

SMC Pneumatic Clean Series



- | | |
|-----------------------------|---------------------------------------|
| ● Air Cylinder | ● Filter / Pressure Control Equipment |
| ● Rotary Actuator | ● Fittings & Tubing |
| ● Air Gripper | ● Air Preparation Equipment |
| ● Directional Control Valve | ● Pressure Switch |
| ● Flow Control Equipment | ● Clean Gas Filter |

SMC Pneumatic Clean Series

Particle generation level of SMC pneumatic clean series equipment can be classified into 1-4 grades by the particle generation measurement test, and each equipment can be used according to the clean room cleanliness class.

Class M2.5 (ISO class 4)	Class M3.5 (ISO class 5)	Class M4.5 (ISO class 6)	Class M5.5 (ISO class 7)

The view above shows an image. Refer to front matter 13 to 22 and the specifications for particle generation grade of each equipment.

Clean Series

Series 10-/11-/12-/13-

Available for clean environment.

Particle generation in a clean room can be prevented.

Applicable model

Actuator, (Air cylinder, Rotary actuator, Air gripper), Directional control valve, Flow control equipment, Filter & Pressure control equipment, Fittings & Tubing, Air preparation equipment, Pressure switch, Clean gas filter

Note) 11-/12-/13- are available only for actuators.

Special Clean Series

Special clean series pursues improvement of cleanliness than the clean series.

This series was developed considering construction, material and assembly environment for use in a clean environment.

Applicable model

Clean rodless cylinder, Clean regulator, Clean one-touch fitting, Clean tubing, Clean gas filter

Copper, Fluorine, and Silicon free + Low particle generation

Series 21-/22-

For the environment in which the use of copper, fluorine and silicon are restricted.

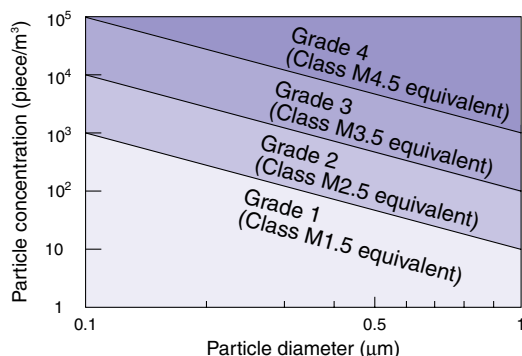
The same structure as clean series. (Grease and package style are different.)

Applicable model

Actuator (Air cylinder, Rotary actuator, Air gripper), Directional control valve, Flow control equipment, Pressure control equipment, Fittings & Tubing

Note) 22-: Available only for actuators.

Particle generation grade classification



Cleanliness class

SMC	Fed.Std.209E	ISO 14644-1
	SI unit	
Grade 1	M1.5	ISO class 3
Grade 2	M2.5	ISO class 4
Grade 3	M3.5	ISO class 5
Grade 4	M4.5	ISO class 6
	M5.5	ISO class 7
	M6.5	ISO class 8



The grade classification is the SMC original method. The smaller the grade no., the less the particle generation. The upper concentration limit of the cleanliness class based on Fed. Std. 209E-1992 is shown in parentheses.

(Refer to Front matter 23 "Particle generation measuring method" and)
Front matter 24 "Comparison of cleanliness standards" for details.

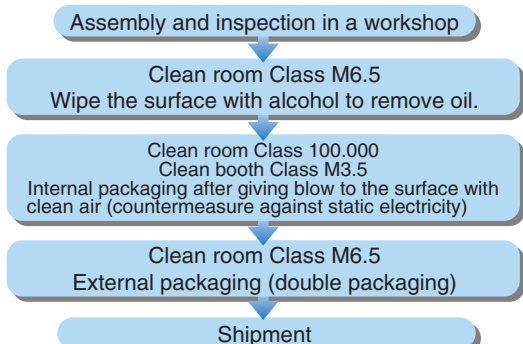
Note) Do not use one-touch fittings 10-KQ (including solenoid valves with built-in one-touch fittings and speed controllers with one-touch fittings) in Grade 1 or Grade 2 areas because internal pressure change may move the collet chuck slightly, which may cause particle generation. This does not apply to insert fittings (KF), miniature fittings (M, MS), clean one-touch fittings (KP, KPQ, KPG) and speed controllers with clean one-touch fittings (AS-FPQ/FPG).

No dust is carried into the clean room.

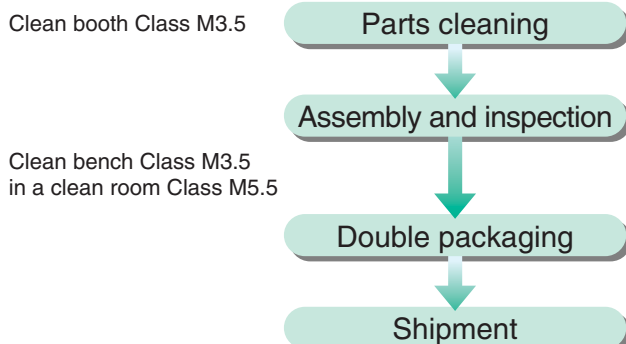
After inspection, products are blown with high purity air (clean bench/class M3.5) in a clean environment. Products are sealed and shipped in anti-static double bags.



10-/11-/12-/13- (Clean series.)

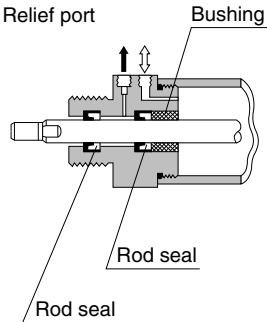
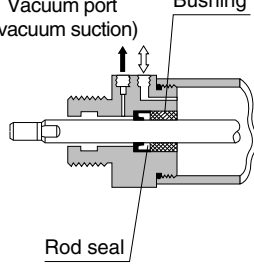


Products assembled in a clean room (Special clean series)

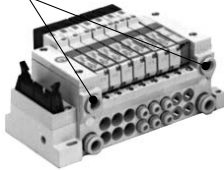
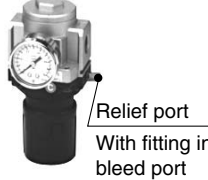


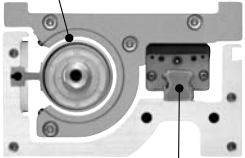
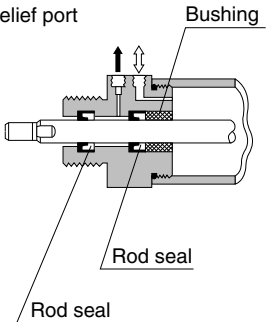
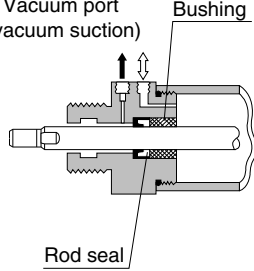
21-/22-series are packed in an usual manner (assembly and inspection in a workshop — packaging — shipment). Please contact SMC for clean packaging.

Basic specifications of actuator

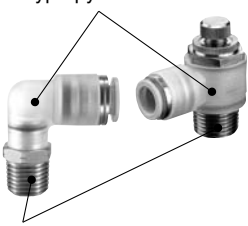
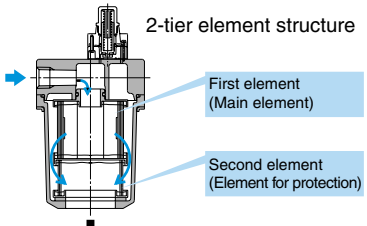
	Series 10-	Series 11-	Series 12-
Construction	• Double seal type / release to atmosphere 	• Single seal type / vacuum suction 	• Guide cylinder • Dual rod cylinder Double seal type / release to atmosphere (Series 10- equivalent) and specially treated guide  Ball bushing guide Linear guide • Rodless cylinder Specially treated cylinder tube exterior  Cylinder tube
Restricted material	No		
Grease	Fluorine grease		
Assembly environment	General environment (Assembly and inspection in a workshop)		
Packaging style	Clean packaging: Products are sealed in anti-static double bags after giving		

Basic specifications of other equipment

	Series 10-	
Construction	• Directional control valve Main valve and pilot valve common exhaust  • Pressure control equipment  Relief port With fitting in bleed port • Air filter  Drain guide With female thread Fitting, speed controller, pressure switch, etc. have the same structure as those of standard.	• Clean regulator All wetted parts are made of stainless steel, FPM and PTFE, and exterior metal parts are made of anodized aluminum, which provides high corrosion resistance.  • Clean one-touch fittings(for blow)  Wetted part Nonmetal Polypropylene resin • Clean tubing Polyolefin Resin
Restricted material	No	
Grease	Fluorine grease	—
Assembly environment	General environment (Assembly and inspection in a workshop)	Parts are cleaned and
Packaging style	Clean packaging: Products are sealed in anti-static double bags after	

Series 13-	Special clean series	Series 21-	Series 22-
• Guide cylinder • Air slide table Single seal type/ vacuum suction (Series 11- equivalent) and specially treated guide  Ball bushing guide Linear guide	• Clean rodless cylinder No contact between the cylinder tube exterior and the slider interior  Linear guide Special treatment	• Double seal type / release to atmosphere 	• Single seal type/ vacuum suction 
	No	Copper, fluorine and silicon-free	
	Fluorine grease	Lithium soap base grease	
	Parts are cleaned and assembled in a clean room.	General environment (Assembly and inspection in a workshop)	
blow to the surface with clean air.		Standard packaging ^(Note)	

(Note) Contact SMC for clean packaging.

Special clean	Series 21-		
• Clean one-touch fittings(for drive system air piping) • Clean speed controller Polypropylene resin  Metal part Brass (Electroless nickel plated) or Stainless steel 304	• Exhaust cleaner for clean room  Possible to exhaust in a clean room. • Clean gas filter PTFE membrane element 	• Directional control valve • Pressure control equipment • The same construction as Series 10-	• Clean one-touch fittings (for drive system air piping) • Clean speed controller No seal to the thread parts * Available for uni thread. (Made to Order)
No		Copper, fluorine and silicon-free	
Fluorine grease	—	Lithium soap base grease	
assembled in a clean room.		General environment (Assembly and inspection in a workshop)	Parts are cleaned and assembled in a clean room.
giving blow to the surface with clean air.		Standard packaging ^(Note)	

(Note) Contact SMC for clean packaging.

Clean Series INDEX

Cylinder

Air Cylinder		P.2
		
Type	Model	Size
Standard	10-/11-21-/22- CJ2	6, 10, 16
Double rod	10-/11-21-/22- CJ2W	10, 16
Direct mount type	10-/11-21-/22- CJ2RA	

Air Cylinder		P.14
		
Type	Model	Size
Standard	10-/11-21-/22- CM2	20, 25
Double rod	10-/11-21-/22- CM2W	
Direct mount type	10-/11-21-/22- CM2R	32, 40
End lock	10-/11-21-/22- CBM2	

Air Cylinder		P.34
		
Type	Model	Size
Standard	10-/11-21-/22- CG1	20, 25, 32
Double rod	10-/11-21-/22- CG1W	40, 50, 63
Direct mount type	10-/11-21-/22- CG1R	20, 25, 32
		40, 50, 63

Air Cylinder		P.46
		
Model	Size	
10-/11-21-/22- CA2	40, 50, 63	

Mini-free Mount Cylinder		P.50
		
Model	Size	
10-11- CUJ	6, 8, 10	

Free Mount Cylinder		P.53
		
Model	Size	
10-/11-21-/22- CDU	6, 10, 16, 20, 25	

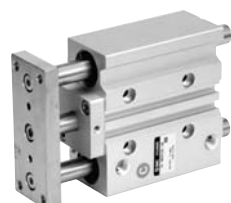
Compact Cylinder		P.56
		
Model	Size	
10-/11-21-/22- CQS	12, 16, 20, 25	

Compact Cylinder		P.64
		
Model	Size	
10-/11-21-/22- CQ2	32, 40, 50, 63, 80, 100	

Sine Cylinder		P.72
		
Model	Size	
10-11- REC	20, 25, 32, 40	

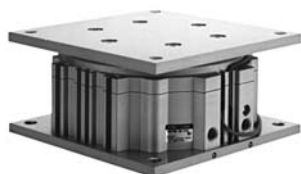
Dual Rod Cylinder		P.76
		
Model	Size	
11-/12-21-/22- CXSJ	6, 10	

Dual Rod Cylinder		P.80
		
Model	Size	
10-/11-/12-21-/22- CXS	6, 10, 15, 20, 25, 32	

Compact Guide Cylinder		P.89
		
Model	Size	
12-/13-21-/22- MGPL	12, 16, 20, 25, 32, 40, 50, 63	

Guide Table

P.94



Model	Size
10-MGF	40, 63, 100

Air Slide Table

P.98



Model	Size
11-22-MXP	6, 10, 12, 16
11-22-MXPJ6	6

Air Slide Table

P.106



Model	Size
13-22-MXQ	6, 8, 12, 16, 20, 25

Air Slide Table

P.132



Model	Size
13-22-MXS	6, 8, 12, 16, 20, 25

Clean Rodless Cylinder

P.153



Model	Size
CYP	15, 32

Magnetically Coupled Rodless Cylinder

P.158



Model	Size
12-CY1B	6, 10, 50, 63
12-CY3B	15, 20, 25, 40

Magnetically Coupled Rodless Cylinder (Direct Mount Type)

P.162



Model	Size
12-CY1R	6, 10, 50, 63
12-CY3R	15, 20, 25, 32, 40

Sine Rodless Cylinder

P.166



Model	Size
12-REA	25, 32, 40, 50, 63

Low Speed Cylinder

P.170



Model	Size
10-11-CQSX	12, 16, 20, 25

Low Speed Cylinder

P.172



Model	Size
10-11-CQ2X	32, 40, 50, 63

Low Speed Cylinder

P.174



Model	Size
10-11-CM2X	20, 25, 32, 40

Clean Series INDEX

Rotary Actuator

Rotary Actuator P.186



Type	Model	Size
Vane	¹⁰⁻ ₂₁₋ CRB1	10, 15, 20, 30

Rotary Actuator P.198



Type	Model	Size
Rack pinion	11-CRA1	30, 50

Rotary Table P.204



Model	Size
¹¹⁻ ₂₂₋ MSQ	1, 2, 3, 7, 10, 20, 30, 50

Air Gripper

Parallel Type Air Gripper 2 Fingers P.214



Model	Size
¹¹⁻ ₂₂₋ MHZ2	10, 16, 20, 25

Rotary Actuated Air Gripper P.218



Type	Model	Size
2 fingers	¹¹⁻ ₂₂₋ MHR2	10, 15, 20, 30

Rotary Actuated Air Gripper P.224



Type	Model	Size
3 fingers	¹¹⁻ ₂₂₋ MHR3	10, 15

Wide Opening Parallel Type Air Gripper 2 Fingers P.228



Model	Size
¹¹⁻ ₂₂₋ MHL2	10, 16, 20, 25, 32, 40

Directional Control Valve

5 Port Solenoid Valve P.238



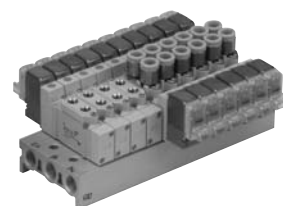
Series	Flow characteristics	Cylinder size (ø)
	C [dm ² /(s·bar)]	
10-SV1000/2000/3000/4000	1.1 to 10	40 to 100

5 Port Solenoid Valve P.325



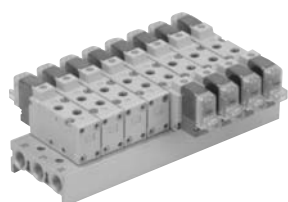
Series	Flow characteristics	Cylinder size (ø)
	C [dm ² /(s·bar)]	
10-SZ3000	0.77	32

5 Port Solenoid Valve P.359



Series	Flow characteristics	Cylinder size (ø)
	C [dm ² /(s·bar)]	
10-SY3000/5000/7000/9000	1.1 to 10	40 to 100

5 Port Solenoid Valve P.492



Series	Flow characteristics	Cylinder size (ø)
	C [dm ² /(s·bar)]	
10-SYJ3000/5000/7000	0.46 to 2.9	25 to 50

5 Port Solenoid Valve P.565



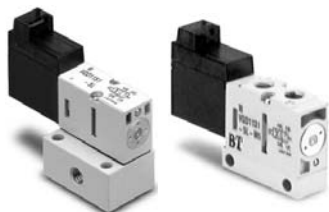
Series	Flow characteristics	Cylinder size (ø)
	C [dm ² /(s·bar)]	
10-SQ1000/2000	0.83 to 2.9	32 to 63

5 Port Solenoid Valve P.583



Series	Flow characteristics	Cylinder size (ø)
	C [dm ² /(s·bar)]	
10-VQ1000/2000	1.0 to 3.2	40 to 63

4 Port Solenoid Valve P.633



Series	Flow characteristics	Cylinder size (ø)
	C [dm ² /(s·bar)]	
10-VQD1000	0.19	25

3 Port Solenoid Valve P.638



Series	Flow characteristics	
	C [dm ² /(s·bar)]	
10-V100	0.037 to 0.076	

3 Port Solenoid Valve P.648



Series	Flow characteristics	
	C [dm ² /(s·bar)]	
10-SY100	0.14 to 0.22 *	

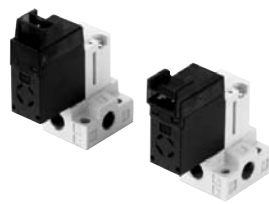
* Effective area

3 Port Solenoid Valve P.657



Series	Flow characteristics	
	C [dm ² /(s·bar)]	
10-SYJ300/500/700	0.41 to 3.0	

3 Port Solenoid Valve P.705



Series	Flow characteristics	
	C [dm ² /(s·bar)]	
10-VQ100	0.55 to 0.14	

Clean Series INDEX

Flow Control Equipment

Clean Speed Controller P.720



Model	Port size	With one-touch fitting
(21-) AS-FPQ (21-) AS-FPG	M5 to 1/2	ø4 to ø12

Speed Controller with One-touch Fittings Elbow type/Universal type P.723



Model	Port size	With one-touch fitting
10-AS-F	M3 to 1/2	ø3.2 to ø12

Speed Controller with One-touch Fittings In-line type P.727



Model	With one-touch fitting
10-AS-F	ø3.2 to ø12

Dual Speed Controller P.730



Model	Connection size	With one-touch fitting
10-ASD	M5 to 1/2	ø4 to ø12

Stainless Steel Speed Controller with One-touch Fitting Elbow type/Universal type P.733



Model	Port size	With one-touch fitting
10-AS-FG	M5 to 1/2	ø3.2 to ø12

Stainless Steel Speed Controller with One-touch Fitting In-line type P.737



Model	With one-touch fitting
10-AS-FG	ø3.2 to ø12

Stainless Steel Dual Speed Controller with One-touch Fitting P.740



Model	Connection port	With one-touch fitting
10-ASD-FG	M5 to 1/2	ø4 to ø12

Speed Controller for Low Speed Operation with One-touch Fitting Elbow type/Universal type P.743



Model	Connection port	With one-touch fitting
10-AS-FM	M5 to 1/4	ø3.2 to ø10

Speed Controller for Low Speed Operation with One-touch Fitting In-line type P.747



Model	With one-touch fitting
10-AS-FM	ø3.2 to ø8

Dual Speed Controller for Low Speed Operation P.750



Model	Connection port	With one-touch fitting
10-ASD-FM	M5 to 1/4	ø4 to ø10

Metal Body Speed Controller Elbow type P.753



Model	Connection port
10-AS1200 to 4200	M3 to 1/2

Metal Body Speed Controller In-line type P.755



Model	Connection port
10-AS1000 to 5000	M3 to 1/2

Filter, Pressure Control Equipment

Air Filter P.762



Model	Port size
10-21- AF20 to 60	1/8 to 1

Mist Separator P.764



Model	Port size
10-21- AFM20 to 40	1/8 to 3/4

Micro Mist Separator P.766



Model	Port size
10-21- AFD20 to 40	1/8 to 3/4

Regulator P.768



Model	Port size
10-21- AR20 to 60	1/8 to 1

Regulator with Back Flow Mechanism P.770



Model	Port size
10-21- AR20K to 60K	1/8 to 1

Filter Regulator P.772



Model	Port size
10-21- AW20 to 40	1/8 to 3/4

Filter Regulator with Back Flow Mechanism P.774



Model	Port size
10-21- AW20K to 40K	1/8 to 3/4

Mist Separator Regulator P.776



Model	Port size
10-21- AWM20 to 40	1/8 to 1/2

Micro Mist Separator Regulator P.778



Model	Port size
10-21- AWD20 to 40	1/8 to 1/2

Direct Operated Precision Regulator P.780



Model	Port size
10-21- ARP3000	1/4

Precision Regulator P.782



Model	Port size
10-IR1000 to 3000	1/8 to 1/2

Vacuum Regulator P.788



Model	Port size
10-IRV1000 to 3000	1/8 to 1/2

Clean Regulator P.792



Model	Port size
SRH3000/4000	1/8 to 1/2, Metal gasket seal

Clean Precision Regulator P.796



Model	Port size
SRP1000	M5, 1/8

Clean Series INDEX

Fittings & Tubing

Clean One-touch Fitting P.806



Application	Model	Port size	Applicable tubing O.D.
For blow	KP	1/8 to 1/2	ø4 to ø12

Clean One-touch Fitting P.812



Application	Model	Port size	Applicable tubing O.D.
For driving system air piping	(21-) KPQ KPG	M5 to 1/2	ø4 to ø12

Miniature One-touch Fitting P.816



Model	Port size	Applicable tubing O.D.
10-KJ	M3 to 1/8	ø3.2 to ø6

One-touch Fitting P.824



Model	Port size	Applicable tubing O.D.
10-KQ	M5 to 1/2	ø3.2 to ø16

Stainless Steel One-touch Fitting P.843



Model	Port size	Applicable tubing O.D.
10-KG	M5 to 1/2	ø4 to ø16

Insert Fitting P.854



Model	Port size	Applicable tubing O.D.
10-KF	1/8 to 1/2	ø4 to ø12

Miniature Fitting P.860



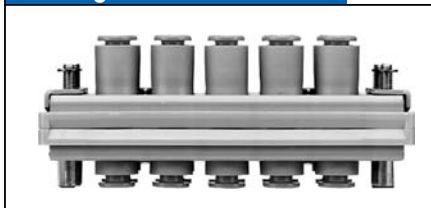
Model	Port size	Applicable tubing O.D.
10-M	M3, M5, 1/8	ø3.2 to ø6

Stainless Miniature Fitting P.866



Model	Port size	Applicable tubing O.D.
10-MS	M5	ø3.2 to ø6

Rectangular/Multi-connector P.870



Model	Applicable tubing O.D.
10-KDM	ø3.2 to ø8

Clean Tubing P.874



Type	Model	Applicable tubing O.D.
Polyolefin	TPH	ø4 to ø12

Clean Tubing P.875



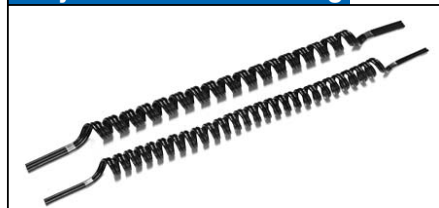
Type	Model	Applicable tubing O.D.
Soft polyolefin	TPS	ø4 to ø12

Polyurethane Tubing P.876



Model	Applicable tubing O.D.
10-TU	ø3.2 to ø12

Polyurethane Coil Tubing P.877



Model	Applicable tubing O.D.
10-TCU	ø4 to ø8

Polyurethane Flat Tubing P.878



Model	Applicable tubing O.D.
10-TFU	ø4 to ø8

Air Preparation Equipment

Main Line Filter

P.882



Model	Port size
10-AFF2B to 75B	1/8 to 2

Mist Separator

P.886



Model	Port size
10-AM150 to 850	1/8 to 2

Micro Mist Separator

P.890



Model	Port size
10-AMD150 to 850	1/8 to 2

Micro Mist Separator with Prefilter

P.894



Model	Port size
10-AMH150 to 850	1/8 to 2

Super Mist Separator

P.898



Model	Port size
10-AME150 to 850	1/8 to 2

Odor Removal Filter

P.902



Model	Port size
10-AMF150 to 850	1/8 to 2

Membrane Air Dryer

P.906



Model	Port size
10-IDG3 to 100	1/8 to 1/2
10-IDG3H to 100H	
10-IDG30L to 100L	1/4 to 1/2
10-IDG60S to 100S	3/8, 1/2

Exhaust Cleaner for Clean Room

P.915



Model	Port size
AMP220 to 420	1/4 to 3/4

Pressure Switch

2-color Display Type High-precision Digital Pressure Switch

P.922



Model	Pressure range
10-ZSE/ISE30	Compound pressure and positive pressure

High-precision Digital Pressure Switch

P.929



Model	Pressure range
10-ZSE/ISE40	Vacuum pressure, compound pressure and positive pressure

High-precision Digital Pressure Switch for General Fluids

P.934



Model	Pressure range
10-ZSE/ISE50	Compound pressure and positive pressure
10-ZSE/ISE60	

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Pressure Switch

Digital Pressure Switch for General Fluids P.944



Model	Pressure range
10-ZSE/ISE5B	Compound pressure and positive pressure
10-ZSE/ISE6B	

High-precision Remote Type Digital Pressure Switch P.950



Type	Model	Pressure range
Compact type for pneumatic equipment	10-PSE530	Vacuum pressure and compound pressure, low pressure and positive pressure

High-precision Remote Type Digital Pressure Switch P.952



Type	Model	Pressure range
Compact type for pneumatic equipment	10-PSE540	Vacuum pressure, compound pressure and positive pressure

Remote Type Digital Pressure Sensor P.954



Type	Model	Pressure range
For minute differential pressure	10-PSE550	Minute differential pressure

Remote Type Digital Pressure Sensor P.956



Type	Model	Pressure range
For general fluids	10-PSE560	Vacuum pressure, compound pressure and positive pressure

Remote Type Digital Pressure Sensor Controller/Multi Channel P.958



Model
10-PSE200

Remote Type 2-color Display Digital Pressure Sensor Controller P.963



Model
10-PSE300

Clean Gas Filter

Clean Gas Filter Cartridge Type P.979



Model	Connection port
SFA100/200/300	1/4

Clean Gas Filter Cartridge Type P.981



Model	Connection port
SFB100	M5, 1/4
SFB200	1/4

Clean Gas Filter Disposable Type P.984



Model	Connection port
SFB300	1/4

Clean Gas Filter Disposable Type P.986

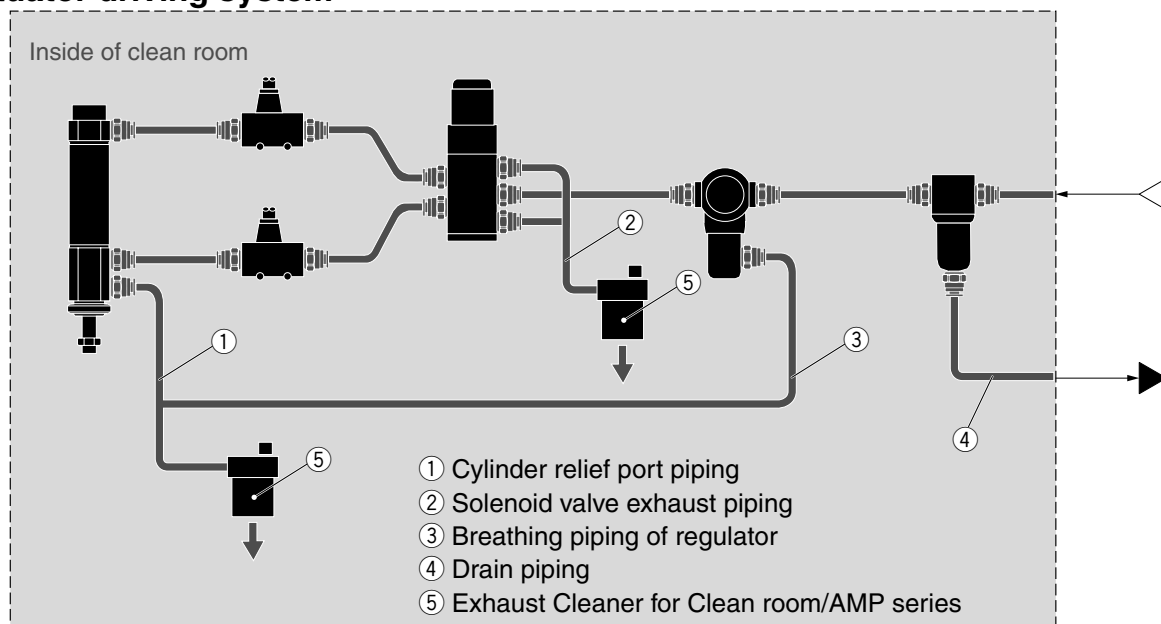


Model	Connection port
SFC100	1/4, 3/8

System Circuit in Clean Room

Following are the actuator driving system and circuit configuration of blow system employed to reduce particle generation when using pneumatic equipment in a clean room.

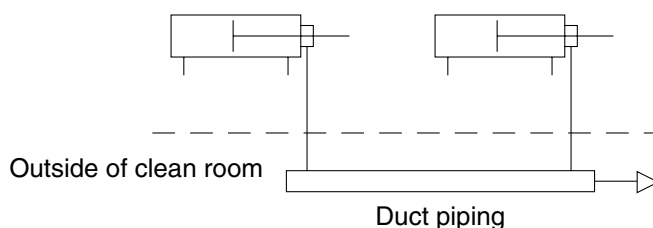
• Actuator driving system



• Cylinder relief port piping

Series 10-/12-/21- (atmospheric release type)

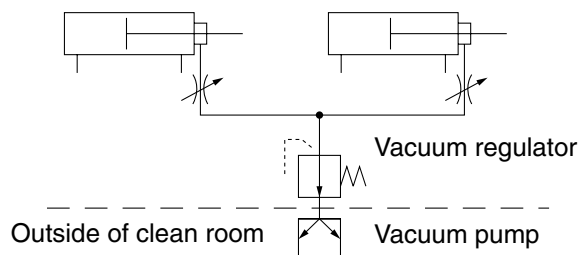
Connect the relief port piping with the dedicated duct piping installed outside the clean room or with the exhaust cleaner for clean room/AMP series.



Series 11-/13-/22- (Vacuum suction type)

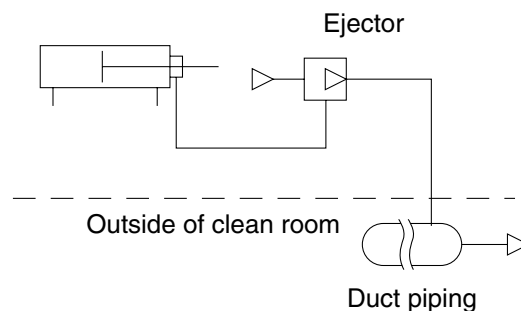
With a vacuum pump

When several air cylinders are used together or a model with high vacuum suction flow is used.



With an ejector

When a few air cylinders are locally used.



System Circuit in Clean Room

• Clean blow system

Example of equipment to suit each clean blow grade

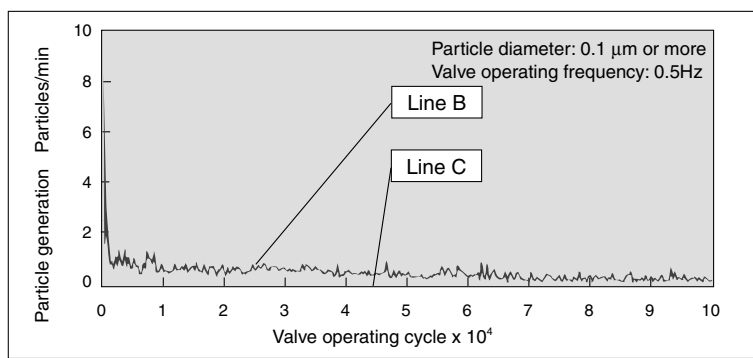
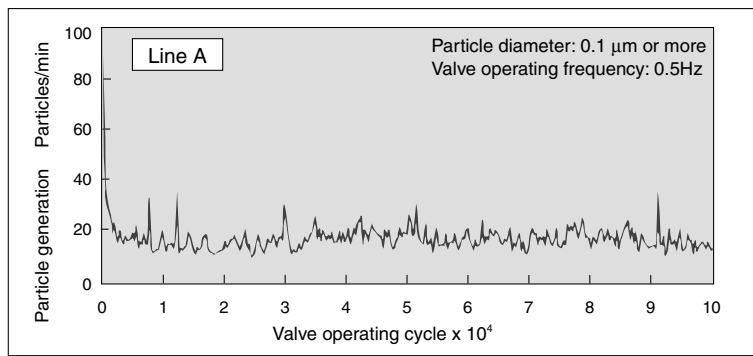
Line A: For oil-free air blow

Line B: For clean blow

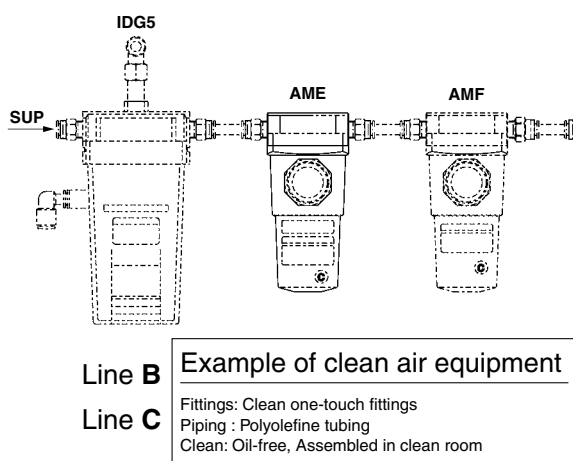
Line C: For clean blow
(With clean gas filter)

Line D: For N₂ blow

Change in particle generation with time

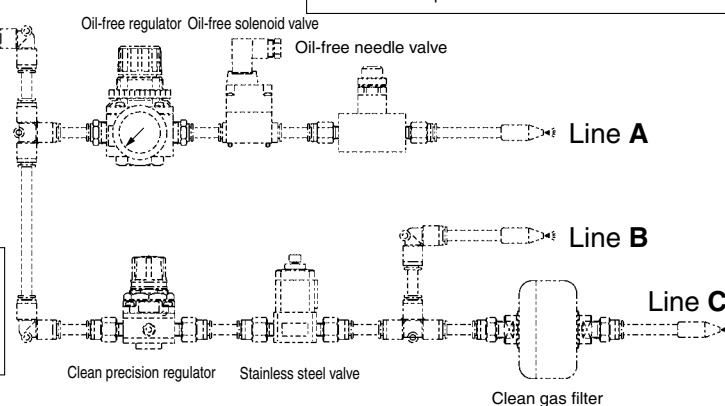


• Example of air line equipment

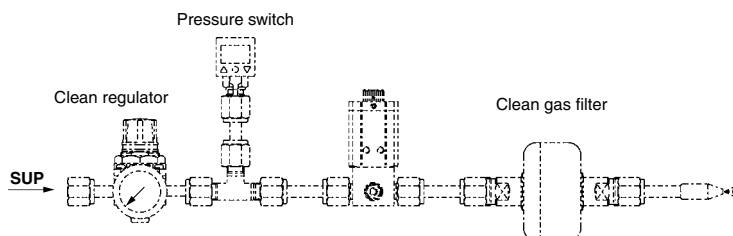


Line A Example of oil-free air equipment

Fitting: Oil-free one-touch fitting
Piping: Urethane tuing
Oil-free: Wetted parts oil-free



• Example of N₂ equipment



Feature (Line D)

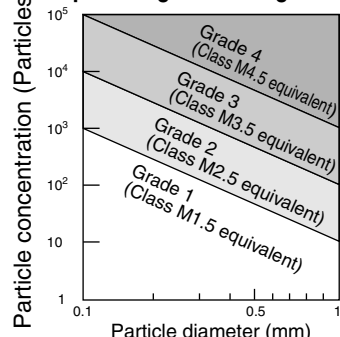
Excellent corrosion resistance (Body SUS316L)
Integral fitting type
Seal material: Fluoro resin or Stainless steel
Precision cleaning, Assembly in a clean room

How to Use Clean Series

The position of the pneumatic equipment to the workpiece is determined by the particle generation degree.

$$\boxed{\text{Particle generation grade no. of the pneumatic equipment}} \leq \boxed{\text{The article concentration grade no. around the workpiece}}$$

Classification of particle generation grades



The grade classification is the SMC original method. The smaller the grade number, the less the particle generation. The upper concentration limit of the cleanliness class based on Fed. Std. 209E-1992 is shown in parentheses. (Refer to Front matter 23 "Particle generation measuring method" and Front matter 24 "Comparison of cleanliness standards" for details.)

Note) Do not use one-touch fittings 10-KQ (including solenoid valves with built-in one-touch fittings and speed controllers with one-touch fittings) in Grade 1 or Grade 2 areas because internal pressure change may cause slight move of the collet chuck, which may cause particle generation. This does not apply to insert fittings (KF), miniature fittings (M, MS), clean one-touch fittings (KP, KPQ, KPG) and speed controllers with clean one-touch fittings (AS-FPQ/FPQ).

Cleanliness class

SMC	Fed.Std.209E	ISO 14644-1
	SI unit	
Grade 1	M1.5	ISO class 3
Grade 2	M2.5	ISO class 4
Grade 3	M3.5	ISO class 5
Grade 4	M4.5	ISO class 6
—	M5.5	ISO class 7
—	M6.5	ISO class 8

Selection procedure

(1) Required clean room cleanliness?

Class M2.5 or Class M3.5 or Class M4.5?

(2) Air flow to the workpiece (Refer to Diagram 1.)

(3) Where is the pneumatic equipment located? (Refer to Diagram 2.)

(4) Determine the particle concentration grade no. around the workpiece based on above (1) to (3). (Refer to Table 1.)

(5) Select the equipment to be used. (Refer to Front matter 13 to 22.)

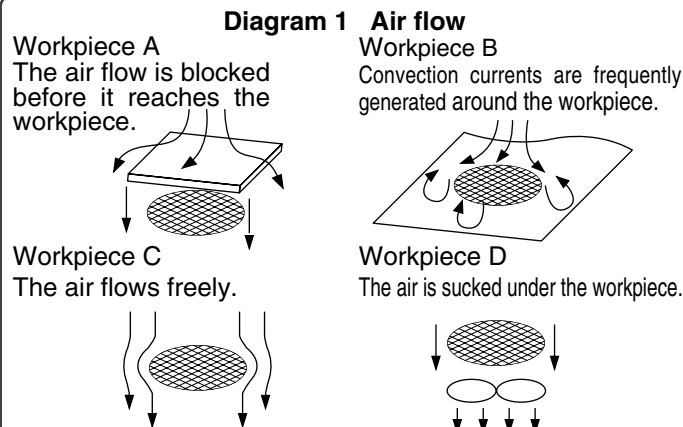


Diagram 2 Installation location of equipment

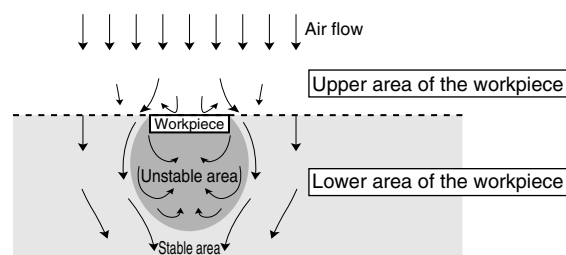


Table 1 Particle concentration grade around the workpiece

(2) Workpiece		A,B			C			D		
(3) Position of the equipment to be used		Upper area of the workpiece	Lower area of the workpiece		Upper area of the workpiece	Lower area of the workpiece		Upper area of the workpiece	Lower area of the workpiece	
			Unstable area	Stable area		Unstable area	Stable area		Unstable area	Stable area
(1) Cleanliness	Class M2.5				Grade 1		Grade 2	Grade 1	Grade 2	
	Class M3.5						Grade 2			
	Class M4.5	Grade 1	Grade 2	Grade 3	Grade 2	Grade 3	Grade 4	Grade 2	Grade 3	Grade 4

: Class M2.5 and M3.5 levels of cleanliness cannot be achieved in area due to dust accumulation or flotation.

Cylinder

Description			Model	Particle generation grade by series						
				Standard	10-	11-	12-	13-	21-	22-
	Air Cylinder	Standard	10-/11-21-/22- CJ2	3	2	1			2	1
		Double rod	10-/11-21-/22- CJ2W							
		Direct mount type	10-/11-21-/22- CJ2RA							
	Air Cylinder	Standard	10-/11-21-/22- CM2	3	2	1			3	1
		Double rod	10-/11-21-/22- CM2W							
		Direct mount type	10-/11-21-/22- CM2R							
		End lock	10-/11-21-/22- CBM2							
	Air Cylinder	Standard	10-/11-21-/22- CG1	3	2	1			3	1
		Double rod	10-/11-21-/22- CG1W							
		Direct mount type	10-/11-21-/22- CG1R							
	Air Cylinder Standard		10-/11-21-/22- CA2	3	2	1			3	1
	Mini-free Mount Cylinder		10-11- CUJ	3	2	1				
	Free Mount Cylinder		10-/11-21-/22- CDU	3	2	1			3	1
	Compact Cylinder		10-/11-21-/22- CQS	3	2	1			2	1
			10-/11-21-/22- CQ2	3	2	1			2	1
	Sine Cylinder		10-11- REC	3	2	1				
	Dual Rod Cylinder		11-/12-21-/22- CXSJ	3, 4 ^{Note)}		1	2		3	1
			10-/11-/12-21-/22- CXS	3, 4 ^{Note)}	2	1	2		3	1

Note) Grade is different depending on the type of the ball bearing.

Values in show grades.

 No grade applies to the blanks.

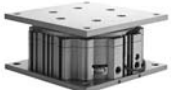
CXSJ

Model	Bearing type	Standard
CXSJL	Ball bushing bearing	3
CXSJM	Slide bearing	4

CXS

Model	Bearing type	Standard
CXSL	Ball bushing bearing	3
CXSM	Slide bearing	4

Cylinder

Description	Model	Particle generation grade by series						
		Standard	10-	11-	12-	13-	21-	22-
 Compact Guide Cylinder	12-/13- 21-/22- MGPL	4			3	2	4	3
 Guide Table	10-MGF	4	2					
 Air Slide Table	11- 22- MXP	-		1, 2, 4 ^{Note)}				1, 2, 4 ^{Note)}
	11- 22- MXPJ6	-		1				1
 Air Slide Table	13- 22- MXQ	-				3, 4 ^{Note)}		3, 4 ^{Note)}
	13- 22- MXS							
 Clean Rodless Cylinder	CYP	2						
 Magnetically Coupled Rodless Cylinder	12-CY1B	4			3			
	12-CY3B	4			3			
 Magnetically Coupled Rodless Cylinder (Direct Mount Type)	12-CY1R	4			3			
	12-CY3R	4			3			
 Sine Rodless Cylinder	12-REA	4			3			
 Low Speed Cylinder	10- 11- CQSX	3	2	1				
	10- 11- CQ2X	3	2	1				
	10- 11- CM2X	3	2	1				

Note) The grade is different depending on the type of the adjuster option.

Values in show grades.

No grade applies to the blanks.

MXP

Option	11-	22-
Without adjuster	1	
Rubber stopper	2	
Metal stopper	4	

MXQ, MXS

Option	13-	22-
Without adjuster		3
Rubber stopper		
Metal stopper		4

Rotary Actuator

Description			Model	Particle generation grade by series						
				Standard	10-	11-	12-	13-	21-	22-
	Rotary Actuator	Vane	¹⁰⁻ ₂₁₋ CRB1	4	2				2	
		Rack pinion	11-CRA1	3		2				
	Rotary Table		¹¹⁻ ₂₂₋ MSQ	3		1				1

Air Gripper

Description			Model	Particle generation grade by series						
				Standard	10-	11-	12-	13-	21-	22-
	Air Gripper 2 fingers		¹¹⁻ ₂₂₋ MHZ2	-		2				2
	Rotary Actuated Air Gripper	2 fingers	¹¹⁻ ₂₂₋ MHR2	-		1				1
		3 fingers	¹¹⁻ ₂₂₋ MHR3	-		1				1
	Wide Opening Parallel Type Air Gripper 2 fingers		¹¹⁻ ₂₂₋ MHL2	-		2				2

Values in show grades.
 No grade applies to the blanks.

Directional Control Valve

Description		Series	Particle generation grade by series		
			Standard	10-	21-
	5 Port Solenoid Valve	10-SV1000/2000/3000/4000	3	1	
		10-SZ3000	3	1	
		10-SY3000/5000/7000/9000	3	1	
		10-SYJ3000/5000/7000	3	1	
		10-SQ1000/2000	3	1	
		¹⁰⁻ ₂₁₋ VQ1000/2000	3	1	2
		10-VQD1000	3	1	
	3 Port Solenoid Valve	10-V100	3	1	
		10-SY100	3	1	
		10-SYJ300/500/700	3	1	
		10-VQ100	3	1	

Note) Particle generation grades apply to threaded port connection type.
Different grades apply to the one-touch fittings. For details, refer to Front matter 12.

Values in  show grades.
 No grade applies to the blanks.

Flow Control Equipment

Description		Model	Particle generation grade by series		
			Standard	10-	21-
	Clean Speed Controller	(21-)AS-FPQ	1		1
		AS-FPG	1		
	Speed Controller with One-touch Fitting Elbow type/Universal type	10-AS-F	4	3	
	Speed Controller with One-touch Fitting In-line type	10-AS-F	4	3	
	Dual Speed Controller	10-ASD	4	3	
	Stainless Steel Speed Controller with One-touch Fitting Elbow type/Universal type	10-AS-FG	4	3	
	Stainless Steel Speed Controller with One-touch Fitting In-line type	10-AS-FG	4	3	
	Stainless Steel Dual Speed Controller with One-touch Fitting	10-ASD-FG	4	3	
	Speed Controller for Low Speed Operation with One-touch Fitting Elbow type/Universal type	10-AS-FM	4	3	
	Speed Controller for Low Speed Operation with One-touch Fitting In-line type	10-AS-FM	4	3	
	Dual Speed Controller for Low Speed Operation with One-touch Fitting	10-ASD-FM	4	3	
	Metal Speed Controller Elbow type	10-AS1200 to 4200	3	1	
	Metal Speed Controller In-line type	10-AS1000 to 5000	3	1	

Values in show grades.
 No grade applies to the blanks.

Filter and Pressure Control Equipment

Description		Model	Particle generation grade by series		
			Standard	10-	21-
	Air Filter	¹⁰⁻ ₂₁₋ AF20 to 60	3	1	1
	Mist Separator	¹⁰⁻ ₂₁₋ AFM20 to 40	3	1	1
	Micro Mist Separator	¹⁰⁻ ₂₁₋ AFD20 to 40	3	1	1
	Regulator	¹⁰⁻ ₂₁₋ AR20 to 60	3	1	1
	Regulator with Back Flow Mechanism	¹⁰⁻ ₂₁₋ AR20K to 60K	3	1	1
	Filter Regulator	¹⁰⁻ ₂₁₋ AW20 to 40	3	1	1
	Filter Regulator with Back Flow Mechanism	¹⁰⁻ ₂₁₋ AW20K to 40K	3	1	1
	Mist Separator Regulator	¹⁰⁻ ₂₁₋ AWM20 to 40	3	1	1
	Micro Mist Separator Regulator	¹⁰⁻ ₂₁₋ AWD20 to 40	3	1	1
	Direct Operated Precision Regulator	¹⁰⁻ ₂₁₋ ARP3000	3	1	1
	Precision Regulator	10-IR1000 to 3000	-	-	
	Vacuum Regulator	10-IRV1000 to 3000		1	
	Clean Regulator	SRH3000/4000	1		
	Precision Clean Regulator	SRP1000	3		

Values in  show grades.
 No grade applies to the blanks.

Air Fitting & Tubing

Description		Model	Particle generation grade by series		
			Standard	10-	21-
	For blow	KP	1		
	Clean One-touch Fitting	(21-)KPQ	1		1
	For drive system air piping	KPG	1		
	Miniature One-touch Fitting	10-KJ	4	3	
	One-touch Fitting	10-KQ	4	3	
	Stainless Steel One-touch Fitting	10-KG	4	3	
	Insert Fitting	10-KF	3	1	
	Miniature Fitting	10-M	3	1	
	Stainless Steel Miniature Fitting	10-MS	3	1	
	Rectangular/Multi-connector	10-KDM	4	3	
	Clean Tubing	Polyolefin	1		
		Soft polyolefin	1		
	Polyurethane Tubing	10-TU	3	1	
	Polyurethane Coil Tubing	10-TCU	3	1	
	Polyurethane Flat Tubing	10-TFU	3	1	

Values in  show grades.
 No grade applies to the blanks.

Air Preparation Equipment

Description		Model	Particle generation grade	
			Standard	10-
	Main Line Filter	10-AFF2B to 75B	3	1
	Mist Separator	10-AM150 to 850	3	1
	Micro Mist Separator	10-AMD150 to 850	3	1
	Micro Mist Separator with Prefilter	10-AMH150 to 850	3	1
	Super Mist Separator	10-AME150 to 850	3	1
	Odor Removal Filter	10-AMF150 to 850	3	1
	Membrane Air Dryer	10-IDG3 to 100	3	1
		10-IDG3H to 100H	3	1
		10-IDG30L to 100L	3	1
		10-IDG60S to 100S	3	1
	Exhaust Cleaner for Clean Room	AMP220 to 420	3	

Values in  show grades.
 No grade applies to the blanks.

Pressure Switch

Description			Model	Particle generation grade	
				Standard	10-
	2-color Display Type High-precision Digital Pressure Switch		10-ZSE/ISE30	3	2
	High-precision Digital Pressure Switch		10-ZSE/ISE40	3	2
	High-precision Digital Pressure Switch for General Fluids		10-ZSE/ISE50	3	2
			10-ZSE/ISE60	3	2
	Digital Pressure Switch for General Fluids		10-ZSE/ISE5B	3	2
			10-ZSE/ISE6B	3	2
	Remote Type Digital Pressure Switch	Compact type for pneumatics	10-PSE530	3	2
		Compact type for pneumatics	10-PSE540	3	2
		For minute differential pressure	10-PSE550	3	2
		For general fluids	10-PSE560	3	2
	Remote Type Digital Pressure Sensor Controller/Multi-channel		10-PSE200	1	1
	Remote Type 2-color Display Digital Pressure Sensor Controller		10-PSE300	1	1

Values in show grades.
 No grade applies to the blanks.

Particle Generation Grade

Clean Gas Filter

Description		Model	Particle generation grade
			Standard
	Clean Gas Filter Cartridge Type	SFA100/200/300	1
	Clean Gas Filter Cartridge Type	SFB100	1
	Clean Gas Strainer Cartridge Type	SFB200	1
	Clean Gas Filter Disposable Type	SFB300	1
	Clean Gas Filter Disposable Type	SFC100	1

Values in  show grades.

Particle Generation Measuring Method

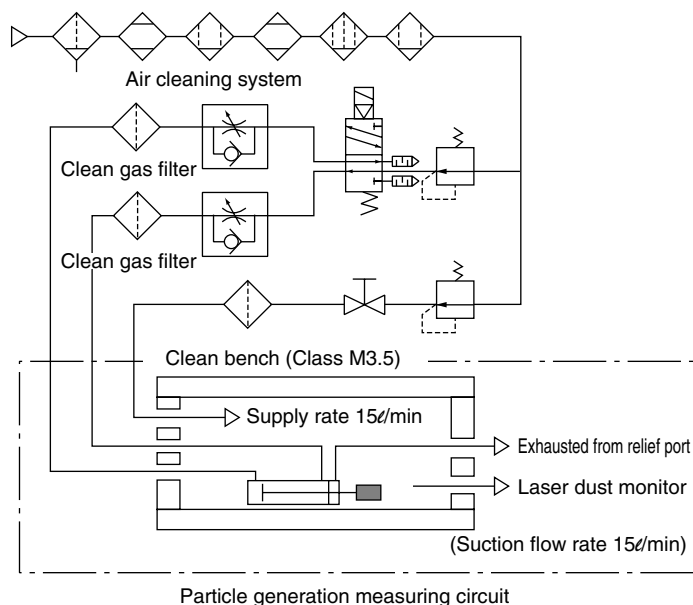
The particle generation data for SMC CLEAN SERIES are measured in the following test method.

Test method (Example)

Place the specimen in the acrylic resin chamber and operate it while supplying the same flow rate of clean air as the suction flow rate of the measuring instrument (15ℓ/min). Measure the changes of the particle concentration over time until the number of cycles reaches the specified point. The chamber is placed in a Class M3.5 clean bench.

Measuring conditions

Chamber	Internal volume	15ℓ
	Supply air quality	Same quality as the supply air for driving
Measuring instrument	Description	Laser dust monitor (Automatic particle counter by light-scattering method)
	Model no.	TS-1500
	Minimum measurable particle diameter	0.17μm
	Suction flow rate	15ℓ/min
	Manufacturer	Hitachi Electronics Engineering Co. Ltd.
Setting conditions	Sampling time	5min
	Interval time	55min
	Sampling air flow	75ℓ



Evaluation method

To obtain the measured values of particle concentration, the accumulated value ^{Note 1)} of particles captured every 5 minutes, by the laser dust monitor, is converted into the particle concentration in every 1m³.

When determining particle generation grades, the 95% upper confidence limit of the average particle concentration (average value), when each specimen is operated at a specified number of cycles ^{Note 2)} is considered.

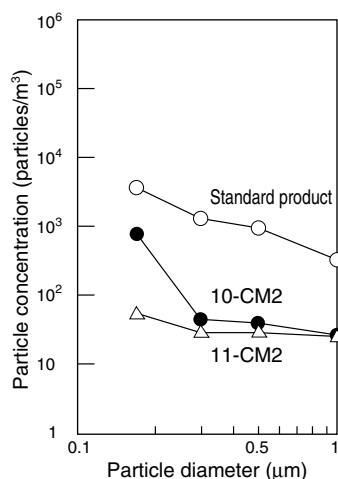
The plots in the graphs indicate the 95% upper confidence limit of the average particle concentration of particles with a diameter within the horizontal axis range.

Note 1) Sampling air flow rate: Number of particles contained in 75ℓ of air

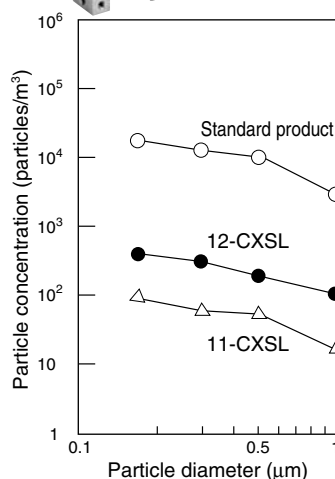
Note 2) Actuator: 1 million cycles

Solenoid valve: 2 million cycles

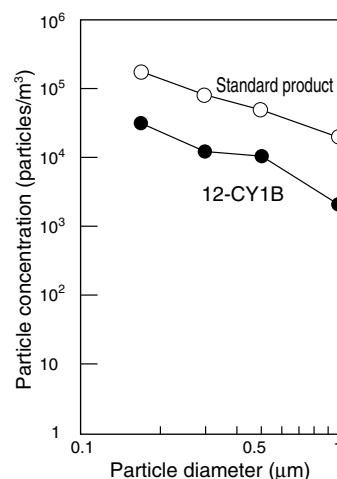
Particle generation characteristics of CM2



Particle generation characteristics of CXSL

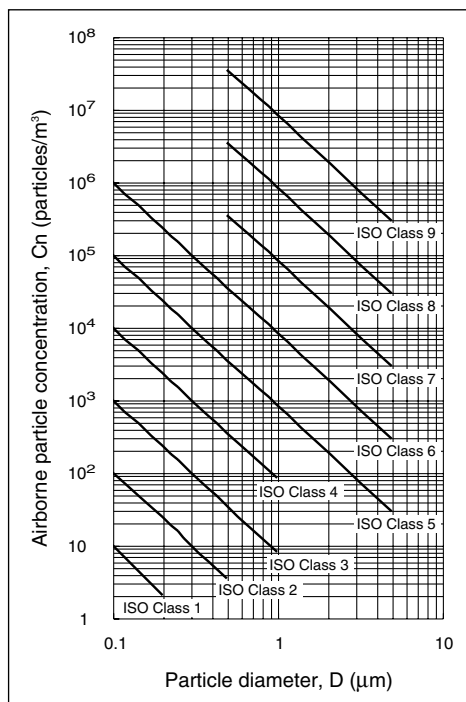


Particle generation characteristics of CY1B



Comparison of Cleanliness Standards

Standard	Fed.Std.209E		ISO 14644-1
Cleanliness classes	Corresponding class indication	British unit: Class 1 to 100.000 SI unit: Class M1 to M7 U descriptor: Particles diameter smaller than 0.1 µm	ISO Class 1 to 9 Intermediate classes available U descriptor: Particles smaller than 0.1 µm M descriptor: Particles larger than 5.0 µm
		(British unit)	(SI unit)
		1	M1.5
		10	M2.5
		100	M3.5
		1000	M4.5
		10000	M5.5
		100000	M6.5
			ISO Class 9
Cleanliness class indication		The number of particles diameter larger than 0.5 µm in an air volume of 1m³ is expressed in 10M or coefficient Nc. Cleanliness class: Nc or M	The number of particles larger than 0.1 µm in an air volume of 1m³ is expressed in 10 ^N . ISO Class N: Occupancy state: Considered particle size
Calculation of the maximum permitted concentration of particulate cleanliness classes		British unit: Number of particles/ft³ = Nc x (0.5/D) ²² SI unit: Number of particles/m³ = 10M x (0.5/D) ²²	Cn = 10 ^N x (0.1/D) ^{2.08}
Evaluation method using a simple sampling		① Number of sampling locations: 2 to 9 95% UCL of the mean and the mean of the averages ② Number of sampling locations: 10 or more The mean	① Number of sampling locations: 2 to 9 95% UCL of the mean and the mean of the averages ② Number of sampling locations: 1, or 10 or more The mean
Number of sampling locations		① Non-unidirectional airflow: at least two locations N _L = A x 64/(10M) ^{0.5} ② Unidirectional airflow: at least two locations Smaller value between N _L =A/2.32 and N _L =A x 64/(10M) ^{0.5}	Derive it from the area of the cleanroom or clean air controlled space. The number of sampling locations N _L = (A) ^{0.5} At least one location
Min. sampling air flow volume		2 liters or a sufficient volume of air that a minimum of 20 particles could be counted if the particle concentration were at the class limit.	2 liters or a sufficient volume of air that a minimum of 20 particles could be counted if the particle concentration were at the class limit. Min. sampling time: 1 minute
Number of samplings		Total number of samplings in each clean zone: 5 times or more	Where only one sampling location is required, take a minimum of three single sample volumes at that location.
Sampling method		5.0 µm and larger: Constant velocity and suction in the same direction of the air flow 0.5 to 5 µm: Correction possible when it is sucked at a nonconstant velocity	Suction in the same direction as the airflow If the direction of the airflow is not predictable, the inlet of the sampling probe shall be directed vertically upward.



Cleanliness class (N)		Maximum concentration limit (particles/m³)					
		Considered particle diameter (µm)					
ISO Class	1	10	2				
	2	100	24	10	4		
	3	1000	237	102	35	8	
	4	10000	2370	1020	352	83	
	5	100000	23700	10200	3520	832	29
	6	1000000	237000	102000	35200	8320	293
	7				352000	83200	2930
	8				3520000	832000	29300
	9				35200000	8320000	293000

Note) Concentration data with no more than three significant figures be used in determining the classification level.

$$Cn = 10^N \times (0.1/D)^{2.08}$$

Cn: The maximum permitted concentration of airborne particles that are equal to or larger than the considered particle size (D). Cn is rounded down to the nearest whole number, using no more than three significant figures.

N: Class no.(1 to 9), intermediate class (1.1 to 8.9)

D: Measured particle diameter (µm)

0.1: Constant number (µm)



For Clean Room Cylinder

Description	Series	Page
\\ Air Cylinder Standard	10-/11- 21-/22- CJ2	P. 2
\\ Air Cylinder Double Rod	10-/11- 21-/22- CJ2W	P. 8
\\ Air Cylinder Direct Mount	10-/11- 21-/22- CJ2RA	P. 12
\\ Air Cylinder Standard	10-/11- 21-/22- CM2	P. 14
\\ Air Cylinder Double Rod	10-/11- 21-/22- CM2W	P. 22
\\ Air Cylinder Direct Mount	10-/11- 21-/22- CM2R	P. 26
\\ Air Cylinder with End Lock	10-/11- 21-/22- CBM2	P. 28
\\ Air Cylinder Standard	10-/11- 21-/22- CG1	P. 34
\\ Air Cylinder Double Rod	10-/11- 21-/22- CG1W	P. 40
\\ Air Cylinder Direct Mount	10-/11- 21-/22- CG1R	P. 44
\\ Air Cylinder Standard	10-/11- 21-/22- CA2	P. 46
\\ Mini-free Mount Cylinder	10- 11- CUJ	P. 50
\\ Free Mount Cylinder	10-/11- 21-/22- CDU	P. 53
\\ Compact Cylinder	10-/11- 21-/22- CQS	P. 56
\\ Compact Cylinder	10-/11- 21-/22- CQ2	P. 64
\\ Sine Cylinder	10- 11- REC	P. 72
\\ Dual Rod Cylinder	11-/12- 21-/22- CXSJ	P. 76
\\ Dual Rod Cylinder	10-/11-/12- 21-/22- CXS	P. 80
\\ Compact Guide Cylinder	12-/13- 21-/22- MGPL	P. 89
\\ Guide Table	10-MGF	P. 94
\\ Air Slide Table	11- 22- MXP	P. 98
\\ Air Slide Table	11- 22- MXPJ6	P. 98
\\ Air Slide Table	13- 22- MXQ	P.106
\\ Air Slide Table	13- 22- MXS	P.132
\\ Clean Rodless Cylinder	CYP	P.153
\\ Rodless Cylinder Basic	12-CY1B	P.158
\\ Rodless Cylinder Basic	12-CY3B	P.160
\\ Rodless Cylinder Direct Mount	12-CY1R	P.162
\\ Rodless Cylinder Direct Mount	12-CY3R	P.164
\\ Sine Rodless Cylinder	12-REA	P.166
\\ Low Speed Cylinder	10- 11- CQSX	P.170
\\ Low Speed Cylinder	10- 11- CQ2X	P.172
\\ Low Speed Cylinder	10- 11- CM2X	P.174
\\ Actuator / Common Precautions		P.176
\\ Auto Switch / Common Precautions		P.179
\\ Applicable Auto Switch List		P.182

Series 10-/11- 21-/22-CJ2

Air cylinder / ø6, ø10, ø16

How to Order



Clean Series

10	Relief type
11	Vacuum suction type

Cushion

Nil	Rubber bumper (Standard)
A	Air cushion (except ø6)

Modeling Example 1: 10 - C D J 2 L 16 - 60 A R H7B

Modeling Example 2: 21 - C D J 2 L 16 - 60 R H7B

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style

Bore size (mm)

Cylinder stroke (mm)

Head cover port location

Bore size (mm)	6	10, 16
Symbol		
Nil	—	Perpendicular to the cylinder axis
R	Axial direction	Axial direction

Type of auto switch

Reed switch	C73
Solid state switch	H7B, H7A1

* Band mounting only

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

Copper, fluorine and silicon-free + low particle generation

21	Relief type
22	Vacuum suction type

Built-in magnet

Nil	No
D	With auto switch (Built-in magnet)

Model

Model		Tube Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto Switch Mounting	Cushion	
Relief type	10-/21-CJ2□6	6	M5 x 0.8	Non-lube	Double acting Single rod	15, 30, 45, 60	Band mounting only	Standard	Except ø6
	10-/21-CJ2□10	10				15, 30, 45, 60, 75, 100, 125, 150			
Vacuum suction type	10-/21-CJ2□16	16				15, 30, 45, 60, 75, 100, 125, 150, 175, 200			
	11-/22-CJ2□6	6				15, 30, 45, 60			
	11-/22-CJ2□10	10				15, 30, 45, 60, 75, 100, 125, 150			
	11-/22-CJ2□16	16				15, 30, 45, 60, 75, 100, 125, 150, 175, 200			

* Air cushion is not available for 21-/22-.

Specifications

Bore size (mm)		6	10/16
Item			
Proof pressure		1.05MPa	
Max. operating pressure		0.7MPa	
Min. operating pressure		0.14MPa	0.08MPa (Air cushion 0.1MPa)
Ambient and fluid temperature		Without auto switch : -10°C to 70°C, With auto switch : -10°C to 60°C (With no condensation)	
Piston speed		50 to 400mm/s	
Stroke length tolerance		+1.0 0	
Mounting style		Basic style / Axial foot style / Rod side flange style	
Grease		10-/11-: Fluorine grease, 21-/22-: Lithium soap base grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-/21-: Grade 2, 11-/22-: Grade 1	

Suction flow rate of vacuum type (Reference values)

Size	Suction flow rate l/min (ANR)
6/10/16	1

Auto Switch Specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Style <Contact>	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC	5 to 40mA	○	Relay, PLC
		100 VAC	5 to 20mA		
Solid state switch	D-H7B	24 VDC (10 to 28 VDC)	5 to 40mA	○	24 VDC Relay, PLC
2-wire type	D-H7A1	28 VDC or less	40mA or less	v	IC circuit, Relay, PLC
3-wire type					

Auto switch mounting method is band mounting only

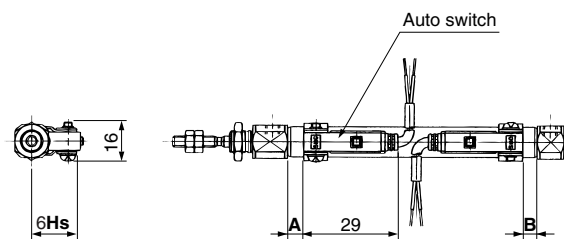
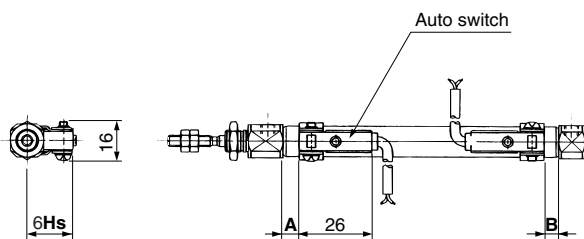
PLC: Programmable Logic Controller

Refer to applicable auto switch list — Page 182.

Auto switches / Proper mounting position at stroke end detection

D-C73

D-H7A1 / H7B



Bore size	D-C73			D-H7A1/H7B		
	A	B	Hs	A	B	Hs
6	2	2	15	1	1	15
10	2.5	2.5	17	1.5	1.5	17
16	3	3	20.5	2	2	20.5

Note) The above-mentioned value is a guide for auto switch mounting position for stroke end detection. When actually mounting the auto switch, adjust the position after confirming the operating state of the auto switch.

Mounting Bracket / Part No.

Mounting bracket	Bore size (mm)		
	6	10	16
Foot bracket	CJ-L010B	CJ-L016B	CJK-L016B
Flange	CJ-F010B	CJ-F016B	CJK-F016B



Specific Product Precautions

Be sure to read before handling.

Caution on mounting

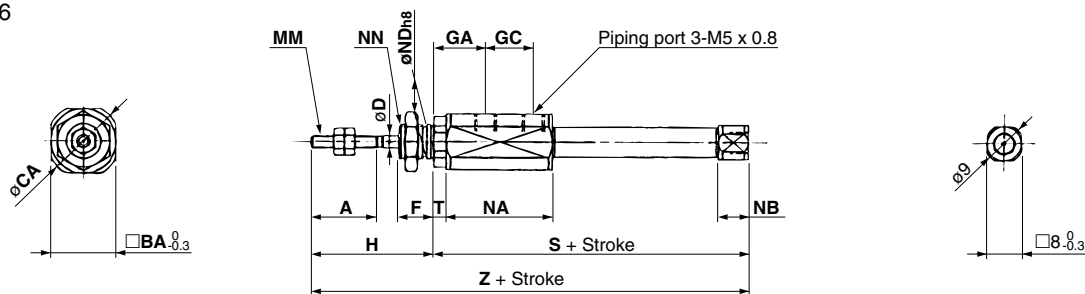
Caution

- When installing the cylinder, secure the rod cover and apply proper tightening torque to the retaining nut or tighten the rod cover by applying proper tightening torque.
If the head cover is secured or tightened, the cover could rotate, leading to misalignment.
- Apply proper screw tightening torque within the following range.
 ø6: 5.9 to 6.4N·m
 ø10: 10.8 to 11.8N·m
 ø16: 20.0 to 21.0N·m

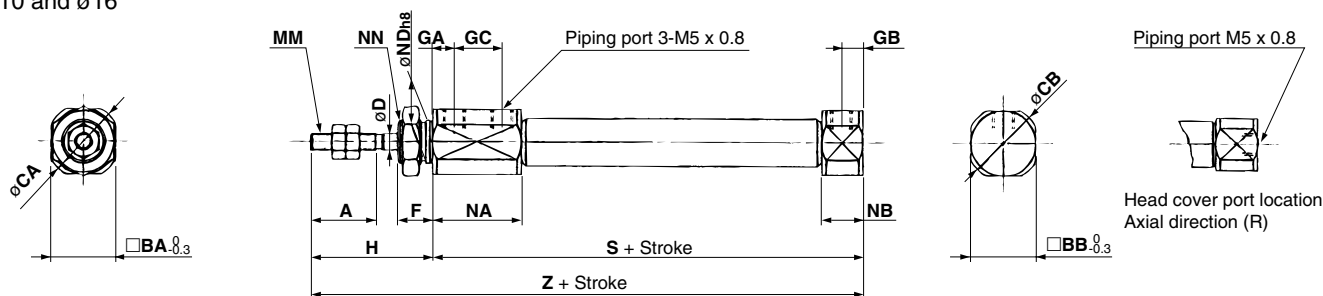
Basic style (B) / ¹⁰⁻~~11-~~**CJ2B**, ²¹⁻~~22-~~**CJ2B**

Rubber bumper

ø6



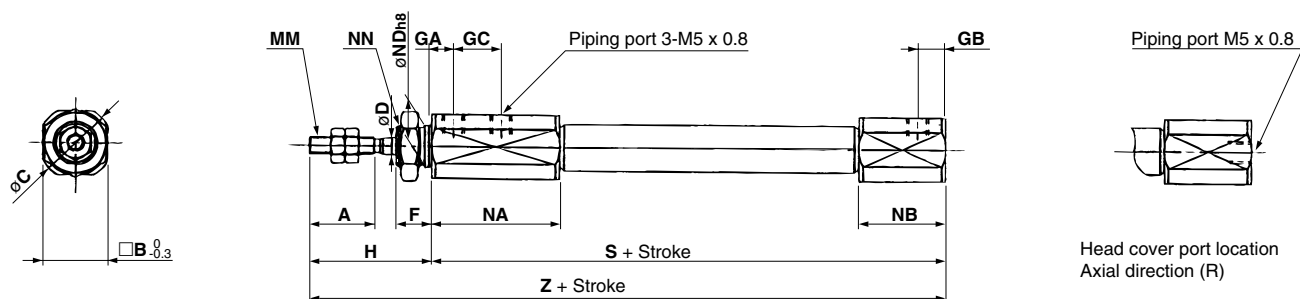
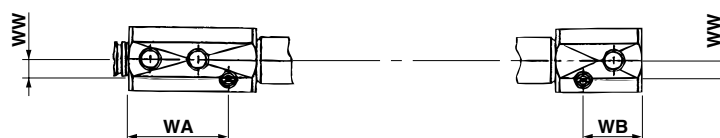
ø10 and ø16



Bore size	A	BA	BB	CA	CB	D	F	GA	GB	GC	H	MM	NA	NB	ND _{h8}	NN	S	T	Z
6	15	15	—	17	—	3	8	12	—	11	28	M3 x 0.5	24.5	7	8 ⁰ _{-0.022}	M8 x 1.0	57.5	3	85.5
10	15	15	12	17	14	4	8	5	5	11	28	M4 x 0.7	20.5	9.5	10 ⁰ _{-0.022}	M10 x 1.0	54	—	82
16	15	18.3	18.3	20	20	5	8	5	5	11	28	M5 x 0.8	20.5	9.5	12 ⁰ _{-0.027}	M12 x 1.0	55	—	83

With air cushion

With air cushion type is not available for 21- / 22- CJ2.

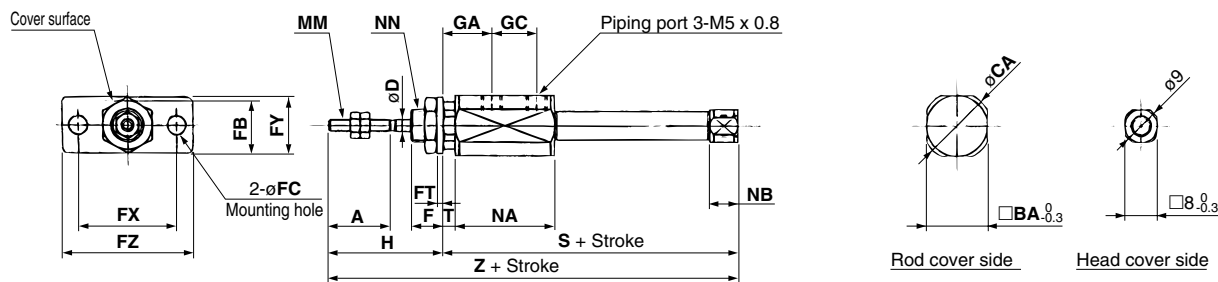


Bore size	A	B	C	D	F	GA	GB	GC	H	MM	NA	NB	ND _{h8}	NN	S	WA	WB	WW	Z
10	15	15	17	4	8	5	6.5	11	28	M4 x 0.7	29.5	20	10 ⁰ _{-0.022}	M10 x 1.0	73.5	23	13.5	4.5	101.5
16	15	18.3	20	5	8	5	6.5	11	28	M5 x 0.8	29.5	20	12 ⁰ _{-0.027}	M12 x 1.0	74.5	23	13.5	5.5	102.5

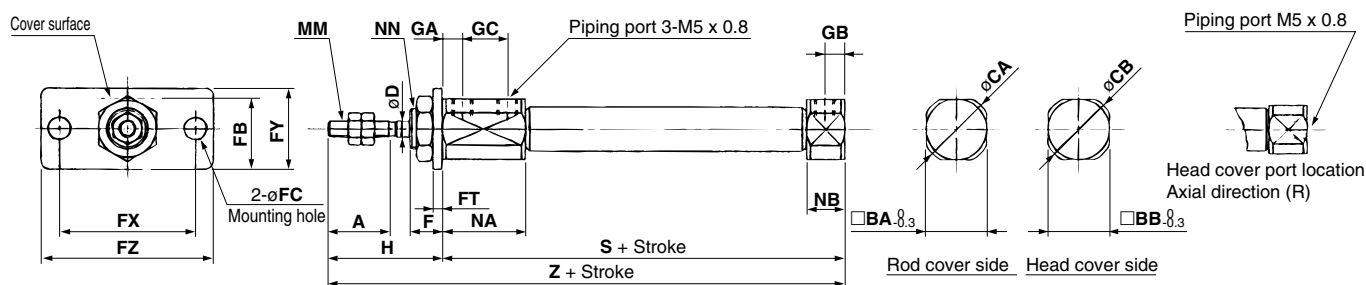
Rod side flange style (F) / 10-11-**CJ2F**, 21-22-**CJ2F**

Rubber bumper

ø6



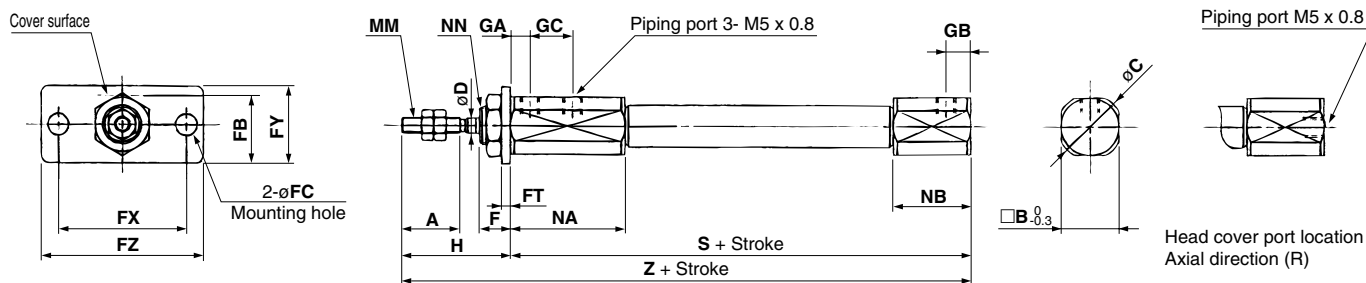
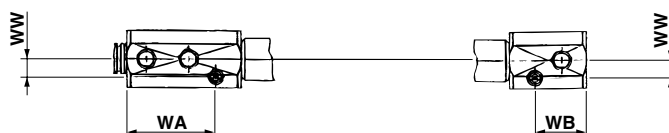
ø10 and ø16



Bore size	A	BA	BB	CA	CB	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	GC	H	MM	NA	NB	NN	S	T	Z
6	15	15	—	17	—	3	8	14.5	4.5	1.6	24	14	32	12	—	11	28	M3 x 0.5	24.5	7	M8 x 1.0	57.5	3	85.5
10	15	15	12	17	14	4	8	17.5	5.5	2.3	33	20	42	5	5	11	28	M4 x 0.7	20.5	9.5	M10 x 1.0	54	—	82
16	15	18.3	18.3	20	20	5	8	19	5.5	2.3	33	20	42	5	5	11	28	M5 x 0.8	20.5	9.5	M12 x 1.0	55	—	83

With air cushion

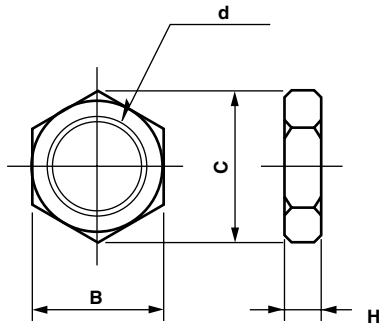
With air cushion type is not available for 21- / 22- CJ2.



Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	GC	H	MM	NA	NB	NN	S	WA	WB	WW	Z
10	15	15	17	4	8	17.5	5.5	2.3	33	20	42	5	6.5	11	28	M4 x 0.7	29.5	20	M10 x 1.0	73.5	23	13.5	4.5	101.5
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	5	6.5	11	28	M5 x 0.8	29.5	20	M12 x 1.0	74.5	23	13.5	5.5	102.5

Mounting Nut

Material: Brass

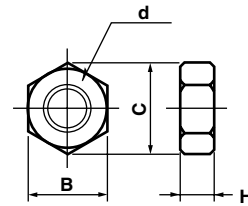


(mm)					
Part no.	Applicable bore size	B	C	d	H
SNJ-010B	6	11	12.7	M8 x 1.0	4
SNJ-016B	10	14	16.2	M10 x 1.0	4
SNKJ-016B	16	17	19.6	M12 x 1.0	4

* The applicable mounting nuts are different from those for standard cylinders.

Rod end nut

Material: Carbon steel



(mm)					
Part no.	Applicable bore size	B	C	d	H
NTJ-006A	6	5.5	6.4	M3 x 0.5	2.4
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-/11-21-/22-CJ2W Double Rod Cylinder / ø10, ø16

How to Order

• **Clean Series**

10	Relief type
11	Vacuum suction type

10 - C D J 2 W L 16 - 60 - H7B

21 - C D J 2 W L 16 - 60 - H7B

• **Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.

• **Type of auto switch**

Reed switch	C73
Solid state switch	H7B, H7A1

* Band mounting only

• **Cylinder stroke (mm)**

• **Bore size (mm)**

• **Mounting style**

B	Basic style
L	Axial foot style
F	Flange style

• **Copper, fluorine and silicon-free + low particle generation**

21	Relief type
22	Vacuum suction type

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
								Rubber	Air
Vacuum suction type	10-/21-CJ2W□10	10	M5 x 0.8	Non-lube	Double acting Double rod	15, 30, 45, 60	Band mounting only	Standard	—
	10-/21-CJ2W□16	16							
	11-/22-CJ2W□10	10							
	11-/22-CJ2W□16	16							

Specifications

Bore size (mm)	
Item	10 /16
Proof pressure	1.05MPa
Max. operating pressure	0.7MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	Without auto switch : -10°C to 70°C With auto switch : -10°C to 60°C (With no condensation)
Piston speed	50 to 400mm/s
Stroke length tolerance	+1.0 0
Mounting style	Basic style /Axial foot style /Flange style
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap base grease
Particle generation grade	10-/21-: Grade 2 11-/22-: Grade 1
(Refer to front matter pages 13 to 22 for details.)	

Suction flow rate of vacuum type (Reference values)

Size	Suction flow rate ℓ /min (ANR)
10/16	1

Auto Switch Specifications (Refer to Best Pneumatics No. 2 for detailed specifications and auto switches not in the following table.)

Style <Contact>	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC	5 to 40mA	○	Relay, PLC
		100 VAC	5 to 20mA		
Solid state switch	2-wire type D-H7B	24 VDC(10 to 28 VDC)	5 to 40mA	○	24 VDC Relay, PLC
	3-wire type D-H7A1	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

* Auto switch mounting method is band mounting only

PLC: Programmable Logic Controller

Refer to applicable auto switch list — Page 182.

Auto switches / Proper mounting position at stroke end detection

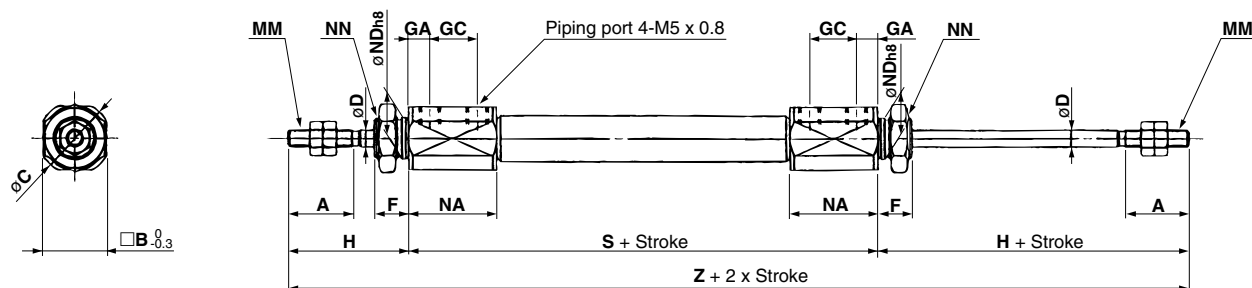
Same as those of the double acting single rod type.

**Specific Product Precautions**

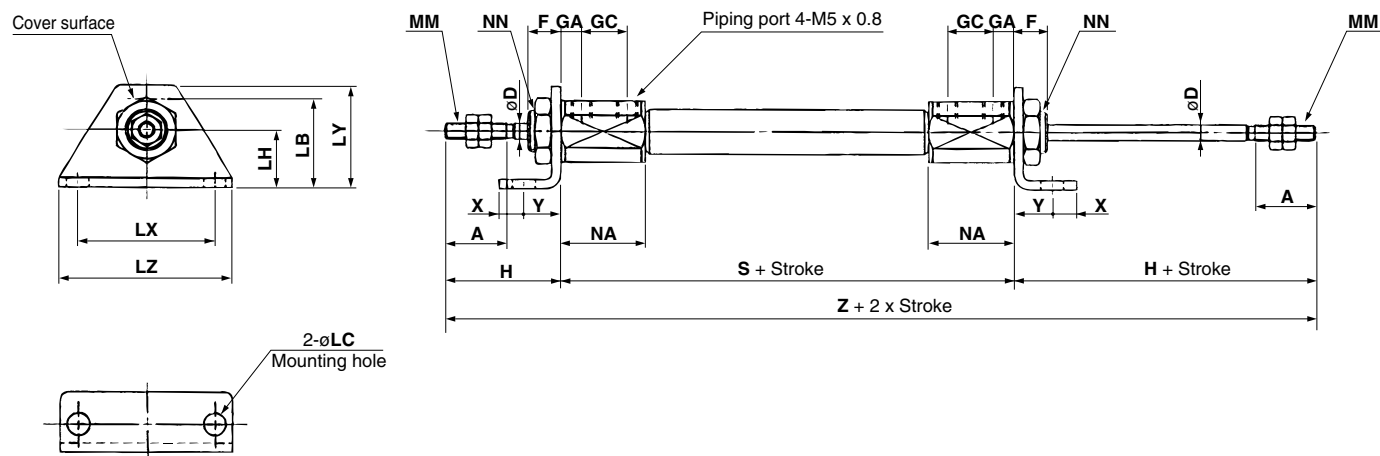
Be sure to read before handling.

Caution on mounting**⚠ Caution**

- When installing the cylinder, secure the rod cover on the mounting side and apply proper tightening torque to the retaining nut or tighten the rod cover on the mounting side by applying proper tightening torque.
If the rod cover on the other side is secured or tightened, the cover could rotate, leading to misalignment.
- Apply proper screw tightening torque within the following ranges.
 ø6: 5.9 to 6.4N·m
 ø10: 10.8 to 11.8N·m
 ø16: 20.0 to 21.0N·m

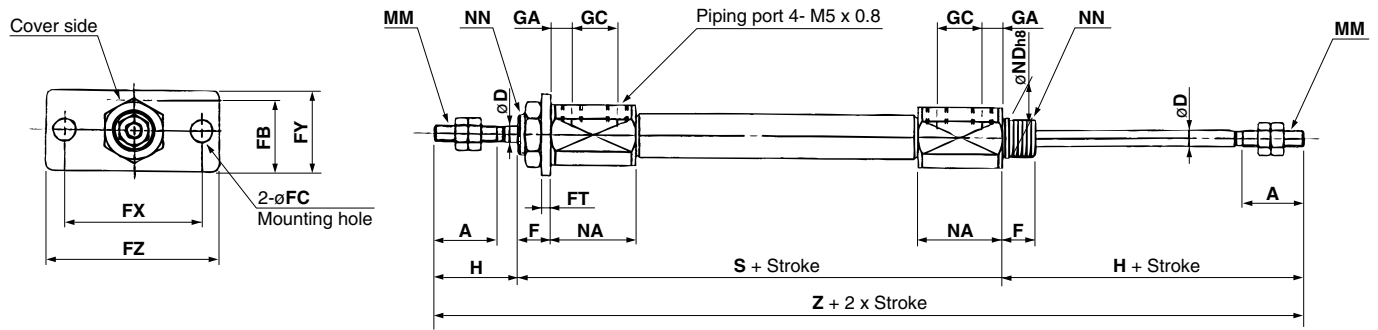
Basic style (B) / ¹⁰⁻₁₁₋CJ2WB, ²¹⁻₂₂₋CJ2WB


Bore size	A	B	C	D	F	GA	GC	H	MM	NA	ND _{h8}	NN	S	Z
10	15	15	17	4	8	5	11	28	M4 x 0.7	20.5	10 ^{-0.022}	M10 x 1.0	65	121
16	15	18.3	20	5	8	5	11	28	M5 x 0.8	20.5	12 ^{-0.027}	M12 x 1.0	66	122

Axial foot style (L) / ¹⁰⁻₁₁₋CJ2WL, ²¹⁻₂₂₋CJ2WL


Bore size	A	D	F	GA	GC	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NN	S	X	Y	Z
10	15	4	8	5	11	28	21.5	5.5	14	2.3	33	25	42	M4 x 0.7	20.5	M10 x 1.0	65	6	9	121
16	15	5	8	5	11	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	20.5	M12 x 1.0	66	6	9	122

Flange (F) / 10-11-**J2WF**, 21-22-**CJ2WF**



Bore size	A	D	F	FB	FC	FT	FX	FY	FZ	GA	GC	H	MM	NA	ND _{h8}	NN	S	Z
10	15	4	8	17.5	5.5	2.3	33	20	42	5	11	28	M4 x 0.7	20.5	10 ⁰ _{-0.022}	M10 x 1.0	65	121
16	15	5	8	19	5.5	2.3	33	20	42	5	11	28	M5 x 0.8	20.5	12 ⁰ _{-0.027}	M12 x 1.0	66	122

Series 10-/11-21-/22-CJ2RA

Direct mount cylinder
ø10, ø16

How to Order



• **Clean series**

10	Relief type
11	Vacuum suction type

10 - C D J 2 R A 16 - 60 R - H7B

21 - C D J 2 R A 16 - 60 R - H7B

• **Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)

• **Copper, fluorine and silicon-free + low particle generation**

21	Relief type
22	Vacuum suction type

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

• **Type of auto switch**

Reed switch	C73
Solid state switch	H7B, H7A1

*Band mounting only

• **Port location on head cover**

Symbol	Port location on head cover
Nil	Perpendicular to the cylinder axis
R	Axial direction

• **Cylinder stroke (mm)**

• **Bore size (mm)**

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
Relief type	10-/21-CJ2RA10	10	M5 x 0.8	Non-lube	Double acting Single rod	15,30,45,60,75,100,125,150	Available Band mounting only	Available Standard	Not available
	10-/21-CJ2RA16	16				15,30,45,60,75,100,125,150,175,200			
Vacuum suction type	11-/22-CJ2RA10	10				15,30,45,60,75,100,125,150			
	11-/22-CJ2RA16	16				15,30,45,60,75,100,125,150,175,200			

Specifications

Bore size (mm)	
Item	10/16
Proof pressure	1.05MPa
Maximum operating pressure	0.7MPa
Minimum operating pressure	0.08MPa
Ambient and fluid temperature	Without auto switch : -10°C to 70°C With auto switch : -10°C to 60°C (No freezing)
Piston speed	50 to 400 mm/s
Stroke length tolerance	± 1.0 0
Mounting style	Bottom mounting style
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-/21-: Grade 2 11-/22-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate ℓ /min (ANR)
10/16	1

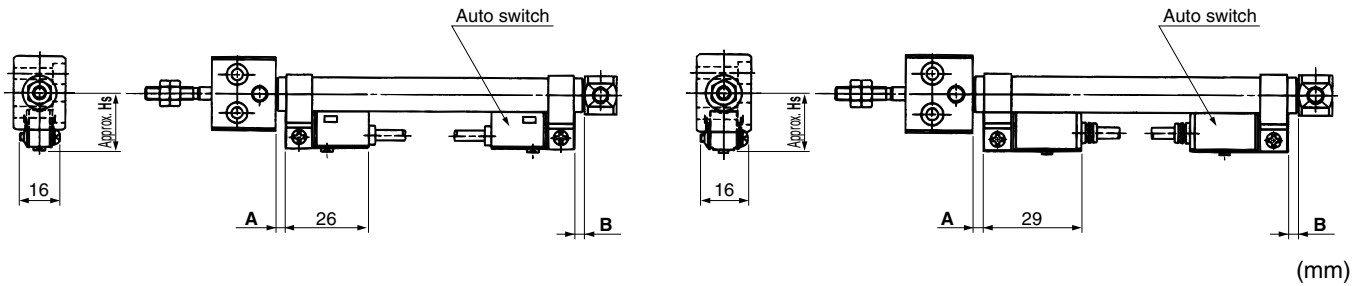
Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC	5 to 40 mA	Yes	Relay, PLC
		100 VAC	5 to 20 mA		
Solid state switch	2-wire D-H7B	24 VDC (10 to 28 VDC)	5 to 40mA	Yes	24 VDC relay, PLC
	3-wire D-H7A1	28 VDC or less	40 mA or less	Yes	IC circuit, Relay, PLC

*Auto switch mounting method is band mounting only.

PLC: Programmable Logic Controller

Refer to page 182 for a list of applicable auto switches.

Proper auto switch mounting position (Detection at stroke end)**D-C73****D-H7A1/H7B**

Bore size	D-C73			D-H7A1/H7B		
	A	B	Hs	A	B	Hs
10	2.5	2.5	17	1.5	1.5	17
16	3	3	20.5	2	2	20.5

Note) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.

**Specific Product Precautions**

Be sure to read before handling.

Caution on mounting**⚠ Caution**

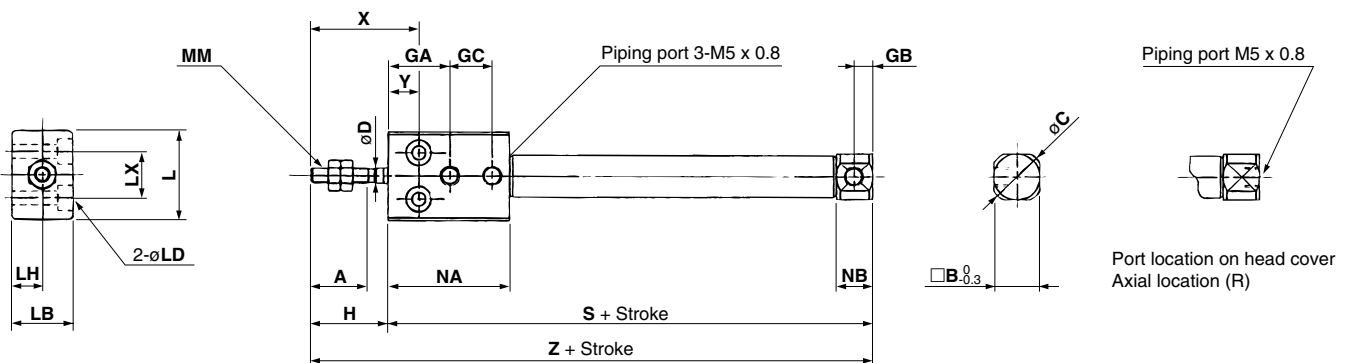
- During installation, secure the rod cover and tighten by applying an appropriate tightening force to the retaining nut or to the rod cover body.
If the head cover is secured or the head cover is tightened, the cover could rotate, leading to the deviation.

- Tighten the retaining screws to an appropriate tightening torque within the range given below.

ø6: 5.9 to 6.4 N·m

ø10: 10.8 to 11.8 N·m

ø16: 20.0 to 21.0 N·m

Bottom mounting / 10-11-CJ2RA, 21-22-CJ2RA

Bore size	A	B	C	D	GA	GB	GC	H	L	LB	LD	LH	LX	MM	NA	NB	S	X	Y	Z
10	15	12	14	4	16	5	11	20	23	16	ø3.5, ø6.5 counterbore depth 4	8	12	M4 x 0.7	31.5	9.5	65	28	8	85
16	15	18.3	20	5	16	5	11	20	26	20	ø4.5, ø8 counterbore depth 5	10	16	M5 x 0.8	31.5	9.5	66	28	8	86

Series 10-/11- 21-/22-CM2

Air cylinder / ø20, ø25, ø32, ø40

How to Order

• **Clean series**

10	Relief type
11	Vacuum suction type

• **Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)

• **Mounting style**

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
BZ	Boss-cut basic style
FZ	Boss-cut rod side flange style

• **Copper, fluorine and silicon-free + Low particle generation**

21	Relief type
22	Vacuum suction type

• **Bore size (mm)**

• **Port thread type**

Nil	Rc
TN	NPT
TF	G

• **Cylinder stroke (mm)**

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

• **Type of auto switch**

Reed switch	C73
Solid state switch	H7B, H7A1

• **Cushion**

Nil	Rubber bumper
A	Air cushion



Model

Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
							Rubber	Air
Relief type	10-/21-CM2□20	20	Non-lube	Double acting, single rod	25, 50, 75, 100, 125, 150, 175, 200, 250, 300	○	○	○
	10-/21-CM2□25	25						
	10-/21-CM2□32	32						
	10-/21-CM2□40	40						
Vacuum suction type	11-/22-CM2□20	20	Non-lube	Double acting, single rod	25, 50, 75, 100, 125, 150, 175, 200, 250, 300	○	○	○
	11-/22-CM2□25	25						
	11-/22-CM2□32	32						
	11-/22-CM2□40	40						

Specifications

Item	Bore size (mm)
	20/25/32/40
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	Without auto switch: - 10°C to 70°C With auto switch: - 10°C to 60°C (No freezing)
Piston speed	10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s
Stroke length tolerance	$+1.4$ -0
Mounting style	Basic style/Axial foot style/Rod side flange style/Head side flange style
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 2, 21-: grade 3 11-/22-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate d/min (ANR)
20/25/32/40	2

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

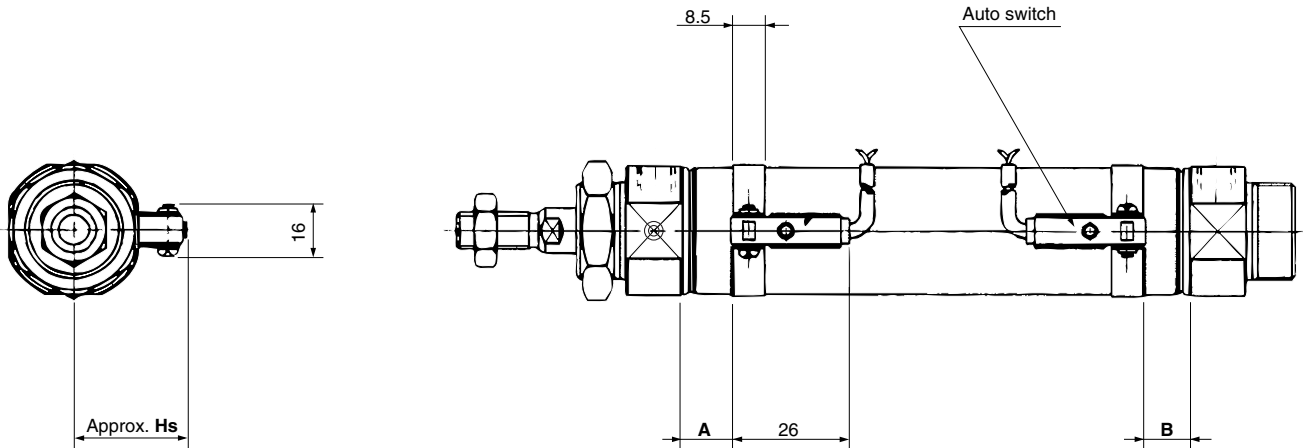
Type	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC, 100 VAC	5 to 40 mA, 5 to 20 mA	○	Relay, PLC
Solid state switch	2-wire D-H7B	24 VDC (10 to 28 VDC)	5 to 40 mA	○	24 VDC relay, PLC
	3-wire D-H7A1	28 VDC or less	40 mA or less	○	IC circuit, Relay, PLC

Refer to page 182 for a list of applicable auto switches.

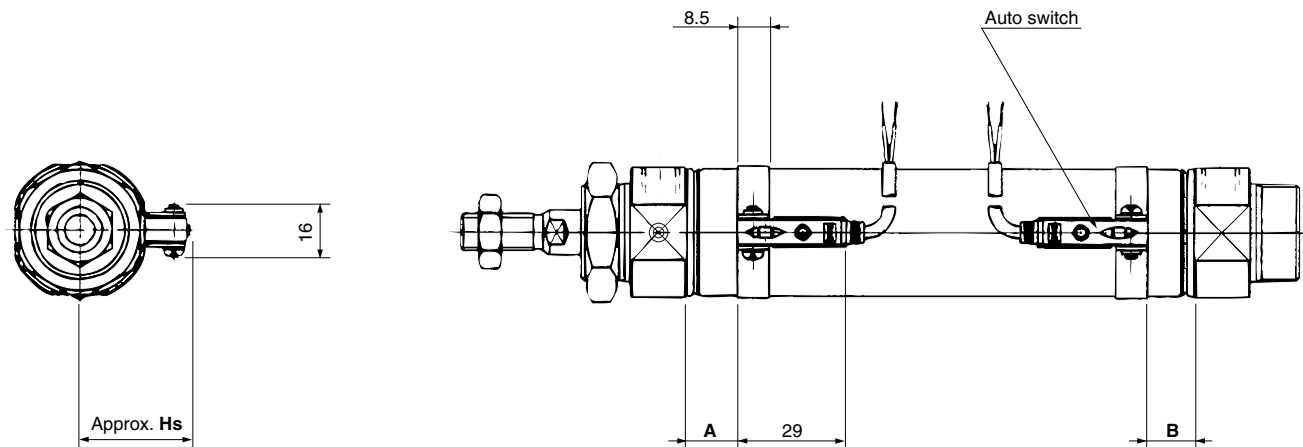
PLC: Programmable Logic Controller

Proper auto switch mounting position (Detection at stroke end)

D-C73



D-H7A1/H7B



(mm)

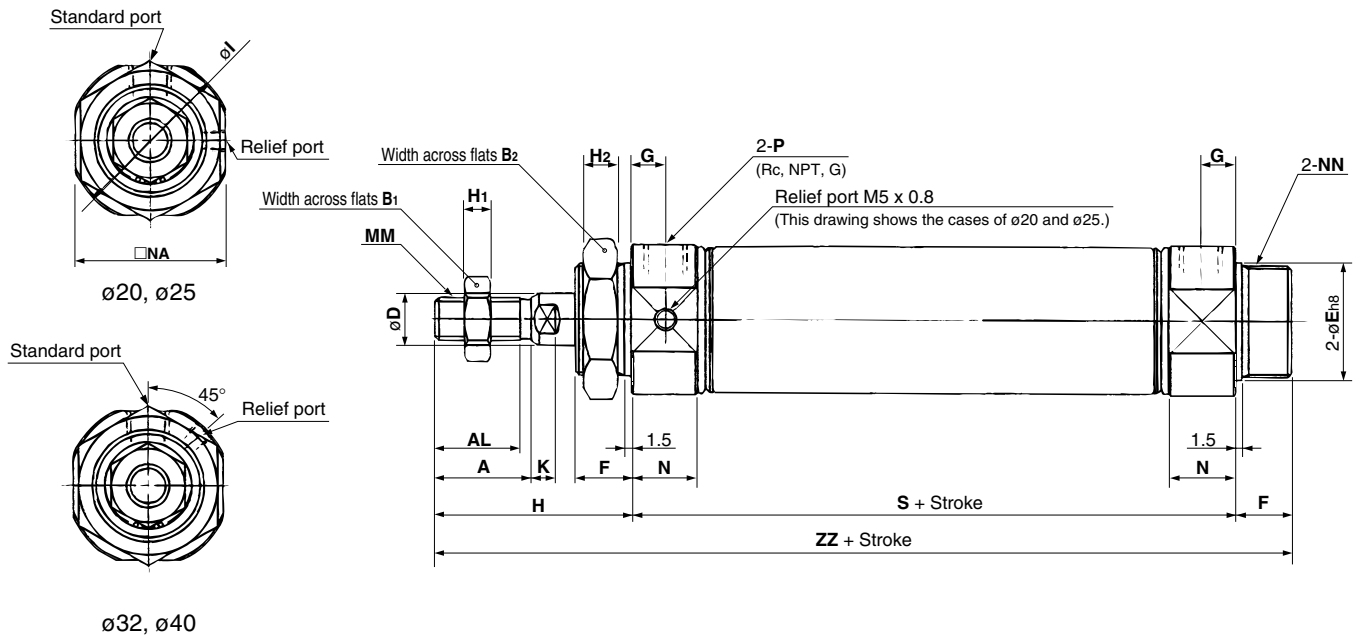
Bore size	D-C73			D-H7A1/H7B		
	A	B	Hs	A	B	Hs
20	7 (4.5)	6 (3.5)	22.5	6 (3.5)	5 (2.5)	22.5
25	7 (4.5)	6 (3.5)	25	6 (3.5)	5 (2.5)	25
32	8 (5.5)	7 (4.5)	28.5	7 (4.5)	6 (3.5)	28.5
40	14	12	32.5	13	11	32.5

Note 1) Descriptions in parentheses are for types with air cushion.

Note 2) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.

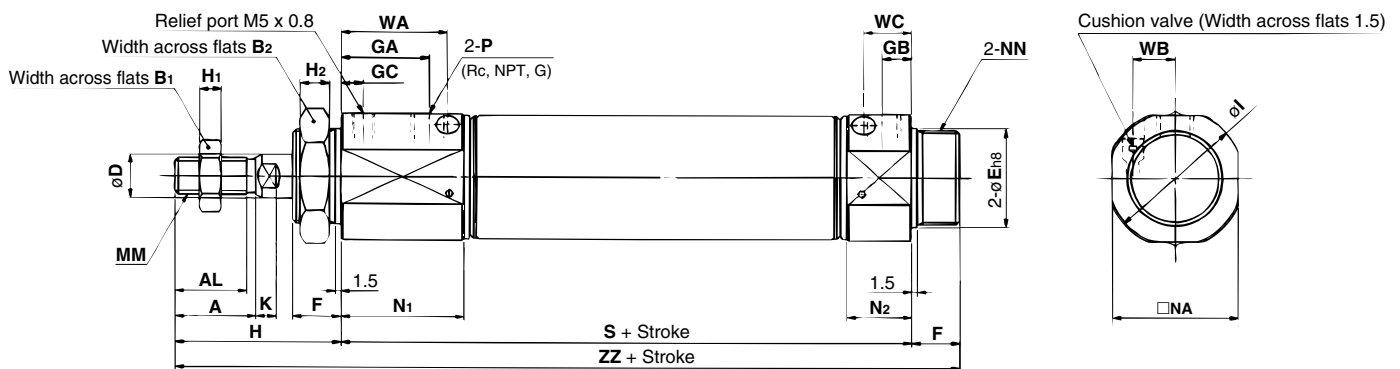
Basic style (B) / 10-**CM2B**, 21-**CM2B**

With rubber bumper



Bore size	A	AL	B ₁	B ₂	D	E	F	G	H	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	8	41	5	8	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	62	116
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	8	45	6	8	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	62	120
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	8	45	6	8	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	122
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	11	50	8	10	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	154

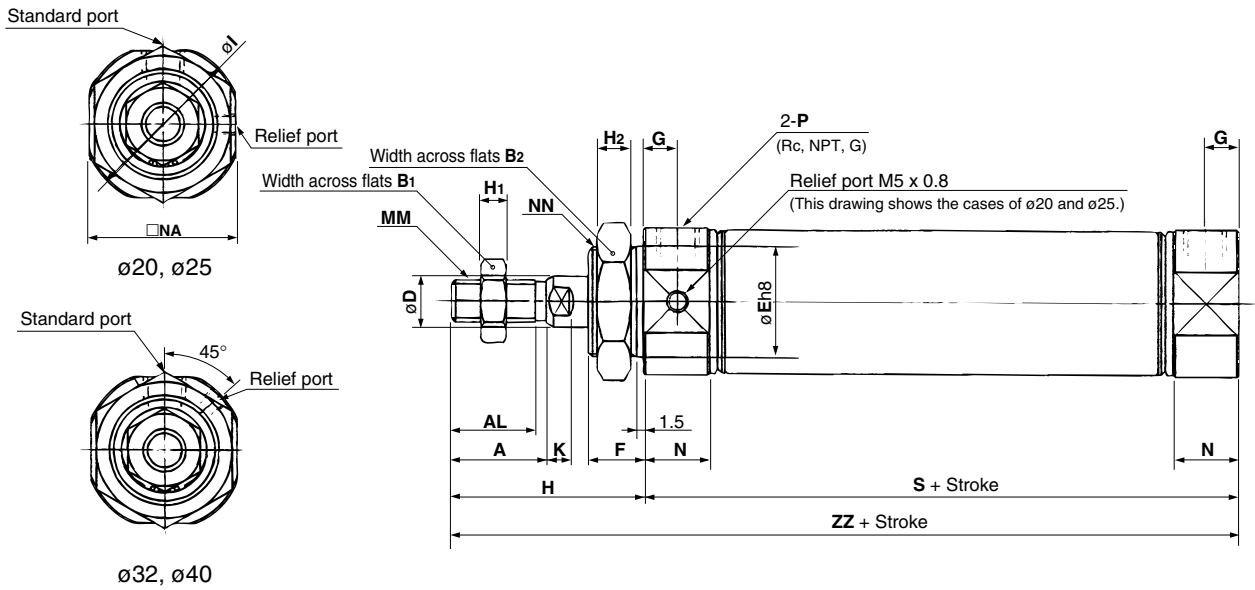
With air cushion



(mm)																													
Bore size	A	AL	B ₁	B ₂	D	E	F	G	A	G	B	G	C	H	H ₁	H ₂	I	K	MM	N ₁	N ₂	NA	NN	P	S	WA	WB	WC	ZZ
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	26	8	6	41	5	8	28	5			M8 x 1.25	35.5	17.5	24	M20 x 1.5	1/8	80	31	8.5	13	134	
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	26	8	6	45	6	8	33.5	5.5			M10 x 1.25	35.5	17.5	30	M26 x 1.5	1/8	80	31	10.5	13	138	
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	26	8	6	45	6	8	37.5	5.5			M10 x 1.25	35.5	17.5	34.5	M26 x 1.5	1/8	82	31	11.5	13	140	
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	31	11	6	50	8	10	46.5	7			M14 x 1.5	41.5	21.5	42.5	M32 x 2	1/4	108	36	15	16	174	

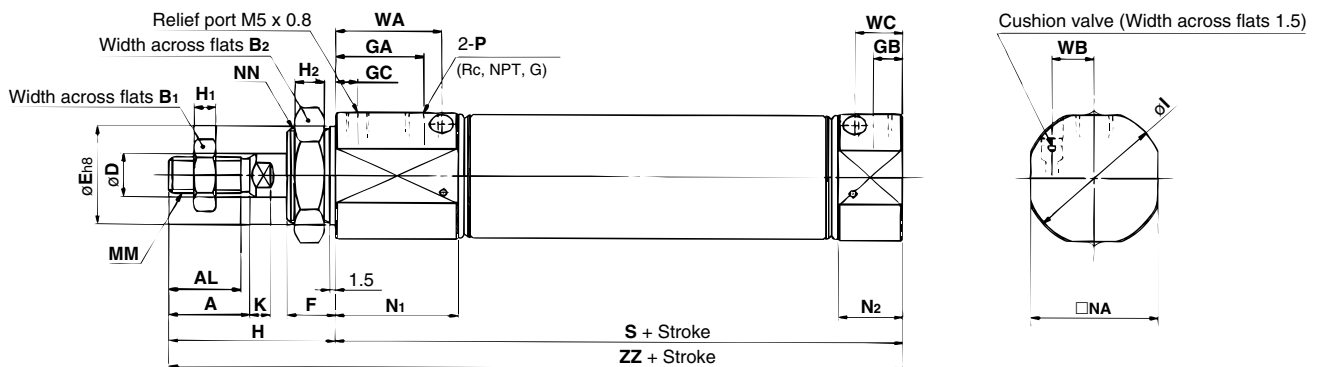
Boss-cut basic style (BZ) / 10-**CM2BZ**, 21-**CM2BZ**

With rubber bumper



(mm)																				
Bore size	A	AL	B ₁	B ₂	D	E	F	G	H	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	8	41	5	8	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	62	103
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	8	45	6	8	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	62	107
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	8	45	6	8	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	109
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	11	50	8	10	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	138

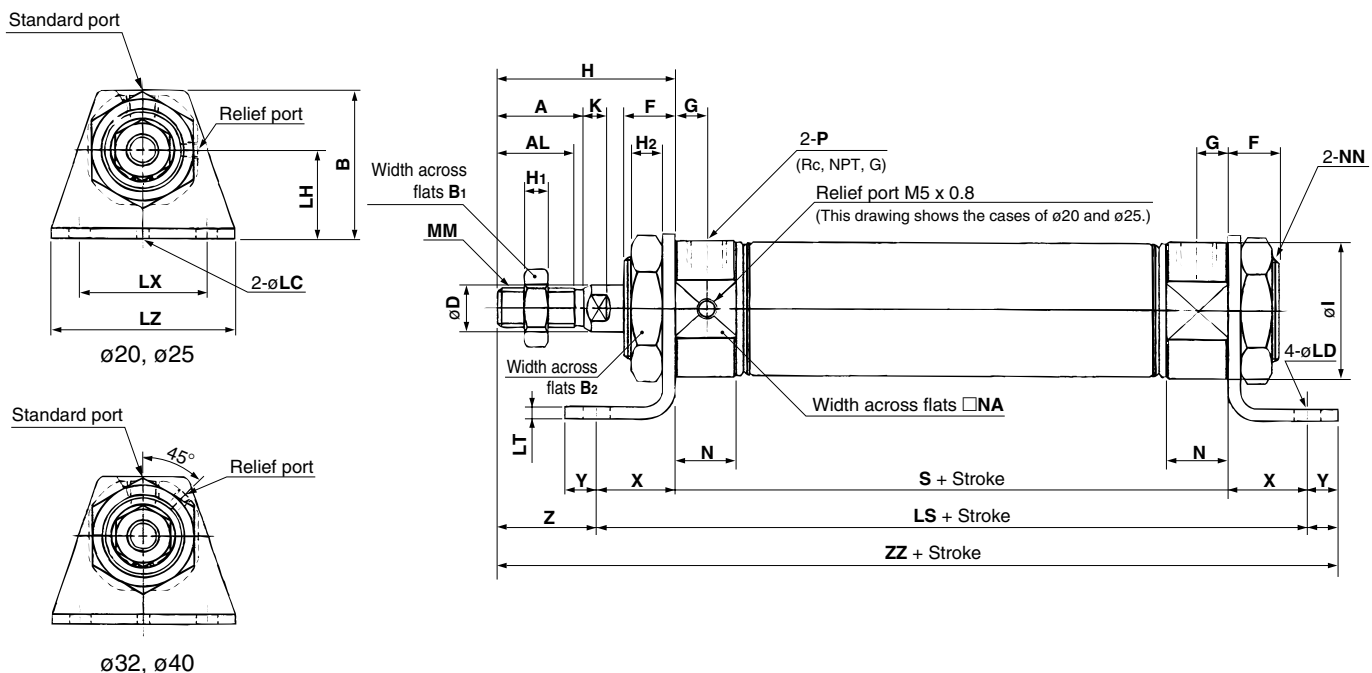
With air cushion



(mm)																													
Bore size	A	AL	B ₁	B ₂	D	E	F	G	A	G	B	G	C	H	H ₁	H ₂	I	K	MM	N ₁	N ₂	NA	NN	P	S	WA	WB	WC	ZZ
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	26	8	6	41	5	8	28	5	M8 x 1.25	35.5	17.5	24	M20 x 1.5	1/8	80	31	8.5	13	121			
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	26	8	6	45	6	8	33.5	5.5	M10 x 1.25	35.5	17.5	30	M26 x 1.5	1/8	80	31	10.5	13	125			
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	26	8	6	45	6	8	37.5	5.5	M10 x 1.25	35.5	17.5	34.5	M26 x 1.5	1/8	82	31	11.5	13	127			
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	31	11	6	50	8	10	46.5	7	M14 x 1.5	41.5	21.5	42.5	M32 x 2	1/4	108	36	15	16	158			

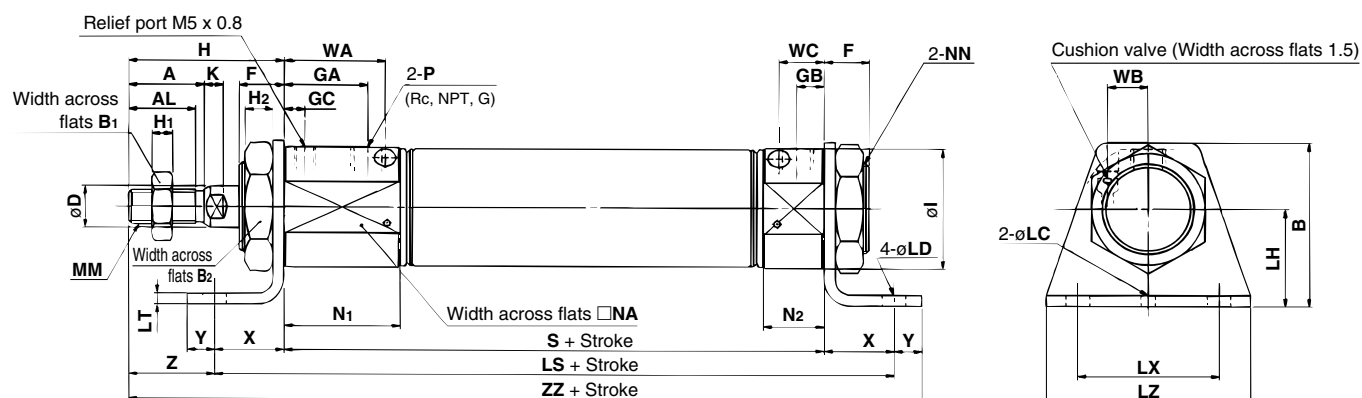
Axial foot style (L) / 10-**CM2L**, 21-**CM2L**

With rubber bumper



(mm)																														
Bore size	A	AL	B	B ₁	B ₂	D	F	G	H	H ₁	H ₂	I	K	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	S	X	Y	Z	ZZ
20	18	15.5	40	13	26	8	13	8	41	5	8	28	5	4	6.8	25	102	3.2	40	55	M8 x 1.25	15	24	M20 x 1.5	1/8	62	20	8	21	131
25	22	19.5	47	17	32	10	13	8	45	6	8	33.5	5.5	4	6.8	28	102	3.2	40	55	M10 x 1.25	15	30	M26 x 1.5	1/8	62	20	8	25	135
32	22	19.5	47	17	32	12	13	8	45	6	8	37.5	5.5	4	6.8	28	104	3.2	40	55	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	20	8	25	137
40	24	21	54	22	41	14	16	11	50	8	10	46.5	7	4	7	30	134	3.2	55	75	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	23	10	27	171

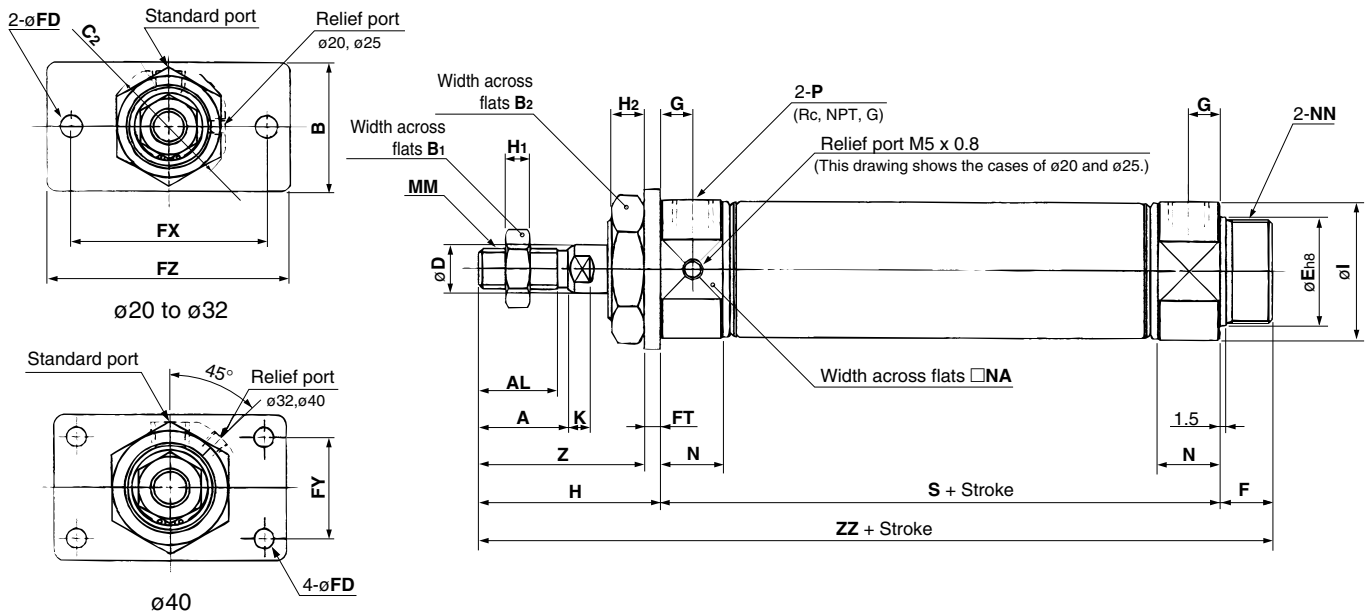
With air cushion



(mm)																																				
Bore size	A	AL	B	B ₁	B ₂	D	F	GA	GB	GC	H	H ₁	H ₂	I	K	LC	LD	LH	LS	LT	LX	LZ	MM	N ₁	N ₂	NA	NN	P	S	WA	WB	WC	X	Y	Z	ZZ
20	18	15.5	40	13	26	8	13	26	8	6	41	5	8	28	5	4	6.8	25	120	3.2	40	55	M8 x 1.25	35.5	17.5	24	M20 x 1.5	1/8	80	31	8.5	13	20	8	21	149
25	22	19.5	47	17	32	10	13	26	8	6	45	6	8	33.5	5.5	4	6.8	28	120	3.2	40	55	M10 x 1.25	35.5	17.5	30	M26 x 1.5	1/8	80	31	10.5	13	20	8	25	153
32	22	19.5	47	17	32	12	13	26	8	6	45	6	8	37.5	5.5	4	6.8	28	122	3.2	40	55	M10 x 1.25	35.5	17.5	34.5	M26 x 1.5	1/8	82	31	11.5	13	20	8	25	155
40	24	21	54	22	41	14	16	31	11	6	50	8	10	46.5	7	4	7	30	154	3.2	55	75	M14 x 1.5	41.5	21.5	42.5	M32 x 2	1/4	108	36	15	16	23	10	27	191

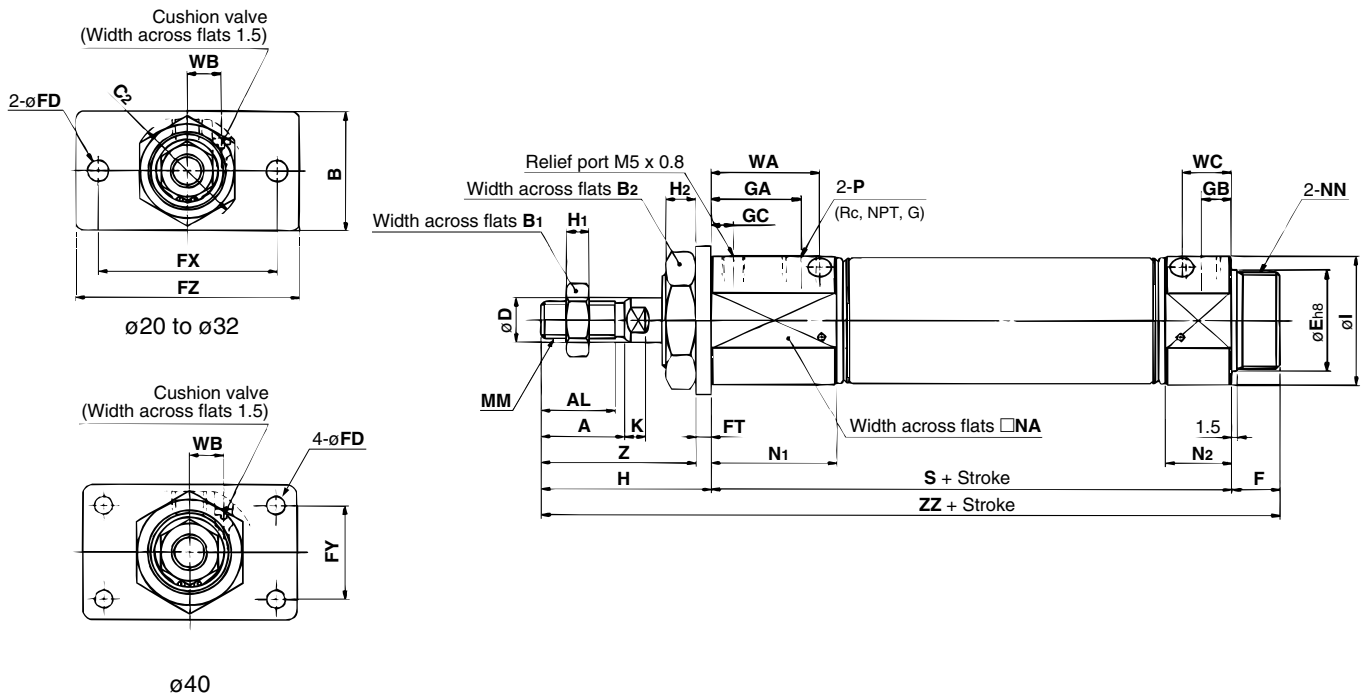
Rod side flange style (F) / 10-**CM2F**, 21-**CM2F**

With rubber bumper



(mm)																												
Bore size	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	Z	ZZ
20	18	15.5	34	13	26	30	8	20 ^{0.033}	13	7	4	60	—	75	8	41	5	8	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	62	37	116
25	22	19.5	40	17	32	37	10	26 ^{0.033}	13	7	4	60	—	75	8	45	6	8	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	62	41	120
32	22	19.5	40	17	32	37	12	26 ^{0.033}	13	7	4	60	—	75	8	45	6	8	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	41	122
40	24	21	52	22	41	47.3	14	32 ^{0.039}	16	7	5	66	36	82	11	50	8	10	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	45	154

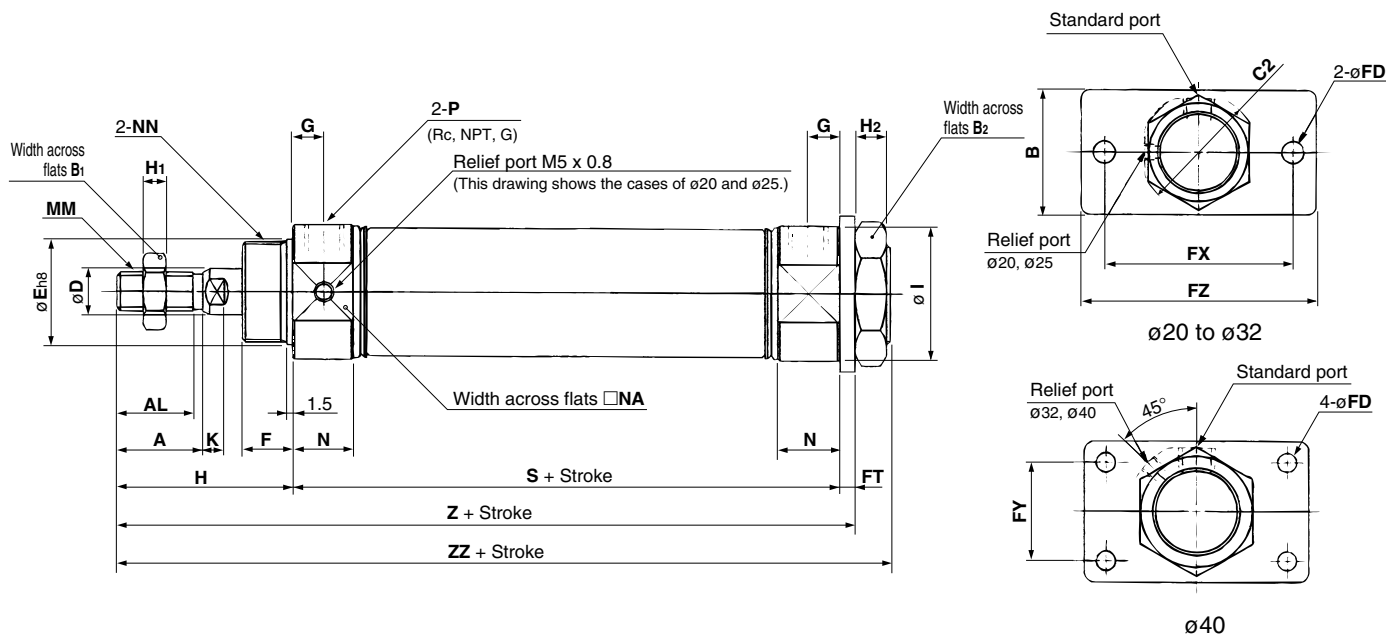
With air cushion



(mm)																																		
Bore size	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FD	FT	FX	FY	FZ	GA	GB	GC	H	H ₁	H ₂	I	K	MM	N ₁	N ₂	NA	NN	P	S	WA	WB	WC	Z	ZZ
20	18	15.5	34	13	26	30	8	20 ^{0.033}	13	7	4	60	—	75	26	8	6	41	5	8	28	5	M8 x 1.25	35.5	17.5	24	M20 x 1.5	1/8	80	31	8.5	13	37	134
25	22	19.5	40	17	32	37	10	26 ^{0.033}	13	7	4	60	—	75	26	8	6	45	6	8	33.5	5.5	M10 x 1.25	35.5	17.5	30	M26 x 1.5	1/8	80	31	10.5	13	41	138
32	22	19.5	40	17	32	37	12	26 ^{0.033}	13	7	4	60	—	75	26	8	6	45	6	8	37.5	5.5	M10 x 1.25	35.5	17.5	34.5	M26 x 1.5	1/8	82	31	11.5	13	41	140
40	24	21	52	22	41	47.3	14	32 ^{0.039}	16	7	5	66	36	82	31	11	6	50	8	10	46.5	7	M14 x 1.5	41.5	21.5	42.5	M32 x 2	1/4	108	36	15	16	45	174

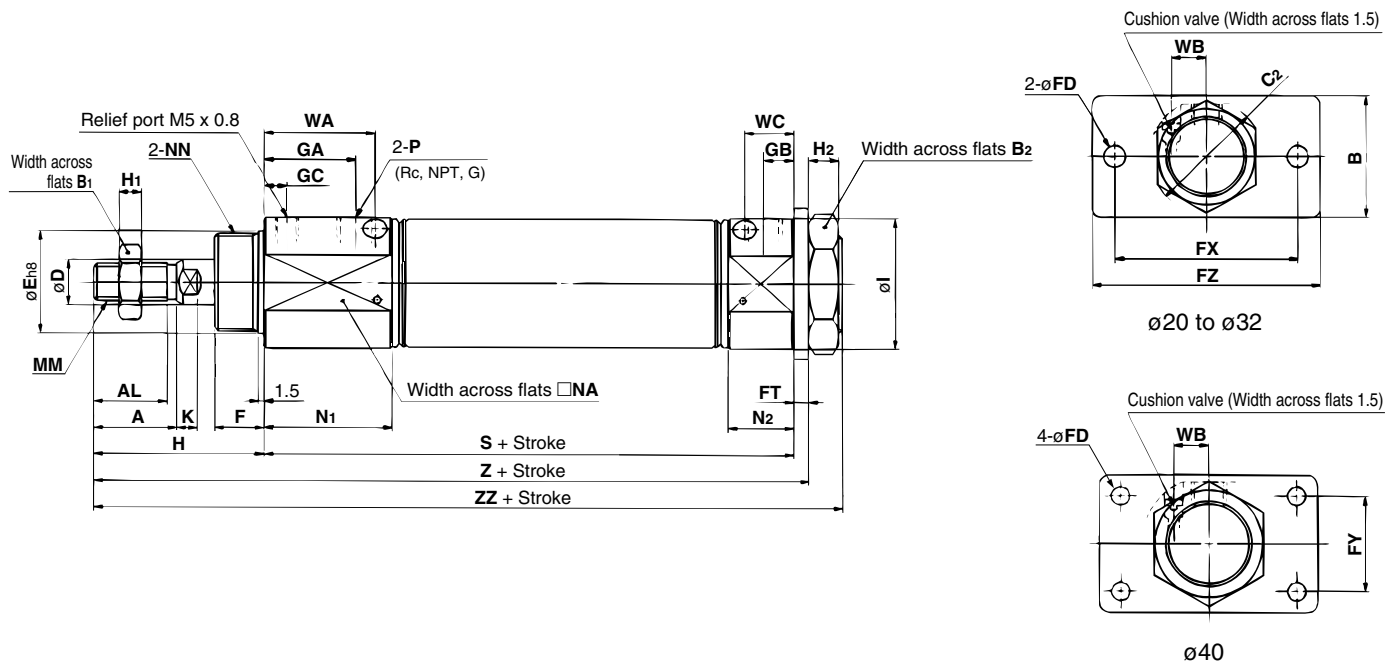
Head side flange style (G) / 10-**CM2G**, 21-**CM2G**

With rubber bumper



(mm)																												
Bore size	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	Z	ZZ
20	18	15.5	34	13	26	30	8	20 ^{0.033}	13	7	4	60	—	75	8	41	5	8	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	62	107	116
25	22	19.5	40	17	32	37	10	26 ^{0.033}	13	7	4	60	—	75	8	45	6	8	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	62	111	120
32	22	19.5	40	17	32	37	12	26 ^{0.033}	13	7	4	60	—	75	8	45	6	8	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	113	122
40	24	21	52	22	41	47.3	14	32 ^{0.039}	16	7	5	66	36	82	11	50	8	10	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	143	154

With air cushion



(mm)																																		
Bore size	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FD	FT	FX	FY	FZ	GA	GB	GC	H	H ₁	H ₂	I	K	MM	N ₁	N ₂	NA	NN	P	S	WA	WB	WC	Z	ZZ
20	18	15.5	34	13	26	30	8	20 ^{0.033}	13	7	4	60	—	75	26	8	6	41	5	8	28	5	M8 x 1.25	35.5	17.5	24	M20 x 1.5	1/8	80	31	8.5	13	125	134
25	22	19.5	40	17	32	37	10	26 ^{0.033}	13	7	4	60	—	75	26	8	6	45	6	8	33.5	5.5	M10 x 1.25	35.5	17.5	30	M26 x 1.5	1/8	80	31	10.5	13	129	138
32	22	19.5	40	17	32	37	12	26 ^{0.033}	13	7	4	60	—	75	26	8	6	45	6	8	37.5	5.5	M10 x 1.25	35.5	17.5	34.5	M26 x 1.5	1/8	82	31	11.5	13	131	140
40	24	21	52	22	41	47.3	14	32 ^{0.039}	16	7	5	66	36	82	31	11	6	50	8	10	46.5	7	M14 x 1.5	41.5	21.5	42.5	M32 x 2	1/4	108	36	15	16	163	174



Specific Product Precautions

Be sure to read before handling.

Operating Precautions

Warning

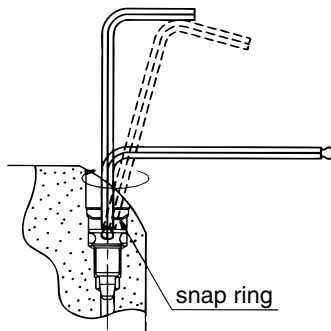
1. Do not rotate the cover.

When installing a cylinder or screwing a pipe fitting into the port, the coupling portion of the cover could break if the cover is rotated.

2. Do not open the cushion valve beyond the stopper.

- A snap ring is installed as a cushion valve retention mechanism. Do not open the cushion valve beyond the snap ring or remove the ring.
- If air is supplied and operation started without confirming the above condition, the cushion valve may be ejected from the cover.
- Use a hexagon wrench key below to adjust the cushion valve.

Bore size (mm)	Cushion valve Width across flats (mm)	Socket wrench
20, 25, 32, 40	1.5	JISB4648 Hexagon spanner wrench 1.5



Caution

1. Use caution to the popping of a snap ring.

When replacing the rod seal, take special precautions not to allow the snap ring to pop out.

2. Do not touch the cylinder during operation.

Use caution when handling a cylinder, which is running at a high speed and a high frequency, because the surface of a cylinder tube could get so hot enough as to cause you get burned.

Series 10-/11- 21-/22-*CM2W*

Double acting, Double rod cylinder/
ø20, ø25, ø32, ø40

How to Order



● **Clean series**

10	Relief type
11	Vacuum suction type

10 - C D M 2 W L 40 - 150 - H7B

21 - C D M 2 W L 40 - 150 - H7B

● **Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)

● **Cylinder stroke (mm)**

● **Port thread type**

Nil	Rc
TN	NPT
TF	G

● **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

● **Type of auto switch**

Reed switch	C73
Solid state switch	H7B, H7A1

● **Bore size (mm)**

● **Mounting style**

B	Basic style
L	Axial foot style
F	Flange style

● **Copper, fluorine and silicon-free+ Low particle generation**

21	Relief type
22	Vacuum suction type

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion							
								Rubber	Air						
Relief type	10-/21-CM2W□20	20	1/8	Non-lube	Double acting, double rod	25, 50, 75, 100, 125 150, 200, 250, 300	Available	Available	Not available						
	10-/21-CM2W□25	25													
	10-/21-CM2W□32	32													
	10-/21-CM2W□40	40	1/4												
Vacuum suction type	11-/22-CM2W□20	20	1/8												
	11-/22-CM2W□25	25													
	11-/22-CM2W□32	32													
	11-/22-CM2W□40	40	1/4												

Specifications

Bore size (mm)	
Item	20/25/32/40
Proof pressure	1.5 MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.08 MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed	10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s
Stroke length tolerance	$+1.4$ -0
Mounting style	Basic, Axial foot, Flange
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 2, 21-: Grade 3 11-/22-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate ℓ /min (ANR)
20/25/32/40	2

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC, 100 VAC	5 to 40 mA, 5 to 20 mA	Yes	Relay, PLC
Solid state switch	2-wire D-H7B	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire D-H7A1	28 VDC or less	40 mA or less	○	IC circuit, Relay, PLC

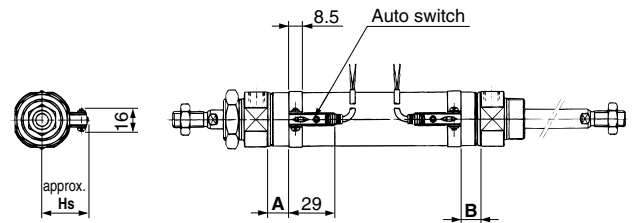
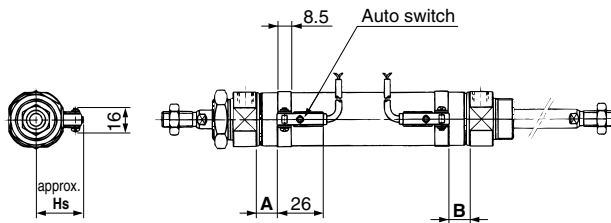
Refer to page 182 for a list of applicable auto switches.

PLC: Programmable Logic Controller

Proper auto switch mounting position (Detection at stroke end)

D-C7

D-H7A1/H7B



Bore size	D-C73			D-H7A1/H7B		
	A	B	Hs	A	B	Hs
20	7	6	22.5	6	5	22.5
25	7	6	25	6	5	25
32	8	7	28.5	7	6	28.5
40	14	12	32.5	13	11	32.5

Note) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.



Specific Product Precautions

Be sure to read before handling.

Operating Precautions

Warning

1. Do not rotate the cover.

If a cover is rotated when installing a cylinder or screwing a fitting into the port, it is likely to damage the junction part with cover.

Caution

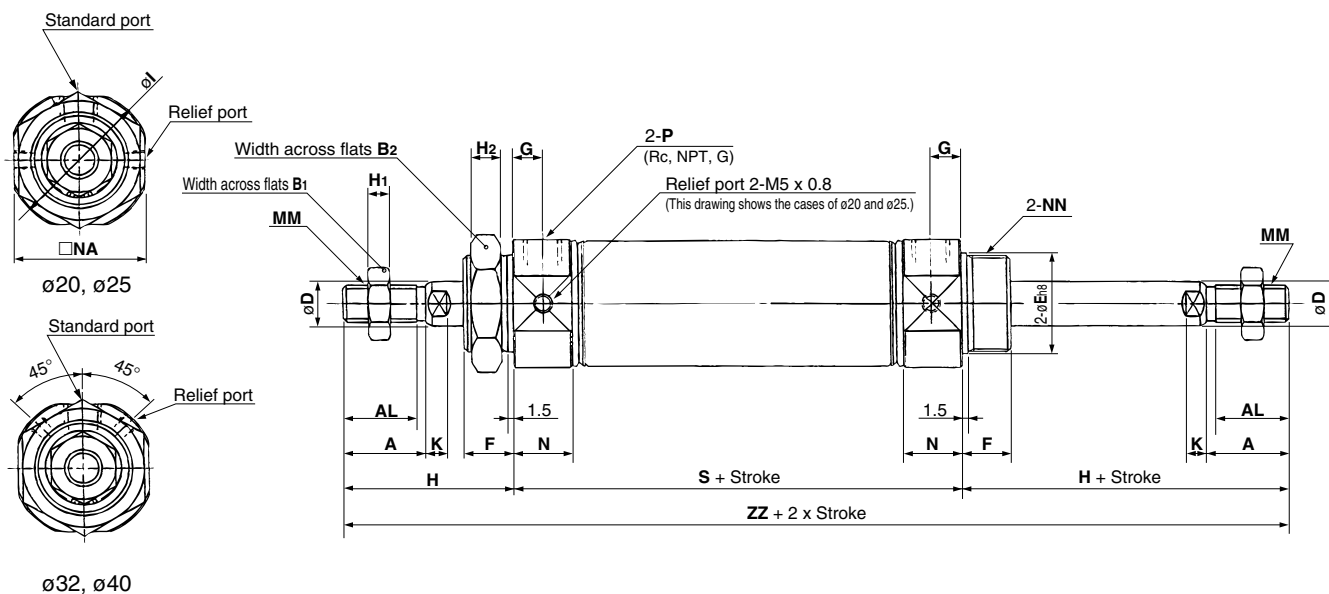
1. Use caution to the popping of a snap ring.

When replacing rod seals and removing and mounting a snap ring, use a proper tool.

2. Do not touch the cylinder during operation.

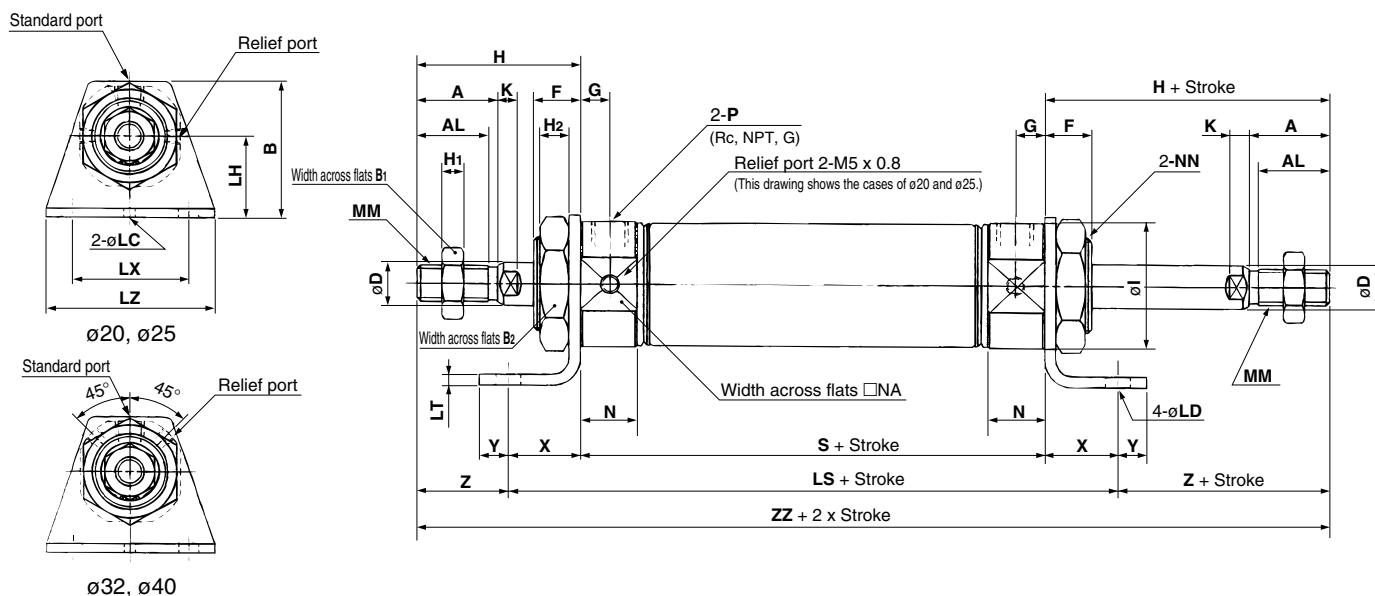
Use caution when handling a cylinder, which is running at a high speed and a high frequency, because the surface of a cylinder tube could get so hot enough as to cause you get burned.

Basic style (B) / 10-**CM2WB**, 21-**CM2WB**



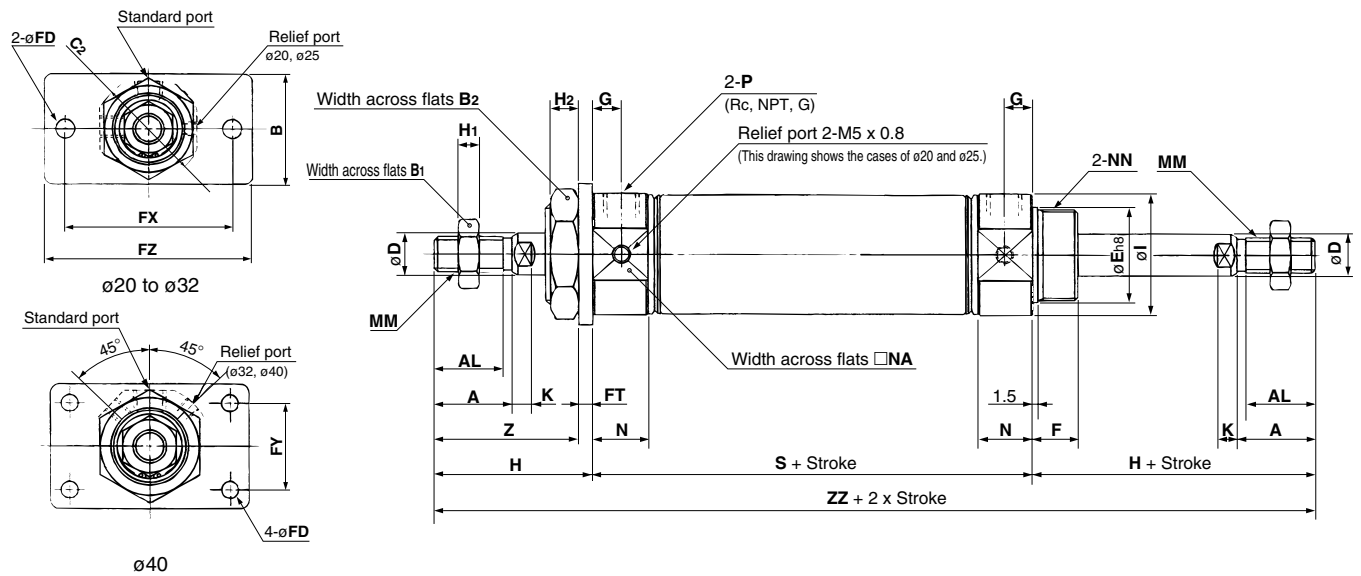
(mm)																				
Bore size	A	AL	B ₁	B ₂	D	E	F	G	H	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	8	20 ^{0.033} ₀	13	8	41	5	8	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	62	144
25	22	19.5	17	32	10	26 ^{0.033} ₀	13	8	45	6	8	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	62	152
32	22	19.5	17	32	12	26 ^{0.033} ₀	13	8	45	6	8	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	154
40	24	21	22	41	14	32 ^{0.039} ₀	16	11	50	8	10	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	188

Axial foot style (L) / 10-**CM2WL**, 21-**CM2WL**



(mm)																														
Bore size	A	AL	B	B ₁	B ₂	D	F	G	H	H ₁	H ₂	I	K	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	S	X	Y	Z	ZZ
20	18	15.5	40	13	26	8	13	8	41	5	8	28	5	4	6.8	25	102	3.2	40	55	M8 x 1.25	15	24	M20 x 1.5	1/8	62	20	8	21	144
25	22	19.5	47	17	32	10	13	8	45	6	8	33.5	5.5	4	6.8	28	102	3.2	40	55	M10 x 1.25	15	30	M26 x 1.5	1/8	62	20	8	25	152
32	22	19.5	47	17	32	12	13	8	45	6	8	37.5	5.5	4	6.8	28	104	3.2	40	55	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	20	8	25	154
40	24	21	54	22	41	14	16	11	50	8	10	46.5	7	4	7	30	134	3.2	55	75	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	23	10	27	188

Flange style (F) / 10-**CM2WF**, 21-**CM2WF**



Bore size	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	Z	ZZ
20	18	15.5	34	13	26	30	8	20 ⁰ _{0.033}	13	7	4	60	—	75	8	41	5	8	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	62	37	144
25	22	19.5	40	17	32	37	10	26 ⁰ _{0.033}	13	7	4	60	—	75	8	45	6	8	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	62	41	152
32	22	19.5	40	17	32	37	12	26 ⁰ _{0.033}	13	7	4	60	—	75	8	45	6	8	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	41	154
40	24	21	52	22	41	47.3	14	32 ⁰ _{0.039}	16	7	5	66	36	82	11	50	8	10	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	45	188

Series 10-/11-21-/22-**CM2R** Direct mount type cylinder ø20, ø25, ø32, ø40

How to Order

• Clean series

10	Relief type
11	Vacuum suction type

10 - C D M 2 R A 40 - 150 - C73

21 - C D M 2 R A 40 - 150 - C73

Copper, fluorine and silicon-free+ Low particle generation

21	Relief type
22	Vacuum suction type

• Mounting style

A	Bottom mounting style
B	Front mounting style

• Bore size (mm)

• Port thread type

Nil	Rc
TN	NPT
TF	G

• Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

• Type of auto switch

Reed switch	C73
Solid state switch	H7B, H7A1

• Built-in magnet

Nil	No
D	With auto switch (Built-in magnet)

Cylinder stroke (mm)

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion						
								Rubber	Air					
Relief type	10-/21-CM2R□20	20	1/8	Non-lube	Double acting, single rod	25, 50, 75, 100, 125, 150	Available	Available	Not available					
	10-/21-CM2R□25	25				25, 50, 75,100, 125, 150, 200								
	10-/21-CM2R□32	32				25, 50, 75, 100, 125, 150, 200, 250, 300								
	10-/21-CM2R□40	40				25, 50, 75, 100, 125, 150								
Vacuum suction type	11-/22-CM2R□20	20	1/8								25,50,75,100,125,150,200			
	11-/22-CM2R□25	25									25, 50, 75, 100, 125, 150			
	11-/22-CM2R□32	32									25,50,75,100,125,150,200			
	11-/22-CM2R□40	40				1/4						25,50,75,100,125,150,200,250,300		

Specifications

Bore size (mm)		20/25/32/40
Item		
Proof pressure		1.5 MPa
Maximum operating pressure		1.0 MPa
Minimum operating pressure		0.05 MPa
Ambient and fluid temperature		Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed		10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s
Stroke length tolerance		$^{+1.4}_0$
Mounting style		Bottom mounting style/Front mounting style
Grease		10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade		10-: Grade 2, 21-: Grade 3 11-/22-: Grade 1
(Refer to front matter pages 13 to 22 for details.)		

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate l/min (ANR)
20/25/32/40	2

Auto Switch Specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC, 100 VAC	5 to 40 mA, 5 to 20 mA	○	Relay, PLC
Solid state switch	2-wire D-H7B	24 VDC (10 to 28 VDC)	5 to 40 mA	○	24 VDC relay, PLC
	3-wire D-H7A1	28 VDC or less	40 mA or less	○	IC circuit, Relay, PLC

Refer to page 182 for a list of applicable auto switches.

PLC: Programmable Logic Controller

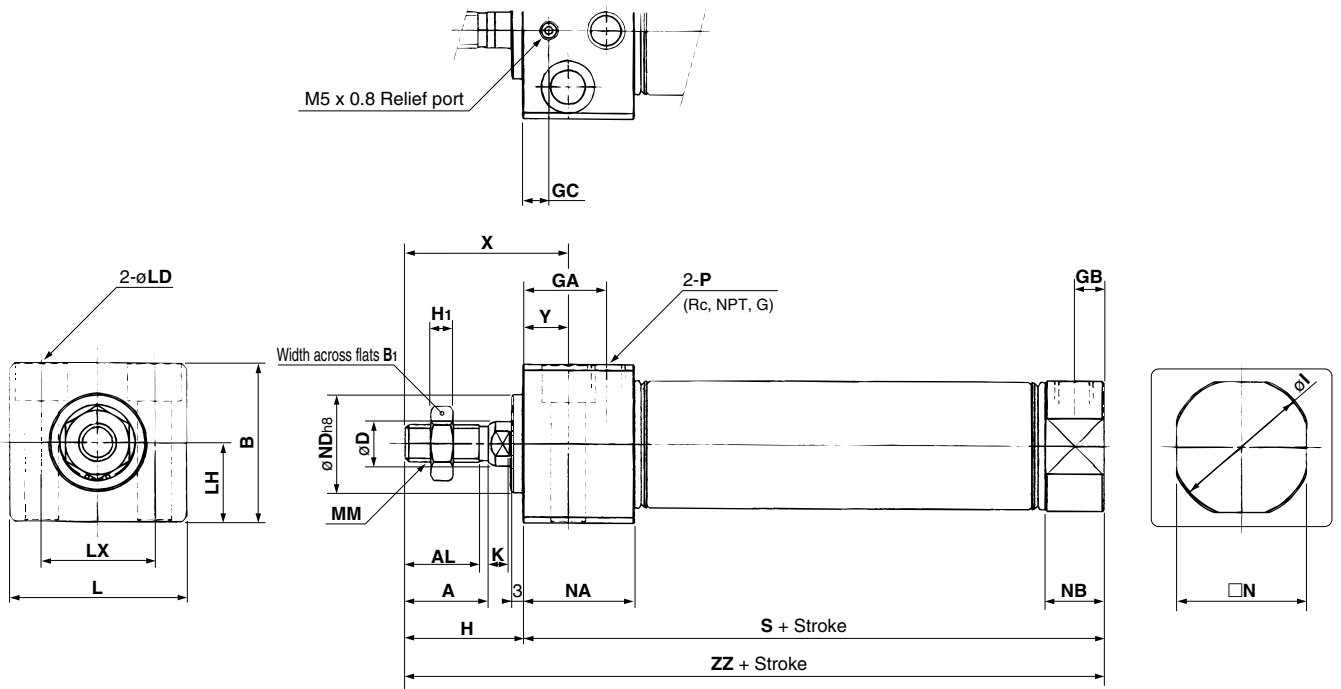
Proper auto switch mounting position (Detection at stroke end)

Same as double acting, single rod type

Specific Product Precautions

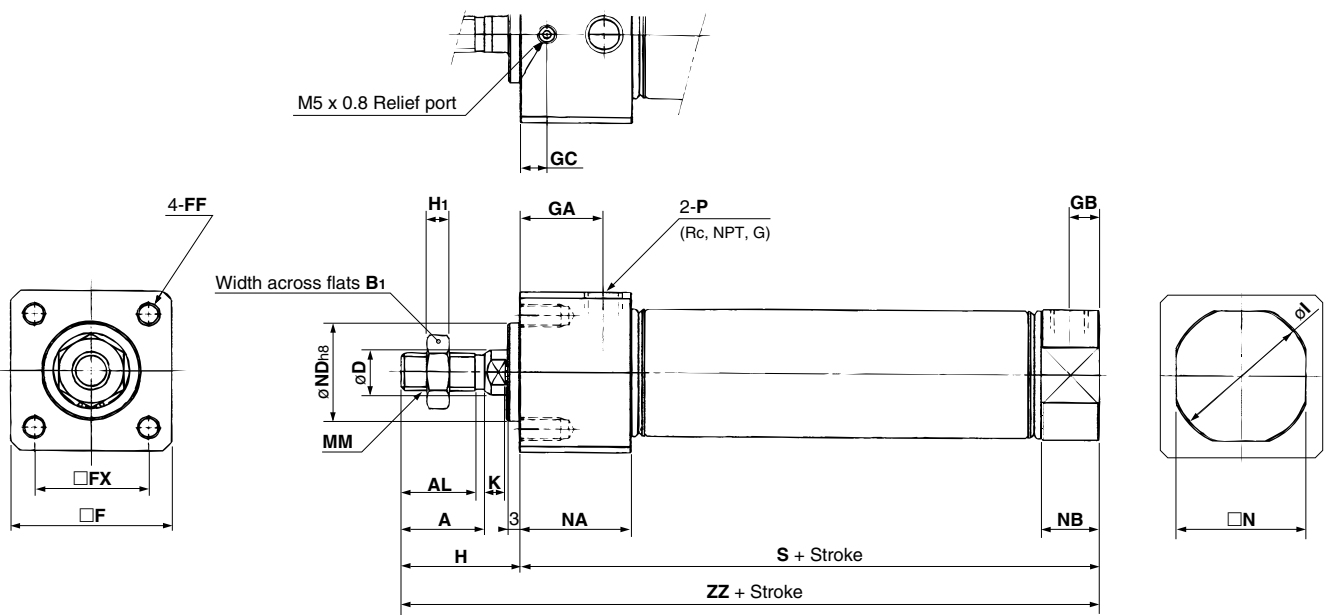
Refer to page 21.

Bottom mounting style / 10-**CM2RA**, 21-**CM2RA**



Bore size	A	AL	B	B ₁	D	GA	GB	GC	H	H ₁	I	K	L	LD	LH	LX	MM	N	NA	NB	ND	P	S	X	Y	ZZ
20	18	15.5	30.3	13	8	22	8	6	27	5	28	5	33.5	ø5.5, ø9.5 counterbore depth 6.5	15	21	M8 x 1.25	24	29	15	20 ^{0.033}	1/8	76	39	12	103
25	22	19.5	36.3	17	10	22	8	6	31	6	33.5	5.5	39	ø6.6, ø11 counterbore depth 7.5	18	25	M10 x 1.25	30	29	15	26 ^{0.033}	1/8	76	43	12	107
32	22	19.5	42.3	17	12	22	8	7	31	6	37.5	5.5	47	ø9, ø14 counterbore depth 10	21	30	M10 x 1.25	34.5	29	15	26 ^{0.033}	1/8	78	43	12	109
40	24	21	52.3	22	14	27	11	9	34	8	46.5	7	58.5	ø11, ø17.5 counterbore depth 12.5	26	38	M14 x 1.5	42.5	37.5	21.5	32 ^{0.039}	1/4	104	49	15	138

Front mounting style / 10-**CM2RB**, 21-**CM2RB**

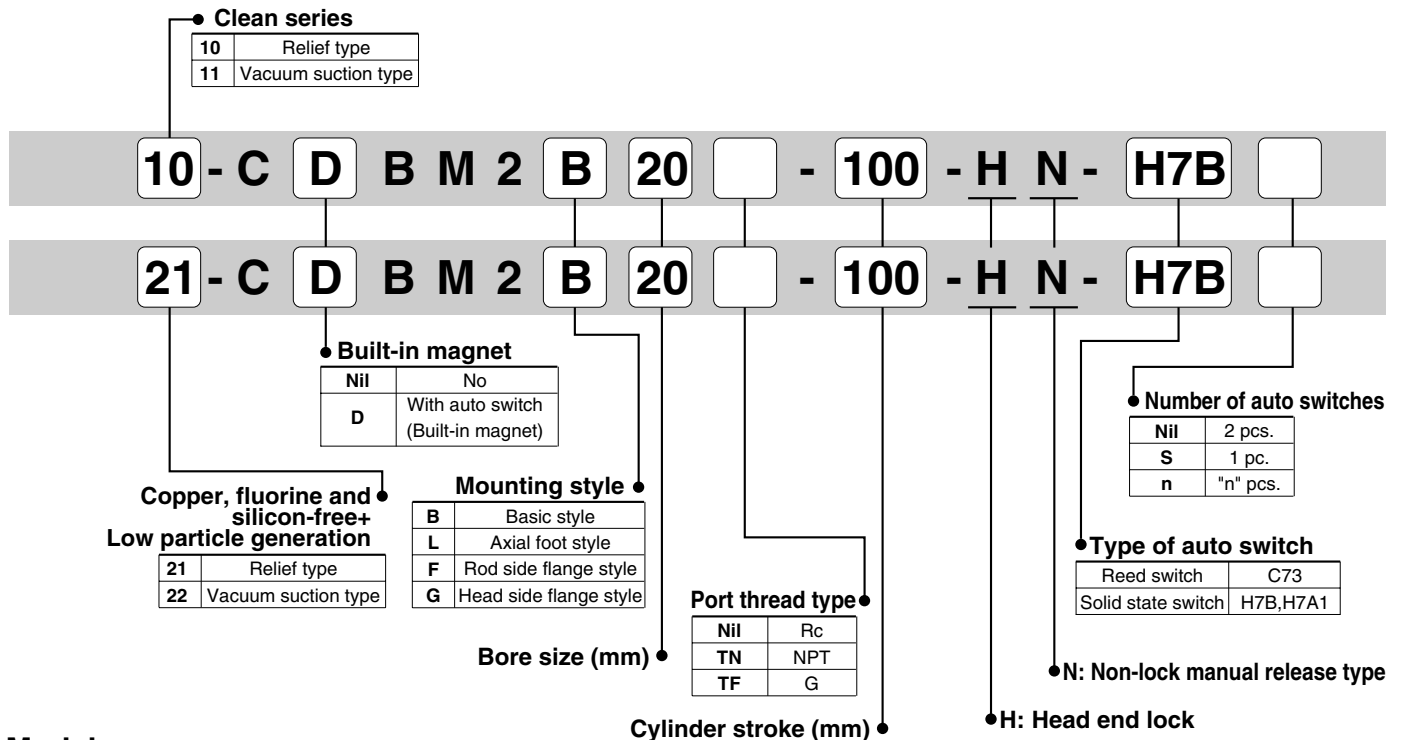


Bore size	A	AL	B ₁	D	F	FF	FX	GA	GB	GC	H	H ₁	I	K	MM	N	NA	NB	ND	P	S	ZZ
20	18	15.5	13	8	30.4	M5 x 0.8 depth 9	22	22	8	6	27	5	28	5	M8 x 1.25	24	29	15	20 ^{0.033}	1/8	76	103
25	22	19.5	17	10	36.4	M6 x 1 depth 11	26	22	8	6	31	6	33.5	5.5	M10 x 1.25	30	29	15	26 ^{0.033}	1/8	76	107
32	22	19.5	17	12	42.4	M6 x 1 depth 11	30	22	8	7	31	6	37.5	5.5	M10 x 1.25	34.5	29	15	26 ^{0.033}	1/8	78	109
40	24	21	22	14	52.4	M8 x 1.25 depth 14	36	27	11	9	34	8	46.5	7	M14 x 1.5	42.5	37.5	21.5	32 ^{0.039}	1/4	104	138

Series 10-/11- 21-/22- CBM2

Cylinder with end lock/
ø20, ø25, ø32, ø40 (Head side lock)

How to Order



Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion							
								Rubber	Air						
Relief type	10-/21-CBM2□20	20	1/8	Non-lube	Double acting, single rod	25, 50, 75, 100, 125, 150, 200, 250, 300	Available	Available	Not available						
	10-/21-CBM2□25	25													
	10-/21-CBM2□32	32													
	10-/21-CBM2□40	40	1/4												
Vacuum suction type	11-/22-CBM2□20	20	1/8												
	11-/22-CBM2□25	25													
	11-/22-CBM2□32	32													
	11-/22-CBM2□40	40	1/4												

Specifications

Bore size (mm)		20/25/32/40
Item		
Proof pressure		1.5 MPa
Maximum operating pressure		1.0 MPa
Minimum operating pressure		0.15 MPa *
Ambient and fluid temperature		Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C (No freezing)
Piston speed		10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s
Stroke length tolerance		$+1.4$ 0
Mounting style		Basic style/Axial foot style/Rod side flange style/Head side flange style
Grease		10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade		10-: Grade 2, 21-: Grade 3
(Refer to front matter pages 13 to 22 for details.)		11-/22-: Grade 1

*0.05 MPa for other part than the lock unit

Lock specifications

Lock position		Head end			
Holding force (Max.) N		ø20	ø25	ø32	ø40
		215	330	550	860
Backlash		1 mm or less			
Manual release		Non-lock type			

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate l/min (ANR)
20/25/32/40	2

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

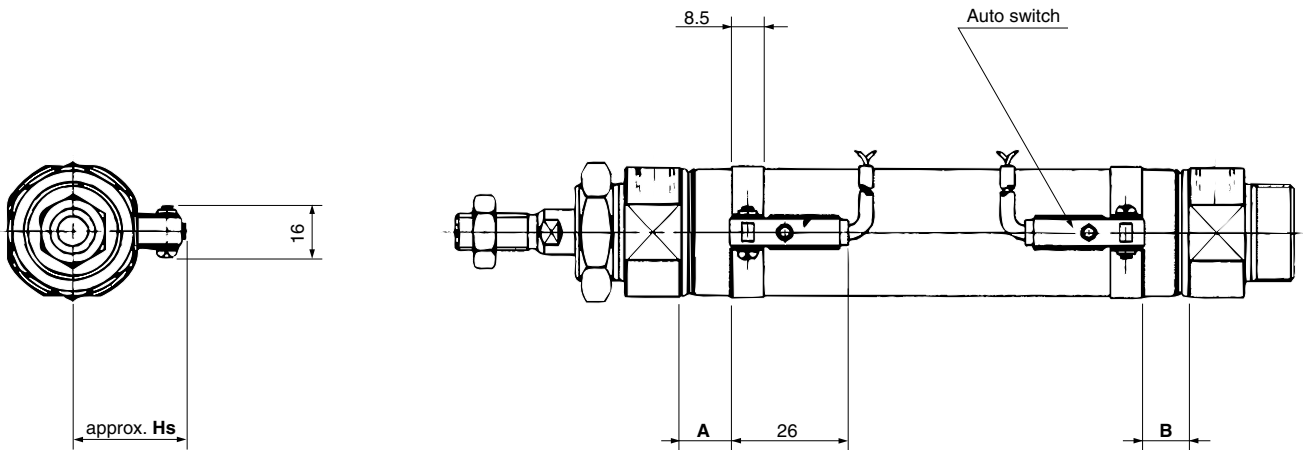
Type	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC, 100 VAC	5 to 40 mA, 5 to 20 mA	Yes	Relay, PLC
Solid state switch	2-wire D-H7B	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire D-H7A1	28 VDC or less	40 mA or less	Yes	IC circuit, Relay, PLC

Refer to page 182 for a list of applicable auto switches.

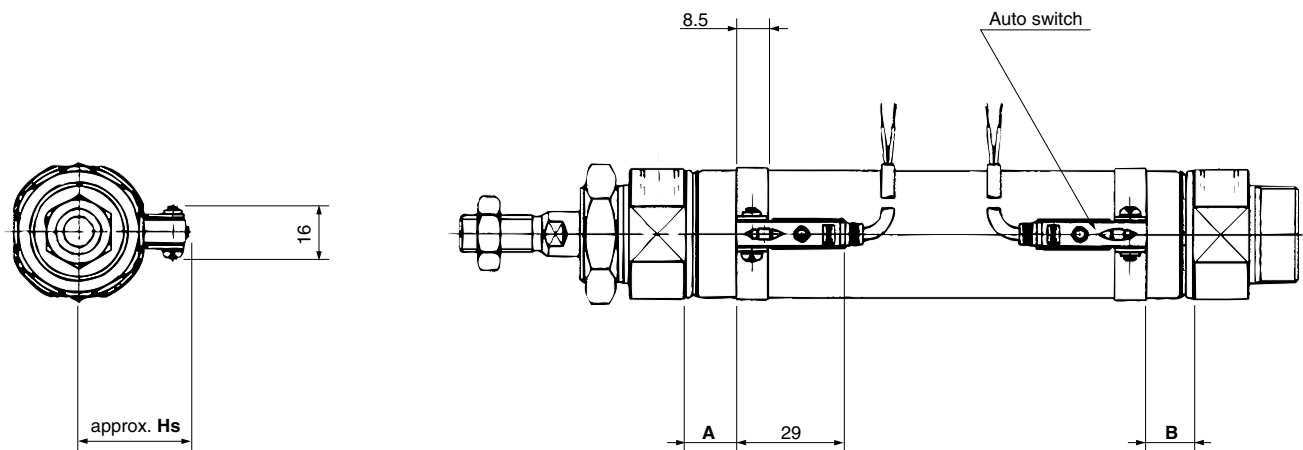
PLC: Programmable Logic Controller

Proper Auto Switch Mounting Position (Detection at stroke end)

D-C73



D-H7A1/H7B

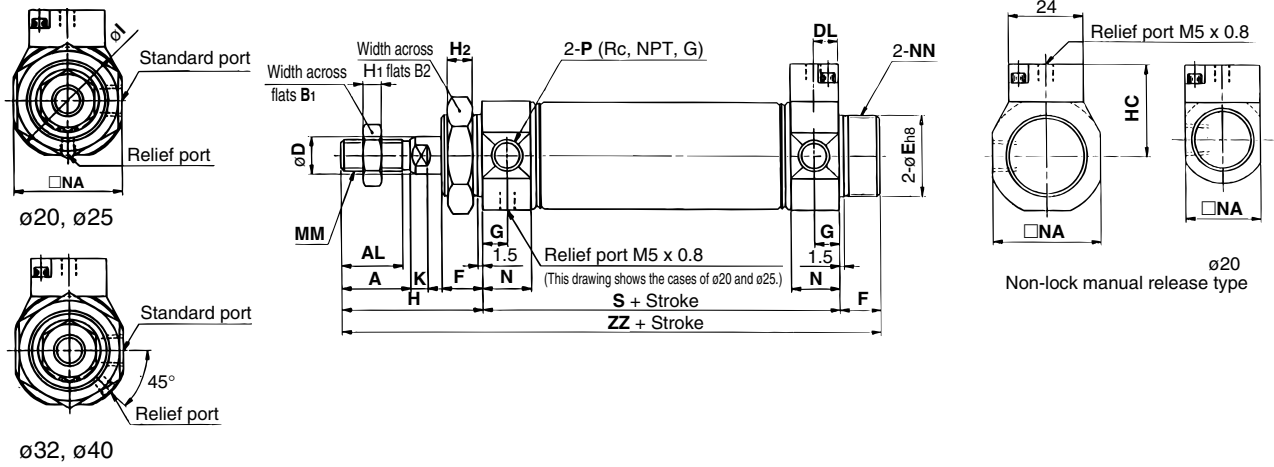


(mm)

Bore size	D-C73			D-H7A1/H7B		
	A	B	Hs	A	B	Hs
20	7	6	22.5	6	5	22.5
25	7	6	25	6	5	25
32	8	7	28.5	7	6	28.5
40	14	12	32.5	13	11	32.5

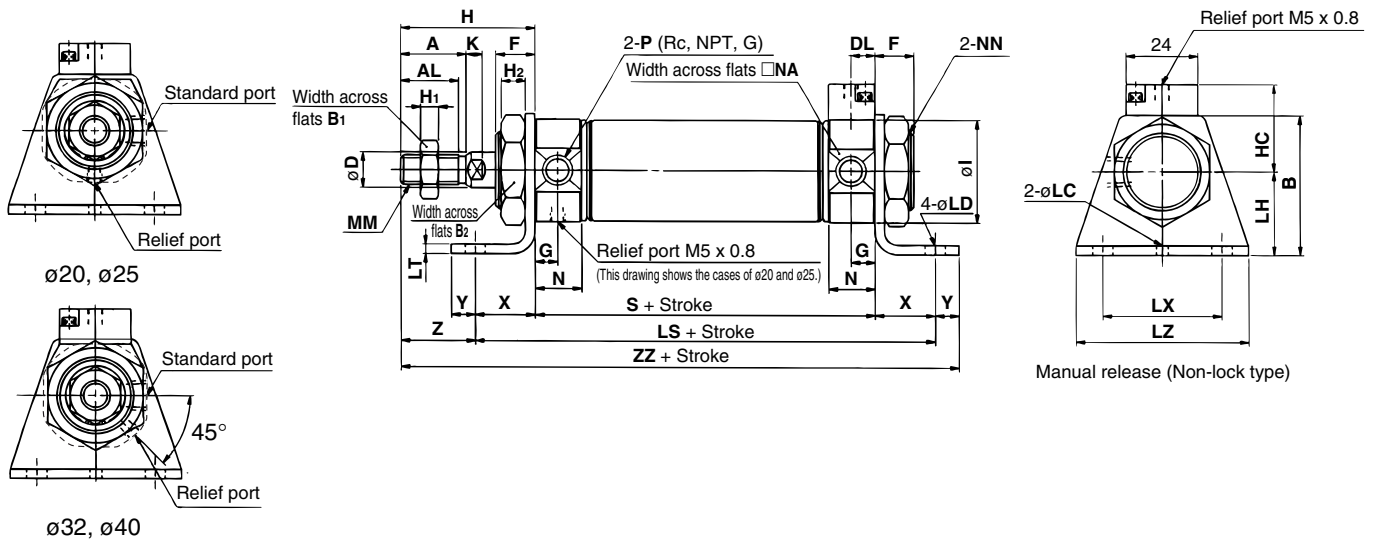
Note) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.

Basic style (B) / ¹⁰⁻₁₁₋CBM2B, ²¹⁻₂₂₋CBM2B



Bore size	A	AL	B ₁	B ₂	D	DL	E	F	G	H	H ₁	H ₂	HC	I	K	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	8	7.5	20 ⁰ _{-0.033}	13	8	41	5	8	24	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	62	116
25	22	19.5	17	32	10	7.5	26 ⁰ _{-0.033}	13	8	45	6	8	27	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	62	120
32	22	19.5	17	32	12	7.5	26 ⁰ _{-0.033}	13	8	45	6	8	29.3	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	122
40	24	21	22	41	14	10.7	32 ⁰ _{-0.039}	16	11	50	8	10	33.3	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	154

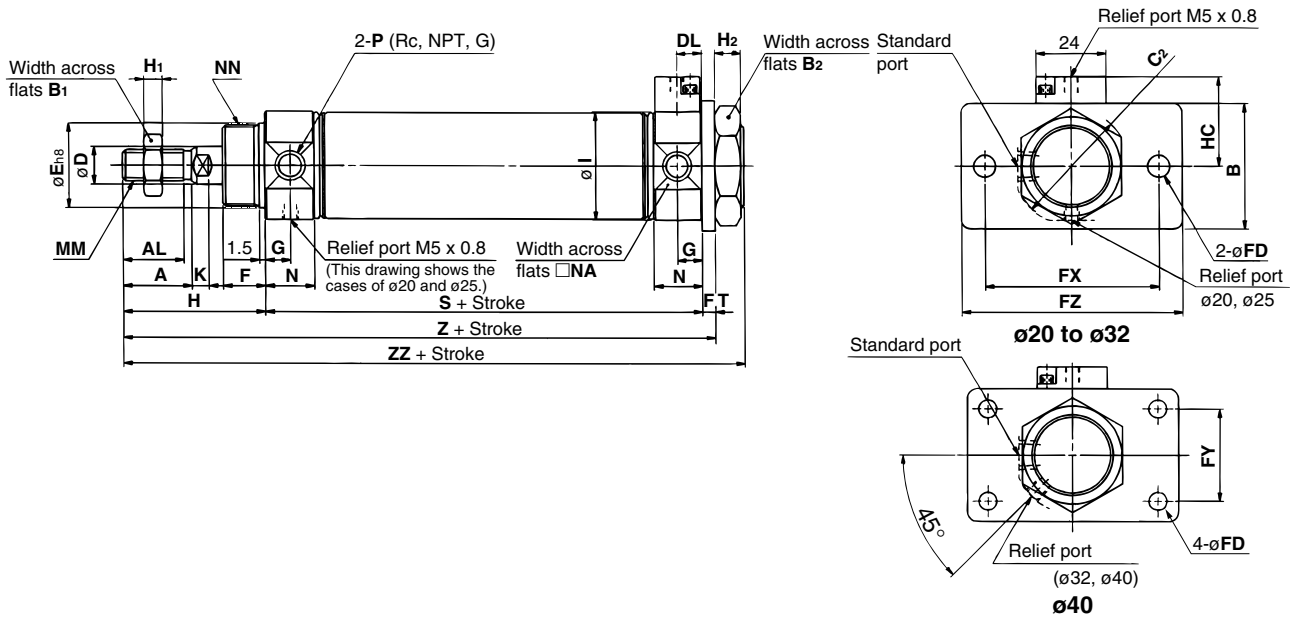
Axial foot style (L) / ¹⁰⁻₁₁₋CBM2L, ²¹⁻₂₂₋CBM2L



Bore size	A	AL	B	B ₁	B ₂	D	DL	F	G	H	H ₁	H ₂	HC	I	K	LC	LD	LH	LS	LT	LX	LZ	MM
20	18	15.5	40	13	26	8	7.5	13	8	41	5	8	24	28	5	4	6.8	25	102	3.2	40	55	M8 x 1.25
25	22	19.5	47	17	32	10	7.5	13	8	45	6	8	27	33.5	5.5	4	6.8	28	102	3.2	40	55	M10 x 1.25
32	22	19.5	47	17	32	12	7.5	13	8	45	6	8	29.3	37.5	5.5	4	6.8	28	104	3.2	40	55	M10 x 1.25
40	24	21	54	22	41	14	10.5	16	11	50	8	10	33.3	46.5	7	4	7	30	134	3.2	55	75	M14 x 1.5

Bore size	N	NA	NN	P	S	X	Y	Z	ZZ
20	15	24	M20 x 1.5	1/8	62	20	8	21	131
25	15	30	M26 x 1.5	1/8	62	20	8	25	135
32	15	34.5	M26 x 1.5	1/8	64	20	8	25	137
40	21.5	42.5	M32 x 2	1/4	88	23	10	27	171

Head side flange style (G) / 10-**CBM2G,** 21-**CBM2G**



(mm)

Bore size	A	AL	B	B ₁	B ₂	C ₂	D	DL	E	F	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	HC	I	K	MM
20	18	15.5	34	13	26	30	8	7.5	20 ⁰ _{-0.033}	13	7	4	60	—	75	8	41	5	8	24	28	5	M8 x 1.25
25	22	19.5	40	17	32	37	10	7.5	26 ⁰ _{-0.033}	13	7	4	60	—	75	8	45	6	8	27	33.5	5.5	M10 x 1.25
32	22	19.5	40	17	32	37	12	7.5	26 ⁰ _{-0.033}	13	7	4	60	—	75	8	45	6	8	29.3	37.5	5.5	M10 x 1.25
40	24	21	52	22	41	47.3	14	10.7	32 ⁰ _{-0.039}	16	7	5	66	36	82	11	50	8	10	33.3	46.5	7	M14 x 1.5

(mm)

Bore size	N	NA	NN	P	S	Z	ZZ
20	15	24	M20 x 1.5	1/8	62	107	116
25	15	30	M26 x 1.5	1/8	62	111	120
32	15	34.5	M26 x 1.5	1/8	64	113	122
40	21.5	42.5	M32 x 2	1/4	88	143	154



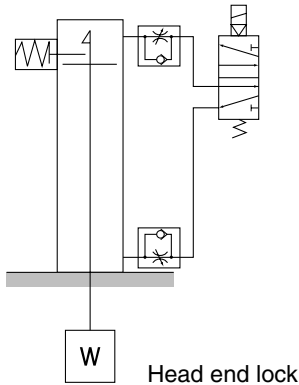
Specific Product Precautions

Be sure to read before handling.

Use the recommended pneumatic circuit.

Caution

1. This is necessary for proper operation and release of the lock.



Operating Precautions

Caution

1. Do not use 3 position solenoid valves.

Avoid use in combination with 3 position solenoid valves (especially closed center metal seal types). If pressure is trapped in the port on the lock mechanism side, the cylinder cannot be locked.

Furthermore, even after being locked, the lock may be released after some time, due to air leaking from the solenoid valve and entering the cylinder.

2. Back pressure is required to release end lock.

Before starting operation, be sure to control the system so that air is supplied to the side without the lock mechanism as shown in the figure above. There is a possibility that the lock may not be released. (Refer to "Releasing the Lock".)

3. Release the lock when mounting or adjusting the cylinder.

If mounting or other work is performed when the cylinder is locked, the lock unit may be damaged.

4. Operate with a load ratio of 50% or less.

If the load ratio exceeds 50%, this may cause problems such as failure of the lock to release, or damage to the lock unit.

5. Do not operate multiple cylinders in synchronization.

Avoid applications in which two or more end lock cylinders are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.

6. Use a speed controller with meter-out control.

Lock cannot be released occasionally by meter-in control.

7. Be sure to operate completely to the cylinder stroke end on the side with the lock.

If the cylinder piston does not reach the end of the stroke, locking might not work or locking might not be released.

Operating pressure

Caution

1. Supply air pressure of 0.15 MPa or higher to the port on the side that has the lock mechanism, as it is necessary for disengaging the lock.

Exhaust speed

Caution

1. Locking will occur automatically if the pressure applied to the port on the lock mechanism side falls to 0.05 MPa or less. In cases where the piping on the lock mechanism side is long and thin, or the speed controller is separated at some distance from the cylinder port, the exhaust speed will be reduced. Take note that some time may be required for the lock to engage. In addition, clogging of a silencer mounted on the solenoid valve exhaust port can produce the same effect.

Releasing the Lock

Warning

1. Before releasing the lock, be sure to supply air to the side without the lock mechanism, so that there is no load applied to the lock mechanism when it is released. (Refer to the recommended pneumatic circuits.) If the lock is released when the port on the other side is in an exhaust state, and with a load applied to the lock unit, the lock unit may be subjected to an excessive force and be damaged. Furthermore, sudden movement of the piston rod is very dangerous.

Manual release

Caution

1. Insert the accessory bolt from the top of the rubber cap, and after screwing it into the lock piston, pull it to release the lock. If you stop pulling the bolt, the lock will return to an operational state. Bolt sizes, pulling forces and strokes are as shown below.

Bore size (mm)	Bolt size	Pulling force	Stroke (mm)
ø20, ø25, ø32	M2.5 x 0.45 x 25L or more	4.9N	2
ø40	M3 x 0.5 x 30L or more	10N	3

Remove the bolt for normal operation.

It can cause lock malfunction or faulty release.

Series 10-/11-21-/22-CG1

Air cylinder ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Clean series

10	Relief type
11	Vacuum suction type

Built-in magnet

Nil	No
D	With auto switch (Built-in magnet)

Lubrication

N	Rubber bumper/ø20 to ø100
A	Air cushion/ø40 to ø63

Bore size (mm)

Port thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style

Type of auto switch

Reed switch	C73, B54
Solid state switch	H7B, H7A1, K59, G59

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Copper, fluorine and silicon-free + Low particle generation

21	Relief type
22	Vacuum suction type



Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion		
								Rubber	Air	
Relief type	10-/21-CG1□20	20	1/8	Non-lube	Double acting, single rod	25, 50, 75, 100, 125, 150, 200	Available	Available	Available (ø40 to ø63)	
	10-/21-CG1□25	25				25, 50, 75, 100, 125, 150, 200, 250, 300				
	10-/21-CG1□32	32								
	10-/21-CG1□40	40								
	10-/21-CG1□50	50								1/4
	10-/21-CG1□63	63								
	10-/21-CG1□80	80								
	10-/21-CG1□100	100				1/2				
Vacuum suction type	11-/22-CG1□20	20	1/8		25, 50, 75, 100, 125, 150, 200	25, 50, 75, 100, 125, 150, 200, 250, 300				
	11-/22-CG1□25	25								
	11-/22-CG1□32	32								
	11-/22-CG1□40	40								
	11-/22-CG1□50	50			1/4					
	11-/22-CG1□63	63								
	11-/22-CG1□80	80								3/8
	11-/22-CG1□100	100								1/2

Note) Consult SMC for long stroke.

Specifications

Item	Bore size (mm)
	20/25/32/40/50/63/80/100
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed	10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s
Stroke length tolerance	Up to 300st ⁺¹⁴ mm
Mounting style	Basic style / Axial foot style / Rod side flange style / Head side flange style
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade	10-: Grade 2, 21-: Grade 3
(Refer to front matter pages 13 to 22 for details.)	11-/22-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate ℓ /min (ANR)
20/25/32/40	10
50/63/80/100	20

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Auto switch part no.	Applicable bore size	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	ø20 to ø63	24 VDC, 100 VAC	5 to 40 mA, 5 to 20 mA	○	Relay, PLC
	D-B54	ø20 to ø100	24 VDC, 100 VAC, 200 VAC	5 to 50 mA, 5 to 25 mA, 5 to 12.5 mA	○	Relay, PLC
Solid state switch	D-H7B	ø20 to ø63	24 VDC (10 to 28 VDC)	5 to 40mA	○	24 VDC relay, PLC
	D-K59	ø20 to ø100	24 VDC (10 to 28 VDC)	5 to 40mA	○	24 VDC relay, PLC
	D-H7A1	ø20 to ø63	28 VDC or less	40 mA or less	○	IC circuit, Relay, PLC
	D-G59	ø20 to ø100	28 VDC or less	40 mA or less	○	IC circuit, Relay, PLC

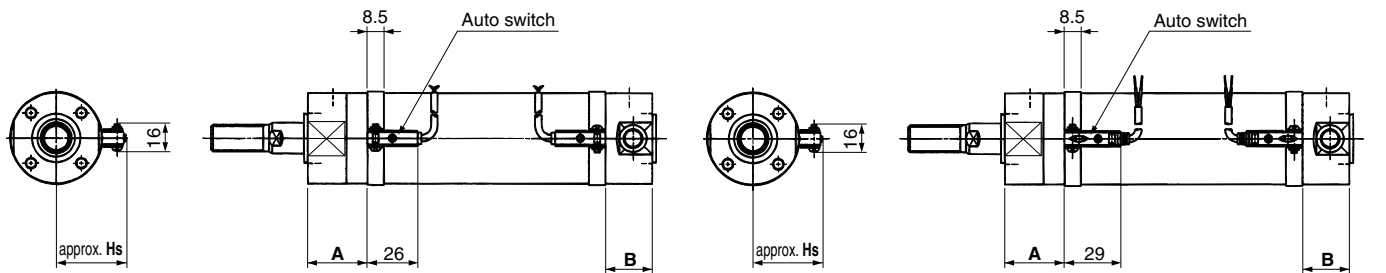
Refer to page 182 for a list of applicable auto switches.

PLC: Programmable Logic Controller

Proper auto switch mounting position (Detection at stroke end)

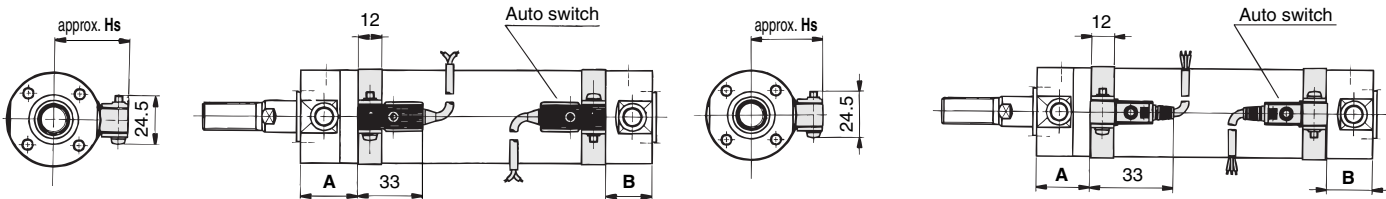
D-C73

D-H7B / H7A1



D-B54

D-K59 / G59



(mm)

Bore size	D-C73			D-H7B/H7A1		
	A	B	Hs	A	B	Hs
20	37.5	20.5[36.5]	24.5	36.5	19.5[35.5]	24.5
25	37.5	20.5[36.5]	27	36.5	19.5[35.5]	27
32	38.5	21.5[37.5]	30.5	37.5	20.5[36.5]	30.5
40	35.5 (44.5)	23.5[32.5]<41.5>	35	34.5 (43.5)	22.5[31.5]<40.5>	35
50	42.5 (54.5)	28.5[40.5]<52.5>	40.5	41.5 (53.5)	27.5[39.5]<51.5>	40.5
63	42.5 (54.5)	28.5[40.5]<52.5>	47.5	41.5 (53.5)	27.5[39.5]<51.5>	47.5
80	—	—	—	—	—	—
100	—	—	—	—	—	—

(mm)

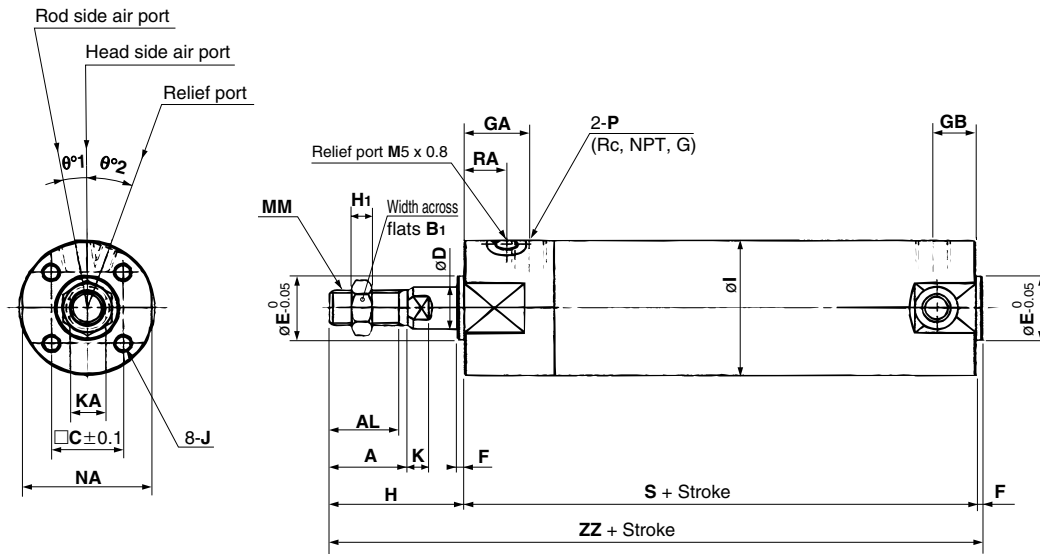
Bore size	D-B54			D-K59 / G59		
	A	B	Hs	A	B	Hs
20	31.5	14.5[30.5]	27.5	33	16[32]	27.5
25	31.5	14.5[30.5]	30	33	16[32]	30
32	32.5	15.5[31.5]	33.5	34	17[33]	33.5
40	29.5(38.5)	17.5[26.5]<35.5>	38	31(40)	19[28]<37>	38
50	36.5(48.5)	22.5[34.5]<46.5>	43.5	38(50)	24[36]<48>	43.5
63	36.5(48.5)	22.5[34.5]<46.5>	50.5	38(50)	24[36]<48>	50.5
80	46.5	30.5[44.5]	59	48	32[46]	59
100	46.5	30.5[44.5]	69.5	48	32[46]	69.5

Note 1) Values in "()" are for types with air cushion, those in "[]" are for double rod types, and those in "< >" are for double rod types with air cushion.

Note 2) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.

Basic style (B) / 10-**CG1B**, 21-**CG1B**

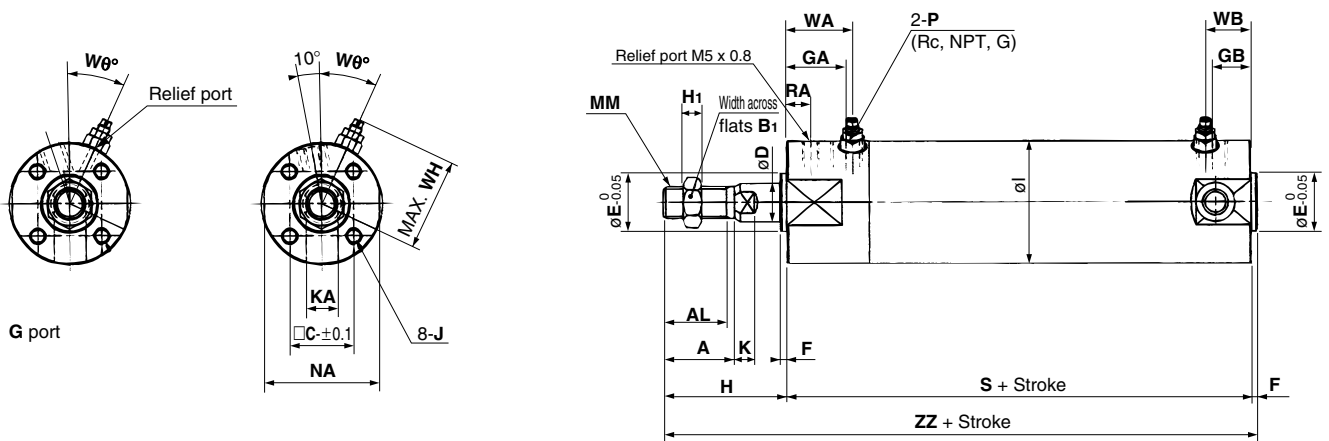
With rubber bumper



Bore size	Standard stroke range	A	AL	B ₁	C	D	E	F	GA	GB	H	H ₁	I	J	K	KA	MM	NA	P	RA	S	θ°1	θ°2	ZZ
20	Up to 200	18	15.5	13	14	8	12	2	20	10	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8<M5 x 0.8>	7	77	0	0	114
25	Up to 300	22	19.5	17	16.5	10	14	2	20	10	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8<M5 x 0.8>	7	77	0	0	119
32	Up to 300	22	19.5	17	20	12	18	2	20<18>	10	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	7	79	0	0<23>	121
40	Up to 300	30	27	19	26	16	25	2	13<10>	10	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	9	78	10	23	130
50	Up to 300	35	32	27	32	20	30	2	14<12>	12	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	10	90	10	23	150
63	Up to 300	35	32	27	38	20	32	2	14<12>	12	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	10	90	10	20	150
80	Up to 300	40	37	32	50	25	40	3	20<17>	16	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80	3/8	10	108	10	20	182
100	Up to 300	40	37	41	60	30	50	3	20<17>	16	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100	1/2	10	108	10	20	182

Note) < >: Denotes the dimensions for G port.

With air cushion

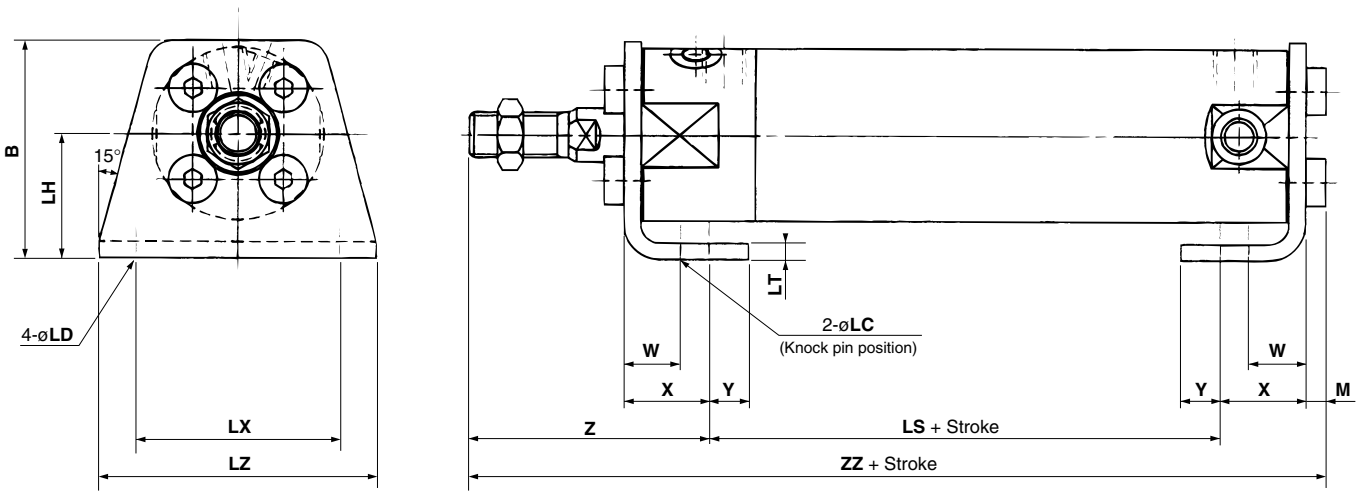


Bore size	Standard stroke range	A	AL	B ₁	C	D	E	F	GA	GB	H	H ₁	I	J	K	KA	MM	NA	P	RA	S	WA	WB	WH	Wθ°	ZZ
40	Up to 300	30	27	19	26	16	25	2	22<19>	10	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	8	87	25	15	33	20°	139
50	Up to 300	35	32	27	32	20	30	2	26<24>	12	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	9	102	30	17	40.5	20°	162
63	Up to 300	35	32	27	38	20	32	2	26<24>	12	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	9	102	30	17	47.5	20°	162

Note) < >: Denotes the dimensions for G port.

Axial foot style (L) / ¹⁰⁻~~11-~~CG1L, ²¹⁻~~22-~~CG1L

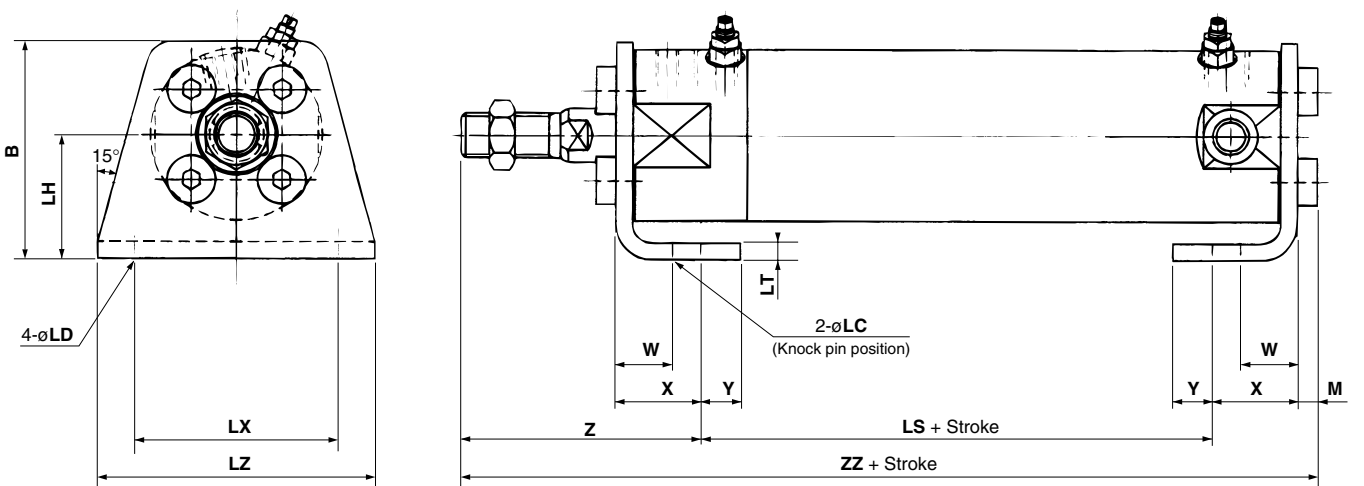
With rubber bumper



(mm)														
Bore size	B	L	CLD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
20	34	4	6	20	53	3	32	44	3	10	15	7	47	118
25	38.5	4	6	22	53	3	36	49	3.5	10	15	7	52	123.5
32	45	4	7	25	53	3	44	58	3.5	10	16	8	53	125.5
40	54.5	4	7	30	51	3	54	71	4	10	16.5	8.5	63.5	135
50	70.5	5	10	40	55	4.5	66	86	5	17.5	22	11	75.5	157.5
63	82.5	5	12	45	55	4.5	82	106	5	17.5	22	13	75.5	157.5
80	101	6	11	55	60	4.5	100	125	5	20	28.5	14	95	188.5
100	121	6	14	65	60	6	120	150	7	20	30	16	95	192

* Other dimensions are the same as basic style.

With air cushion

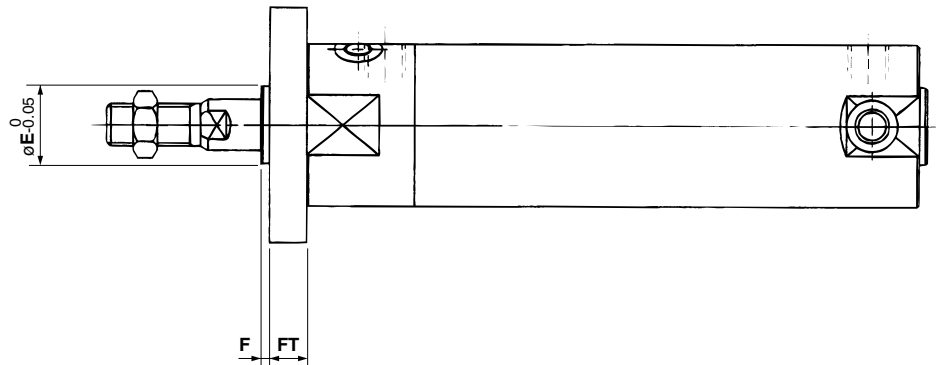
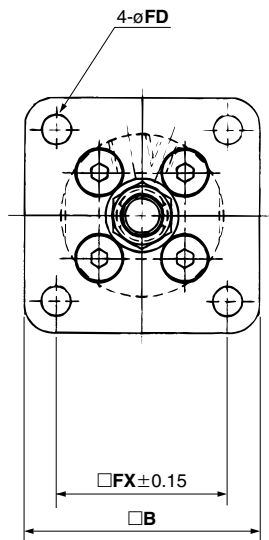


(mm)														
Bore size	B	L	CLD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
40	54.5	4	7	30	60	3	54	71	4	10	16.5	8.5	63.5	144
50	70.5	5	10	40	67	4.5	66	86	5	17.5	22	11	75.5	169.5
63	82.5	5	12	45	67	4.5	82	106	5	17.5	22	13	75.5	169.5

* Other dimensions are the same as basic style.

Rod side flange style (F) / ¹⁰⁻₁₁₋**CG1F**, ²¹⁻₂₂₋**CG1F**

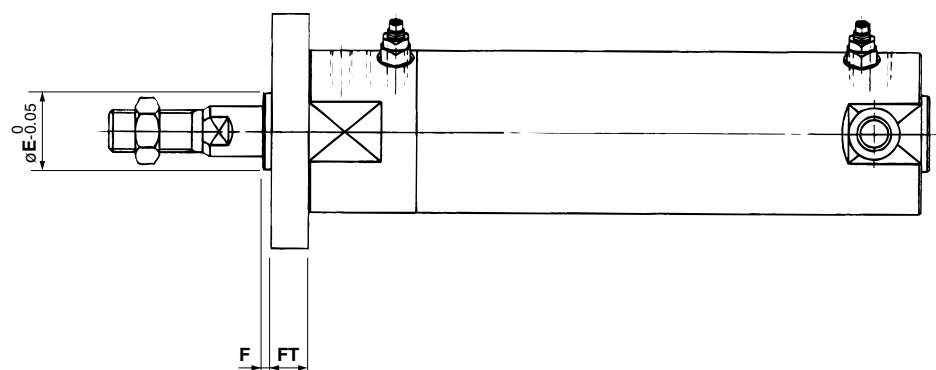
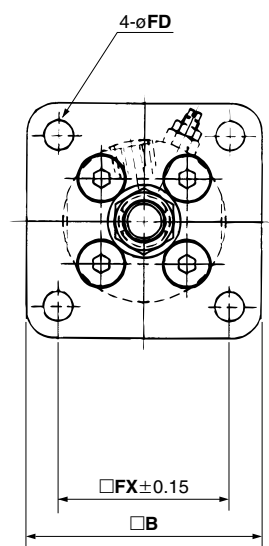
With rubber bumper



Bore size	B	E	F	FX	FD	FT
20	40	12	2	28	5.5	6
25	44	14	2	32	5.5	7
32	53	18	2	38	6.6	7
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9
80	104	40	3	82	11	11
100	128	50	3	100	14	14

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

With air cushion

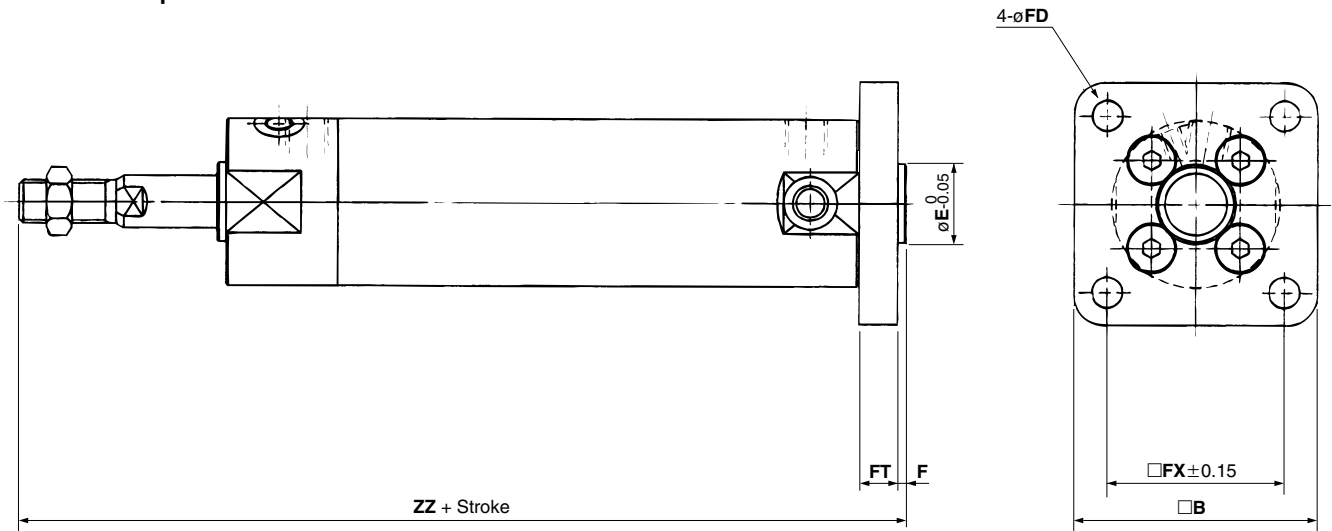


Bore size	B	E	F	FX	FD	FT
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

Head side flange style (G) / 10-11-**CG1G**, 21-22-**CG1G**

With rubber bumper

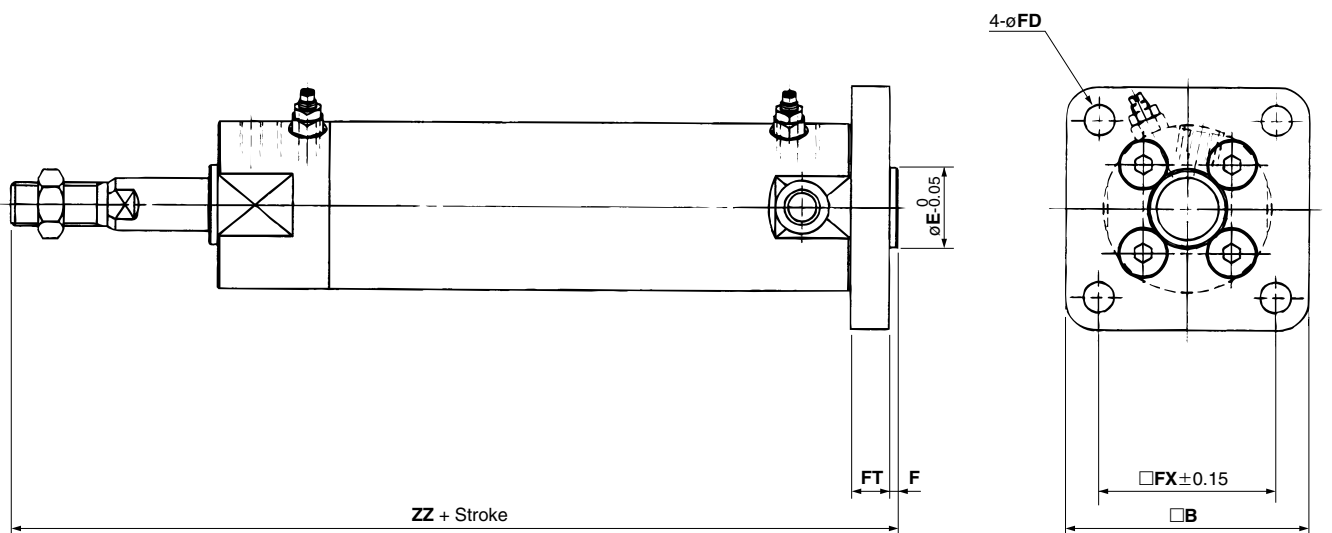


(mm)

Bore size	B	E	F	FX	FD	FT	ZZ
20	40	12	2	28	5.5	6	120
25	44	14	2	32	5.5	7	126
32	53	18	2	38	6.6	7	128
40	61	25	2	46	6.6	8	138
50	76	30	2	58	9	9	159
63	92	32	2	70	11	9	159
80	104	40	3	82	11	11	193
100	128	50	3	100	14	14	196

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

With air cushion



(mm)

Bore size	B	E	F	FX	FD	FT	ZZ
40	61	25	2	46	6.6	8	147
50	76	30	2	58	9	9	171
63	92	32	2	70	11	9	171

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

Series 10-/11-21-/22-CG1W

Double acting, double rod cylinder
 ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Clean series

10	Relief type
11	Vacuum suction type

Built-in magnet

Nil	No
D	With auto switch (Built-in magnet)

Type

N	Rubber bumper/ø20 to ø100
A	Air cushion/ø40 to ø63

Bore size (mm)

Port thread type

Nil	Rc
TN	NPT
TF	G

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Modeling Example 1: 10 - C D G 1 W L N 25 - 100 - H7B

Modeling Example 2: 21 - C D G 1 W L N 25 - 100 - H7B

Copper, fluorine and silicon-free + Low particle generation

21	Relief type
22	Vacuum suction type

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style

Type of auto switch

Reed switch	C73, B54
Solid state switch	H7B, H7A1, K59, G59

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
								Rubber	Air
Relief type	10-/21-CG1W□20	20	1/8	Non-lube	Double acting, double rod	25, 50, 75, 100, 125, 150, 200	Available	Available	Available (ø40 to ø63)
	10-/21-CG1W□25	25				25, 50, 75, 100, 125, 150, 200, 250, 300			
	10-/21-CG1W□32	32							
	10-/21-CG1W□40	40							
	10-/21-CG1W□50	50	1/4						
	10-/21-CG1W□63	63							
	10-/21-CG1W□80	80							
10-/21-CG1W□100	100	1/2							
Vacuum suction type	11-/22-CG1W□20	20	1/8			25, 50, 75, 100, 125, 150, 200			
	11-/22-CG1W□25	25				25, 50, 75, 100, 125, 150, 200, 250, 300			
	11-/22-CG1W□32	32							
	11-/22-CG1W□40	40							
	11-/22-CG1W□50	50	1/4						
	11-/22-CG1W□63	63							
	11-/22-CG1W□80	80		3/8					
	11-/22-CG1W□100	100	1/2						

Specifications

Item	Bore size (mm)
	20/25/32/40/50/63/80/100
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed	10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s
Stroke length tolerance	Up to 300 ^{+1.4} ₀ st mm
Mounting style	Basic style / Axial foot style / Rod side flange style
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 2, 21-: Grade 3 11-/22-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate l/min (ANR)
20/25/32/40	10
50/63/80/100	20

Auto Switch Specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Auto switch model	Applicable bore size	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	ø20 to ø63	24 VDC, 100 VAC	5 to 40 mA, 5 to 20 mA	Yes	Relay, PLC
	D-B54	ø20 to ø100	24 VDC, 100 VAC, 200 VAC	5 to 50 mA, 5 to 25 mA, 5 to 12.5 mA	Yes	Relay, PLC
Solid state switch	2-wire D-H7B	ø20 to ø63	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	D-K59	ø20 to ø100	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire D-H7A1	ø20 to ø63	28 VDC or less	40 mA or less	Yes	IC circuit, Relay, PLC
	D-G59	ø20 to ø100	28 VDC or less	40 mA or less	Yes	IC circuit, Relay, PLC

Refer to page 182 for a list of applicable auto switches.

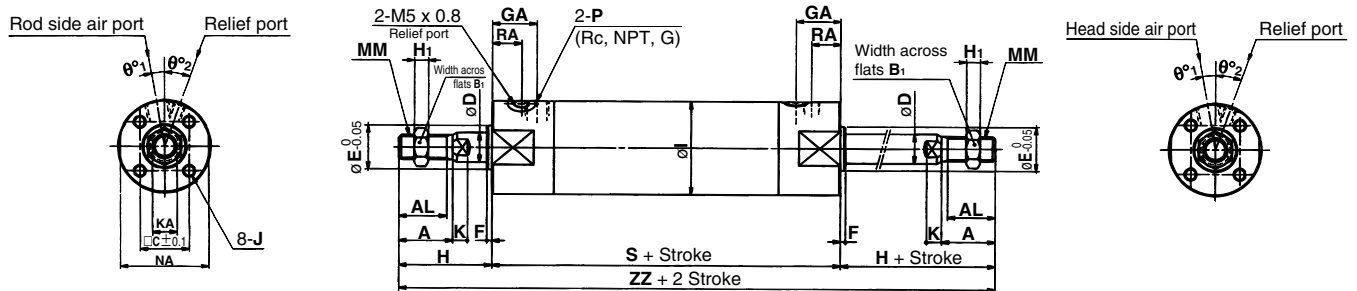
PLC: Programmable Logic Controller

Proper Auto Switch Mounting Position (Detection at stroke end)

Refer to page 35, Double acting, Single rod types.

Basic style (B) / 10-**CG1WB** 21-**CG1WB**

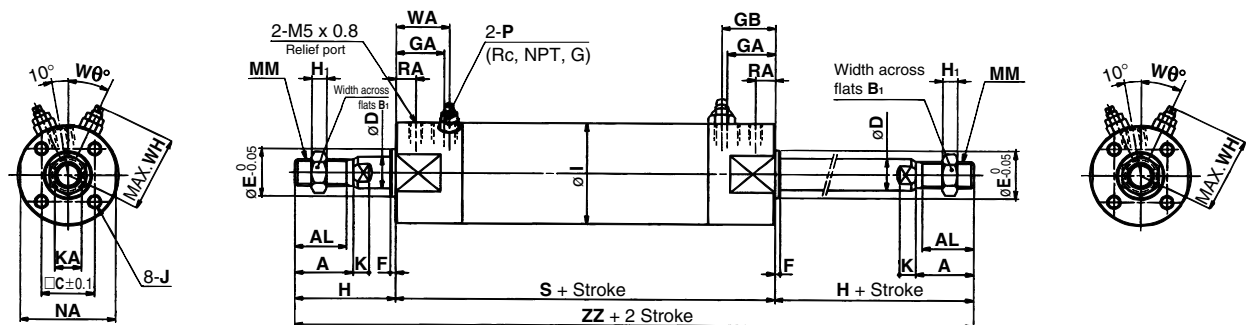
With rubber bumper



Bore size	A	AL	B ₁	C	D	E	F	GA	H	H ₁	I	J	K	KA	MM	NA	P	RA	S	θ ₁	θ ₂	ZZ
20	18	15.5	13	14	8	12	2	20	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8<M5 x 0.8>	7	93	0	0	163
25	22	19.5	17	16.5	10	14	2	20	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8<M5 x 0.8>	7	93	0	0	173
32	22	19.5	17	20	12	18	2	20<18>	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	7	95	0	0<23>	175
40	30	27	19	26	16	25	2	13<10>	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	9	87	10	23	187
50	35	32	27	32	20	30	2	14<12>	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	10	102	10	23	218
63	35	32	27	38	20	32	2	14<12>	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	10	102	10	20	218
80	40	37	32	50	25	40	3	20<17>	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80	3/8	10	122	10	20	264
100	40	37	41	60	30	50	3	20<17>	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100	1/2	10	122	10	20	264

Note) < >: Denotes the dimensions for G port.

With air cushion

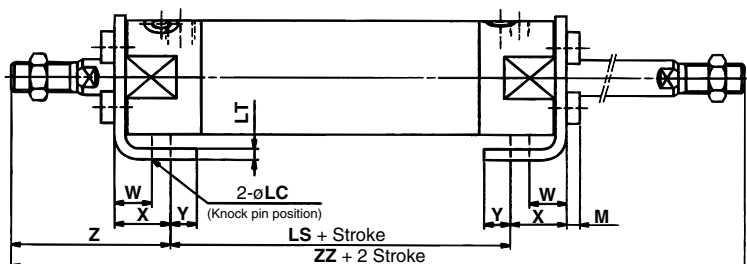
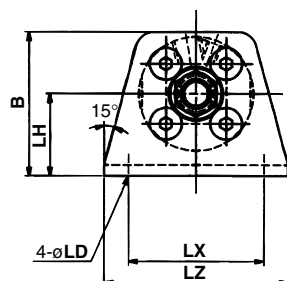


Bore size	A	AL	B ₁	C	D	E	F	GA	H	H ₁	I	J	K	KA	MM	NA	P	RA	S	WA	WH	Wθ	ZZ
40	30	27	19	26	16	25	2	22<19>	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	8	105	25	33	20°	205
50	35	32	27	32	20	30	2	26<24>	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	9	126	30	40.5	20°	242
63	35	32	27	38	20	32	2	26<24>	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	9	126	30	47.5	20°	242

Note) < >: Denotes the dimensions for G port.

Axial foot style (L) / 10-**CG1WL** 21-**CG1WL**

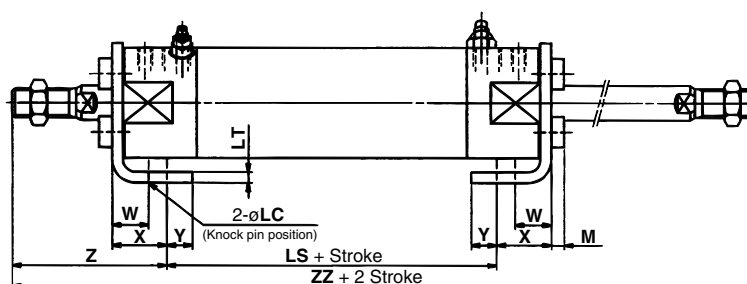
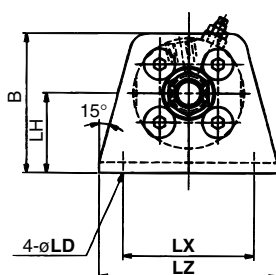
With rubber bumper



	(mm)													
Bore size	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
20	34	4	6	20	69	3	32	44	3	10	15	7	47	163
25	38.5	4	6	22	69	3	36	49	3.5	10	15	7	52	173
32	45	4	7	25	69	3	44	58	3.5	10	16	8	53	175
40	54.5	4	7	30	60	3	54	71	4	10	16.5	8.5	63.5	187
50	70.5	5	10	40	67	4.5	66	86	5	17.5	22	11	75.5	218
63	82.5	5	12	45	67	4.5	82	106	5	17.5	22	13	75.5	218
80	101	6	11	55	74	4.5	100	125	5	20	28.5	14	95	264
100	121	6	14	65	74	6	120	150	7	20	30	16	95	264

* Other dimensions are the same as basic style.

With air cushion

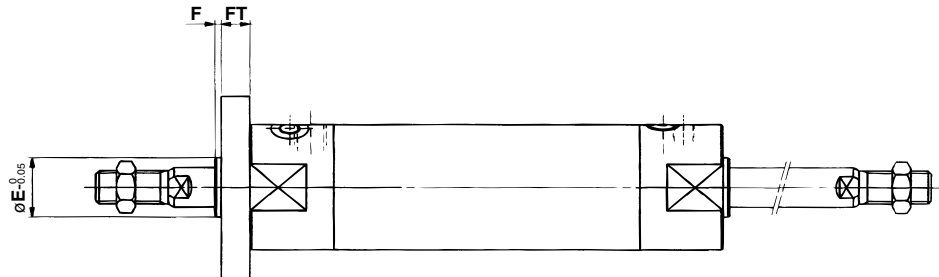
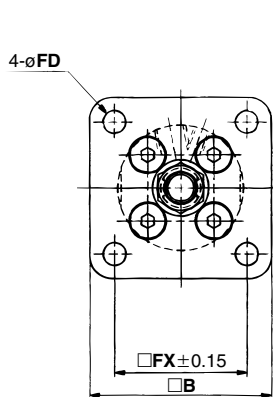


	(mm)													
Bore size	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
40	54.5	4	7	30	78	3	54	71	4	10	16.5	8.5	63.5	205
50	70.5	5	10	40	91	4.5	66	86	5	17.5	22	11	75.5	242
63	82.5	5	12	45	91	4.5	82	106	5	17.5	22	13	75.5	242

* Other dimensions are the same as basic style.

Rod side flange style (F) / ¹⁰⁻~~11-~~**CG1WF**, ²¹⁻~~22-~~**CG1WF**

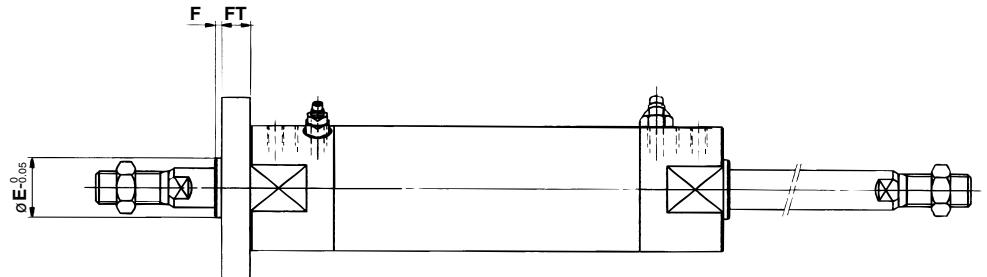
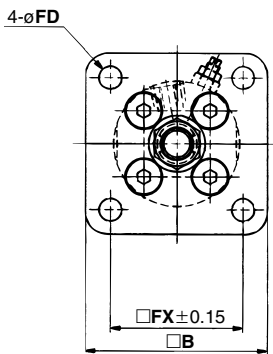
With rubber bumper



Bore size	B	E	F	FX	FD	FT
20	40	12	2	28	5.5	6
25	44	14	2	32	5.5	7
32	53	18	2	38	6.6	7
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9
80	104	40	3	82	11	11
100	128	50	3	100	14	14

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

With air cushion



Bore size	B	E	F	FX	FD	FT
40	61	25	2	46	6.6	8
50	76	30	2	58	9	9
63	92	32	2	70	11	9

Note) End boss is machined on the flange for øE.
* Other dimensions are the same as basic style.

Series 10-/11-21-/22-**CG1R** Direct mount type cylinder ø20, ø25, ø32, ø40, ø50, ø63

How to Order

● **Clean series**

10	Relief type
11	Vacuum suction type

● **Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)

● **Cushion**

N	Rubber bumper
---	---------------

● **Bore size (mm)**

● **Cylinder stroke (mm)**

● **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

● **Copper, fluorine and silicon-free + Low particle generation**

21	Relief type
22	Vacuum suction type

● **Port thread type**

Nil	Rc
TN	NPT
TF	G

● **Type of auto switch**

Reed switch	C73, B54
Solid state switch	H7B, H7A1, K59, G59

Example 1: 10 - C D G 1 R N 25 - 100 - H7B

Example 2: 21 - C D G 1 R N 25 - 100 - H7B

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion						
								Rubber	Air					
Relief type	10-/21-CG1RN20	20	1/8	Non-lube	Double acting Single rod	25, 50, 75, 100,125,150,	○	○	Not available					
	10-/21-CG1RN25	25				25, 50, 75, 100, 125,150,200								
	10-/21-CG1RN32	32				25, 50, 75, 100, 125,150,200 250,300								
	10-/21-CG1RN40	40												
	10-/21-CG1RN50	50												
10-/21-CG1RN63	63	1/4												
Vacuum suction type	11-/22-CG1RN20	20	1/8								25, 50, 75, 100,125,150,			
	11-/22-CG1RN25	25				25, 50, 75, 100, 125,150,200								
	11-/22-CG1RN32	32				25, 50, 75, 100, 125,150,200 250,300								
	11-/22-CG1RN40	40												
	11-/22-CG1RN50	50												
	11-/22-CG1RN63	63	1/4											

Specifications

Item	Bore size (mm)
	20/25/32/40/50/63
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed	10-/11-: 30 to 400 mm/s, 21-/22-: 50 to 400 mm/s
Stroke length tolerance	Up to 300 ^{+1.4} ₀ mm
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 2, 21-: Grade 3 11-/22-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

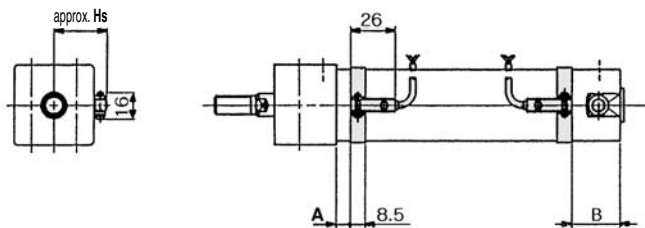
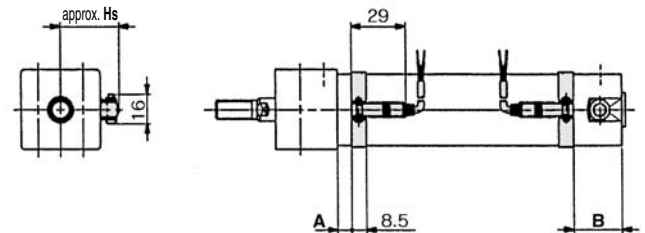
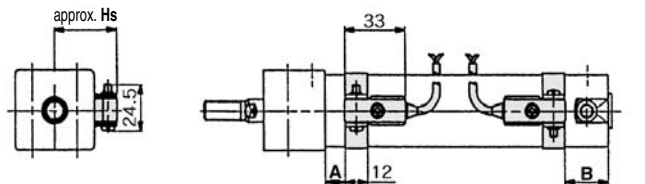
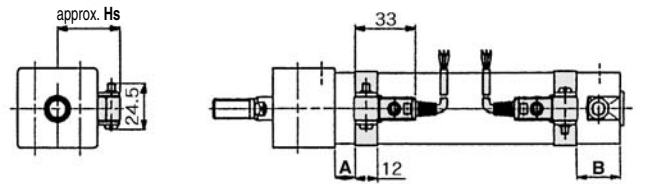
Bore size	Suction flow rate l/min (ANR)
20/25/32/40	10
50/63	20

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Auto switch model	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC, 100 VAC	5 to 40 mA, 5 to 20 mA	○	Relay, PLC
	D-B54	24 VDC, 100 VAC, 200 VAC	5 to 50 mA, 5 to 25 mA, 5 to 12.5 mA	○	Relay, PLC
Solid state switch	2-wire	D-H7B	24 VDC (10 to 28 VDC)	○	24 VDC relay, PLC
		D-K59	24 VDC (10 to 28 VDC)	○	24 VDC relay, PLC
	3-wire	D-H7A1	28 VDC or less	○	IC circuit, Relay, PLC
		D-G59	28 VDC or less	○	IC circuit, Relay, PLC

Refer to page 182 for a list of applicable auto switches.

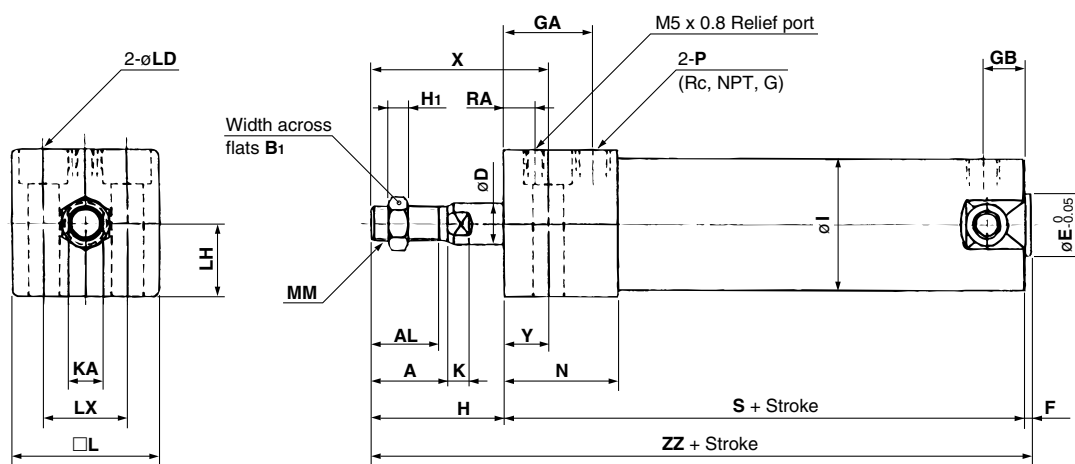
PLC: Programmable Logic Controller

Proper auto switch mounting position (Detection at stroke end)**D-C73****D-H7B/H7A1****D-B54****D-K59/G59**

(mm)

Bore size	D-C73			D-H7B/H7A1			D-B54			D-K59/G59		
	A	B	Hs	A	B	Hs	A	B	Hs	A	B	Hs
20	8.5	20.5	24.5	7.5	19.5	24.5	2.5	14.5	27.5	4	16	27.5
25	8.5	20.5	27	7.5	19.5	27	2.5	14.5	30	4	16	30
32	9.5	21.5	30.5	8.5	20.5	30.5	3.5	15.5	33.5	5	17	33.5
40	14.5	23.5	35	13.5	22.5	35	8.5	17.5	38	10	19	38
50	16.5	28.5	40.5	15.5	27.5	40.5	10.5	22.5	43.5	12	24	43.5
63	16.5	28.5	47.5	15.5	27.5	47.5	10.5	22.5	50.5	12	24	50.5

Note) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.

Basic style / 10-CG1RN**, 21-**CG1RN****

																											(mm)
Bore size	Stroke range	A	AL	B ₁	D	E	F	G	AG	B _H	H ₁	I	K	KA	L	LD	LH	LX	MM	N	P	RA	S	X	Y	ZZ	
20	Up to 150	18	15.5	13	8	12	2	20	10	27	5	26	5	6	30.4	ø5.5, ø9.5 counterbore depth 6	15	18	M8 x 1.25	27	1/8<M5 x 0.8>	7	75	38	11	104	
25	Up to 200	22	19.5	17	10	14	2	22	10	32	6	31	5.5	8	36.4	ø6.6, ø11 counterbore depth 7	18	22	M10 x 1.25	29	1/8<M5 x 0.8>	9	77	44	12	111	
32	Up to 200	22	19.5	17	12	18	2	26	10	32	6	38	5.5	10	42.4	ø9, ø14 counterbore depth 9	21	24	M10 x 1.25	33	1/8	9	83	45	13	117	
40	Up to 300	30	27	19	16	25	2	30	10	39	8	47	6	14	52.4	ø11, ø17.5 counterbore depth 12	26	32	M14 x 1.5	37	1/8	11	94	55	16	135	
50	Up to 300	35	32	27	20	30	2	33	12	45	11	58	7	18	64.5	ø14, ø20 counterbore depth 14	32	41	M18 x 1.5	44	1/4	12	108	62	17	155	
63	Up to 300	35	32	27	20	32	2	39	12	45	11	72	7	18	76.6	ø18, ø26 counterbore depth 18	38	46	M18 x 1.5	50	1/4	12	114	64	19	161	

Note) < >: Denotes the dimensions for G port.

Series 10-/11-21-/22-CA2

Air cylinder ø40, ø50, ø63

How to Order



Clean series

10	Relief type
11	Vacuum suction type

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style

Bore size (mm)

Port thread type

Nil	Rc
TN	NPT
TF	G

Modeling Example:

10 - C D A 2 B 40 - 150 - Y59B

21 - C D A 2 B 40 - 150 - Y59B

Built-in magnet

Nil	No
D	With auto switch (Built-in magnet)

Copper, fluorine and silicon-free + Low particle generation

21	Relief type
22	Vacuum suction type

Cylinder stroke (mm)

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Type of auto switch

Reed switch	Z7□, A54/A59W
Solid state switch	J51/F5□, Y5□/Y7□

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion
Relief type	10-/21-CA2□40	40	1/4	Non-lube	Double acting, single rod	50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500	Available	Air cushion
	10-/21-CA2□50	50	3/8					
	10-/21-CA2□63	63						
Vacuum suction type	11-/22-CA2□40	40	1/4					
	11-/22-CA2□50	50	3/8					
	11-/22-CA2□63	63						

Note) Consult SMC for long stroke.

Specifications

Item	Bore size (mm)
	40/50/63
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)
Piston speed	50 to 400 mm/s
Stroke length tolerance	Up to 250st ^{+1.0} mm 251 to 1000st ^{+1.4} mm
Mounting style	Basic style / Axial foot style / Rod side flange style / Head side flange style
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 2, 21-: Grade 3 11-/22-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate ℓ /min (ANR)
40	10
50/63	20

Applicable auto switch (Refer to Best Pneumatics catalog for further information on auto switches.)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)*			Pre-wire connector	Applicable load			
					DC	AC		Tie-rod mount	0.5 (Nil)	3 (L)				5 (Z)	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	Z76	●	●	—	—	IC circuit	—	
				2-wire	24V	12V	100V	Z73	●	●	●	—	—	Relay, PLC	
		100V, 200V				A54	●	●	●	—					
	Diagnostic indication (2-color indication)	Grommet		—	—	A59W	●	●	—	—					
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	Y59A	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)			Y7P	●	●	○	○				
				2-wire	—	—	100V, 200V	J51	●	●	○	—	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24V	5V, 12V	—	Y59B	●	●	○	○	IC circuit		
				3-wire (PNP)				Y7NW	●	●	○	○			
				Y7PW				●	●	○	○				
				2-wire				12V	Y7BW	●	●	○	○		—
				Y7BA				—	●	○	○				
				4-wire (NPN)				5V, 12V	F59F	●	●	○	○		IC circuit

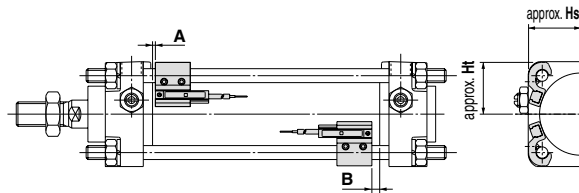
* Lead wire length symbols: 0.5m.....Nil (Example) A54
 3 m.....L (Example) A54L
 5 m.....Z (Example) A54Z

* Solid state switches marked with "○" are produced upon receipt of order.

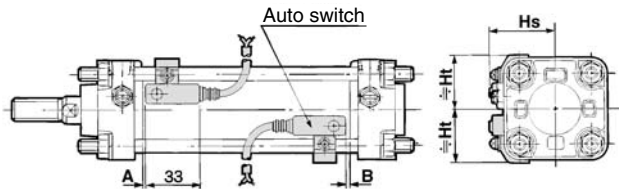
Refer to page 182 for a list of applicable auto switches.

Proper auto switch mounting position (Detection at stroke end) and its mounting height

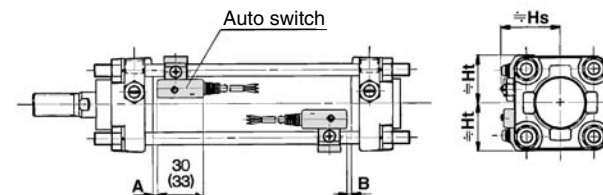
D-Z7□
 D-Y59□/Y69□/Y7P/Y7PV
 D-Y7□W/Y7□WV
 D-Y7BAL



D-A5□
 D-A59W



D-F5□/J5□



Values inside () are for D-F5LF.

Proper auto switch mounting position (mm)

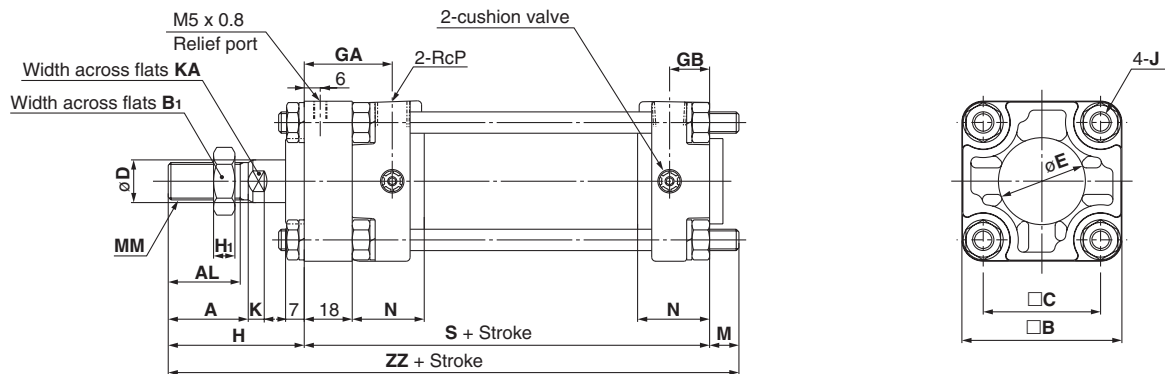
Auto switch model	D-Z7□ D-Y59□ D-Y7P D-Y7□W D-Y7BAL		D-A54		D-A59W		D-J51 D-F59F	
	A	B	A	B	A	B	A	B
Bore size (mm)								
40	3.5	1.5	0	0	4	2	7	4
50	3.5	1.5	0	0	4	2	6.5	4.5
63	6	5	2.5	1.5	6.5	5.5	12.5	8

Note) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.

Auto switch mounting height (mm)

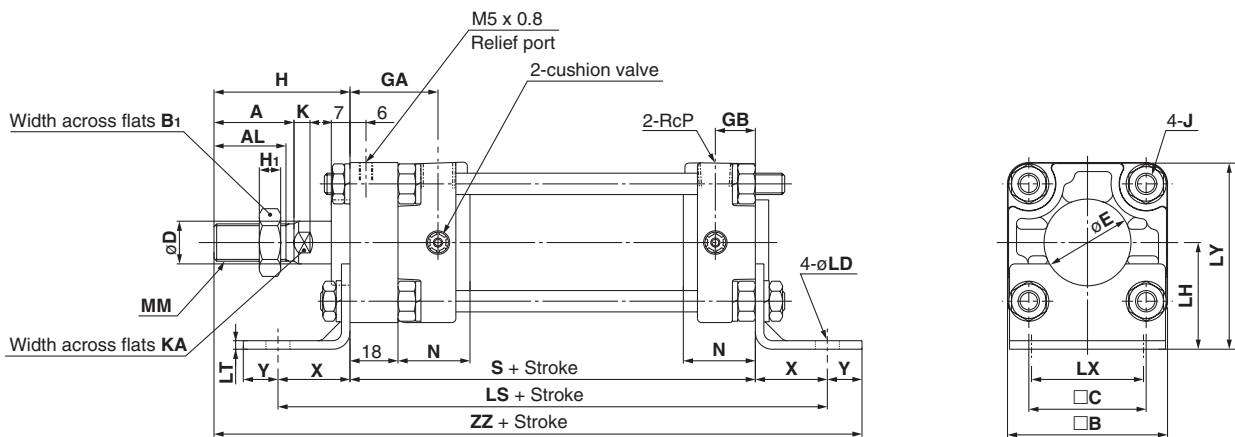
Auto switch model	D-Z7□ D-Y59□ D-Y7P D-Y7□W D-Y7BAL		D-A54 D-A59W		D-J51 D-F59F	
	Hs	Ht	Hs	Ht	Hs	Ht
Bore size (mm)						
40	30	30	38.5	31.5	38	31.5
50	34	34	42	35.5	42	35.5
63	41	41	46.5	43	47	43

Basic style (B) / ¹⁰⁻CA2B, ²¹⁻CA2B



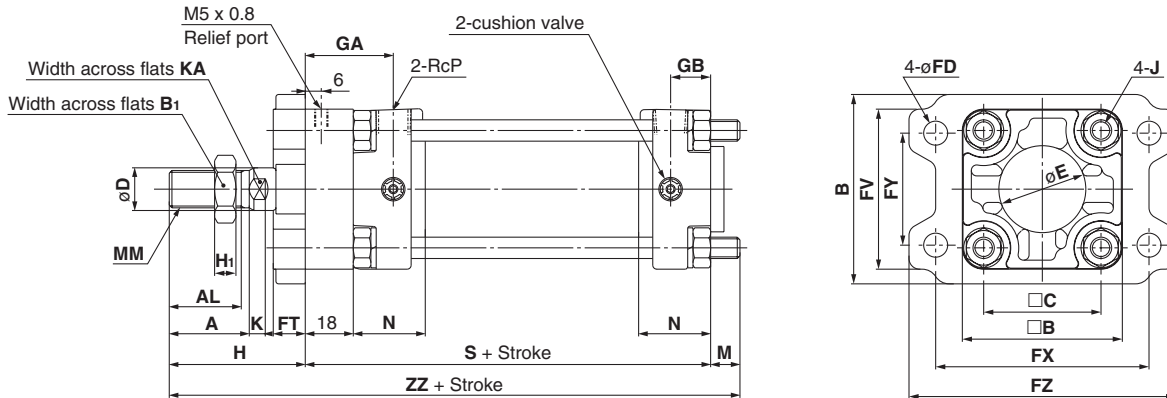
(mm)																					
Symbol	Stroke range	A	AL	B	B ₁	C	D	E	GA	GB	H	H ₁	J	K	KA	M	MM	N	P	S	ZZ
Bore size																					
40	Up to 1000	30	27	60	22	44	16	32	33	15	51	8	M8 x 1.25	6	14	11	M14 x 1.5	27	1/4	102	164
50	Up to 1000	35	32	70	27	52	20	40	35	17	58	11	M8 x 1.25	7	18	11	M18 x 1.5	30	3/8	108	177
63	Up to 1000	35	32	85	27	64	20	40	35	17	58	11	M10 x 1.25	7	18	14	M18 x 1.5	31	3/8	116	188

Axial Foot Style (L) / ¹⁰⁻CA2L, ²¹⁻CA2L



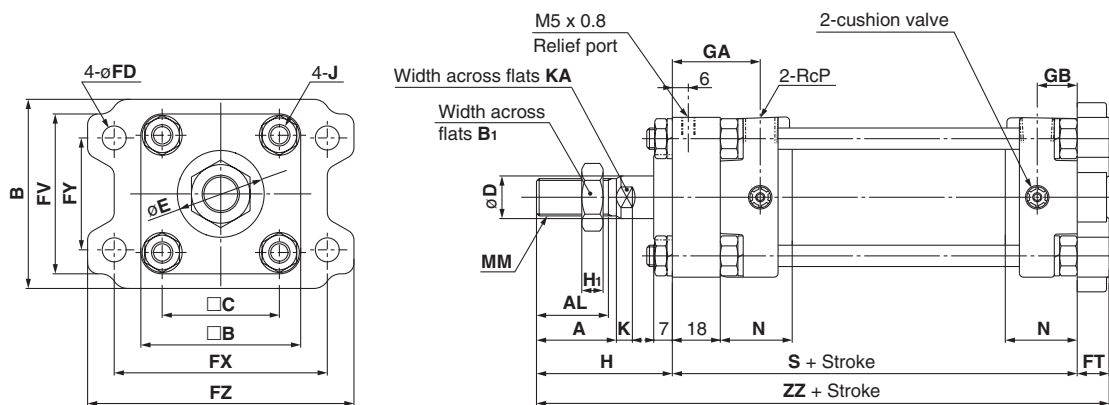
(mm)																												
Symbol	Stroke range	A	AL	B	B ₁	C	D	E	GA	GB	H	H ₁	J	K	KAL	DL	LS	LT	LX	LY	MM	N	P	S	X	Y	ZZ	
Bore size																												
40	Up to 1000	30	27	60	22	44	16	32	33	15	51	8	M8 x 1.25	6	14	9	40	156	3.2	42	70	M14 x 1.5	27	1/4	102	27	13	193
50	Up to 1000	35	32	70	27	52	20	40	35	17	58	11	M8 x 1.25	7	18	9	45	162	3.2	50	80	M18 x 1.5	30	3/8	108	27	13	206
63	Up to 1000	35	32	85	27	64	20	40	35	17	58	11	M10 x 1.25	7	18	11.5	50	184	3.2	59	93	M18 x 1.5	31	3/8	116	34	16	224

Rod side flange style (F) / 10-11-CA2F, 21-22-CA2F



(mm)																												
Symbol	Stroke range	A	AL	B	□B	B ₁	□C	D	E	FV	FD	FT	FX	FY	FZ	GAG	B	H	H ₁	J	K	KA	M	MM	N	P	S	ZZ
Bore size																												
40	Up to 1000	30	27	71	60	22	44	16	32	60	9	12	80	42	100	33	15	51	8	M8 x 1.25	6	14	11	M14 x 1.5	27	1/4	102	164
50	Up to 1000	35	32	81	70	27	52	20	40	70	9	12	90	50	110	35	17	58	11	M8 x 1.25	7	18	11	M18 x 1.5	30	3/8	108	177
63	Up to 1000	35	32	101	85	27	64	20	40	86	11.5	15	105	59	130	35	17	58	11	M10 x 1.25	7	18	14	M18 x 1.5	31	3/8	116	188

Head side flange style (G) / 10-11-CA2G, 21-22-CA2G



(mm)																												
Symbol	Stroke range	A	AL	B	□B	B ₁	□C	D	E	FV	FD	FT	FX	FY	FZ	GAG	B	H	H ₁	J	K	KA	M	MM	N	P	S	ZZ
Bore size																												
40	Up to 1000	30	27	71	60	22	44	16	32	60	9	12	80	42	100	33	15	51	8	M8 x 1.25	6	14	11	M14 x 1.5	27	1/4	102	165
50	Up to 1000	35	32	81	70	27	52	20	40	70	9	12	90	50	110	35	17	58	11	M8 x 1.25	7	18	11	M18 x 1.5	30	3/8	108	178
63	Up to 1000	35	32	101	85	27	64	20	40	86	11.5	15	105	59	130	35	17	58	11	M10 x 1.25	7	18	14	M18 x 1.5	31	3/8	116	189

Series 10-11-CUJ

Mini-free mount cylinder ø6, ø8, ø10

How to Order

Double acting

10-C D UJB 6-8 D F8N

• **Clean series**

10	Relief type
11	Vacuum suction type

• **Built-in magnet**

Nil	No
D	Yes (Built-in)

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.

*M9□ includes one auto switch.

• **Type of auto switch**

Nil	Without auto switch
-----	---------------------

* For the applicable auto switch model, refer to the table (2) below.

• **Rod end thread**

Nil	Rod end female thread
M	Rod end male thread

• **Stroke**
Refer to Table (1).

• **Bore size**

6	6mm
8	8mm
10	10mm



Table(1) Standard stroke

Action	Bore size (mm)	Standard stroke (mm)
Double acting	6	4, 6, 8, 10, 15
	8, 10	4, 6, 8, 10, 15, 20

Table(2) Applicable auto switch (Refer to Best Pneumatics catalog for further information on auto switches.)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) *			Applicable load		
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
							Perpendicular	In-line						
switch Solid state	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	—	M9N	●	●	○	—	Relay, PLC
				2-wire		12V		F8N	—	●	●	○		
					—			M9B	●	●	○			
					F8B			—	●	●	○			

* Lead wire length symbols: 0.5m..... Nil (Example) F8N
3 m..... L (Example) F8NL

* Auto switches marked with "○" are produced upon receipt of order.

Refer to page 182 for a list of applicable auto switches.

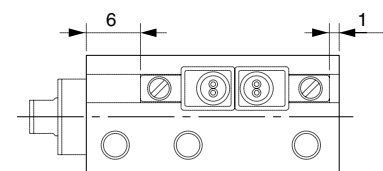
Specifications

Bore size (mm)	6	8	10
Action	Double acting		
Fluid	Air		
Proof pressure	1.05MPa		
Minimum operating pressure	Double acting	0.15MPa	0.1MPa
Maximum operating pressure	0.7MPa		
Ambient and fluid temperature	Without auto switch: -10°C to 70°C (No freezing) With auto switch: -10°C to 60°C (No freezing)		
Cushion	None		
Lubrication	Non-lube		
Piston speed	50 to 400 mm/s		
Thread tolerance	JIS Class 2		
Stroke length tolerance	+0.5 0		
Mounting	Through-hole		
Grease	Fluorine grease		
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 2, 11-: Grade 1		

Auto switch

Proper auto switch mounting position (Detection at stroke end) (ø6, ø8, ø10 common)

D-F8N/F8B



Note) The above values should be used as a guide for detection at stroke end. When actually mounting the auto switch, adjust the position after confirming the operating conditions of the auto switch.

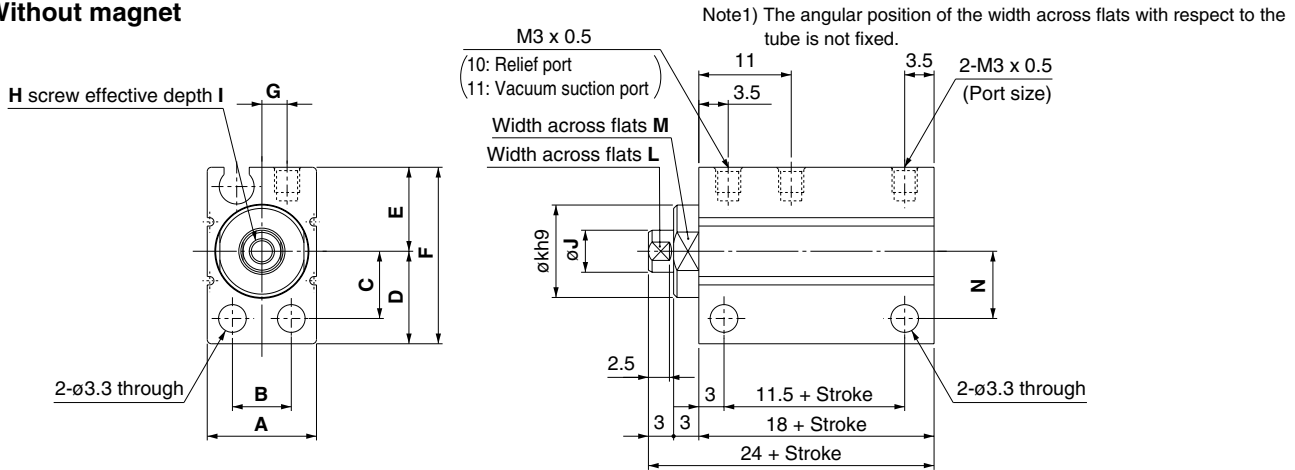
Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate d/min (ANR)
6/8	2
10	3

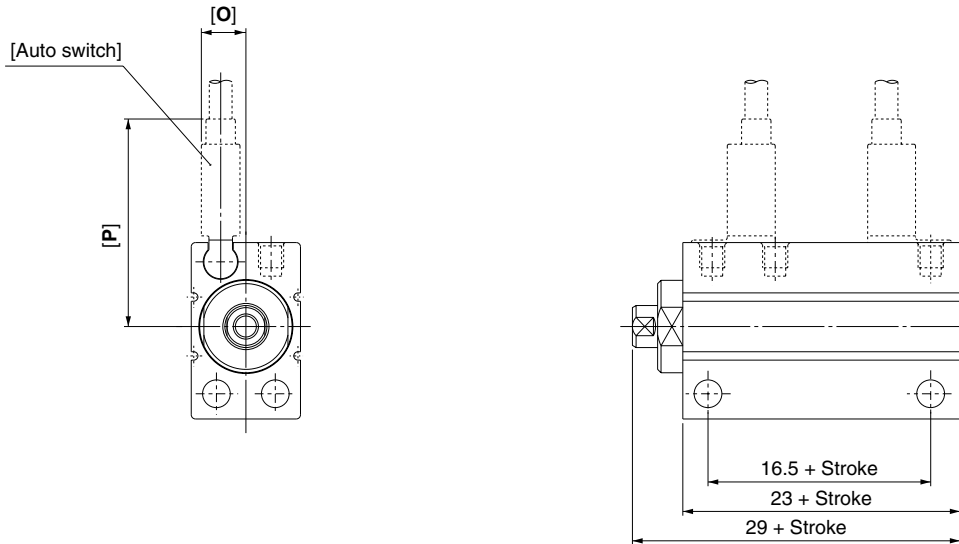
Dimensions ø6 to ø10

10
11 -C(D)UJB

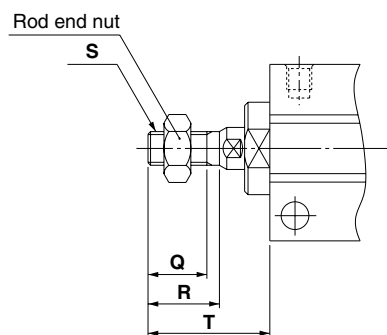
Without magnet



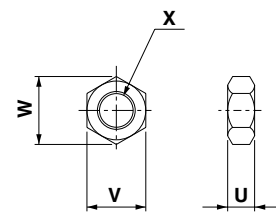
Built-in magnet



Rod end male thread



Rod end nut / Accessory (Option)



Rod end male thread (mm)				
Bore size	Q	R	S	T
6	5.5	6.5	M3 x 0.5	12.5
8	7	8.5	M4 x 0.7	14.5
10	9	10.5	M5 x 0.8	16.5

(mm)					
Part no.	Applicable bore size	U	V	W	X
NTJ-006A	6	2.4	5.5	6.4	M3 x 0.5
NTJ-010A	8	3.2	7	8.1	M4 x 0.7
NTJ-015A	10	4	8	9.2	M5 x 0.8

Standard

(mm)																
Bore size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	13	7	7	10	9	19	3	M2.5 x 0.45	5	4	9	3.5	8	7	5.3	24
8	13	7	8	11	10	21	3	M3 x 0.5	6	5	11	4.5	10	8	5.3	25
10	13.5	7	8.5	11.5	10.5	22	3.2	M3 x 0.5	6	6	12	5	11	8.5	5.6	25.5



Specific product precautions

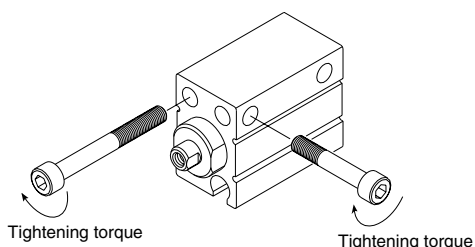
Be sure to read before handling.

Mounting

⚠ Caution

When mounting a mini-free mount cylinder, tighten the bolts with the proper tightening torque.

	Bolt	Appropriate tightening torque (N·m)
ø6	M3 x 0.5	1.06
ø8		
ø10		

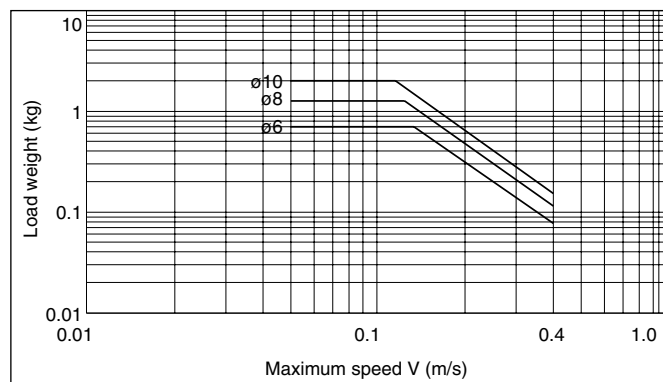


Allowable kinetic energy

⚠ Caution

When driving an inertial load, operate a cylinder with kinetic energy within the allowable value. The range in the chart below that is delineated by bold solid lines indicates the relation between load weights and maximum driving speeds.

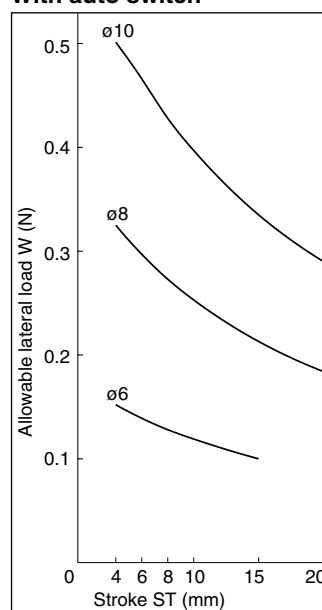
Bore size (mm)	6	8	10
Piston speed (m/s)	0.05 to 0.4		
Allowable kinetic energy (J)	6.25×10^{-3}	9.35×10^{-3}	12.5×10^{-3}



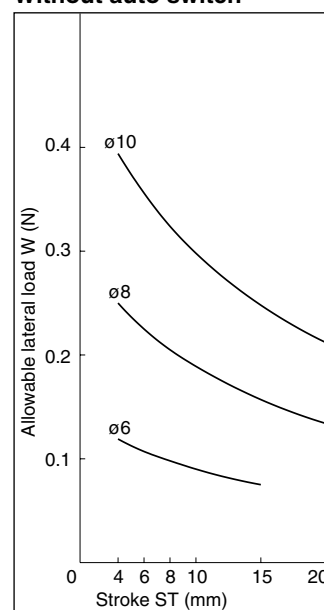
Selection

Strictly observe the limiting range of lateral load on a piston rod. (See the graphs below.) If this product is used beyond the limits, it may shorten the machine life or cause damage.

With auto switch



Without auto switch



Series 10-/11- 21-/22-CDU

Free mount cylinder / ø6, ø10, ø16, ø20, ø25

How to Order

Clean series

10	Relief type
11	Vacuum suction type

Built-in magnet

D	Built-in magnet
---	-----------------

Bore size (mm)

10 - C D U 16 - 30 D - M9B

21 - C D U 16 - 30 D - M9B

Cylinder stroke (mm)

Copper, fluorine and silicon-free + low particle generation

21	Relief type
22	Vacuum suction type

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

Type of auto switch

Reed switch	D-A93
Solid state switch	D-M9N, D-M9B

Action

D	Double acting
---	---------------



Model

Model		Cushion Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
								Rubber	Air
Relief type	10-/21-CDU6	6	M5 x 0.8	Non-lube	Double acting single rod	5, 10, 15, 20, 25, 30	○	○	—
	10-/21-CDU10	10				5, 10, 15, 20, 25, 30, 40, 50			
	10-/21-CDU16	16							
	10-/21-CDU20	20							
	10-/21-CDU25	25							
Vacuum suction type	11-/22-CDU6	6				5, 10, 15, 20, 25, 30, 40, 50			
	11-/22-CDU10	10							
	11-/22-CDU16	16							
	11-/22-CDU20	20							
	11-/22-CDU25	25							

Specifications

Bore size (mm)		6	10/16	20/25
Item				
Proof pressure		1.05MPa		
Max. operating pressure		0.7MPa		
Min. operating pressure		0.12MPa	0.06MPa	0.05MPa
Ambient and fluid temperature		Without auto switch : -10°C to 70°C With auto switch : -10°C to 60°C (With no condensation)		
Piston speed		50 to 400mm/s		
Stroke length tolerance		+1.0 0		
Grease		10-/11-: Fluorine grease 21-/22-: Lithium soap base grease		
Particle generation grade		10-: Grade 2, 21-: Grade 3		
(Refer to front matter pages 13 to 22 for details.)		11-/22-: Grade 1		

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate l/min (ANR)
6	6
10	10
16/20/25	12

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Switch type	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-A93	24 VDC	5 to 40mA (24 VDC)	○	Relay, PLC
Solid state switch	2-wire type D-M9B	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC
	3-wire type D-M9N	24 VDC (10 to 28 VDC)	5 to 40mA	○	24 VDC Relay, PLC

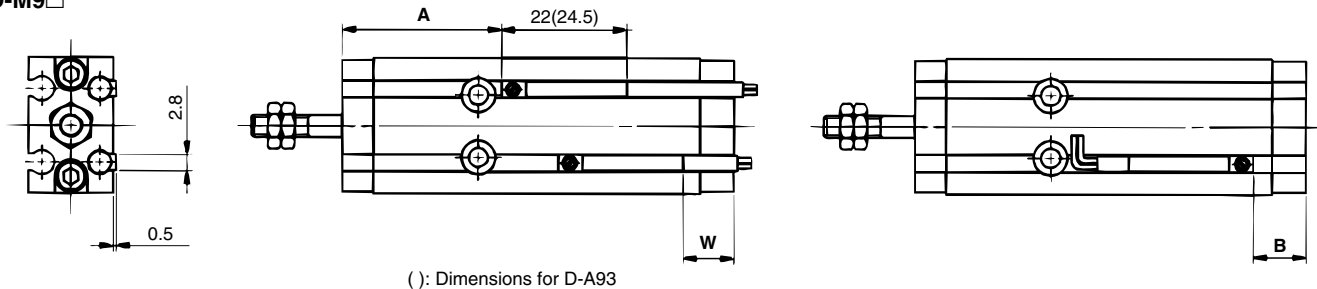
Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

Auto switches / Proper mounting position at stroke end detection

D-A9□

D-M9□



Bore size (mm)	D-A9□			D-M9□		
	A	B	W	A	B	W
6	29.5	5.5	-3.5(-1)	33.5	9.5	0.5
10	29.5	9.5	-7.5(-5)	33.5	13.5	-3.5
16	36	11.5	-9.5(-7)	40	15.5	-5.5
20	41	15	-13(-10.5)	45	19	-9
25	40.5	16.5	-14.5(-12)	45.5	20.5	-10.5

Note 1) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) The negative values in the table indicate that the auto switch is mounted inside the cylinder body in case of W and outside in case of B.

Note 3) In case of 5mm stroke (with 1 pc.) or 10mm stroke (2 pcs.), the switch(es) may not go off or more than one switch may turn on simultaneously. Set them at 1 to 4mm out of the values in the above table.

Note 4) (): Dimensions for D-A93.



Specific Product Precautions

Be sure to read before handling.

Mounting

Caution

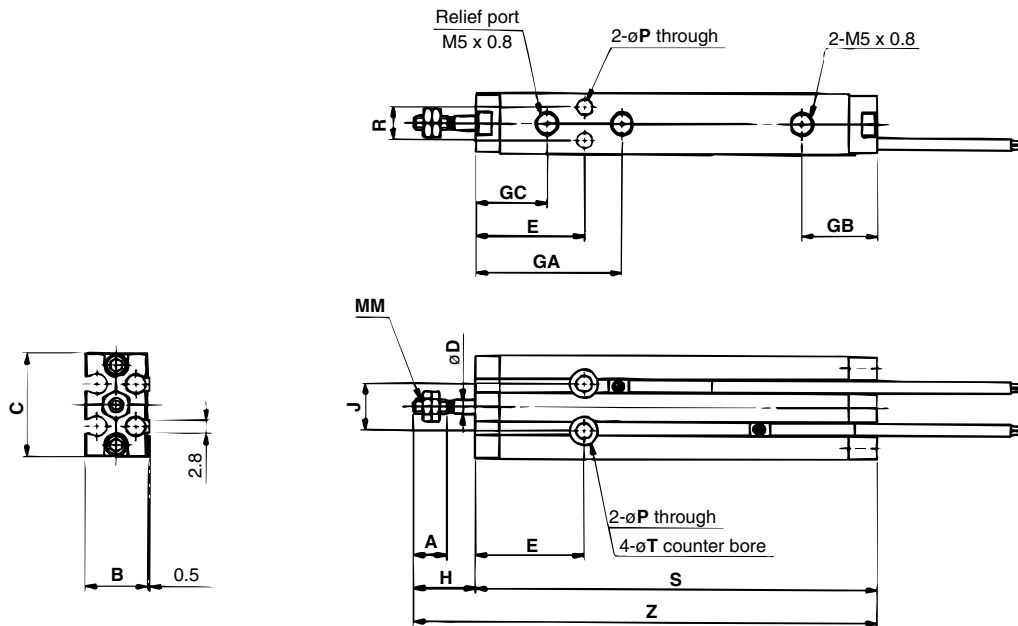
1. Observe the proper tightening torque in the right table in mounting.

Appropriate tightening torque

Bore size (mm)	Hexagon socket head cap bolt size(mm)	Appropriate tightening torque N·m
ø6, ø10	M3	1.08 ±10%
ø16	M4	2.45 ±10%
ø20, ø25	M5	5.10 ±10%

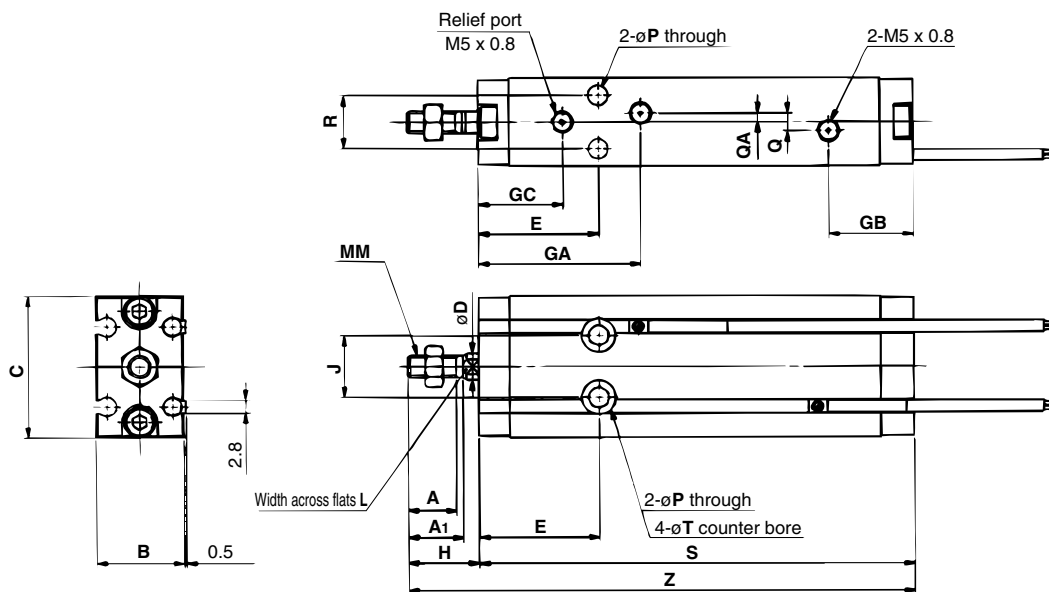
¹⁰⁻CDU6 to 25, ²¹⁻CDU6 to 25

ø6/ø10



Bore size	A	B	C	D	E	GA	GB	GC	H	J	MM	P	R	T	S						Z					
															5	10	15	20	25	30	5	10	15	20	25	30
6	7	13	22	3	23	31	16	15	13	10	M3 x 0.5	3.2	7	6 depth 4.8	60	65	70	75	80	85	73	78	83	88	93	98
10	10	15	24	4	24	33.5	16	15.5	16	11	M4 x 0.7	3.2	9	6 depth 5	64	69	74	79	84	89	80	85	90	95	100	105

ø16 to ø25



(mm)																																		
Bore size	A	A ₁	B	C	D	E	GA	GB	GC	H	J	L	MM	P	Q	QA	R	T	S								Z							
	5	10	15	20	25	30	40	50	5	10	15	20	25	30	40	50																		
16	11	12.5	20	32	6	27	36.5	19	19	16	14	5	M5 x 0.8	4.5	4	2	12	7.6 depth 6.5	72.5	77.5	82.5	87.5	92.5	97.5	—	—	88.5	93.5	98.5	103.5	108.5	113.5	—	—
20	12	14	26	40	8	30	40	21.5	22	19	16	6	M6 x 1.0	5.5	9	4.5	16	9.5 depth 8	81	86	91	96	101	106	116	126	100	105	110	115	120	125	135	145
25	15.5	18	32	50	10	29	40.5	22	22	23	20	8	M8 x 1.25	5.5	9	4.5	20	9.5 depth 9	83	88	93	98	103	108	118	128	106	111	116	121	126	131	141	151

Series 10-/21-11-/22-CQS

Compact cylinder ø12, ø16, ø20, ø25

How to Order



Mounting style

B	Through-hole/Both ends tapped (standard)
----------	--

Bore size (mm)

Cylinder stroke (mm)
*Refer to the table below for standard strokes.

Clean series

10	Relief type
11	Vacuum suction type

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

With auto switch

Nil	No
D	With auto switch (Built-in magnet)

Copper, fluorine and silicon-free + Low particulate generation

21	Relief type
22	Vacuum suction type

Action

D	Double acting
----------	---------------

Type of auto switch (With auto switch)

Nil	Without auto switch (Built-in magnet cylinder)
------------	--

*For auto switch part numbers, refer to the next page.
*Auto switch is packaged together (not assembled).

Rod end thread

Nil	Standard (Rod end female thread)
M	Rod end male thread

Example model numbers: 10 - C D Q S B 12 - 5 D - M9B, 21 - C D Q S B 12 - 5 D - M9B

Model

	Model	Bore size (mm)	Port size	Relief port	Action	Standard stroke (mm)
Relief type	10-/21-CQSB12	12	M5 x 0.8	M5 x 0.8	Double acting Single rod	5, 10, 15, 20, 25, 30
	10-/21-CQSB16	16				5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	10-/21-CQSB20	20				5, 10, 15, 20, 25, 30
	10-/21-CQSB25	25				5, 10, 15, 20, 25, 30, 35, 40, 45, 50
Vacuum suction type	11-/22-CQSB12	12				5, 10, 15, 20, 25, 30
	11-/22-CQSB16	16				5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	11-/22-CQSB20	20				5, 10, 15, 20, 25, 30
	11-/22-CQSB25	25				5, 10, 15, 20, 25, 30, 35, 40, 45, 50

Specifications

Item	Bore size (mm)
	12/16/20/25
Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	Without auto switch : -10°C to 70°C With auto switch : -10°C to 60°C (With no condensation)
Cushion	No
Piston speed	30 to 400 mm/s
Stroke length tolerance	+1.0 0
Mounting	Through-hole, Both ends tapped
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap base grease
Particle generation grade	10-/21-: Grade 2 11-/22-: Grade 1
(Refer to front matter pages 13 to 22 for details.)	

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate l/min (ANR)
12/16/20/25	5

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

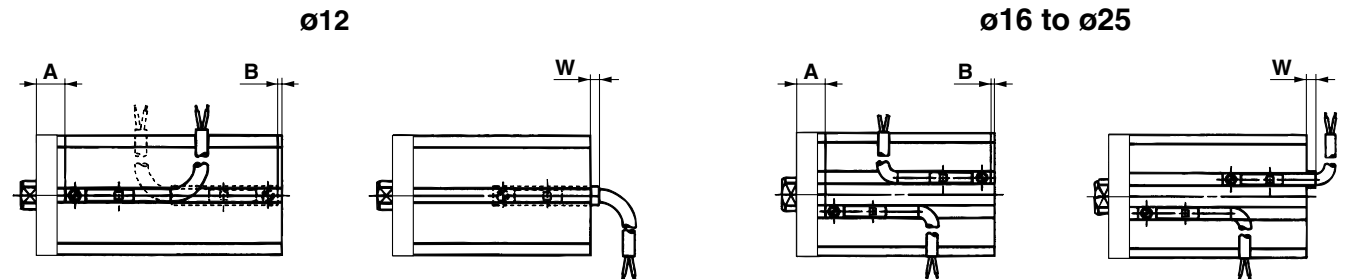
Contact point	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-A93	24 VDC, 100 VAC	5 to 40mA, 5 to 20mA	○	Relay, PLC
Solid state switch	2-wire type D-M9B	24 VDC (10 to 28 VDC)	2.5 to 40mA	○	24 VDC Relay, PLC
	3-wire type D-M9N, D-M9P	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

Refer to applicable auto switch list — Page 182.

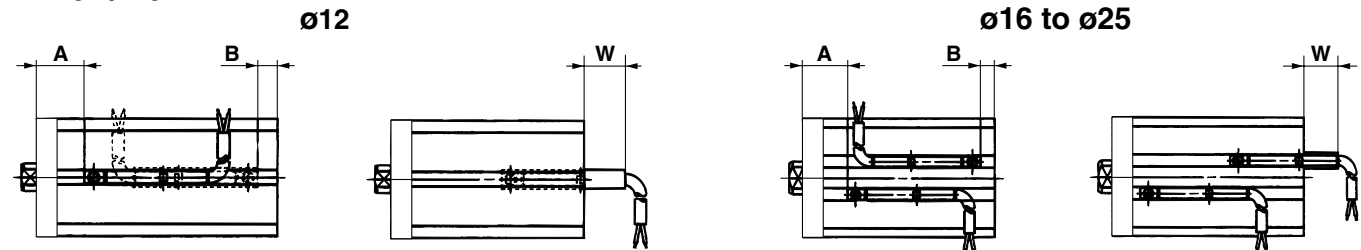
PLC: Programmable Logic Controller

Auto Switch / Proper Mounting Positions for Stroke End Detection

D-A93



D-M9B/M9N



Bore size (mm)	D-A93			D-M9B/M9N/M9P		
	A	B	W	A	B	W
12	11.5	0.5	4	15.5	4.5	5.5
16	12	0	4.5	16	4	6
20	16	3.5	1	20	7.5	2.5
25	17	5.5	-1	21	9.5	0.5



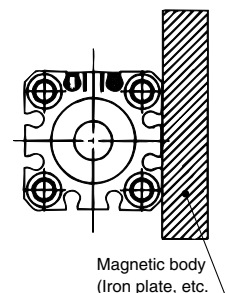
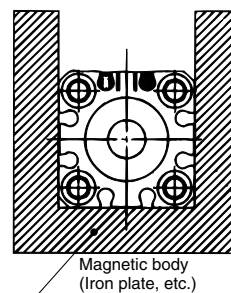
Specific Product Precautions

Be sure to read before handling.

Caution on mounting

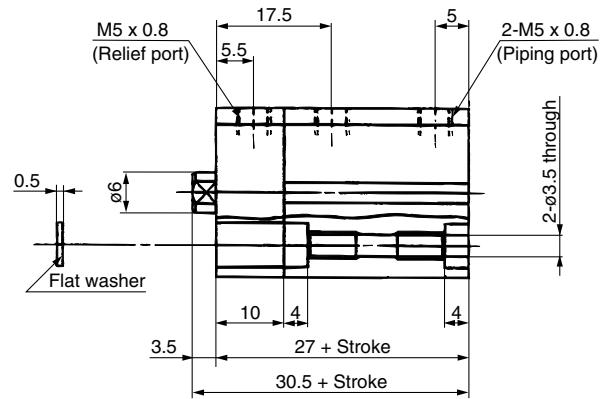
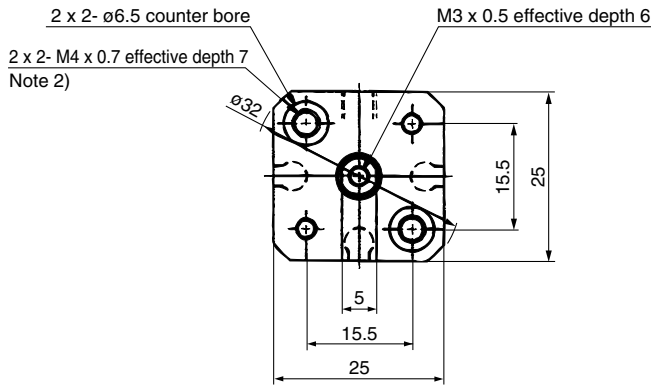
⚠ Caution

- When a magnetic object comes in close proximity with the cylinder as shown in the right picture (including proximity on one side only), the auto switch operation may become unstable. Consult SMC in such cases.

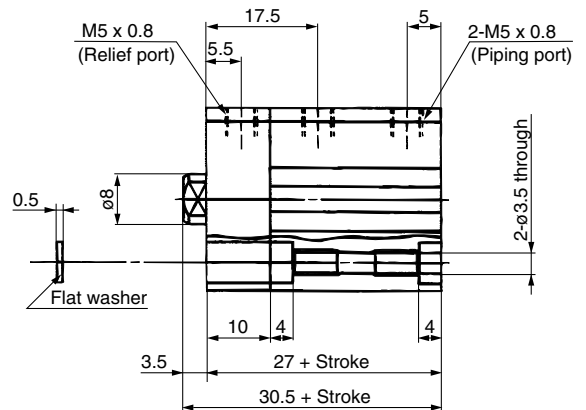
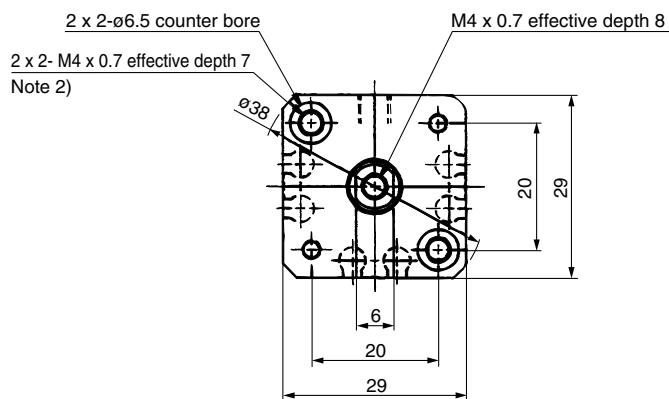


Standard / ¹⁰⁻₁₁₋10-CQSB12 to 25, ²¹⁻₂₂₋11-CQSB12 to 25

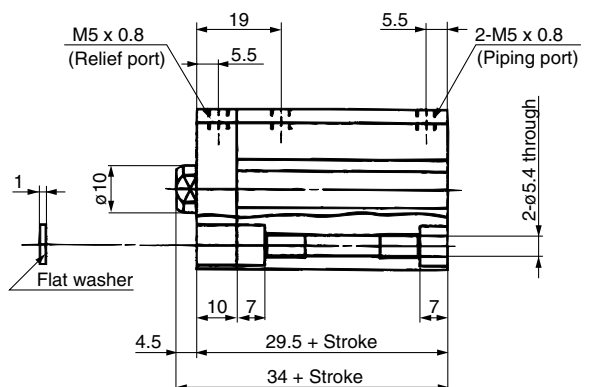
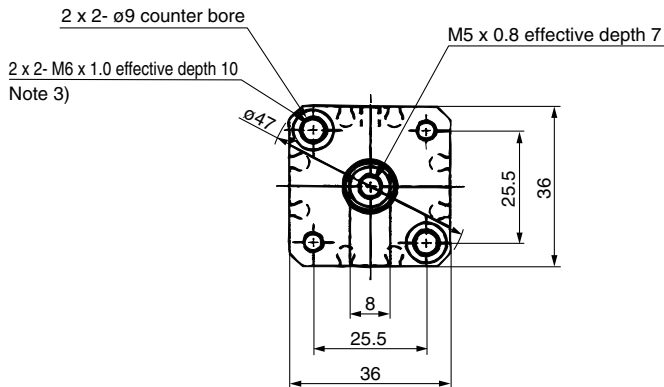
ø12



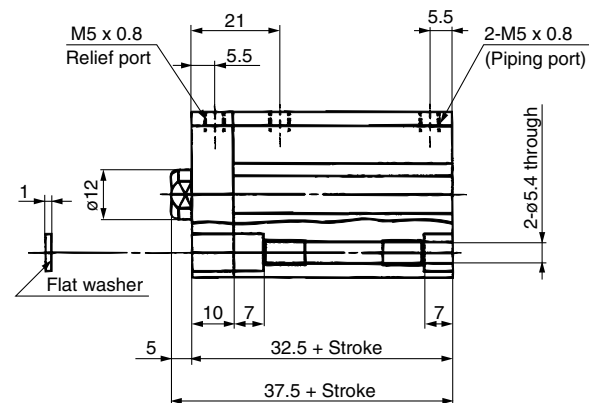
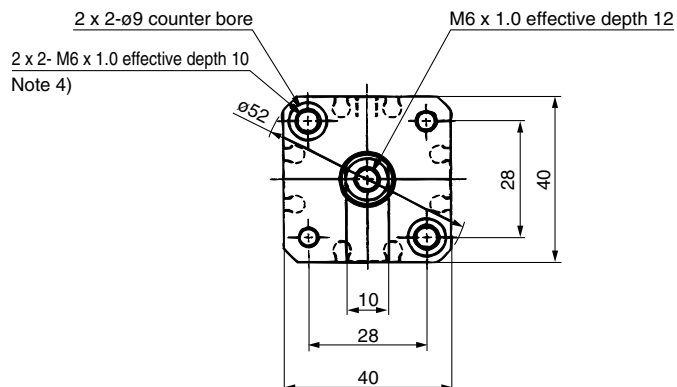
ø16



ø20



ø25



Note 1) Standard strokes available in 5 mm increments.

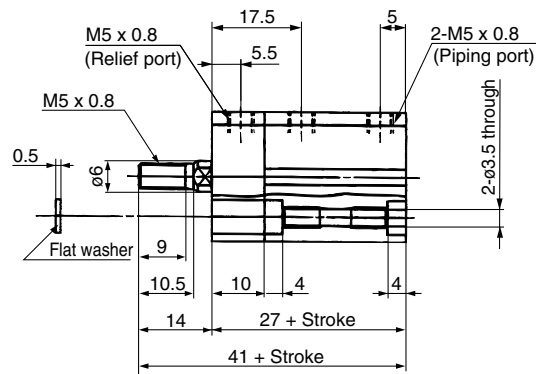
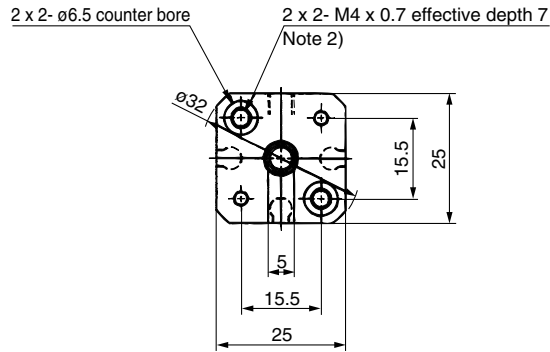
Note 2) Through-hole in case of 5 mm stroke.

Note 3) Through-hole in case of 5 to 15 mm stroke.

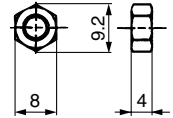
Note 4) Through-hole in case of 5 or 10 mm stroke.

Standard rod end male thread type / 10-11-CQSB12 to 25 21-22-CQSB12 to 25

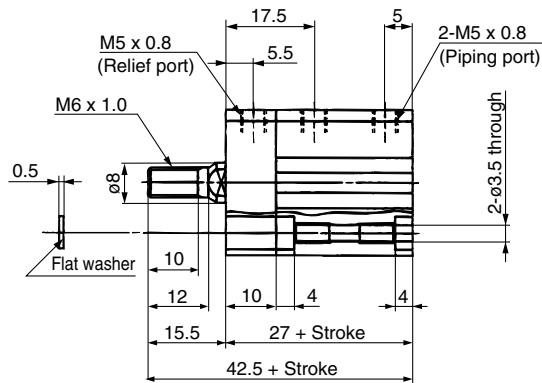
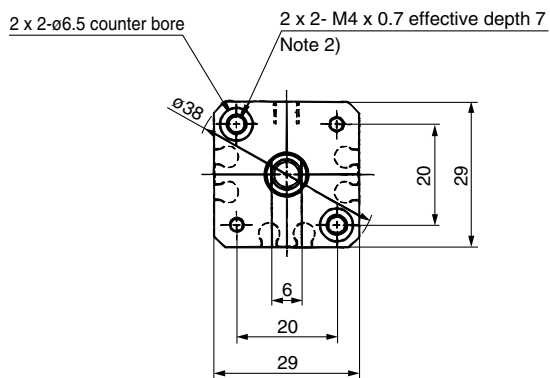
ø12



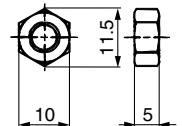
Rod end nut



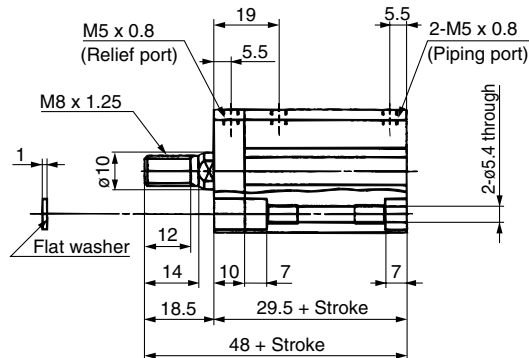
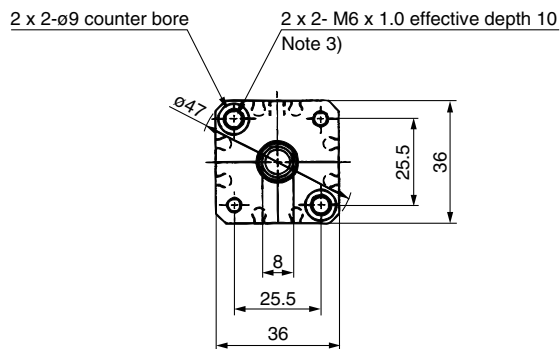
ø16



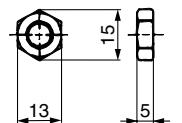
Rod end nut



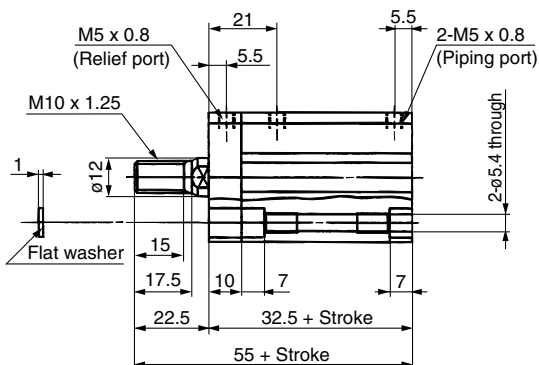
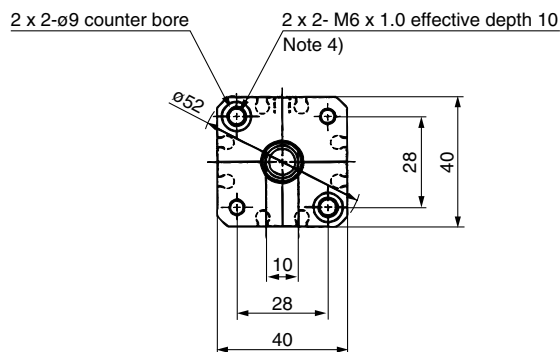
ø20



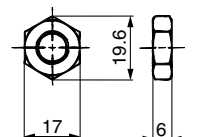
Rod end nut



ø25



Rod end nut



Note 1) Standard strokes available in 5 mm increments.

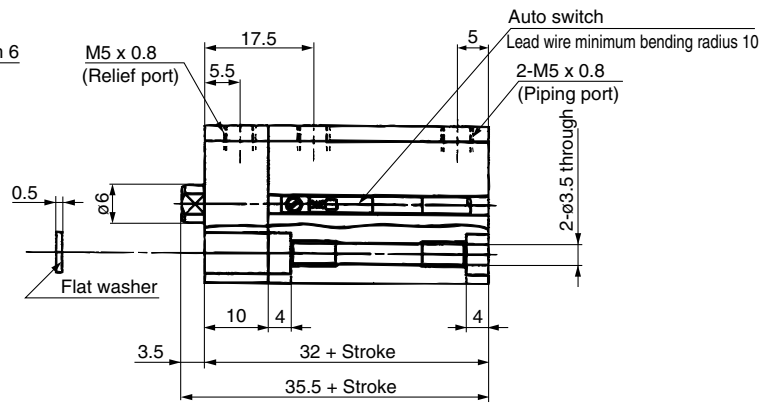
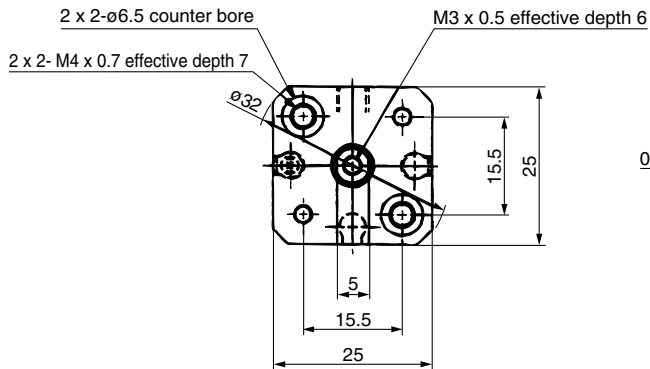
Note 2) Through-hole in case of 5 mm stroke.

Note 3) Through-hole in case of 5 to 15 mm stroke.

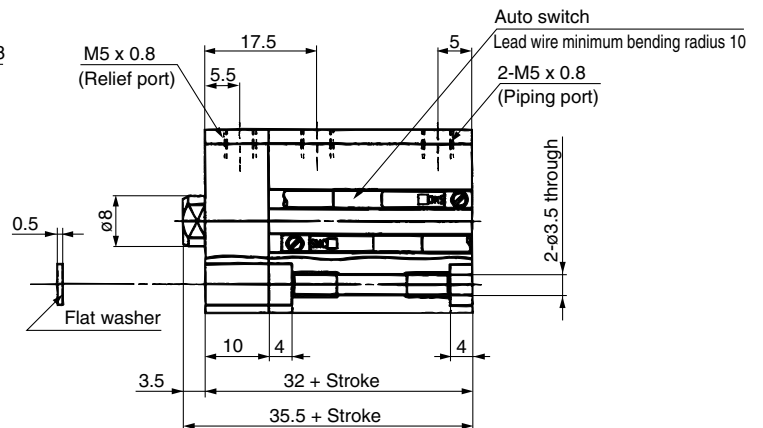
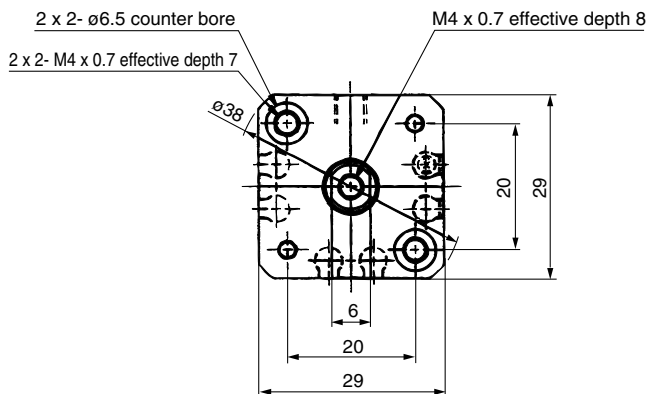
Note 4) Through-hole in case of 5 or 10 mm stroke.

With auto switch / ¹⁰⁻₁₁₋CDQSB12 to 25 ²¹⁻₂₂₋CDQSB12 to 25

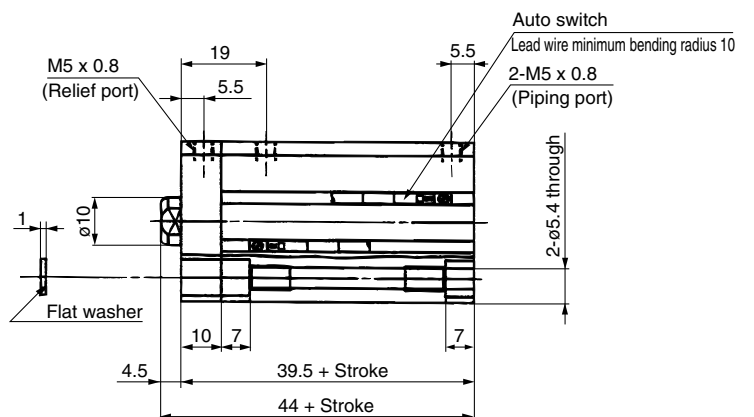
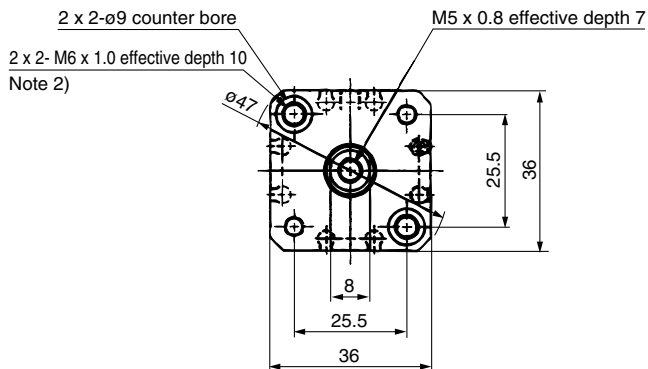
ø12



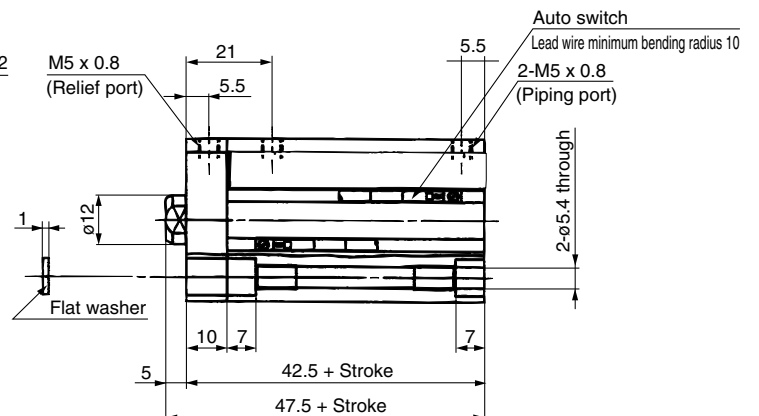
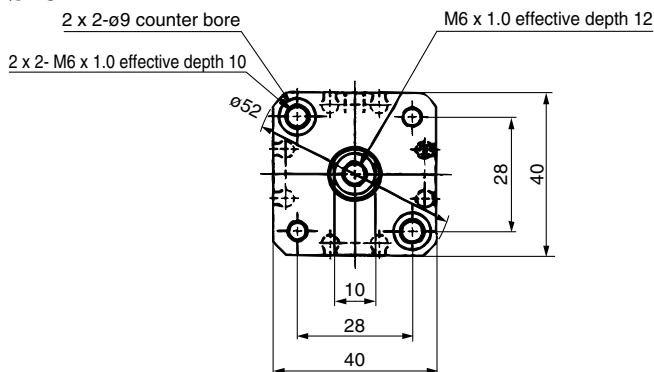
ø16



ø20



ø25

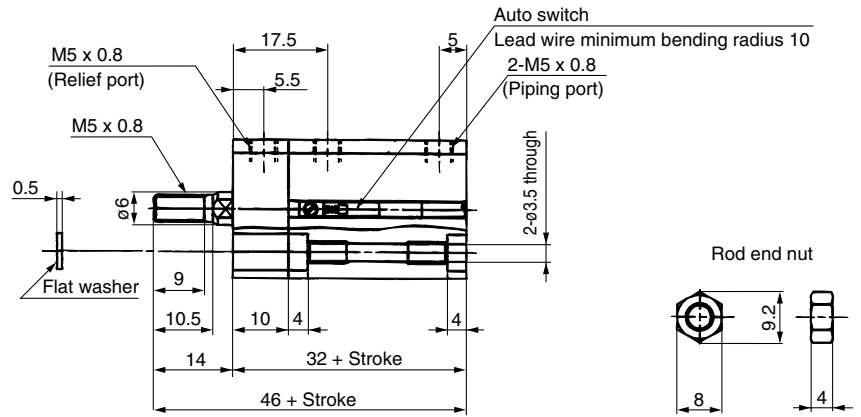
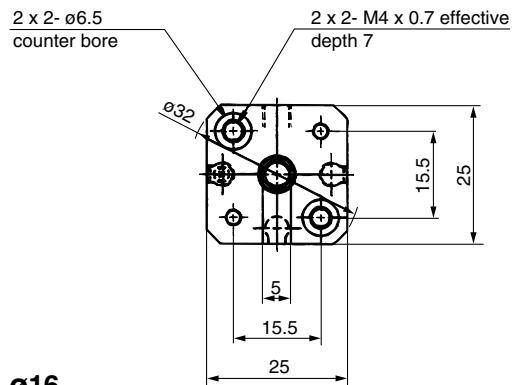


Note 1) Standard strokes available in 5 mm increments.

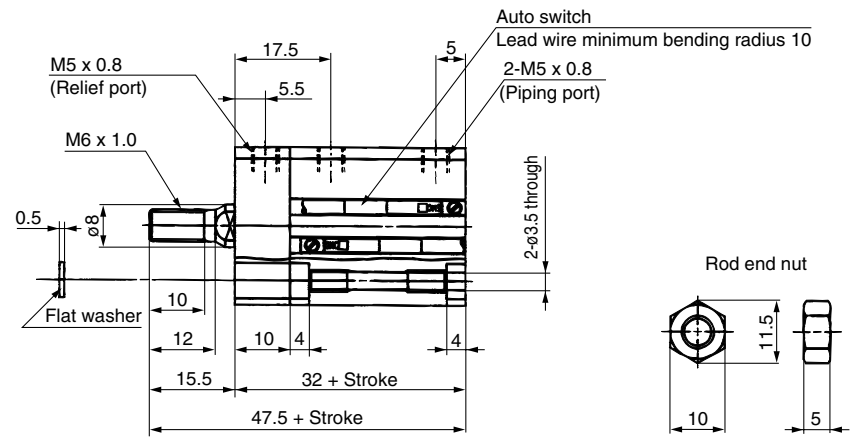
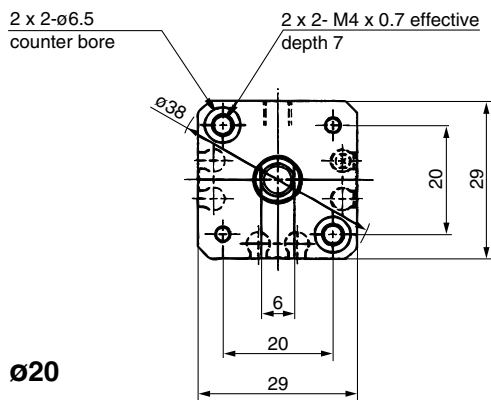
Note 2) Through-hole in case of 5 mm stroke.

With Auto Switch / Rod End Male Thread 10-11-**CDQSB12 to 25**, 21-22-**CDQSB12 to 25**

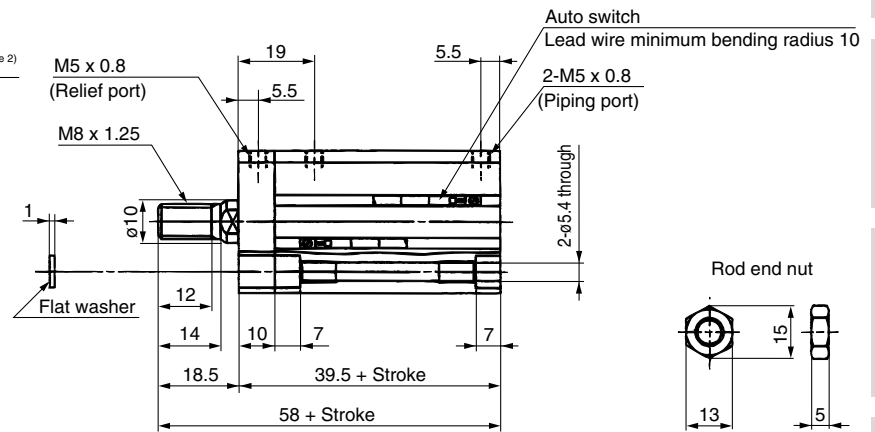
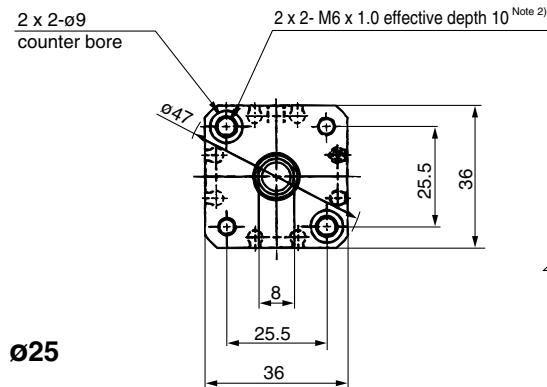
ø12



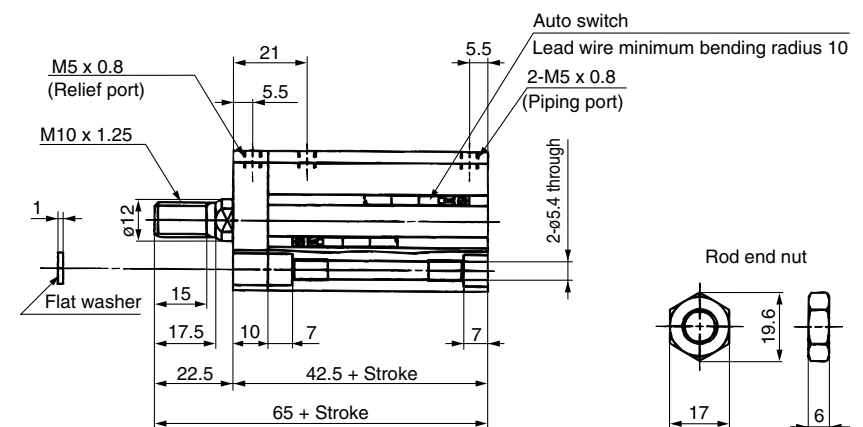
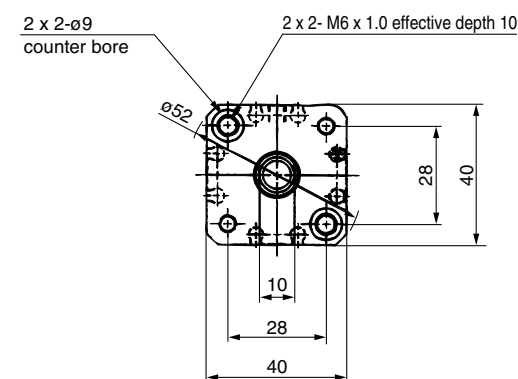
ø16



ø20



ø25



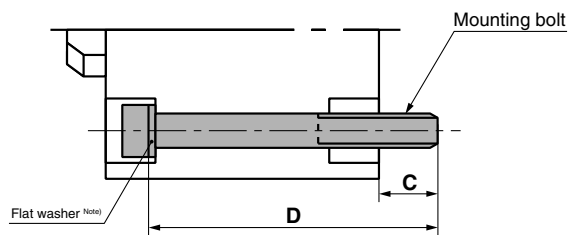
Note 1) Standard strokes available in 5 mm increments.
Note 2) Through-hole is used in case of 5 mm stroke.

CQS Mounting Bolt

Mounting: Special long bolt for through-hole mounting is available as option.

How to Order: Prefix "Bolt" to the part no. of the required bolt.

Example) Bolt M3 x 35L 2 pieces



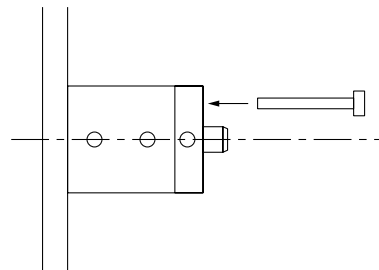
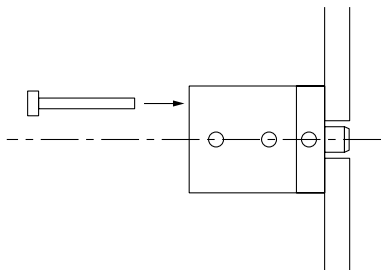
Note) Be sure to use the attached flat washer when mounting a cylinder with a through-hole.

Rod side mounting / Without auto switch

Model			C	D	Mounting bolt
10-21-	11-22-	CQSB12-5D	6.5	35	M3 x 35L
		-10D		40	x 40L
		-15D		45	x 45L
		-20D		50	x 50L
		-25D		55	x 55L
		-30D		60	x 60L
10-21-	11-22-	CQSB16-5D	6.5	35	M3 x 35L
		-10D		40	x 40L
		-15D		45	x 45L
		-20D		50	x 50L
		-25D		55	x 55L
		-30D		60	x 60L
10-21-	11-22-	CQSB20-5D	6.5	35	M5 x 35L
		-10D		40	x 40L
		-15D		45	x 45L
		-20D		50	x 50L
		-25D		55	x 55L
		-30D		60	x 60L
		-35D		65	x 65L
		-40D		70	x 70L
		-45D		75	x 75L
		-50D		80	x 80L
10-21-	11-22-	CQSB25-5D	8.5	40	M5 x 40L
		-10D		45	x 45L
		-15D		50	x 50L
		-20D		55	x 55L
		-25D		60	x 60L
		-30D		65	x 65L
		-35D		70	x 70L
		-40D		75	x 75L
		-45D		80	x 80L
		-50D		85	x 85L

Head side mounting / Without auto switch

Model			C	D	Mounting bolt
10-21-	11-22-	CQSB12-5D	6.5	25	M3 x 25L
		-10D		30	x 30L
		-15D		35	x 35L
		-20D		40	x 40L
		-25D		45	x 45L
		-30D		50	x 50L
10-21-	11-22-	CQSB16-5D	6.5	25	M3 x 25L
		-10D		30	x 30L
		-15D		35	x 35L
		-20D		40	x 40L
		-25D		45	x 45L
		-30D		50	x 50L
10-21-	11-22-	CQSB20-5D	6.5	25	M5 x 25L
		-10D		30	x 30L
		-15D		35	x 35L
		-20D		40	x 40L
		-25D		45	x 45L
		-30D		50	x 50L
		-35D		55	x 55L
		-40D		60	x 60L
		-45D		65	x 65L
		-50D		70	x 70L
10-21-	11-22-	CQSB25-5D	8.5	30	M5 x 30L
		-10D		35	x 35L
		-15D		40	x 40L
		-20D		45	x 45L
		-25D		50	x 50L
		-30D		55	x 55L
		-35D		60	x 60L
		-40D		65	x 65L
		-45D		70	x 70L
		-50D		75	x 75L

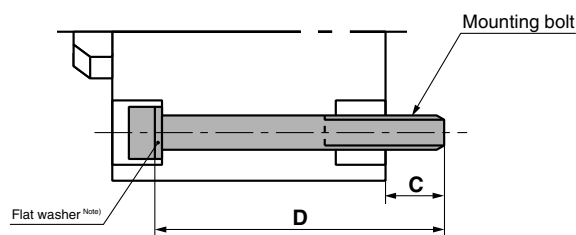


CDQS Mounting Bolt

Mounting: Special long bolt for through-hole mounting is available as option.

How to Order: Prefix "Bolt" to the part no. of the required bolt.

Example) Bolt M3 x 40 2 pieces



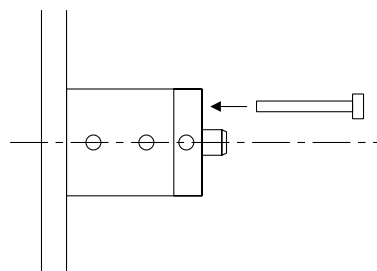
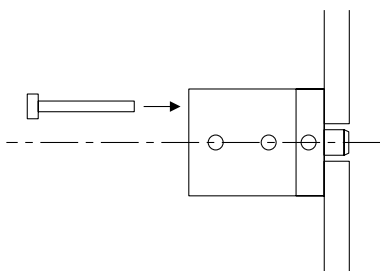
Note) Be sure to use the attached plain washer for mounting, cylinder with through-holes.

Rod side mounting / With auto switch

Model			C	D	Mounting bolt
10-21-	11-22-	CDQSB12-5D	6.5	40	M3 x 40L
		-10D		45	x 45L
		-15D		50	x 50L
		-20D		55	x 55L
		-25D		60	x 60L
		-30D		65	x 65L
10-21-	11-22-	CDQSB16-5D	6.5	40	M3 x 40L
		-10D		45	x 45L
		-15D		50	x 50L
		-20D		55	x 55L
		-25D		60	x 60L
		-30D		65	x 65L
10-21-	11-22-	CDQSB20-5D	6.5	45	M5 x 45L
		-10D		50	x 50L
		-15D		55	x 55L
		-20D		60	x 60L
		-25D		65	x 65L
		-30D		70	x 70L
		-35D		75	x 75L
		-40D		80	x 80L
		-45D		85	x 85L
		-50D		90	x 90L
10-21-	11-22-	CDQSB25-5D	8.5	50	M5 x 50L
		-10D		55	x 55L
		-15D		60	x 60L
		-20D		65	x 65L
		-25D		70	x 70L
		-30D		75	x 75L
		-35D		80	x 80L
		-40D		85	x 85L
		-45D		90	x 90L
		-50D		95	x 95L

Head side mounting / With auto switch

Model			C	D	Mounting bolt
10-21-	11-22-	CDQSB12-5D	6.5	30	M3 x 30L
		-10D		35	x 35L
		-15D		40	x 40L
		-20D		45	x 45L
		-25D		50	x 50L
		-30D		55	x 55L
10-21-	11-22-	CDQSB16-5D	6.5	30	M3 x 30L
		-10D		35	x 35L
		-15D		40	x 40L
		-20D		45	x 45L
		-25D		50	x 50L
		-30D		55	x 55L
10-21-	11-22-	CDQSB20-5D	6.5	35	M5 x 35L
		-10D		40	x 40L
		-15D		45	x 45L
		-20D		50	x 50L
		-25D		55	x 55L
		-30D		60	x 60L
		-35D		65	x 65L
		-40D		70	x 70L
		-45D		75	x 75L
		-50D		80	x 80L
10-21-	11-22-	CDQSB25-5D	8.5	40	M5 x 40L
		-10D		45	x 45L
		-15D		50	x 50L
		-20D		55	x 55L
		-25D		60	x 60L
		-30D		65	x 65L
		-35D		70	x 70L
		-40D		75	x 75L
		-45D		80	x 80L
		-50D		85	x 85L



Series 10-/21-11-/22-CQ2

Compact cylinder
ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Mounting style

B	Through-hole (Standard)
---	-------------------------

Clean series

10	Relief type
11	Vacuum suction type

Port thread type

Nil	Rc
TN	NPT
TF	G

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

With auto switch

Nil	No
D	With auto switch (Built-in magnet)

Copper, fluorine and silicon-free + Low particle generation

21	Relief type
22	Vacuum suction type

Cylinder stroke (mm)

*For standard stroke, refer to the table below.

Action

D	Double acting
---	---------------

Type of auto switch (With auto switch)

Nil	Without auto switch (Built-in magnet cylinder)
-----	--

*For applicable auto switch part numbers, refer to the next page.
*Auto switch is shipped together, (not assembled).

Rod end thread

Nil	Standard (Rod end female thread)
M	Rod end male thread

Model

Model		Bore size (mm)	Port size	Relief port	Action	Standard stroke (mm)	
Relief type	10-/21-CQ2B32	32	M5 x 0.8, 1/8 ^{Note 1)}	M5 x 0.8	Double acting single rod	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	
	10-/21-CQ2B40	40	1/8				
	10-/21-CQ2B50	50	1/4			10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	
	10-/21-CQ2B63	63					
	10-/21-CQ2B80	80	3/8				
	10-/21-CQ2B100	100					
Vacuum suction type	11-/22-CQ2B32	32	M5 x 0.8, 1/8 ^{Note 1)}				5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
	11-/22-CQ2B40	40	1/8				
	11-/22-CQ2B50	50	1/4			10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	
	11-/22-CQ2B63	63					
	11-/22-CQ2B80	80	3/8				
	11-/22-CQ2B100	100					

Note 1) Only 5 stroke comes with M5 x 0.8 in the case of no auto switch on ø32.

Specifications

	Bore size (mm)	32/40/50/63	80/100
Item			
Proof pressure		1.5MPa	
Max. operating pressure		1.0MPa	
Min. operating pressure		0.1MPa	
Ambient and fluid temperature		Without auto switch : -10°C to 70°C With auto switch : -10°C to 60°C (With no condensation)	
Cushion		No	
Piston speed		30 to 400 mm/s	30 to 300 mm/s
Stroke length tolerance		+1.0 0	
Mounting		Through-hole	
Grease		10-/11-: Fluorine grease 21-/22-: Lithium soap base grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-/21-: Grade 2, 11-/22-: Grade 1	

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate l/min (ANR)
32/40	5
50/63	10
80/100	20

Auto Switch Specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

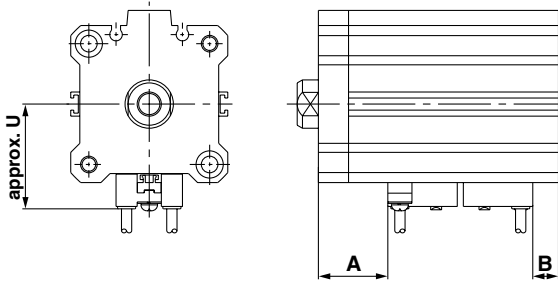
Style	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-A73, D-A93	24 VDC, 100 VAC	5 to 40mA, 5 to 20mA	○	Relay, PLC
Solid state switch	2-wire type D-M9B	24 VDC (10 to 28VDC)	2.5 to 40mA	○	24 VDC Relay, PLC
	3-wire type D-M9N, D-M9P	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

Refer to applicable auto switch list — Page 182.

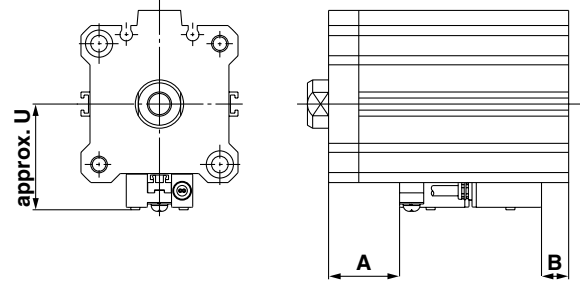
PLC: Programmable Logic Controller

Auto switch/Proper mounting positions for stroke end detection

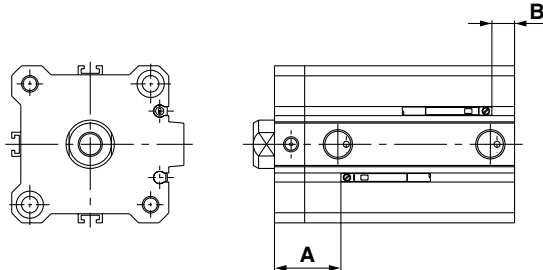
D-A73



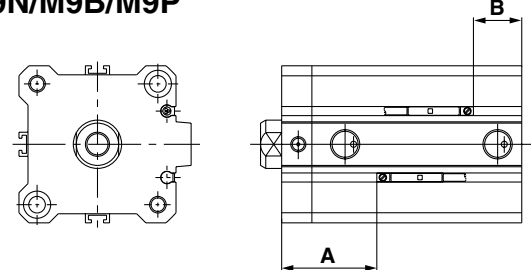
D-J79/F79



D-A93



D-M9N/M9B/M9P



Bore size (mm)	D-A73			D-J79/F79			D-A93		D-M9B/M9N/M9P	
	A	B	approx. U	A	B	approx. U	A	B	A	B
32	19	6	31.5	19.5	6.5	32.5	18	5	22	9
40	23	8.5	35	23.5	9	36	22	7.5	26	11.5
50	21	11.5	41	21.5	12	42	20	10.5	24	14.5
63	23.5	14.5	47.5	24	15	48.5	22.5	13.5	26.5	17.5
80	31.5	19	57.5	32	19.5	58.5	30.5	18	34.5	22
100	36	24	67.5	36.5	24.5	68.5	35	23	39	27



Specific Product Precautions

Be sure to read before handling.

Snap Ring Installation/Removal

⚠ Caution

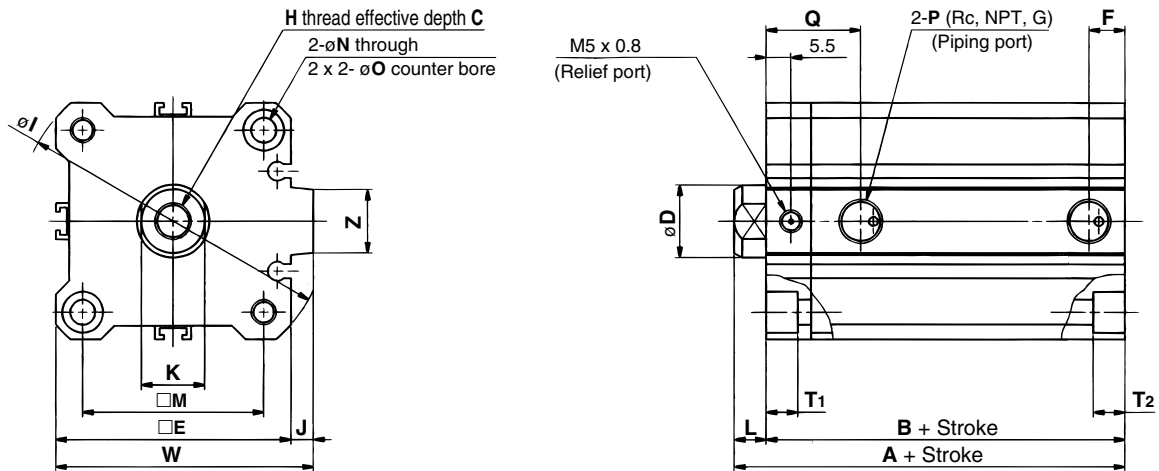
- For installation and removal, use an appropriate pair of pliers (tool for installing a type C snap ring).
- Even if a proper plier (tool for installing type C snap ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a snap ring may be flown out of the tip of a plier (tool for installing a type C snap ring). Be much careful with the popping of a snap ring. Besides, be certain that a snap ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Precautions

⚠ Caution

- Load to piston rod must always be in an axial direction.
 - When installing a cylinder, centering should be required accurately.
 - When using it as a stopper, install a guide or take some other measures to prevent lateral load from being directly applied to the piston rod.
- Do not loosen or remove the hexagon socket head cap screw securing the rod cover. It may cause the rod cover to be detached, resulting in human injury or damage to peripheral equipment.

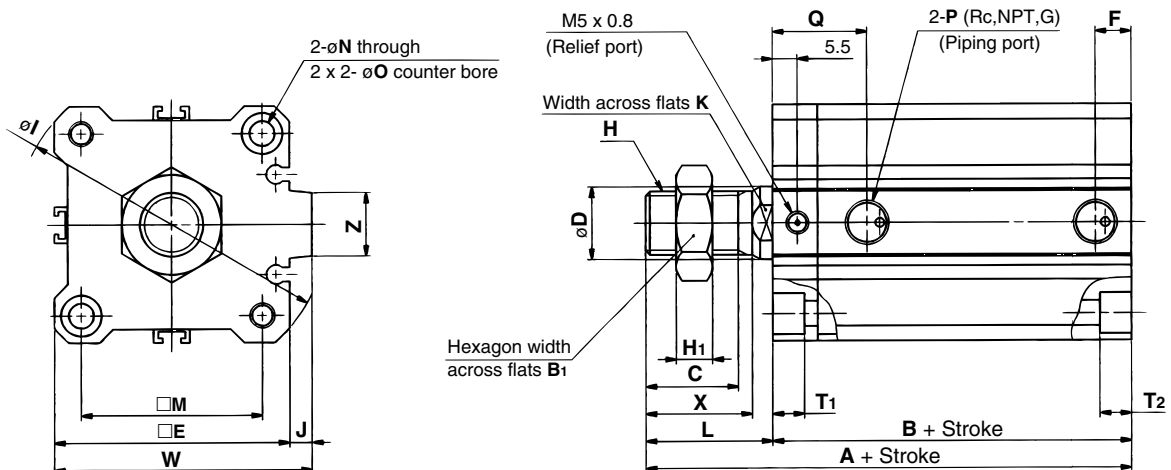
Rod end female thread



Bore size	A		B		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	T ₁	T ₂	W	Z	Stroke range
	50ST or less	75/100ST	50ST or less	75/100ST																			Note 1)
32	40	50	33	43	13	16	45	5.5 7.5	M8 x 1.25	60	4.5	14	7	34	5.5	9	M5 x 0.8 1/8	21.5 20.5	7	7	49.5	14	5 10 to 50, 75, 100
40	46.5	56.5	39.5	49.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5	9	1/8	21	6	7	57	14	5 to 50, 75, 100
50	48.5	58.5	40.5	50.5	15	20	64	10.5	M10 x 1.5	86	7	17	8	50	6.6	11	1/4	20.5	18	8	71	19	10 to 50, 75, 100

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95). Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

Rod end male thread

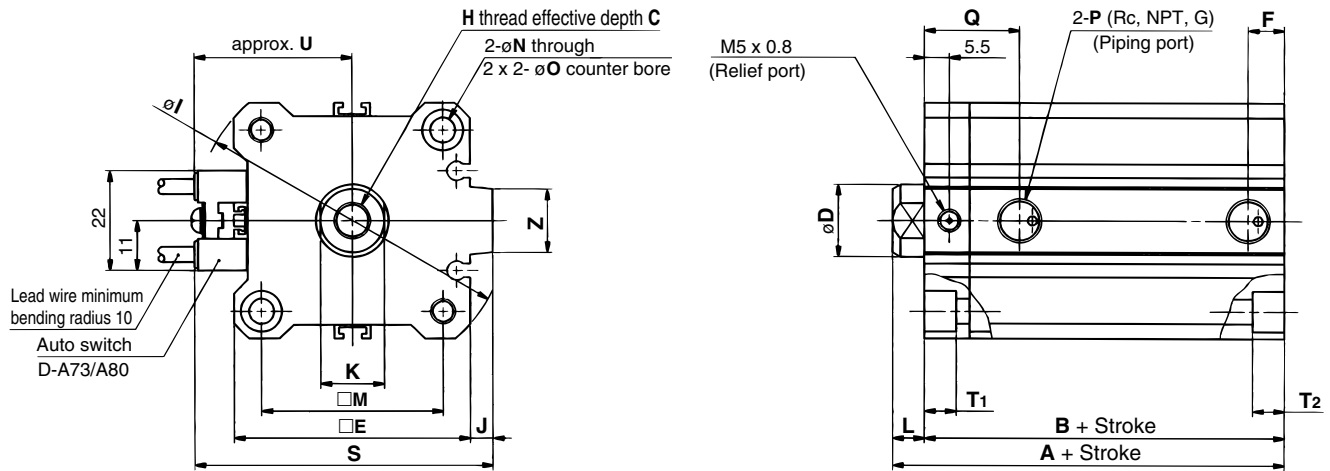


Bore size	A		B		B ₁	C	D	E	F	H	H ₁	I	J	K	L	M	N	O	P	Q	T ₁	T ₂	W	X	Z	Stroke range
	50ST or less	75-100ST	50ST or less	75-100ST																						Note 1)
32	61.5	71.5	33	43	22	20.5	16	45	5.5 7.5	M14 x 1.5	8	60	4.5	14	28.5	34	5.5	9	M5 x 0.8 1/8	21.5 20.5	7	7	49.5	23.5	14	5 10 to 50, 75, 100
40	68	78	39.5	49.5	22	20.5	16	52	8	M14 x 1.5	8	69	5	14	28.5	40	5.5	9	1/8	21	6	7	57	23.5	14	5 to 50, 75, 100
50	74	84	40.5	50.5	27	26	20	64	10.5	M18 x 1.5	11	86	7	17	33.5	50	6.6	11	1/4	20.5	18	8	71	28.5	19	10 to 50, 75, 100

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95). Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

10-**CDQ2B32 to 50**, 21-**CDQ2B32 to 50**

Rod end female thread

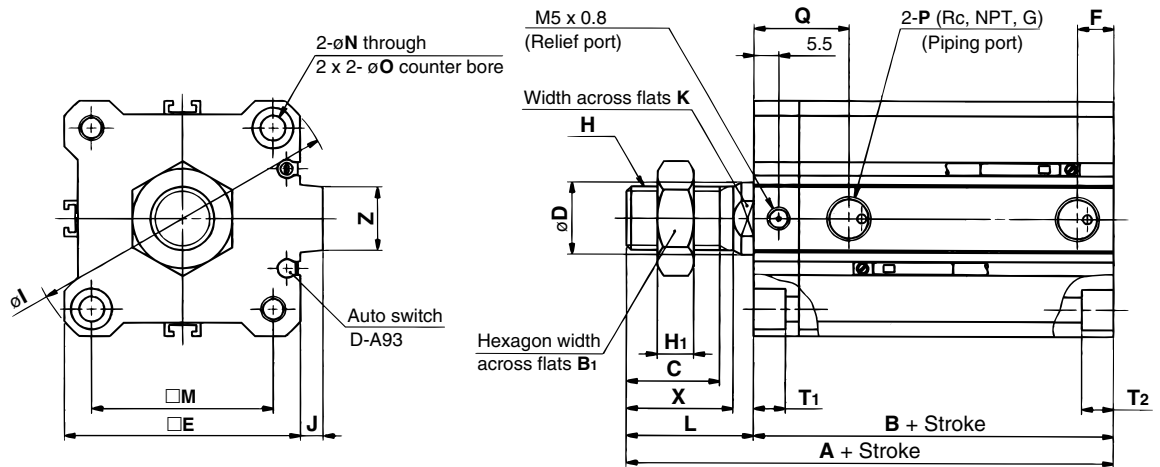


Above drawing applies to D-A73 and D-A80.

Bore size	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	T ₁	T ₂	S	U	Z	Stroke range ^{Note 1)}
32	50	43	13	16	45	7.5	M8 x 1.25	60	4.5	14	7	34	5.5	9	1/8	20.5	7	7	58.5	31.5	14	5 to 50, 75, 100
40	56.5	49.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5	9	1/8	21	6	7	66	35	14	5 to 50, 75, 100
50	58.5	50.5	15	20	64	10.5	M10 x 1.5	86	7	17	8	50	6.6	11	1/4	20.5	18	8	80	41	19	10 to 50, 75, 100

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95).
Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

Rod end male thread

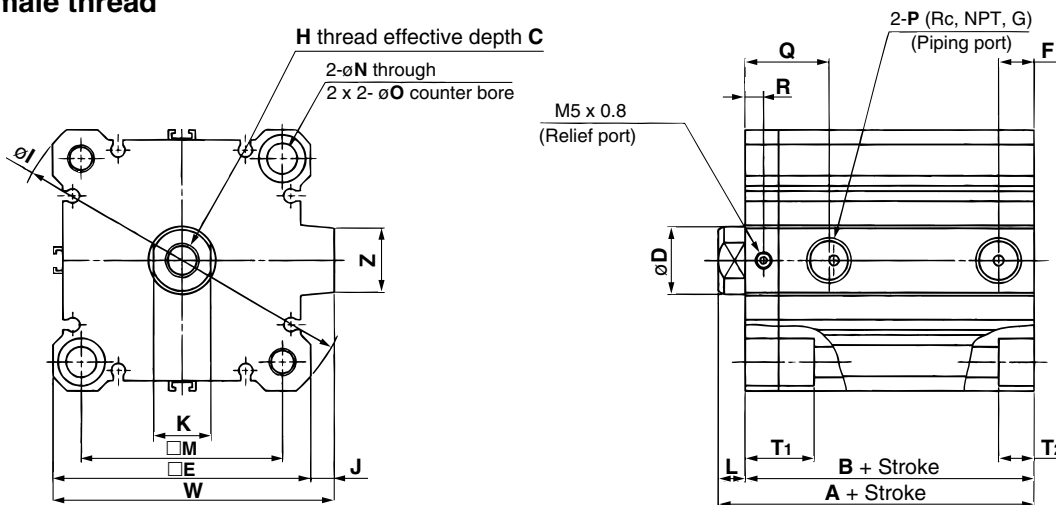


Above drawing applies to D-A93.

Bore size	A	B	B ₁	C	D	E	F	H	H ₁	I	J	K	L	M	N	O	P	Q	T ₁	T ₂	X	Z	Stroke range ^{Note 1)}
32	71.5	43	22	20.5	16	45	7.5	M14 x 1.5	8	60	4.5	14	28.5	34	5.5	9	1/8	20.5	7	7	23.5	14	5 to 50, 75, 100
40	78	49.5	22	20.5	16	52	8	M14 x 1.5	8	69	5	14	28.5	40	5.5	9	1/8	21	6	7	23.5	14	5 to 50, 75, 100
50	84	50.5	27	26	20	64	10.5	M18 x 1.5	11	86	7	17	33.5	50	6.6	11	1/4	20.5	18	8	28.5	19	10 to 50, 75, 100

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95).
Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

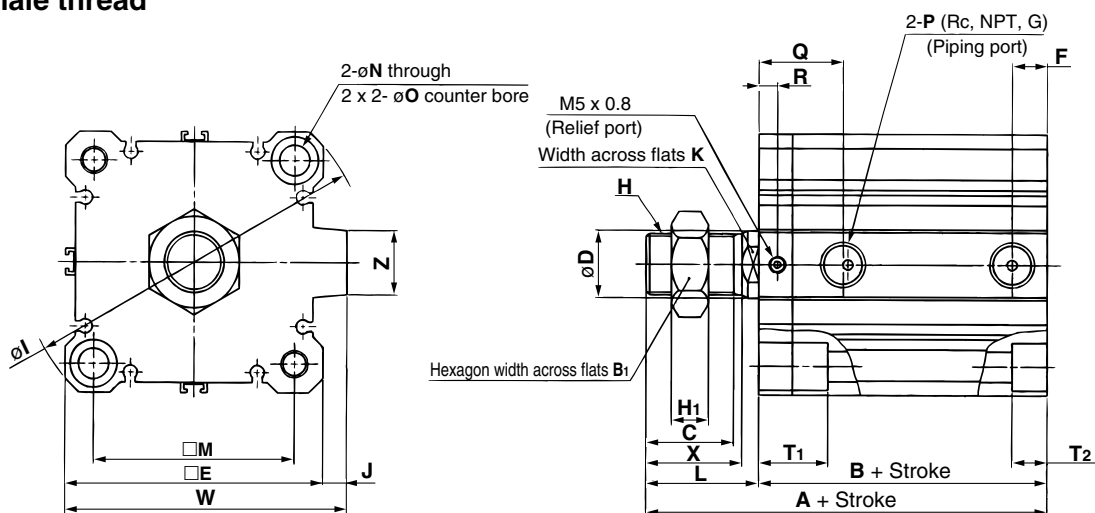
Rod end female thread



Bore size	A		B		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	T ₁	T ₂	W	Z	Stroke range
	50ST or less	75/100ST	50ST or less	75/100ST																				
63	54	64	46	56	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14	1/4	25	5.5	20.5	10.5	84	19	10 to 50, 75, 100
80	68.5	78.5	58.5	68.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5	3/8	31	10	28.5	13.5	104	26	
100	80	90	68	78	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5	3/8	38	10	28.5	13.5	123.5	26	

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95). Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

Rod end male thread

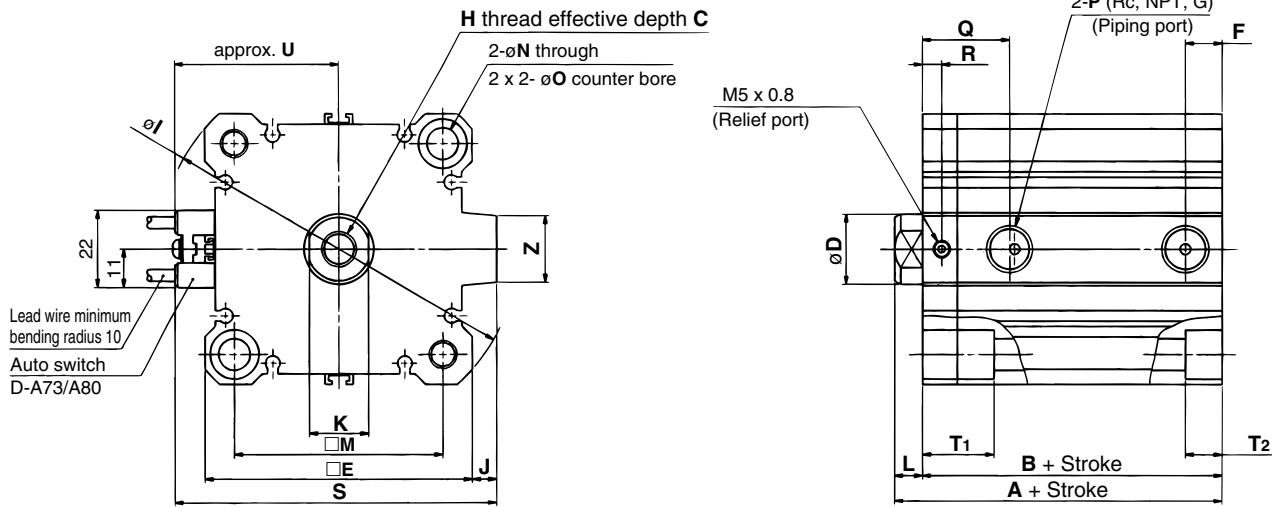


Bore size	A		B		B ₁	C	D	E	F	H	H ₁	I	J	K	L	M	N	O	P	Q	R	T ₁	T ₂	W	X	Z	Stroke range
	50ST or less	75/100ST	50ST or less	75/100ST																							
63	79.5	89.5	46	56	27	26	20	77	10.5	M18 x 1.5	11	103	7	17	33.5	60	9	14	1/4	25	5.5	20.5	10.5	84	28.5	19	10 to 50, 75, 100
80	102	112	58.5	68.5	32	32.5	25	98	12.5	M22 x 1.5	13	132	6	22	43.5	77	11	17.5	3/8	31	10	28.5	13.5	104	35.5	26	
100	111.5	121.5	68	78	41	32.5	30	117	13	M26 x 1.5	16	156	6.5	27	43.5	94	11	17.5	3/8	38	10	28.5	13.5	123.5	35.5	26	

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95). Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

10-11-**CDQ2B63 to 100**, 21-22-**CDQ2B63 to 100**

Rod end female thread

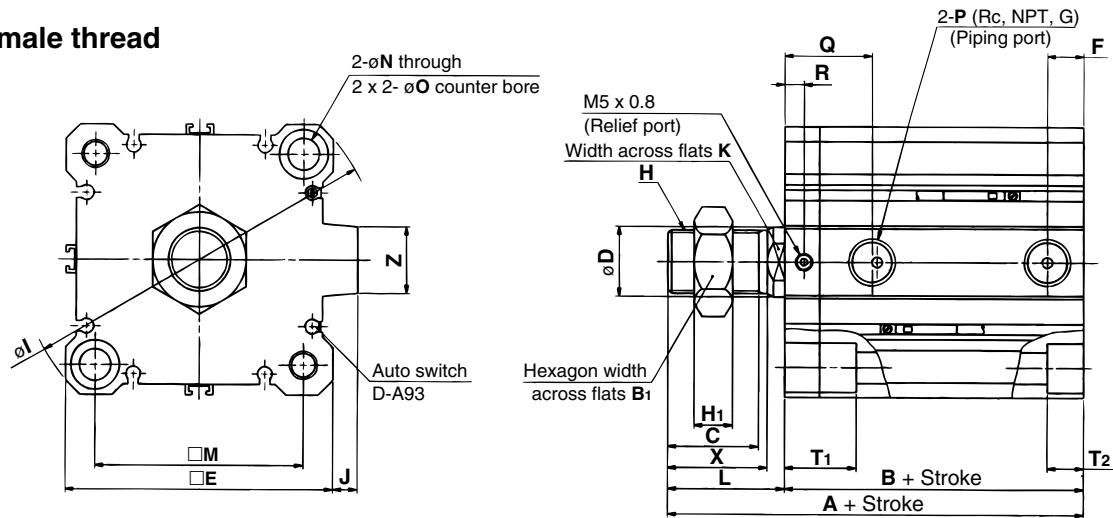


Above drawing applies to D-A73 and D-A80.

Bore size	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T ₁	T ₂	U	Z	Stroke range ^{Note 1)}
63	64	56	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14	1/4	25	5.5	93	20.5	10.5	47.5	19	10 to 50, 75, 100
80	78.5	68.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5	3/8	31	10	112.5	28.5	13.5	57.5	26	
100	90	78	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5	3/8	38	10	132.5	28.5	13.5	67.5	26	

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95). Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

Rod end male thread



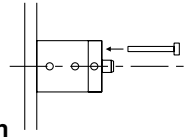
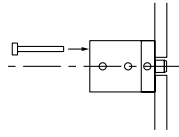
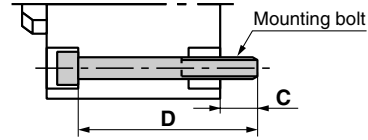
Above drawing applies to D-A93.

Bore size	A	B	B ₁	C	D	E	F	H	H ₁	I	J	K	L	M	N	O	P	Q	R	T ₁	T ₂	X	Z	Stroke range ^{Note 1)}
63	89.5	56	27	26	20	77	10.5	M18 x 1.5	11	103	7	17	33.5	60	9	14	1/4	25	5.5	20.5	10.5	28.5	19	10 to 50, 75, 100
80	112	68.5	32	32.5	25	98	12.5	M22 x 1.5	13	132	6	22	43.5	77	11	17.5	3/8	31	10	28.5	13.5	35.5	26	
100	121.5	78	41	32.5	30	117	13	M26 x 1.5	16	156	6.5	27	43.5	94	11	17.5	3/8	38	10	28.5	13.5	35.5	26	

Note 1) A spacer of 20, 15, 10 or 5 mm is attached to 75 or 100 stroke to make an intermediate stroke (55, 60, 65, 70 and 80, 85, 90, 95). Therefore the same dimensions as the 75 or 100 mm stroke can be obtained.

CQ2 Mounting bolt

Mounting: Special long bolt for through-hole mounting is available as option.
How to Order: Prefix "Bolt" to the part No. of the required bolt.
Example) Bolt M5 x 40L 2 pieces



Rod side mounting / Without auto switch

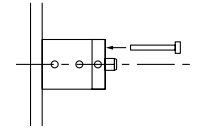
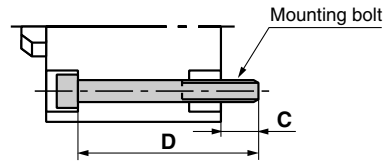
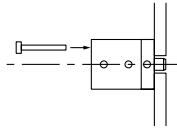
Model	C	D	Mounting bolt
10-21-11-22-	9	CQ2B32-5D	40 M5 x 40L
		-10D	45 x 45L
		-15D	50 x 50L
		-20D	55 x 55L
		-25D	60 x 60L
		-30D	65 x 65L
		-35D	70 x 70L
		-40D	75 x 75L
		-45D	80 x 80L
		-50D	85 x 85L
		-75D	120 x 120L
		-100D	145 x 120L
10-21-11-22-	7.5	CQ2B40-5D	45 M5 x 45L
		-10D	50 x 50L
		-15D	55 x 55L
		-20D	60 x 60L
		-25D	65 x 65L
		-30D	70 x 70L
		-35D	75 x 75L
		-40D	80 x 80L
		-45D	85 x 85L
		-50D	90 x 90L
		-75D	125 x 125L
		-100D	150 x 150L
10-21-11-22-	12.5	CQ2B50-10D	55 M6 x 55L
		-15D	60 x 60L
		-20D	65 x 65L
		-25D	70 x 70L
		-30D	75 x 75L
		-35D	80 x 80L
		-40D	85 x 85L
		-45D	90 x 90L
		-50D	95 x 95L
		-75D	130 x 130L
		-100D	155 x 155L
10-21-11-22-	14.5	CQ2B63-10D	60 M8 x 60L
		-15D	65 x 65L
		-20D	70 x 70L
		-25D	75 x 75L
		-30D	80 x 80L
		-35D	85 x 85L
		-40D	90 x 90L
		-45D	95 x 95L
		-50D	100 x 100L
		-75D	135 x 135L
		-100D	160 x 160L
10-21-11-22-	15	CQ2B80-10D	70 M10 x 70L
		-15D	75 x 75L
		-20D	80 x 80L
		-25D	85 x 85L
		-30D	90 x 90L
		-35D	95 x 95L
		-40D	100 x 100L
		-45D	105 x 105L
		-50D	110 x 110L
		-75D	145 x 120L
		-100D	170 x 170L
10-21-11-22-	15.5	CQ2B100-10D	80 M10 x 80L
		-15D	85 x 85L
		-20D	90 x 90L
		-25D	95 x 95L
		-30D	100 x 100L
		-35D	105 x 105L
		-40D	110 x 110L
		-45D	115 x 115L
		-50D	120 x 120L
		-75D	155 x 155L
		-100D	180 x 180L

Head side mounting / Without auto switch

Model	C	D	Mounting bolt
10-21-11-22-	9	CQ2B32-5D	40 M5 x 40L
		-10D	45 x 45L
		-15D	50 x 50L
		-20D	55 x 55L
		-25D	60 x 60L
		-30D	65 x 65L
		-35D	70 x 70L
		-40D	75 x 75L
		-45D	80 x 80L
		-50D	85 x 85L
		-75D	120 x 120L
		-100D	145 x 145L
10-21-11-22-	11.5	CQ2B40-5D	50 M5 x 50L
		-10D	55 x 55L
		-15D	60 x 60L
		-20D	65 x 65L
		-25D	70 x 70L
		-30D	75 x 75L
		-35D	80 x 80L
		-40D	85 x 85L
		-45D	90 x 90L
		-50D	95 x 95L
		-75D	130 x 130L
		-100D	155 x 155L
10-21-11-22-	12.5	CQ2B50-10D	45 M6 x 45L
		-15D	50 x 50L
		-20D	55 x 55L
		-25D	60 x 60L
		-30D	65 x 65L
		-35D	70 x 70L
		-40D	75 x 75L
		-45D	80 x 80L
		-50D	85 x 85L
		-75D	120 x 120L
		-100D	145 x 120L
10-21-11-22-	14.5	CQ2B63-10D	50 M8 x 50L
		-15D	55 x 55L
		-20D	60 x 60L
		-25D	65 x 65L
		-30D	70 x 70L
		-35D	75 x 75L
		-40D	80 x 80L
		-45D	85 x 85L
		-50D	90 x 90L
		-75D	125 x 125L
		-100D	150 x 150L
10-21-11-22-	15	CQ2B80-10D	55 M10 x 55L
		-15D	60 x 60L
		-20D	65 x 65L
		-25D	70 x 70L
		-30D	75 x 75L
		-35D	80 x 80L
		-40D	85 x 85L
		-45D	90 x 90L
		-50D	95 x 95L
		-75D	130 x 130L
		-100D	155 x 155L
10-21-11-22-	15.5	CQ2B100-10D	65 M10 x 65L
		-15D	70 x 70L
		-20D	75 x 75L
		-25D	80 x 80L
		-30D	85 x 85L
		-35D	90 x 90L
		-40D	95 x 95L
		-45D	100 x 100L
		-50D	105 x 105L
		-75D	140 x 140L
		-100D	165 x 165L

CDQ2 Mounting bolt

Mounting: Special long bolt for through-hole mounting is available as option.
 How to Order: Prefix "Bolt" to the part No. of the required bolt.
 Example) Bolt M5 x 50L 2 pieces



Rod side mounting / With auto switch

Model		C	D	Mounting bolt
10-21-	11-22-	9	CDQ2B32-5D	
			-10D	50 M5 x 50L
			-15D	55 x 55L
			-20D	60 x 60L
			-25D	65 x 65L
			-30D	70 x 70L
			-35D	75 x 75L
			-40D	80 x 80L
			-45D	85 x 85L
			-50D	90 x 90L
			-75D	95 x 95L
			-100D	120 x 120L
			-100D	145 x 145L
10-21-	11-22-	7.5	CDQ2B40-5D	
			-10D	55 M5 x 55L
			-15D	60 x 60L
			-20D	65 x 65L
			-25D	70 x 70L
			-30D	75 x 75L
			-35D	80 x 80L
			-40D	85 x 85L
			-45D	90 x 90L
			-50D	95 x 95L
			-75D	100 x 100L
			-100D	125 x 125L
			-100D	150 x 150L
10-21-	11-22-	12.5	CDQ2B50-10D	
			-15D	65 M6 x 65L
			-20D	70 x 70L
			-25D	75 x 75L
			-30D	80 x 80L
			-35D	85 x 85L
			-40D	90 x 90L
			-45D	95 x 95L
			-50D	100 x 100L
			-75D	105 x 105L
			-100D	130 x 130L
			-100D	155 x 155L
10-21-	11-22-	14.5	CDQ2B63-10D	
			-15D	70 M8 x 70L
			-20D	75 x 75L
			-25D	80 x 80L
			-30D	85 x 85L
			-35D	90 x 90L
			-40D	95 x 95L
			-45D	100 x 100L
			-50D	105 x 105L
			-75D	110 x 110L
			-100D	135 x 135L
			-100D	160 x 160L
10-21-	11-22-	15	CDQ2B80-10D	
			-15D	80 M10 x 80L
			-20D	85 x 85L
			-25D	90 x 90L
			-30D	95 x 95L
			-35D	100 x 100L
			-40D	105 x 105L
			-45D	110 x 110L
			-50D	115 x 115L
			-75D	120 x 120L
			-100D	145 x 145L
			-100D	170 x 170L
10-21-	11-22-	15.5	CDQ2B100-10D	
			-15D	90 M10 x 90L
			-20D	95 x 95L
			-25D	100 x 100L
			-30D	105 x 105L
			-35D	110 x 110L
			-40D	115 x 115L
			-45D	120 x 120L
			-50D	125 x 125L
			-75D	130 x 130L
			-100D	155 x 155L
			-100D	180 x 180L

Head side mounting / With auto switch

Model		C	D	Mounting bolt
10-21-	11-22-	9	CDQ2B32-5D	
			-10D	50 M5 x 50L
			-15D	55 x 55L
			-20D	60 x 60L
			-25D	65 x 65L
			-30D	70 x 70L
			-35D	75 x 75L
			-40D	80 x 80L
			-45D	85 x 85L
			-50D	90 x 90L
			-75D	95 x 95L
			-100D	120 x 120L
			-100D	145 x 145L
10-21-	11-22-	11.5	CDQ2B40-5D	
			-10D	60 M5 x 60L
			-15D	65 x 65L
			-20D	70 x 70L
			-25D	75 x 75L
			-30D	80 x 80L
			-35D	85 x 85L
			-40D	90 x 90L
			-45D	95 x 95L
			-50D	100 x 100L
			-75D	105 x 105L
			-100D	130 x 130L
			-100D	155 x 155L
10-21-	11-22-	12.5	CDQ2B50-10D	
			-15D	55 M6 x 55L
			-20D	60 x 60L
			-25D	65 x 65L
			-30D	70 x 70L
			-35D	75 x 75L
			-40D	80 x 80L
			-45D	85 x 85L
			-50D	90 x 90L
			-75D	95 x 95L
			-100D	120 x 120L
			-100D	145 x 145L
10-21-	11-22-	14.5	CDQ2B63-10D	
			-15D	60 M8 x 60L
			-20D	65 x 65L
			-25D	70 x 70L
			-30D	75 x 75L
			-35D	80 x 80L
			-40D	85 x 85L
			-45D	90 x 90L
			-50D	95 x 95L
			-75D	100 x 100L
			-100D	125 x 125L
			-100D	150 x 150L
10-21-	11-22-	15	CDQ2B80-10D	
			-15D	65 M10 x 65L
			-20D	70 x 70L
			-25D	75 x 75L
			-30D	80 x 80L
			-35D	85 x 85L
			-40D	90 x 90L
			-45D	95 x 95L
			-50D	100 x 100L
			-75D	105 x 105L
			-100D	130 x 130L
			-100D	155 x 155L
10-21-	11-22-	15.5	CDQ2B100-10D	
			-15D	75 M10 x 75L
			-20D	80 x 80L
			-25D	85 x 85L
			-30D	90 x 90L
			-35D	95 x 95L
			-40D	100 x 100L
			-45D	105 x 105L
			-50D	110 x 110L
			-75D	115 x 115L
			-100D	140 x 140L
			-100D	165 x 165L

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-11-REC

Sine Cylinder / ø20, ø25, ø32, ø40

How to Order



10 - R E C L 25 - 150 - H7B

Clean series

10	Relief type
11	Vacuum suction type

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style

Port type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)

Bore size (mm)

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

Type of auto switch

Reed switch	C73
Solid state switch	H7B, H7NW

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	Effective cushioning stroke (mm)		
Relief type	10-REC□20	20	1/8	Non-lube	Double acting single rod	150 to 700	○	Air cushion (Both sides)	45		
	10-REC□25	25				150 to 1000			50		
	10-REC□32	32							200 to 1000	60	
	10-REC□40	40	1/4								
Vacuum suction type	11-REC□20	20	1/8						150 to 700		45
	11-REC□25	25				150 to 1000			50		
	11-REC□32	32							200 to 1000	60	
	11-REC□40	40	1/4								

Specifications

Item	Bore size (mm)
	20/25/32/40
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.2MPa
Ambient and fluid temperature	-10°C to 60°C (With no freezing)
Piston speed	50 to 400mm/s
Cushion	Air cushion
Stroke length tolerance	to 250ST: $+1.0_0$, 251 to 1,000ST: $+1.4_0$
Mounting style	Basic style / Axial foot style / Rod side flange style / Head side flange style
Grease	Fluorine grease
Particle generation grade	10-: Grade 2
(Refer to front matter pages 13 to 22 for details.)	11-: Grade 1

Suction flow rate of vacuum suction type (Reference values)

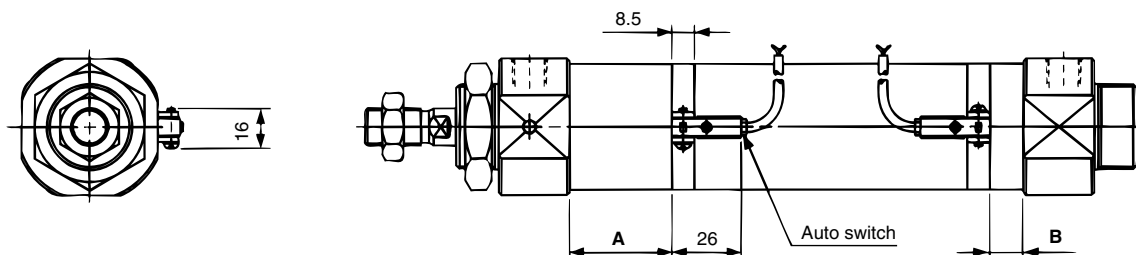
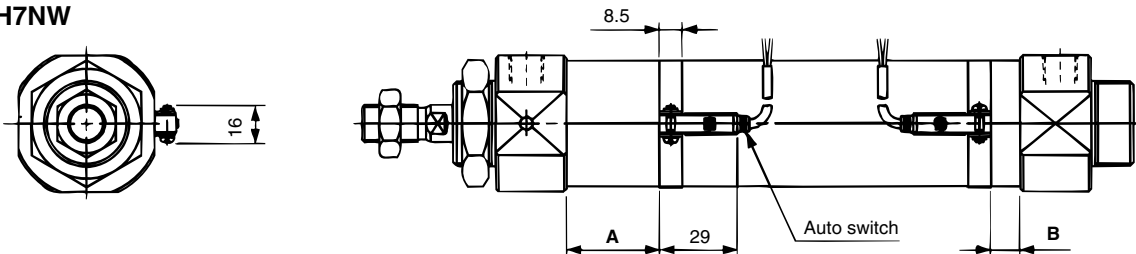
Size	Suction flow rate l/min (ANR)
20	1
25/32/40	2

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Style	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-C73	24 VDC, 100 VAC	5 to 40mA, 5 to 20mA	○	Relay, PLC
Solid state switch	2-wire type D-H7B	24 VDC (10 to 28 VDC)	5 to 40mA	○	24 VDC, PLC
	3-wire type D-H7NW	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

Auto switches / Proper mounting position for stroke end detection**D-C73****D-H7B / H7NW**

(mm)

Bore size	D-C73		D-H7B, D-H7NW	
	A	B	A	B
20	56.0	31.0	55.0	30.0
25	56.0	31.0	55.0	30.0
32	59.5	36.5	58.5	35.5
40	70.0	39.0	69.0	38.0

Note) The above-mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an autoswitch, adjust the position after confirming the operating state of the auto switch.

**Specific Product Precautions**

Be sure to read before handling.

Speed adjustment**Caution**

1. Throttle speed controller, such as Series AS, is recommended for speed adjustment.

Recommended speed controllers

Model	Model		
	Elbow type	Straight type	In-line type
10-REC20	10-AS2201F-01-06-X214	10-AS2301F-01-06-X214	10-AS2001F-06-X214
10-REC25	10-AS2201F-01-06-X214	10-AS2301F-01-06-X214	10-AS2001F-06-X214
10-REC32	10-AS2201F-01-06-X214	10-AS2301F-01-06-X214	10-AS3001F-08-X214
10-REC40	10-AS3201F-02-08-X214	10-AS3301F-02-08-X214	10-AS3001F-08-X214

2. Speed control is possible with meter-in and meter-out styles of speed controllers. However, smooth acceleration and deceleration may not be obtained by these speed controllers.
3. For installation other than horizontal mounting, it is recommended to use a system with reduced pressure supply circuit on the downward side. (This system is also effective for a start delay at rise and air reduction.)

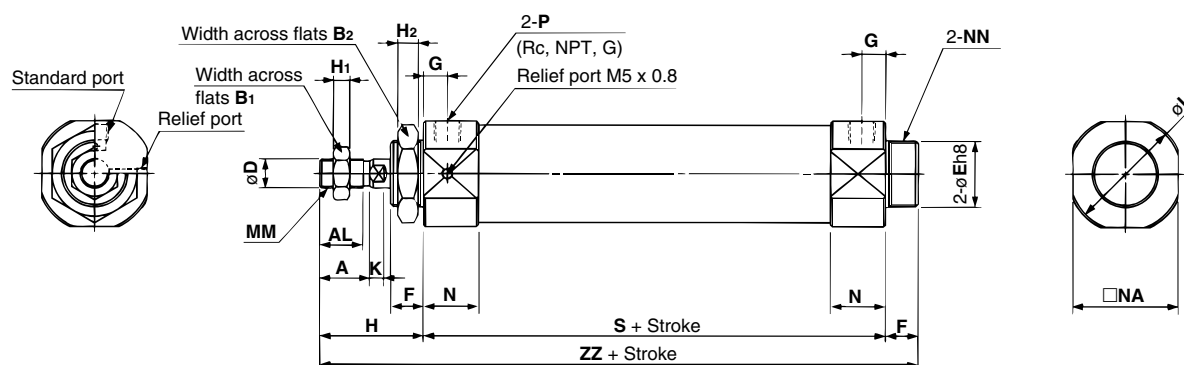
Cushion adjustment**Caution**

1. Cushion adjustment mechanism is not provided. Cushion adjustment is not necessary because the model can perform smooth acceleration and deceleration in a wide range of strokes without an adjusting cushion.

Relief Port**Caution**

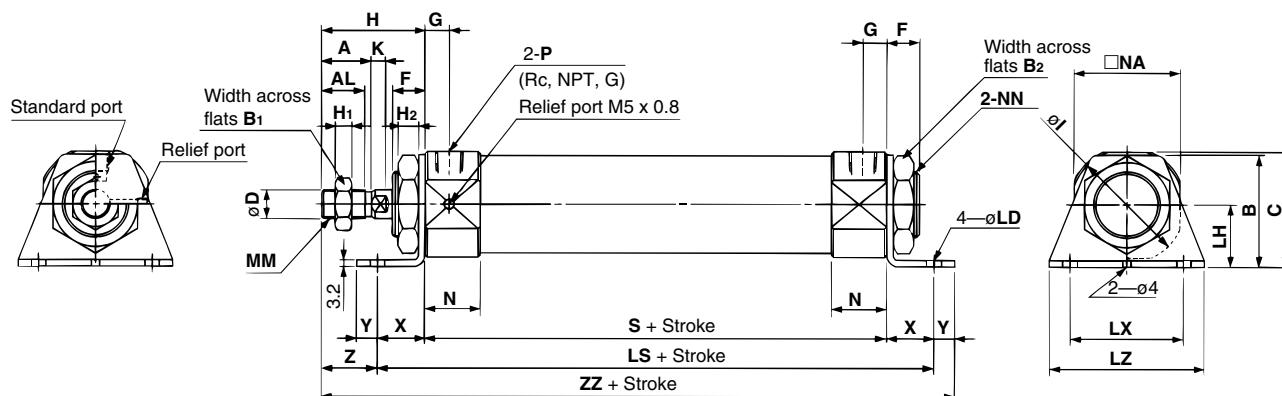
1. Hexagon socket set screw is not prepared for clean room specifications, and use it as relieving port accordingly.

Dimensions

Basic style (B) / ¹⁰⁻₁₁₋RECB

(mm)

Bore size	Stroke range	A	AL	B ₁	B ₂	D	E	F	G	H	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	ZZ
20	150 to 700	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	10	41	5	8	33.5	5	M8 x 1.25	20	30	M20 x 1.5	1/8	146	200
25	150 to 700	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	10	45	6	8	37.5	5.5	M10 x 1.25	20	34.5	M26 x 1.5	1/8	146	204
32	150 to 1000	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	11	45	6	8	46.5	5.5	M10 x 1.25	22	42.5	M26 x 1.5	1/8	159	217
40	200 to 1000	24	21	22	41	14	32 ⁰ _{-0.039}	16	12.5	50	8	10	56.2	7	M14 x 1.5	26.5	51	M32 x 2	1/4	181	247

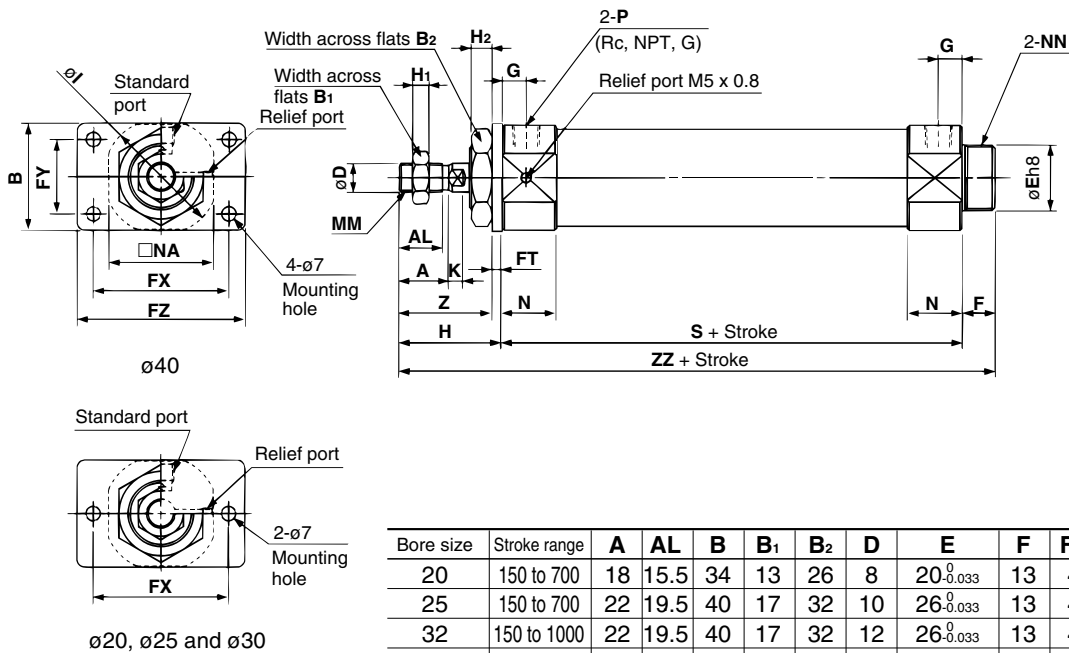
Axial foot style (L): ¹⁰⁻₁₁₋RECL

(mm)

Bore size	Stroke range	A	AL	B	B ₁	B ₂	C	D	F	G	H	H ₁	H ₂	I	K	LD	LH	LS	LX	LZ	MM	N	NA
20	150 to 700	18	15.5	40	13	26	40	8	13	10	41	5	8	33.5	5	6.8	25	186	40	55	M8 x 1.25	20	30
25	150 to 700	22	19.5	47	17	32	45.5	10	13	10	45	6	8	37.5	5.5	6.8	28	186	40	55	M10 x 1.25	20	34.5
32	150 to 1000	22	19.5	47	17	32	49.5	12	13	11	45	6	8	46.5	5.5	6.8	28	199	40	55	M10 x 1.25	22	42.5
40	200 to 1000	24	21	54	22	41	55.5	14	16	12.5	50	8	10	56.2	7	7	30	227	55	75	M14 x 1.5	26.5	51

Bore size	Stroke range	NN	P	S	X	Y	Z	ZZ
20	150 to 700	M20 x 1.5	1/8	146	20	8	21	215
25	150 to 700	M26 x 1.5	1/8	146	20	8	25	219
32	150 to 1000	M26 x 1.5	1/8	159	20	8	25	232
40	200 to 1000	M32 x 2	1/4	181	23	10	27	264

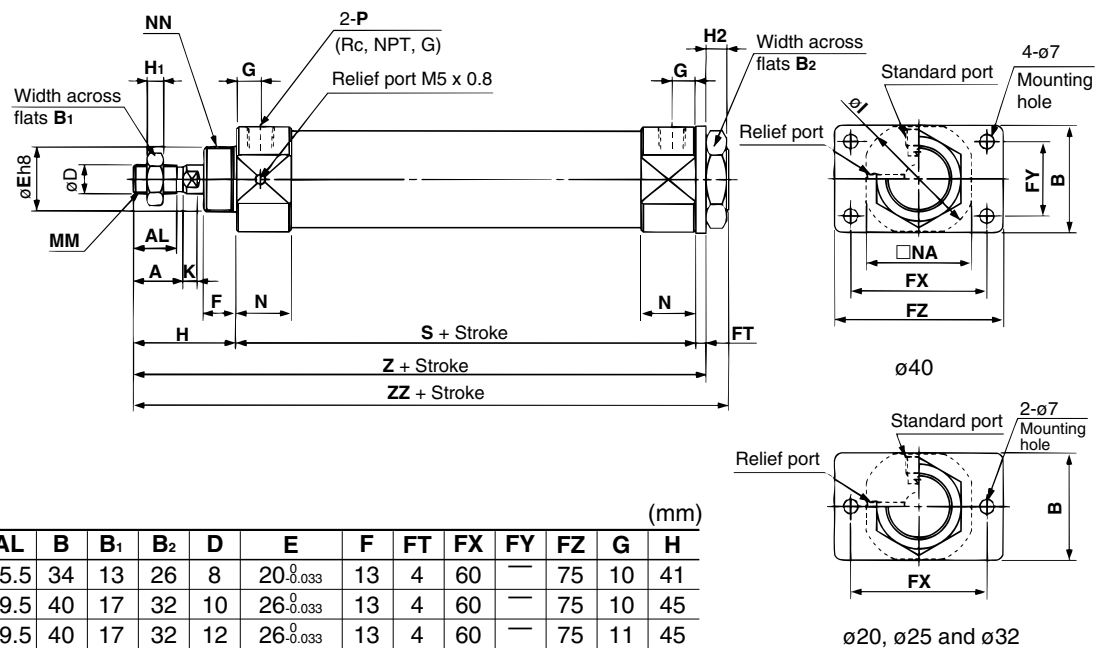
Rod side flange style (F) / 10-RECF



Bore size	Stroke range	A	AL	B	B ₁	B ₂	D	E	F	FT	FX	FY	FZ	G	H
20	150 to 700	18	15.5	34	13	26	8	20 ⁰ _{-0.033}	13	4	60	—	75	10	41
25	150 to 700	22	19.5	40	17	32	10	26 ⁰ _{-0.033}	13	4	60	—	75	10	45
32	150 to 1000	22	19.5	40	17	32	12	26 ⁰ _{-0.033}	13	4	60	—	75	11	45
40	200 to 1000	24	21	52	22	41	14	32 ⁰ _{-0.039}	16	5	66	36	82	12.5	50

Bore size	Stroke range	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	Z	ZZ
20	150 to 700	5	8	33.5	5	M8 x 1.25	20	30	M20 x 1.5	1/8	146	37	200
25	150 to 700	6	8	37.5	5.5	M10 x 1.25	20	34.5	M26 x 1.5	1/8	146	41	204
32	150 to 1000	6	8	46.5	5.5	M10 x 1.25	22	42.5	M26 x 1.5	1/8	159	41	217
40	200 to 1000	8	10	56.2	7	M14 x 1.5	26.5	51	M32 x 2	1/4	181	45	247

Head side flange style (G) / 10-RECG



Bore size	Stroke range	A	AL	B	B ₁	B ₂	D	E	F	FT	FX	FY	FZ	G	H
20	15 to 700	18	15.5	34	13	26	8	20 ⁰ _{-0.033}	13	4	60	—	75	10	41
25	150 to 700	22	19.5	40	17	32	10	26 ⁰ _{-0.033}	13	4	60	—	75	10	45
32	150 to 1000	22	19.5	40	17	32	12	26 ⁰ _{-0.033}	13	4	60	—	75	11	45
40	200 to 1000	24	21	52	22	41	14	32 ⁰ _{-0.039}	16	5	66	36	82	12.5	50

Bore size	Stroke range	H ₁	H ₂	I	K	MM	N	NA	NN	P	S	Z	ZZ
20	150 to 700	5	8	33.5	5	M8 x 1.25	20	30	M20 x 1.5	1/8	146	191	200
25	150 to 700	6	8	37.5	5.5	M10 x 1.25	20	34.5	M26 x 1.5	1/8	146	195	204
32	150 to 1000	6	8	46.5	5.5	M10 x 1.25	22	42.5	M26 x 1.5	1/8	159	208	217
40	200 to 1000	8	10	56.2	7	M14 x 1.5	26.5	51	M32 x 2	1/4	181	236	247

Series 11-/12-21-/22-**CM2W** Dual rod cylinder/Compact type ø6, ø10

How to Order



● **Clean series**

11	Vacuum suction type
12	Relief type(with specially treated sliding parts)

11 — CXS J L 6 — 50 — M9B S

21 — CXS J L 6 — 50 — M9B S

● **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.

● **Type of auto switch**

Nil	Without auto switch (Built-in magnet)
-----	---------------------------------------

* Select the applicable auto switch from the table below.

● **Bore size / Stroke** (mm)

Bore size	Standard stroke
6	10, 20, 30, 40, 50
10	10, 20, 30, 40, 50

● **Bearing type**

M	Slide Bearing
L*	Ball bushing bearing

* Only ball bushing bearing is available for series 12- and 21-.

● **Compact Cylinder**

Copper, fluorine and silicon-free + low particle generation

21	Relief type
22	Vacuum suction type

Auto switch specifications (Refer to Best Pneumatics No. 7 to 12 for detailed specifications and auto switches not in the following table.)

Style	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model	Lead wire length (m)*			Applicable load	
					DC		AC	Electrical entry direction	0.5 Nil	3 (L)	5 (Z)		
								Horizontal					
Reed switch	—	Grommet	Yes	2-wire	24V	12V	100V	A93	●	●	—	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	12V	—	M9N	●	●	—	—	Relay, PLC
				2-wire		12V		M9B	●	●	—	—	

* Lead wire symbol 0.5m.....Nil (Example) A93
3m.....L A93L

Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

Specifications

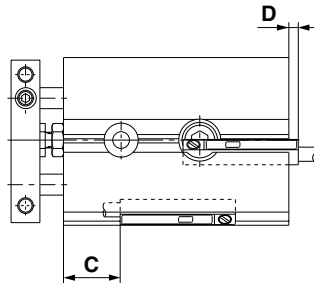
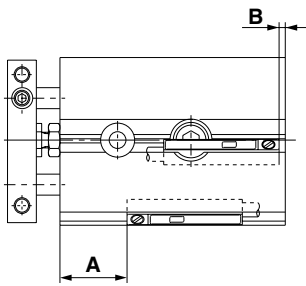
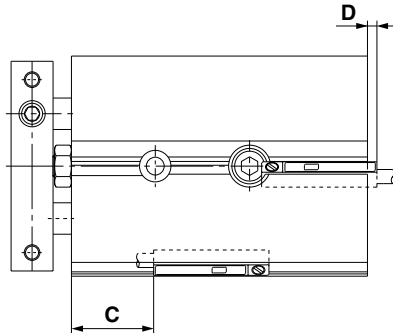
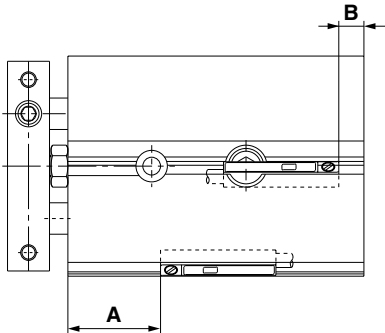
Bore size mm	6	10
Fluid	Air (Non-lube)	
Proof pressure	1.05MPa	
Max. operating pressure	0.7MPa	
Min. operating pressure	0.15MPa	0.1MPa
Ambient and fluid temperature	-10°C to 60°C (With no condensation)	
Piston speed	30 to 400 mm/s	
Cushion	Rubber bumper	
Stroke adjustable range	0 to -5mm compared to the standard stroke	
Port size	M3 x 0.5	M5 x 0.8
Grease	11-/12-: Fluorine grease 21-/22-: Lithium soap base grease	
Particle generation grade	12-: Grade 2, 21-: Grade 3	
(Refer to front matter pages 13 to 22 for details.)	11-/22-: Grade 1	

*The maximum piston speed shown in the table above applies to the extension side.
The maximum piston speed for retraction is approximately 70% that of extension.

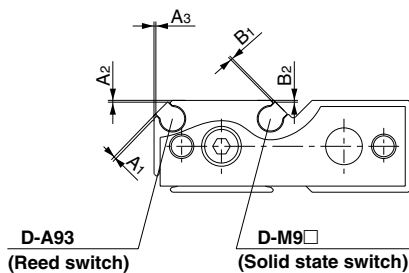
Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate l/min (ANR)
6	7
10	15

Auto switches / Proper mounting positions for stroke end detection

11- **CXSJ**□6 / 21- **CXSJ**□611- **CXSJ**□10 / 21- **CXSJ**□10

Auto switch mounting dimensions



(mm)		
Symbol	D-A93	D-M9□
A	19(20)	23(24)
B ^{Note 1)}	—	2(1)
C	14.5(15.5)	13(11.5)
D	6.5(7.5)	8(9)

Note 1) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) For D-A93, only outward electrical entry (D dimension) is available.

Note 3) Dimensions in parentheses apply to 12-CXSJ□6.

(mm)		
Symbol	D-A93	D-M9□
A	30 (31.5)	34(35.5)
B ^{Note 1)}	—	3.5(2)
C	25.5 (27)	24(25.5)
D	5 (6.5)	6.5(8)

Note 1) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) For D-A93, only outward electrical entry (D dimension) is available.

Note 3) Dimensions in parentheses apply to 12-CXSJ□10.

(mm)		
Auto switch model	Symbol	Bore size
		6, 10
D-A93	A1	0.4
	A2, A3	0.3
	B1	0.4
D-M9□	B2	0.3



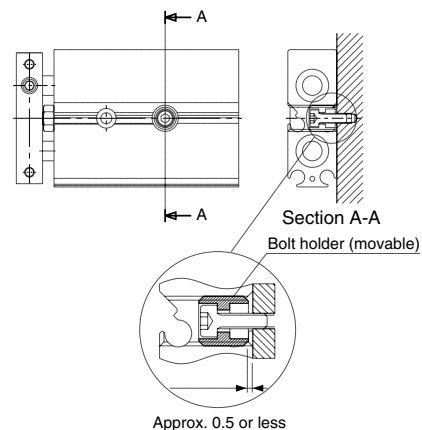
Specific product precautions

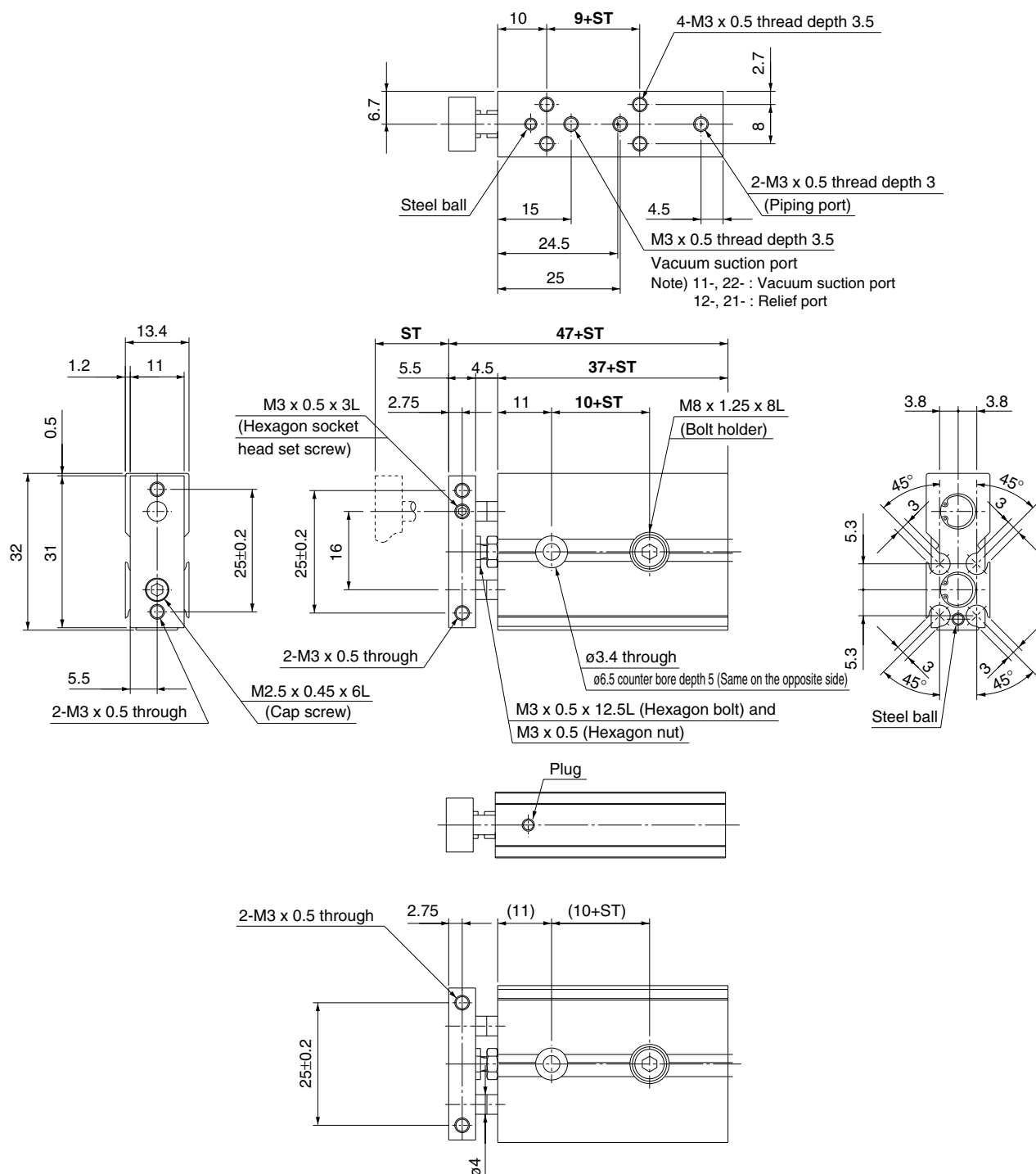
Be sure to read before handling.

Mounting

Adjust the bolt holder with a hexagon wrench 3mm in width across flats so that it does not protrude from the cylinder surface (approx. 0.5mm depth from the cylinder surface to the top of the holder).

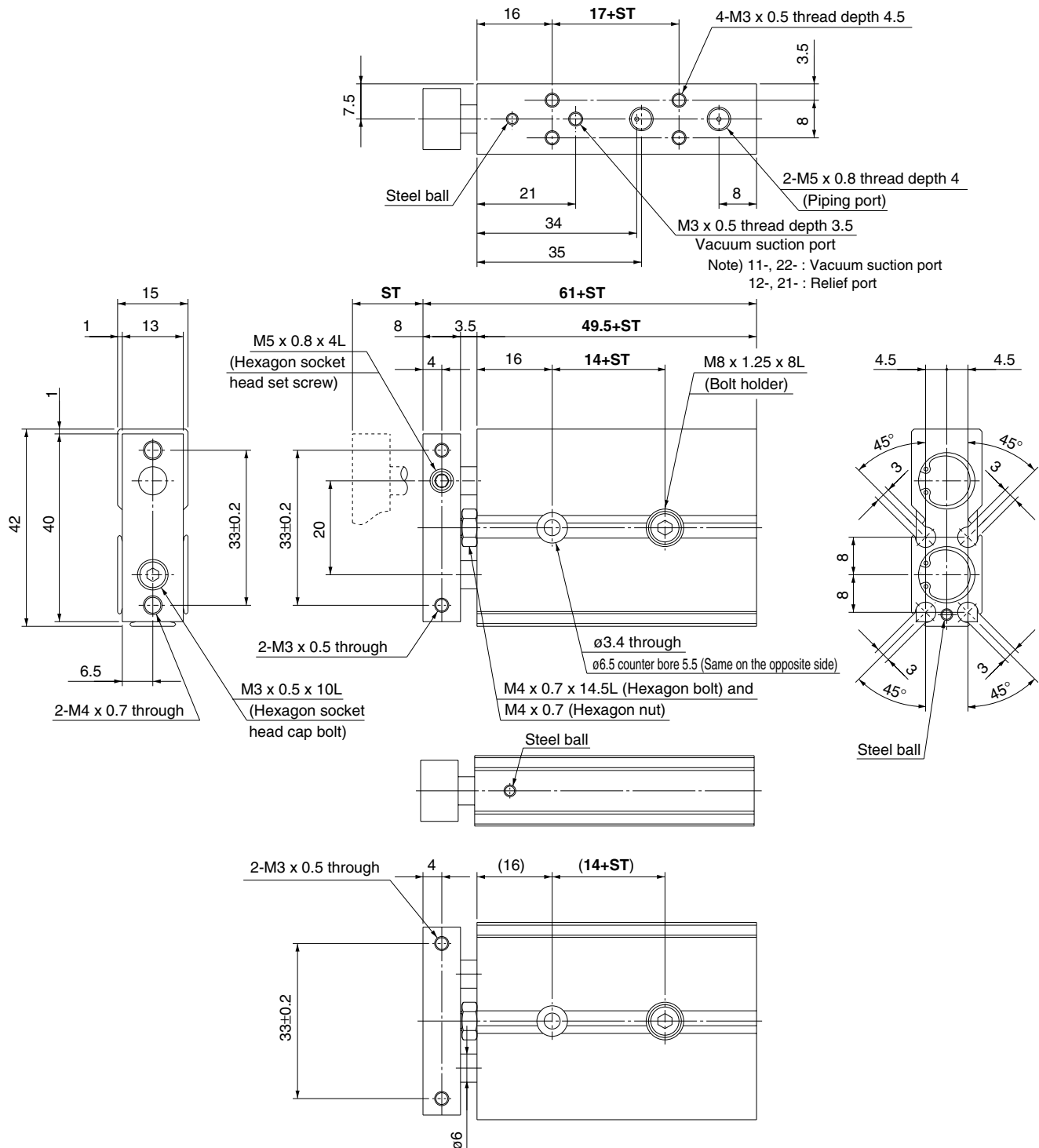
If the bolt holder is not properly adjusted, it can interfere with the switch rail, hindering the auto switch mounting.



Dimensions / $\phi 6$ 

Part no.	ST	9+ST	10+ST	37+ST	47+ST
11-12- CXSJ □6-10	10	19	20	47	57
11-12- CXSJ □6-20	20	29	30	57	67
11-12- CXSJ □6-30	30	39	40	67	77
11-12- CXSJ □6-40	40	49	50	77	87
11-12- CXSJ □6-50	50	59	60	87	97

Dimensions / ø10



(mm)

Part no.	ST	14+ST	17+ST	49.5+ST	61+ST
¹¹⁻¹²⁻ ²¹⁻²²⁻ CXSJ □10-10	10	24	27	59.5	71
¹¹⁻¹²⁻ ²¹⁻²²⁻ CXSJ □10-20	20	34	37	69.5	81
¹¹⁻¹²⁻ ²¹⁻²²⁻ CXSJ □10-30	30	44	47	79.5	91
¹¹⁻¹²⁻ ²¹⁻²²⁻ CXSJ □10-40	40	54	57	89.5	101
¹¹⁻¹²⁻ ²¹⁻²²⁻ CXSJ □10-50	50	64	67	99.5	111

Series 10-/11-/12-21-/22-CXS Dual rod cylinder ø6, ø10, ø15, ø20, ø25, ø32

How to Order

● Clean series

10	Relief type	CXSM,CXSL
11	Vacuum suction type	CXSM,CXSL
12	Relief type (with specially treated sliding parts)	CXSL

● Dual rod cylinder

10 - CXS M 15 - 30 - Y59A

21 - CXS L 15 - 30 - Y59A

● Bearing type

L	Ball bushing bearing
M	Slide bearing

● Copper, fluorine and silicon-free + low particle generation

21	Relief type	CXSL
22	Vacuum suction type	CXSM,CXSL

● Bore size (mm)

Symbol	Type	Bore size
Nil	M5 x 0.8	ø6 to ø20
	Rc	
TN	NPT	ø25, ø32
TF	G	

● Port type

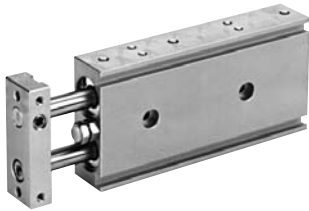
● Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

● Type of auto switch

Reed switch	Z73
Solid state switch	Y59A,Y59B

● Cylinder stroke (mm)



Model

Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
							Rubber	Air
Vacuum suction type	11-/22-CXS□6	6	Non-lube	Double acting single rod	10, 20, 30, 40, 50	○	○ (Both sides)	—
	11-/22-CXS□10	10			10, 20, 30, 40, 50			
	11-/22-CXS□15	15			10, 20, 30, 40, 50, 75, 100			
	11-/22-CXS□20	20			10, 20, 30, 40, 50			
	11-/22-CXS□25	25			10, 20, 30, 40, 50, 75, 100			
	11-/22-CXS□32	32			10, 20, 30, 40, 50, 75, 100			
Relief type	10-/12-/21-CXS□6	6	Non-lube	Double acting single rod	10, 20, 30, 40, 50	○	○ (Both sides)	—
	10-/12-/21-CXS□10	10			10, 20, 30, 40, 50			
	10-/12-/21-CXS□15	15			10, 20, 30, 40, 50, 75, 100			
	10-/12-/21-CXS□20	20			10, 20, 30, 40, 50			
	10-/12-/21-CXS□25	25			10, 20, 30, 40, 50, 75, 100			
	10-/12-/21-CXS□32	32			10, 20, 30, 40, 50, 75, 100			

Specifications

Item	Bore size (mm)		
	6	10/15	20/25/32
Proof pressure	1.05MPa		
Max. operating pressure	0.7MPa		
Min. operating pressure	0.15MPa	0.1MPa	0.05MPa
Ambient and fluid temperature	-10 to 60°C (With no condensation)		
Piston speed	30 to 400mm/s		
Stroke adjustable range	0 to -5mm compared to the standard stroke		
Bearing type	Ball bushing bearing/Slide bearing		
Grease	10-/11-/12-: Fluorine grease 21-/22-: Lithium soap base grease		
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-/12-: Grade 2, 21-: Grade 3 11-/22-: Grade 1		

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate ℓ/min (ANR)
6	2
10	5
15	10
20/25	15
32	20

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Style	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-Z73	24 VDC, 100 VAC	5 to 40mA, 5 to 20mA	○	Relay, PLC
Solid state switch	2-wire type D-Y59B	24 VDC (10 to 28V)	5 to 40mA	○	24 VDC Relay, PLC
	3-wire type D-Y59A	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

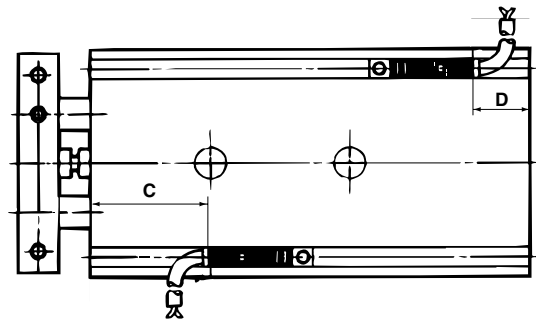
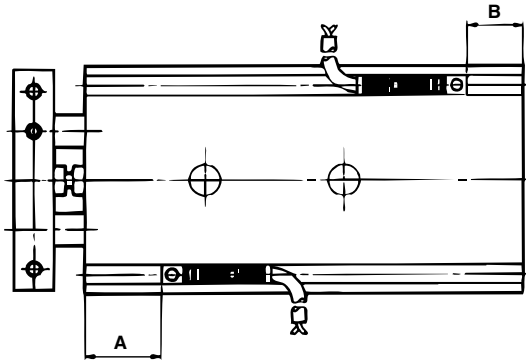
Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

Auto switches / Proper mounting position for stroke end detection

Electrical entry direction: Inward

Electrical entry direction: Outward

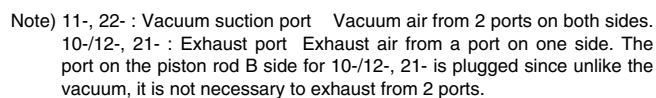


(mm)

Bore size	A	B	D-Z73		D-Y59A, D-Y59B	
			C	D	C	D
6	20.5	4.5	15	-1	16.5	0.5
10	27	8	21.5	2.5	23	4
15	38	4.5	32.5	-1	34	0.5
20	50	7	44.5	1.5	46	3
25	50.5	8.5	45	3.5	46.5	5
32	60	9	54.5	3.5	56	5

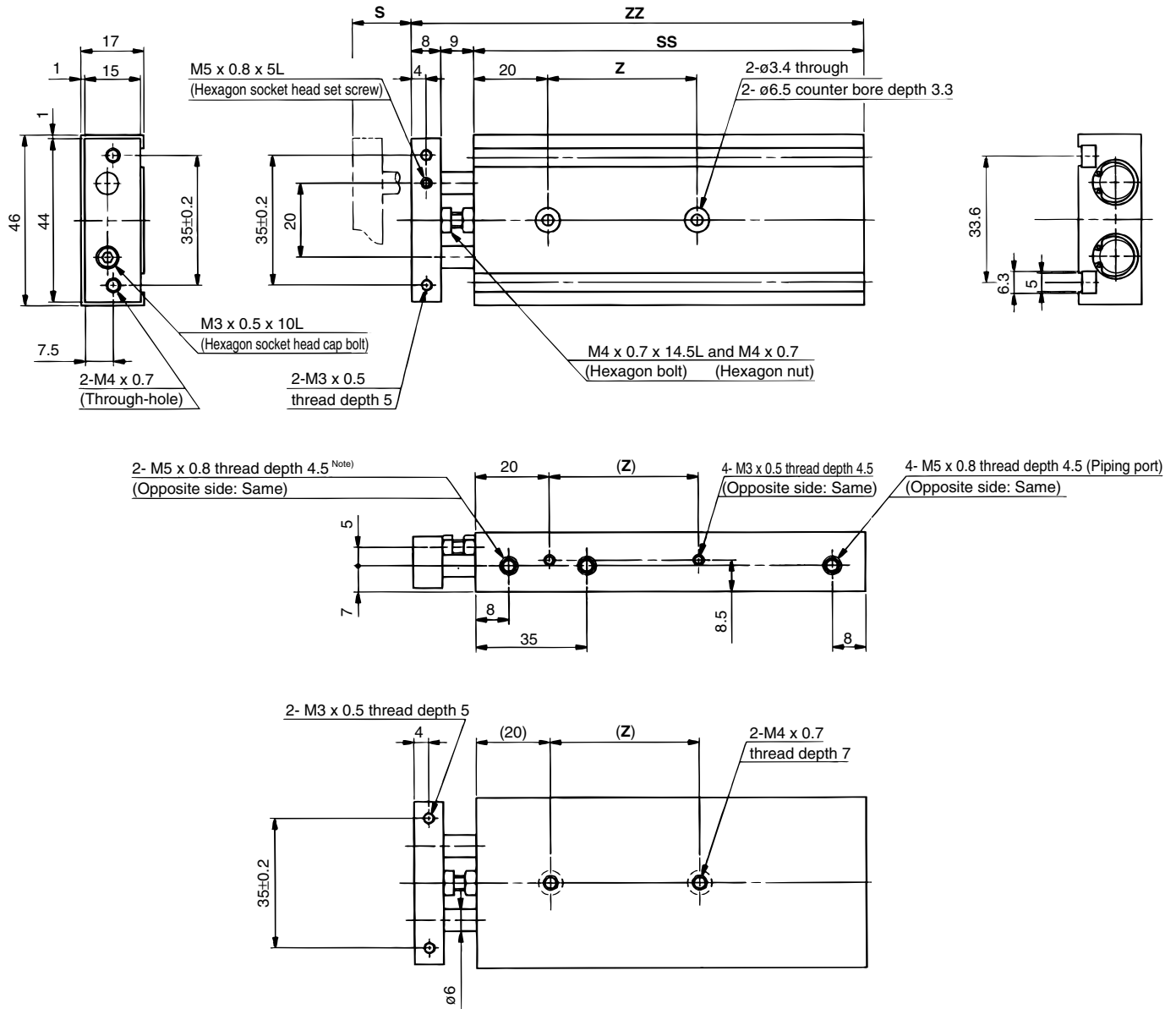
Note 1) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) Lead wire entry is inward when the product is shipped.



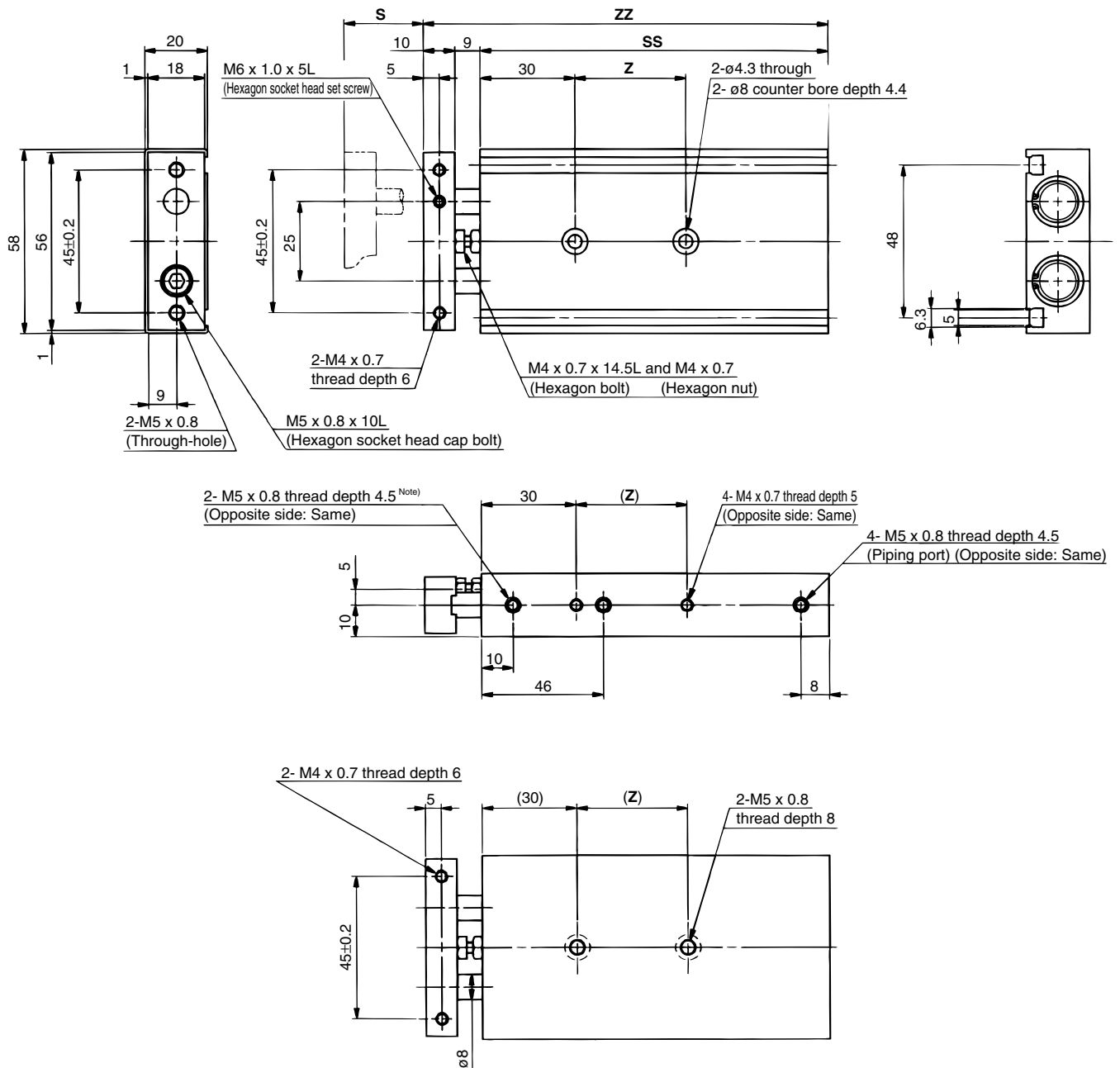
Model	15+1/2ST	50+ST	63.5+ST
^{10+11/12} ₂₁₊₂₂ CXS□6-10	20	60	73.5
^{10+11/12} ₂₁₊₂₂ CXS□6-20	25	70	83.5
^{10+11/12} ₂₁₊₂₂ CXS□6-30	30	80	93.5
^{10+11/12} ₂₁₊₂₂ CXS□6-40	35	90	103.5
^{10+11/12} ₂₁₊₂₂ CXS□6-50	40	100	113.5

Basic style / ^{10-/11-22-}**CXS**□10, ¹²⁻²¹⁻**CXSL**10



Note) 11-, 22- : Vacuum suction port Vacuum air from 2 ports on both sides. 10-/12-, 21- : Exhaust port Exhaust air from a port on one side. The port on the piston rod B side for 10-/12-, 21- is plugged since unlike the vacuum, it is not necessary to exhaust from 2 ports.

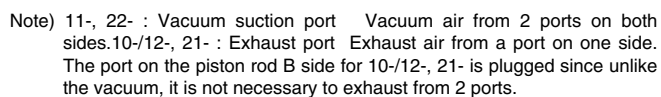
Model	S	SS	ZZ	Z
^{10-/11-12-21-/22-} CXS □10-10	10	70	87	30
^{10-/11-12-21-/22-} CXS □10-20	20	80	97	30
^{10-/11-12-21-/22-} CXS □10-30	30	90	107	40
^{10-/11-12-21-/22-} CXS □10-40	40	100	117	40
^{10-/11-12-21-/22-} CXS □10-50	50	110	127	40



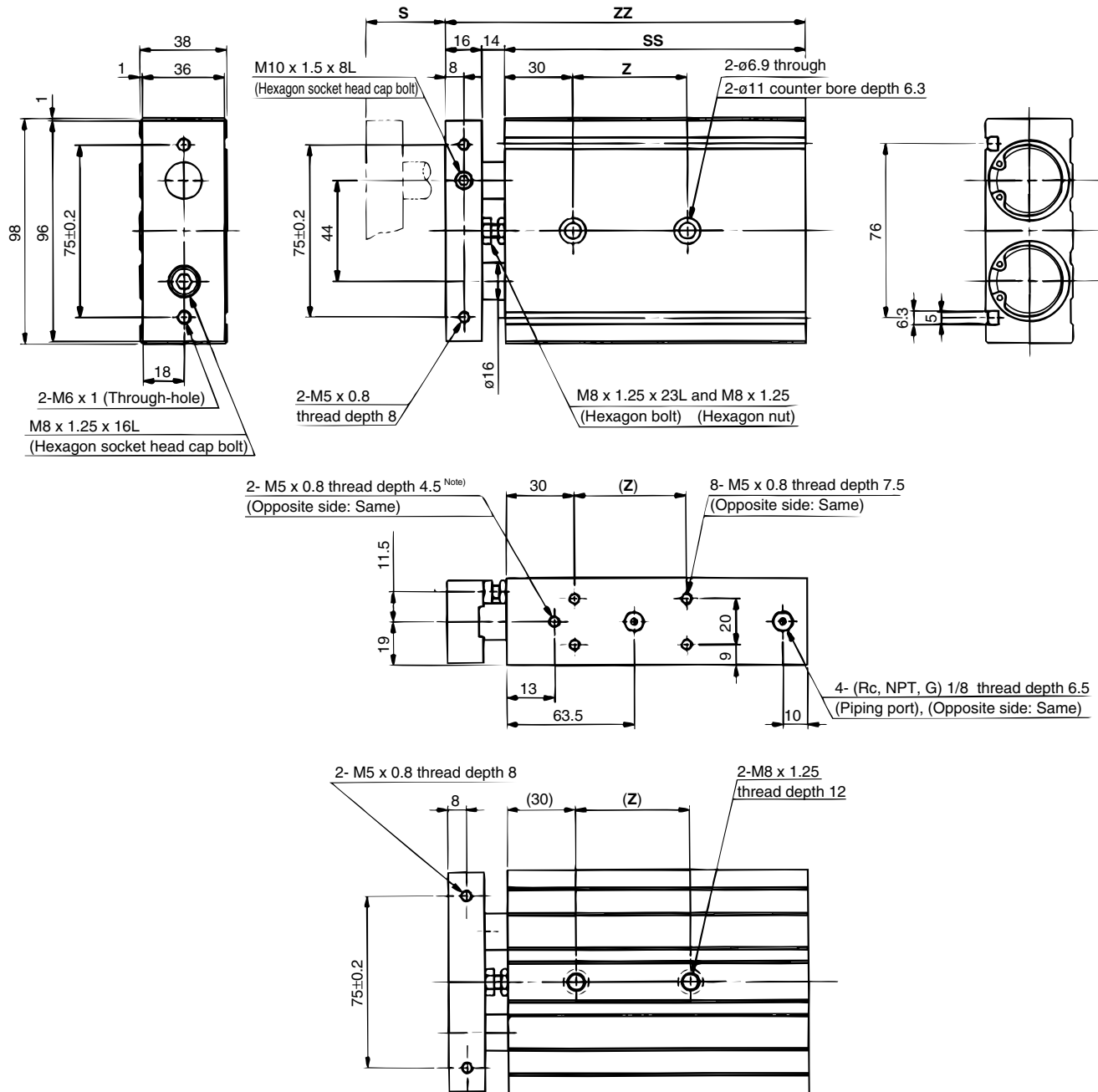
Note) 11-, 22- : Vacuum suction port Vacuum air from 2 ports on both sides. 10-/12-, 21- : Exhaust port Exhaust air from a port on one side. The port on the piston rod B side for 10-/12-, 21- is plugged since unlike the vacuum, it is not necessary to exhaust from 2 ports.

(mm)

Model	S	SS	ZZ	Z
^{10-/11- 21-/22-} CXS □15-10	10	77.5	96.5	25
^{10-/11- 21-/22-} CXS □15-20	20	87.5	106.5	25
^{10-/11- 21-/22-} CXS □15-30	30	97.5	116.5	35
^{10-/11- 21-/22-} CXS □15-40	40	107.5	126.5	35
^{10-/11- 21-/22-} CXS □15-50	50	117.5	136.5	45



				(mm)	
Model		S	SS	ZZ	Z
10-11-12-21-22	CXS□25-10	10	94	118	30
10-11-12-21-22	CXS□25-20	20	104	128	40
10-11-12-21-22	CXS□25-30	30	114	138	40
10-11-12-21-22	CXS□25-40	40	124	148	40
10-11-12-21-22	CXS□25-50	50	134	158	60
10-11-12-21-22	CXS□25-75	75	159	183	60
10-11-12-21-22	CXS□25-100	100	184	208	80

Basic style / <sup>10-/11-
22-</sup>CXS □ 32, <sup>12-
21-</sup>CXSL32


Note) 11-, 22- : Vacuum suction port Vacuum air from 2 ports on both sides. 10-/12-, 21- : Exhaust port Exhaust air from a port on one side. The port on the piston rod B side for 10-/12-, 21- is plugged since unlike the vacuum, it is not necessary to exhaust from 2 ports.

Model	S	SS	ZZ	Z
^{10-/11- 21-/22-} CXS □ 32-10	10	104	134	40
^{10-/11- 21-/22-} CXS □ 32-20	20	114	144	50
^{10-/11- 21-/22-} CXS □ 32-30	30	124	154	50
^{10-/11- 21-/22-} CXS □ 32-40	40	134	164	50
^{10-/11- 21-/22-} CXS □ 32-50	50	144	174	60
^{10-/11- 21-/22-} CXS □ 32-75	75	169	199	70
^{10-/11- 21-/22-} CXS □ 32-100	100	194	224	90



Specific product precautions

Be sure to read before handling.

Mounting

⚠ Caution

- 1. Make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness : 0.05 or less).**
Dual rod cylinders can be mounted from 3 directions, however, make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness: 0.05 or less). Otherwise, the accuracy of the piston rod operation is not achieved, and malfunction may occur.
- 2. The piston rod must be retracted when mounting the cylinder.**
Scratches or gouges in the piston rod may lead to damaged bearings and seals, and causes malfunction or air leakage.
- 3. Secure the plate before mounting the load.**
Load mounting without securing the plate may cause galling of the piston rod, leading to particle generation.

Piping

⚠ Caution

- 1. Plug the appropriate supply port(s) according to the operating conditions.**
Dual rod cylinders have 2 supply ports for each operating direction (3 supply ports for ø6 only). Plug the appropriate supply port according to the operating conditions. After the plugged port has been changed, check the port for air leakage. If small leakage is detected, unplug the port, check the seat surface, and reassemble it.
- 2. For 12- relief port, change the plug position according to the operating conditions.**
A relief port is provided on each side. Change the plug position according to the operating conditions. After the change, apply 0.1 MPa pressure from the relief port to check the plugged portion for air leakage. If small leakage is detected, unplug the port, check the seat surface, and reassemble it.
- 3. Vacuum air from vacuum ports on both sides of 11- and 22-.**
Vacuum from one side is insufficient. Be sure to vacuum simultaneously from both sides.

Stroke Adjustment

⚠ Caution

- 1. After adjusting the stroke, tighten firmly the hexagon nut to prevent it from loosening.**
Dual rod cylinders have a bolt to adjust 0 to - 5 strokes on the retracted end (IN).
Loosen the hexagon nut to adjust the stroke. However, make sure to tighten the hexagon nut after making an adjustment.
- 2. Do not operate a cylinder with its bumper bolt removed.**
If the bumper bolt is removed, the piston hits the head cover, causing damage to the cylinder. Therefore, do not use a cylinder without a bumper bolt.
- 3. A bumper at the end of the bumper bolt is replaceable. In case a missing bumper, or a bumper has a permanent setting, use the following part numbers for ordering.**

Model	CXS6/10/15	CXS20/25	CXS32
Part number	CXS10-34A 28747	CXS20-34A 28749	CXS32-34A 28751
No. of bumpers	1		

Disassembly and Maintenance

⚠ Caution

- 1. Never use a cylinder with its plate removed.**
When removing the hexagon socket head cap screw from the end plate, the piston rod must be secured to prevent rotation. However, if the sliding parts of the piston rod are scratched or gouged, malfunction may occur. If a plate is not required for your applications, use the cylinder that does not come with a plate, available through Made to Order (-X593).
- 2. When disassembling and reassembling the cylinder, contact SMC or refer to the separate instruction manual.**

⚠ Warning

- 1. Take precautions when your hands are near the plate and housing.**
During cylinder operation, be careful not to get your hand or fingers caught between the plate and housing.

Series 12-/13- 21-/22-MGPL

Compact guide cylinder
ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63

How to Order

● **Clean series**

12	Relief type (with specially treated sliding parts)
13	Vacuum suction type (with specially treated sliding parts)

● **Copper, fluorine and silicon-free + low particle generation**

21	Relief type
22	Vacuum suction type

● **Ball bushing bearing**

● **Bore size (mm)**

Symbol	Type	Bore size
Nil	M5 x 0.8	ø12, ø16
	Rc	ø20 to ø63
N	NPT	
TF	G	

● **Port type**

● **Cylinder stroke (mm)**

● **Type of auto switch**

Nil	Without auto switch
Reed switch	Z73
Solid state switch	Y59A, Y59B

● **Number of auto switches**

Nil	2 pcs.
S	1 pc.

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
								Rubber	Air
(with specially treated sliding parts) Relief type	12-/21-MGPL12	12	M5 x 0.8	Non-lube	Double acting	10, 20, 30, 40, 50, 75,100, 125, 150, 175, 200, 250	○	○ (Both sides)	—
	12-/21-MGPL16	16				20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	12-/21-MGPL20	20	1/8			25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	12-/21-MGPL25	25							
	12-/21-MGPL32	32							
	12-/21-MGPL40	40							
	12-/21-MGPL50	50	1/4						
	12-/21-MGPL63	63							
(with specially treated sliding parts) Vacuum suction type	13-/22-MGPL12	12	M5 x 0.8			10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250			
	13-/22-MGPL16	16				20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	13-/22-MGPL20	20	1/8			25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
	13-/22-MGPL25	25							
	13-/22-MGPL32	32							
	13-/22-MGPL40	40							
	13-/22-MGPL50	50	1/4						
	13-/22-MGPL63	63							

Specifications

Item	Bore size (mm)	
	12/16	20/25/32/40/50/63
Proof pressure	1.5MPa	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.12MPa	0.1MPa
Ambient and fluid temperature	-10°C to 60°C (With no condensation)	
Piston speed	50 to 400mm/s	
Stroke length tolerance	$\begin{smallmatrix} +1.5 \\ 0 \end{smallmatrix}$	
Grease	12-/13-: Fluorine grease 21-/22-: Lithium soap base grease	
Particle generation grade	13-: Grade 2, 21-: Grade 4	
(Refer to front matter pages 13 to 22 for details.)	12-/22-: Grade 3	

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate ℓ /min (ANR)
12/16/20/25	5
32/40/50/63	10

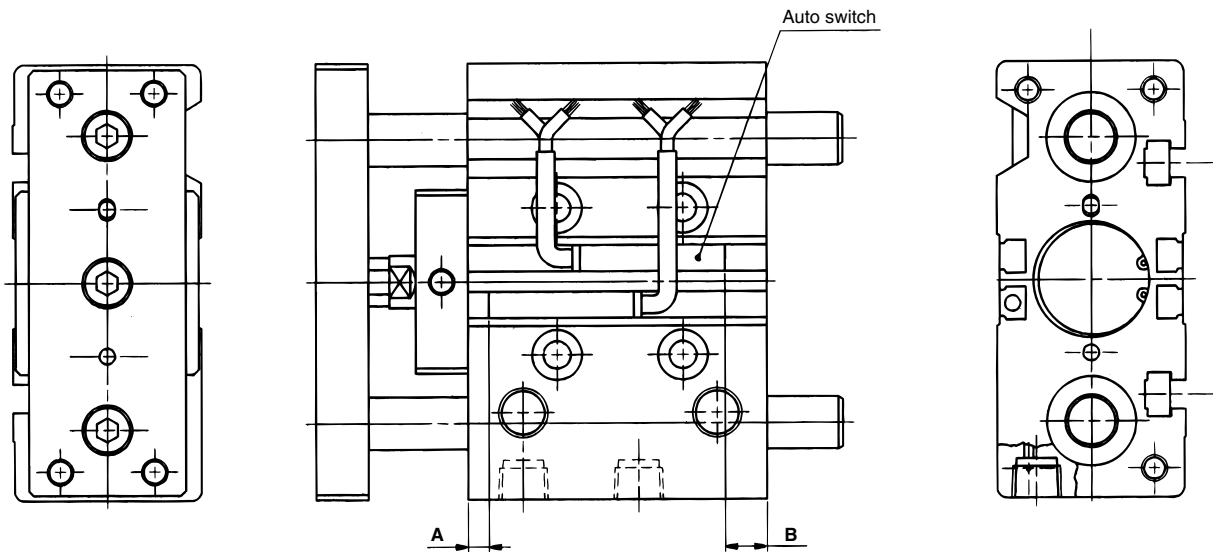
Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Style	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-Z73	24 VDC, 100 VAC	5 to 40mA, 5 to 20mA	○	Relay, PLC
Solid state switch	2-wire type D-Y59B	24 VDC (10 to 28 VDC)	5 to 40mA	○	24 VDC Relay, PLC
	3-wire type D-Y59A	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

Auto switches / Proper mounting position for stroke end detection

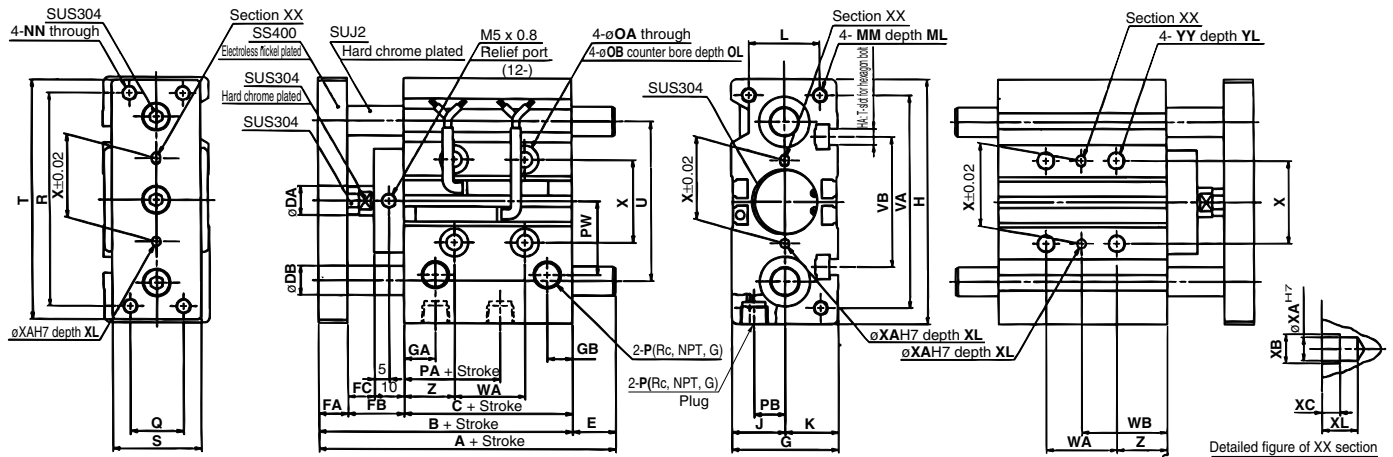


Proper mounting position (mm)		
Bore size(mm)	A	B
12	1	3
16	4	4
20	4.5	7.5
25	4.5	8

(mm)		
Bore size(mm)	A	B
32	5.5	7
40	9.5	9.5
50	7.5	11.5
63	10	14

Note 1) The minimum stroke for auto switch mounting is 10 mm or larger for types with 2 pieces and 5 mm or larger for types with 1 piece.
Note 2) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Basic style / ¹²⁻MGPL 12 to 25, ²¹⁻MGPL 12 to 25

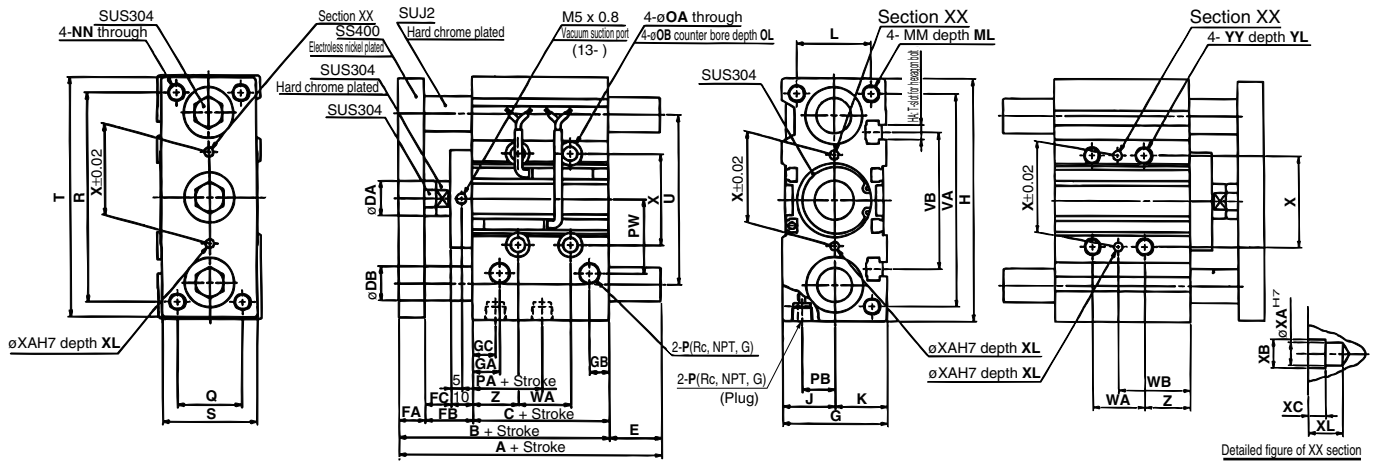


Bore size	A				B	C	DA	DB	E				FA	FB	FC	G	GA	GB	H
	30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st					30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st							
12	56	68	98	98	55	29	6	6	1	13	43	43	8	18	8	26	11	7.5	58
16	62	78	108	108	59	33	8	8	3	19	49	49	8	18	8	30	11	8	64
20	76	93	117	135	66	37	10	10	10	27	51	69	10	19	9	36	10.5	8.5	83
25	82.5	98.5	117.5	135	66.5	37.5	12	13	16	32	51	68.5	10	19	9	42	11.5	9	93

Bore size	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	VB
12	M4	13	13	18	M4 x 0.7	10	M4 x 0.7	4.3	8	4.5	M5 x 0.8	13	8	18	14	48	22	56	41	50	37
16	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	15	10	19	16	54	25	62	46	56	38
20	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.6	9.5	5.5	1/8	12.5	10.5	25	18	70	30	81	54	72	44
25	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	5.6	9.5	5.5	1/8	12.5	13.5	28.5	26	78	38	91	64	82	50

Bore size	WA					WB					X	XA	XB	XC	XL	YY	YL	Z
	30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st	30st or less	Over 30st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st								
12	20	40	110	200	—	15	25	60	105	—	23	3	3.5	3	6	M5 x 0.8	10	5
16	24	44	110	200	—	17	27	60	105	—	24	3	3.5	3	6	M5 x 0.8	10	5
20	24	44	120	200	300	29	39	77	117	167	28	3	3.5	3	6	M6 x 1.0	12	17
25	24	44	120	200	300	29	39	77	117	167	34	4	4.5	3	6	M6 x 1.0	12	17

Basic style / ¹²⁻MGPL 32 to 63, ²¹⁻MGPL 32 to 63



(mm)																			
Bore size	A				B	C	DA	DB	E				FA	FB	FC	G	GA	GB	GC
	50st or less	Over 50st and up to 100st	Over 100st and up to 200st	Over 200st					50st or less	Over 50st and up to 100st	Over 100st and up to 200st	Over 200st							
32	93	110	130	152	71.5	37.5	16	16	21.5	38.5	58.5	80.5	12	22	12	48	12.5	9	12.5
40	93	110	130	152	78	44	16	16	15	32	52	74	12	22	12	54	14	10	14
50	104	125	145	172	83	44	20	20	21	42	62	89	16	23	13	64	14	11	12
63	104	125	145	172	88	49	20	20	16	37	57	84	16	23	13	78	16.5	13.5	16.5

Bore size	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	VB
32	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	7	15	34	30	96	44	110	78	98	63
40	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	1/8	13	18	38	30	104	44	118	86	106	72
50	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	9	21.5	47	40	130	60	146	110	130	92
63	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	14	9	1/4	14	28	55	50	130	70	158	124	142	110

Bore size	WA					WB					X	XA	XB	XC	XL	YY	YL	Z
	25st or less	Over 25st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st	25st or less	Over 25st and up to 100st	Over 100st and up to 200st	Over 200st and up to 300st	Over 300st								
32	24	48	124	200	300	33	45	83	121	171	42	4	4.5	3	6	M8 x 1.25	16	21
40	24	48	124	200	300	34	46	84	122	172	50	4	4.5	3	6	M8 x 1.25	16	22
50	24	48	124	200	300	36	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63	28	52	128	200	300	38	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24



Specific Product Precautions

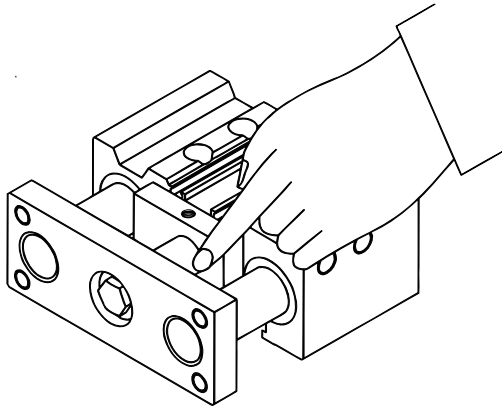
Be sure to read before handling.

Mounting

Warning

1. Do not place your hands or fingers between the cylinder and the body.

Be careful not to get your hands or fingers caught between the cylinder body and the plate when air is applied.



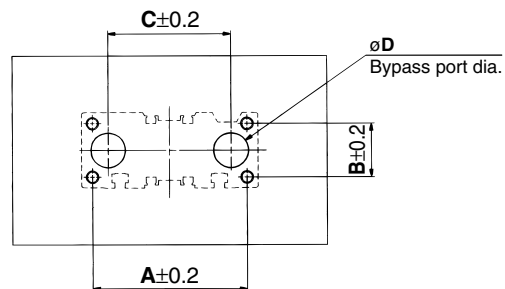
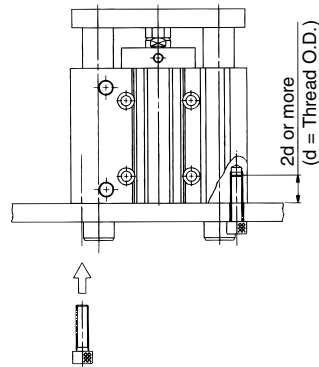
Caution

1. Be careful not to scratch or gouge the sliding portion of the piston rod and the guide rod.

Damaged seals may cause leakage or malfunction.

2. Bottom of cylinder

The guide rods protrude from the bottom of the cylinder at the end of the retracting stroke. Therefore, in cases where the cylinder is to be bottom mounted, it is necessary to provide bypass ports in the mounting surface for the guide rods, as well as holes for the hexagon socket head screws which are used for mounting.

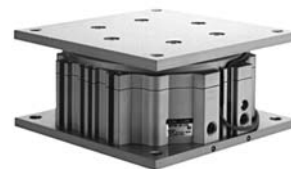


Bore size (mm)	A (mm)	B (mm)	C (mm)	øD (mm)	Hexagon socket head cap screw
12	50	18	41	8	M4 x 0.7
16	56	22	46	10	M5 x 0.8
20	72	24	54	12	M5 x 0.8
25	82	30	64	15	M6 x 1.0
32	98	34	78	18	M8 x 1.25
40	106	40	86	18	M8 x 1.25
50	130	46	110	22	M10 x 1.5
63	142	58	124	22	M10 x 1.5

Series 10-MGF

Guide table ø40, ø63, ø100

How to Order



10 - M G F 63 - 50 - Y59B

Clean series

10	Relief type
----	-------------

Bore size (mm)

Port type

Symbol	Type	Bore size
Nil	Rc	ø40, ø63, ø100
TN	NPT	
TF	G	

Number of auto switches

Nil	2 pcs.
S	1 pc.

Type of auto switch

Reed switch	Z73
Solid state switch	Y59A, Y59B

Cylinder stroke (mm)

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke * (mm)	Auto switch mounting	Cushion	
Relief type	10-MGF40	40	1/8	Non-lube	Double acting	30, 50, 75, 100	○	Rubber	Air
	10-MGF63	63	1/4					○ (Both sides)	-
	10-MGF100	100							

* Non-standard intermediate strokes (in 5 mm increments) are available by attaching a spacer of 5, 10, 15, 20 or 25 mm width.

Specifications

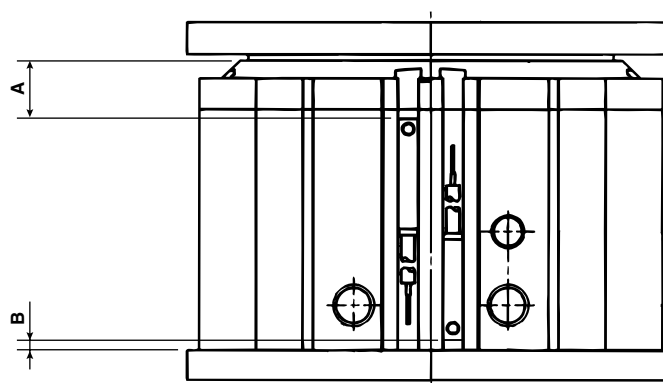
Bore size(mm)		
Item		40/63/100
Proof pressure		1.5MPa
Max. operating pressure		1.0MPa
Min. operating pressure		0.1MPa
Ambient and fluid temperature		-10 to 60°C (With no freezing)
Piston speed		20 to 200 mm/s
Stroke length tolerance		$\begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$ mm
Grease		Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		Grade 2

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Style	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	D-Z73	24 VDC, 100 VAC	5 to 40mA, 5 to 20mA	○	Relay, PLC
Solid state switch	2-wire type D-Y59B	24 VDC (10 to 28 VDC)	5 to 40mA	○	24 VDC Relay, PLC
	3-wire type D-Y59A	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

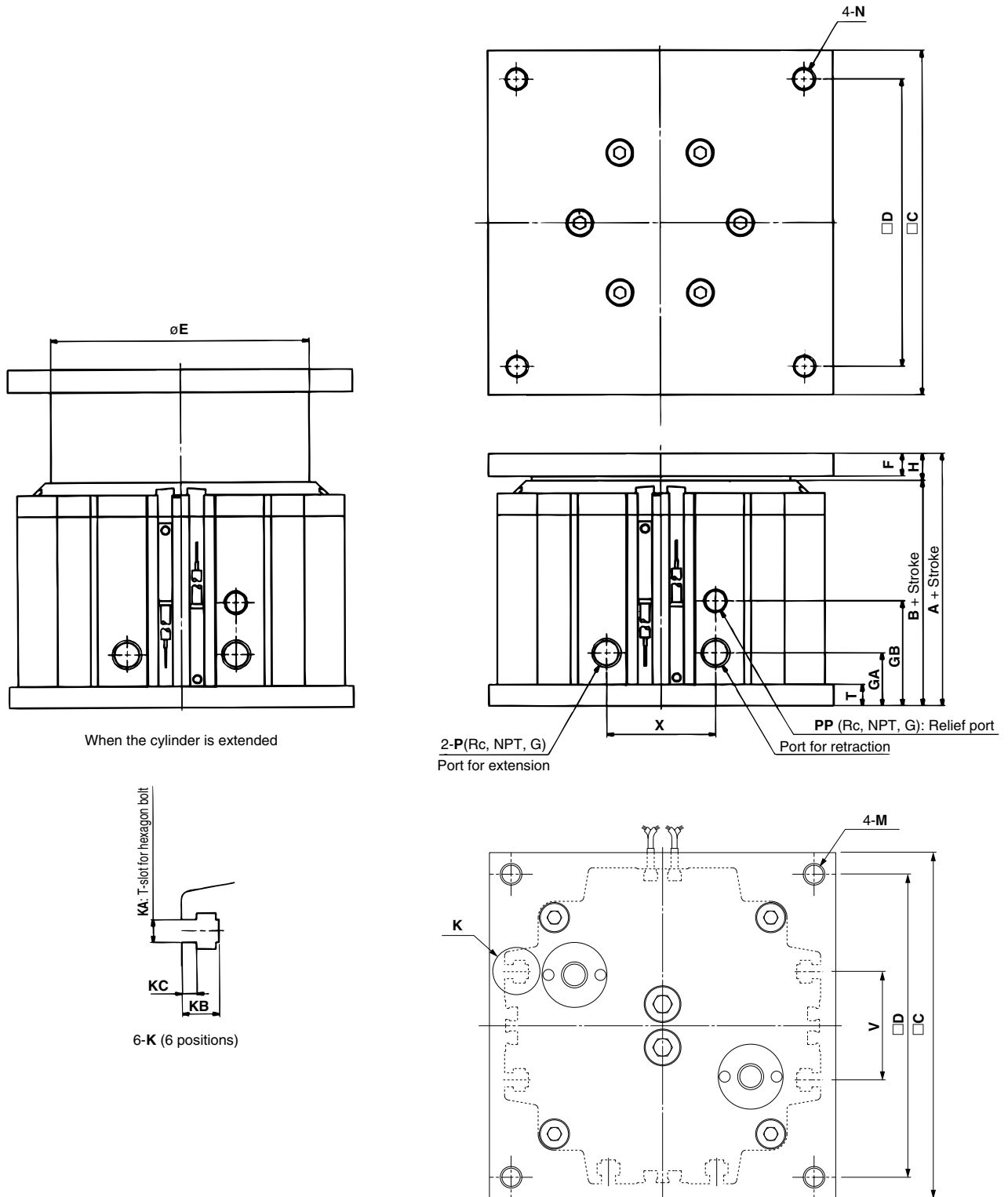
Auto switches / Proper mounting position for stroke end detection**Proper mounting position (mm)**

Bore size	A	B
40	16	0
63	27.5	0
100	32.5	0

Note) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Dimensions

10-MGF40/63/100



Bore size	Standard stroke	A	B	C	D	E	F	GA	GB	H	KA	KB	KC	M	N	P	PP	T	V	X
40	30, 50, 75, 100	58	48.5	120	100	90	8	18.5	36.5	9.5	M5	8.7	3.5	M8 x 1.25	M8 x 1.25	1/8	1/8	7.5	40	38
63		73	61.5	160	140	120	10	20	38	11.5	M6	11	4	M10 x 1.5	M10 x 1.5	1/4	1/8	9	50	46
100		78	66.5	200	170	160	10	20	38	11.5	M6	11	4	M12 x 1.75	M12 x 1.75	1/4	1/8	9	70	46

(mm)



Specific Product Precautions

Be sure to read before handling.

Selection

⚠ Caution

1. Operate loads within the range of the operating limits.

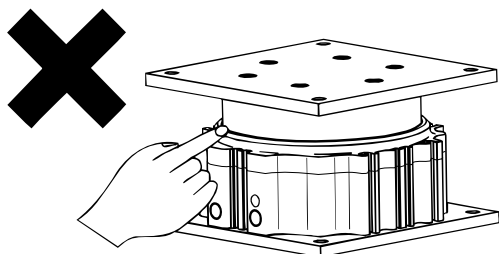
Select a load taking into consideration the allowable horizontal loads, rotational torque and eccentric loads that will apply. When used in excess of the applicable limit, eccentric loads applied to the tubing guide will cause wear of the guide, increase the guide's deviation range, cause stress cracks and breaks on the mounting bolts, and decrease the life of the cylinder.

2. Care should be taken to avoid scratches or gouges on the mounting surface of the plate or end plate.

The flatness of the mounting face may deteriorate, the guide's deviation range may increase and the sliding resistance may become greater.

3. Do not allow hands or fingers near the cylinder during its operation.

Your fingers may be caught between the body and the plate. If you need to come near the cylinder during its operation, install a cover on the cylinder.



4. Do not bring objects that are sensitive to magnetism near the cylinder.

The magnet is built into the cylinder. Do not bring magnetic disks, cards or tapes near the cylinder. Data may be lost.

5. If the cylinder is operated vertically with heavy loads, measures must be taken to prevent rapid extension of the piston rod when starting to operate in the downward direction.

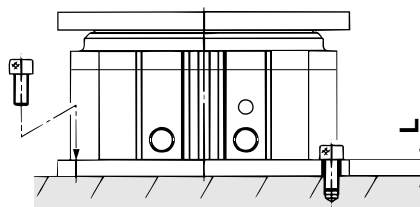
If the cylinder is operated vertically with heavy loads at the same pressure for both upward and downward directions, the starting speed in the downward direction may be higher than the speed controlled with a speed controller. In such cases, use a dual pressure control circuit as a pneumatic circuit.

Mounting

⚠ Caution

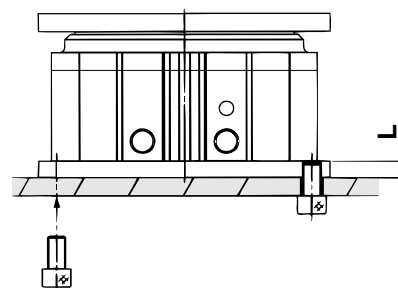
1. When mounting the cylinder, use screws of appropriate lengths and tighten with proper force not exceeding the maximum tightening torque.

Mounting from upper side



Model	Bolt	Maximum tightening torque N·m	L(mm)
MGF40	M6 x 1	10	7.5
MGF63	M8 x 1.25	25	9
MGF100	M10 x 1.5	51	9

Mounting from bottom side



Model	Bolt	Maximum tightening torque N·m	L(mm)
MGF40	M8 x 1.25	18	7.5
MGF63	M10 x 1.5	36	9
MGF100	M12 x 1.75	65	9

Series 11-22-MXP/MXPJ6

Air slide table
ø6, ø10, ø12, ø16

How to Order

• **Clean series**
11 Vacuum suction type

11 — MXP 12 15 [] [] — M9N []

22 — MXP 12 15 [] [] — M9N []

• **Copper, fluorine and silicon-free + low particle generation**
22 Vacuum suction type

• **Bore size - Stroke mm**

ø6	5, 10
ø10	10, 20
ø12	15, 25
ø16	20, 30

• **Adjuster option**

Nil	Rubber stopper
C	Metal stopper
H	Without adjuster

* Adjuster for series 11-MXP6 is available for one side only. Without adjuster type is unavailable for series 11-MXP6.

• **Auto switch**

Nil	With magnet and rail
N	Without magnet and rail

* Auto switch cannot be mounted on types without magnet and rail (N).

• **Number of auto switches**

Nil	2 pcs.
s	1 pc.
n	n pcs.

• **Type of auto switch**

Nil	Without auto switch
-----	---------------------

* Refer to the table below for auto switch part numbers.



11-MXP

How to Order 11- MXPJ6

• **Clean series**
11 Vacuum suction type

11 — MXPJ6 — 10

22 — MXPJ6 — 10

• **Copper, fluorine and silicon-free + low particle generation**
22 Vacuum suction type

* With auto switch type is unavailable for 11-MXPJ6.

• **Stroke**

5	5mm
10	10mm



11-MXPJ6

Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Style	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)*		Applicable load		
					DC	AC	Electrical entry direction	0.5 (Nil)	3 (L)			
							Horizontal					
Reed switch	—	Grommet	Yes	2-wire	24V	12V	100V	A93	●	●	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	12V	—	M9N	●	●	—	Relay, PLC
				2-wire		12V		M9B	●	●	—	

* Lead wire symbol 0.5m.....Nil (Example) A93
3m.....L A93L

PLC: Programmable Logic Controller

Refer to applicable auto switch list — Page 182.

Specifications

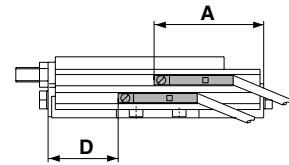
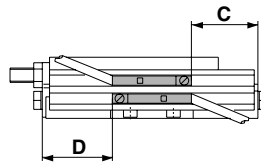
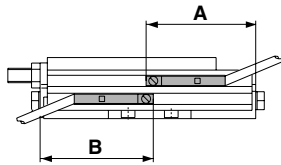
Model		11-/22-MXPJ6	11-/22-MXP6	11-/22-MXP10	11-/22-MXP12	11-/22-MXP16
Bore size (mm)		6	6	10	12	16
Piping port size		M3 x 0.5		M5 x 0.8		
Fluid		Air				
Action		Double acting				
Operating pressure		0.15 to 0.7 MPa				
Proof pressure		1.05 MPa				
Ambient and fluid temperature		−10 to 60°C				
Piston speed		30 to 200 mm/s				
Cushion		Rubber bumper	Rubber bumper (Rubber stopper)			
			—	Rubber bumper (Without adjuster)		
			No (Metal stopper)			
Lubrication		Non-lube				
Stroke adjuster		—	Standard equipment (MXP6 : Adjustable on one side only)			
Stroke adjustment range	Rubber stopper	—	0 to 5mm on one side only	0 to 3 mm at both ends		
	Metal stopper	—	0 to 6mm on one side only	0 to 5 mm at both ends	0 to 4 mm at both ends	
Stroke length tolerance		⁺¹ ₀ mm				
Grease		11-: Fluorine grease 22-: Lithium soap base grease				
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Without adjuster	Grade 1	—	Grade 1		
	Rubber stopper	—	Grade 2	Grade 2		
	Metal stopper	—	Grade 4	Grade 4		

Suction flow rate of vacuum type (Reference values)

Size	Suction flow rate ℓ/min (ANR)
6	1
10	3
12	4
16	6

Auto switches / Proper mounting position for stroke end detection

11-/22- MXP6



Reed switch D-A93

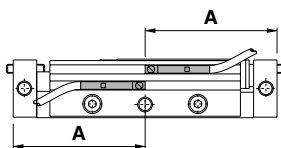
Model		Stroke (mm)	Auto switch operating range
		10	
11-/22-MXP 6	A	34.5	5
	B	35.5	
	C	14.5	
	D	15.5	

Solid state switch D-M9B, D-M9N

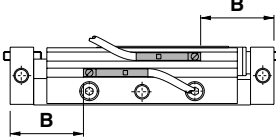
Model		Stroke (mm)		Auto switch operating range
		5	10	
11-/22-MXP 6	A	25.5	30.5	3
	B	26.5	31.5	
	C	13.5	18.5	
	D	14.5	19.5	

11-/22-MXP10, 12, 16

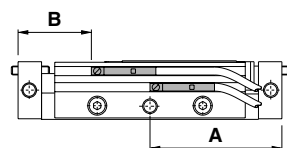
· Electrical entry from outside



· Electrical entry from inside



· Parallel electrical entry



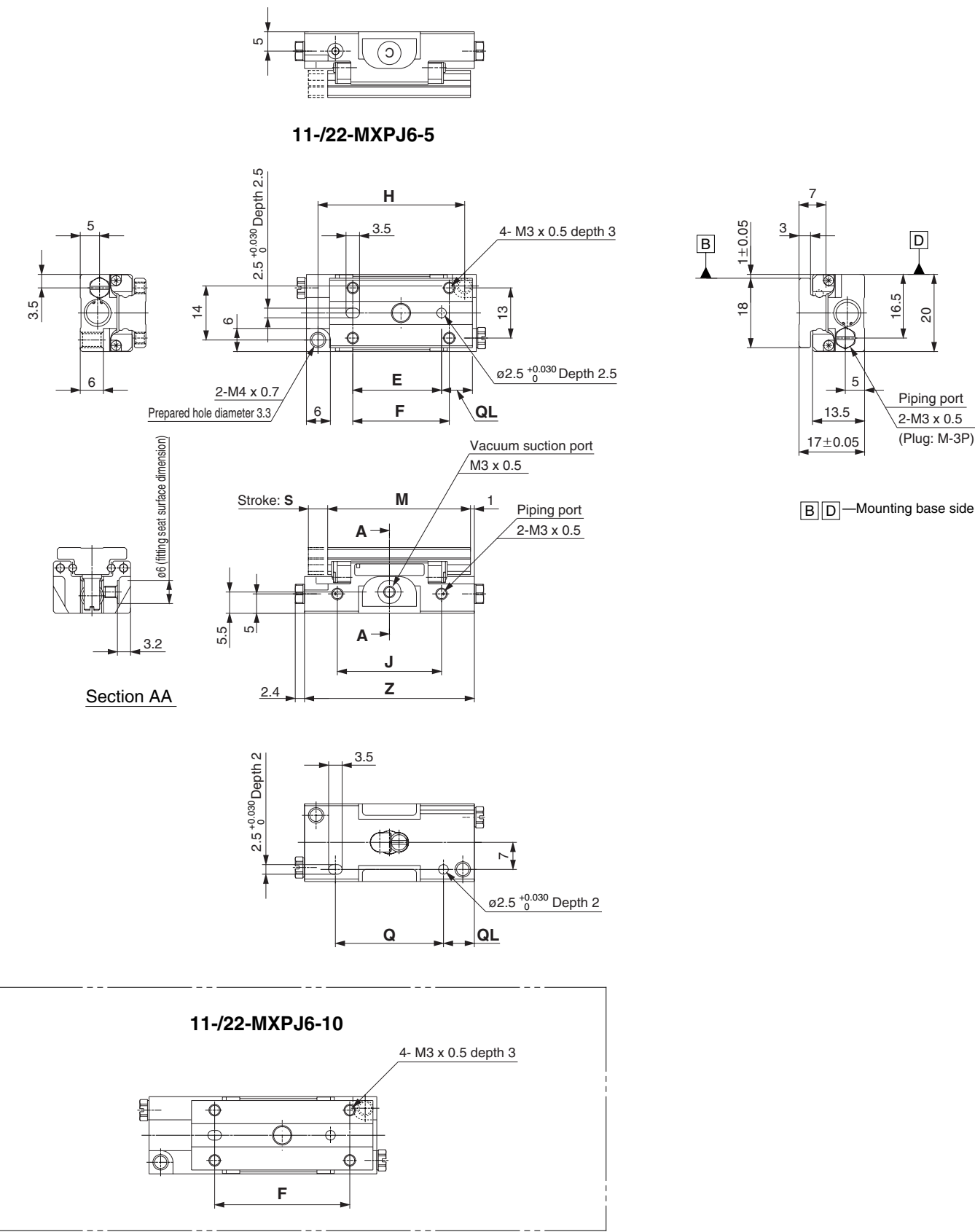
Reed switch D-A93

Model		Stroke (mm)					Auto switch operating range (mm)
		10	15	20	25	30	
11-/22-MXP10	A	35	—	45	—	—	5
	B	15	—	25	—	—	
11-/22-MXP12	A	—	40.5	—	50.5	—	
	B	—	20.5	—	30.5	—	
11-/22-MXP16	A	—	—	51	—	59	
	B	—	—	31	—	39	

Solid state switch D-M9B, D-M9N

Model		Stroke (mm)					Auto switch operating range (mm)
		10	15	20	25	30	
11-/22-MXP10	A	31	—	41	—	—	3
	B	19	—	29	—	—	
11-/22-MXP12	A	—	36.5	—	46.5	—	
	B	—	24.5	—	34.5	—	
11-/22-MXP16	A	—	—	47	—	55	
	B	—	—	35	—	43	

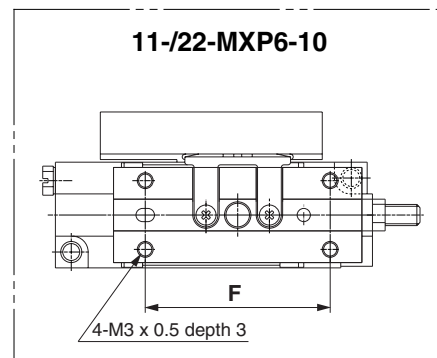
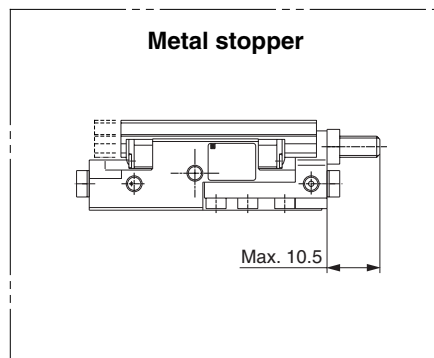
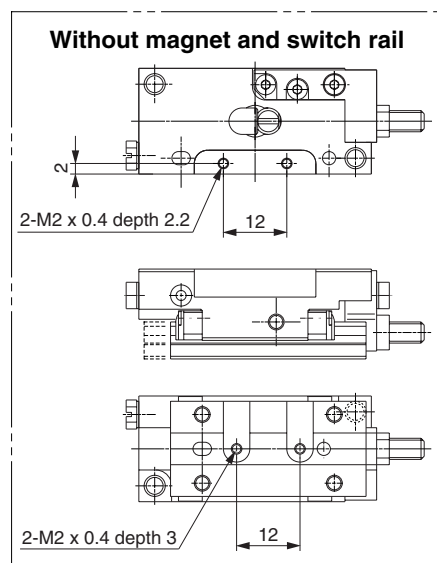
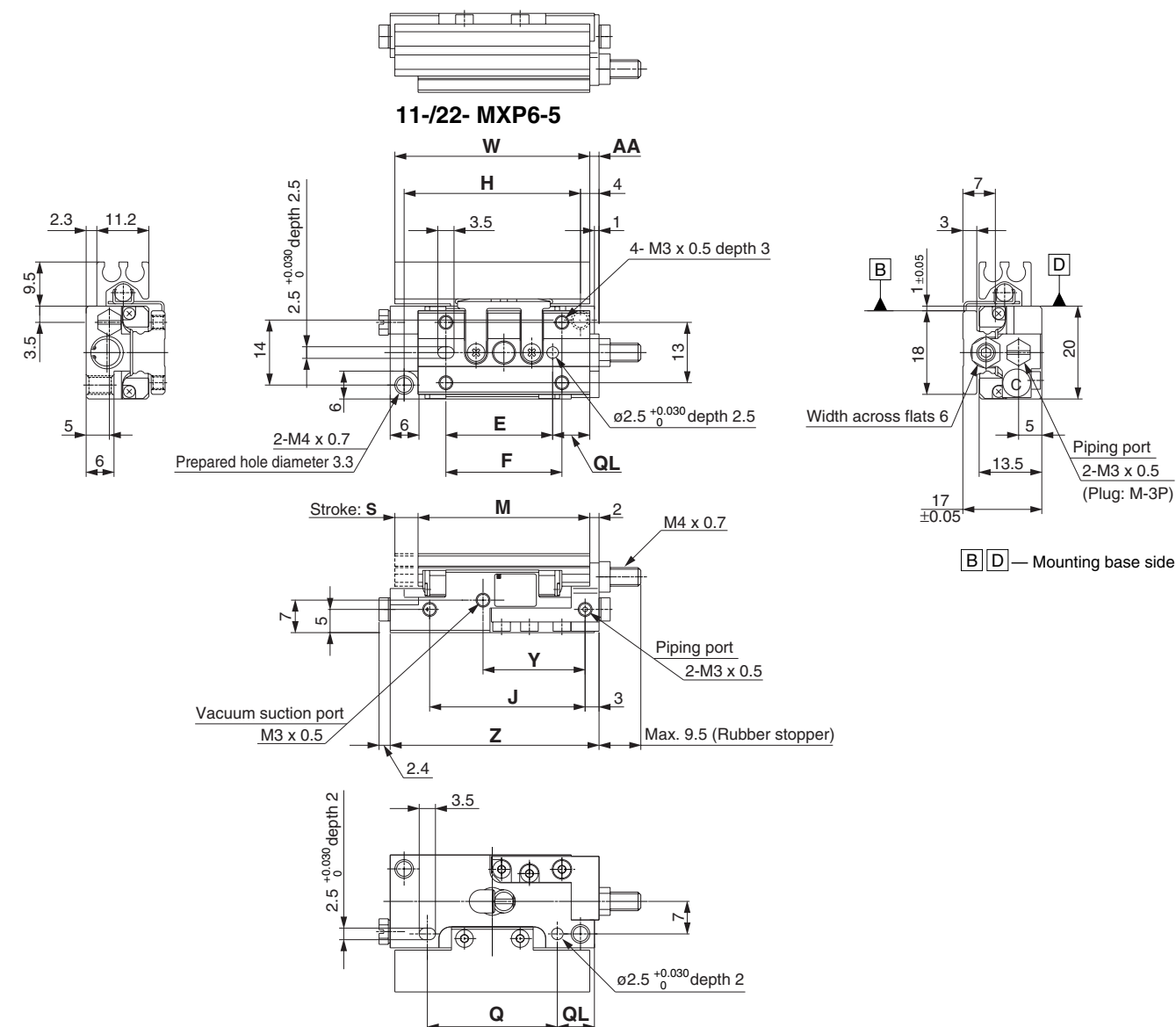
Dimensions / 11-22-MXPJ6



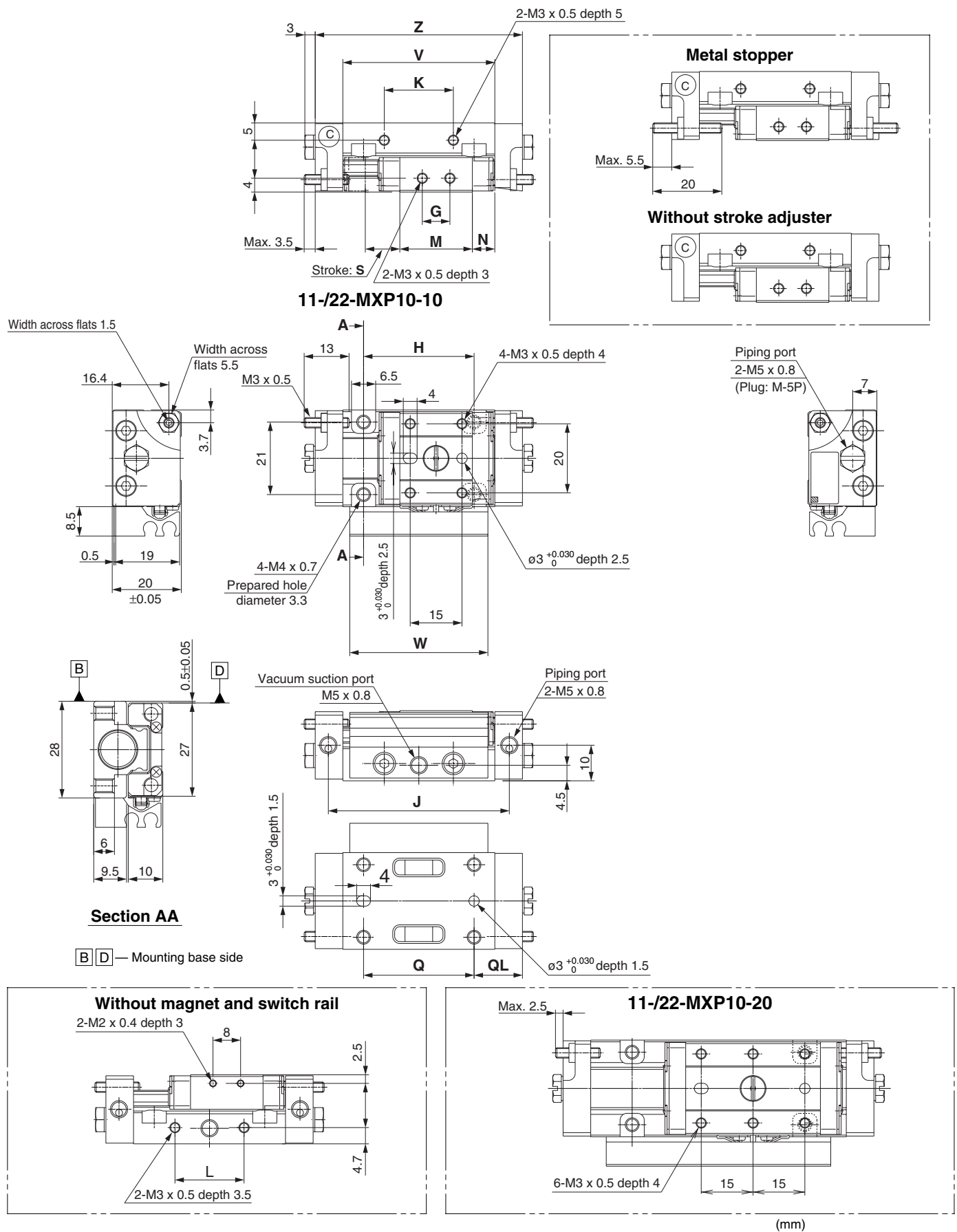
(mm)

Model	E	F	H	J	M	Q	QL	S	Z
11-22-MXPJ6-5	23	25	38	27	37	28	8	5	44
11-22-MXPJ6-10	30	35	53	42	47	37	11	10	59

Dimensions: 11-22-MXP6

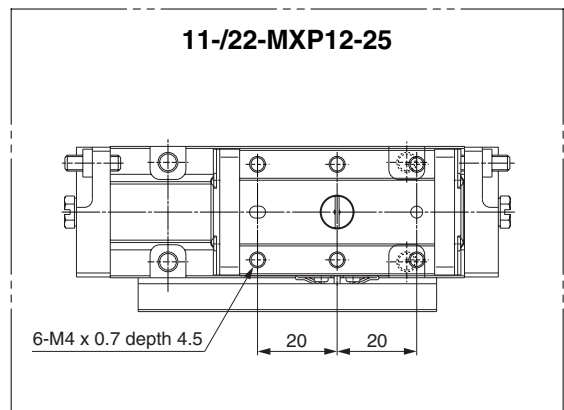
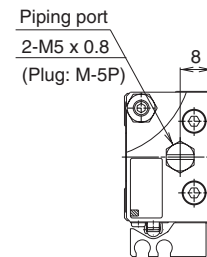
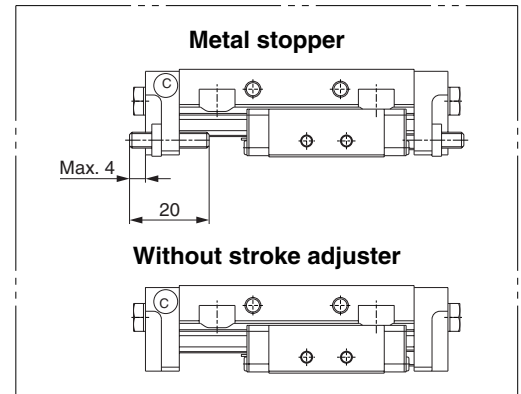
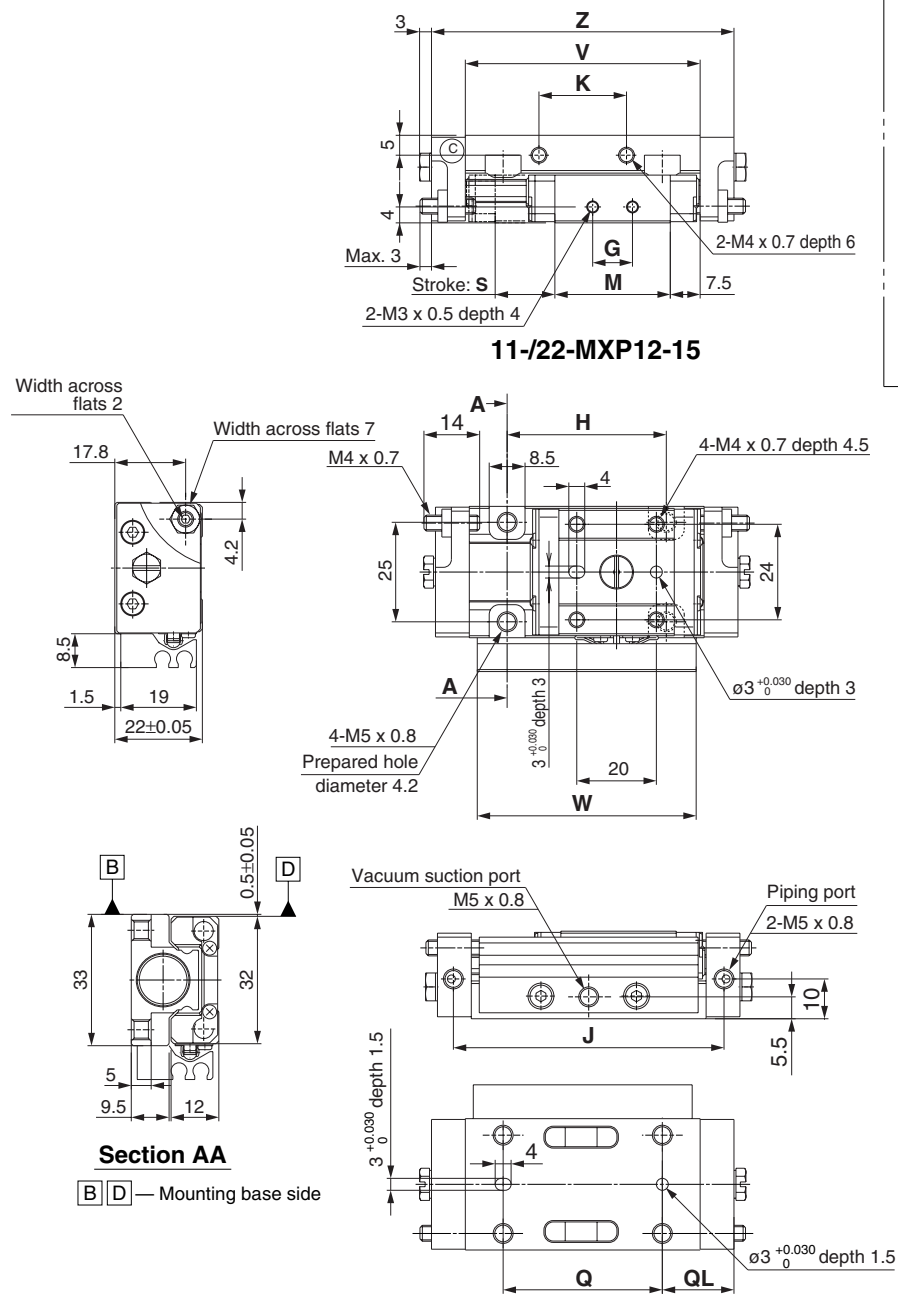


Model	E	F	H	J	M	Q	QL	S	W	Y	Z	AA
11-22-MXP6-5	23	25	38	33.5	37	28	8	5	42	22	45	2
11-22-MXP6-10	30	35	42	48.5	47	37	11	10	53	27.5	60	9.5

Dimensions: 11-22-MXP10


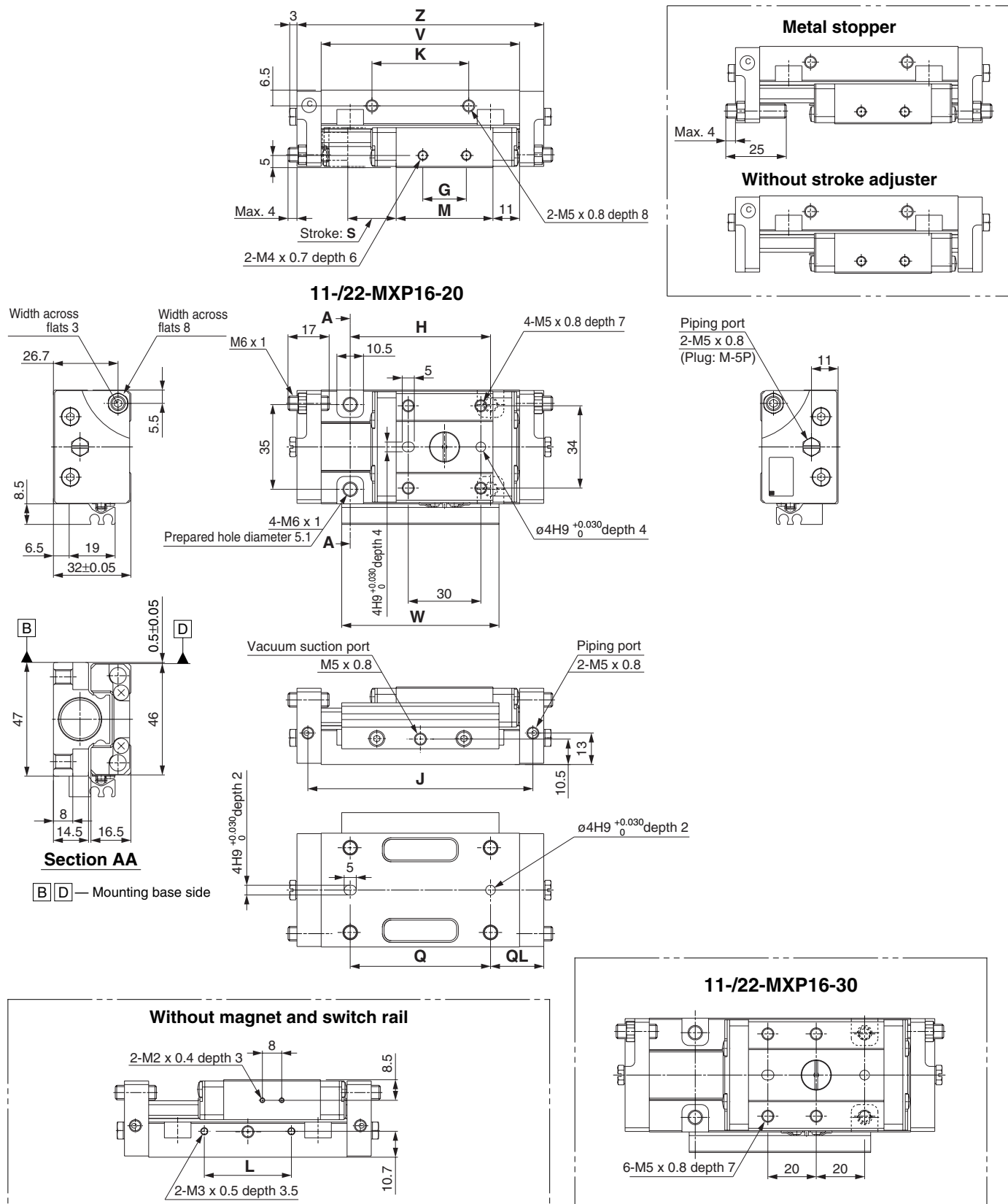
Model	G	H	J	K	L	M	N	Q	QL	S	V	W	Z
11-22-MXP10-10	8	32	52.4	20	20	21	6.5	32	14	10	44	40	60
11-22-MXP10-20	20	50	82.4	36	36	39	7.5	50	20	20	74	65	90

Dimensions: $\frac{11}{22}$ -MXP12



(mm)												
Model	G	H	J	K	L	M	Q	QL	S	V	W	Z
11-/22-MXP12-15	10	40	68	22	24	29	40	18	15	59	55	76
11-/22-MXP12-25	30	60	98	40	42	49	60	23	25	89	75	106

Dimensions: 11-22-MXP16



Model	G	H	J	K	L	M	Q	QL	S	V	W	Z
11-22-MXP16-20	18	58	93	40	36	40	58	22	20	82	65	102
11-22-MXP16-30	28	70	119	50	42	56	70	29	30	108	75	128

Made to Order

Anti-corrosive specifications for guide unit	-X42
--	------

11-/22-MXP Standard model no. -X42

11-/22-MXPJ6 Standard model no. -X42

Martensitic stainless steel is used for body, table and guide block. Use this treatment if more effective anti-corrosiveness is necessary. Anti-corrosive treatment ^{Note 2)} is applied to the body, table and guide block.

Note 1) Dimensions are the same as standard type.

Note 2) Special anti-corrosive treatment makes the body, the table and the guide black.

⚠ Specific Product Precautions

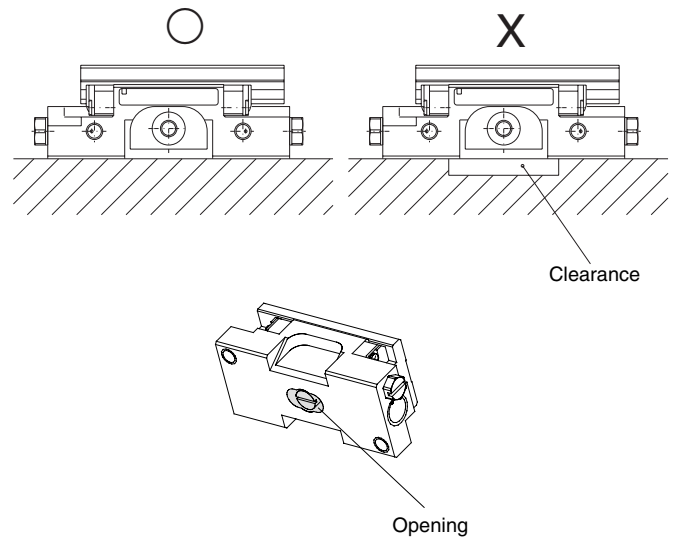
Be sure to read before handling.

Mounting

⚠ Caution

Mount the body on a flat surface in case of 11-/22-MXPJ6 series.

11-/22-MXPJ6 series has an opening on the bottom surface of the body and the opening is connected to the vacuum suction port. Sufficient vacuum suction may not be achieved in presence of any clearances.



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 13-22-MXQ Air slide table

ø6, ø8, ø12, ø16, ø20, ø25

How to Order

Port thread type

Symbol	Thread type	Bore size
Nil	M-thread	ø6 to ø16
	Rc	ø20, ø25
TN	NPT	ø20, ø25
TF	G	ø20, ø25

Clean series

13 Vacuum suction type (Special treatment on guide)

22 Copper, fluorine and silicon-free + Low particle generation Vacuum suction type

13-MXQ 12 **50** **M9N**

22-MXQ 12 **50** **M9N**

Symmetric type

Nil	Standard type
L	Symmetric type

Bore size / Stroke (mm)

6	10, 20, 30, 40, 50
8	10, 20, 30, 40, 50, 75
12	10, 20, 30, 40, 50, 75, 100
16	10, 20, 30, 40, 50, 75, 100, 125
20	10, 20, 30, 40, 50, 75, 100, 125, 150
25	10, 20, 30, 40, 50, 75, 100, 125, 150

Adjuster option

Nil	Without adjuster	
AS	Rubber stopper	Extension end
AT		Retraction end
A		Both ends
CS	Metal stopper	Extension end
CT		Retraction end
C		Both ends

Functional option

Nil	Standard type
p ^{Note)}	Axial piping type

Note) The combination of axial piping type and both ends adjusters or retraction end adjuster is not available.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Type of auto switch

Nil	Without auto switch

* For the applicable auto switch model, refer to the table below.



Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m) *		Applicable load		
					DC	AC	Electrical entry direction	0.5 Nil	3 (L)			
							In-line					
Reed switch	—	Grommet	Yes	2-wire	24V	12V	100V	A93	●	●	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	12V	—	M9N	●	●	—	Relay, PLC
				2-wire		12V		M9B	●	●	—	

* Lead wire length symbols: 0.5m.....Nil (Example) A93
3 m.....L (Example) A93L

PLC: Programmable Logic Controller

Refer to page 182 for a list of applicable auto switches.

Specifications

Bore size (mm)	6	8	12	16	20	25
Fluid	Air					
Action	Double acting					
Operating pressure	0.15 to 0.7MPa					
Proof pressure	1.05 MPa					
Ambient and fluid temperature	-10 to 60°C (No freezing)					
Piston speed	50 to 300 mm/s (Adjuster option/Metal stopper: 50 to 200 mm/s)					
Cushion	Rubber bumper (Standard, Adjuster option/Rubber stopper) None (Adjuster option/Metal stopper)					
Lubrication	Non-lube					
Stroke length tolerance	$^{+1}_0$ mm					
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease					
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Without adjuster					
	Rubber stopper	13-/22-: Grade 3				
	Metal stopper	13-/22-: Grade 4				

Suction flow rate of vacuum suction type (Reference values)

Bore size	Suction flow rate ℓ/min (ANR)
6, 8, 12	1
16	2
20	3
25	5

Adjuster Option: Stroke Adjustment Range

Rubber stopper	Extension end (AS)	Stroke adjustment range 0 to 5 mm
	Retraction end (AT)	
	Both ends (A)	
Metal stopper	Extension end (CS)	Stroke adjustment range 0 to 5 mm
	Retraction end (CT)	
	Both ends (C)	

Proper auto switch mounting position (Detection at stroke end)



Reed switch: D-A93

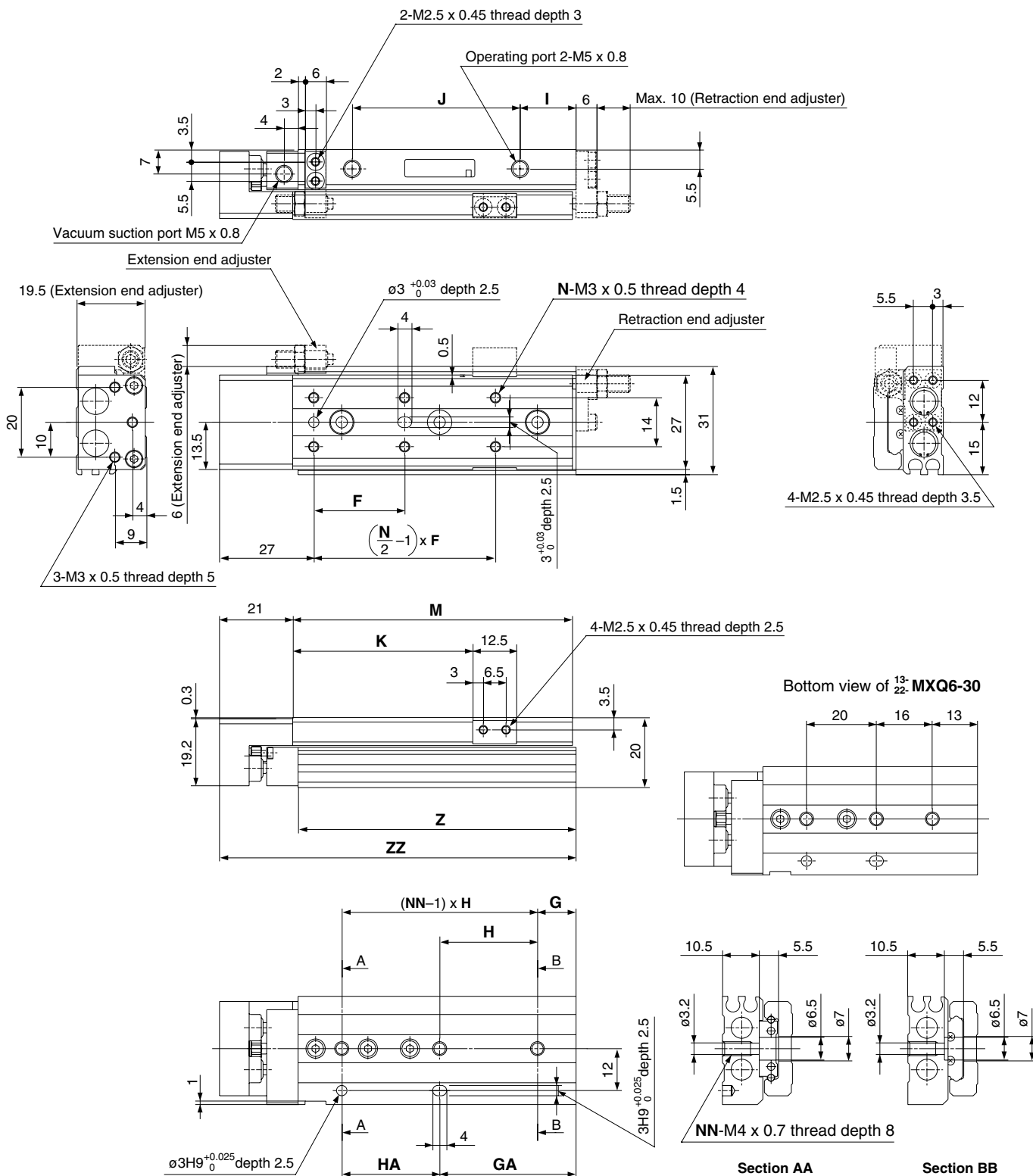
Model	A	B									E									Auto switch operation range
		Stroke									Stroke									
		10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150	
13-/22-MXQ6(L)	6	5.5	5.5	5.5	13.5	13.5	—	—	—	—	1	1	1	9	9	—	—	—	—	4.5
13-/22-MXQ8(L)	7.5	8	8	12	16	31	32	—	—	—	3.5	3.5	7.5	11.5	26.5	27.5	—	—	—	5
13-/22-MXQ12(L)	11.5	24.5	14.5	14.5	21.5	21.5	40.5	40.5	—	—	20	10	10	17	17	36	36	—	—	6
13-/22-MXQ16(L)	16.5	30.5	20.5	20.5	20.5	26.5	33.5	51.5	51.5	—	26	16	16	16	22	29	47	47	—	7
13-/22-MXQ20(L)	19	43.5	33.5	23.5	33.5	31.5	39.5	71.5	74.5	77.5	39	29	19	29	27	35	67	70	75	8
13-/22-MXQ25(L)	22	52.5	42.5	32.5	32.5	46.5	46.5	60.5	88.5	88.5	48	38	28	28	42	42	56	84	75	9

Solid state switch: D-M9B, D-M9N

Model	A	B									E									Auto switch operation rang
		Stroke									Stroke									
		10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150	
13-/22-MXQ6(L)	10	9.5	9.5	9.5	17.5	17.5	—	—	—	—	-0.5	-0.5	-0.5	7.5	7.5	—	—	—	—	1.5
13-/22-MXQ8(L)	11.5	12	12	16	20	35	36	—	—	—	2	2	6	10	25	26	—	—	—	1.5
13-/22-MXQ12(L)	15.5	28.5	18.5	18.5	25.5	25.5	44.5	44.5	—	—	18.5	8.5	8.5	15.5	15.5	34.5	34.5	—	—	2.5
13-/22-MXQ16(L)	20.5	34.5	24.5	24.5	24.5	30.5	37.5	55.5	55.5	—	24.5	14.5	14.5	14.5	20.5	27.5	45.5	45.5	—	3
13-/22-MXQ20(L)	23	47.5	37.5	27.5	37.5	35.5	43.5	75.5	78.5	81.5	37.5	27.5	17.5	27.5	25.5	33.5	65.5	68.5	73.5	3
13-/22-MXQ25(L)	27	56.5	46.5	36.5	36.5	50.5	50.5	64.5	92.5	92.5	46.5	36.5	26.5	26.5	40.5	40.5	54.5	82.5	73.5	3

Dimensions: 13-22-MXQ6

Basic style

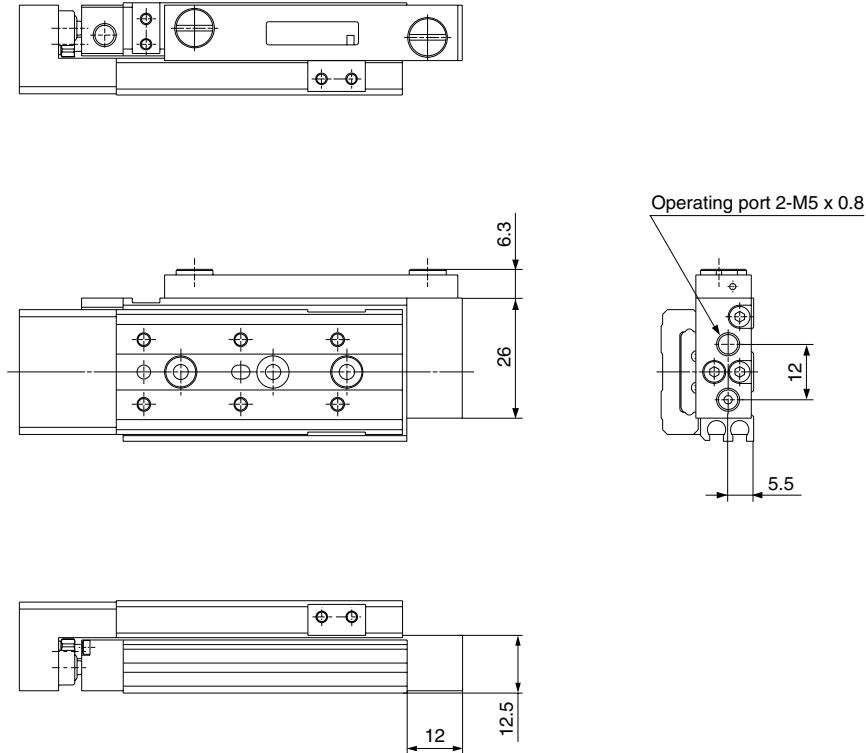


Model	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
13-/22-MXQ6-10	22	4	6	23	2	13	16	9	17	21.5	42	41.5	64
13-/22-MXQ6-20	25	4	13	26	2	13	26	9	27	31.5	52	51.5	74
13-/22-MXQ6-30	21	6	—(Note)	—(Note)	3	29	20	9	37	41.5	62	61.5	84
13-/22-MXQ6-40	26	6	11	28	3	39	28	16	48	51.5	80	79.5	102
13-/22-MXQ6-50	27	6	21	28	3	49	28	9	65	61.5	90	89.5	112

Note) Refer to the bottom view of 13-MXQ6-30.

Dimensions: 13-22-MXQ6

Axial piping type (ø6): 13-22-MXQ6-□□P



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

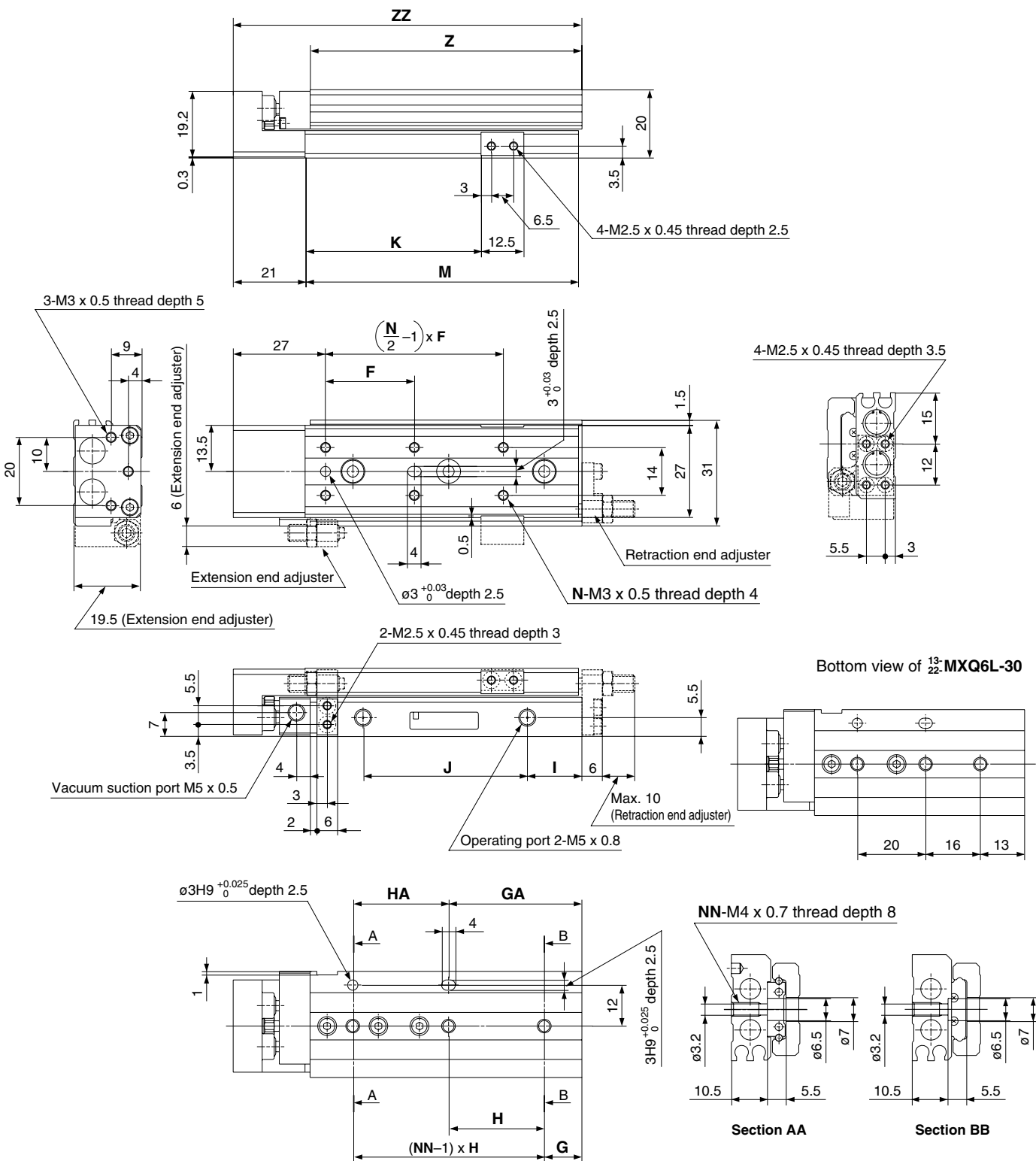
Air preparation
equipment

Pressure switch

Clean gas filter

Dimensions: $\frac{13}{22}$ -MXQ6L / Symmetric type

Basic style

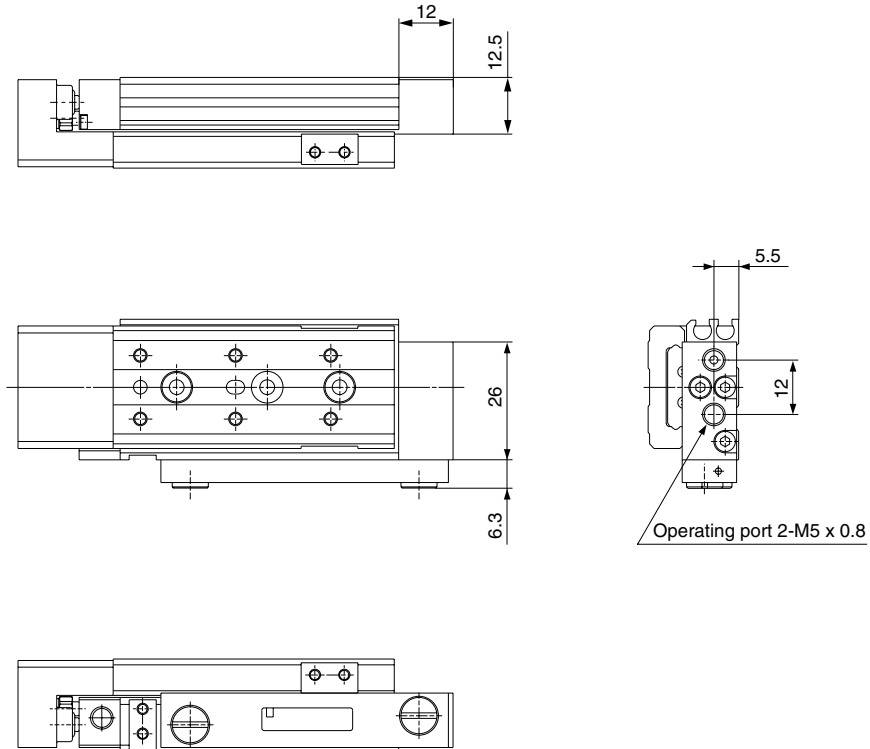


													(mm)
Model	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
13-/22-MXQ6L-10	22	4	6	23	2	13	16	9	17	21.5	42	41.5	64
13-/22-MXQ6L-20	25	4	13	26	2	13	26	9	27	31.5	52	51.5	74
13-/22-MXQ6L-30	21	6	(Note)	(Note)	3	29	20	9	37	41.5	62	61.5	84
13-/22-MXQ6L-40	26	6	11	28	3	39	28	16	48	51.5	80	79.5	102
13-/22-MXQ6L-50	27	6	21	28	3	49	28	9	65	61.5	90	89.5	112

Note) Refer to the bottom view of 13-MXQ6L-30.

Dimensions: ¹³⁻₂₂₋**MXQ6L** / Symmetric type

Axial piping type (ø6): ¹³⁻₂₂₋**MXQ6L-□□P**



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Basic style

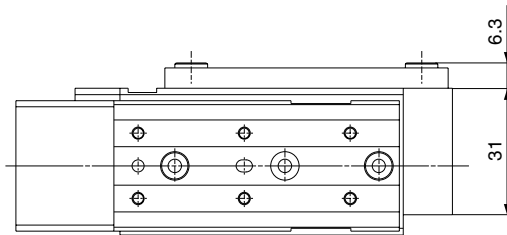
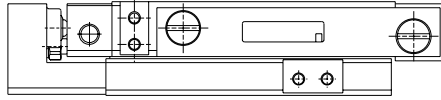


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXQ8-10	25	4	7	25	2	13	19	11	17	23.5	—	4	46	45.5	71
13-/22-MXQ8-20	25	4	14	28	2	14	28	10	28	33.5	—	4	56	55.5	81
13-/22-MXQ8-30	26	6	^(Note)	^(Note)	3	29	27	12	40	43.5	—	4	70	69.5	95
13-/22-MXQ8-40	32	6	8	31	3	39	31	14	52	53.5	—	4	84	83.5	109
13-/22-MXQ8-50	46	6	8	29	4	37	58	13	78	63.5	82.5	8	109	108.5	134
13-/22-MXQ8-75	50	6	31	30	4	61	60	12	105	88.5	112.5	8	135	134.5	160

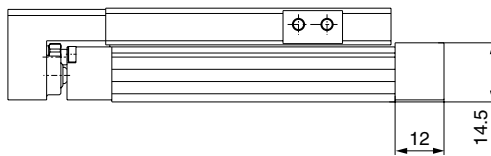
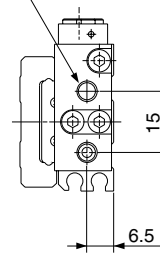
Note) Refer to the bottom view of 13-MXQ8-30.

Dimensions: ¹³⁻₂₂₋**MXQ8**

Axial piping type (ø8): ¹³⁻₂₂₋**MXQ8-□□P**



Operating port 2-M5 x 0.8



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

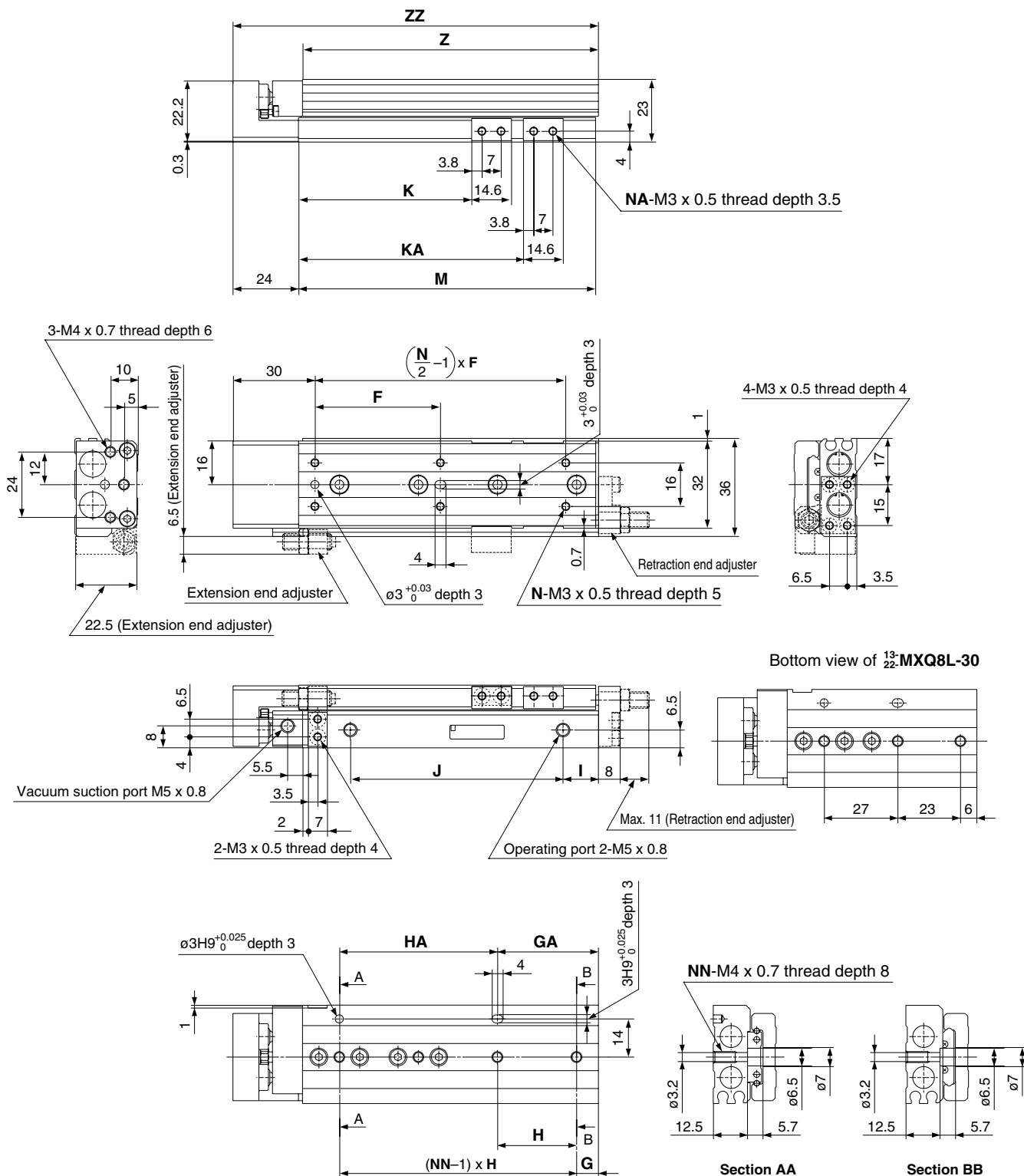
Air preparation
equipment

Pressure switch

Clean gas filter

Dimensions: 13-22-MXQ8L / Symmetric type

Basic style

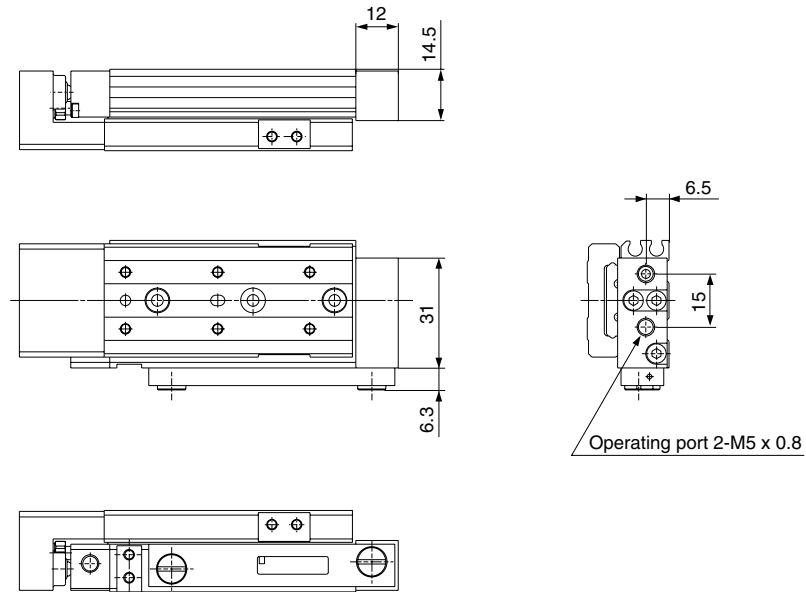


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXQ8L-10	25	4	7	25	2	13	19	11	17	23.5	—	4	46	45.5	71
13-/22-MXQ8L-20	25	4	14	28	2	14	28	10	28	33.5	—	4	56	55.5	81
13-/22-MXQ8L-30	26	6	(Note)	(Note)	3	29	27	12	40	43.5	—	4	70	69.5	95
13-/22-MXQ8L-40	32	6	8	31	3	39	31	14	52	53.5	—	4	84	83.5	109
13-/22-MXQ8L-50	46	6	8	29	4	37	58	13	78	63.5	82.5	8	109	108.5	134
13-/22-MXQ8L-75	50	6	31	30	4	61	60	12	105	88.5	112.5	8	135	134.5	160

Note) Refer to the bottom view of 13-MXQ8L-30.

Dimensions: ¹³⁻₂₂₋**MXQ8L** / Symmetric type

Axial piping type (ø8): ¹³⁻₂₂₋**MXQ8L-□□P**



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

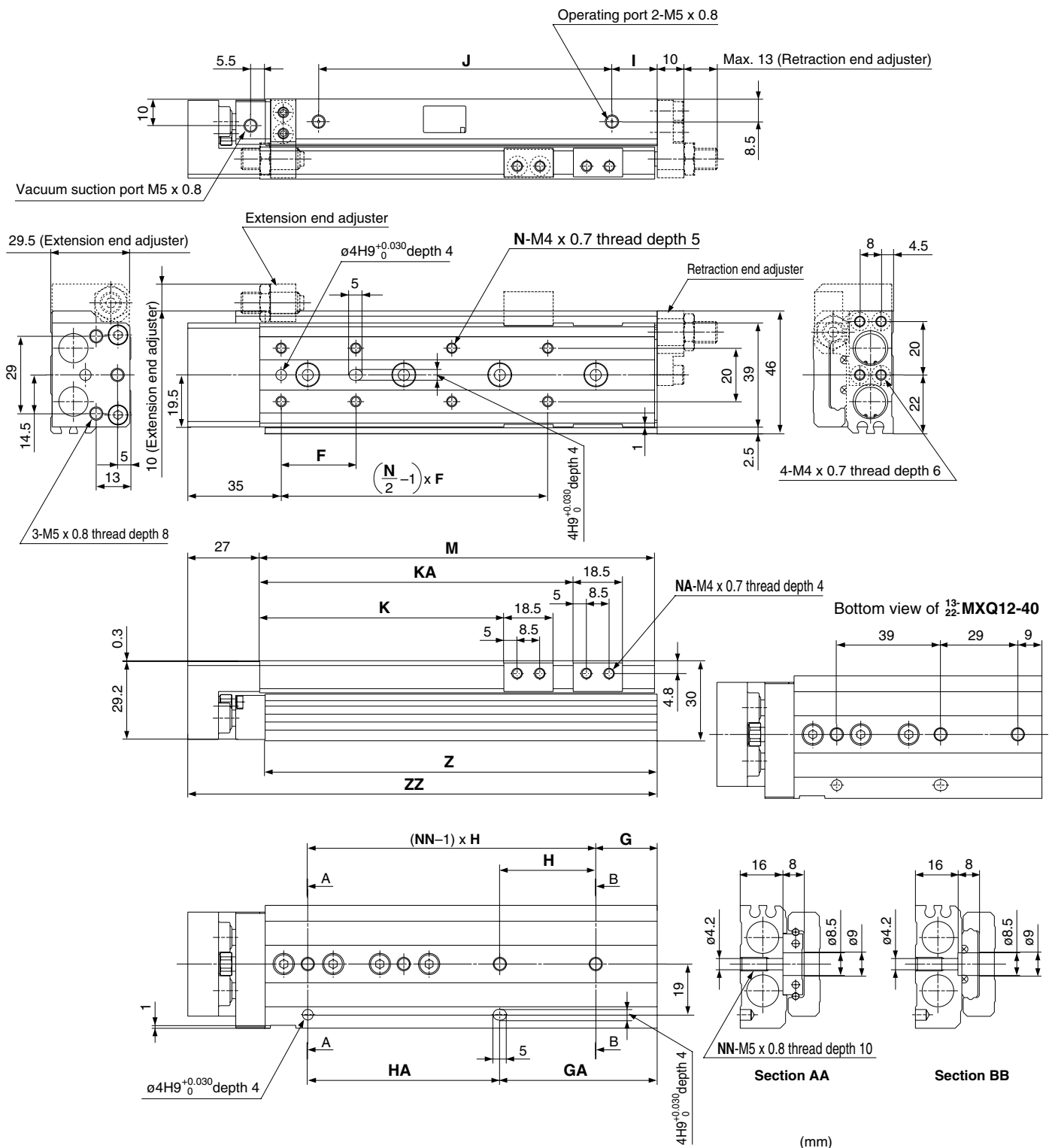
Air preparation
equipment

Pressure switch

Clean gas filter

Dimensions: 13-22-MXQ12

Basic style

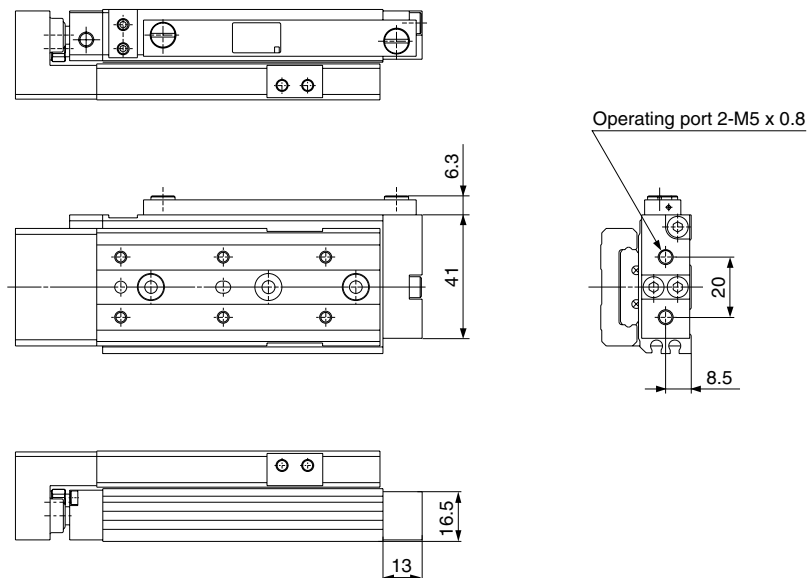


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXQ12- 10	28	4	18	32	2	18	32	12	34	26.5	—	4	67	66	95
13-/22-MXQ12- 20	28	4	18	32	2	18	32	12	34	36.5	—	4	67	66	95
13-/22-MXQ12- 30	38	4	20	40	2	20	40	14	42	46.5	—	4	77	76	105
13-/22-MXQ12- 40	34	6	—(Note)	—(Note)	3	38	39	15	58	56.5	—	4	94	93	122
13-/22-MXQ12- 50	34	6	9	39	3	48	39	13	70	66.5	—	4	104	103	132
13-/22-MXQ12- 75	36	8	23	36	4	59	72	17	110	91.5	117.5	8	148	147	176
13-/22-MXQ12-100	36	10	12	36	5	84	72	17	135	116.5	142.5	8	173	172	201

Note) Refer to the bottom view of 13-MXQ12-40.

Dimensions: ¹³⁻₂₂₋MXQ12

Axial piping type (ø12): ¹³⁻₂₂₋MXQ12-□□P



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

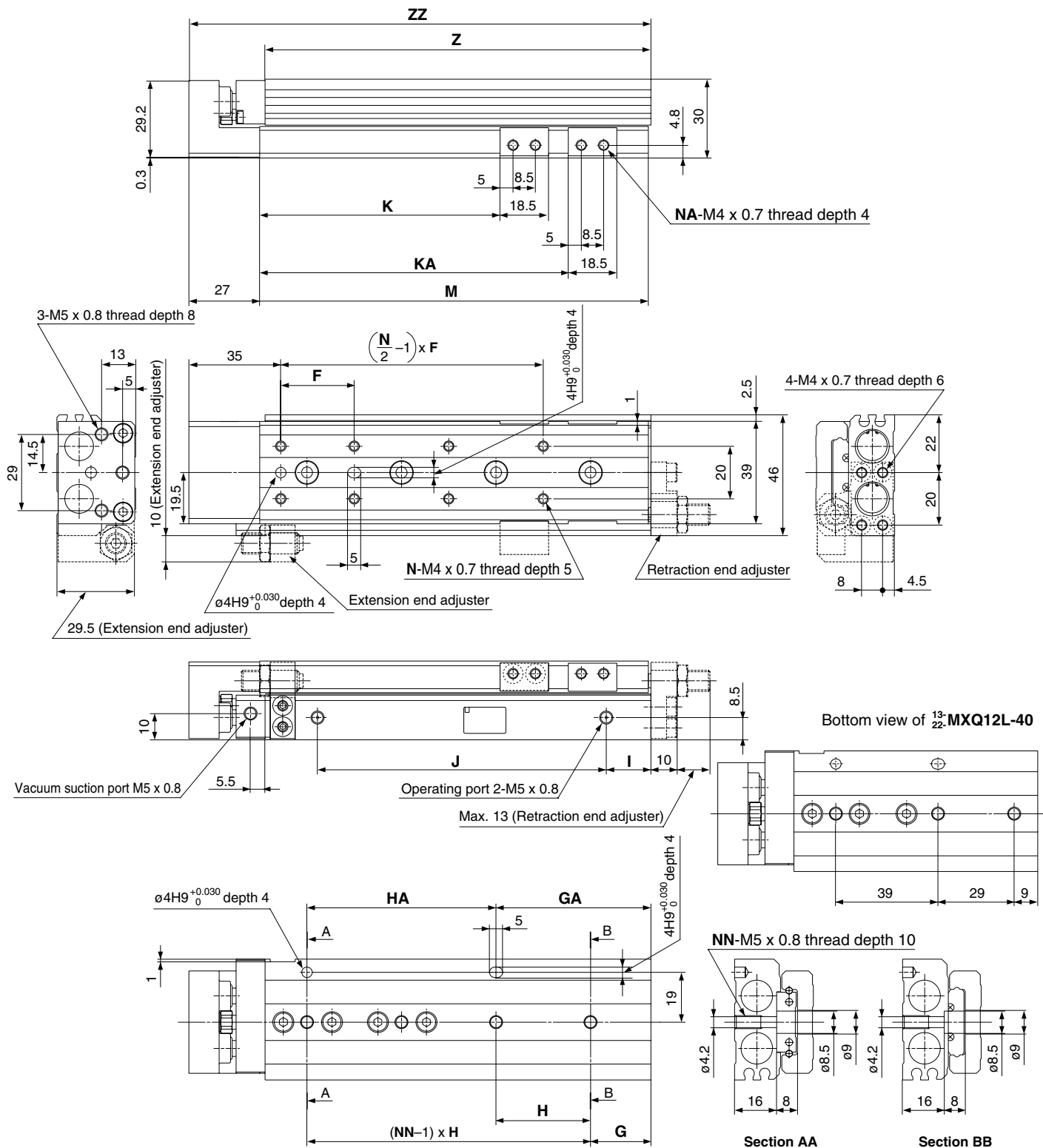
Air preparation
equipment

Pressure switch

Clean gas filter

Dimensions: 13-22-MXQ12L / Symmetric type

Basic style

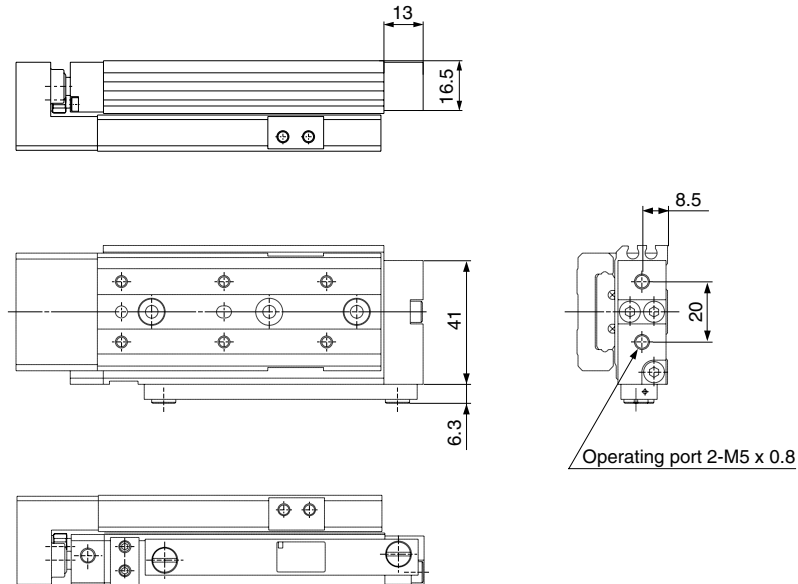


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXQ12L- 10	28	4	18	32	2	18	32	12	34	26.5	—	4	67	66	95
13-/22-MXQ12L- 20	28	4	18	32	2	18	32	12	34	36.5	—	4	67	66	95
13-/22-MXQ12L- 30	38	4	20	40	2	20	40	14	42	46.5	—	4	77	76	105
13-/22-MXQ12L- 40	34	6	(Note)	(Note)	3	38	39	15	58	56.5	—	4	94	93	122
13-/22-MXQ12L- 50	34	6	9	39	3	48	39	13	70	66.5	—	4	104	103	132
13-/22-MXQ12L- 75	36	8	23	36	4	59	72	17	110	91.5	117.5	8	148	147	176
13-/22-MXQ12L-100	36	10	12	36	5	84	72	17	135	116.5	142.5	8	173	172	201

Note) Refer to the bottom view of 13-MXQ12L-40.

Dimensions: ¹³⁻₂₂₋**MXQ12L / Symmetric type**

Axial piping type (ø12): ¹³⁻₂₂₋**MXQ12L-□□P**



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

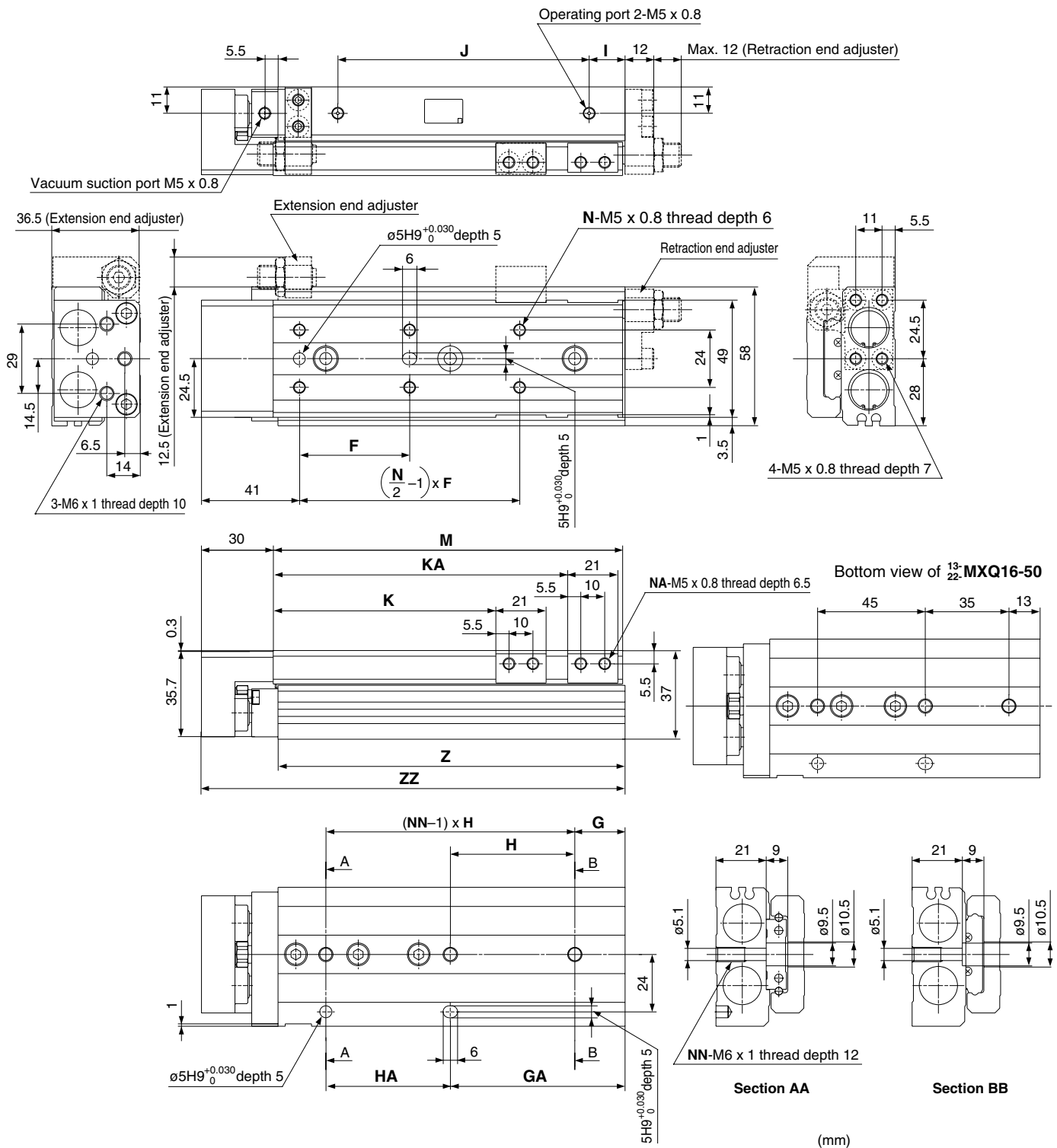
Air preparation
equipment

Pressure switch

Clean gas filter

Dimensions: 13-22-MXQ16

Basic style

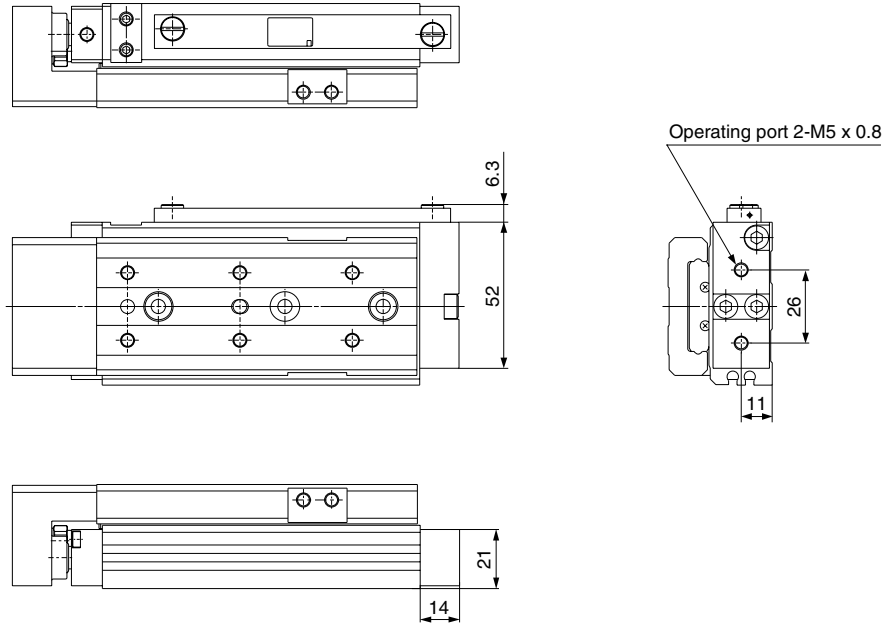


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXQ16- 10	38	4	18	39	2	18	39	12	40	28	—	4	78	77	109
13-/22-MXQ16- 20	38	4	18	39	2	18	39	12	40	38	—	4	78	77	109
13-/22-MXQ16- 30	48	4	19	48	2	19	48	12	50	48	—	4	88	87	119
13-/22-MXQ16- 40	58	4	19	58	2	19	58	12	60	58	—	4	98	97	129
13-/22-MXQ16- 50	40	6	—(Note)	—(Note)	3	48	45	20	68	68	91	8	114	113	145
13-/22-MXQ16- 75	46	6	21	52	3	73	52	15	105	93	123	8	146	145	177
13-/22-MXQ16-100	44	8	36	44	4	80	88	18	145	118	166	8	189	188	220
13-/22-MXQ16-125	44	10	17	44	5	105	88	23	165	143	191	8	214	213	245

Note) Refer to the bottom view of 13-MXQ16-50.

Dimensions: ¹³⁻²²⁻**MXQ16**

Axial piping type (ø16): ¹³⁻²²⁻**MXQ16-□□P**



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

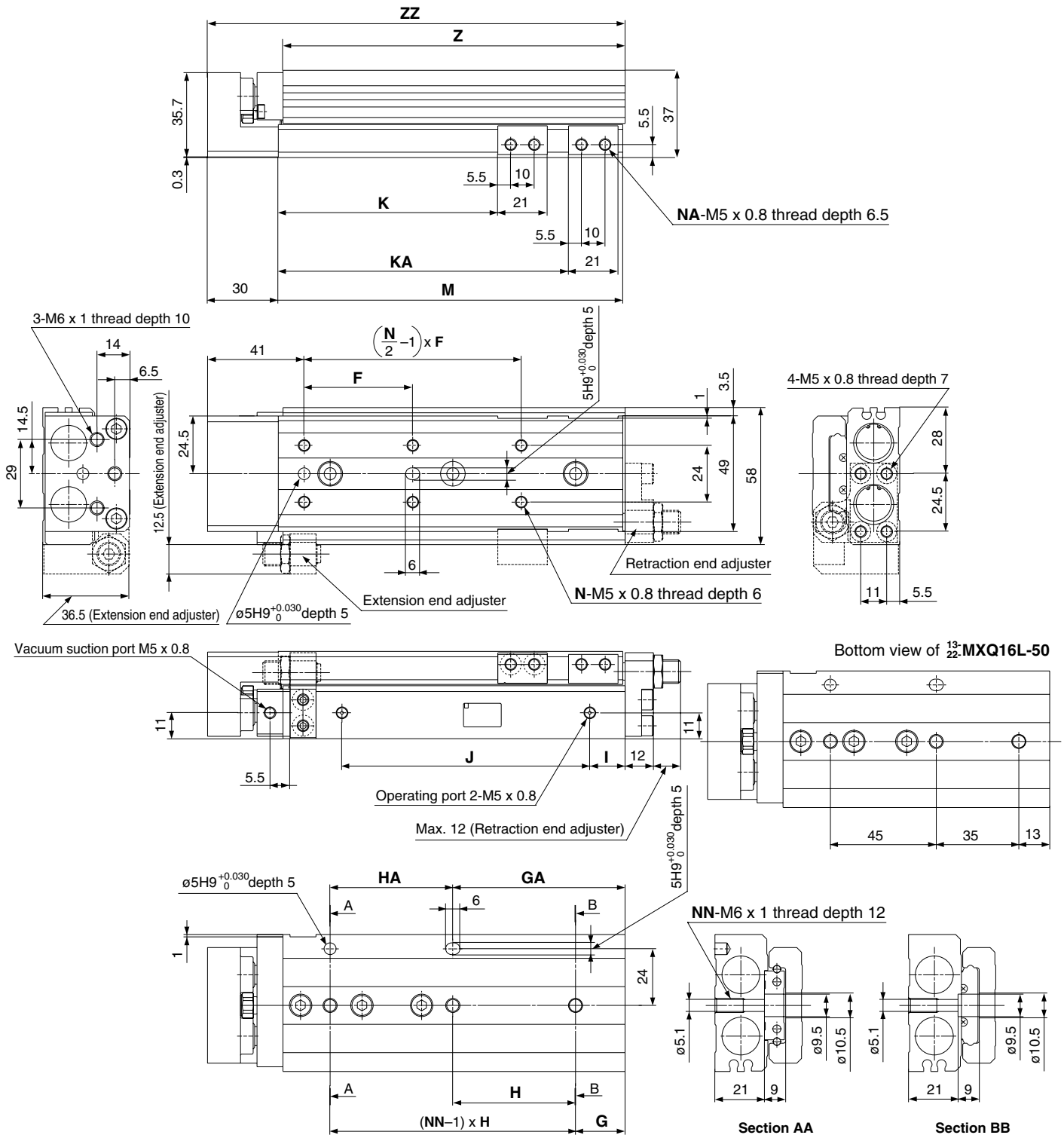
Air preparation equipment

Pressure switch

Clean gas filter

Dimensions: **13-22-MXQ16L / Symmetric type**

Basic style

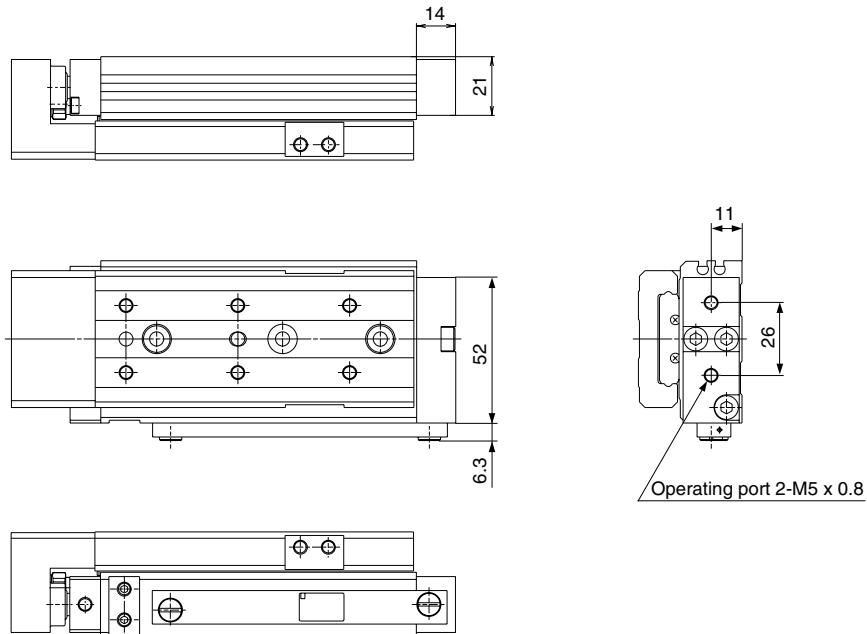


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXQ16L- 10	38	4	18	39	2	18	39	12	40	28	—	4	78	77	109
13-/22-MXQ16L- 20	38	4	18	39	2	18	39	12	40	38	—	4	78	77	109
13-/22-MXQ16L- 30	48	4	19	48	2	19	48	12	50	48	—	4	88	87	119
13-/22-MXQ16L- 40	58	4	19	58	2	19	58	12	60	58	—	4	98	97	129
13-/22-MXQ16L- 50	40	6	Note)	Note)	3	48	45	20	68	68	91	8	114	113	145
13-/22-MXQ16L- 75	46	6	21	52	3	73	52	15	105	93	123	8	146	145	177
13-/22-MXQ16L-100	44	8	36	44	4	80	88	18	145	118	166	8	189	188	220
13-/22-MXQ16L-125	44	10	17	44	5	105	88	23	165	143	191	8	214	213	245

Note) Refer to the bottom view of 13-MXQ16L-50.

Dimensions: ¹³⁻₂₂₋**MXQ16L / Symmetric type**

Axial piping type (ø16): ¹³⁻₂₂₋**MXQ16L-□□P**



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

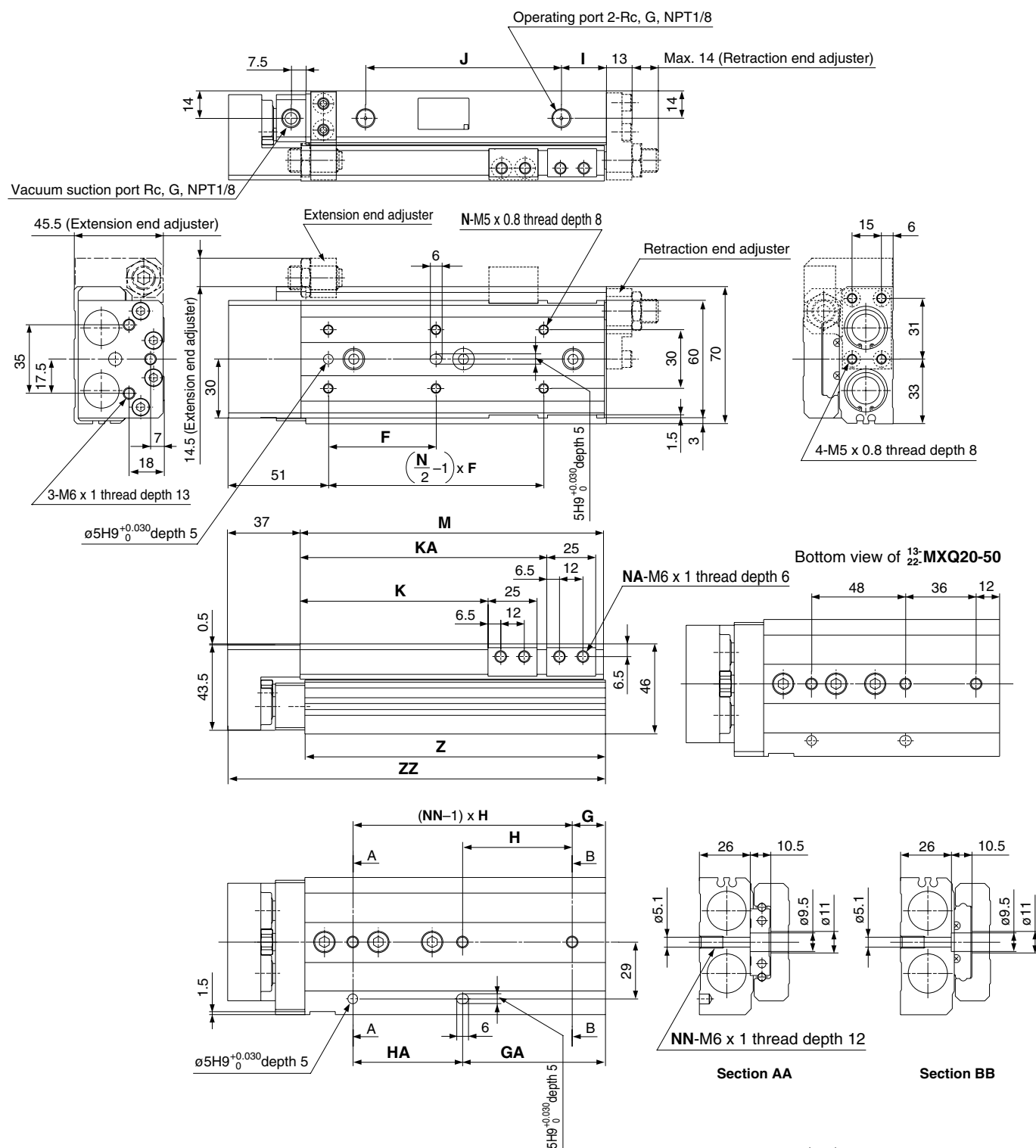
Air preparation equipment

Pressure switch

Clean gas filter

Dimensions: 13-22-MXQ20

Basic style

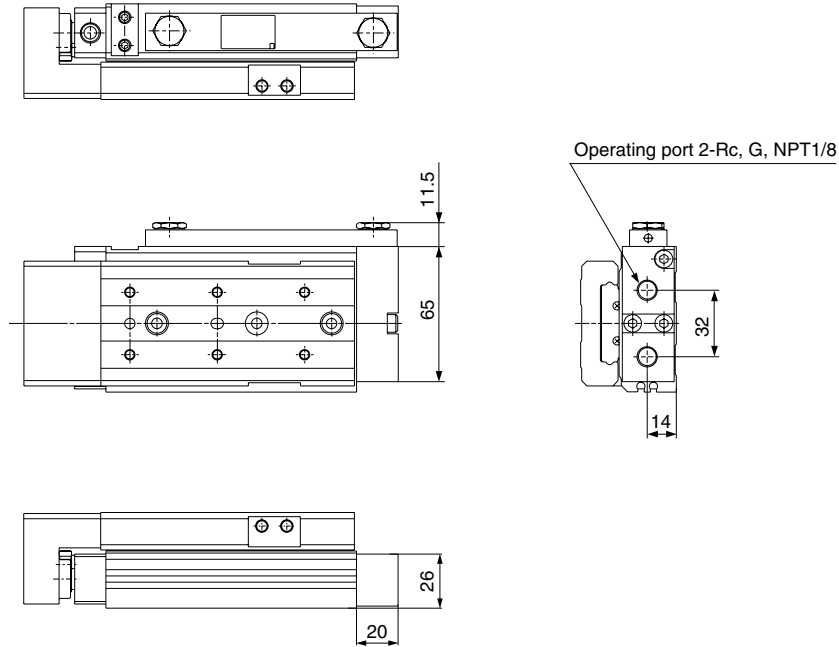


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXQ20- 10	45	4	22	46	2	18	50	16	46	31	—	4	94	92.5	132
13-/22-MXQ20- 20	40	4	22	46	2	18	50	16	46	41	—	4	94	92.5	132
13-/22-MXQ20- 30	48	4	22	46	2	18	50	16	46	51	—	4	94	92.5	132
13-/22-MXQ20- 40	58	4	22	56	2	22	56	16	56	61	—	4	104	102.5	142
13-/22-MXQ20- 50	42	6	(Note)	(Note)	3	48	48	18	72	71	—	4	122	120.5	160
13-/22-MXQ20- 75	55	6	17	56	3	73	56	23	100	96	126	8	155	153.5	193
13-/22-MXQ20-100	50	8	18	56	4	74	112	25	155	121	183	8	212	210.5	250
13-/22-MXQ20-125	55	8	37	59	4	96	118	18	190	146	211	8	240	238.5	278
13-/22-MXQ20-150	62	8	56	62	4	118	124	21	215	171	239	8	268	266.5	306

Note) Refer to the bottom view of 13-MXQ20-50.

Dimensions: ¹³⁻₂₂₋**MXQ20**

Axial piping type (ø20): ¹³⁻₂₂₋**MXQ20-□□P**



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

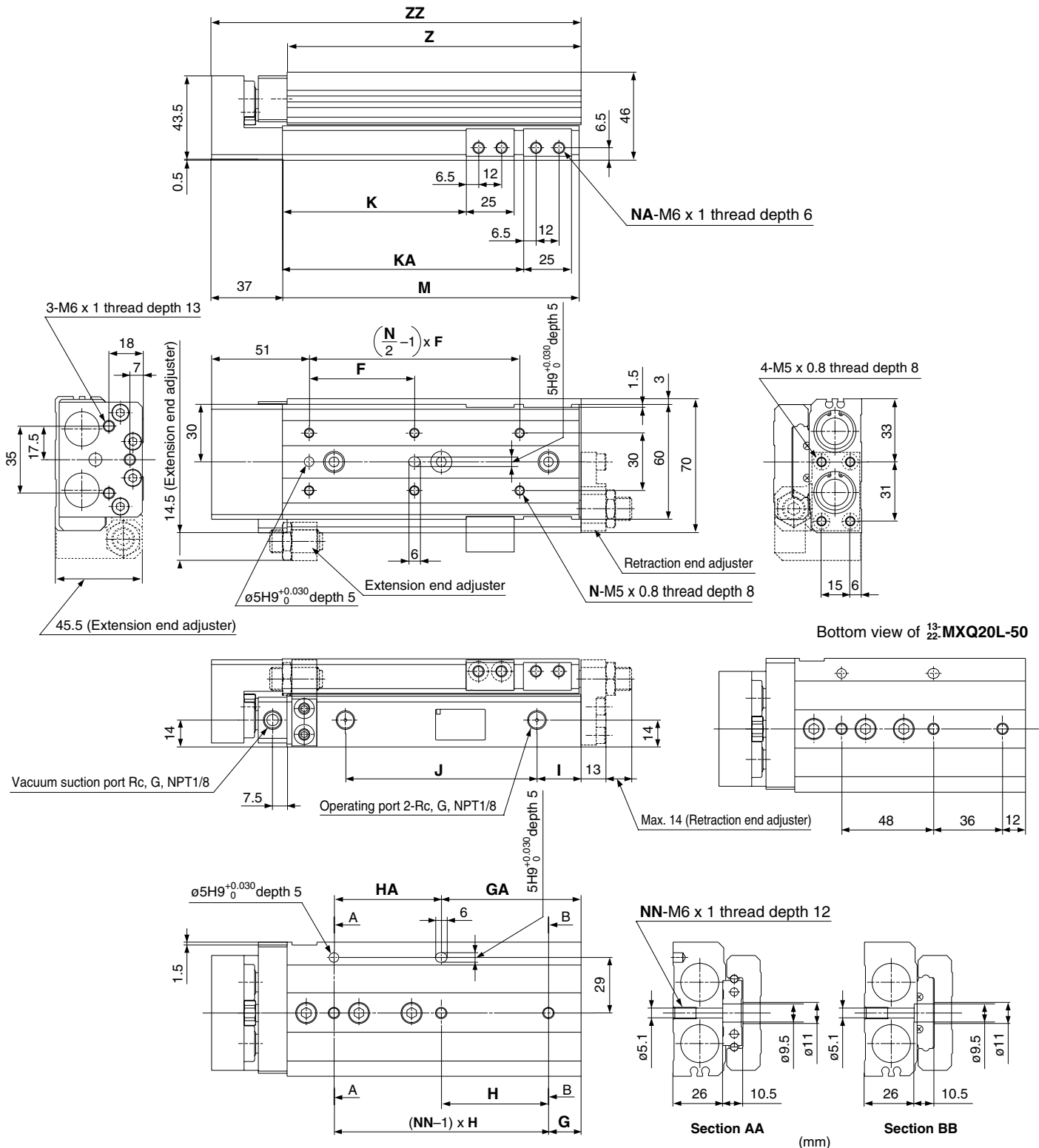
Air preparation equipment

Pressure switch

Clean gas filter

Dimensions: 13-22-MXQ20L / Symmetric type

Basic style

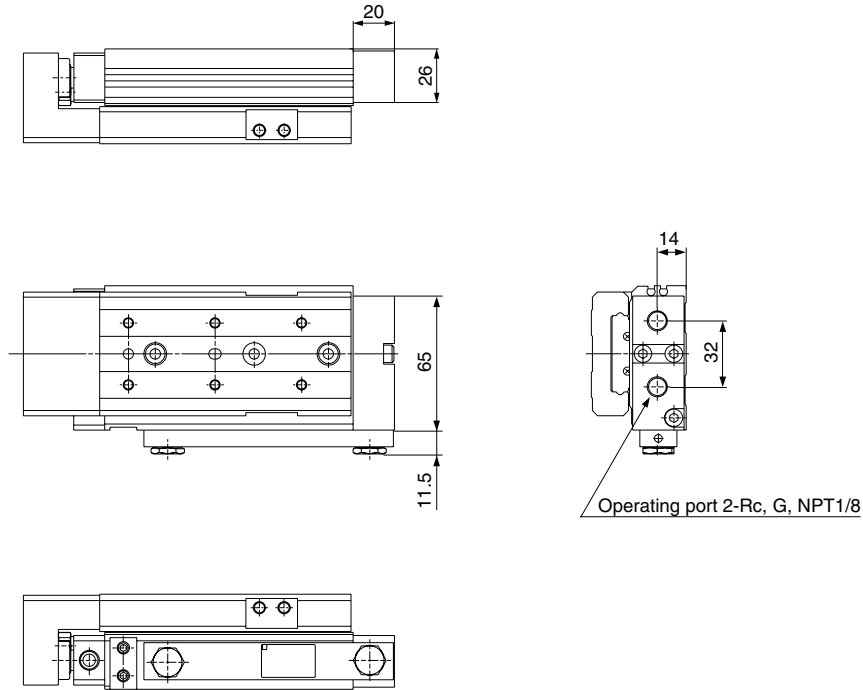


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-22-MXQ20L- 10	45	4	22	46	2	18	50	16	46	31	—	4	94	92.5	132
13-22-MXQ20L- 20	40	4	22	46	2	18	50	16	46	41	—	4	94	92.5	132
13-22-MXQ20L- 30	48	4	22	46	2	18	50	16	46	51	—	4	94	92.5	132
13-22-MXQ20L- 40	58	4	22	56	2	22	56	16	56	61	—	4	104	102.5	142
13-22-MXQ20L- 50	42	6	Note)	Note)	3	48	48	18	72	71	—	4	122	120.5	160
13-22-MXQ20L- 75	55	6	17	56	3	73	56	23	100	96	126	8	155	153.5	193
13-22-MXQ20L-100	50	8	18	56	4	74	112	25	155	121	183	8	212	210.5	250
13-22-MXQ20L-125	55	8	37	59	4	96	118	18	190	146	211	8	240	238.5	278
13-22-MXQ20L-150	62	8	56	62	4	118	124	21	215	171	239	8	268	266.5	306

Note) Refer to the bottom view of 13-MXQ20L-50.

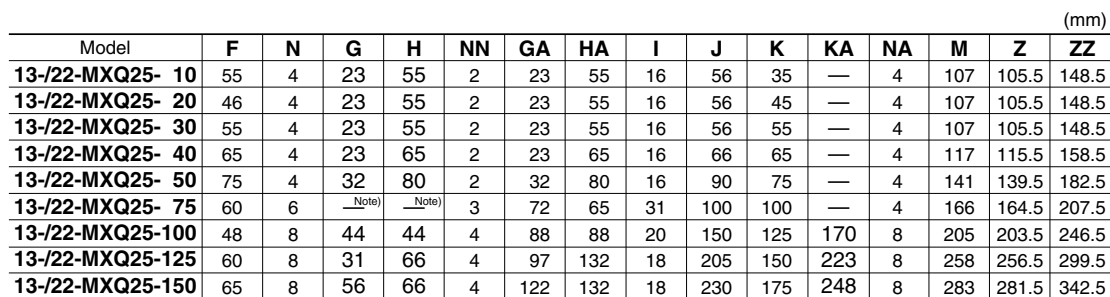
Dimensions: ¹³⁻₂₂₋**MXQ20L** / Symmetric type

Axial piping type (ø20): ¹³⁻₂₂₋**MXQ20L-□□P**



* Other dimensions are the same as basic style.

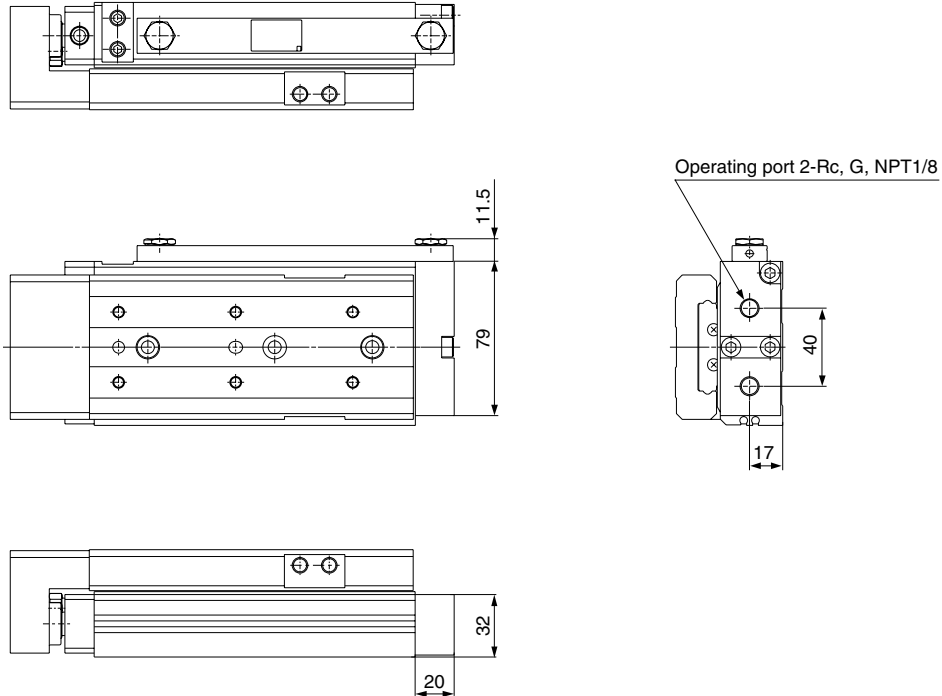
Basic style



Note) Refer to the bottom view of 13-MXQ25-75.

Dimensions: ¹³⁻₂₂₋**MXQ25**

Axial piping type (ø25): ¹³⁻₂₂₋**MXQ25-□□P**



* Other dimensions are the same as basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

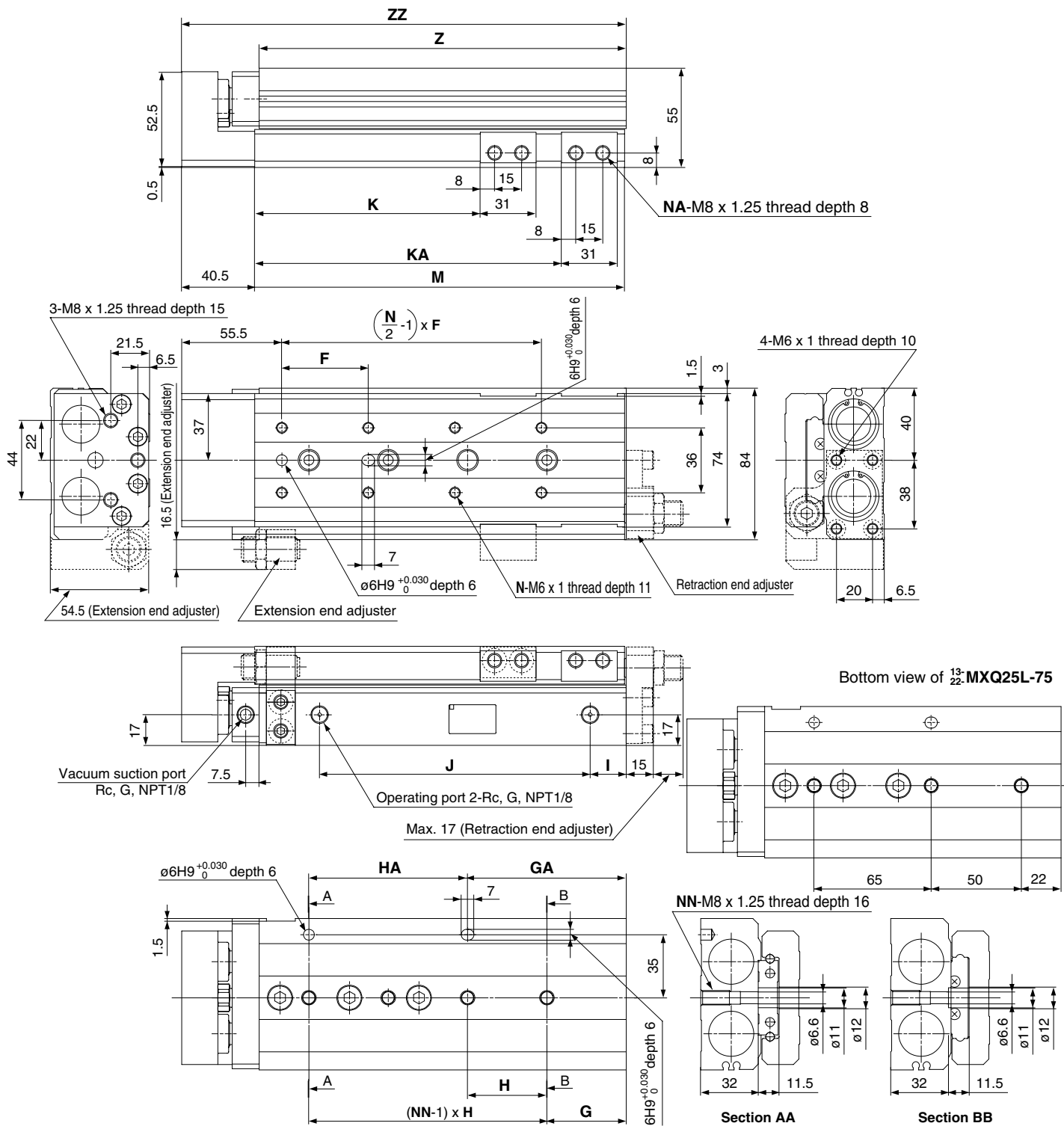
Air preparation
equipment

Pressure switch

Clean gas filter

Dimensions: ¹³⁻₂₂₋MXQ25L / Symmetric type

Basic style

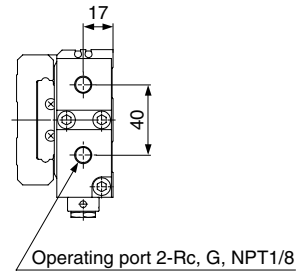
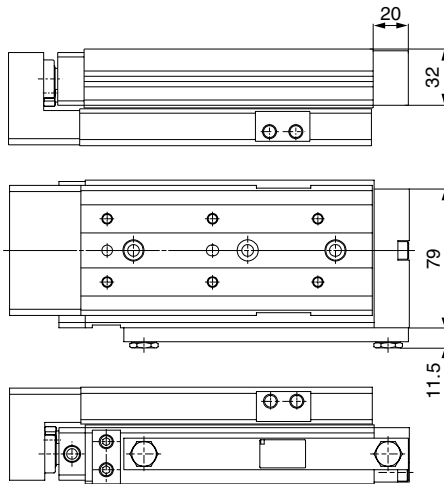


Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13/-22-MXQ25L- 10	55	4	23	55	2	23	55	16	56	35	—	4	107	105.5	148.5
13/-22-MXQ25L- 20	46	4	23	55	2	23	55	16	56	45	—	4	107	105.5	148.5
13/-22-MXQ25L- 30	55	4	23	55	2	23	55	16	56	55	—	4	107	105.5	148.5
13/-22-MXQ25L- 40	65	4	23	65	2	23	65	16	66	65	—	4	117	115.5	158.5
13/-22-MXQ25L- 50	75	4	32	80	2	32	80	16	90	75	—	4	141	139.5	182.5
13/-22-MXQ25L- 75	60	6	Note)	Note)	3	72	65	31	100	100	—	4	166	164.5	207.5
13/-22-MXQ25L-100	48	8	44	44	4	88	88	20	150	125	170	8	205	203.5	246.5
13/-22-MXQ25L-125	60	8	31	66	4	97	132	18	205	150	223	8	258	256.5	299.5
13/-22-MXQ25L-150	65	8	56	66	4	122	132	18	230	175	248	8	283	281.5	342.5

Note) Refer to the bottom view of 13-MXQ25L-75.

Dimensions: ¹³⁻₂₂₋**MXQ25L** / Symmetric type

Axial piping type (ø25): ¹³⁻₂₂₋**MXQ25L**-□□P



* Other dimensions are the same as those of basic style.

Made to Order

1. Anti-corrosive specifications for guide unit -X42

¹³⁻₂₂₋**MXQ**

Standard model no. -X42

Martensitic stainless steel is used for table and guide block. Use this treatment if more effective anti-corrosiveness is necessary.

Table and guide block are given anti-corrosive treatment ^{Note 2}.

Note 1) Dimensions are the same as standard type.

Note 2) Special anti-corrosive treatment makes table and the guide block black.

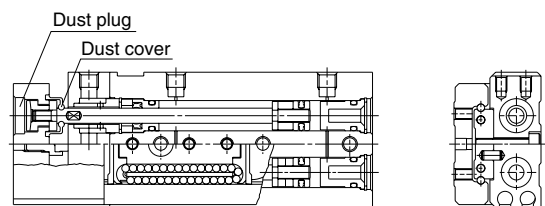
2. Dust cover and dust plug made by fluoro rubber -X52

¹³⁻₂₂₋**MXQ**

Standard model no. -X52

Fluoro rubber is used for the dust cover and the dust plug instead of silicone rubber for standard one.

Note 1) Dimensions are the same as standard type.



Specific Product Precautions

Be sure to read before handling.

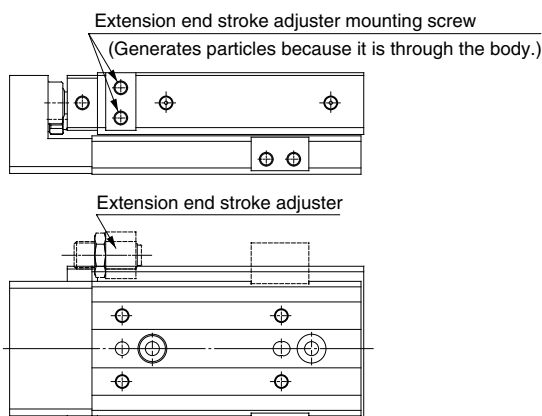
Operating Precautions

⚠ Caution

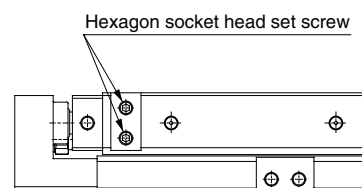
In case the extension end stroke adjuster is removed, plug the mounting hole.

Particle generation may occur because the bottom hole of the mounting screw penetrates the body. Consult SMC for more information.

Applicable bore size (mm)	12, 16, 20, 25
---------------------------	----------------



In case of types without extension end adjuster, the hole is plugged with a hexagon socket head set screw at the time of shipment.



Series 13-22-MXS Air slide table

ø6, ø8, ø12, ø16, ø20, ø25

How to Order

Port type

Symbol	Type	Bore size
Nil	M-thread	ø6 to ø16
	Rc	ø20, ø25
TN	NPT	ø20, ø25
TF	G	ø20, ø25

Clean series

13 Vacuum suction type (Special treatment on guide)

13—MXS 12 50 M9N

22—MXS 12 50 M9N

Copper, fluorine and silicon-free + low particle generation

22 Vacuum suction type

Symmetric type

Nil	Standard type
L (Note 2)	Symmetric type

Bore size (Stroke (mm))

	10	20	30	40	50
6	10	20	30	40	50
8	10	20	30	40	50, 75
12	10	20	30	40	50, 75, 100
16	10	20	30	40	50, 75, 100, 125
20	10	20	30	40	50, 75, 100, 125, 150
25	10	20	30	40	50, 75, 100, 125, 150

Adjuster option

Nil	Without adjuster
AS	Rubber stopper
AT	Extension end
A	Retraction end
	Both ends

Functional option

Nil	Standard type
P (Note 1)	Axial piping type

Note 1) The combination of axial piping type and both ends adjusters or retraction end adjuster is not available.

Note 2) Axial piping type is not available for symmetric type.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Type of auto switch

Nil	Without auto switch

* Refer to the table below for auto switch model numbers.



Auto switch specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model	Lead wire length (m) *		Applicable load	
					DC	AC	Electrical entry direction	0.5 (Nil)	3 (L)			
							In-line					
Reed switch	—	Grommet	Yes	2-wire	24V	12V	100V	A93	●	●	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	12V	—	M9N	●	●	—	Relay, PLC
				2-wire		12V		M9B	●	●	—	

* Lead wire length symbols: 0.5m.....Nil (Example) A93
3 m.....L (Example) A93L

PLC: Programmable Logic Controller

Refer to page 182 for a list of applicable auto switches.

Specifications

Bore size (mm)		6	8	12	16	20	25
Fluid		Air					
Action		Double acting					
Operating pressure		0.15 to 0.7 MPa					
Proof pressure		1.05 MPa					
Ambient and fluid temperature		-10 to 60°C (No freezing)					
Piston speed		50 to 300 mm/s					
Cushion		Rubber bumper (Standard, With stroke adjuster)					
Lubrication		Non-lube					
Stroke length tolerance		$^{+1}_0$ mm					
Grease		13-: Fluorine grease 22-: Lithium soap based grease					
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Without adjuster	13-/22-: Grade 3					
	Rubber stopper						
	Metal stopper	13-/22-: Grade 4					

Suction flow rate of vacuum suction type
(Reference values)

Bore size	Suction flow rate ℓ /min (ANR)
6, 8, 12	1
16	2
20	3
25	5

Adjuster option stroke adjustment range

With stroke adjuster	Extension end (AS)	Stroke adjustment range 0 to 5 mm
	Retraction end (AT)	
	Both ends (A)	

Auto switches / Proper mounting position at stroke end detection



Reed switch: D-A93

Model	A	B									E									Auto switch operation range													
		Stroke									Stroke																						
		10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150														
13-/22-MXS6	5.9	5.6	5.6	5.6	17.6	23.6	—	—	—	—	3.6 (1.1)	3.6 (1.1)	3.6 (1.1)	15.6 (13.1)	21.6 (19.1)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.5
13-/22-MXS8	7.6	10.9	5.9	6.9	14.9	22.9	47.9	—	—	—	8.9 (6.4)	3.9 (1.4)	4.9 (2.4)	12.9 (10.4)	20.9 (18.4)	45.9 (43.4)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
13-/22-MXS12	11.6	28.4	18.4	8.4	10.4	20.4	41.4	70.4	—	—	26.4 (23.9)	16.4 (13.9)	6.4 (3.9)	8.4 (5.9)	18.4 (15.9)	39.4 (36.9)	68.4 (65.9)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6
13-/22-MXS16	16.3	28.7	18.7	8.7	8.7	13.7	38.7	61.7	86.7	—	26.7 (24.2)	16.7 (14.2)	6.7 (4.2)	8.7 (6.2)	11.7 (9.2)	36.7 (34.2)	59.7 (57.2)	84.7 (82.2)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7
13-/22-MXS20	18.9	32.6	22.6	12.6	12.6	17.6	31.6	59.6	88.6	115.6	30.6 (28.1)	20.6 (18.1)	10.6 (8.1)	10.6 (8.1)	15.6 (13.1)	29.6 (27.1)	57.6 (55.1)	86.6 (84.1)	113.6 (111.1)	—	—	—	—	—	—	—	—	—	—	—	—	—	8
13-/22-MXS25	23	37.5	27.5	17.5	17.5	20.5	36.5	52.5	85.5	100.5	35.5 (33)	25.5 (23)	15.5 (13)	15.5 (13)	18.5 (16)	34.5 (32)	50.5 (48)	83.5 (81)	98.5 (96)	—	—	—	—	—	—	—	—	—	—	—	—	—	8

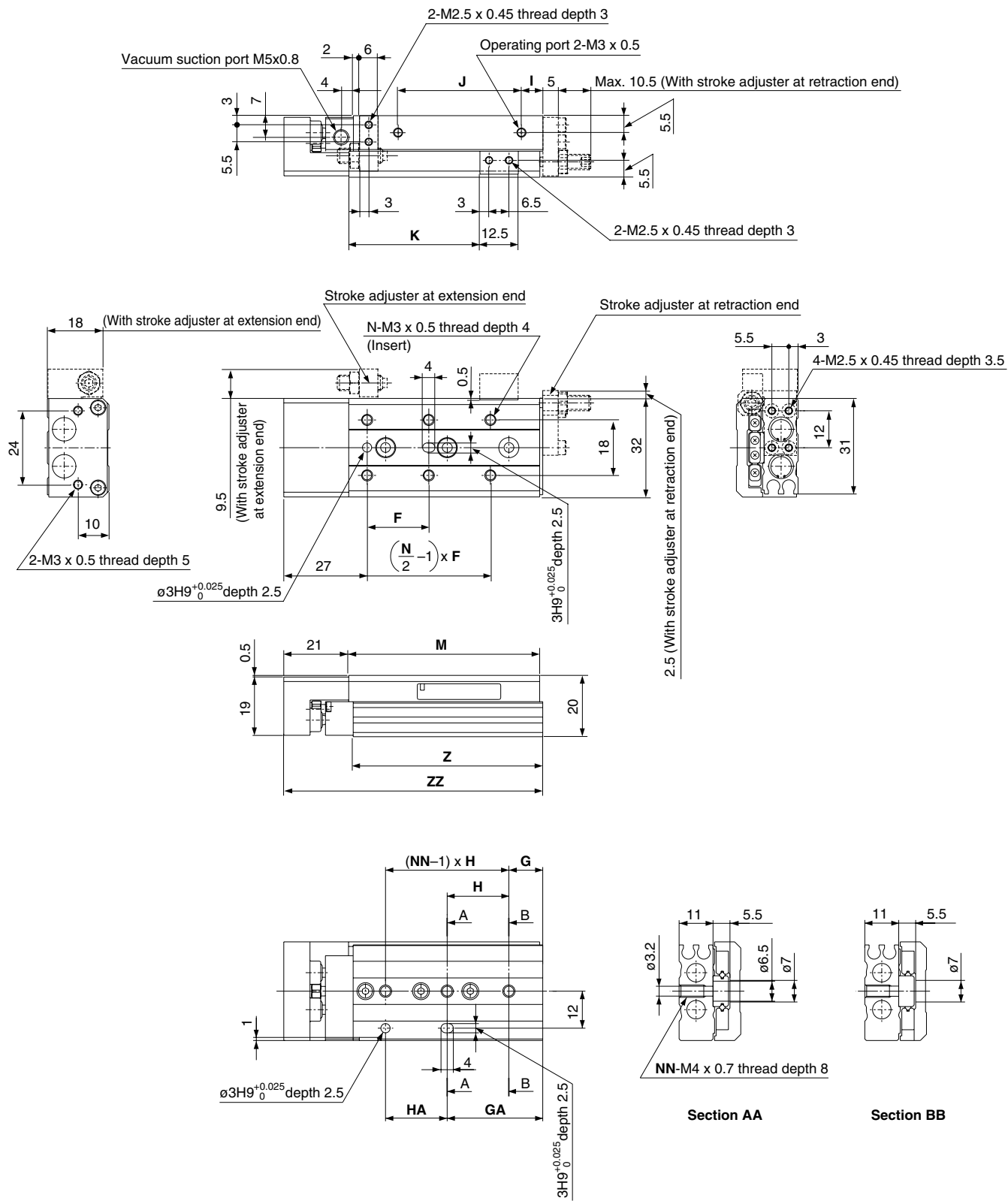
(): denotes D-A93.

Solid state switch: D-M9B, D-M9N

Model	A	B									E									Auto switch operation range
		Stroke									Stroke									
		10	20	30	40	50	75	100	125	150	10	20	30	40	50	75	100	125	150	
13-/22-MXS6	10	9.6	9.6	9.6	21.6	27.6	—	—	—	—	-0.4	-0.4	-0.4	11.6	17.5	—	—	—	—	1.5
13-/22-MXS8	11.6	14.9	9.9	10.9	18.9	26.9	51.9	—	—	—	4.9	-0.1	0.9	8.9	16.9	41.9	—	—	—	1.5
13-/22-MXS12	15.6	32.4	22.4	12.4	14.4	24.4	45.4	74.4	—	—	22.4	12.4	2.4	4.4	14.4	35.4	64.4	—	—	2.5
13-/22-MXS16	20.3	32.7	22.7	12.7	12.7	17.7	42.7	65.7	90.7	—	22.7	12.7	2.7	2.7	7.7	32.7	55.7	80.7	—	3
13-/22-MXS20	22.9	36.6	26.6	16.6	16.6	21.6	35.6	63.6	92.6	119.6	26.6	16.6	6.6	6.6	11.6	25.6	53.6	82.6	109.6	3
13-/22-MXS25	27	41.5	31.5	21.5	21.5	24.5	40.5	56.5	89.5	104.5	31.5	21.5	11.5	11.5	14.5	30.5	46.5	79.5	94.5	3

Dimensions: 13-22-MXS6

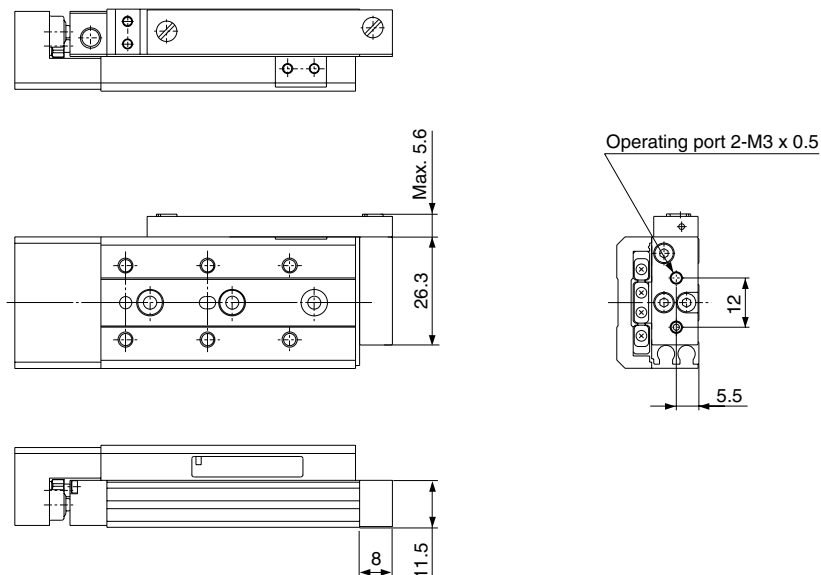
Basic style



Model	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
13-/22-MXS6-10	20	4	6	25	2	11	20	10	17	22.5	42	41.5	64
13-/22-MXS6-20	30	4	6	35	2	21	20	10	27	32.5	52	51.5	74
13-/22-MXS6-30	20	6	11	20	3	31	20	7	40	42.5	62	61.5	84
13-/22-MXS6-40	28	6	13	30	3	43	30	19	50	52.5	84	83.5	106
13-/22-MXS6-50	38	6	17	24	4	41	48	25	60	62.5	100	99.5	122

Dimensions: ¹³⁻₂₂₋MXS6

Axial piping type (ø6): ¹³⁻₂₂₋MXS6-□□P



* Other dimensions are the same as those of basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

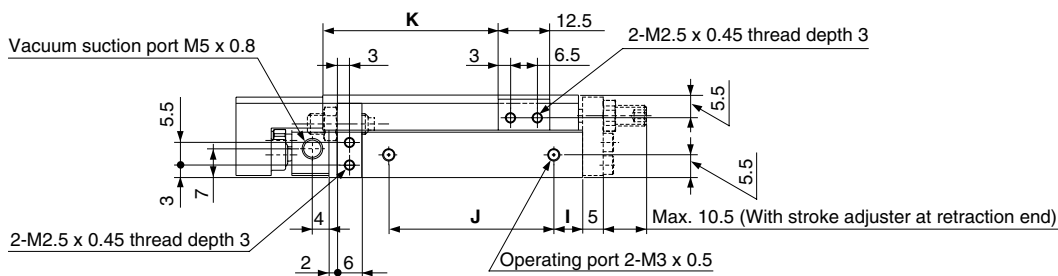
Fittings & Tubing

Air preparation equipment

Pressure switch

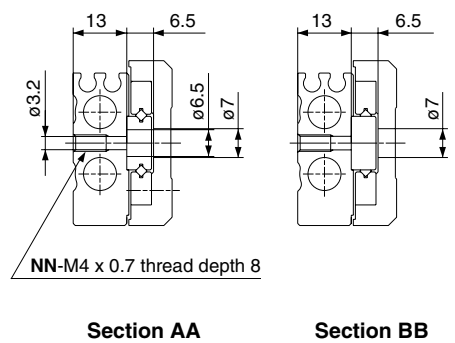
Clean gas filter

Dimensions: $\frac{13}{22}$ -MXS6L / Symmetric type



Model	F	N	G	H	NN	GA	HA	I	J	K	M	Z	ZZ
13-/22-MXS6L-10	20	4	6	25	2	11	20	10	17	22.5	42	41.5	64
13-/22-MXS6L-20	30	4	6	35	2	21	20	10	27	32.5	52	51.5	74
13-/22-MXS6L-30	20	6	11	20	3	31	20	7	40	42.5	62	61.5	84
13-/22-MXS6L-40	28	6	13	30	3	43	30	19	50	52.5	84	83.5	106
13-/22-MXS6L-50	38	6	17	24	4	41	48	25	60	62.5	100	99.5	122

Basic style



(mm)

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure control equipment

Fittings & Tubing

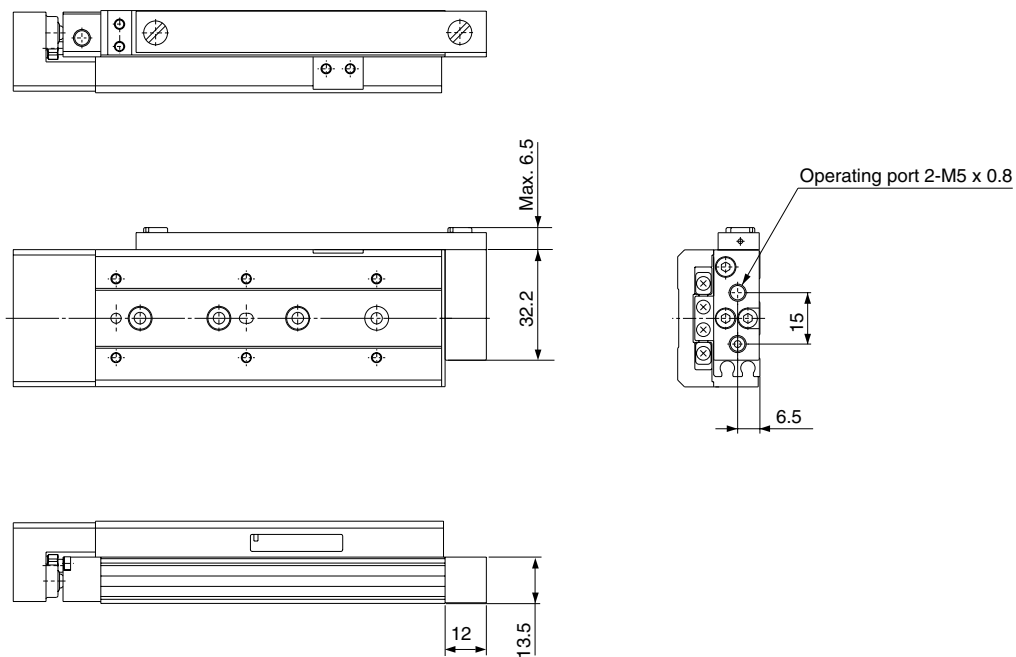
Air preparation equipment

Pressure switch

Clean gas filter

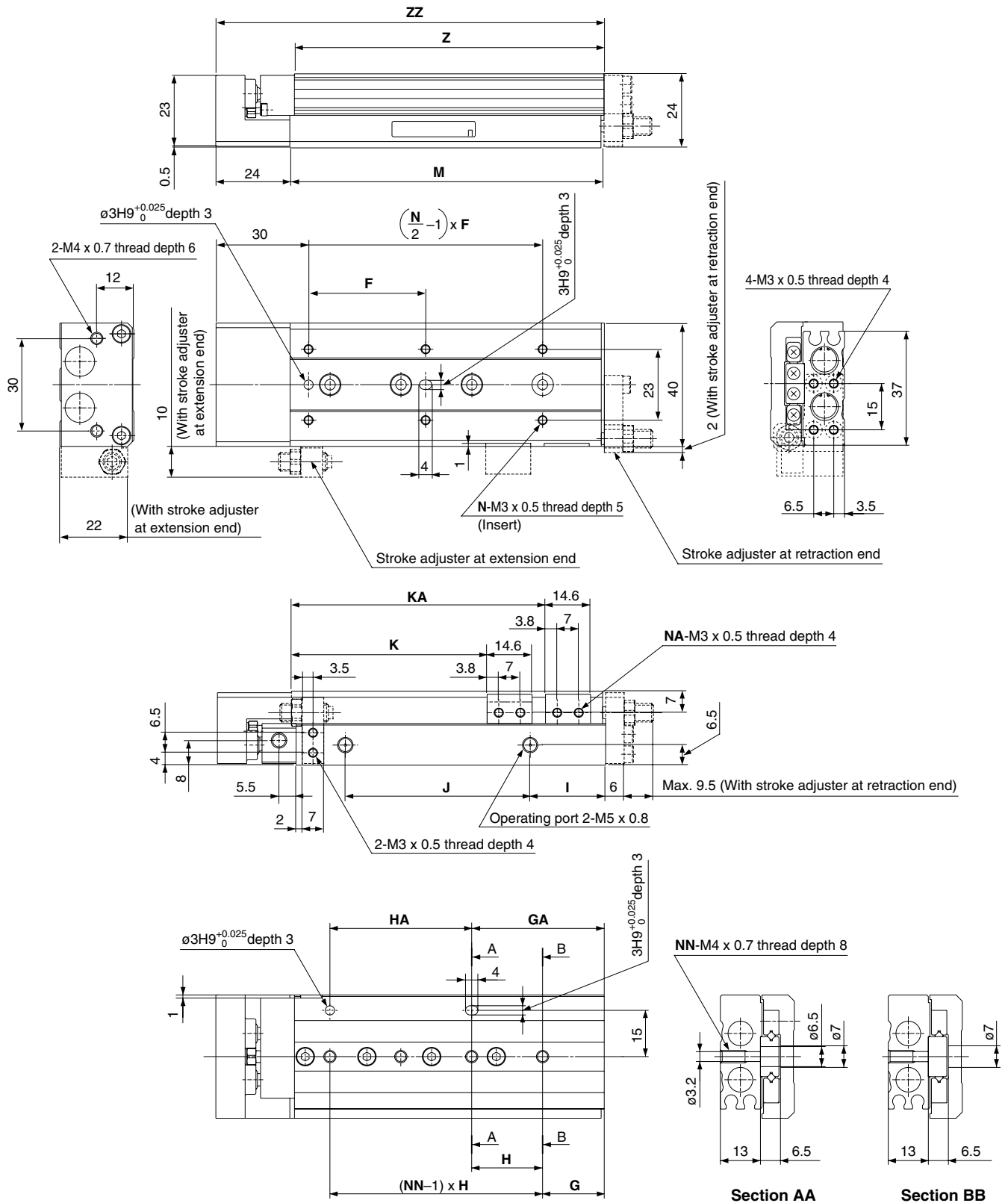
Dimensions: ¹³⁻₂₂₋**MXS8**

Axial piping type (ø8): ¹³⁻₂₂₋**MXS8-□□P**



* Other dimensions are the same as those of basic style.

Dimensions: 13-22-MXS8L / Symmetric type



Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXS8L-10	25	4	9	28	2	17	20	13	19.5	23.5	—	2	49	48.5	74
13-/22-MXS8L-20	25	4	12	30	2	12	30	8.5	29	33.5	—	2	54	53.5	79
13-/22-MXS8L-30	40	4	13	20	3	33	20	9.5	39	43.5	—	2	65	64.5	90
13-/22-MXS8L-40	50	4	15	28	3	43	28	10.5	56	53.5	—	2	83	82.5	108
13-/22-MXS8L-50	38	6	20	23	4	43	46	24.5	60	63.5	82.5	4	101	100.5	126
13-/22-MXS8L-75	50	6	27	28	5	83	56	38.5	96	88.5	132.5	4	151	150.5	176

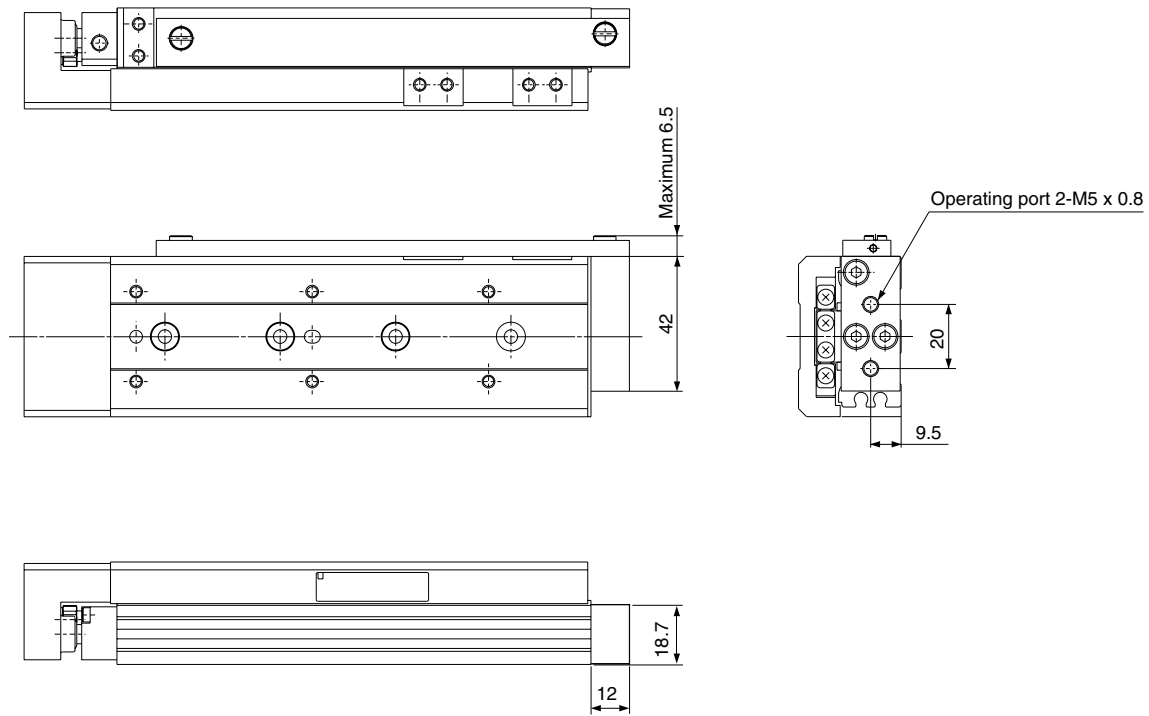
Basic style



Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13/-22-MXS12-10	35	4	15	40	2	15	40	10	40	26.5	—	2	71	70	99
13/-22-MXS12-20	35	4	15	40	2	15	40	10	40	36.5	—	2	71	70	99
13/-22-MXS12-30	35	4	15	40	2	15	40	10	40	46.5	—	2	71	70	99
13/-22-MXS12-40	50	4	17	25	3	42	25	10	52	56.5	—	2	83	82	111
13/-22-MXS12-50	35	6	15	36	3	51	36	22	60	66.5	—	2	103	102	131
13/-22-MXS12-75	55	6	25	36	4	61	72	43	85	91.5	125.5	4	149	148	177
13/-22-MXS12-100	65	6	35	38	5	111	76	52	130	116.5	179.5	4	203	202	231

Dimensions / ¹³⁻₂₂₋ **MXS12**

Axial piping (ø12) ¹³⁻₂₂₋ **MXS12-□□P**



* Other dimensions are the same as those of basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

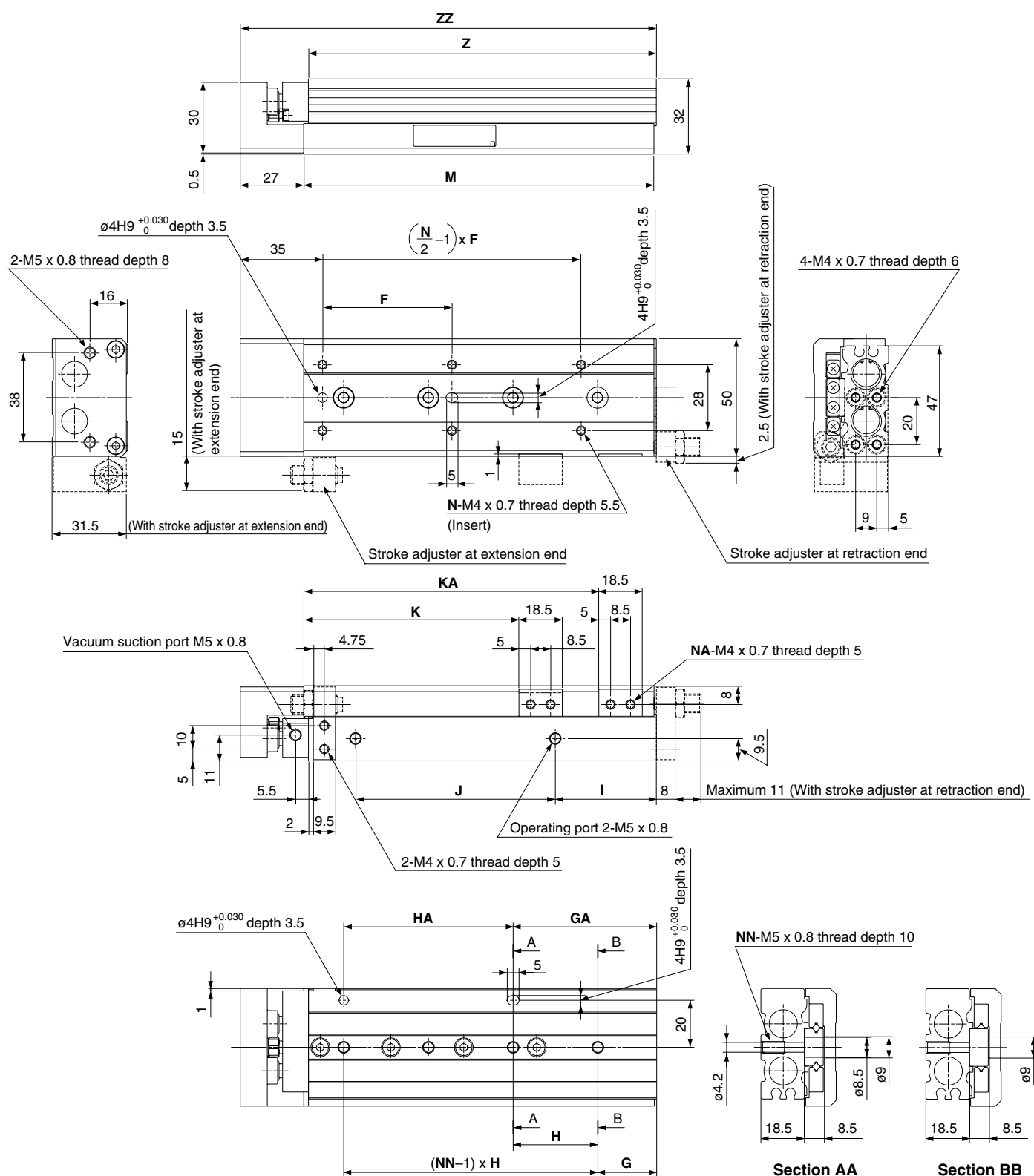
Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

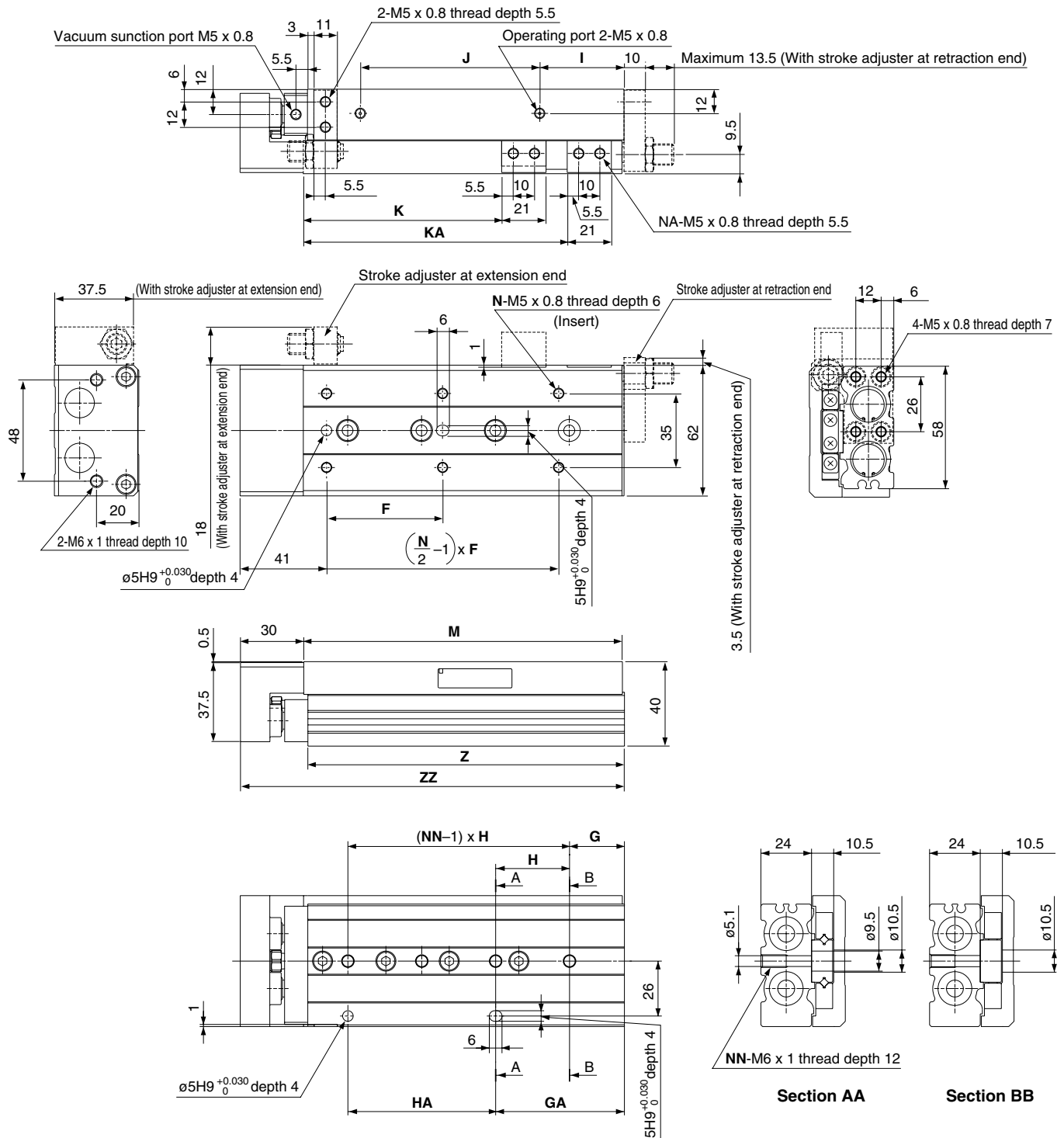
Dimensions / ¹³⁻₂₂₋MXS12L / Symmetric type



															(mm)
Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXS12L-10	35	4	15	40	2	15	40	10	40	26.5	—	2	71	70	99
13-/22-MXS12L-20	35	4	15	40	2	15	40	10	40	36.5	—	2	71	70	99
13-/22-MXS12L-30	35	4	15	40	2	15	40	10	40	46.5	—	2	71	70	99
13-/22-MXS12L-40	50	4	17	25	3	42	25	10	52	56.5	—	2	83	82	111
13-/22-MXS12L-50	35	6	15	36	3	51	36	22	60	66.5	—	2	103	102	131
13-/22-MXS12L-75	55	6	25	36	4	61	72	43	85	91.5	125.5	4	149	148	177
13-/22-MXS12L-100	65	6	35	38	5	111	76	52	130	116.5	179.5	4	203	202	231

Dimensions / 13-22-MXS16

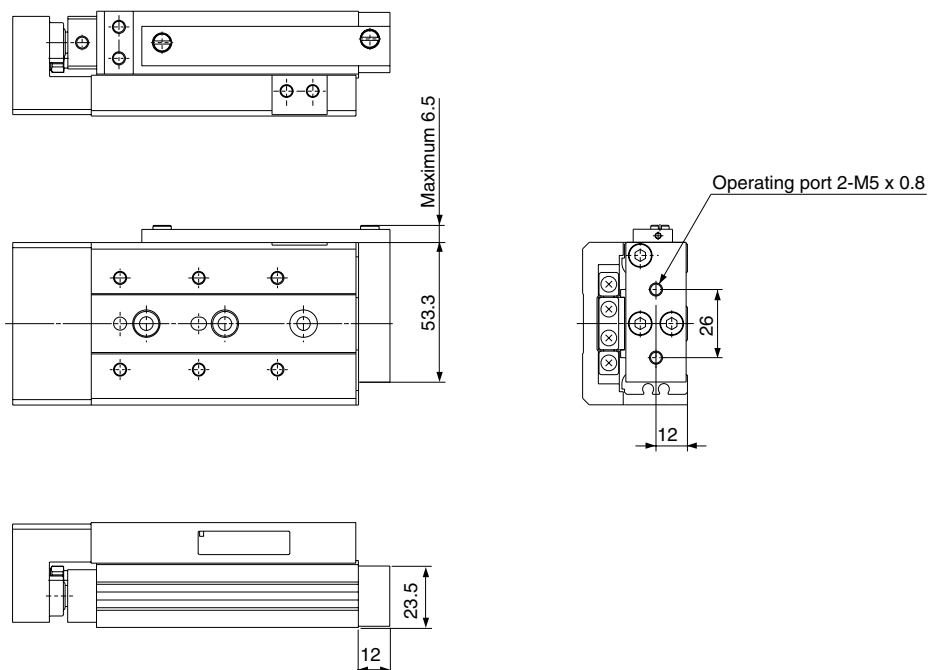
Basic style



Model	F	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXS16-10	35	4	16	40	2	16	40	10	40	29	—	2	76	75	107
13-/22-MXS16-20	35	4	16	40	2	16	40	10	40	39	—	2	76	75	107
13-/22-MXS16-30	35	4	16	40	2	16	40	10	40	49	—	2	76	75	107
13-/22-MXS16-40	40	4	16	50	2	16	50	10	50	59	—	2	86	85	117
13-/22-MXS16-50	30	6	21	30	3	51	30	15	60	69	—	2	101	100	132
13-/22-MXS16-75	55	6	26	35	4	61	70	40	85	94	125	4	151	150	182
13-/22-MXS16-100	65	6	39	35	5	109	70	55	118	119	173	4	199	198	230
13-/22-MXS16-125	70	8	19	35	7	159	70	68	155	144	223	4	249	248	280

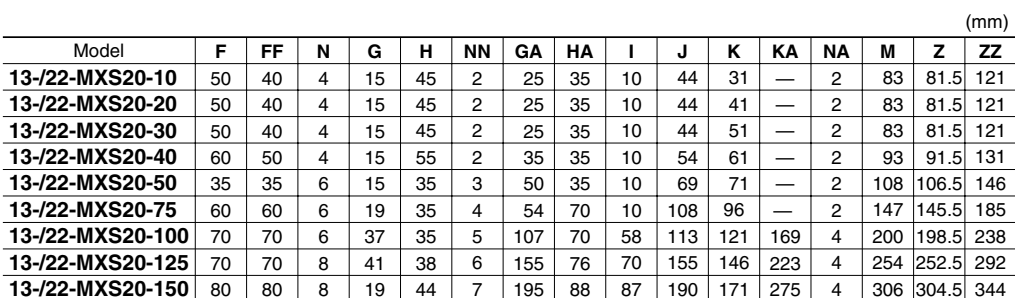
Dimensions / ¹³⁻₂₂₋**MXS16**

Axial piping (ø16) ¹³⁻₂₂₋**MXS16-□□P**



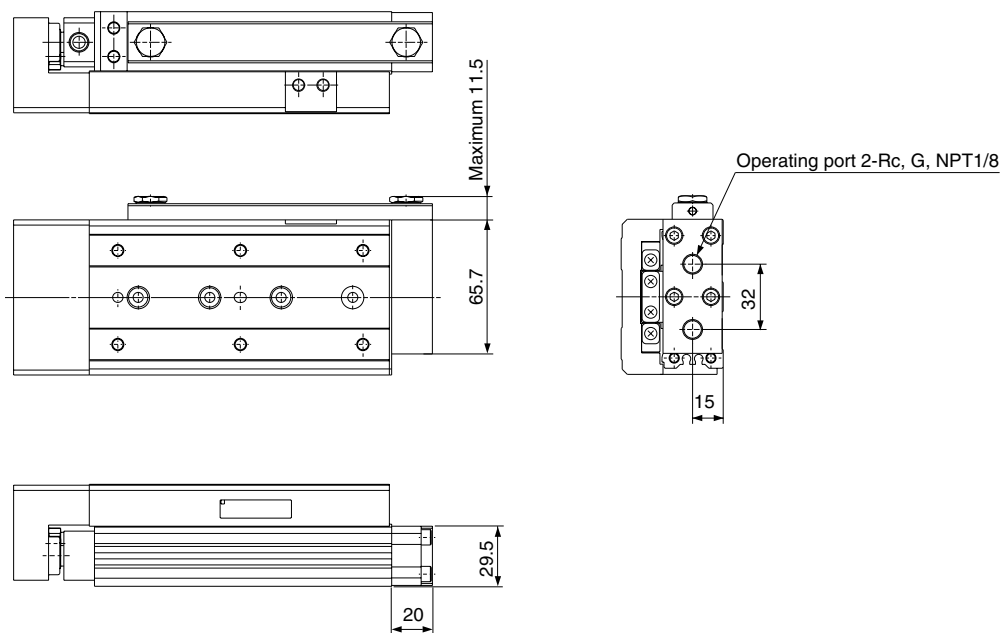
* Other dimensions are the same as those of basic style.

Basic style



Dimensions / ¹³⁻²²⁻**MXS20**

Axial piping (ø20) ¹³⁻²²⁻**MXS20-□□P**



* Other dimensions are the same as those of basic style.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

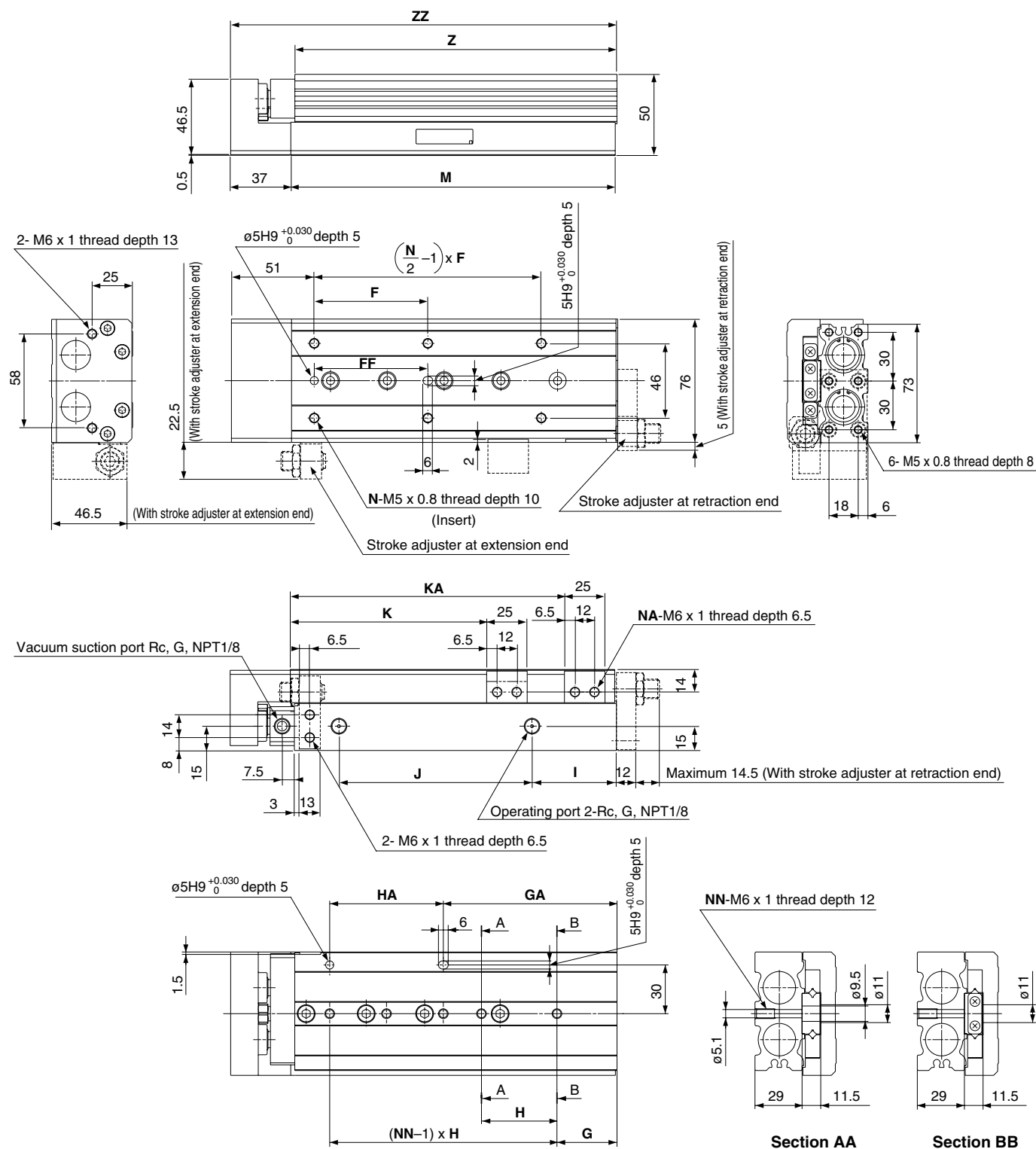
Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

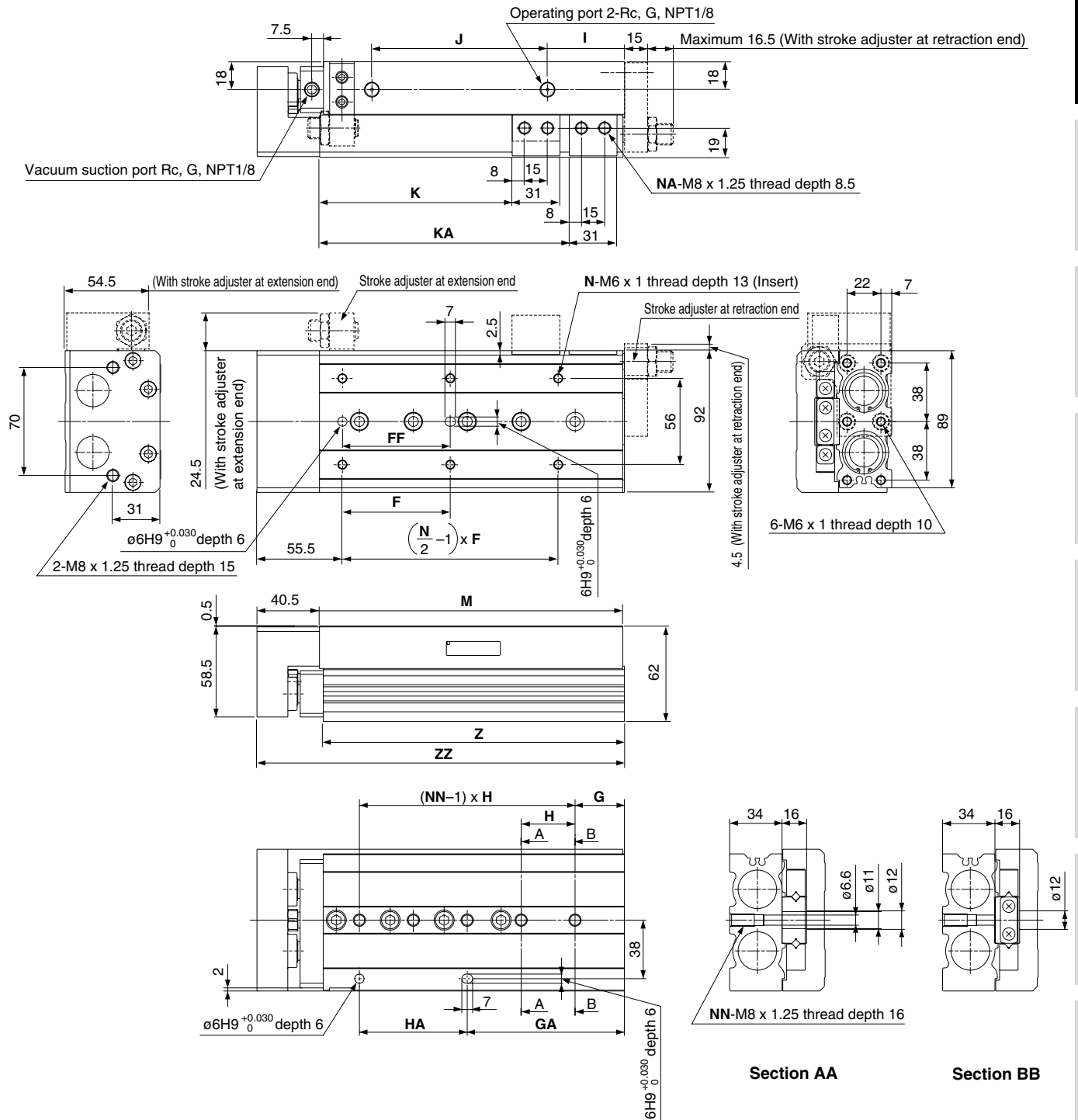
Dimensions / 13-22-MXS20L / Symmetric type



Model	F	FF	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXS20L-10	50	40	4	15	45	2	25	35	10	44	31	—	2	83	81.5	121
13-/22-MXS20L-20	50	40	4	15	45	2	25	35	10	44	41	—	2	83	81.5	121
13-/22-MXS20L-30	50	40	4	15	45	2	25	35	10	44	51	—	2	83	81.5	121
13-/22-MXS20L-40	60	50	4	15	55	2	35	35	10	54	61	—	2	93	91.5	131
13-/22-MXS20L-50	35	35	6	15	35	3	50	35	10	69	71	—	2	108	106.5	146
13-/22-MXS20L-75	60	60	6	19	35	4	54	70	10	108	96	—	2	147	145.5	185
13-/22-MXS20L-100	70	70	6	37	35	5	107	70	58	113	121	169	4	200	198.5	238
13-/22-MXS20L-125	70	70	8	41	38	6	155	76	70	155	146	223	4	254	252.5	292
13-/22-MXS20L-150	80	80	8	19	44	7	195	88	87	190	171	275	4	306	304.5	344

Dimensions / 13-22-MXS25

Basic style

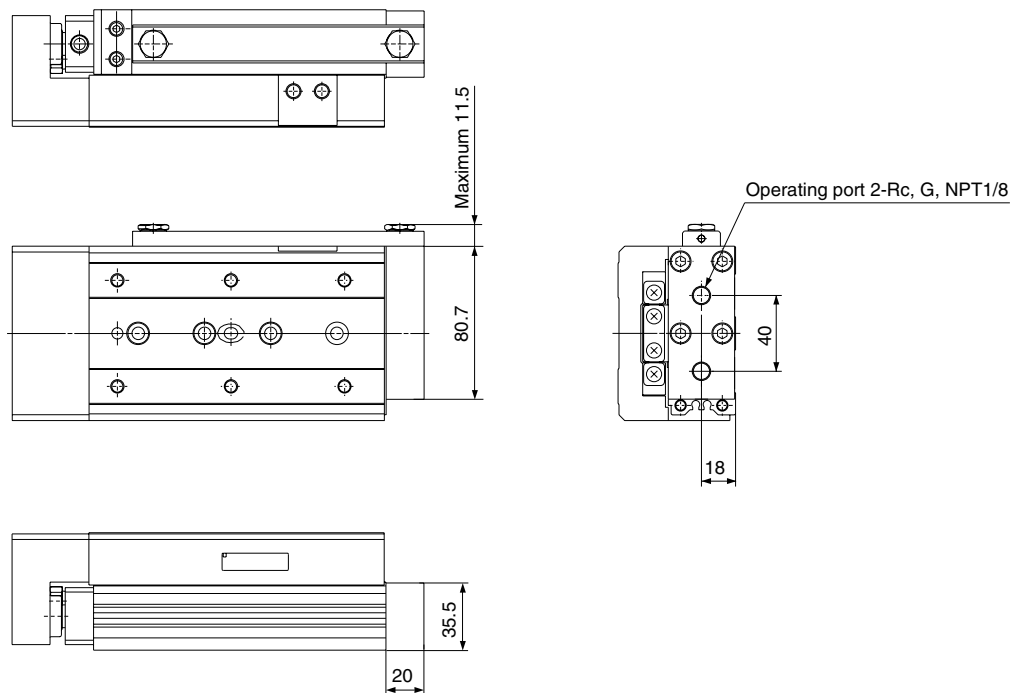


(mm)

Model	F	FF	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXS25-10	50	40	4	22	45	2	22	45	12	47	35	—	2	92	90.5	133.5
13-/22-MXS25-20	50	40	4	22	45	2	22	45	12	47	45	—	2	92	90.5	133.5
13-/22-MXS25-30	50	40	4	22	45	2	22	45	12	47	55	—	2	92	90.5	133.5
13-/22-MXS25-40	60	50	4	22	55	2	22	55	12	57	65	—	2	102	100.5	143.5
13-/22-MXS25-50	35	35	6	20	35	3	55	35	12	70	75	—	2	115	113.5	156.5
13-/22-MXS25-75	60	60	6	26	35	4	61	70	33	90	100	—	2	156	154.5	197.5
13-/22-MXS25-100	70	70	6	32	35	5	102	70	50	114	125	162	4	197	195.5	238.5
13-/22-MXS25-125	75	75	8	40	38	6	154	76	67	155	150	218	4	255	253.5	296.5
13-/22-MXS25-150	80	80	8	30	40	7	190	80	82	180	175	258	4	295	293.5	336.5

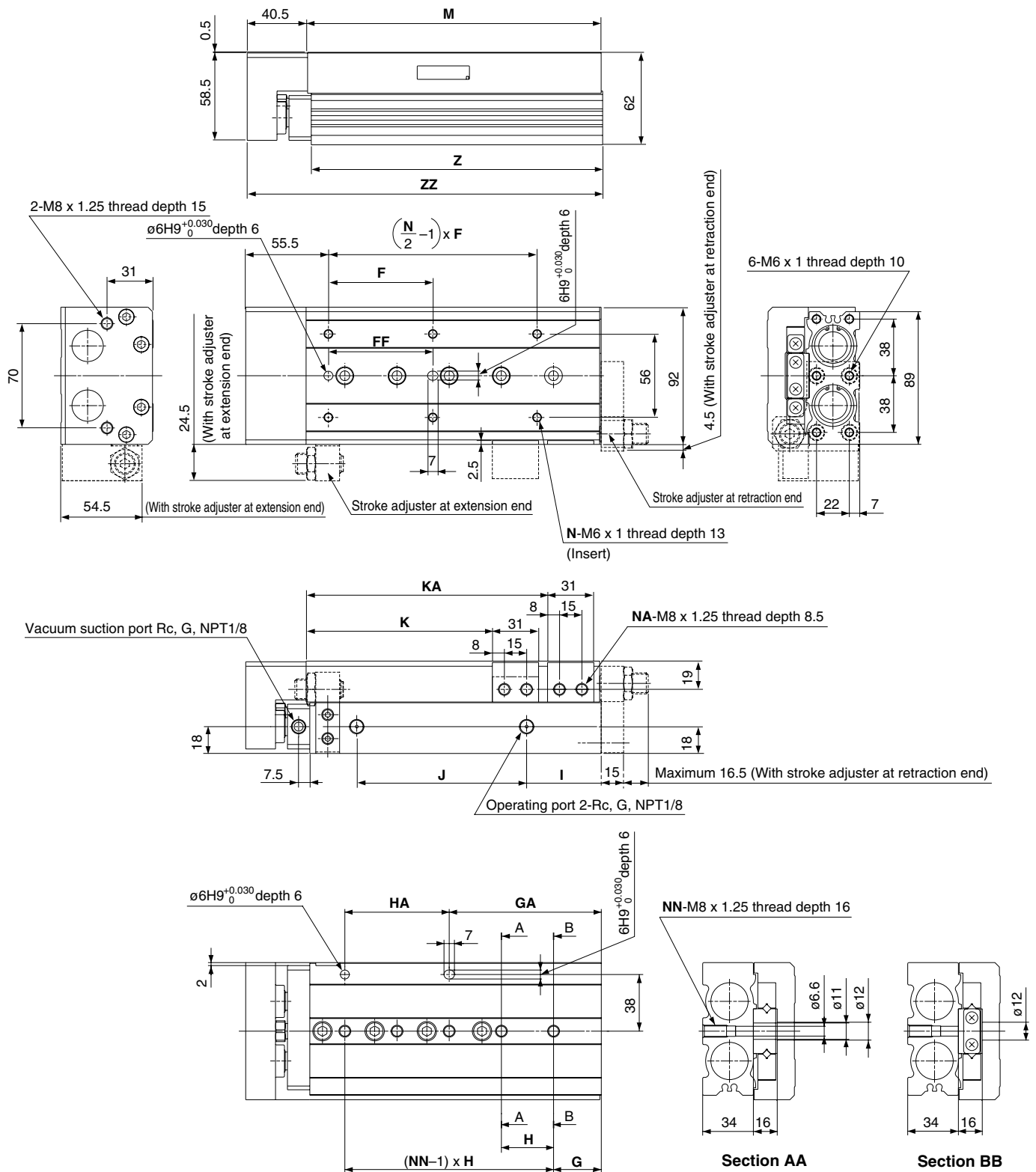
Dimensions / ¹³⁻₂₂₋**MXS25**

Axial piping (ø25) ¹³⁻₂₂₋**MXS25-□□P**



* Other dimensions are the same as those of basic style.

Dimensions / 13-22-MXS25L / Symmetric type



Model	F	FF	N	G	H	NN	GA	HA	I	J	K	KA	NA	M	Z	ZZ
13-/22-MXS25L-10	50	40	4	22	45	2	22	45	12	47	35	—	2	92	90.5	133.5
13-/22-MXS25L-20	50	40	4	22	45	2	22	45	12	47	45	—	2	92	90.5	133.5
13-/22-MXS25L-30	50	40	4	22	45	2	22	45	12	47	55	—	2	92	90.5	133.5
13-/22-MXS25L-40	60	50	4	22	55	2	22	55	12	57	65	—	2	102	100.5	143.5
13-/22-MXS25L-50	35	35	6	20	35	3	55	35	12	70	75	—	2	115	113.5	156.5
13-/22-MXS25L-75	60	60	6	26	35	4	61	70	33	90	100	—	2	156	154.5	197.5
13-/22-MXS25L-100	70	70	6	32	35	5	102	70	50	114	125	162	4	197	195.5	238.5
13-/22-MXS25L-125	75	75	8	40	38	6	154	76	67	155	150	218	4	255	253.5	296.5
13-/22-MXS25L-150	80	80	8	30	40	7	190	80	82	180	175	258	4	295	293.5	336.5

Made to Order

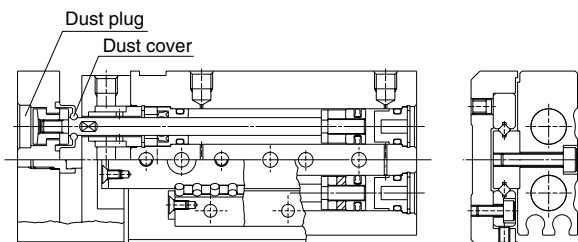
Use of fluoro rubber for dust cover and dust plug -X52

13-MXS

Refer to standard products How to Order -X52

Material used for the dust cover and dust plug has been changed from silicone rubber to fluoro rubber.

Note 1) Dimensions are the same as those of standard type.



! Specific Product Precautions

Be sure to read before handling.

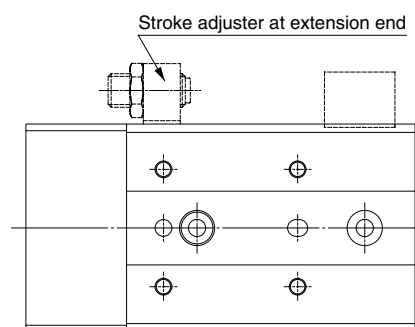
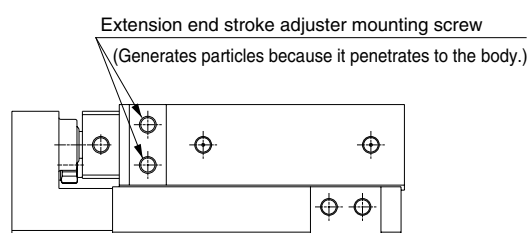
Precautions

! Caution

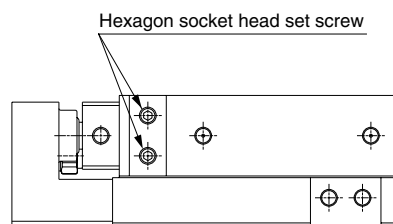
Plug the port after removing the stroke adjuster at the extension end.

Otherwise particle generation may occur because the prepared hole of the mounting screw penetrates the body. Contact SMC for more information.

Cylinder bore size (mm)	25
-------------------------	----



In case of without extension end adjuster type, port is plugged with a hexagon socket head screw at the time of shipment.



Series CYP

Clean rodless cylinder ø15, ø32

How to Order

CYP 15 200 Y59B

Clean rodless cylinder

Cylinder bore size

15	15mm
32	32mm

Port type

Nil	M5 x 0.8	15
	Rc	
TN	NPT	32
TF	G	

Standard stroke

Bore size (mm)	Standard stroke (mm)
15-32	100, 150, 200, 250, 300, 350 400, 450, 500, 600, 700

Note 1) Contact SMC if the maximum stroke is exceeded.
Note 2) Intermediate strokes are available upon request.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

Type of auto switch

Nil	Without auto switch
-----	---------------------

For auto switch model numbers, refer to the table below.

Piping port location

Nil	a	Operating direction right
	b	Operating direction left
L	c	Operating direction right
	d	Operating direction left
R	e	Operating direction right
	f	Operating direction left
S	g	Operating direction right
	h	Operating direction left

Piping port location

Note) Ports other than those specified will be plugged.

Auto Switch Specifications (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model	* Lead wire length (m)			Applicable load	
					DC	AC			0.5	3	5		
Reed switch	—	Grommet	Yes	2-wire	24V	12V	100V	Electrical entry direction Horizontal	Nil	(L)	(Z)	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	Y59A	●	●	○	IIC circuit	Relay, PLC
				2-wire		12V		Y59B	●	●	○	—	

* Lead wire symbol 0.5m.....Nil (Example) Y59B
3 m.....L Y59BL
5 m.....Z Y59BZ

** Solid state switches marked with ○ are produced upon receipt of order.

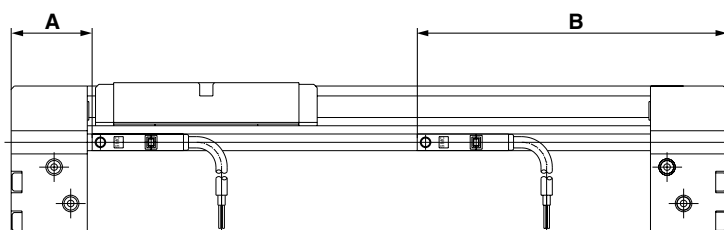
Refer to applicable auto switch list. — Page 182

PLC: Programmable Logic Controller

Specifications

Bore size (mm)	15	32
Fluid	Air and inert gas	
Action	Double acting	
Proof pressure	0.5MPa	
Operating pressure range	0.05 to 0.3MPa	
Ambient and fluid temperature	-10 to 60°C (With no condensation)	
Piston speed	50 to 300mm/s	
Lubrication	Non-lube	
Stroke adjustable range	±1mm on each side (total ±2mm)	
Cushion	Sine cushion (Air cushion)	
Piping port size	M5 x 0.8	Rc1/8, NPT1/8, G1/8
Grease	Fluorine grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 2	

Auto switches / Proper mounting position for stroke end detection

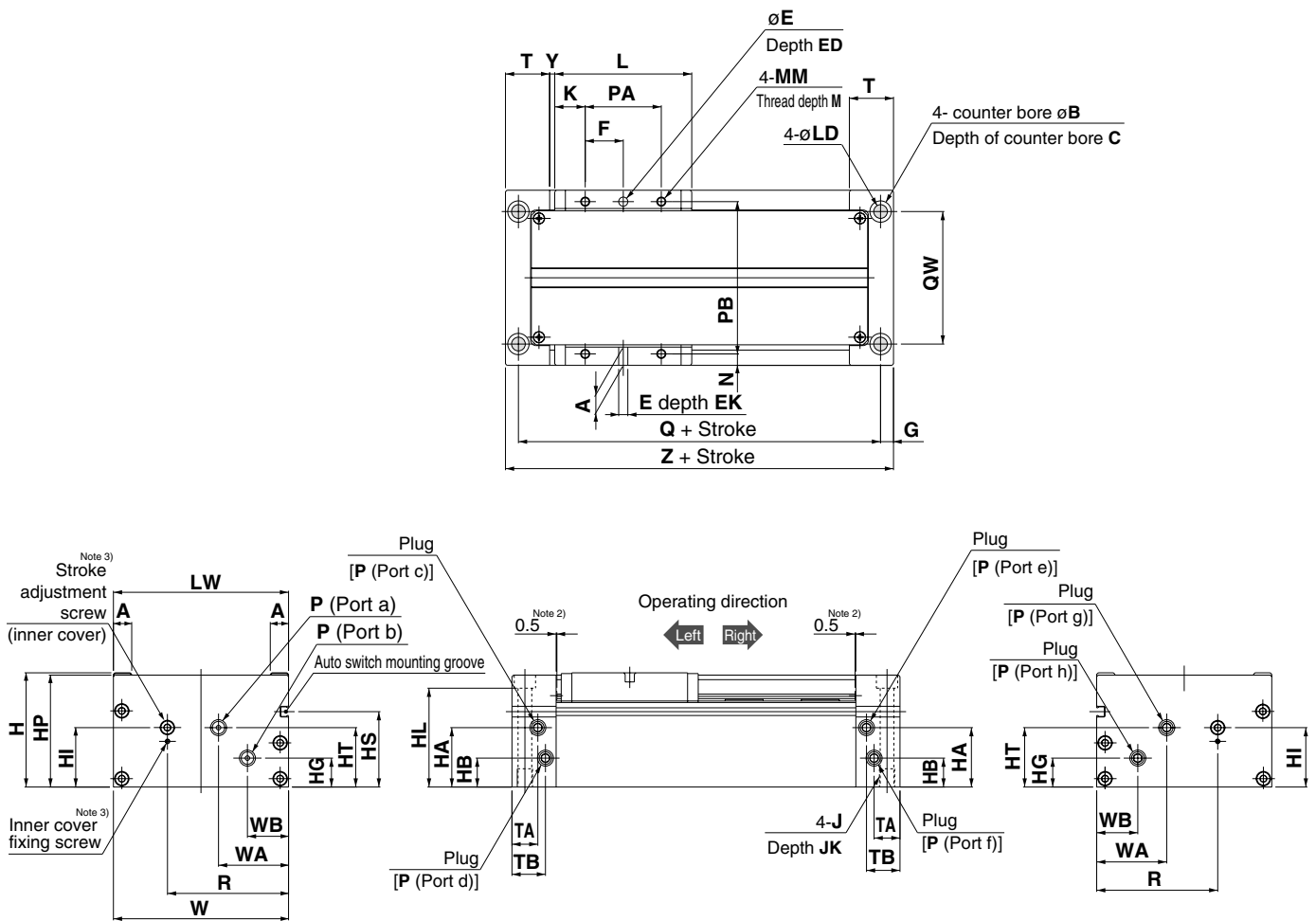


Auto switch proper mounting position

Auto switch model Cylinder model	A		B	
	D-Z73	D-Y5□	D-Z73	D-Y5□
CYP15	24.5		93.5	
CYP32	33		122	

Note) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Dimensions



(mm)																				
Model	A	B	C	E	ED	EK	F	G	H	HA	HB	HG	HI	HL	HP	HS	HT	J	JK	K
CYP15	8	9.5	5.4	4H9 ^{+0.030} ₀	9.5	4	12.5	6.5	45	19.5	8.5	8.5	23	38.6	44	27	19.5	M6 x 1	10	21
CYP32	12	14	8.6	6H9 ^{+0.030} ₀	13	6	25	8.5	75	39	19	19	39	64.9	73.5	49.5	39	M10 x 1.5	12	20

Model	L	LD	LW	MM	M	N	PA	PB	Q	QW	R	T	TA	TB	W	WA	WB	Y	Z
CYP15	67	5.4	69	M4 x 0.7	6	4.5	25	60	105	48	45	23	13	18	69	32	17	2.5	118
CYP32	90	8.6	115	M6 x 1	8	7.5	50	100	138	87	79.5	29	17	22	115	46	27	3.5	155

Model	P		
	Nil	TN	TF
CYP15	M5 x 0.8	—	—
CYP32	Rc1/8	NPT1/8	G1/8

Note 1) These dimensional drawings apply to piping port position "Nil".

Note 2) These dimensional drawings indicate the protrusion of bumper.

Note 3) Refer to the specific product precautions (stroke adjustment and cushion effect (sine cushion)).



Specific product precautions

Be sure to read before handling.

Handling

⚠ Caution

1. Open the inner package of the double packaged clean series inside a clean room or other clean environment.
2. Perform parts replacement and disassembly work in a clean room after exhausting compressed air in the piping outside the clean room.

Mounting

⚠ Caution

1. Take care to avoid striking the cylinder tube with other objects or handling it in a way that could cause deformation. The cylinder tube and slider units have a non-contact construction. For this reason, even a slight deformation or slippage of position can cause malfunction and loss of durability, as well as a danger of degrading the particulate generation characteristics.
2. Do not scratch or gouge the linear guide by striking it with other objects. Since the linear guide is specially treated for maximum suppression of particle generation due to sliding, even a slight scratch can cause malfunction and loss of durability, as well as degradation in the particulate generation characteristics.
3. Since the slide table is supported by precision bearings, do not apply strong impacts or excessive moment when mounting work pieces.
4. Be sure to operate the cylinder with the plates on both sides secured. Avoid applications in which the slide table or only one plate is secured.
5. When changing the ports to be used, be sure that unused ports are securely sealed. Take sufficient care in sealing unused ports, because if ports are not properly sealed, air can leak from the ports and particulate generation characteristics can be degraded.

Operation

⚠ Caution

1. The max. operating pressure of the clean rodless cylinder is 0.3 MPa. If the max. operating pressure of 0.3 MPa for the clean rodless cylinder is exceeded, the magnetic coupling could be broken, causing a danger of malfunction or degradation of particulate generation characteristics, etc.
2. The product can be used with a direct load applied within the allowable range, but careful alignment is necessary when connecting to a load having an external guide mechanism. Since alignment variations increase as the stroke gets longer, use a connection method which can absorb these variations and consider measures to control particulate generation.

Operation

⚠ Caution

3. When used for vertical operation, use caution regarding possible dropping due to separation of the magnetic coupling. When used for vertical operation, use caution as there is a possibility of dropping due to separation of the magnetic coupling if a load (pressure) greater than the allowable value is applied.
4. Do not operate with the magnetic coupling out of position. If the magnetic coupling is out of position, push the external slider by hand (or the piston slider with air pressure) back to the proper position at the stroke end.
5. Do not supply lubrication, as this is a non-lube product. The interior of the cylinder is lubricated at the factory, and lubrication with turbine oil, etc., will not satisfy the product's specifications.
6. Never reapply lubricant. Never reapply lubricant, as there may be a degradation of particulate generation characteristics or operation characteristics.

Speed adjustment

⚠ Caution

1. A throttle valve for clean room use is recommended for speed adjustment. (Please consult with SMC regarding equipment and methods to be used) Speed adjustment can also be performed with a meter-in or meter-out type speed controller for clean room use, but it may not be possible to obtain smooth starting and stopping operation.

Throttle valves and dual speed controllers for recommended speed adjustment of CYP cylinders

Throttle valve		Series	Model	
			CYP15	CYP32
Metal body piping type	Elbow type		10-AS1200-M5-X216	10-AS2200-01-X214
	In-line type		10-AS1000-M5-X214	10-AS2000-01-X209
Resin body with one-touch fitting	Elbow type (Throttle valve)		10-AS1201F-M5-04-X214	10-AS2201F-01-04-X214
			10-AS1201F-M5-06-X214	10-AS2201F-01-06-X214
				10-AS2201F-01-06-X214
	Universal type (Throttle valve)		10-AS1301F-M5-04-X214	10-AS2301F-01-04-X214
			10-AS1301F-M5-06-X214	10-AS2301F-01-06-X214
				10-AS2301F-01-06-X214
	In-line type (Throttle valve)		10-AS1001F-04-X214	10-AS2001F-04-X214
			10-AS1001F-06-X214	10-AS2001F-06-X214
	Dual type (Speed controller)		10-ASD230F-M5-04	10-ASD330F-01-06
			10-ASD230F-M5-06	10-ASD330F-01-08

Note 1) For the selection method of the metal body piping type and the resin body type with one-touch fittings, refer to pages 718 to 760.

Note 2) For fittings used with the metal body piping type, refer to pages 804 to 873.

2. In the case of vertical mounting, a system with a reduced pressure supply circuit installed on the down side is recommended. (This is effective against upward starting delays and for air saving.)



Specific Product Precautions

Be sure to read before handling.

Stroke adjustment and cushion effect (Sine cushion)

⚠ Caution

1. A sine cushion function (for smooth start and soft stop) is included in the standard specifications.

Due to the nature of a sine cushion, adjustment of the cushion effect is not possible. There is no cushion needle adjustment as in the case of conventional cushion mechanisms.

2. The stroke adjustment is a mechanism to adapt the slide table's stroke end position to a mechanical stopper on other equipment, etc.

(Adjustment range : Total of both sides $\pm 2\text{mm}$)

To ensure safety, perform adjustment after shutting off the drive air, exhausting the residual pressure and implementing drop prevention measures.

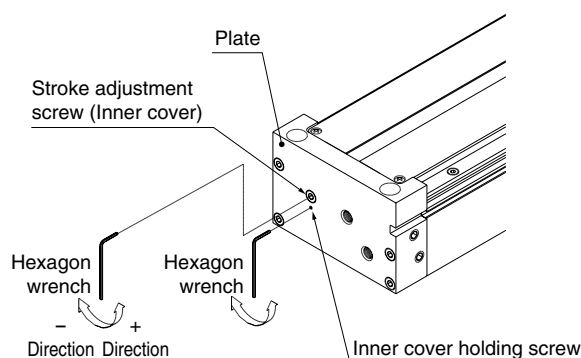
- 1) Loosen the inner cover holding screw with a hexagon wrench, etc.
- 2) To align the position with a mechanical stopper on other equipment, rotate the stroke adjustment screw (inner cover) to the left or right with a flat head screw driver to move the inner cover back and force. Approximately 1mm of adjustment is possible with one rotation.
- 3) The maximum adjustment on one side is $\pm 1\text{mm}$. A total adjustment of approximately $\pm 2\text{mm}$ is possible with one rotation.
- 4) After completing the stroke adjustment, tighten the inner cover holding screw with a hexagon wrench, etc.

Inner cover holding screw tightening torque [N·m]

Model	Thread size	Tightening torque	Hexagon wrench size
CYP15	M3 x 0.5	0.3	1.5
CYP32	M6 x 1	2.45	3

Stroke adjustment screw

Model	Hexagon wrench size
CYP15	2.5
CYP32	4



Maintenance

⚠ Caution

1. Never disassemble the cylinder tube or linear guide, etc.

If disassembled, the slide table may touch the outside surface of the cylinder tube, resulting in a degradation of particulate generation characteristics.

2. Please consult with SMC when replacing seals and bearings (wear rings).

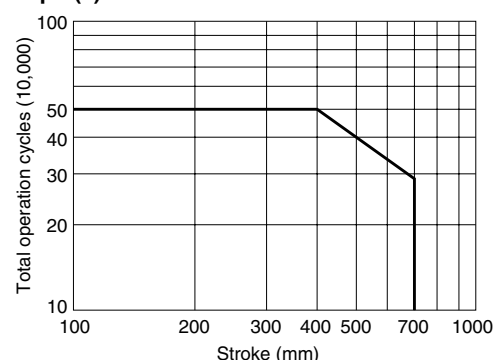
Particulate generation characteristics

⚠ Caution

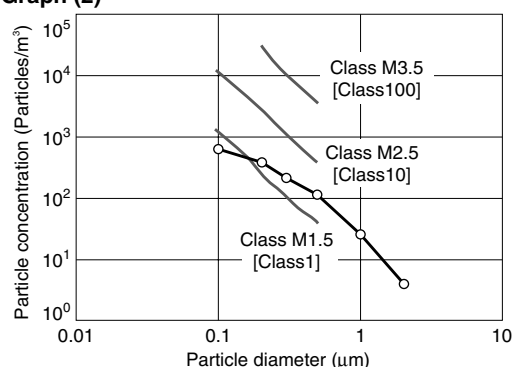
1. In order to maintain the particulate generation grade, use operation of 500 thousand cycles or travel distance of about 400 km as a standard. (Graph (1) below)

If operation is continued beyond the recommended values, lubrication failure of the linear guide and loss of particulate generation characteristics may occur.

Graph (1)



Graph (2)



Note 1) This chart shows the level of cleanliness inside the measurement chamber.

Note 2) The vertical axis shows the number of particles per unit volume (1 m^3) of air which are no smaller than the particle size shown on the horizontal axis.

Note 3) The dotted lines show the upper concentration limit of the cleanliness class based on Fed. Std. 209E-1992.

Note 4) The plots indicate a 95% upper reliability limit value for time series data up to 500 thousand operation cycles. (Cylinder: CYP32-200, Workpiece weight 5 kg, Average speed: 200 mm/s)

Note 5) The data above provides a guide for selection but is not guaranteed.

Series 12-CY1B

Magnetic rodless cylinder
ø6, ø10, ø50, ø63

How to Order

12- CY1B (ø15 to ø40) was remodeled to 12- CY3B (ø15 to ø40).
Refer to pages 160 and 161 for details.



Clean series

12 — Special treatment on sliding part

Bore size (mm)

Magnetic holding force type

Please refer to the table of magnetic holding force.

12 - CY1B

10

H

300

Cylinder stroke (mm)

Port thread type

Symbol	Type	Bore size
Nil	M5 x 0.8	6, 10
	Rc	
TN	NPT	50, 63
TF	G	

Model

Model	Bore size (mm)	Port size	Lubrication	Standard stroke (mm)	Maximum manufacturable stroke (mm)	Cushion	
						Rubber	Air
12-CY1B6	6	M5 x 0.8	Non-lube	50, 100, 150, 200	300	○ (Both sides)	—
12-CY1B10	10			50, 100, 150, 200, 250,300	500		
12-CY1B50	50	Rc1/4 NPT1/4 G1/4		100, 150, 200, 250, 300, 350, 400, 450,500, 600, 700, 800, 900, 1000	1300		
12-CY1B63	63						

Note 1) Stroke exceeding the standard stroke but below the maximum possible stroke is available for special order upon request.

Note 2) Intermediate stroke is available by the 1 mm interval.

Note 3) Please contact SMC if the maximum manufacturable stroke is exceeded.

Specifications

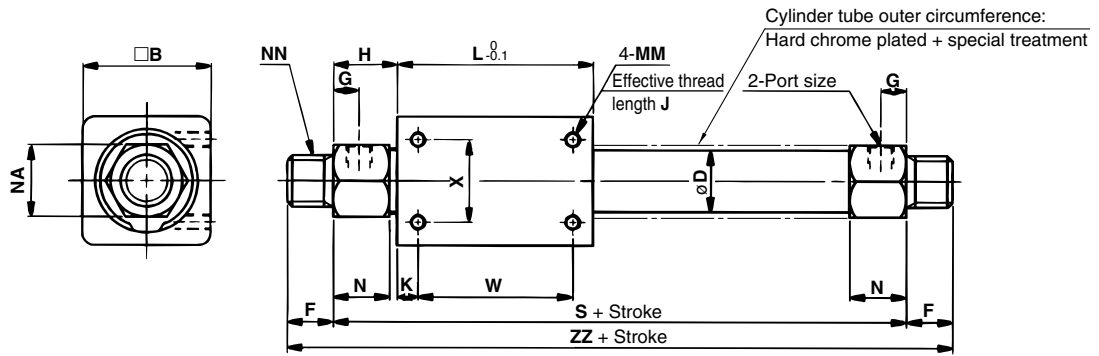
Bore size (mm)	
Item	6/10/50/63
Proof pressure	1.05MPa
Max. operating pressure	0.7MPa
Min. operating pressure	0.18MPa
Ambient and fluid temperature	−10°C to 60°C (With no freezing)
Piston speed	50 to 400 mm/s
Stroke length tolerance	0 to 250 st: $+^{+1.0}_0$, 251 to 1000 st: $+^{+1.4}_0$, 1001 st to: $+^{+1.8}_0$
Mounting bracket	2 mounting nuts (Standard)
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Magnetic holding force (N)

Bore size (mm)		6	10	50	63
Holding force type	H style	19.6	53.9	1471	2256
	L style	—	—	863	1373

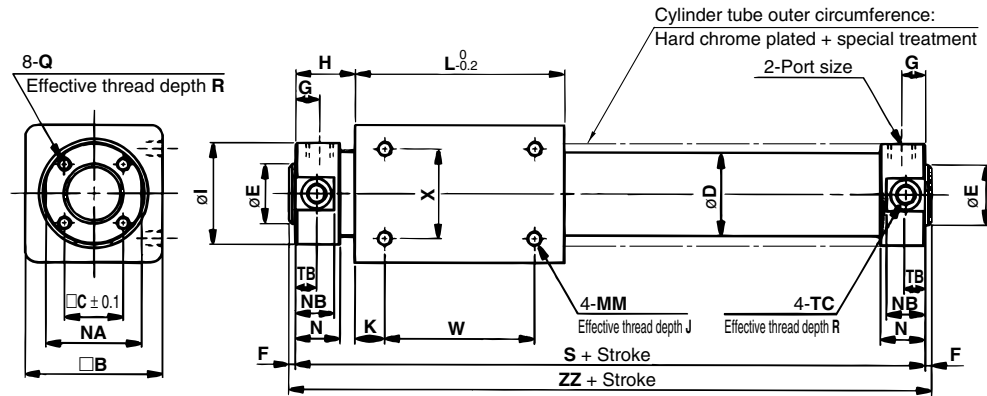
Dimensions

12-CY1B 6/10



(mm)																
Model	Port size	D	B	F	G	H	K	L	N	NA	MM5J	NN	S	W	X	ZZ
12-CY1B6	M5 x 0.8	7.6	17	9	5	14	5	35	10	14	M3 x 0.5 x 4.5	M10 x 1.0	63	25	10	81
12-CY1B10	M5 x 0.8	12	25	9	5	12.5	4	38	11	14	M3 x 0.5 x 4.5	M10 x 1.0	63	30	16	81

12-CY1B 50/63



(mm)																
Model	B	C	D	E	F	G	H	I	K	L	MM x J	N	NA	NB	Q x R	S
12-CY1B50	86	32	53	30 ^{-0.007} _{-0.037}	2	14	33	58.2	25	110	M8 x 1.25 x 12	25	55	23	M8 x 1.25 x 16	176
12-CY1B63	100	38	66	32 ^{-0.007} _{-0.043}	2	14	33	72.2	26	122	M8 x 1.25 x 12	25	69	23	M10 x 1.5 x 16	188

Model	TB	TC x R	W	X	ZZ
12-CY1B50	13	M12 x 1.25 x 7.5	60	60	180
12-CY1B63	13	M14 x 1.5 x 11.5	70	70	192

Model	P (Piping port)		
	Nil	TN	TF
12-CY1B50	Rc1/4	NPT1/4	G1/4
12-CY1B63	Rc1/4	NPT1/4	G1/4

Series 12-CY3B

Magnetic rodless cylinder
ø15, ø20, ø25, ø32, ø40

How to Order



Clean series

12 — Special treatment on sliding part

Bore size (mm)

12 - CY3B

15

300

Cylinder stroke (mm)

Port type

Symbol	Type	Bore size
Nil	M5 x 0.8	15
	Rc	
TN	NPT	20, 25, 32, 40
TF	G	

Model

Model	Bore size (mm)	Port size	Lubrication	Standard stroke (mm)	Maximum manufacturable stroke	Cushion	
						Rubber	Air
12-CY3B15	15	M5 x 0.8	Non-lube	50, 100, 150, 200, 250, 300, 350, 400, 450, 500	1000	○ (Both sides)	—
12-CY3B20	20	Rc1/8		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1300		
12-CY3B25	25	NPT1/8					
12-CY3B32	32	G1/8					
12-CY3B40	40	Rc1/4 NPT1/4 G1/4		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000			

Note 1) Stroke exceeding the standard stroke but below the maximum possible stroke is available for special order upon request.

Note 2) Intermediate stroke is available by the 1 mm interval.

Note 3) Please contact SMC if the maximum manufacturable stroke is exceeded.

Specifications

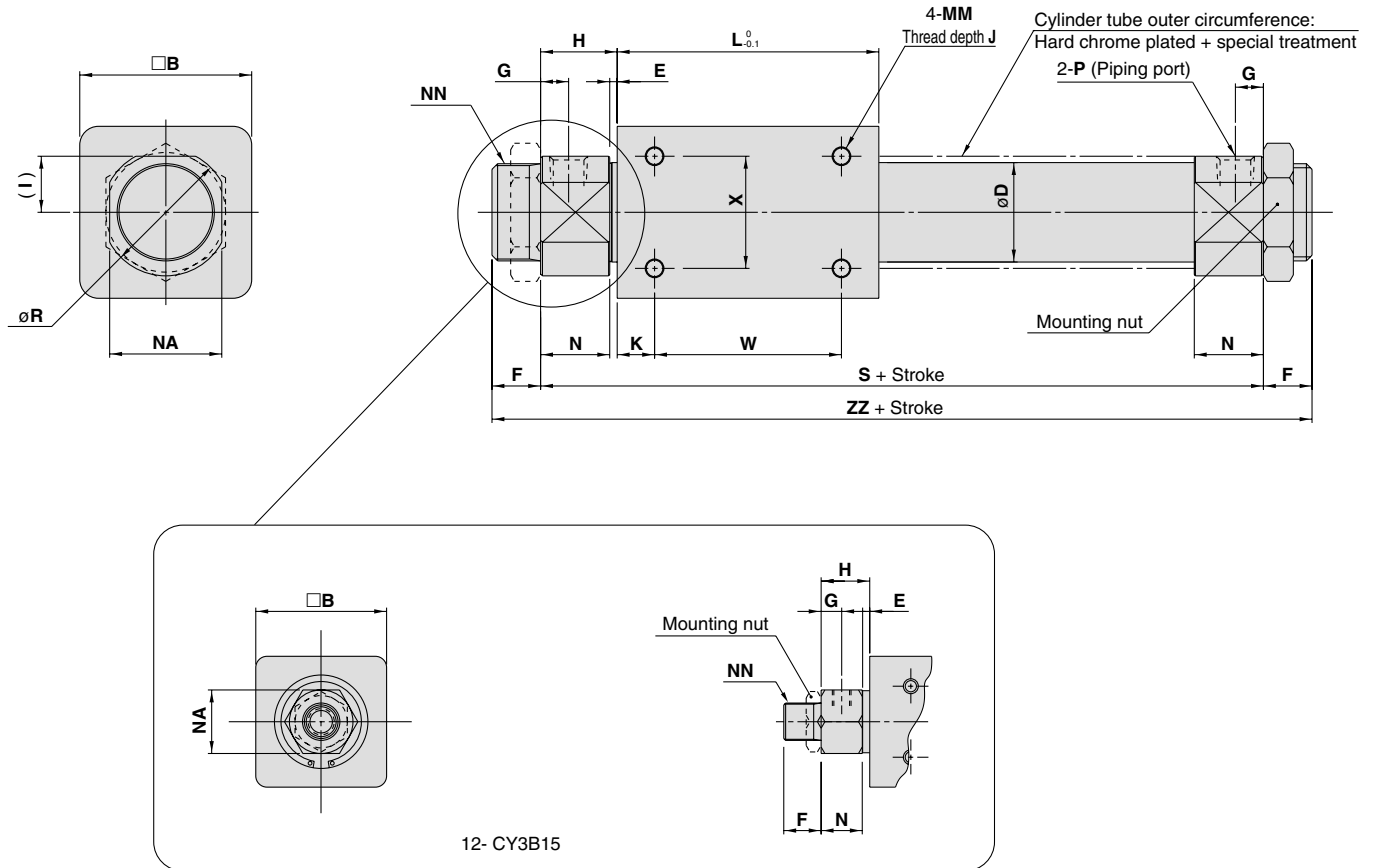
Bore size (mm)	
Item	15/20/25/32/40
Proof pressure	1.05MPa
Max. operating pressure	0.7MPa
Min. operating pressure	ø15, ø20: 0.16MPa, ø25: 0.15MPa, ø32: 0.14MPa, ø40: 0.12MPa
Ambient and fluid temperature	−10°C to 60°C (With no freezing)
Piston speed	50 to 400 mm/s
Stroke length tolerance	0 to 250 st: $^{+1.0}_0$, 251 to 1000 st: $^{+1.4}_0$, 1001 st to: $^{+1.8}_0$
Mounting bracket	2 mounting nuts (Standard)
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Magnetic holding force (N)

Bore size (mm)	15	20	25	32	40
Holding force	137	231	363	588	922

Dimensions

12-CY3B15 to 40



Model	B	D	E	F	G	H	I	J	K	L	MM	N	NA	NN	R	S	W	X	ZZ
12-CY3B15	35	16.6	2	10	5.5	13	—	6	11	57	M4 x 0.7	11	17	M10 x 1	—	83	35	19	103
12-CY3B20	36	21.6	2	13	7.5	20	12	6	8	66	M4 x 0.7	18	24	M20 x 1.5	28	106	50	25	132
12-CY3B25	46	26.4	2	13	7.5	20.5	15	8	10	70	M5 x 0.8	18.5	30	M26 x 1.5	34	111	50	30	137
12-CY3B32	60	33.6	2	16	8	22	18	8	15	80	M6 x 1	20	36	M26 x 1.5	40	124	50	40	156
12-CY3B40	70	41.6	3	16	11	29	23	10	16	92	M6 x 1	26	46	M32 x 2	50	150	60	40	182

Model	P (Piping port)		
	Nil	TN	TF
12-CY3B15	M5 x 0.8	—	—
12-CY3B20	Rc1/8	NPT1/8	G1/8
12-CY3B25	Rc1/8	NPT1/8	G1/8
12-CY3B32	Rc1/8	NPT1/8	G1/8
12-CY3B40	Rc1/4	NPT1/4	G1/4

Mounting nuts (2 pcs.) are shipped together.

Part number	Applicable bore size (mm)	d	H	B	C
SNJ-016B	15	M10 x 1.0	4	14	16.2
SN-020B	20	M20 x 1.5	8	26	30
SN-032B	25, 32	M26 x 1.5	8	32	37
SN-040B	40	M32 x 2.0	10	41	47.3

Series 12-CY1R

Magnetic rodless cylinder (Direct mount type)
 ø6, ø10, ø50, ø63

How to Order

12- CY1R(ø15 to ø40) was remodeled to 12- CY3R (ø15 to ø40).
 Please refer to pages 164 and 165 for details.



Clean series
 12 — Special treatment on sliding part

Bore size (mm)
 10

Magnetic holding force type
 Please refer to the table of magnetic holding force.

H - **300**

N

Port type		
Symbol	Type	Bore size
NII	M5 x 0.8	6, 10
	Rc	
TN	NPT	50, 63
TF	G	

Standard stroke

N — Without switch rail

* Switch rail is not available for 12- series.

Model

Model	Bore size (mm)	Port size	Lubrication	Standard stroke (mm)	Maximum manufacturable stroke (mm)	Cushion	
						Rubber	Air
12-CY1R6	6	M5 x 0.8	Non-lube type	50, 100, 150, 200	300	○ (Both sides)	—
12-CY1R10	10			50, 100, 150, 200, 250, 300	500		
12-CY1R50	50	Rc1/4 NPT1/4 G1/4		100, 150, 200, 250, 300, 350, 400,	1300		
12-CY1R63	63			450, 500, 600, 700, 800, 900, 1000			

Note 1) Stroke exceeding the standard stroke will be available upon request as special product.

Note 2) Intermediate stroke is available by the 1 mm interval.

Note 3) Please contact SMC if the maximum manufacturable stroke is exceeded.

Specifications

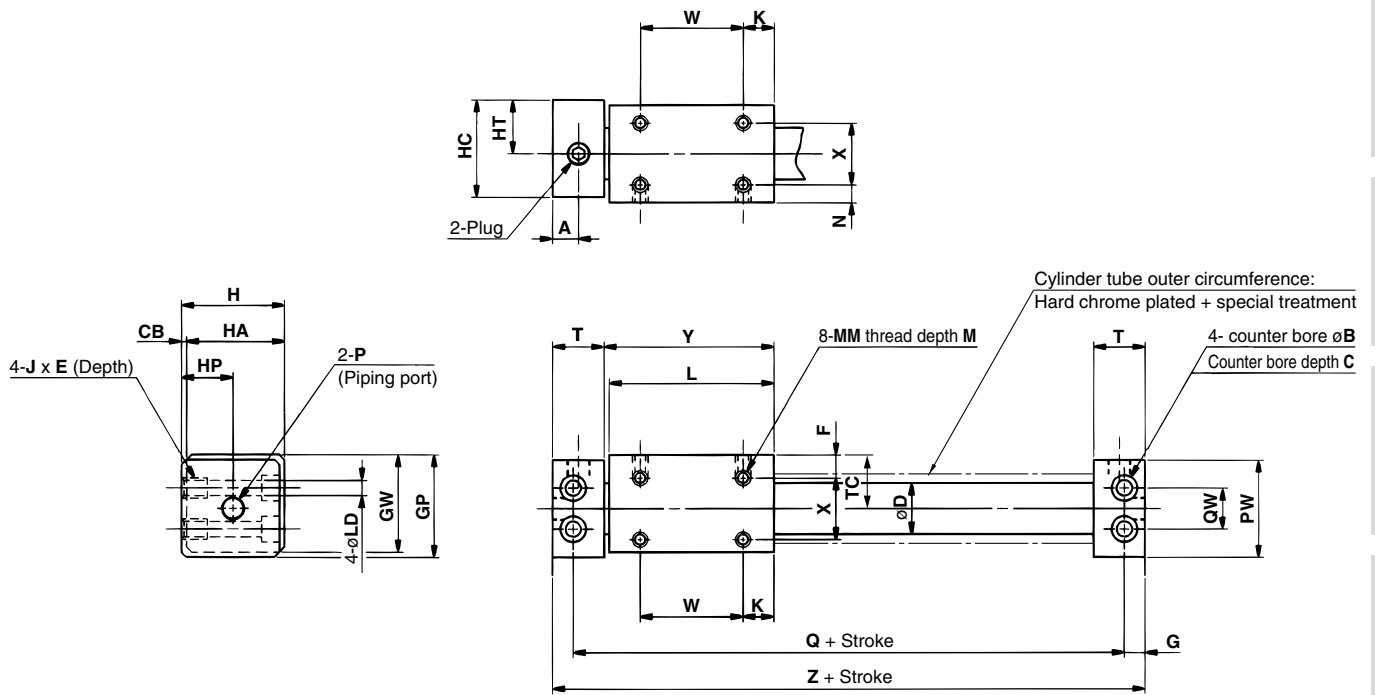
Bore size (mm)	
Item	6/10/50/63
Proof pressure	1.05MPa
Max. operating pressure	0.7MPa
Min. operating pressure	0.18MPa
Ambient and fluid temperature	−10°C to 60°C (With no freezing)
Piston speed	50 to 400 mm/s
Stroke length tolerance	0 to 250 st: $^{+1.0}_0$, 251 to 1000 st: $^{+1.4}_0$, 1001 st to $^{+1.8}_0$
Mounting	Direct mount type
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Magnetic holding force (N)

Holding force type	Bore size (mm)	6	10	50	63
H style		19.6	53.9	1471	2256
L style		—	—	863	1373

Dimensions

12-CY1R6/10/50/63



Dimensions

(mm)

Model	A	B	C	CB	D	F	G	GP	GW	H	HA	HC	HP	HR	HT	J x E	K
12-CY1R6	9	6.5	3.2	2	7.6	5.5	4	20	18.5	19	17	18	9	17	7	M4 x 0.756	7
12-CY1R10	9	6.5	3.2	2	12	6.5	4	27	25.5	26	24	25	14	24	14	M4 x 0.756	9
12-CY1R50	14	14	8.2	5	53	17	8.5	83	81.5	85	80	84	45	80	45	M10 x 1.5 x 15	25
12-CY1R63	15	14	8.2	5	66	18	8.5	95	93.5	97	92	96	51	90	51	M10 x 1.5 x 15	24

Model	L	LD	M	MM	N	PW	Q	QW	T	TC	W	X	Y	Z
12-CY1R6	34	3.5	3.5	M3 x 0.5	3.5	19	64	10	17.5	10.5	20	10	35.5	72
12-CY1R10	38	3.5	4	M3 x 0.5	4.5	26	68	14	17.5	14	20	15	39.5	76
12-CY1R50	110	8.6	10	M8 x 1.25	15	82	159	48	30	42	60	50	113	176
12-CY1R63	118	8.6	10	M8 x 1.25	16	94	171	60	32	48	70	60	121	188

Model	P (Piping port)		
	Nil	TN	TF
12-CY1R6	M5 x 0.8	—	—
12-CY1R10	M5 x 0.8	—	—
12-CY1R50	Rc1/4	NPT1/4	G1/4
12-CY1R63	Rc1/4	NPT1/4	G1/4

Series 12-CY3R

Magnetic rodless cylinder (Direct mount type)
 ø15, ø20, ø25, ø32, ø40

How to Order



Clean series
 12 — Special treatment on sliding part

Bore size (mm)

Port thread type

Symbol	Type	Bore size
Nil	M5 x 0.8	15
	Rc	
TN	NPT	20, 25, 32, 40
TF	G	

12 - CY3R 25 - 300 N

Standard stroke

N — Without switch rail

* Switch rail is not available for 12- series.

Model

Model	Bore size (mm)	Port size	Lubrication	Standard stroke (mm)	Maximum manufacturable stroke (mm)	Cushion	
						Rubber	Air
12-CY3R15	15	M5 x 0.8	Non-lube	50, 100, 150, 200, 250, 300, 350, 400, 450, 500	1000	○ (Both sides)	—
12-CY3R20	20	Rc1/8		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1300		
12-CY3R25	25	NPT1/8					
12-CY3R32	32	G1/8					
12-CY3R40	40	Rc1/4 NPT1/4 G1/4					

Note 1) Stroke exceeding the standard stroke will be available upon request as special product.

Note 2) Intermediate stroke is available by the 1 mm interval.

Note 3) Please contact SMC if the maximum manufacturable stroke is exceeded.

Specifications

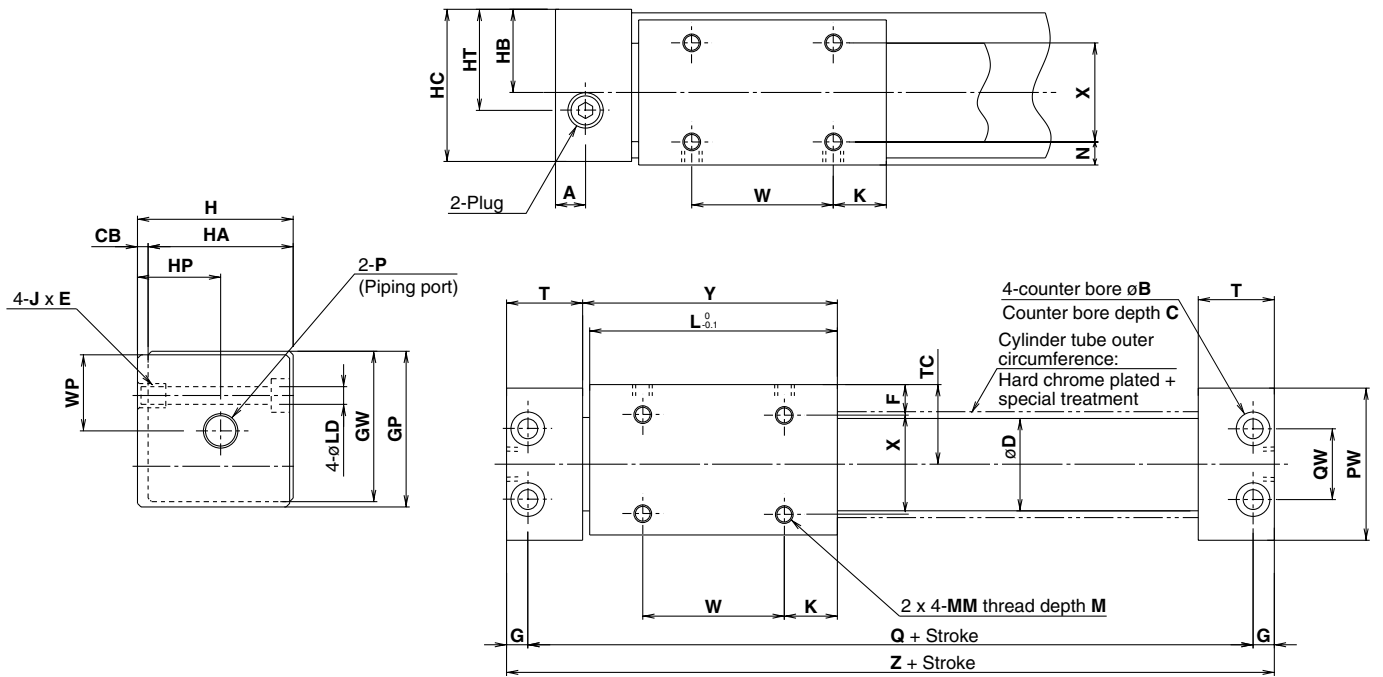
Bore size (mm)		15/20/25/32/40
Item		
Proof pressure		1.05MPa
Max. operating pressure		0.7MPa
Min. operating pressure		ø15, ø20: 0.16MPa, ø25: 0.15MPa, ø32: 0.14MPa, ø40: 0.12MPa
Ambient and fluid temperature		−10°C to 60°C (With no freezing)
Piston speed		50 to 400 mm/s
Stroke length tolerance		0 to 250 st: $^{+1.0}_0$, 251 to 1000 st: $^{+1.4}_0$, 1001 st to $^{+1.8}_0$
Mounting		Direct mount type
Grease		Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		Grade 3

Magnetic holding force (N)

Bore size (mm)	15	20	25	32	40
Holding force	137	231	363	588	922

Dimensions

12-CY3R15 to 40



Model	A	B	C	CB	D	F	G	GP	GW	H	HA	HB	HC	HP	HT	J x E	K
12-CY3R15	10.5	8	4.2	2	16.6	8	5	33	31.5	32	30	17	31	17	17	M5 x 0.8 x 7	14
12-CY3R20	9	9.5	5.2	3	21.6	9	6	39	37.5	39	36	21	38	24	24	M6 x 1 x 8	11
12-CY3R25	8.5	9.5	5.2	3	26.4	8.5	6	44	42.5	44	41	23.5	43	23.5	23.5	M6 x 1 x 8	15
12-CY3R32	10.5	11	6.5	3	33.6	10.5	7	55	53.5	55	52	29	54	29	29	M8 x 1.25 x 10	13
12-CY3R40	10	11	6.5	5	41.6	13	7	65	63.5	67	62	36	66	36	36	M8 x 1.25 x 10	15

Model	L	LD	M	MM	N	PW	Q	QW	T	TC	W	WP	X	Y	Z
12-CY3R15	53	4.3	5	M4 x 0.7	6	32	84	18	19	17	25	16	18	54.5	94
12-CY3R20	62	5.6	5	M4 x 0.7	7	38	95	17	20.5	20	40	19	22	64	107
12-CY3R25	70	5.6	6	M5 x 0.8	6.5	43	105	20	21.5	22.5	40	21.5	28	72	117
12-CY3R32	76	7	7	M6 x 1	8.5	54	116	26	24	28	50	27	35	79	130
12-CY3R40	90	7	8	M6 x 1	11	64	134	34	26	33	60	32	40	93	148

Series 12-REA

Sine rodless cylinder
 ø25, ø32, ø40, ø50, ø63

How to Order



Clean series
 12 — Special treatment on sliding part

Bore size (mm)

12 - REA 25 - 300

Cylinder stroke (mm)

Port type

Symbol	Type
Nil	Rc
TN	NPT
TF	G

Model

Model	Bore size (mm)	Port size	Lubrication	Standard stroke (mm)	Maximum manufacturable stroke (mm)
12-REA25	25	Rc1/8 NPT1/8 G1/8	Non-lube	200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1300
12-REA32	32				
12-REA40	40	Rc1/4		200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	
12-REA50	50	NPT1/4			
12-REA63	63	G1/4			

Note 1) Stroke exceeding the standard stroke will be available upon request as special product.

Note 2) Intermediate stroke is available by the 1 mm interval.

Note 3) Please contact SMC if the maximum manufacturable stroke is exceeded.

Specifications

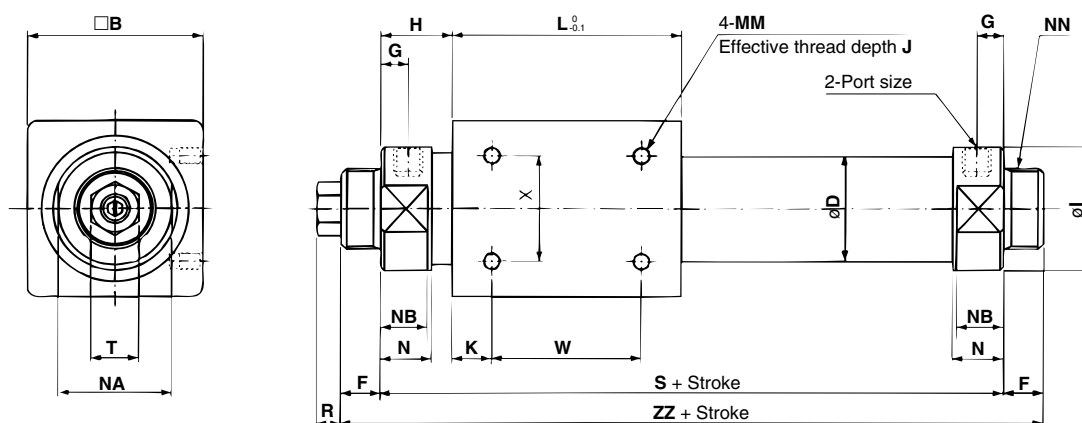
Item	Bore size (mm)
	25/32/40/50/63
Proof pressure	1.05MPa
Max. operating pressure	0.7MPa
Min. operating pressure	0.18MPa
Ambient and fluid temperature	-10 to 60°C (With no freezing)
Piston speed	50 to 300 mm/s
Stroke length tolerance	0 to 250 st: $^{+1.0}_0$, 251 to 1000 st: $^{+1.4}_0$, 1001 st to $^{+1.8}_0$
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Magnetic holding force

Bore size (mm)	25	32	40	50	63
Holding force N	363	588	922	1471	2256

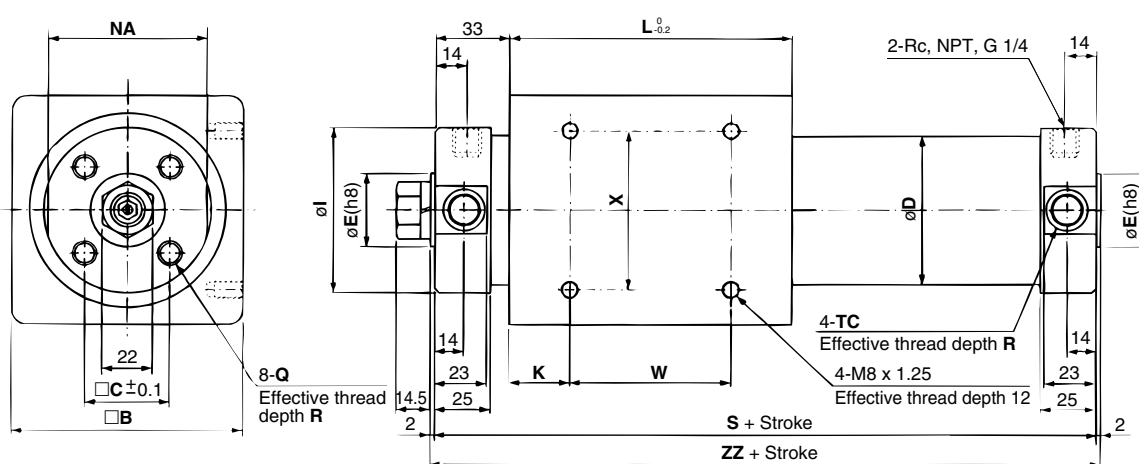
Dimensions

12-REA 25 to 40



Model	Port size	B	D	F	G	H	I	K	L	MM x J	N	NA	NB	NN	S	W	X	ZZ	R	T
12-REA25	Rc, NPT, G 1/8	46	27.8	13	8	20.5	34	10	70	M5 x 0.8 x 8	15	30	13	M26 x 1.5	111	50	30	137	8	17
12-REA32	Rc, NPT, G 1/8	60	35	16	9	22	40	15	80	M6 x 1.0 x 8	17	36	15	M26 x 1.5	124	50	40	156	8	17
12-REA40	Rc, NPT, G 1/4	70	43	16	11	29	50	16	92	M6 x 1.0 x 10	21	46	19	M32 x 2.0	150	60	40	182	10	19

12- REA 50/63



Model	B	C	D	E	I	K	L	NA	Q x R	S	TC x R	W	X	ZZ
12-REA50	86	32	53	30 ⁰ _{-0.033}	58.2	25	110	55	M8 x 1.25 x 16	176	M12 x 1.25 x 7.5	60	60	180
12-REA63	100	38	66	32 ⁰ _{-0.039}	72.2	26	122	69	M10 x 1.5 x 16	188	M14 x 1.5 x 11.5	70	70	192



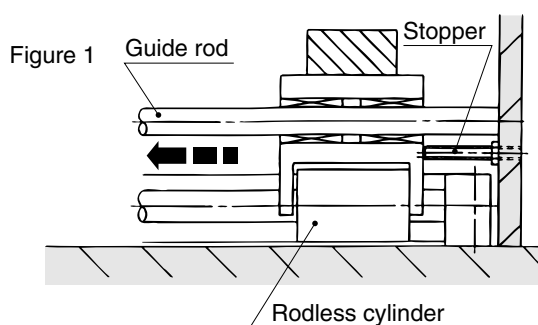
Specific Product Precautions

Be sure to read before handling.

12-CY1B/3B/1R/3R/REA. Common Precautions

⚠ Caution

- 1. Use caution to the rotation of the external slider.**
Rotation should be controlled by connecting the external slider to another shaft (linear guide, etc.).
- 2. Do not operate with the magnetic coupling out of position.**
If the magnetic coupling is out of position, push the external slider by hand (or the position slider with air pressure) back to the proper position at the stroke end.
- 3. Do not apply a lateral load to the external slider.**
When a load is mounted directly to the cylinder, variations in the alignment of each shaft center cannot be offset, which results in the generation of a lateral load that can cause malfunction. The cylinder should be operated using a connection method which allows for shaft alignment variations and deflection due to the cylinder's own weight. A drawing of a recommended mounting method is shown in Figure 1.



- 4. When used for vertical operation, use caution regarding allowable load.**
When used for vertical operation, use caution as there is a possibility of dropping due to separation of the magnetic coupling if a load greater than the allowable value is added. When used for vertical operation, contact SMC for the operating conditions (pressure, load, speed, stroke, frequency, etc.).
Refer to Best Pneumatics vol.8 (CY1 series model selection method) for details.
- 5. Do not scratch or gouge the external surface of the cylinder.**
It can damage the wear ring, increase particle generation and cause malfunction.
- 6. Do not use the cylinder with its body fixed.**
Be sure to secure both head covers (or end covers in case of CY1R) before using the cylinder. Operation of the cylinder with its body fixed will damage the wear ring, resulting in increase of particle generation or malfunction.

12- CY1R/3R

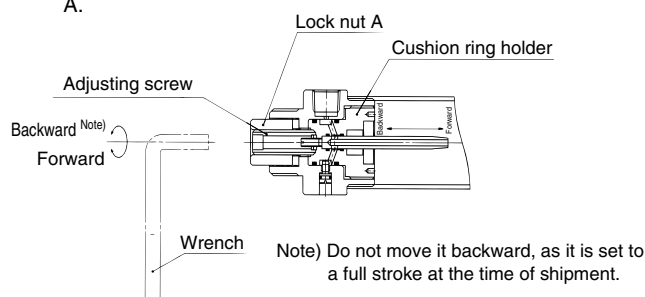
⚠ Caution

- 1. Pay attention to the cylinder mounting surface.**
If there is any clearance between the end covers on both ends and the mounting surfaces, adjust the shim with a spacer for secure installation.

12- REA

⚠ Caution

- 1. Stroke adjustment is provided for position adjustment.**
This mechanism is not intended for adjustment of the cushion effect (smooth start-up, soft stop). This mechanism is for matching of the cylinder's stroke end position to the mechanical stopper, etc., of a machine.
- 2. Stroke adjustment should be conducted with no pressure supply.**
To ensure safety, stroke adjustment should be conducted with no pressure supply. Before adjustment is performed, shut off the drive air, release any residual pressure and implement measures to prevent dropping of workpieces, etc.
Adjustment procedure is shown below.
 - 1) Insert a wrench into the hexagon hole of the adjustment screw to loosen lock nut A.
 - 2) Rotate the adjustment screw to right and left and move the cushion ring holder (stroke end) forward and backward to align the position with that of the external stopper.
 - 3) After the stroke end adjustment is completed, retighten lock nut A.



•Adjusting screw width across flats

Model	Width across flats (mm)
12-REA25	5
12-REA32	5
12-REA40	6
12-REA50	8
12-REA63	8

•Lock nut A tightening torque

Model	Tightening torque (N·m)
12-REA25	1.2
12-REA32	1.2
12-REA40	2.1
12-REA50	3.4
12-REA63	3.4

- 3. Throttle type speed controllers are recommended for speed adjustment, as shown in the table below.**

•Recommended speed controller

Model	Model		
	Elbow type	Straight type	In-line type
12-REA25	10-AS2201F-01-06-X214	10-AS2301F-01-06-X214	10-AS2001F-06-X214
12-REA32	10-AS2201F-02-06-X214	10-AS2301F-02-06-X214	10-AS2001F-06-X214
12-REA40	10-AS2201F-02-06-X214	10-AS2301F-02-06-X214	10-AS2001F-06-X214
12-REA50	10-AS3201F-02-08-X214	10-AS3301F-02-08-X214	10-AS3001F-08-X214
12-REA63	10-AS3201F-02-08-X214	10-AS3301F-02-08-X214	10-AS3001F-08-X214

Although speed adjustment is possible with meter-in and meter-out speed controllers, smooth start-up and soft stop may not be achieved.

In case the mounting orientation is not horizontal, a system with a pressure regulating circuit on the lower side is recommended. (It is also effective to shorten start-up delay in rising and for energy conservation.)

- 4. Cushion adjustment is not necessary.**

The fixed cushion mechanism does not require the conventional cushion adjustment.

12-CY1B/3B

12- CY1R/3R

Warning

1. Use caution as the attractive power of the magnets is very strong.

When removing the external slider and piston slider from the cylinder tube for maintenance, etc., handle with caution, since the magnets installed in each slider have a very strong attractive force.

Caution

1. Use caution when taking off the external slider, as the piston slider will be directly attracted to it.

When removing the external slider or piston slider from the cylinder tube, first force the sliders out of their magnetically coupled positions, and then remove them individually when there is no longer any holding force. If they are removed while still magnetically coupled, they will be directly attracted to one another and will not come apart.

2. Use caution to the direction of the external slider and the piston slider.

Since the external slider and piston slider are directional for $\phi 6$, $\phi 10$ and holding type L, refer to the figures below when performing disassembly or maintenance. Put the external slider and piston slider together, and insert the piston slider into the cylinder tube so that they will have the correct positional relationship as shown in Fig. (2). If they align as shown in Fig. (3), insert the piston slider after turning it around 180° .

If the direction is not correct, it will be impossible to obtain the specified holding force.

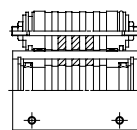


Figure 2. Correct positioning

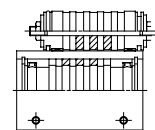


Figure 3. Positioning in incorrect direction

Example : $\phi 20$ to $\phi 63$ with L type holding force

3. Do not disassemble the magnetic components (piston slider and external slider).

This can cause a loss of holding force and malfunction.

4. Since it is possible to change the magnetic holding force (from H type to L type), please contact SMC if this is necessary.

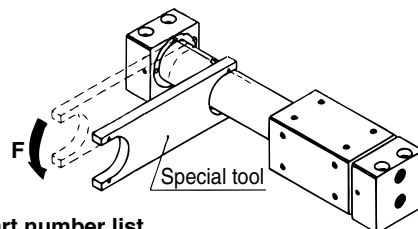
5. When disassembling to replace the seals and wear ring, refer to the separate disassembly instructions.

Caution

6. Apply additional tightening when remounting the head cover after disassembly.

When disassembling, hold the wrench flat section of one head cover with a vice, and remove the other cover using a spanner or adjustable angle wrench on its wrench flat section. When retightening, first coat with Loctite (No. 542 red) and retighten 3° to 5° past the original position prior to removal.

6. Special tools are necessary for disassembly.



Special tool part number list

Part no.	Applicable bore size (mm)
CYRZ-V	6, 10, 15, 20
CYRZ-W	25, 32, 40
CYRZ-X	50
CYRZ-Y	63

12- REA

Warning

1. Do not disassemble the product because it may damage the air cushion mechanism.

Contact SMC when disassembly or maintenance is necessary.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-11-CQSX

Low speed cylinder
ø12, ø16, ø20, ø25

How to Order

• **Clean series**

10	Relief type
11	Vacuum suction type

10 — C D QSX B 20 — 30 D

• **Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)

• **Low speed cylinder**

• **Mounting**

B	Through-hole/Both ends tapped (Standard)
---	---

• **Bore size**

12	12mm
16	16mm
20	20mm
25	25mm

• **Cylinder stroke (mm)**

Bore size (mm)	Standard stroke (mm)
12, 16	5, 10, 15, 20, 25, 30
20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
25	

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.

• **Type of auto switch**

Reed switch	A93
Solid state switch	F9B, F91

• **Rod end thread**

Nil	Standard (Rod end female thread)
M	Rod end male thread

• **Action**

D	Double acting
---	---------------

• **M9B**

Example) 10-CQSXB25-47D : Install a 3mm width spacer in a standard stroke cylinder, 10-CQSXB25-50D.



Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
								Rubber	Air
Relief type	10-CQSXB12	12	M5 x 0.8	Non-lube	Double acting single rod	5, 10, 15, 20, 25, 30	○	—	—
	10-CQSXB16	16				5, 10, 15, 20, 25, 30, 35, 40, 45, 50			
	10-CQSXB20	20							
	10-CQSXB25	25							
Vacuum suction type	11-CQSXB12	12				5, 10, 15, 20, 25, 30			
	11-CQSXB16	16				5, 10, 15, 20, 25, 30, 35, 40, 45, 50			
	11-CQSXB20	20							
	11-CQSXB25	25							

Specifications

Bore size (mm)		10- (Relief type)			
		12	16	20	25
Fluid		Air			
Proof pressure		1.5MPa			
Max. operating pressure		1.0MPa			
Min. operating pressure		0.04MPa		0.035MPa	
Ambient and fluid temperature		Without auto switch : -10 to 70°C (With no freezing)			
		With auto switch : -10 to 60°C (With no freezing)			
Piston speed		1 to 200 mm/s			
Piston rod diameter		ø6	ø8	ø10	ø12
Rod end thread	Female thread	M3 x 0.5	M4 x 0.7	M5 x 0.8	M6 x 1.0
	Male thread	M5 x 0.8	M6 x 1.0	M8 x 1.25	M10 x 1.25
Rod end thread tolerance		JIS Class 2			
Stroke tolerance		+1.0 0 mm			
Port size		M5 x 0.8			
Relief port		M5 x 0.8			
Grease		Fluorine grease			
Particle generation grade		Grade 2			

Bore size (mm)		11- (Vacuum suction type)			
		12	16	20	25
Fluid		Air			
Proof pressure		1.5MPa			
Max. operating pressure		1.0MPa			
Min. operating pressure		0.03MPa		0.025MPa	
Ambient and fluid temperature		Without auto switch : -10 to 70°C			
		With auto switch : -10 to 60°C			
Piston speed		1 to 200 mm/s		0.5 to 200 mm/s	
Piston rod diameter		ø6	ø8	ø10	ø12
Rod end thread	Female thread	M3 x 0.5	M4 x 0.7	M5 x 0.8	M6 x 1.0
	Male thread	M5 x 0.8	M6 x 1.0	M8 x 1.25	M10 x 1.25
Rod end thread tolerance		JIS Class 2			
Stroke tolerance		+1.0 0 mm			
Port size		M5 x 0.8			
Vacuum suction port		M5 x 0.8			
Grease		Fluorine grease			
Particle generation grade		Grade 1			
Suction flow rate (Reference values)		5 ℓ/min(ANR)			



External dimensions and applicable auto switches are the same as 10-/11- CQS. Please refer to pages 56 to 63.

Series 10-11-CQ2X

Low speed cylinder ø32, ø40, ø50, ø63

How to Order

● **Clean series**

10	Relief type
11	Vacuum suction type

10 — C D Q2XB 40 — 30 D [] J79 []

● **Built-in magnet**

Nil	No
D	With auto switch (Built-in magnet)

● **Low speed cylinder**

● **Bore size**

32	32mm
40	40mm
50	50mm
63	63mm

● **Cylinder stroke (mm)**

Bore size (mm)	Standard stroke (mm)
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50, 63	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

● **Manufacturing of Intermediate Strokes**
Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders.
Please contact us for ø40 with damper.

Example) 10-CQ2XB40-57D : Install an 18mm width spacer in a standard stroke cylinder, 10-CQ2XB40-75D.

● **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.

● **Type of auto switch**

Reed switch	A73, A93
Solid state switch	J79, M9B, F79, M9N

● **Rod end thread**

Nil	Standard (Rod end female thread)
M	Rod end male thread

● **Action**

D	Double acting
---	---------------



Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
								Rubber	Air
Relief type	10-CQ2XB32	32	M5 x 0.8, Rc1/8 ^{Note 1)}	Non-lube	Double acting single rod	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	○	—	—
	10-CQ2XB40	40	Rc1/8						
	10-CQ2XB50	50	Rc1/4			10, 15, 20, 25, 30, 35 40, 45, 50, 75, 100			
	10-CQ2XB63	63							
Vacuum suction type	11-CQ2XB32	32	M5 x 0.8, Rc1/8 ^{Note 1)}			5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100			
	11-CQ2XB40	40	Rc1/8						
	11-CQ2XB50	50	Rc1/4			10, 15, 20, 25, 30, 35 40, 45, 50, 75, 100			
	11-CQ2XB63	63							

Note 1) In the case of ø32 without auto switch, M5 x 0.8 is used for 5 stroke only.

Specifications

Bore size (mm)	10- (Relief type)			
	32	40	50	63
Fluid	Air			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.035MPa		0.03MPa	
Ambient and fluid temperature	Without auto switch : -10 to 70°C (With no freezing)			
	With auto switch : -10 to 60°C (With no freezing)			
Piston speed	1 to 200 mm/s			
Piston rod diameter	ø16		ø20	
Rod end thread	Female thread	M8 x 1.25	M10 x 1.5	
	Male thread	M14 x 1.5	M18 x 1.5	
Rod end thread tolerance	JIS Class 2			
Stroke tolerance	+1.0 0 mm			
Port size	M5 x 0.8, 1/8	1/8	1/4	
Relief port	M5 x 0.8			
Grease	Fluorine grease			
Particle generation grade	Grade 2			

Bore size (mm)		11- (Vacuum suction type)			
		32	40	50	63
Fluid		Air			
Proof pressure		1.5 MPa			
Max. operating pressure		1.0 MPa			
Min. operating pressure		0.025MPa		0.02MPa	
Ambient and fluid temperature		Without auto switch : -10 to 70°C (With no freezing)			
		With auto switch : -10 to 60°C (With no freezing)			
Piston speed		0.5 to 200 mm/s			
Piston rod diameter		ø16		ø20	
Rod end thread	Female thread	M8 x 1.25		M10 x 1.5	
	Male thread	M14 x 1.5		M18 x 1.5	
Rod end thread tolerance		JIS Class 2			
Stroke tolerance		+1.0 0 mm			
Port size		M5 x 0.8, 1/8	1/8	1/4	
Vacuum suction port		M5 x 0.8			
Grease		Fluorine grease			
Particle generation grade		Grade 1			
Suction flow rate (Reference values)		5 ℓ/min (ANR)		10 ℓ/min (ANR)	



External dimensions and applicable auto switches are the same as 10-/11- CQ2.
Please refer to pages 64 to 71.

Series 10-11-CM2X

Low speed cylinder
Double acting single rod / ø20, ø25, ø32, ø40

How to Order

Clean series

10	Relief type
11	Vacuum suction type

Built-in magnet

Nil	No
D	With auto switch (Built-in magnet)

Low speed cylinder

Bore size

20	20mm
25	25mm
32	32mm
40	40mm

Cylinder stroke (mm)
Refer to the standard stroke table below.

Port thread type

Nil	Rc
TN	NPT
TF	G

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
BZ	Boss-cut basic style
FZ	Boss-cut rod side flange style

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

Type of auto switch

Reed switch	C73
Solid state switch	H7B, H7A1

Ordering Example: 10-C D M2X L 40 150 H7B



Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion							
								Rubber	Air						
Relief type	10-CM2X□20	20	1/8	Non-lube	Double acting single rod	25, 50, 75, 100, 125 150, 200, 250, 300	○	○	—						
	10-CM2X□25	25													
	10-CM2X□32	32													
	10-CM2X□40	40	1/4												
Vacuum suction type	11-CM2X□20	20	1/8												
	11-CM2X□25	25													
	11-CM2X□32	32													
	11-CM2X□40	40	1/4												

Specifications

Bore size (mm)	10- (Relief type)				11- (Vacuum suction type)			
	20	25	32	40	20	25	32	40
Fluid	Air							
Proof pressure	1.5 MPa							
Max. operating pressure	1.0 MPa							
Min. operating pressure	0.035 MPa				0.025 MPa			
Ambient and fluid temperature	Without auto switch : −10°C to 70°C (With no freezing)							
	With auto switch : −10 to 60°C (With no freezing)							
Cushion	Rubber bumper							
Piston speed	1 to 200 mm/s				0.5 to 200 mm/s			
Piston rod diameter	ø8	ø10	ø12	ø14	ø8	ø10	ø12	ø14
Rod end thread	M8 x 1.25	M10 x 1.25		M14 x 1.5	M8 x 1.25	M10 x 1.25		M14 x 1.5
Rod end thread tolerance	JIS Class 2							
Stroke tolerance	$\begin{smallmatrix} +1.4 \\ 0 \end{smallmatrix}$ mm							
Port size	1/8			1/4	1/8			1/4
Vacuum suction port, Relief port	M5 x 0.8							
Grease	Fluorine grease							
Particle generation grade	Grade 2				Grade 1			
Suction flow rate (Reference values)	—				2 ℓ/min (ANR)			

 External dimensions and applicable auto switches are the same as 10-/11-CM2. Please refer to pages 15 to 20.



Specific Product Precautions

Be sure to read before handling.

Precautions

Warning

1. Do not rotate the cover.

When installing a cylinder or screwing a pipe fitting into the port, the coupling portion of the cover could break if the cover is rotated.

Caution

1. Be careful of the snap ring to pop out.

When replacing the rod seal, take care that the snap ring does not spring out while you are removing it.

Maintenance

Caution

1. Grease pack

Use the following part number to order grease for maintenance.

Grease pack
GR-X-005 (5g)



Actuator / Common Precautions 1

Be sure to read before handling. Refer to the main text for precautions for each series.

Precaution on designing

Warning

1. **There is a possibility of dangerous sudden action by air cylinders if sliding parts of machinery are twisted due to external forces, etc.**

In such cases, personal injury by catching hands or feet in the machinery, or damage to the machinery itself may occur. Therefore, the machine should be adjusted to operate smoothly and designed to avoid such dangers.

2. **A protective cover is recommended to minimize the risk of personal injury.**

If a driven object and moving parts of a cylinder are in close proximity, personal injury may occur. Design the structure to avoid contact with the human body.

3. **Securely tighten all stationary parts and connected parts so that they will not become loose.**

Particularly when a cylinder operates at a high frequency or is installed in a place where there is a lot of vibration, ensure that all parts remain secure.

4. **A deceleration circuit may be required.**

When a driven object is operated at high speed or the load is heavy, a cylinder's cushion will not be sufficient to absorb the impact. Install a deceleration circuit to reduce the speed before cushioning to relieve the impact.

In this case, the rigidity of the machinery should also be examined.

5. **Consider a possible drop in circuit pressure due to a power outage, etc.**

When a cylinder is used in a clamping mechanism, there is a danger of workpiece dropping if there is a decrease in clamping force due to a drop in circuit pressure caused by a power outage, etc. Therefore, safety equipment should be installed to prevent damage to machinery and personal injury. Suspension mechanisms and lifting devices also require consideration for drop prevention.

6. **Consider a possible loss of power source.**

Measures should be taken to avoid personal injury and equipment damage in the event that there is a loss of power to equipment controlled by pneumatics, electricity, or hydraulics.

7. **Design circuitry to prevent the sudden lurching of driven objects.**

When a cylinder is driven by an exhaust center type directional control valve or when it is started up after residual pressure is exhausted from the circuit, etc., the piston and its driven object will lurch when the cylinder is operated at high speed if pressure is applied to one side of the cylinder, due to the absence of air pressure inside the cylinder. Therefore, equipment should be selected and circuits should be designed to prevent this sudden lurching, because there is a danger of personal injury and/or damage to equipment when this occurs.

8. **Consider emergency stops.**

Design the machinery so that personal injury and/or damage to machinery and equipment will not occur when the machinery is stopped by a safety device under abnormal conditions, such as a power outage or a manual emergency stop.

9. **Consider the action when operation is restarted after an emergency stop or abnormal stop.**

Design the machinery so that personal injury or equipment damage will not occur upon restart of operation.

When the cylinder has to be reset at the start position, install safety manual control equipment.

Selection

Warning

1. **Confirm the specifications.**

The products featured in this catalog are designed for use in industrial compressed air systems. If the products are used in conditions where pressure and/or temperature are outside the range of specifications, damage and/or malfunctions may occur. Do not use in these conditions. (Refer to the specifications).

Please consult with SMC if you use a fluid other than compressed air.

2. **Intermediate Stops**

With a 3-position closed center type valve, it is difficult to accurately and precisely stop a piston at the required position in the same way as can be done with hydraulic pressure due to the compressibility of air.

Furthermore, since valves and cylinders, etc. are not guaranteed for zero air leakage, it may not be possible to hold a stopped position for an extended period of time. Please contact with SMC when it is necessary to hold a stopped position for an extended period of time.

Caution

1. **Operate within the limits of the maximum feasible stroke.**

Operation that exceeds the maximum stroke may damage a piston rod. Refer to the air cylinder model selection procedures for the maximum feasible strokes.

2. **Operate a cylinder within a range such that collision damage will not occur to a piston at the stroke end.**

Operate a cylinder within a range so that a piston having inertial force will not be damaged when it collides against the cover at the stroke end. Refer to the air cylinder model selection procedures for the maximum feasible strokes.

3. **Use a speed controller to adjust the cylinder speed, gradually increasing from a low speed to the desired speed setting.**

4. **Provide intermediate supports for long stroke cylinders.**

An intermediate support should be provided in order to prevent damage to a long stroke cylinder, due to problems such as sagging of the rod, deflection of the cylinder tube, vibration and external load.



Actuator / Common Precautions 2

Be sure to read before handling. Refer to the main text for precautions for each series.

Mounting

Caution

1. **Be certain to match the rod shaft center with the load and direction of movement when connecting.**

When not properly matched, problems may arise with the rod and tube, and damage may be caused due to friction on areas such as the inner tube surface, bushings, rod surface, and seals.

2. **When using an external guide, connect the rod end and the load in such a way that there is no interference at any point within the stroke.**

3. **Do not scratch or gouge the sliding portion of the cylinder tube or the piston rod by striking it with an object, or squeezing it.**

The tube bore is manufactured under precise tolerances. Thus, even a slight deformation could lead to a malfunction.

Moreover, scratches or gouges, etc. in the piston rod may lead to damaged seals and cause air leakage.

4. **Do not use until you verify that the equipment can operate properly.**

After mounting, repairs, or modification, etc., connect the air supply and electric power, and then confirm proper mounting by means of appropriate function and leak tests.

5. **Instruction manual**

Install the products and operate them only after reading the instruction manual carefully and understanding its contents.

Also keep the manual where it can be referred to as necessary.

Cushion

Caution

1. **Readjust with a cushion needle.**

Cushions are adjusted at the time of shipment; however, the cushion needle on the cover should be readjusted, when the product is put into service based on factors such as the size of the load and the operating speed. When the cushion needle is turned clockwise, the restriction becomes smaller and the cushion's effectiveness is increased. Tighten the lock nut securely after adjustment is performed.

2. **Do not operate the actuator with the cushion needle fully closed.**

This could damage the seals.

Air Supply

Warning

1. **Use clean air.**

Do not use compressed air which contains chemicals, synthetic oil containing organic solvents, salts or corrosive gases, etc. as this may cause damage or malfunction.

Caution

1. **Install air filters.**

Install air filters close to valves at their upstream side. A filtration degree of 5 μ m or less should be selected.

2. **Install an aftercooler, air dryer, or water separator (Drain Catch).**

Compressed air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer, aftercooler or water separator (drain catch), etc.

3. **Use the product within the specified range of fluid and ambient temperature.**

Take measures to prevent freezing at temperature below 5°C, since moisture in circuits may freeze and cause damage to seals and lead to malfunctions.



Actuator / Common Precautions 3

Be sure to read before handling. Refer to the main text for precautions for each series.

Operating Environment

Warning

1. Do not use in atmospheres or locations where corrosion hazards exist.
Refer to the construction drawings regarding cylinder materials.
2. In locations where ultrapure water or cleaning solvent, etc. splashes on the equipment, take suitable measures to protect the rod.

Maintenance

Warning

1. Perform maintenance procedures as shown in the instruction manual.
Improper handling may result in malfunction and damage of machinery or equipment.
2. Removal of equipment, and supply / exhaust of compressed air
Before any machinery or equipment is removed, first ensure that the appropriate measures are in place to prevent the fall or erratic movement of driven objects and equipment, then cut off the electric power and release the compressed air in the system.
When machinery is restarted, proceed with caution after confirming that appropriate measures are in place to prevent cylinders from sudden movement.

Caution

1. Drain flushing
Remove drainage from air filters regularly.



Auto switch / Common Precautions 1

Be sure to read before handling. Refer to the main text for precautions for each series.

Design/Selection

Warning

1. Confirm the specifications.

Read the specifications carefully and use this product appropriately. The product may be damaged or malfunction if it is used outside the specifications of current voltage, temperature or impact.

2. Use caution when multiple cylinders are used in close proximity to each other.

When two or more auto switch cylinders are lined up in close proximity to each other, magnetic field interference may cause the switches to malfunction. Maintain a minimum cylinder separation of 40mm. (When the allowable interval is specified for each cylinder series, use the indicated value.)

3. Use caution to the ON time of a switch at the intermediate position of stroke.

When an auto switch is placed at an intermediate position of the stroke and a load is driven at the time the piston passes, the auto switch will operate, but if the speed is too fast, the operating time will be shortened and the load may not operate properly. The maximum detectable piston speed is :

$$V \text{ (mm/s)} = \frac{\text{Auto switch operation range (mm)}}{\text{Load operating time (ms)}} \times 1000$$

In cases of high piston speed, the use of an auto switch (D-F5NT, F7NT, G5NT and M5□T) with a built-in OFF delay timer (approx. 200ms) makes it possible to extend the load operating time.

4. Wiring should be kept as short as possible.

<Reed switch>

As the length of the wiring to a load gets longer, the rush current at switching ON becomes greater, and this may shorten the product's life. (The switch will stay ON all the time).

- 1) For an auto switch without a contact protection circuit, use a contact protection box when the wire length is 5m or longer.
- 2) Even if an auto switch has a built-in contact protection circuit, when the wiring is more than 30m long, it is not able to adequately absorb the rush current and its life may be reduced. It is again necessary to connect a contact protection box in order to extend its life. Please contact SMC in this case.

<Solid state switch>

- 3) Although wire length should not affect switch function, use a wire 100m or shorter.

5. Use caution to internal voltage drop of a switch.

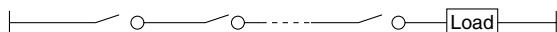
<Reed switch>

1. Switches with an indicator light (except D-A56/A76H/ A96/A96 V/C76/E76A/Z76)

- If auto switches are connected in series as shown below, please note that there will be a large voltage drop because of internal resistance in the light emitting diodes. (Refer to internal voltage drop in the auto switch specifications.)

- [The voltage drop will be "n" times larger when "n" auto switches are connected.]

The load may be ineffective even though the auto switch function is normal.



- Similarly, when operating below a specified voltage, it is possible that the load may be ineffective even though the auto switch function is normal. Therefore, the formula below should be satisfied after confirming the minimum operating voltage of the load.

Power voltage – Internal voltage drop of switch > Minimum operating voltage of load

- 2) If the internal resistance of a light emitting diode causes a problem, select a switch without an indicator light (D-A6□, A80, A80H, A90, A90V, C80, R80, 90, E80A, Z80).

<Solid state switch>

- 3) Generally, the internal voltage drop will be greater with a 2-wire solid state auto switch than with a reed switch. Take the same precautions as in 1).

Also please note that a 12VDC relay is not applicable.

6. Use caution to the leakage current.

<Solid state switch>

With a 2-wire solid state auto switch, current (leakage current) flows to the load to operate the internal circuit even when in the OFF state.

Current to operate load (OFF condition) > Leakage current
If the condition given in the above formula is not met, it will not reset correctly (stays ON). Use a 3-wire switch if this specification cannot be satisfied.

Moreover, leakage current flow to the load will be "n" times larger when "n" auto switches are connected in parallel.

7. Do not use a load that generates surge voltage.

<Reed switch>

When driving a load such as a relay that generates a surge voltage, use a switch with a built-in contact protection circuit or a contact protection box.

<Solid state switch>

Although a zener diode for surge protection is connected to the output side of a solid state auto switch, damage may still occur if the surge is applied repeatedly. When a load, such as a relay or solenoid, which generates surge is directly driven, use a type of switch with a built-in surge absorbing element.

8. Cautions for use in an interlock circuit

When an auto switch is used for an interlock signal requiring high reliability, devise a double interlock system to avoid trouble by providing a mechanical protection function, or by also using another switch (sensor) together with the auto switch.

Also perform periodic maintenance inspections and confirm proper operation.

9. Ensure sufficient space for maintenance activities.

When designing an application, be sure to allow sufficient space for maintenance and inspection.



Auto switch / Common Precautions 2

Be sure to read before handling. Refer to the main text for precautions for each series.

Mounting/Adjustment

Warning

1. Do not drop or bump.

Do not drop, bump, or apply excessive impacts (300m/s² or more for reed switches and 1000m/s² or more for solid state switches) while handling. Although the body of the switch may not be damaged, the inside of the switch could be damaged and cause a malfunction.

2. Do not carry a cylinder by the auto switch lead wires.

Never carry a cylinder by its lead wires. This may not only cause broken lead wires, but it may cause internal elements of the switch to be damaged by the stress.

3. Mount switches using the proper tightening torque.

When a switch is tightened beyond the range of tightening torque, the mounting screws or switch may be damaged.

On the other hand, tightening below the range of tightening torque may allow the switch to slip out of position.

4. Mount a switch at the center of the operating range.

Adjust the mounting position of an auto switch so that the piston stops at the center of the operating range (the range in which a switch is ON). (The mounting positions shown in the catalog indicate the optimum position at the stroke end.) If mounted at the end of the operating range (around the borderline of ON and OFF), the operation will be unstable.

<D-M9□>

If this auto switch replaces the conventional model, it may not function depending on the application (shown below) because its operation range is shorter.

- Applications where at the end, the stopping position shifting range is larger than the operation range

e.g. Workpiece pushing, pressing into a hole, or clamping

- Applications where an auto switch is used to detect intermediate stopping positions (Detecting time is shortened).

As indicated above, mount a switch at the center of the operating range.

Wiring

Warning

1. Avoid repeatedly bending or stretching lead wires.

Broken lead wires will result from repeatedly applying bending stress or stretching force to lead wires.

2. Be sure to connect the load before power is applied.

<2-wire type>

If the power is turned on when an auto switch is not connected to a load, the switch will be instantly damaged because of excess current.

3. Confirm proper insulation of wiring.

Be certain that there is no faulty wiring insulation (contact with other circuits, ground fault, improper insulation between terminals, etc.). Damage may occur due to excess current flow into a switch.

4. Do not wire with power lines or high voltage lines.

Wire separately from power lines or high voltage lines, avoiding parallel wiring or wiring in the same conduit with these lines. Control circuits, including auto switches, may malfunction due to

Wiring

Warning

5. Do not allow short circuiting of loads.

<Reed switch>

If the power is turned on with a load in a short circuited condition, the switch will be instantly damaged because of excess current flow into the switch.

<Solid state switch>

Models M-F9□(V), F9□W(V), J51, G5NB and all models of PNP output switches do not have built-in short circuit prevention circuits. If loads are short circuited, the switches will be instantly damaged.

Use caution to avoid reverse wiring with the brown power supply line and the black output line on 3-wire type switches.

6. Avoid incorrect wiring.

<Reed switch>

A 24VDC switch with indicator light has polarity. The brown lead wire or terminal No.1 is (+), and the blue lead wire or terminal No.2 is (-).

[In the case of model D-97, the side without indicator is (+) and the blue line side is (-).]

1) If connections are reversed, a switch will operate, however, the light emitting diode will not light up.

Also please note that a current greater than the maximum specified one will damage a light emitting diode and make it inoperable.

Applicable models

D-A73, A73H, A73C, C73, C73C, E73A, Z73, R73

D-97, 93A, A93, A93V

D-A33, A34, A33A, A34A, A44, A44A

D-A53, A54, B53, B54

2) However, when using a 2 color indication auto switch (D-A79W, A59W, B59W), be aware that the switch will constantly remain ON if the connections are reversed.

<Solid state switch>

1) If connections are reversed on a 2-wire type switch, the switch will not be damaged if protected by a protection circuit, but the switch will always stay in an ON state. However, it is still necessary to avoid reversed connections, since the switch could be damaged by a load short circuit in this condition.

2) If connections are reversed (power supply line (+) and power supply line (-) on a 3-wire type switch, the switch will be protected by a protection circuit. However, if the power supply line (+) is connected to the blue wire and the power supply line (-) is connected to the black wire, the switch will be damaged.

<D-M9□>

D-M9□ does not have built-in short-circuit prevention circuits. Reverse connection of power supply line (+) and (-) may damage the switch.



Auto switch / Common Precautions 3

Be sure to read before handling. Refer to the main text for precautions for each series.

Environment

Warning

1. Never use in the presence of explosive gases.

Our auto switches are not explosion proof. Never use them in the presence of explosive gas, as this may cause a serious explosion.

2. Do not use in an area where a magnetic field is generated.

Auto switches will malfunction or magnets inside cylinders will become demagnetized. (Please consult with SMC regarding the availability of a magnetic field resistant auto switch.)

3. Do not use in environments where the auto switches will be constantly exposed to water.

Although switches except D-A3□/A44□/G39□/K39□ satisfy the IEC standard IP67 structure (JIS C 0920: anti-immersion structure), do not use switches in applications where continually exposed to water splash or spray. Poor insulation or swelling of the potting resin inside switches may cause malfunction.

4. Do not use in environments with oil or chemicals.

Please consult with SMC if auto switches will be used in an environment with coolants, cleaning solvents, various oils or chemicals. If auto switches are used under these conditions for even a short time, they may be adversely affected by improper insulation, a malfunction due to swelling of the potting resin, or hardening of the lead wires.

5. Do not use in environments with temperature cycles.

Please consult with SMC if switches are to be used where there are temperature cycles other than normal temperature changes, as they may be adversely affected internally.

6. Do not use in environments where there is excessive impact shock.

<Reed switch>

When excessive impact (300 m/s² or more) is applied to a reed switch during operation, the contact point may malfunction and generate or cut off a signal momentarily (1ms or less). Please consult with SMC regarding the need to use a solid state switch depending on the environment.

7. Do not use in locations where surges are generated.

<Solid state switch>

When there are units (solenoid type lifters, high frequency induction furnaces, motors, etc.) which generate a large amount of surge in the area around cylinders with solid state auto switches, this may cause deterioration or damage to the switches. Avoid sources of surge generation and crossed lines.

8. Avoid close contact with magnetic substances.

When a magnetic substance (substance attracted by a magnet) is brought into close proximity with an auto switch cylinder, it may cause the auto switches to malfunction due to a loss of the magnetic force inside the cylinder.

Maintenance

Warning

1. Perform the following maintenance periodically in order to prevent possible danger due to unexpected auto switch malfunction.

1) Securely tighten switch mounting screws.

If screws become loose or the mounting position is dislocated, retighten screws securely after readjusting the mounting position.

2) Confirm that there is no damage to lead wires.

To prevent faulty insulation, replace switches or repair lead wires if damage is discovered.

3) Confirm that the green light on the 2-color indicator type switch lights up.

Confirm that the green LED is ON when stopped at the set position. If the red LED is ON when stopped at the set position, the mounting position is not appropriate. Readjust the mounting position until the green LED lights up.

Other

Warning

1. Please consult with SMC concerning water resistance, elasticity of lead wires, etc.

*Lead wire color changes

Lead wire colors of SMC auto switches have been changed in order to meet NECA (Nippon Electric Control Equipment Industries Association) Standard 0402 for production beginning September, 1996 and thereafter. Special care should be taken regarding wire polarity during the time that both old and new colors exist.

2-wire system

	Old	New
Output (+)	Red	Brown
Output (-)	Black	Blue

3-wire system

	Old	New
Power supply +	Red	Brown
Power supply GND	Black	Blue
Output	White	Black

Solid state with diagnostic output

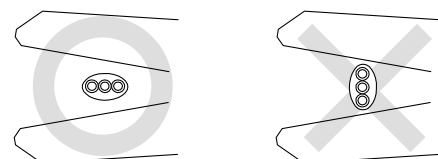
	Old	New
Power supply +	Red	Brown
Power supply GND	Black	Blue
Output	White	Black
Diagnostic output	Yellow	Orange

Solid state with latch type diagnostic output

	Old	New
Power supply +	Red	Brown
Power supply GND	Black	Blue
Output	White	Black
Latch type diagnostic output	Yellow	Orange

Caution

1. When stripping the cable clad, take care with the orientation of the cable being stripped. The insulator may accidentally be torn or damaged depending on the orientation.(D-M9□ only)



Recommended tools are shown below.

Manufacturer	Model name	Model no.
VESSEL	Wire stripper	No 3000G
TOKYO IDEAL	Strip master	45-089

* Stripper for round cable (ø2.0) can be used for a 2-wire type cable.

Cylinder

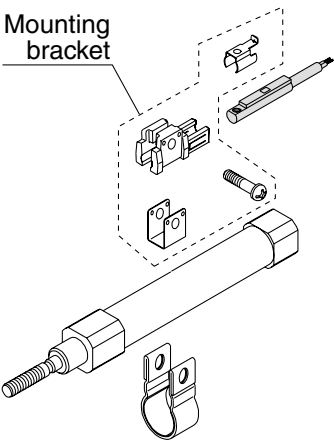
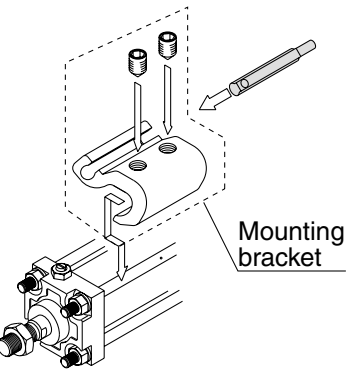
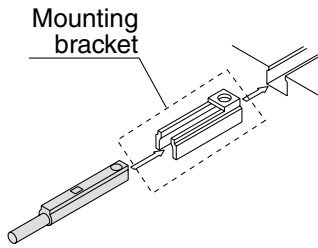
Applicable auto switch list

Cylinder series		CDJ2		CDM2	CDBM2	CDG1		CDA2	CUJ	CDU	CDQS	CDQ2	REC	CXSJ	CXS	MGP	MGF	MXP	MXQ	MXS	CYP	CDQSX	CDQ2X	CDM2X	
Bore size		ø6	ø10/ø16	ø20 to ø40	ø20 to ø40	ø20 to ø63	ø80/ø100	ø40 to ø63	ø6 to ø10	ø6 to ø25	ø12 to ø25	ø32 to ø100	ø20 to ø40	ø6-ø10	ø6 to ø32	ø12 to ø63	ø40/ø63/ø100	ø6 to ø16	ø6 to ø25	ø6 to ø25	ø15/ø32	ø12 to ø25	ø32 to ø63	ø20 to ø40	
Reed switch	D-C7/C8																								
	D-C73C/C80C																								
	D-B5/B6																								
	D-B59W																								
	D-A3/A4																								
	D-A3□A/A44A																								
	D-A3□C/A44C																								
	D-A7/A8																								
	D-A7□H/A80H																								
	D-A73C/A80C																								
	D-A79W																								
	D-A5/A6																								
	D-A59W																								
	D-A9	*	*	*	*	*	*	*	*				*	*		*	*		*	*	*		*	*	
	D-A9□V							*	*								*		*	*	*		*	*	
	D-Z7/Z8								*								*		*	*	*		*	*	
Solid state switch	D-H7																								
	D-H7C																								
	D-H7BAL																								
	D-H7□F																								
	D-H7□W																								
	D-G5/K5																								
	D-G5BAL																								
	D-G59F																								
	D-G5NTL																								
	D-G5□W/K59W																								
	D-G39/K39																								
	D-G39A/K39A																								
	D-F7/J7																								
	D-J79C																								
	D-F7□F																								
	D-F7BAL																								
	D-F7BAVL																								
	D-F7□V																								
	D-F7NTL																								
	D-F7□W (V)																								
	D-F5/J5																								
	D-F5BAL																								
	D-F5□W/J59W																								
	D-F5□F																								
	D-F5NTL																								
	D-G39C/K39C																								
	D-M9	*	*	*	*	*	*	*	*					*	*		*		*	*	*		*	*	*
	D-M9□V								*								*						*	*	
	D-F9□W	*	*	*	*	*	*	*	*					*			*		*	*	*		*	*	
	D-F9□WV								*								*		*	*	*		*	*	
	D-F9BAL								*								*		*	*	*		*	*	
	D-Y59A/Y7P/Y59B																								
	D-Y69A/Y7PV/Y69B																								
	D-Y7□W																								
	D-Y7□WV																								
	D-Y7BAL																								
D-P5□WL																									
D-F9G/H	*	*	*	*	*	*	*	*					*	*		*		*	*	*		*	*		
D-Y7G/H																									
D-G5NBL																									
D-F8□																									

Please refer to the next page for applicable auto switches and cylinders in the fields marked with asterisks (*).

Compact auto switch mounting bracket

Mounting brackets used for installing the compact auto switches D-A9/M9/F9 onto band mounting / tie-rod mounting / groove mounting style cylinders are available.

Band mounting  Applicable cylinder 10-/11-/21-/22-CDJ2 Series 10-/11-/21-/22-CDM2 Series 10-/11-/21-/22-CDG1 Series 10-/11-REC Series 10-/11-CDM2X Series		Applicable auto switch Solid state switch D-M9 D-F9□W (2-color indication) Reed switch D-A9 Perpendicular entry is unavailable.
Tie-rod mounting  Applicable cylinder 10-/11-/21-/22-CDA2 Series		Applicable auto switch Solid state switch D-M9/M9□V D-F9□W/F9□WV (2-color indication) D-F9BAL (water resistant type) Reed switch D-A9/D-A9□V
Groove mounting  Applicable cylinder 12-/13-/21-/22-MGP Series		Applicable auto switch Reed switch D-A9/D-A9□V

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

For Clean Room Rotary Actuator

Description	Series	Page
Rotary Actuator Vane Type	10-/21-CRB1	P.186
Rotary Actuator Rack & Pinion Type	11-CRA1	P.198
Rotary Table	11-/22-MSQ	P.204
Rotary Actuators / Precautions		P.209
Auto Switch Guide		P.212

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series ¹⁰⁻₂₁₋CRB1

Vane type
Rotary actuator / Size: 10, 15, 20, 30

How to Order



Clean series

10	Relief type
----	-------------

Mounting style

B	Basic style
F	Flange style

Rotating angle

Vane type	Symbol	Rotating angle
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Vane type

S	Single vane
D	Double vane

* Double vane is not available for size 10.

10 - C D R B 1 F W 10 - 180 S - 90 L

21 - C D R B 1 F W 10 - 180 S - 90 L

Auto switch

Nil	Without switch unit
D	With switch unit

Size

10
15
20
30

Auto switch

Reed switch	90	Size: 10, 15
Solid state switch	S99 T99	
Reed switch	R73	Size: 20, 30
Solid state switch	S79 T79	

Copper, fluorine and silicon-free + Low particle generation

21	Relief type
----	-------------

Electrical entry / Lead wire length

Nil	Grommet / Lead wire 0.5 m
L	Grommet / Lead wire 3 m
C *	Connector / Lead wire 0.5 m
CL *	Connector / Lead wire 3 m
CN *	Connector / Without lead wire

* Connectors are available only for auto switch types R73, T79.

Specifications

Single vane

Model		10-/21-CRB1BW10-□S	10-/21-CRB1BW15-□S	10-/21-CRB1BW20-□S	10-/21-CRB1BW30-□S
Rotating angle		90°, 180°, 270°			
Proof pressure MPa		1.05			1.5
Max. operating pressure MPa		0.7			1.0
Min. operating pressure MPa		0.2	0.15		
Ambient and fluid temperature °C		5 to 60			
Speed regulation range sec/90° ^{Note 1)}		0.03 to 0.3			0.04 to 0.3
Allowable kinetic energy J ^{Note 2)}		0.00015	0.001	0.003	0.0087
Shaft load N	Allowable radial load	14.7	14.7	24.5	29.4
	Allowable thrust load	9.8	9.8	19.6	24.5
Bearing type		Bearing			
Port location		Side ported or Axial ported			
Port size	Side ported	M3 x 0.5		M5 x 0.8	
	Axial ported	M3 x 0.5		M5 x 0.8	
Shaft type		Double shaft (Double shaft with single flat on both shafts)			
Mounting		Basic style, Flange style			
Auto switch		Mountable (Side ported only)			
Grease		10-: Fluorine grease 21-: Lithium soap based grease			
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-: Grade 2			
		21-: Grade 2			

Note 1) Make sure to operate within the speed regulation range. Exceeding the maximum speed (0.3 sec/90°) can cause the unit to stick or not operate.

Note 2) The numbers in the table indicate the energy factor when the rubber bumper is used (at the end of the rotation).

Double vane

Model		10-/21-CRB1BW15-□D	10-/21-CRB1BW20-□D	10-/21-CRB1BW30-□D
Rotating angle		90°, 100°		
Proof pressure MPa		1.05		1.5
Max. operating pressure MPa		0.7		1.0
Min. operating pressure MPa		0.15		
Ambient and fluid temperature °C		5 to 60		
Speed regulation range sec/90° ^{Note 1)}		0.03 to 0.3		0.04 to 0.3
Allowable kinetic energy J ^{Note 2)}		0.001	0.003	0.0087
Shaft load N	Allowable radial load	14.7	24.5	29.4
	Allowable thrust load	9.8	19.6	24.5
Bearing type		Bearing		
Port location		Side ported or Axial ported		
Port size: Side ported, Axial ported		M3 x 0.5	M5 x 0.8	
Shaft type		Double shaft (Double shaft with single flat on both shafts)		
Mounting		Basic style, Flange style		
Auto switch		Mountable (Side ported only)		
Grease		10-: Fluorine grease 21-: Lithium soap based grease		
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-: Grade 2		
		21-: Grade 2		

Note 1) Make sure to operate within the speed regulation range. Exceeding the maximum speed (0.3 sec/90°) can cause the unit to stick or not operate.

Note 2) The numbers in the table indicate the energy factor when the rubber bumper is used (at the end of the rotation).

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Auto switch specifications (Refer to Best Pneumatics catalog for further information on auto switches.)

Type	Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
For 10 and 15	Reed switch	D-90	24 VAC/DC or less	50 mA	No
	Solid state switch	2-wire D-T991/T992	24 VDC	5 to 150 mA	Yes
		3-wire D-S991/S992	28 VDC or less	150 mA or less	Yes
For 20 and 30	Reed switch	D-R731/R732	100 VAC	5 to 20 mA	Yes
	Solid state switch	2-wire D-T791/T792	24 VDC	5 to 150 mA	Yes
		3-wire D-S791/S792	28 VDC or less	150 mA or less	Yes

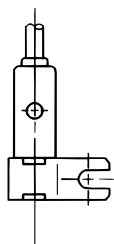
Refer to page 212 for a list of applicable auto switches.

PLC: Programmable Logic Controller

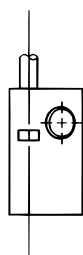
Classification of auto switches: Right-handed and left-handed (includes one of each)

Right-handed

D-□□□1

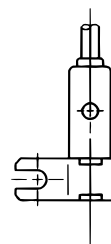


D-□991

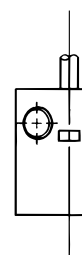


Left-handed

D-□□□2

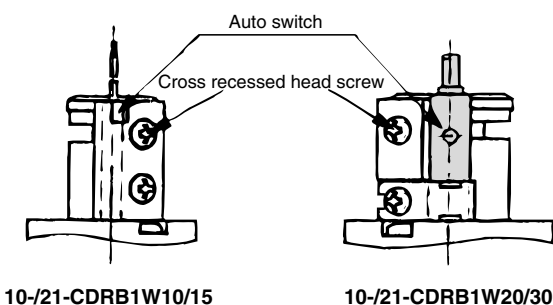


D-□992



How to change the detecting position of auto switch

When setting the detection location, loosen the tightening screw a bit and move a switch to the preferred location and then tighten again and fix it. At this time, if tightened too much, screw can become damaged and unable to fix location. Be sure to set the tightening torque around 0.5 N·m.



Operating range and hysteresis of auto switch

Model	Operating range	Hysteresis range
10-/21-CDRB1BW10/15	110°	10°
10-/21-CDRB1BW20/30	90°	10°

Option

Flange assembly

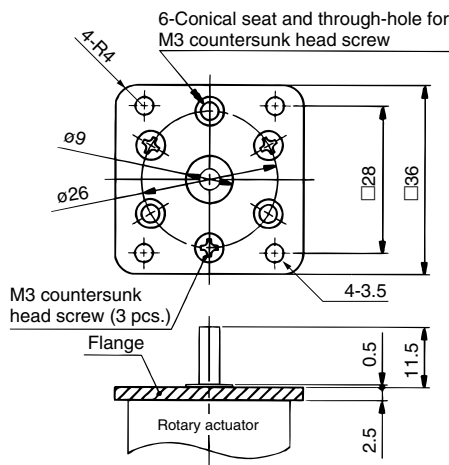
* The flange (with countersunk head screws) is not mounted on the actuator at the time of shipment.

* The flange can be mounted on the rotary actuator at 60-degree intervals.

Type		Flange assembly part no.
Basic type	With auto switch	
10-/21-CRB1FW10	10-/21-CDRB1FW10	P414070-2
10-/21-CRB1FW15	10-/21-CDRB1FW15	P414090-2
10-/21-CRB1FW20	10-/21-CDRB1FW20	P414060-2
10-/21-CRB1FW30	10-/21-CDRB1FW30	P414080-2

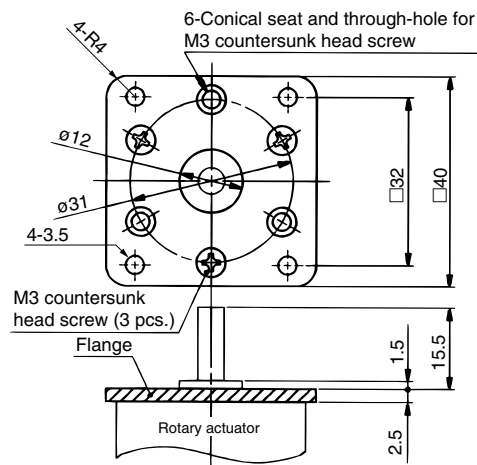
Assembly part no:

P414070-2 (for 10-/21-C□RB1FW□10)



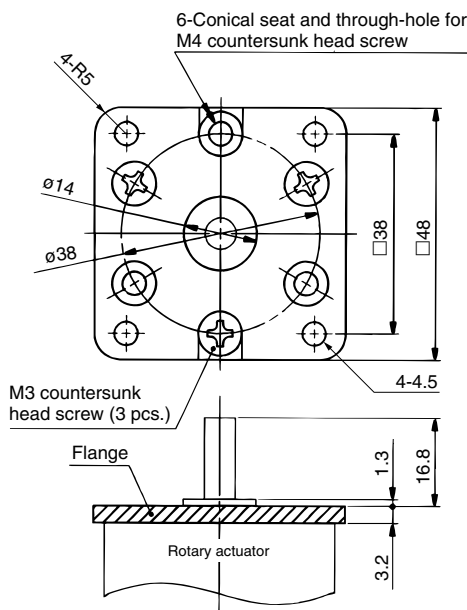
Assembly part no:

P414090-2 (for 10-/21-C□RB1FW□15)



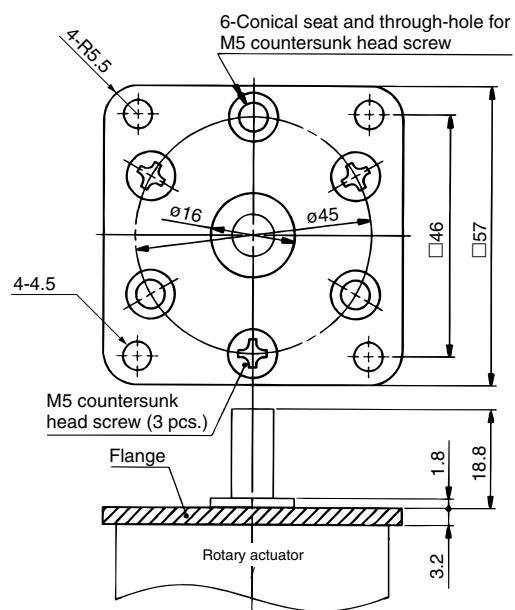
Assembly part no:

P414060-2 (for 10-/21-C□RB1FW□20)



Assembly part no:

P414080-2 (for 10-/21-C□RB1FW□30)

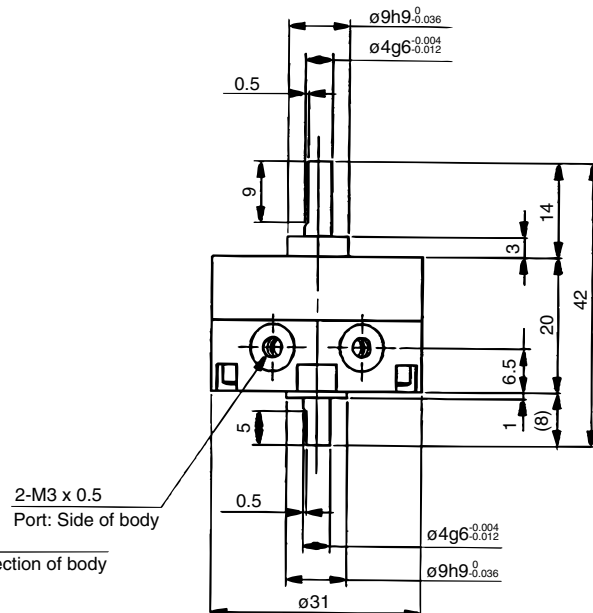
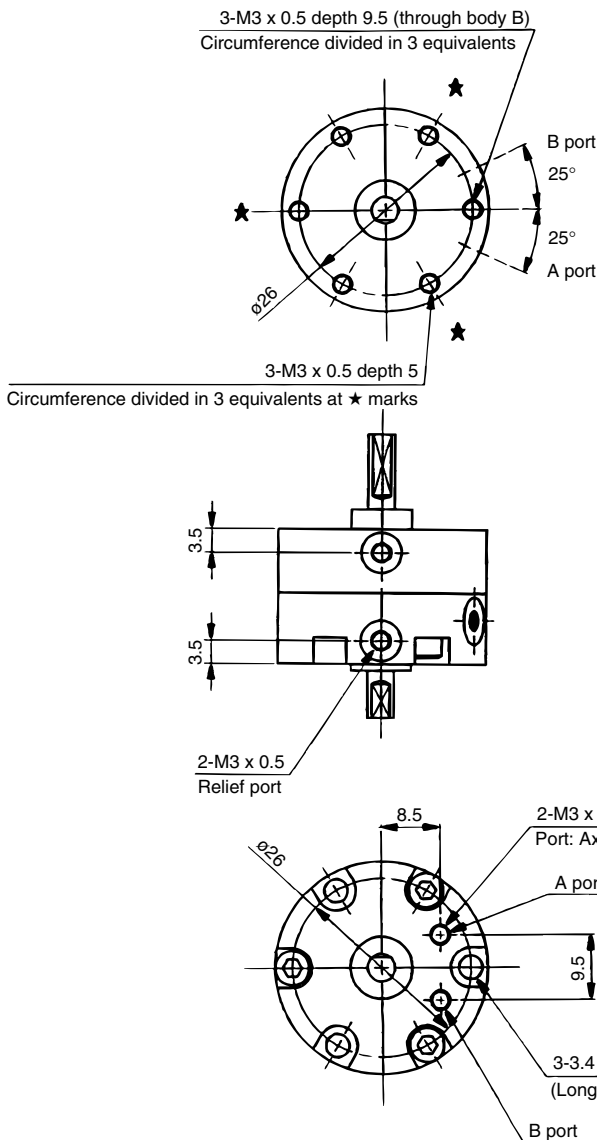
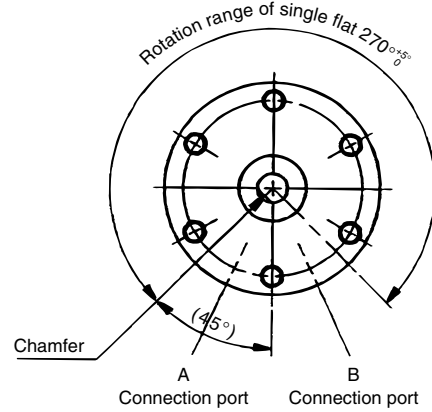
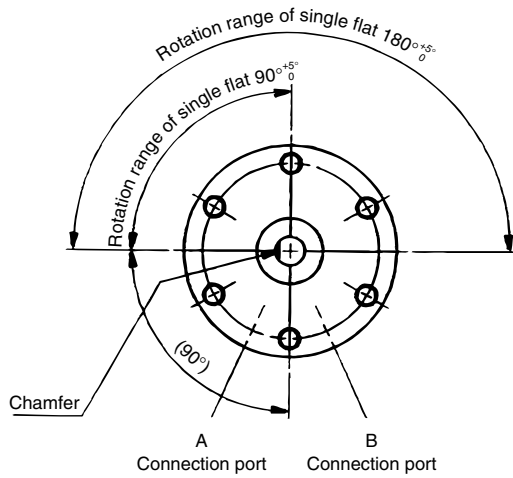


Without auto switch / 10-21-CRB1BW10

* Double vane is not available for size 10.

Size 10

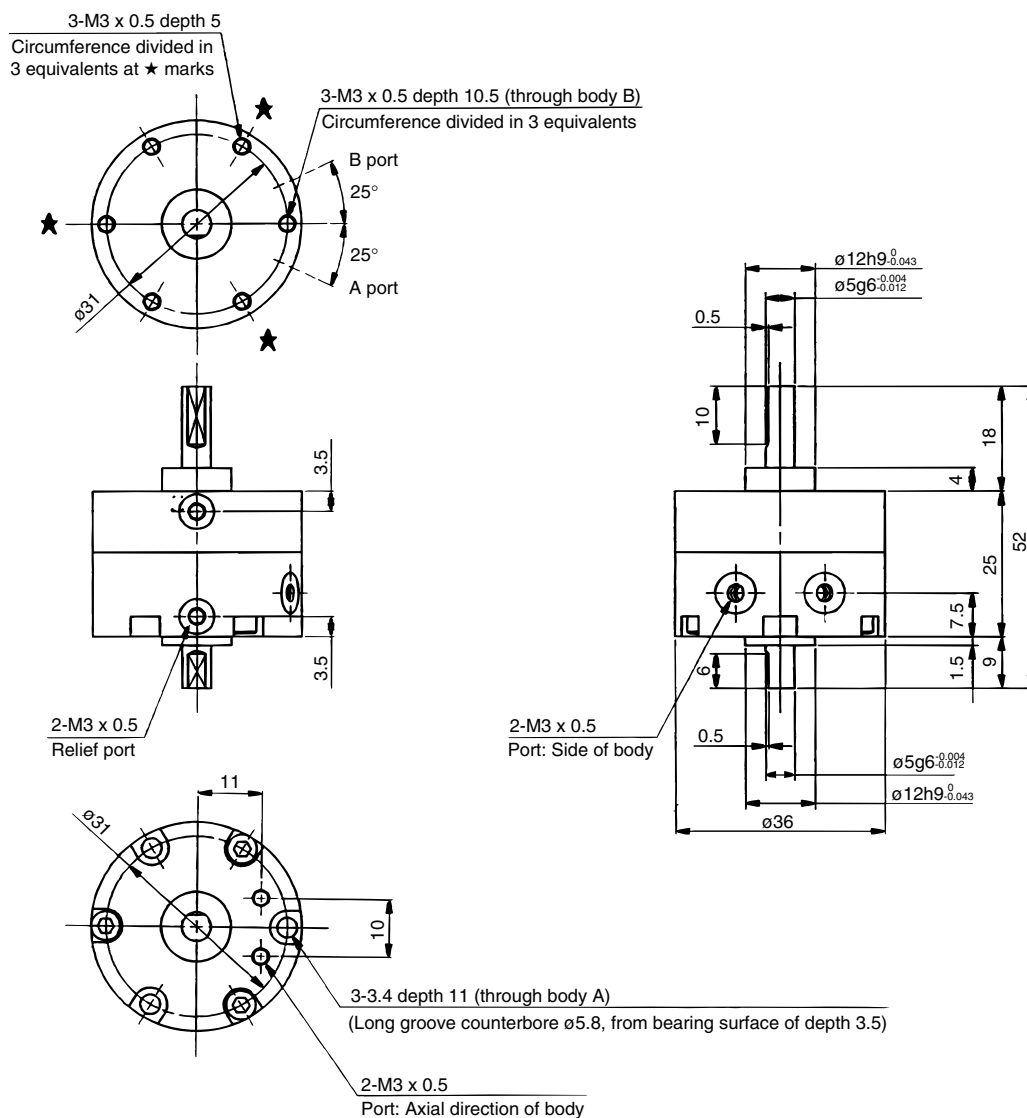
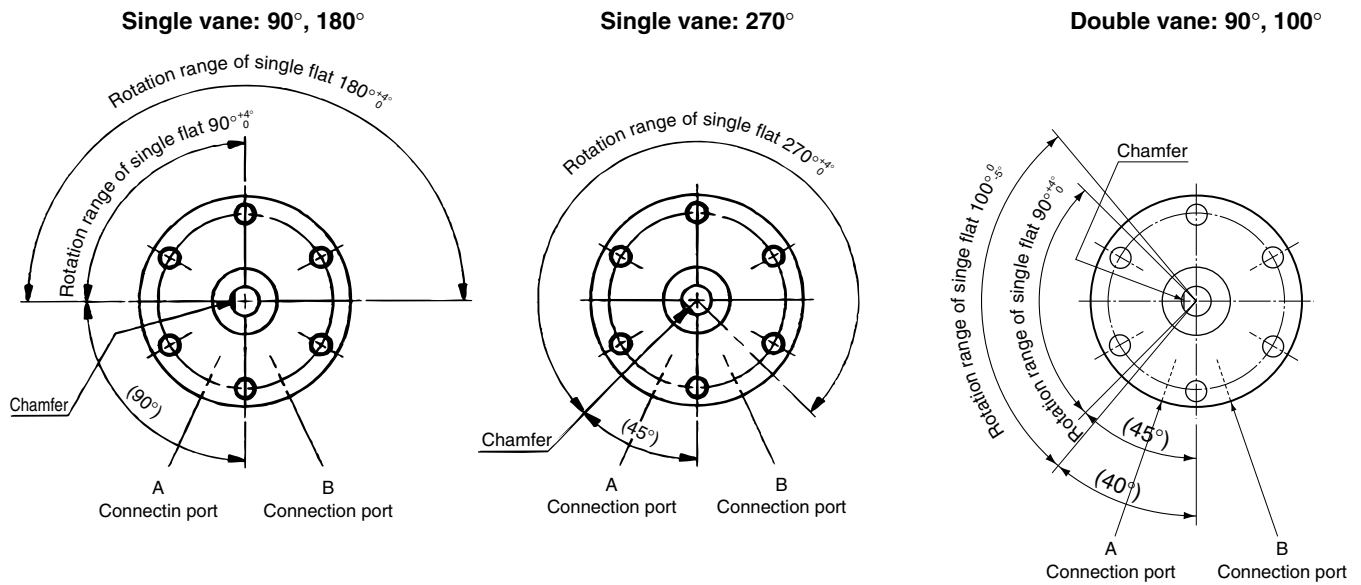
Rotation range (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)



Without auto switch / ¹⁰⁻₂₁₋CRB1BW15 (Dimensions are common to both single vane and double vane)
Size 15

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)

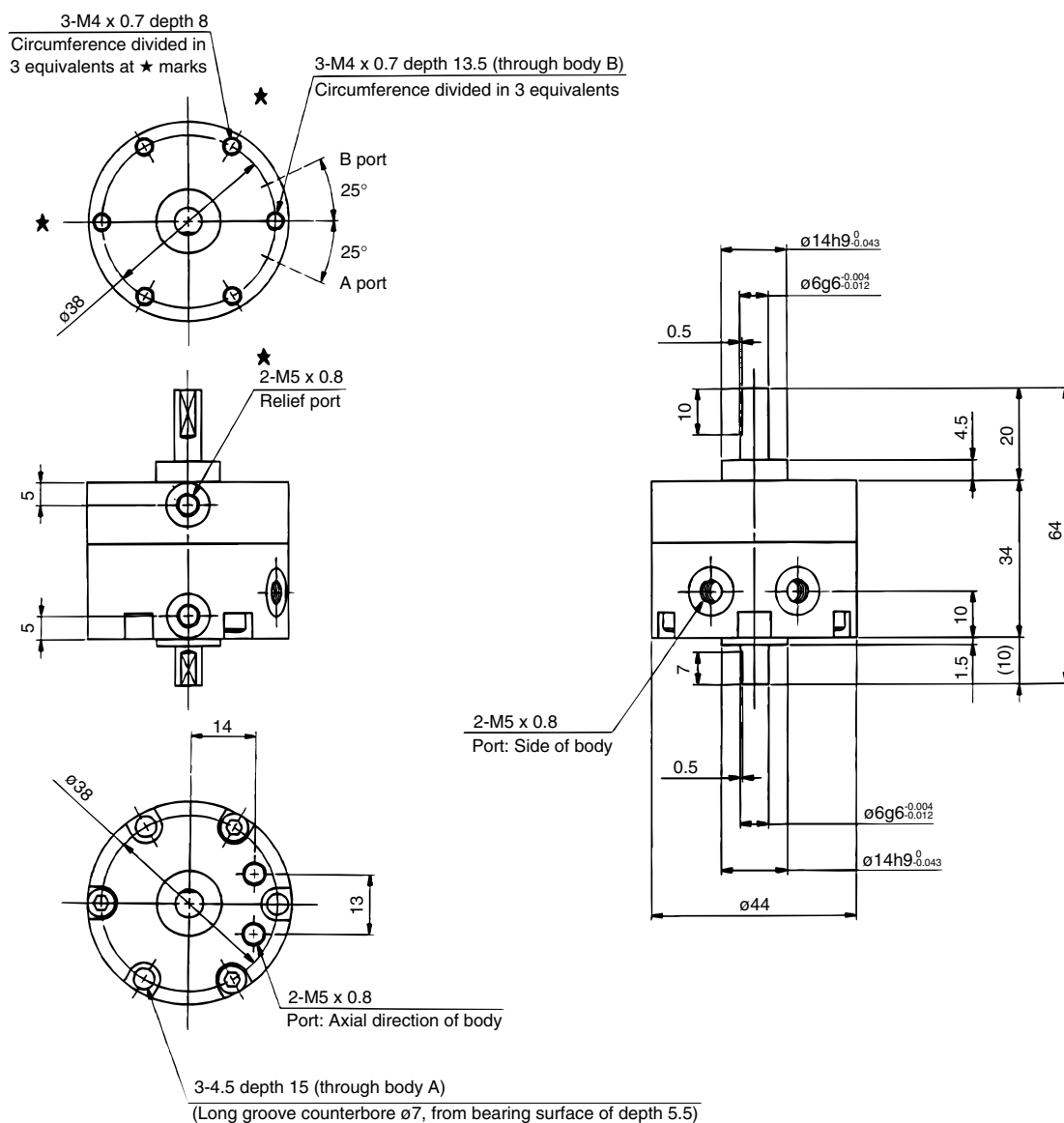
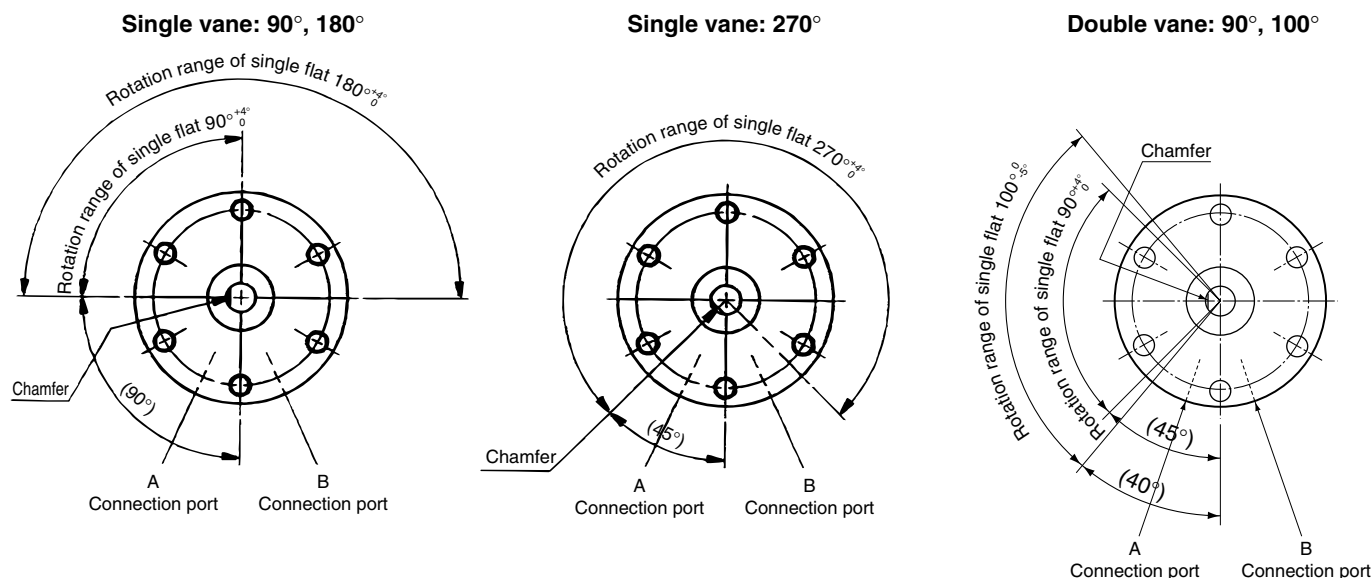


Without auto switch / 10-CRB1BW20** (Dimensions are common to both single vane and double vane)**

Size 20

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

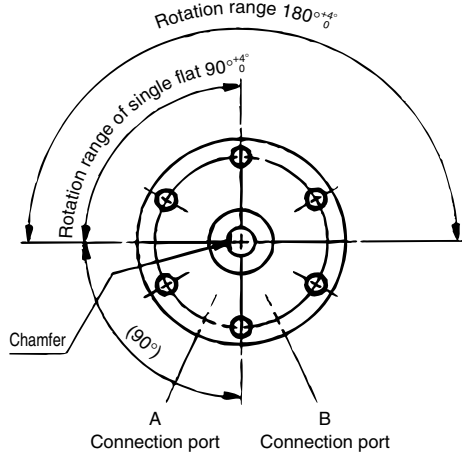
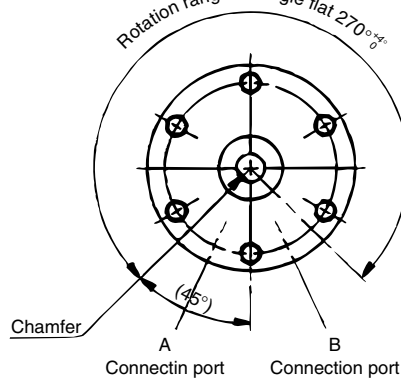
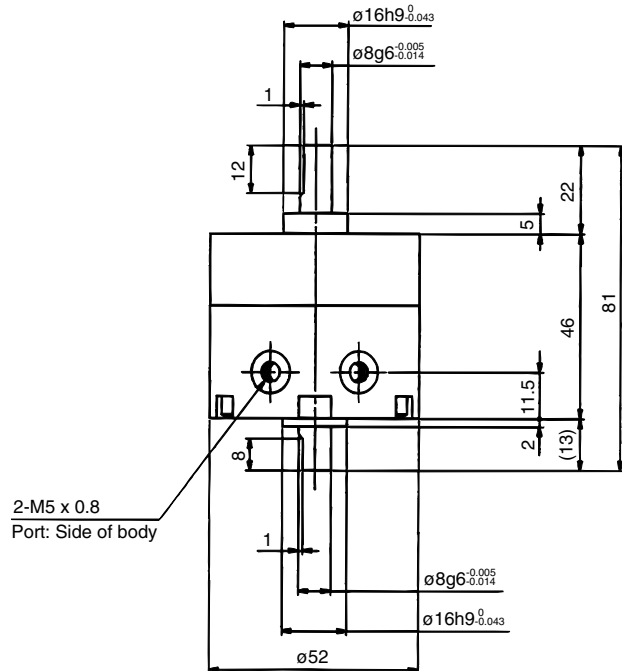
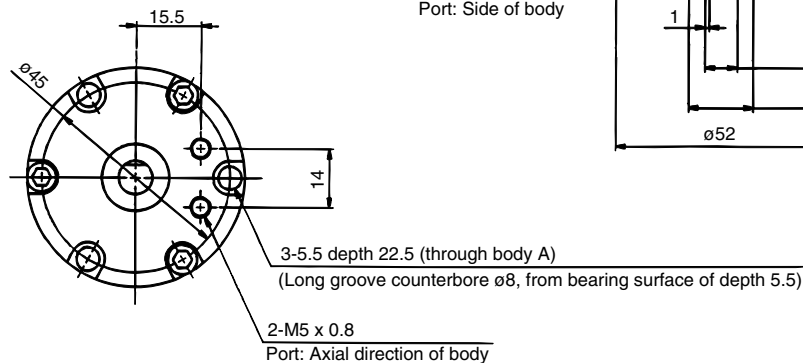
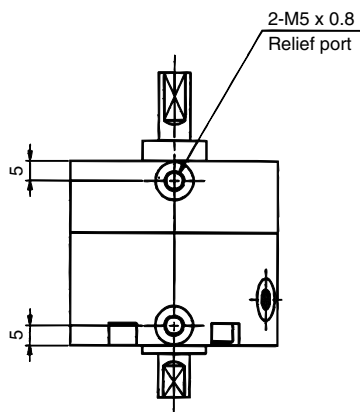
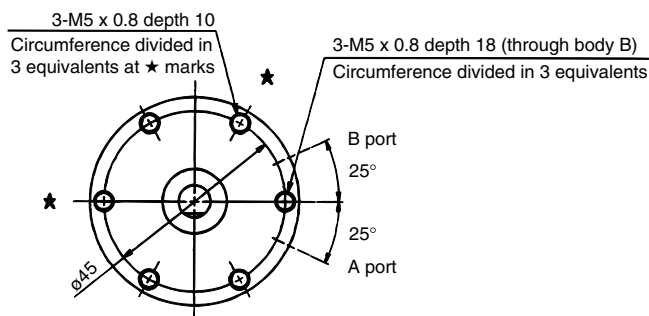
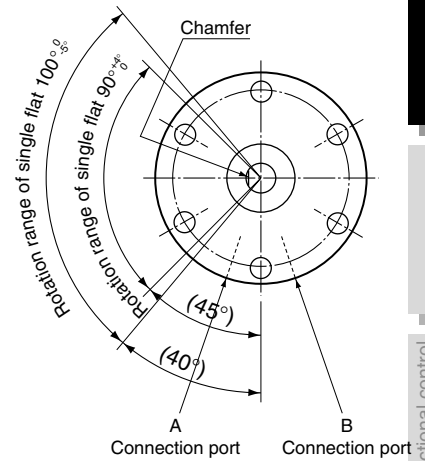
Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)



Without auto switch / ¹⁰⁻₂₁₋CRB1BW30 (Dimensions are common to both single vane and double vane)
Size 30

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)

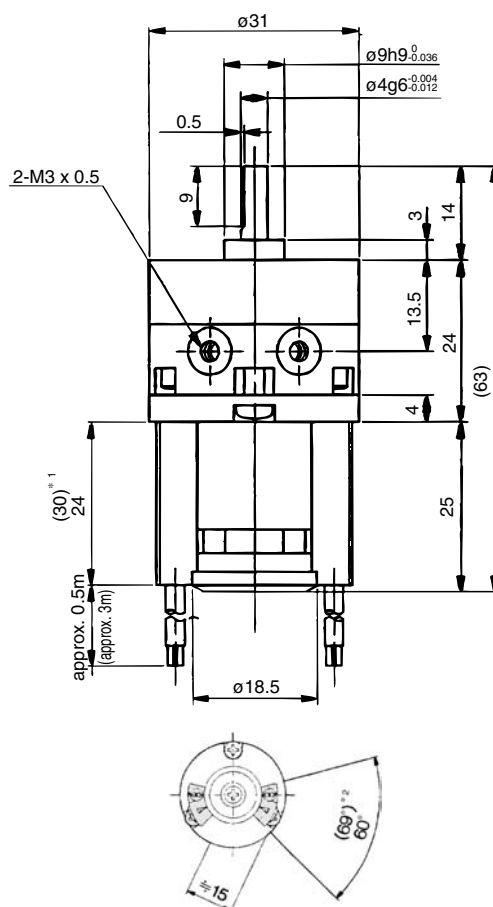
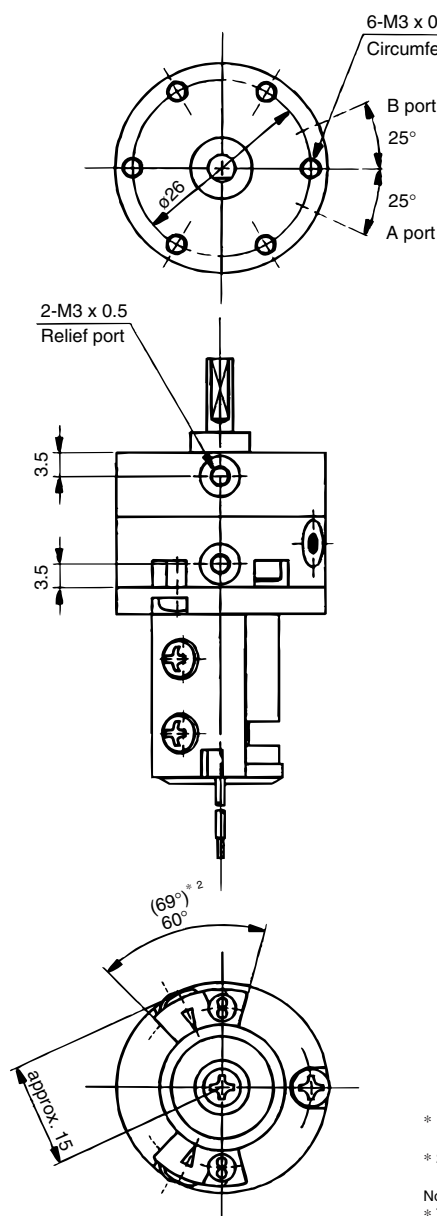
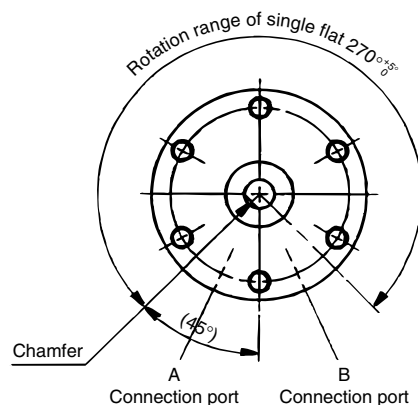
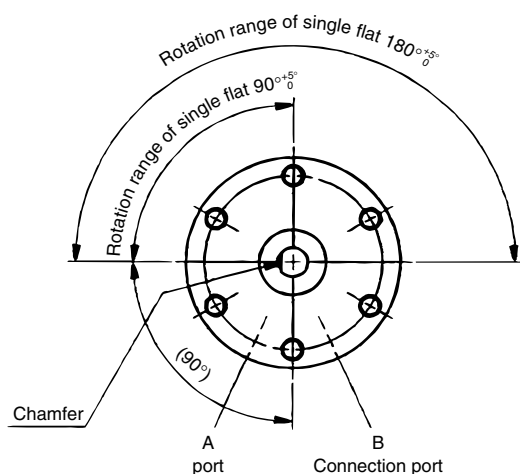
Single vane: 90°, 180°

Single vane: 270°

Double vane: 90°, 100°


With auto switch / ¹⁰⁻₂₁₋CDRB1BW10

* Double vane is not available for size 10.

Size 10

Rotation range (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)



* 1 The length is 24 when any of the following auto switches are used: D-90, D-90A, D-S99(V), D-T99(V), and D-S9P(V). The length is 30 when any of the following auto switches are used: D-97 and D-93A.

* 2 The angle is 60° when any of the following auto switches are used: D-90, D-90A, D-97, and D-93A.

The angle is 69° when any of the following auto switches are used: D-S99(V), D-T99(V), and D-S9P(V).

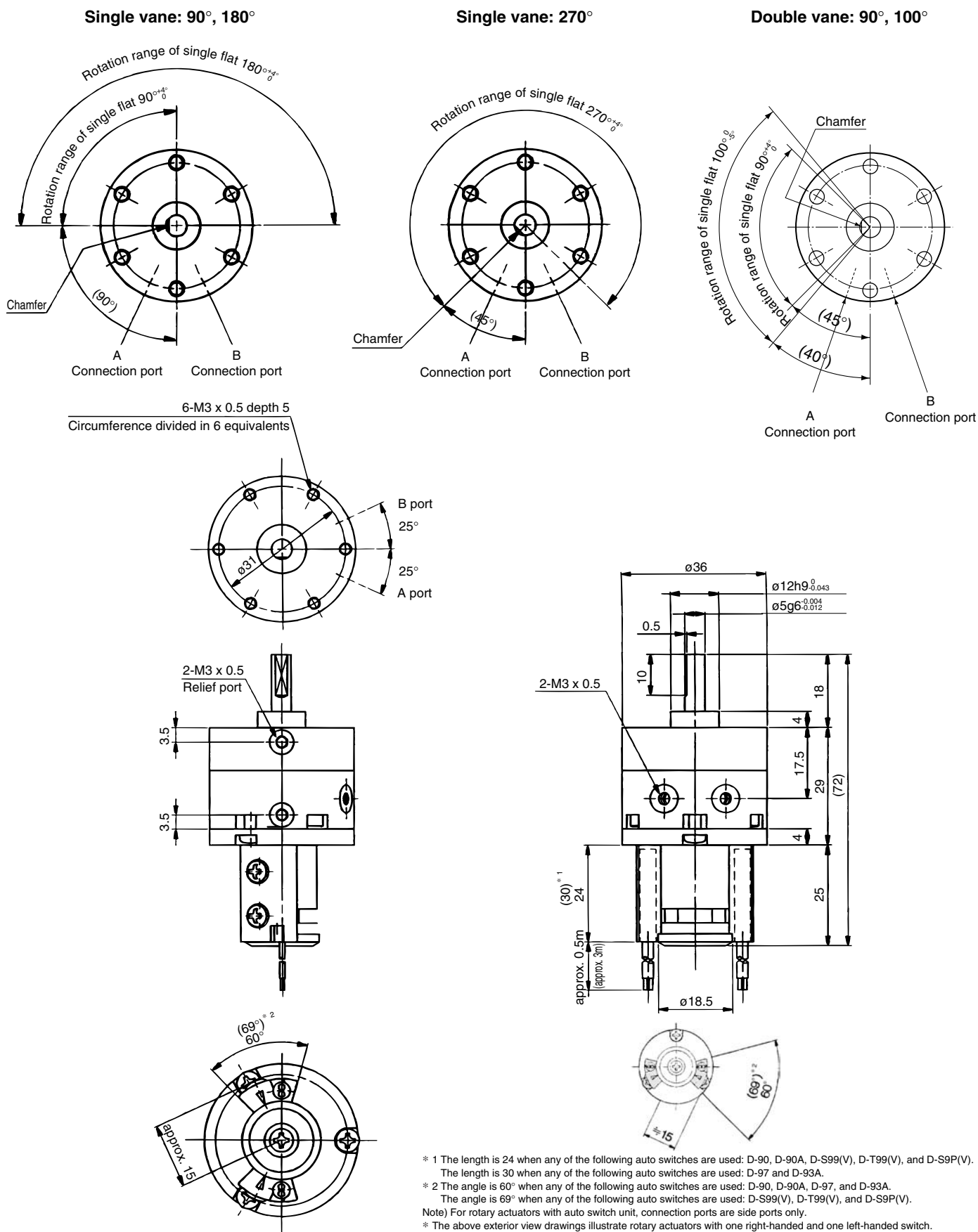
Note) For rotary actuators with auto switch unit, connection ports are side ports only.

* The above exterior view drawings illustrate rotary actuators with one right-handed and one left-handed switch.

With auto switch / ¹⁰⁻₂₁₋CDRB1BW15 (Dimensions are common to both single vane and double vane)
Size 15

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)



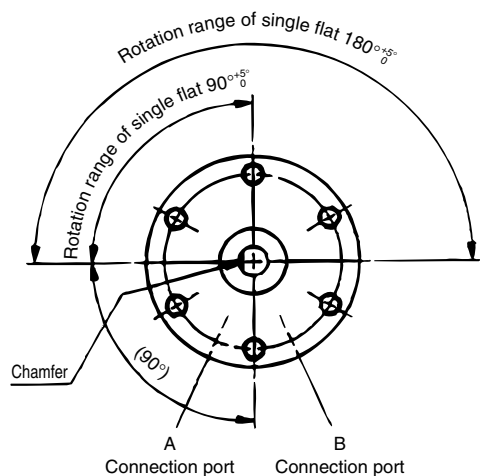
With auto switch / ¹⁰⁻₂₁₋CDRB1BW20 (Dimensions are common to both single vane and double vane)

Size 20

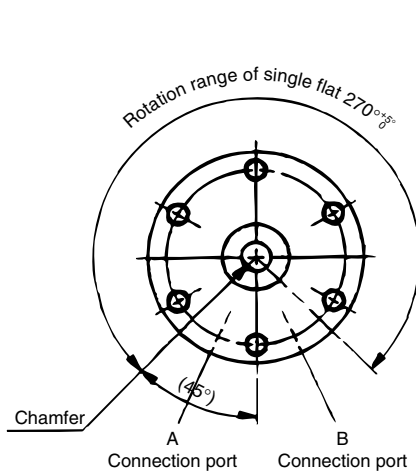
Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)

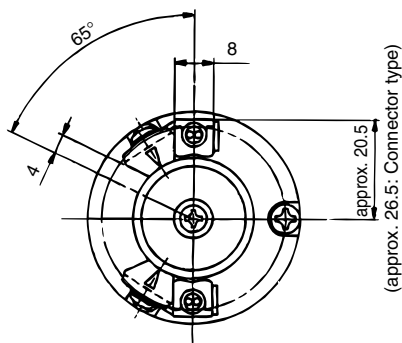
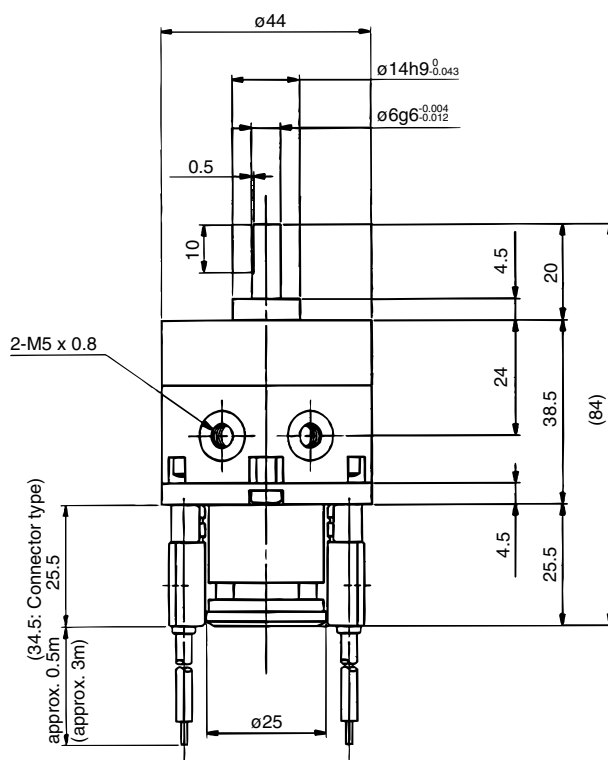
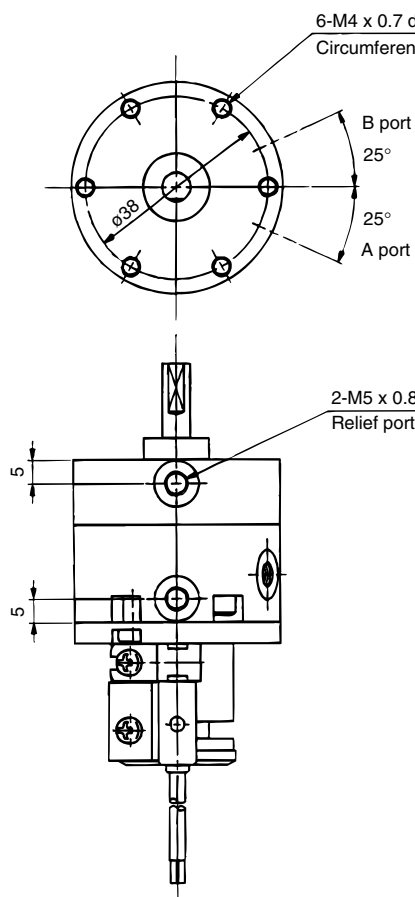
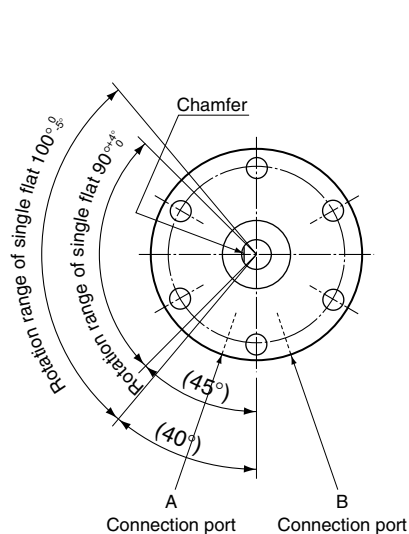
Single vane: 90°, 180°



Single vane: 270°



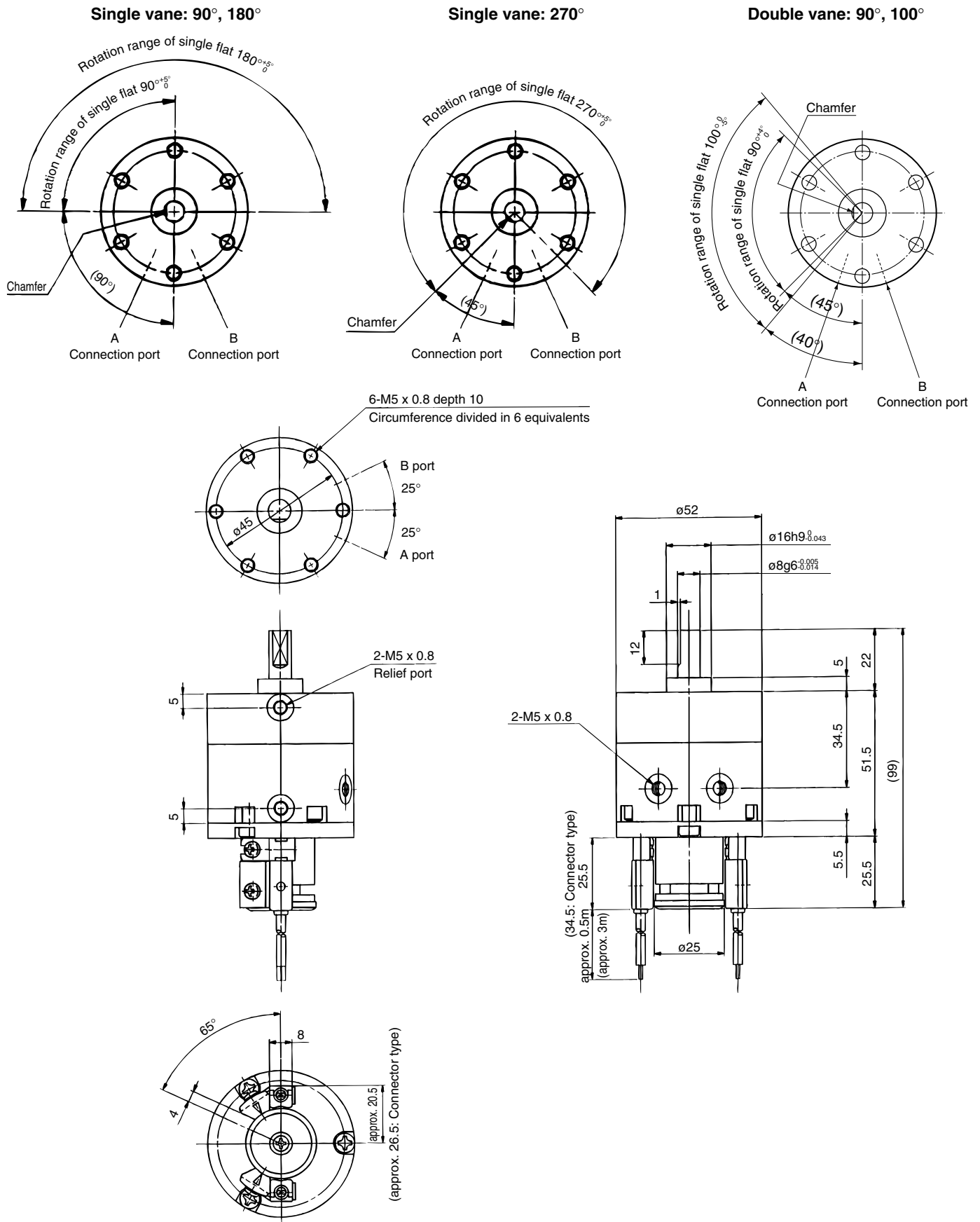
Double vane: 90°, 100°



With auto switch / ¹⁰⁻₂₁₋CDRB1BW30 (Dimensions are common to both single vane and double vane)
Size 30

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)



Series 11-CRA1

Rack & Pinion type
Rotary actuator: Size 30, 50

How to Order

● **Clean series**

11	Vacuum suction type
----	---------------------

● **Auto switch**

Nil	No
D	With auto switch

● **Mounting style**

B	Basic style
L	Foot style

● **Shaft type**

S*	Single shaft
W	Double shaft

* Not available for ø30

● **Size**

30
50

● **Rotating angle**

Standard	90	90°
	180	180°
Option	100	100°*
	190	190°*

* Not available for ø30

● **Cushion**

Nil	Without air cushion
C*	With air cushion on both ends

* Not available for ø30

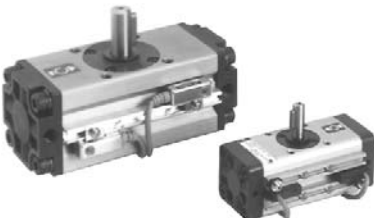
● **Number of auto switches**

Nil	2 pcs.
S	1 pc.

● **Auto switch**

30	A73, J79, F79
50	A54, J59, F59

Ordering Example: 11 - C D R A 1 B S 50 - 90 C - A53



Specifications

Size	30	50
Fluid	Air (Non-lube)	
Max. operating pressure	1MPa	
Min. operating pressure	0.1MPa	
Ambient and fluid temperature	0 to 60°C	
Cushion	With air cushion	Not available
Allowable kinetic energy (mJ)	Without air cushion	10
	With air cushion	50
Cushion angle	—	35°
Adjustable range of rotation time	0.2 to 1 s/90°	0.2 to 2 s/90°
Port size	M5 x 0.8	Rc1/8
Mounting style	Basic style, Flange style	
Grease	Fluorine grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 2	

* The maximum absorbed energy under proper adjustment of the cushion needle

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate l/min (ANR)
30	1
50	5

Auto switch specifications (Refer to Best Pneumatics catalog for further information on auto switches.)

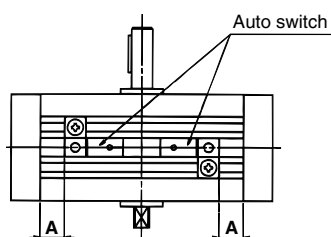
Type		Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
30	Reed switch	D-A73	24 VDC/100 VAC	5 to 40 mA, 5 to 20 mA	Yes	Relay, PLC
	Solid state switch	D-J79	24 VDC (10 to 28 VDC)	5 to 150 mA	Yes	24 VDC relay, PLC
		D-F79	28 VDC or less	150 mA or less	Yes	Relay, PLC, IC circuit
50	Reed switch	D-A54	24 VDC/100 VAC/200 VAC	5 to 50 mA, 5 to 25 mA, 5 to 12.5 mA	Yes	Relay, PLC
	Solid state switch	D-J59	24 VDC (10 to 28 VDC)	5 to 150 mA	Yes	24 VDC relay, PLC
		D-F59	28 VDC or less	150 mA or less	Yes	Relay, PLC, IC circuit

Refer to page 212 for a list of applicable auto switches.

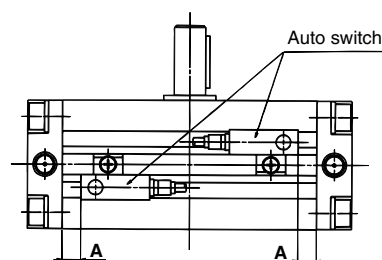
PLC: Programmable Logic Controller

Proper auto switch mounting position

Size 30



Size 50

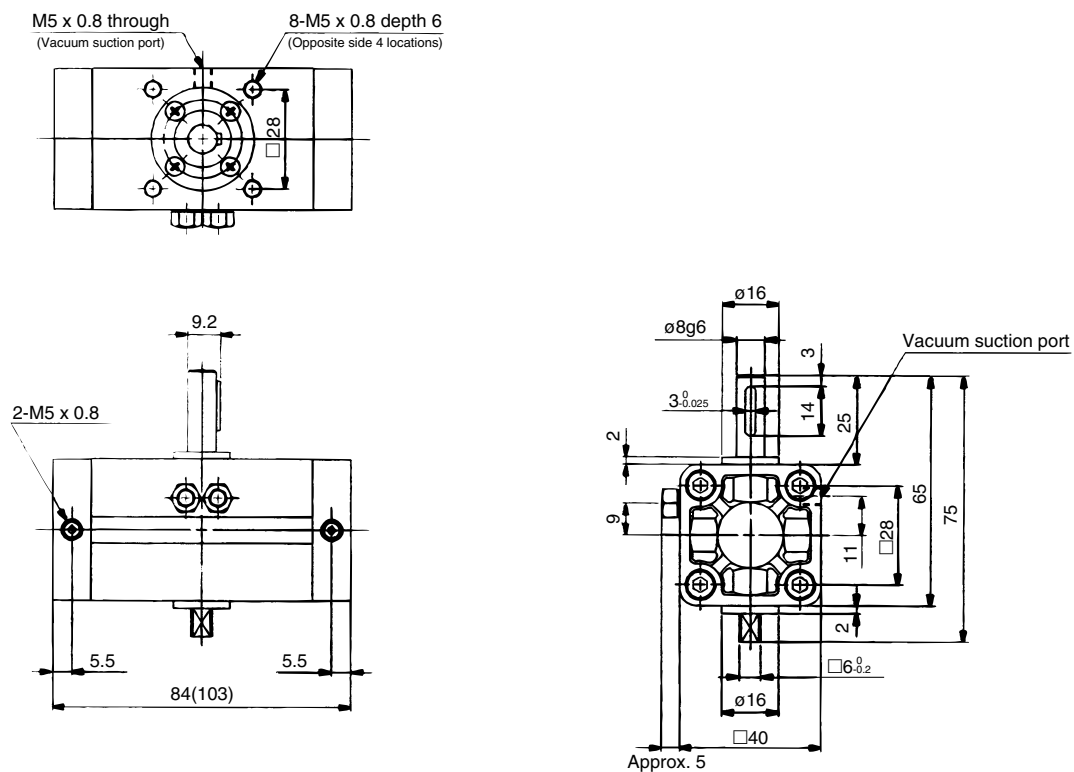


Model	A (mm)	Operating range	Hysteresis range
11-CDRA1□W30-90/180	9 (19)	95°	20°
11-CDRA1□□50-90/180	9 (26)	65°	20°

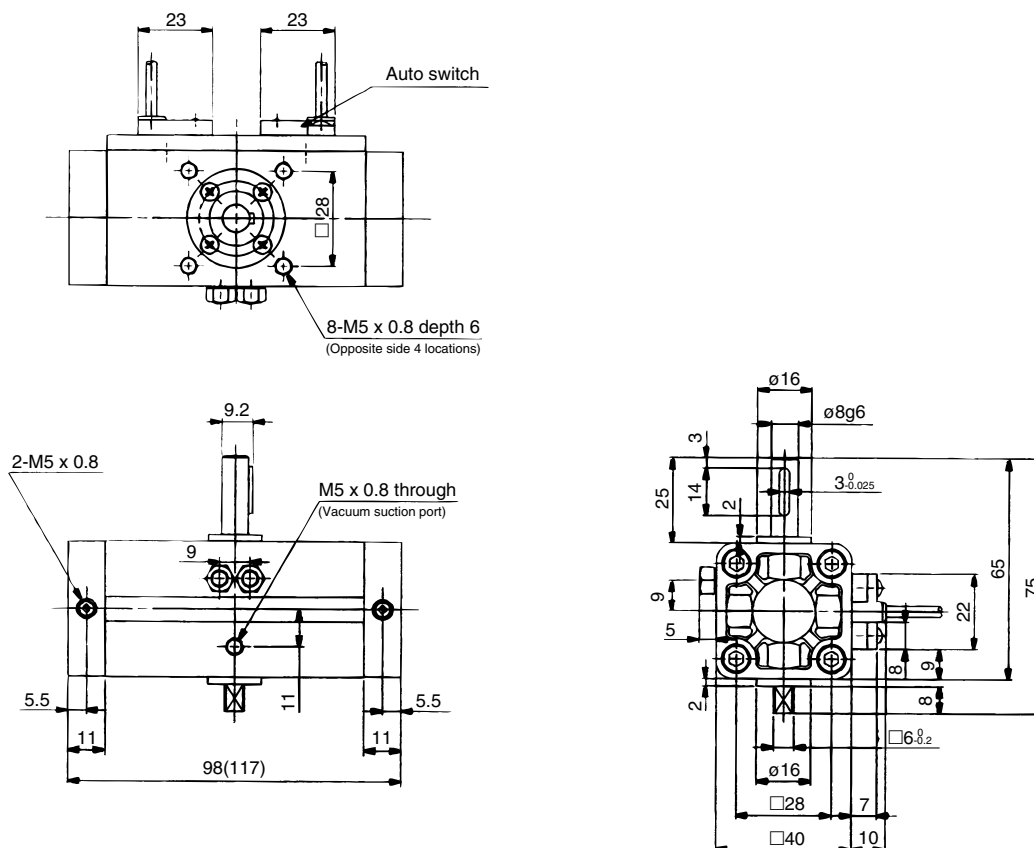
* The dimensions inside () are for 180°.

** Up to 2 auto switches can be mounted per actuator.

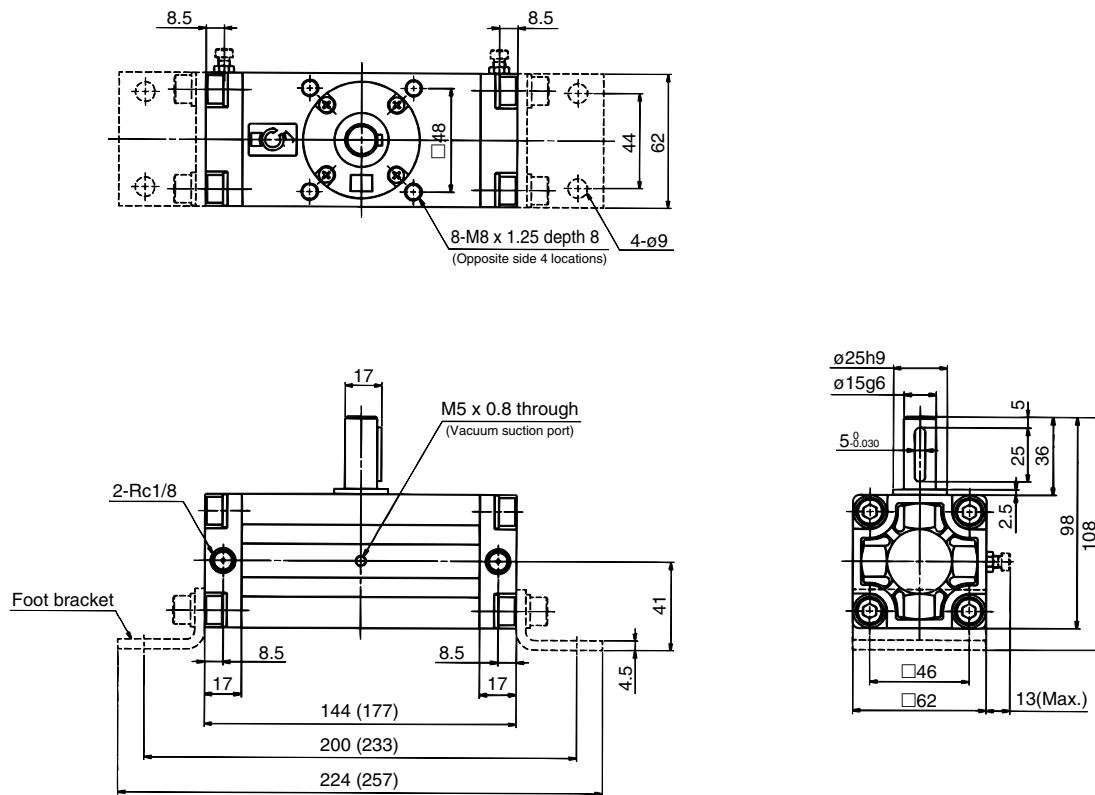
Double shaft (Without auto switch) / 11-CRA1□W30



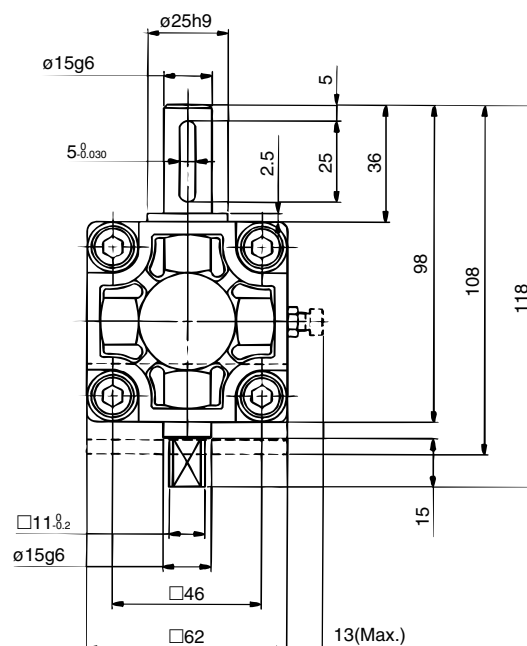
Double shaft (With auto switch) / 11-CDRA1□W30



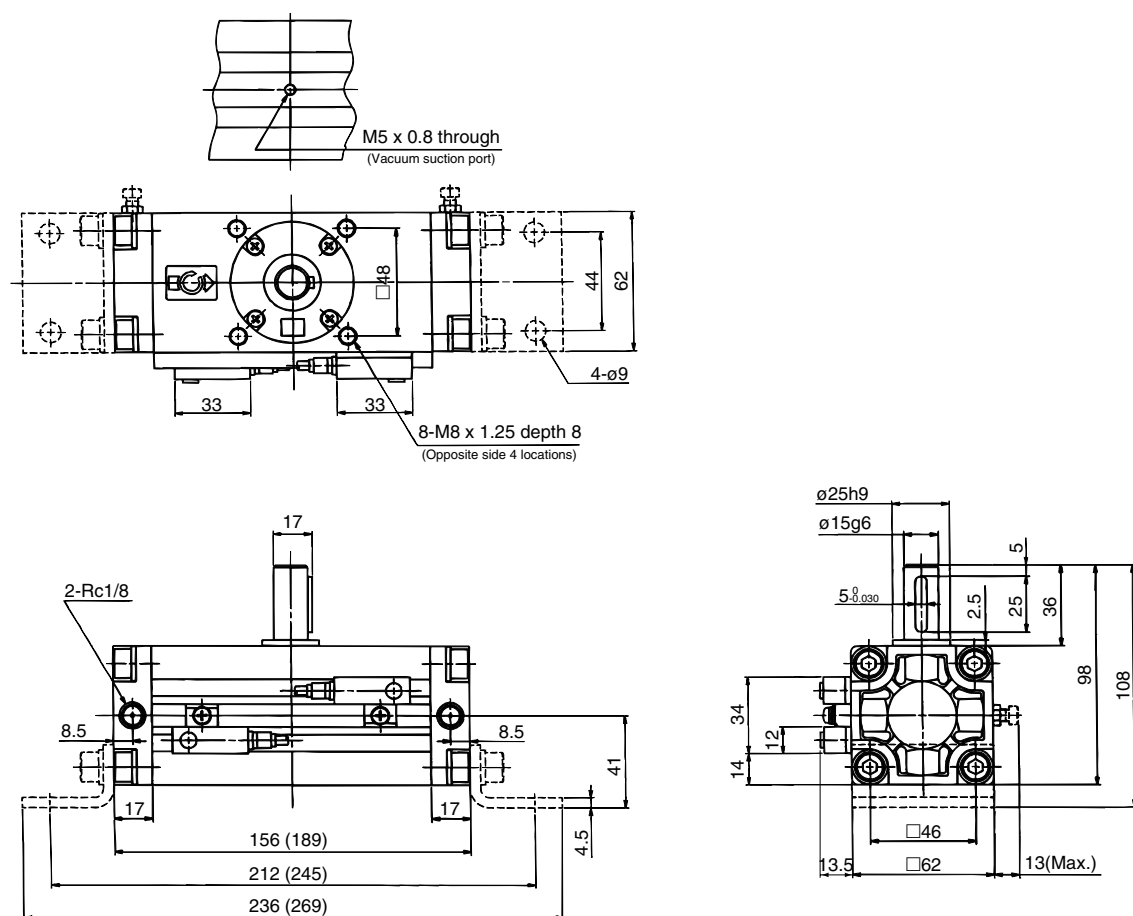
Single shaft (Without auto switch) / 11-CRA1□S50



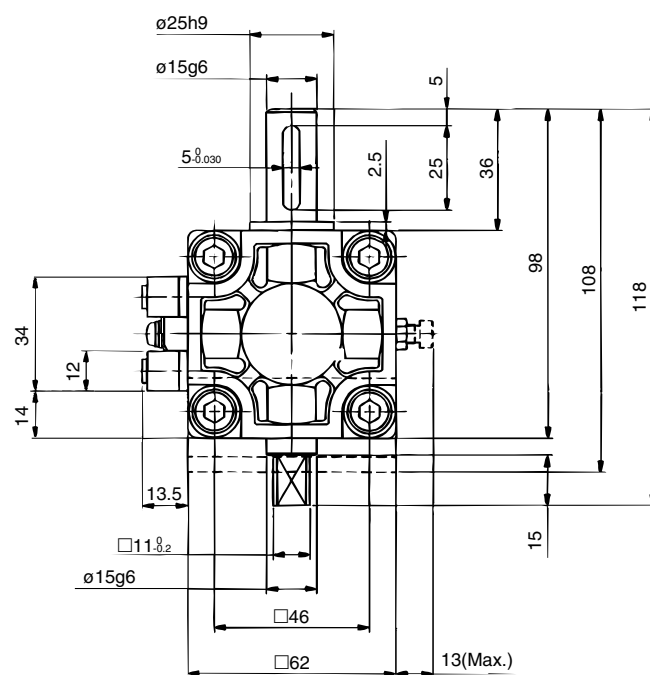
Double shaft (Without auto switch) / 11-CRA1□W50



Single shaft (With auto switch) / 11-CDRA1□S50



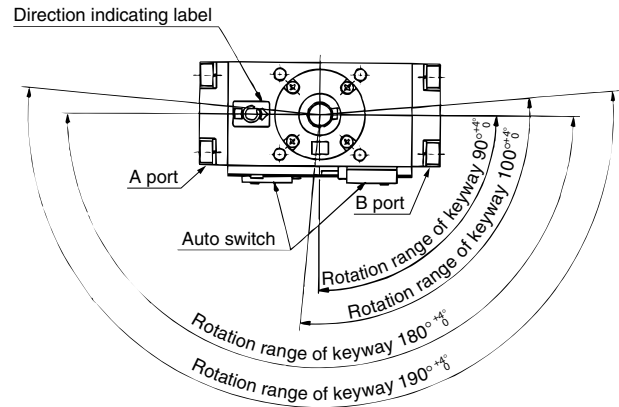
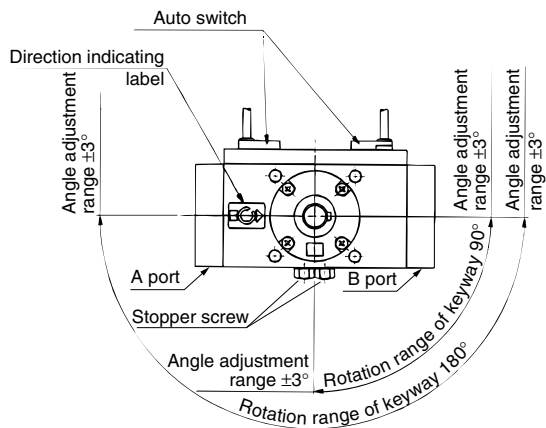
Double Shaft (With auto switch) / 11-CDRA1□W50



Rotation range of keyway / Switch mounting position

11-CDRA1□W30

11-CDRA1□□50

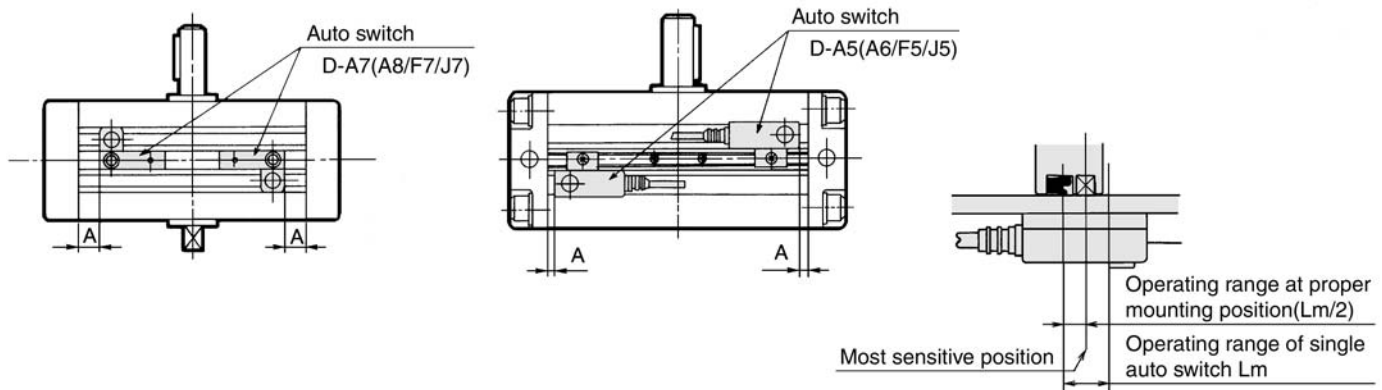


* If air pressure is applied from the A side of the direction indicating label, the shaft rotates clockwise. If air pressure is applied from the B side, the shaft rotates counterclockwise.

Proper auto switch mounting position at rotation end

11-CDRA1□W30

11-CDRA1□□50 to 100



Operating angle θ m: Converts the operating range (Lm) of the auto switch into the rotation angle.
Angle of hysteresis: The hysteresis of the auto switch is converted to degrees.

Model	A (mm)	Operating angle θ m	Hysteresis angle ^{Note 1)}
11-CDRA1□W 30-90	9 (19)	95°	20°
11-CDRA1□□50-90	9 (26)	65°	20°
11-CDRA1□□63-90	11 (30)	60°	10°
11-CDRA1□□80-90	15 (37)	45°	7°
11-CDRA1□□100-90	27 (60)	35°	5°

* The dimensions inside () are for 180. ** Up to 2 auto switches can be mounted per actuator.

The dimensions in the table are the values that represent the most sensitive positions of the auto switches.

Thus, they are not the dimensions that represent the mounting position at the time of shipment.

★ Please consult with SMC concerning the angles for the auto switches other than the models D-A73 and D-A53.

Series 11-22-MSQ

Rotary table: Rack & Pinion type
Size: 1, 2, 3, 7, 10, 20, 30, 50

How to Order

Size: 1, 2, 3, 7

Clean series

11 Vacuum suction type

A High precision style

B Basic style

Size

1

2

3

7

Nil Side ported

E Front ported

11 - MSQB1A - M9B

A With adjustment bolt

Auto switch

Reed switchA90

Solid state switchM9B, M9N, F8B, F8N

Number of auto switches

Nil2 pcs.

S1 pc.

n n pcs.

Size: 10, 20, 30, 50

Clean series

11 Vacuum suction type

Size

10

20

30

50

11 - MSQB10A - M9B

Copper, fluorine and silicon-free + Low particle generation

22 Vacuum suction type

A High precision style

B Basic style

Number of auto switches

Nil2 pcs.

S1 pc.

n n pcs.

Auto switch

Reed switchA90

Solid state switchM9B, M9N

A With adjustment bolt

R With internal shock absorber

22 - MSQB10A - M9B

Auto switch specifications

Type		Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
Reed switch		D-A90	24 VAC or less, 48 VAC or less, 100 VAC or less 24 VDC or less, 48 VDC or less, 100 VDC or less	50mA, 40mA, 20mA	No	IC circuit, Relay, PLC
Solid state switch	2-wire	D-M9B, D-F8B	24 VDC (10 to 28 VDC)	2.5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire	D-M9N, D-F8N	24 VDC (4.5 to 28 VDC)	40 mA or less	Yes	24 VDC relay, PLC

Refer to page 212 for a list of applicable auto switches.

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Specifications

Size	1 2 3 7 10 20 30 50										
Fluid	Air (Non-lube)										
Maximum operating pressure	With adjustment bolt	0.7MPa					1MPa				
	With internal shock absorber	Not available					0.6MPa				
Minimum operating pressure	Basic style	0.1MPa									
	High precision style	0.1MPa				0.2MPa	0.1MPa				
Ambient and fluid temperature		0 to 60°C (No freezing)									
Cushion	With adjustment bolt	Not available		Rubber bumper							
	With internal shock absorber	Not available					Shock absorber				
Allowable kinetic energy (mJ)	With adjustment bolt	1	1.5	2	6	7	25	48	81		
	With internal shock absorber	Not available					39	116	116	294	
Angle adjustment range		0 to 190°C									
Maximum rotation		190°C									
Rotation time adjustment range	With adjustment bolt	0.2 to 0.7 s/90°				0.2 to 1.0 s/90°					
	With internal shock absorber	Not available					0.2 to 0.7 s/90°				
Port size		M3 x 0.5				M5 x 0.8			Rc 1/8, M5 x 0.8		
Grease		11-: Fluorine grease 22-: Lithium soap based grease									
Particle generation grade		11-: Grade 1									
(Refer to front matter pages 13 to 22 for details.)		22-: Grade 1									

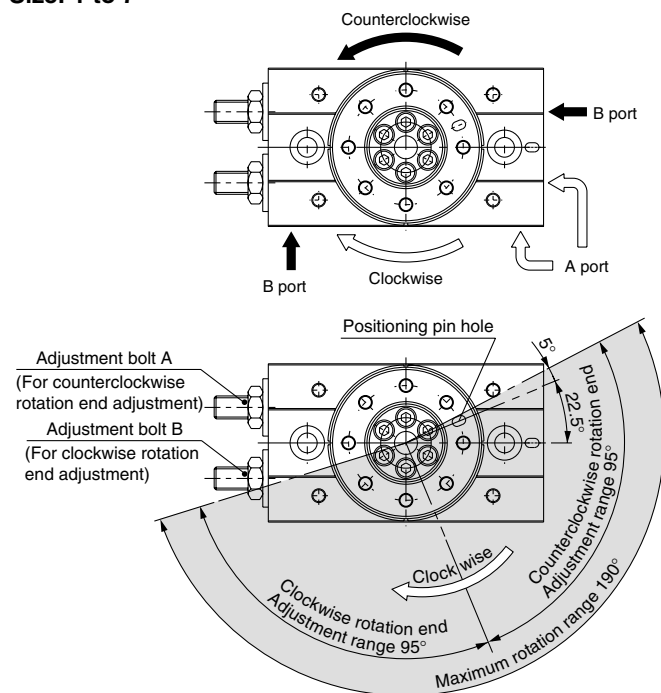
Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate ℓ/min (ANR)
1/2/3/7	1
10/20/30/50	

Rotation range example

- The rotary table turns in the clockwise direction when the A port is pressurized, and in the counterclockwise direction when the B port is pressurized.
- By adjusting the adjustment bolt, the rotation end can be set within the ranges shown in the drawing for the desired rotation angle.
- The rotation angle can also be set on a type with internal absorber.

Size: 1 to 7

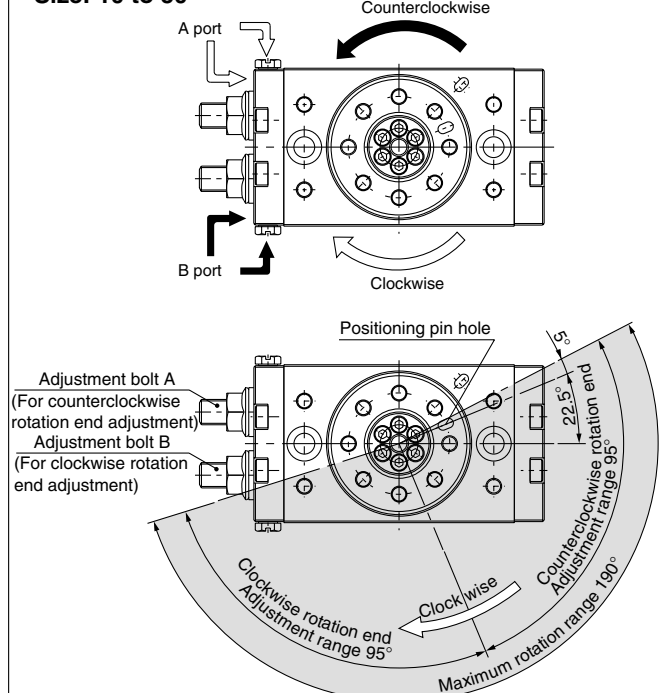


Note) · The drawing shows the rotation range of the positioning pin hole.
· The pin hole position in the drawing shows the counterclockwise rotation end when the adjustment bolts A and B are tightened equally and the rotation is adjusted 180°.

With adjustment bolt, internal shock absorber

Size	Adjustment angle per rotation of angle adjustment bolt
1	8.2°
2	10.0°
3	10.9°
7	10.2°

Size: 10 to 50



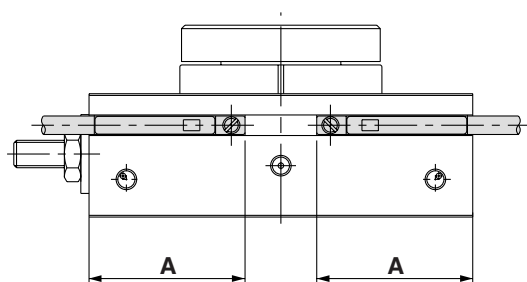
Note) · The drawing shows the rotation range of the positioning pin hole.
· The pin hole position in the drawing shows the counterclockwise rotation end when the adjustment bolts A and B are tightened equally and the rotation is adjusted 180°.

With adjustment bolt, internal shock absorber

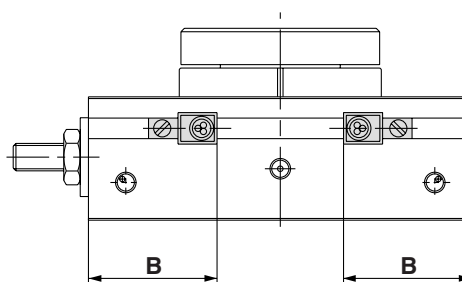
Size	Adjustment angle per rotation of angle adjustment bolt
10	10.2°
20	7.2°
30	6.5°
50	8.2°
70	7.0°
100	6.1°
200	4.9°

Proper auto switch mounting position at rotation end

Size: 1 to 7



D-F9, M9



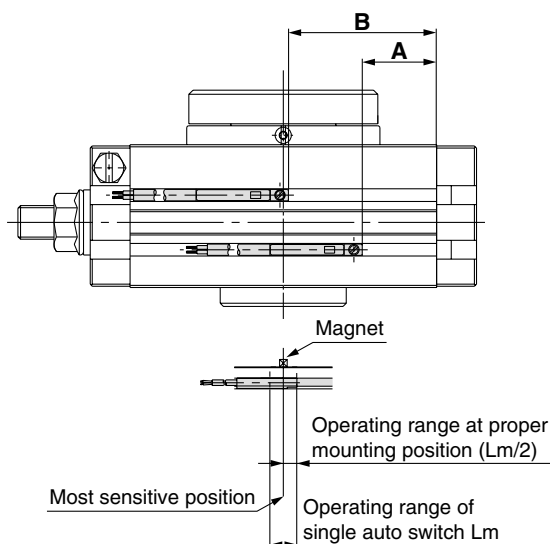
D-F8

Size	Rotating angle	Solid state switch					
		D-M9□			D-F8□		
		A	Operating angle θ m	Hysteresis angle	B	Operating angle θ m	Hysteresis angle
1	190°	20.9	55°	10°	16.9	20°	10°
2	190°	22.8	45°	10°	18.8	20°	10°
3	190°	24.4	40°	10°	20.4	15°	10°
7	190°	28.7	40°	10°	24.7	15°	10°

Operating angle θ m: Converts the operating range (Lm) of the auto switch into the rotation angle

Angle of hysteresis: The hysteresis of the auto switch is converted to degrees.

Size: 10 to 50



Size	Rotating angle	Reed switch				Solid state switch			
		D-A9□, D-A9□V				D-M9□			
		A	B	Operating angle θ m	Hysteresis angle	A	B	Operating angle θ m	Hysteresis angle
10	190°	17	36	90°	10°	21	40	60°	10°
20	190°	23	50	80°	10°	27	54	50°	10°
30	190°	27	66	65°	10°	31	60	50°	10°
50	190°	33	68	50°	10°	37	72	40°	10°

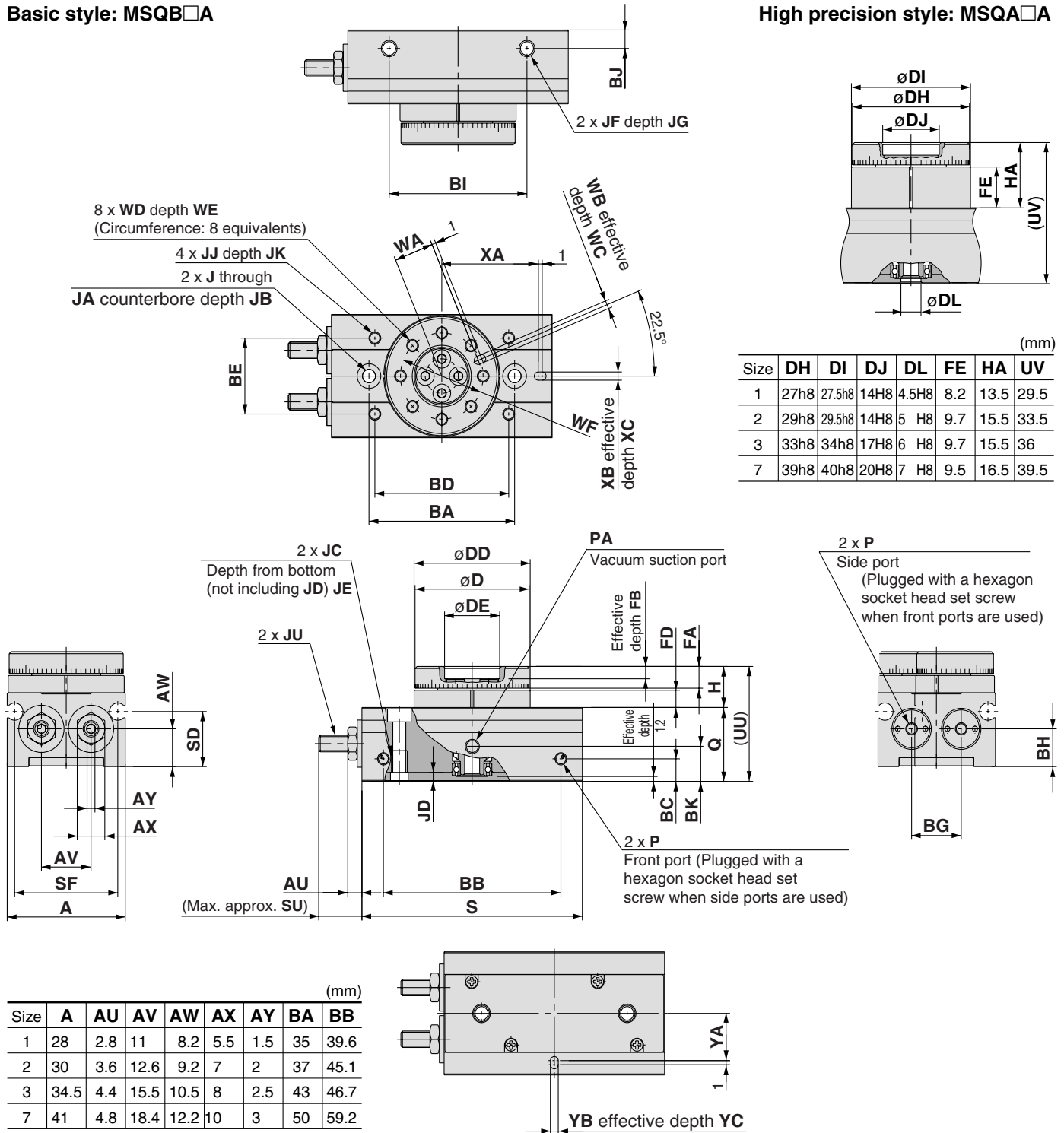
Operating angle θ m: Converts the operating range (Lm) of the auto switch into the rotation angle

Angle of hysteresis: The hysteresis of the auto switch is converted to degrees.

Dimensions: Size 1, 2, 3, 7

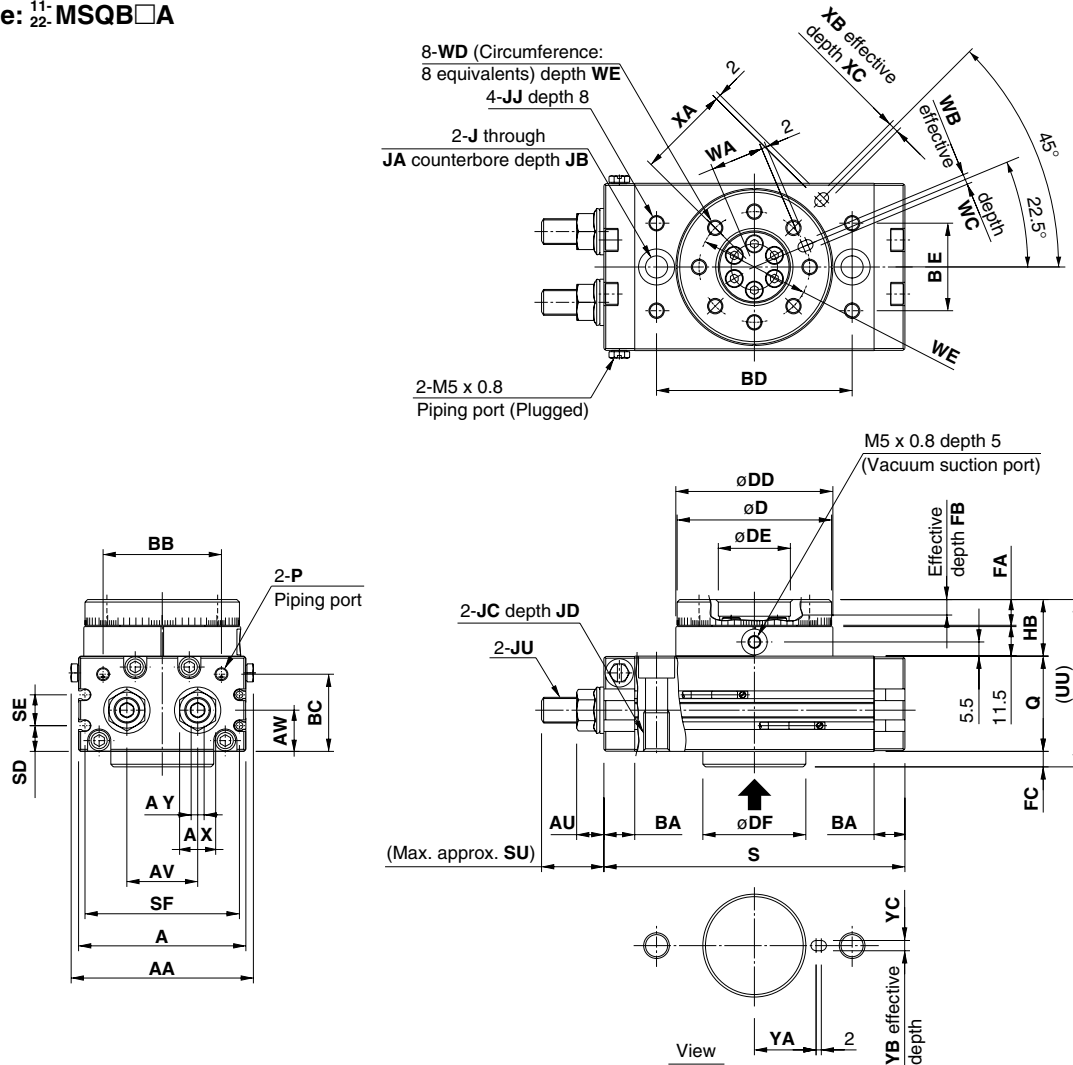
Basic style: MSQB□A

High precision style: MSQA□A



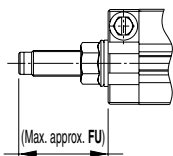
Dimensions: Size 10, 20, 30, 50

Basic style: ¹¹⁻²²⁻**MSQB**□**A**



With internal shock absorber

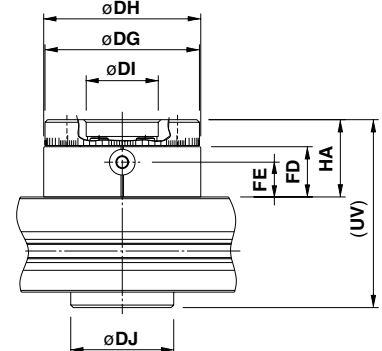
¹¹⁻²²⁻**MSQA**□□**R**
¹¹⁻²²⁻**MSQB**□□**R**



Size	FU (mm)
10	31.5
20	34.7
30	34.7
50	51.7

High precision style

¹¹⁻²²⁻**MSQA**□□**A**
¹¹⁻²²⁻**MSQA**□□**R**



Size	DG	DH	DI	DJ	FD	FE	HA	UV (mm)
10	45h8	46h8	20H8	35h8	15.5	9.5	24	63
20	60h8	61h8	28H8	40h8	19.5	13.5	30	73
30	65h8	67h8	32H8	48h8	19.5	13.5	30	76
50	75h8	77h8	35H8	54h8	21.5	15.5	34	87

Size	AA	A	AU	AV	AW	AX	AY	BA	BB	BC	BD	BE	D	DD	DE	DF	FA	FB	FC	HB	J	JA	JB	JC	JD
10	55.4	50	8.6	20	15.5	12	4	9.5	34.5	27.8	60	27	45h9	46h9	20H9	35h9	8	4	5	20	6.8	11	6.5	M8 x 1.25	12
20	70.8	65	10.6	27.5	16	14	5	12	46	30	76	34	60h9	61h9	28H9	40h9	10	6	6	22	8.6	14	8.5	M10 x 1.5	15
30	75.4	70	10.6	29	18.5	14	5	12	50	32	84	37	65h9	67h9	32H9	48h9	10	4.5	6	22	8.6	14	8.5	M10 x 1.5	15
50	85.4	80	14	38	22	19	6	15.5	63	37.5	100	50	75h9	77h9	35H9	54h9	12	5	7	24	10.5	18	10.5	M12 x 1.75	18

Size	JJ	JU	P	Q	S	SD	SE	SF	SU	UU	WA	WB	WC	WD	WE	WF	XA	XB	XC	YA	YB	YC
10	M5 x 0.8	M8 x 1	M5 x 0.8	34	92	9	13	45	17.7	59	15	3H9	3.5	M5 x 0.8	8	32	27	3H9	3.5	19	3H9	3.5
20	M6 x 1	M10 x 1	M5 x 0.8	37	117	10	12	60	25	65	20.5	4H9	4.5	M6 x 1	10	43	36	4H9	4.5	24	4H9	4.5
30	M6 x 1	M10 x 1	Rc 1/8	40	127	11.5	14	65	25	68	23	4H9	4.5	M6 x 1	10	48	39	4H9	4.5	28	4H9	4.5
50	M8 x 1.25	M14 x 1.5	Rc 1/8	46	152	14.5	15	75	31.4	77	26.5	5H9	5.5	M8 x 1.25	12	55	45	5H9	5.5	33	5H9	5.5



Rotary actuators: Precautions 1

Be sure to read before handling. Refer to main text for more detailed precautions on every series.

Caution on design

⚠ Warning

- 1. If the operation involves load fluctuations, ascending / descending movements, or changes in frictional resistance, make sure to provide safety measures.**
Operating speed will increase, and bodily injury may occur, or damage to the machinery itself may occur.
- 2. If there is a chance that it will pose a hazard to humans, install a protective cover.**
If the moving portion of the product will pose a hazard to humans or will damage machinery or equipment, provide a construction that prevents direct contact with those areas.
- 3. Make sure that the secured portions will not loosen.**
Be sure to adopt a reliable connecting method if the rotary actuator is used very frequently or if it is used in a location that is exposed to a large amount of vibrations.
- 4. There may be cases in which a speed reduction circuit or a shock absorber is required.**
If the driven object moves at high speeds or has a large weight, it will be unfeasible for the rotary actuator's cushions alone to absorb shocks. Therefore, provide a speed-reduction circuit to reduce the rotary actuator's speed before the thrust is applied to the cushions, or an external shock absorber to dampen the shocks. If these countermeasures are taken, make sure to take the rigidity of the mechanical equipment into consideration.
- 5. Consider the possibility of a reduction in the circuit air pressure that could be caused by power outages.**
When actuator is used as clamping mechanism, there is a danger of workpiece dropping if there is a decrease in clamping force due to a drop in circuit pressure caused by a power outage. Therefore, safety equipment should be installed to prevent damage to machinery and bodily injury.
- 6. Consider the possibility of power source related malfunctions that could occur.**
On the pieces of equipment that rely on power sources such as compressed air, electricity, or hydraulic pressure, adopt a countermeasure that will prevent these pieces of equipment from causing hazards to humans or damage to equipment in the event of a malfunction in these power sources.
- 7. If a speed controller is provided in the exhaust restrictor, implement a safety design taking the residual pressure into consideration.**
If air pressure is applied to the air supply side without residual pressure in the exhaust side, the rotary actuator will operate at abnormally high speeds, which could pose a hazard to humans and damage the machinery and equipment.
- 8. Consider the behavior of the rotary actuator in the event of an emergency stop.**
Devise a system that ensures safety so that if a person engages the emergency stop, or if a safety device is tripped during a system malfunction such as a power outage, the halting of the machine will not cause the movement of the rotary actuator to pose a hazard to humans or damage the equipment.
- 9. Consider the behavior of the rotary actuator when restarting after an emergency stop.**
Devise a design that ensures safety so that the restarting of the rotary actuator will not pose a hazard to humans or damage the equipment.
When the actuator has to be reset at the starting position, install safe manual control equipment.

Caution on design

⚠ Warning

- 10. Do not use the product as a shock absorber.**
If an abnormal pressure or air leakage occurs, the rotary actuator's speed reduction capability could become severely effected, which could pose a hazard to humans and damage the machinery and equipment.

Selection

⚠ Warning

- 1. Select a speed within the product's allowable energy value.**
If the product is used in a state in which the kinetic energy of the load exceeds the allowable value, it could damage the product, which could pose a hazard to humans and damage the machinery and equipment.
- 2. Provide a shock absorber if the kinetic energy that is applied to the product exceeds the allowable value.**
If the product is used in a state in which the kinetic energy exceeds the allowable value, it could damage the product, which could pose a hazard to humans and damage the machinery and equipment.
- 3. Do not stop or hold the product at midpoint by keeping air pressure in the product.**
With the product lacking an external stopping mechanism, if the directional control valve is closed to keep the air pressure in the product in an attempt to stop the product at midpoint, it might not be possible to maintain that stopped position due to an air leakage. As a result, it could pose a hazard to humans and damage machinery and equipment.

⚠ Caution

- 1. Do not operate the product in a low speed range below the speed adjustment range specified for the product.**
If the product is used in the low speed range below the specified speed adjustment range, it could cause the product to stick, slip, or to stop its movement.
- 2. Do not apply an external torque to the product that exceeds the rated output.**
If an external force that exceeds the product's rated output is applied to the product, it could damage the product.
- 3. The holding torque of the rotating end of the double piston style**
With a double piston product, if the internal piston is stopped by coming into contact with the angle adjustment screw or the cover, the holding torque at the rotating end is one-half that of the actual output.
- 4. If it is necessary to provide repeatability of the rotation angle, directly stop the load externally.**
Even with a product that is equipped with an angle adjuster, there are times in which the initial rotation angle could change.
- 5. Do not use the product under hydraulic pressure.**
The product will be damaged if it is used by applying hydraulic pressure.
- 6. With the vane style product, if it is necessary to ensure a rotation angle, make sure to use a minimum pressure of 0.3 MPa.**



Rotary actuators: Precautions 2

Be sure to read before handling. Refer to main text for more detailed precautions on every series.

Mounting

Warning

1. **Before adjusting the angle by supplying air pressure, take appropriate measures to prevent the equipment from rotating unnecessarily.**

When an adjustment is performed under air pressure, the equipment could rotate and fall during the adjustment, depending on the mounted posture of the equipment. As a result, it could pose a hazard to humans and damage the machinery and equipment.

2. **Do not loosen the angle adjustment screw beyond the allowable adjustment range.**

The angle adjustment screw could pull out if it is loosened beyond its allowable adjustment range, which could pose a hazard to humans and damage the machinery and equipment.

3. **Do not place a magnetic object near the product.**

The auto switch is a magnetic sensing type. If a magnetic object is placed close to it, the rotary actuator could operate suddenly, which could pose a hazard to humans and damage the machinery and equipment.

4. **Do not modify the product.**

By modifying the product, its strength could be affected, which could lead the product to break. As a result, it could pose a hazard to humans and damage the machinery and equipment.

5. **Do not enlarge the fixed throttle by modifying the pipe connectors.**

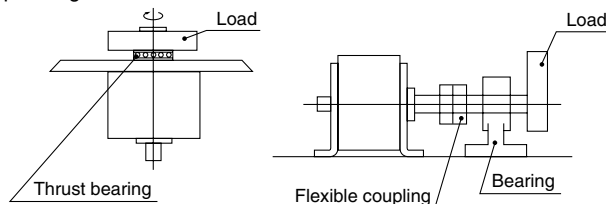
If the hole diameter is enlarged, the product's rotation speed increases, causing the shock force to increase and damage the product. As a result, it could pose a hazard to humans and damage the machinery and equipment.

6. **If shaft couplings are to be used, use those with angular freedom.**

If shaft couplings that lack angular freedom are used, they could scrape due to eccentricity, leading to equipment malfunction and product damage. As a result, it could pose a hazard to humans and damage the machinery and equipment.

7. **Do not apply to the shaft a load that exceeds the values given.**

If a load that exceeds the allowable value is applied to the product, it could lead to equipment malfunction, which could pose a hazard to humans and damage the machinery and equipment. Provided that a dynamic load is not generated, a load that is within the allowable radial/thrust load can be applied. However, applications in which the load is applied directly to the shaft should be avoided wherever possible. The methods such as those described below are recommended to prevent the load from being applied directly to the shaft in order to ensure a proper operating condition.



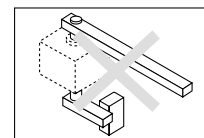
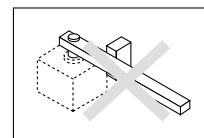
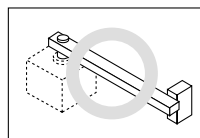
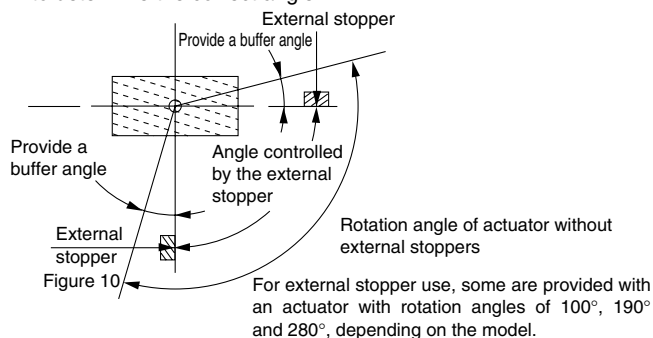
8. **Place an external stopper in a position that is away from the rotating shaft.**

If the stopper is placed near the rotating shaft, the torque that is generated by the product itself causes a reaction force that is directed to the stopper to be applied to the rotating shaft, thus leading the rotating shaft and the bearing to break. As a result, it could pose a hazard to humans and damage the machinery and equipment.

Precautions when using external stoppers

If the kinetic energy that is generated by the load exceeds the actuator's threshold value, an external dampening function must be provided to absorb the energy.

Furthermore, with the CRA1 series, which is a single rack pinion type, there is a backlash (within 1° at the rotation end) of the rack pinion mechanism. Thus, an external stopper is required in order to determine the correct angle.



External stopper becomes a fulcrum, and the load's inertial force is applied to the shaft as a bending moment.

If an external stopper is installed on the shaft side opposite the load, the inertial force generated by the load is applied directly to the shaft.

Caution

1. **Do not use organic solvent to wipe the area of the nameplate that shows the model.**

It will erase what is indicated on the nameplate.

2. **Do not hit the rotating shaft by securing the body or hit the body by securing the rotating shaft.**

These actions could cause the shaft to bend or damage the bearing. When a load must be coupled to the rotating shaft, secure the rotating shaft.

3. **Do not place your foot directly on the shaft or on the equipment that is coupled to the shaft.**

Placing one's weight directly onto the rotating shaft could cause the rotating shaft or the bearing to become damaged.

4. **If a product is equipped with an angle adjustment function, use it within the specified adjustment range.**

If the product is used outside the specified adjustment range, it could lead to equipment malfunction or product damage. Refer to the product specifications for details on the adjustment range of the products.



Rotary actuators: Precautions 3

Be sure to read before handling. Refer to main text for more detailed precautions on every series.

Air supply

Warning

1. Use clean air.

Do not use compressed air that contains synthetic oil, salt, and corrosive gases in which chemicals and organic solvents are present, because it could cause equipment damage or malfunction.

Caution

1. Install an air filter.

Install an air filter upstream, near the valve. Select an air filter with a filtration degree of 5 µm or finer.

2. Take countermeasures to ensure air quality, such as by installing an aftercooler, air dryer, or drain catch.

Compressed air that contains a large amount of drainage could cause the rotary actuator or other types of pneumatic equipment to malfunction. Therefore, take appropriate measures to ensure air quality, such as by providing an aftercooler, air dryer, or drain catch.

3. Ensure that the fluid and ambient temperature are within the specified range.

If the fluid temperature is less than 5°C, the moisture in the circuit could freeze, causing damage to the seals and leading to equipment malfunction. Therefore, take appropriate measures to prevent freezing.

Operating environment

Warning

1. Do not use the rotary actuator in an environment or location that poses the risk of corrosion.

Refer to the respective construction diagram for details on the materials used in the rotary actuator.

Speed and bumper adjustment

Warning

1. To make a speed adjustment, gradually adjust starting from the low speed end.

If the speed adjustment is performed from the high speed end, it could damage the product. As a result, it could pose a hazard to humans and damage the machinery and equipment.

2. The cushion needle is not adjusted at the time of shipment. Therefore, an adjustment must be made in accordance with the operating speed and the moment of inertia of the load.

The absorption of kinetic energy by the bumper is regulated by the adjustment of the needle. An improper adjustment could lead to damage of the equipment and the product. As a result, it could pose a hazard to humans and damage the machinery and equipment.

3. Do not use the rotary actuator with its cushion needle in the fully closed state.

This could tear the seal, which could pose a hazard to humans and damage the machinery and equipment.

4. Do not apply an excessive force to loosen the cushion needle.

The needle itself is provided with a pull stop; however the pull stop could be damaged if the needle is loosened through the application of excessive force. As a result, it could pose a hazard to humans and damage the machinery and equipment.

Maintenance

Warning

1. Follow the procedures given in the operation manual to perform a maintenance inspection. Improper handling could lead to malfunction or damage the machinery and equipment.

2. During a maintenance inspection, do not disassemble the equipment with electrical power or with an air supply applied.

3. After the product has been disassembled for inspection, make sure to perform the appropriate functionality inspection.

The product specifications cannot be met unless a functionality inspection is performed.

Caution

1. For lubrication, use the type of grease that is used for the respective product.

The use of a non-designated lubricant could damage the seals.

2. Series MSQ: Because sizes 1, 2, 3 and 7 require special tools, they cannot be disassembled. Because sizes 10, 20, 30 and 50 have the table press fit into an angular type bearing, they cannot be disassembled.

Rotary actuator Auto switch guide

Type	Auto switch mounting	Electrical entry	Auto switch model	Applicable rotary actuators						
				Size						
				11- CDRA1		10-/21- CDRB1		11-/22- MSQ		
				30	50	10, 15	20, 30	1 to 7	10 to 50	
Reed switch	Rail	Grommet	D-A72, A73, A80	●						
			D-A72H, A73H D-A76H, A80H	●						
		Connector	D-A73C, A80C	●						
		Grommet	D-A53, A54, A56 D-A64, A67		●					
	Direct	Grommet	D-90, 97			●				
			D-A90, A93, A96 D-A90V, A93V, A96V					●	●	
			D-90A, 93A			●				
			D-R731, R732				●			
			D-R801, R802				●			
		Connector	D-R731C, R732C				●			
			D-R801C, R802C				●			
	Rail	Grommet	D-A79W	●						
	Tie-rod	Grommet	D-A59W		●					
Solid state switch	Rail	Grommet	D-F79, F7P, J79	●						
			D-F7NV, F7PV, F7BV	●						
		Connector	D-J79C	●						
		Grommet	D-F59, F5P, J51, J59		●					
	Direct	Grommet	D-S991, S992, D-S99V1, S99V2			●				
			D-T991, T992, D-T99V1, T99V2			●				
			D-S9P1, S9P2, D-S9PV1, S9PV2			●				
			D-S791, S792				●			
			D-T791, T792				●			
			D-S7P1, S7P2				●			
		Connector	D-T791C, T792C				●			
		Grommet	D-F8N, F8P, F8B					●		
			D-M9N, M9P, M9B D-M9NV, M9PV, M9BV					●	●	
	Rail	Grommet	D-F79W, F7PW, J79W D-F7BWV, D-F7NWV	●						
	Direct	Grommet	D-F9NW, F9PW, F9BW D-F9NWV, F9PWV, F9BWV					●	●	
	Tie-rod	Grommet	D-F59W, F5PW, J59W		●					
	With diagnostic output 2-color indication	Rail	Grommet	D-F79F	●					
		Tie-rod	Grommet	D-F59F		●				
	With timer Water resistant 2-color indication	Tie-rod	Grommet	D-F5BAL		●				
		Rail		D-F7BAL, D-F7BAVL	●					
Direct		D-F9BAL						●	●	
Tie-rod		Grommet	D-F5NTL		●					

For Clean Room Air Gripper

Description	Series	Page
\\ Air Gripper	11-/22- MHZ2	P.214
\\ Rotary Actuated Air Gripper 2 fingers	11-/22- MHR2	P.218
\\ Rotary Actuated Air Gripper 3 fingers	11-/22- MHR3	P.224
\\ Wide Opening Air Gripper	11-/22- MHL2	P.228
\\ Air Grippers: Precautions		P.233
\\ Auto Switch Guide		P.235

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Series 11-22-MHZ2 Air gripper ø10, ø16, ø20, ø25

How to Order

• **Clean series**

11	Vacuum suction type
----	---------------------

• **Copper, fluorine and silicon-free + Low particle generation**

22	Vacuum suction type
----	---------------------

• **Bore size**

10	10mm
16	16mm
20	20mm
25	25mm

• **Action**

D	Double acting
---	---------------

• **Finger option**

Standard	Nil: Basic style	1: Side tapped mounting	2: Through-holes in opening / closing direction
	N: Basic style	N1: Side tapped mounting	N2: Through-holes in opening / closing direction
Narrow type			
	3: Flat type fingers		

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.

• **Auto switch**

Nil	Without auto switch (Built-in magnet)
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Auto switch specifications (Refer to Best Pneumatics catalog for further information on auto switches.)

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) ^{Note 1)}			Applicable load		Applicable model			
					DC	AC	Perpendicular	In-line	0.5 Nil	3 (L)	5 ^{Note 2)} (Z)			ø10	ø16	ø20	ø25
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V	M9NV	M9N	●	●	○	IC circuit	Relay PLC	●	●	●	●
				3-wire (PNP)			F8N	—	●	●	○			●	●	●	●
				2-wire			M9PV	M9P	●	●	○			●	●	●	●
							F8P	—	●	●	○			—	—	●	●
					12V	—	M9BV	M9B	●	●	○	—		—	—	●	●
							F8B	—	●	●	○			—	—	●	●

Note 1) Lead wire length symbols: 0.5 m.....Nil (Example) M9N
 3 m.....L (Example) M9NL
 5 m.....Z (Example) M9NZ

Note 2) Auto switches marked with a "○" symbol are produced upon receipt of order.

Refer to page 235 for a list of applicable auto switches.

Specifications

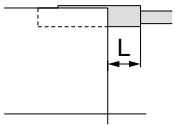
Fluid	Air
Operating pressure	$\phi 10$: 0.2 to 0.7 MPa $\phi 16$ to $\phi 25$: 0.1 to 0.7 MPa
Ambient and fluid temperature	-10 to 60°C
Repeatability	± 0.01
Maximum operating frequency	180 c.p.m.
Lubrication	Not required
Action	Double acting
Grease	11-: Fluorine grease 22-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	11-/22-: Grade 2

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate ℓ/min (ANR)
10/16	1
20/25	2

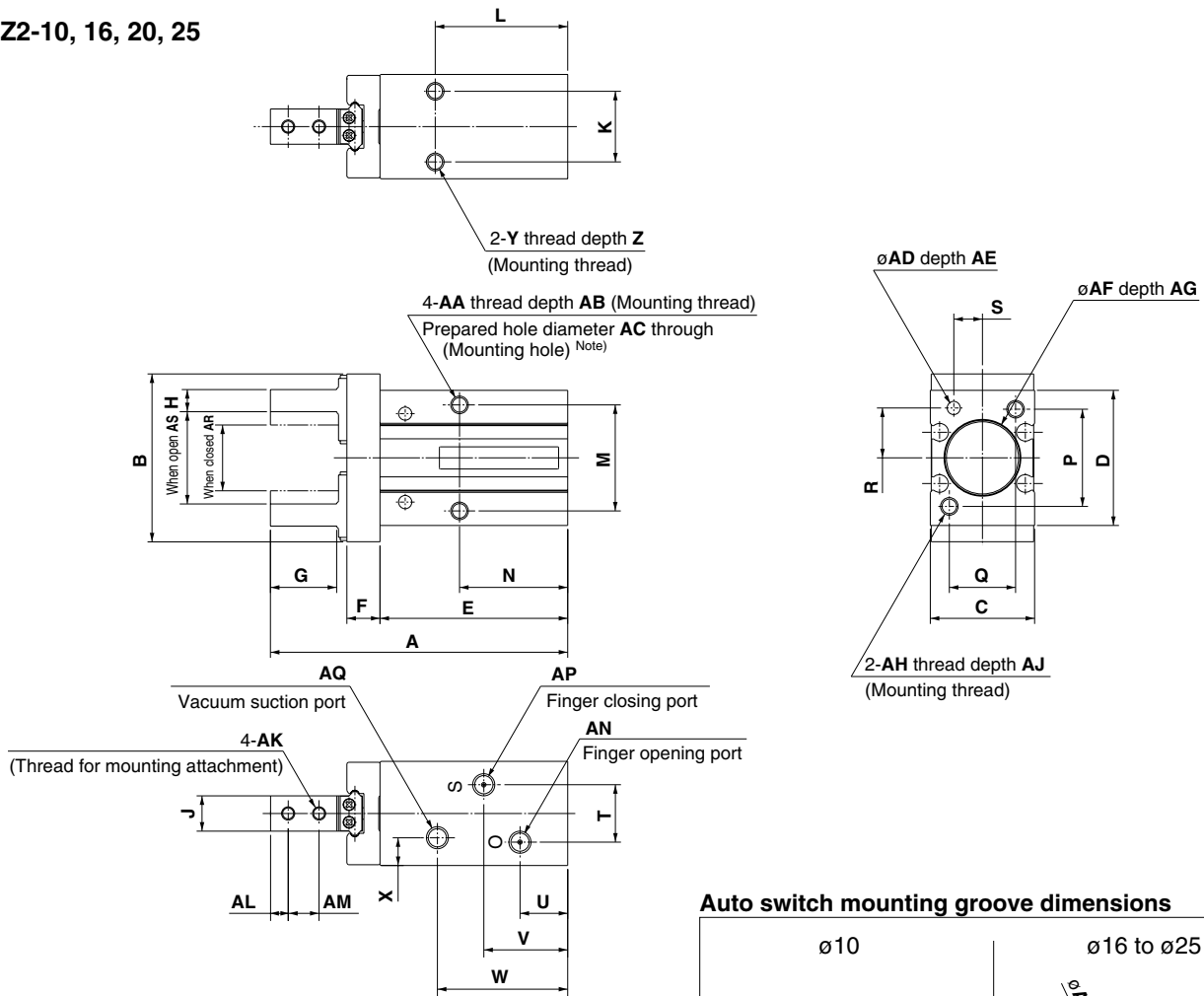
Protrusion of auto switch from edge of body

- The amount of auto switch protrusion from the body's end surface is as shown in the table below.
- Use this as a standard when mounting, etc.
- D-F8□ has no protrusion from the body's end surface.

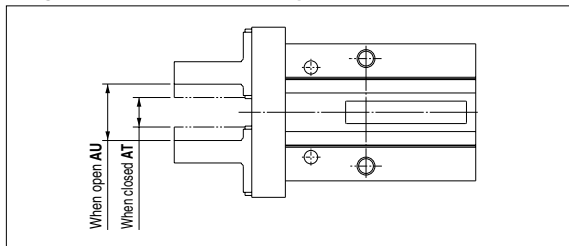
Lead wire type		In-line electrical entry type	
Explanatory drawing			
Model		D-M9□	
11- 22-MHZ2-10□	Open	8	
	Closed	10	
11- 22-MHZ2-16□	Open	4	
	Closed	7	
11- 22-MHZ2-20□	Open	—	
	Closed	5	
11- 22-MHZ2-25□	Open	—	
	Closed	2	

Dimensions

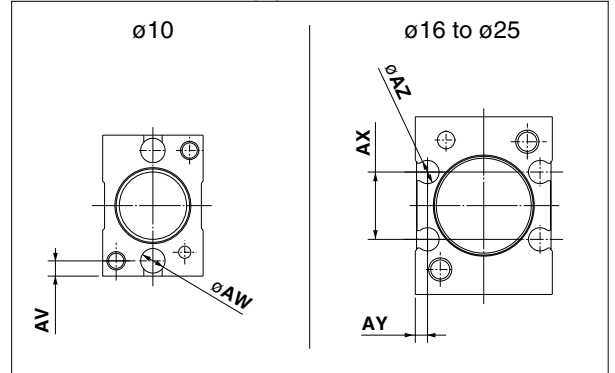
11-22-MHZ2-10, 16, 20, 25



Finger position / Narrow type (N)



Auto switch mounting groove dimensions



Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
11-22-MHZ2-10D□	57	29	16.4 ^{+0.05} ₀	23	37.8	6	12	4 ⁰ _{-0.1}	5 ⁰ _{-0.05}	11.4	27	16	23	18	12	7.6 ^{±0.02}	5.2 ^{±0.02}	10
11-22-MHZ2-16D□	67.3	38	23.6 ^{+0.05} ₀	30.6	42.5	7.5	15	5 ⁰ _{-0.1}	8 ⁰ _{-0.05}	16	30	24	24.5	22	15	11 ^{±0.02}	6.5 ^{±0.02}	13
11-22-MHZ2-20D□	84.8	50	27.6 ^{+0.05} ₀	42	52.8	9.5	20	8 ⁰ _{-0.1}	10 ⁰ _{-0.05}	18.6	35	30	29	32	18	16.8 ^{±0.02}	7.5 ^{±0.02}	15
11-22-MHZ2-25D□	102.7	63	33.6 ^{+0.05} ₀	52	63.6	11	25	10 ⁰ _{-0.1}	12 ⁰ _{-0.05}	22	36.5	36	30	40	22	21.8 ^{±0.02}	10 ^{±0.02}	20

Model	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK
11-22-MHZ2-10D□	12	19.5	28.2	5.5	M3 x 0.5	6	M3 x 0.5	5.5	2.6	2H9 ^{+0.025} ₀	3	12.4H9 ^{+0.043} ₀	1.5	M3 x 0.5	6	M2.5 x 0.45
11-22-MHZ2-16D□	10.8	19	29.5	6.5	M4 x 0.7	4.5	M4 x 0.7	8	3.4	3H9 ^{+0.025} ₀	3	17.4H9 ^{+0.043} ₀	1.5	M4 x 0.7	8	M3 x 0.5
11-22-MHZ2-20D□	12	23	39.8	8.3	M5 x 0.8	8	M5 x 0.8	10	4.3	4H9 ^{+0.030} ₀	4	22.4H9 ^{+0.052} ₀	2	M5 x 0.8	10	M4 x 0.7
11-22-MHZ2-25D□	13	37	49.7	10.8	M6 x 1	10	M6 x 1	12	5.1	4H9 ^{+0.030} ₀	4	27.4H9 ^{+0.052} ₀	3	M6 x 1	12	M5 x 0.8

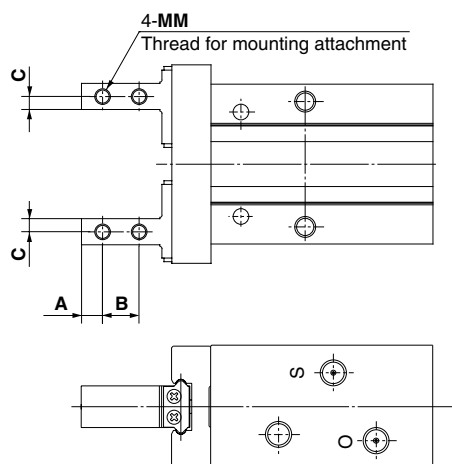
Model	AL	AM	AN	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
11-22-MHZ2-10D□	3	5.7	M3 x 0.5	M3 x 0.5	M3 x 0.5	11.2 ^{+0.5} _{-0.2}	15.2 ^{+2.2} ₀	5.7 ^{+0.5} _{+0.1}	9.7 ^{+2.2} ₀	2.5	4	—	—	—
11-22-MHZ2-16D□	4	7	M5 x 0.8	M5 x 0.8	M5 x 0.8	14.9 ^{+0.5} _{-0.2}	20.9 ^{+2.2} _{-0.2}	6.6 ^{+0.5} _{+0.1}	12.6 ^{+2.2} ₀	—	—	11.6	2.1	4
11-22-MHZ2-20D□	5	9	M5 x 0.8	M5 x 0.8	M5 x 0.8	16.3 ^{+0.5} _{-0.2}	26.3 ^{+2.2} _{-0.2}	7.2 ^{+0.5} _{+0.1}	17.2 ^{+2.2} ₀	—	—	14	2.1	4
11-22-MHZ2-25D□	6	12	M5 x 0.8	M5 x 0.8	M5 x 0.8	19.3 ^{+0.5} _{-0.3}	33.3 ^{+2.5} _{-0.2}	8.8 ^{+0.5} _{+0.1}	22.8 ^{+2.5} ₀	—	—	19	3.5	4

Note) Through-hole mounting is not possible for size 10.

Standard type / Series ¹¹⁻²²⁻MHZ2

Finger option

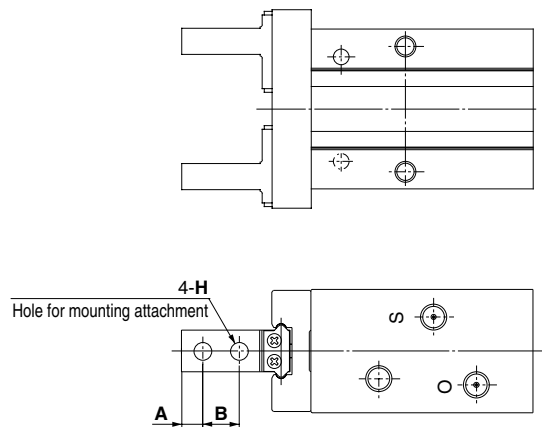
Side tapped mounting [1/N1]



Model	A	B	C	MM
¹¹⁻²²⁻ MHZ2-10D ¹ _{N1}	3	5.7	2	M2.5 x 0.45
¹¹⁻²²⁻ MHZ2-16D ¹ _{N1}	4	7	2.5	M3 x 0.5
¹¹⁻²²⁻ MHZ2-20D ¹ _{N1}	5	9	4	M4 x 0.7
¹¹⁻²²⁻ MHZ2-25D ¹ _{N1}	6	12	5	M5 x 0.8

* Specifications and dimensions other than the above are the same as the basic type (including narrow type).

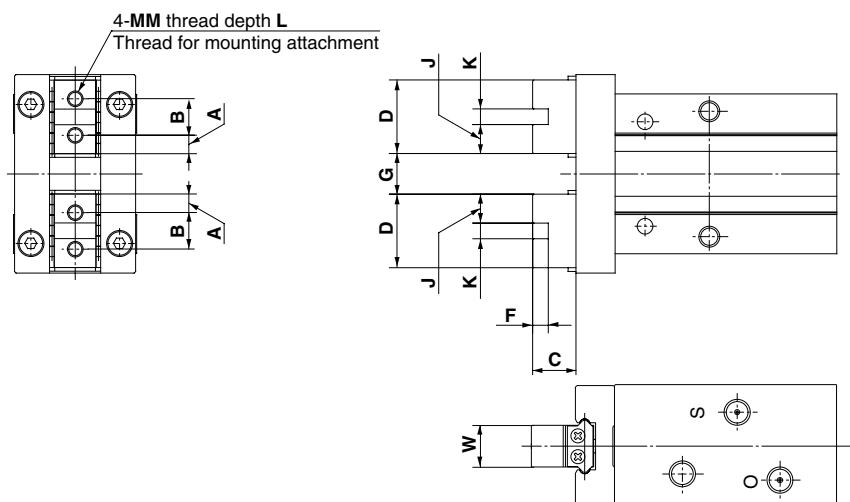
Through-holes in opening / Closing direction [2/N2]



Model	A	B	H
¹¹⁻²²⁻ MHZ2-10D ² _{N2}	3	5.7	2.9
¹¹⁻²²⁻ MHZ2-16D ² _{N2}	4	7	3.4
¹¹⁻²²⁻ MHZ2-20D ² _{N2}	5	9	4.5
¹¹⁻²²⁻ MHZ2-25D ² _{N2}	6	12	5.5

* Specifications and dimensions other than the above are the same as the basic type (including narrow type).

Flat type fingers [3]



Model	A	B	C	D	F	G		J	K	MM	L	W	Weight (g)
						Open	Closed						
¹¹⁻²²⁻ MHZ2-10D3 * 1), * 2)	2.45	6	5.2	10.9	2	5.4 ^{+2.2} ₀	1.4 ^{+0.5} _{+0.3}	4.45	2H9 ^{+0.025} ₀	M2.5 x 0.45	5	5 ⁰ _{0.05}	60
¹¹⁻²²⁻ MHZ2-16D3 * 1), * 2)	3.05	8	8.3	14.1	2.5	7.4 ^{+2.2} ₀	1.4 ^{+0.5} _{+0.3}	5.8	2.5H9 ^{+0.025} ₀	M3 x 0.5	6	8 ⁰ _{0.05}	125
¹¹⁻²²⁻ MHZ2-20D3 * 1), * 2)	3.95	10	10.5	17.9	3	11.6 ^{+2.3} ₀	1.6 ^{+0.5} _{+0.3}	7.45	3H9 ^{+0.025} ₀	M4 x 0.7	8	10 ⁰ _{0.05}	250
¹¹⁻²²⁻ MHZ2-25D3 * 1), * 2)	4.9	12	13.1	21.8	4	16 ^{+2.5} ₀	2 ^{+0.5} _{+0.3}	8.9	4H9 ^{+0.030} ₀	M5 x 0.8	10	12 ⁰ _{0.05}	450

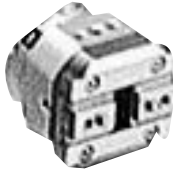
* 1) Specifications and dimensions other than the above are the same as the basic type (Narrow type is not available for D3).

* 2) The overall length is the same as the MHQ(G) flat finger type.

Series 11-22-MHR2 2 finger rotary actuated air gripper

Size: 10, 15, 20, 30

How to Order



Clean series
11 Vacuum suction type

11 — M D HR 2 — 10 R — M9B S

22 — M D HR 2 — 10 R — M9B S

Copper, fluorine and silicon-free + Low particle generation
22 Vacuum suction type

Number of fingers
2 2 fingers

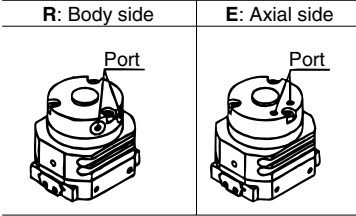
Nominal size
10
15
20
30

Connecting port
R: Body side
E: Axial side

Built-in magnet
Nil No
D With magnet (For auto switch)

Number of auto switches
Nil 2 pcs.
S 1 pc.

Auto switch
M9B
M9N



Model

Model		Nominal size	Port size	Lubrication	Action	Gripping force N (Effective value at 0.5 MPa) *		Opening / Closing stroke (Both sides)		
						External gripping force	Internal gripping force	Finger opening width (mm)	Finger closing width (mm)	Stroke (mm)
Vacuum suction type	11-22-MHR2-10 11-22-MDHR2-10	10	M3 x 0.5	Non-lube	Double acting	12	12	10	16	6
	11-22-MHR2-15 11-22-MDHR2-15	15				24	25	14	22	8
	11-22-MHR2-20 11-22-MDHR2-20	20	M5 x 0.8			33	34	16	28	12
	11-22-MHR2-30 11-22-MDHR2-30	30				58	59	19	37	18

* Refer to our catalog Best Pneumatics vol. 12 for details of gripping force at each gripping point. Value of effective gripping force is measured at the middle of opening / closing stroke.

Specifications

Nominal size		10	15,20,30
Item			
Operating pressure		0.2 to 0.6 MPa	0.15 to 0.6 MPa
Ambient and fluid temperature		0 to 60°C	
Repeatability		±0.01 mm	
Maximum operating frequency		180 c.p.m.	
Grease		11-: Fluorine grease 22-: Lithium soap based grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		11-/22-: Grade 1	

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate l/min (ANR)
10/15/20/30	10

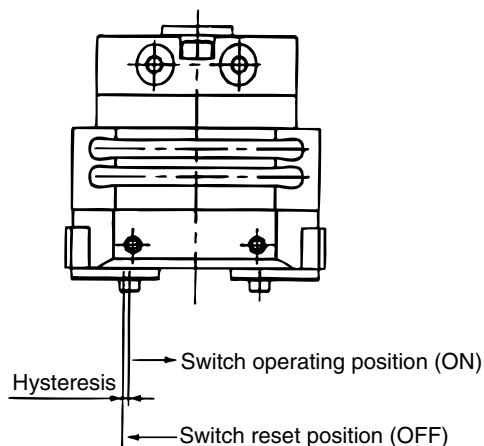
Auto switch specifications (Refer to Best Pneumatics catalog for further information on auto switches.)

Type	Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
Solid state switch	2-wire D-M9B(V)	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire D-M9N(V)	28 VDC or less	40 mA or less	Yes	

Refer to page 235 for a list of applicable auto switches.

PLC: Programmable Logic Controller

Auto switch hysteresis

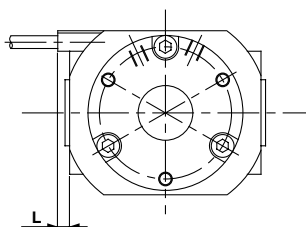
¹¹⁻₂₂₋**MDHR2**


Please refer to the table as a guide when setting auto switch positions.

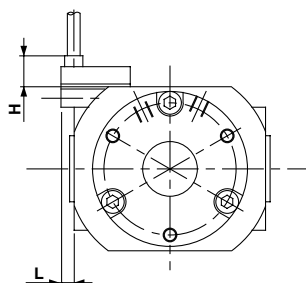
Model	Hysteresis (Max. value) (mm)
¹¹⁻ ₂₂₋ MDHR2-10	0.4
¹¹⁻ ₂₂₋ MDHR2-15	
¹¹⁻ ₂₂₋ MDHR2-20	0.5
¹¹⁻ ₂₂₋ MDHR2-30	

Protrusion of auto switch from edge of body

- The maximum protrusion of an auto switch (when fingers are fully open) from the edge of the body is shown in the table below. Use the table as a guideline for mounting.

¹¹⁻₂₂₋**MDHR2-10,15**


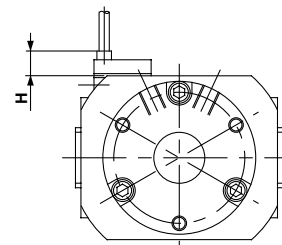
When auto switch **D-M9N**, **D-M9P**, **D-M9B** is used



When auto switch **D-M9NV**, **D-M9PV**, **D-M9BV** is used

Max. protrusion of auto switch from edge of body: L, H Unit: (mm)

Auto switch model		D-M9□	D-M9□V
Air gripper model			
MDHR2-10	L	2.6	0.6
	H	-	6.8
MDHR2-15	L	-	-
	H	-	6.8

¹¹⁻₂₂₋**MDHR2-20,30**


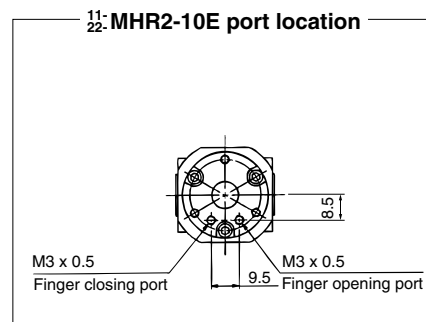
When auto switch **D-M9NV**, **D-M9PV**, **D-M9BV** is used

Max. protrusion of auto switch from edge of body: H (mm)

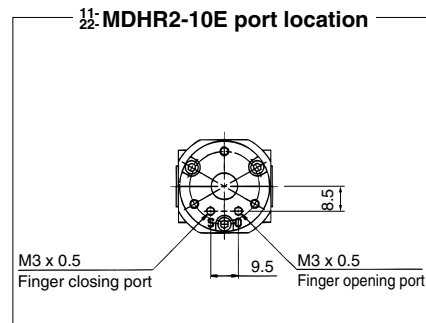
Auto switch model	D-M9□V
Air gripper model	
MDHR2-20	6.8
MDHR2-30	6.8

The auto switch will not protrude in the case of D-M9□.

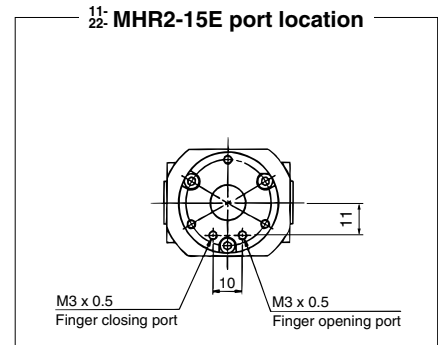
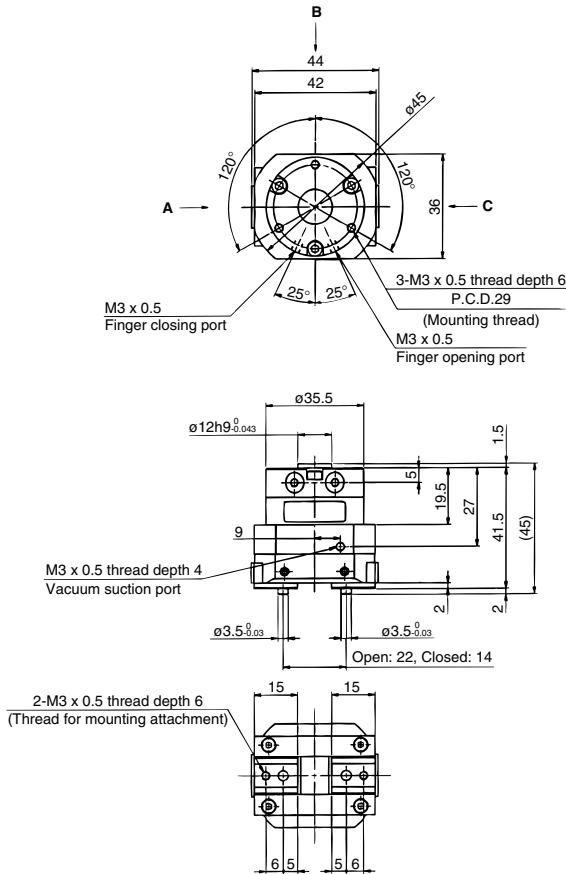
11-22-MHR2-10R



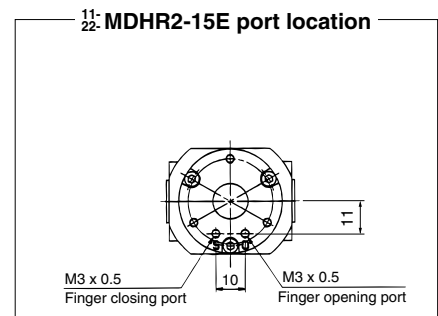
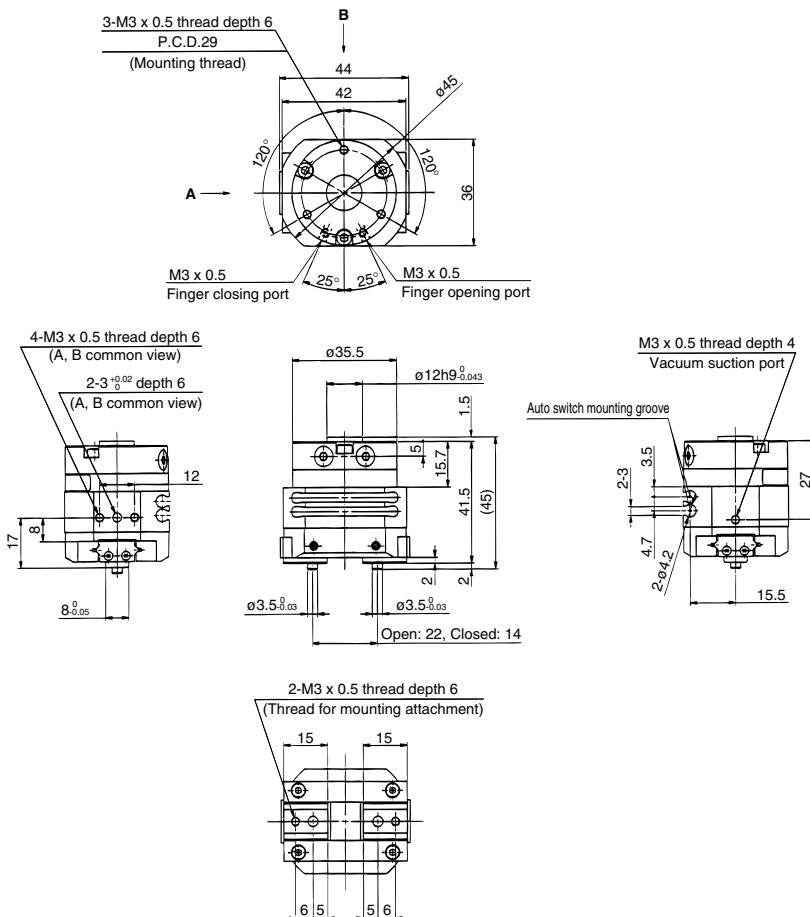
11-**MDHR2-10R**
22-



Without auto switch: 11-22-**MHR2-15R**

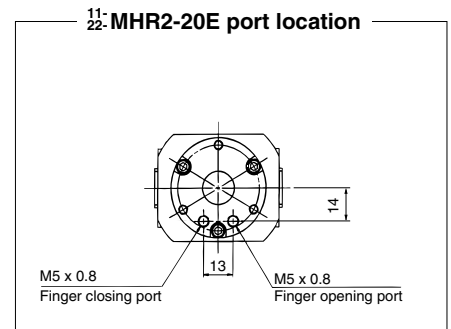
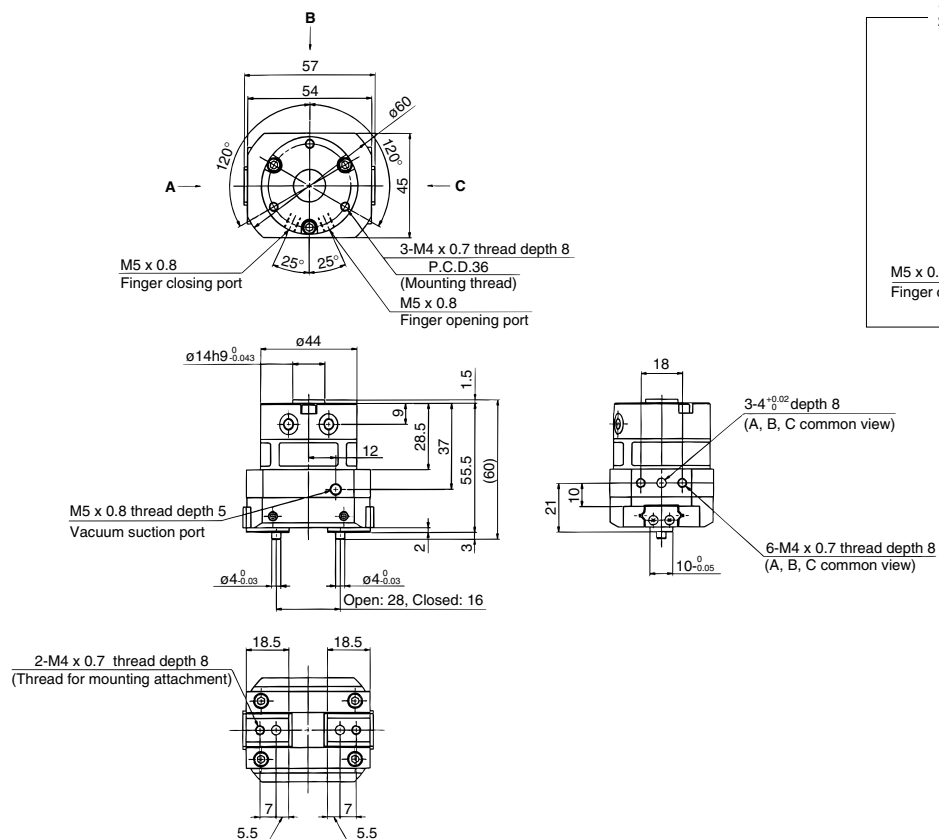


With auto switch: 11-22-**MDHR2-15R**

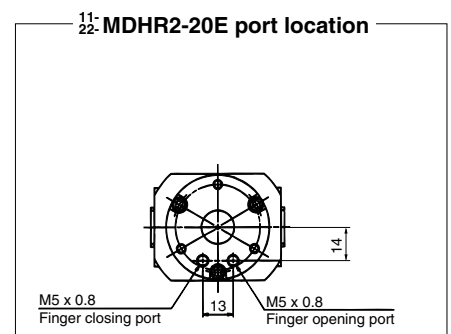
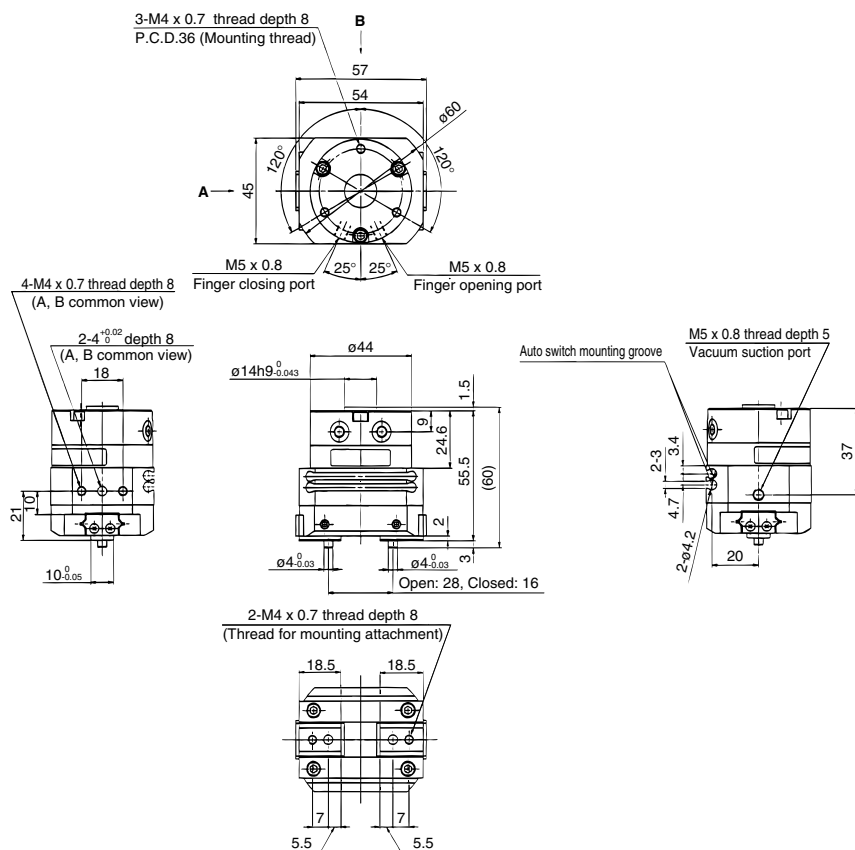


Rotary actuated air gripper 11-22-**MHR2**

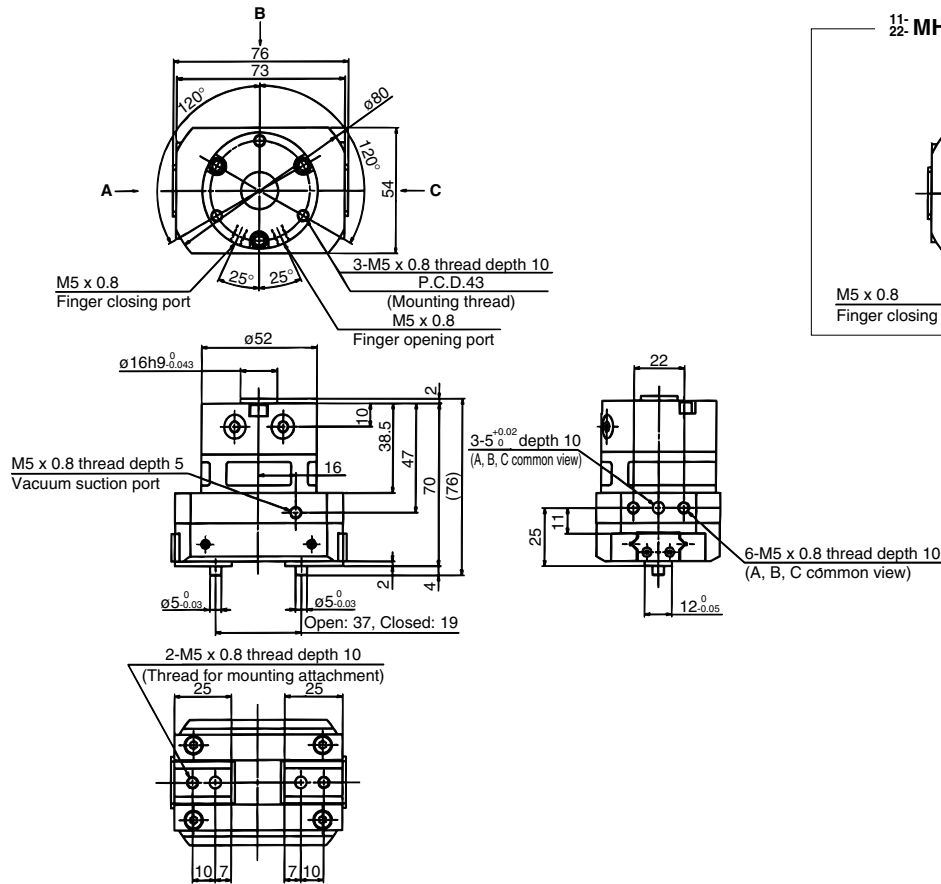
Without auto switch: 11-22-**MHR2-20R**



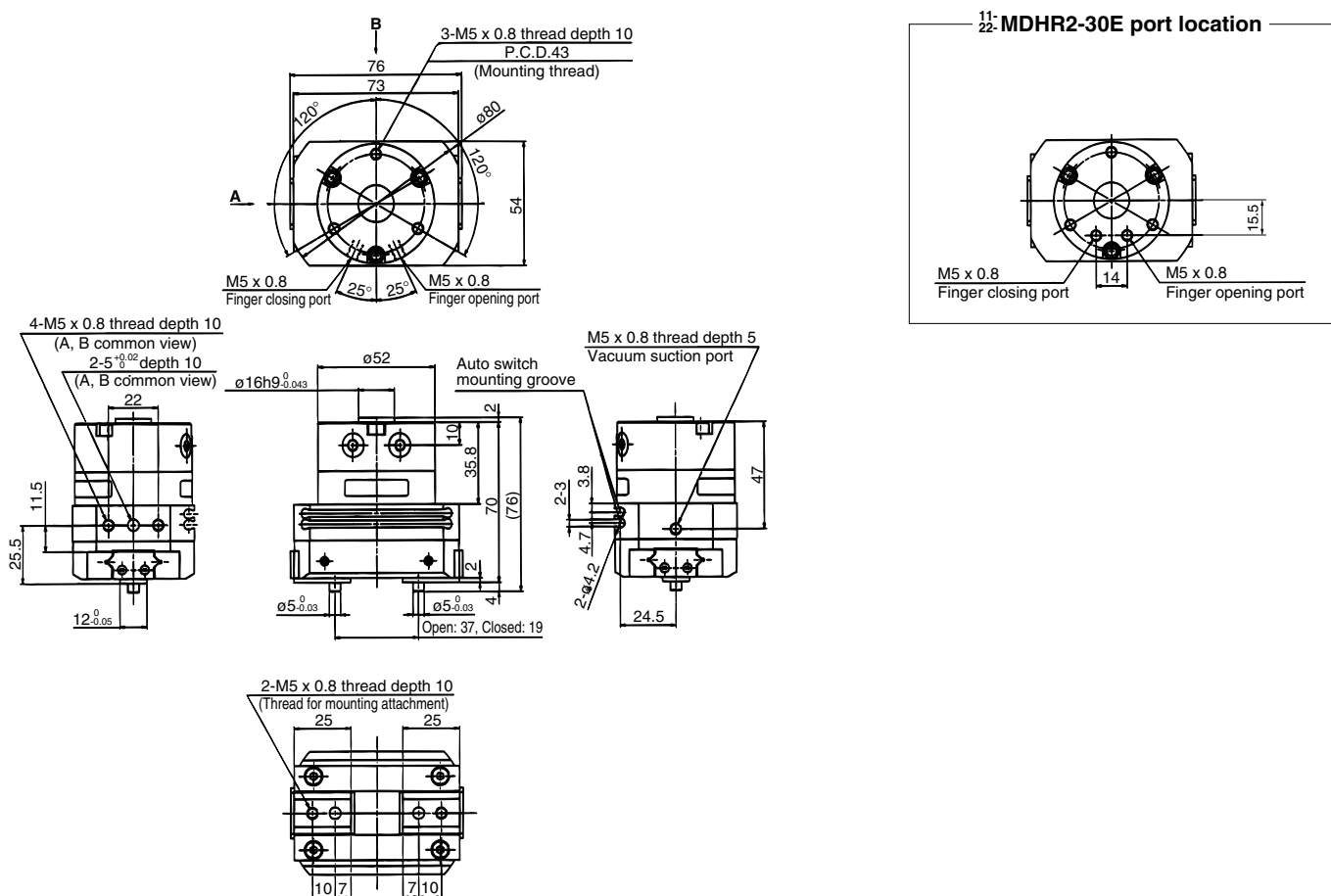
With auto switch: 11-22-**MDHR2-20R**



Without auto switch: ¹¹⁻²²⁻MHR2-30R



With auto switch: ¹¹⁻²²⁻MDHR2-30R



Series 11-22-MHR3

3 finger rotary actuated air gripper
Size: 10, 15

How to Order



Clean series

11	Vacuum suction type
----	---------------------

11 — M D H R 3 — 10 R — M9B S

22 — M D H R 3 — 10 R — M9B S

Copper, fluorine and silicon-free + Low particle generation

22	Vacuum suction type
----	---------------------

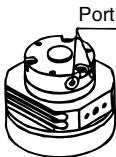
Number of fingers

3	3 fingers
---	-----------

Nominal size

10	
15	

Connecting port

R: Body side	E: Axial side
	

Built-in magnet

Nil	No
D	With magnet (For auto switch)

Number of auto switches

Nil	2 pcs.
S	1 pc.

Auto switch

M9B
M9N

* Only R type is available for "Without auto switch".

Model

Model	Nominal size	Port size	Lubrication	Action	Gripping force N (Effective value at 0.5 MPa) *		Opening / Closing stroke (Diameter)		
					External gripping force	Internal gripping force	Finger closing width (mm)	Finger opening width (mm)	Stroke (mm)
11-22-MHR3-10 11-22-MDHR3-10	10	M3 x 0.5	Non-lube	Double acting	7	6.5	16	22	6
11-22-MHR3-15 11-22-MDHR3-15	15				13	12	19	27	8

* Refer to Best Pneumatics catalog for details of gripping force at each gripping point.
Value of effective gripping force is measured at the middle of opening / closing stroke.

Specifications

Item	Nominal size	
	10	15
Operating pressure	0.2 to 0.6MPa	
Ambient and fluid temperature	0 to 60°C	
Repeatability	±0.01mm	
Maximum operating frequency	180 c.p.m.	
Grease	11-: Fluorine grease 22-: Lithium soap based grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	11-/22-: Grade 1	

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate l/min (ANR)
10/15	10

Auto switch specifications (Refer to Best Pneumatics catalog for further information on auto switches.)

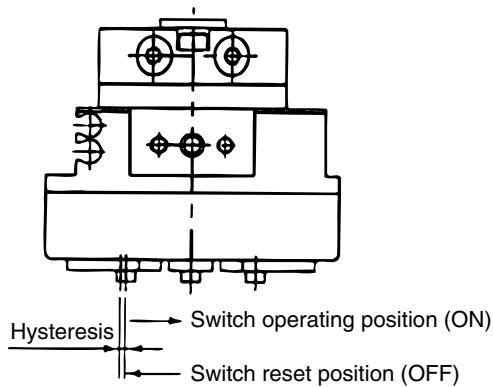
Type	Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
Solid state switch	2-wire D-M9B(V)	24 VDC (10 to 28 VDC)	5 to 30 mA	Yes	24 VDC relay, PLC
	3-wire D-M9N(V)	28 VDC or less	50 mA or less	Yes	

Refer to page 235 for a list of applicable auto switches.

PLC: Programmable Logic Controller

Auto switch hysteresis

¹¹⁻²²⁻**MDHR3**



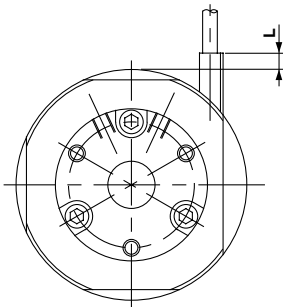
Please refer to the table as a guide when setting auto switch positions.

Model	Hysteresis (Max. value) (mm)
¹¹⁻ ²²⁻ MDHR3-10	0.3
¹¹⁻ ²²⁻ MDHR3-15	0.5

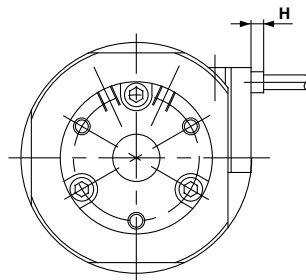
Protrusion of auto switch from edge of body

- The maximum protrusion of auto switch (when fingers are fully open) from the edge of the body is shown in the table below. Use the table as a guideline for mounting.

¹¹⁻²²⁻**MDHR3-10**



When auto switch D-M9□ is used

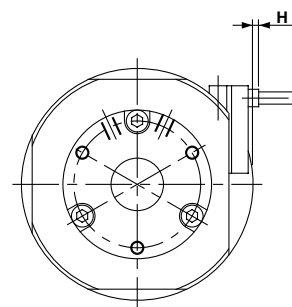


When auto switch D-M9□V is used

Max. protrusion of auto switch from edge of body: L,H (mm)

Auto switch model	D-M9□	D-M9□V
L	—	—
H	—	2.3

¹¹⁻²²⁻**MDHR3-15**



When auto switch D-M9□V is used

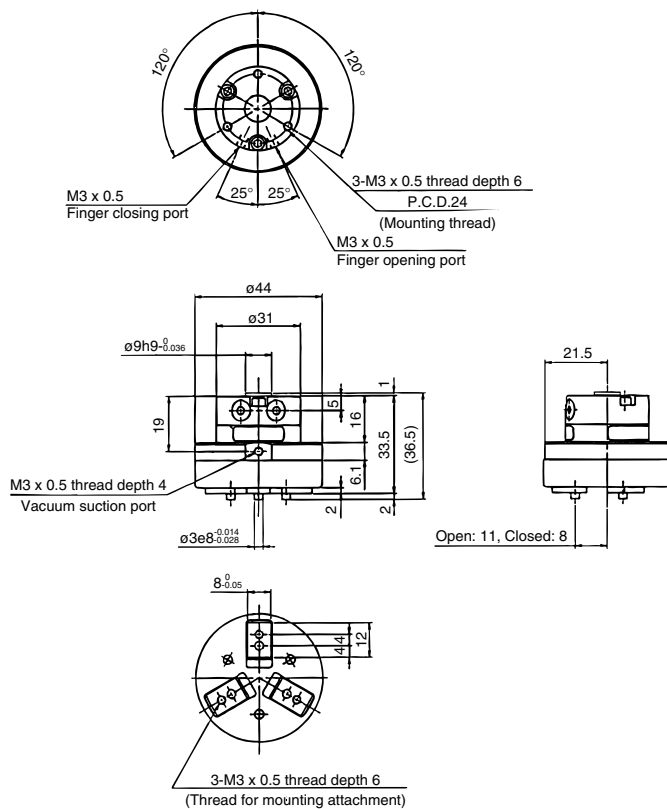
Max. protrusion of auto switch from edge of body: H (mm)

Auto switch model	D-M9□V
H	1.3

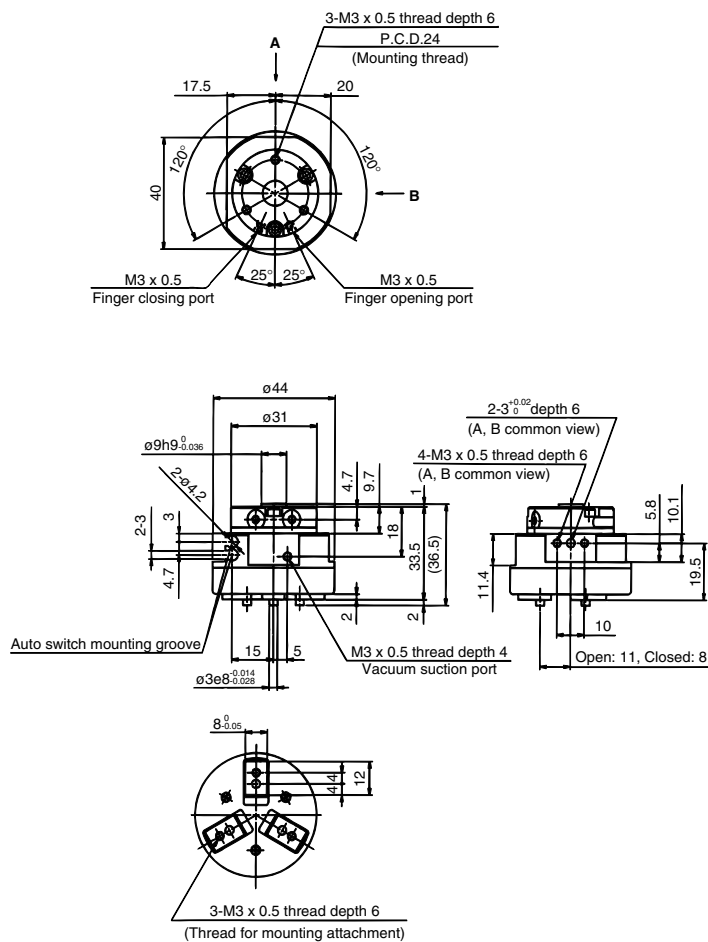
- The auto switch will not protrude in the case of D-M9□.

Rotary actuated air gripper ¹¹⁻~~22-~~ **MHR3**

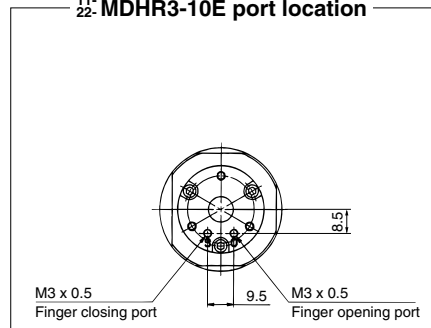
Without auto switch: ¹¹⁻~~22-~~ **MHR3-10R**



With auto switch: ¹¹⁻~~22-~~ **MDHR3-10R**



¹¹⁻~~22-~~ MDHR3-10E port location



Series 11-22-MHL2

Parallel style wide opening air gripper
 ø10, ø16, ø20, ø25, ø32, ø40

How to Order



• **Clean series**
 11 Vacuum suction type

11—MHL 2—16 D 1— Y59A

22—MHL 2—16 D 1— Y59A

• **Wide opening**

• **Number of fingers**
 2 2 fingers

• **Bore size**

10	10mm
16	16mm
20	20mm
25	25mm
32	32mm
40	40mm

• **Copper, fluorine and silicon-free + Low particle generation**
 22 Vacuum suction type

• **Action**
 D Double acting

• **Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.

• **Auto switch**
 Y59A
 Y59B

• **Thread type**

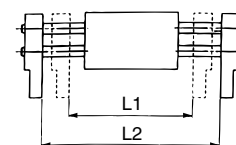
Nil	M	ø10, ø16, ø20, ø25
	Rc	ø32, ø40
TN	NPT	ø32, ø40
TG	G	ø32, ø40

• **Opening/Closing stroke (mm)**

Symbol	Bore size					
	ø10	ø16	ø20	ø25	ø32	ø40
Nil	20	30	40	50	70	100
1	40	60	80	100	120	160
2	60	80	100	120	160	200

Model / Stroke

Model	Bore size (mm)	Maximum operating frequency (c.p.m)	Opening / Closing stroke (mm) (L2-L1)	Width at closing (mm) (L1)	Width at opening (mm) (L2)	Weight (g)
11-22-MHL2-10D	10	60	20	72	92	340
11-22-MHL2-10D1		40	40	94	134	405
11-22-MHL2-10D2			60	112	172	485
11-22-MHL2-16D	16	60	30	84	114	660
11-22-MHL2-16D1		40	60	126	186	870
11-22-MHL2-16D2			80	146	226	1010
11-22-MHL2-20D	20	60	40	98	138	1175
11-22-MHL2-20D1		40	80	158	238	1645
11-22-MHL2-20D2			100	178	278	1840
11-22-MHL2-25D	25	60	50	116	166	1850
11-22-MHL2-25D1		40	100	198	298	2720
11-22-MHL2-25D2			120	216	336	2935
11-22-MHL2-32D	32	30	70	150	220	3070
11-22-MHL2-32D1		20	120	198	318	3985
11-22-MHL2-32D2			160	242	402	4820
11-22-MHL2-40D	40	30	100	188	288	5620
11-22-MHL2-40D1		20	160	246	406	7180
11-22-MHL2-40D2			200	286	486	8255



Note) The open and close time spans represent the valve when the exterior of the workpiece is being held.

Specifications

Bore size (mm)	10	16	20	25	32	40
Fluid	Air					
Action	Double acting					
Operating pressure (MPa)	0.15 to 0.6		0.1 to 0.6			
Ambient and fluid temperature	−10 to 60°C					
Repeatability	±0.1					
Lubrication	Not required					
Effective gripping force (N) at 0.5 MPa (Note)	14	45	74	131	228	396
Grease	11-: Fluorine grease 22-: Lithium soap based grease					
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	11-/22-: Grade 2					

Note) Gripping point = Bore size 10, 16, 20, 25: 40 mm, Bore size 32, 40: 80 mm

* Refer to Best Pneumatics catalog for details of gripping force at each gripping point.

Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate ℓ/min (ANR)
10/16/20/25/32/40	25

Auto switch specifications (Refer to Best Pneumatics catalog for further information on auto switches.)

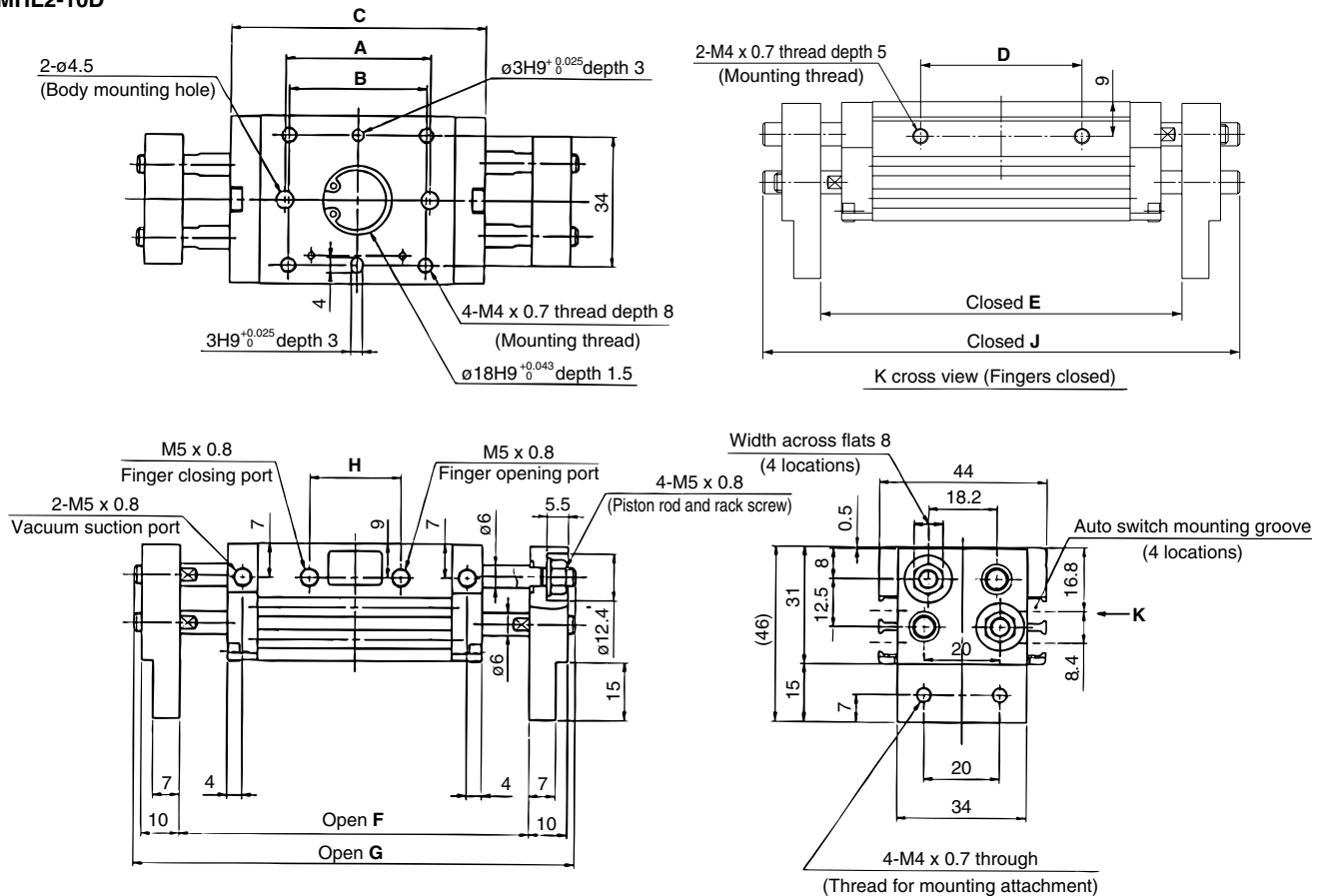
Type	Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
Solid state switch	2-wire D-Y59B	24 VDC (10 to 28 VDC)	5 to 40 mA	Yes	24 VDC relay, PLC
	3-wire D-Y59A	28 VDC or less	40 mA or less	Yes	24 VDC relay, PLC

Refer to page 235 for a list of applicable auto switches.

PLC: Programmable Logic Controller

Dimensions

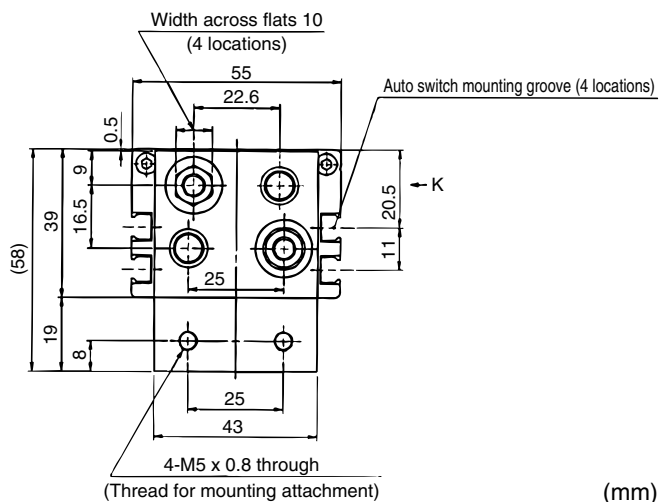
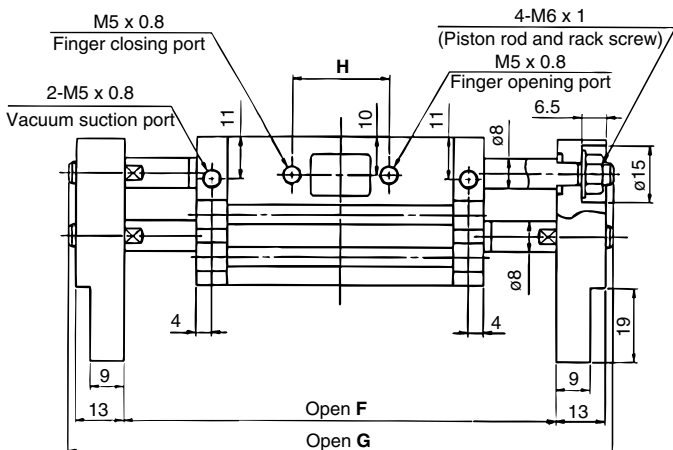
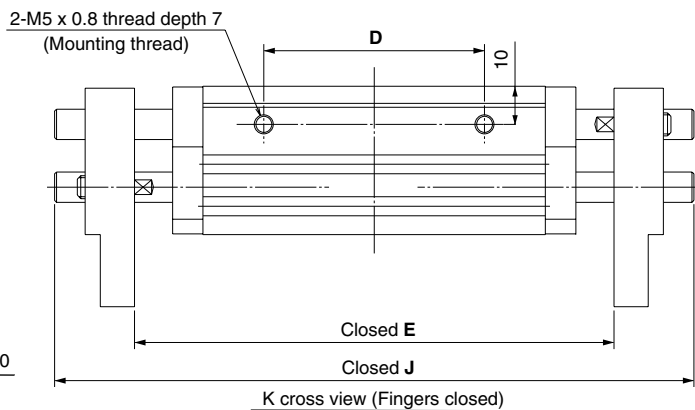
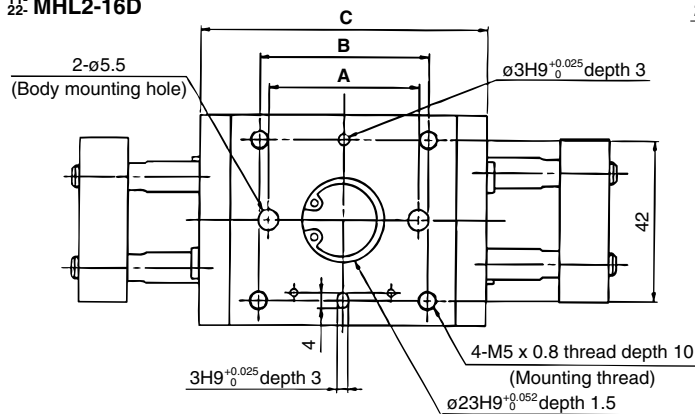
¹¹⁻²²⁻**MHL2-10D**



	A	B	C	D	E	F	G	H	J
¹¹⁻²²⁻ MHL2-10D	38	36	67	26	72	92	116	24	96
¹¹⁻²²⁻ MHL2-10D1	54	52	83	42	94	134	158	39	124
¹¹⁻²²⁻ MHL2-10D2	72	70	101	60	112	172	196	57	162

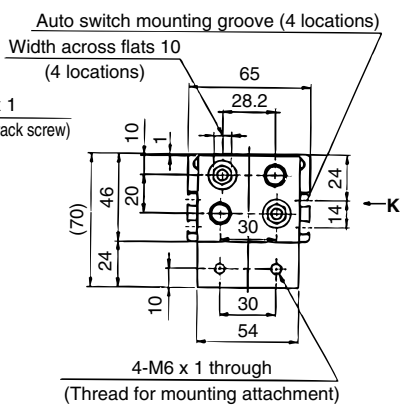
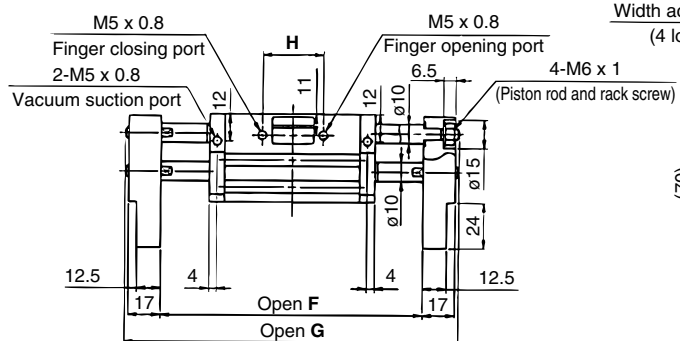
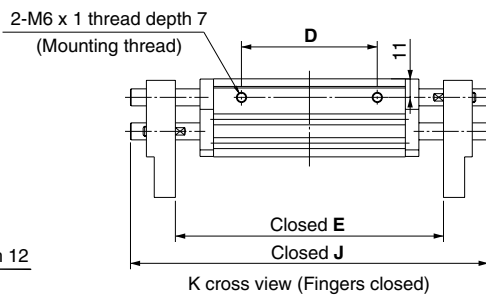
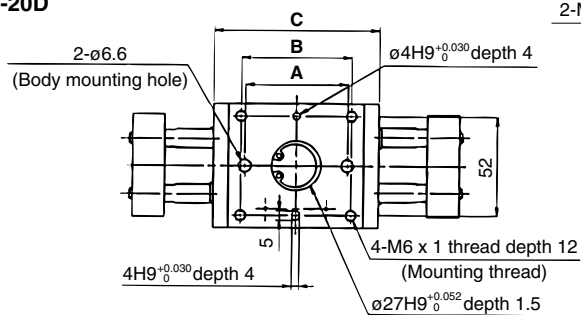
Dimensions

**11-
22- MHL2-16D**



	A	B	C	D	E	F	G	H	J
¹¹⁻²²⁻ MHL2-16D	40	45	76	28	84	114	144	26	114
¹¹⁻²²⁻ MHL2-16D1	70	75	106	58	126	186	216	50	168
¹¹⁻²²⁻ MHL2-16D2	90	95	126	78	146	226	256	70	208

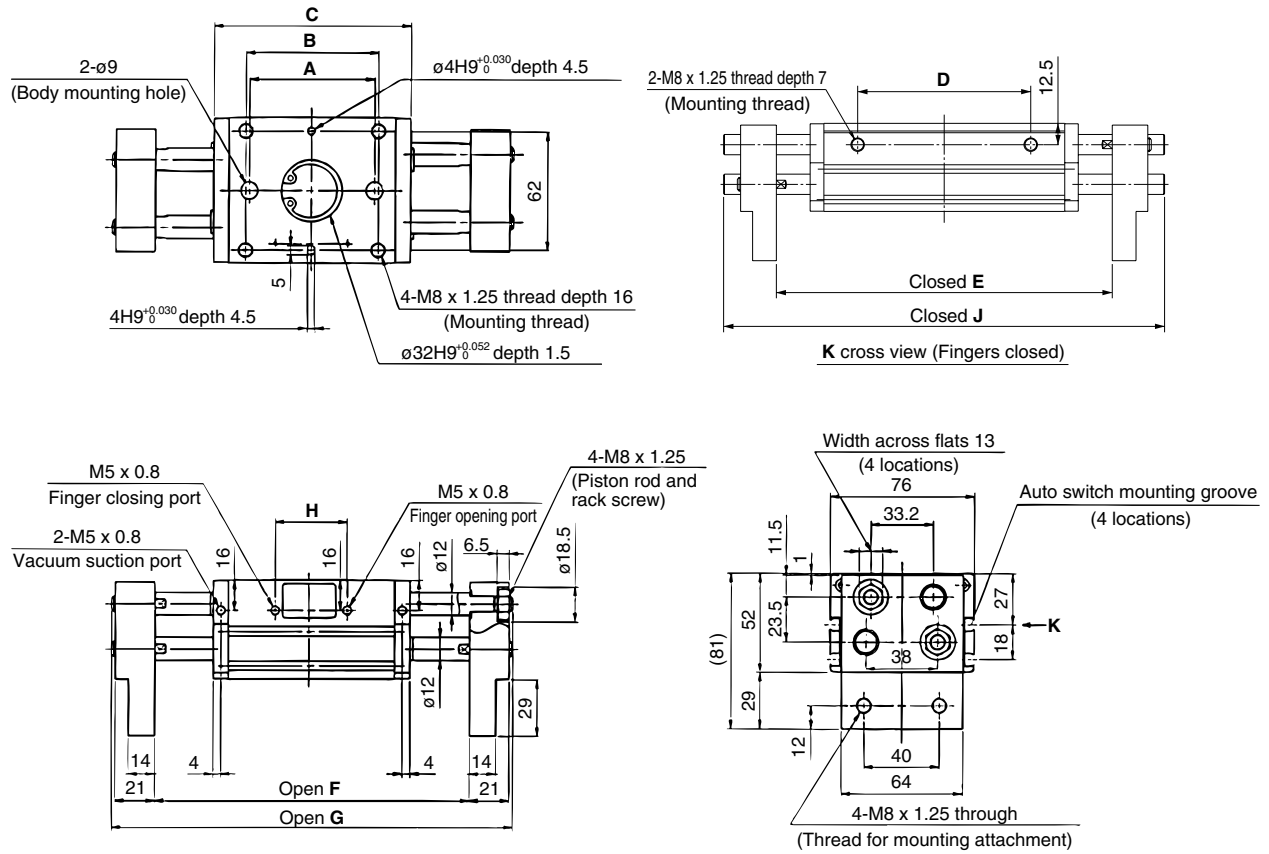
11- MHL2-20D
22-



	A	B	C	D	E	F	G	H	J
¹¹⁻²²⁻ MHL2-20D	54	58	87	38	98	138	176	32	136
¹¹⁻²²⁻ MHL2-20D1	96	100	129	80	158	238	276	68	211
¹¹⁻²²⁻ MHL2-20D2	116	120	149	100	178	278	316	88	251

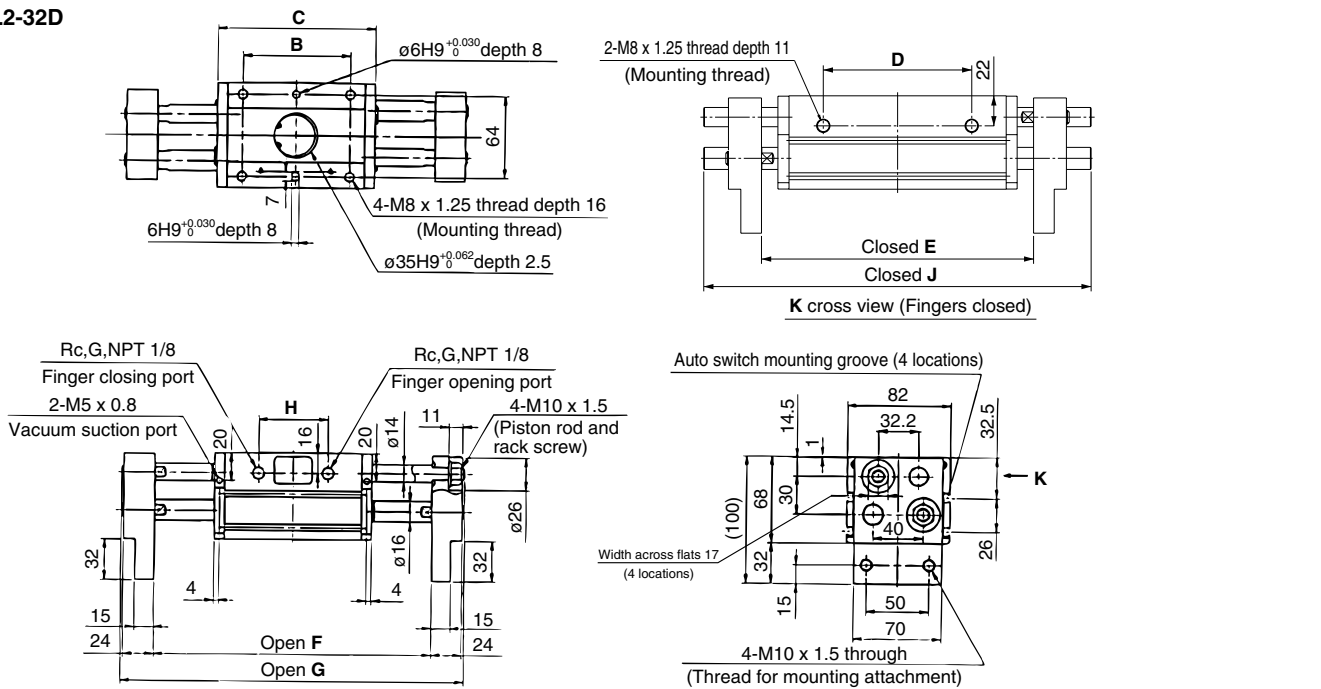
Dimensions

¹¹⁻²²⁻MHL2-25D



	A	B	C	D	E	F	G	H	J
¹¹⁻²²⁻ MHL2-25D	66	70	104	48	116	166	212	38	162
¹¹⁻²²⁻ MHL2-25D1	120	124	158	102	198	298	344	86	260
¹¹⁻²²⁻ MHL2-25D2	138	142	176	120	216	336	382	104	298

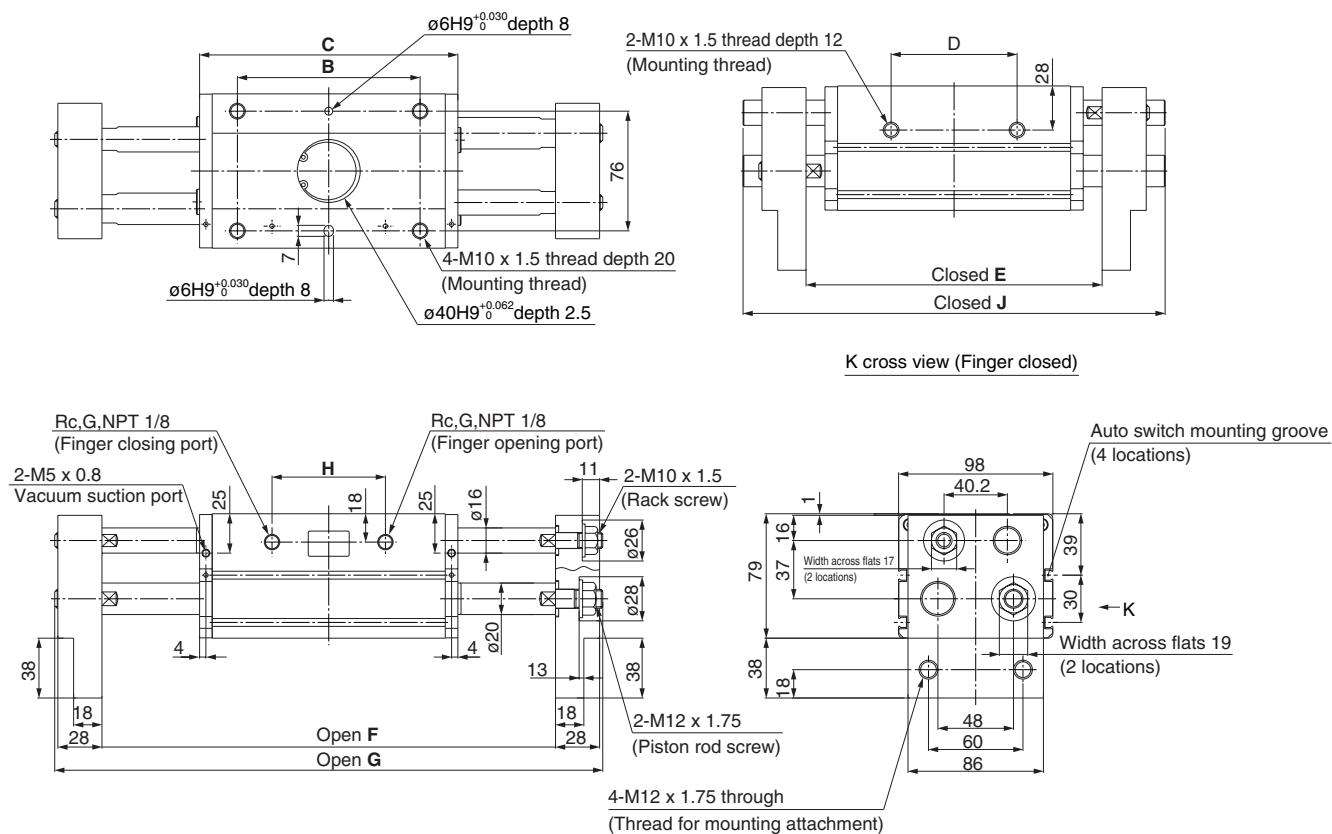
¹¹⁻²²⁻MHL2-32D



	B	C	D	E	F	G	H	J
¹¹⁻²²⁻ MHL2-32D	86	126	60	150	220	272	56	202
¹¹⁻²²⁻ MHL2-32D1	134	174	108	198	318	370	104	298
¹¹⁻²²⁻ MHL2-32D2	178	218	152	242	402	454	148	382

Dimensions

**11-
22- MHL2-40D**



(mm)

	B	C	D	E	F	G	H	J
¹¹⁻²²⁻ MHL2-40D	116	164	80	188	288	348	72	268
¹¹⁻²²⁻ MHL2-40D1	174	222	138	246	406	466	130	386
¹¹⁻²²⁻ MHL2-40D2	214	262	178	286	486	546	170	466



Air grippers

Precautions 1

Be sure to read before handling. Refer to main text for more detailed precautions on every series.

Caution on design

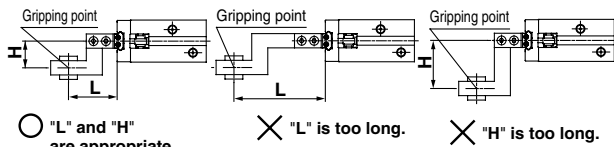
Warning

1. When moving workpieces pose a danger to personnel, or there is a danger of fingers being caught in a gripper, etc., implement safety measures such as mounting of protective covers.
2. If circuit pressure drops due to a power failure or trouble with the air supply, etc., there is a danger of workpieces dropping because of reduced gripping force. Implement drop prevention measures to avoid human injury and equipment damage.

Selection

Warning

1. Keep the gripping point within the specified range of the gripping distance.
When the gripping point distance becomes large, the finger attachment applies an excessively large load to the finger sliding section, causing excessive play of the fingers and possibly leading to premature failure. Refer to the graph of the specified range of the gripping distance for each series.



2. Attachment should be designed as light and short as possible.
 - 1) Long and heavy attachment increases the inertia force to open or close the fingers. It may cause unsteady movement of fingers and have an adverse effect on life.
 - 2) Even if gripping point remains within the limited range, make the attachment as light and short as possible.
 - 3) Select the larger size gripper or use two or more grippers for one piece at once for handling long and large workpiece.
3. Provide the runoff space in the attachment when using with a small or thin workpiece.
If the runoff space is not provided with the finger part, gripping becomes unsteady, and it may lead to gripping failure or slippage.
4. Select the model whose gripping force is sufficient against workpiece weight.
Incorrect selection may lead to dropping of workpiece, etc. Refer to the model selection criteria for each series pertaining to effective gripping force and workpiece weight.
5. Do not use in applications, where excessive external force or impact force may be applied to gripper.
It may cause malfunction. Please consult with SMC with regard to any other applications.
6. Select a model having a sufficient finger opening width for the workpiece.

<In the case of insufficient width>

 - 1) Gripping becomes unsteady due to variations in opening / closing width or workpiece diameter.
 - 2) When using the auto switch, the detection may not be reliable.
Refer to "Auto Switch Hysteresis" and set the stroke including the hysteresis length for reliable switch function.

Mounting

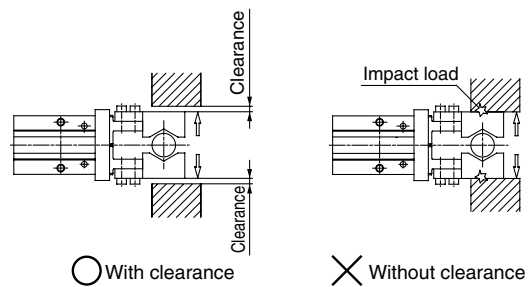
Warning

1. Do not scratch or dent the air gripper by dropping or bumping it when mounting.
Slight deformation can cause inaccuracy or malfunction.
2. Tighten the screw within the specified torque range when mounting the attachment.
Tightening with larger torque than the specified range may cause malfunction, while the tightening with smaller torque may allow movement of gripping position and dropping of work.

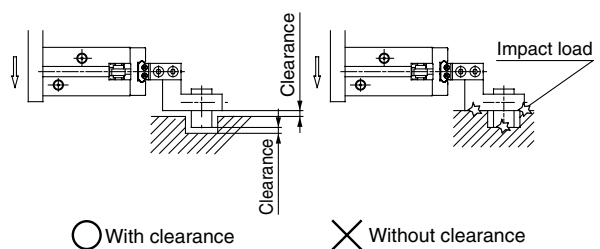
Caution

1. Avoid twisting the fingers when mounting the attachment.
Any damage to fingers may cause malfunction and reduce accuracy.
2. Avoid external force to fingers.
Fingers may be damaged by continual lateral or impact loads. Provide clearance to prevent the workpiece or the attachment from striking against any object at the stroke end.

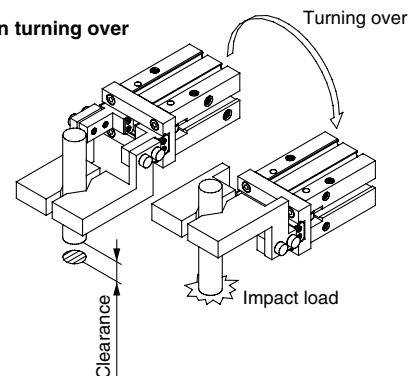
1) Stroke end when fingers are open



2) Stroke end when gripper is moving



3) When turning over





Air grippers

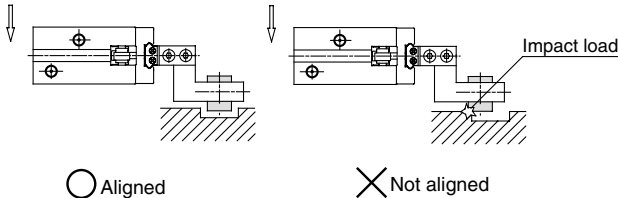
Precautions 2

Be sure to read before handling. Refer to main text for more detailed precautions on every series.

Mounting

3. Adjust the gripping point, so that excessive force will not be applied on fingers when inserting the workpiece.

Confirm that the gripper can operate without receiving any shock by testing with manual operation or low-speed operation.



4. Control the opening / closing speed with the speed controller to avoid excessive high-speed operation.

If the finger opening / closing speed is greater than necessary, impact forces acting on the fingers and other parts will increase. This can cause a loss of repeatability when gripping workpieces and have an adverse effect on the life of the unit.

Adjustment of finger opening / closing speed

Speed adjustment example

Double acting	Connect 2 pieces of speed controllers in meter-out state.
---------------	---

Maintenance

Warning

1. Do not allow people to enter or place objects in the carrying path of the air gripper.

This can cause an injury or accident, etc.

2. Do not put hands, etc. in between the air gripper fingers or attachments.

This can cause an injury or accident, etc.

3. When removing the air gripper, first confirm that no workpieces are being held and then release the compressed air before removing the air gripper.

If a workpiece is still being held, there is a danger of it being dropped.

Air grippers

Auto switch guide

Type	Auto switch mounting	Electrical entry	Auto switch model	Applicable air grippers			
				Size			
Solid state switch	Direct	Grommet	D-F8N·F8P·F8B	11-/22-MHZ2 10 to 25	11-/22-MDHR2 10 to 30	11-/22-MDHR3 10·15	11-/22-MHL2 10 to 40
			D-M9N·M9P·M9B D-M9NV·M9PV·M9BV	●	●	●	
			D-Y59A·Y7P·Y59B D-Y69A·Y7PV·Y69B				●
	Direct	Grommet	D-Y7NW·7PW·7BW D-Y7NWV·7PWV·7BWV				●
			D-F9NW·F9PW·F9BW D-F9NWV·F9PWV·F9BWV	●			
	Direct	Grommet	D-Y7BAL				●

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

For Clean Room Directional Control Valve

Description	Series	Page
5 Port Solenoid Valve	10-SV1000/2000/3000/4000	P.238
5 Port Solenoid Valve	10-SZ3000	P.325
5 Port Solenoid Valve	10-SY3000/5000/7000/9000	P.359
5 Port Solenoid Valve	10-SYJ3000/5000/7000	P.492
5 Port Solenoid Valve	10-SQ1000/2000	P.565
5 Port Solenoid Valve	10-21 VQ1000/2000	P.583
4 Port Solenoid Valve	10-VQD1000	P.633
3 Port Solenoid Valve	10-V100	P.638
3 Port Solenoid Valve	10-SY100	P.648
3 Port Solenoid Valve	10-SYJ300/500/700	P.657
3 Port Solenoid Valve	10-VQ100	P.705
Precautions		P.714

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

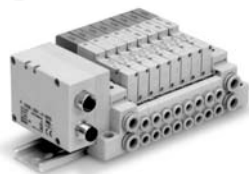
Air preparation equipment

Pressure switch

Clean gas filter

Series 10-SV1000/2000/3000/4000 5 port solenoid valve

Serial wiring



Decentralized serial wiring

P.241

IP67 compliant

Applicable series	Cassette base manifold
	10-SV1000/10-SV2000
	Tie-rod base manifold
	10-SV1000/10-SV2000/10-SV3000/10-SV4000
- Number of output points: 16 points - EX500 gateway communication specifications - Remote I/O, DeviceNet, PROFIBUS-DP	



Serial wiring with input/output unit

P.259

IP67 compliant

Applicable series	Tie-rod base manifold
	10-SV1000/10-SV2000/10-SV3000
Number of input/output points: Each 32 points	

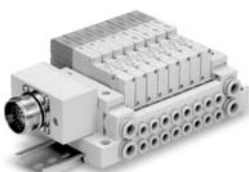


Dedicated output serial wiring

P.267

Applicable series	Cassette base manifold
	10-SV1000/10-SV2000
	Tie-rod base manifold
	10-SV1000/10-SV2000/10-SV3000/10-SV4000
Number of output points: 16 points	

Parallel wiring



For circular connector

P.279

IP67 compliant

Applicable series	Cassette base manifold
	10-SV1000/10-SV2000
	Tie-rod base manifold
	10-SV1000/10-SV2000/10-SV3000/10-SV4000
Number of connectors: 26 pins	



D-sub connector

P.289

Applicable series	Cassette base manifold
	10-SV1000/10-SV2000
	Tie-rod base manifold
	10-SV1000/10-SV2000/10-SV3000/10-SV4000
- Number of connectors: 25 pins - MIL-C-24308 - Conforming to JIS-X-5101	



Flat ribbon cable connector

P.299

Applicable series	Cassette base manifold
	10-SV1000/10-SV2000
	Tie-rod base manifold
	10-SV1000/10-SV2000/10-SV3000/10-SV4000
- Number of connectors: 26, 20, 10 pins - With strain relief - Conforming to MIL-C-83503	

Valve manifold specifications

P.309

Manifold option



Single valve / Sub-plate [IP67 compliant]

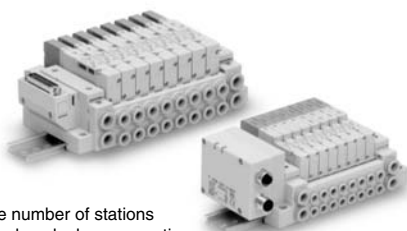
P.314

IP67 compliant	Applicable series	10-SV1000/10-SV2000/10-SV3000/10-SV4000
		With waterproof M12 connector

Series 10-SV

Valve manifold common specifications

Cassette base manifold



· Changing the number of stations can be easily done by lever operation.

Manifold specifications

Applicable series		10-SV1000	10-SV2000
Manifold type		Stacking type cassette base manifold	
1 (P: SUP) / 3, 5 (E: EXH) type		Common SUP, EXH	
Valve stations (maximum)		18 stations	20 stations
Max. number of solenoids		18 points	26 points
Port size	1(P), 3/5(E) port	C8, N9	C10, N11
	4(A), 2(B) port	C3, C4, C6 N1, N3, N7	C4, C6, C8 N3, N7, N9

Flow characteristics

Model	Port size		Flow characteristics					
	1,5,3 (P,EA,EB)	4,2 (A,B)	1→4/2(P→A/B)			4/2→3/5(A/B→E)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5V1-16	C8	C6	0.89	0.22	0.22	0.98	0.21	0.23
10-SS5V2-16	C10	C8	2.3	0.28	0.50	2.7	0.18	0.56

Note) The value is for manifold base with 5 stations and individually operated 2 position type.

Tie-rod base manifold



· 34 pins connector allows up to 16 stations with double solenoids.

Manifold specifications

Applicable series		10-SV1000	10-SV2000	10-SV3000	10-SV4000
Manifold type		Tie-rod base manifold			
1 (P: SUP) / 3, 5 (E: EXH) type		Common SUP, EXH			
Valve stations (maximum)		20 stations			
Max. number of solenoids		32 points			
Port size	1(P), 3/5(E) port	C8, N9	C10, N11	C12, N11	C12, N11,03
	4(A), 2(B) port	C3, C4, C6 N1, N3, N7	C4, C6, C8 N3, N7, N9	C6, C8, C10 N7, N9, N11	C8, C10, C12 N9, N11, 02, 03

Flow characteristics

Model	Port size		Flow characteristics					
	1,5,3 (P,EA,EB)	4,2 (A,B)	1→4/2(P→A/B)			4/2→3/5(A/B→E)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5V1-10	C8	C6	0.98	0.26	0.24	1.1	0.35	0.28
10-SS5V2-10	C10	C8	2.1	0.20	0.46	2.4	0.18	0.48
10-SS5V3-10	C12	C10	4.2	0.22	0.91	4.3	0.21	0.93
10-SS5V4-10	C12	C12	6.2	0.19	1.3	7.0	0.18	1.6

Note) The value is for manifold base with 5 stations and individually operated 2 position type.

Enclosure of manifold variations (Common for cassette base and tie-rod base)

Series	Enclosure (Based on IEC529)
Series EX500 Decentralized serial wiring	IP67 *
Series EX250 Serial wiring with input/output unit	IP67
Series EX120 Dedicated output serial wiring	Dusttight (IP40)
For circular connector	IP67
D-sub connector	Dusttight (IP40)
Flat ribbon cable	Dusttight (IP40)

* Enclosure of a gateway unit and input manifold is IP65.

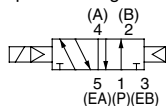
Series 10-SV solenoid valve specifications



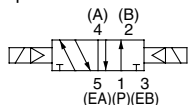
Made to order specifications
(For details, refer to page 321.)

JIS symbol

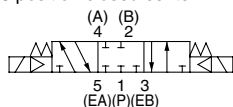
2 position single solenoid



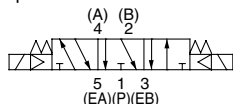
2 position double solenoid



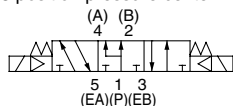
3 position closed center



3 position exhaust center

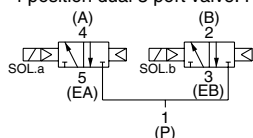


3 position pressure center

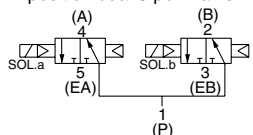


Series 10-SV1000

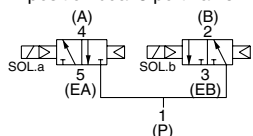
4 position dual 3 port valve: N.C./N.C.



4 position dual 3 port valve: N.O./N.O.

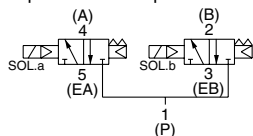


4 position dual 3 port valve: N.C./N.O.

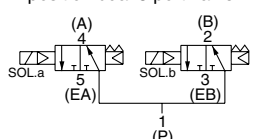


Series 10-SV2000

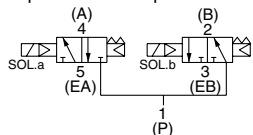
4 position dual 3 port valve: N.C./N.C.



4 position dual 3 port valve: N.O./N.O.



4 position dual 3 port valve: N.C./N.O.



Fluid		Air
Internal pilot Operating pressure range (MPa)	2 position single	0.15 to 0.7
	4 position dual 3 port valve	
	2 position double	
External pilot Operating pressure range (MPa)	2 position double	0.1 to 0.7
	3 position	0.2 to 0.7
	Operating pressure range	–100 kPa to 0.7
Ambient and fluid temperature (°C)	2 position single, double	–10 to 50 (No freezing. Refer to page 714.)
	4 position dual 3 port valve	
	3 position	
Max. operating frequency (Hz)	2 position single, double	5
	4 position dual 3 port valve	
	3 position	
Manual override		Non-locking push type
Pilot exhaust method		Push-turn locking slotted type
Pilot exhaust method	Internal pilot	Common exhaust type for main and pilot valve
	External pilot	Pilot valve individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact / vibration resistance (m/s ²)		150/30
Enclosure		IP67 (Based on IEC60529)
Coil rated voltage		24 VDC, 12 VDC
Allowable voltage fluctuation		±10% of rated voltage
Power consumption		0.6 (With indicator light: 0.65)
Surge voltage suppressor		Zener diode
Indicator light		LED



Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Response time

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)			
	10-SV1000	10-SV2000	10-SV3000	10-SV4000
2 position single	11 or less	25 or less	28 or less	40 or less
2 position double	10 or less	17 or less	26 or less	40 or less
3 position	18 or less	29 or less	32 or less	82 or less
4 position dual 3 port valve	15 or less	33 or less	—	—



Note) Based on dynamic performance test, JIS B 8375-1981 (Coil temperature: 20°C, at rated voltage)

Weight

Series	Type of actuation	Weight (g)
10-SV1000	Single solenoid	66
	Double solenoid	71
	3 position	73
	4 position dual 3 port	71
10-SV2000	Single solenoid	74
	Double solenoid	78
	3 position	83
	4 position dual 3 port	78
10-SV3000	Single solenoid	99
	Double solenoid	102
	3 position	110
	4 position dual 3 port	110
10-SV4000	Single solenoid	186
	Double solenoid	190
	3 position	211
	4 position dual 3 port	211

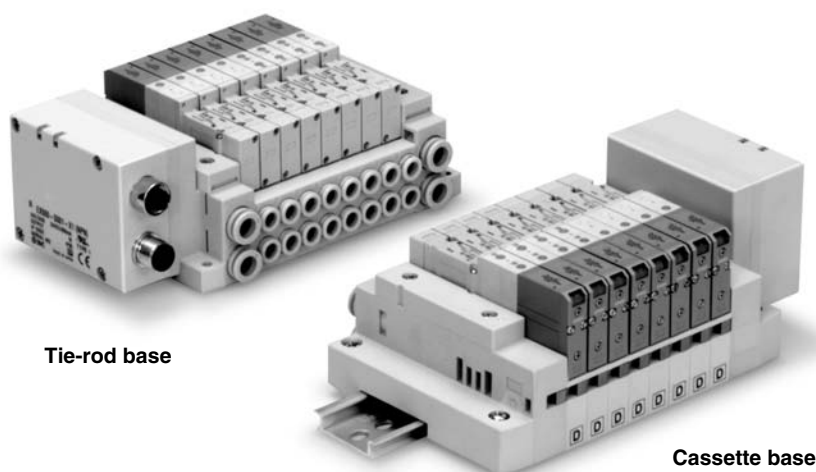


Note) Weight of solenoid valve only.

Decentralized serial wiring

Series *EX500*

IP67 compliant



Applicable series	Cassette base manifold 10-SV1000/10-SV2000
	Tie-rod base manifold 10-SV1000/10-SV2000/10-SV3000/10-SV4000
	· Number of output points: 16 points · EX500 gateway unit communication specifications Remote I/O, DeviceNet, PROFIBUS-DP, CC-Link

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

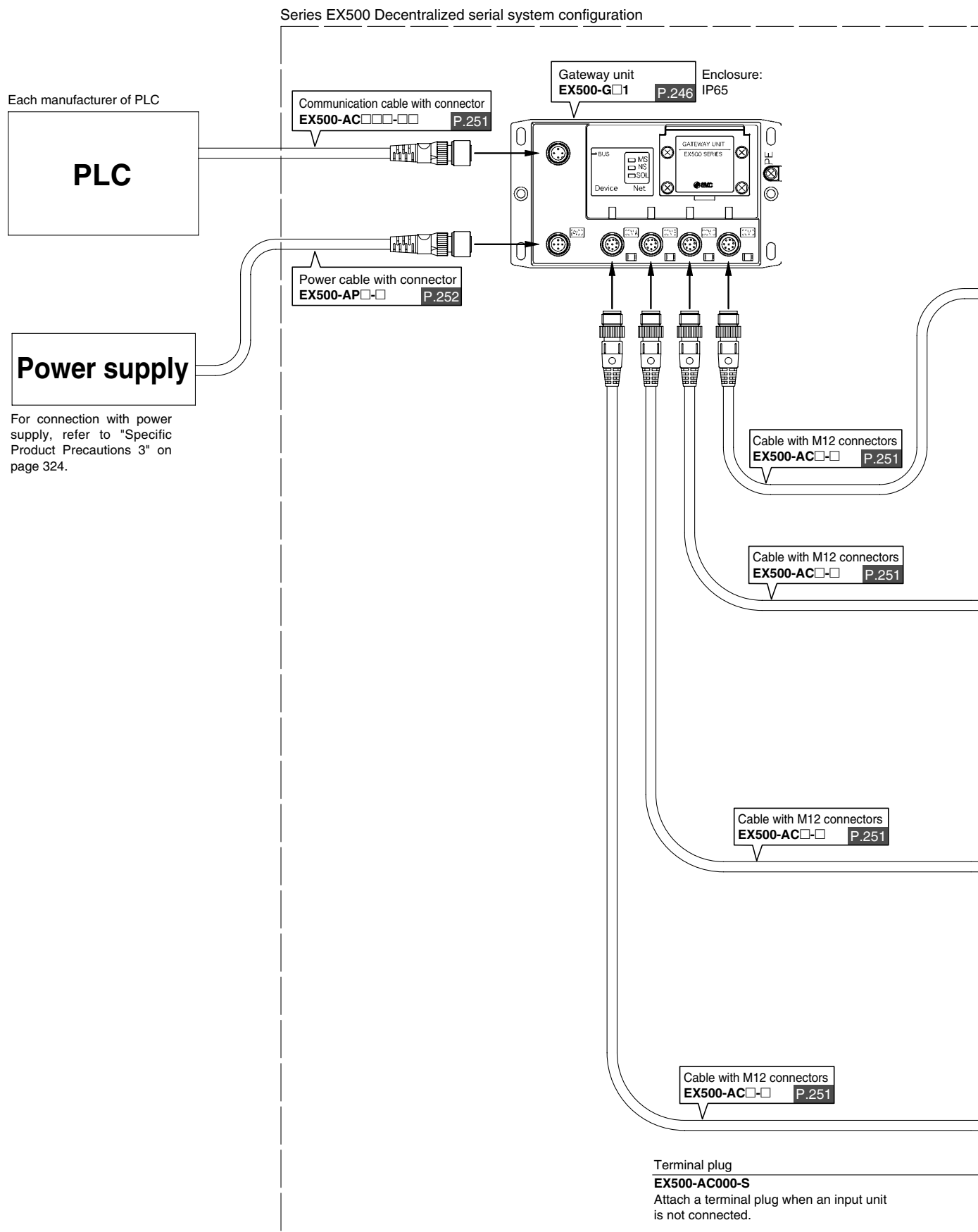
Pressure switch

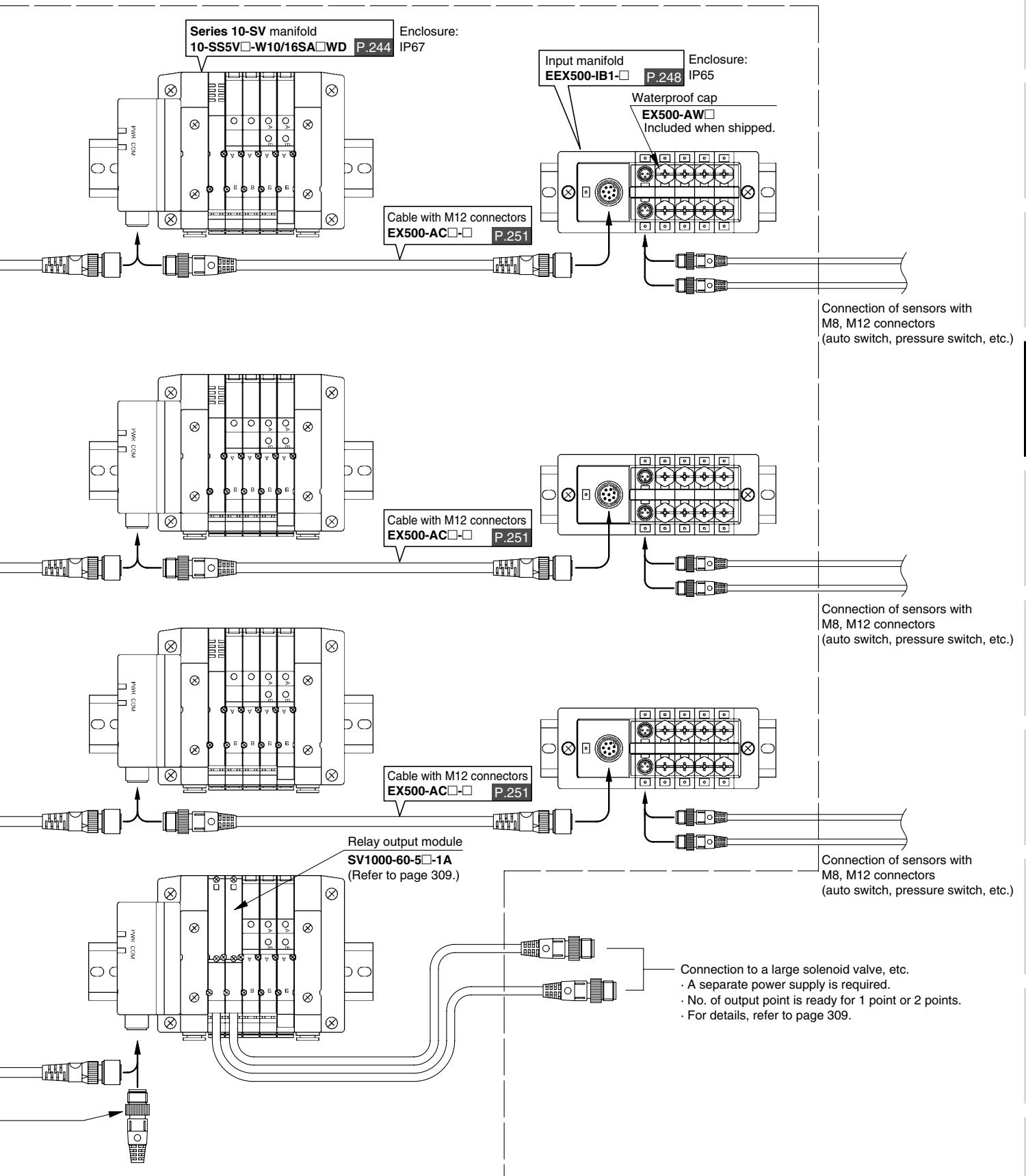
Clean gas filter

Series EX500 Decentralized serial system configuration

A configuration of series EX500 serial system with series 10-SV is shown below.

- One gateway unit can be configured with manifold valves (outputs) and input unit manifold (inputs) for up to 16 input/output points per branch, with a maximum of four branches. (Maximum no. of outputs 64 points and no. of inputs 64 points)





Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-SV

EX500 Decentralized serial wiring

How to Order

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Tie-rod base
10 - SS5V 1 - W 10S A1W D - 05 U - - -

Cassette base
10 - SS5V 1 - W 16S A1W D - 05 U - - -

Clean series

1	10-SV1000
2	10-SV2000

Enclosure
IP67 specifications

SI unit

A1W	For Remote I/O
A2W	For DeviceNet/ For ProfiBus-DP CC-Link
0	Without SI unit

Valve stations

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
⋮	⋮	
08	8 stations	
02	2 stations	Specified layout ^{Note 2)} (up to 16 solenoids possible)
⋮	⋮	
16	16 stations	

Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used on all manifold stations. Use of a single solenoid will result in an unused control signal. If this is not desired, order with a specified layout.

Note 2) Specified layout: Indicate wiring specifications on the manifold specification sheet. (Note that double, 3 position and 4 position valves cannot be used where single solenoid wiring has been specified.)

P, E port location

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 16 stations)

SUP/EXH block assembly specifications

Nil	Internal pilot
R	External pilot

Mounting

Nil	Direct mounting
D	DIN rail mounting (with DIN rail)
D0 ^{Note)}	DIN rail mounting (without DIN rail)
D3	For 3 stations
⋮	⋮
D16	For 16 stations

^{Note)} In the case of D0, only DIN rail fittings are attached.

DIN rail length specified

Nil	Standard length
3	For 3 stations
⋮	⋮
16	For 16 stations

A, B port size (metric)

Symbol	A, B port	P, E port	Applicable series
C3	One-touch fitting for ø3.2	One-touch fitting for ø8	10-SV1000
C4	One-touch fitting for ø4		
C6	One-touch fitting for ø6		
C4	One-touch fitting for ø4	One-touch fitting for ø10	10-SV2000
C6	One-touch fitting for ø6		
C8	One-touch fitting for ø8		
C6	One-touch fitting for ø6	One-touch fitting for ø12	10-SV3000
C8	One-touch fitting for ø8		
C10	One-touch fitting for ø10		
C8	One-touch fitting for ø8	One-touch fitting for ø12	10-SV4000
C10	One-touch fitting for ø10		
C12	One-touch fitting for ø12		
02	Rc 1/4	Rc3/8	
03	Rc 3/8		
02F	G 1/4		
03F	G 3/8	G3/8	
M	A, B ports mixed		

A, B port size (inch)

Symbol	A, B port	P, E port	Applicable series
N1	One-touch fitting for ø1/8"	One-touch fitting for ø5/16"	10-SV1000
N3	One-touch fitting for ø5/32"		
N7	One-touch fitting for ø1/4"		
N3	One-touch fitting for ø5/32"	One-touch fitting for ø3/8"	10-SV2000
N7	One-touch fitting for ø1/4"		
N9	One-touch fitting for ø5/16"		
N7	One-touch fitting for ø1/4"	One-touch fitting for ø3/8"	10-SV3000
N9	One-touch fitting for ø5/16"		
N11	One-touch fitting for ø3/8"		
N9	One-touch fitting for ø5/16"	One-touch fitting for ø3/8"	10-SV4000
N11	One-touch fitting for ø3/8"		
02N	NPT 1/4		
03N	NPT 3/8	NPT3/8	
02T	NPTF 1/4		
03T	NPTF 3/8		
M	A, B ports mixed		

* In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

* Port sizes of X, PE port for external pilot specification (R) are ø4 (metric), ø5/32" (inch) for 10-SV1000/2000 and ø6 (metric) and ø1/4" (inch) for 10-SV3000/4000.

How to Order Valve Manifold Assembly

Ordering example (10-SV1000)

Manifold

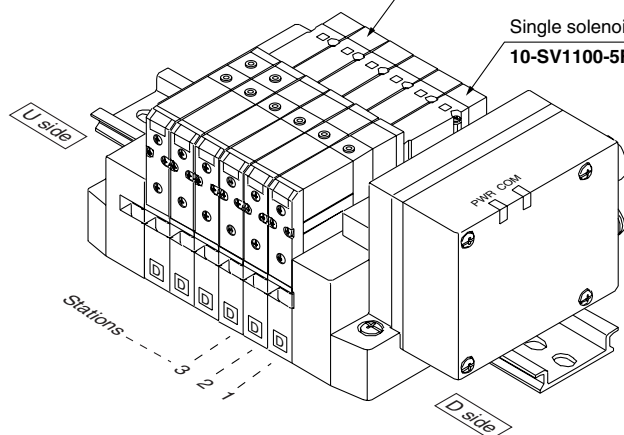
10-SS5V1-W16SA1WD-06B-C6 (1set)

Double solenoid

10-SV1200-5FU (2 sets)

Single solenoid

10-SV1100-5FU (4 sets)



10-SS5V1-W16SA1WD-06B-C6.....1 set (Manifold part no.)

* 10-SV1100-5FU.....4 sets (Single solenoid part no.)

* 10-SV1200-5FU.....2 sets (Double solenoid part no.)

How to Order Solenoid Valves

10 - SV 1 1 0 0 - 5 F

Clean series

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
A	4 position dual 3 port valve: N.C./N.C.
B	4 position dual 3 port valve: N.O./N.O.
C	4 position dual 3 port valve: N.C./N.O.

* 4 position dual 3 port valves are applicable to series 10-SV1000 and 10-SV2000 only.

Pilot type

Nil	Internal pilot
R	External pilot

* External pilot specifications is not available for 4 position dual 3 port valves.

Back pressure check valve

Nil	None
K	Built-in

* Built-in back pressure check valve type is applicable to series 10-SV1000 only.

* Back pressure check valve is not available for 3 position closed, exhaust and pressure center.

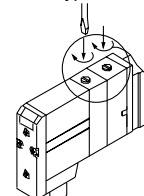
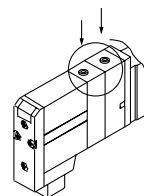


Note) Refer to Specific Product Precautions 2 on page 323.

Manual override

Nil: Non-locking push type

D: Push-turn locking slotted type



Light/surge voltage suppressor

U	With light/surge voltage suppressor
R	With surge voltage suppressor

Rated voltage

5	DC24V
---	-------

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Gateway (GW) unit



Input unit manifold



How to Order

EX500—G**DN1**

• Communication protocol

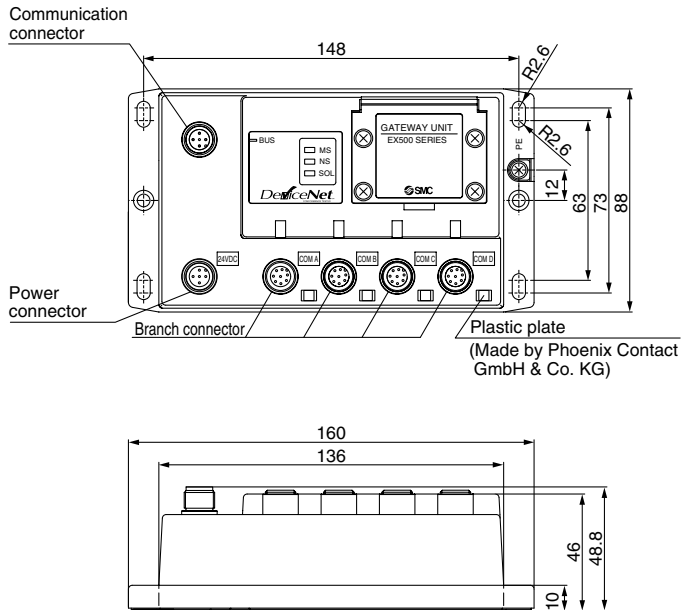
DN1	DeviceNet	AB1-X1	Remote I/O (RIO)
PR1A	PROFIBUS-DP	MJ1	CC-Link

Specifications

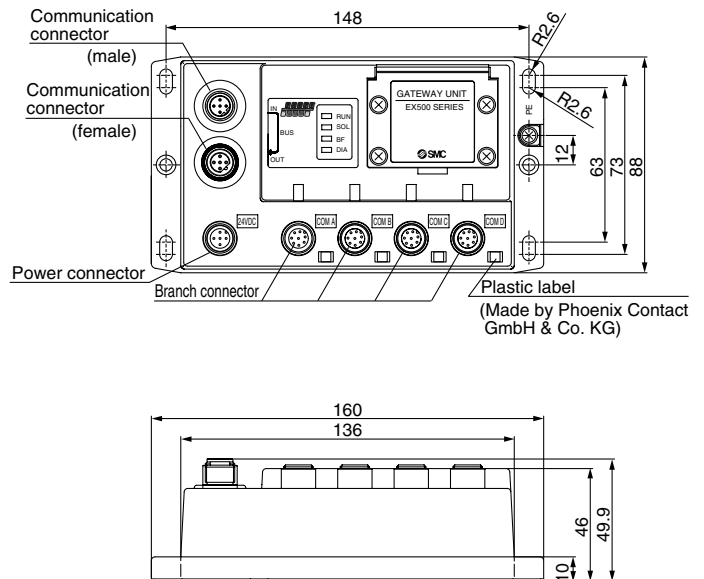
Model	EX500-GAB1-X1	EX500-GDN1	EX500-GPR1A	EX500-GMJ1
Applicable PLC / Communication protocol	Rockwell Automation, Inc. PLC	DeviceNet Release2.0	PROFIBUS-DP (EN50170)	CC-Link Ver.1.10
Communication speed	57.6/115.2/230.4 kbit/sec	125/250/500 kbit/sec	9.6/19.2/45.45/93.75/187.5/500 kbit/sec 1.5/3/6/12 Mbit/sec	156/625 kbit/sec 2.5/5/10 Mbit/sec
Rated voltage	24 VDC			
Power supply voltage range	Input and control unit power supply: 24 VDC±10% Solenoid valve power supply: 24 VDC+10%/–5% (Power drop warning at approx. 20 V)			
	—	Power for DeviceNet 11 to 25 VDC	—	—
Current consumption	200 mA or less (GW unit)			
	—	Power for DeviceNet 50 mA or less	—	—
No. of input/output points	Maximum 64 inputs / 16 outputs			
No. of input/output branches	4 branches (16 inputs / 16 outputs per branch)			
Branch cable	8 core heavy duty cable			
Branch cable length	5 m or less (total extension 10 m or less)			
Communication connector	M12 connector (8 pins, socket)			
Power connector	M12 connector (5 pins, plug)			
Ambient operating temperature / humidity	+5 to +45°C/35 to 85% RH (No condensation)			
Enclosure	IP65			
Applicable standard	UL, CSA, CE			
Weight (g)	470			

Dimensions

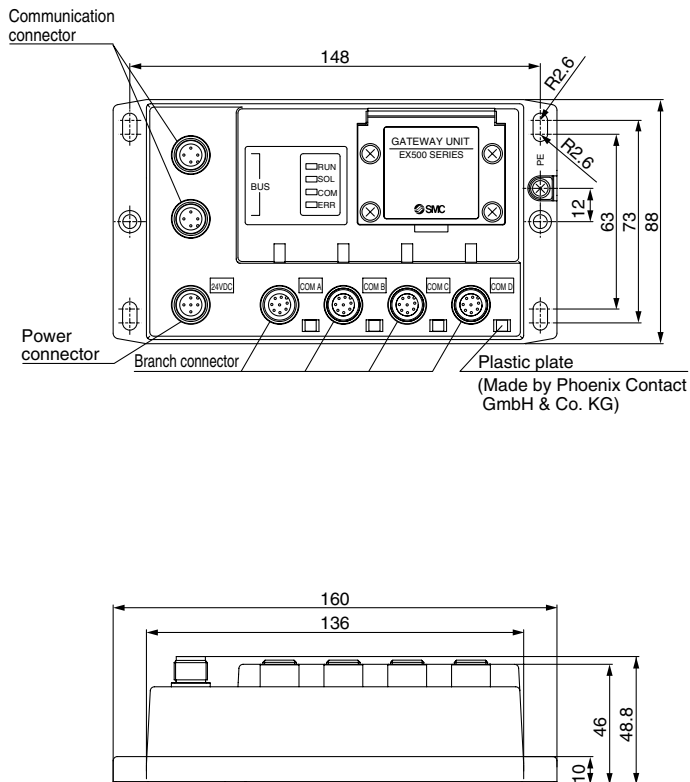
EX500-GDN1 / DeviceNet



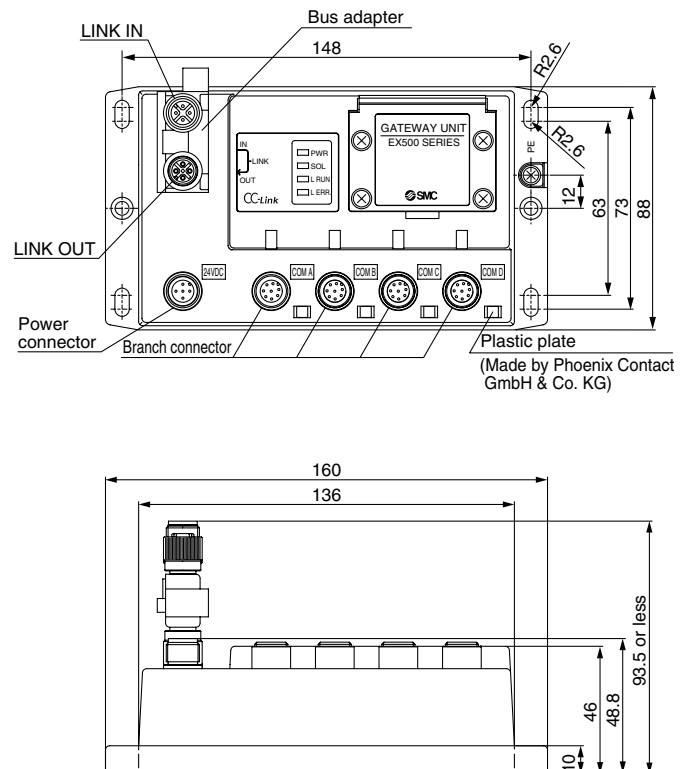
EX500-GPR1A / PROFIBUS-DP



EX500-GAB1-X1 / Remote I/O (RIO)



EX500-GMJ1 / CC-Link



How to Order Input Manifold

How to Order Input Block

Input unit manifold



EEX500—IB1—E 8

Input unit specifications

Connector type

E	M8 connector
T	M12 connector
M	M8, M12 mixed

Stations

1	1 station
⋮	⋮
8	8 stations

Applicable GW unit

Nil	DeviceNet PROFIBUS-DP CC-Link
-X1	Remote I/O (RIO)

EX500 — IE 1

Block type

1	M8 connector, PNP specifications
2	M8 connector, NPN specifications
3	M12 connector, PNP specifications
4	M12 connector, NPN specifications
5	8 points integrated type, M8 connector, PNP specifications
6	8 points integrated type, M8 connector, NPN specifications

Applicable GW unit

Nil	DeviceNet PROFIBUS-DP CC-Link
-X1	Remote I/O (RIO)

Input unit specifications

Connection block	Current source type input block (PNP input block) or Current sink type input block (NPN input block)
Communication connector	M12 connector (8 pins, plug)
Number of connection blocks	Maximum 8 blocks
Block supply voltage	24 VDC
Block supply current	0.65 A maximum
Current consumption	100 mA or less (at rated voltage)
Short circuit protection	Operates at 1ATyp. (Power supply cut) GW unit reset by turning power OFF and back ON
Enclosure	IP65
Weight (g) ^{Note)}	100 (Input block + End block)

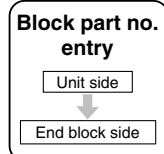
Note) Since the DIN rail weight is not included, confirm the DIN rail length to be used on page 249, and add the weight separately which is found in the DIN rail dimension table on page 312.

Input block specifications

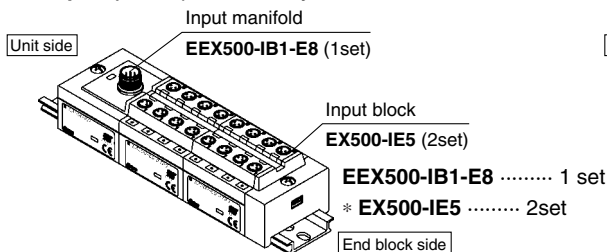
Sensor applicable	Current source type (PNP output) or Current sink type (NPN output)
Sensor connector	M8 connector (3 pins) or, M12 connector (4 pins)
Number of inputs	2 points / 8 points (M8 only)
Rated voltage	24 VDC
Indication	Green LED
Insulation	None
Sensor supply current	Maximum 30 mA / Sensor
Enclosure	IP65
Weight (g)	[For M8: 20] [For M12: 40] [8 points integrated type, for M8: 55]

How to Order Input Unit Manifold [Ordering example]

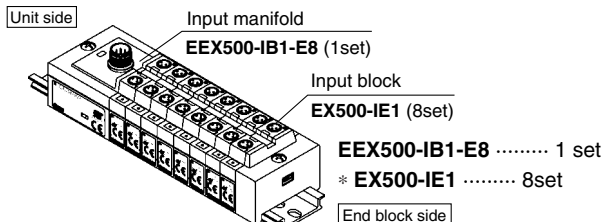
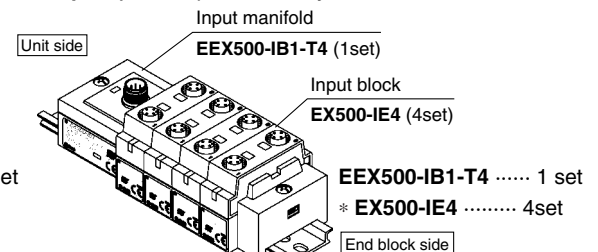
When ordering an input unit manifold, enter the **input manifold part no.** + **input block part no.** together.
The **input unit**, **end block** and **DIN rail** are included in the input manifold. Refer to the indications below.



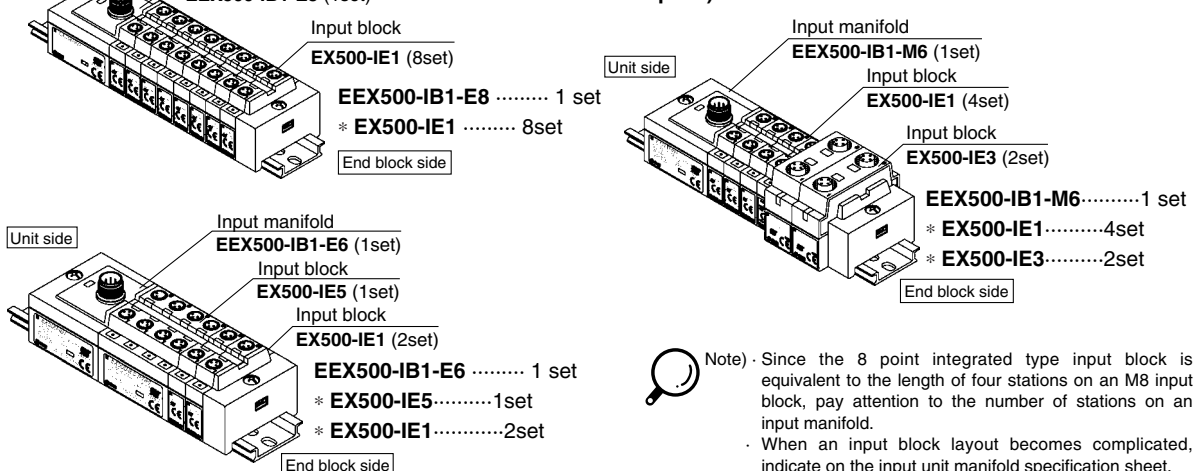
Example 1) M8 input block only



Example 2) M12 input block only



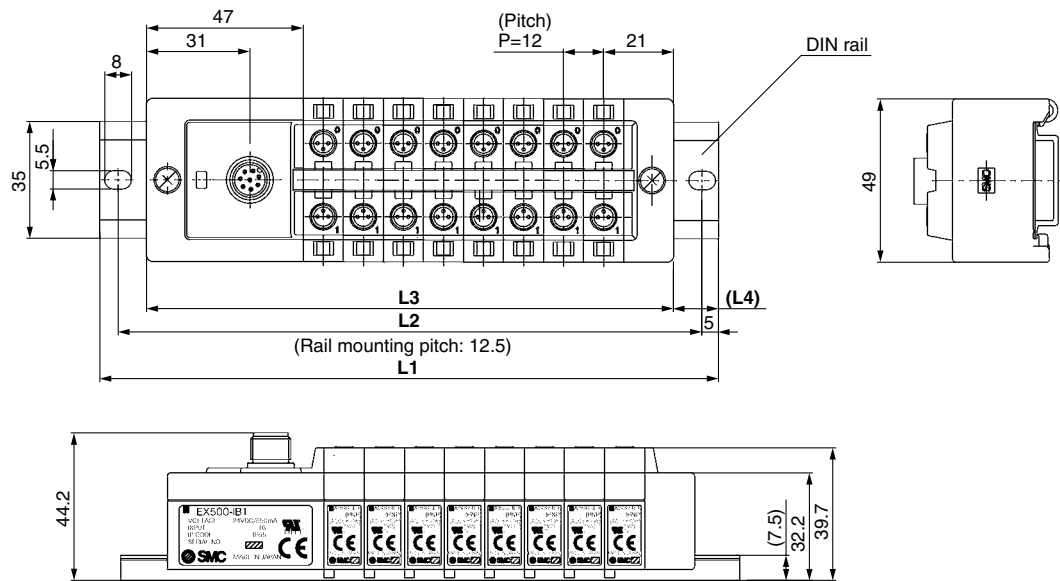
Example 3) M8 and M12 mixed



Note) Since the 8 point integrated type input block is equivalent to the length of four stations on an M8 input block, pay attention to the number of stations on an input manifold.
When an input block layout becomes complicated, indicate on the input unit manifold specification sheet.

Input Unit Manifold Dimensions

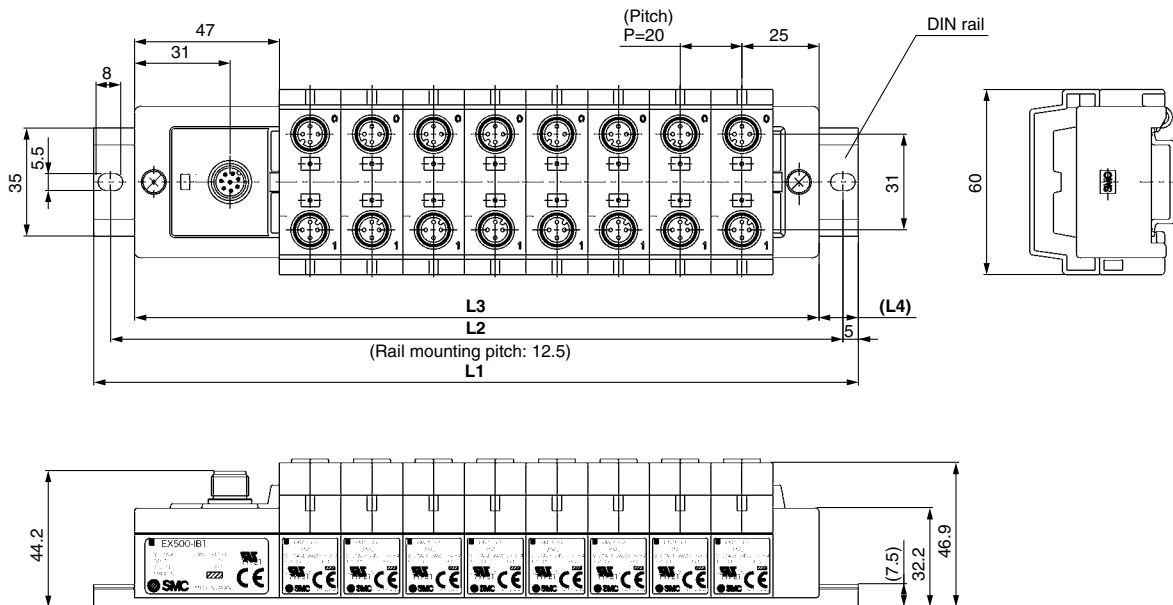
Input block (M8) only



(mm)

Stations	1	2	3	4	5	6	7	8
Rail length L1	98	110.5	123	135.5	148	160.5	173	185.5
Mounting pitch L2	87.5	100	112.5	125	137.5	150	162.5	175
Manifold length L3	74	86	98	110	122	134	146	158
L4	12	12	12.5	12.5	13	13	13.5	13.5

Input block (M12) only



(mm)

Stations	1	2	3	4	5	6	7	8
Rail length L1	110.5	123	148	173	185.5	210.5	223	248
Mounting pitch L2	100	112.5	137.5	162.5	175	200	212.5	237.5
Manifold length L3	82	102	122	142	162	182	202	222
L4	12	12	12.5	12.5	13	13	13.5	13.5



For valve specifications, refer to page 240.

How to Order SI Unit

EX500 — S001



Applicable GW unit

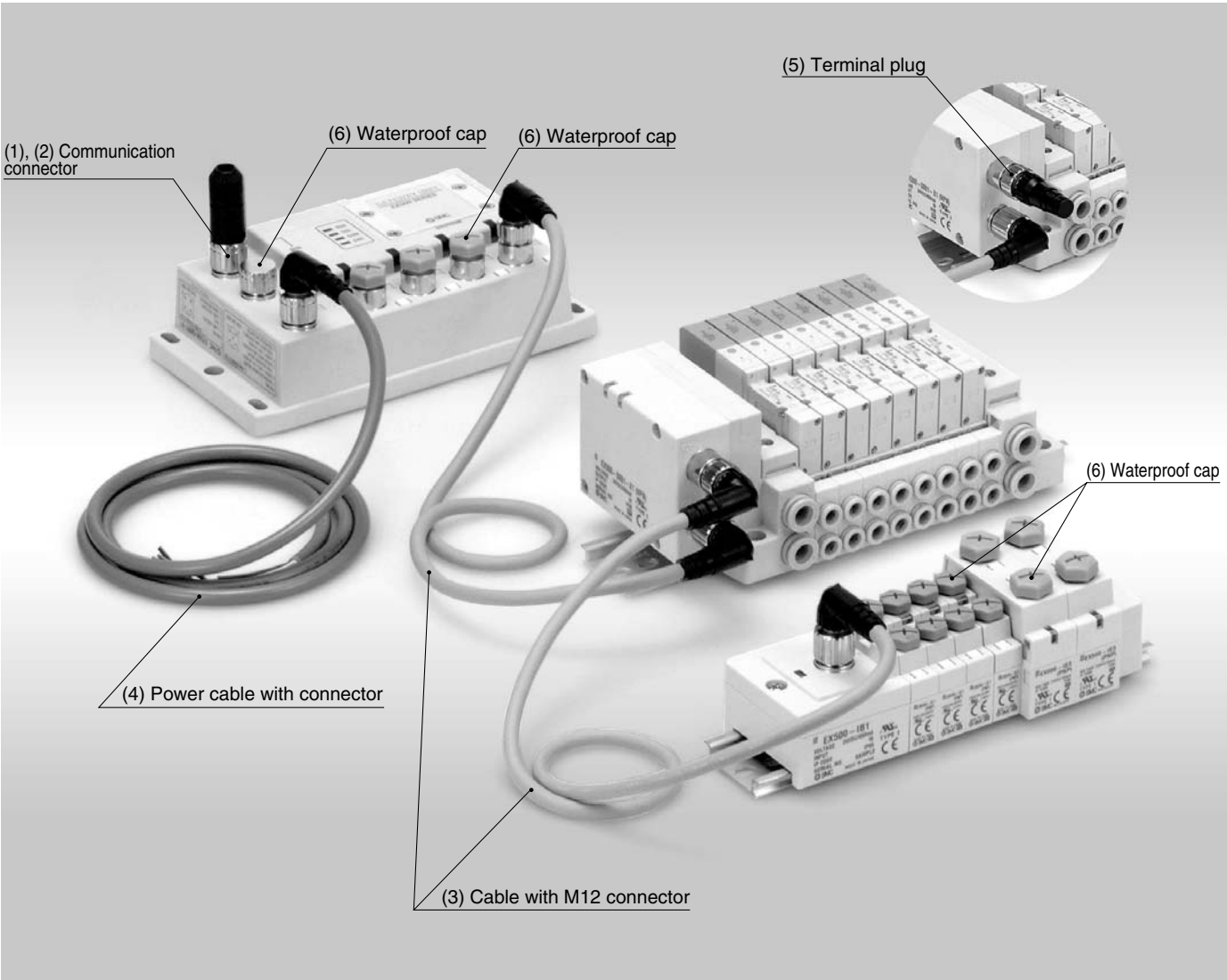
Nil	DeviceNet PROFIBUS-DP CC-Link
-X1	Remote I/O (RIO)

Specifications

Connection block	Solenoid valve (Single, Double) Relay output module (1 output, 2 outputs)
Communication connector	M12 connector (8 pins, Plug, Socket)
Connection block stations	Double solenoid valve Relay output module (2 points): Maximum 8 stations Single solenoid valve Relay output module (1 point): Maximum 16 stations
Block supply voltage	24 VDC
Block supply current	0.65A maximum
Current consumption	100 mA or less (at rated voltage)
Enclosure ^{Note)}	IP65
Weight (g)	115

Note) A single SI unit of Series EX500 has an enclosure compliant with IP65. The IP67 protection can be achieved when it is mounted on a manifold.

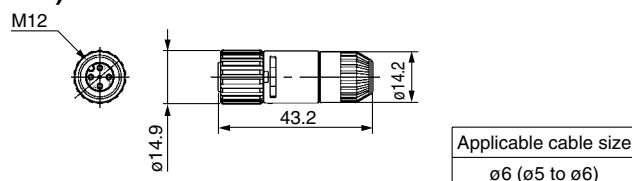
Option



Option

(1) Communication connector (for RIO type GW unit)

EX500 — AC000 — AB

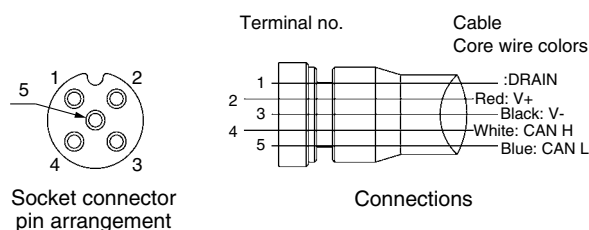
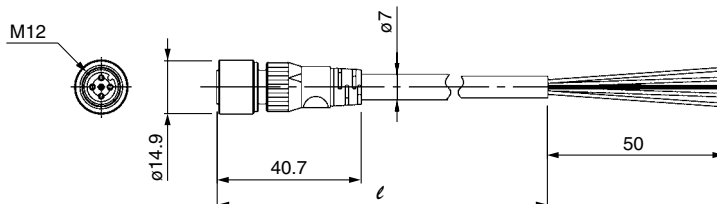


(2) Communication connector cable (for DeviceNet type GW unit)

EX500 — AC 050 — DN

Cable length (ℓ)

010	1000 [mm]
050	5000 [mm]



(3) Cable with M12 connector

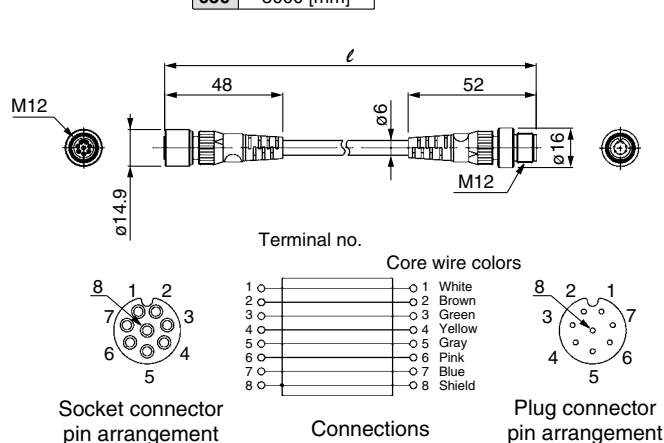
EX500 — AC 030 — SSPS

Cable length (ℓ)

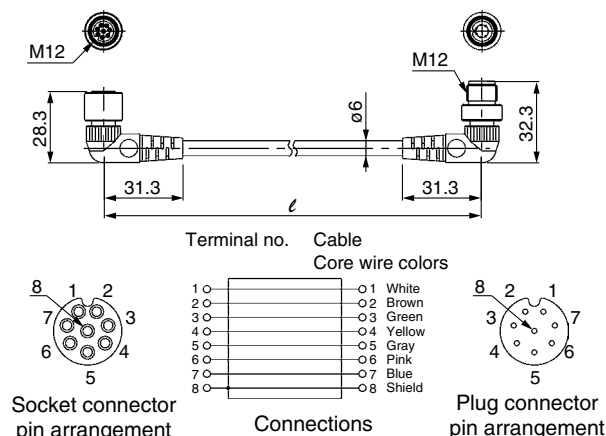
003	300 [mm]
005	500 [mm]
010	1000 [mm]
030	3000 [mm]
050	5000 [mm]

Connector specifications

SSPS	Socket side: Straight, Plug side: Straight
SAPA	Socket side: Angle, Plug side: Angle



Straight connector type



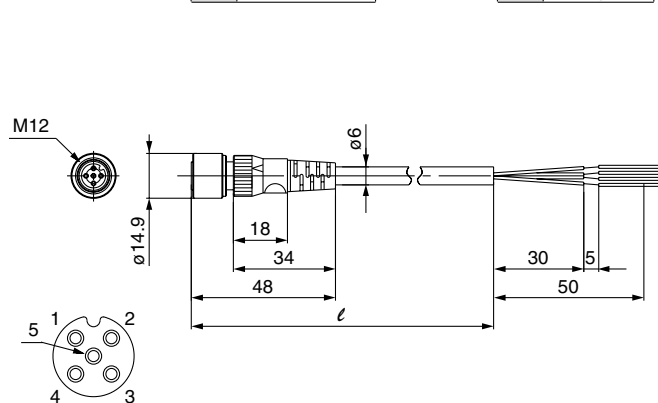
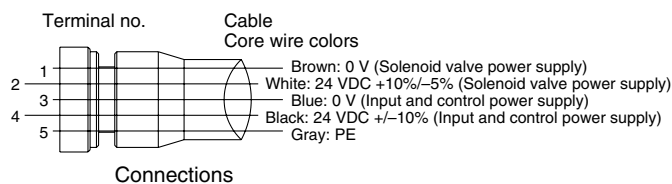
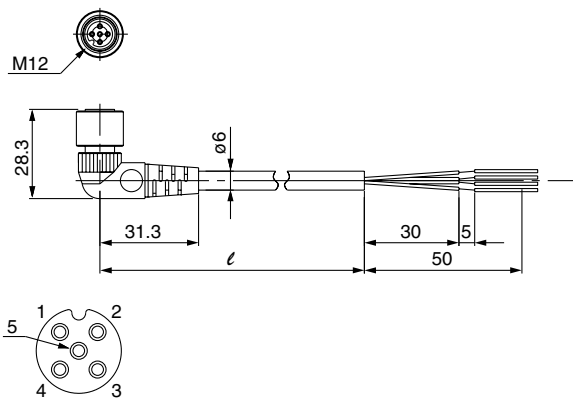
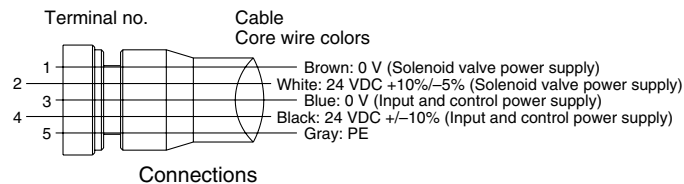
Angle connector type

Option**(4) Power cable with connector****EX500 — AP** 050 — S**Cable length (ℓ)**

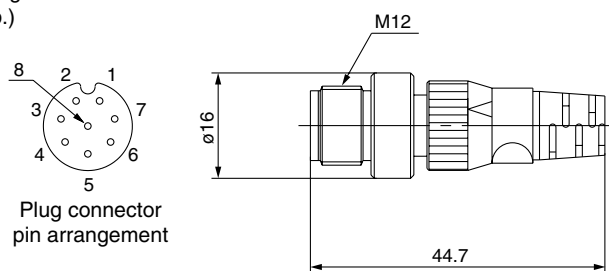
010	1000 [mm]
050	5000 [mm]

Connector specifications

S	Straight
A	Angle

Socket connector
pin arrangement**Straight connector type**Socket connector
pin arrangement**Angle connector type****(5) Terminal plug**

This is used where an input manifold (input unit / input block) is not being used.
 (If a terminal plug is not used, the GW unit is COM LED will not light up.)

EX500 — AC000 — SPlug connector
pin arrangement**(6) Waterproof cap**

Use this on ports that are not being used for a GW unit or input block.
 Use of this waterproof cap maintains the integrity of the IP65 enclosure.
 (Included with each input block)

Note) Tighten the waterproof cap with the prescribed tightening torque. (For M8: 0.05 N·m, M12: 0.1 N·m)

EX500 — AW **Connector type**

ES	M8 connector (For socket)
TP	M12 connector (For plug)
TS	M12 connector (For socket)

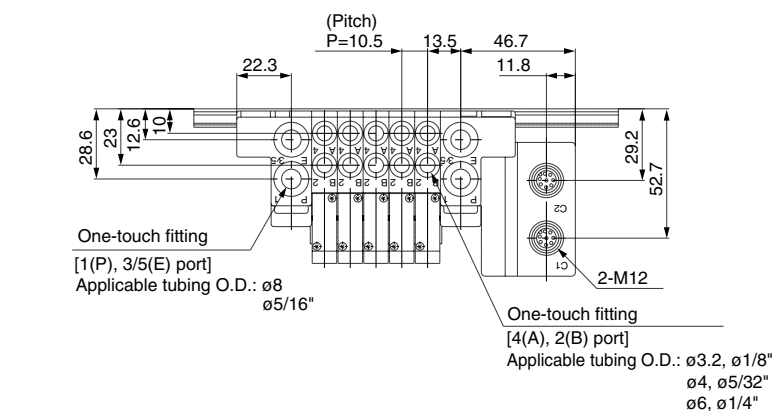


Waterproof cap

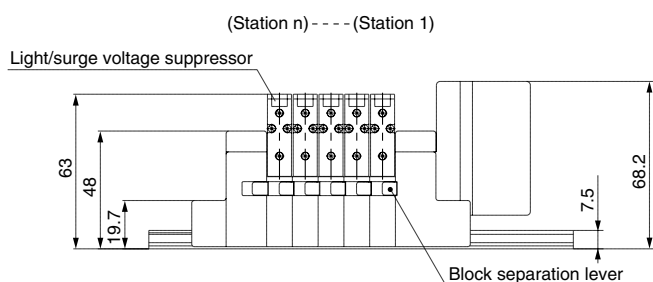
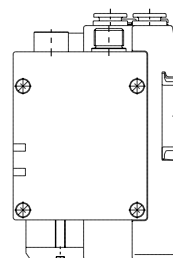
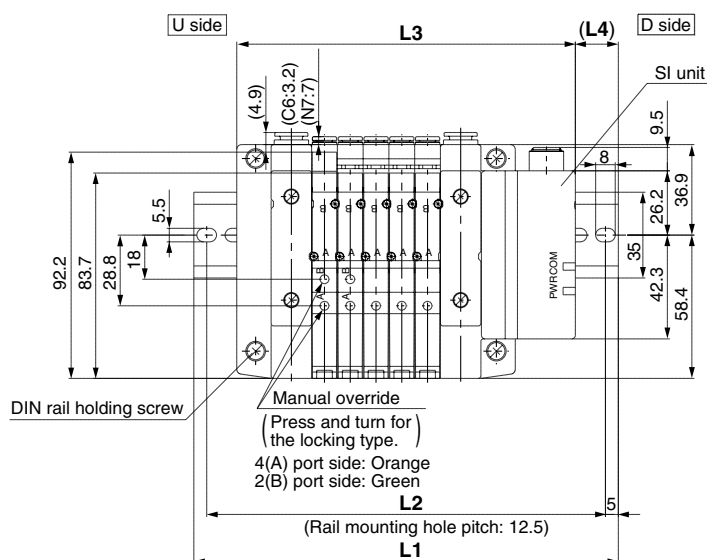
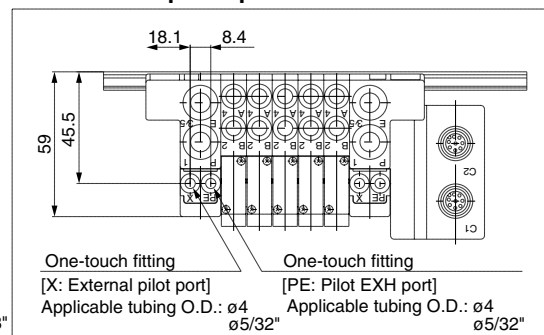
Dimensions: Series 10-SV1000 for EX500 Decentralized serial wiring

• Cassette base manifold: 10-SS5V1-W16SA □WD- Stations $\begin{matrix} U \\ D \\ B \end{matrix}$ (R)- $\begin{matrix} C3, N1 \\ C4, N3 \\ C6, N7 \end{matrix}$

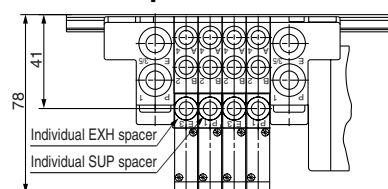
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



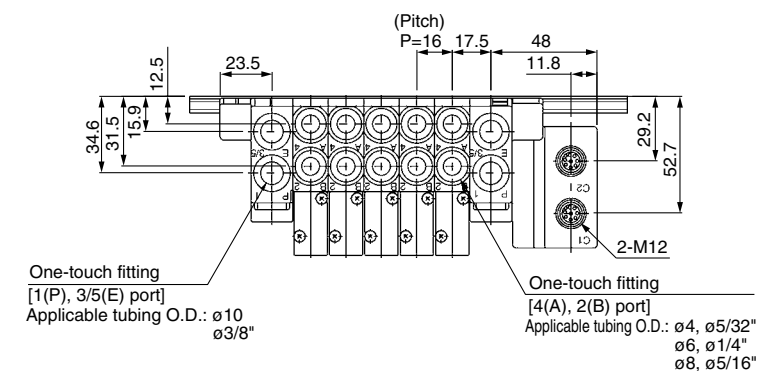
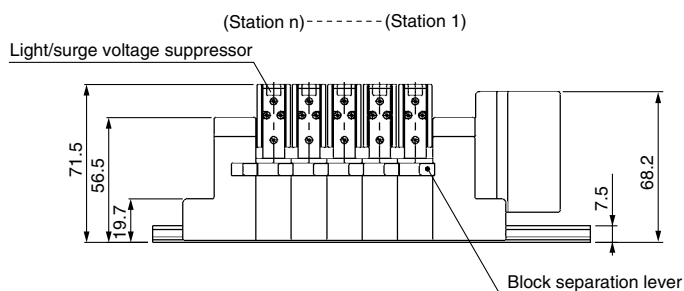
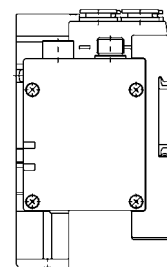
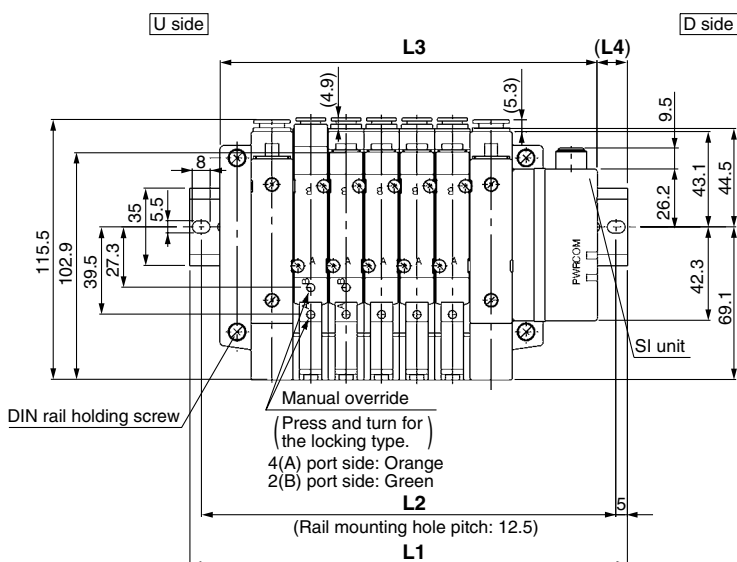
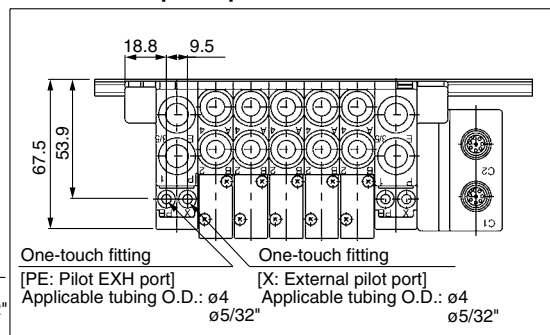
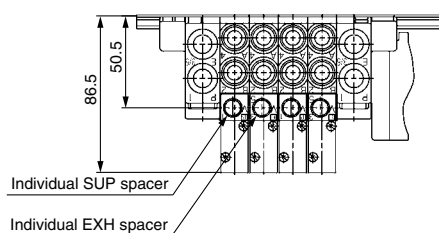
L Dimension

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5
L2	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275
L3	106.5	117	127.5	138	148.5	159	169.5	180	190.5	201	211.5	222	232.5	243	253.5
L4	14.5	15.5	16.5	17.5	12.5	13.5	14.5	15.5	16.5	17.5	12	13	14	15	16

Dimensions: Series 10-SV2000 for EX500 Decentralized serial wiring**• Cassette base manifold: 10-SS5V2-W16SA □WD-Stations U
D
B (R)-C4, N3
C6, N7
C8, N9**

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

**With external pilot specifications****With option****L Dimension**

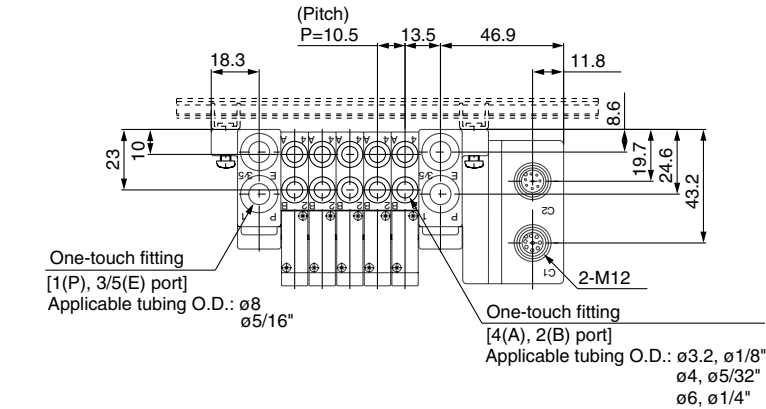
n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	148	173	185.5	198	210.5	235.5	248	260.5	285.5	298	310.5	323	348	360.5	373
L2	137.5	162.5	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	362.5
L3	122.5	138.5	154.5	170.5	186.5	202.5	218.5	234.5	250.5	266.5	282.5	298.5	314.5	330.5	346.5
L4	13	17.5	15.5	14	12	16.5	15	13	17.5	16	14	12.5	17	15	13.5

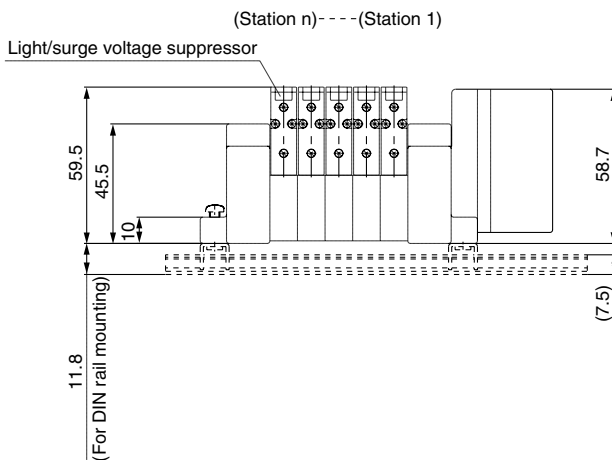
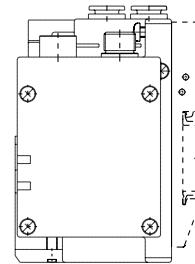
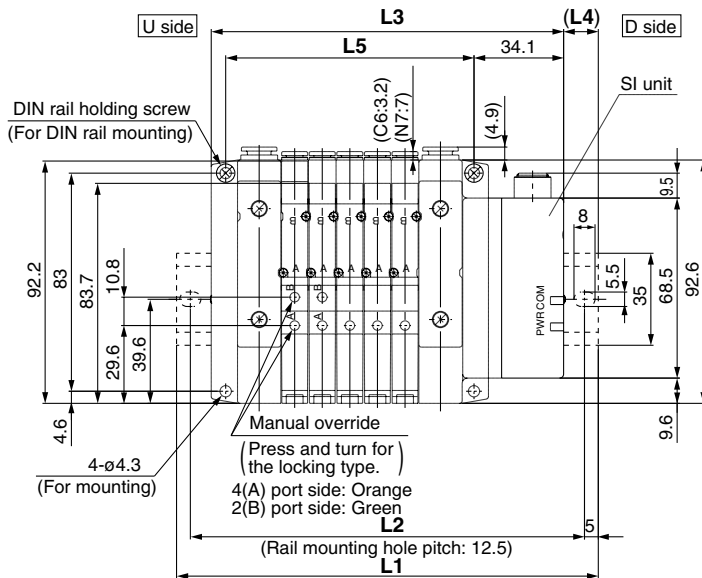
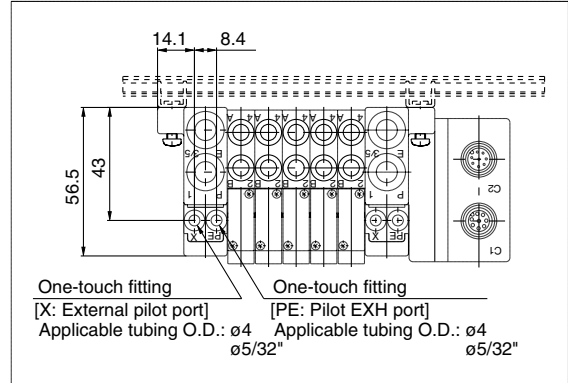
Dimensions: Series 10-SV1000 for EX500 Decentralized serial wiring

• Tie-rod base manifold: 10-SS5V1-W10SA □WD- Stations $\begin{matrix} U \\ D \end{matrix}$ (R)- $\begin{matrix} C3, N1 \\ C4, N3 \\ C6, N7 \end{matrix}$ (-D)

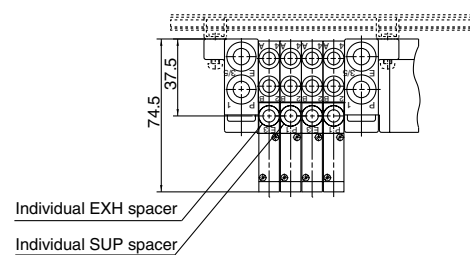
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	135.5	148	148	160.5	173	185.5	198	210.5	210.5	223	235.5	248	260.5	273	273	
L2	125	137.5	137.5	150	162.5	175	187.5	200	200	212.5	225	237.5	250	262.5	262.5	
L3	102.6	113.1	123.6	134.1	144.6	155.1	165.6	176.1	186.6	197.1	207.6	218.1	228.6	239.1	249.6	
L4	16.5	17.5	12	13	14	15	16	17	12	13	14	15	16	17	11.5	
L5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.5	189	199.5	210	

n: Stations

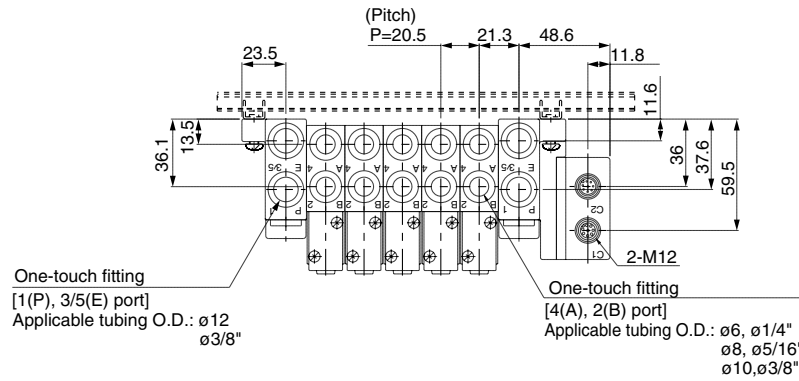
Dimensions: Series 10-SV2000 for EX500 Decentralized serial wiring
• Tie-rod base manifold: 10-SS5V2-W10SA

WD- Stations

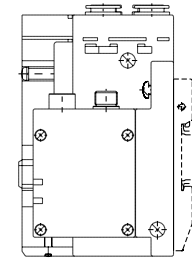
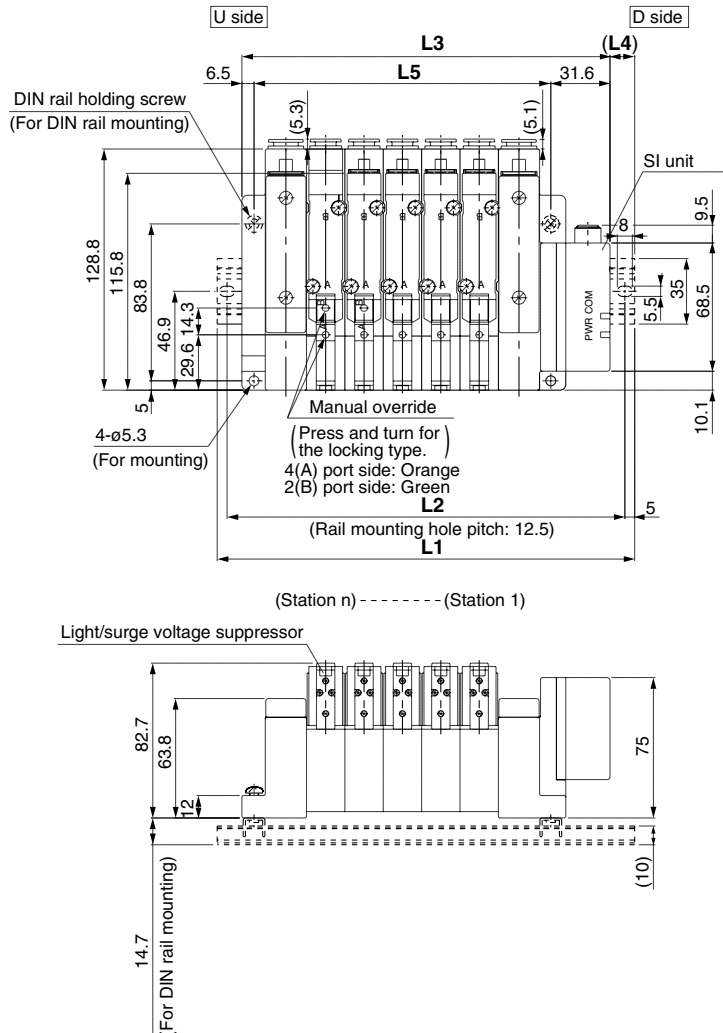
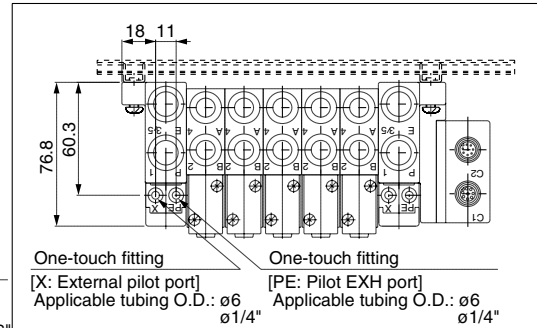
Dimensions: Series 10-SV3000 Decentralized serial wiring

• Tie-rod base manifold: 10-SS5V3-W10SA □WD- Stations $\begin{matrix} U \\ D \\ B \end{matrix}$ (R)- $\begin{matrix} C6, N7 \\ C8, N9 \\ C10, N11 \end{matrix}$ (-D)

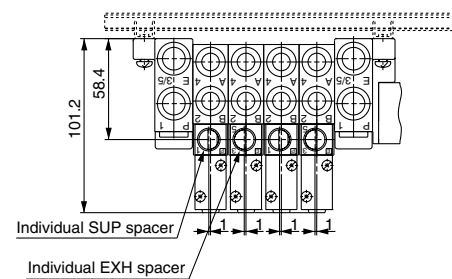
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



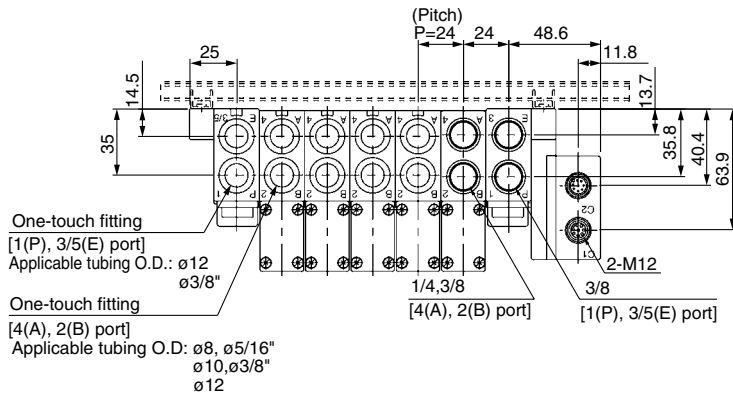
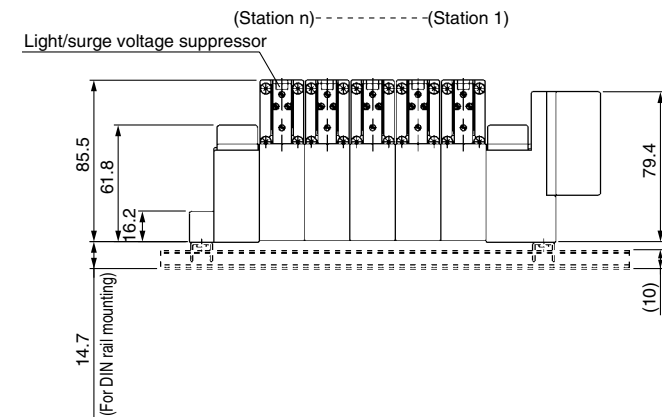
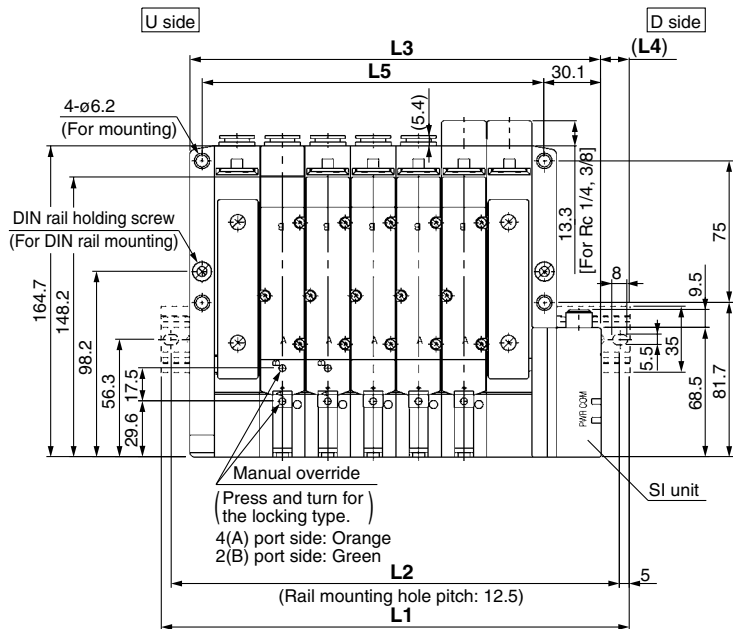
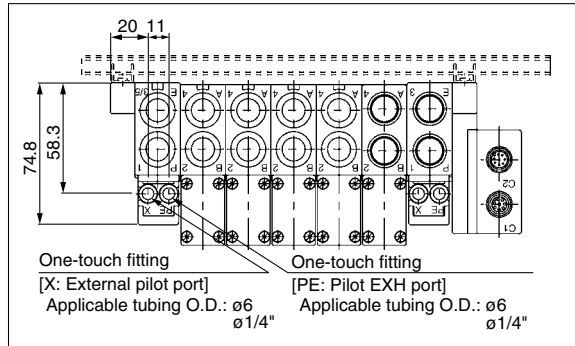
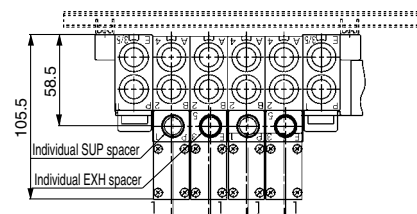
L Dimension

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	160.5	185.5	210.5	223	248	273	285.5	310.5	323	348	373	385.5	410.5	435.5	448
L2	150	175	200	212.5	237.5	262.5	275	300	312.5	337.5	362.5	375	400	425	437.5
L3	135.1	155.6	176.1	196.6	217.1	237.6	258.1	278.6	299.1	319.6	340.1	360.6	381.1	401.6	422.1
L4	12.5	15	17	13	15.5	17.5	13.5	16	12	14	16.5	12.5	14.5	17	13
L5	97	117.5	138	158.5	179	199.5	220	240.5	261	281.5	302	322.5	343	363.5	384

Dimensions: Series 10-SV4000 for EX500 Decentralized serial wiring
• Tie-rod base manifold: 10-SS5V4-W10SA ☐ WD- Stations $\begin{matrix} U \\ D \\ B \end{matrix}$ (R)- $\begin{matrix} 02 \\ 03 \end{matrix} \begin{matrix} \square \\ \square \end{matrix} \begin{matrix} C8, \\ C10, \\ C12, \end{matrix} N9, N11, (-D)$

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

**With external pilot specifications****With option****L Dimension**

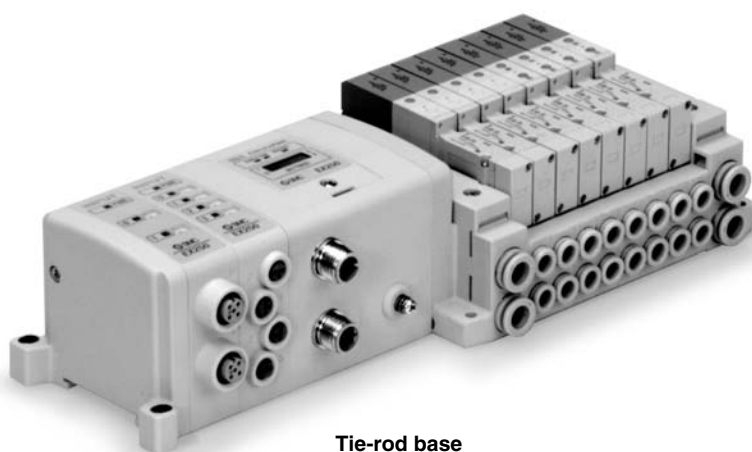
n: Stations

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		173	198	223	248	273	298	323	348	373	385.5	410.5	435.5	460.5	485.5	510.5
L2		162.5	187.5	212.5	237.5	262.5	287.5	312.5	337.5	362.5	375	400	425	450	475	500
L3		145.6	169.6	193.6	217.6	241.6	265.6	289.6	313.6	337.6	361.6	385.6	409.6	433.6	457.6	481.6
L4		13.5	14	14.5	15	15.5	16	16.5	17	17.5	12	12.5	13	13.5	14	14.5
L5		109	133	157	181	205	229	253	277	301	325	349	373	397	421	445

Serial Wiring with Input / Output Unit

Series EX250

IP67 compliant



Tie-rod base

Applicable series	Tie-rod base manifold 10-SV1000/10-SV2000/10-SV3000
	· Number of inputs/outputs: 32 each

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-CM2W

EX250 Serial wiring
with input/output unit

How to Order

• Tie-rod base

10 - SS5V 1 - W10S1 QW - - - D - 05 U - - -

• Clean series

Series	
1	SV1000
2	SV2000
3	SV3000

• Enclosure IP67 specifications

SI unit

QW	For DeviceNet
NW	For PROFIBUS-DP
VW	For CC-LINK
TAW	For AS-i: 8 ins/8 outs, 31slave modes, 2 power supplies
TBW	For AS-i: 4 ins/4 outs, 31slave modes, 2 power supplies
TCW	For AS-i: 8 ins/8 outs, 31slave modes, 1 power supply
TDW	For AS-i: 4 ins/4 outs, 31slave modes, 1 power supply
YW	For CAN open
0	Without SI unit

• Input blocks cannot be mounted without SI unit.
• When the DIN rail is included without an SI unit, the DIN rail length will accommodate an SI unit and one input block.

Input block stations

Nil	None
1	1 station
:	:
8	8 stations

Note) Without SI unit, the symbol is nil.

Input block type

Nil	Without input block
1	M12: 2 inputs
2	M12: 4 inputs
3	M8: 4 inputs (3 pins)

Note) Without SI unit, the symbol is nil.

Input block common specifications

Nil	+COM
N	-COM

Valve stations

Symbol	Stations	Note
02	2 stations	Note 1) Double wiring specifications
:	:	
16	16 stations	Note 2) Specified layout (Up to 32 solenoids possible)
02	2 stations	
:	:	
20	20 stations	

• When the SI unit is for AS-i, the maximum numbers of solenoids are as follows.

TAW, TCW: Maximum 8 solenoids
TBW, TDW: Maximum 4 solenoids

Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used on all manifold stations. Use of a single solenoid will result in an unused control signal. If this is not desired, order with a specified layout.

Note 2) Specified layout: Indicate wiring specifications on the manifold specification sheet. (Note that double, 3 position and 4 position valves cannot be used where single solenoid wiring has been specified.)

P, E port location

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 20 stations)

SUP/EXH block assembly specifications

Nil	Internal pilot
R	External pilot

A, B port size (metric)

Symbol	A, B port	P, E port	Applicable series
C3	One-touch fitting for ø3.2	One-touch fitting for ø8	10-SV1000
C4	One-touch fitting for ø4		
C6	One-touch fitting for ø6		
C4	One-touch fitting for ø4	One-touch fitting for ø10	10-SV2000
C6	One-touch fitting for ø6		
C8	One-touch fitting for ø8		
C6	One-touch fitting for ø6	One-touch fitting for ø12	10-SV3000
C8	One-touch fitting for ø8		
C10	One-touch fitting for ø10		
M	A, B ports mixed		

A, B port size (inch)

Symbol	A, B port	P, E port	Applicable series
N1	One-touch fitting for ø1/8"	One-touch fitting for ø5/16"	10-SV1000
N3	One-touch fitting for ø5/32"		
N7	One-touch fitting for ø1/4"		
N3	One-touch fitting for ø5/32"	One-touch fitting for ø3/8"	10-SV2000
N7	One-touch fitting for ø1/4"		
N9	One-touch fitting for ø5/16"		
N7	One-touch fitting for ø1/4"	One-touch fitting for ø3/8"	10-SV3000
N9	One-touch fitting for ø5/16"		
N11	One-touch fitting for ø3/8"		
M	A, B ports mixed		

Mounting

Nil	Direct mounting
D	DIN rail mounting (With DIN rail)
D0 ^{Note)}	DIN rail mounting (Without DIN rail)
D3	For 3 stations
:	:
D20	For 20 stations

Note) In the case of D0, only DIN rail fittings are attached.

* In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

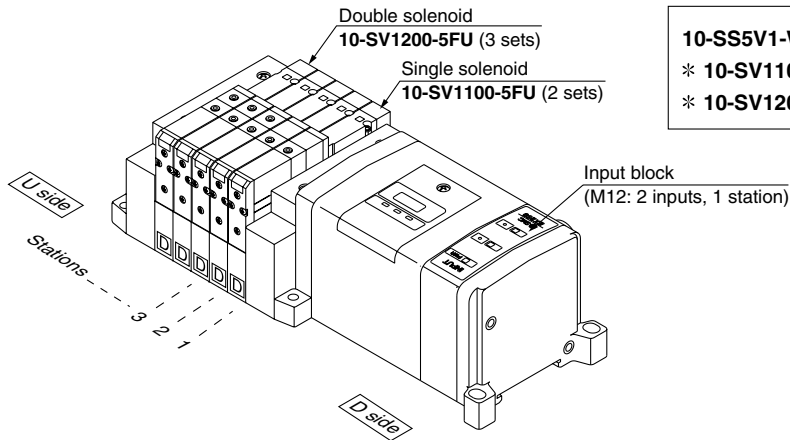
* Port sizes of X, PE port for external pilot specifications (R, RS) are ø4 (metric), ø5/32" (inch) for 10-SV1000/2000 and ø6 (metric) and ø1/4" (inch) for 10-SV3000/4000.

How to Order Valve Manifold Assembly

Ordering example (10-SV1000)

Manifold

10-SS5V1-W10S1QW11ND-05B-C6 (1 set)



10-SS5V1-W10S1QW11ND-05B-C6.....1 set (Manifold part no.)

* 10-SV1100-5FU.....2 sets (Single solenoid part no.)

* 10-SV1200-5FU.....3 sets (Double solenoid part no.)

How to Order Solenoid Valves

10 - SV 1 1 0 0 - 5 F

Clean series

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
A	4 position dual 3 port valve: N.C./N.C.
B	4 position dual 3 port valve: N.O./N.O.
C	4 position dual 3 port valve: N.C./N.O.

* 4 position dual 3 port valves are applicable to Series 10-SV1000 and 10-SV2000 only.

Pilot type

Nil	Internal pilot
R	External pilot

* External pilot specifications is not available for 4 position dual 3 port valves.

Back pressure check valve

Nil	None
K	Built-in

* Built-in back pressure check valve type is applicable to Series 10-SV1000 only.
* Back pressure check valve is not available for 3 position valves.

Manual override

Nil: Non-locking push type D: Push-turn locking slotted type

Light/surge voltage suppressor

U	With light/surge voltage suppressor
R	With surge voltage suppressor

Rated voltage

5	24 VDC
---	--------

Note) Refer to Specific Product Precautions 2 on page 323.

Series EX250 Serial Wiring with input/Output Unit**10-SV1000/2000/3000****Applicable network** DeviceNet / PROFIBUS-DP / CC-Link / AS-i / CANopen

- The serial transmission system reduces wiring work, while minimizing wiring and saving space.

SI unit

As a field bus slave, it is capable of solenoid valve ON/OFF control up to a maximum of 32 points.

In addition, by connecting an input block a maximum of 32 sensor signal inputs are possible.

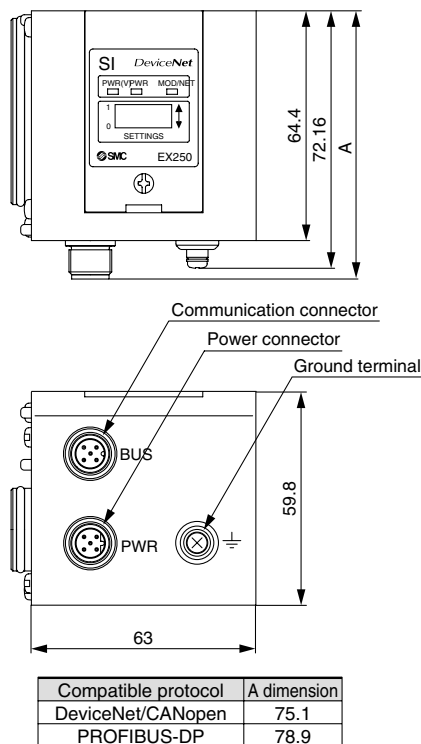
Input block

This is an expansion block which connects to an SI unit to perform sensor input from auto switches, etc.

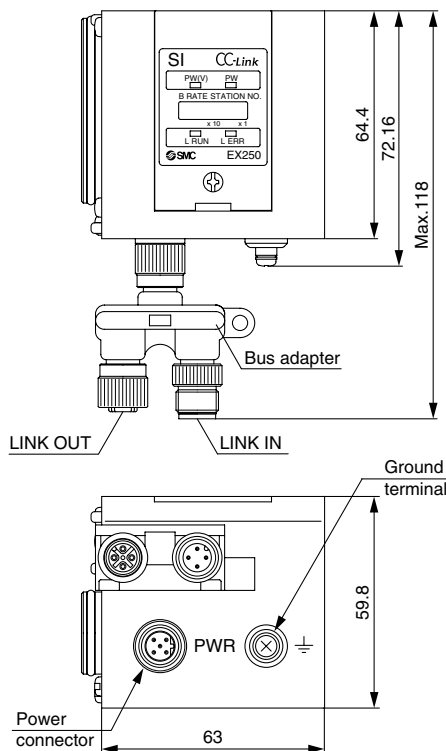
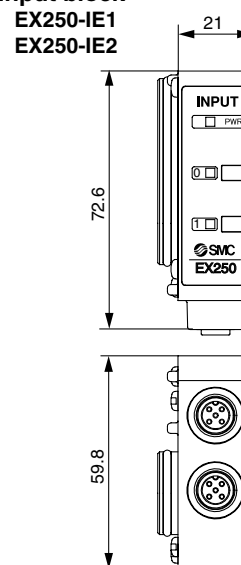
Two or four sensor inputs can be accommodated by one input block, and the common can be matched to the sensor by an NPN/PNP switch. Input connectors are available in both M8 and M12 types.

Dimensions: SI unit / Input block

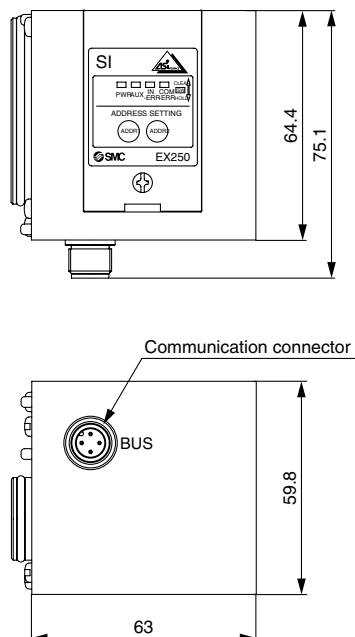
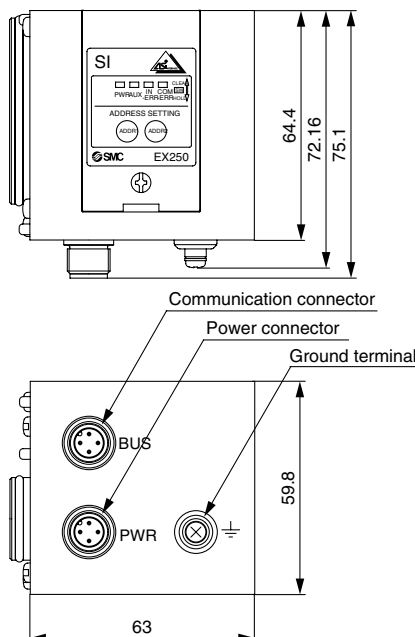
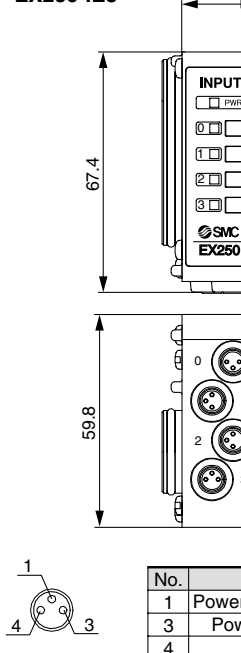
DeviceNet, PROFIBUS-DP, CC-Link, CAN open compatible



CC-LINK compatible

**Input block**

No.	Function	
	EX250-IE1	EX250-IE2
1	Power supply (24 VDC)	Input
2	—	Input
3	Power supply (0 V)	Input
4	Input	Input
5	Ground	Ground

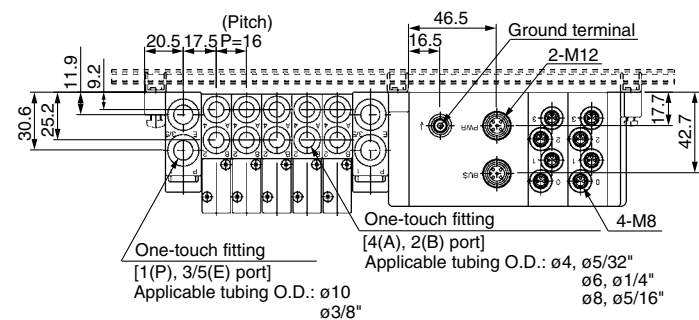
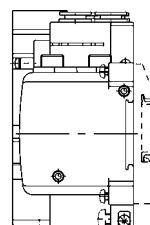
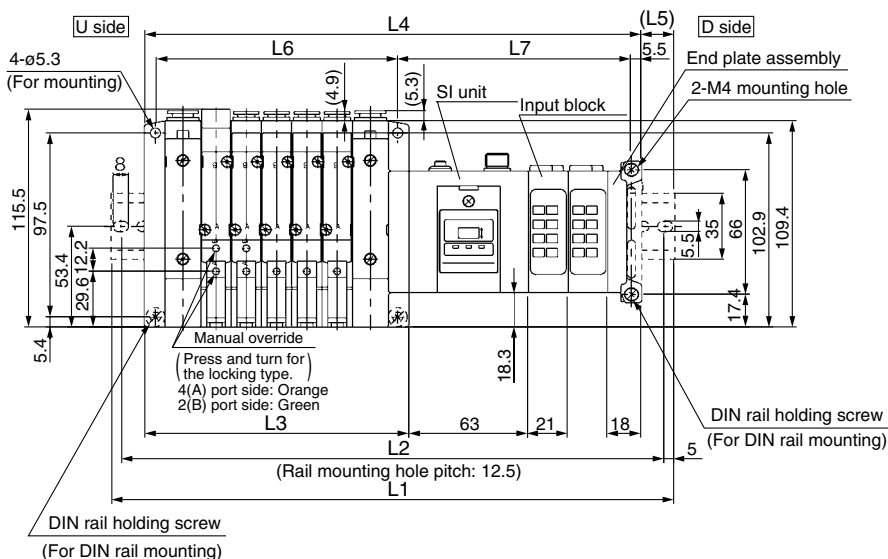
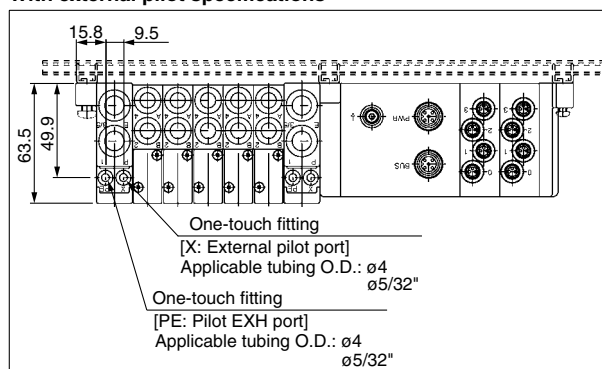
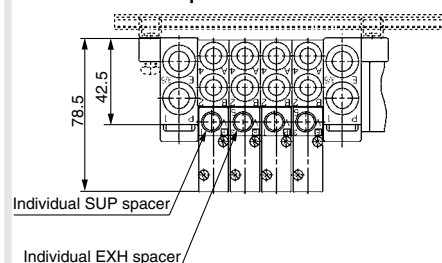
AS-i compatible**1 power supply****2 power supplies****EX250-IE3**

No.	Function	
	EX250-IE3	EX250-IE3
1	Power supply (24 VDC)	Power supply (24 VDC)
3	Power supply (0 V)	Power supply (0 V)
4	Input	Input

Dimensions: Series 10-SV2000 for EX250 Serial Wiring with Input/Output Unit**• Tie-rod base manifold: 10-SS5V2-W10S1□□□□D- Stations $\begin{matrix} U \\ D \end{matrix}$ (R)- $\begin{matrix} C4, N3 \\ C6, N7 \\ C8, N9 \end{matrix}$ (-D)**

(With 2 input blocks)

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

**With external pilot specifications****With option**

n1 = Valve stations
n2 = Input block stations

$$\begin{aligned} L2 &= L1 - 10.5 \\ L3 &= 16 \times n1 + 60 \\ L4 &= L3 + 81 + 21 \times n2 \\ L5 &= (L1 - L4)/2 \\ L6 &= 16 \times n1 + 48 \\ L7 &= 21 \times n2 + 81.5 \end{aligned}$$

L1: DIN rail overall length

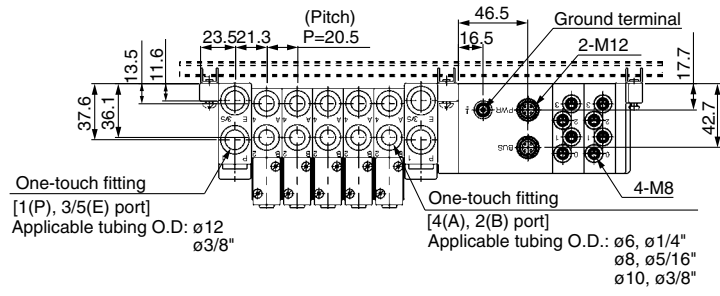
Valve stations (n1) Input block stations (n2)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0	198	223	235.5	248	260.5	285.5	298	310.5	335.5	348	360.5	373	398	410.5	423	448	460.5	473	485.5
1	223	235.5	260.5	273	285.5	298	323	335.5	348	373	385.5	398	410.5	435.5	448	460.5	485.5	498	510.5
2	248	260.5	273	298	310.5	323	335.5	360.5	373	385.5	410.5	423	435.5	448	473	485.5	498	510.5	535.5
3	260.5	285.5	298	310.5	335.5	348	360.5	373	398	410.5	423	435.5	460.5	473	485.5	510.5	523	535.5	548
4	285.5	298	323	335.5	348	360.5	385.5	398	410.5	435.5	448	460.5	473	498	510.5	523	548	560.5	573
5	310.5	323	335.5	360.5	373	385.5	398	423	435.5	448	473	485.5	498	510.5	535.5	548	560.5	585.5	598
6	323	348	360.5	373	398	410.5	423	435.5	460.5	473	485.5	510.5	523	535.5	548	573	585.5	598	610.5
7	348	360.5	385.5	398	410.5	435.5	448	460.5	473	498	510.5	523	535.5	560.5	573	585.5	610.5	623	635.5
8	373	385.5	398	423	435.5	448	460.5	485.5	498	510.5	535.5	548	560.5	573	598	610.5	623	648	660.5

Dimensions: Series 10-SV3000 for EX250 Serial Wiring with Input/Output Unit

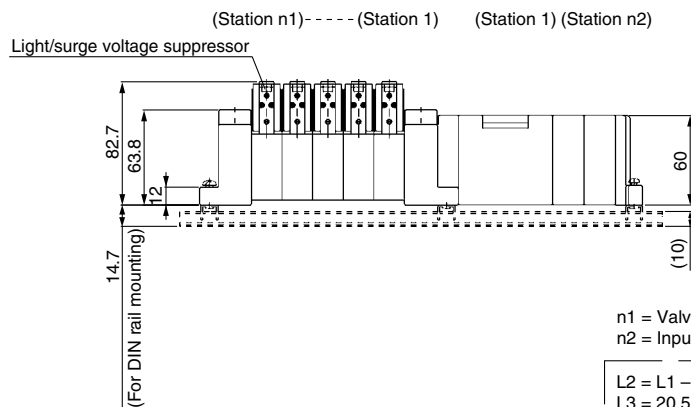
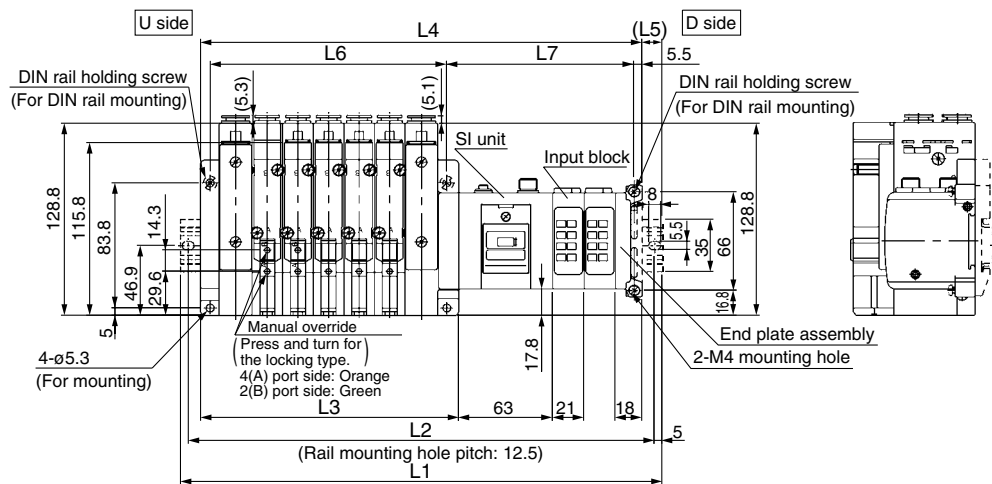
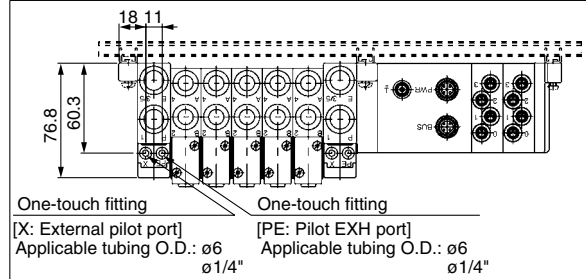
• Tie-rod base manifold: 10-SS5V3-W10S1□□□□D- $\begin{matrix} \text{U} \\ \text{D} \end{matrix}$ Stations $\begin{matrix} \text{R} \\ \text{B} \end{matrix}$ (-) C6, N7
C8, N9
C10, N11 (-)D

(With 2 input blocks)

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



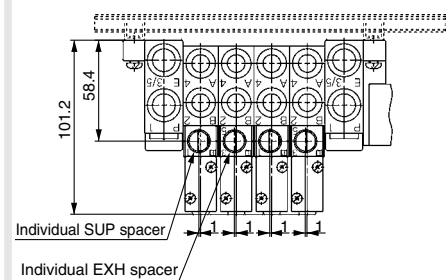
n1 = Valve stations
n2 = Input block stations

$$\begin{aligned} L2 &= L1 - 10.5 \\ L3 &= 20.5 \times n1 + 70.5 \\ L4 &= L3 + 81 + 21 \times n2 \\ L5 &= (L1 - L4)/2 \\ L6 &= 20.5 \times n1 + 56 \\ L7 &= 21 \times n2 + 83.5 \end{aligned}$$

L1: DIN rail overall length

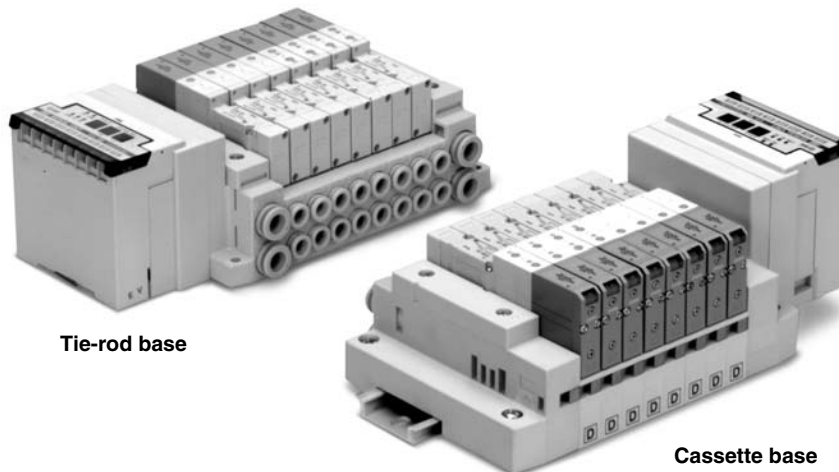
Valve stations (n1) Input block stations (n2)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0	223	248	260.5	285.5	298	323	348	360.5	385.5	410.5	423	448	473	485.5	510.5	535.5	548	573	585.5
1	248	260.5	285.5	310.5	323	348	360.5	385.5	410.5	423	448	473	485.5	510.5	535.5	548	573	585.5	610.5
2	260.5	285.5	310.5	323	348	360.5	385.5	410.5	423	448	473	485.5	510.5	535.5	548	573	598	610.5	635.5
3	285.5	310.5	323	348	373	385.5	410.5	423	448	473	485.5	510.5	535.5	548	573	598	610.5	635.5	648
4	310.5	323	348	373	385.5	410.5	423	448	473	485.5	510.5	535.5	548	573	598	610.5	635.5	660.5	673
5	323	348	373	385.5	410.5	435.5	448	473	485.5	510.5	535.5	548	573	598	610.5	635.5	660.5	673	698
6	348	373	385.5	410.5	435.5	448	473	485.5	510.5	535.5	548	573	598	610.5	635.5	660.5	673	698	723
7	373	385.5	410.5	435.5	448	473	498	510.5	535.5	548	573	598	610.5	635.5	660.5	673	698	723	735.5
8	385.5	410.5	435.5	448	473	498	510.5	535.5	548	573	598	610.5	635.5	660.5	673	698	723	735.5	760.5

With option



Dedicated Output Serial Wiring

Series *EX120*



Applicable series	Cassette base manifold 10-SV1000/10-SV2000
	Tie-rod base manifold 10-SV1000/10-SV2000/10-SV3000/10-SV4000
	· Number of outputs: 16 points

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-SV

EX120 dedicated output serial wiring

How to Order

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Tie-rod base
10 - SS5V 1 - 10S3 A D - 05 U - - -

Cassette base
10 - SS5V 1 - 16S3 A D - 05 U - - -

Clean series

SI unit

1	10-SV1000
2	10-SV2000

Valve stations

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
08	8 stations	
02	2 stations	Specified layout ^{Note 2)} (up to 16 solenoids possible)
16	16 stations	

Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used on all manifold stations. Use of a single solenoid will result in an unused control signal. If this is not desired, order with a specified layout.

Note 2) Specified layout: Indicate wiring specifications on the manifold specification sheet. (Note that double, 3 position and 4 position valves cannot be used where single solenoid wiring has been specified.)

P, E port location

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 16 stations)

SUP/EXH block assembly specifications

Nil	Internal pilot
R	External pilot

Mounting

Nil	Direct mounting
D	DIN rail mounting (With DIN rail)
D0 ^{Note)}	DIN rail mounting (Without DIN rail)
D3	For 3 stations When a longer DIN rail is desired than the specified stations (Specify a longer rail than the standard length.)
D16	For 16 stations

Note) In the case of D0, only DIN rail fittings are attached.

DIN rail length specified

Nil	Standard length
3	For 3 stations Specify a longer rail than the standard length.
16	For 16 stations

SI unit Specifications

Symbol	Specifications
0	Without SI unit
A*	With general type SI unit (Series EX300)
B	Mitsubishi Electric Corp.: MELSECNET/MINI-S3 Data Link System
C	OMRON Corp.: SYSBUS Wire System
D	SHARP Corp.: Satellite I/O Link System
E	Matsushita Electric Works: MEWNET-F System
F1	NKE Corp.: Uni-wire System (16 point outputs)
G	Rockwell Automation: Allen Bradley Remote I/O (RIO) System
H	NKE Corp.: Uni-wire H System
J1	SUNX Corp.: S-LINK System (16 output points)
J2	SUNX Corp.: S-LINK System (8 output points)
K	Fuji Electric Co.: T-LINK Mini System
Q	OMRON Corp.: DeviceNet, CompoBus/D
R1	OMRON Corp.: CompoBus/S (16 output points)
R2	OMRON Corp.: CompoBus/S (8 output points)
U	JEMANET (JPCN-1)
V	Mitsubishi Electric Corp.: CC-Link System

* For the general purpose type, a transmission unit is required on the CPU side.

SI unit part no.

Symbol	Specifications	For SS5V□-□□S3	Symbol	Specifications	For SS5V□-□□S3
A*	With general type SI unit (Series EX300)	EX320-S001	H	NKE Corp.: Uni-wire H System	EX120-SUH1
B	Mitsubishi Electric Corp.: MELSECNET/MINI-S3 Data Link System	EX120-SMB1	J1	SUNX Corp.: S-LINK System (16 output points)	EX120-SSL1
C	OMRON Corp.: SYSBUS Wire System	EX120-STa1	J2	SUNX Corp.: S-LINK System (8 output points)	EX120-SSL2
E	SHARP Corp.: Satellite I/O Link System	EX120-SSH1	K	Fuji Electric Co.: T-LINK Mini System	EX120-SFU1
F1	Matsushita Electric Works: MEWNET-F System	EX120-SPA1	Q	OMRON Corp.: DeviceNet, CompoBus/D	EX120-SDN1
G	NKE Corp.: Uni-wire System (16 output points)	EX120-SUW1	R1	OMRON Corp.: CompoBus/S (16 output points)	EX120-SCS1
	Rockwell Automation: Allen Bradley Remote I/O (RIO) System	EX120-SAB1	R2	OMRON Corp.: CompoBus/S (8 output points)	EX120-SCS2
			U	JEMANET (JPCN-1)	EX120-SJN1
			V	Mitsubishi Electric Corp.: CC-Link System	EX120-SMJ1

* For terminal LED descriptions for each SI unit and cable wiring, etc., refer to pages 270 to 272.

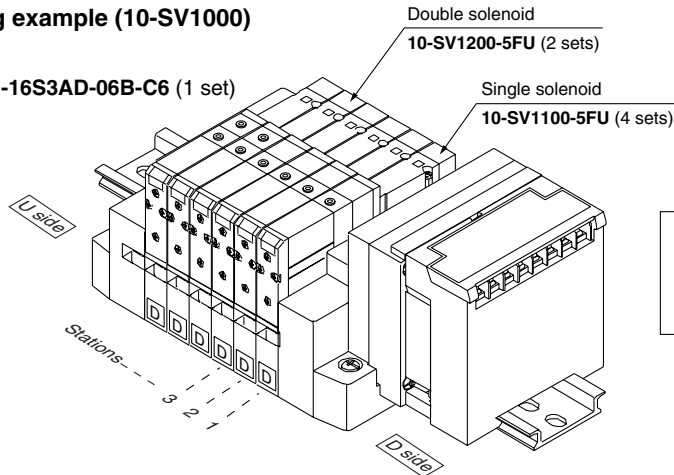


How to Order Valve Manifold Assembly

Ordering example (10-SV1000)

Manifold

10-SS5V1-16S3AD-06B-C6 (1 set)



10-SS5V1-16S3AD-06B-C6.....1 set (Manifold part no.)
 * **10-SV1100-5FU**.....4 sets (Single solenoid part no.)
 * **10-SV1200-5FU**.....2 sets (Double solenoid part no.)

How to Order Solenoid Valves

10 - SV 1 1 00 - 5 F

Clean series

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
A	4 position dual 3 port valve: N.C./N.C.
B	4 position dual 3 port valve: N.O./N.O.
C	4 position dual 3 port valve: N.C./N.O.

* 4 position dual 3 port valves are applicable to Series 10-SV1000 and 10-SV2000 only.

Pilot type

Nil	Internal pilot
R	External pilot

* External pilot specification is not available for 4 position dual 3 port valves.

Manual override

Nil: Non-locking push type	D: Push-turn locking slotted type
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Rated voltage

5	24 VDC
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Light/surge voltage suppressor

U	With light/surge voltage suppressor
R	With surge voltage suppressor

Back pressure check valve

Nil	None
K	Built-in

* Built-in back pressure check valve type is applicable to Series 10-SV1000 only.
 * Back pressure check valve is not available for 3 position solenoid valves.



Note) Refer to Specific Product Precautions 2 on page 323.

A, B port size (Metric)

Symbol	A, B port	P, E port	Applicable series
C3	One-touch fitting for ø3.2	One-touch fitting for ø8	10-SV1000
C4	One-touch fitting for ø4		
C6	One-touch fitting for ø6		
C4	One-touch fitting for ø4	One-touch fitting for ø10	10-SV2000
C6	One-touch fitting for ø6		
C8	One-touch fitting for ø8		
C6	One-touch fitting for ø6	One-touch fitting for ø12	10-SV3000
C8	One-touch fitting for ø8		
C10	One-touch fitting for ø10		
C8	One-touch fitting for ø8	One-touch fitting for ø12	10-SV4000
C10	One-touch fitting for ø10		
C12	One-touch fitting for ø12		
02	Rc 1/4	Rc3/8	
03	Rc 3/8		
02F	G 1/4	G3/8	
03F	G 3/8		
M	A, B ports mixed		

A, B port size (Inch)

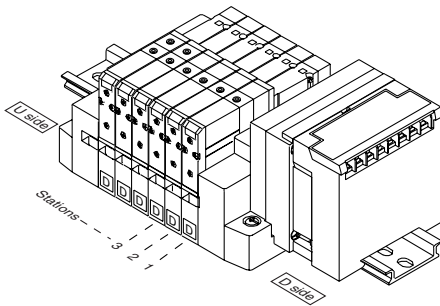
Symbol	A, B port	P, E port	Applicable series
N1	One-touch fitting for ø1/8"	One-touch fitting for ø5/16"	10-SV1000
N3	One-touch fitting for ø5/32"		
N7	One-touch fitting for ø1/4"		
N3	One-touch fitting for ø5/32"	One-touch fitting for ø3/8"	10-SV2000
N7	One-touch fitting for ø1/4"		
N9	One-touch fitting for ø5/16"		
N7	One-touch fitting for ø1/4"	One-touch fitting for ø3/8"	10-SV3000
N9	One-touch fitting for ø5/16"		
N11	One-touch fitting for ø3/8"		
N9	One-touch fitting for ø5/16"	One-touch fitting for ø3/8"	10-SV4000
N11	One-touch fitting for ø3/8"		
02N	NPT 1/4	NPT3/8	
03N	NPT 3/8		
02T	NPTF 1/4	NPTF3/8	
03T	NPTF 3/8		
M	A, B ports mixed		

* In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

* Port sizes of X, PE port for external pilot specification (R) are ø4 (metric), ø5/32" (inch) for 10-SV1000/2000 and ø6 (metric) and ø1/4" (inch) for 10-SV3000/4000.

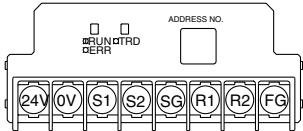
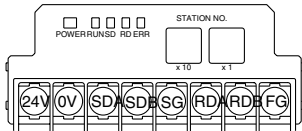
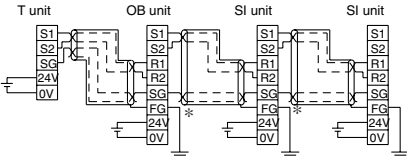
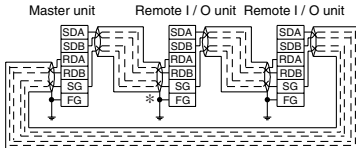
EX120 dedicated output serial wiring 10-SV

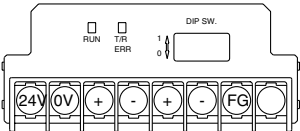
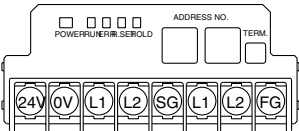
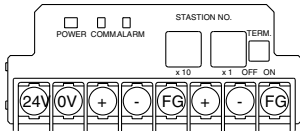
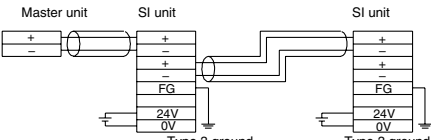
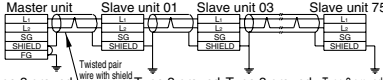
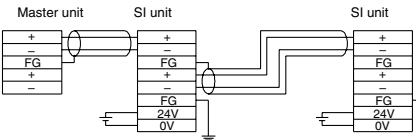
- The serial transmission system reduces wiring work, while minimizing wiring and saving space.
- Maximum 16 stations (Specify a model with more than 9 stations by means of the manifold specification sheet.)

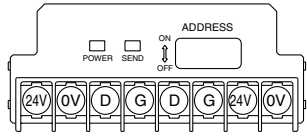
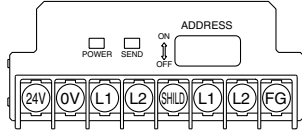
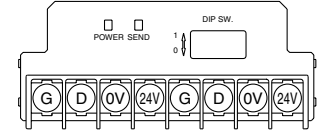
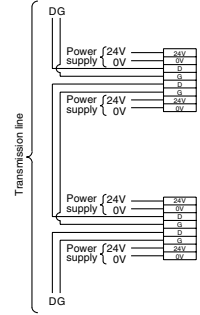
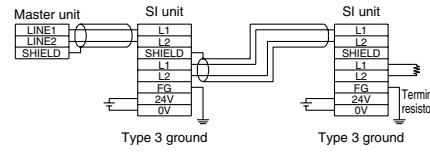
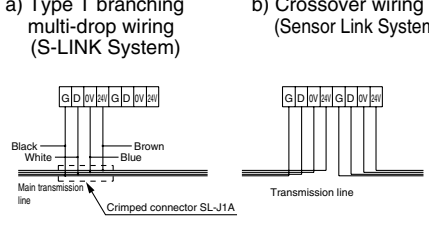


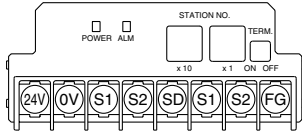
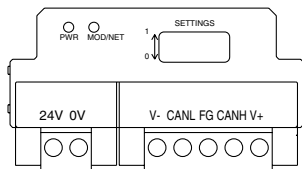
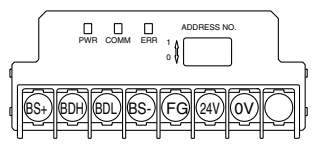
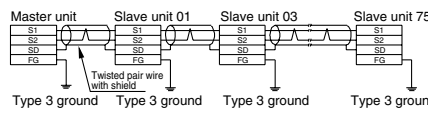
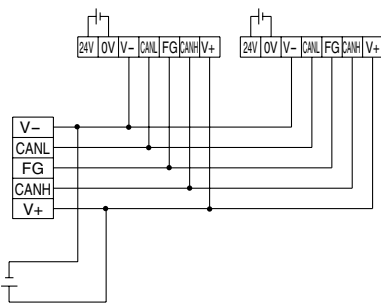
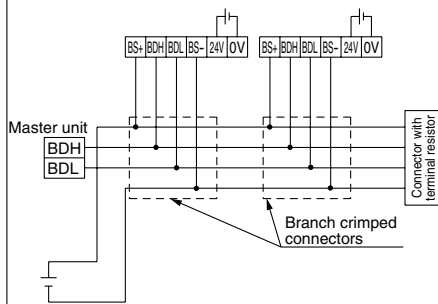
- Stations are counted from D side as the 1st.
- A maximum of 16 solenoids is possible (16 stations with single solenoids).

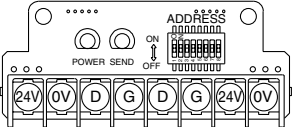
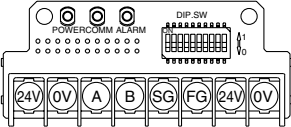
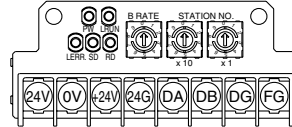
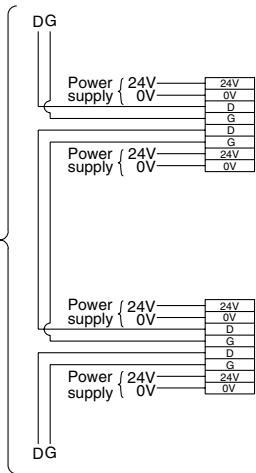
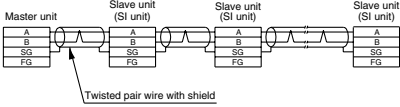
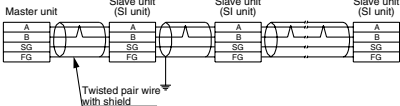
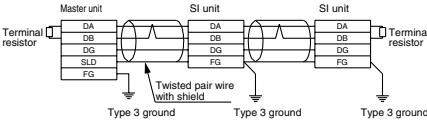
Item	Specifications
External power supply	24 VDC +10%/–5%
Current consumption (Internal unit)	0.1A A,B,D,E,F1,J1,J2,K,R1,R2,H,U,V
	0.3A C,Q

	Type A Series EX300	Type B Mitsubishi Electric Corporation MELSECNET/mini-S3 Data Link System																		
Name of terminal block, LED	 <table><tr><th>LED</th><th>Description</th></tr><tr><td>TRD</td><td>ON during data reception</td></tr><tr><td>RUN/ERR</td><td>Blinks for normal data reception, ON for abnormal</td></tr></table>	LED	Description	TRD	ON during data reception	RUN/ERR	Blinks for normal data reception, ON for abnormal	 <table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>ON for power supply input</td></tr><tr><td>RUN</td><td>ON for normal data traffic with master unit</td></tr><tr><td>RD</td><td>ON during data reception</td></tr><tr><td>SD</td><td>ON during data transmission</td></tr><tr><td>ERR</td><td>ON for data reception error, OFF when normal</td></tr></table>	LED	Description	POWER	ON for power supply input	RUN	ON for normal data traffic with master unit	RD	ON during data reception	SD	ON during data transmission	ERR	ON for data reception error, OFF when normal
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ERR	ON for data reception error, OFF when normal																			
Note	•Connection to T unit PLC manufacturer's I/O card enables serial transmission. - EX300-TMB1 ... for Mitsubishi Electric Corporation - EX300-TTA1 ... for OMRON Corporation - EX300-TFU1 ... for Fuji Electric Co., Ltd. - EX300-T001 ... General purpose * Each T unit has 32 control points. •No. of output points, 16 points	•MELSECNET/mini-S3 Data Link System - Master unit: AJ71PT32-S3 - AJ71T32-S3 - A1SJ71PT32-S3 •No. of output points, 16 points, No. of stations occupied, 2 stations																		
Cable wiring	 * Ground either the reception side or the transmission side of the shielding wire shield.	 * Ground either the reception side or the transmission side of the shielding wire shield.																		

	Type C OMRON Corporation SYSBUS Wire System	Type D SHARP Corporation Satellite I/O Link System	Type E Matsushita Electric Works, Ltd. MEWNET-F System																												
Name of terminal block, LED	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>RUN</td><td>ON when transmission is normal and PLC is in operation mode</td></tr><tr><td>T / R</td><td>Blinks when transmission is normal, ON when transmission is abnormal.</td></tr><tr><td>ERR</td><td>ON when transmission is abnormal.</td></tr></tbody></table>	LED	Description	RUN	ON when transmission is normal and PLC is in operation mode	T / R	Blinks when transmission is normal, ON when transmission is abnormal.	ERR	ON when transmission is abnormal.	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>POWER</td><td>ON when power supply is ON</td></tr><tr><td>RUN</td><td>ON when power is ON and slave unit operates normally</td></tr><tr><td>ERR</td><td>ON for abnormal slave unit switch setting, abnormal communication, master unit PLC stopped and defective slave unit</td></tr><tr><td>R.SET</td><td>ON for master unit control input</td></tr><tr><td>HOLD</td><td>ON for master unit control input</td></tr></tbody></table>	LED	Description	POWER	ON when power supply is ON	RUN	ON when power is ON and slave unit operates normally	ERR	ON for abnormal slave unit switch setting, abnormal communication, master unit PLC stopped and defective slave unit	R.SET	ON for master unit control input	HOLD	ON for master unit control input	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>POWER</td><td>ON when power supply is ON</td></tr><tr><td>COMM.</td><td>Blinks during data transmission/reception</td></tr><tr><td>ALARM</td><td>ON for unit abnormality, blinks for station no. setting error</td></tr></tbody></table>	LED	Description	POWER	ON when power supply is ON	COMM.	Blinks during data transmission/reception	ALARM	ON for unit abnormality, blinks for station no. setting error
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Note	•SYSBUS Wire System Master unit: Type C500-RM201 Type C200H-RM201 •No. of output points, 16 points	•Satellite I/O Link System Master unit: ZW-31LM JW-31LM, JW-31LMH JW-23LM, JW-23LMH •No. of output points, 16 points	•MEWNET-F System Master unit: AFP3740, AFP3742 AFP5740, AFP5742 •No. of output points, 16 points																												
Cable wiring	 Type 3 ground	a) 2-wire type Wiring does not include signal ground line (SG).  Type 3 ground b) 3-wire type Wiring does not include signal ground line (SG).  Type 3 ground	 Type 3 ground																												

Type F1 NKE Corporation Uni-wire System		Type G Allen Bradley Remote I/O (RIO) System		Type J1, J2 SUNX Corporation S-LINK System																		
Name of terminal block, LED																						
	<table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>ON for power supply input (ON when normal, flickers when voltage drops)</td></tr><tr><td>SEND</td><td>Transmission indication: Blinks when normal, OFF or ON when abnormal</td></tr></table>	LED	Description	POWER	ON for power supply input (ON when normal, flickers when voltage drops)	SEND	Transmission indication: Blinks when normal, OFF or ON when abnormal	<table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>ON when power supply is ON</td></tr><tr><td>COM</td><td>ON when communication is normal Blinks when communication is initialized OFF for abnormal communication</td></tr><tr><td>ERROR</td><td>ON for abnormal communication</td></tr></table>	LED	Description	POWER	ON when power supply is ON	COM	ON when communication is normal Blinks when communication is initialized OFF for abnormal communication	ERROR	ON for abnormal communication	<table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>ON for power supply input</td></tr><tr><td>SEND</td><td>Transmission indication: Blinks when normal, Blinks slowly when abnormal</td></tr></table>	LED	Description	POWER	ON for power supply input	SEND
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ERROR	ON for abnormal communication																					
LED	Description																					
POWER	ON for power supply input																					
SEND	Transmission indication: Blinks when normal, Blinks slowly when abnormal																					
Note	• Uni-wire System - Send unit: SD-120 • No. of output points, 16 points	• Remote I/O (RIO) System • No. of output points, 16 points	• S-LINK System - S-LINK controller: SL-CU1A • No. of output points, 16 points (Type J1) - No. of output points (Type J2)																			
Cable wiring			a) Type T branching multi-drop wiring (S-LINK System) b) Crossover wiring (Sensor Link System)  The above is the example of using dedicated S-LINK flat ribbon cable SL-RCMI00.																			

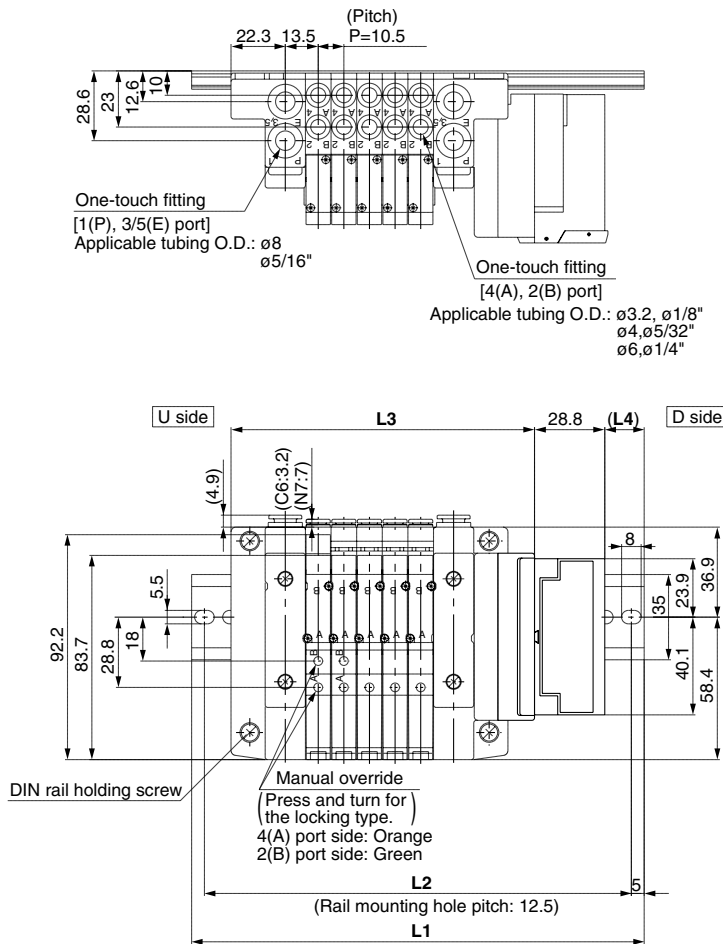
Type K Fuji Electric Co., Ltd. T-LINK Mini System		Type Q DeviceNet		Type R1, R2 OMRON Corporation CompoBus/S																						
Name of terminal block, LED																										
	<table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>ON for power supply input</td></tr><tr><td>ALM</td><td>ON for abnormal transmission or processor side power supply cut</td></tr></table>	LED	Description	POWER	ON for power supply input	ALM	ON for abnormal transmission or processor side power supply cut	<table><tr><th>LED</th><th>Description</th></tr><tr><td>PWR</td><td>Green light ON for DeviceNet circuit power input</td></tr><tr><td rowspan="4">MOD/NET</td><td>OFF When this unit is offline or circuit power is OFF</td></tr><tr><td>Green blinks When waiting for connection (Online)</td></tr><tr><td>Green ON When connection is established (Online)</td></tr><tr><td>Red blinks When connection time out occurs (recoverable communication abnormality)</td></tr><tr><td>Red ON For MAC ID duplication error, or BUSOFF error (major communication abnormality)</td></tr></table>	LED	Description	PWR	Green light ON for DeviceNet circuit power input	MOD/NET	OFF When this unit is offline or circuit power is OFF	Green blinks When waiting for connection (Online)	Green ON When connection is established (Online)	Red blinks When connection time out occurs (recoverable communication abnormality)	Red ON For MAC ID duplication error, or BUSOFF error (major communication abnormality)	<table><tr><th>LED</th><th>Description</th></tr><tr><td>PWR</td><td>ON when communication power is supplied, OFF when power is OFF</td></tr><tr><td>COMM</td><td>ON for normal communication, OFF for abnormal communication or waiting</td></tr><tr><td>ERR</td><td>ON for abnormal communication, OFF for normal communication or waiting</td></tr></table>	LED	Description	PWR	ON when communication power is supplied, OFF when power is OFF	COMM	ON for normal communication, OFF for abnormal communication or waiting	ERR
LED	Description																									
POWER	ON for power supply input																									
ALM	ON for abnormal transmission or processor side power supply cut																									
LED	Description																									
PWR	Green light ON for DeviceNet circuit power input																									
MOD/NET	OFF When this unit is offline or circuit power is OFF																									
	Green blinks When waiting for connection (Online)																									
	Green ON When connection is established (Online)																									
	Red blinks When connection time out occurs (recoverable communication abnormality)																									
Red ON For MAC ID duplication error, or BUSOFF error (major communication abnormality)																										
LED	Description																									
PWR	ON when communication power is supplied, OFF when power is OFF																									
COMM	ON for normal communication, OFF for abnormal communication or waiting																									
ERR	ON for abnormal communication, OFF for normal communication or waiting																									
Note	• T-LINK Mini System - Master unit: FTM100B - Converter: FRC100A-G02 - Repeater: FRC200A-C10 • No. of output points, 16 points	• DeviceNet • OMRON Corporation: CompoBus/D System - Master unit: Type C200HW-DRM21-V1 - Master unit: Type CS1W-DRM21 • No. of output points, 16 points	• CompoBus/S System - Master unit: Type C200HW-SRM21-V1 - Master unit: Type CQM1-SRM21-V1 • No. of output points, 16 points (Type SR1) - No. of output points, 8 points (Type SR2)																							
Cable wiring	 Connect the shielding wire to the SD terminal. If the shielding wire is not connected to the SD terminal, normal transmission will be impossible even for short distances. Furthermore, do not ground the shielding wire (SD).																									

	Type H NKE Corporation Uni-wire H System	Type U JEMANET (JPCN-1)	Type V Mitsubishi Electric Corporation CC-LINK System																										
Name of terminal block, LED	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>POWER</td><td>ON for power supply input (ON when normal, flickers when voltage drops)</td></tr><tr><td>SEND</td><td>Transmission indication: Blinks when normal, OFF or ON when abnormal</td></tr></tbody></table>	LED	Description	POWER	ON for power supply input (ON when normal, flickers when voltage drops)	SEND	Transmission indication: Blinks when normal, OFF or ON when abnormal	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>POWER</td><td>ON for SI unit power supply input</td></tr><tr><td>COMM</td><td>ON for normal communication</td></tr><tr><td>ALARM</td><td>ON for abnormal communication</td></tr></tbody></table>	LED	Description	POWER	ON for SI unit power supply input	COMM	ON for normal communication	ALARM	ON for abnormal communication	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>PW</td><td>ON when communication power is supplied, OFF when power is OFF</td></tr><tr><td>L RUN</td><td>ON when normal data is being received</td></tr><tr><td>SD</td><td>ON when data is transmitted</td></tr><tr><td>RD</td><td>ON when data is received</td></tr><tr><td>L ERR.</td><td>ON for transmission error/wrong setting. Blinks when station or transmission speed setting changes during operation</td></tr></tbody></table>	LED	Description	PW	ON when communication power is supplied, OFF when power is OFF	L RUN	ON when normal data is being received	SD	ON when data is transmitted	RD	ON when data is received	L ERR.	ON for transmission error/wrong setting. Blinks when station or transmission speed setting changes during operation
LED	Description																												
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L ERR.	ON for transmission error/wrong setting. Blinks when station or transmission speed setting changes during operation																												
Note	• Uni-wire H System Send unit: SD-H2 • No. of output points, 16 points	• JEMANET (JPCN-1) (Reference) AJ71J92-S3 (Mitsubishi Electric Corporation) A1SJ71J92-S3 (Mitsubishi Electric Corporation) Type C200HW-JRM21 (OMRON Corporation) NJ-JPCN-1 (Fuji Electric Co., Ltd.) NP1L-JP1 (Fuji Electric Co., Ltd.) • No. of output points, 16 points	• CC-Link System Master unit: AJ61BT11 Master unit: A1SJ61BT11 Master unit: AJ61QBT11 Master unit: A1SJ61QBT11 • No. of output points, 16 points																										
Cable wiring	Transmission line 	a) 2-wire type  b) 3-wire type 																											

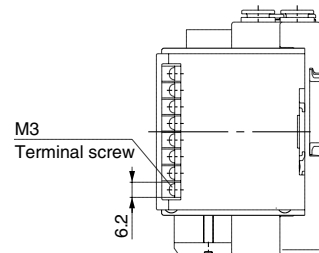
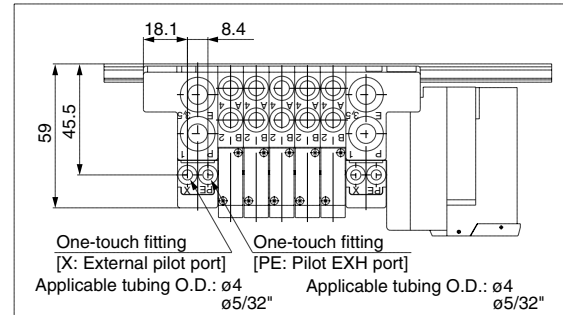
Dimensions: Series 10-SV1000 for EX120 Dedicated Output Serial Wiring

• Cassette base manifold: 10-SS5V1-16S3□D- Stations $\begin{matrix} U \\ D \end{matrix}$ (R)- $\begin{matrix} C3, N1 \\ C4, N3 \\ C6, N7 \end{matrix}$

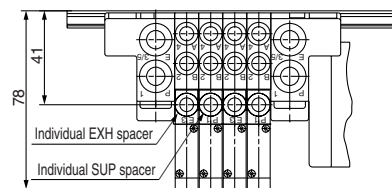
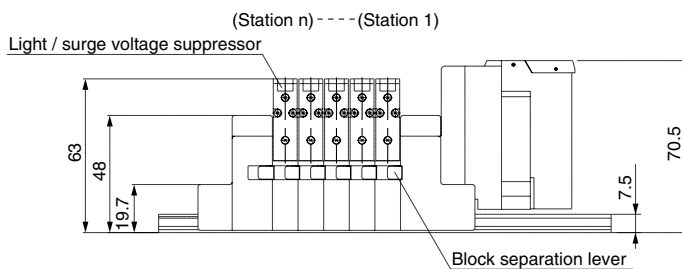
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

	n: Stations														
$\begin{matrix} L \\ n \end{matrix}$	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273	285.5	298
L2	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5	275	287.5
L3	92.9	103.4	113.9	124.4	134.9	145.4	155.9	166.4	176.9	187.4	197.9	208.4	218.9	229.4	239.9
L4	13	14	15	16	17	12	13	14	15	16	17	11.5	12.5	13.5	14.5

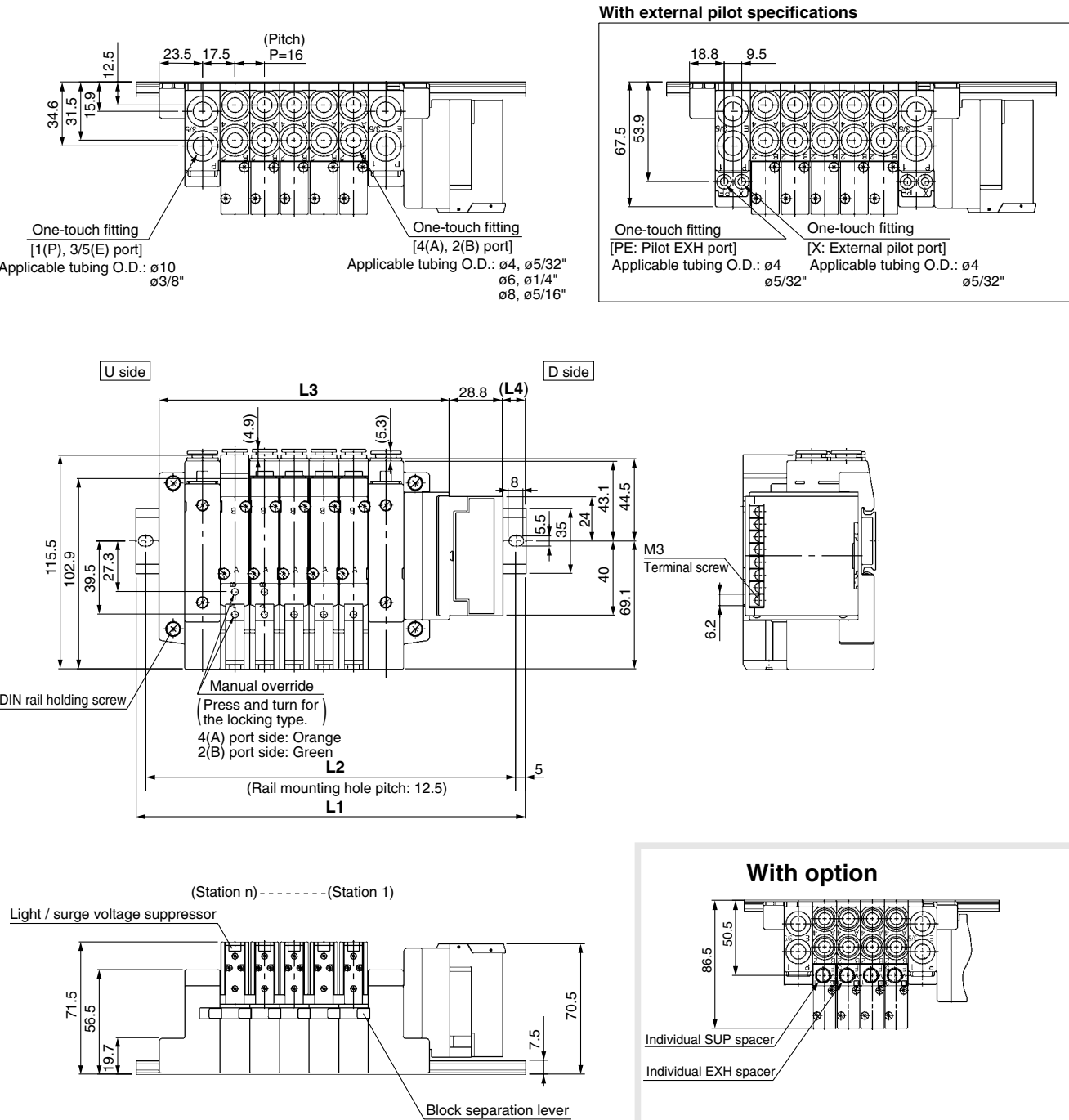


Note) The width of type E (Matsushita Electric Works, Ltd.) and type G (Rockwell Automation, Inc.) SI units are $\boxed{24.3 \text{ mm}}$ greater.
For details, please contact SMC.

Dimensions: Series 10-SV2000 for EX120 Dedicated Output Serial Wiring

• Cassette base manifold: 10-SS5V2-16S3□D- Stations $\begin{matrix} U \\ D \end{matrix}$ (R) - $\begin{matrix} C4, N3 \\ C6, N7 \\ C8, N9 \end{matrix}$

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



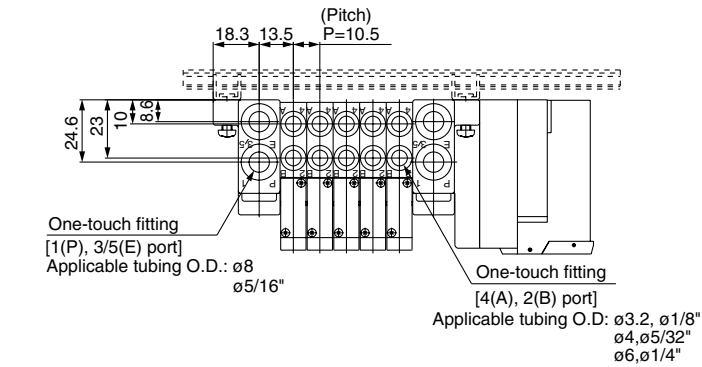
L Dimension		n: Stations														
	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		173	185.5	198	210.5	235.5	248	260.5	273	298	310.5	323	348	360.5	373	385.5
L2		162.5	175	187.5	200	225	237.5	250	262.5	287.5	300	312.5	337.5	350	362.5	375
L3		108.9	124.9	140.9	156.9	172.9	188.9	204.9	220.9	236.9	252.9	268.9	284.9	300.9	316.9	332.9
L4		17.5	16	14	12.5	17	15	13.5	11.5	16	14.5	12.5	17	15.5	13.5	12

Note) The width of type E (Matsushita Electric Works, Ltd.) and type G (Rockwell Automation, Inc.) SI units are $\boxed{24.3 \text{ mm}}$ greater.
For details, please contact SMC.

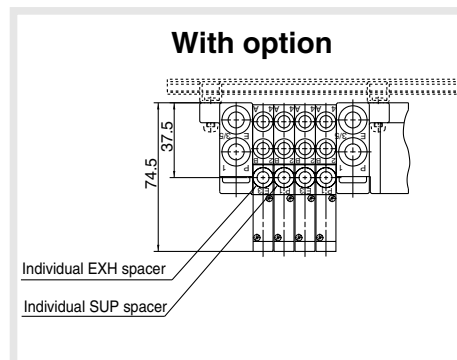
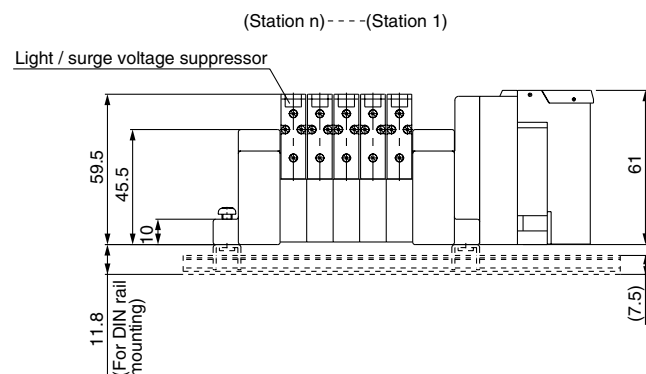
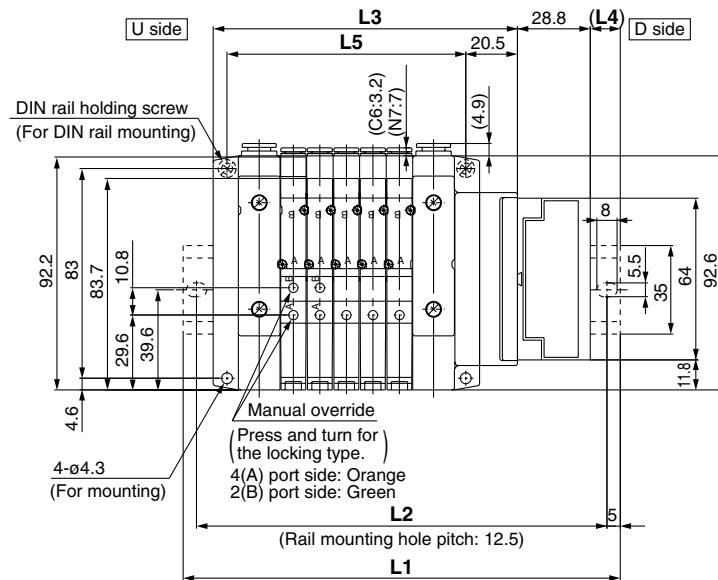
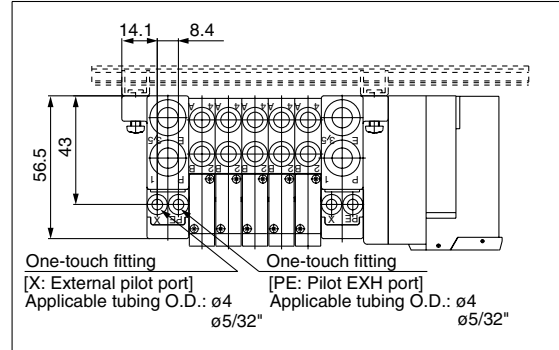
Dimensions: Series 10-SV1000 for EX120 Dedicated Output Serial Wiring

• Tie-rod base manifold: 10-SS5V1-10S3□D-Stations^U_B (R)-^{C3, N1}_{C4, N3} (-D) ^{C6, N7}

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



L Dimension

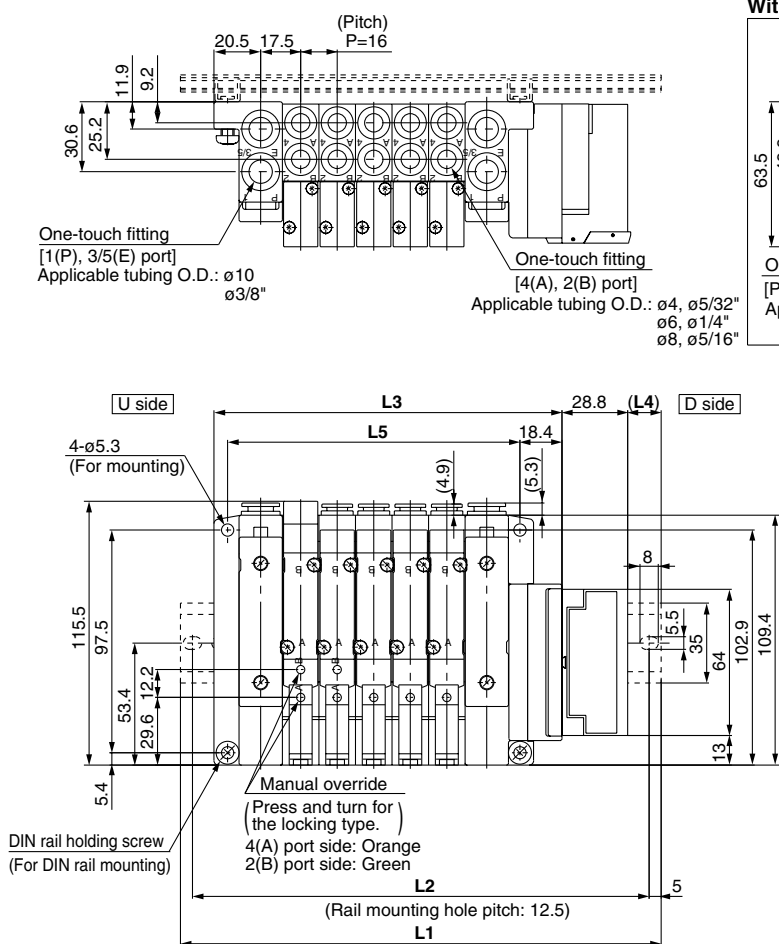
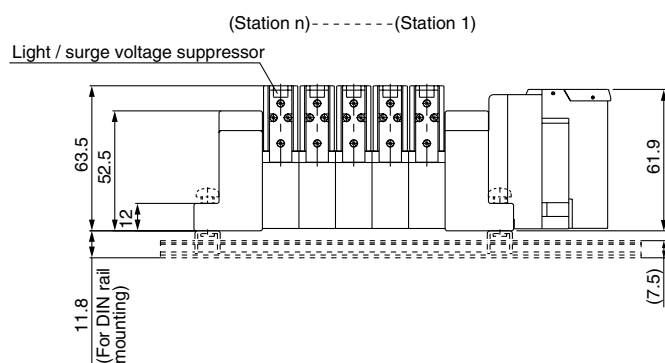
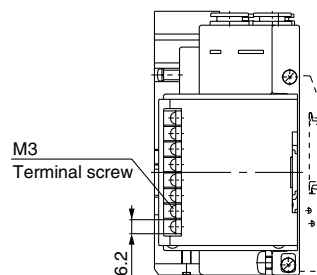
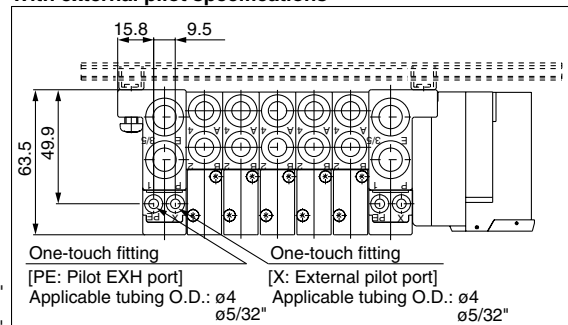
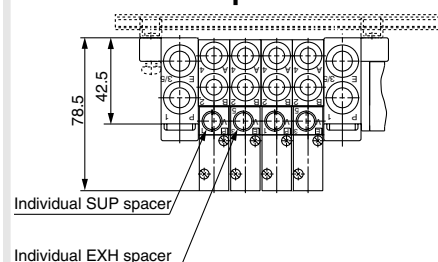
L Dimension															n: Stations
$\frac{L}{n}$	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	148	160.5	173	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298
L2	137.5	150	162.5	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5
L3	89	99.5	110	120.5	131	141.5	152	162.5	173	183.5	194	204.5	215	225.5	236
L4	15	16	17	12	13	14	15	16	17	11.5	12.5	13.5	14.5	15.5	16.5
L5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.5	189	199.5	210

Note) The width of type E (Matsushita Electric Works, Ltd.) and type G (Rockwell Automation, Inc.) SI units are 24.3 mm greater.
For details, please contact SMC.

Dimensions: Series 10-SV2000 for EX120 Dedicated Output Serial Wiring
• Tie-rod base manifold: 10-SS5V2-10S3□D- Stations

$\frac{U}{D}$ $\frac{B}{B}$ (R) - $\frac{C4, N3}{C6, N7}$ $\frac{C8, N9}{(-D)}$

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

**With external pilot specifications****With option****L Dimension**

n: Stations

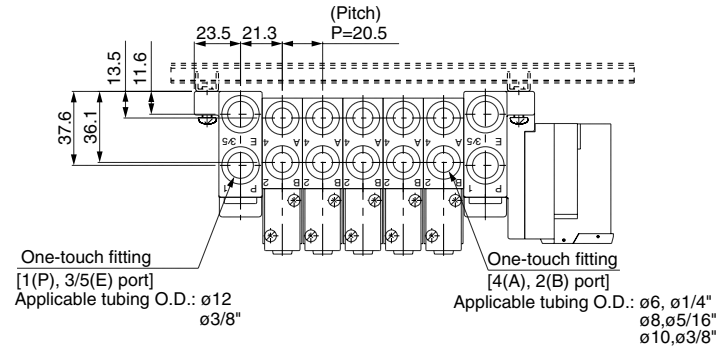
$\frac{L}{n}$	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	160.5	173	198	210.5	223	248	260.5	273	285.5	310.5	323	335.5	360.5	373	385.5
L2	150	162.5	187.5	200	212.5	237.5	250	262.5	275	300	312.5	325	350	362.5	375
L3	104.4	120.4	136.4	152.4	168.4	184.4	200.4	216.4	232.4	248.4	264.4	280.4	296.4	312.4	328.4
L4	13.5	12	16.5	14.5	13	17.5	15.5	14	12	16.5	15	13	17.5	16	14
L5	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304

Note) The width of type E (Matsushita Electric Works, Ltd.) and type G (Rockwell Automation, Inc.) SI units are ≥ 24.3 mm greater.
For details, please contact SMC.

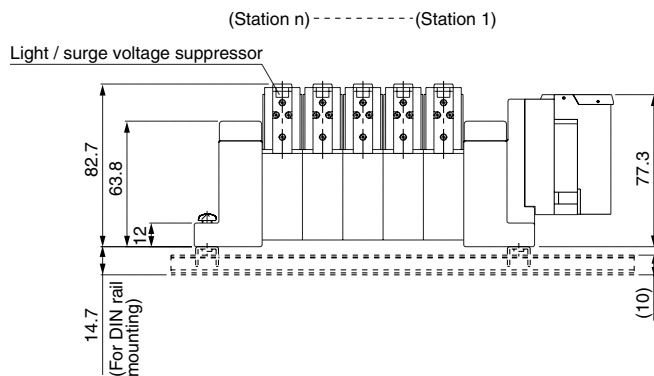
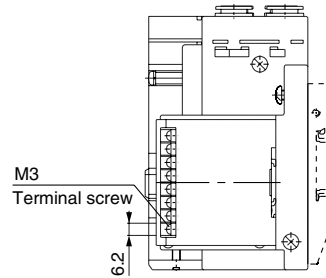
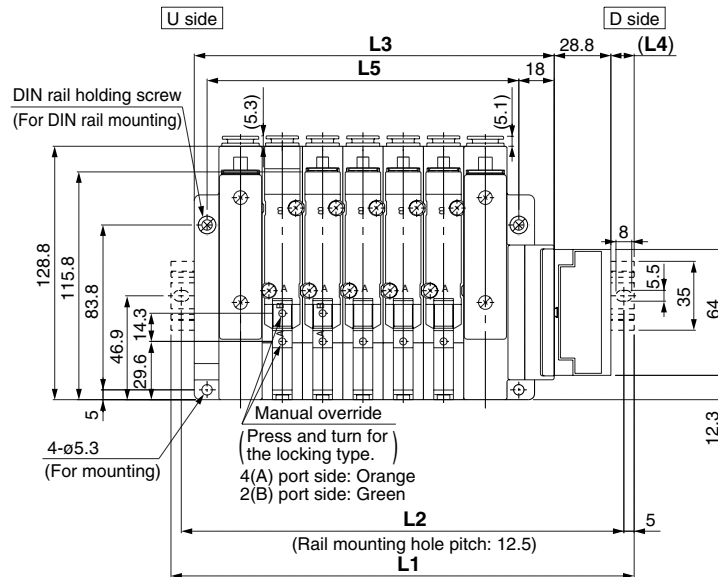
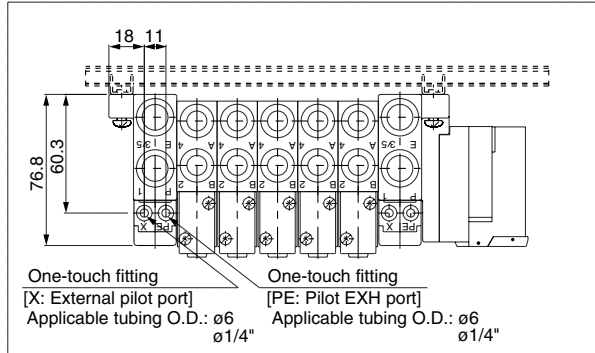
Dimensions: Series 10-SV3000 for EX120 Dedicated Output Serial Wiring

• Tie-rod base manifold: 10-SS5V3-10S3□D- Stations $\frac{U}{D}$ (R) - $\frac{C6, N7}{C8, N9}$ (-D) $\frac{C10, N11}$

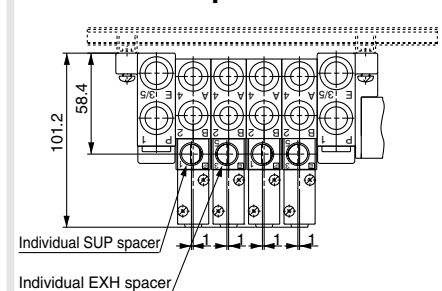
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

n: Stations

$\frac{L}{n}$	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	185.5	198	223	235.5	260.5	285.5	298	323	348	360.5	385.5	410.5	423	448	460.5
L2	175	187.5	212.5	225	250	275	287.5	312.5	337.5	350	375	400	412.5	437.5	450
L3	121.5	142	162.5	183	203.5	224	244.5	265	285.5	306	326.5	347	367.5	388	408.5
L4	17.5	13.5	16	12	14	16.5	12.5	14.5	17	13	15	17.5	13.5	15.5	11.5
L5	97	117.5	138	158.5	179	199.5	220	240.5	261	281.5	302	322.5	343	363.5	384

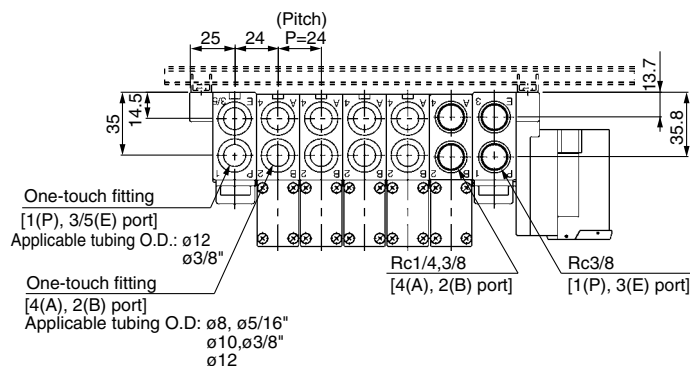
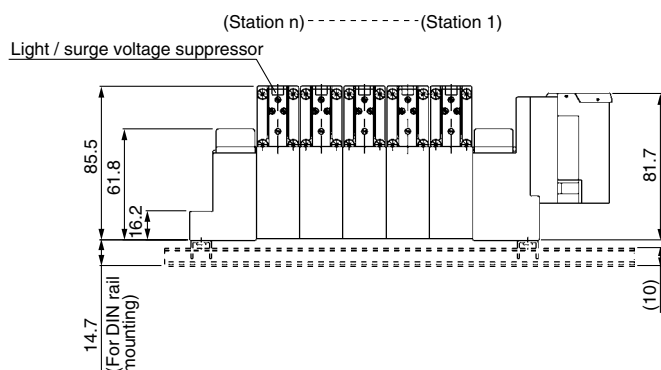
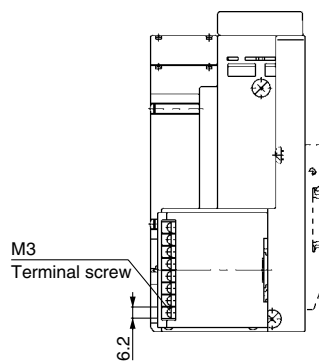
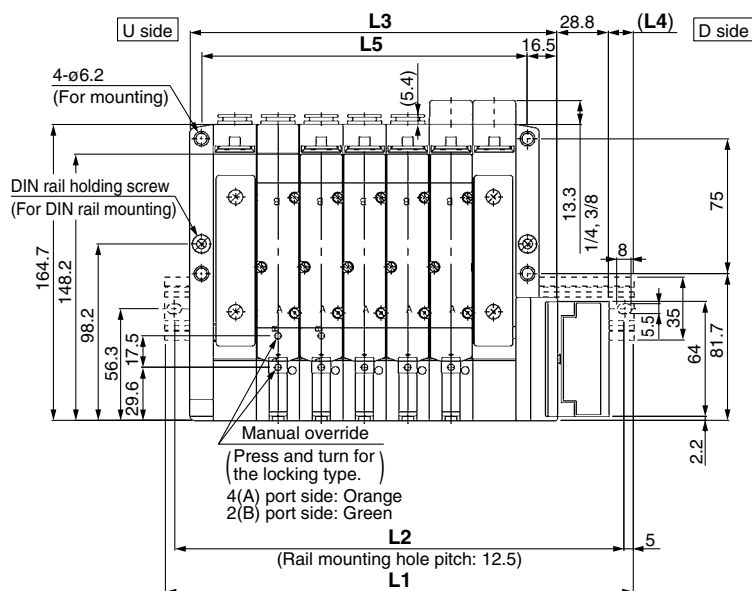
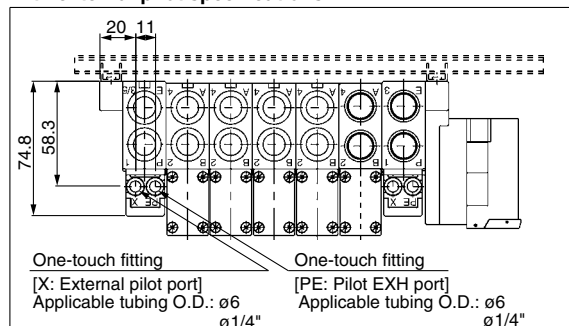
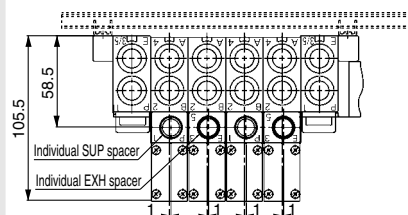


Note) The width of type E (Matsushita Electric Works, Ltd.) and type G (Rockwell Automation, Inc.) SI units are $\boxed{24.3 \text{ mm}}$ greater.
For details, please contact SMC.

Dimensions: Series 10-SV4000 for EX120 Dedicated Output Serial Wiring
• Tie-rod base manifold: 10-SS5V4-10S3□D- Stations

$\begin{matrix} \text{U} \\ \text{D} \\ \text{B} \end{matrix}$
 $\begin{matrix} \text{02} \\ \text{03} \end{matrix}$
 $\begin{matrix} \text{C8} \\ \text{C10} \\ \text{C12} \end{matrix}$
 $\begin{matrix} \text{N9} \\ \text{N11} \end{matrix}$
 $\begin{matrix} \text{(R)} \\ \text{(-D)} \end{matrix}$

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

**With external pilot specifications****With option****L Dimension**

n: Stations

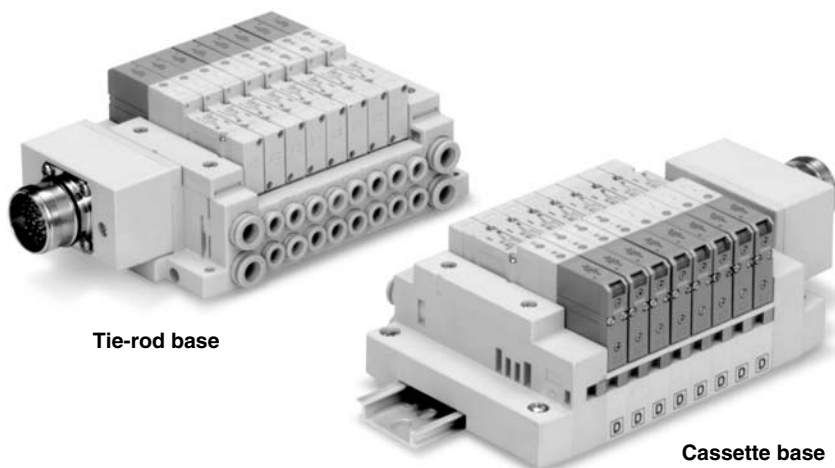
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	185.5	210.5	235.5	260.5	285.5	310.5	335.5	360.5	385.5	410.5	435.5	448	473	498	523
L2	175	200	225	250	275	300	325	350	375	400	425	437.5	462.5	487.5	512.5
L3	132	156	180	204	228	252	276	300	324	348	372	396	420	444	468
L4	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	17.5	11.5	12	12.5	13
L5	109	133	157	181	205	229	253	277	301	325	349	373	397	421	445



Note) The width of type E (Matsushita Electric Works, Ltd.) and type G (Rockwell Automation, Inc.) SI units are 24.3 mm greater.
For details, please contact SMC.

Circular connector

IP67 compliant



Applicable
series

Cassette base manifold
10-SV1000/10-SV2000

Tie-rod base manifold
10-SV1000/10-SV2000/10-SV3000/10-SV4000

· Number of connectors: 26 pins

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Series 10-SV

Circular connector

How to Order

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Tie-rod base
10 - SS5V 1 - W 10CD - 05 U

Cassette base
10 - SS5V 1 - W 16CD - 05 U

Clean series

Series

1	10-SV1000
2	10-SV2000

Enclosure IP67 specifications

Valve stations

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
12	12 stations	
02	2 stations	Specified layout ^{Note 2)} (Up to 24 solenoids possible)
20	20 stations	

Mounting

Nil	Direct mounting
D	DIN rail mounting (With DIN rail)
D0 ^{Note)}	DIN rail mounting (Without DIN rail)
D3	For 3 stations
...	...
D20 ^{Note)}	For 20 stations

DIN rail length specified

Nil	Standard length
3	For 3 stations
...	...
20 ^{Note)}	For 20 stations

Stations

Type 16: Series 10-SV1000

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
09	9 stations	
02	2 stations	Specified layout ^{Note 2)} (Up to 18 solenoids possible)
18	18 stations	

Type 16: Series 10-SV2000

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
12	12 stations	
02	2 stations	Specified layout ^{Note 2)} (Up to 24 solenoids possible)
20	20 stations	

Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used at all of the manifold stations. Use of a single solenoid will result in an unused control signal. If this is not desired, order with a specified layout.

Note 2) Specified layout: Indicate wiring specifications on the manifold specification sheet. (Note that double, 3 and 4 position valves cannot be used where single solenoid wiring has been specified.)

P, E port location

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 20 stations)

SUP/EXH block assembly specifications

Nil	Internal pilot
R	External pilot

A, B port size (Metric)

Symbol	Specifications	P, E port	Applicable series
C3	One-touch fitting for ø3.2	One-touch fitting for ø8	10-SV1000
C4	One-touch fitting for ø4		
C6	One-touch fitting for ø6		
C4	One-touch fitting for ø4	One-touch fitting for ø10	10-SV2000
C6	One-touch fitting for ø6		
C8	One-touch fitting for ø8		
C6	One-touch fitting for ø6	One-touch fitting for ø12	10-SV3000
C8	One-touch fitting for ø8		
C10	One-touch fitting for ø10		
C8	One-touch fitting for ø8	One-touch fitting for ø12	10-SV4000
C10	One-touch fitting for ø10		
C12	One-touch fitting for ø12		
02	Rc 1/4	Rc3/8	10-SV4000
03	Rc 3/8		
02F	G 1/4		
03F	G 3/8	G3/8	
M	A, B ports mixed		

A, B port size (Inch)

Symbol	Specifications	P, E port	Applicable series
N1	One-touch fitting for ø1/8"	One-touch fitting for ø5/16"	10-SV1000
N3	One-touch fitting for ø5/32"		
N7	One-touch fitting for ø1/4"		
N3	One-touch fitting for ø5/32"	One-touch fitting for ø3/8"	10-SV2000
N7	One-touch fitting for ø1/4"		
N9	One-touch fitting for ø5/16"		
N7	One-touch fitting for ø1/4"	One-touch fitting for ø3/8"	10-SV3000
N9	One-touch fitting for ø5/16"		
N11	One-touch fitting for ø3/8"		
N9	One-touch fitting for ø5/16"	One-touch fitting for ø3/8"	10-SV4000
N11	One-touch fitting for ø3/8"		
02N	NPT 1/4		
03N	NPT 3/8	NPT3/8	
02T	NPTF 1/4	NPTF3/8	
03T	NPTF 3/8		
M	A, B ports mixed		

Note) In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

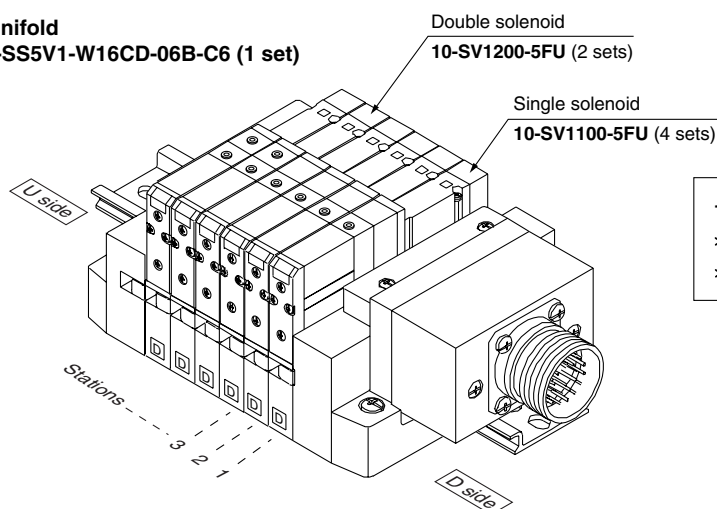
Note) Port sizes of X, PE port for external pilot specification (R) are ø4 (metric), ø5/32" (inch) for 10-SV1000/2000 and ø6 (metric) and ø1/4" (inch) for 10-SV3000/4000.

How to Order Manifold Assembly

Ordering example (10-SV1000)

Manifold

10-SS5V1-W16CD-06B-C6 (1 set)



10-SS5V1-W16CD-06B-C6.....1 set (Manifold part no.)
 * 10-SV1100-5FU.....4 sets (Single solenoid part no.)
 * 10-SV1200-5FU.....2 sets (Double solenoid part no.)

How to Order Solenoid Valves

10—SV 1 1 0 0 — 5 F

Clean series

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
A	4 position dual 3 port valve: N.C./N.C.
B	4 position dual 3 port valve: N.O./N.O.
C	4 position dual 3 port valve: N.C./N.O.

* 4 position dual 3 port valves are applicable to series 10-SV1000 and 10-SV2000 only.

Pilot type

Nil	Internal pilot
R	External pilot

* External pilot specifications is not available for 4 position dual 3 port valves.

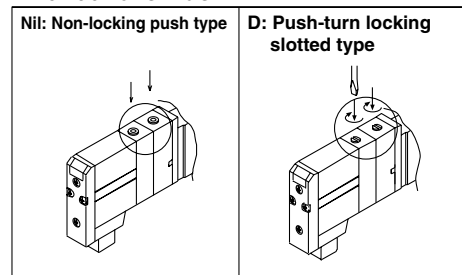
Back pressure check valve

Nil	None
K	Built-in

* Built-in back pressure check valve type is applicable to Series 10-SV1000 only.

* Back pressure check valve is not available for 3 position solenoid valves.

Manual override



Light/surge voltage suppressor

U	With light/surge voltage suppressor
R	With surge voltage suppressor

Rated voltage

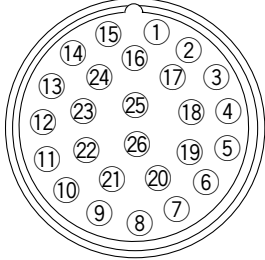
5	24 VDC
6	12 VDC



Note) Refer to Specific Product Precautions 2 on page 323.

Manifold Electrical Wiring

10C/16C Circular Connector Type (26 pins)



②⑥ --- Common

②⑤ --- Common

②④ --- SOL.B

②③ --- SOL.A } Station 12

Light/surge voltage suppressor

②② --- SOL.B

②① --- SOL.A } Station 11

Light/surge voltage suppressor

②④ --- SOL.B

②③ --- SOL.A } Station 2

Light/surge voltage suppressor

②② --- SOL.B

②① --- SOL.A } Station 1

Light/surge voltage suppressor

· This circuit has double wiring specifications for up to 12 stations. Since the usable number of solenoids differs depending on the manifold type, refer to the table below. In the case of single solenoids, connect to SOL. A. Furthermore, when wiring is specified on a manifold specification sheet, connections are made without skipping any connectors, and signals A for single and A, B for double are in order 1 → 2 → 3 → 4, etc.

· Stations are counted from D side (connector side) as the 1st.

· Since solenoid valves do not have polarity, either the +COM or –COM can be used.

Usable No. of Solenoids

Model		Max. no. of solenoids
Tie-rod base type 10	10-SV1000 to 10-SV4000	24
Cassette base type 16	10-SV1000	18
	10-SV2000	24

282

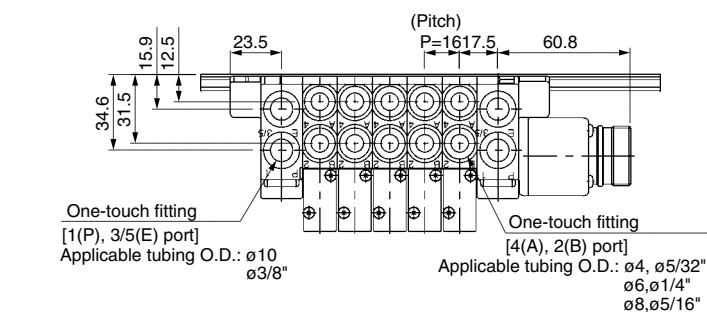
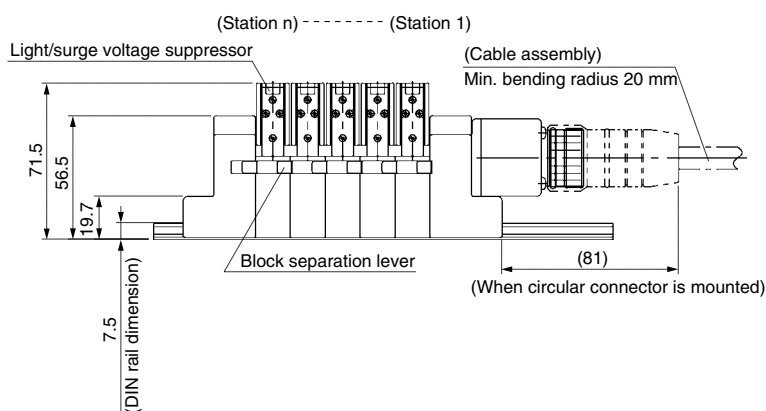
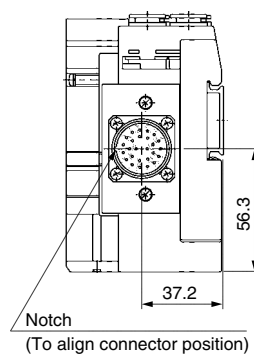
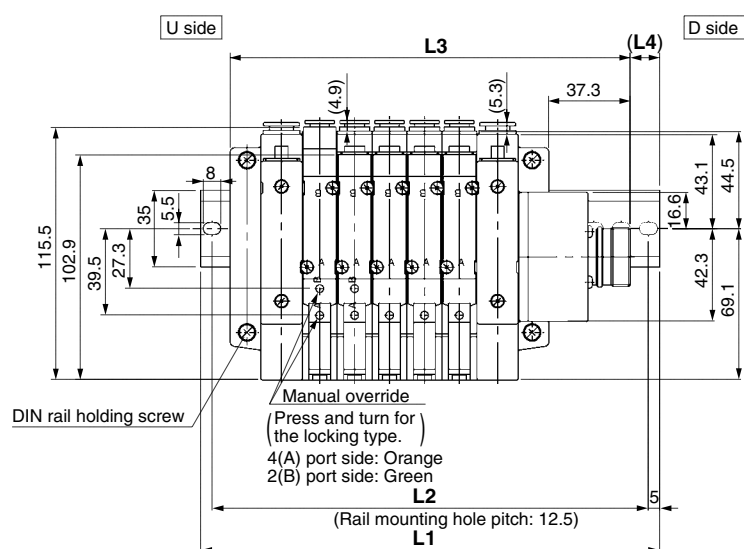
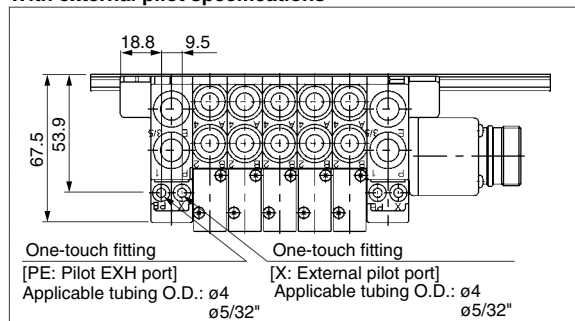
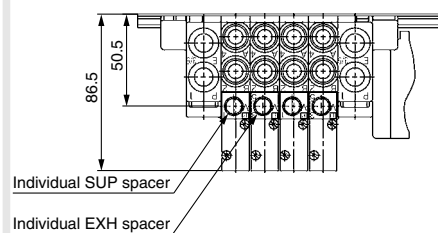


Dimensions: Series 10-SV2000 for circular connector
• Cassette base manifold: 10-SS5V2-W16CD-

U	C4, N3
D	C6, N7
B	C8, N9

Stations (R) -

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
 - External pilot port positions are the same as P, E port outlet positions.

**With external pilot specifications****With option****L Dimension**

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	160.5	185.5	198	210.5	223	248	260.5	273	298	310.5	323	335.5	360.5	373	385.5	410.5	423	435.5	448
L2	150	175	187.5	200	212.5	237.5	250	262.5	287.5	300	312.5	325	350	362.5	375	400	412.5	425	437.5
L3	135.3	151.3	167.3	183.3	199.3	215.3	231.3	247.3	263.3	279.3	295.3	311.3	327.3	343.3	359.3	375.3	391.3	407.3	423.3
L4	12.5	17	15.5	13.5	12	16.5	14.5	13	17.5	15.5	14	12	16.5	15	13	17.5	16	14	12.5

Dimensions: Series 10-SV1000 for circular connector

• Tie-rod base manifold: 10-SS5V1-W10CD-

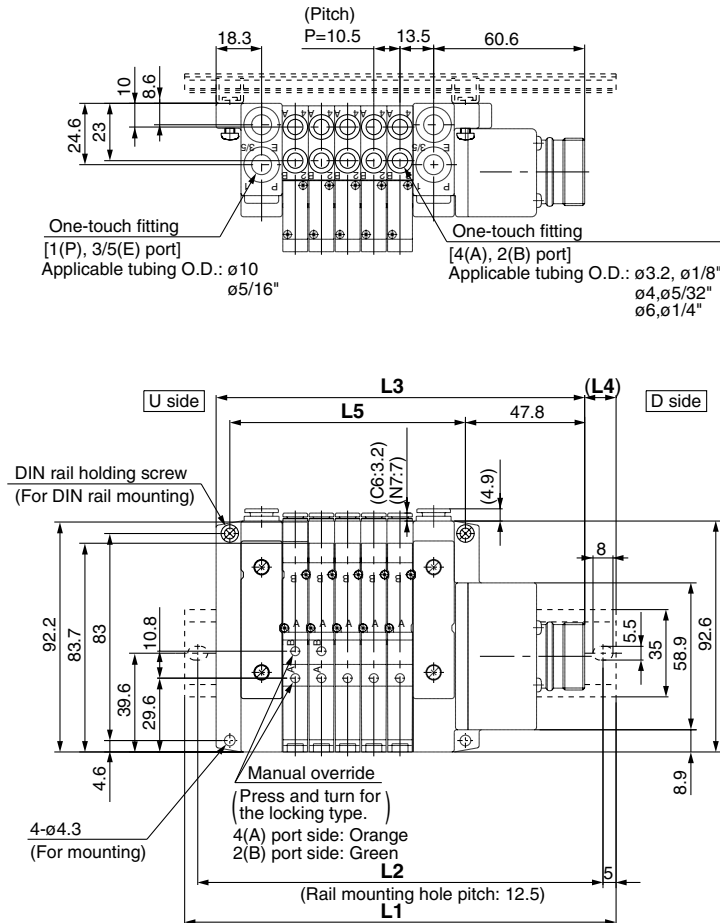
Stations

UDB

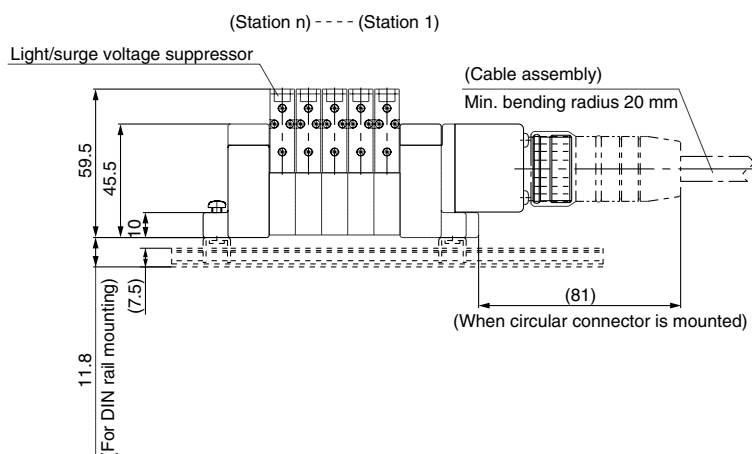
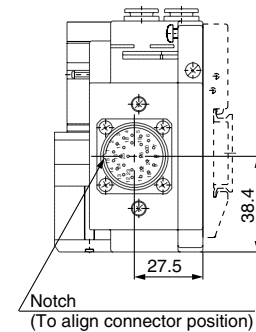
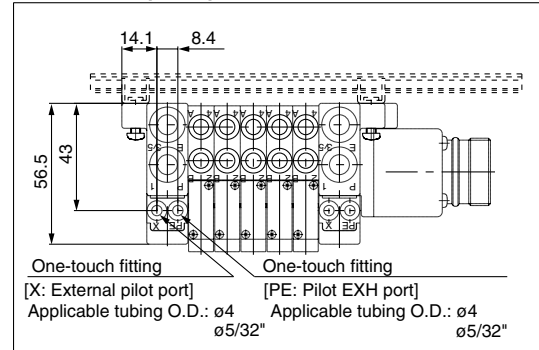
(R) -
C3, N1
C4, N3
C6, N7

(-D)

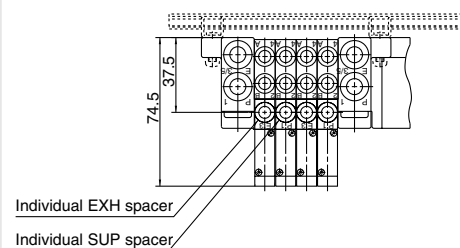
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	148	160.5	160.5	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298	298	310.5	323	335.5
L2	137.5	150	150	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5	287.5	300	312.5	325
L3	116.3	126.8	137.3	147.8	158.3	168.8	179.3	189.8	200.3	210.8	221.3	231.8	242.3	252.8	263.3	273.8	284.3	294.8	305.3
L4	16	17	11.5	12.5	13.5	14.5	15.5	16.5	17.5	12.5	13.5	14.5	15.5	16.5	17.5	12	13	14	15
L5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.5	189	199.5	210	220.5	231	241.5	252

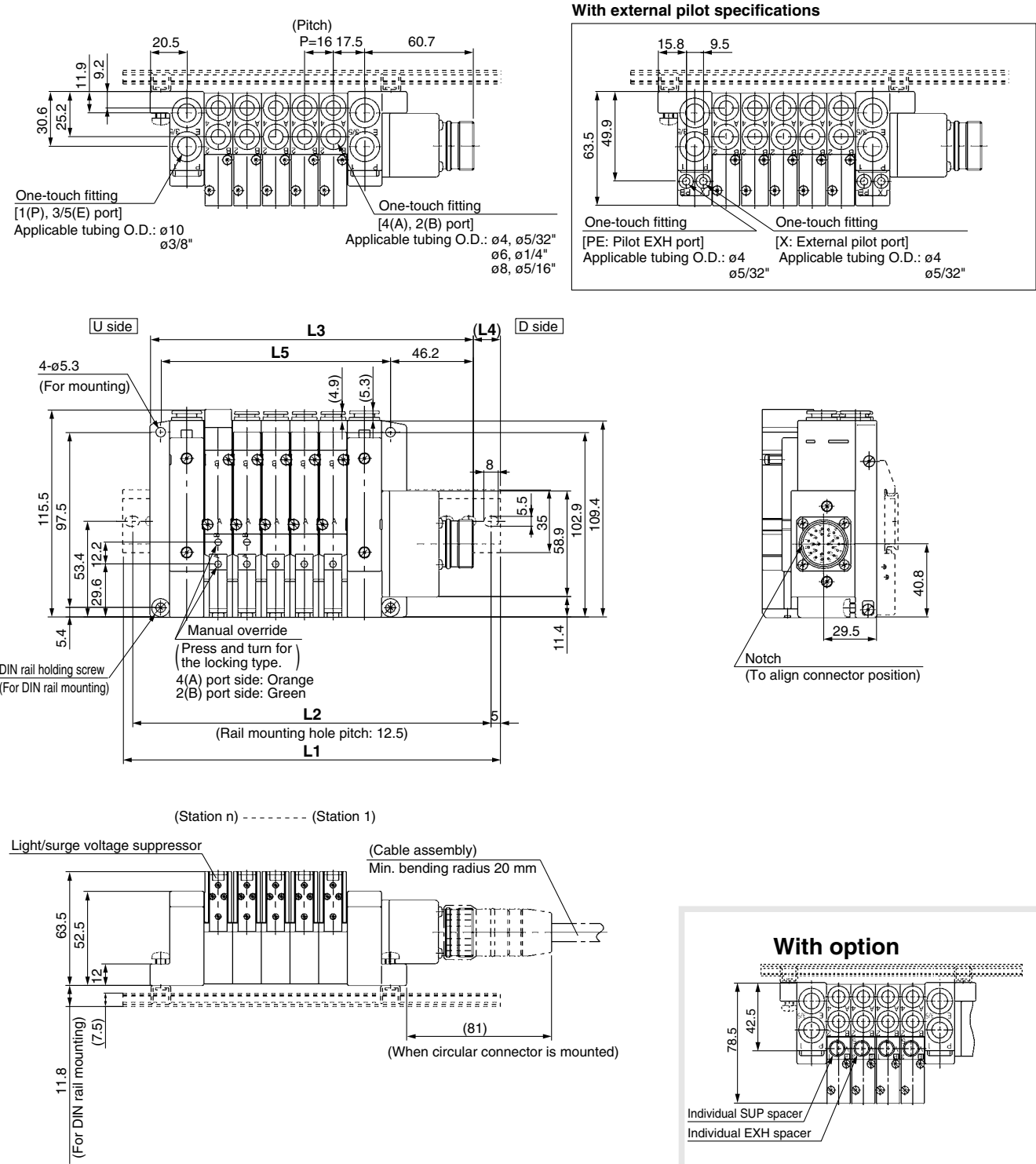
Dimensions: Series 10-SV2000 for circular connector

• Tie-rod base manifold: 10-SS5V2-W10CD- Stations

U
D
B

 (R) - C4, N3
C6, N7 (-D)
C8, N9

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



L Dimension

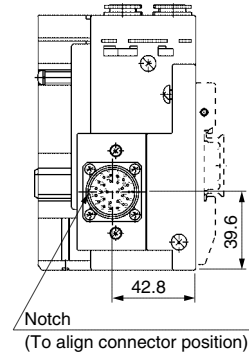
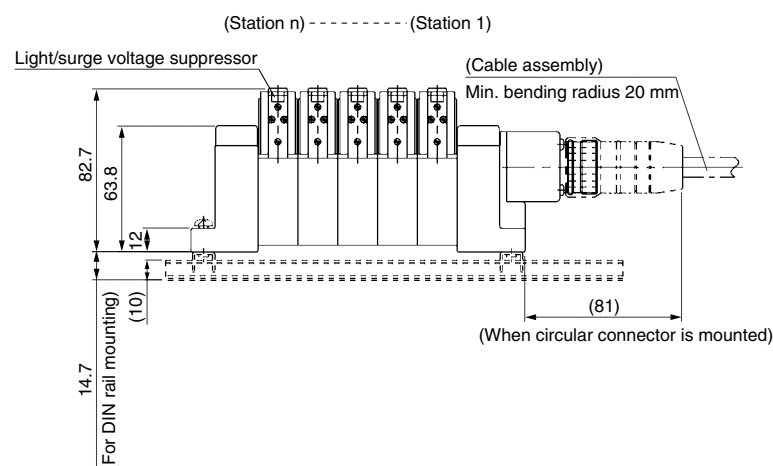
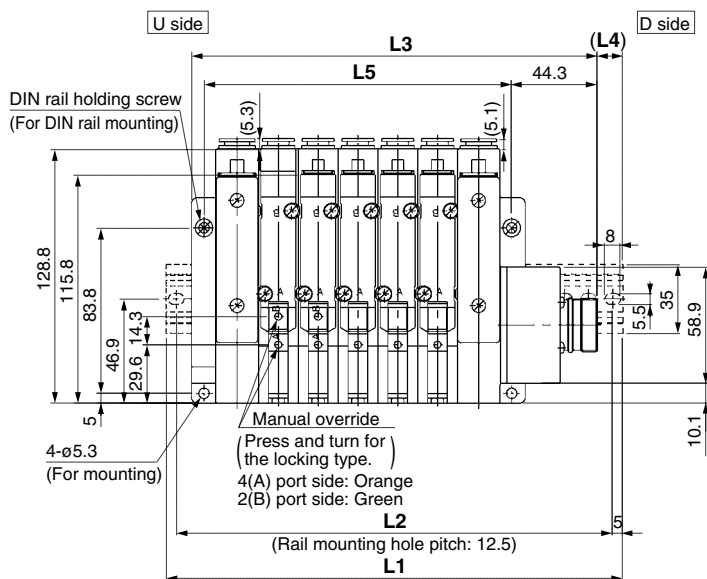
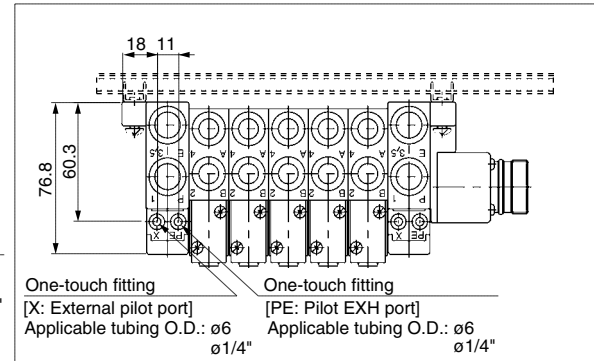
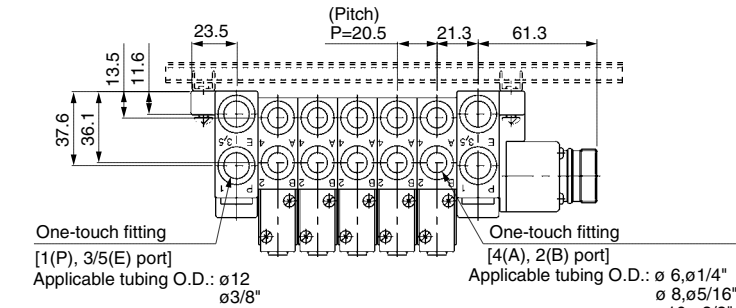
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		160.5	173	198	210.5	223	235.5	260.5	273	285.5	310.5	323	335.5	348	373	385.5	398	423	435.5	448
L2		150	162.5	187.5	200	212.5	225	250	262.5	275	300	312.5	325	337.5	362.5	375	387.5	412.5	425	437.5
L3		132.2	148.2	164.2	180.2	196.2	212.2	228.2	244.2	260.2	276.2	292.2	308.2	324.2	340.2	356.2	372.2	388.2	404.2	420.2
L4		14	12.5	17	15	13.5	11.5	16	14.5	12.5	17	15.5	13.5	12	16.5	14.5	13	17.5	15.5	14
L5		80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336	352	368

Dimensions: Series 10-SV3000 for circular connector

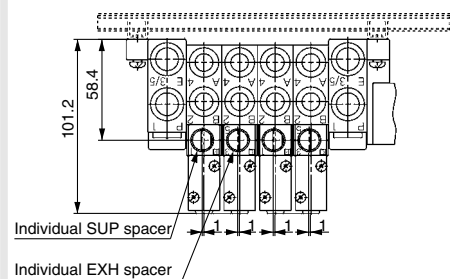
• Tie-rod base manifold: 10-SS5V3-W10CD- Stations $\begin{matrix} U \\ D \\ B \end{matrix}$ (R) - $\begin{matrix} C6, N7 \\ C8, N9 \\ C10, N11 \end{matrix}$ (-D)

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

With external pilot specifications



With option

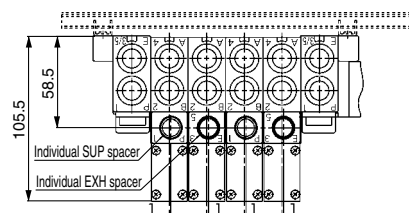
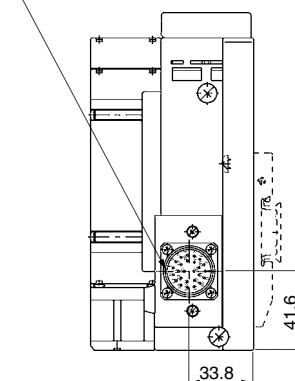


L Dimension

n: Stations

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		173	198	223	235.5	260.5	285.5	298	323	335.5	360.5	385.5	398	423	448	460.5	485.5	510.5	523	548
L2		162.5	187.5	212.5	225	250	275	287.5	312.5	325	350	375	387.5	412.5	437.5	450	475	500	512.5	537.5
L3		147.8	168.3	188.8	209.3	229.8	250.3	270.8	291.3	311.8	332.3	352.8	373.3	393.8	414.3	434.8	455.3	475.8	496.3	516.8
L4		12.5	15	17	13	15.5	17.5	13.5	16	12	14	16.5	12.5	14.5	17	13	15	17.5	13.5	15.5
L5		97	117.5	138	158.5	179	199.5	220	240.5	261	281.5	302	322.5	343	363.5	384	404.5	425	445.5	466

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



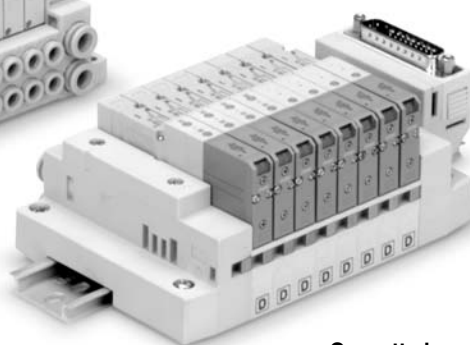
n: Stations

L ⁿ		n: Station																	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	198	210.5	235.5	260.5	285.5	310.5	335.5	360.5	385.5	410.5	435.5	460.5	485.5	498	523	548	573	598	623
L2	187.5	200	225	250	275	300	325	350	375	400	425	450	475	487.5	512.5	537.5	562.5	587.5	612.5
L3	162.8	186.8	210.8	234.8	258.8	282.8	306.8	330.8	354.8	378.8	402.8	426.8	450.8	474.8	498.8	522.8	546.8	570.8	594.8
L4	17.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5	17	17.5	11.5	12	12.5	13	13.5	14
L5	109	133	157	181	205	229	253	277	301	325	349	373	397	421	445	469	493	517	541

D-sub connector



Tie-rod base



Cassette base

Applicable series	Cassette base manifold 10-SV1000/10-SV2000
	Tie-rod base manifold 10-SV1000/10-SV2000/10-SV3000/10-SV4000
	· Number of connectors: 25 pins · MIL-C-24308 - Conforming to JIS-X-5101

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-SV

D-sub connector

How to Order

Tie-rod base
10—SS5V 1—10FD 1—05 U

Cassette base
10—SS5V 1—16FD 1—05 U

Clean series
Series 1 10-SV1000
2 10-SV2000

Connector entry direction
1 Upward
2 Lateral

Valve stations

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
⋮	⋮	
11	11 stations	
02	2 stations	Specified layout ^{Note 2)} (Up to 23 solenoids possible)
⋮	⋮	
20	20 stations	

Series

Symbol	Stations	Note
1	10-SV1000	Double wiring specifications ^{Note 1)}
2	10-SV2000	
3	10-SV3000	
4	10-SV4000	Specified layout ^{Note 2)} (Up to 23 solenoids possible)
⋮	⋮	
20	20 stations	

Mounting

Nil	Direct mounting
D	DIN rail mounting (With DIN rail)
D0 ^{Note)}	DIN rail mounting (Without DIN rail)
D3	For 3 stations
⋮	⋮
D20	For 20 stations

DIN rail length specified

Nil	Standard length
3	For 3 stations
⋮	⋮
20 ^{Note)}	For 20 stations

Valve stations

10-SV1000 Series

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
⋮	⋮	
09	9 stations	
02	2 stations	Specified layout ^{Note 2)} (Up to 18 solenoids possible)
⋮	⋮	
18	18 stations	

Series 10-SV2000

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
⋮	⋮	
11	11 stations	
02	2 stations	Specified layout ^{Note 2)} (Up to 23 solenoids possible)
⋮	⋮	
20	20 stations	

P, E port location

U	D	B
U side (2 to 10 stations)	D side (2 to 10 stations)	Both sides (2 to 20 stations)

Pilot type

Nil	R
Internal pilot	External pilot

A, B port size (Metric)

Symbol	A, B port	P, E port	Applicable series
C3	One-touch fitting for ø3.2	One-touch fitting for ø8	10-SV1000
C4	One-touch fitting for ø4		
C6	One-touch fitting for ø6		
C4	One-touch fitting for ø4	One-touch fitting for ø10	10-SV2000
C6	One-touch fitting for ø6		
C8	One-touch fitting for ø8		
C6	One-touch fitting for ø6	One-touch fitting for ø12	10-SV3000
C8	One-touch fitting for ø8		
C10	One-touch fitting for ø10		
C8	One-touch fitting for ø8	One-touch fitting for ø12	10-SV4000
C10	One-touch fitting for ø10		
C12	One-touch fitting for ø12		
02	Rc 1/4	Rc3/8	10-SV4000
03	Rc 3/8		
02F	G 1/4		
03F	G 3/8	G3/8	10-SV4000
M	A, B ports mixed		

A, B port size (Inch)

Symbol	A, B port	P, E port	Applicable series
N1	One-touch fitting for ø1/8"	One-touch fitting for ø5/16"	10-SV1000
N3	One-touch fitting for ø5/32"		
N7	One-touch fitting for ø1/4"		
N3	One-touch fitting for ø5/32"	One-touch fitting for ø3/8"	10-SV2000
N7	One-touch fitting for ø1/4"		
N9	One-touch fitting for ø5/16"		
N9	One-touch fitting for ø5/16"	One-touch fitting for ø3/8"	10-SV3000
N11	One-touch fitting for ø3/8"		
N9	One-touch fitting for ø5/16"		
N11	One-touch fitting for ø3/8"	One-touch fitting for ø3/8"	10-SV4000
02N	NPT 1/4		
03N	NPT 3/8		
02T	NPTF 1/4	NPTF3/8	10-SV4000
03T	NPTF 3/8		
M	A, B ports mixed		

Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used at all of the manifold stations. Use of a single solenoid will result in an unused control signal. If this is not desired, order with a specified layout.

Note 2) Specified layout: Indicate wiring specifications on the manifold specification sheet. (Note that double, 3 and 4 position valves cannot be used where single solenoid wiring has been specified.)

Note) In case of D0, only DIN rail fittings are attached.

Note) Able to specify the length for 3 stations up to 18 stations for 10-SV1000, which is available with 18 stations at the maximum.

* In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

* Port sizes of X, PE port for external pilot specification (R) are ø4 (metric), ø5/32" (inch) for 10-SV1000/2000 and ø6 (metric) and ø1/4" (inch) for 10-SV3000/4000.

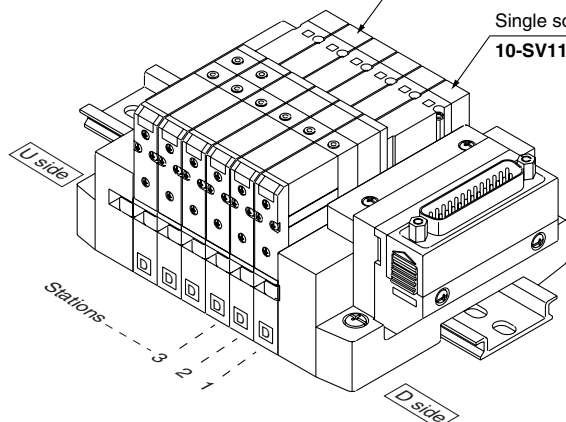
How to Order Manifold Assembly

Ordering example (10-SV1000)

Manifold
10-SS5V1-16FD1-06B-C6 (1 set)

Double solenoid
10-SV1200-5FU (2 sets)

Single solenoid
10-SV1100-5FU (4 sets)



10-SS5V1-16FD1-06B-C6.....1 set (Manifold part no.)
* 10-SV1100-5FU.....4 sets (Single solenoid part no.)
* 10-SV1200-5FU.....2 sets (Double solenoid part no.)

How to Order Solenoid Valves

10 - SV 1 1 0 0 - 5 F

Clean series

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
A	4 position dual 3 port valve: N.C./N.C.
B	4 position dual 3 port valve: N.O./N.O.
C	4 position dual 3 port valve: N.C./N.O.

* 4 position dual 3 port valves are applicable to Series 10-SV1000 and 10-SV2000 only.

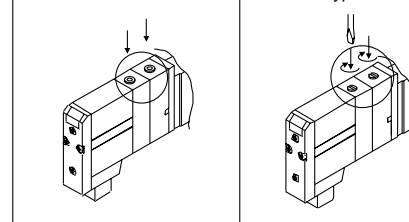
Pilot type

Nil	Internal pilot
R	External pilot

* External pilot specifications is not available for 4 position dual 3 port valves.

Manual override

Nil: Non-locking push type D: Push-turn locking slotted type



Light/surge voltage suppressor

U	With light/surge voltage suppressor
R	With surge voltage suppressor

Rated voltage

5	24 VDC
6	12 VDC

Back pressure check valve

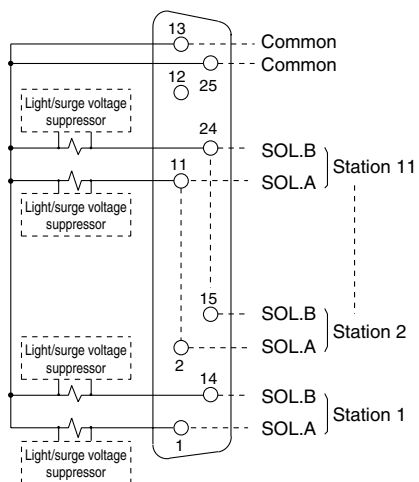
Nil	None
K	Built-in

* Built-in back pressure check valve type is applicable to Series 10-SV1000 only.

* Back pressure check valve is not available for 3 position solenoid valves.



Note) Refer to Specific Product Precautions 2 on page 323.

Manifold Electrical Wiring**10F/16F D-sub connector type (25 pins)**

- This circuit has double wiring specifications for up to 11 stations. Since the usable number of solenoids differs depending on the manifold type, refer to the table below.
- In the case of single solenoids, connect to SOL. A. Furthermore, when wiring is specified on the manifold specification sheet, connections are made without skipping any connectors, and signals A for single and A, B for double are in order 1→14→2→15, etc.
- Stations are counted from D side (connector side) as the 1st.
- Since solenoid valves do not have polarity, either the +COM or -COM can be use.

Usable No. of Solenoids

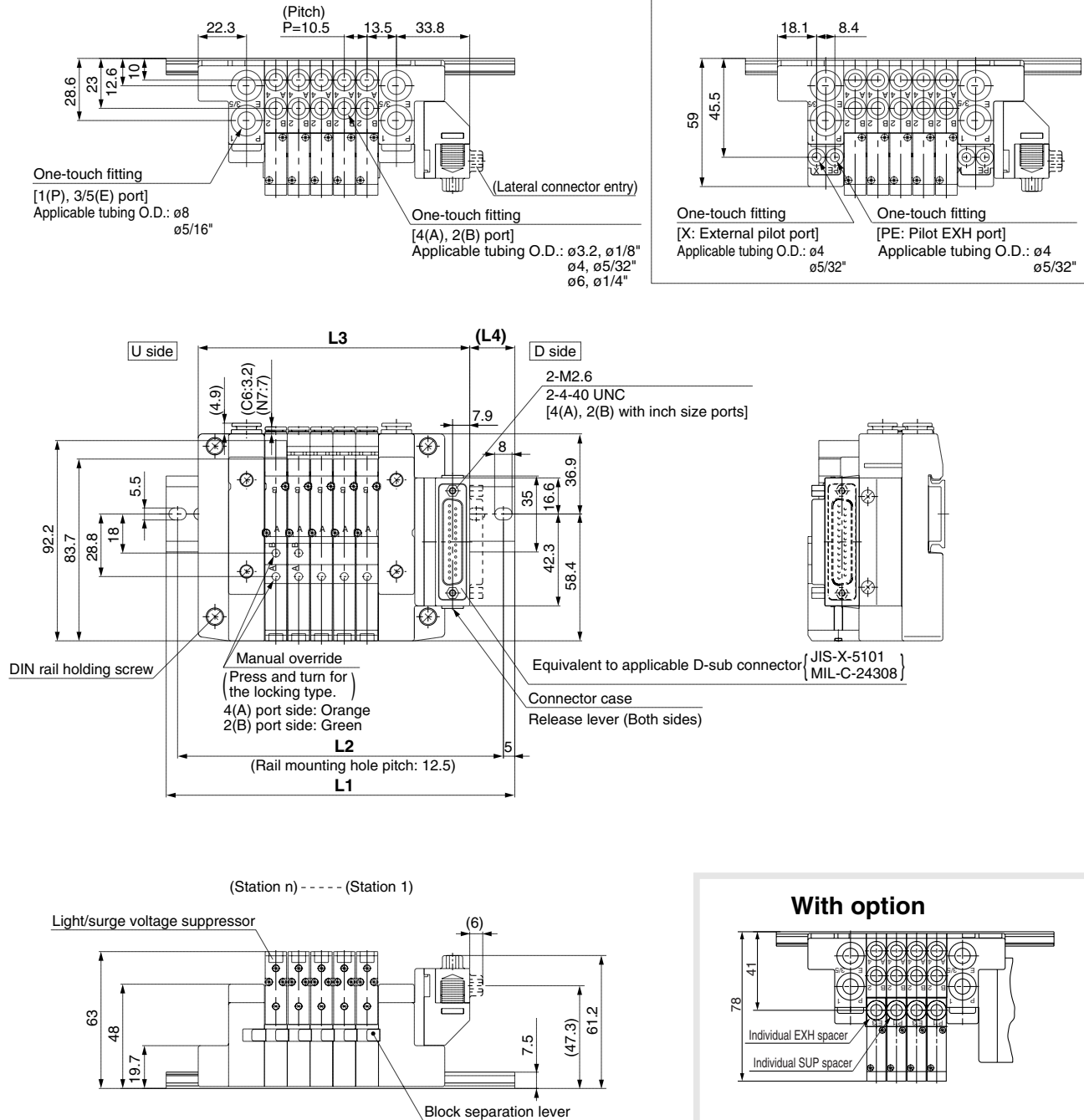
Model		Max. no. of solenoids
Tie-rod base type 10	10-SV1000 to 10-SV4000	23
Cassette base type 16	10-SV1000	18
	10-SV2000	23

Dimensions: Series 10-SV1000 for D-sub Connector

• Cassette base manifold: 10-SS5V1-16FD ¹/₂ - Stations ^U/_D ^D/_B (R)- C3, N1 C4, N3 C6, N7

· When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
· External pilot port positions are the same as P, E port outlet positions.

With external pilot specifications



L Dimension

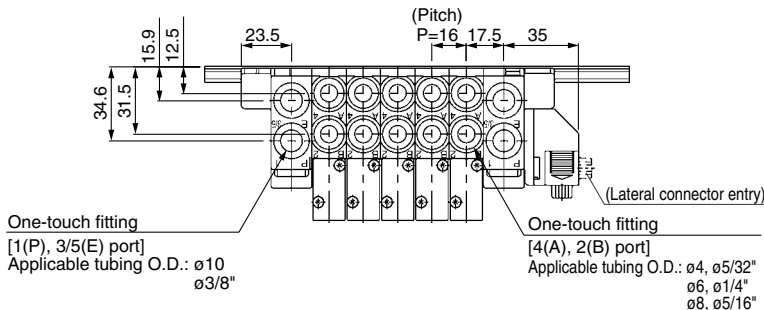
n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
L1	123	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273	285.5	298
L2	112.5	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5	275	287.5
L3	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5	230	240.5	251	261.5
L4	18	19	20	21	22	23	24	18.5	19.5	20.5	21.5	22.5	23.5	18.5	19.5	20.5	21.5

n: Stations

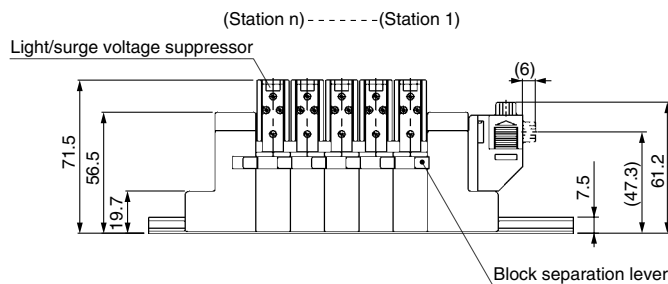
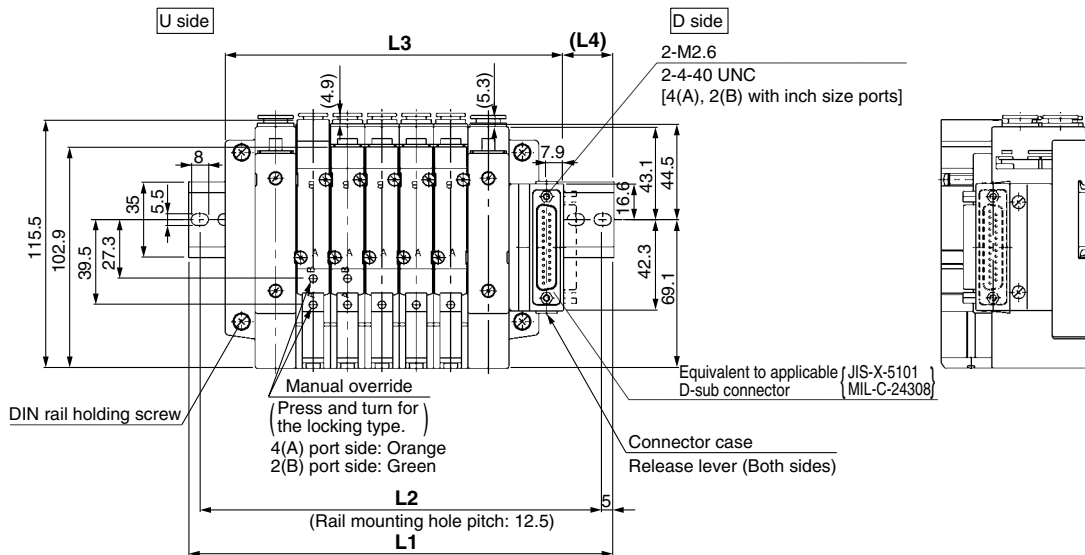
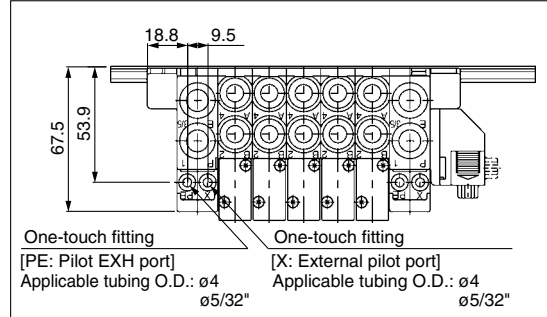
Dimensions: Series 10-SV2000 for D-sub Connector

• Cassette base manifold: 10-SS5V2-16FD₂¹ - Stations $\begin{matrix} U \\ D \end{matrix} (R)- \begin{matrix} C4, N3 \\ C6, N7 \\ C8, N9 \end{matrix}$

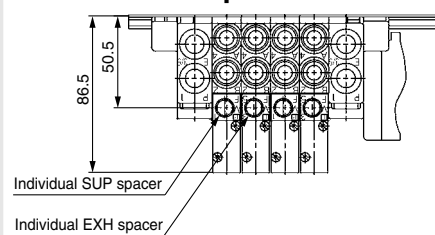
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

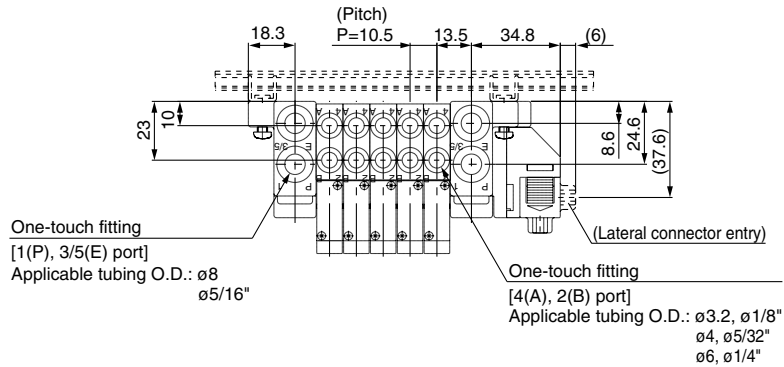
$\begin{matrix} L \\ n \end{matrix}$	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	148	160.5	173	198	210.5	223	235.5	260.5	273	285.5	310.5	323	335.5	348	373	385.5	398	423	435.5
L2	137.5	150	162.5	187.5	200	212.5	225	250	262.5	275	300	312.5	325	337.5	362.5	375	387.5	412.5	425
L3	109.5	125.5	141.5	157.5	173.5	189.5	205.5	221.5	237.5	253.5	269.5	285.5	301.5	317.5	333.5	349.5	365.5	381.5	397.5
L4	22.5	20.5	19	23.5	21.5	20	18	22.5	21	19	23.5	22	20	18.5	23	21	19.5	24	22

n: Stations

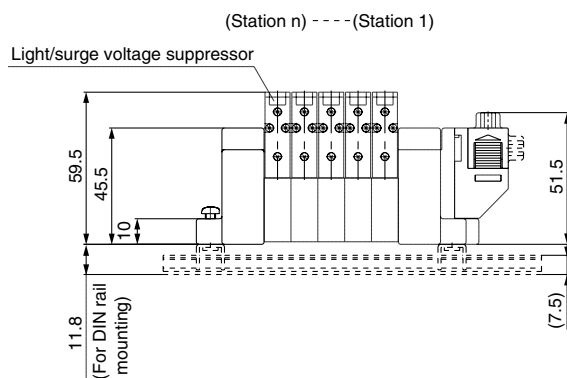
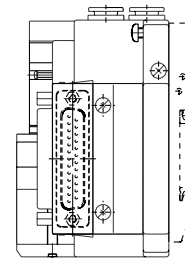
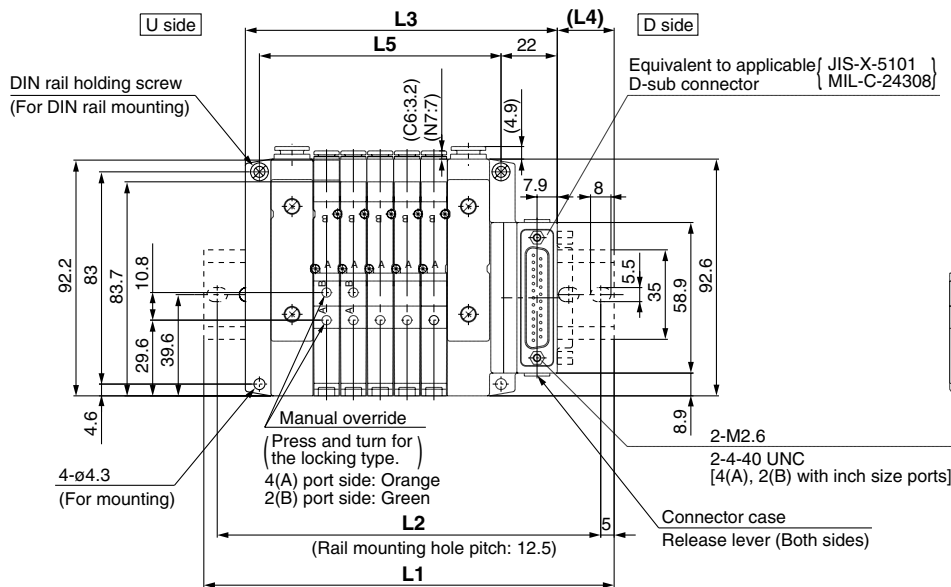
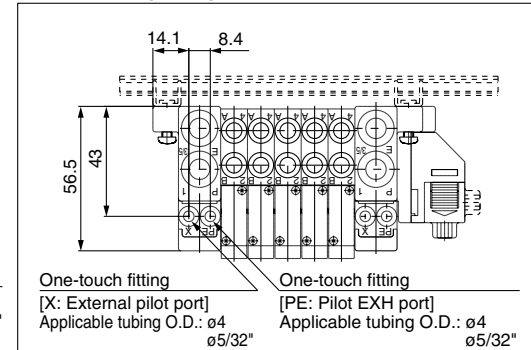
Dimensions: Series 10-SV1000 for D-sub Connector

• Tie-rod base manifold: 10-SS5V1-10FD₂ - Stations $\begin{matrix} U \\ D \\ B \end{matrix}$ (R)- $\begin{matrix} C3, N1 \\ C4, N3 \\ C6, N7 \end{matrix}$ (-D)

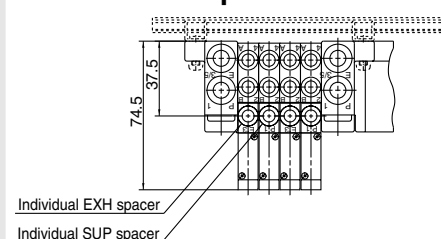
- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

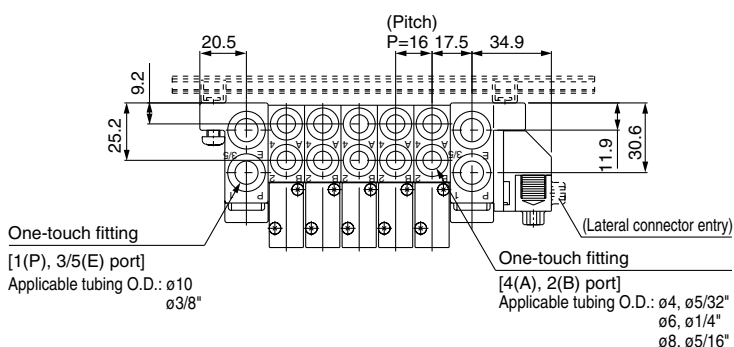
L _n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	123	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298	310.5	310.5
L2	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5	300	300
L3	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5	227	237.5	248	258.5	269	279.5
L4	19.5	20.5	21.5	22.5	23.5	18	19	20	21	22	23	18	19	20	21	22	23	24	18.5
L5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.9	189	199.5	210	220.5	231	241.5	252

n: Stations

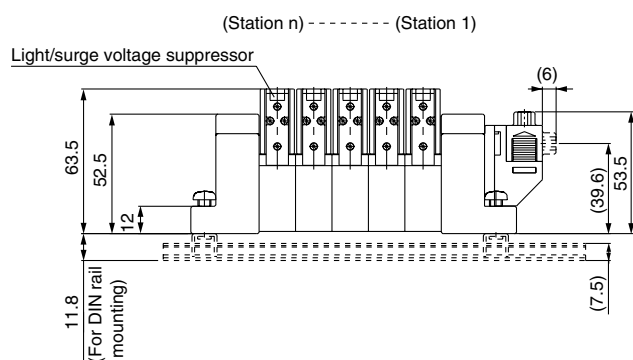
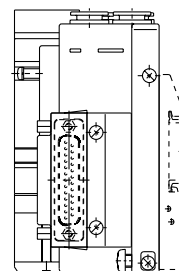
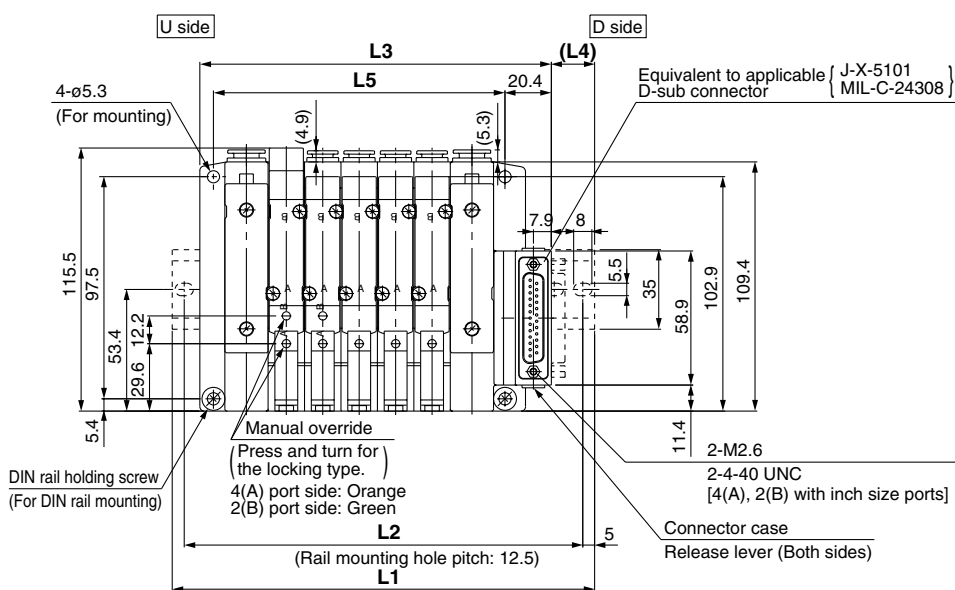
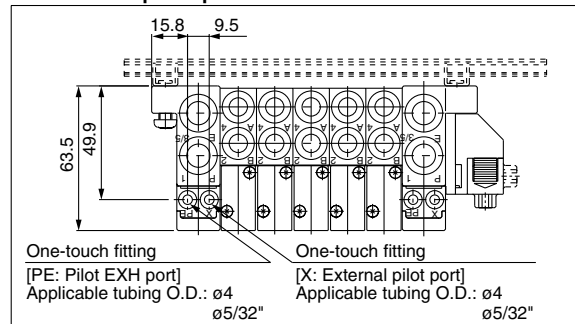
Dimensions: Series 10-SV2000 for D-sub Connector

• Tie-rod base manifold: 10-SS5V2-10FD $\frac{1}{2}$ - Stations $\frac{U}{D}$ (R)- $\frac{C4, N3}{C6, N7}$ (-D)

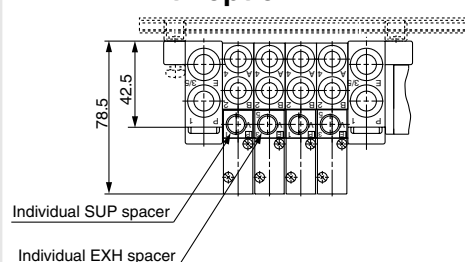
• When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
• External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

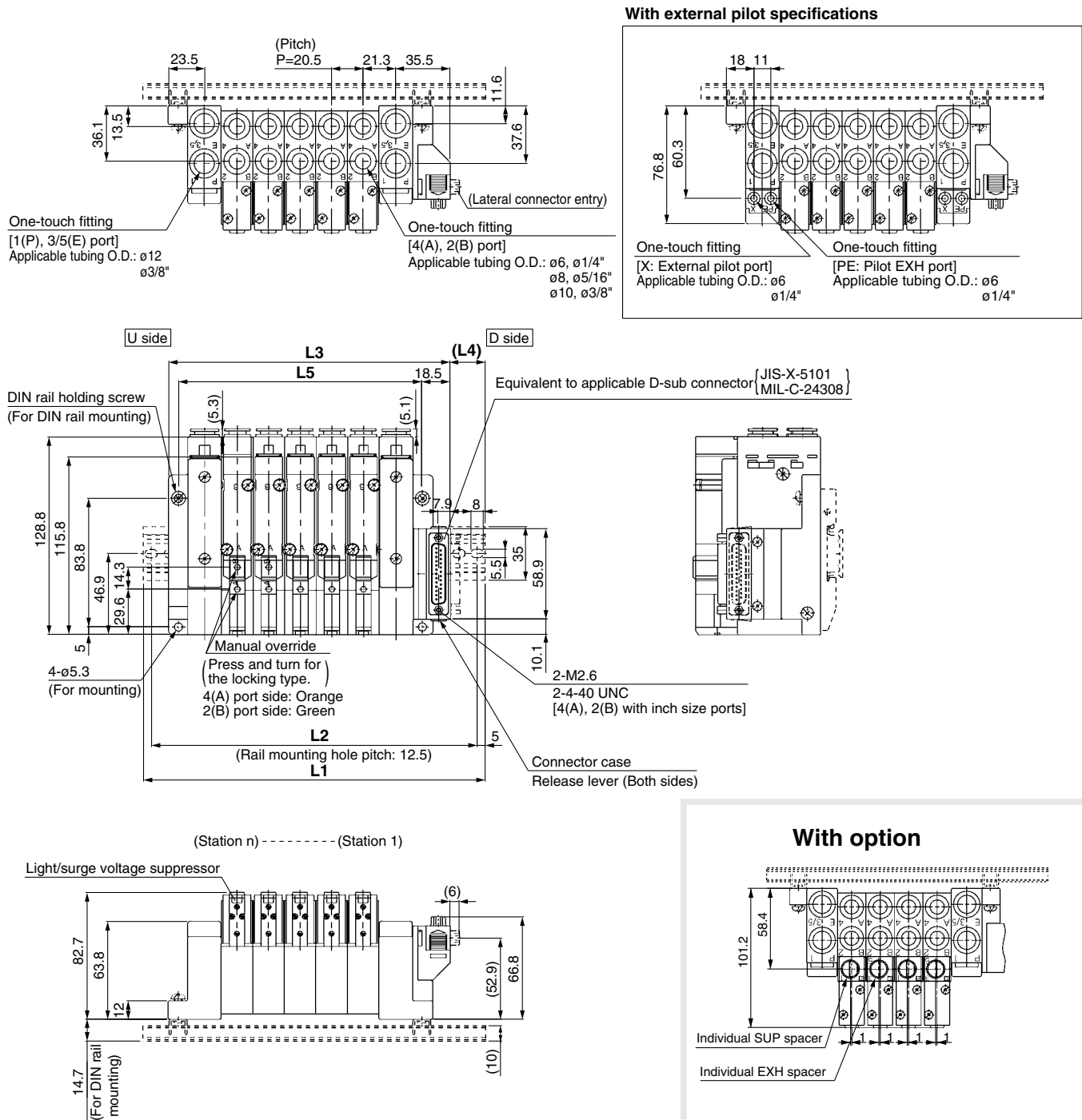
n: Stations

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		135.5	160.5	173	185.5	210.5	223	235.5	248	273	285.5	298	323	335.5	348	360.5	385.5	398	410.5	435.5
L2		125	150	162.5	175	200	212.5	225	237.5	262.5	275	287.5	312.5	325	337.5	350	375	387.5	400	425
L3		106.4	122.4	138.4	154.4	170.4	186.4	202.4	218.4	234.4	250.4	266.4	282.4	298.4	314.4	330.4	346.4	362.4	378.4	394.4
L4		17.5	22	20.5	18.5	23	21.5	19.5	18	22.5	20.5	19	23.5	21.5	20	18	22.5	21	19	23.5
L5		80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336	352	368

Dimensions: Series 10-SV3000 for D-sub Connector

• Tie-rod base manifold: 10-SS5V3-10FD¹/₂ - Stations^U_D (R)-^{C6, N7}_{C8, N9} (-D)^{C10, N11}

· When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
· External pilot port positions are the same as P, E port outlet positions.



L Dimension

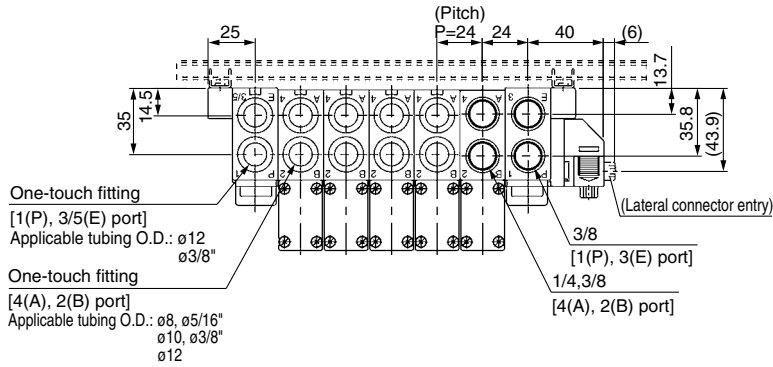
n: Stations

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		160.5	173	198	223	235.5	260.5	285.5	298	323	348	360.5	385.5	398	423	448	460.5	485.5	510.5	523
L2		150	162.5	187.5	212.5	225	250	275	287.5	312.5	337.5	350	375	387.5	412.5	437.5	450	475	500	512.5
L3		122	142.5	163	183.5	204	224.5	245	265.5	286	306.5	327	347.5	368	388.5	409	429.5	450	470.5	491
L4		22.5	18.5	20.5	23	19	21	23.5	19.5	21.5	24	20	22	18	20.5	22.5	18.5	21	23	19
L5		97	117.5	138	158.5	179	199.5	220	240.5	261	281.5	302	322.5	343	363.5	384	404.5	425	445.5	466

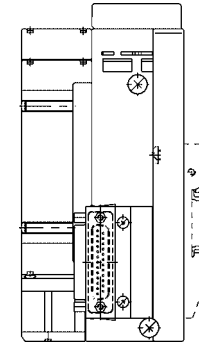
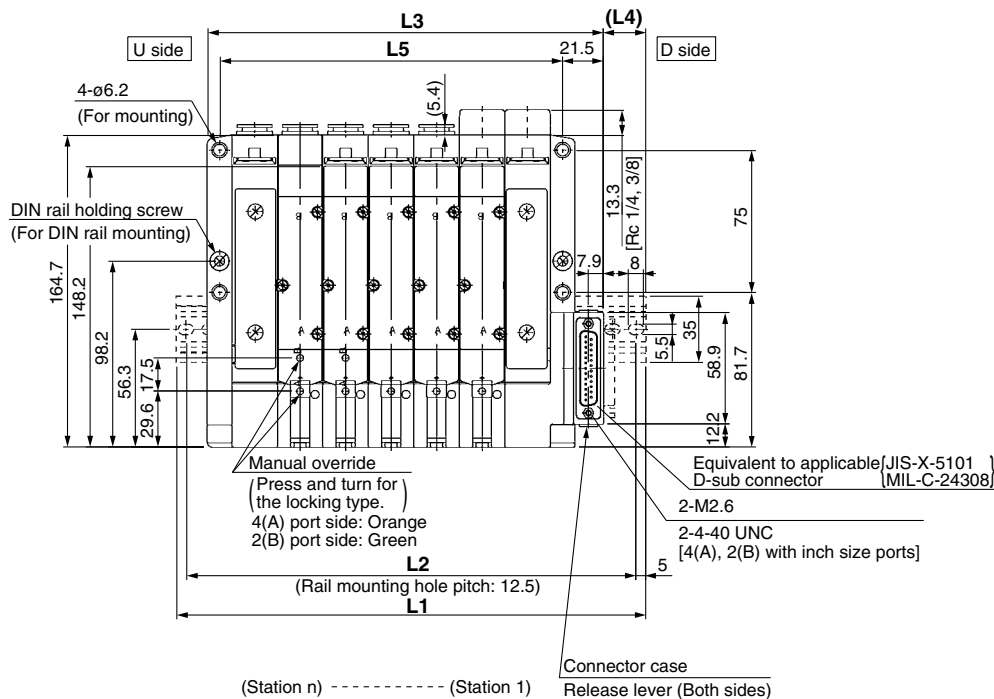
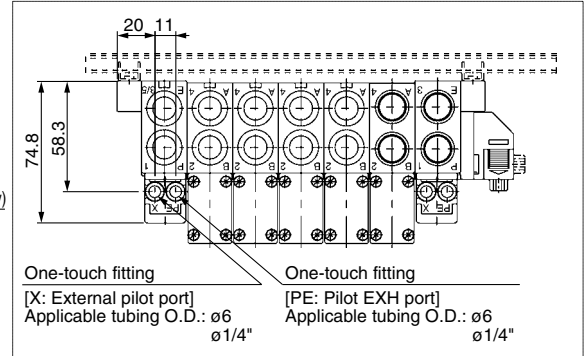
Dimensions: Series 10-SV4000 for D-sub Connector

• Tie-rod base manifold: 10-SS5V4-10FD ¹/₂ - Stations ^U_D (R)- ⁰²/₀₃ C8, C10, N9 C12, N11 (-D)

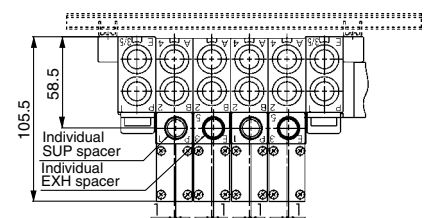
• When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
• External pilot port positions are the same as P, E port outlet positions.



With external pilot specifications



With option



L Dimension

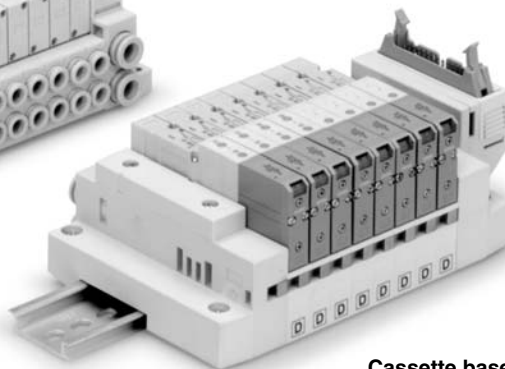
ⁿ / ₁	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	173	198	223	248	273	298	310.5	335.5	360.5	385.5	410.5	435.5	460.5	485.5	510.5	535.5	560.5	585.5	610.5
L2	162.5	187.5	212.5	237.5	262.5	287.5	300	325	350	375	400	425	450	475	500	525	550	575	600
L3	137	161	185	209	233	257	281	305	329	353	377	401	425	449	473	497	521	545	569
L4	21	21.5	22	22.5	23	23.5	18	18.5	19	19.5	20	20.5	21	21.5	22	22.5	23	23.5	24
L5	109	133	157	181	205	229	253	277	301	325	349	373	397	421	445	469	493	517	541

n: Stations

Flat Ribbon Cable Connector



Tie-rod base



Cassette base

Applicable series	Cassette base manifold 10-SV1000/10-SV2000
	Tie-rod base manifold 10-SV1000/10-SV2000/10-SV3000/10-SV4000
	· Number of connectors: 26, 20, 10 pins · With strain relief Conforming to MIL-C-83503

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

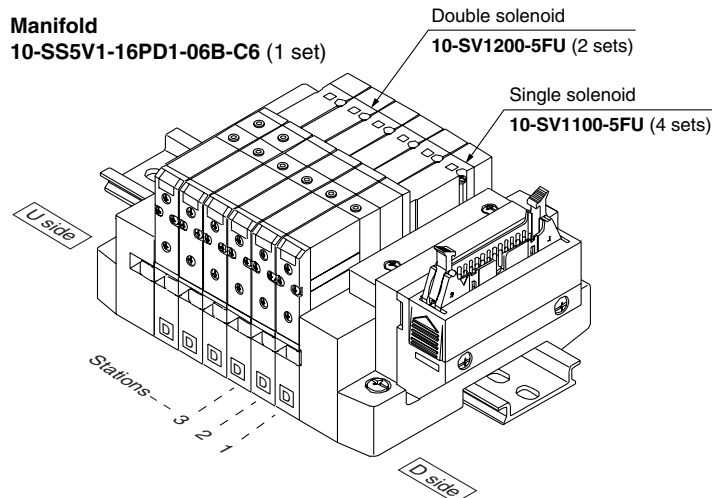
Clean gas filter

How to Order Valve Manifold Assembly

Ordering example (10-SV1000)

Manifold

10-SS5V1-16PD1-06B-C6 (1 set)



10-SS5V1-16PD1-06B-C6.....1 set (Manifold part no.)
 * 10-SV1100-5FU.....4 sets (Single solenoid part no.)
 * 10-SV1200-5FU.....2 sets (Double solenoid part no.)

How to Order Solenoid Valves

10 - SV 1 1 0 0 - 5 F

Clean series

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
A	4 position dual 3 port valve: N.C./N.C.
B	4 position dual 3 port valve: N.O./N.O.
C	4 position dual 3 port valve: N.C./N.O.

* 4 position dual 3 port valves are applicable to Series 10-SV1000 and 10-SV2000 only.

Pilot type

Nil	Internal pilot
R	External pilot

* External pilot specifications is not available for 4 position dual 3 port valves.

Manual override

Nil: Non-locking push type D: Push-turn locking slotted type

Rated voltage

5	24 VDC
6	12 VDC

Light/surge voltage suppressor

U	With light/surge voltage suppressor
R	With surge voltage suppressor

Back pressure check valve

Nil	None
K	Built-in

* Built-in back pressure check valve type is applicable to Series 10-SV1000 only.
 * Back pressure check valve is not available for 3 position solenoid valves.

Note) Refer to Specific Product Precautions 2 on page 323.

A, B port size (Metric)

Symbol	A, B port	P, E port	Applicable series
C3	One-touch fitting for ø3.2	One-touch fitting for ø8	10-SV1000
C4	One-touch fitting for ø4		
C6	One-touch fitting for ø6		
C4	One-touch fitting for ø4	One-touch fitting for ø10	10-SV2000
C6	One-touch fitting for ø6		
C8	One-touch fitting for ø8		
C6	One-touch fitting for ø6	One-touch fitting for ø12	10-SV3000
C8	One-touch fitting for ø8		
C10	One-touch fitting for ø10		
C8	One-touch fitting for ø8	One-touch fitting for ø12	10-SV4000
C10	One-touch fitting for ø10		
C12	One-touch fitting for ø12		
02	Rc 1/4		
03	Rc 3/8	Rc3/8	
02F	G 1/4	G3/8	
03F	G 3/8		
M	A, B ports mixed		

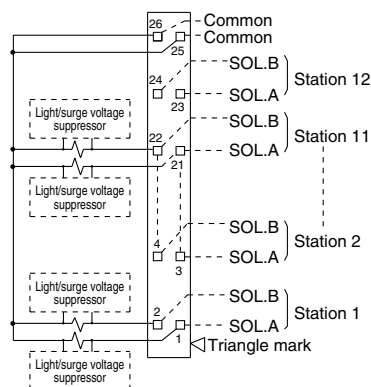
A, B port size (Inch)

Symbol	A, B port	P, E port	Applicable series
N1	One-touch fitting for ø1/8"	One-touch fitting for ø5/16"	10-SV1000
N3	One-touch fitting for ø5/32"		
N7	One-touch fitting for ø1/4"		
N3	One-touch fitting for ø5/32"	One-touch fitting for ø3/8"	10-SV2000
N7	One-touch fitting for ø1/4"		
N9	One-touch fitting for ø5/16"		
N7	One-touch fitting for ø1/4"	One-touch fitting for ø3/8"	10-SV3000
N9	One-touch fitting for ø5/16"		
N11	One-touch fitting for ø3/8"		
N9	One-touch fitting for ø5/16"	One-touch fitting for ø3/8"	10-SV4000
N11	One-touch fitting for ø3/8"		
02N	NPT 1/4	NPT3/8	
03N	NPT 3/8		
02T	NPTF 1/4	NPTF3/8	
03T	NPTF 3/8		
M	A, B ports mixed		

* In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

* Port sizes of X, PE port for external pilot specification (R) are ø4 (metric), ø5/32" (inch) for 10-SV1000/2000 and ø6 (metric) and ø1/4" (inch) for 10-SV3000/4000.

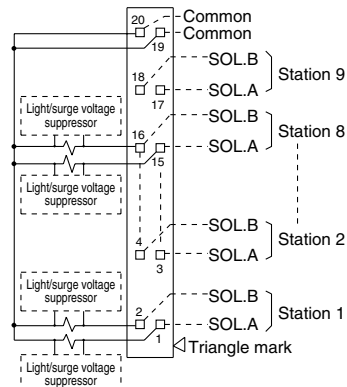
Manifold Electrical Wiring

10P/16P flat ribbon cable type (26 pins)


- This circuit has double wiring specifications for up to 12 stations. Since the usable number of solenoids differs depending on the manifold type, refer to the table below. In the case of single solenoids, connect to SOL. A. Furthermore, when wiring is specified on a manifold specification sheet, connections are made without skipping any connectors, and signals A for single and A, B for double are in order 1 → 2 → 3 → 4, etc.
- Stations are counted from D side (connector side) as the 1st.
- Since terminal numbers are not indicated on the flat cable, use the triangle mark as a reference for wiring.
- Since solenoid valves do not have polarity, either the +COM or -COM can be used.

Usable no. of solenoids

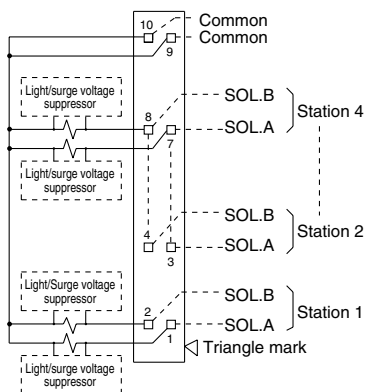
Model		Max. no. of solenoids
Tie-rod base type 10	10-SV1000 to 10-SV4000	24
Cassette base type 16	10-SV1000	18
	10-SV2000	24

10PG/16PG flat ribbon cable type (20 pins)


- This circuit has double wiring specifications for up to 9 stations. Since the usable number of solenoids differs depending on the manifold type, refer to the table below. In the case of single solenoids, connect to SOL. A. Furthermore, when wiring is specified on a manifold specification sheet, connections are made without skipping any connectors, and signals A for single and A, B for double are in order 1 → 2 → 3 → 4, etc.
- Stations are counted from D side (connector side) as the 1st.
- Since terminal numbers are not indicated on the flat cable, use the triangle mark as a reference for wiring.
- Since solenoid valves do not have polarity, either the +COM or -COM can be used.

Usable no. of solenoids

Model		Max. no. of solenoids
Tie-rod base type 10	10-SV1000 to 10-SV4000	18
Cassette base type 16	10-SV1000 to 10-SV2000	

10PH/16PH flat ribbon cable type (10 pins)


- This circuit has double wiring specifications for up to 4 stations. Since the usable number of solenoids differs depending on the manifold type, refer to the table below. In the case of single solenoids, connect to SOL. A. Furthermore, when wiring is specified on a manifold specification sheet, connections are made without skipping any connectors, and signals A for single and A, B for double are in order 1 → 2 → 3 → 4, etc.
- Stations are counted from D side (connector side) as the 1st.
- Since terminal numbers are not indicated on the flat cable, use the triangle mark as a reference for wiring.
- Since solenoid valves do not have polarity, either the +COM or -COM can be used.

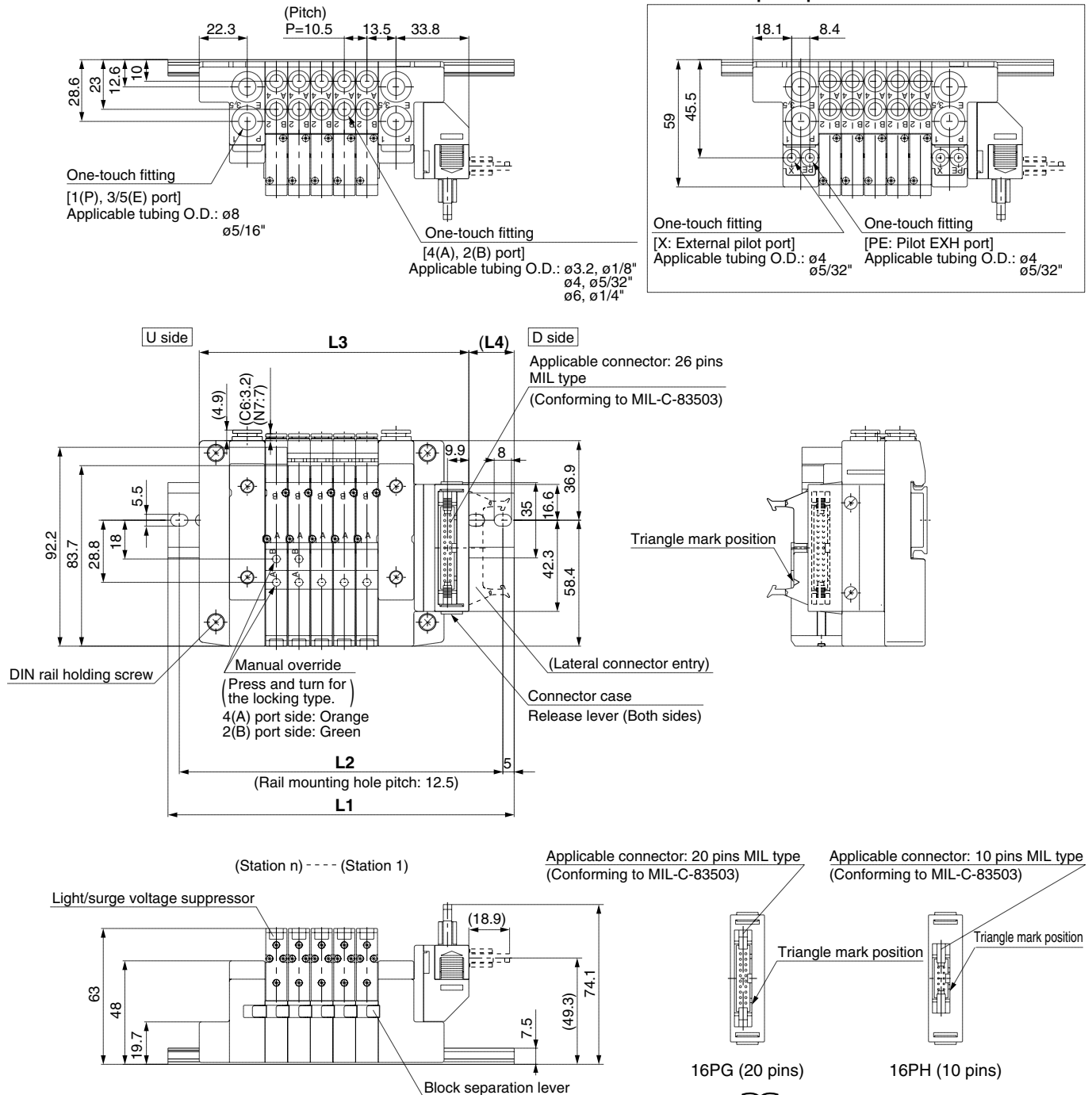
Usable no. of solenoids

Model		Max. no. of solenoids
Tie-rod base type 10	10-SV1000 to 10-SV4000	8
Cassette base type 16	10-SV1000 to 10-SV2000	

Dimensions: Series 10-SV1000 for flat ribbon cable

• Cassette base manifold: 10-SS5V1-16^P_{PG PH} D₂ - Stations^U_{D B} (R) - C3, N1 C4, N3 C6, N7

• When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
• External pilot port positions are the same as P, E port outlet positions.



L Dimension

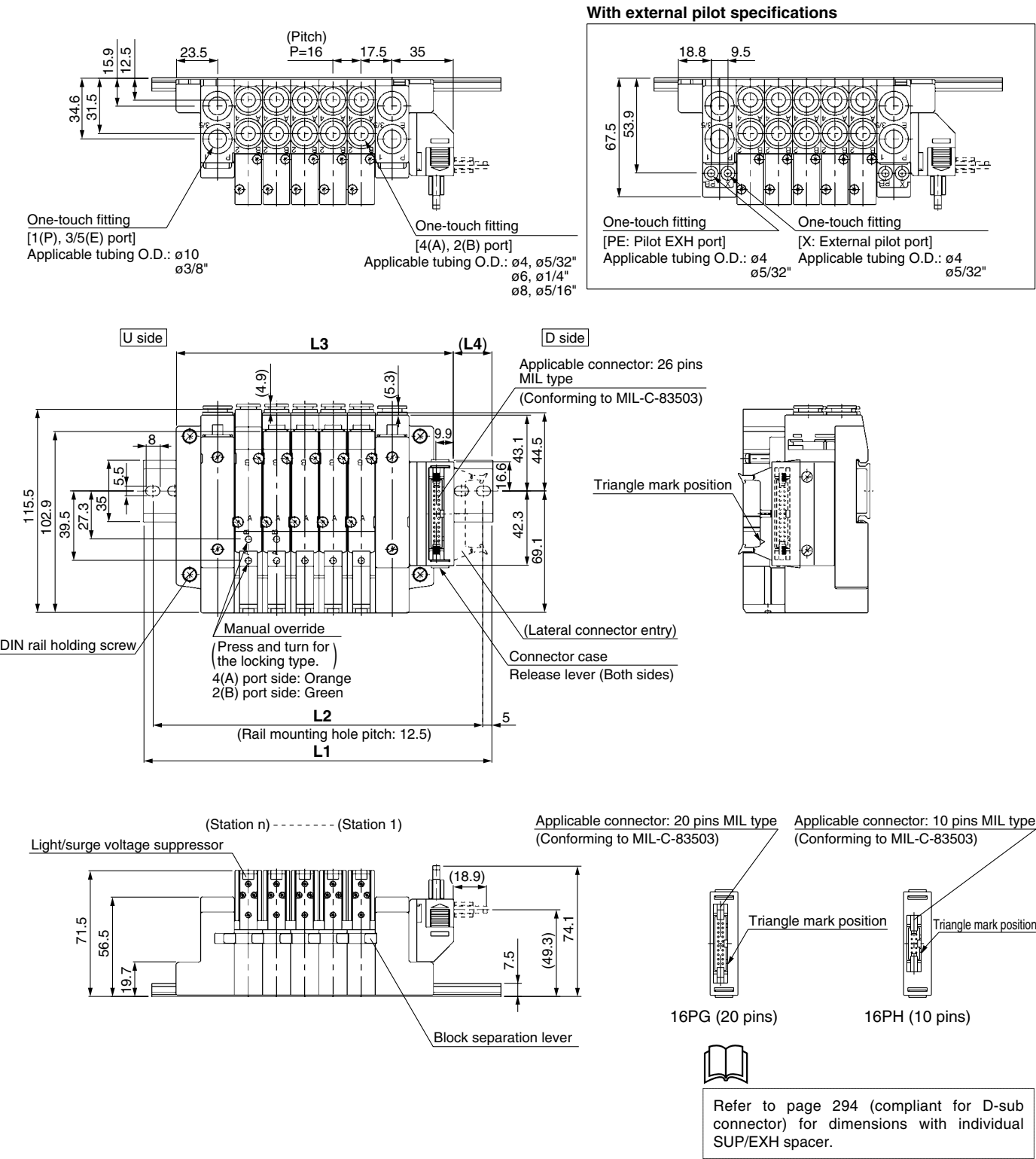
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
L1	n: Stations	135.5	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273	285.5	298
L2		125	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5	275	287.5
L3		93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5	230	240.5	251	261.5
L4		24.5	19	20	21	22	23	24	19	20	21	22	23	24	18.5	19.5	20.5	21.5

Flat ribbon cable connector **10-SV**

Dimensions: Series 10-SV2000 for Flat Ribbon Cable

• **Cassette base manifold: 10-SS5V2-16** ^P_{PG} ^D₁ - **Stations** ^U_D ^B (R) - C4, N3
C6, N7
C8, N9

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

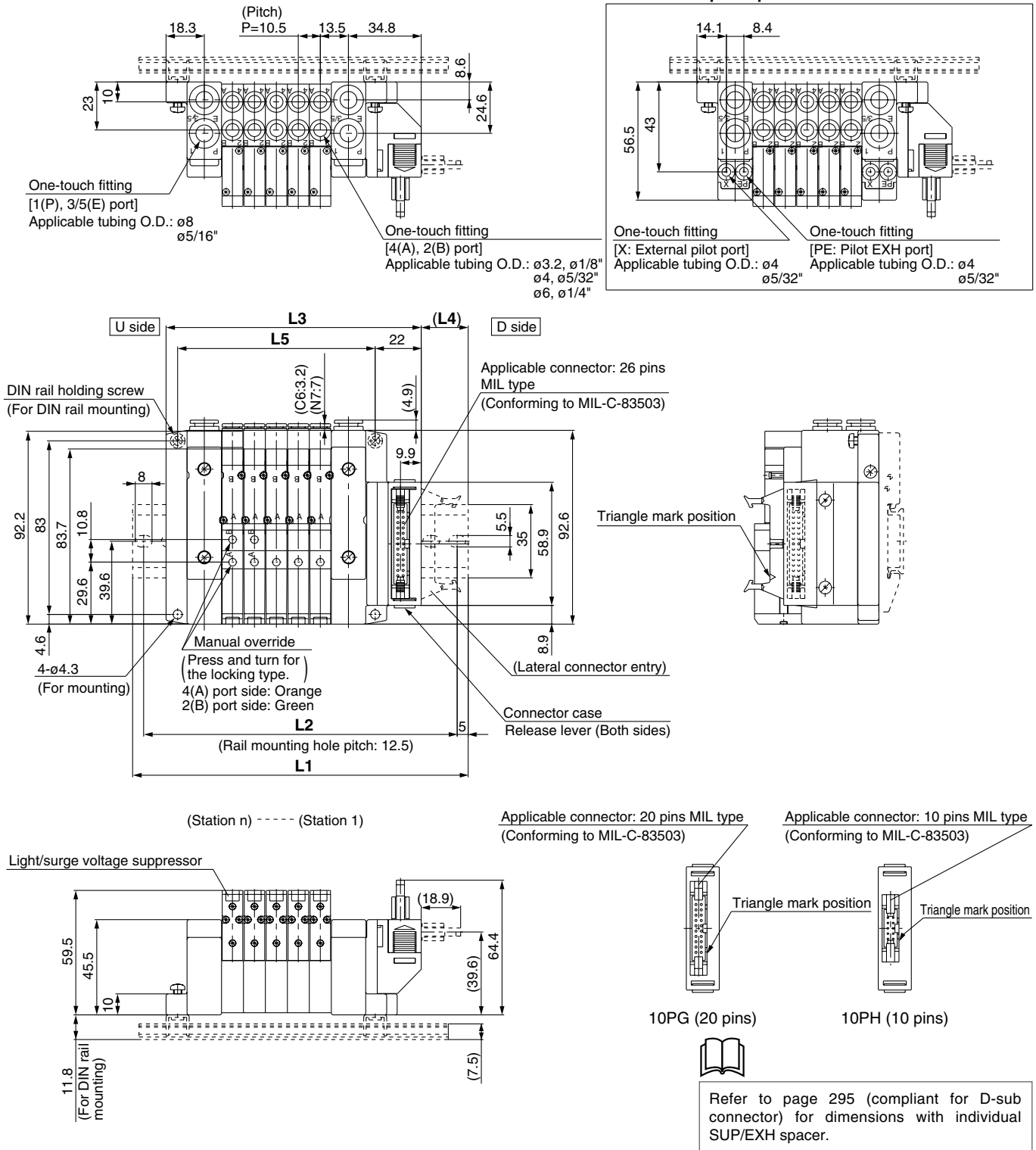


L Dimension		n: Stations																		
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		148	160.5	173	198	210.5	223	235.5	260.5	273	285.5	310.5	323	335.5	348	373	385.5	398	423	435.5
L2		137.5	150	162.5	187.5	200	212.5	225	250	262.5	275	300	312.5	325	337.5	362.5	375	387.5	412.5	425
L3		109.5	125.5	141.5	157.5	173.5	189.5	205.5	221.5	237.5	253.5	269.5	285.5	301.5	317.5	333.5	349.5	365.5	381.5	397.5
L4		22.5	21	19	23.5	22	20	18.5	23	21	19.5	24	22	20.5	18.5	23	21.5	19.5	24	22.5

Dimensions: Series 10-SV1000 for Flat Ribbon Cable

• Tie-rod base manifold: 10-SS5V1-10 ^P_{PG} ^D_{PH} ¹₂ - Stations ^U_D ^B_B (R) - C3, N1 C4, N3 C6, N7

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.



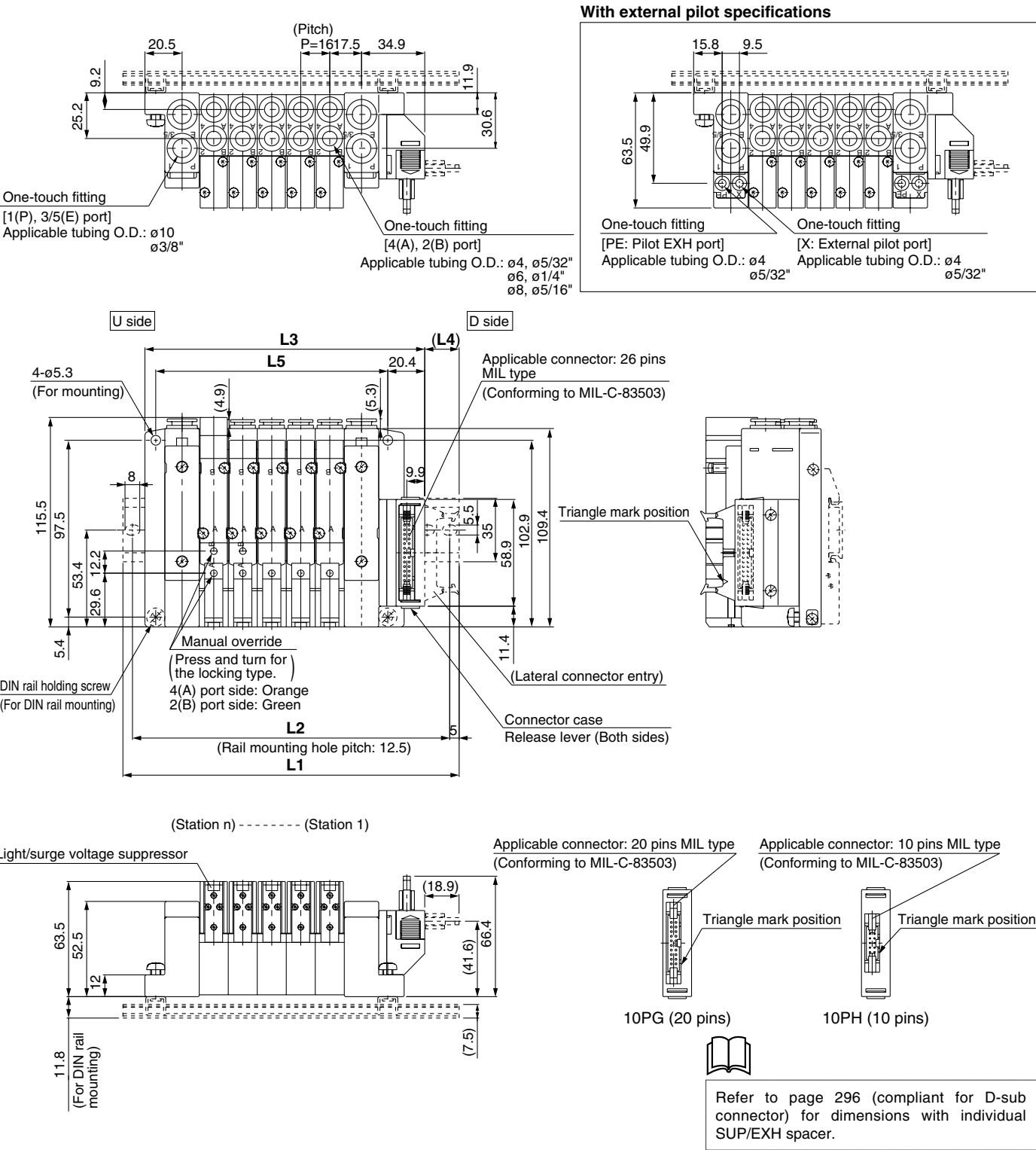
L Dimension

		n: Stations																		
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	123	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5	310.5	
L2	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300	300	
L3	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5	227	237.5	248	258.5	269	279.5	
L4	19.5	20.5	21.5	22.5	23.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	19	20	21	22	23	24	19	
L5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.5	189	199.5	210	220.5	231	241.5	252	

Dimensions: Series 10-SV2000 for Flat Ribbon Cable

• Tie-rod base manifold: 10-SS5V2-10 ^P_{PG} ^D_{PH} ¹₂ - Stations ^U_D ^B_B (R) - C4, N3
C6, N7
C8, N9

- When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
- External pilot port positions are the same as P, E port outlet positions.

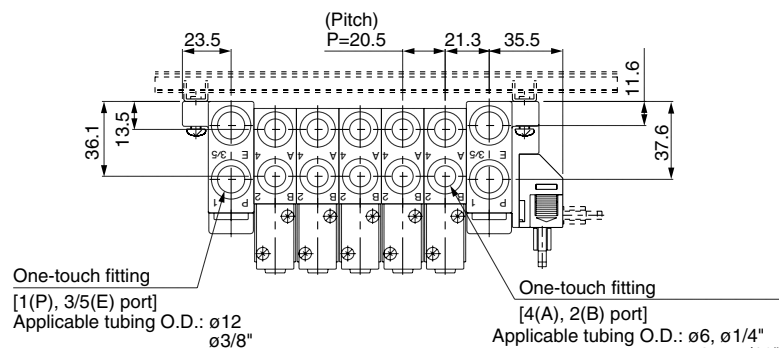
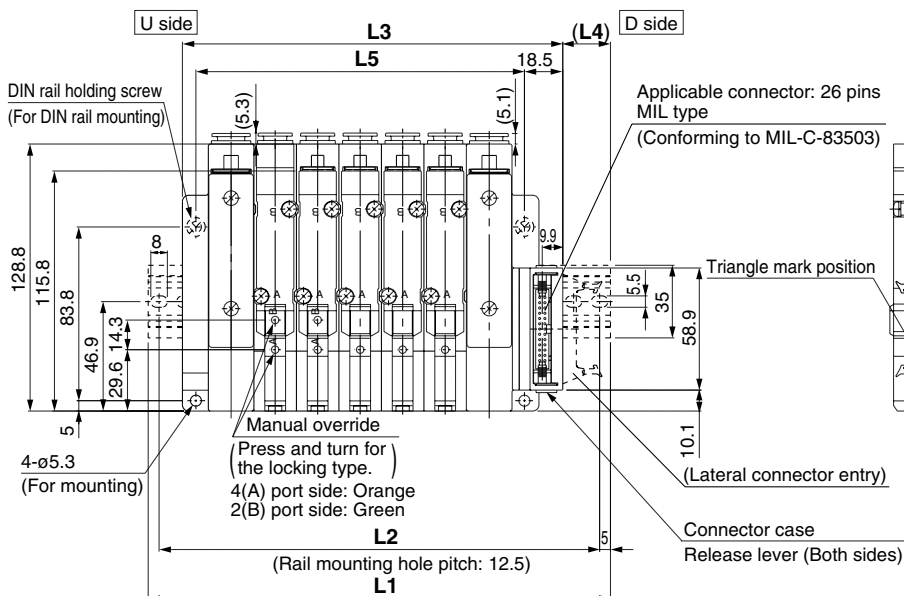
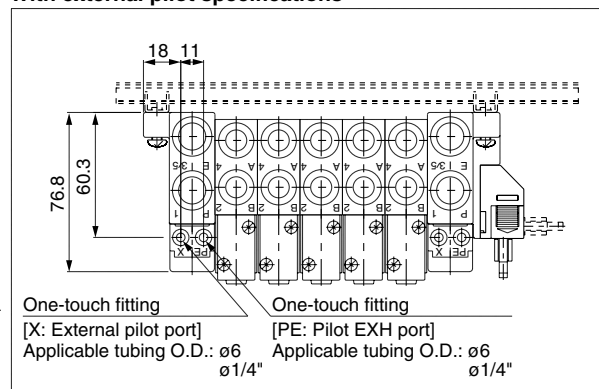


L Dimension

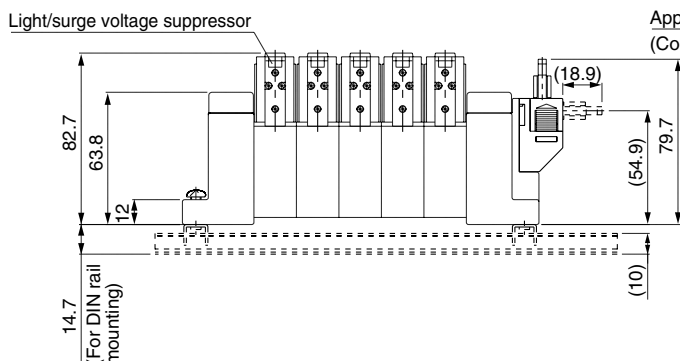
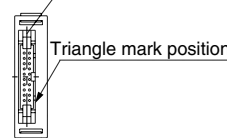
		n: Stations																		
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		148	160.5	173	185.5	210.5	223	235.5	248	273	285.5	298	323	335.5	348	360.5	385.5	398	410.5	435.5
L2		137.5	150	162.5	175	200	212.5	225	237.5	262.5	275	287.5	312.5	325	337.5	350	375	387.5	400	425
L3		106.4	122.4	138.4	154.4	170.4	186.4	202.4	218.4	234.4	250.4	266.4	282.4	298.4	314.4	330.4	346.4	362.4	378.4	394.4
L4		24	22.5	20.5	19	23.5	21.5	20	18	22.5	21	19	23.5	22	20	18.5	23	21	19.5	24
L5		80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336	352	368

Dimensions: Series 10-SV3000 for Flat Ribbon Cable
• Tie-rod base manifold: 10-SS5V3-10
 $\begin{matrix} P \\ PG \\ PH \end{matrix}$
 $\begin{matrix} D_1 \\ D_2 \end{matrix}$
Stations
 $\begin{matrix} U \\ D \\ B \end{matrix}$
(R) -
 $\begin{matrix} C6, N7 \\ C8, N9 \\ C10, N11 \end{matrix}$
- (D)

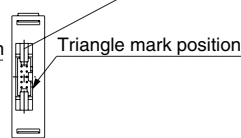
· When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
 · External pilot port positions are the same as P, E port outlet positions.

**With external pilot specifications**

(Station n) ----- (Station 1)

Applicable connector: 20 pins MIL type
(Conforming to MIL-C-83503)Applicable connector: 10 pins MIL type
(Conforming to MIL-C-83503)

10PG (20 pins)



10PH (10 pins)



Refer to page 297 (compliant for D-sub connector) for dimensions with individual SUP/EXH spacer.

L Dimension

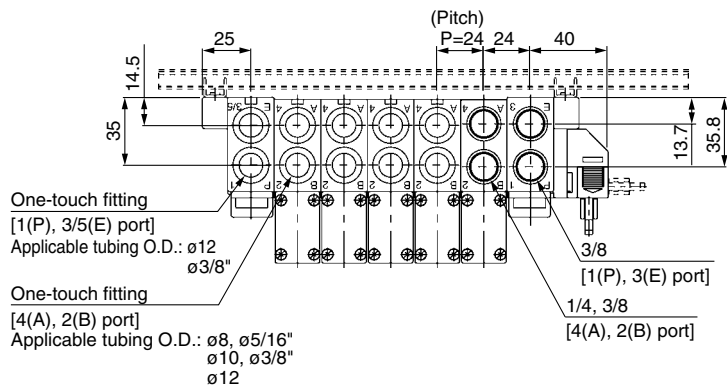
n: Stations

L	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	160.5	173	198	223	235.5	260.5	285.5	298	323	348	360.5	385.5	398	423	448	460.5	485.5	510.5	523
L2	150	162.5	187.5	212.5	225	250	275	287.5	312.5	337.5	350	375	387.5	412.5	437.5	450	475	500	512.5
L3	122	142.5	163	183.5	204	224.5	245	265.5	286	306.5	327	347.5	368	388.5	409	429.5	450	470.5	491
L4	22.5	18.5	21	23	19	21.5	23.5	19.5	22	24	20	22.5	18.5	20.5	23	19	21	23.5	19.5
L5	97	117.5	138	158.5	179	199.5	220	240.5	261	281.5	302	322.5	343	363.5	384	404.5	425	445.5	466

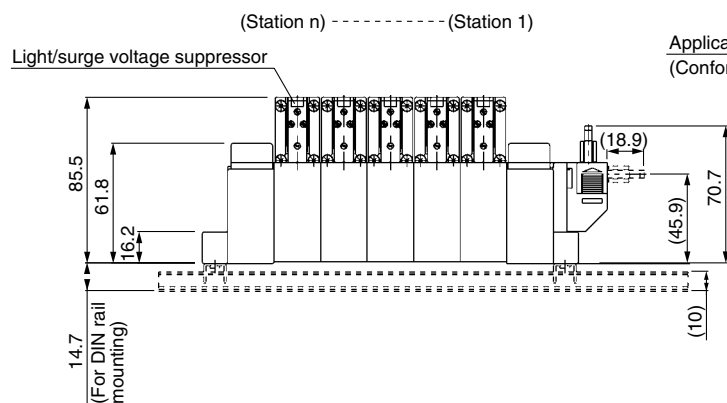
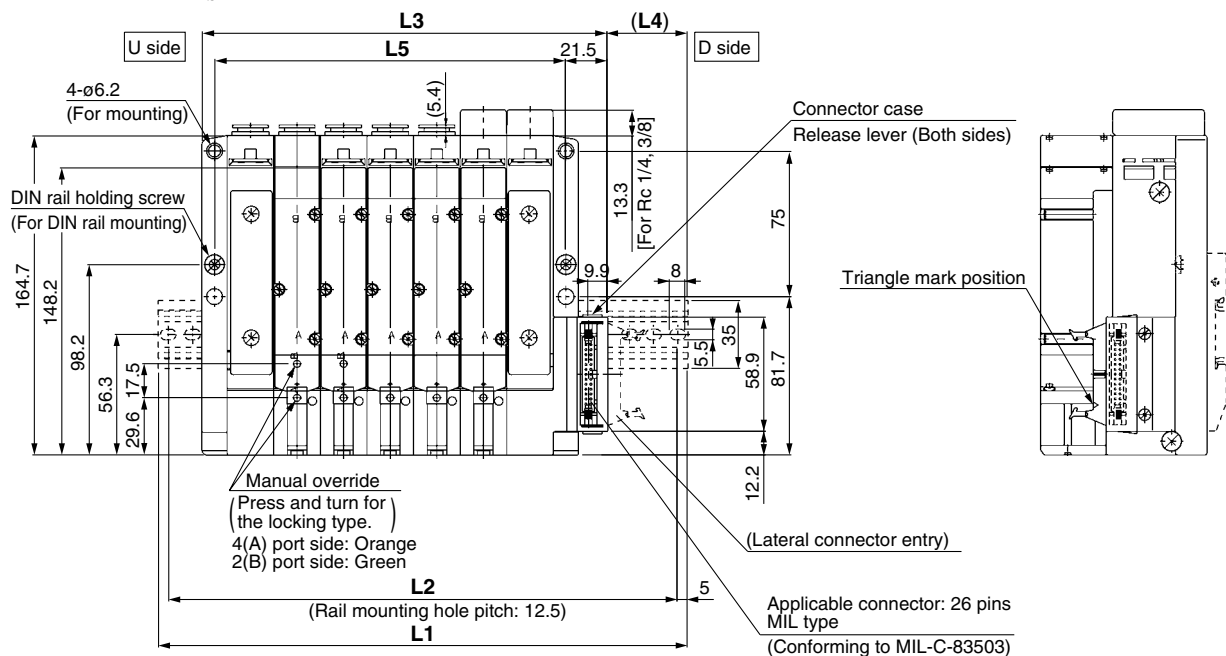
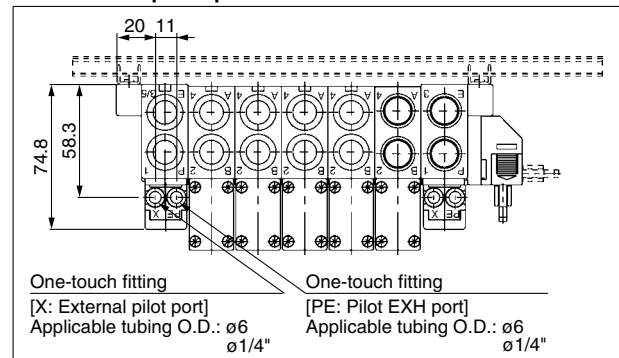
Dimensions: Series 10-SV4000 for Flat Ribbon Cable

• Tie-rod base manifold: 10-SS5V4-10 ^P_{PG} ¹₂ - **Stations** ^U_D ^{B (R) - ^{C8,}_{C10,} ^{N9}_{C12,} ^{N11} (D)}

• When P, E port outlets are indicated on the U side or D side, the P, E ports on the opposite side are plugged.
• External pilot port positions are the same as P, E port outlet positions.

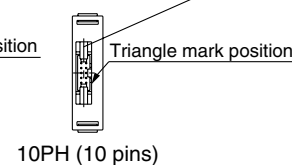
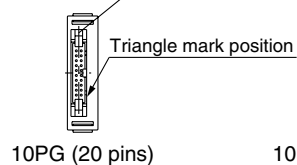


With external pilot specifications



Applicable connector: 20 pins MIL type
(Conforming to MIL-C-83503)

Applicable connector: 10 pins MIL type
(Conforming to MIL-C-83503)



Refer to page 298 (compliant for D-sub connector) for dimensions with individual SUP/EXH spacer.

L Dimension

	n: Stations																		
L ⁿ	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	185.5	210.5	235.5	260.5	285.5	310.5	335.5	348	373	398	423	448	473	498	523	548	573	598	623
L2	175	200	225	250	275	300	325	337.5	362.5	387.5	412.5	437.5	462.5	487.5	512.5	537.5	562.5	587.5	612.5
L3	137	161	185	209	233	257	281	305	329	353	377	401	425	449	473	497	521	545	569
L4	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
L5	109	133	157	181	205	229	253	277	301	325	349	373	397	421	445	469	493	517	541

Series 10-SV Manifold Option (Common for type 16 and 10)

■Relay output module

By adding a relay output module to a series 10-SV manifold, devices up to 110 VAC, 3 A (large type solenoid valves, etc.) can be controlled together with Series 10-SV valves.

How to Order

SV 000 - 60 - 5 A - 1A

Series ●

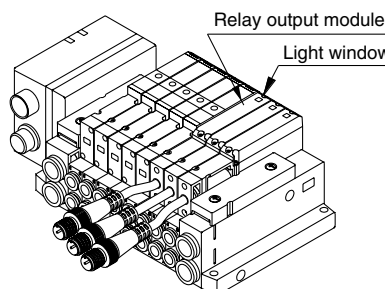
1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

● No. of output points

A	1 output
B	2 outputs

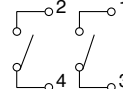
● Rated voltage

5	24 VDC
6	12 VDC



* Note that serial wiring manifolds (EX500, EX250 and EX120) are available with 24 VDC only.

Relay output module specifications

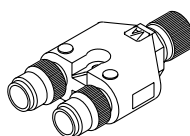
Item	Specifications			
No. of output points	1 output [connector with lead wire (M12)]		2 outputs [connector with lead wire (M12)]	
Output type	4 pins connector (M12) plug		4 pins connector (M12) plug	
	1. — 2. Output A 3. — 4. Output A  Contact type ("a" contact)	 Relay output module side pin arrangement	1. Output B 2. Output A 3. Output B 4. Output A  Contact type ("a" contact)	 Relay output module side pin arrangement
Load voltage	110 VAC		110 VAC	
Load current	3A		0.3A	
Indicator light	Orange		A side: Orange B side: Green	
Enclosure	Based on IP67 (IEC60529)			
Current consumption	20 mA or less			
Polarity	Non-polar			
Weight (g)	48			

■Y type connector

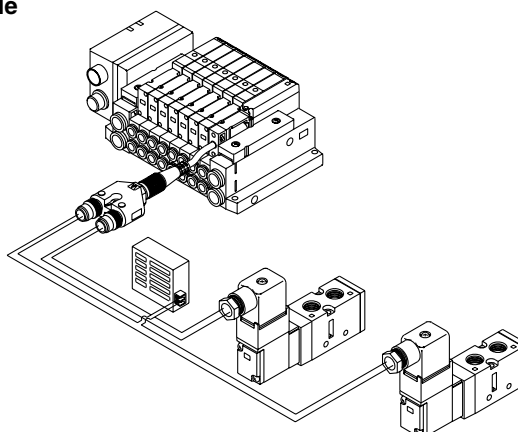
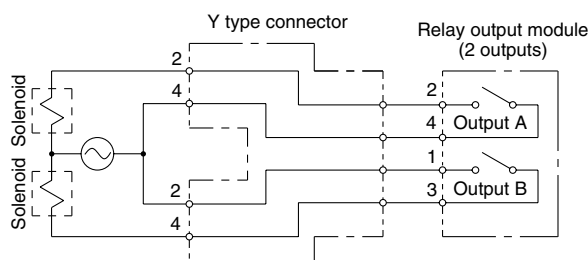
Used to branch a two output relay output module to two separate systems.

How to Order

EX500 - ACY00 - S



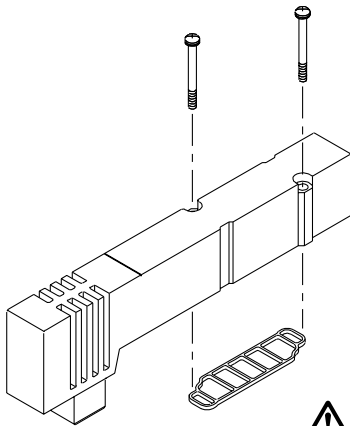
Relay output module and Y type connector wiring example



Manifold Option

Blanking plate assembly

Used in situations where valves will be added in the future.



Caution

Series	Blanking plate assembly part no.
10-SV1000	SV1000-67-1A
10-SV2000	SV2000-67-1A
10-SV3000	SV3000-67-1A
10-SV4000	SV4000-67-1A

Mounting screw tightening torques

M2: 0.15 N·m

M3: 0.6 N·m

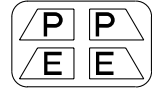
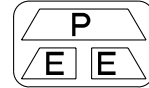
M4: 1.4 N·m

Label for block disk

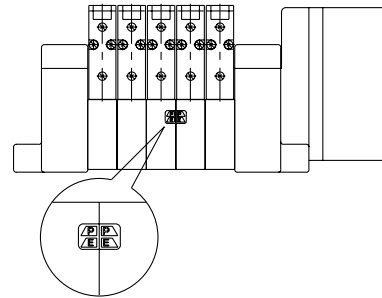
These labels are attached to manifolds in which SUP and EXH block disks have been installed, in order to identify the installed locations. (Three sheets each included.)

SV1000 - 74 - 1A

Label for SUP block disk Label for EXH block disk Label for SUP/EXH block disk



* When a block disk is concurrently ordered by specifying on the manifold specification sheet, etc., a label will be stuck on the position where block disk is mounted.



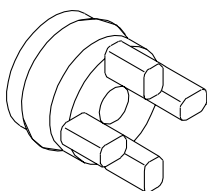
SUP/EXH block disk

[SUP block disk]

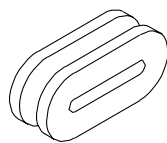
By placing a SUP block disk in a manifold valve's pressure supply passage, two different high and low pressures can be supplied to one manifold.

[EXH block disk]

By installing an EXH block disk in a manifold valve's exhaust passage, the valve's exhaust can be separated so that it will not affect other valves. It can also be used on a manifold with mixed positive pressure and vacuum. (Two pieces are required to block EXH on both sides. However, series 10-SV1000 and 2000 type 10 manifolds require only one piece.)



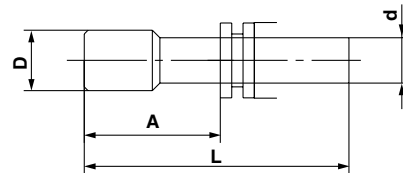
Cassette base type 16



Tie-rod base type 10

Plug (White)

These are inserted in unused cylinder ports and P, E ports.



Applicable fitting size d	Model	A	L	D
ø4	10-KQP-04	16	32	ø6
ø6	10-KQP-06	18	35	ø8
ø8	10-KQP-08	20.5	39	ø10
ø10	10-KQP-10	22	43	ø12
ø12	10-KQP-12	24	44.5	ø14
ø1/8"	10-KQP-01	16	31.5	ø5
ø5/32"	10-KQP-03	16	32	ø6
ø1/4"	10-KQP-07	18	35	ø8.5
ø5/16"	10-KQP-09	20.5	39	ø10
ø3/8"	10-KQP-11	22	43	ø11.5

Series	Manifold model	SUP block disk	EXH block disk
10-SV1000	10	SV1000-59-1A	SV1000-59-2A
	16	SX3000-77-1A	SX3000-77-1A
10-SV2000	10	SV2000-59-1A	SV2000-59-2A
	16	SV2000-59-3A	SV2000-59-3A
10-SV3000	10	SV3000-59-1A	SV3000-59-1A
10-SV4000	10	SY9000-57-1A	SY9000-57-1A

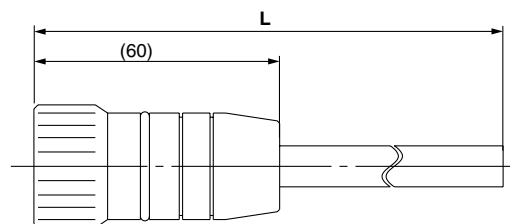
Manifold Option

■Circular connector / Cable assembly (26 pins)

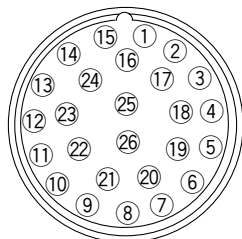
AXT100 – MC26 – □

Lead wire length

Part no.	L dimension
AXT100-MC26-015	1.5 m
AXT100-MC26-030	3 m
AXT100-MC26-050	5 m



Plug terminal no.
(Arrangement as seen from lead wire side)



Circular connector cable assembly
Terminal no.

Terminal no.	Lead wire color	Dot marking
1	Black	None
2	Brown	None
3	Red	None
4	Orange	None
5	Yellow	None
6	Pink	None
7	Blue	None
8	Purple	White
9	Gray	Black
10	White	Black
11	White	Red
12	Yellow	Red
13	Orange	Red
14	Yellow	Black
15	Pink	Black
16	Blue	White
17	Purple	None
18	Gray	None
19	Orange	Black
20	Red	White
21	Brown	White
22	Pink	Red
23	Gray	Red
24	Black	White
25	White	None

Note) Terminal no. 26 is connected to 25 inside the connector.

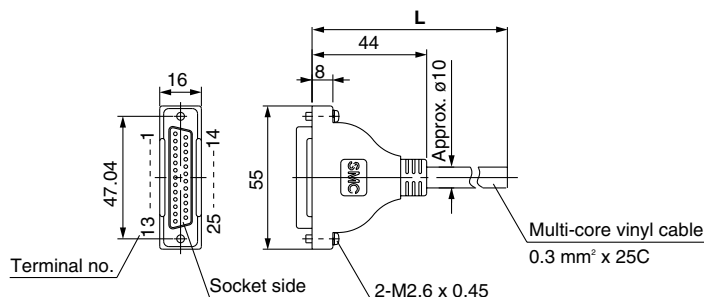
■D-sub connector / Cable assembly (25 pins)

AXT100 – DS25 – □

Lead wire length

Part no.	L dimension
AXT100-DS25-015	1.5 m
AXT100-DS25-030	3 m
AXT100-DS25-050	5 m

When a commercially available connector is required, use a 25 pin female connector conforming to MIL-C-24308.



D-sub connector cable assembly
Terminal no.

Terminal no.	Lead wire color	Dot marking
1	Black	None
2	Brown	None
3	Red	None
4	Orange	None
5	Yellow	None
6	Pink	None
7	Blue	None
8	Purple	White
9	Gray	Black
10	White	Black
11	White	Red
12	Yellow	Red
13	Orange	Red
14	Yellow	Black
15	Pink	Black
16	Blue	White
17	Purple	None
18	Gray	None
19	Orange	Black
20	Red	White
21	Brown	White
22	Pink	Red
23	Gray	Red
24	Black	White
25	White	None

Circular connector, D-sub connector cable assembly
Electric characteristics

Item	Characteristics
Conductor resistance Ω/km, 20°C	65 or less
Withstand voltage VAC, 1min.	1000
Insulation resistance MΩkm, 20°C	5 or less

Note) The minimum inside bending radius for each cable is 20 mm.

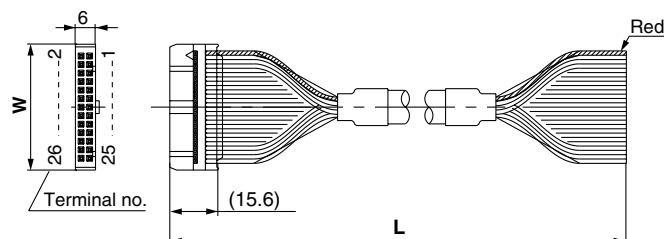
Manifold Option

Flat Ribbon Cable / Cable assembly

AXT100 – FC□ – □

Cable length (L)	10 pins	20 pins	26 pins
1.5 m	AXT100-FC10-1	AXT100-FC20-1	AXT100-FC26-1
3 m	AXT100-FC10-2	AXT100-FC20-2	AXT100-FC26-2
5 m	AXT100-FC10-3	AXT100-FC20-3	AXT100-FC26-3
Connector width (W)	17.2	30	37.5

* For other commercial connectors, use a type with strain relief conforming to MIL-C-83503.



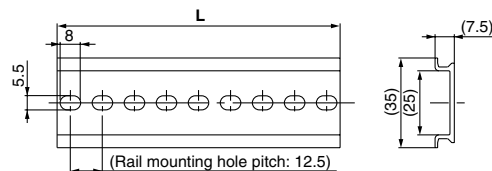
Connector manufacturers' example

- Hirose Electric Co., Ltd.
- Sumitomo 3M Limited
- Fujitsu Limited
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg. Co., Ltd.

10-SV1000/2000 and Series EX500 input unit DIN rail dimensions and weights

VZ1000 – 11 – 1 – □

* As for □, enter the number from the DIN rail dimensions table.



No.	0	1	2	3	4	5	6	7	8	9
L dimension	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5
Weight (g)	17.6	19.9	22.1	24.4	26.6	28.9	31.1	33.4	35.6	37.9

No.	10	11	12	13	14	15	16	17	18	19
L dimension	223	235.5	248	260.5	273	285.5	298	310.5	323	335.5
Weight (g)	40.1	42.4	44.6	46.9	49.1	51.4	53.6	55.9	58.1	60.4

No.	20	21	22	23	24	25	26	27	28	29
L dimension	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5
Weight (g)	62.5	64.9	67.1	69.4	71.6	73.9	76.1	78.4	80.6	82.9

No.	30	31	32	33	34	35	36	37	38	39
L dimension	473	485.5	498	510.5	523	535.5	548	560.5	573	585.5
Weight (g)	85.1	87.4	89.6	91.9	94.1	96.4	98.6	100.9	103.1	105.4

No.	40	41	42	43	44	45	46	47	48	49
L dimension	598	610.5	623	635.5	648	660.5	673	685.5	698	710.5
Weight (g)	107.6	109.9	112.1	114.4	116.6	118.9	121.1	123.4	125.6	127.9

No.	50	51	52	53	54	55	56	57	58	59
L dimension	723	735.5	748	760.5	773	785.5	798	810.5	823	835.5
Weight (g)	130.1	132.4	134.6	136.9	139.1	141.4	143.6	145.9	148.1	150.4

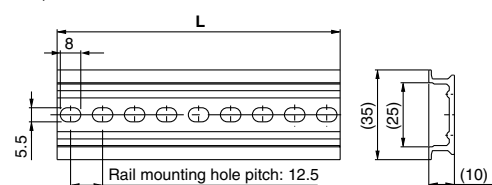
No.	60	61	62	63	64	65	66	67	68	69
L dimension	848	860.5	873	885.5	898	910.5	923	935.5	948	960.5
Weight (g)	152.6	154.9	157.1	159.4	161.6	163.9	166.1	168.4	170.6	172.9

No.	70	71
L dimension	973	985.5
Weight (g)	175.1	177.4

10-SV3000 and 4000 DIN rail dimensions and weights

VZ1000 – 11 – 4 – □

* As for □, enter the number from the DIN rail dimensions table.



No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L dimension	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	233.5	248	260.5	273	285.5	298	310.5	323	335.5	348
Weight (g)	24.8	28	31.1	34.3	37.4	40.6	43.8	46.9	50.1	53.3	56.4	59.6	62.7	65.9	69.1	72.2	75.4	78.6	81.7	84.9	88

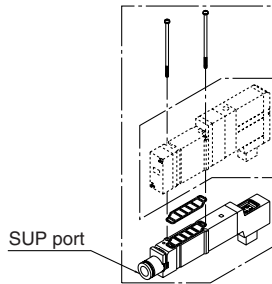
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
L dimension	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5	523	535.5	548	560.5	573	585.5	598	610.5
Weight (g)	91.2	94.4	97.5	100.7	103.9	107	110.2	113.3	116.5	119.7	122.8	126	129.2	132.3	135.5	138.6	141.8	145	148.1	151.3	154.5

No.	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
L dimension	623	635.5	648	660.5	673	685.5	698	710.5	723	735.5	748	760.5	773	785.5	798	810.5	823	835.5	848	860.5	873
Weight (g)	157.6	160.8	163.9	167.1	170.3	173.4	176.6	179.8	182.9	186.1	189.2	192.4	195.6	198.7	201.9	205.1	208.2	211.4	214.5	217.7	220.9

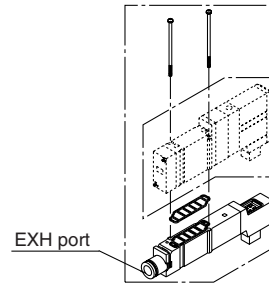
No.	63	64	65	66	67	68	69	70	71
L dimension	885.5	898	910.5	923	935.5	948	960.5	973	985.5
Weight (g)	224	227.2	230.4	233.5	236.7	239.8	243	246.2	249.3

Manifold Option

■ Individual SUP spacer assembly



■ Individual EXH spacer assembly



How to order individual SUP/EXH spacer assembly

Series 10-SV1000

SV1000 — **38** — **1A** — **C6**

• Port size

C3	One-touch fitting for ø3.2
C4	One-touch fitting for ø4
C6	One-touch fitting for ø6
N1	One-touch fitting for ø1/8"
N3	One-touch fitting for ø5/32"
N7	One-touch fitting for ø1/4"

• Spacer type

38	Individual SUP spacer
39	Individual EXH spacer

Series 10-SV2000/10-SV3000/10-SV4000

SV **2** **000** — **38** — **1** **A**

• Series

2	10-SV2000
3	10-SV3000
4	10-SV4000

• Thread type ^{note)}

Nil	Rc
F	G
N	NPT
T	NPTF



Note) 10-SV2000/3000/4000 port size

Series	Port size
10-SV2000	1/8
10-SV3000	1/4
10-SV4000	1/4

Accessory

Series	Round head combination screw	Gasket
10-SV1000	SX3000-22-9 (M2 x 39.5)	SX3000-57-4
10-SV2000	SV2000-21-6 (M3 x 46)	SY5000-11-15
10-SV3000	SV3000-21-3 (M4 x 53)	SY7000-11-11
10-SV4000	SV2000-21-5 (M3 x 60)	SY9000-11-2

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-SV1000/2000/3000/4000

Single Valve / Sub-plate Type
[IP67 compliant]

How to Order

10 - SV 1 1 00 - 5 W1 U D -

Clean series

Series

1	10-SV1000
2	10-SV2000
3	10-SV3000
4	10-SV4000

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Pilot type

Nil	Internal pilot
R	External pilot

* External pilot specifications is not available for 4 position dual 3 port valves.

Rated voltage

5	24 VDC
6	12 VDC

M12 waterproof connector

Symbol	Cable length (mm)
W1	300
W2	500
W3	1000
W4	2000
W7	5000

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Symbol	Port size	Applicable series
Nil	Without sub-plate	
01	1/8	10-SV1000
02	1/4	10-SV2000
03	3/8	10-SV3000
04	1/2	10-SV4000

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type

Light / Surge voltage suppressor

U	With light/surge voltage suppressor
R	With surge voltage suppressor

Series 10-SV1000

Series 10-SV2000

A	4 position dual 3 port valve: N.C./N.C.	
B	4 position dual 3 port valve: N.O./N.O.	
C	4 position dual 3 port valve: N.C./N.O.	

4 position dual 3 port valves are not available for 10-SV3000 and 10-SV4000.

Series 10-SV solenoid valve specifications



Fluid		Air
Internal pilot operating pressure range (MPa)	2 position single	0.15 to 0.7
	4 position dual 3 port valve	
	2 position double	0.1 to 0.7
External pilot operating pressure range (MPa)	3 position	0.2 to 0.7
	Operating pressure range	–100 kPa to 0.7
	2 position single, double	0.25 to 0.7
	3 position	
Ambient and fluid temperature (°C)		–10 to 50 (No freezing. Refer to page 714.)
Max. operating frequency (Hz)	2 position single, double	5
	4 position dual 3 port valve	
	3 position	3
Manual override		Non-locking push type
		Push-turn locking slotted type
Pilot exhaust method	Internal pilot	Common exhaust type for main and pilot valve
	External pilot	Pilot valve individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s²)		150/30 (8.3 to 2000 Hz)
Enclosure		IP67 (Based on IEC60529)
Electrical entry		M12 waterproof connector
Coil rated voltage		24 VDC, 12 VDC
Allowable voltage fluctuation		±10% of rated voltage
Power consumption (W)		0.6 (With light: 0.65)
Surge voltage suppressor		Zener diode
Indicator light		LED



Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and deenergized states every once for each condition. (Values at the initial period)
 Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Response time

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)			
	10-SV1000	10-SV2000	10-SV3000	10-SV4000
2 position single	11 or less	25 or less	28 or less	40 or less
2 position double	10 or less	17 or less	26 or less	40 or less
3 position	18 or less	29 or less	32 or less	82 or less
4 position dual 3 port valve	15 or less	33 or less	—	—



Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)

M12 waterproof connector wiring specifications

Single solenoid	Double solenoid
4 pins connector (M12) plug Solenoid Circuit diagram Solenoid valve side pin wiring diagram	4 pins connector (M12) plug Solenoid A Solenoid B Circuit diagram Solenoid valve side pin wiring diagram



Note) Solenoid valves have no polarity.

Connection (female side) connector cable

As the parts are not supplied from SMC, refer to the application examples listed in the below.
 (For detail such as catalog availability, etc., please contact each manufacturer.)

Connector size	Number of pins	Manufacturer	Applicable series example
M12	4	Corrence Corporation	VA-4D
		OMRON Corporation	XS2
		Yamatake-Honeywell Co., Ltd.	PA5-41
		Hirose Electric Co., Ltd.	HR24
		DKK Ltd.	CM01-8DP4S

Single Valve/Sub-plate Type 10-SV

Flow Characteristics / Weight

Series 10-SV1000

Valve model	Type of actuation		Port size	Flow characteristics ^{Note 1)}						Weight (g) ^{Note 2)}
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv	
10-SV1□00-□-01□	2 position	Single	1/8	1.0	0.30	0.24	1.1	0.30	0.26	123 (88)
		Double								128 (93)
	3 position	Closed center		0.77	0.28	0.18	0.85	0.30	0.19	130 (95)
		Exhaust center		0.73	0.31	0.18	1.1[0.55]	0.26[0.52]	0.24[0.16]	
		Pressure center		1.2[0.51]	0.24[0.45]	0.29[0.14]	0.89	0.47	0.24	
	4 position dual	N.C./N.C.		0.68	0.35	0.18	1.1	0.39	0.29	128 (93)
		N.O./N.O.		0.87	0.31	0.23	0.77	0.44	0.21	

Note 1) []: Denotes the normal position. Note 2) (): Denotes without sub-plate.

Series 10-SV2000

Valve model	Type of actuation		Port size	Flow characteristics ^{Note 1)}						Weight (g) ^{Note 2)}
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv	
10-SV2□00-□-02□	2 position	Single	1/4	2.4	0.41	0.64	2.8	0.29	0.66	159 (96)
		Double								163 (100)
	3 position	Closed center		1.8	0.47	0.50	1.8	0.40	0.47	168 (105)
		Exhaust center		1.4	0.55	0.44	3.0[1.2]	0.33[0.48]	0.72[0.37]	
		Pressure center		3.3[0.84]	0.36[0.60]	0.85[0.28]	1.8	0.40	0.48	
	4 position dual	N.C./N.C.		2.2	0.40	0.55	2.6	0.31	0.60	163 (100)
		N.O./N.O.		2.7	0.24	0.57	2.3	0.36	0.54	

Note 1) []: Denotes the normal position. Note 2) (): Denotes without sub-plate.

Series 10-SV3000

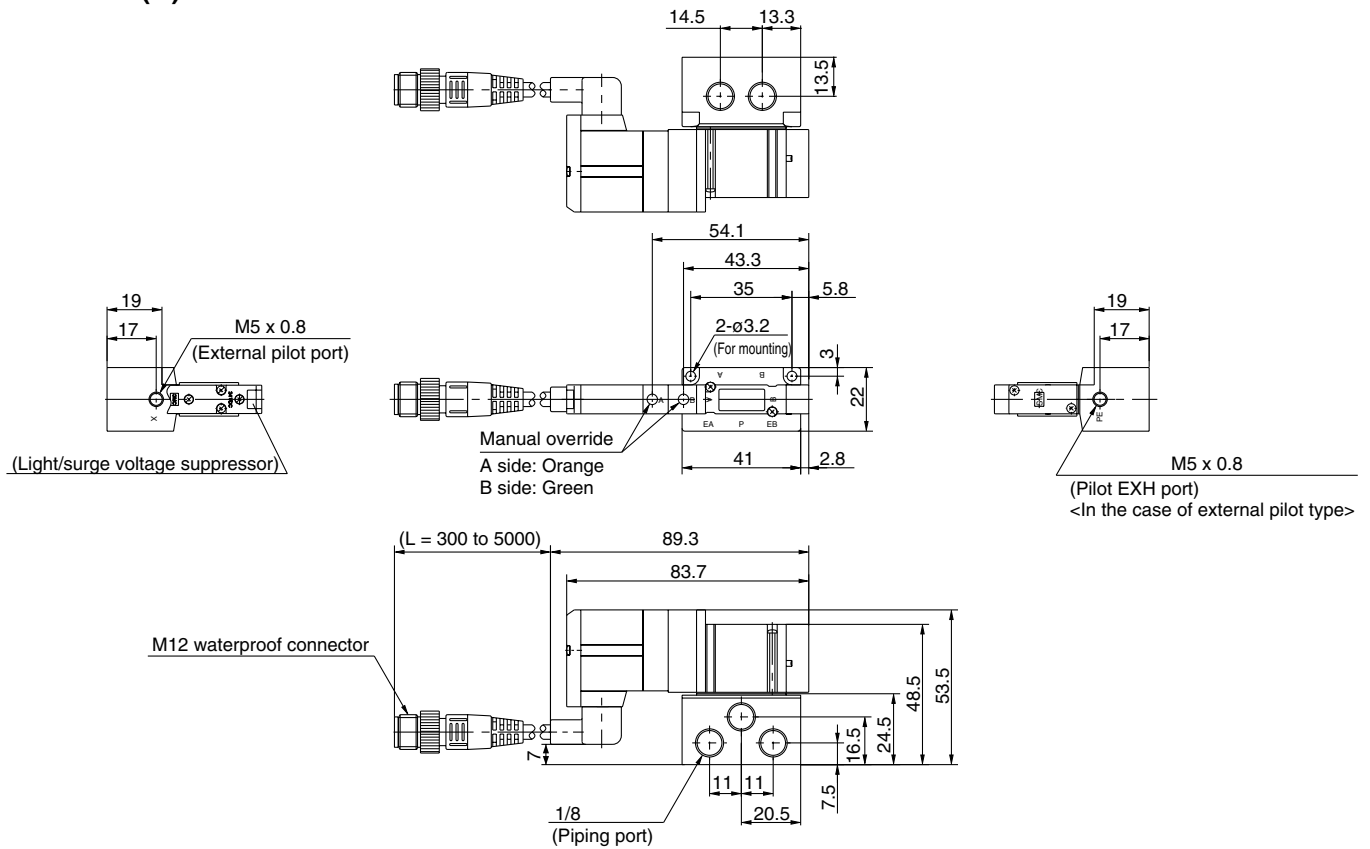
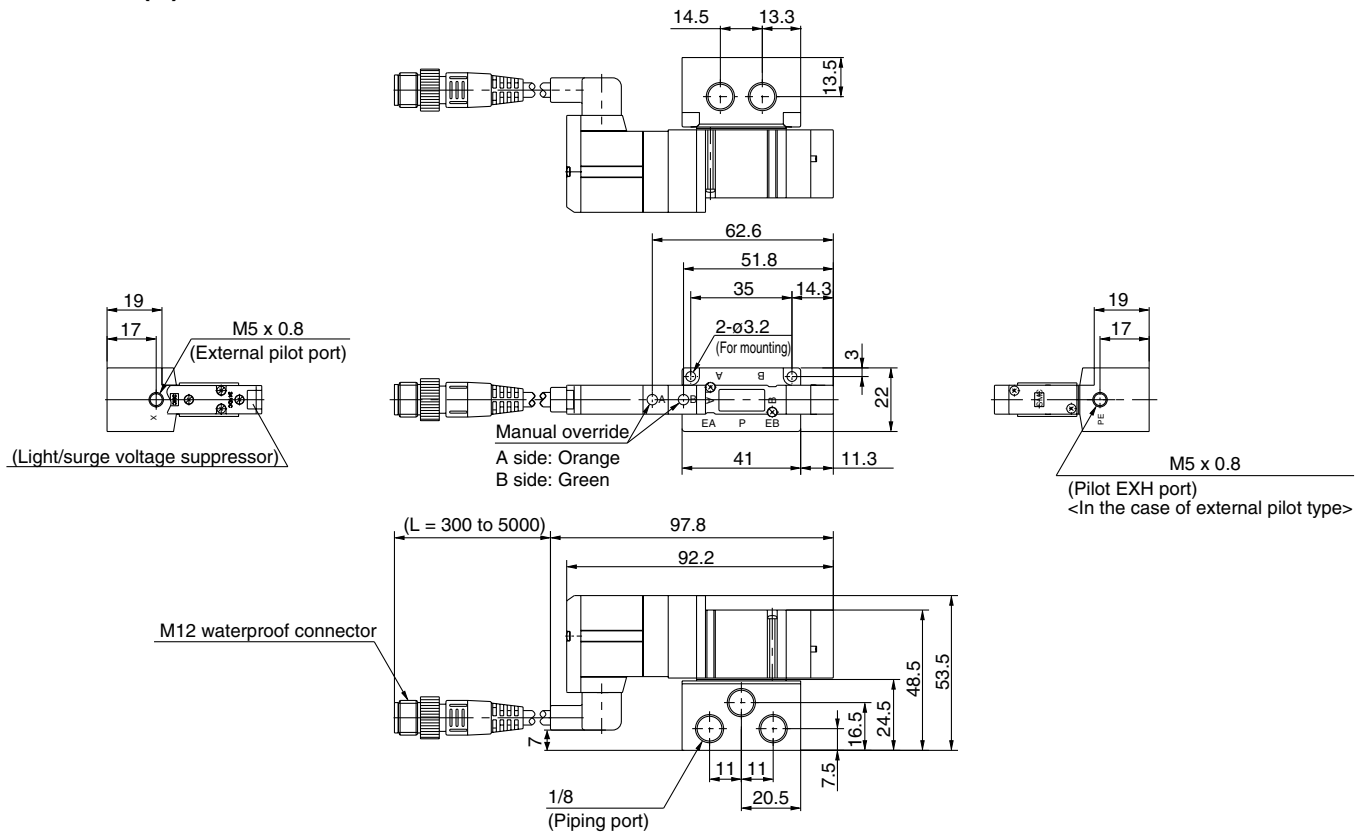
Series 10-SV3000										
Valve model	Type of actuation		Port size	Flow characteristics ^{Note 1)}						Weight (g) ^{Note 2)}
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv	
10-SV3□00-□-02□	2 position	Single	1/4	4.1	0.41	1.1	4.1	0.29	1.0	250 (121)
		Double								253 (124)
	3 position	Closed center		3.0	0.43	0.80	2.6	0.41	0.72	26 (132)
		Exhaust center		2.6	0.42	0.71	4.7[1.7]	0.35[0.48]	1.1[0.49]	
		Pressure center		5.3[2.3]	0.39[0.49]	1.3[0.65]	2.2	0.49	0.63	
10-SV3□00-□-03□	2 position	Single	3/8	4.9	0.29	1.2	4.5	0.27	1.1	235
		Double								238
	3 position	Closed center		3.0	0.40	0.80	2.6	0.45	0.73	246
		Exhaust center		2.6	0.42	0.71	4.8[1.7]	0.35[0.48]	1.1[0.34]	
		Pressure center		5.3[2.3]	0.31[0.51]	1.3[0.64]	2.3	0.45	0.66	

Note 1) []: Denotes the normal position. Note 2) (): Denotes without sub-plate.

Series 10-SV4000

Valve model	Type of actuation		Port size	Flow characteristics ^{Note 1)}						Weight (g) ^{Note 2)}
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv	
10-SV4□00-□-03□	2 position	Single	3/8	7.9	0.34	2.0	9.6	0.43	2.5	505 (208)
		Double								509 (212)
	3 position	Closed center		7.5	0.33	1.8	7.3	0.30	1.7	530 (233)
		Exhaust center		7.2	0.34	1.7	13[4.0]	0.23[0.41]	2.8[0.95]	
		Pressure center		12[3.3]	0.26[0.41]	2.8[0.84]	6.7	0.40	1.9	
10-SV4□00-□-04□	2 position	Single	1/2	8.0	0.48	2.2	10	0.29	2.5	484
		Double								488
	3 position	Closed center		7.6	0.32	1.8	7.3	0.32	1.8	509
		Exhaust center		7.3	0.42	2.0	13[4.7]	0.32[0.54]	3.6[1.5]	
		Pressure center		12[3.3]	0.33[0.51]	3.3[0.94]	7.4	0.33	1.9	

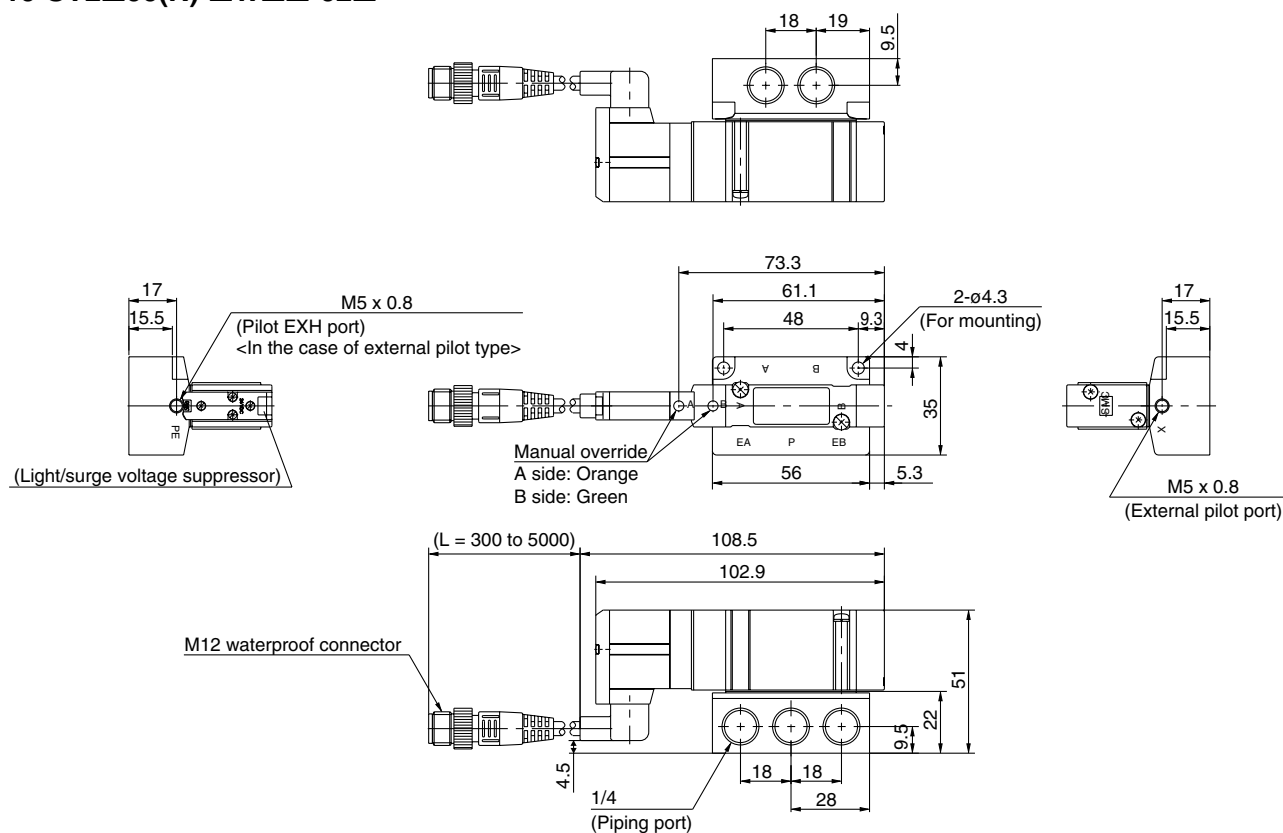
Note 1) []: Denotes the normal position. Note 2) (): Denotes without sub-plate.

Dimensions: Series 10-SV1000**2 position single/double, 4 position dual 3 port [M12 waterproof connector type]****10-SV1□00(R)-□W□□-01□****3 position closed center / exhaust center / pressure center [M12 waterproof connector type]****10-SV1□00(R)-□W□□-01□**

Dimensions: Series 10-SV2000

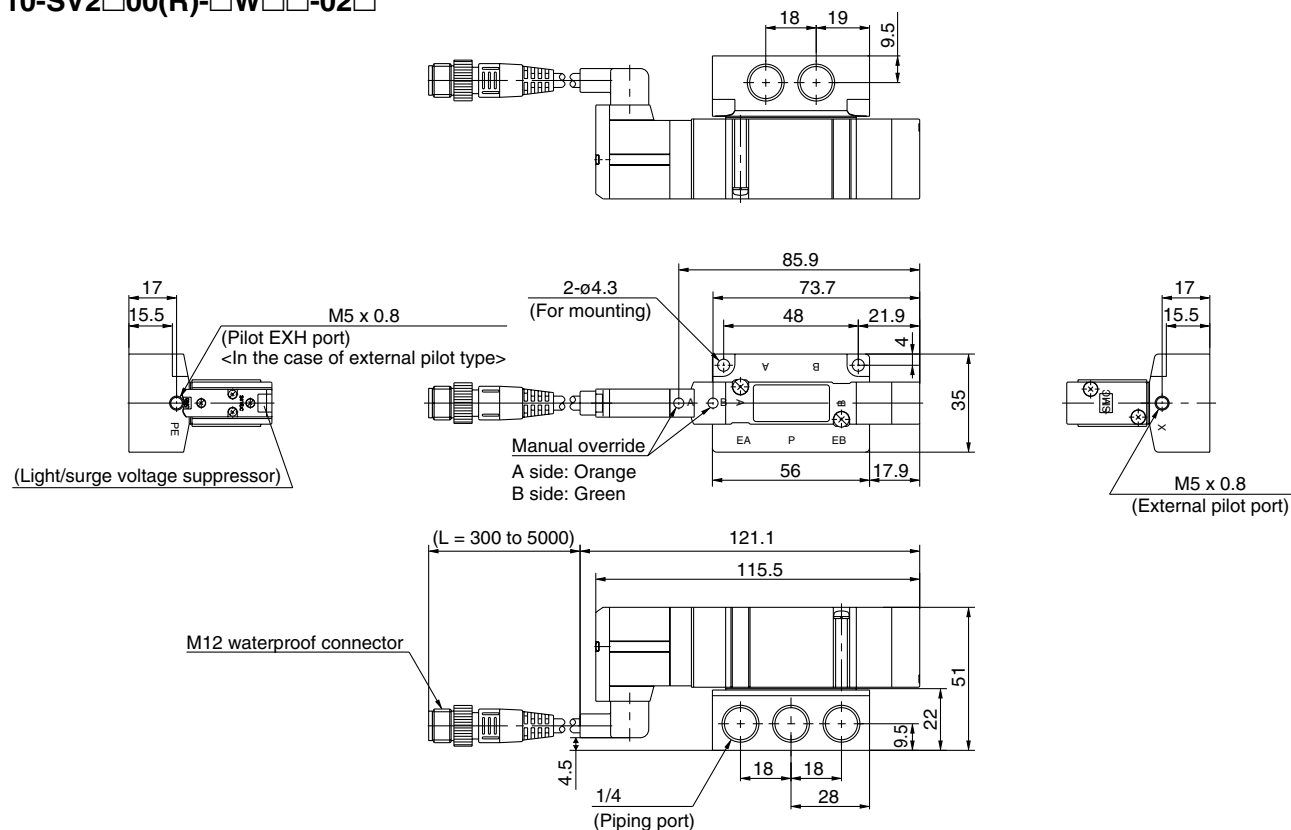
2 position single/double, 4 position dual 3 port [M12 waterproof connector type]

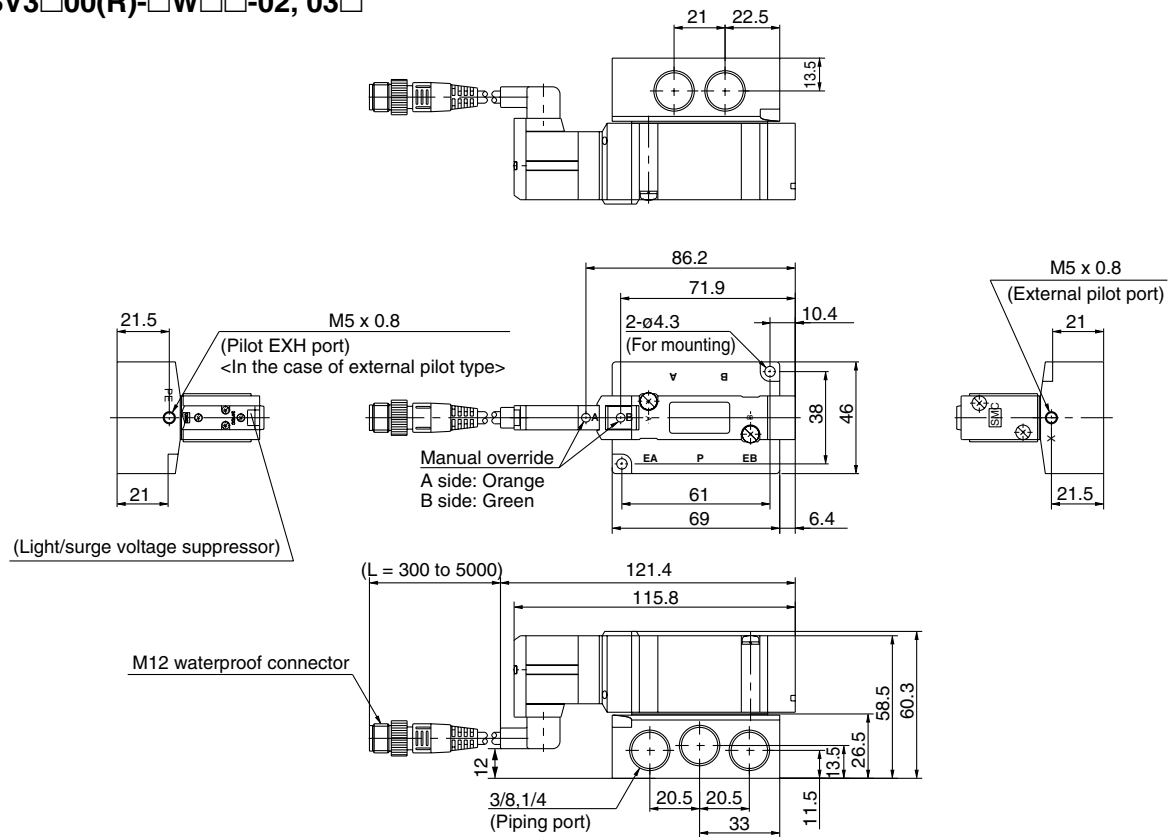
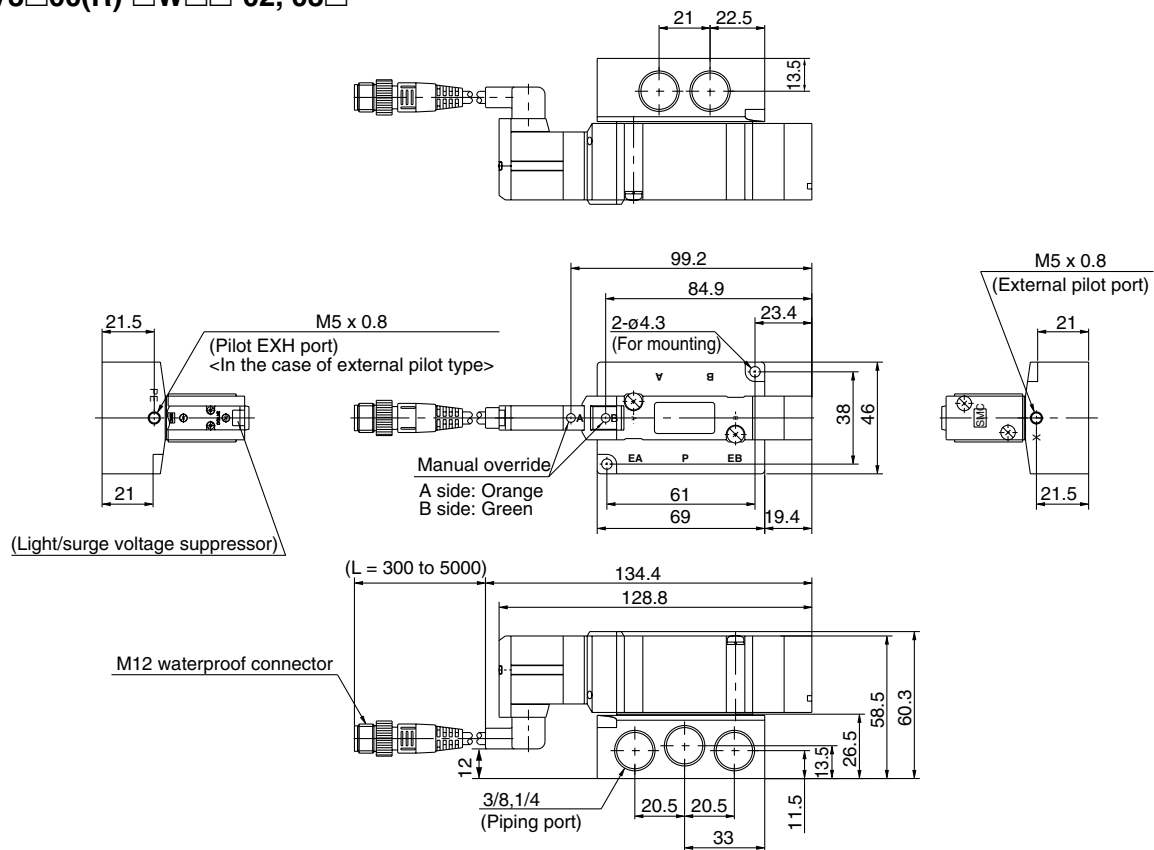
10-SV2□00(R)-□W□□-02□



3 position closed center / exhaust center / pressure center [M12 waterproof connector type]

10-SV2□00(R)-□W□□-02□

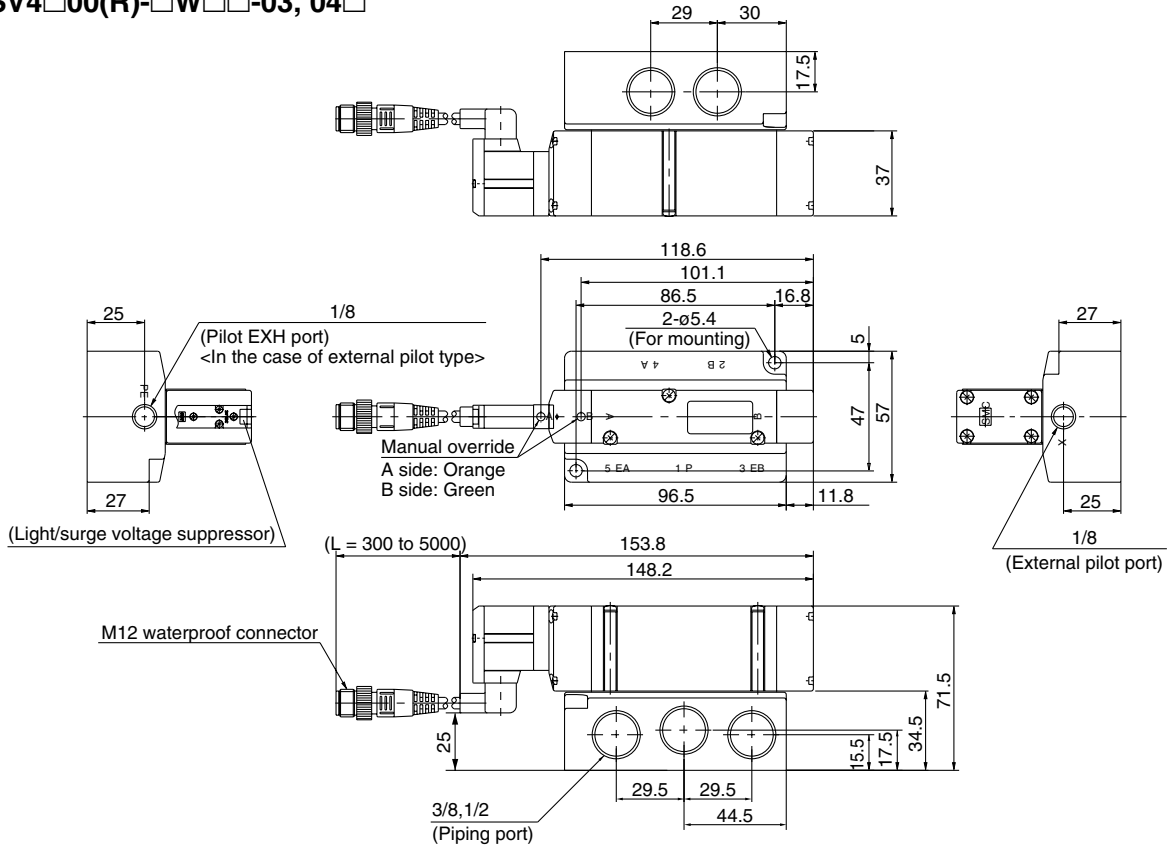


Dimensions: Series 10-SV3000**2 position single/double [M12 waterproof connector type]****10-SV3□00(R)-□W□□-02, 03□****3 position closed center / exhaust center / pressure center [M12 waterproof connector type]****10-SV3□00(R)-□W□□-02, 03□**

Dimensions: Series 10-SV4000

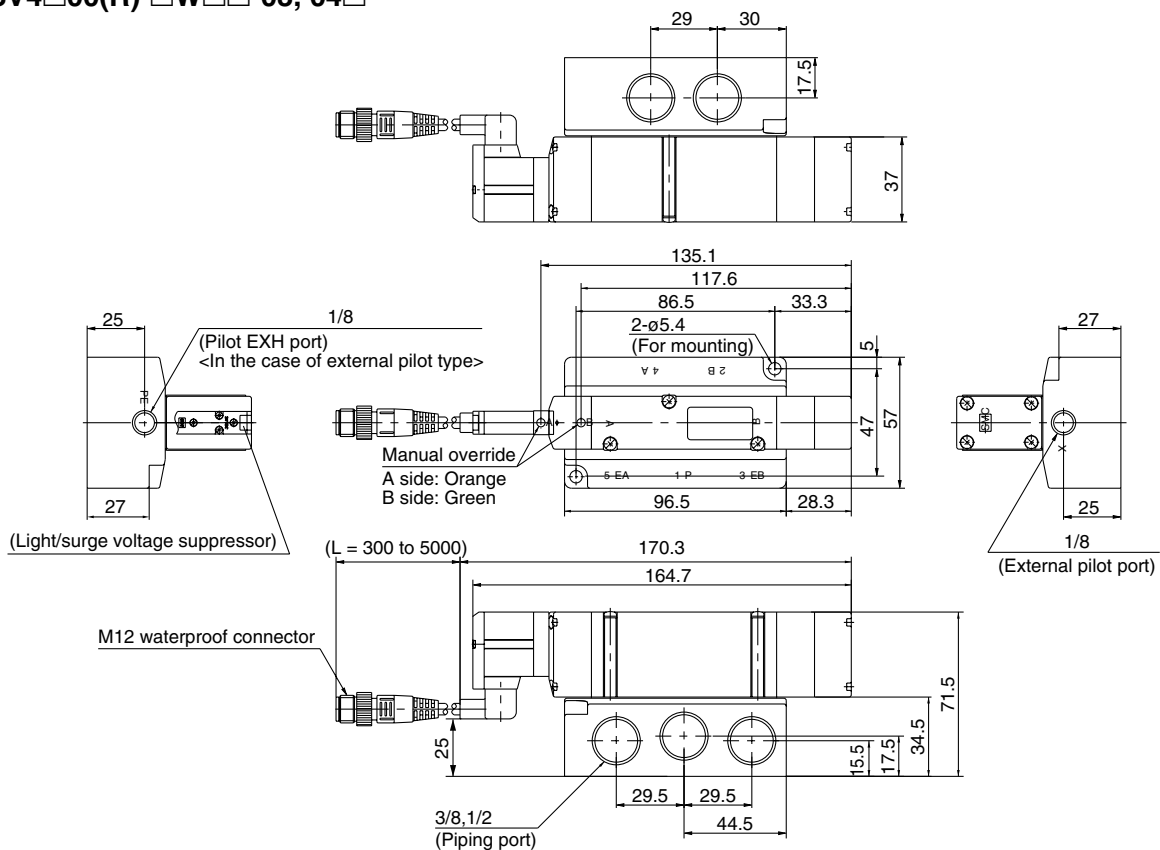
2 position single/double [M12 waterproof connector type]

10-SV4□00(R)-□W□□-03, 04□



3 position closed center / exhaust center / pressure center [M12 waterproof connector type]

10-SV4□00(R)-□W□□-03, 04□



Series 10-SV

Made to Order Specifications

For detailed specifications, delivery and pricing, please contact SMC.

1

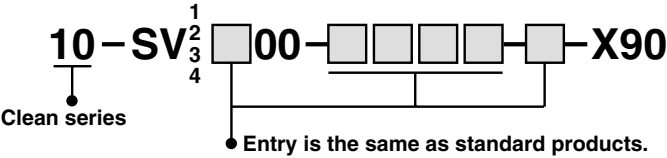
Main Valve Fluoro Rubber Specifications

Symbol

-X90

- Fluoro rubber is used for rubber parts of the main valve to allow use in applications such as the following.
1. When using a lubricant other than the recommended turbine oil, and there is a possibility of malfunction due to swelling of the spool valve seals.
 2. When ozone enters or is generated in the air supply.

Part no.



Note) Because in series -X90 fluoro rubber is used for only main valve, the rubber parts of the application/usage in conditions requiring heat resistance should be avoided.

Air cylinder
Rotary actuator
Air gripper
Directional control valve
Flow control equipment
Filter, Pressure control equipment
Fittings & Tubing
Air preparation equipment
Pressure switch
Clean gas filter



Specific Product Precautions 1

Be sure to read before handling.

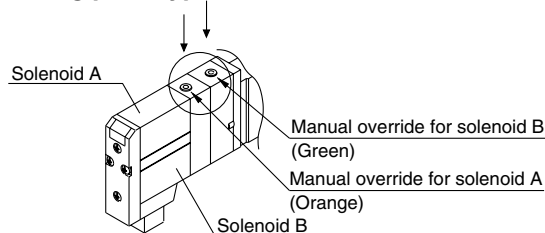
Warning Environment

1. Do not use valves in atmospheres of corrosive gases, chemicals, salt water, water, steam, or where there is direct contact with any of these.
2. Products compliant with IP65 and IP67 enclosures (Based on IEC529) are protected against dust and water, however, these products cannot be used in water.
3. Products compliant with IP65 and IP67 enclosures satisfy the specifications by mounting each product properly. Be sure to read the Specific Product Precautions for each product.

Warning Manual Override Operation

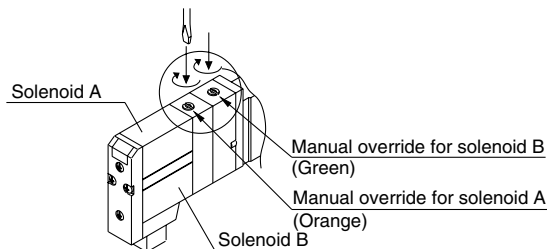
Handle carefully, as connected equipment can be actuated through manual override operation.

Non-locking push type



Push-turn locking slotted type

After pushing down, turn in the direction of the arrow.
If it is not turned, it can be operated the same way as the non-locking type.



Caution

When locking the manual override with the push-turn locking slotted type, be sure to push it down before turning.
Turning without first pushing it down can cause damage to the manual override and other trouble such as air leakage, etc.

Caution

Exhaust Restriction

Since Series 10-SV is a type in which the pilot valve exhaust joins the main valve exhaust inside the valve, use caution, so that the piping from the exhaust port is not restricted.

Caution

Series 10-SV Used as a 3 Port Valve

In the case of using a 5 port valve

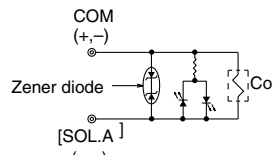
Series 10-SV can be used as normally closed (N.C.) or normally open (N.O.) 3 port valves by closing one of the cylinder ports (A or B) with a plug. However, they should be used with the exhaust ports kept open. They are convenient at times when a double solenoid type 3 port valve is required.

Plug position		B port	A port
Actuation		N.C.	N.O.
Number of solenoids	Single		
	Double		

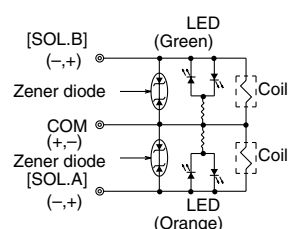
Caution Light/Surge Voltage Suppressor

Solenoid valves have no polarity.
Light/Surge voltage suppressor

Single solenoid

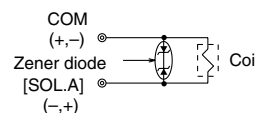


Double solenoid, 3 position type

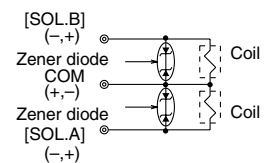


Surge voltage suppressor

Single solenoid



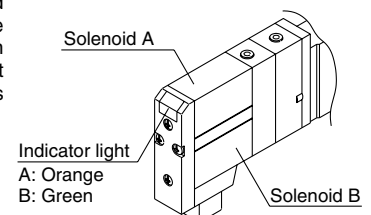
Double solenoid, 3 position type



Caution

Light indication

When equipped with light and surge voltage suppressor, the light window turns orange when solenoid A is energized, and it turns green when solenoid B is energized.





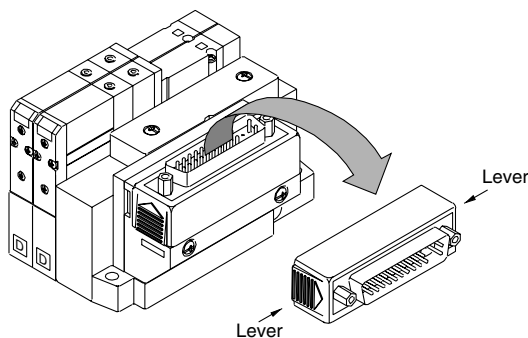
Specific Product Precautions 2

Be sure to read before handling.

Caution

Connector Entry Directions

Connector entry directions for D-sub connectors and flat ribbon cables can be changed. To change the connector's entry direction, press the levers on both sides of the connector, take it off, and change the direction as shown in the drawing. Since lead wire assemblies are attached to the connector, excessive pulling or twisting can cause broken wires or other trouble. Also, take precautions so that lead wires are not caught and pinched when installing the connector.

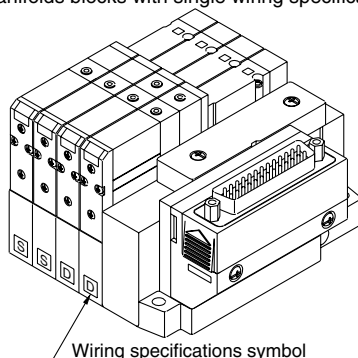


Caution

How to Order Manifold

The letter "S" or "D" is indicated on manifold blocks for series 10-SV as shown below. This indication refers to the type of substrate assembly (single wiring or double wiring) inside the manifold blocks.

When the manifold specification sheet does not include a wiring specification, all stations will be double wiring specification (D). In this case, single and double solenoid valves can be mounted in any position, but when a single valve is used, there will be an unused control signal. To avoid this, indicate positions of manifold blocks for single wiring specification (S) and double wiring specification (D) on a manifold specification sheet. (Note that double, 3 or 4 position valves cannot be used for manifolds blocks with single wiring specification (S).)



Caution

Substrate Assemblies inside Manifolds

Substrate assemblies inside of manifolds cannot be taken apart. Attempting to do so may damage parts.

Caution

One-touch Fittings

1. Tube attachment/detachment for One-touch fittings

1) Attaching of tube

- (1) Take a tube having no flaws on its periphery and cut it off at a right angle. When cutting the tube, use tube cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tube cutters, there is the danger that the tube may be cut diagonally or become flattened, etc., making a secure installation impossible, and causing problems such as the tube pulling out after installation or air leakage.

Also allow some extra length in the tube.

- (2) Grasp the tube and push it in slowly, inserting it securely all the way into the fitting.
- (3) After inserting the tube, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tube pulling out.

2) Detaching of tube

- (1) Push in the release button sufficiently, and push the collar evenly at the same time.
- (2) Pull out the tube while holding down the release button so that it does not come out. If the release button is not pressed down sufficiently, there will be increased bite on the tube and it will become more difficult to pull it out.
- (3) When the removed tube is to be used again, cut off the portion which has been chewed before reusing it. If the chewed portion of the tube is used as is, this can cause trouble such as air leakage or difficulty in removing the tube.

Caution

Other Tubing Brands

1. When using tube other than SMC brand, confirm that the following specifications are satisfied with respect to the outside diameter tolerance of the tube.

- 1) Nylon tubing within ± 0.1 mm
- 2) Soft nylon tubing within ± 0.1 mm
- 3) Polyurethane tubing within $+0.15$ mm
within -0.2 mm

Do not use tubing which does not meet these outside diameter tolerances. It may not be possible to connect them, or they may cause other trouble, such as air leakage or the tube pulling out after connection.

Caution

Back Pressure Check Valve Built-in Type

Valves with built-in back pressure check valve is to protect the back pressure inside a valve. For this reason, use caution the valves with external pilot specification cannot be pressurized from exhaust port [3/5(E)]. As compared with the types which do not integrate the back pressure check valve, C value of the flow characteristics goes down. For details, please contact SMC.



Specific Product Precautions 3

Be sure to read before handling.

Serial Wiring EX500/EX250/EX120 Precautions

Warning

1. **These products are intended for use in general factory automation equipment.**
Avoid using these products in machinery/equipment which affects human safety, and in cases where malfunction or failure can result in extensive damage.
2. **Do not use in an explosive atmosphere, environment with inflammable gases, or corrosive atmosphere.**
This can cause injury or fire, etc.
3. **Work such as transporting, installing, piping, wiring, operation, control, maintenance and check should be performed by personnel with specialized knowledge.**
There is a danger of electrocution, injury or fire, etc.
4. **Install an external emergency stop circuit that can promptly stop operation and shut off the power supply.**
5. **Do not remodel these products, as there is a danger of injury and damage.**
6. **Do not wipe the product with chemicals, etc.**

Caution

1. **Read the instruction manual carefully, strictly observe the precautions and operate within the range of the specifications.**
2. **Do not drop these products or submit them to strong impacts. This can cause damage, failure or malfunction, etc.**
3. **In locations with poor electrical conditions, take steps to ensure a steady flow of the rated power supply. Use of a voltage outside of the specifications can cause malfunction, damage to the unit, electrocution or fire, etc.**
4. **Do not touch connector terminals or internal substrates when current is being supplied. There is a danger of malfunction, damage to the unit or electrocution if connector terminals or internal substrates are touched when current is being supplied.**
Be sure that the power supply is OFF when adding or removing manifold valves or input blocks, etc., or when connecting or disconnecting connectors.
5. **Operate at an ambient temperature that is within the specifications. Even when the ambient temperature range is within the specifications, do not use in locations where there are rapid temperature changes.**
6. **Keep wire scraps and other extraneous material from getting inside these products. This can cause fire, failure or malfunction, etc.**
7. **Give consideration to the operating environment depending on the type of enclosure being used.**
To achieve IP65 or IP67 protection, provide appropriate wiring between all units using electrical wiring cables, communication connectors and cables with M12 connectors. Also, provide waterproof caps when there are unused ports, and perform proper mounting of input units, input blocks, SI units and manifold valves, etc. Provide a cover or other protection for applications in which there is constant exposure to water.
8. **Obey the proper tightening torque.**
There is a possibility of damaging threads if tightening exceeds the tightening torque range.

Caution

9. **Provide adequate protection when operating in locations such as the following.**
 - Where noise is generated by static electricity, etc.
 - Where there is a strong electric field
 - Where there is a danger of exposure to radiation
 - When in close proximity to power supply lines
10. **When these products are installed in equipment, provide adequate protection against noise by using noise filters, etc.**
11. **Since these products are components that are used after installation in other equipment, the customer should confirm conformity to EMC directives for the finished product.**
12. **Do not remove the name plate.**
13. **Perform periodic inspections and confirm normal operation. It may otherwise be impossible to guarantee safety due to unexpected malfunction or erroneous operation.**

Power Supply Safety Instructions

Caution

1. **Operation is possible with a single power supply or a separate power supply. However, be sure to provide two wiring systems (one for solenoid valves, and one for input and control units).**
2. **Use the following UL approved products for DC power supply combinations.**
 - 1) Controlled voltage current circuit conforming to UL508
Circuit uses the secondary coil of an isolated transformer as the power supply, satisfying the following conditions.
 - Max. voltage (with no load): 30 Vrms (42.4 V peak) or less
 - Max. current: (1) 8 A or less (including shorts), and
 - (2) When controlled by a circuit protector (fuse, etc.) with the following rating

No-load voltage (V peak)	Max. current rating
0 to 20 [V]	5.0
Over 20 [V] to 30 [V]	100
	Peak voltage value

- 2) A circuit (class 2 circuit) with maximum 30 Vrms (42.4 V peak) or less, and a power supply consisting of a class 2 power supply unit conforming to UL1310, or a class 2 transformer conforming to UL1585

Safety Instructions for Cable

Caution

1. **Be careful of mis-wiring. This can cause malfunction, damage and fire in the unit.**
2. **To prevent noise and surge in signal lines, keep all wiring separate from power lines and high voltage lines. Otherwise, this can cause malfunction.**
3. **Check wiring insulation, as defective insulation can cause damage to the unit due to excessive voltage or current.**
4. **Do not bend or pull cables repeatedly, and do not place heavy objects on them or allow them to be pinched. This can cause broken lines.**

Series 10-SZ3000 5 Port Solenoid Valve

Series 10-SZ3000 / Plug-in Type



Model		Flat ribbon cable type 60P□			
		D-sub connector Type 60F	Type 60P	Type 60PG	Type 60PH
Manifold		Plug-in type			
1 (P: SUP), 3/5 (R: EXH) system		Common SUP, EXH			
Valve stations (With power terminal)		2 to 20 stations		2 to 16 stations	2 to 8 stations
Applicable connector		D-sub connector Conforming to MIL-C-24308 JIS-X-5101	Flat ribbon cable connector Socket: 26 pins MIL type with strain relief Conforming to MIL-C-83503	Flat ribbon cable connector Socket: 20 pins MIL type with strain relief Conforming to MIL-C-83503	Flat ribbon cable connector Socket: 10 pins MIL type with strain relief Conforming to MIL-C-83503
Internal wiring		+COM, -COM			
4(A), 2(B) port Porting specifications	Location	Valve			
	Direction	Lateral, Upward, Downward			
Port size	Metric	1(P), 3/5(R) port: ø8		4(A), 2(B) port: M5, ø4, ø6	
	Inch	1(P), 3/5(R) port: ø5/16"		4(A), 2(B) port: ø5/32", ø1/4"	

Series 10-SZ3000 / Non Plug-in Type



Model		Type 10-SS5Z3-60			
Manifold		Non plug-in type			
1 (P: SUP), 3/5 (R: EXH) system		Common SUP, EXH			
Valve stations		2 to 20 stations			
4(A), 2(B) port Porting specifications	Location	Valve			
	Direction	Lateral, Upward, Downward			
Port size	Metric	1(P), 3/5(R) port: ø8		4(A), 2(B) port: M5, ø4, ø6	
	Inch	1(P), 3/5(R) port: ø5/16"		4(A), 2(B) port: ø5/32", ø1/4"	

Series 10-SZ3000 / Serial Transmission Type



DeviceNet, CompoBus/D (OMRON Corp.)
OMRON Corp.: CompoBus/S System (16 output points)
OMRON Corp.: CompoBus/S System (8 output points)
Mitsubishi Electric Corp.: CC-LINK System
NKE Corp.: Uni-wire System
NKE Corp.: Uni-wire H System
SUNX Corp.: S-LINK System (16 output points)
SUNX Corp.: S-LINK System (8 output points)

Series 10-SZ3000

5 Port Solenoid
Valve Plug-in Type

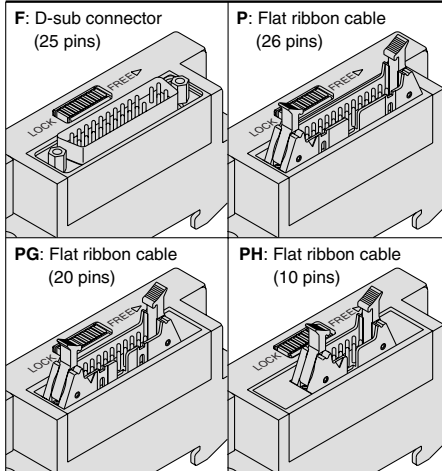
How to Order

• Plug-in manifold with power supply terminals

10-SS5Z3-60 F D 1 - 05 U - P -

• Clean series

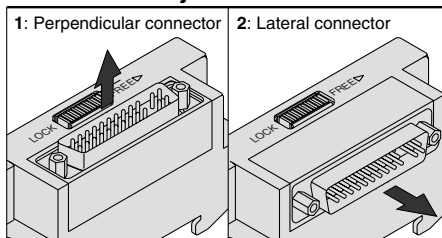
• Connector type



• Connector mounting position

Symbol	Mounting position
D	D side

• Connector entry direction



• SUP/EXH block mounting position

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 20 stations)
M *	Special specifications

* For special specifications, indicate separately by the manifold specification sheet.
Note) A total of up to 3 SUP/ EXH blocks can be mounted. Please contact SMC if 4 or more will be mounted.

• Pilot type

Nil	Internal pilot
R	External pilot

• Option

When a longer DIN rail is desired than the specified stations, specify the station number to be required.

• Power supply terminals

Symbol	Specifications
P	24 VDC, Positive common
P12	12 VDC, Positive common
N	24 VDC, Negative common
N12	12 VDC, Negative common

• SUP/EXH block fitting specifications

Nil	Straight
L	Elbow fittings (Upward)
B	Elbow fittings (Downward)

• Valve stations

F: D-sub connector

Symbol	Stations	Note
02	2 stations	Double wiring specifications ^{Note 1)}
:	:	
10	10 stations	Specified layout ^{Note 2)} (Up to 21 solenoids possible)
02	2 stations	
:	:	
20	20 stations	

P: Flat ribbon cable connector (26 pins)

Symbol	Stations	Note
02	2 stations	Double wiring specifications
:	:	
11	11 stations	Specified layout (Up to 22 solenoids possible)
02	2 stations	
:	:	
20	20 stations	

PG: Flat ribbon cable connector (20 pins)

Symbol	Stations	Note
02	2 stations	Double wiring specifications
:	:	
08	8 stations	Specified layout (Up to 16 solenoids possible)
02	2 stations	
:	:	
16	16 stations	

PH: Flat ribbon cable connector (10 pins)

Symbol	Stations	Note
02	2 stations	Double wiring specifications
:	:	
04	4 stations	Specified layout (Up to 8 solenoids possible)
02	2 stations	
:	:	
08	8 stations	

Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used at all of the manifold stations.

Note 2) Specified layout: Indicate wiring specifications on a manifold specification sheet.
(Please note that in locations where single solenoid wiring is indicated, it will be impossible to use double or 3 position / 4 position valves.)

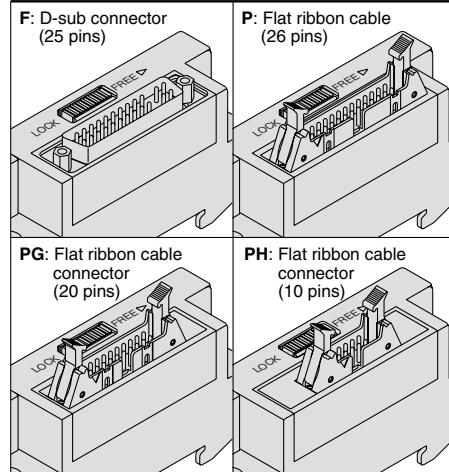
How to Order

• Plug-in manifold without power supply terminals

10-SS5Z3-60 **F** **D** **1** - **05** **U** -

• Clean series

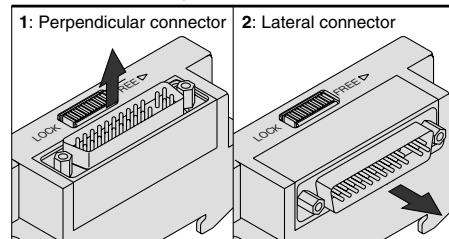
• Connector type



• Connector mounting position

Symbol	Mounting position
D	D side

• Connector entry direction



• SUP/EXH block mounting position

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 20 stations)
M *	Special specifications



* For special specifications, indicate separately by the manifold specification sheet.
 Note) A total of up to 3 SUP/ EXH blocks can be mounted. Please contact SMC if 4 or more will be mounted.

• Option

When a longer DIN rail is desired than the specified stations, specify the station number to be required.

• SUP/EXH block fitting specifications

Nil	Straight
L	Elbow fittings (Upward)
B	Elbow fittings (Downward)

• Pilot type

Nil	Internal pilot
R	External pilot

• Valve stations

F: D-sub connector

Symbol	Stations	Note
02	2 stations	Double wiring ^{Note 1)} specifications
:	:	
12	12 stations	Specified layout ^{Note 2)} (Up to 24 solenoids possible)
02	2 stations	
:	:	
20	20 stations	

P: Flat ribbon cable connector (26 pins)

Symbol	Stations	Note
02	2 stations	Double wiring specifications
:	:	
12	12 stations	Specified layout (Up to 25 solenoids possible)
02	2 stations	
:	:	
20	20 stations	

PG: Flat ribbon cable connector (20 pins)

Symbol	Stations	Note
02	2 stations	Double wiring specifications
:	:	
09	9 stations	Specified layout (Up to 19 solenoids possible)
02	2 stations	
:	:	
19	19 stations	

PH: Flat ribbon cable connector (10 pins)

Symbol	Stations	Note
02	2 stations	Double wiring specifications
:	:	
04	4 stations	Specified layout (Up to 9 solenoids possible)
02	2 stations	
:	:	
09	9 stations	



Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used at all of the manifold stations.

Note 2) Specified layout: Indicate wiring specifications on a manifold specification sheet. (Please note that in locations where single solenoid wiring is indicated, it will be impossible to use double or 3 position / 4 position valves.)

How to Order

- How to order solenoid valves For plug-in (Common for both with and without power supply terminals)

10 - SZ3 **1** **60** **-** **5** **LOZ** **-** **C6**

• Clean series

Type of actuation •

1	2 position single solenoid (A) (B) 5 1 3 (EA)(P)(EB)
2	2 position double solenoid (A) (B) 5 1 3 (EA)(P)(EB)
3	3 position closed center (A) (B) 5 1 3 (EA)(P)(EB)
4	3 position exhaust center (A) (B) 5 1 3 (EA)(P)(EB)
5	3 position pressure center (A) (B) 5 1 3 (EA)(P)(EB)
A	4 position dual 3 port valve: N.C./N.C. (A) (B) 5 1 3 (R) (P)
B	4 position dual 3 port valve: N.O./N.O. (A) (B) 5 1 3 (R) (P)
C	4 position dual 3 port valve: N.C./N.O. (A) (B) 5 1 3 (R) (P)

• Rated voltage

5	24 VDC
6	12 VDC

- When using on a manifold with power supply terminals, be sure to match with the manifold's voltage specifications.

• Back pressure check valve

Nil	None
K	Built-in

- The built-in back pressure check valve type has an effective area approximately 20% smaller.
- The 3 position solenoid valves are not available with back pressure check valve.

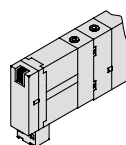
• Pilot type

Nil	Internal pilot
R	External pilot

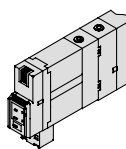
- The 4 position dual 3 port valve is not available with external pilot specifications.

• Switch specifications

Nil: Without switch



J: With switch



* For switch operation, refer to page 354.

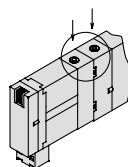
• Common specifications

Nil	Positive common
N	Negative common

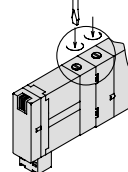
- When using on a manifold with power supply terminals, be sure to match with the manifold's common specifications.

Manual override •

Nil: Non-locking push type

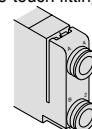


D: Push-turn locking slotted type

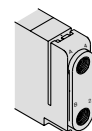


• A, B port size

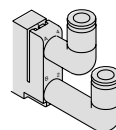
C4: One-touch fitting for $\phi 4$
C6: One-touch fitting for $\phi 6$
N3: One-touch fitting for $\phi 5/32$ "
N7: One-touch fitting for $\phi 1/4$ "



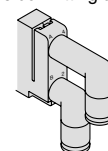
M5: M5 x 0.8



Elbow fitting assembly (Upward)
L4: $\phi 4$ elbow fitting assembly
L6: $\phi 6$ elbow fitting assembly



Elbow fitting assembly (Downward)
B4: $\phi 4$ elbow fitting assembly
B6: $\phi 6$ elbow fitting assembly



How to Order Valve Manifold Assembly

Ordering example (10-SZ3000, positive common with power supply terminals)



Double solenoid (24 VDC)

10-SZ3260-5LOZ-C6 (3 sets)

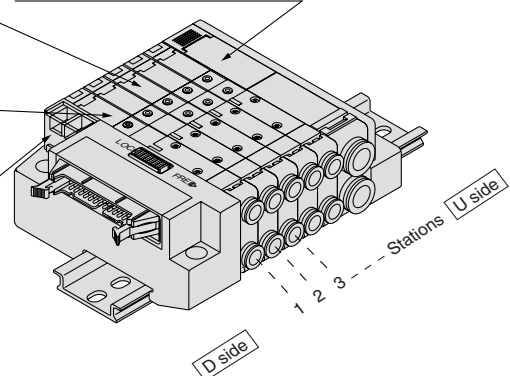
SUP/EXH block (U-side mounting)

Single solenoid (24 VDC)

10-SZ3160-5LOZ-C6 (2 sets)

With power supply terminals
Plug-in manifold

10-SS5Z3-60PD2-05U-P



10-SS5Z3-60PD2-05U-P 1 set (Manifold part no.)
 * **10-SZ3160-5LOZ-C6** 2 sets (Single solenoid part no.)
 * **10-SZ3260-5LOZ-C6** 3 sets (Double solenoid part no.)

→The asterisk denotes the symbol for assembly.
 Prefix to the part no. of the solenoid valve, etc.

Stations are counted from D side as the 1st one.

Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing. When entry of part numbers becomes complicated, indicate on the manifold specification sheet.



Made to Order Specifications
 (For details, refer to page 353.)

Manifold Specifications

Model	D-sub connector Type 60F	Flat ribbon cable type 60P□		
		Type 60P	Type 60PG	Type 60PH
Manifold	Plug-in type			
1 (P: SUP), 3/5 (R: EXH) system	Common SUP, EXH			
Valve stations (With power terminal)	2 to 20 stations		2 to 16 stations	2 to 8 stations
Applicable connector	D-sub connector Conforming to MIL-C-24308 JIS-X-5101	Flat ribbon cable connector Socket: 26 pins MIL type with strain relief Conforming to MIL-C-83503	Flat ribbon cable connector Socket: 20 pins MIL type with strain relief Conforming to MIL-C-83503	Flat ribbon cable connector Socket: 10 pins MIL type with strain relief Conforming to MIL-C-83503
Internal wiring		+COM, −COM		
4(A), 2(B) port Porting specifications	Location	Valve		
	Direction	Lateral, Upward, Downward		
Port size	Metric	1(P), 3/5(R) port: ø8		4(A), 2(B) port: M5, ø4, ø6
	Inch	1(P), 3/5(R) port: ø5/16"		4(A), 2(B) port: ø5/32", ø1/4"
Weight W (g) (n1: Stations n2: Number of SUP/EXH blocks m: Weight of DIN rail)		W=3.2n1+53n2+m+126.5		



Note 1) In cases such as those where many valves are operated simultaneously, use type B (double side SUP/EXH), applying pressure to the 1(P) ports on both sides and exhausting from the 3(R) ports on both sides.

Note 2) The weight W is the value for the D-sub connector manifold with power supply terminals only. To obtain the weight with solenoid valves attached, add the solenoid valve weights given on page 330 for the appropriate number of stations. For DIN rail weight, refer to page 332.

Flow Characteristics

Port size		Flow characteristics					
1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→2/4(P→A/B)			4/2→(A/B→R)		
		C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
C8	C4	0.58[0.49]	0.26[0.36]	0.14[0.13]	0.76[0.65]	0.15[0.20]	0.18[0.15]
	C6	0.73[0.64]	0.24[0.27]	0.18[0.16]	0.77[0.74]	0.19[0.16]	0.19[0.19]
	M5	0.60[0.57]	0.38[0.35]	0.17[0.15]	0.67[0.58]	0.16[0.39]	0.16[0.16]



Note) · The value is for manifold base with 5 stations and individually operated 2 position type.
 · Values inside [] are for 4 position dual 3 port valves.

Solenoid Valve Specifications

Series			10-SZ3000
Fluid			Air
Internal pilot operating pressure range (MPa)	2 position single		0.15 to 0.7
	2 position double		0.1 to 0.7
	3 position		0.2 to 0.7
	4 position dual 3 port valve		0.15 to 0.7
External pilot operating pressure range (MPa)	Operating pressure range		−100 kPa to 0.7
	Pilot pressure range	2 position single	0.25 to 0.7
		2 position double	0.25 to 0.7
		3 position	0.25 to 0.7
Ambient and fluid temperature (°C)			−10 to 50 (No freezing. Refer to page 714.)
Max. operating frequency (Hz)	2 position single, double 4 position dual 3 port valve		10
	3 position		3
	Manual override (Manual operation)		
Pilot type			Common exhaust type for main and pilot valve
Lubrication			Not required
Mounting orientation			Unrestricted
Impact/Vibration resistance m/s ² Note)			150/30
Enclosure			Dust-protected



Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Solenoid Specifications

Electrical entry	L type (For plug-in), M type plug connector (M)
Coil rated voltage (V) (Note)	24, 12, 6, 5, 3 DC
Allowable voltage fluctuation	±10% of rated voltage
Power consumption (W)	0.6 (With light: 0.65)
Surge voltage suppressor	Diode
Indicator light	LED



Note) Only 24 VDC and 12 VDC are available for plug-in use.

Response Time

Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)	
	Without surge voltage suppressor	With surge voltage suppressor
		S, Z type
2 position single	12 or less	15 or less
2 position double	10 or less	13 or less
3 position	15 or less	20 or less
4 position dual 3 port valve	30 or less	35 or less

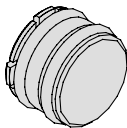
Weight

Valve model	Type of actuation		Port size 4(A), 2(B)	Weight (g)
10-SZ3□60-□-C4 N3	2 position	Single	C4 N3 (One-touch fitting for ø4, ø5/32")	78
		Double		84
	3 position	Closed center		88
		Exhaust center		
		Pressure center		
	4 position	Dual 3 port valve		84
10-SZ3□60-□-C6 N7	2 position	Single	C6 N7 (One-touch fitting for ø6, ø1/4")	74
		Double		81
	3 position	Closed center		85
		Exhaust center		
		Pressure center		
	4 position	Dual 3 port valve		81
10-SZ3□60-□-M5	2 position	Single	M5 x 0.8	69
		Double		75
	3 position	Closed center		79
		Exhaust center		
		Pressure center		
	4 position	Dual 3 port valve		75

Manifold Option

■SUP block disk

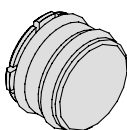
By installing a SUP block disk in the pressure supply passage of a manifold valve, it is possible to supply two or more different high and low pressures to one manifold. (Use in combination with a pilot port block disk.)



Series	Part no.
10-SZ3000	SZ3000-114-4A

■EXH block disk

By installing an EXH block disk in the exhaust passage of a manifold valve, it is possible to divide the valve's exhaust so that it does not affect another valve. (Two block disks are needed to divide both exhausts.)



Series	Part no.
10-SZ3000	SZ3000-114-4A

■Pilot port block disk

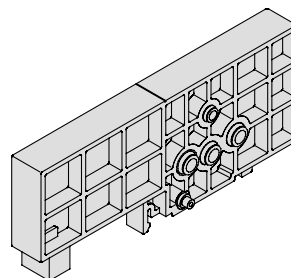
By installing a pilot port block disk in the pilot passage of a manifold valve, it can be function as an internal pilot/external pilot mixed manifold. (Use in combination with a SUP or EXH block disk.)



Series	Part no.
10-SZ3000	SZ3000-114-2A

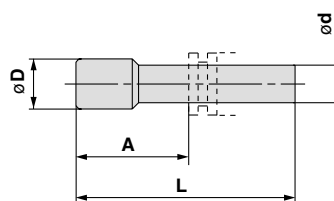
■Blanking block assembly SZ3000-55-1A

These are mounted when later addition of valves is planned, etc.



■Plug (White)

These are inserted in cylinder ports or SUP/EXH ports which are not being used. Purchasing order is available in units of 10 pieces.



Dimensions

Applicable fitting size ϕd	Model	A	L	D
4	10-KQP-04	16	32	$\phi 6$
6	10-KQP-06	18	35	$\phi 8$
8	10-KQP-08	20.5	39	$\phi 10$
5/32"	10-KQP-03	16	32	$\phi 6$
1/4"	10-KQP-07	18	35	$\phi 8.5$
5/16"	10-KQP-09	20.5	39	$\phi 10$

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

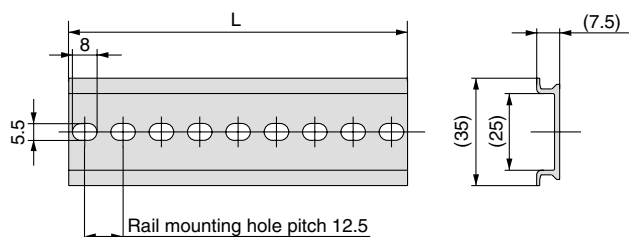
Clean gas filter

Manifold Option

■DIN rail dimensions / Weight

VZ1000-11-1-

- Refer to the L dimension tables
- * Enter a number from the DIN rail dimension table below.

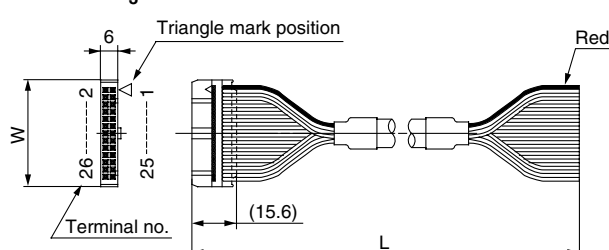


No.	0	1	2	3	4	5	6	7	8	9
L dimension	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5
Weight (g)	17.6	19.9	22.1	24.4	26.6	28.9	31.1	33.4	35.6	37.9

No.	10	11	12	13	14	15	16	17	18	19
L dimension	223	235.5	248	260.5	273	285.5	298	310.5	323	335.5
Weight (g)	40.1	42.4	44.6	46.9	49.1	51.4	53.6	55.9	58.1	60.4

No.	20	21	22	23	24	25	26	27	28	29
L dimension	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5
Weight (g)	62.6	64.9	67.1	69.4	71.6	73.9	76.1	78.4	80.6	82.9

■Flat ribbon cable type / Cable assembly

AXT100-FC


Flat Ribbon Cable Assembly

Cable length (L)	10 pins	20 pins	26 pins
1.5 m	AXT100-FC10-1	AXT100-FC20-1	AXT100-FC26-1
3 m	AXT100-FC10-2	AXT100-FC20-2	AXT100-FC26-2
5 m	AXT100-FC10-3	AXT100-FC20-3	AXT100-FC26-3
Connector width (W)	17.2	30	37.5

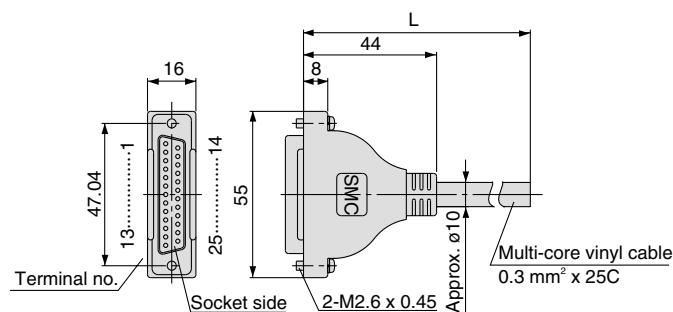
* For other commercial connectors, use a type with strain relief conforming to MIL-C-83503.

Connector manufacturers' example

- Hirose Electric Co., Ltd.
- Sumitomo 3M Limited
- Fujitsu Limited
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg. Co., Ltd.

■D-sub connector (25 pins) / Cable assembly

AXT100-DS25-

015
030
050


D-sub Connector Cable Assembly Terminal No.

Terminal no.	Lead wire color	Dot marking
1	Black	None
2	Brown	None
3	Red	None
4	Orange	None
5	Yellow	None
6	Pink	None
7	Blue	None
8	Purple	White
9	Gray	Black
10	White	Black
11	White	Red
12	Yellow	Red
13	Orange	Red
14	Yellow	Black
15	Pink	Black
16	Blue	White
17	Purple	None
18	Gray	None
19	Orange	Black
20	Red	White
21	Brown	White
22	Pink	Red
23	Gray	Red
24	Black	White
25	White	None

D-sub Connector Cable Assembly

Cable length (L)	Assembly part no.	Note
1.5 m	AXT100-DS25-015	Cable 25 cores x 24AWG
3 m	AXT100-DS25-030	
5 m	AXT100-DS25-050	

* For other commercial connectors, use a 25 pins type with female connector conforming to MIL-C-24308.

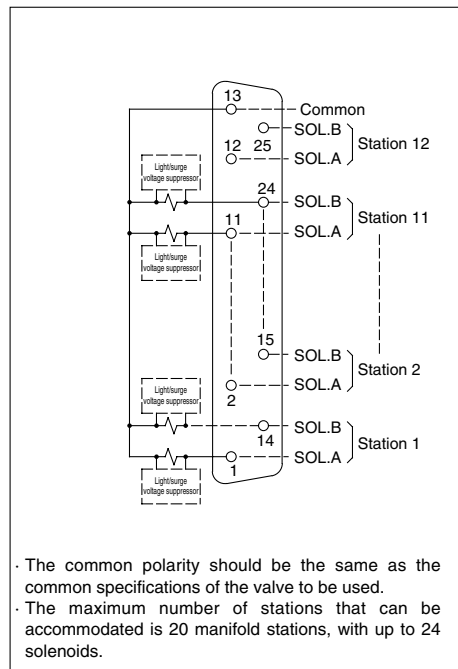
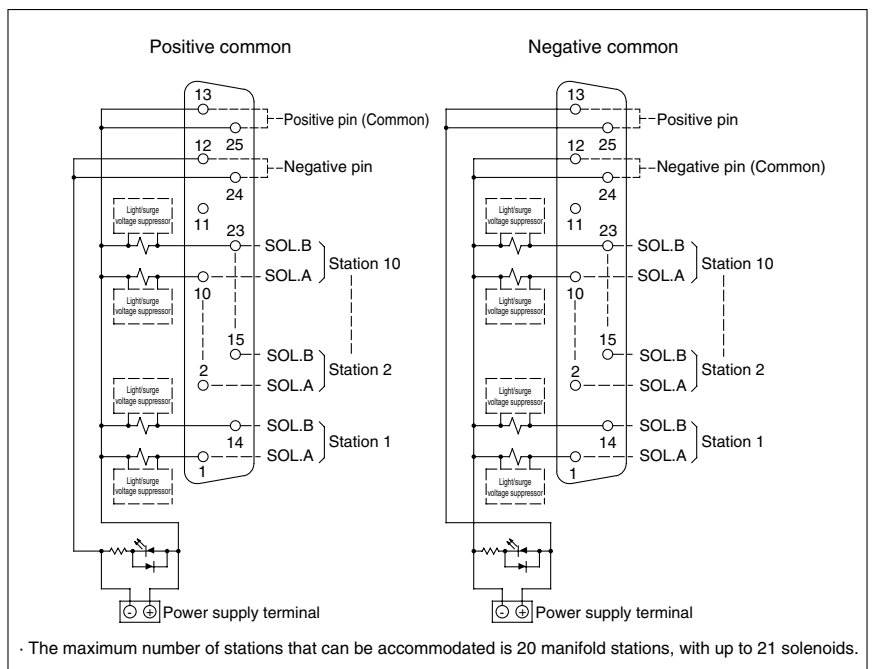
Connector manufacturers' example

- Hirose Electric Co., Ltd.
- Fujitsu Limited
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg. Co., Ltd.

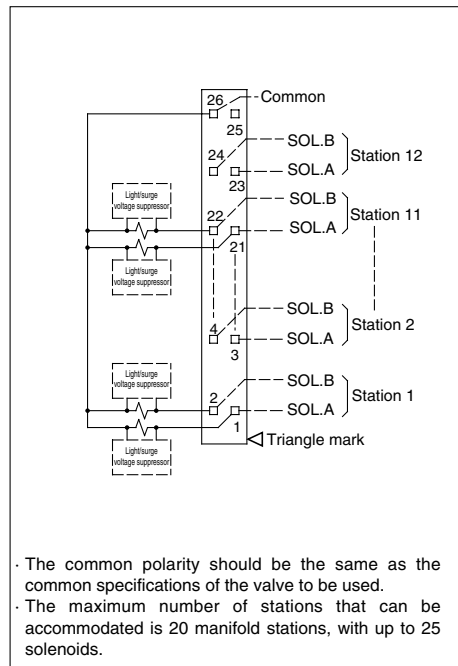
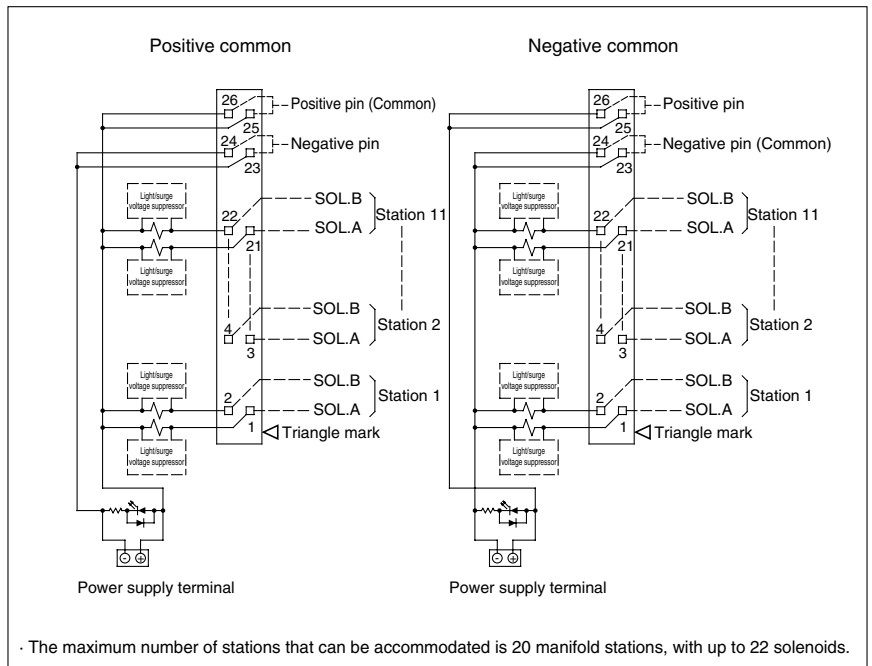
Electric Characteristics

Item	Characteristics
Conductor resistance Ω/km, 20°C	65 or less
Withstand limit VAC, 1min.	1000
Insulation resistance MΩkm, 20°C	5 or less

Note) The minimum bending radius for D-sub connector cables is 20 mm.

Manifold Electrical Wiring**Type 60F D-sub Connector (25 pins)****• Without power supply terminal****• With power supply terminal**

- The circuits above are for the double wiring specifications with up to 10 or 12 stations. Connect to SOL. A in the case of a single solenoid. Moreover, when wiring instructions are given on a manifold specification sheet, the "A" signal for single and the "A, B" signals for double should be wired in order 1, 14, 2, 15.....etc., without skipping or leaving any connectors remaining.
- Stations are counted from D side as the 1st one.

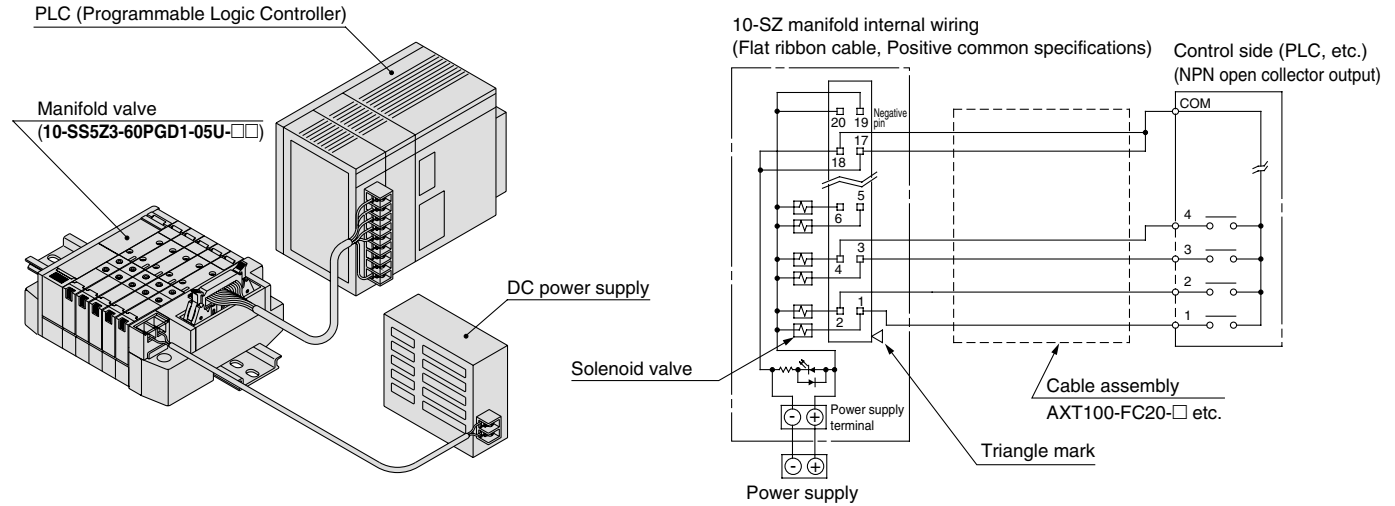
Type 60P Flat Ribbon Cable (26 pins)**• Without power supply terminal****• With power supply terminal**

- The circuits above are for the double wiring specifications with up to 11 or 12 stations. Connect to SOL. A in the case of a single solenoid. Moreover, when wiring instructions are given on a manifold specification sheet, the "A" signal for single and the "A, B" signals for double should be wired in order 1, 2, 3, 4.....etc., without skipping or leaving any connectors remaining.
- Stations are counted from D side as the 1st one.
- Since terminal numbers are not indicated on the flat cable, use the triangle mark as a reference for wiring.

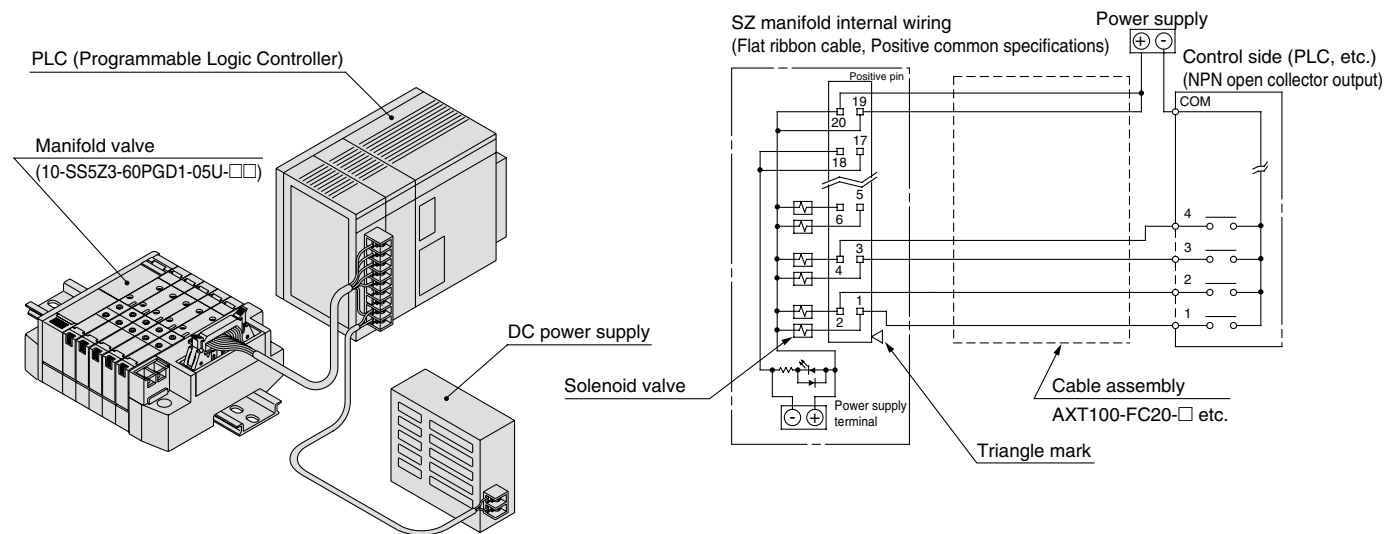
Wiring of Plug-in Type Manifold with Power Supply Terminal (Example)

- Since the power supply to drive valves with power supply terminals can be supplied from either the control side or the manifold side, these wiring examples should be used for reference when wiring is performed.

1. Wiring example when using manifold power supply terminal



2. Wiring example when not using manifold power supply terminal (Power is supplied to the control side or along the wiring, etc.)

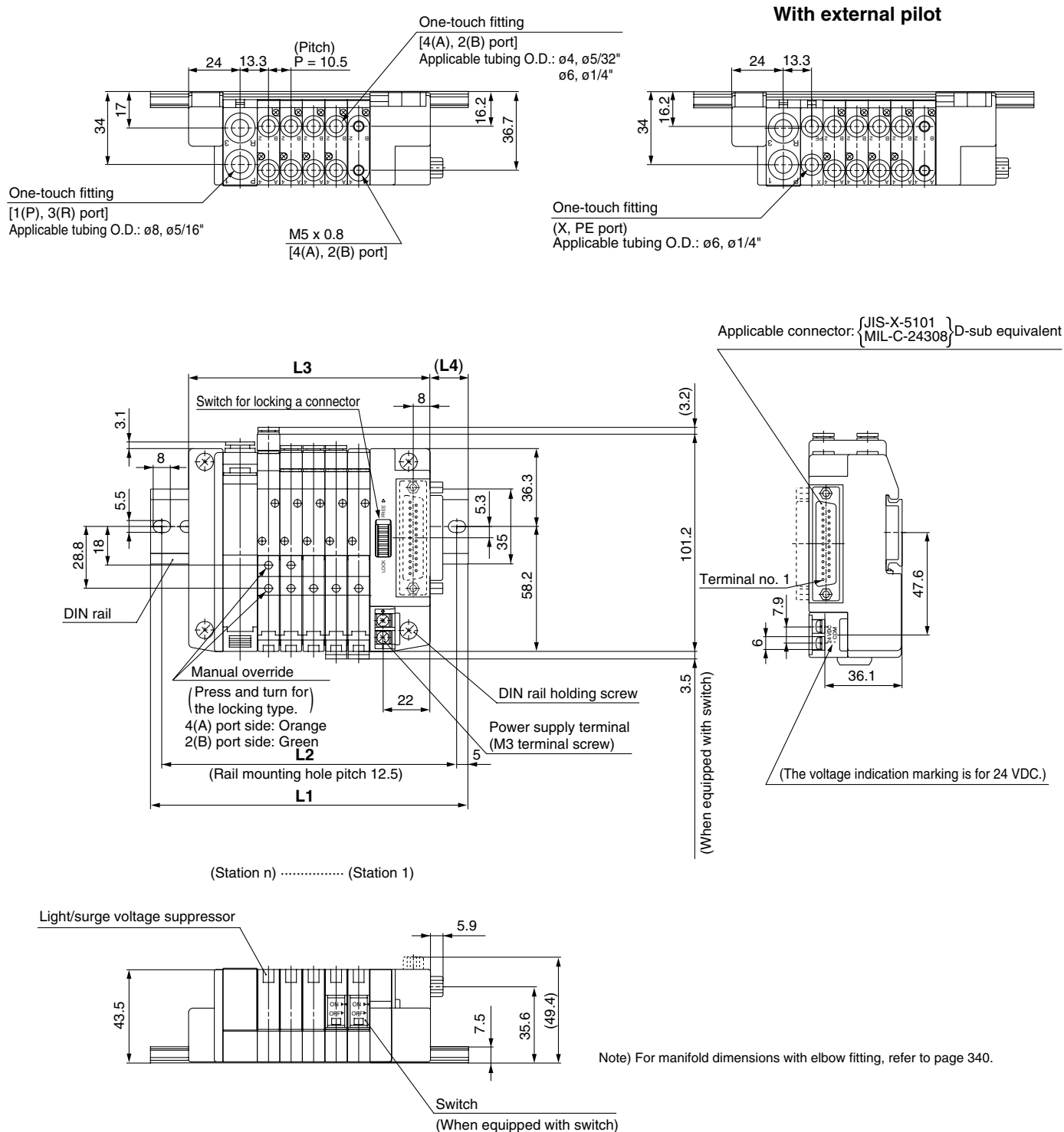


⚠ Caution

- Single wire, COM position, etc. of PLC are different from each manufacturer. When connecting with PLC, read the specifications carefully and understand the electrical circuit. Poor wiring could cause damage to PLC, power source, etc. as well as manifold and valve.

Dimensions: 10-SZ3000 Plug-in

10-SS5Z3-60FD₁ - Stations U-□



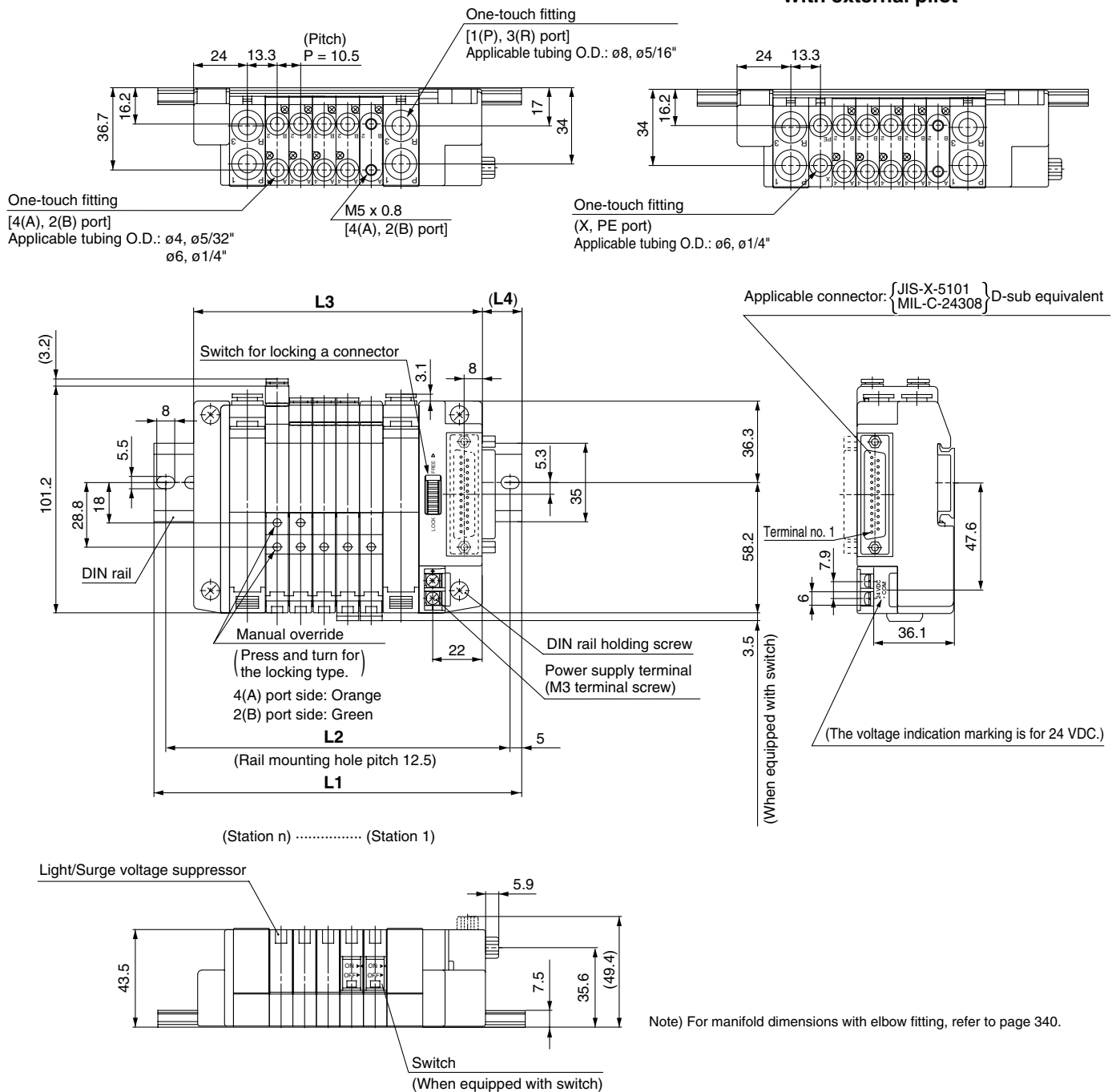
Note) For manifold dimensions with elbow fitting, refer to page 340.

Internal Pilot Manifold L Dimension n: Stations (n1 + n2)

L ⁿ	2	3	4	5	6	7	8	9	10
L1	110.5	123	135.5	148	148	160.5	173	185.5	198
L2	100	112.5	125	137.5	137.5	150	162.5	175	187.5
L3	81	91.5	102	112.5	123	133.5	144	154.5	165
L4	15	16	17	18	12.5	13.5	14.5	15.5	16.5

External Pilot Manifold L Dimension n: Stations (n1 + n2)

L ⁿ	2	3	4	5	6	7	8	9	10
L1	123	135.5	148	148	160.5	173	185.5	198	210.5
L2	112.5	125	137.5	137.5	150	162.5	175	187.5	200
L3	91.5	102	112.5	123	133.5	144	154.5	165	175.5
L4	16	17	18	12.5	13.5	14.5	15.5	16.5	17.5

Dimensions: 10-SZ3000 Plug-in**10-SS5Z3-60FD¹/₂ - Stations B-□****Internal Pilot Manifold L Dimension**

n: Stations (n1 + n2)

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	123	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5	310.5
L2	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300	300
L3	97	107.5	118	128.5	139	149.5	160	170.5	181	191.5	202	212.5	223	233.5	244	254.5	265	275.5	286
L4	13	14	15	16	17	12	13	14	15	16	17	18	12.5	13.5	14.5	15.5	16.5	17.5	12.5

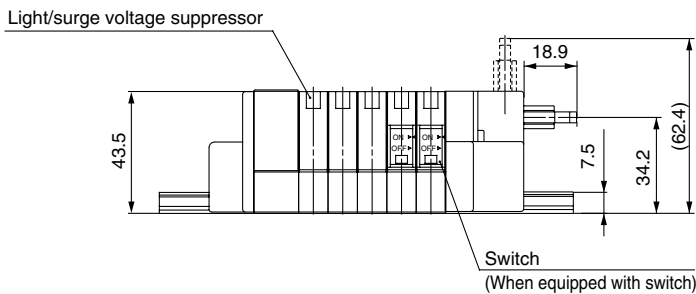
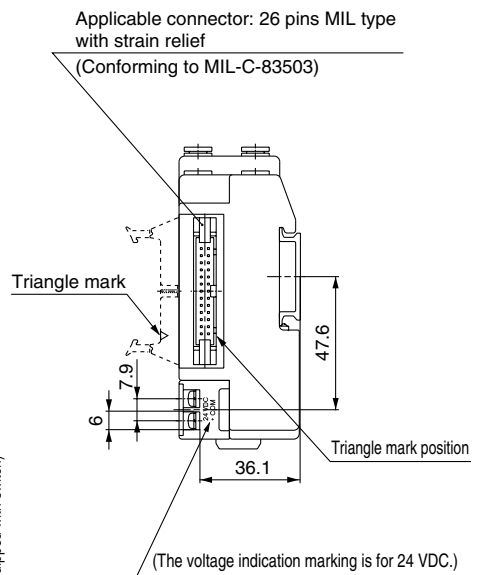
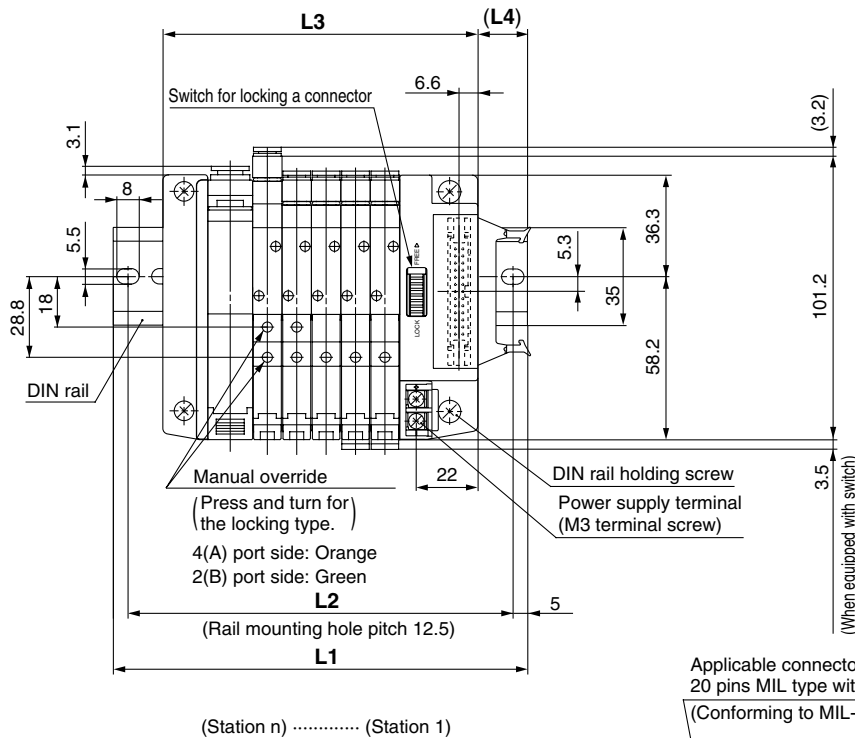
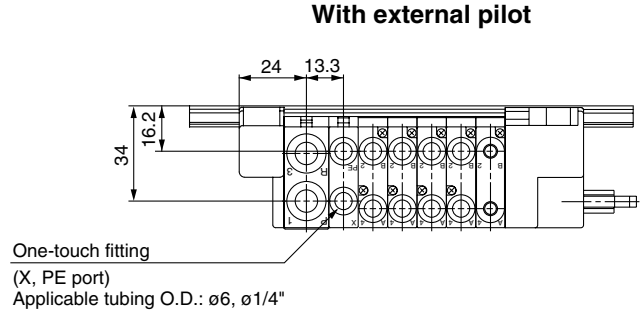
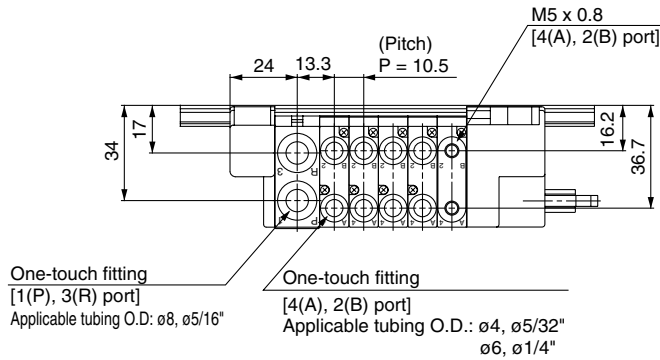
External Pilot Manifold L Dimension

n: Stations (n1 + n2)

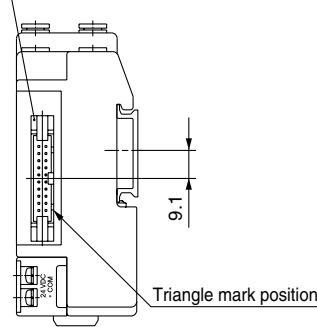
L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5	310.5	323
L2	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300	300	312.5
L3	107.5	118	128.5	139	149.5	160	170.5	181	191.5	202	212.5	223	233.5	244	254.5	265	275.5	286	296.5
L4	14	15	16	17	12	13	14	15	16	17	18	12.5	13.5	14.5	15.5	16.5	17.5	12.5	13.5

Dimensions: 10-SZ3000 Plug-in

10-SS5Z3-60PD $\frac{1}{2}$ - Stations **U**-□ (26 pins)

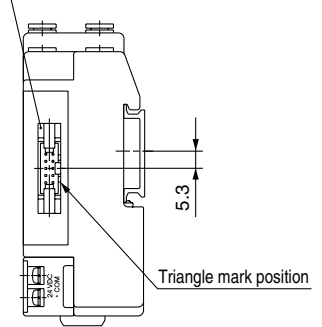


Applicable connector:
20 pins MIL type with strain relief
(Conforming to MIL-C-83503)



60PG (20 pins)

Applicable connector:
10 pins MIL type with strain relief
(Conforming to MIL-C-83503)



60PH (10 pins)

Note 1) Types 60PG and 60PH differ only in their connectors, and the L1 through L4 dimensions are the same as type 60P.

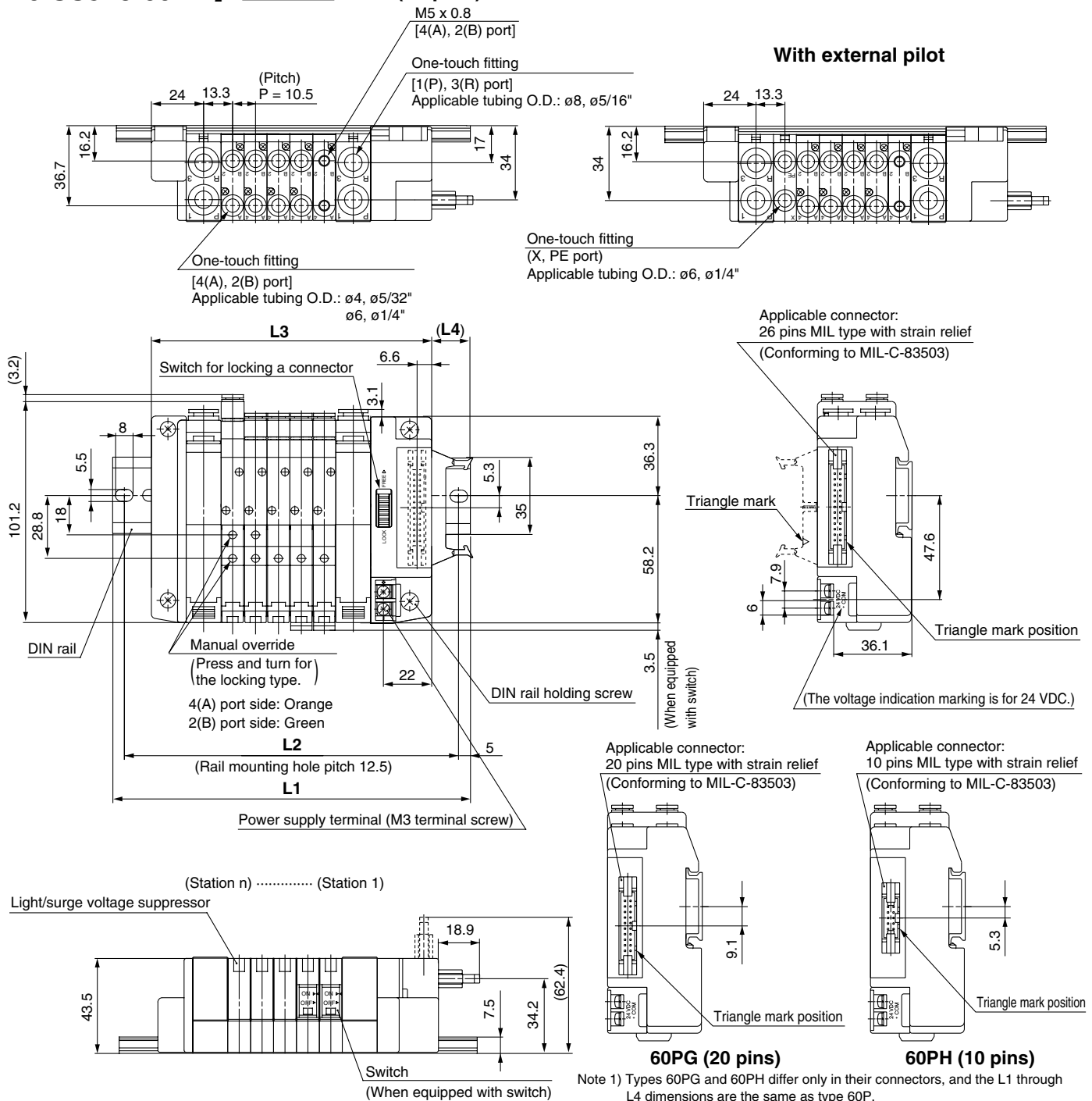
Note 2) For manifold dimensions with elbow fitting, refer to page 340.

Internal Pilot Manifold L Dimension n: Stations (n1 + n2)

L \ n	2	3	4	5	6	7	8	9	10
L1	110.5	123	135.5	148	148	160.5	173	185.5	198
L2	100	112.5	125	137.5	137.5	150	162.5	175	187.5
L3	81	91.5	102	112.5	123	133.5	144	154.5	165
L4	15	16	17	18	12.5	13.5	14.5	15.5	16.5

External Pilot Manifold L Dimension n: Stations (n1 + n2)

L \ n	2	3	4	5	6	7	8	9	10
L1	123	135.5	148	148	160.5	173	185.5	198	210.5
L2	112.5	125	137.5	137.5	150	162.5	175	187.5	200
L3	91.5	102	112.5	123	133.5	144	154.5	165	175.5
L4	16	17	18	12.5	13.5	14.5	15.5	16.5	17.5

Dimensions: 10-SZ3000 Plug-in**10-SS5Z3-60PD₁ - Stations B-□ (26 pins)****Internal Pilot Manifold L Dimension**

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	123	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5	310.5
L2	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300	300
L3	97	107.5	118	128.5	139	149.5	160	170.5	181	191.5	202	212.5	223	233.5	244	254.5	265	275.5	286
L4	13	14	15	16	17	12	13	14	15	16	17	18	12.5	13.5	14.5	15.5	16.5	17.5	12.5

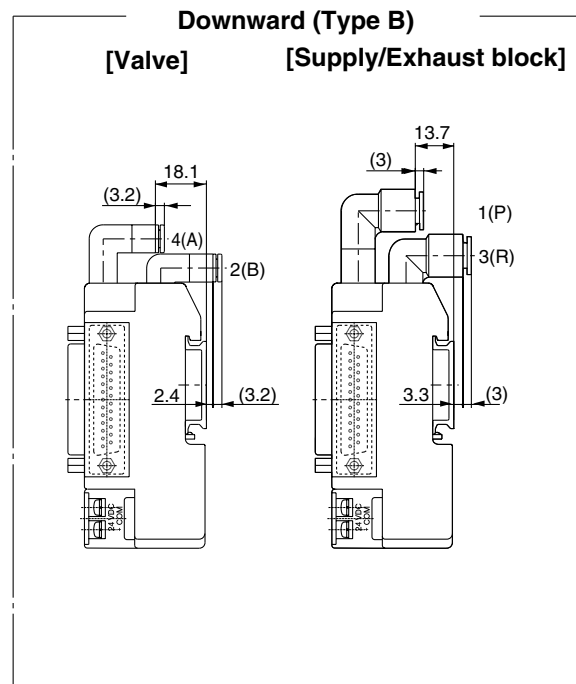
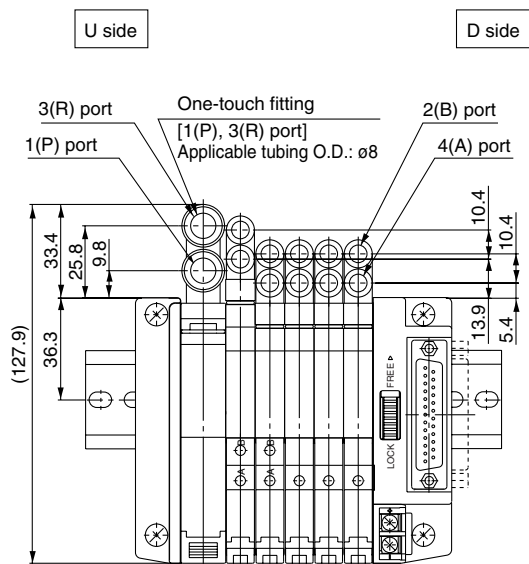
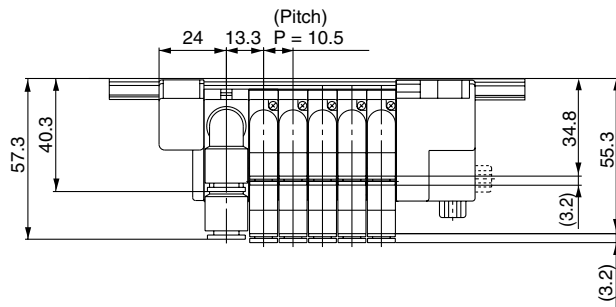
External Pilot Manifold L Dimension

L \ n		n: Stations (n1 + n2)																		
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5	310.5	323
L2		125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300	300	312.5
L3		107.5	118	128.5	139	149.5	160	170.5	181	191.5	202	212.5	223	233.5	244	254.5	265	275.5	286	296.5
L4		14	15	16	17	12	13	14	15	16	17	18	12.5	13.5	14.5	15.5	16.5	17.5	12.5	13.5

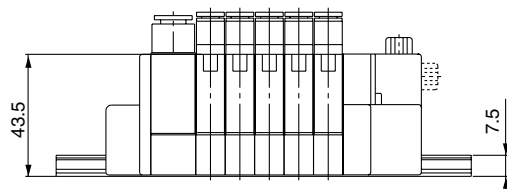
Dimensions with Elbow Fitting: 10-SZ3000 Plug-in, D-sub Connector

10-SS5Z3-60FD₂ - Stations **U_B** - ☐

(The fitting dimension of the flat cable and non plug-in types is the same.)



(Station n) ---- (Station 1)



Series 10-SZ3000

5 Port Solenoid Valve
Non Plug-in Type

How to Order

• Non plug-in manifold

10-SS5Z3-60 - 05 U - -

- Clean series**
- Stations**

02	2 stations
⋮	⋮
20	20 stations
- SUP/EXH block mounting position**

D	D side (2 to 10 stations)
U	U side (2 to 10 stations)
B	Both sides (2 to 20 stations)
M *	Special specifications

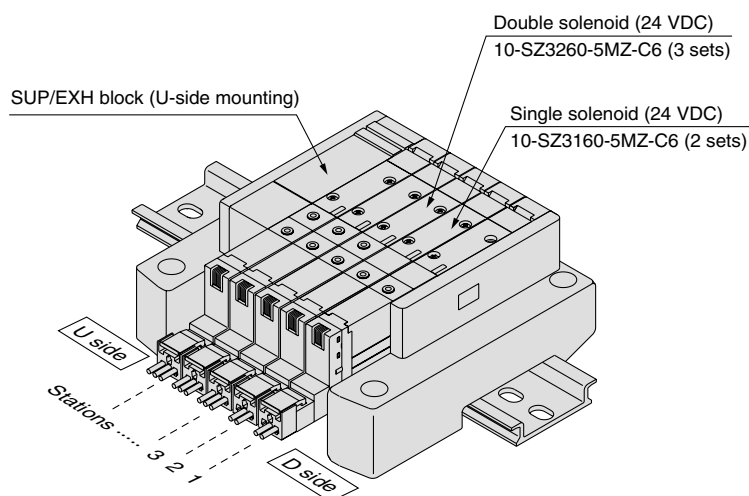
* For special specifications, indicate separately by the manifold specification sheet.
- Option**
When a longer DIN rail is desired than the specified stations, specify the station number to be required.
- SUP/EXH block fitting specifications**

Nil	Straight
L	Elbow type (Upward)
B	Elbow type (Downward)
- Pilot type**

Nil	Internal pilot
R	External pilot

How to Order Valve Manifold Assembly

Ordering example (10-SZ3000, Non plug-in)



10-SS5Z3-60-05U.....1 set (Manifold part no.)
 * **10-SZ3160-5MZ-C6**.....2 sets (Single solenoid part no.)
 * **10-SZ3260-5MZ-C6**.....3 sets (Double solenoid part no.)

→The asterisk denotes the symbol for assembly. Prefix to the part no. of the solenoid valve, etc.

Stations are counted from D side as the 1st one.
 Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing.
 When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

How to Order

10-SZ3 **1** **60** **-** **5** **M** **-** **C6**

• Clean series

Type of actuation

1	2 position single solenoid (A) (B) 4 2 5 1 3 (EA) (P) (EB)
2	2 position double solenoid (A) (B) 4 2 5 1 3 (EA) (P) (EB)
3	3 position closed center (A) (B) 4 2 5 1 3 (EA) (P) (EB)
4	3 position exhaust center (A) (B) 4 2 5 1 3 (EA) (P) (EB)
5	3 position pressure center (A) (B) 4 2 5 1 3 (EA) (P) (EB)
A	4 position dual 3 port valve: N.C./N.C. (A) (B) 4 2 5 1 3 (R) (R) 1 (P)
B	4 position dual 3 port valve: N.O./N.O. (A) (B) 4 2 5 1 3 (R) (R) 1 (P)
C	4 position dual 3 port valve: N.C./N.O. (A) (B) 4 2 5 1 3 (R) (R) 1 (P)

Pilot type

Nil	Internal pilot
R	External pilot

- The 4 position dual 3 port valve is not available with external pilot specifications.

Back pressure check valve

Nil	None
K	Built-in

- The built-in back pressure check valve type has an effective area approximately 20% smaller.
- The 3 position solenoid valves are not available with back pressure check valve.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

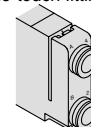
Common specifications

Nil	Positive common
N	Negative common

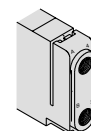
- The symbol is "Nil" when not equipped with light/surge voltage suppressor.

A, B port size

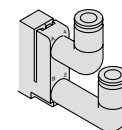
C4: One-touch fitting for ø4
 C6: One-touch fitting for ø6
 N3: One-touch fitting for ø5/32"
 N7: One-touch fitting for ø1/4"



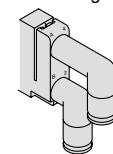
M5: M5 x 0.8



Elbow fitting assembly (Upward)
 L4: ø4 elbow fitting assembly
 L6: ø6 elbow fitting assembly

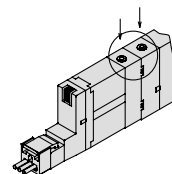


Elbow fitting assembly (Downward)
 B4: ø4 elbow fitting assembly
 B6: ø6 elbow fitting assembly

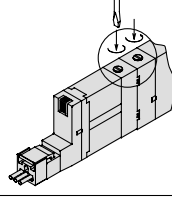


Manual override

Nil: Non-locking push type



D: Push-turn locking slotted type

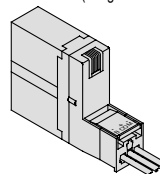


Light/Surge voltage suppressor

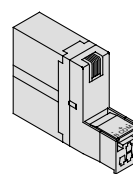
Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

Electrical entry

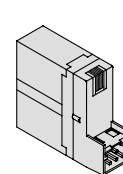
M: With lead wire (Length 300 mm)



MN: Without lead wire



MO: Without connector



Manifold Specifications



Made to Order Specifications
(For details, refer to page 353.)

Model		Type 10-SS5Z3-60	
Manifold		Non plug-in type	
1 (P: SUP), 3/5 (R: EXH) system		Common SUP, EXH	
Valve stations		2 to 20 stations	
4(A), 2(B) port Porting specifications	Location	Valve	
	Direction	Lateral, Upward, Downward	
Port size	Metric	1(P), 3/5(R) port: ø8	4(A), 2(B) port: M5, ø4, ø6
	Inch	1(P), 3/5(R) port: ø5/16"	4(A), 2(B) port: ø5/32", ø1/4"
Weight W (g) ^{Note 2)} (n: Number of SUP/EXH blocks m: Weight of DIN rail)		W=34n+m+89	



Note 1) In cases such as those where many valves are operated simultaneously, use type B (double side SUP/EXH), applying pressure to the 1(P) ports on both sides and exhausting from the 3(R) ports on both sides.

Note 2) The weight W is the value for the manifold only. To obtain the weight with solenoid valves attached, add the solenoid valve weights given on page 330 for the appropriate number of stations. For DIN rail weight, refer to page 332.

Flow Characteristics

Port size		Flow characteristics					
1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→2/4 (P→A/B)			4/2→3 (A/B→R)		
		C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv
C8	C4	0.58[0.49]	0.26[0.36]	0.14[0.13]	0.76[0.65]	0.15[0.20]	0.18[0.15]
	C6	0.73[0.64]	0.24[0.27]	0.18[0.16]	0.77[0.74]	0.19[0.16]	0.19[0.19]
	M5	0.60[0.57]	0.38[0.35]	0.17[0.15]	0.67[0.58]	0.16[0.39]	0.16[0.16]



Note) · The value is for manifold base with 5 stations and individually operated 2 position type.
· Values inside [] are for 4 position dual 3 port valves.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

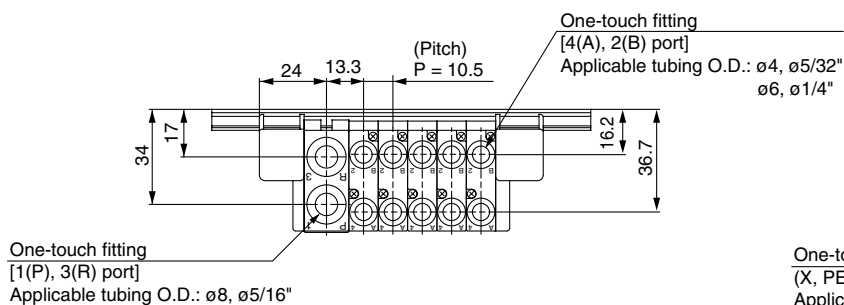
Air preparation equipment

Pressure switch

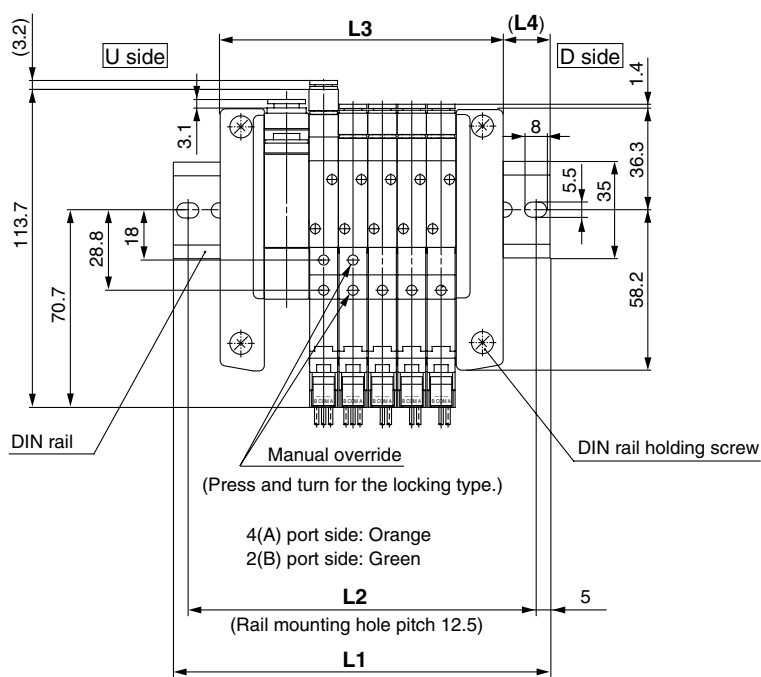
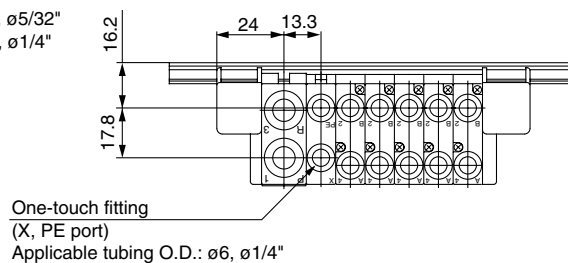
Clean gas filter

Dimensions: 10-SZ3000 Non Plug-in

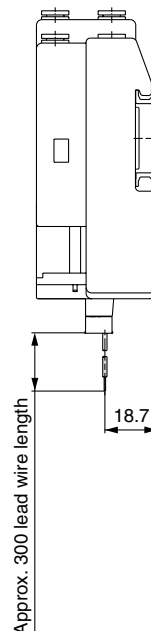
10-SS5Z3-60- Stations U



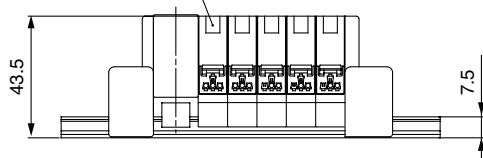
With external pilot



(Station n).....(Station 1)



Light/Surge voltage suppressor



Note) For manifold dimensions with elbow fitting, refer to page 340.

Internal Pilot Manifold L Dimension

n: Stations

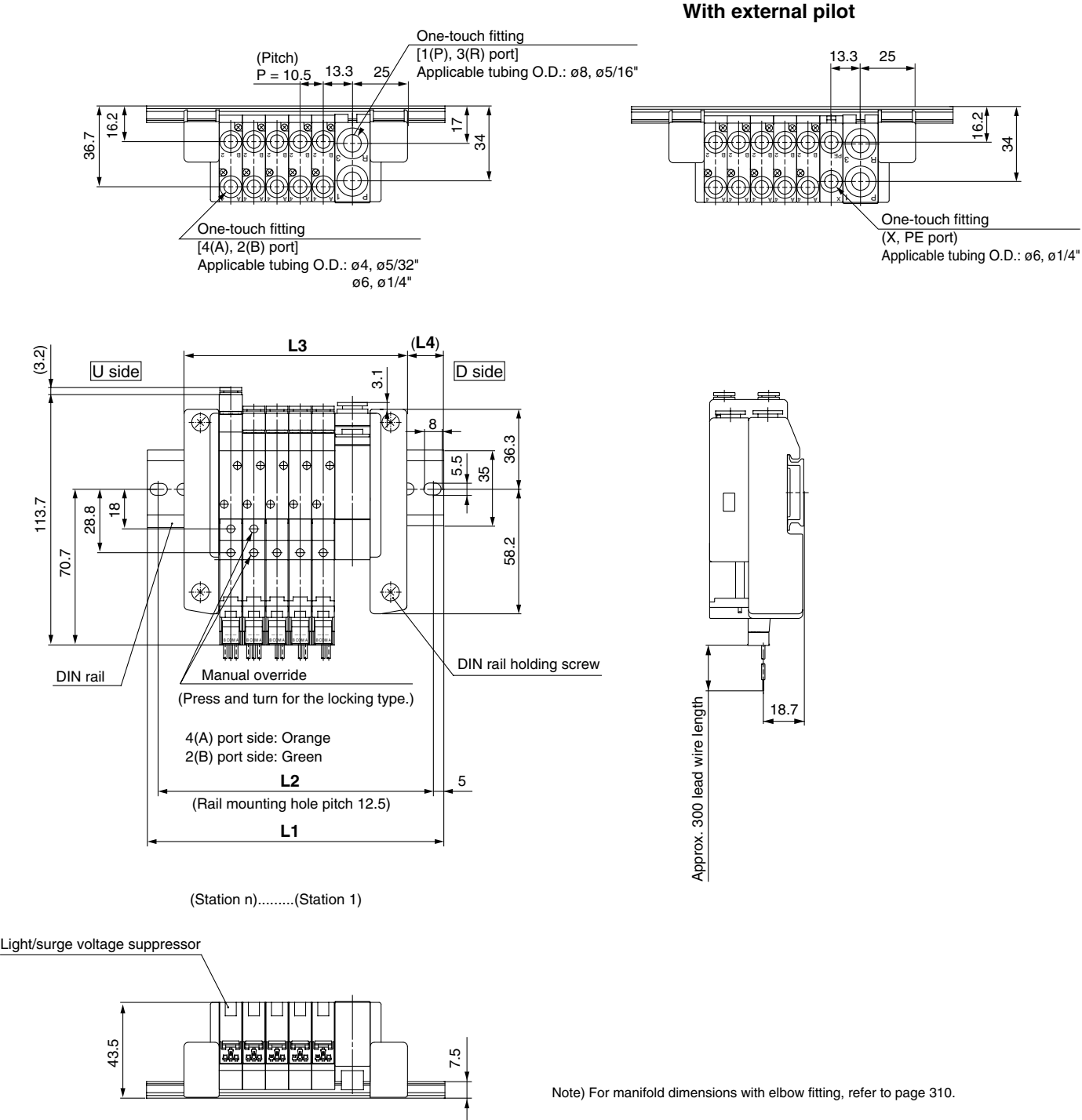
L \ n	2	3	4	5	6	7	8	9	10
L1	98	110.5	123	135.5	135.5	148	160.5	173	185.5
L2	87.5	100	112.5	125	125	137.5	150	162.5	175
L3	70	80.5	91	101.5	112	122.5	133	143.5	154
L4	14	15	16	17	12	13	14	15	16

External Pilot Manifold L Dimension

n: Stations

L \ n	2	3	4	5	6	7	8	9	10
L1	110.5	123	135.5	135.5	148	160.5	173	185.5	198
L2	100	112.5	125	125	137.5	150	162.5	175	187.5
L3	80.5	91	101.5	112	122.5	133	143.5	154	164.5
L4	15	16	17	12	13	14	15	16	17

Dimensions: 10-SZ3000 Non Plug-in
10-SS5Z3-60- Stations D

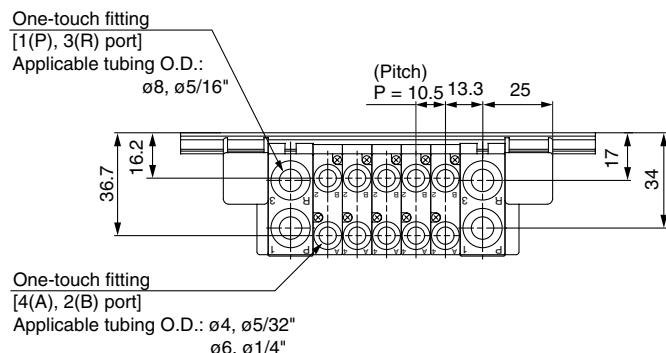


Internal Pilot Manifold L Dimension										n: Stations
L \ n	2	3	4	5	6	7	8	9	10	
L1	98	110.5	123	135.5	135.5	148	160.5	173	185.5	
L2	87.5	100	112.5	125	125	137.5	150	162.5	175	
L3	70	80.5	91	101.5	112	122.5	133	143.5	154	
L4	14	15	16	17	12	13	14	15	16	

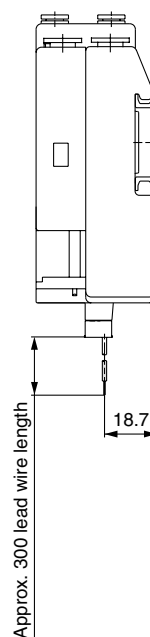
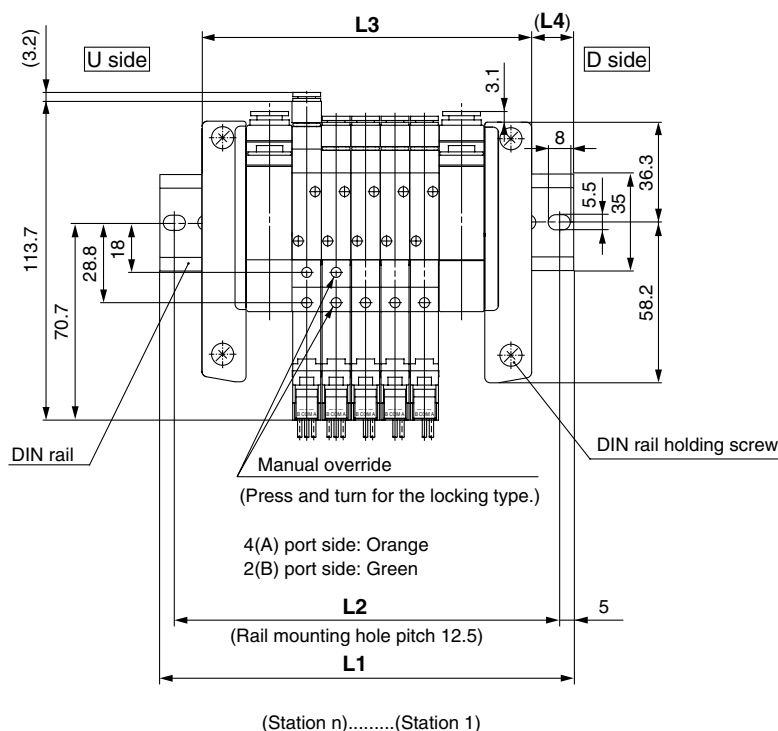
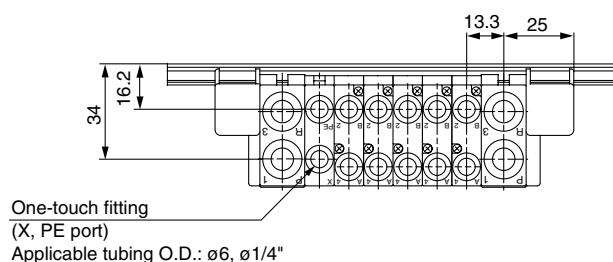
External Pilot Manifold L Dimension										n: Stations
L \ n	2	3	4	5	6	7	8	9	10	
L1	110.5	123	135.5	135.5	148	160.5	173	185.5	198	
L2	100	112.5	125	125	137.5	150	162.5	175	187.5	
L3	80.5	91	101.5	112	122.5	133	143.5	154	164.5	
L4	15	16	17	12	13	14	15	16	17	

Dimensions: 10-SZ3000 Non Plug-in

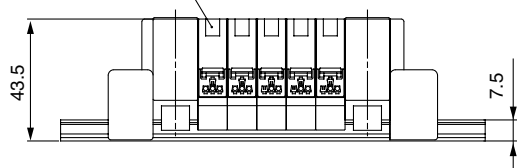
10-SS5Z3-60- Stations B



With external pilot



Light/surge voltage suppressor



Note) For manifold dimensions with elbow fitting, refer to page 340.

Internal Pilot Manifold L Dimension

		n: Stations																		
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		110.5	123	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298	310.5
L2		100	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5	300
L3		86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5	233	243.5	254	264.5	275
L4		12	13	14	15	16	17	12	13	14	15	16	17	12	13	14	15	16	17	18

External Pilot Manifold L Dimension

		n: Stations																		
L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		123	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298	310.5	310.5
L2		112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5	300	300
L3		96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5	233	243.5	254	264.5	275	285.5
L4		13.5	14.5	15.5	16.5	17.5	12	13	14	15	16	17	12	13	14	15	16	17	18	12.5

Series 10-SZ3000

Type 60S ☐ 5 Port Solenoid Valve
Serial Transmission Type



How to Order

10-SS5Z3-60S **Q** **D** - **05** **U** ☐ ☐ - ☐

• Clean series

Model

Q	DeviceNet, CompoBus/D (OMRON Corp.)
R1	OMRON Corp.: CompoBus / S System (16 output points)
R2	OMRON Corp.: CompoBus / S System (8 output points)
V	Mitsubishi Electric Corp.: CC-LINK System
F	NKE Corp.: Uni-wire System
H	NKE Corp.: Uni-wire H System
J1	SUNX Corp.: S-LINK System (16 output points)
J2	SUNX Corp.: S-LINK System (8 output points)
0	Without SI unit

SI unit mounting position

D	D side
----------	--------

This should be indicated even without SI unit.

Valve stations

Symbol	Stations	Note
02	2 stations	Double wiring specifications
:	:	
08	8 stations	Specified layout (Up to 16 solenoids possible)
02	2 stations	
:	:	
16	16 stations	



Note 1) Double wiring specifications: Single, double, 3 position and 4 position solenoid valves can be used at all of the manifold stations.

Note 2) Specified layout: Indicate wiring specifications on the manifold specification sheet. (Note that double, 3 and 4 position valves cannot be used where single solenoid wiring has been specified.)

Note 3) R2 and J2 are available with up to 8 solenoids.

• Option

When a longer DIN rail is desired than the specified stations, specify the station number to be required.

• SUP/EXH block fitting specifications

Nil	Straight
L	Elbow type (Upward)
B	Elbow type (Downward)

• Pilot type

Nil	Internal pilot
R	External pilot

• SUP/EXH block mounting position

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 16 stations)
M *	Special specifications

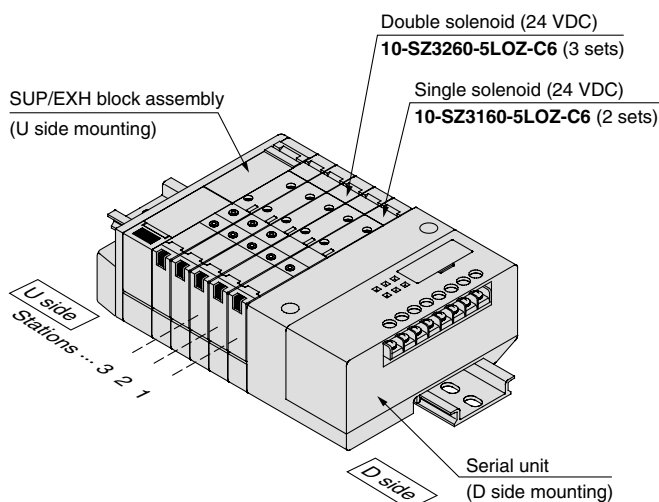


* For special specifications, indicate separately by the manifold specification sheet.

Note) A total of up to 3 SUP/EXH blocks can be mounted. Please contact SMC if 4 or more will be mounted.

How to Order Valve Manifold Assembly

Ordering example (OMRON Corporation compatible serial unit)



10-SS5Z3-60SR1D-05U.....1 set (Manifold part no.)
* 10-SZ3160-5LOZ-C6.....2 sets (Single solenoid part no.)
* 10-SZ3260-5LOZ-C6.....3 sets (Double solenoid part no.)

→The asterisk denotes the symbol for assembly. Prefix it to the part no. of solenoid valve, etc.

Stations are counted from D side as the 1st one.
Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing.
When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

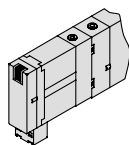
- **Clean series**

Type of actuation ●

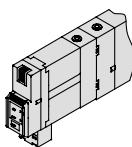
1	2 position single solenoid (A) (B) 4 2 5 1 3 (E A) (P) (E B)
2	2 position double solenoid (A) (B) 4 2 5 1 3 (E A) (P) (E B)
3	3 position closed center (A) (B) 4 2 5 1 3 (E A) (P) (E B)
4	3 position exhaust center (A) (B) 4 2 5 1 3 (E A) (P) (E B)
5	3 position pressure center (A) (B) 4 2 5 1 3 (E A) (P) (E B)
A	4 position dual 3 port valve: N.C./N.C. (A) (B) 4 2 5 1 3 (R) (P)
B	4 position dual 3 port valve: N.O./N.O. (A) (B) 4 2 5 1 3 (R) (P)
C	4 position dual 3 port valve: N.C./N.O. (A) (B) 4 2 5 1 3 (R) (P)

Switch specifications

Nil: Without switch



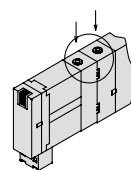
J: With switch



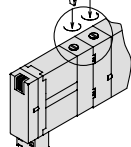
For switch operation, refer to page 354.

- **Manual override**

Nil: Non-locking push type



D: Push-turn locking slotted type
Manual override



- **Back pressure check valve**

Nil	None
K	Built-in

- The built-in back pressure check valve type has an effective area approximately 20% smaller.
- The 3 position solenoid valves are not available with back pressure check valve.

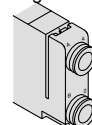
- **Pilot type**

Nil	Internal pilot
R	External pilot

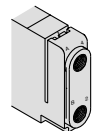
- Dual 3 port valves are not available with external pilot specifications.

- A, B port size

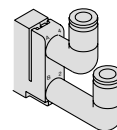
C4: One-touch fitting for $\varnothing 4$
C6: One-touch fitting for $\varnothing 6$
N3: One-touch fitting for $\varnothing 5/32''$
N7: One-touch fitting for $\varnothing 1/4''$



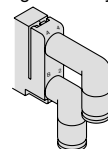
M5: M5 x 0.8



Elbow fitting assembly (Upward)
L4: $\varnothing 4$ elbow fitting assembly
L6: $\varnothing 6$ elbow fitting assembly



Elbow fitting assembly (Downward)
B4: $\varnothing 4$ elbow fitting assembly
B6: $\varnothing 6$ elbow fitting assembly



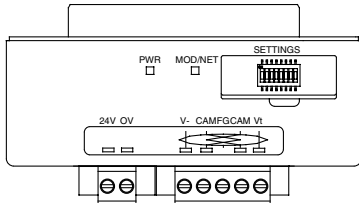
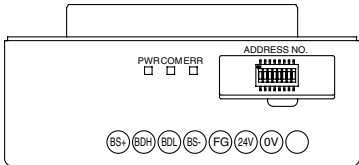
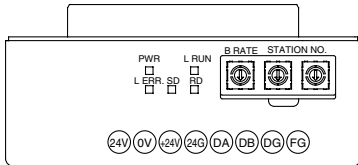
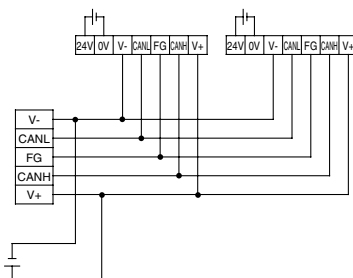
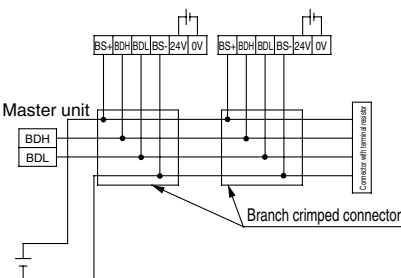
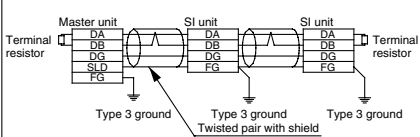
Specifications

Specifications

External power supply	24 VDC +10%/−5%	
Current consumption (Inside unit)	0.1A	F,H,J1,J2, Q,R1,R2,V

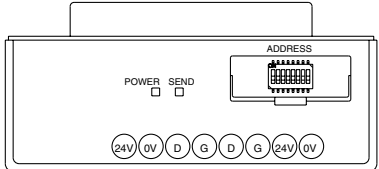
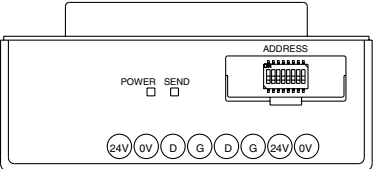
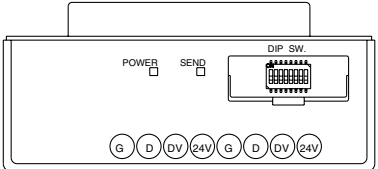
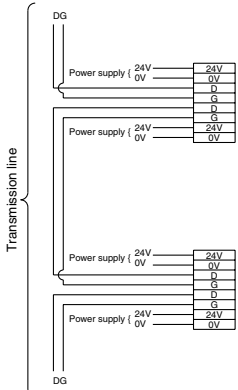
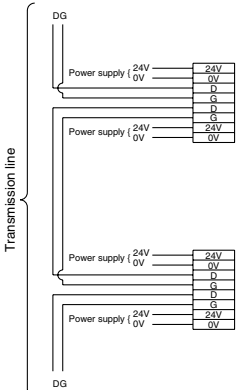
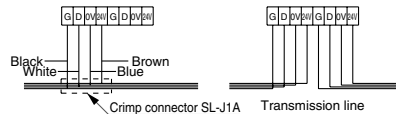
SI Unit Part No.

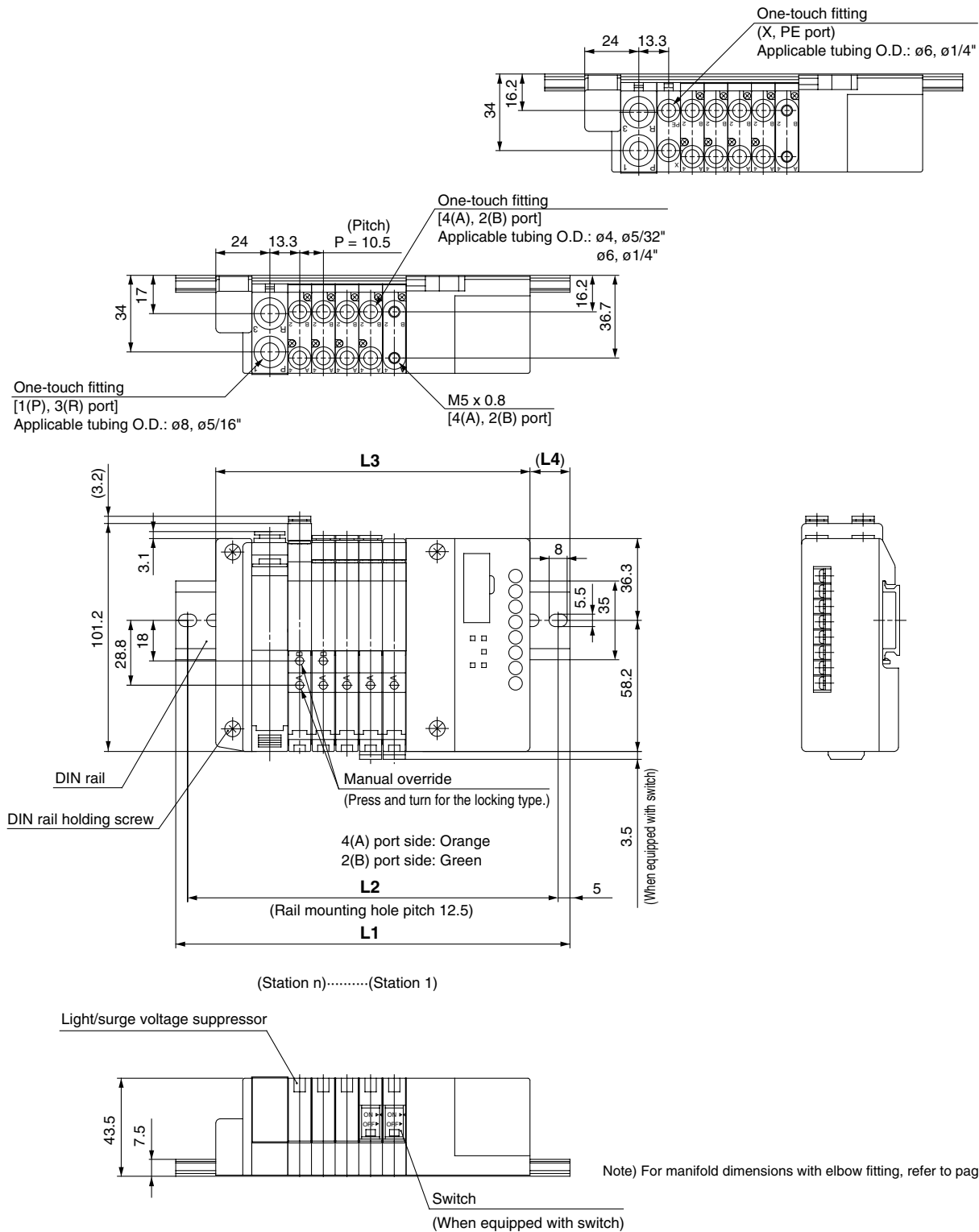
Symbol	Specifications	Part no.
Q	DeviceNet, CompoBus/D (OMRON Corporation)	EX140-SDN1
R1	OMRON Corporation: CompoBus/S System (16 output points)	EX140-SCS1
R2	OMRON Corporation: CompoBus/S System (8 output points)	EX140-SCS2
V	Mitsubishi Electric Corporation: CC-LINK System	EX140-SMJ1

	Type SQ DeviceNet	Type SR1/SR2 OMRON Corporation CompoBus/S System	Type SV Mitsubishi Electric Corporation CC-LINK System																												
Name of terminal block, LED	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>POWER</td><td>Green light ON with circuit power input</td></tr><tr><td rowspan="4">MOD/ NET</td><td>Light OFF: When the unit is not online or circuit power is OFF</td></tr><tr><td>Green light ON continuously: When the unit is online and in operation</td></tr><tr><td>Red light blinks: When a reversible abnormal transmission occurs</td></tr><tr><td>Red light ON continuously: When irreversible abnormal transmission occurs or the same line is unable to go online</td></tr></tbody></table>	LED	Description	POWER	Green light ON with circuit power input	MOD/ NET	Light OFF: When the unit is not online or circuit power is OFF	Green light ON continuously: When the unit is online and in operation	Red light blinks: When a reversible abnormal transmission occurs	Red light ON continuously: When irreversible abnormal transmission occurs or the same line is unable to go online	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>PWR.</td><td>Light ON with transmission power input, light OFF without it</td></tr><tr><td rowspan="2">COMM</td><td>Light ON with normal transmission, light OFF with abnormal or standby transmission</td></tr><tr><td>Light ON with abnormal transmission, light OFF with normal or standby transmission</td></tr></tbody></table>	LED	Description	PWR.	Light ON with transmission power input, light OFF without it	COMM	Light ON with normal transmission, light OFF with abnormal or standby transmission	Light ON with abnormal transmission, light OFF with normal or standby transmission	 <table><thead><tr><th>LED</th><th>Description</th></tr></thead><tbody><tr><td>PWR.</td><td>Light ON with transmission power input, light OFF without it</td></tr><tr><td>L RUN</td><td>Light ON when receiving normal data</td></tr><tr><td>SD</td><td>Light ON when sending data</td></tr><tr><td>RD</td><td>Light ON when receiving data</td></tr><tr><td>L ERR.</td><td>Light ON with transmission error / setting error, light blinks with changes in the station no. or transmission speed setting</td></tr></tbody></table>	LED	Description	PWR.	Light ON with transmission power input, light OFF without it	L RUN	Light ON when receiving normal data	SD	Light ON when sending data	RD	Light ON when receiving data	L ERR.	Light ON with transmission error / setting error, light blinks with changes in the station no. or transmission speed setting
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Note	• DeviceNet • OMRON Corporation CompoBus/D System Master unit: C200HW-DRM21 • No. of output points, 16 points	• CompoBus/S System Master unit: C200HW-SRM21 Master unit: CQM1-SRM21 • No. of output points, 16 points (Type SR1) • No. of output points, 8 points (Type SR2)	• CC-LINK System Master unit: AJ61BT11 Master unit: A1SJ61BT11 Master unit: AJ61QBT11 Master unit: A1SJ61QBT11 • No. of output points, 16 points																												
Cable wiring																															

SI Unit Part No.

Symbol	Specifications	Part no.
F	NKE Corporation: Uni-wire System	EX140-SUW1
H	NKE Corporation: Uni-wire H System	EX140-SUH1
J1	SUNX Corporation: S-LINK System (16 output points)	EX140-SSL1
J2	SUNX Corporation: S-LINK System (8 output points)	EX140-SSL2

	Type SF NKE Corporation Uni-wire System	Type SH NKE Corporation Uni-wire H System	Type SJ1/SJ2 SUNX Corporation S-LINK System																		
Name of terminal block and LED	 <table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>Lighting when power is turned ON (Light ON when normal, flickers when voltage is low)</td></tr><tr><td>SEND</td><td>Transmission indicator Normal: Blinks, Abnormal: Light OFF or ON</td></tr></table>	LED	Description	POWER	Lighting when power is turned ON (Light ON when normal, flickers when voltage is low)	SEND	Transmission indicator Normal: Blinks, Abnormal: Light OFF or ON	 <table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>Lighting when power is turned ON (Light ON when normal, flickers when voltage is low)</td></tr><tr><td>SEND</td><td>Transmission indicator Normal: Blinks, Abnormal: Light OFF or ON</td></tr></table>	LED	Description	POWER	Lighting when power is turned ON (Light ON when normal, flickers when voltage is low)	SEND	Transmission indicator Normal: Blinks, Abnormal: Light OFF or ON	 <table><tr><th>LED</th><th>Description</th></tr><tr><td>POWER</td><td>Lighting when power is turned ON</td></tr><tr><td>SEND</td><td>Transmission indicator Normal: Blinks, Abnormal: Blinks slowly</td></tr></table>	LED	Description	POWER	Lighting when power is turned ON	SEND	Transmission indicator Normal: Blinks, Abnormal: Blinks slowly
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Note	· Uni-wire System Send unit: SD-120 · No. of output points, 16 points	· Uni-wire H System Send unit: SD-H2 · No. of output points, 16 points	· S-LINK System S-LINK controller: SL-CU1 · No. of output points, 16 points (Type SJ1) No. of output points, 8 points (Type SJ2)																		
Cable wiring			a) Type T branching multi-drop wiring (S-LINK System) b) Crossover wiring (Sensor link system)  Main transmission line The above is the example of using dedicated S-LINK flat ribbon cable SL-RCM□00.																		

Dimensions: 10-SZ3000 Serial Transmission Type**10-SS5Z3-60S □ D- Stations U****With external pilot****Internal Pilot Manifold L Dimension**

n: Stations (n1 + n2)

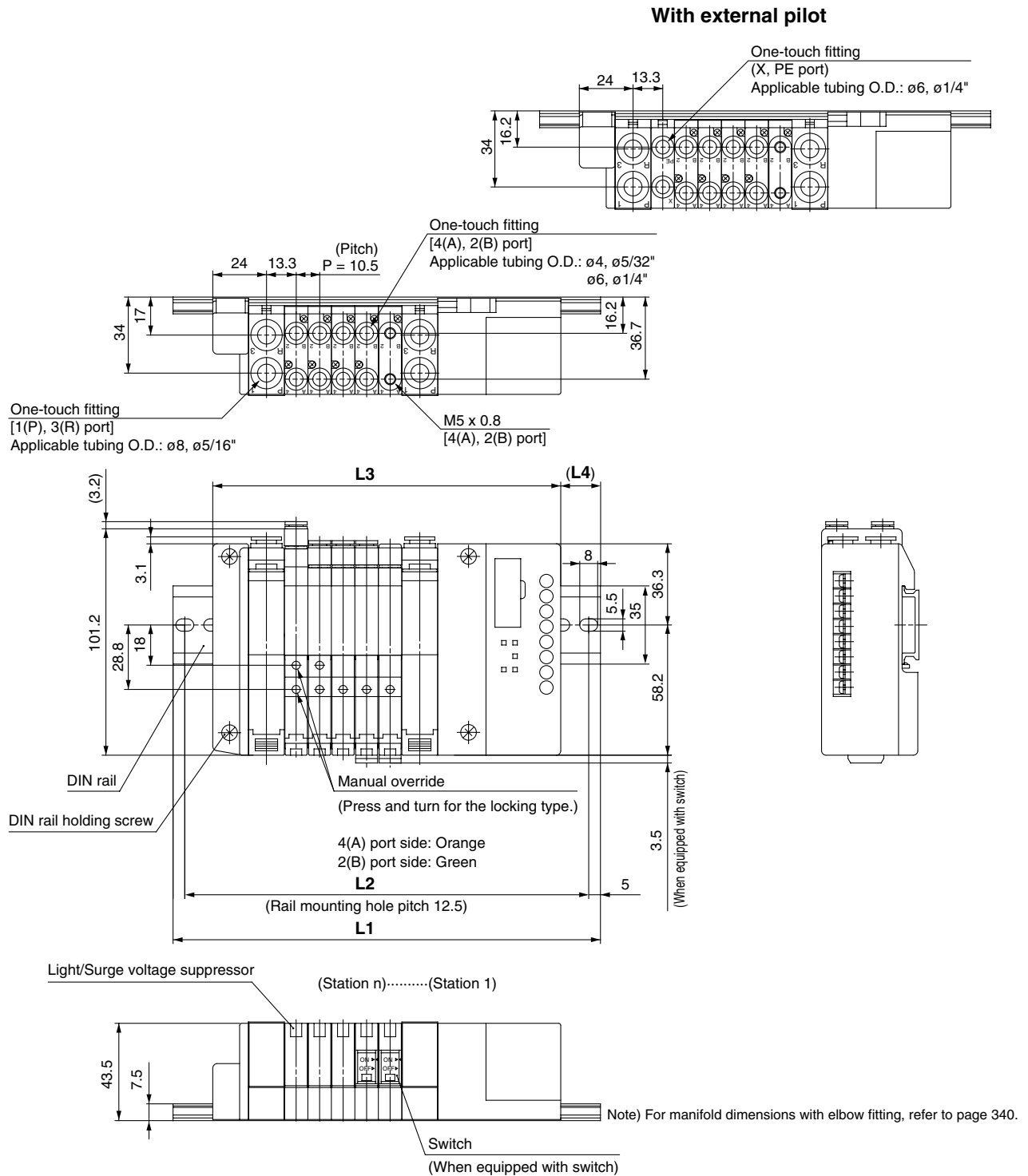
L \ n	2	3	4	5	6	7	8	9	10
L1	135.5	148	160.5	173	185.5	185.5	198	210.5	223
L2	125	137.5	150	162.5	175	175	187.5	200	212.5
L3	108	118.5	129	139.5	150	160.5	171	181.5	192
L4	14	15	16	17	18	12.5	13.5	14.5	15.5

External Pilot Manifold L Dimension

n: Stations (n1 + n2)

L \ n	2	3	4	5	6	7	8	9	10
L1	148	160.5	173	185.5	185.5	198	210.5	223	235.5
L2	137.5	150	162.5	175	175	187.5	200	212.5	225
L3	118.5	129	139.5	150	160.5	171	181.5	192	202.5
L4	15	16	17	18	12.5	13.5	14.5	15.5	16.5

Dimensions: 10-SZ3000 Serial Transmission Type

10-SS5Z3-60S □ **D-** Stations **B**

Internal Pilot Manifold L Dimension

n: Stations (n1 + n2)

L \ n	2	3	4	5	6	7	8	9
L1	148	160.5	173	185.5	198	210.5	210.5	223
L2	137.5	150	162.5	175	187.5	200	200	212.5
L3	124	134.5	145	155.5	166	176.5	187	197.5
L4	12	13	14	15	16	17	12	13

L \ n	10	11	12	13	14	15	16
L1	235.5	248	260.5	273	285.5	285.5	298
L2	225	237.5	250	262.5	275	275	287.5
L3	208	218.5	229	239.5	250	260.5	271
L4	14	15	16	17	18	12.5	13.5

External Pilot Manifold L Dimension

n: Stations (n1 + n2)

L \ n	2	3	4	5	6	7	8	9
L1	160.5	173	185.5	198	210.5	210.5	223	235.5
L2	150	162.5	175	187.5	200	200	212.5	225
L3	134.5	145	155.5	166	176.5	187	197.5	208
L4	13	14	15	16	17	12	13	14

L \ n	10	11	12	13	14	15	16
L1	248	260.5	273	285.5	285.5	298	310.5
L2	237.5	250	262.5	275	275	287.5	300
L3	218.5	229	239.5	250	260.5	271	281.5
L4	15	16	17	18	12.5	13.5	14.5

Series 10-SZ3000

Made to Order Specifications

Please contact SMC for detailed specifications, delivery and pricing.

1 Main Valve Fluoro Rubber Specifications -X90

Symbol

Fluoro rubber is used for rubber parts of the main valve to allow use in applications such as the following.

1. When using a lubricant other than the recommended turbine oil, and there is a possibility of malfunction due to swelling of the spool valve seals.
2. When ozone enters or is generated in the air supply.

Model no.

10-SZ3 60(R) -X90

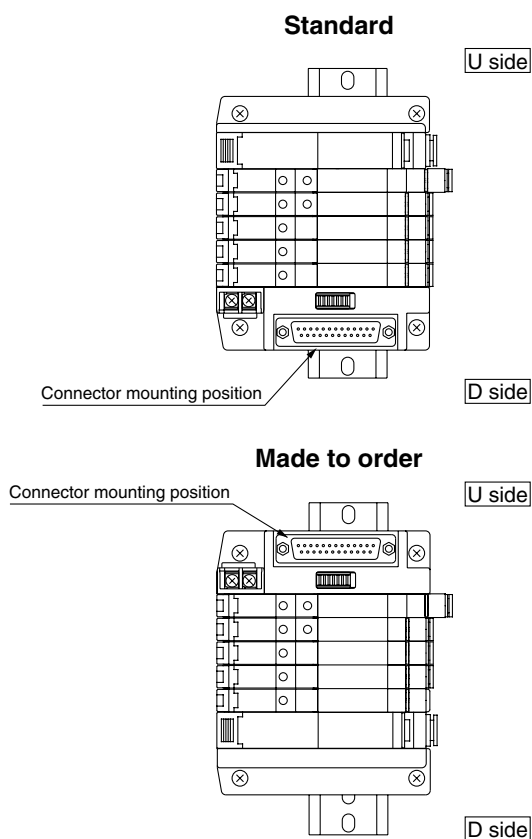
• Entry is the same as standard products.

Specifications and performance are the same as standard products.

Note) Because in series -X90 fluoro rubber is used for only main valve, the rubber parts of the application/usage in conditions requiring heat resistance should be avoided.

2 Plug-in Manifold Connector and Serial Unit Mounted on U Side

Products are also available with the plug-in manifold connector mounting position and the serial unit mounting position on the reverse side (U side). For details about part numbers and wiring specifications, etc., please contact SMC.



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Specific Product Precautions 1

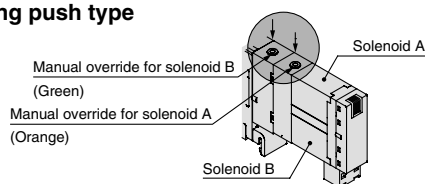
Be sure to read before handling.

Warning

Manual Override Operation

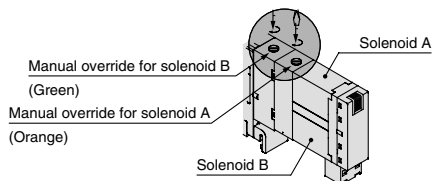
Handle carefully, as connected equipment can be actuated through manual override operation.

Non-locking push type



Push-turn locking slotted type

After pushing down, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking type.



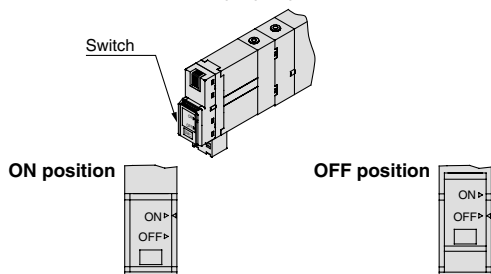
Caution

When locking the manual override on the push-turn locking slotted type, be sure to push it down before turning. Turning without first pushing it down can cause damage to the manual override and other trouble such as air leakage, etc.

Warning

Valves with Switches

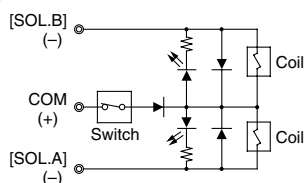
When turning OFF with the switch, be sure to move the switch to the locked position. Connected equipment may be actuated if current flow occurs with the switch at an improper position.



Normal operating condition. Switching of valve is based on an electric signal from the connector.

The valve coil is kept in a de-energized state even when there is an electric signal from the connector.

Electric circuit diagram (With positive common and light/surge voltage suppressor)



Caution

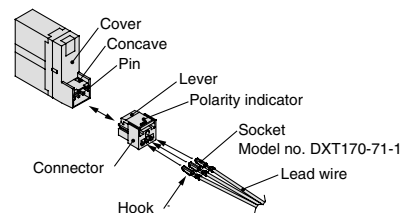
How to Use Plug Connector

When attaching and detaching a connector, first shut off the electric power and the air supply.

Also, crimp the lead wires and sockets securely.

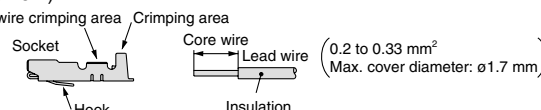
1. Attaching and detaching connectors

- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



2. Crimping of lead wires and sockets

Peel 3.2 to 3.7 mm of the tip of lead wire, enter the core wires neatly into a socket and crimp it with a special crimp tool. Be careful so that the cover of lead wire does not enter into the crimping part. (Crimping tool: Model no. DXT170-75-1)



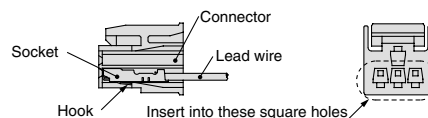
3. Attaching and detaching lead wires with sockets

Attaching

Insert the sockets into the square holes of the connector (with ⊕ and ⊖ indication), and continue to push the sockets all the way in until the lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm). If the socket is used again, spread the hook outward.



Plug connector lead wire length

Plug connector lead wires have a standard length of 300 mm, however, the following lengths are also available.

M Type Connector Assembly Part No.

Positive common specifications

For single solenoid: **SX100-40-4S-**
For double solenoid
For 3 position type: **SX100-40-4D-**
For 4 position type

Negative common specifications

For single solenoid: **SX100-41-4S-**
For double solenoid
For 3 position type: **SX100-41-4D-**
For 4 position type

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector.

<Example> Lead wire length 2000 mm

10-SZ3160-SMO-M5
SX100-40-4S-20



Specific Product Precautions 2

Be sure to read before handling.

⚠ Caution

Common Connector Assembly for Manifold

By using a common connector assembly for the solenoid valves on a manifold, the common wiring for each solenoid valve is reduced to one line, making it possible to achieve labor savings on wiring work.

Common connector assembly part numbers

Positive common specifications

For single solenoid

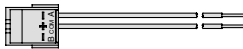
SX100-42-4S



For double solenoid,
3 position type, 4 position type
SX100-42-4D



With common lead wire for
single solenoid
SX100-40-4S



With common lead wire for
double solenoid, 3 position type,
4 position type
SX100-40-4D



(Lead wire length 300 mm)

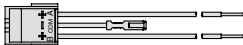
Negative common specifications

For single solenoid

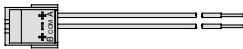
SX100-43-4S



For double solenoid,
3 position type, 4 position type
SX100-43-4D



With common lead wire for
single solenoid
SX100-41-4S



With common lead wire for
double solenoid, 3 position type,
4 position type
SX100-41-4D



(Lead wire length 300 mm)

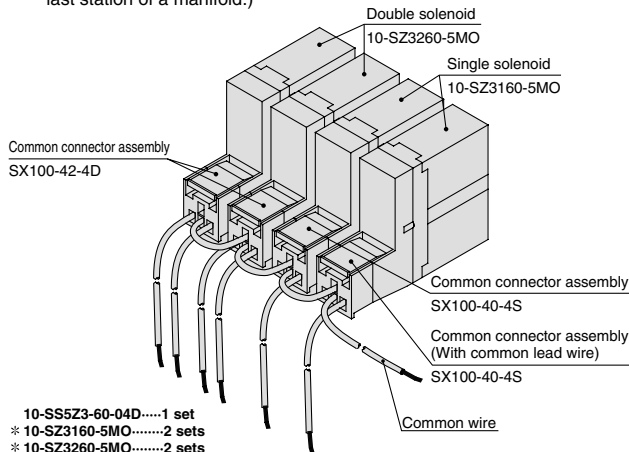
How to Order

Include the common connector assembly part number together with the manifold and solenoid valve part numbers. If the arrangement becomes complicated, then indicate on the manifold specification sheet.

Note 1) Take note that applications with unused connectors or with blanking plates between stations are not possible.

Note 2) For the solenoid valve, specify "without connector" for the plug connector type. The grommet type cannot be used.

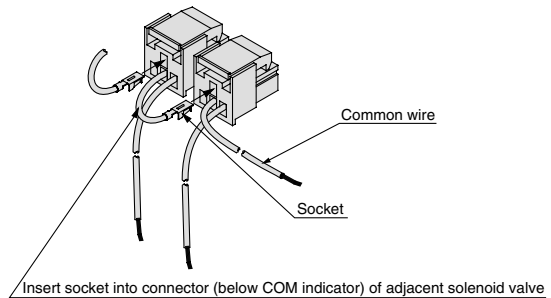
Note 3) In places where signals will be sent to the common wiring, use a connector assembly with a common lead wire. (This is limited to the first station or the last station of a manifold.)



10-SS5Z3-60-04D.....1 set
* 10-SZ3160-5MO.....2 sets
* 10-SZ3260-5MO.....2 sets
* SX100-40-4S.....1 set (with common lead wire for single solenoid)
* SX100-42-4S.....1 set (For single solenoid)
* SX100-42-4D.....2 sets (For double solenoid, for 3 position, for 4 position)
The asterisk denotes the symbol for assembly. Prefix it to the part no. of solenoid valve, etc.

Common connector assembly wiring

When ordering common connector assemblies alone, wiring should be performed as outlined in the drawing below. For details on attachment of sockets, refer to the section "How to Use Plug Connectors" on page 354.



⚠ Caution

One-touch Fittings

The pitch of each piping port (P, A, B, etc.) for Series 10-SZ is based on the assumption that Series KJ One-touch fittings will be used. For this reason, when other fittings are used, they may interfere with one another depending on their types and sizes. Therefore, the dimensions of the fittings to be used should first be confirmed in their respective catalogs.

⚠ Caution

Exhaust Restriction

Since Series 10-SZ is a type in which the pilot valve exhaust joins the main valve exhaust inside the valve, care must be taken that the piping from the exhaust port is not restricted.

⚠ Caution

Series 10-SZ3000 Used as a 3 Port Valve

Using a 5 port valve as a 3 port valve

Series 10-SZ3000 valves can be used as normally closed (N.C.) or normally open (N.O.) 3 port valves by closing one of the cylinder ports (A or B) with a plug. However, they should be used with the exhaust ports kept open. They are convenient at times when a double solenoid type 3 port valve is required.

Plug position		B port	A port
Type of actuation		N.C.	N.O.
Number of solenoids	Single		
	Double		



Specific Product Precautions 3

Be sure to read before handling.

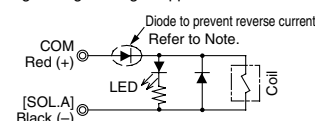
⚠ Caution

Light/Surge voltage suppressor

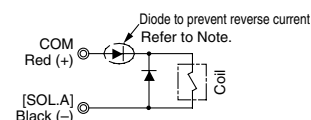
Positive common specifications

Single solenoid type

Light/Surge voltage suppressor



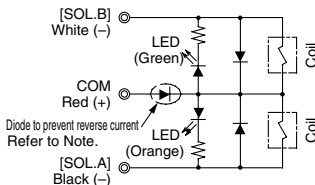
Surge voltage suppressor



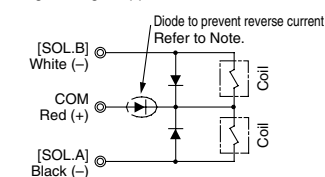
Positive common specifications

Double solenoid, 3 position type, 4 position type

Light/surge voltage suppressor



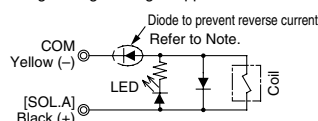
Surge voltage suppressor



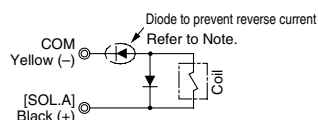
Negative common specifications

Single solenoid type

Light/Surge voltage suppressor



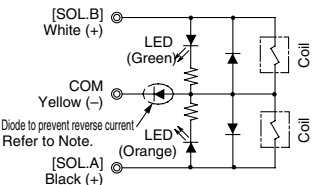
Surge voltage suppressor



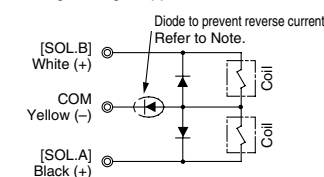
Negative common specifications

Double solenoid, 3 position type, 4 position type

Light/surge voltage suppressor



Surge voltage suppressor



Note) Connect so that polarity is matched to the connector's (+), (-) and A, B and COM indicators. In case of voltage specifications other than 12 or 24 VDC, take care to avoid mistaking polarity, as there is no diode to prevent reverse current. In the event that lead wires are connected in advance, they will be as shown below.

Positive common specifications

- A (-): **Black**
- COM (+): **Red**
- B (-): **White** (No lead wire in case of single solenoid)

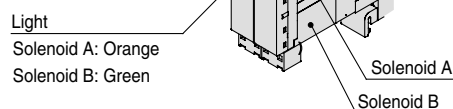
Negative common specifications

- A (+): **Black**
- COM (-): **Yellow**
- B (+): **White** (No lead wire in case of single solenoid)

⚠ Caution

Light Indication

When equipped with indicator light and surge voltage suppressor, the light window turns orange when solenoid A is energized, and it turns green when solenoid B is energized.



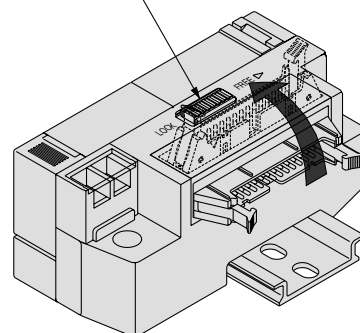
⚠ Caution

Changing the Connector Entry Direction

To change the connector's entry direction, set the switch on the top of the connector block to the FREE position, and turn the connector. Make sure to set the switch back to the LOCK position before connecting the connector. (When the switch is difficult to slide, move the connector a little so that it will slide easier.)

If an excessive force is applied on the connector in the LOCK position, the connector block may be damaged. Also, using in such a way that the connector floats in the FREE position, it may cause the lead wire, etc. to break. Thus, refrain from using in these ways.

Switch for locking a connector





Specific Product Precautions 4

Be sure to read before handling.

Caution

One-touch Fittings

1. Tube attachment/detachment for One-touch fittings

1) Attaching of tube

- (1) Take a tube having no flaws on its periphery and cut it off at a right angle. When cutting the tube, use tube cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tube cutter, the tube may be cut diagonally or become flattened, etc. This can make a secure installation impossible, and cause problems such as the tube pulling out after installation or air leakage. Also allow some extra length in the tube.
- (2) Grasp the tube and push it in slowly, inserting it securely all the way into the fitting.
- (3) After inserting the tube, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tube pulling out.

2) Detaching of tube

- (1) Push in the release button sufficiently, pushing the collar evenly.
- (2) Pull out the tube while holding down the release button so that it does not come out. If the release button is not pressed down sufficiently, there will be increased bite on the tube and it will become more difficult to pull it out.
- (3) When the removed tube is to be used again, cut off the portion which has been chewed before reusing it. If the chewed portion of the tube is used as is, this can cause trouble such as air leakage or difficulty in removing the tube.

Caution

Other Tube Brands

1. When using other tubing than SMC brand, confirm that the following specifications are satisfied with respect to the outside diameter tolerance of the tube.

- 1) Nylon tubing within ± 0.1 mm
- 2) Soft nylon tubing within ± 0.1 mm
- 3) Polyurethane tubing within $+0.15$ mm, within -0.2 mm

Do not use tubes which do not meet these outside diameter tolerances. It may not be possible to connect them, or they may cause other trouble, such as air leakage or the tube pulling out after connection.

Caution

Built-in Back Pressure Check Valve

Valves with built-in back pressure check valve is to protect the back pressure inside a valve. For this reason, use caution that the valves with external pilot specification cannot be pressurized from exhaust port [3(R)]. As compared with the types which do not integrate the back pressure check valve, C value of the flow characteristics goes down. For details, please contact SMC.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

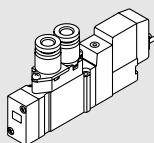
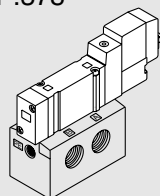
Pressure switch

Clean gas filter

Series 10-SY3000/5000/7000/9000

5 Port Solenoid Valve

Series Variations

Series			Sonic conductance C[dm³/(s·bar)] { 4/2 — 5/3 (A/B — EA/EB) }	Type of actuation					Voltage		Electrical entry					Light/Surge voltage suppressor (Note 1)
				2 position		3 position			DC 24V 12V 6V 5V 3V	AC 100V 50/60Hz 110V 50/60Hz 200V 50/60Hz 220V 50/60Hz	Grommet	L plug connector	M plug connector (Note 3)	DIN terminal	M8 connector	
				Single	Double	Closed center	Exhaust center	Pressure center								
Body ported	P.362 	10-SY3□20	0.65	●	●	●	●	●	●	●	●	●	●	●	●	
		10-SY5□20	2.4	●	●	●	●	●	●	●	●	●	●	●	●	
		10-SY7□20	3.3	●	●	●	●	●	●	●	●	●	●	●	●	
		10-SY9□20	8.6	●	●	●	●	●	●	●	●	●	●	●	●	
Base mounted	P.378 	10-SY3□40	1.1	●	●	●	●	●	●	●	●	●	●	●	●	
		10-SY5□40	2.8	●	●	●	●	●	●	●	●	●	●	●	●	
		10-SY7□40	4.5	●	●	●	●	●	●	●	●	●	●	●	●	
		10-SY9□40	10	●	●	●	●	●	●	●	●	●	●	●	●	

Series		Manual override			Bracket	P, EA, EB port size					A, B port size											Valve option							
		Non-locking push type	Push-turn locking slotted type	Push-turn locking lever type		M5	1/8	1/4	3/8	1/2	M5	1/8	1/4	3/8	1/2	One-touch fitting								Exhaust throttle	Oil resistant, other than designated turbine oil	Vacuum specifications	Low pressure specifications	External pilot	Enclosure IP 65 Note 2)
																C4	C6	C8	C10	C12	N3	N7	N9						
Body ported	10-SY3□20	●	●	●	●	●	—	—	—	—	●	—	—	—	—	●	●	—	—	—	●	●	—	—	—	—	—	—	
	10-SY5□20	●	●	●	●	—	●	—	—	—	●	—	—	—	—	●	●	●	—	—	●	●	●	—	—	—	—		
	10-SY7□20	●	●	●	●	—	● (EA, EB)	● (P)	—	—	—	●	—	—	—	—	—	●	●	—	—	—	●	●	—	—	DIN terminal M8 connector		
	10-SY9□20	●	●	●	—	—	—	●	—	—	—	●	●	—	—	—	—	●	●	●	—	—	●	●	—	—	—		
Base mounted	10-SY3□40	●	●	●	—	—	●	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	10-SY5□40	●	●	●	—	—	—	●	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	10-SY7□40	●	●	●	—	—	—	●	●	—	—	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	10-SY9□40	●	●	●	—	—	—	—	●	●	—	—	●	●	—	—	—	—	—	—	—	—	—	—	—	—	DIN terminal M8 connector		

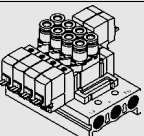
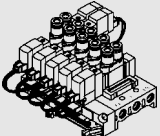
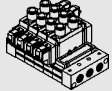
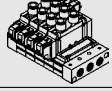
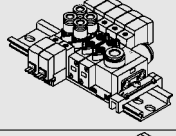
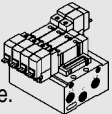
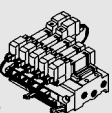
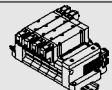
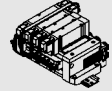
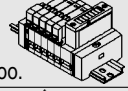
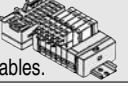


Note 1) All AC voltage models have built-in surge voltage suppressor.

Note 2) Only available for DIN terminal and M8 connector.

Note 3) DIN terminal is not available for 10-SY3000. (Refer to page 488.)

Manifold Variations

Manifold variations			Valve series	Wiring					
				Connection	Common specifications				
					Individual wiring	Flat ribbon cable (26 pins)	Flat ribbon cable (20 pins) connector box	PC wiring system	Positive common Negative common
			5 port						
Body ported	Bar stock type Individual wiring ■ Direct piping to the main unit of a valve. Combination of different fittings is possible.	 Type 20 P.394	10-SY3□20	●	—	—	—	—	—
			10-SY5□20	—	●	—	—	●	In common
			10-SY7□20	—	—	—	—	—	—
	Bar stock type Flat ribbon cable ■ A 26 pins MIL connector permits One-touch wiring of external cables in a bundle.	 Type 20P P.404	10-SY3□20	—	●	—	—	●	In common
			10-SY5□20	—	●	—	—	●	In common
			10-SY7□20	—	—	—	—	—	—
	Stacking type Individual wiring ■ Manifold stations can be increased.	 Type 23 P.400	10-SY9□20	●	—	—	—	—	—
			10-SY9□20	—	●	—	—	●	In common
	Stacking type Flat ribbon cable ■ Manifold stations can be increased.	 Type 23P P.410	10-SY9□20	—	●	—	—	●	In common
			10-SY9□20	—	●	—	—	●	In common
			10-SY9□20	—	—	—	—	—	—
Base mounted	Cassette type Individual wiring Size and weight reduced by eliminating the manifold base	 Type 60 P.415	10-SY3□60	●	—	—	—	—	—
			10-SY5□60	●	—	—	—	—	—
			10-SY7□60	●	—	—	—	—	—
	Compact bar stock type Individual wiring ■ The base mounting facilitates maintenance after valves are changed.	 Type 41 P.428	10-SY3□40	●	—	—	—	—	—
			10-SY5□40	—	●	—	—	●	In common
			10-SY7□40	—	—	—	—	—	—
	Compact bar stock type Flat ribbon cable ■ A 26 pins MIL connector permits One-touch wiring of external cables in a bundle.	 Type 41P P.444	10-SY3□40	—	●	—	—	●	In common
			10-SY5□40	—	●	—	—	●	In common
			10-SY7□40	—	—	—	—	—	—
	Bar stock type/Common external EXH Individual wiring ■ The base mounting facilitates maintenance after valves are changed. Vacuum/low pressure combination system is possible.	 Type 42 P.428	10-SY3□40	●	—	—	—	—	—
			10-SY5□40	—	●	—	—	●	In common
			10-SY7□40	—	—	—	—	—	—
	Bar stock type/Common external EXH Flat ribbon cable ■ A 26 pins MIL connector permits One-touch wiring of external cables in a bundle. ■ Vacuum/low pressure combination system is possible.	 Type 42P P.444	10-SY3□40	—	●	—	—	●	In common
			10-SY5□40	—	●	—	—	●	In common
			10-SY7□40	—	—	—	—	—	—
	Stacking type Individual wiring ■ Manifold stations can be increased.	 Type 43 P.438	10-SY9□40	●	—	—	—	—	—
			10-SY9□40	—	●	—	—	●	In common
	Stacking type Flat ribbon cable ■ Manifold stations can be increased.	 Type 43P P.452	10-SY9□40	—	●	—	—	●	In common
			10-SY9□40	—	●	—	—	●	In common
	Stacking type/DIN rail mounted Individual wiring ■ Stations can be increased on the DIN rail. Integral mounting of other electric parts is possible, too.	 Type 45 P.460	10-SY3□40	●	—	—	—	—	—
			10-SY5□40	—	●	—	—	●	In common
	Stacking type/DIN rail mounted Connector box ■ Stations can be increased on the DIN rail. The provided connector box permits one-touch connection of electric cables.	 Type 45-A NA P.468	10-SY3□40	—	—	●	●	●	●
			10-SY5□40	—	—	●	●	●	●

●Standard ●Option ▲Made-to-order (Refer to page "Made-to-Order".)

Manifold Variations

[illegible]

Note) When using DIN terminal or M8 connector.
There is no DIN terminal available for 10-SY3000.

Series 10-SY3000/5000/7000/9000

Body Ported
Valve Single Unit

How to Order

10—SY 5 1 20 5 L 01

• Clean series

• Series

3	10-SY3000
5	10-SY5000
7	10-SY7000
9	10-SY9000

• Type of actuation

1	2 position single (A)(B) (EA)(P)(EB)
2	2 position double (A)(B) (EA)(P)(EB)
3	3 position closed center (A)(B) (EA)(P)(EB)
4	3 position exhaust center (A)(B) (EA)(P)(EB)
5	3 position pressure center (A)(B) (EA)(P)(EB)

• Coil specifications

Nil	Standard
T	With power saving circuit (24, 12 VDC only)

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

DC	
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

• Rated voltage

AC (50/60 Hz) 50/60	
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", DC voltage is only available.

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC				24, 12 VDC / 100, 110, 200, 220 VAC
Grommet	L plug connector	M plug connector	DIN terminal	
G: Lead wire length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	Nil: Without lead wire	D: With connector
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	DO: Without connector

24, 12, 6, 5, 3 VDC

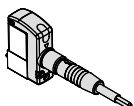
M8 connector

WO: Without connector cable



Note 1)

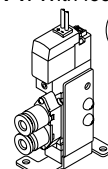
W□: With connector cable



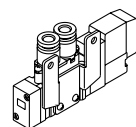
* "LN", "MN" type: with 2 sockets
* For DIN terminal of Series 10-SY3000, refer to back matter page 10.
* DIN terminal type "Y" conforming to EN-175301-803C (Former DIN43650C) is available, too. For details, refer to page 482.
* For connector cable of M8 connector, refer to page 490.
Make sure to specify cable length for the □ by referring to page 491.

• Bracket

Nil: Without bracket
F1: With foot bracket (2 position single only)



F2: With side bracket



* 10-SY9000 has no bracket.

• A, B port size
Thread piping

Symbol	Port size	Applicable series
M5	M5 x 0.8	10-SY3000
01	1/8	10-SY5000
02	1/4	10-SY7000
03	3/8	10-SY9000

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY7000
C10	One-touch fitting for ø10	10-SY9000
C12	One-touch fitting for ø12	10-SY9000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø 5/32"	10-SY3000
N7	One-touch fitting for ø 1/4"	10-SY5000
N9	One-touch fitting for ø 5/16"	10-SY7000
N11	One-touch fitting for ø 3/8"	10-SY9000

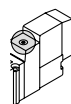
• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

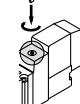
* Except M5.

• Manual override

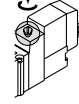
Nil: Non-locking push type



D: Push-turn locking slotted type



E: Push-turn locking lever type



• Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

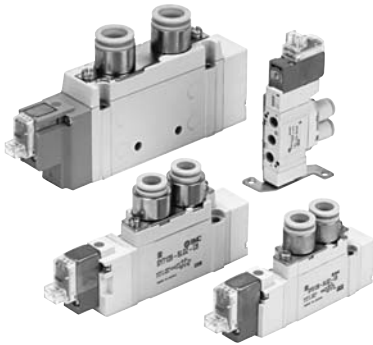
Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "DOZ" is not available.
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolts for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to catalog on page 413.)

Specifications



Series		10-SY3000	10-SY5000	10-SY7000	10-SY9000
Fluid		Air			
Internal pilot	2 position single	0.15 to 0.7			
Operating pressure range (MPa)	2 position double	0.1 to 0.7			
	3 position	0.2 to 0.7			
Ambient and fluid temperature (°C)		-10 to 50 (No freezing. Refer to page 714.)			
Max. operating frequency (Hz)	2 position single, double	10	5	5	5
	3 position	3	3	3	3
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type			
Pilot exhaust method		Common exhaust type for main and pilot valve			
Lubrication		Not required			
Mounting orientation		Unrestricted			
Impact/Vibration resistance (m/s ²) (Note)		150/30			
Enclosure		Dustproof (* DIN terminal, M8 connector conforms to IP65)			



* Based on IEC60529.

(Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)
Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)



Made to Order Specifications
(For details, refer to pages 477 to 483.)

Solenoid Specifications

Electrical entry		Grommet (G), (H) L plug connector (L) M plug connector (M)	DIN terminal (D) M8 connector (W)
		G, H, L, M, W	D
Coil rated voltage (V)	DC	24, 12, 6, 5, 3	24, 12
	AC ^{50/60} Hz	100, 110, 200, 220	
Allowable voltage fluctuation (%)		±10% of rated voltage *	
Power consumption (W)	DC	Standard 0.35 (With indicator light: 0.4, DIN terminal with indicator light: 0.45) With power saving circuit 0.1 (With indicator light only)	
	AC		
Apparent power (VA) *	100V	0.78 (With indicator light: 0.81)	0.78 (With indicator light: 0.87)
	110V	0.86 (With indicator light: 0.89)	0.86 (With indicator light: 0.97)
	[115V]	[0.94 (With indicator light: 0.97)]	[0.94 (With indicator light: 1.07)]
	200V	1.18 (With indicator light: 1.22)	1.15 (With indicator light: 1.30)
	220V	1.30 (With indicator light: 1.34)	1.27 (With indicator light: 1.46)
Surge voltage suppressor		Diode (DIN terminal, non-polar type: Varistor)	
Indicator light		LED (AC of DIN terminal is neon light.)	



* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

* For types S, Z and T (with power saving circuit), there is a pressure drop due to the internal circuit. Therefore, the allowable voltage fluctuation range should be as follows.

Types S, Z: 24 VDC: -7% to +10%

12 VDC: -4% to +10%

Type T: 24 VDC: -8% to +10%

12 VDC: -6% to +10%

Response Time



(Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

10-SY3000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	12 or less	15 or less	12 or less
2 position double	10 or less	13 or less	10 or less
3 position	15 or less	20 or less	16 or less

10-SY5000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	19 or less	26 or less	19 or less
2 position double	18 or less	22 or less	18 or less
3 position	32 or less	38 or less	32 or less

10-SY7000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	31 or less	38 or less	33 or less
2 position double	27 or less	30 or less	28 or less
3 position	50 or less	56 or less	50 or less

10-SY9000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	35 or less	41 or less	35 or less
2 position double	35 or less	41 or less	35 or less
3 position	62 or less	64 or less	62 or less

Series 10-SY7000

Valve model	Type of actuation	Port size		Flow characteristics						Weight (g)									
		1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1—4/2(P—A/B)			4/2—5/3(A/B—EA/EB)			Grom- met	L, M plug connector	DIN terminal	W M8 connector						
				C [dm ³ / s-bar]	b	Cv	C [dm ³ / s-bar]	b	Cv										
10-SY7□20 □-02	2 position	Single	1/4	C8	One-touch fitting for ø8	4.1	0.23	0.93	3.3	0.33	0.81	101	104	125	108				
		Double				120	125	167	133										
	3 position	Closed center				2.9	0.31	0.70	2.4	0.38	0.63	128	133	175	141				
		Exhaust center				2.5	0.39	0.65	3.4	0.35	0.82								
		Pressure center				4.3	0.23	0.97	2.2	0.39	0.58								
						[2.4]	[0.32]	[0.61]	[2.1]	[0.38]	[0.54]								
10-SY7□20 □-C8	2 position	Single				C8	One-touch fitting for ø8	3.2	0.26	0.77	3.2	0.37	0.82	107	110	131	114		
		Double						126	132	174	140								
	3 position	Closed center						2.6	0.24	0.63	2.4	0.31	0.62	134	140	182	148		
		Exhaust center						2.4	0.25	0.57	2.6	0.42	0.7						
		Pressure center						3.3	0.28	0.78	2.2	0.34	0.60						
								[2.4]	[0.22]	[0.57]	[1.9]	[0.46]	[0.56]						
10-SY7□20 □-C10	2 position	Single						C10	One-touch fitting for ø10	3.8	0.26	0.86	3.2	0.34	0.82	103	105	126	109
		Double								122	127	169	135						
	3 position	Closed center								2.8	0.27	0.67	2.4	0.21	0.59	130	135	177	143
		Exhaust center								2.5	0.25	0.59	2.7	0.38	0.7				
		Pressure center								3.8	0.25	0.89	2.3	0.38	0.61				
										[2.4]	[0.31]	[0.61]	[2.0]	[0.38]	[0.56]				

Note) []: Denotes normal position.

Series 10-SY9000

Valve model	Type of actuation	Port size		Flow characteristics						Weight (g)								
		1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1—4/2(P—A/B)			4/2—5/3(A/B—EA/EB)			Grom- met	L, M plug connector	DIN terminal	W M8 connector					
				C (dm ³ / s-bar)	b	Cv	C (dm ³ / s-bar)	b	Cv									
10-SY9□20 -□-02	2 position Single Double	1/4	3 position Closed center Exhaust center Pressure center	1/4	7.0	0.33	1.7	7.6	0.35	2.0	241 260	244 266	265 308	248 274				
	6.7				0.37	1.7	6.4	0.34	1.6									
	6.4				0.36	1.6	8.3 [4.1]	0.41 [0.27]	2.2 [0.91]	284	290	332	298					
	8 [3.2]				0.27 [0.34]	1.8 [0.76]	6.5	0.22	1.4									
10-SY9□20 -□-03	2 position Single Double		3/8		3 position Closed center Exhaust center Pressure center	3/8	8.0	0.29	1.9	8.0	0.33	2.0	236 255	239 261	260 303	243 269		
	7.9						0.33	1.9	6.6	0.27	1.6							
	8.0						0.33	1.9	8.7 [8.3]	0.34 [0.40]	2.2 [2.3]	279	285	327	293			
	8.9 [3.3]						0.34 [0.40]	2.2 [0.82]	6.5	0.25	1.5							
10-SY9□20 -□-C8	2 position Single Double				1/4		3 position Closed center Exhaust center Pressure center	C8 One-touch fitting for ø8	4.3	0.28	0.96	7.1	0.32	1.7	293 312	296 318	317 360	300 326
	4.3								0.31	0.99	6.1	0.28	1.4					
	4.3								0.3	0.99	7.4 [3.8]	0.36 [0.29]	1.9 [0.86]	336	342	384	350	
	4.4 [3.2]								0.35 [0.26]	1 [0.71]	2.1	0.41	0.53					
10-SY9□20 -□-C10	2 position Single Double	1/4		3 position Closed center Exhaust center Pressure center			C10 One-touch fitting for ø10		6.1	0.28	1.4	7.9	0.33	1.9	279 298	282 304	303 346	286 312
	5.9								0.30	1.4	6.5	0.26	1.5					
	5.8								0.25	1.3	8.4 [4.1]	0.33 [0.27]	2 [0.93]	322	328	370	336	
	6.3 [3.2]								0.29 [0.29]	1.5 [0.72]	6.4	0.25	1.5					
10-SY9□20 -□-C12	2 position Single Double		1/4	3 position Closed center Exhaust center Pressure center		C12 One-touch fitting for ø12			7.0	0.25	1.6	8.6	0.41	2.2	265 284	268 290	289 332	272 298
	6.9								0.24	1.6	7.0	0.33	1.7					
	6.6								0.23	1.4	9.4 [4.5]	0.48 [0.32]	2.6 [1.0]	308	314	356	322	
	7.4 [3.2]								0.25 [0.34]	1.7 [0.74]	6.6	0.23	1.5					

Note) []: Denotes normal position.

How to Order Pilot Valve Assembly

How to Order Connector Assembly for L/M Plug Connector

10—V111—5—G—

Coil specifications

Nil	Standard: DC specifications
T	With power saving circuit (24 VDC, 12 VDC only)

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC $50/60$ Hz
2	200 VAC $50/60$ Hz
3	110 VAC $50/60$ Hz [115 VAC $50/60$ Hz]
4	220 VAC $50/60$ Hz [230 VAC $50/60$ Hz]

* For type "W□", DC voltage is only available.

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Electrical entry

G	Grommet (300 mm lead wire)
H	Grommet (600 mm lead wire)
L	L plug connector
LN	With lead wire
LO	Without lead wire
M	M plug connector
MN	With lead wire
MO	Without lead wire
WO	Without connector cable
Wm	With connector cable ^{Note 1)}

* For connector cable of M8 connector, refer to page 490.

Note 1) Make sure to specify cable length for the □ by referring to page 491.

For DC: SY100-30-4A—

For 100 VAC: SY100-30-1A—

For 200 VAC: SY100-30-2A—

For other voltages of AC: SY100-30-3A—

Without lead wire: SY100-30-A

(with connector and 2 of sockets only)

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order M8 Connector Cable

Straight type

V100-49-1—

Cable length

1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm

DIN terminal type

10—V115—5—D—

Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC $50/60$ Hz
2	200 VAC $50/60$ Hz
3	110 VAC $50/60$ Hz [115 VAC $50/60$ Hz]
4	220 VAC $50/60$ Hz [230 VAC $50/60$ Hz]

* DC specifications of types "D" and "DO" is only available with 12 and 24 VDC.

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

D	DIN terminal
DO	Without connector

* Do not replace 10-V111 (G, H, L, M) to 10-V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

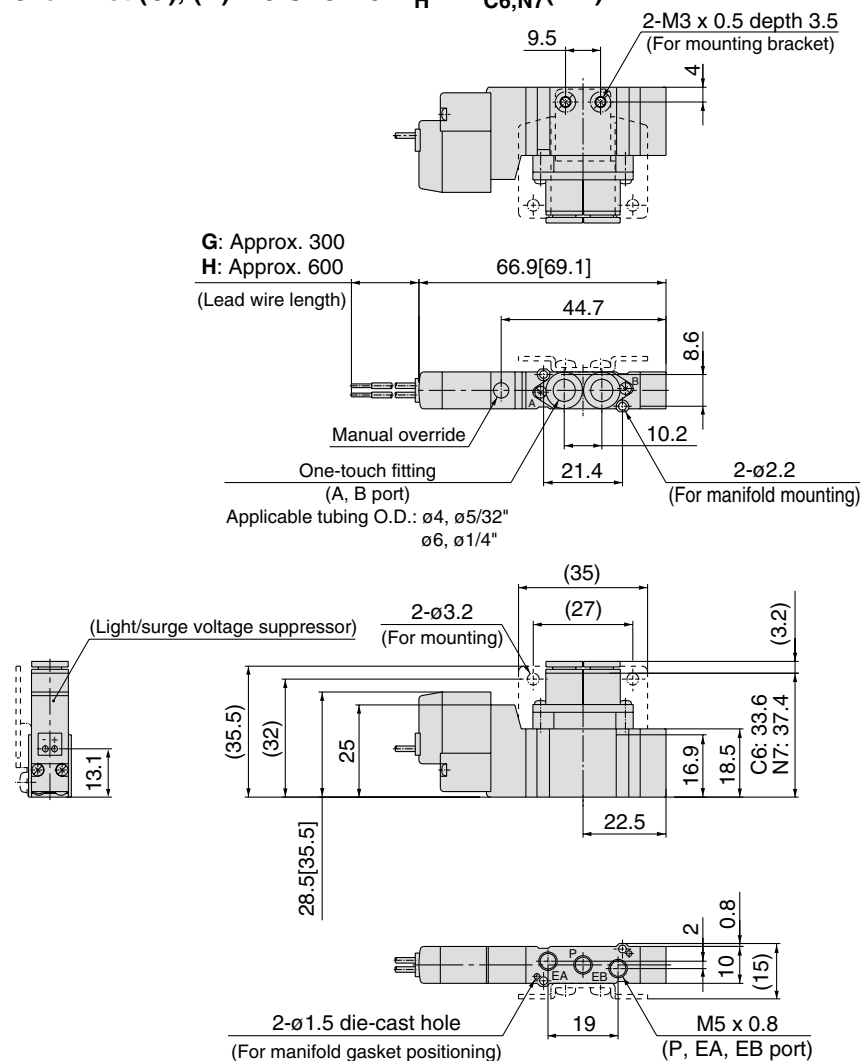
Dimensions: Series 10-SY3000



Note) []: AC

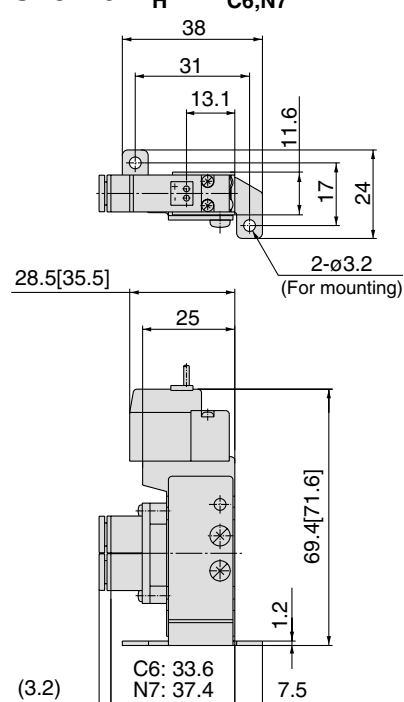
2 position single

Grommet (G), (H): 10-SY3120-□_G□_H-C4,N3-C6,N7(-F2)

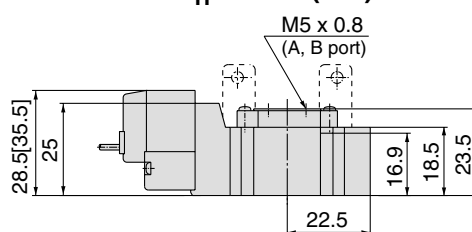


Foot bracket

10-SY3120-□_G□_H-C4,N3-C6,N7-F1

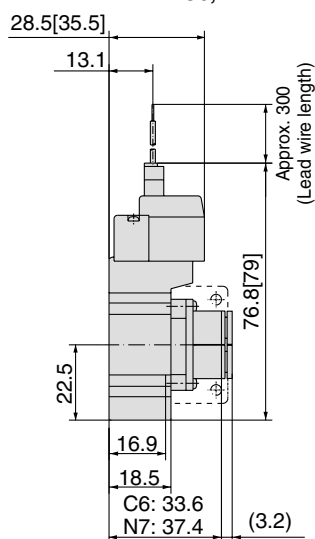


10-SY3120-□_G□_H-M5(-F2)



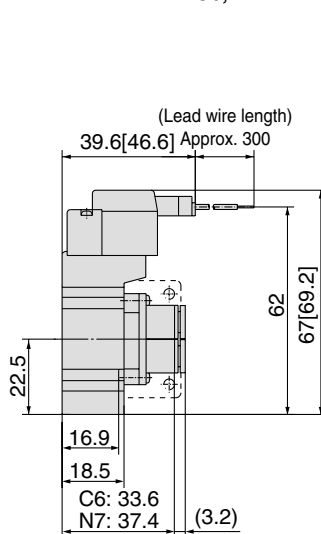
L plug connector (L):

10-SY3120-□_L□_L-C4,N3-C6,N7(-F2)



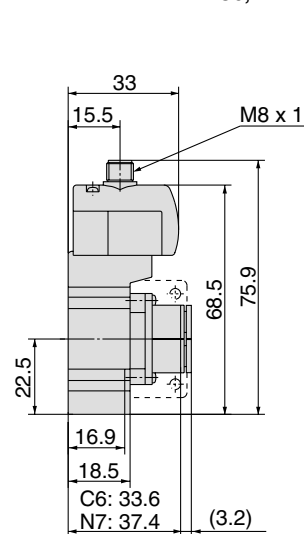
M plug connector (M):

10-SY3120-□_M□_M-C4,N3-C6,N7(-F2)



M8 connector (WO):

10-SY3120-□_{WO}□_{WO}-C4,N3-C6,N7(-F2)



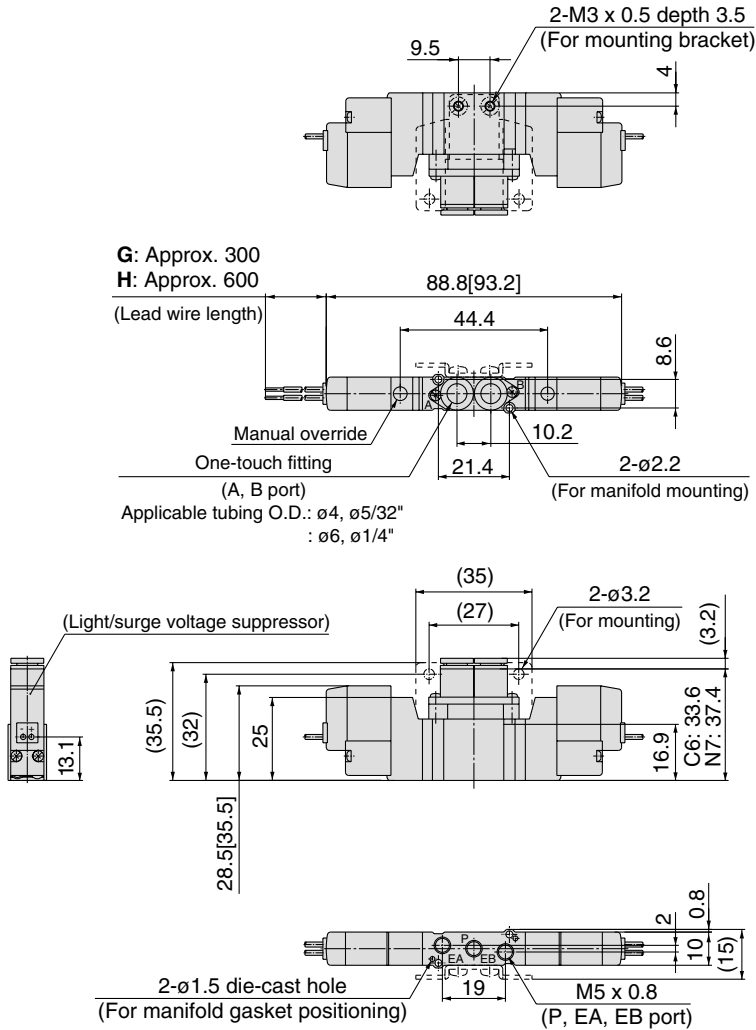
Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY3000

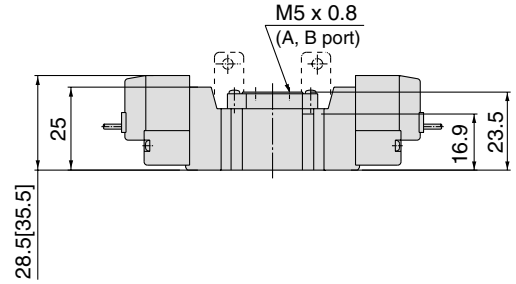
Note) []: AC

2 position double

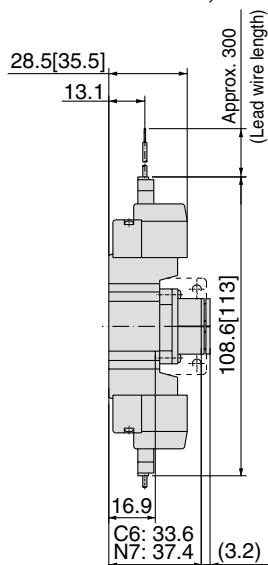
Grommet (G), (H): 10-SY3220-□G□□-C4,N3
C6,N7(-F2)



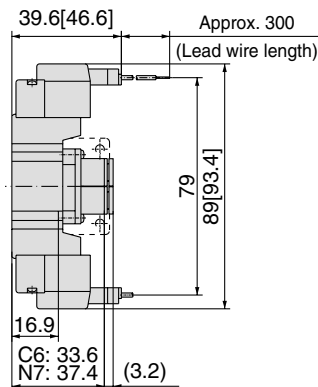
10-SY3220-□H□□-M5(-F2)



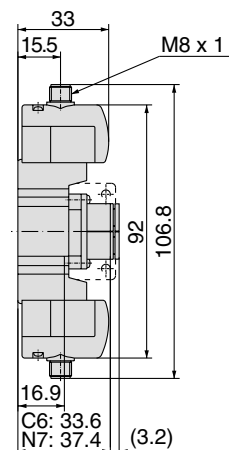
L plug connector (L):
10-SY3220-□L□□-C4,N3
C6,N7(-F2)



M plug connector (M):
10-SY3220-□M□□-C4,N3
C6,N7(-F2)



M8 connector (WO):
10-SY3220-WO□□-C4,N3
C6,N7(-F2)



Note) Refer to page 490 for dimensions of connector types.

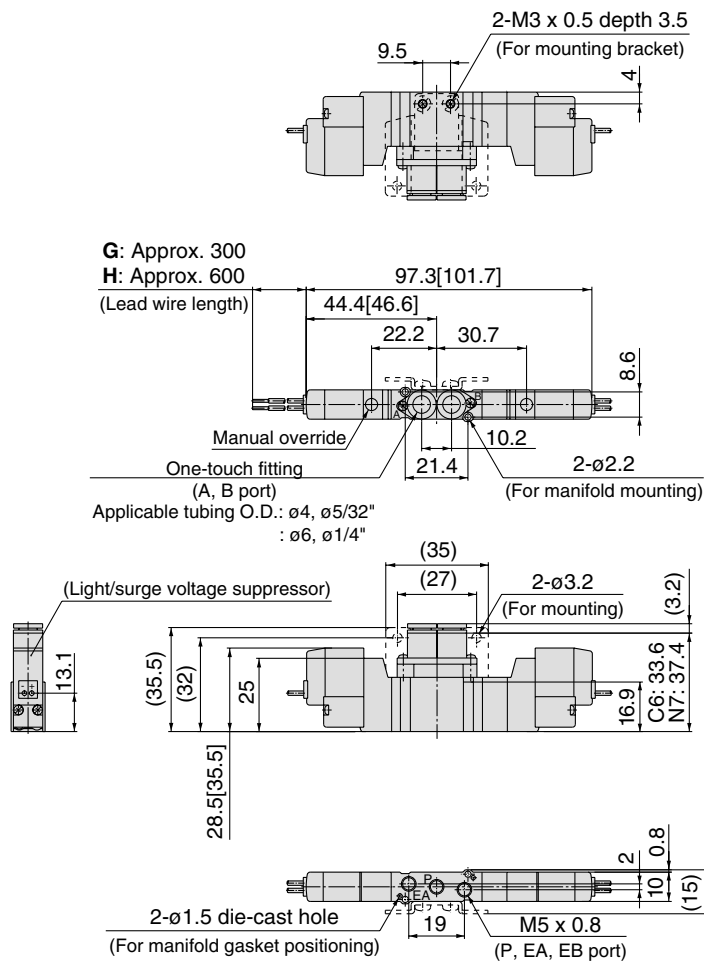
Dimensions: Series 10-SY3000



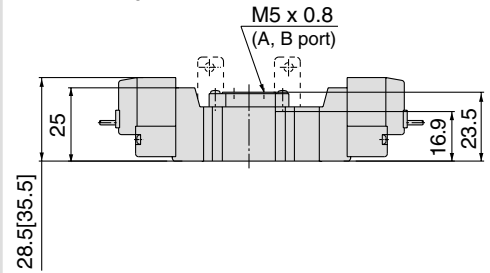
Note) []: AC

3 position closed center/exhaust center/pressure center

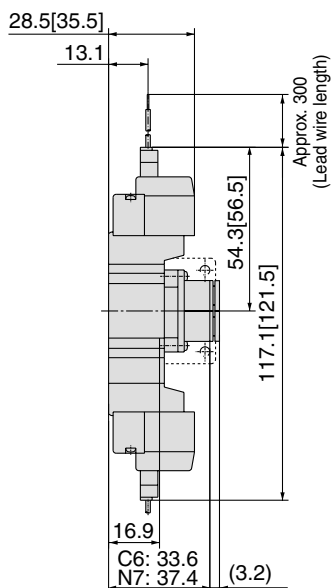
Grommet (G), (H): 10-SY3³₅20-□G□□-C₄N₃-C₆N₇(-F2)



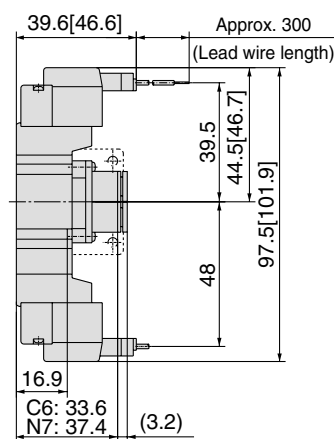
10-SY3³₅20-□G□□-M5(-F2)



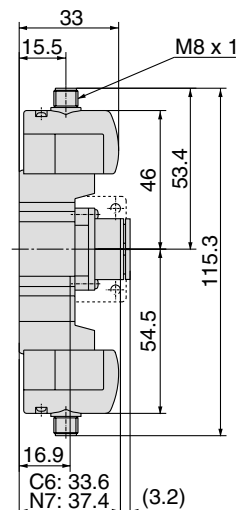
L plug connector (L):
10-SY3³₅20-□L□□-C₄N₃-C₆N₇(-F2)



M plug connector (M):
10-SY3³₅20-□M□□-C₄N₃-C₆N₇(-F2)



M8 connector (WO):
10-SY3³₅20-□WO□□-C₄N₃-C₆N₇(-F2)



Note) Refer to page 490 for dimensions of connector types.

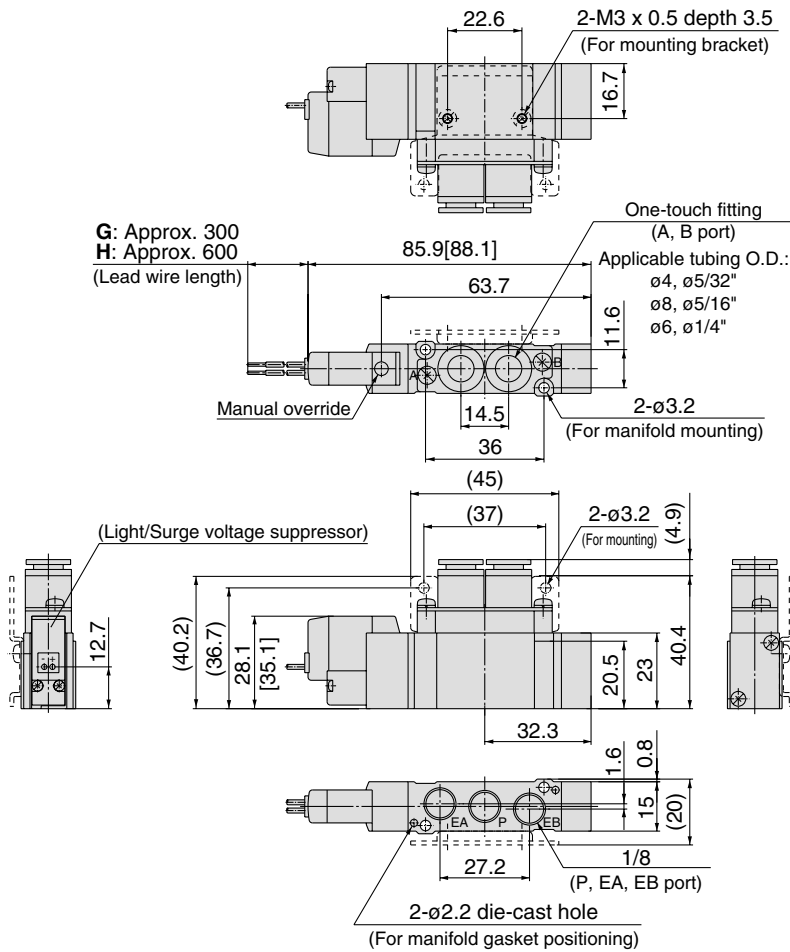
Dimensions: Series 10-SY5000



Note) []: AC

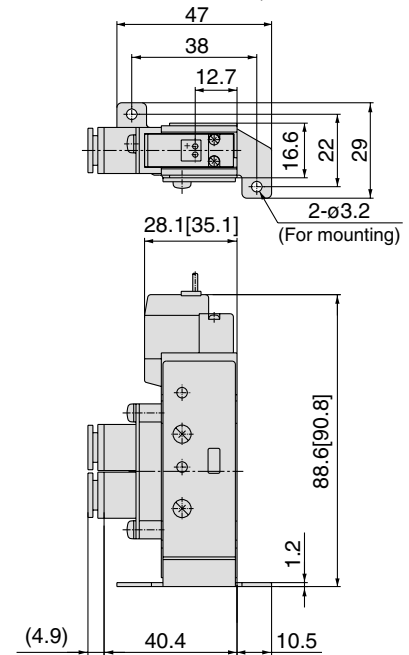
2 position single

Grommet (G), (H): 10-SY5120-□^G□^{C4,N3}□^{C6,N7}□^{C8,N9}□(-F₂)

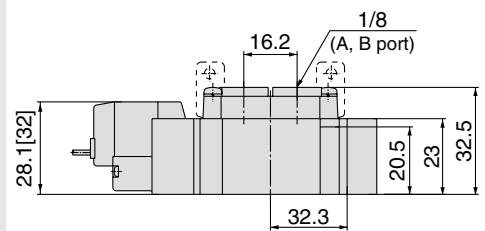


Foot bracket

10-SY5120-□^G□^{C4,N3}□^{C6,N7}□^{C8,N9}□(-F₁)

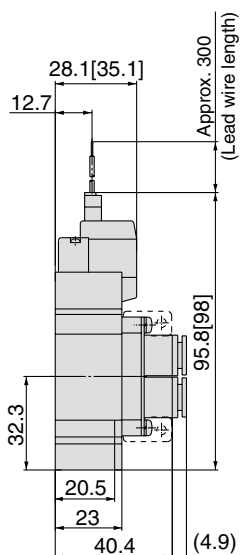


10-SY5120-□^G□^{C4,N3}□^{C6,N7}□^{C8,N9}□(-F₁)



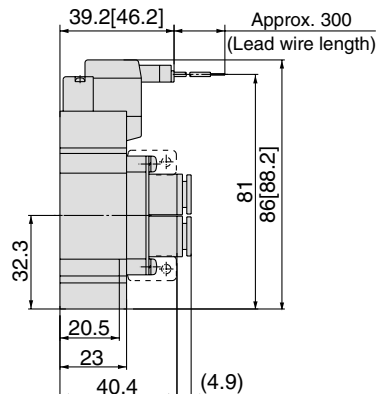
L plug connector (L):

10-SY5120-□^L□^{C4,N3}□^{C6,N7}□^{C8,N9}□(-F₂)



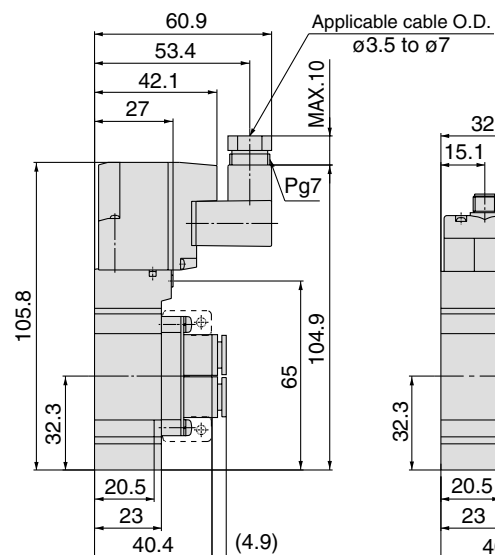
M plug connector (M):

10-SY5120-□^M□^{C4,N3}□^{C6,N7}□^{C8,N9}□(-F₂)



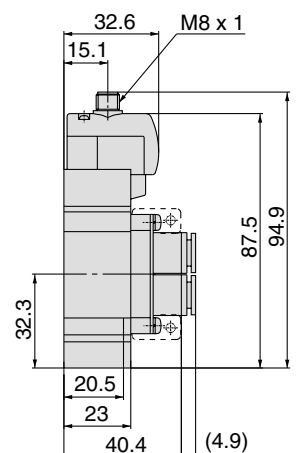
DIN terminal (D):

10-SY5120-□^D□^{C4,N3}□^{C6,N7}□^{C8,N9}□(-F₂)



M8 connector (WO):

10-SY5120-□^{WO}□^{C4,N3}□^{C6,N7}□^{C8,N9}□(-F₂)



Note) Refer to page 490 for dimensions of connector types.

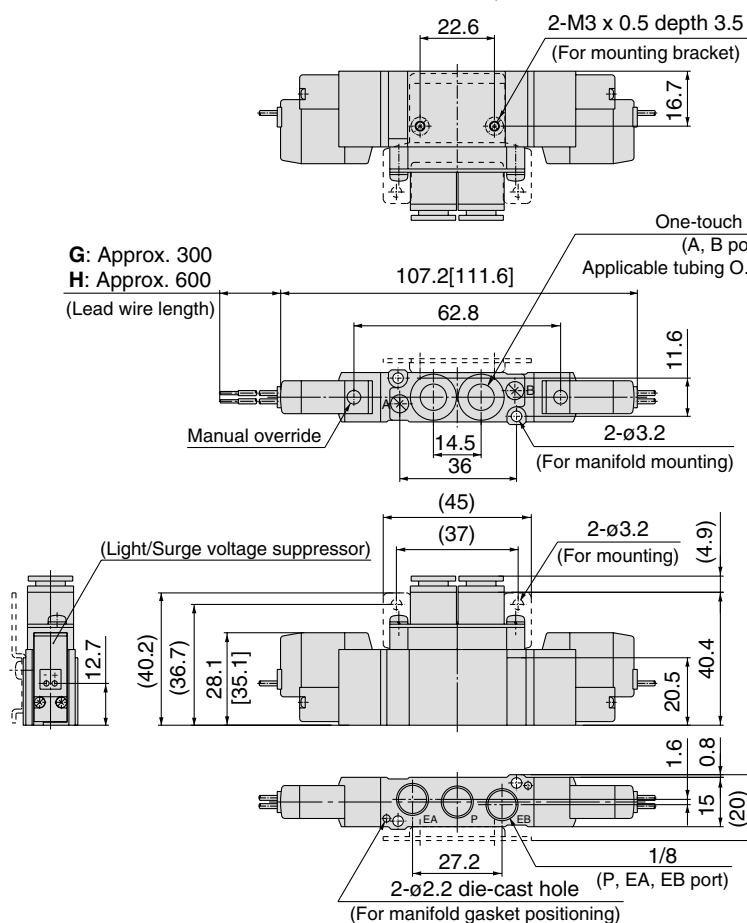
Dimensions: Series 10-SY5000



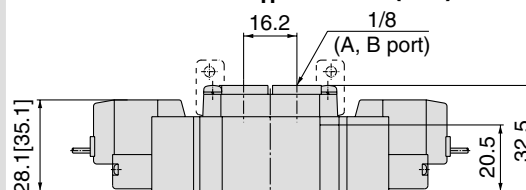
Note) []: AC

2 position double

Grommet (G), (H): 10-SY5220-☐G☐H☐C4,N3
C6,N7(-F2)
C8,N9

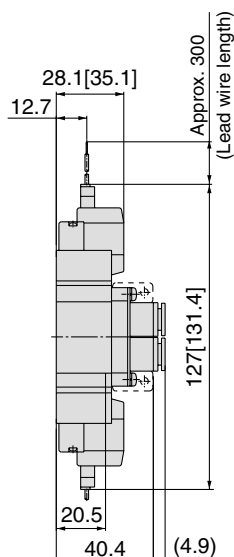


10-SY5220-☐G☐H☐C4,N3
C6,N7(-F2)
C8,N9



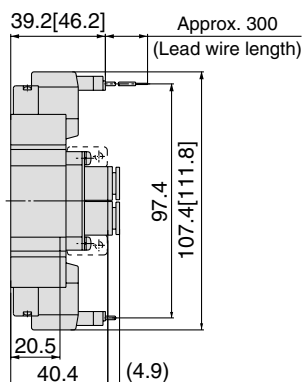
L plug connector (L):

10-SY5220-☐L☐C4,N3
C6,N7(-F2)
C8,N9



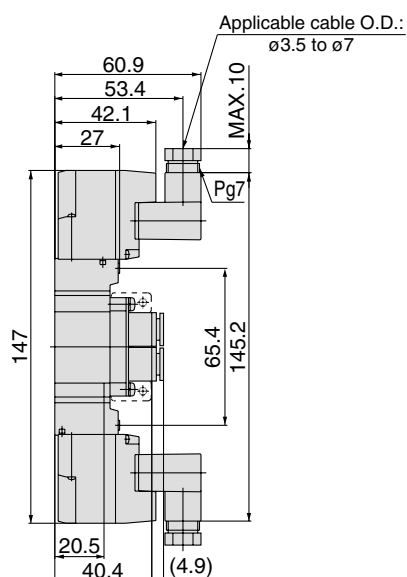
M plug connector (M):

10-SY5220-☐M☐C4,N3
C6,N7(-F2)
C8,N9



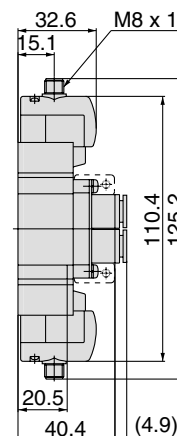
DIN terminal (D):

10-SY5220-☐D☐C4,N3
C6,N7(-F2)
C8,N9



M8 connector (WO):

10-SY5220-☐WO☐C4,N3
C6,N7(-F2)
C8,N9



Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY5000

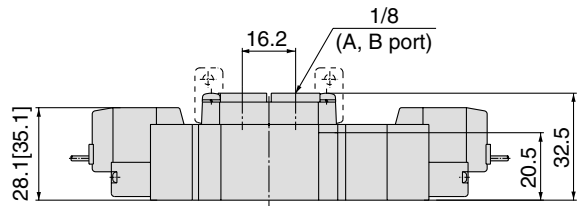
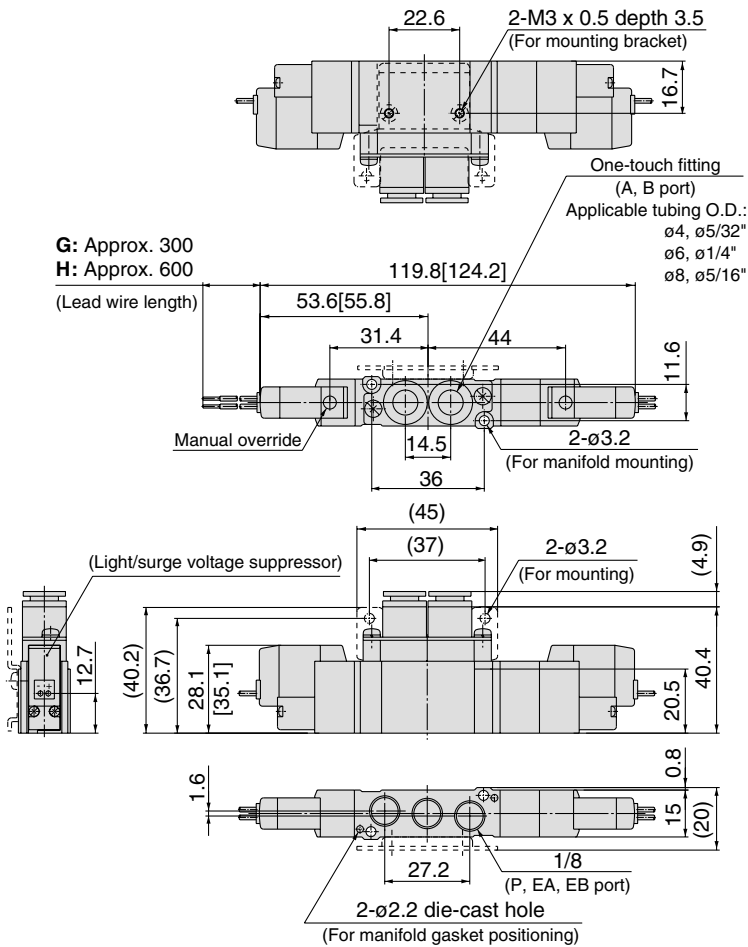


Note) []: AC

3 position closed center / exhaust center / pressure center

Grommet (G), (H): 10-SY5420-³₅□⁴₅□□^{C4,N3}_{C6,N7}□^{C8,N9}□(-F2)

10-SY5420-³₅□⁴₅□□^{C4,N3}_{C6,N7}□^{C8,N9}□(-F2)



L plug connector (L):

10-SY5420-³₅□□□^{C4,N3}_{C6,N7}□^{C8,N9}□(-F2)

M plug connector (M):

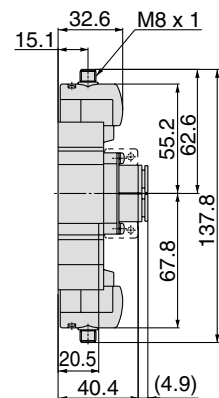
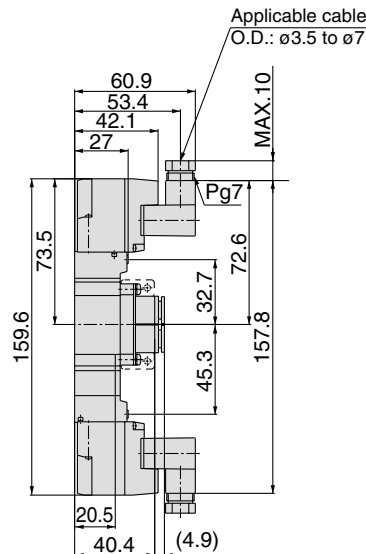
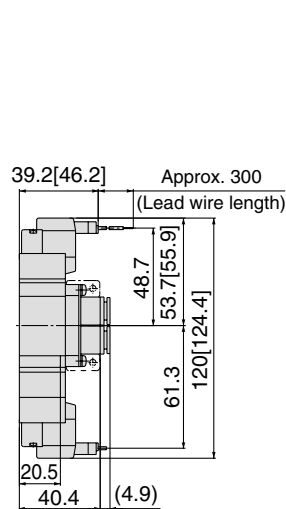
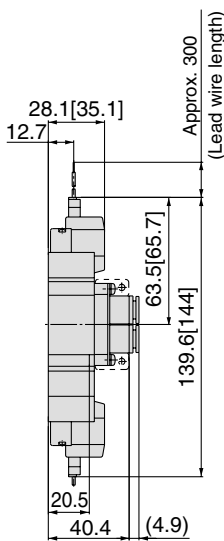
10-SY5420-³₅□□□^{C4,N3}_{C6,N7}□^{C8,N9}□(-F2)

DIN terminal (D):

10-SY5420-³₅□□□^{C4,N3}_{C6,N7}□^{C8,N9}□(-F2)

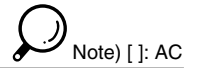
M8 connector (WO):

10-SY5420-³₅□□□^{C4,N3}_{C6,N7}□^{C8,N9}□(-F2)



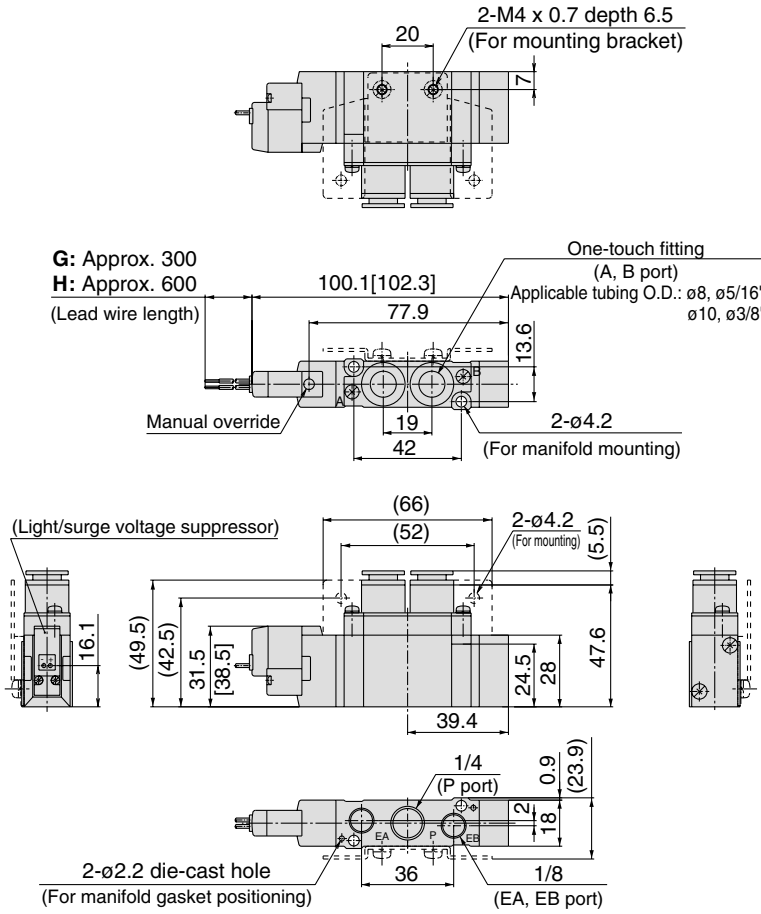
Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY7000

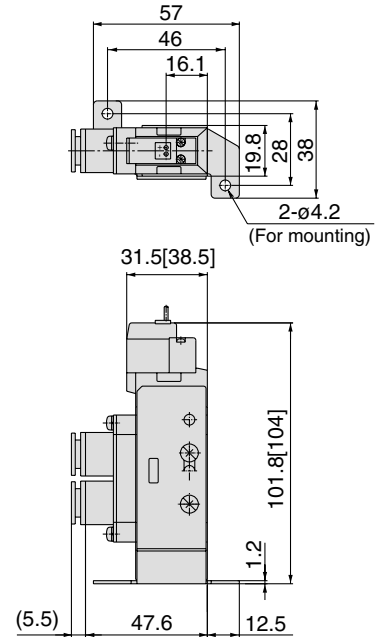


2 position single

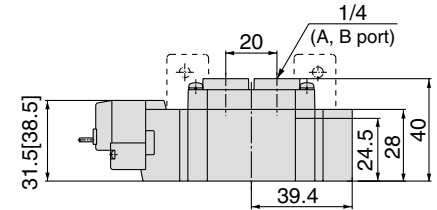
Grommet (G), (H): 10-SY7120-□_G□_H-C8,N9-C10,N11□(-F2)



10-SY7120-□_G□_H-C8,N9-C10,N11□-F1



10-SY7120-□_G□_H-02□(-F2)



L plug connector (L):

10-SY7120-□_L□_L-C8,N9-C10,N11□(-F2)

M plug connector (M):

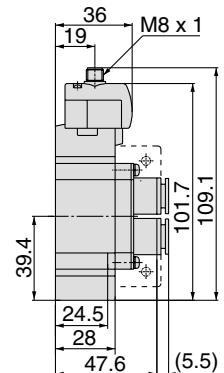
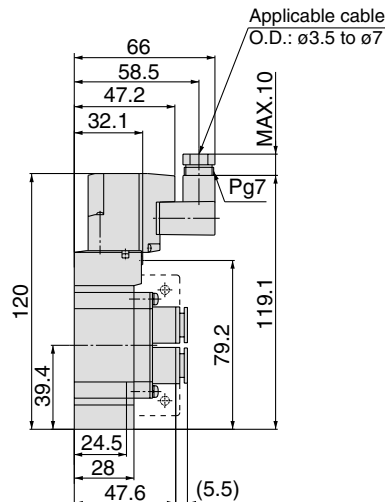
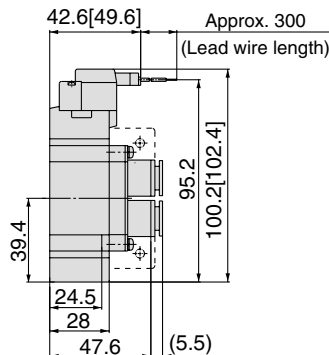
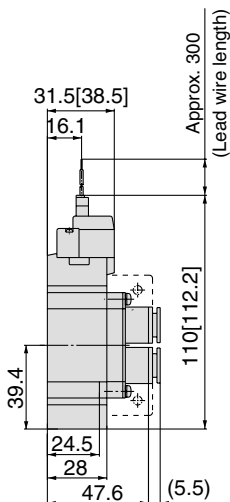
10-SY7120-□_M□_M-C8,N9-C10,N11□(-F2)

DIN terminal (D):

10-SY7120-□_D□_D-C8,N9-C10,N11□(-F2)

M8 connector (WO):

10-SY7120-□_{WO}□_{WO}-C8,N9-C10,N11□(-F2)



Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY7000

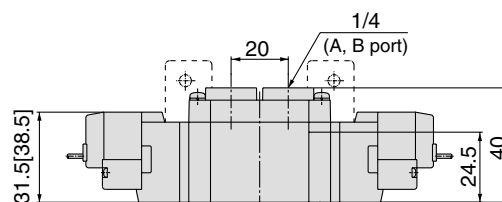
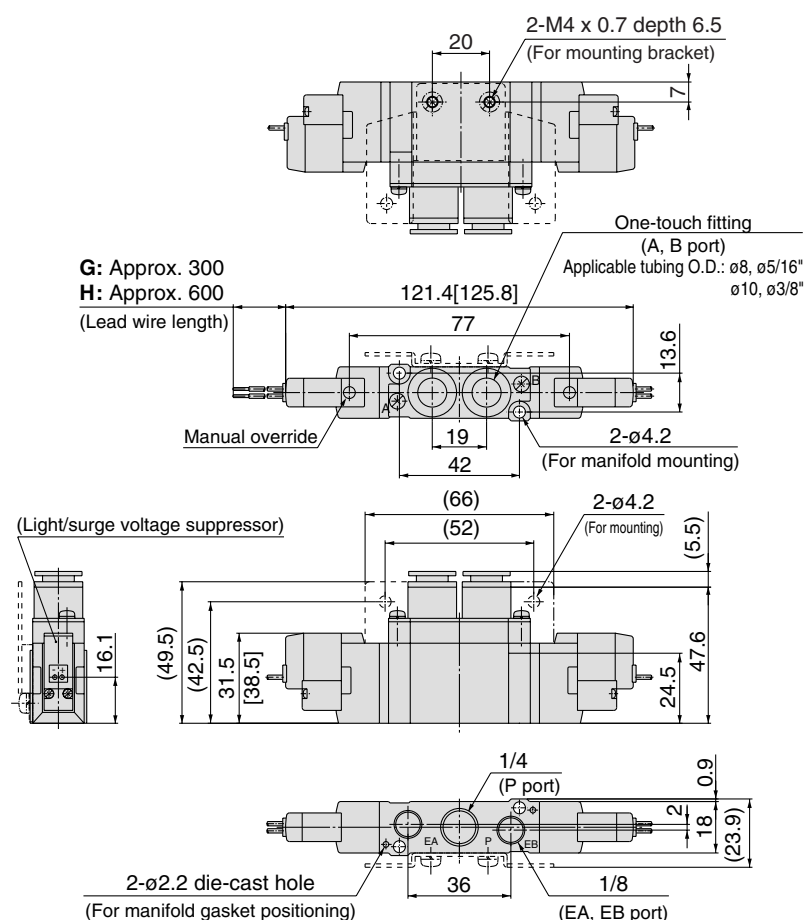


Note) []: AC

2 position double

Grommet (G), (H): 10-SY7220-G-C8,N9
C10,N11(-F2)

10-SY7220-G-02(-F2)



Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

L plug connector (L):

10-SY7220-□L□□-^{C8,N9}_{C10,N11}□(-F2)

M plug connector (M):

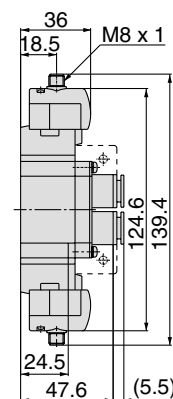
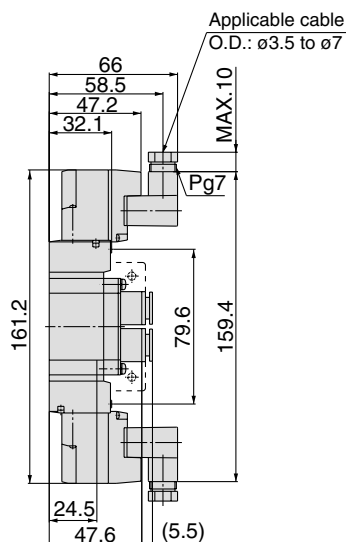
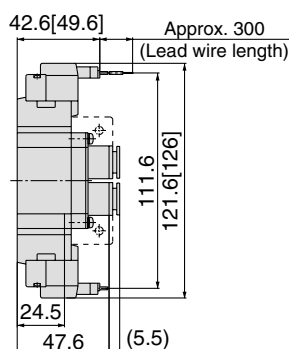
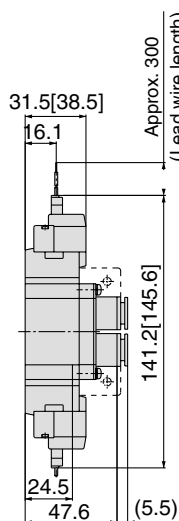
10-SY7220-□M□□-^{C8,N9}_{C10,N11}□(-F2)

DIN terminal (D):

10-SY7220-□D□□-^{C8,N9}_{C10,N11}□(-F2)

M8 connector (WO):

10-SY7220-□WO□□-^{C8,N9}_{C10,N11}□(-F2)



Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY7000

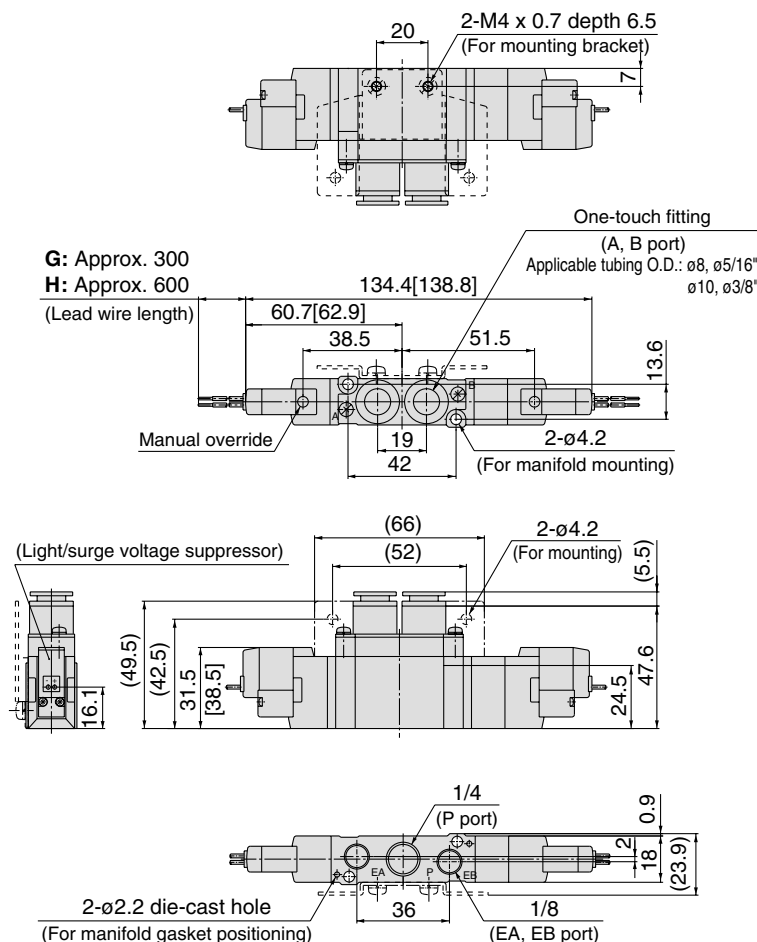


Note) []: AC

3 position closed center / exhaust center / pressure center

Grommet (G), (H): 10-SY7³₄20-□^G□□-C⁸,N⁹_{C10,N11}□(-F2)

10-SY7³₄20-□^G□□-02□(-F2)



L plug connector (L):

10-SY7³₄20-□^L□□-C⁸,N⁹_{C10,N11}□(-F2)

M plug connector (M):

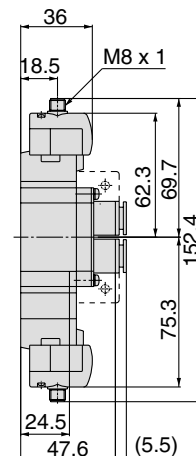
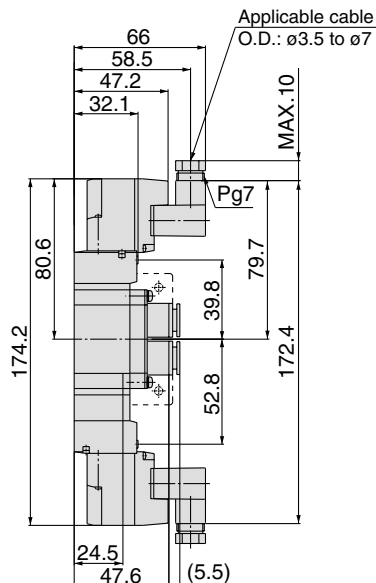
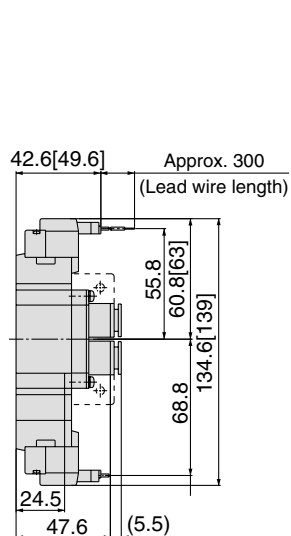
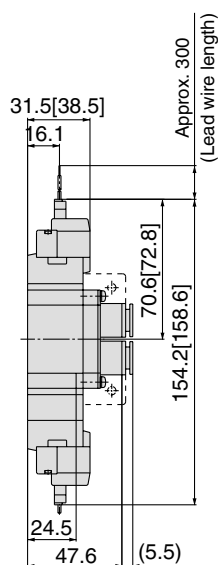
10-SY7³₄20-□^M□□-C⁸,N⁹_{C10,N11}□(-F2)

DIN terminal (D):

10-SY7³₄20-□^D□□-C⁸,N⁹_{C10,N11}□(-F2)

M8 connector (WO):

10-SY7³₄20-□^{WO}□□-C⁸,N⁹_{C10,N11}□(-F2)



Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY9000

Note) []: AC

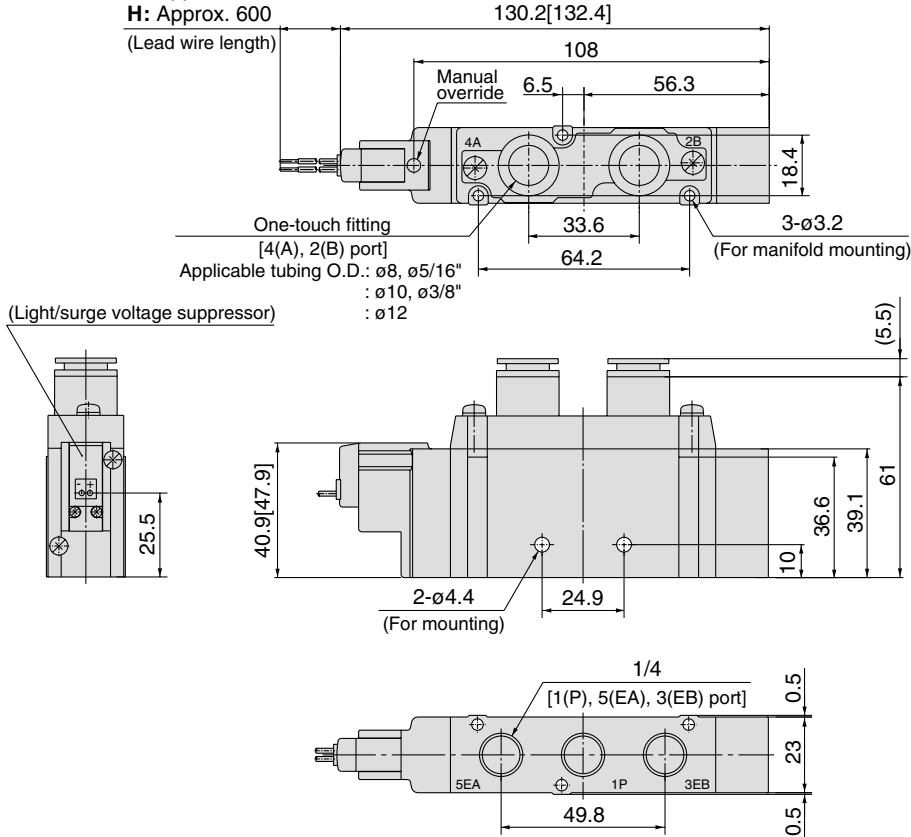
2 position single

Grommet (G), (H): 10-SY9120-☐G☐H☐C8,N9
C10,N11
C12

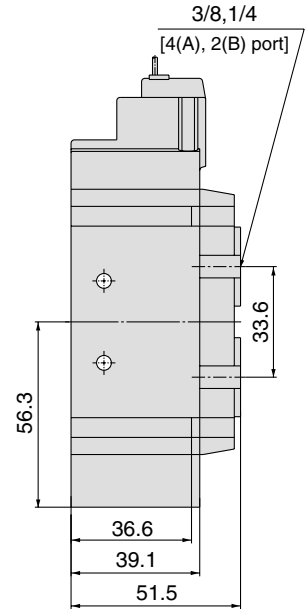
G: Approx. 300

H: Approx. 600

(Lead wire length)



10-SY9120-☐G☐H☐02
03



L plug connector (L):

10-SY9120-☐L☐C8,N9
C10,N11
C12

M plug connector (M):

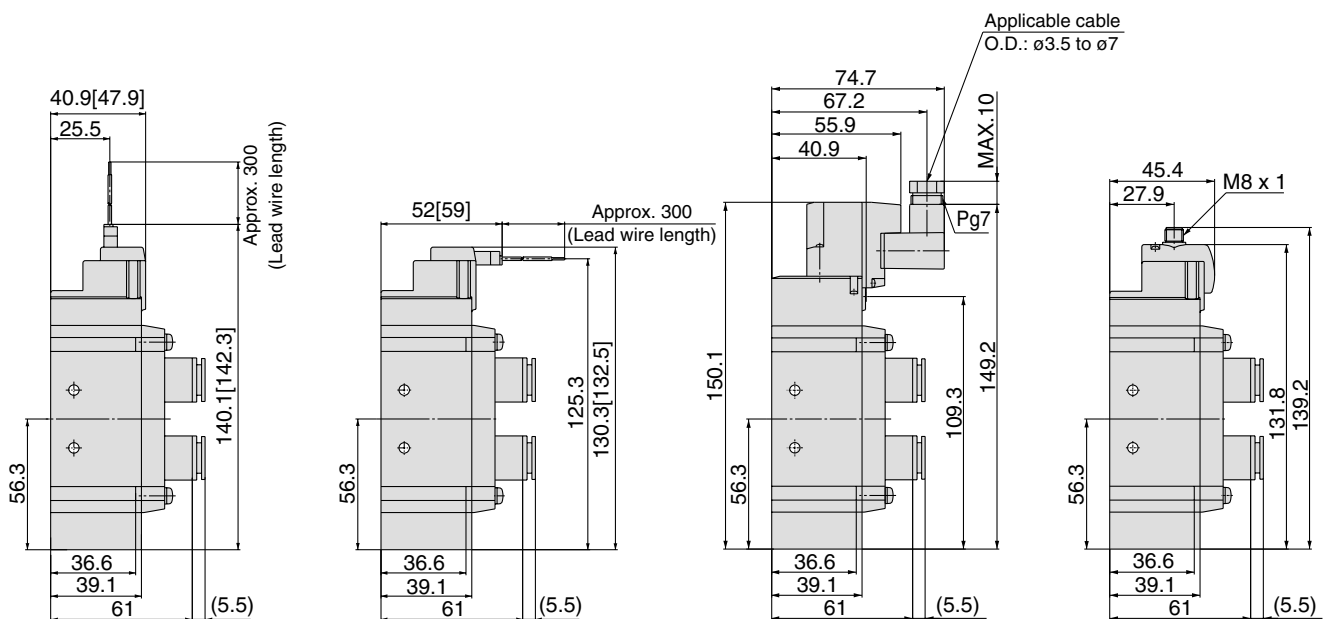
10-SY9120-☐M☐C8,N9
C10,N11
C12

DIN terminal (D):

10-SY9120-☐D☐C8,N9
C10,N11
C12

M8 connector (WO):

10-SY9120-☐WO☐C8,N9
C10,N11
C12



Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY9000

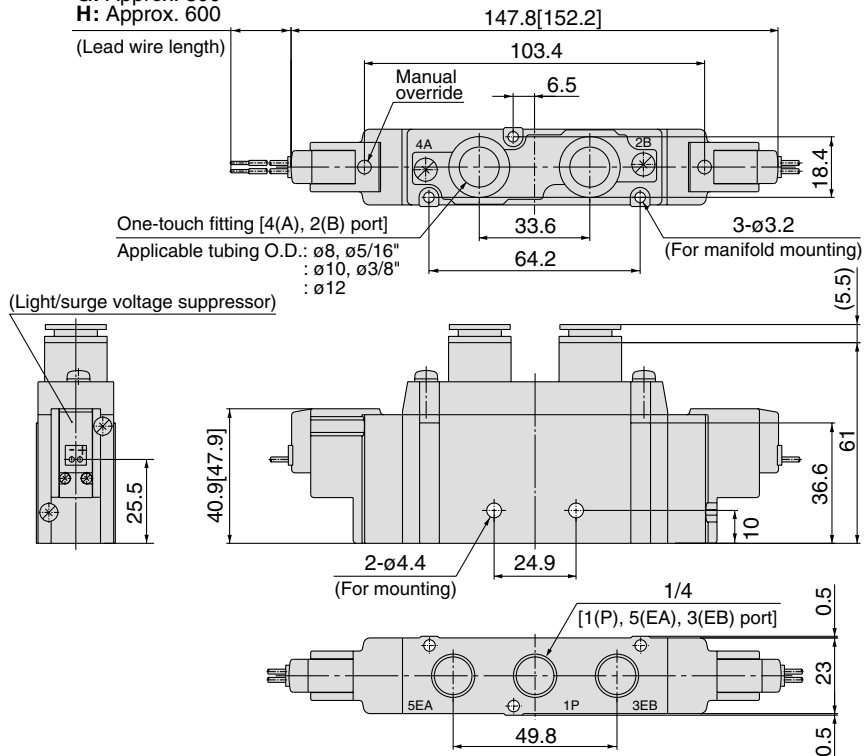


Note) []: AC

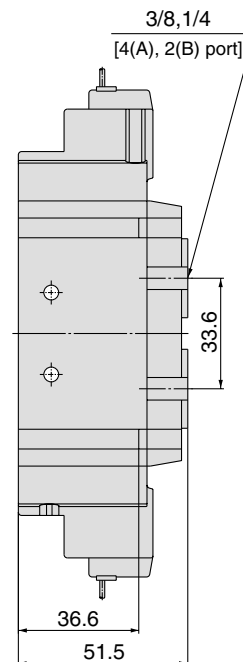
2 position double

Grommet (G), (H): 10-SY9220-□_G□_H□_{C8,N9}□_{C10,N11}□_{C12}

G: Approx. 300
H: Approx. 600



10-SY9220-□_G□_H□₀₂□₀₃



L plug connector (L):

10-SY9220-□_L□_{C8,N9}□_{C10,N11}□_{C12}

M plug connector (M):

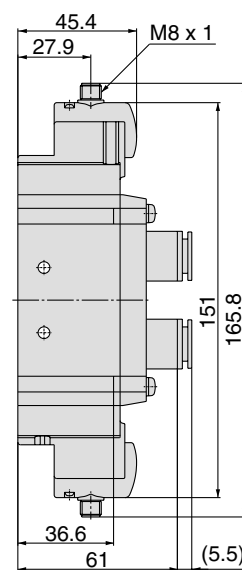
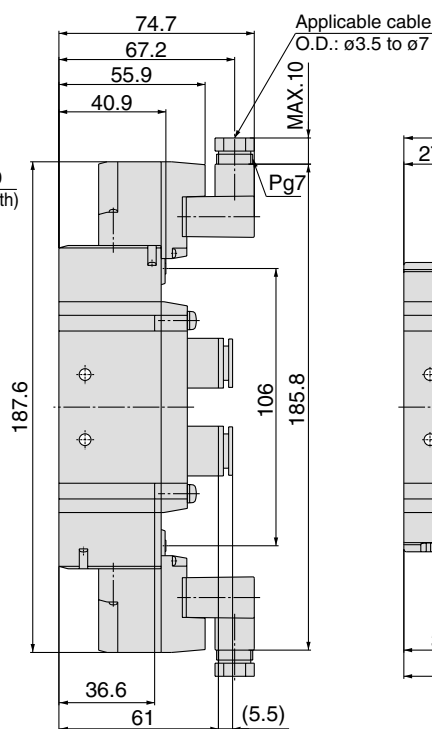
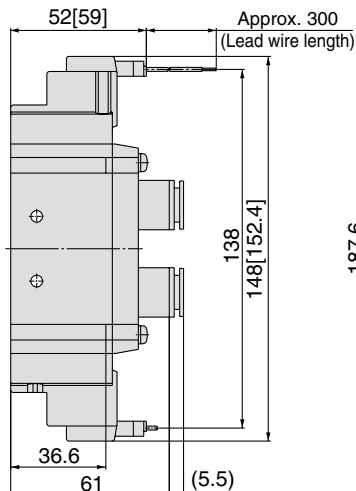
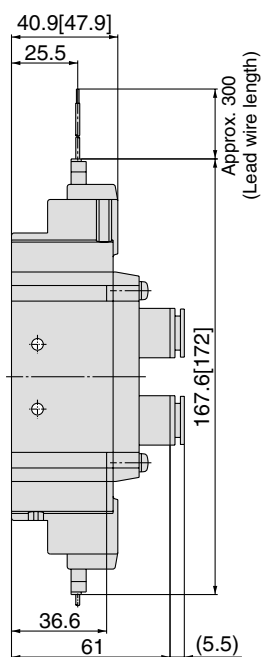
10-SY9220-□_M□_{C8,N9}□_{C10,N11}□_{C12}

DIN terminal (D):

10-SY9220-□_D□_{C8,N9}□_{C10,N11}□_{C12}

M8 connector (WO):

10-SY9220-□_{WO}□_{C8,N9}□_{C10,N11}□_{C12}



Note) Refer to page 490 for dimensions of connector types.

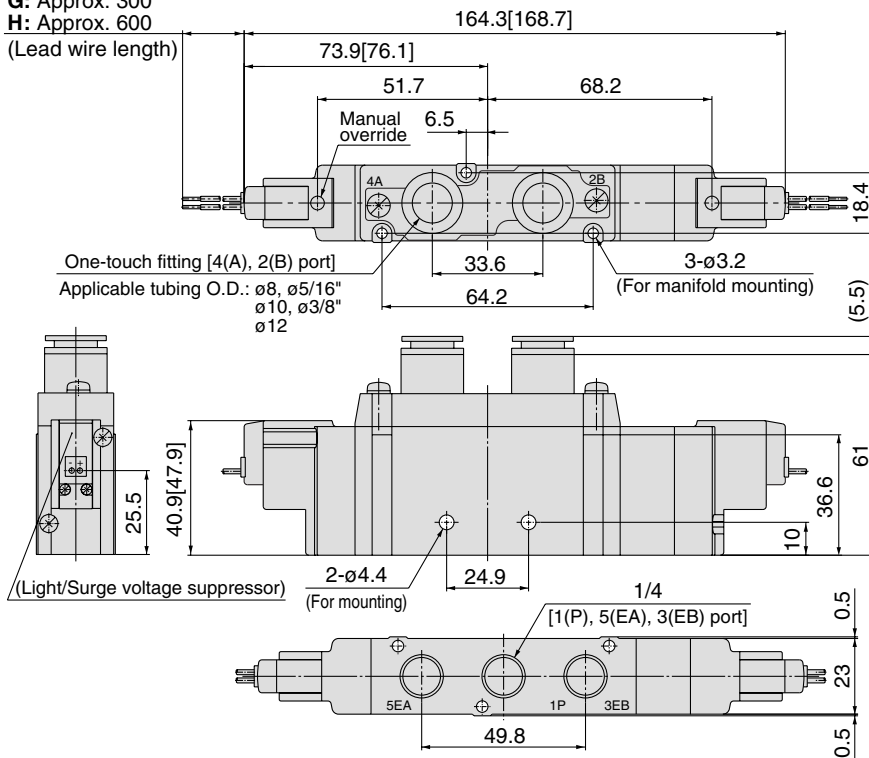
Dimensions: Series 10-SY9000

Note) []: AC

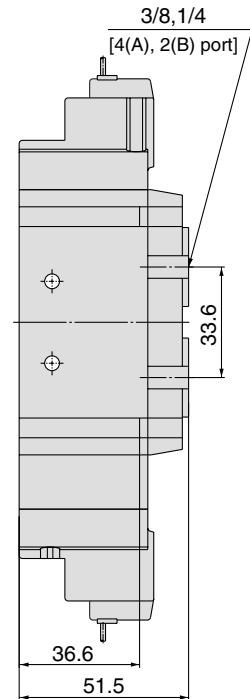
3 position closed center / exhaust center / pressure center

Grommet (G), (H): 10-SY9420-³₅-□^{C8,N9}_{C12}-□^{G,H}-□^{C10,N11}-□

G: Approx. 300
H: Approx. 600



10-SY9420-³₅-□^{G,H}-□^{C10,N11}-□⁰²₀₃



L plug connector (L):

10-SY9420-³₅-□^L-□^{C8,N9}_{C12}-□^{C10,N11}-□

M plug connector (M):

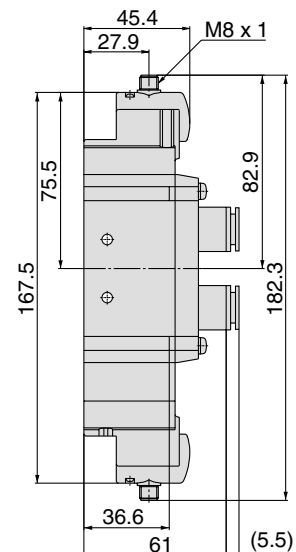
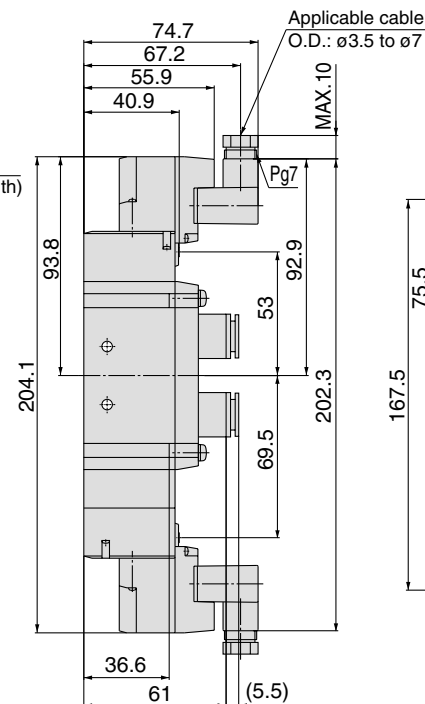
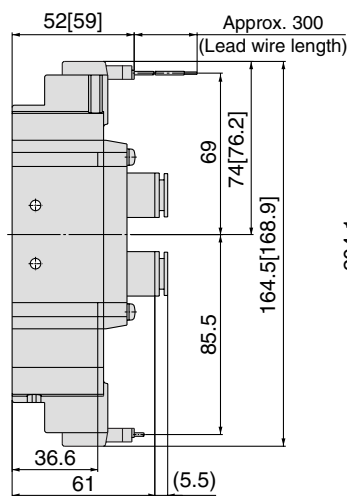
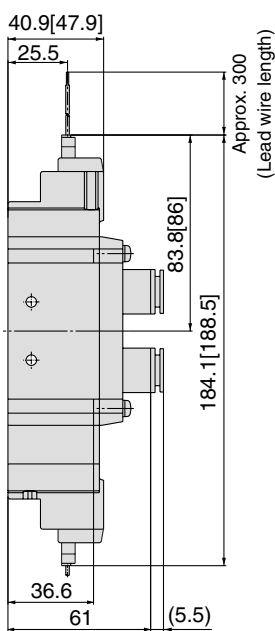
10-SY9420-³₅-□^M-□^{C8,N9}_{C12}-□^{C10,N11}-□

DIN terminal (D):

10-SY9420-³₅-□^D-□^{C8,N9}_{C12}-□^{C10,N11}-□

M8 connector (WO):

10-SY9420-³₅-□^{WO}-□^{C8,N9}_{C12}-□^{C10,N11}-□



Note) Refer to page 490 for dimensions of connector types.

Series 10-SY3000/5000/7000/9000 Base mounted Single Valve

How to Order

10—SY **5** **2** 40 **5** **L**

• Clean series

• Series

3	10-SY3000
5	10-SY5000
7	10-SY7000
9	10-SY9000

• Actuation

1	2 position single (A)(B) 4 2 (EA)(P)(EB)
2	2 position double (A)(B) 4 2 (EA)(P)(EB)
3	3 position closed center (A)(B) 4 2 (EA)(P)(EB)
4	3 position exhaust center (A)(B) 4 2 (EA)(P)(EB)
5	3 position pressure center (A)(B) 4 2 (EA)(P)(EB)

• Pilot system

Nil	Internal pilot
R	External pilot

• Coil specifications

Nil	Standard
T	With power saving circuit (24, 12 VDC only)

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

• Rated voltage

DC specifications

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

AC(50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", DC voltage is only available.

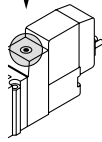
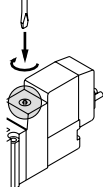
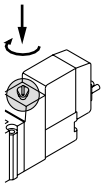
• Port size

Symbol	Port size	Applicable series
Nil	Without sub-plate	
01	1/8 With sub-plate	10-SY3000
02	1/4 With sub-plate	10-SY5000 10-SY7000
03	3/8 With sub-plate	10-SY7000 10-SY9000
04	1/2 With sub-plate	10-SY9000

• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

• Manual override

Nil: Non-locking Push type 	D: Push-turn locking Slotted type 	E: Push-turn locking Lever type 
---	--	--

• Light/Surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (non-polar type)
U	With light/surge voltage suppressor (non-polar type)

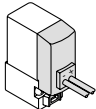
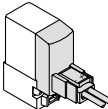
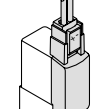
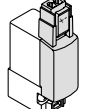
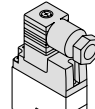
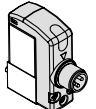
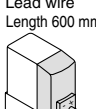
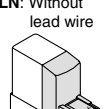
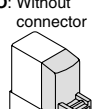
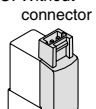
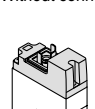
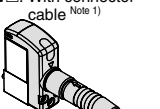
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (non-polar type)
Z	With light/surge voltage suppressor (non-polar type)

* DOZ is not available.
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC				24, 12 VDC 100, 110, 200, 220 VAC	24, 12, 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	MN: Without lead wire	DIN terminal	M8 Connector
G: Lead wire Length 300 mm 	L: With lead wire (length 300 mm) 	M: With lead wire (length 300 mm) 	MN: Without lead wire 	D: With connector 	WO: Without connector 
H: Lead wire Length 600 mm 	LN: Without lead wire 	LO: Without connector 	MO: Without connector 	DO: Without connector 	W□: With connector cable ^{Note 1)} 

* "LN", "MN" type: with 2 sockets.
* For DIN terminal of 10-SY3000 series, refer to Page 488.

* DIN terminal type "Y" conforming to EN-175301-803C (previously DIN43650C) is available, too. For details, refer to page 482.

* Refer to page 490 for connector cable of M8 connector.
Note 1) A symbol for cable length should be described in □. Please refer to page 491.

Specifications

Series			10-SY3000	10-SY5000	10-SY7000	10-SY9000
Fluid			Air			
Internal pilot operating pressure range (MPa)	2 position single		0.15 to 0.7			
	2 position double		0.1 to 0.7			
	3 position		0.2 to 0.7			
External pilot operating pressure range (MPa)	Operating pressure range		−100 kPa to 0.7			
	Pilot pressure range	2 position single	0.25 to 0.7			
		2 position double	0.25 to 0.7			
		3 position	0.25 to 0.7			
Ambient and fluid temperature (°C)			−10 to 50 (No freezing. Refer to page 714.)			
Maximum operating frequency (Hz)	2 position single, double		10	5	5	5
	3 position		3	3	3	3
Manual override (Manual operation)			Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type			
Pilot exhaust method	Internal pilot		Common exhaust type for main and pilot valve			
	External pilot		Individual pilot exhaust			
Lubrication			Not required			
Mounting orientation			Unrestricted			
Shock/Vibration resistance m/s ² Note)			150/30			
Enclosure			Dustproof (* DIN terminal, M8 connector conforms to IP65)			



* Based on IEC60529

Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values in the initial stage)

Vibration resistance: No malfunction when tested with one sweep of 45 to 2000Hz in the axial direction and at a right angle to the main valve and armature, in both energized and de-energized states. (Values in the initial stage)



Made to Order Specifications

(For details, refer to pages 477 to 483)

Response time



Note) Based on dynamic performance test, JIS B 8375-1981.

(Coil temperature: 20°C, at rated voltage)

10-SY3000

Type of actuation	Response Time ms (at the pressure of 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor		
		Type S, Z	Type R, U	
2 position single	12 or less	15 or less	12 or less	
2 position double	10 or less	13 or less	10 or less	
3 position	15 or less	20 or less	16 or less	

10-SY5000

Type of actuation	Response Time ms (at the pressure of 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor		
		Type S, Z	Type R, U	
2 position single	19 or less	26 or less	19 or less	
2 position double	18 or less	22 or less	18 or less	
3 position	32 or less	38 or less	32 or less	

10-SY7000

Type of actuation	Response Time ms (at 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor		
		Type S, Z	Type R, U	
2 position single	31 or less	38 or less	33 or less	
2 position double	27 or less	30 or less	28 or less	
3 position	50 or less	56 or less	50 or less	

10-SY9000

Type of actuation	Response Time ms (at 0.5 MPa)			
	Without light/surge voltage suppressor	With light/surge voltage suppressor		
		Type S, Z	Type R, U	
2 position single	35 or less	41 or less	35 or less	
2 position double	35 or less	41 or less	35 or less	
3 position	62 or less	64 or less	62 or less	

Solenoid specifications

Electrical entry		Grommet (G), (H) L plug connector (L) M plug connector (M) DIN terminal (D) M8 Connector (W)	
		G, H, L, M, W	D
Coil rated voltage (V)	DC	24, 12, 6, 5, 3	24, 12
	AC ^{50/60} Hz	100, 110, 200, 220	
Allowable voltage fluctuation		±10% of rated voltage *	
Power consumption (W)	DC	Standard	0.35 (With indicator light: 0.4 DIN terminal with indicator light: 0.45)
		With power saving circuit	0.1 (With indicator light only)
Apparent power (VA) *	AC	100V	0.78 (With indicator light: 0.81) 0.78 (With indicator light: 0.87)
		110V	0.86 (With indicator light: 0.89) 0.86 (With indicator light: 0.97)
		[115V]	[0.94 (With indicator light: 0.97)] [0.94 (With indicator light: 1.07)]
		200V	1.18 (With indicator light: 1.22) 1.15 (With indicator light: 1.30)
		220V [230V]	1.30 (With indicator light: 1.34) 1.27 (With indicator light: 1.46) [1.42(With indicator light: 1.46)] [1.39(With indicator light: 1.60)]
Surge voltage suppressor		Diode (Varistor for DIN terminal and non-polar type.)	
Indicator light		LED (Neon bulb for AC type DIN terminal)	



* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

* Voltage drop may be caused by internal circuit for S, Z and T type (With power-saving circuit).

Use the valves within allowable voltage fluctuation range as below.

Type S, Z 24 VDC: -7% to +10%

12 VDC: -4% to +10%

Type T 24 VDC: -8% to +10%

12 VDC: -6% to +10%

Flow Characteristics / Weight

Model/Series 10-SY3000

Valve model	Type of actuation		Port size	Flow Characteristics Note 1)						Weight (g) Note 2)		
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			Grommet	L, M plug connector	W M8 connector
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv			
SY3□40-□-01	2 position	Single	1/8	1.0	0.30	0.24	1.1	0.30	0.26	84(50)	85(53)	89(57)
		Double								102(68)	107(73)	115(81)
	3 position	Closed center		0.77	0.28	0.18	0.85	0.30	0.19	104(69)	109(74)	117(82)
		Exhaust center		0.73	0.31	0.18	1.1 [0.55]	0.26 [0.52]	0.24 [0.16]			
		Pressure center		1.2 [0.51]	0.24 [0.45]	0.29 [0.14]	0.89	0.47	0.24			

 Note 1) []: denotes normal position.
Note 2) (): Without sub-plate.

Model: Series 10-SY5000

Valve model	Type of actuation		Port size	Flow Characteristics Note 1)						Weight (g) Note 2)			
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			Grommet	L, M plug connector	DIN terminal	W M8 connector
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv				
SY5□40-□-02	2 position	Single	1/4	2.4	0.41	0.64	2.8	0.29	0.66	121(58)	123(61)	154(92)	127(65)
		Double								139(76)	144(81)	186(123)	152(89)
	3 position	Closed center		1.8	0.47	0.50	1.8	0.40	0.47	144(82)	150(87)	192(129)	158(95)
		Exhaust center		1.4	0.55	0.44	3.0 [1.2]	0.33 [0.48]	0.72 [0.37]				
		Pressure center		3.3 [0.84]	0.36 [0.60]	0.85 [0.28]	1.8	0.40	0.48				

 Note 1) []: denotes normal position.
Note 2) (): Without sub-plate.

Model: Series 10-SY7000

Valve model	Type of actuation		Port size	Flow Characteristics Note 1)						Weight (g) Note 2)			
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			Grommet	L, M plug connector	DIN terminal	W M8 connector
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv				
SY7□40-□-02	2 position	Single	1/4	4.1	0.41	1.1	4.1	0.29	1.0	218(89)	221(92)	242(113)	225(96)
		Double								237(108)	242(113)	284(155)	250(121)
	3 position	Closed center		3.0	0.43	0.80	2.6	0.41	0.72	239(110)	245(116)	287(158)	253(124)
		Exhaust center		2.6	0.42	0.71	4.7 [1.7]	0.35 [0.48]	1.1 [0.49]				
		Pressure center		5.3 [2.3]	0.39 [0.49]	1.3 [0.65]	2.2	0.49	0.63				
SY7□40-□-03	2 position	Single	3/8	4.9	0.29	1.2	4.5	0.27	1.1	218(89)	221(92)	242(113)	225(96)
		Double								237(108)	242(113)	284(155)	250(121)
	3 position	Closed center		3.0	0.40	0.80	2.6	0.45	0.73	239(110)	245(116)	287(158)	253(124)
		Exhaust center		2.6	0.42	0.71	4.8 [1.7]	0.35 [0.48]	1.1 [0.49]				
		Pressure center		5.3 [2.3]	0.31 [0.51]	1.3 [0.64]	2.3	0.45	0.66				

 Note 1) []: denotes normal position.
Note 2) (): Without sub-plate.

Model: Series 10-SY9000

Valve model	Type of actuation		Port size	Flow Characteristics Note 1)						Weight (g) Note 2)			
				1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)			Grommet	L, M plug connector	DIN terminal	W M8 connector
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv				
SY9□40-□-03	2 position	Single	3/8	7.9	0.34	2.0	9.6	0.43	2.6	469(172)	472(175)	493(196)	476(179)
		Double								488(191)	494(197)	535(239)	502(205)
	3 position	Closed center		7.5	0.33	1.8	7.3	0.30	1.7	512(215)	518(221)	560(263)	526(229)
		Exhaust center		7.2	0.34	1.7	13 [4.0]	0.23 [0.41]	2.8 [0.95]				
		Pressure center		12 [3.3]	0.26 [0.41]	2.8 [0.84]	6.7	0.40	1.9				
SY9□40-□-04	2 position	Single	1/2	8.0	0.48	2.2	10	0.29	2.5	448(172)	453(175)	472	457(179)
		Double								467(191)	473(197)	515	481(205)
	3 position	Closed center		7.6	0.32	1.8	7.3	0.32	1.8	491(215)	497(221)	539	505(229)
		Exhaust center		7.3	0.42	2.0	13 [4.7]	0.32 [0.54]	3.6 [1.5]				
		Pressure center		12 [3.3]	0.33 [0.51]	3.3 [0.94]	7.4	0.33	1.9				

 Note 1) []: denotes normal position.
Note 2) (): Without sub-plate.

How to Order Connector assemblies for L/M plug connector

How to Order Pilot valve assembly

10—V111—5—G—

Coil specifications

Nil	Standard
T	With power saving circuit (24 VDC, 12 VDC only)

* Power saving circuit is not available in the case of "D", "DO" or "W" type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC 50/60Hz
2	200 VAC 50/60Hz
3	110 VAC 50/60Hz [115 VAC 50/60Hz]
4	220 VAC 50/60Hz [230 VAC 50/60Hz]

* For type "W", DC voltage is only available.

Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (non-polar type)
U	With light/surge voltage suppressor (non-polar type)

* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Electrical entry

G	Grommet (300 mm lead wire)
H	Grommet (600 mm lead wire)
L	L plug connector
LN	With lead wire
LO	Without lead wire
M	M plug connector
MN	With lead wire
MO	Without lead wire
WO	Without connector
W	M8 Connector
	Without connector cable (Note 1)

* For connector cable of M8 connector, refer to page 490.

Note 1) A symbol for cable length is described in □. Please refer to page 491.

For DC: SY100-30-4A—

For 100 V AC: SY100-30-1A—

For 200 V AC: SY100-30-2A—

For other voltages of AC: SY100-30-3A—

Without lead wire: SY100-30-A

(with connector and 2 of sockets only)

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

■DIN terminal type

10—V115—5—D—

Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC 50/60Hz
2	200 VAC 50/60Hz
3	110 VAC 50/60Hz [115 VAC 50/60Hz]
4	220 VAC 50/60Hz [230 VAC 50/60Hz]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.

Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (non-polar type)
Z	With light/surge voltage suppressor (non-polar type)

* DOZ is not available.
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

D	DIN terminal	With connector
DO		Without connector

Note) Do not replace 10-V111 (G, H, L, M) to 10-V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

How to Order M8 Connector cable

■Straight type

V100-49-1—

Cable length

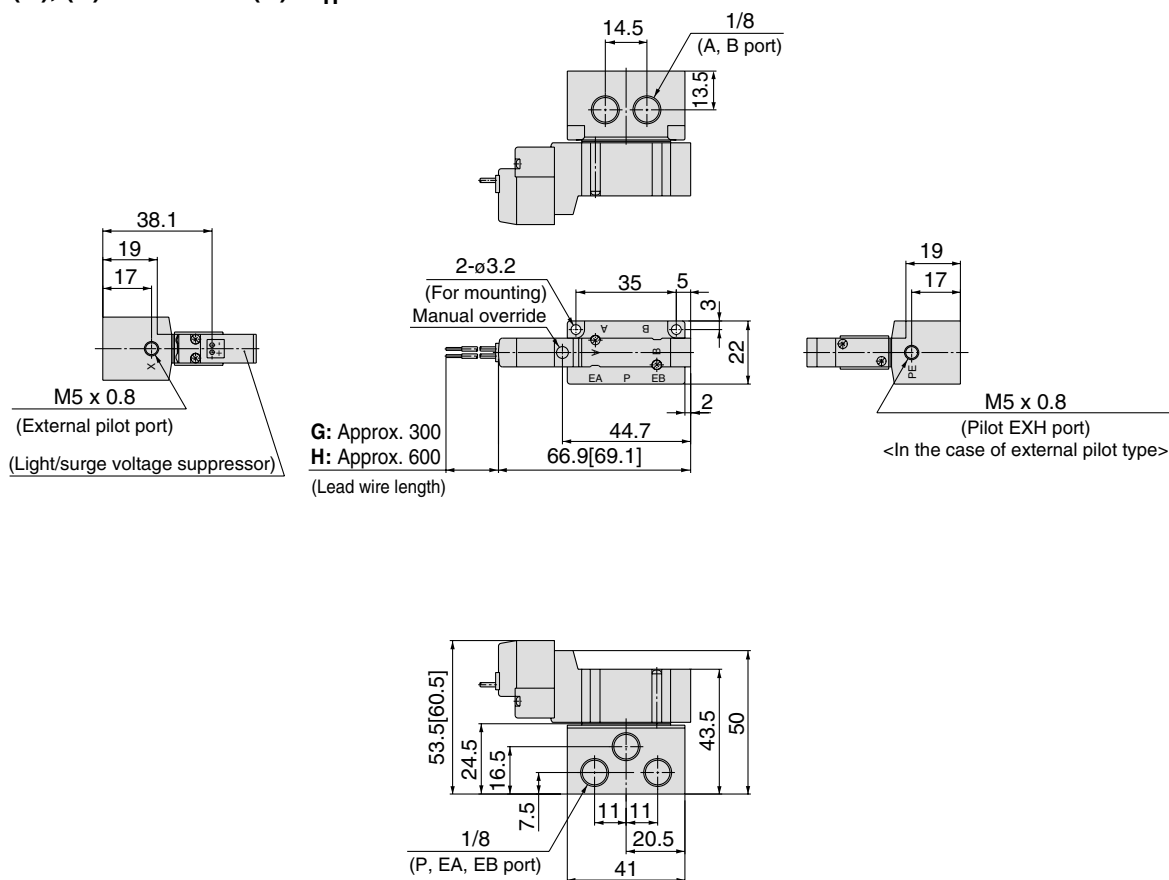
1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm



Dimensions: Series 10-SY3000

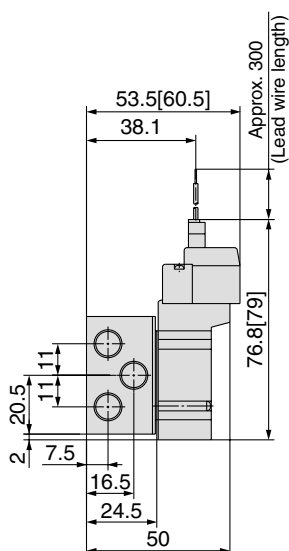
2 position single

Grommet (G), (H): 10-SY3140(R)- ^G_H -01



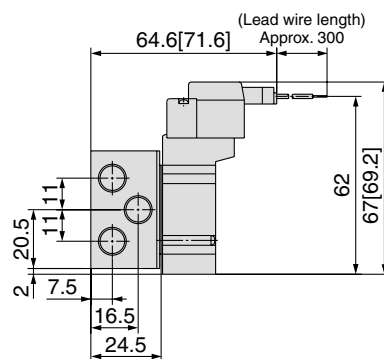
L plug connector (L):

10-SY3140(R)-□L□□-01□



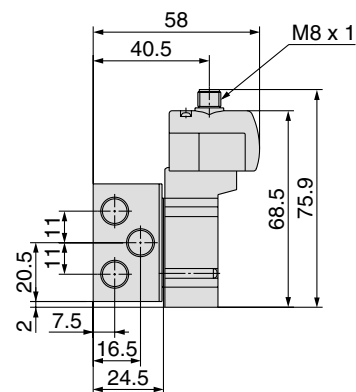
M plug connector (M):

10-SY3140(R)-□M□□-01□



M8 connector (WO):

10-SY3140(R)-□WO□□-01□



Note) Refer to page 490 for dimensions of model with connector.

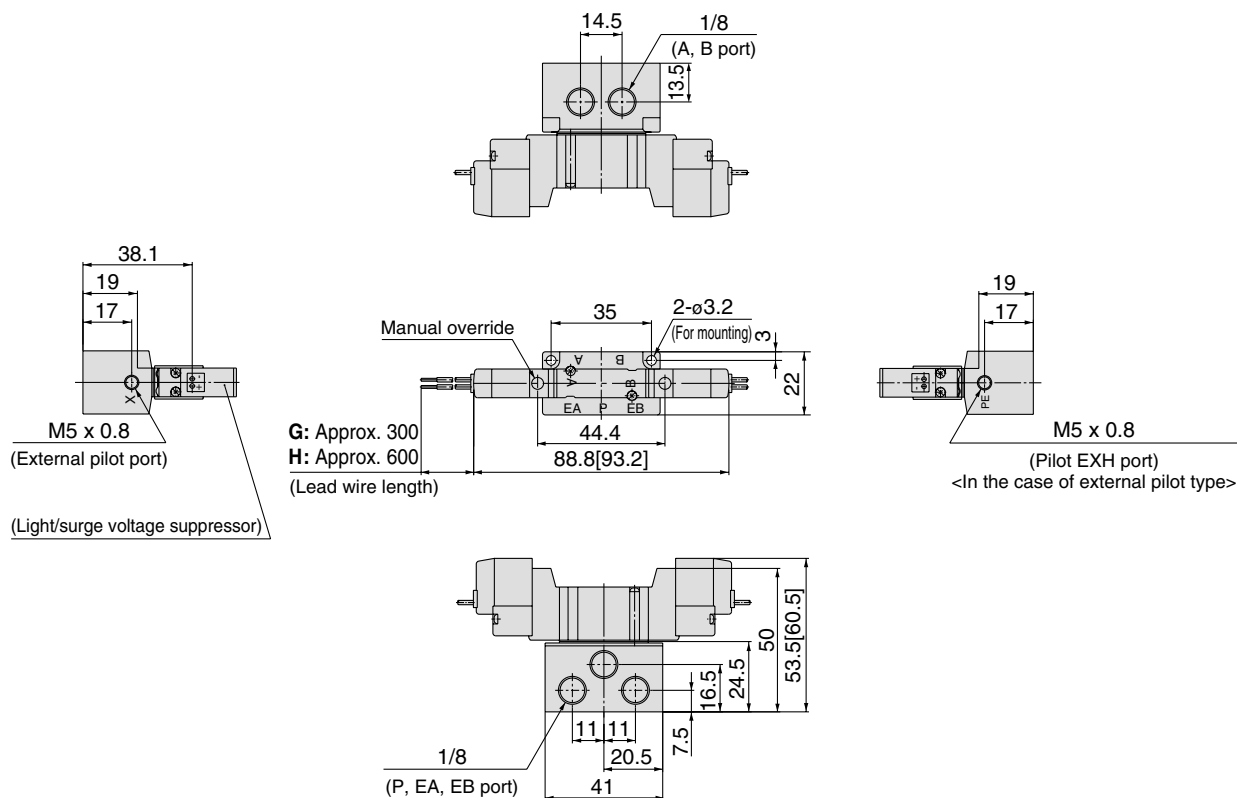
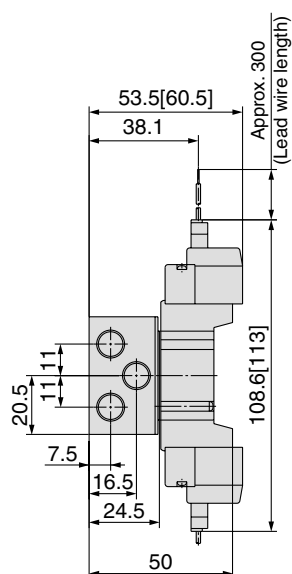
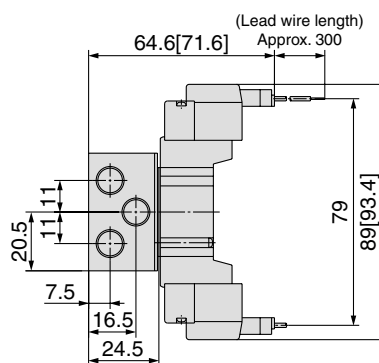
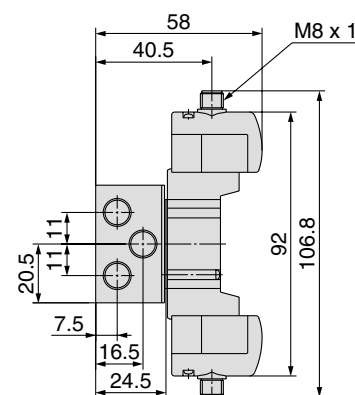


Note) [] : AC

Dimensions: Series 10-SY3000

2 position double

Grommet (G), (H): 10-SY3240(R)-□G□□-01□

L plug connector (L):
10-SY3240(R)-□L□□-01□M plug connector (M):
10-SY3240(R)-□M□□-01□M8 connector (WO)
10-SY3240(R)-□WO□□-01□

Note) Refer to page 490 for dimensions of model with connector.

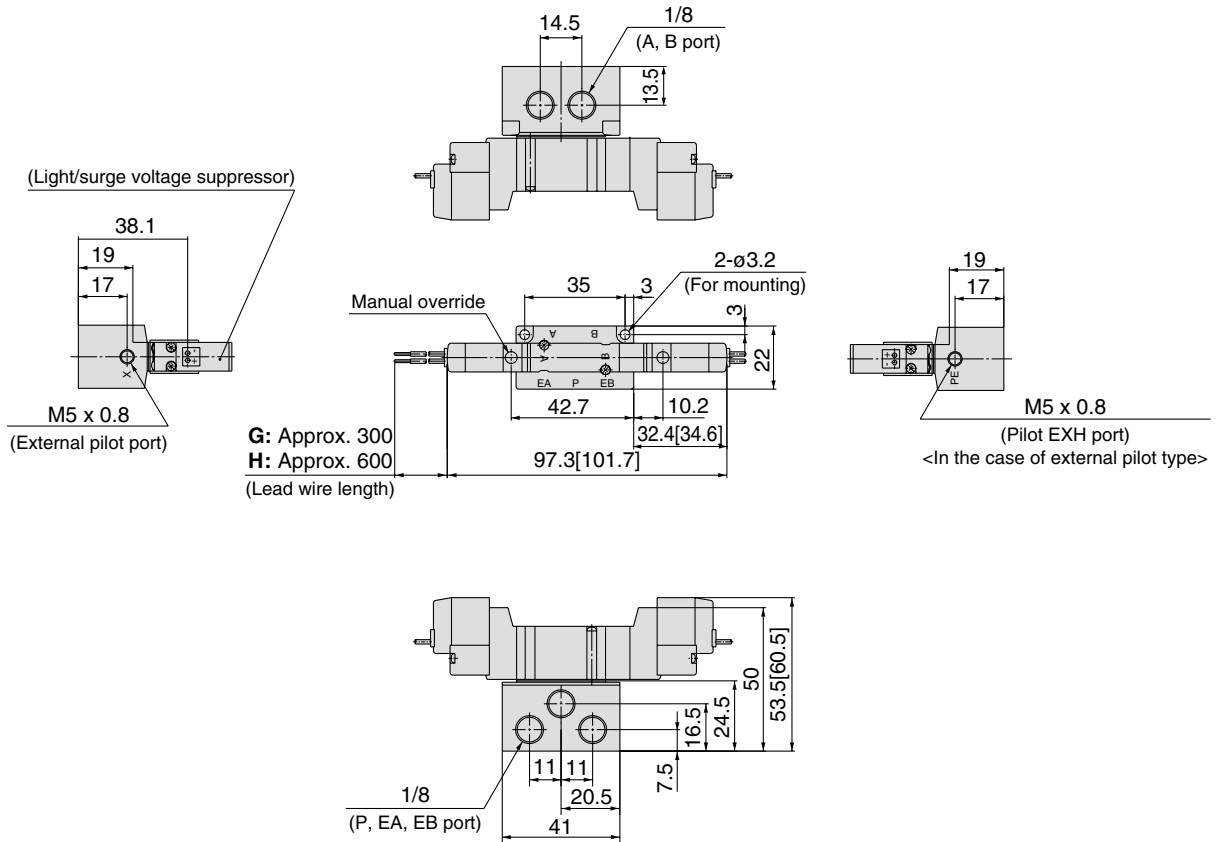
Dimensions: Series 10-SY3000



Note) []: In case of AC

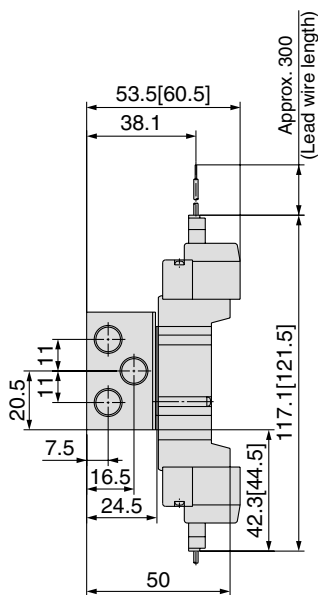
3 position closed center / exhaust center / pressure center

Grommet (G), (H): 10-SY3³/₅40(R)-□G□□-01□



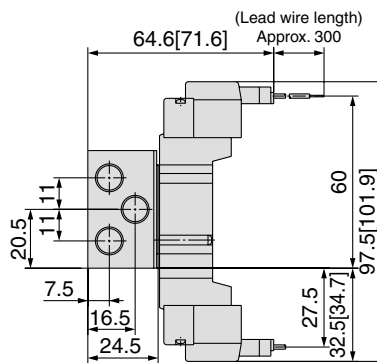
L plug connector (L):

10-SY3³/₅40(R)-□L□□-01□



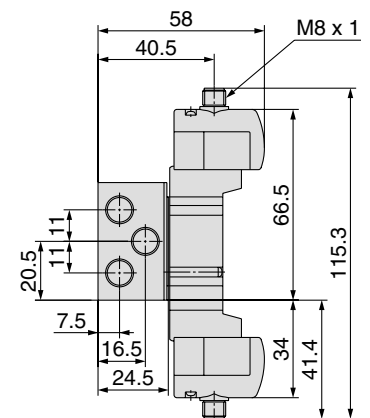
M plug connector (M):

10-SY3³/₅40(R)-□M□□-01□



M8 connector (WO):

10-SY3³/₅40(R)-□WO□□-01□



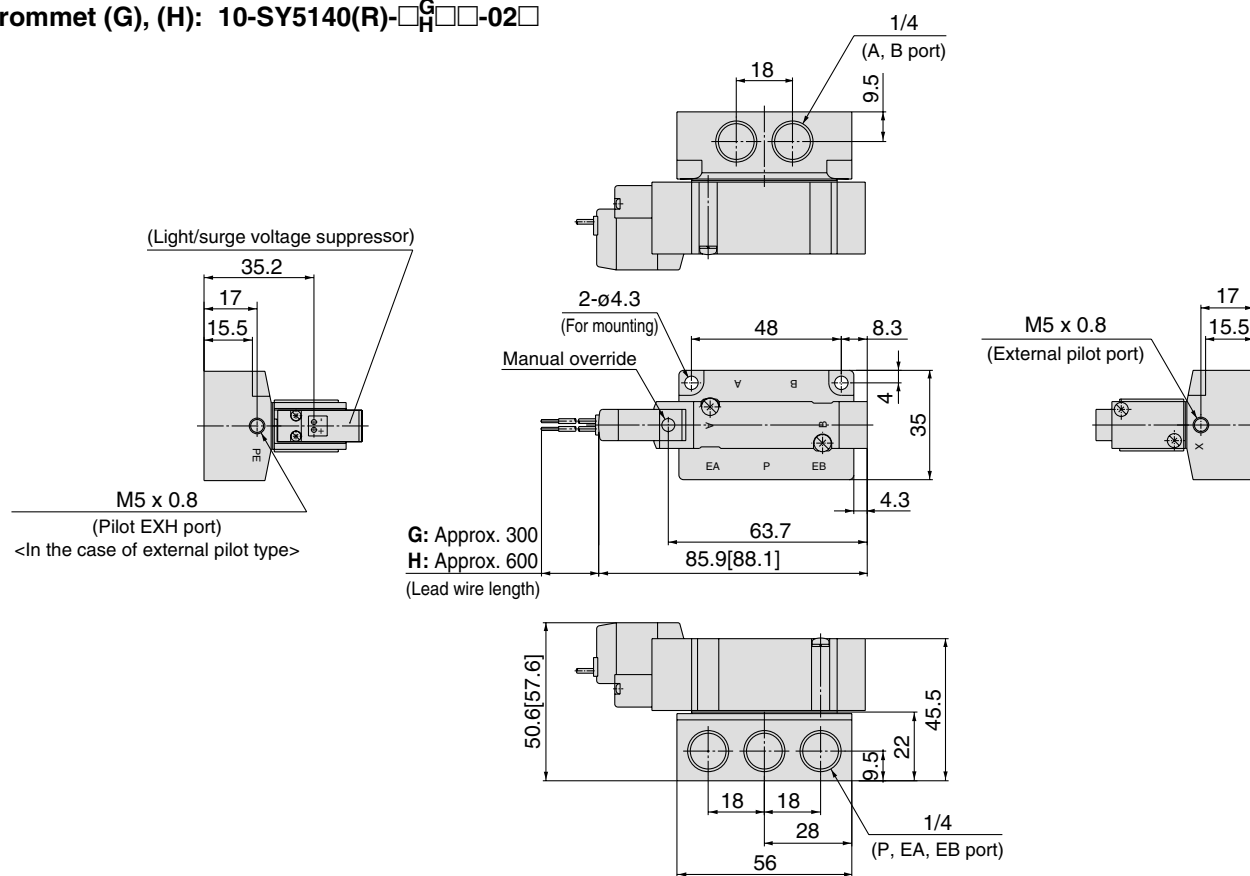
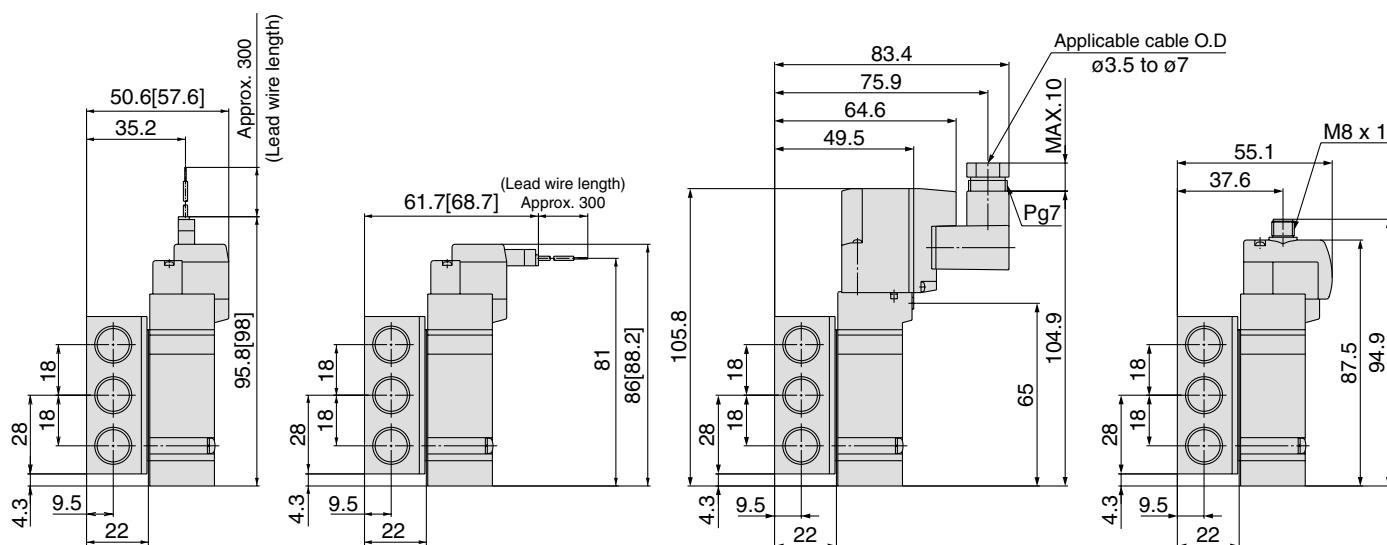
Note) Refer to page 490 for dimensions of model with connector.

Dimensions: Series 10-SY5000



Note) []: In case of AC

2 position single

Grommet (G), (H): 10-SY5140(R)-□^G_H□□-02□L plug connector (L):
10-SY5140(R)-□L□□-02□M plug connector (M):
10-SY5140(R)-□M□□-02□DIN terminal (D):
10-SY5140(R)-□D□□-02□M8 connector (WO):
10-SY5140(R)-□WO□□-02□

Note) Refer to page 490 for dimensions of model with connector.

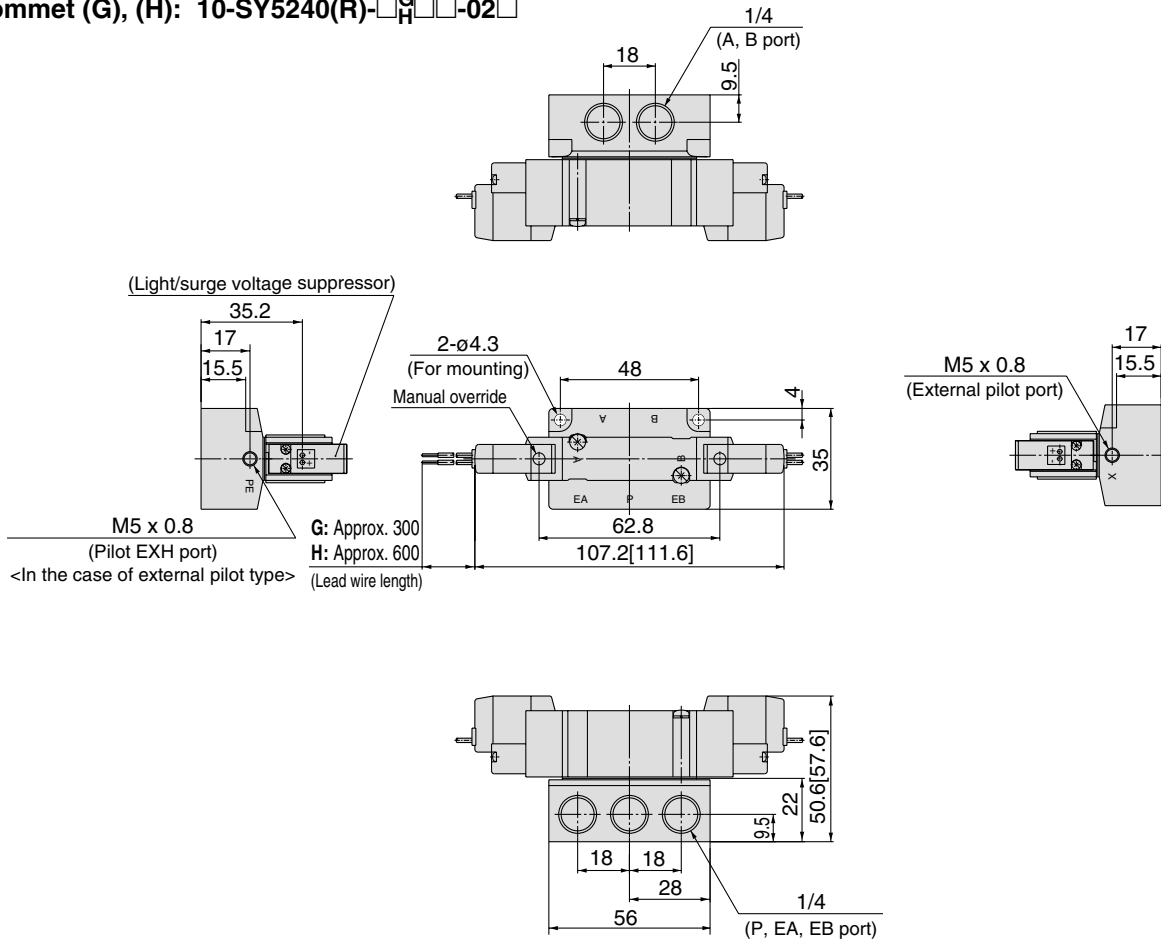
Dimensions: Series 10-SY5000



Note) []: In case of AC

2 position double

Grommet (G), (H): 10-SY5240(R)-□G□□-02□

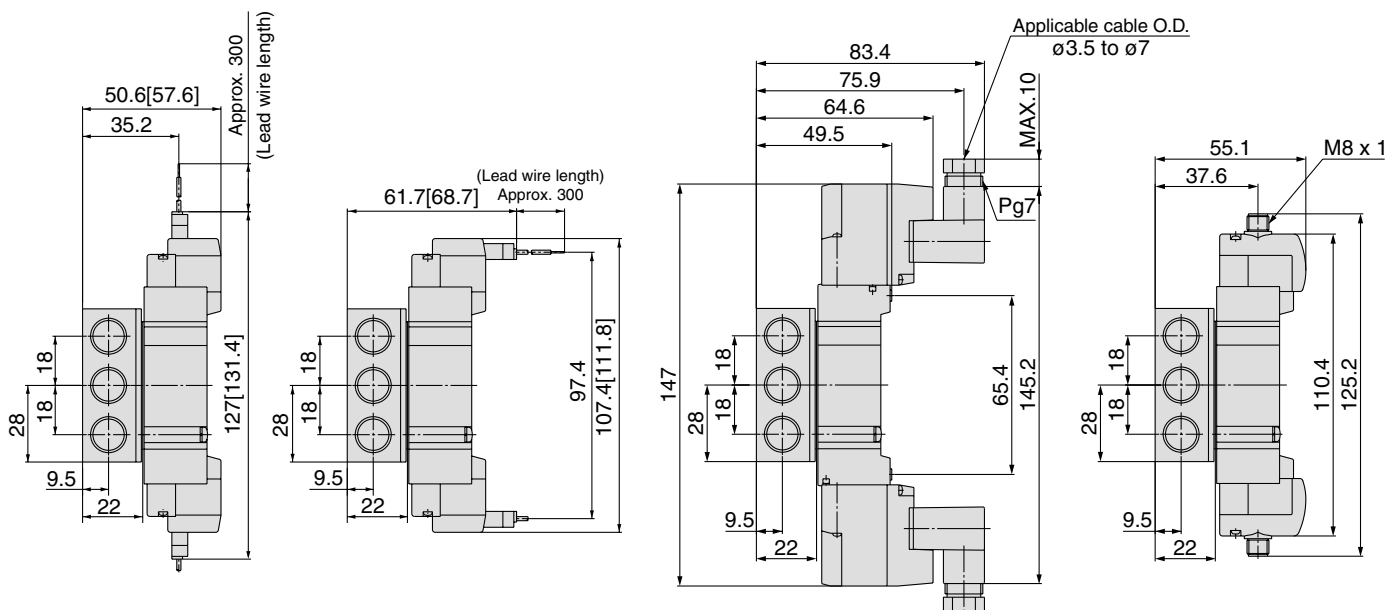


L plug connector (L):
10-SY5240(R)-□L□□-02□

M plug connector (M):
10-SY5240(R)-□M□□-02□

DIN terminal (D):
10-SY5240(R)-□D□□-02□

M8 connector (WO):
10-SY5240(R)-□WO□□-02□



Note) Refer to page 490 for dimensions of connector types.

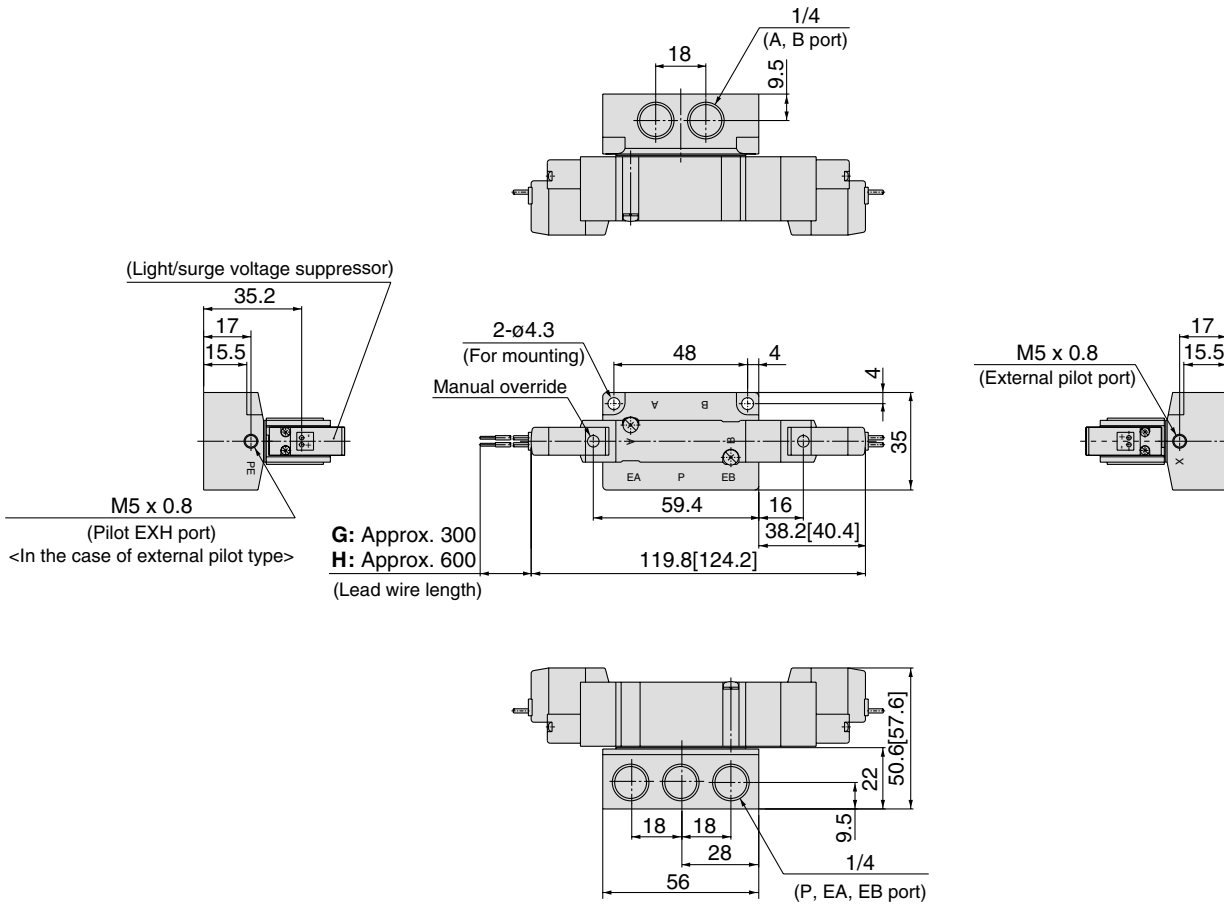
Dimensions: Series 10-SY5000



Note) []: In case of AC

3 position closed center / exhaust center / pressure center

Grommet (G), (H): 10-SY5³/₅40(R)-□G□□-02□



L plug connector (L):

10-SY5³/₅40(R)-□L□□-02□

M plug connector (M):

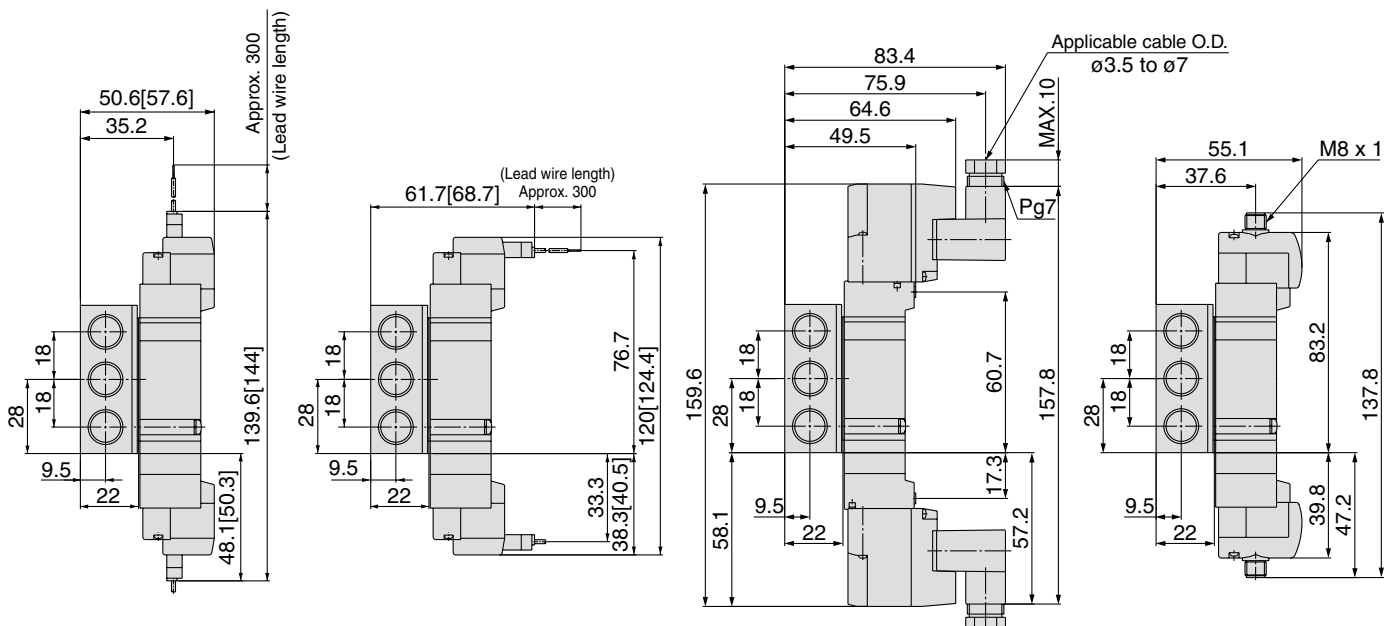
10-SY5³/₅40(R)-□M□□-02□

DIN terminal (D):

10-SY5³/₅40(R)-□D□□-02□

M8 connector (WO)

10-SY5³/₅40(R)-□WO□□-02□



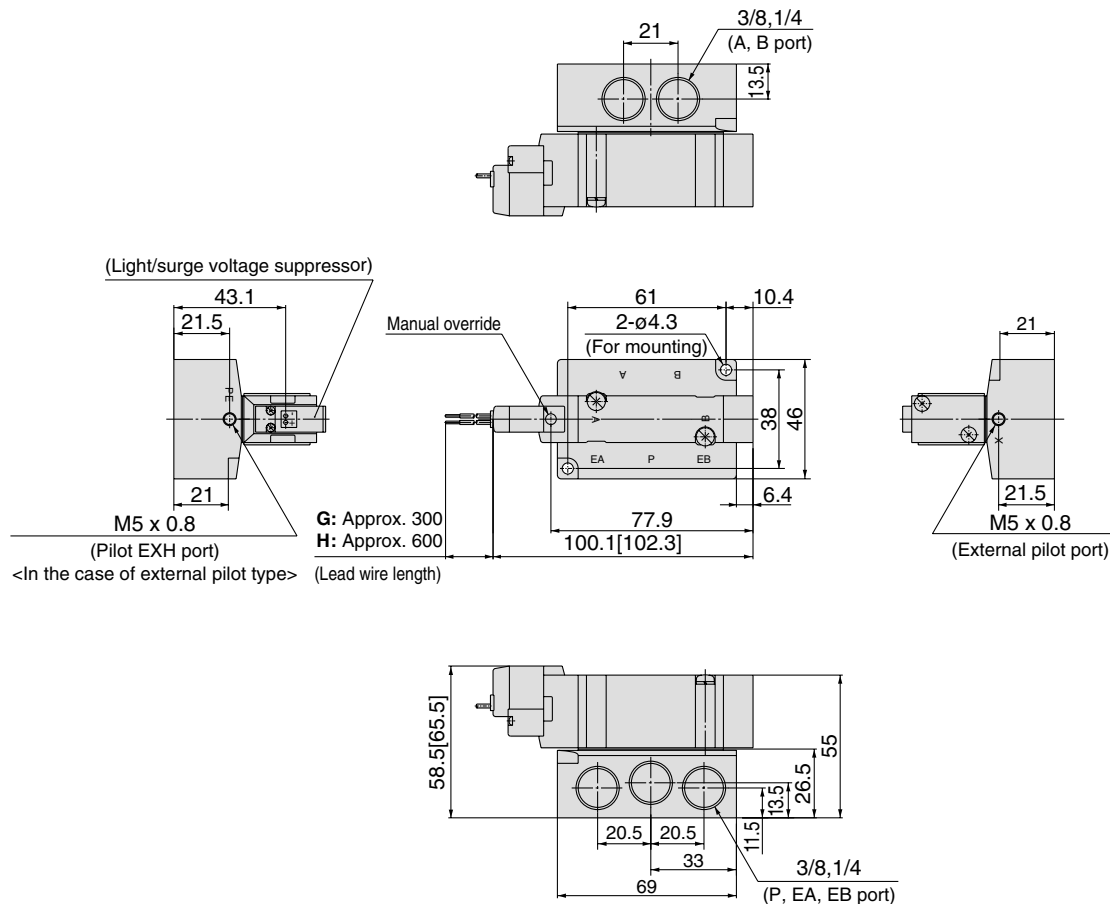
Note) Refer to page 490 for dimensions of model with connector.

Dimensions: Series 10-SY7000

 Note) []: In case of AC

2 position single

Grommet (G), (H): 10-SY7140(R)-□G□□-02□
H□□-03□

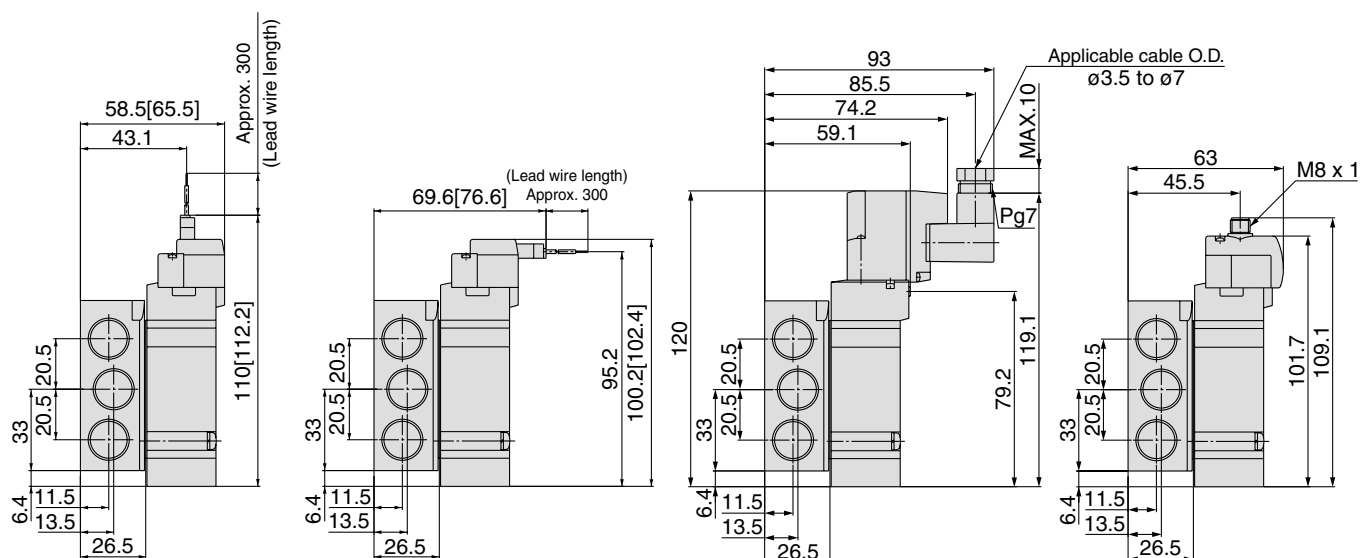


L plug connector (L):
10-SY7140(R)-□L□□-02□
H□□-03□

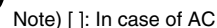
M plug connector (M):
10-SY7140(R)-□M□□-02□
H□□-03□

DIN terminal (D):
10-SY7140(R)-□D□□-02□
H□□-03□

M8 connector (WO):
10-SY7140(R)-□WO□□-02□
H□□-03□



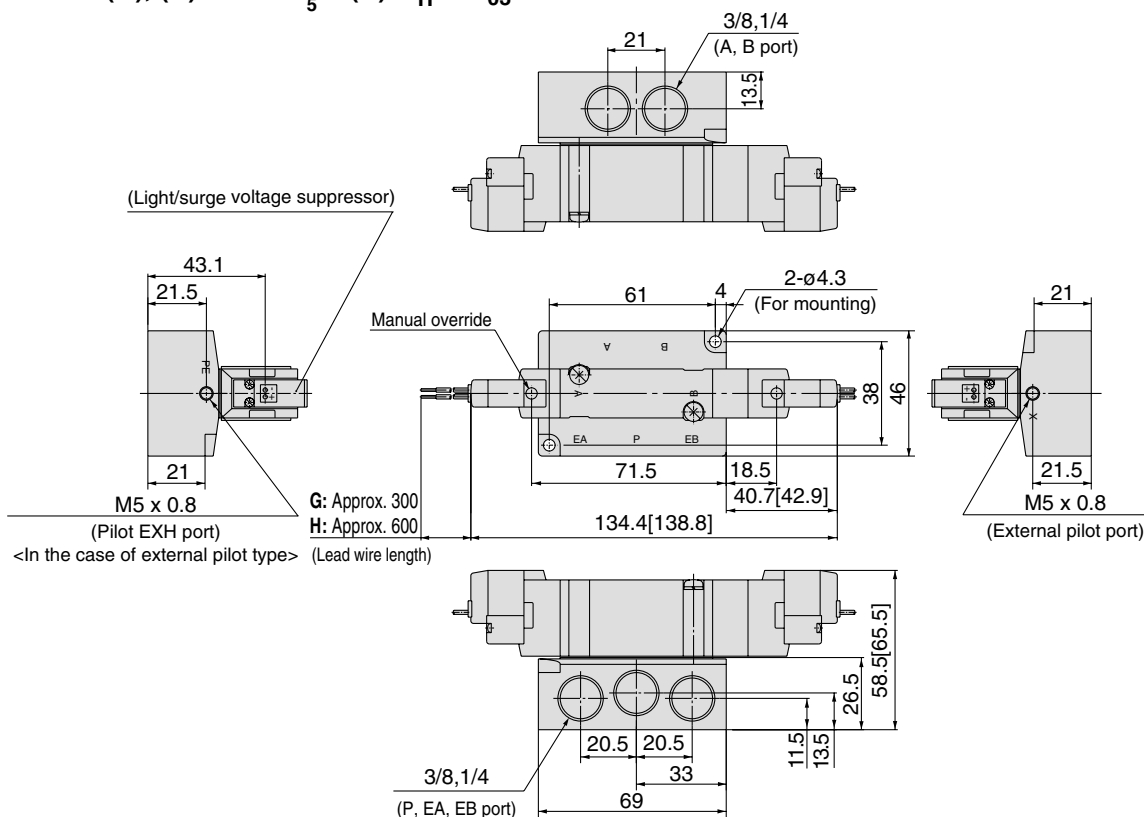
Note) Refer to page 490 for dimensions of model with connector.



Dimensions: Series 10-SY7000

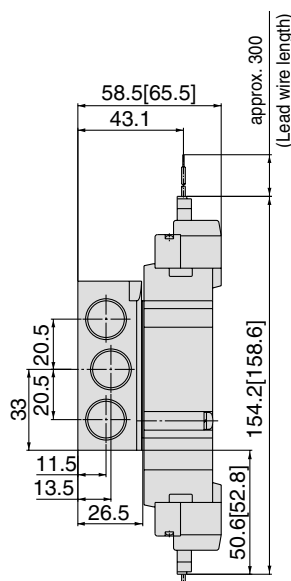
3 position closed center / exhaust center / pressure center

Grommet (G), (H): 10-SY7³₄40(R)-G-02
H-03



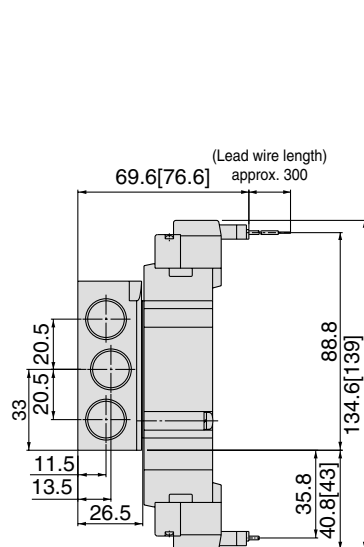
L plug connector (L):

10-SY7³₄₅40(R)-□L□□-02□
03□



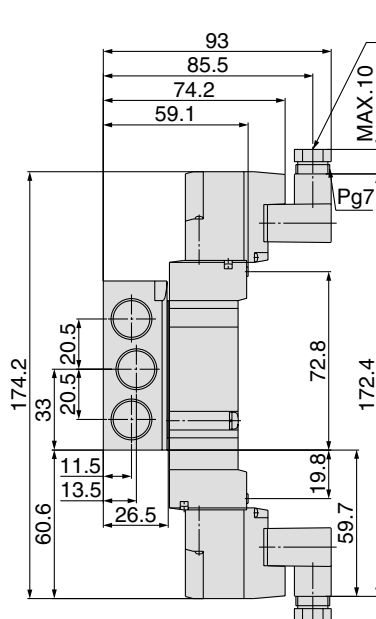
M plug connector (M):

10-SY7³₄⁵40(R)-□M□□-⁰²₀₃□



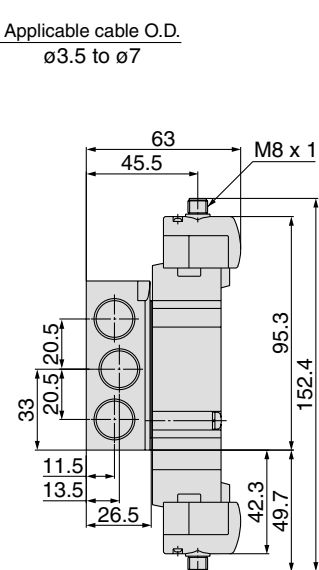
DIN terminal (D):

10-SY7³₄₅40(R)-□D□□-⁰²₀₃□



M8 connector (WO):

10-SY7³₄₅40(R)-□WO□□-⁰²₀₃□



Note) Refer to page 490 for dimensions of connector types.

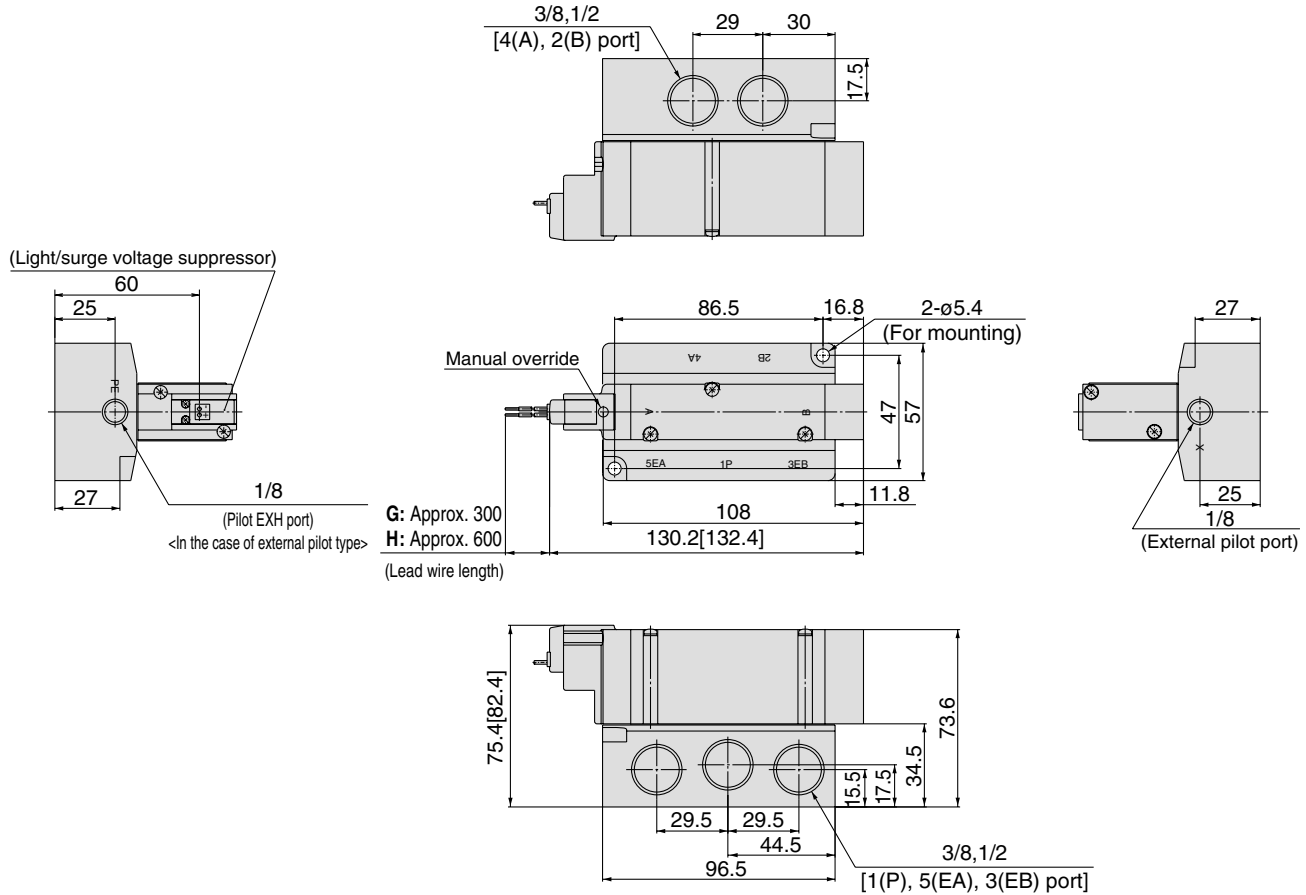
Dimensions: Series 10-SY9000



Note) []: In case of AC

2 position single

Grommet (G), (H): 10-SY9140(R)-□G□□-03□
H□□-04□



L plug connector (L):

10-SY9140(R)-□L□□-03□
□□□-04□

M plug connector (M):

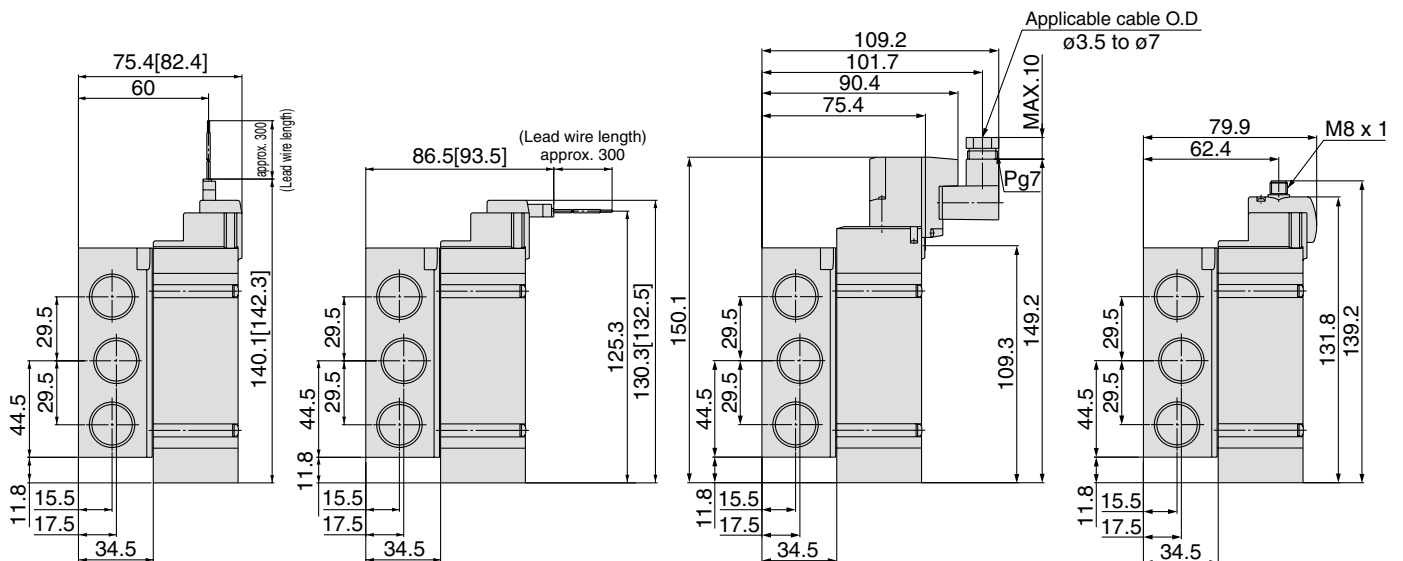
10-SY9140(R)-□M□□-03□
□□□-04□

DIN terminal (D):

10-SY9140(R)-□D□□-03□
□□□-04□

M8 connector (WO):

10-SY9140(R)-□WO□□-03□
□□□-04□



Note) Refer to page 490 for dimensions of connector types.

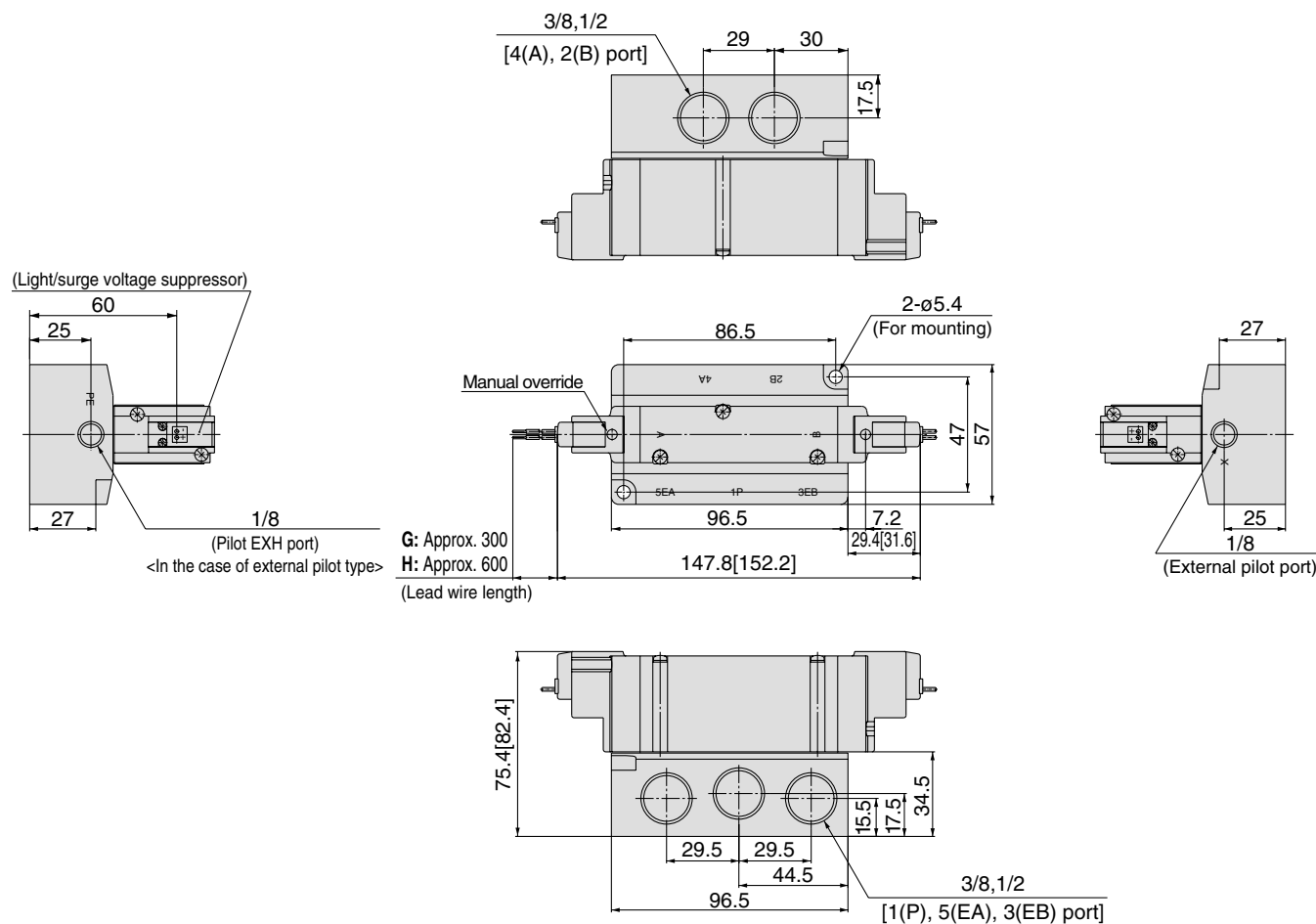
Dimensions: Series 10-SY9000



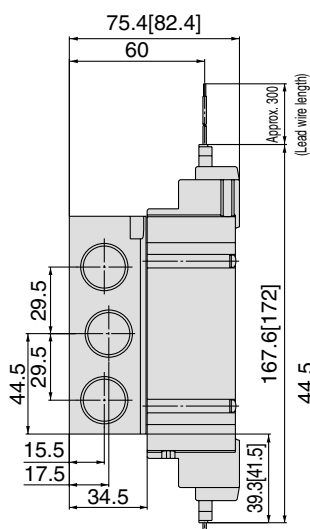
Note) []: In case of AC

2 position double

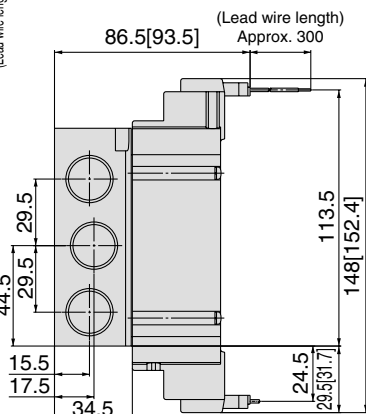
Grommet (G)/(H): 10-SY9240(R)-□^G□^H□□-03□₀₄



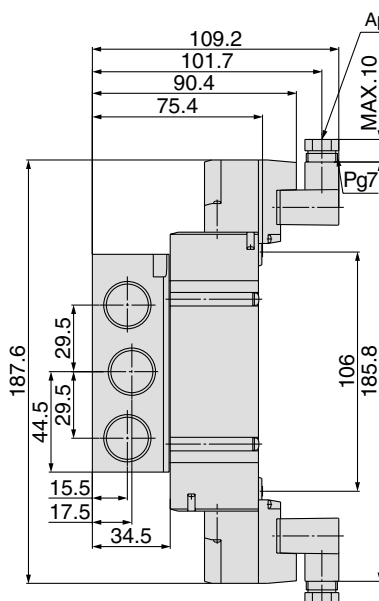
L plug connector (L):
10-SY9240(R)-□L□□-03□₀₄



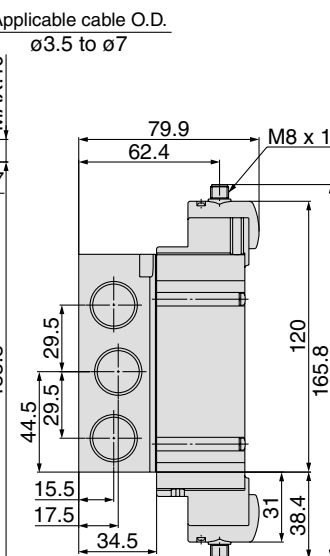
M plug connector (M):
10-SY9240(R)-□M□□-03□₀₄



DIN terminal (D):
10-SY9240(R)-□D□□-03□₀₄



M8 connector (WO):
10-SY9240(R)-□WO□□-03□₀₄



Note) Refer to page 490 for dimensions of connector types.

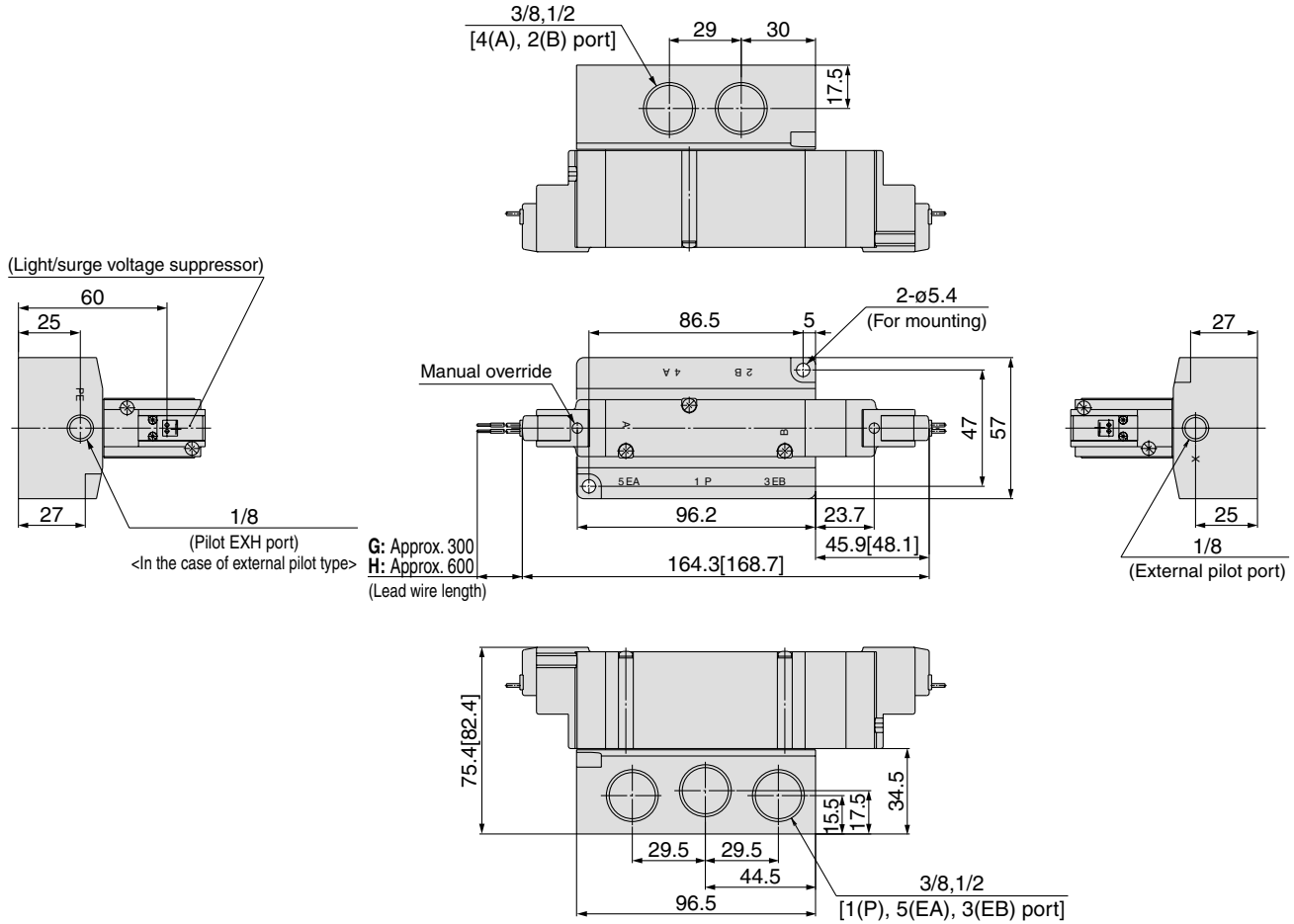
Dimensions: Series 10-SY9000



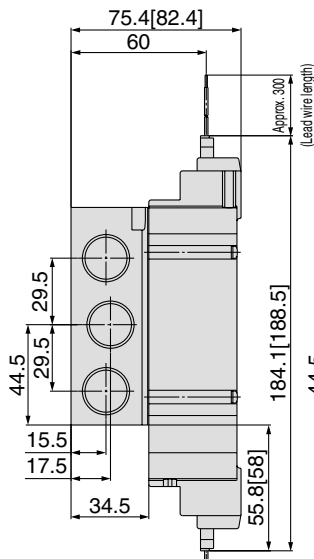
Note) []: In case of AC

3 position closed center / exhaust center / pressure center

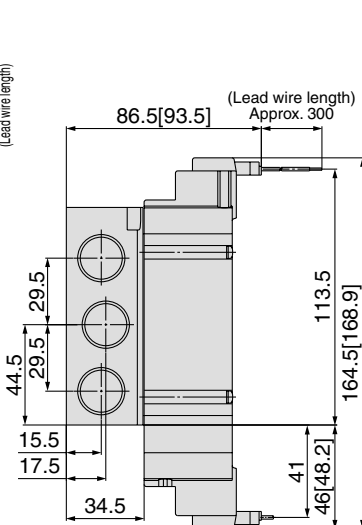
Grommet(G),(H): 10-SY9³₄40(R)-□^G□□-03⁰⁴□



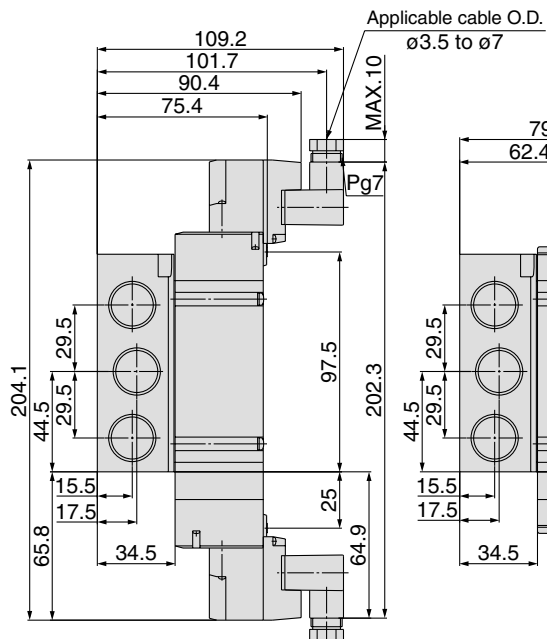
L plug connector (L):
10-SY9³₄40(R)-□^L□□-03⁰⁴□



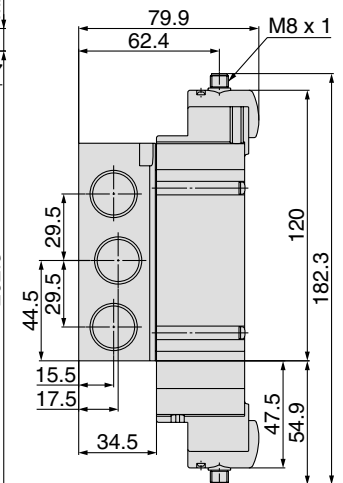
M plug connector (M):
10-SY9³₄40(R)-□^M□□-03⁰⁴□



DIN terminal (D):
10-SY9³₄40(R)-□^D□□-03⁰⁴□



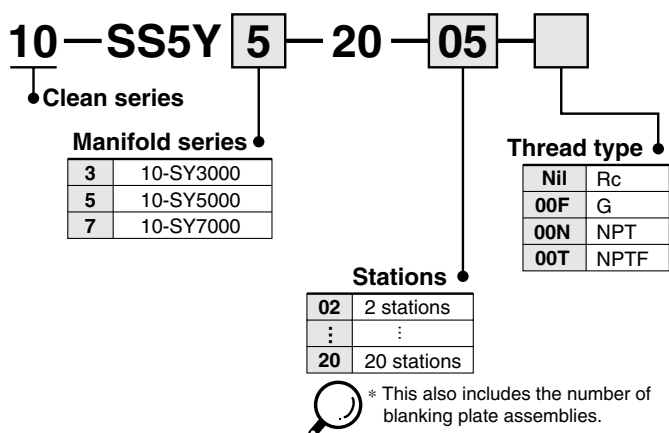
M8 connector (WO):
10-SY9³₄40(R)-□^{WO}□□-03⁰⁴□



Note) Refer to page 490 for dimensions of connector types.

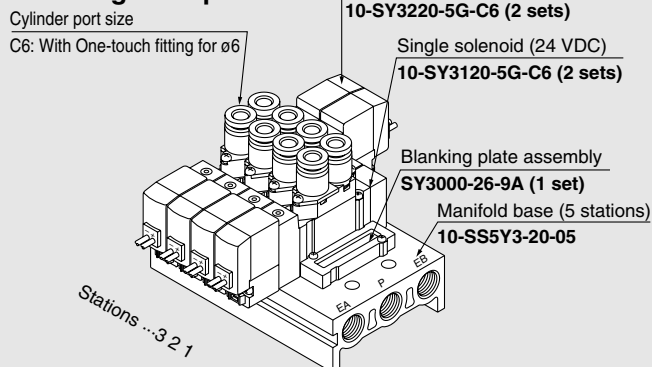
Series 10-SY3000/5000/7000 Type 20 Body Ported Type Manifold Bar Stock / Individual Wiring

How to Order Manifold



How to Order for Manifold Assembly

Ordering example



10-SS5Y3-20-05...1 set (Type 20, 5 stations manifold base part no.)
 * **SY3000-26-9A...1 set (Blanking plate assembly part no.)**
 * **10-SY3120-5G-C6...2 sets (Single solenoid part no.)**
 * **10-SY3220-5G-C6...2 sets (Double solenoid part no.)**

* The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc .

Add the valve and option part numbers in order starting from the first station as shown above. When entry of part numbers becomes complicated, indicate on a manifold specification sheet.

How to Order Valves

10—SY 5 1 20 **5 L** **01**

• **Clean series**

• **Series**

3	10-SY3000
5	10-SY5000
7	10-SY7000

• **Type of actuation**

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

• **Coil specifications**

Nil	Standard
T	With power saving circuit (24 VDC, 12 VDC only)

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

• **Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

* Not including M5

• **A, B port size Thread piping**

Symbol	Port size	Applicable series
M5	M5 x 0.8	10-SY3000
01	1/8	10-SY5000
02	1/4	10-SY7000

• **Manual override**

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

• **Light/surge voltage suppressor**

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (non-polar type)
U	With light/surge voltage suppressor (non-polar type)

* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
 * For "R" and "U", DC voltage is only available.
 * Power saving circuit is only available in the "Z" type.

• **Rated voltage**

DC	AC(50/60Hz)
5	1
6	2
V	3
S	4
R	

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
 * For type "W□", DC voltage is only available.

• **Electrical entry**

24, 12, 6, 5, 3 VDC 100, 110, 200, 220 VAC			24, 12 VDC 100, 110 VAC, 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 Connector
G: Lead wire Length 300 mm H: Lead wire Length 600 mm	L: With lead wire (length 300 mm) LN: Without lead wire LO: Without connector	M: With lead wire (length 300 mm) MN: Without lead wire MO: Without connector	D: With connector DO: Without connector	WO: Without connector cable W□: With connector cable (Note 1)

* "LN", "MN" type: with 2 sockets.
 * For DIN terminal of 10-SY3000 series, refer to page 488.
 * DIN terminal type "Y" conforming to EN-175301-803C (previously DIN43650C) is available, too. For details, refer to page 482.
 * For connector cable of M8 connector, refer to page 490.
 Note 1) A symbol for cable length is described in □. Please refer to page 491.
 (For details, refer to catalog in page 413.)

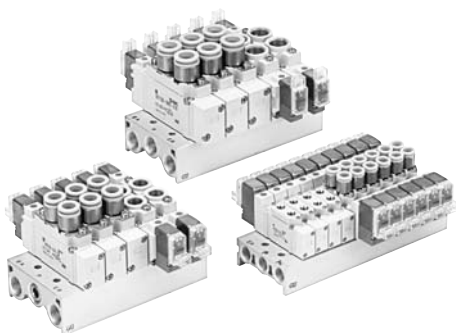
• **One-touch fitting (Metric size)**

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	10-SY3000
C4	One-touch fitting for ø4	10-SY5000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY5000
C8	One-touch fitting for ø8	10-SY7000
C10	One-touch fitting for ø10	10-SY7000

• **One-touch fitting (Inch size)**

Symbol	Port size	Applicable series
N3	Applicable One-touch fittings for ø 5/32"	10-SY3000
N7	Applicable One-touch fittings for ø 1/4"	10-SY3000
N3	Applicable One-touch fittings for ø 5/32"	10-SY5000
N7	Applicable One-touch fittings for ø 1/4"	10-SY5000
N9	Applicable One-touch fittings for ø 5/16"	10-SY5000
N9	Applicable One-touch fittings for ø 5/16"	10-SY7000
N11	Applicable One-touch fittings for ø 3/8"	10-SY7000

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary.
 (For details, refer to catalog in page 413.)



Manifold Specifications

Model	10-SS5Y3-20	10-SS5Y5-20	10-SS5Y7-20
Applicable valve	10-SY3□20	10-SY5□20	10-SY7□20
Manifold type	Single base/B mount		
P (SUP) / R (EXH)	Common SUP, Common EXH		
Valve Stations	2 to 20 stations ^{Note 1)}		
A, B port location	Valve		
Port size	P, EA, EB port	1/8	1/4
	A, B port	M5 x 0.8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	1/8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)
Manifold base weight W (g) n: Stations	W=13n+35	W=36n+64	W=43n+64

- Note 1) For more than 10 stations (more than 5 stations in the case of SS5Y7), supply pressure to P port on both sides and exhaust from EA/EB port on both sides.
Note 2) Refer to "Manifold Option" on page 413.

Flow Characteristics

Model	Port size		Flow Characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5Y3-20	1/8	C6	0.72	0.29	0.18	0.80	0.36	0.21
10-SS5Y5-20	1/4	C8	1.9	0.28	0.48	2.2	0.20	0.53
10-SS5Y7-20	1/4	C10	3.6	0.31	0.93	3.6	0.27	0.88

- Note) The value is for manifold base with 5 stations and individually operated 2 position type.

10-SY3000: 10-SS5Y3-20- Stations - □

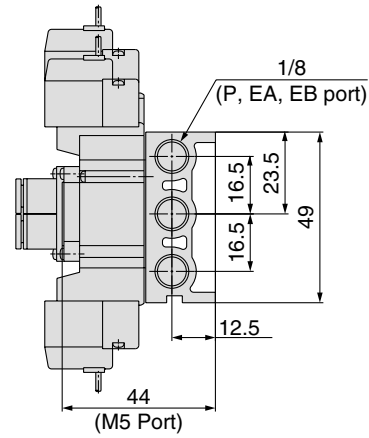
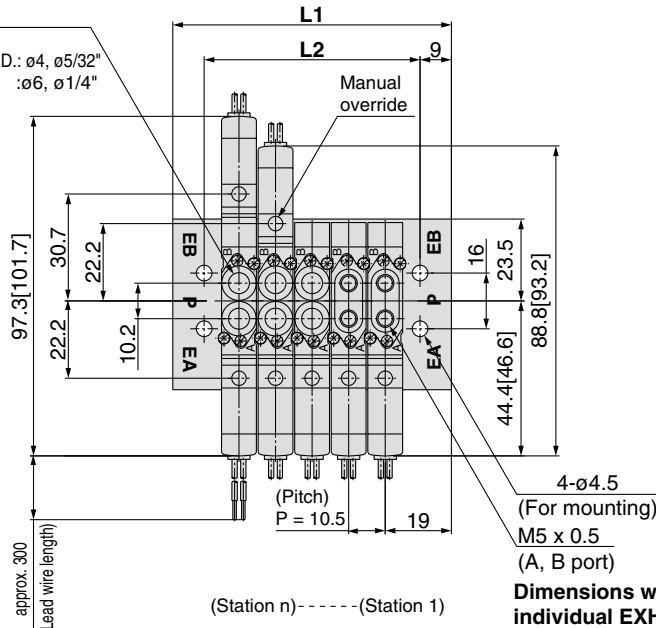
Note) []: In case of AC

Grommet (G)

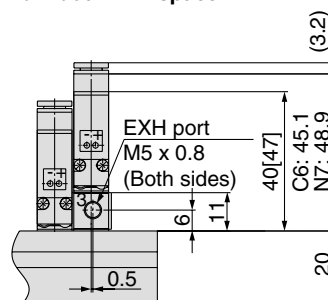
One-touch fitting

(A, B port)

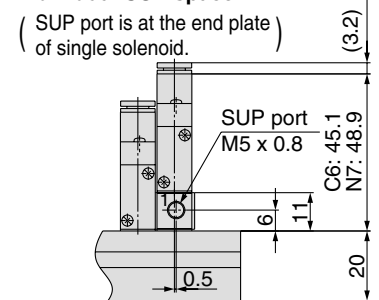
Applicable tubing O.D.: $\phi 4$, $\phi 5/32$ "
: $\phi 6$, $\phi 1/4$ "



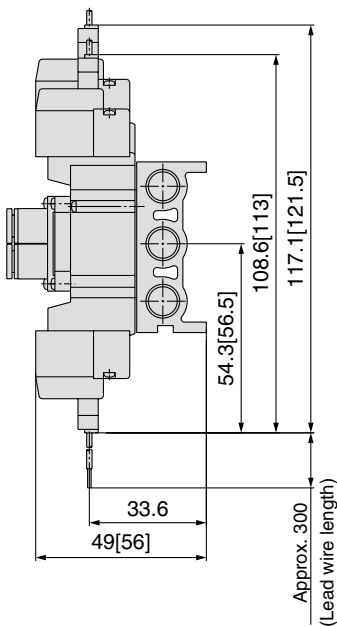
Dimensions when mounting individual EXH spacer



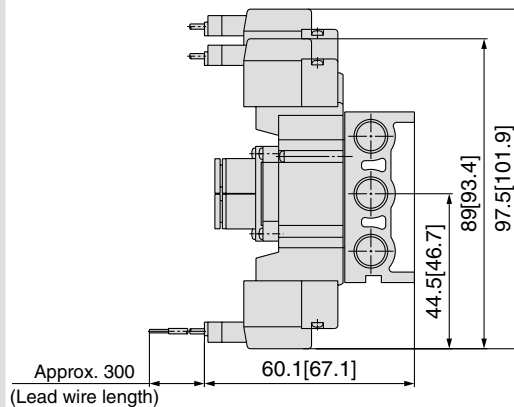
Dimensions when mounting individual SUP spacer



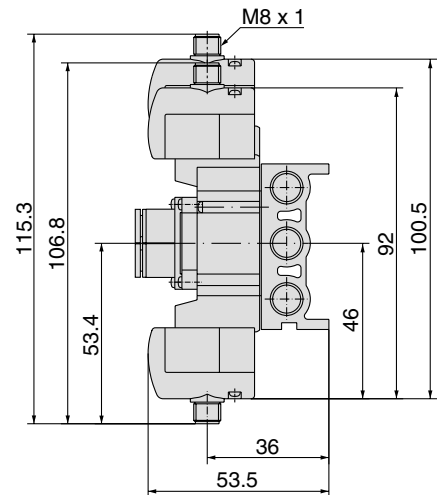
L plug connector (L)



M plug connector (M)

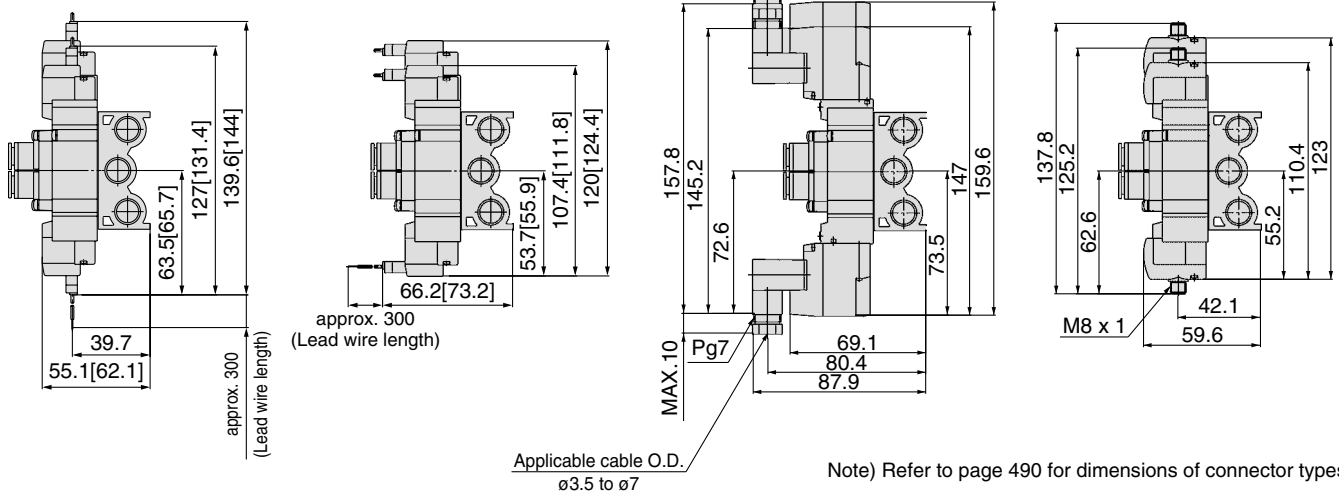
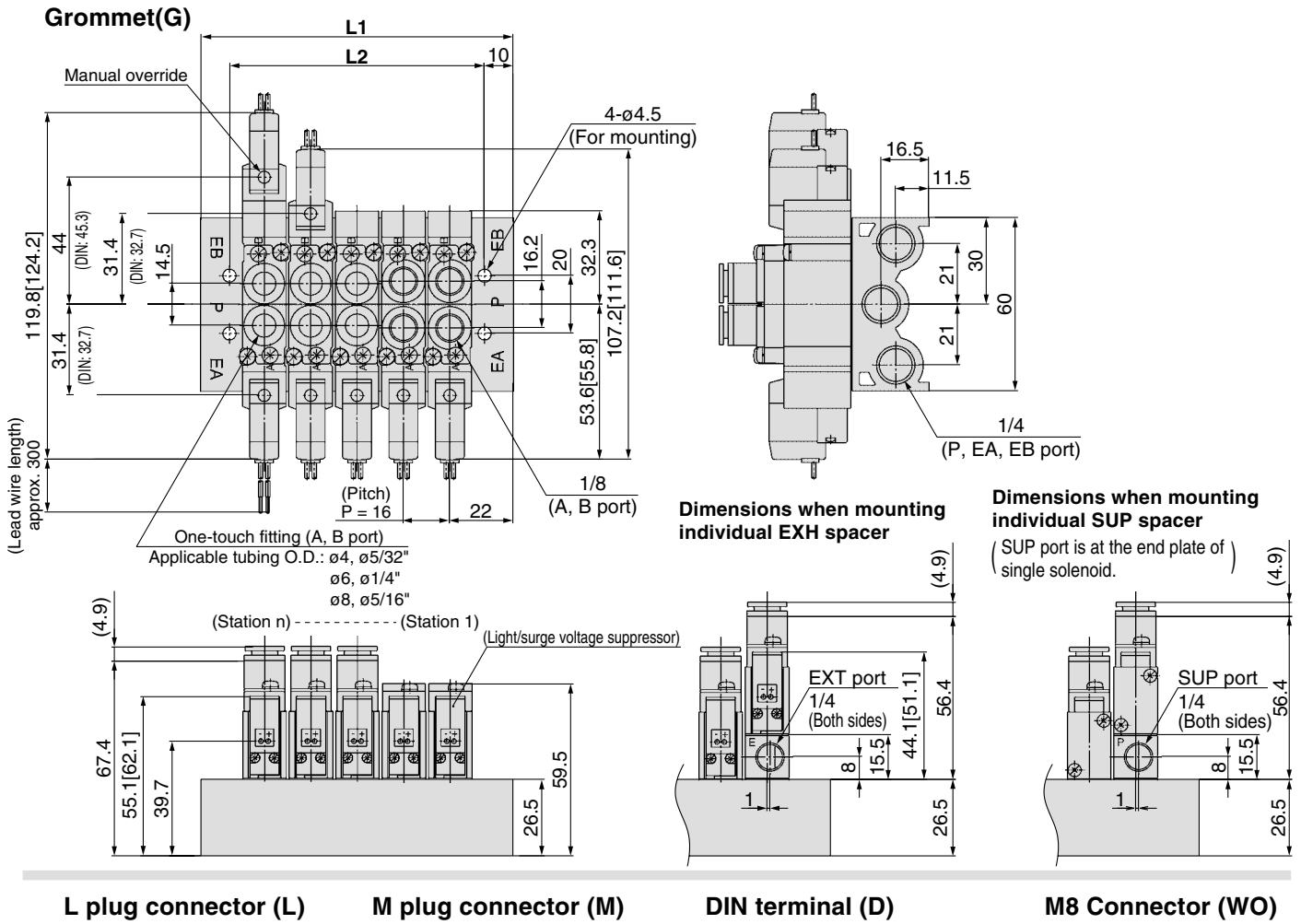
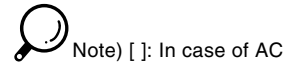


M8 Connector (WO)



Note) Refer to page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5	227	237.5
L2	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5

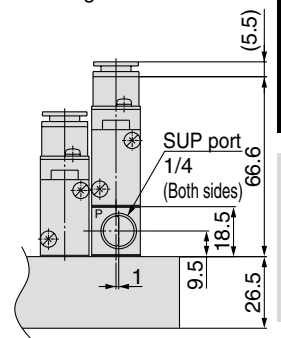
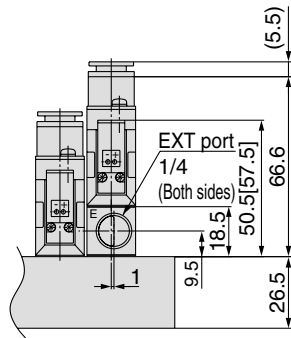
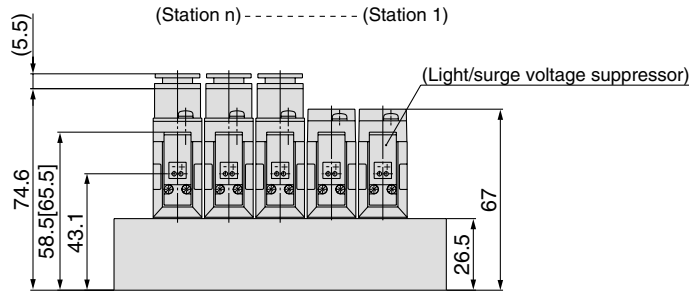
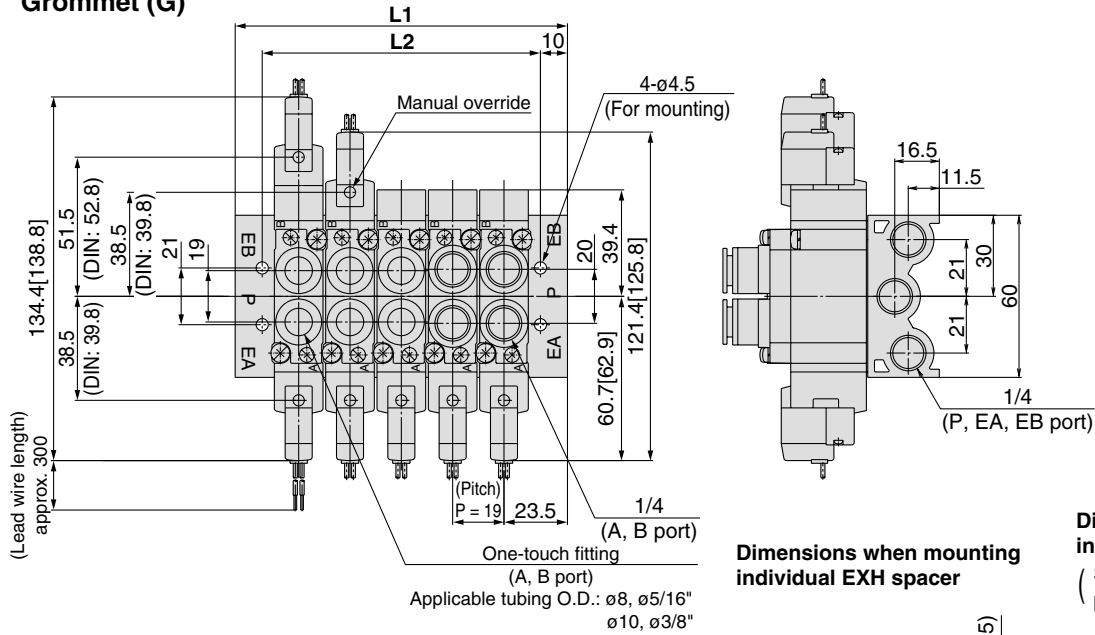


Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	60	76	92	108	124	140	156	172	188	204	220	236	252	268	284	300	316	332	348
L2	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328

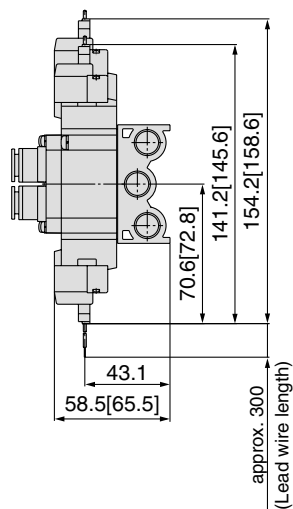
10-SY7000:10-SS5Y7-20- Stations -□

Note) []: In case of AC

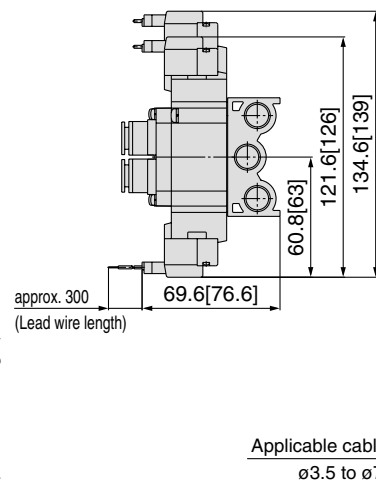
Grommet (G)



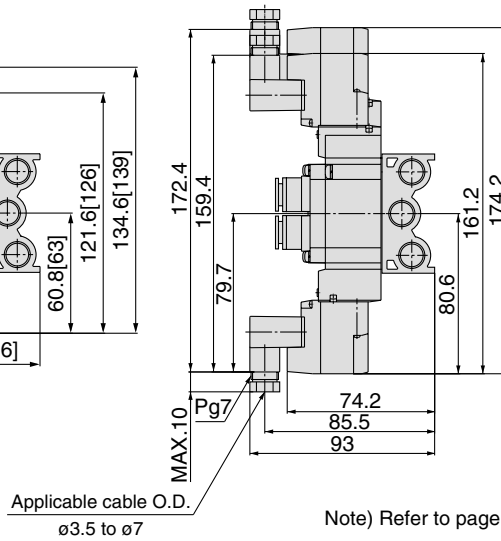
L plug connector (L)



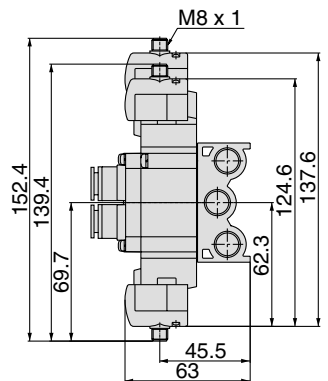
M plug connector (M)



DIN terminal (D)



M8 Connector (WO)



Note) Refer to page 490 for dimensions of connector types.

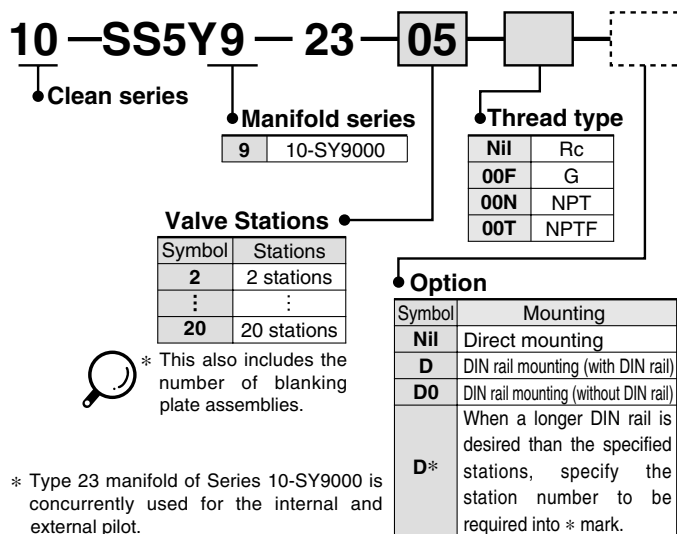
Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	66	85	104	123	142	161	180	199	218	237	256	275	294	313	332	351	370	389	408
L2	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

Series 10-SY9000

Type 23

Body Ported Type Manifold
Stacking type / Individual wiring type

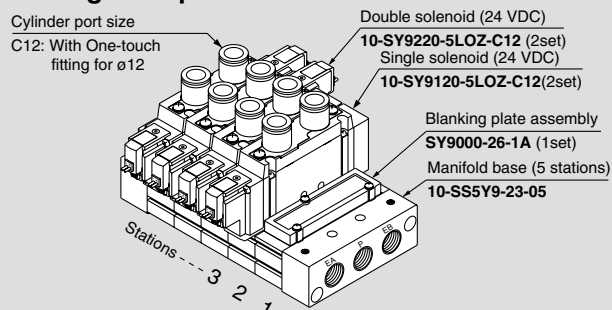
How to Order Manifold



* Type 23 manifold of Series 10-SY9000 is concurrently used for the internal and external pilot.

How to Order for Manifold Assembly

Ordering example



10-SS5Y9-23-05.....1 set (Type 23, 5 stations manifold base part no.)
 *SY9000-26-1A.....1 set (Blanking plate assembly part no.)
 *10-SY9120-5LOZ-C12.....2 sets (Single solenoid part no.)
 *10-SY9220-5LOZ-C12.....2 sets (Double solenoid part no.)
 * The asterisk denotes the symbol for assembly.
 Prefix it to the part nos. of the solenoid valve, etc .

Add the valve and option part numbers in order starting from the first station as shown above. When entry of part numbers becomes complicated, indicate on a manifold specification sheet.

How to Order Valves

10—SY 9 1 20 5 L 02

Clean series

Series

9	10-SY9000
---	-----------

Type of actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Pilot specifications

Nil	Internal pilot
R	External pilot

* In the case of external pilot specifications, it cannot be used as a single unit.

Coil specifications

Nil	Standard
T	With power saving circuit (24 VDC, 12 VDC only)

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage

DC		AC (50/60 Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
V	6 VDC	3	110 VAC [115 VAC]
S	5 VDC	4	220 VAC [230 VAC]
R	3 VDC		

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", only DC voltage is available.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

A, B port size Thread piping

Symbol	Port size
02	1/4
03	3/8

One-touch fitting (Metric size)

Symbol	Port size
C8	One-touch fitting for ø8
C10	One-touch fitting for ø10
C12	One-touch fitting for ø12

One-touch fitting (Inch size)

Symbol	Port size
N9	One-touch fitting for ø 5/16"
N11	One-touch fitting for ø 3/8"

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

Light/Surge voltage suppressor Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (non-polar type)
U	With light/surge voltage suppressor (non-polar type)

* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

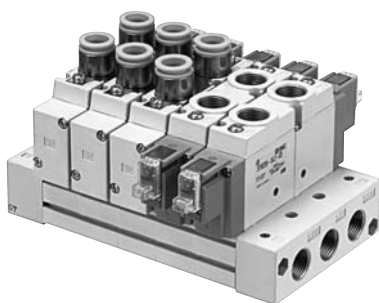
* "DOZ" is not available.
* For AC voltage, there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

24, 12, 6, 5, 3 VDC 100, 110, 200, 220 VAC			24, 12 VDC 100, 110 VAC, 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 Connector
G: Lead wire Length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	D: With connector	WO: Without connector cable
H: Lead wire Length 600 mm	LN: Without lead wire	MN: Without lead wire	DO: Without connector	W□: With connector cable ^{Note 1)}
	LO: Without connector	MO: Without connector		

* "LN", "MN" type: with 2 sockets.
* DIN terminal type "Y" conforming to EN-175301-803C (previously DIN43650C) is available, too. For details, refer to Page 482.
* For connector cable of M8 connector, refer to page 490.
Note 1) Be sure to specify cable length in□. Please refer to page 491.

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary.
(For details, refer to catalog in Page 413.)



Manifold Specifications

Model	10-SS5Y9-23	
Applicable valve	10-SY9□20	
Manifold type	Stacking type	
P (SUP) / R (EXH)	Common SUP, Common EXH	
Valve Stations	2 to 20 stations Note 1)	
A, B port location	Valve	
Port size	P, EA, EB port	$\frac{3}{8}$
	A, B port	$\frac{1}{4}$
		$\frac{3}{8}$
		C8 (One-touch fitting for $\phi 8$) C10 (One-touch fitting for $\phi 10$) C12 (One-touch fitting for $\phi 12$)
Manifold base weight W (g) n: Stations	W=66n+246	



Note 1) For more than 10 stations, supply pressure to P port on both sides and exhaust from EA/EB port on both sides.

Note 2) Refer to "Manifold Option" on Page 413.

Flow Characteristics

Model	Port size		Flow Characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5Y9-23	$\frac{3}{8}$	C12	6.3	0.20	1.5	8.2	0.28	1.9



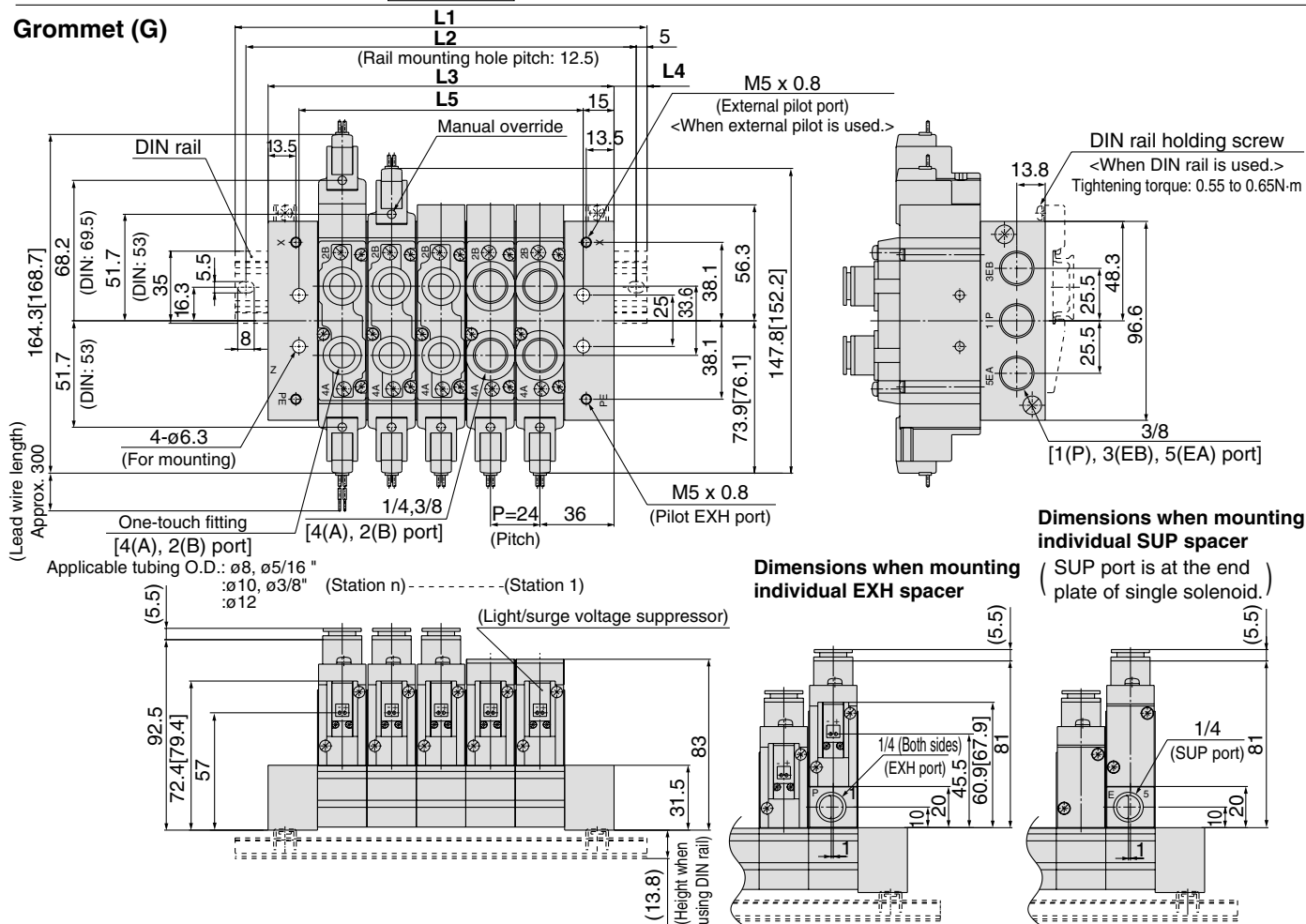
Note) The value is for manifold base with 5 stations and individually operated 2 position type.

10- SY9000: 10-SS5Y9-23- Stations -(D)



Note) [] : In case of AC

Grommet (G)

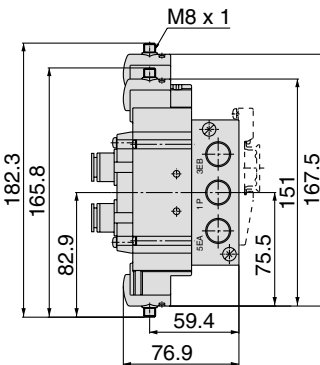
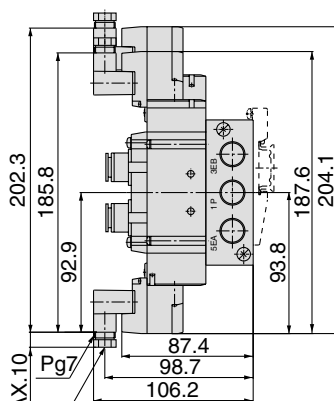
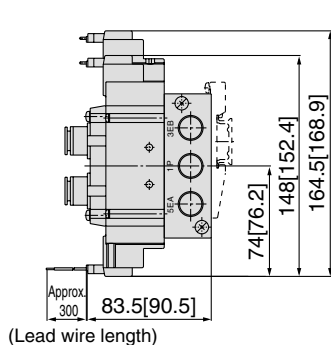
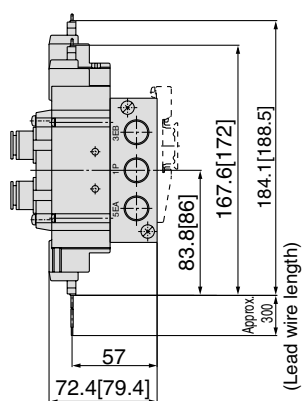


L plug connector (L)

M plug connector (M)

DIN terminal (D)

M8 Connector (WO)



Applicable cable O.D.
ø3.5 to ø7

Note) Refer to Page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	123	148	173	198	223	248	273	298	323	335.5	360.5	385.5	410.5	435.5	460.5	485.5	510.5	535.5	560.5
L2	112.5	137.5	162.5	187.5	212.5	237.5	262.5	287.5	312.5	325	350	375	400	425	450	475	500	525	550
L3	96	120	144	168	192	216	240	264	288	312	336	360	384	408	432	456	480	504	528
L4	13.5	14	14.5	15	15.5	16	16.5	17	17.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5
L5	66	90	114	138	162	186	210	234	258	282	306	330	354	378	402	426	450	474	498



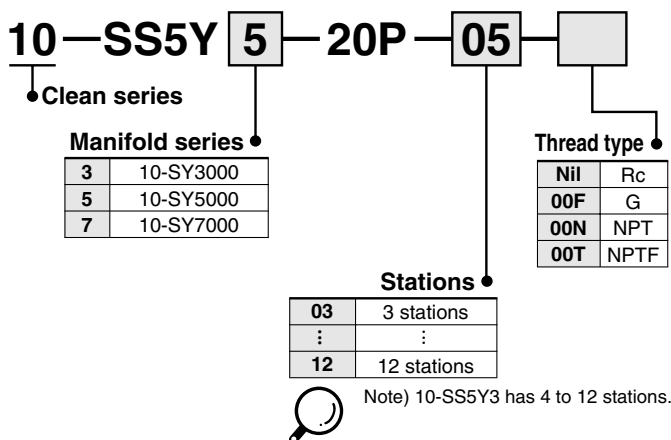
Note) In the case of direct mounting without DIN rail, total width of manifold is L3.

Series 10-SY3000/5000/7000

Type **20P**

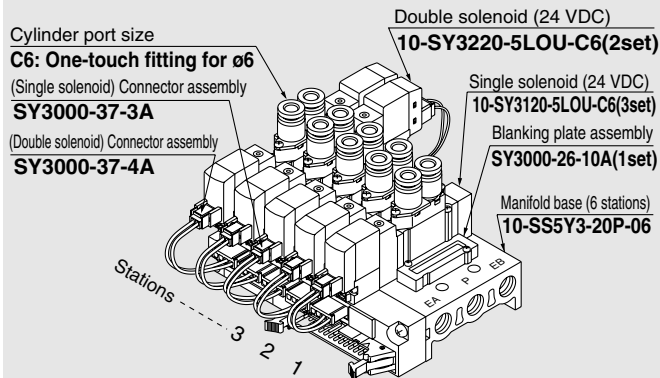
Body Ported Type Manifold
Bar Stock/Flat Ribbon Cable

How to Order Manifold



How to Order for Manifold Assemblies

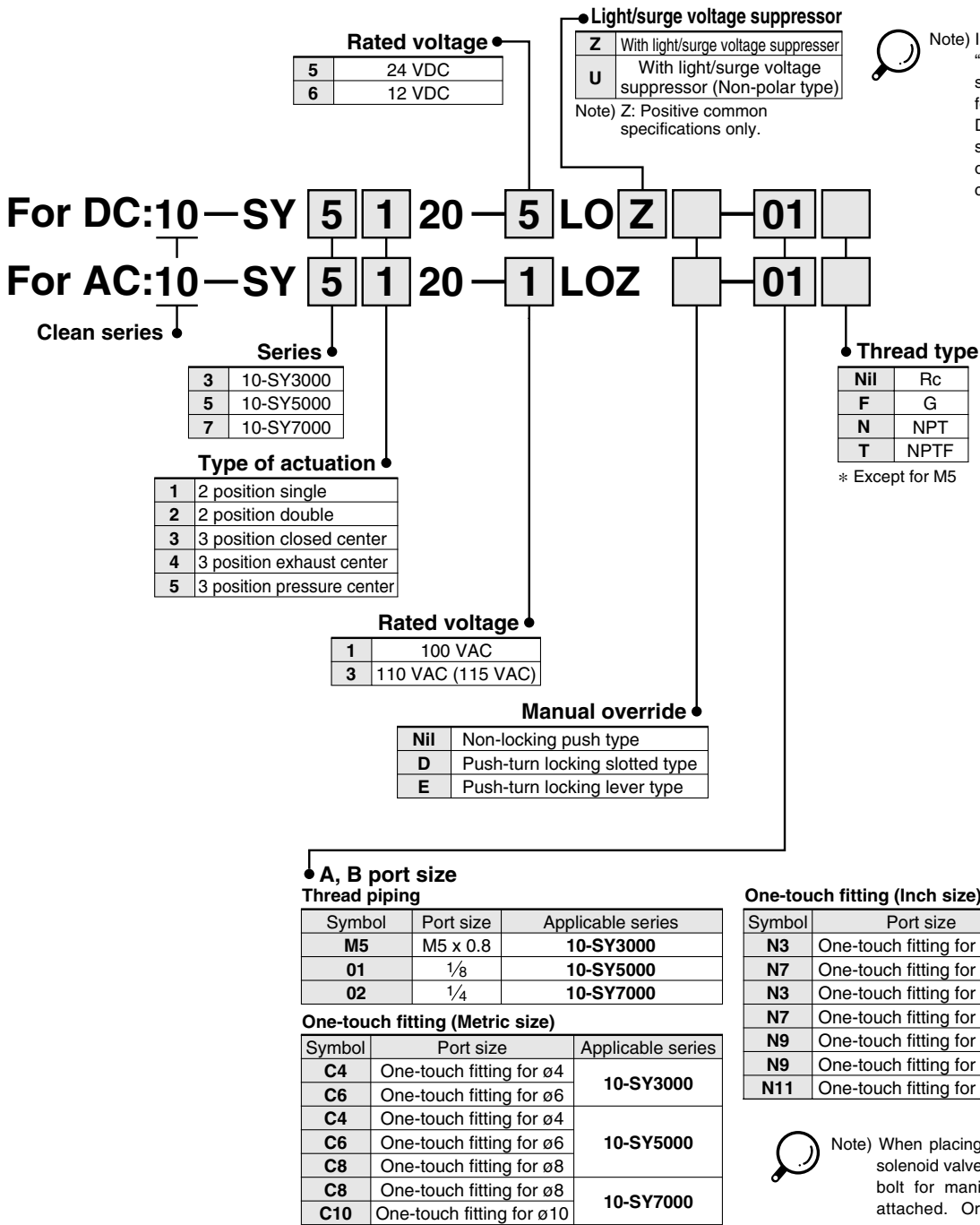
Ordering example



10-SS5Y3-20P-06.....1 set (Type 20, 6 stations manifold part no.)
 * SY3000-26-10A.....1 set (Blanking plate assembly part no.)
 * 10-SY3120-5LOU-C6.....3 sets (Single solenoid part no.)
 * 10-SY3220-5LOU-C6.....2 sets (Double solenoid part no.)
 * SY3000-37-3A.....3 sets (Connector assembly part no.)
 * SY3000-37-4A.....2 sets (Connector assembly part no.)
 * The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part number under the manifold base part number.
In the case of complex arrangement, specify them on the manifold specification sheet.

How to Order Valves



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

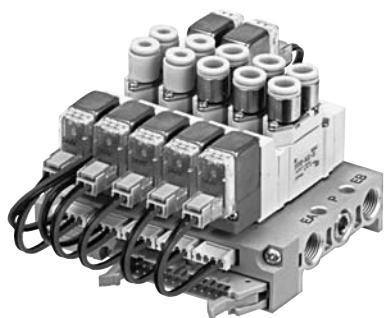
Pressure switch

Clean gas filter

Type **20P** Body ported type **10-SY3000/5000/7000**

- Multiple valve wiring is simplified through the use of the flat cable connector
- Clean appearance

In the case of a flat ribbon cable type, each valve is wired on the print board of manifold base to allow the external wiring to be piped all together with 26 pins MIL connector.



Manifold Specifications

Model	10-SS5Y3-20P	10-SS5Y5-20P	10-SS5Y7-20P
Applicable valve	10-SY3□20	10-SY5□20	10-SY7□20
Manifold type	Single base / B mount		
P (SUP) / R (EXH)	Common SUP, Common EXH		
Valve Stations	4 to 12 stations Note 1)	3 to 12 stations Note 1)	
A, B port location	Valve		
Port size	P, EA, EB port	1/8	1/4
	A, B port	M5 x 0.8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	1/8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)
C8 (One-touch fitting for ø8) C10 (One-touch fitting for ø10)			
Manifold base weight W (g) n: Stations	W=19n+45	W=43n+77	W=51n+81
Applicable flat ribbon cable connector	Flat ribbon cable connector, Socket: 26 pins MIL type with strain relief, Conforming to MIL-C-83503		
Internal wiring	In common between +COM and –COM (Z type: +COM only).		
Rated voltage	12, 24 VDC 100, 110 VAC		



Note 1) For more than 10 stations (more than 5 stations in the case of 10-SS5Y7), supply pressure to P port on both sides and exhaust from EA/EB port on both sides.

Note 2) The withstand voltage specification for the wiring unit section is JIS C 0704, Grade 1 or its equivalent.

Note 3) Refer to "Manifold Option" on Page 413.

Flow Characteristics

Model	Port size		Flow Characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5Y3-20P	1/8	C6	0.72	0.29	0.18	0.80	0.36	0.21
10-SS5Y5-20P	1/4	C8	1.9	0.28	0.48	2.2	0.20	0.53
10-SS5Y7-20P	1/4	C10	3.6	0.31	0.93	3.6	0.27	0.88



Note) The value is for manifold base with 5 stations and individually operated 2 position type.

How to Order Connector Assembly

For 12, 24 VDC

Specifications	For 10-SY3000	For 10-SY5000/7000
For single solenoid	SY3000-37-3A	SY5000-37-3A
Double solenoid, 3 position	SY3000-37-4A	SY5000-37-4A
Single with spacer assembly	SY5000-37-3A	SY5000-37-5A
Double, 3 position with spacer assembly	SY3000-37-6A	SY5000-37-6A

For 100 VAC

Specifications	For 10-SY3000	For 10-SY5000/7000
For single solenoid	SY3000-37-32A	SY5000-37-15A
Double solenoid, 3 position	SY3000-37-33A	SY5000-37-16A
Single with spacer assembly	SY5000-37-15A	SY5000-37-17A
Double, 3 position with spacer assembly	SY3000-37-34A	SY5000-37-18A

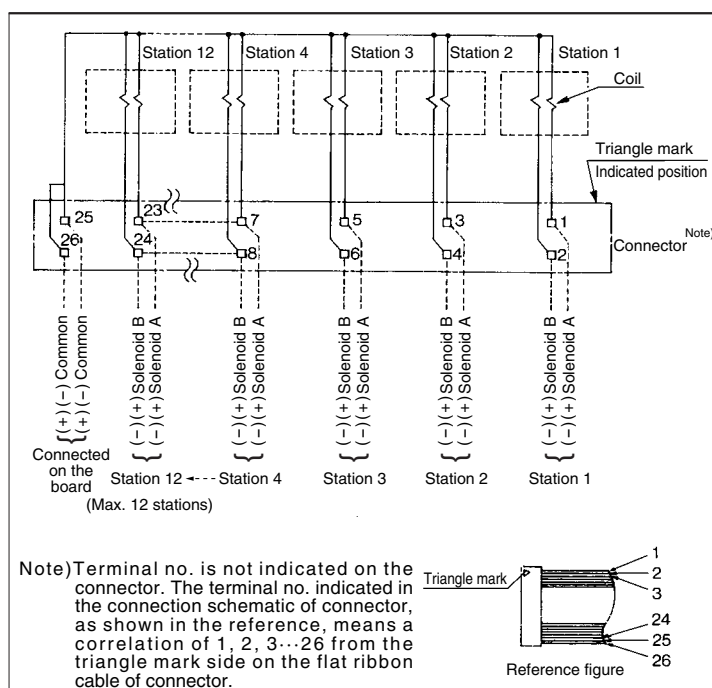
110 VAC (115 VAC)

Specifications	For 10-SY3000	For 10-SY5000/7000
For single solenoid	SY3000-37-35A	SY5000-37-19A
Double solenoid, 3 position type	SY3000-37-36A	SY5000-37-20A
Single with spacer assembly	SY5000-37-19A	SY5000-37-21A
Double, 3 position with spacer assembly	SY3000-37-37A	SY5000-37-22A

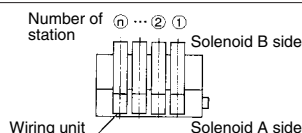
⚠ Caution

- For non-polar (U) valves, the electrical DC connections can be used with either positive and negative COM. For type (Z), only use with positive COM as the valve does not operate correctly when used with negative COM.

Internal Wiring of Manifold (Non-polar Type)

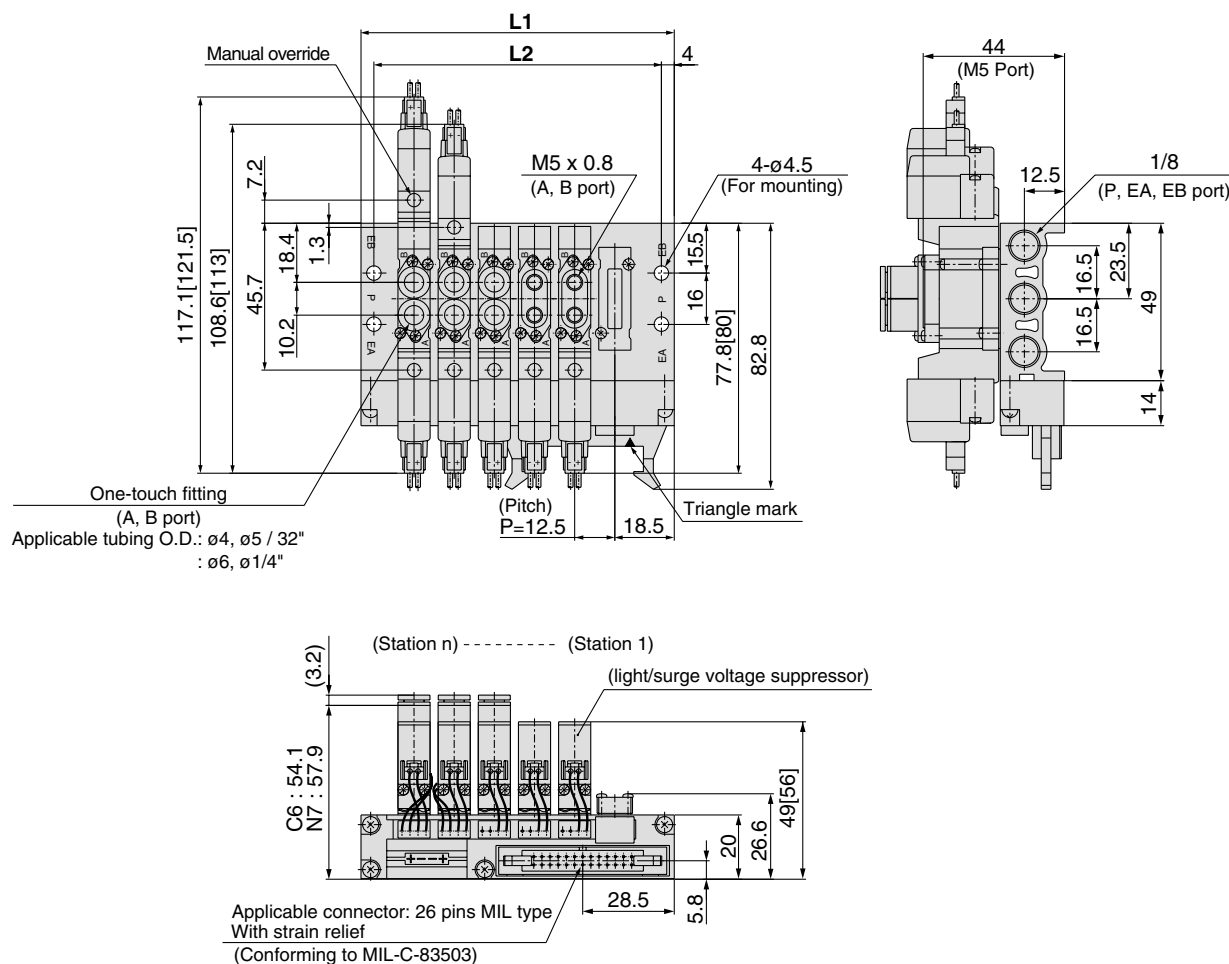


- For more than 10 stations, both poles of the common should be wired.
- For single solenoid, connect to the solenoid A side.
- The maximum number of stations that can be accommodated is 12. For more stations, please contact SMC.



10-SY3000: 10-SS5Y3-20P- Stations

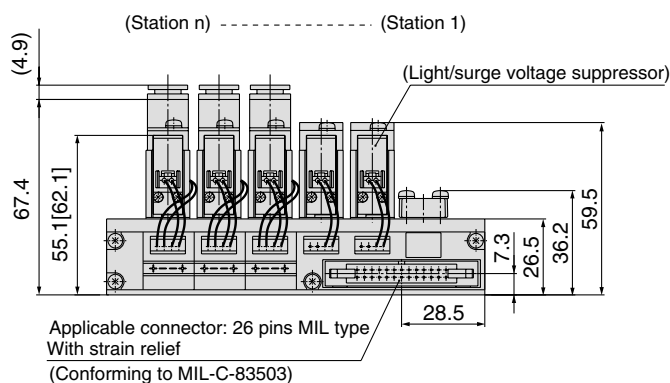
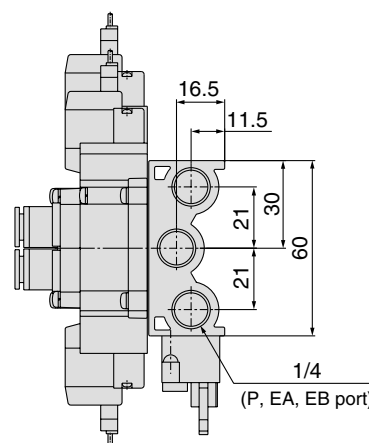
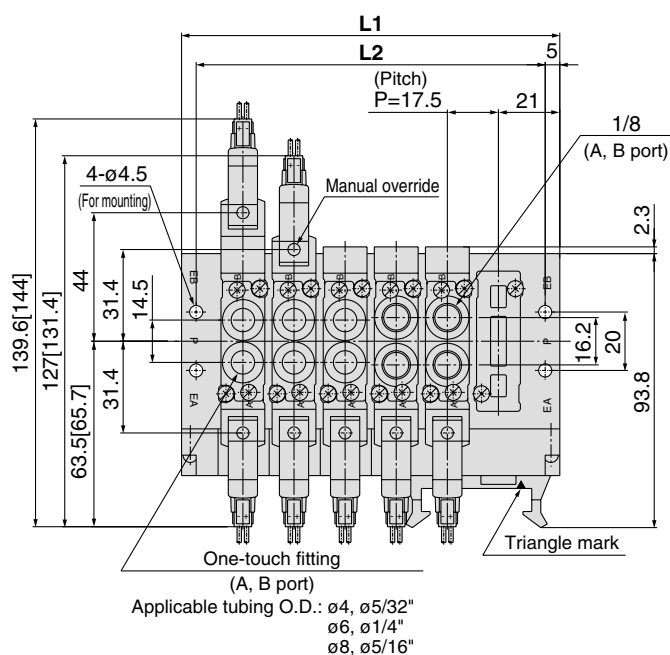
Note) []: AC



Stations n	4	5	6	7	8	9	10	11	12
L1	72.5	85	97.5	110	122.5	135	147.5	160	172.5
L2	64.5	77	89.5	102	114.5	127	139.5	152	164.5

10-SY5000: 10-SS5Y5-20P-Stations

 Note) []: In case of AC

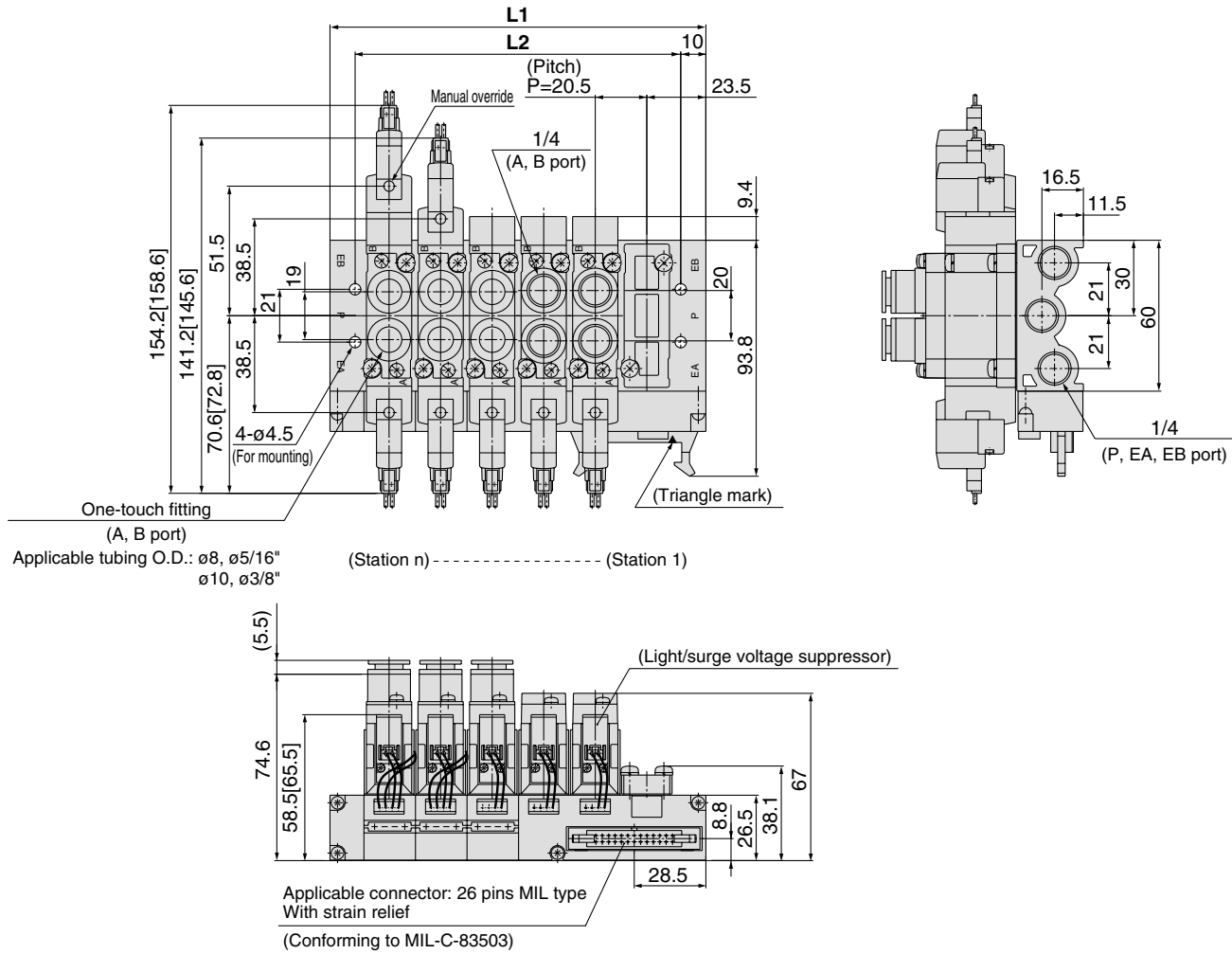


Stations n	3	4	5	6	7	8	9	10	11	12
L1	77	94.5	112	129.5	147	164.5	182	199.5	217	234.5
L2	67	84.5	102	119.5	137	154.5	172	189.5	207	224.5

10-SY7000: 10-SS5Y7-20P- Stations



Note) []: In case of AC



Stations n	3	4	5	6	7	8	9	10	11	12
L1	88	108.5	129	149.5	170	190.5	211	231.5	252	272.5
L2	68	88.5	109	129.5	150	170.5	191	211.5	232	252.5

Series 10-SY9000

Type **23P**

Body ported manifold
Stacking type/Flat ribbon cable

How to Order Manifold

10-SS5Y9-23P-05

- Clean series**
- Manifold series**
9 10-SY9000
- Thread type**

Nil	Rc
00F	G
00N	NPT
00T	NPTF
- Valve stations**

Symbol	Stations
4	4 stations
⋮	⋮
12	12 stations
- Option**

Symbol	Mounting
Nil	Direct mounting
D	DIN rail mounting (with DIN rail)
D0	DIN rail mounting (without DIN rail)
D*	When a DIN rail longer than the specified stations is required, enter the station number to be required into * mark.

* This also includes the number of blanking plate assemblies.

* Type 23P manifold of Series 10-SY9000 is concurrently used for the internal and external pilot.

How to Order Valve Manifold Assembly

Ordering example

Size of cylinder port
C12: One-touch fitting for □12

(Single solenoid) Connector assembly
SY9000-37-1A

(Double solenoid) Connector assembly
SY9000-37-2A

Double solenoid (24 VDC)
10-SY9220-5LOU-C12(2set)

Single solenoid (24 VDC)
10-SY9120-5LOU-C12(2set)

Blanking plate assembly
SY9000-26-3A(1set)

Manifold base (5 stations)
10-SS5Y9-23P-05

Stations --- 3 2 1

10-SS5Y9-23P-05 1 set (Type 23P, 5 stations manifold base part no.)
***SY9000-26-3A** 1 set (Blanking plate assembly part no.)
***10-SY9120-5LOU-C12** ... 2 sets (Single solenoid part no.)
***10-SY9220-5LOU-C12** ... 2 sets (Double solenoid part no.)
***SY9000-37-1A** 2 sets (Connector assembly part no.)
***SY9000-37-2A** 2 sets (Connector assembly part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part number under the manifold base part number. In the case of complex arrangement, specify them on the manifold specification sheet.

How to Order Valves

For DC: 10-SY9 1 20 5 LO Z 02

For AC: 10-SY9 1 20 1 LO Z 02

- Clean series**

5	24 VDC
6	12 VDC
- Rated voltage**

1	100 VAC
3	110 VAC (115 VAC)
- Series**
9 10-SY9000
- Type of actuation**

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
- Pilot specifications**

Nil	Internal pilot
R	External pilot

* Type 23P manifolds can be used for both internal and external pilots.
- Rated voltage**

1	100 VAC
3	110 VAC (115 VAC)
- Manual override**

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type
- Light/surge voltage suppressor**

Z	With light/surge voltage suppressor
U	With light/surge voltage suppressor (Non-polar type)

Note) Z: Positive common specifications only.
- Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF
- A, B port size Thread piping**

Symbol	Port size
02	1/4
03	3/8
- One-touch fitting (Metric size)**

Symbol	Port size
C8	One-touch fitting for ø8
C10	One-touch fitting for ø10
C12	One-touch fitting for ø12
- One-touch fitting (Inch size)**

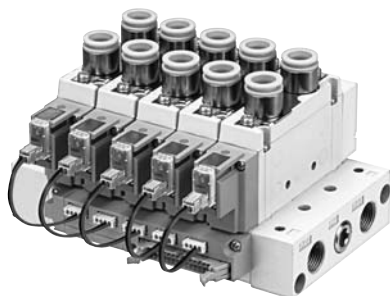
Symbol	Port size
N9	One-touch fitting for ø 5/16"
N11	One-touch fitting for ø 3/8"

Note) In the case of flat cable type, "U" and "Z" types are for DC specifications and "Z" type is for AC specifications. "Z" type for DC is positive common specification only. For other combinations, please contact SMC.

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary (For details, please refer to page 413 of the catalog).

- Multiple valve wiring is simplified through the use of the flat cable connector
- Clean appearance

In the case of a flat ribbon cable type, each valve is wired on the print board of manifold base to allow the external wiring to be piped all together with 26 pins MIL connector.



How to Order Connector Assembly

For 12, 24 VDC

Specifications	For 10-SY9000
For single solenoid	SY9000-37-1A
Double solenoid 3 position	SY9000-37-2A
Single with spacer assembly	SY9000-37-3A
Double, 3 position with spacer assembly	SY9000-37-4A

For 100 VAC

Specifications	For 10-SY9000
For single solenoid	SY9000-37-1B
Double solenoid 3 position	SY9000-37-2B
Single with spacer assembly	SY9000-37-3B
Double, 3 position with spacer assembly	SY9000-37-4B

110 VAC (115 VAC)

Specifications	For 10-SY9000
For single solenoid	SY9000-37-1C
Double solenoid 3 position	SY9000-37-2C
Single with spacer assembly	SY9000-37-3C
Double, 3 position with spacer assembly	SY9000-37-4C

Caution

- For non-polar (U) valves, the electrical DC connections can be used with either positive and negative COM. For type (Z), only use with positive COM as the valve does not operate correctly when used with negative COM.

Manifold Specifications

Model	10-SS5Y9-23P
Applicable valve	10-SY9□20
Manifold type	Stacking type
P (SUP) / R (EXH)	Common SUP, Common EXH
Valve stations	4 to 12 stations ^{Note 1)}
A, B port location	Valve
Port size	P, EA, EB port
	A, B port
	3/8
	1/4
	3/8
	C8 (One-touch fitting for ø8) C10 (One-touch fitting for ø10) C12 (One-touch fitting for ø12)
Manifold base weight W (g)	W=73n+259
n: Stations	
Applicable flat ribbon cable connector	Flat ribbon cable connector, Socket: 26 pins MIL type with strain relief, Conforming to MIL-C-83503
Internal wiring	In common between +COM and -COM (Z type: +COM only)
Rated voltage	12, 24 VDC 100, 110 VAC

Note 1) For more than 10 stations, supply pressure to P port on both sides and exhaust from EA/EB port on both sides.

Note 2) The withstand voltage specification for the wiring unit section is JIS C 0704, Grade 1 or its equivalent.

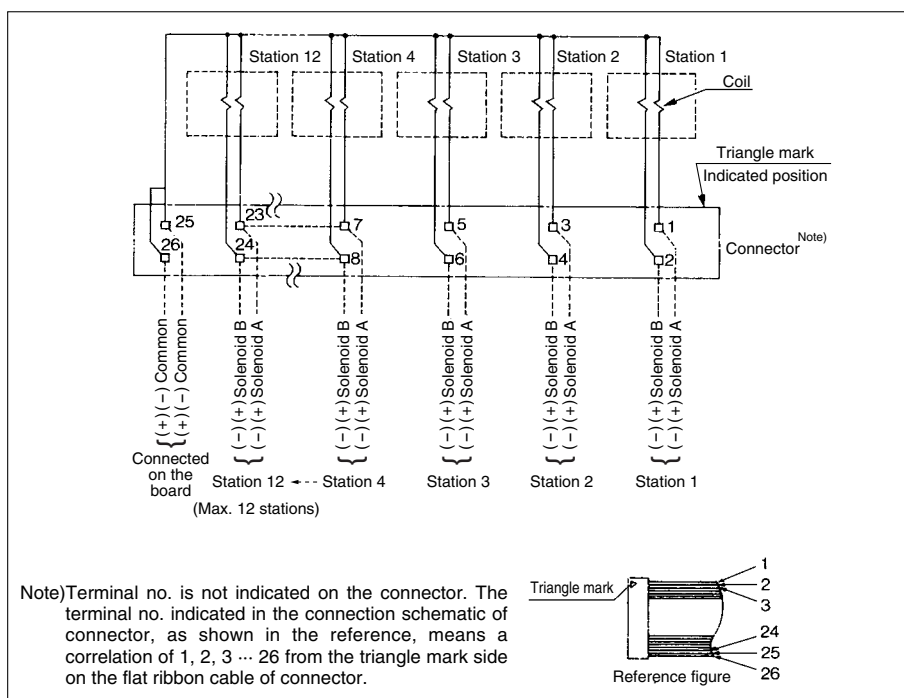
Note 3) Refer to "Manifold Option" on page 413.

Flow Characteristics

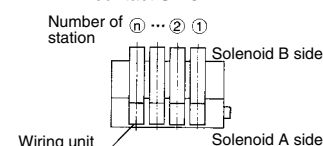
Model	Port size		Flow Characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s-bar)]	b	Cv	C[dm ³ /(s-bar)]	b	Cv
10-SS5Y9-23P	3/8	C12	6.3	0.20	1.5	8.2	0.28	1.9

Note) The value is for manifold base with 5 stations and individually operated 2 position type.

Internal wiring of manifold (Non-polar type)



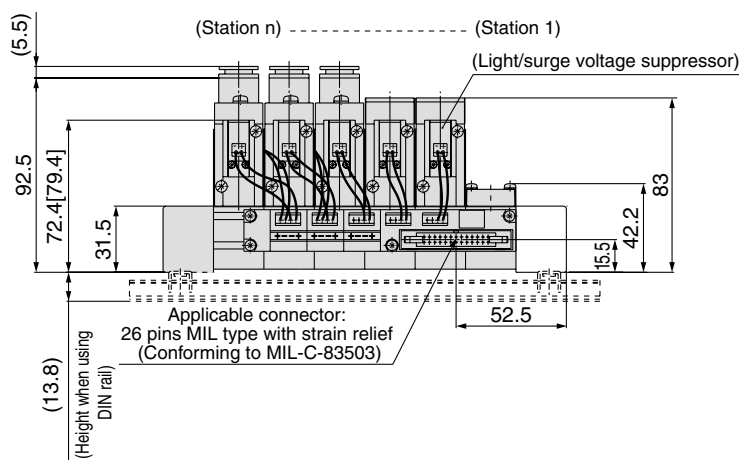
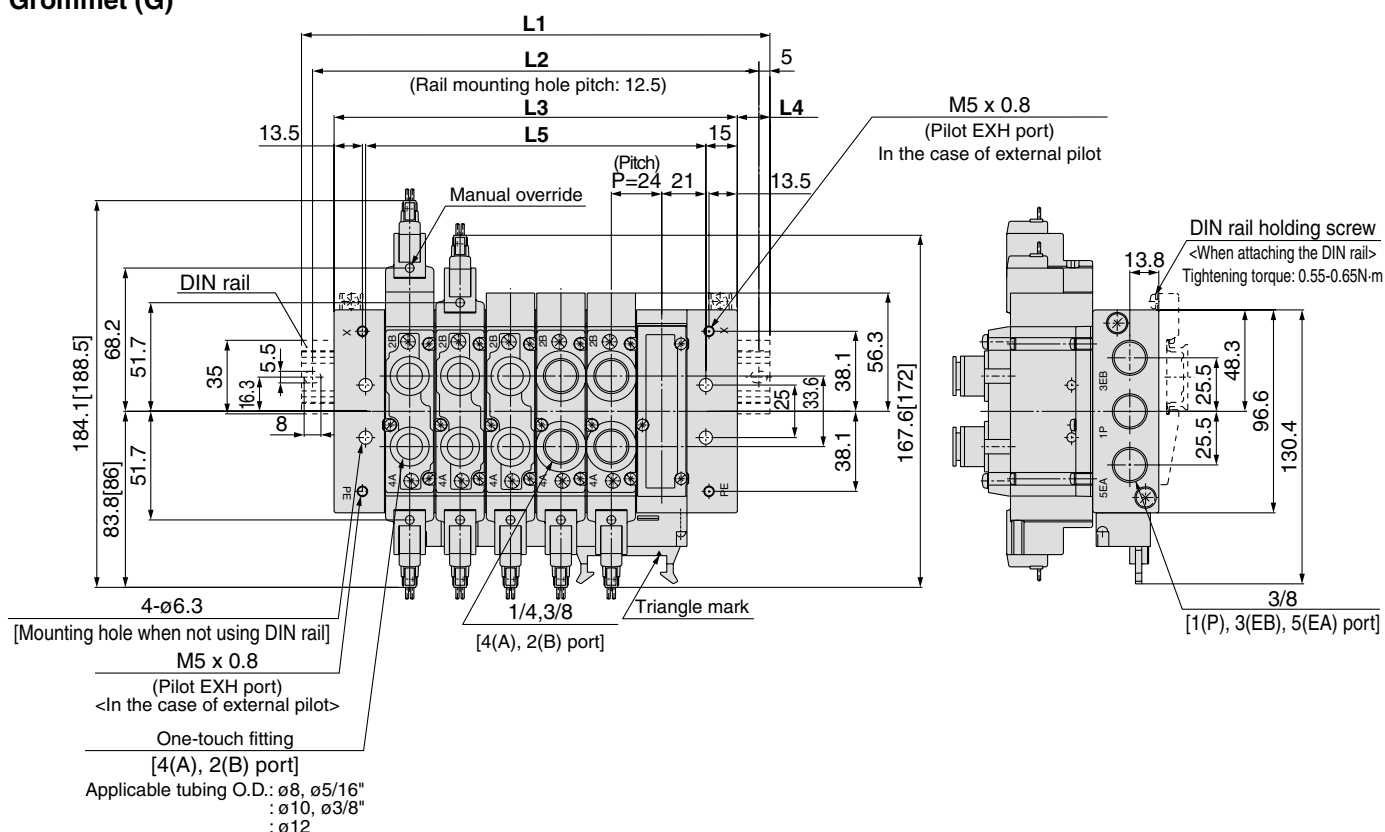
- For more than 10 stations, both poles of the common should be wired.
- For single solenoid, connect to the solenoid A side.
- The maximum number of stations that can be accommodated is 12. For more stations, please contact SMC.



10-SY9000: 10-SS5Y9-23P- Stations -(D)

Note) [] : AC

Grommet (G)

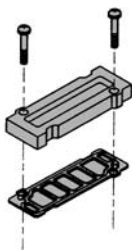


Stations n	4 stations	5	6	7	8	9	10	11	12 stations
L1	173	198	223	248	273	298	323	335.5	360.5
L2	162.5	187.5	212.5	237.5	262.5	287.5	312.5	325	350
L3	144	168	192	216	240	264	288	312	336
L4	14.5	15	15.5	16	16.5	17	17.5	12	12.5
L5	114	138	162	186	210	234	258	282	306

Note) In the case of direct mounting without DIN rail, total width of manifold is L3.

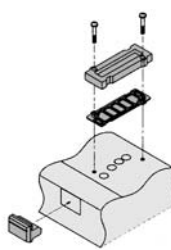
Manifold Option

■ Type 20, 23 Blanking plate assembly



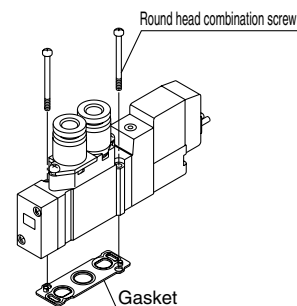
Series	Assembly part No.
10-SY3000	SY3000-26-9A
10-SY5000	SY5000-26-20A
10-SY7000	SY7000-26-22A
10-SY9000	SY9000-26-1A

■ Type 20P, 23P Blanking plate assembly



Series	Assembly part No.
10-SY3000	SY3000-26-10A
10-SY5000	SY5000-26-21A
10-SY7000	SY7000-26-23A
10-SY9000	SY9000-26-3A

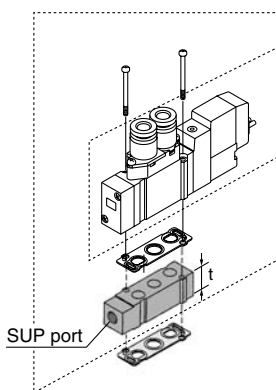
■ Gasket assembly part No.



Series	Gasket assembly
10-SY3000	SY3000-GS-1
10-SY5000	SY5000-GS-1
10-SY7000	SY7000-GS-1
10-SY9000	SY9000-GS-1

Note) Gasket assembly consists of mounting screws and a gasket.

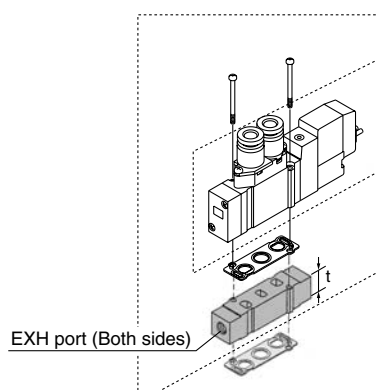
■ Individual SUP spacer assembly



Series	Assembly part No.	Port size	t
10-SY3000	SY3000-38-20A	M5 x 0.8	10.5
10-SY5000	SY5000-38-1 * A	1/8	15
10-SY7000	SY7000-38-1 * A	1/4	18
10-SY9000	SY9000-38-1 * A	1/4	20

Note) · The SUP port of 10-SY3000/5000/7000 may be either on the lead wire side or end plate side. (An assembly is shipped under the conditions shown in the figure.)
· The end plate side is only available to 10-SY9000.

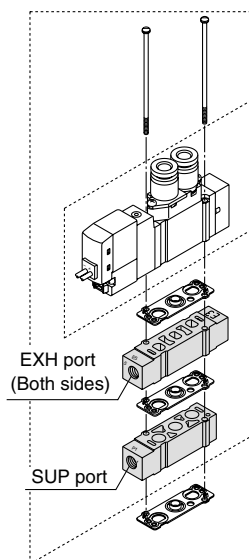
■ Individual EXH spacer assembly



Series	Assembly part No.	Port size	t
10-SY3000	SY3000-39-20A	M5 x 0.8	10.5
10-SY5000	SY5000-39-1 * A	1/8	15
10-SY7000	SY7000-39-1 * A	1/4	18
10-SY9000	SY9000-39-1 * A	1/4	20

Note) In case of types 20P and 23P, for protection of the wiring unit section from drainage, piping at the EA port should be arranged so that it will not be directly exposed to exhaust from the valve.

■ Individual SUP spacer assembly + Individual EXH spacer assembly (stacked)



⚠ Caution

Mounting screw tightening torque

M2: 0.16N·m
M3: 0.8N·m
M4: 1.4N·m

* : Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

⚠ Warning

When mounting a valve or spacer on the manifold base or sub-plate, etc., those mounting directions are determined. If mounted in the wrong direction, the equipment to be connected may cause malfunction. Refer to external dimensions, and then mount it.

[○: Applicable ×: Not applicable]

Series	Individual SUP + individual EXH assembly part No.	Port size	Applicable manifold type	
			20	20P
10-SY3000	SY3000-120-1A	M5 x 0.8	○	×
10-SY5000	SY5000-75-2 * A	1/8	○	×
10-SY7000	SY7000-73-3 * A	1/4	○	×



Note) The SUP port of SUP spacer can be mounted in either direction. For the EXH port, connect the side marked with "5" to the pilot valve side. Be sure to connect each port of the pilot valve to protect from drainage.

An individual SUP spacer and an individual EXH spacer can be mounted on either top or bottom. (An assembly is shipped under the condition shown in the figure above.)

Manifold option

■ SUP block disc (for 10-SY9000)

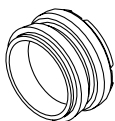
By installing a SUP block disc in the pressure supply passage of a manifold valve, it is possible to supply two or more different high and low pressures to one manifold.



Series	Part no.
10-SY9000	SY9000-61-2A

■ EXH block disc (for 10-SY9000)

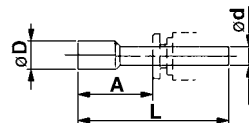
By installing an EXH block disc in the exhaust passage of a manifold valve, it is possible to divide the valve's exhaust so that it does not affect another valve. (Two block disks are needed to divide both exhausts.)



Series	Part no.
10-SY9000	SY9000-61-2A

■ Plug (White)

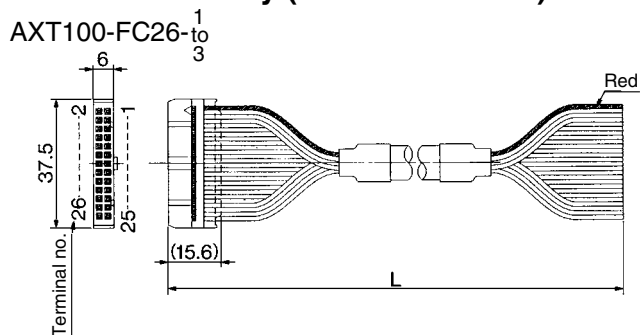
To be inserted into unused cylinder ports and supply/exhaust ports. The minimum order quantity is 10 pieces.



Dimensions

Applicable fitting size ød	Model	A	L	D
4	10-KQP-04	16	32	6
6	10-KQP-06	18	35	8
8	10-KQP-08	20.5	39	10
10	10-KQP-10	22	43	12
12	10-KQP-12	24	44.5	14
1/8"	10-KQP-01	16	31.5	5
5/32"	10-KQP-03	16	32	6
1/4"	10-KQP-07	18	35	8.5
5/16"	10-KQP-09	20.5	39	10
3/8"	10-KQP-11	22	43	11.5

■ Cable assembly (for 20P and 23P)



Connector assembly for flat ribbon cable

Cable length (L)	Assembly part No.	Note
1.5m	AXT100-FC26-1	Cable 26 cores x 28AWG
3m	AXT100-FC26-2	
5m	AXT100-FC26-3	

* For other connectors in the marketplace, use a 26 pins with strain relief conforming to MIL-C-83503.

Example of connector manufacturers

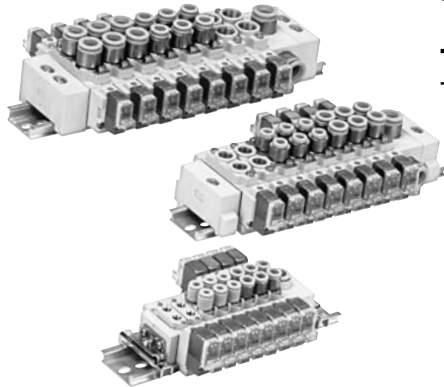
- Hirose Electric Co., Ltd.
- Japan Aviation Electronics Industry, Ltd.
- Sumitomo 3M Ltd.
- J.S.T. Mfg Co., Ltd.
- Fujitsu Ltd.

Series 10-SY3000/5000/7000

Type **60**

Body ported cassette manifold

How to Order



10 — **SS5Y** **3** — **60** — **05** **D** — []

• Clean series

Series

3	10-SY3000
5	10-SY5000
7	10-SY7000

Valve stations

02	2 stations
...	...
20	20 stations

• Option

When a DIN rail longer than the specified stations is required, enter the number of manifold stations. (Max. 20 stations)

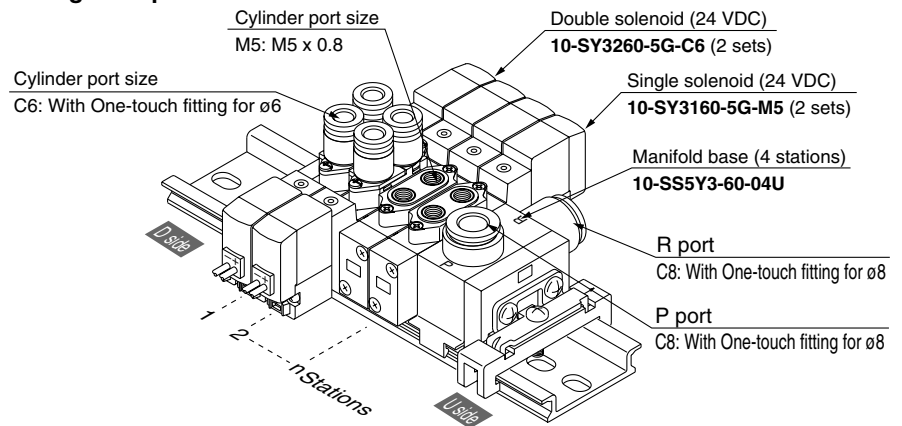
• SUP/EXH block assembly mounting position

Symbol	Mounting position	Applicable stations
U	U side	2 to 10 stations
D	D side	2 to 10 stations
B	Both sides	2 to 20 stations
M*	Special specifications	

* For special specifications, indicate separately on the manifold specification sheet.

How to Order Valve Manifold Assembly

Ordering example



10-SS5Y3-60-04U1 set (Type 60, 4 station manifold base part No.)

* 10-SY3260-5G-C62 sets (Double solenoid part No.)

* 10-SY3160-5G-M52 sets (Single solenoid part No.)

* The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part number under the manifold base part number.

In the case of complex arrangement, specify them on the manifold specification sheet.

Manifold Specifications

Model		10-SS5Y3-60	10-SS5Y5-60	10-SS5Y7-60
Applicable valve		10-SY3□60	10-SY5□60	10-SY7□60
Manifold type		Stacking type / DIN rail mounted		
P(SUP) / R(EXH)		Common SUP / Common EXH		
Valve stations		2 to 20 stations ^{Note)}		
A, B port location		Valve		
Port size	P, R port	C8 (One-touch fitting for ø8)	C10 (One-touch fitting for ø10)	C12 (One-touch fitting for ø12)
	A, B port	M5 x 0.8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	1/8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)	1/4 C8 (One-touch fitting for ø8) C10 (One-touch fitting for ø10)
Manifold base weight W (g) (n: Number of SUP / EXH blocks, m: Weight of DIN rail)		W = 13n + m + 36	W = 41.2n + m + 77.6	W = 65.4n + m + 128.2

 Note) In cases such as those where many valves are operated simultaneously, use "- Stations B (SUP/EXH block on both sides)", applying pressure to the P ports on both sides and exhausting from the R ports on both sides.

Flow characteristics

Model	Port size		Flow characteristics					
	1,5/3 (P,R)	4,2 (A,B)	1→4/2(P→A/B)			4/2→5/3(A/B→R)		
			C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv
10-SS5Y3-60	C8	M5	0.55	0.29	0.14	0.72	0.24	0.18
		C4	0.57	0.24	0.14	0.71	0.20	0.17
		C6	0.68	0.28	0.17	0.77	0.24	0.19
10-SS5Y5-60	C10	1/8	1.8	0.24	0.44	2.1	0.17	0.47
		C6	1.5	0.30	0.37	2.0	0.16	0.46
		C8	1.8	0.20	0.45	2.2	0.17	0.50
10-SS5Y7-60	C12	1/4	3.7	0.25	0.96	3.8	0.19	0.94
		C8	3.2	0.26	0.81	4.0	0.18	0.96
		C10	3.7	0.28	0.98	4.1	0.19	1.0

 Note) The value is for manifold base with 5 stations and individually operated 2 position type.

How to Order Valves

10 — SY 3 1 60 — 5 L — C6

• Clean series

Series

3	10-SY3000
5	10-SY5000
7	10-SY7000

Type of actuation

1	2 position single (A) (B) 4 2 5 1 3 (EA) (P) (EB)
2	2 position double (A) (B) 4 2 5 1 3 (EA) (P) (EB)
3	3 position closed center (A) (B) 4 2 5 1 3 (EA) (P) (EB)
4	3 position exhaust center (A) (B) 4 2 5 1 3 (EA) (P) (EB)
5	3 position pressure center (A) (B) 4 2 5 1 3 (EA) (P) (EB)

Coil specifications

Nil	Standard
T	With power saving circuit <24 VDC, 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage

DC	
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

AC (50/60Hz)	
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* "D" and "DO" are only available for 10-SY5000/7000.
* For type "W□", DC voltage is only available.

• A, B port size

Thread piping

Symbol	Port size	Applicable series
M5	M5 x 0.8	10-SY3000
01	1/8	10-SY5000
02	1/4	10-SY7000

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	10-SY5000
C4	One-touch fitting for ø4	10-SY5000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY7000
C8	One-touch fitting for ø8	10-SY7000
C10	One-touch fitting for ø10	10-SY7000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø5/32"	10-SY3000
N7	One-touch fitting for ø1/4"	10-SY3000
N3	One-touch fitting for ø5/32"	10-SY5000
N7	One-touch fitting for ø1/4"	10-SY5000
N9	One-touch fitting for ø5/16"	10-SY5000
N9	One-touch fitting for ø5/16"	10-SY7000
N11	One-touch fitting for ø3/8"	10-SY7000

• Manual override

Nil: Non-locking push type	D: Push-turn locking slotted type	E: Push-turn locking lever type

• Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* Type "S" is not available with AC, which prevents surge voltage with a rectifier.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D (10-SY5000/7000 only)

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* Type "S" is not available with AC, which prevents surge voltage with a rectifier.

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			24, 12 VDC 100, 110, 200, 220 VAC	24, 12, 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	MN: Without lead wire (10-SY5000/7000 only)	WO: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	DO: Without connector
				W□: With connector cable (Note 1)

* "LN", "MN" type: with 2 sockets.
* DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is available, too. For details, please refer to page 482.
* For M8 connector cable, please refer to page 490.
Note 1) Please enter cable length in □ with reference to page 491.

Specifications

Series		10-SY3000	10-SY5000	10-SY7000
Fluid		Air		
Internal pilot operating pressure range MPa	2 position single	0.15 to 0.7		
	2 position double	0.1 to 0.7		
	3 position	0.2 to 0.7		
Ambient and fluid temperature (°C)		Max. 50		
Max. operating frequency(Hz)	2 position single/double	10	5	5
	3 position	3	3	3
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type		
Pilot exhaust system		Common exhaust type for main and pilot valve		
Lubrication		Not required		
Mounting orientation		Unrestricted		
Impact / Vibration resistance m/s² (Note)		150/30		
Enclosure		Dustproof (* DIN terminal, M8 connector conforms to IP65)		

 Note) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states once each condition.

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000Hz. Test was performed in both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values in the initial stage)

Solenoid specifications

Electrical entry			Grommet (G)/(H) L plug connector (L) M plug connector (M) DIN terminal (D) M8 connector (W)	
			G, H, L, M, W	D
Coil rated voltage (V)	DC	24, 12, 6, 5, 3		24, 12
	AC 50/60Hz	100, 110, 200, 220		
Allowable voltage fluctuation			±10% of rated voltage *	
Power consumption (W)	DC	Standard	0.35 {With indicator light: 0.4 (DIN terminal with light: 0.45)}	
		With power saving circuit	0.1 (With indicator light only)	
Apparent * power (VA)	AC	100V	0.78 (With indicator light: 0.81)	0.78 (With indicator light: 0.87)
		110V [115V]	0.86 (With indicator light: 0.89) [0.94 (With indicator light: 0.97)]	0.86 (With indicator light: 0.97) [0.94 (With indicator light: 1.07)]
		200V	1.18 (With indicator light: 1.22)	1.15 (With indicator light: 1.30)
		220V [230V]	1.30 (With indicator light: 1.34) [1.42 (With indicator light: 1.46)]	1.27 (With indicator light: 1.46) [1.39 (With indicator light: 1.60)]
Surge voltage suppressor			Diode (Varistor is for DIN terminal and non-polar.)	
Indicator light			LED (AC of DIN connector in neon bulb.)	

 * In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

* Allowable voltage fluctuation range for types S, Z and T (with power saving circuit) are shown below. These types generate voltage drop due to internal circuit.

Type S, Z 24 VDC: -7% to +10%
12 VDC: -4% to +10%
Type T 24 VDC: -8% to +10%
12 VDC: -6% to +10%

Response time



Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)

10-SY3000

Type of actuation	Response time ms (at 0.5MPa)		
	Without surge voltage suppressor	With surge voltage suppressor	
		S, Z type	R, U type
2 position single	12 or less	15 or less	12 or less
2 position double	10 or less	13 or less	10 or less
3 position	15 or less	20 or less	16 or less

10-SY5000

Type of actuation	Response time ms (at 0.5MPa)		
	Without surge voltage suppressor	With surge voltage suppressor	
		S, Z type	R, U type
2 position single	19 or less	26 or less	19 or less
2 position double	18 or less	22 or less	18 or less
3 position	32 or less	38 or less	32 or less

10-SY7000

Type of actuation	Response time ms (at 0.5MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		S, Z type	R, U type
2 position single	31 or less	38 or less	33 or less
2 position double	27 or less	30 or less	28 or less
3 position	50 or less	56 or less	50 or less

How to Order Pilot Valve Assembly

10 — V111 — 5 G

• Clean series

Coil specifications

Nil	Standard
T	With power saving circuit <24 VDC and 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC ^{50/60} Hz
2	200 VAC ^{50/60} Hz
3	110 VAC ^{50/60} Hz [115 VAC ^{50/60} Hz]
4	220 VAC ^{50/60} Hz [230 VAC ^{50/60} Hz]

* For type "W□", DC voltage is only available.

• Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

• Electrical entry

G	Grommet (Lead wire length 300 mm)
H	Grommet (Lead wire length 600 mm)
L	L plug connector
LN	Without lead wire
LO	Without connector
M	M plug connector
MN	Without lead wire
MO	Without connector
WO	Without connector cable
Wm	With connector cable ^{Note 1)}

* For connector cable of M8 connector, refer to page 490.
Note 1) Please enter cable length in □ with reference to page 491.

How to Order Connector Assembly for L/M Plug Connector

For DC: SY100-30-4A

For 100 VAC: SY100-30-1A

For 200 VAC: SY100-30-2A

For other voltages of AC: SY100-30-3A

Without lead wire: SY100-30-A
(only connector and 2 pcs. of sockets)

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

■ DIN terminal type

10 — V115 — 5 D

• Clean series

Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC ^{50/60} Hz
2	200 VAC ^{50/60} Hz
3	110 VAC ^{50/60} Hz [115 VAC ^{50/60} Hz]
4	220 VAC ^{50/60} Hz [230 VAC ^{50/60} Hz]

* DC specifications of type "D" and "DO" is only available with 12 VDC and 24 VDC.

• Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

• Electrical entry

D	DIN terminal
DO	Without connector

Note) Do not replace 10-V111 (G, H, L, M) to 10-V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

How to Order M8 Connector Cable

V100-49-1

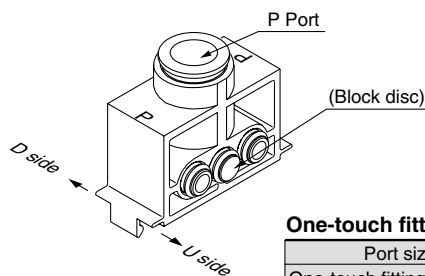
Cable length

1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm

* Refer to page 491 for details.

Manifold Option

Individual SUP block assembly



One-touch fitting (Metric size)

Port size	Assembly part No.	Applicable series
One-touch fitting for ø6	SY3000-54-2C	10-SY3000
One-touch fitting for ø8	SY3000-54-1C	10-SY3000
One-touch fitting for ø10	SY5000-54-1C	10-SY5000
One-touch fitting for ø12	SY7000-54-1C	10-SY7000

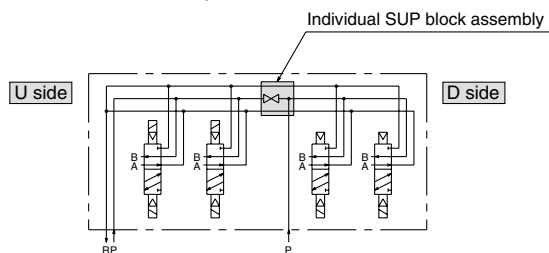
One-touch fitting (Inch size)

Port size	Assembly part No.	Applicable series
One-touch fitting for ø5 / 16"	SY3000-54-3C	10-SY3000
One-touch fitting for ø3 / 8"	SY5000-54-2C	10-SY5000
One-touch fitting for ø3 / 8"	SY7000-54-3C	10-SY7000

[When supplying the manifold with 2 different supply pressures.]

Specify arrangement of individual SUP block assembly on the manifold specification sheet. (When using 10-SS5Y□-60-□□D, block disk is assembled on D side.)

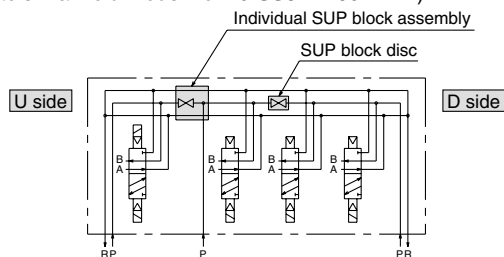
<Manifold model: 10-SS5Y³₅-60-□□D>



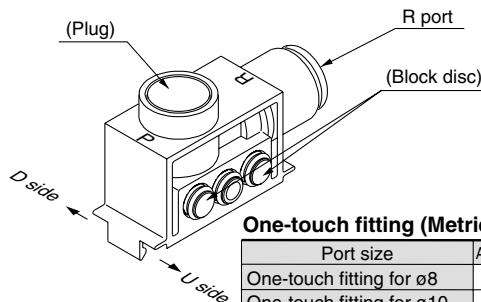
[When a different supply pressure is required for only a middle valve.]

Specify arrangement of individual SUP block assembly and SUP block disk on the manifold specification sheet.

(Applicable manifold model no. 10-SS5Y□-60-□□B)



Individual EXH block assembly



One-touch fitting (Metric size)

Port size	Assembly part No.	Applicable series
One-touch fitting for ø8	SY3000-55-1B	10-SY3000
One-touch fitting for ø10	SY5000-55-1B	10-SY5000
One-touch fitting for ø12	SY7000-55-1B	10-SY7000

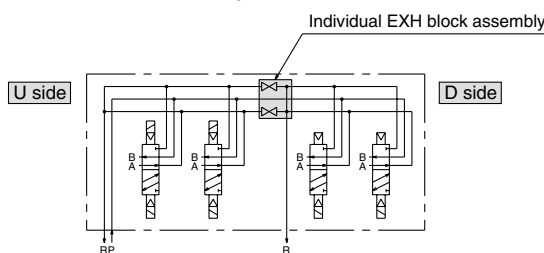
One-touch fitting (Inch size)

Port size	Assembly part No.	Applicable series
One-touch fitting for ø5 / 16"	SY3000-55-2B	10-SY3000
One-touch fitting for ø3 / 8"	SY5000-55-2B	10-SY5000
One-touch fitting for ø3 / 8"	SY7000-55-3B	10-SY7000

[When 2 different EXH passages are required.]

Specify arrangement of individual EXH block assembly on the manifold specification sheet. (When using 10-SS5Y□-60-□□D, block disk is assembled on D side.)

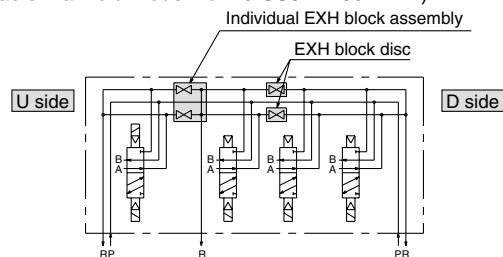
<Manifold model: 10-SS5Y³₅-60-□□D>



[When a separate exhaust passage is needed on only a middle valve.]

Specify arrangement of individual EXH block assembly and EXH block disk on the manifold specification sheet.

(Applicable manifold model no. 10-SS5Y□-60-□□B)



Manifold Option

■SUP block disc

By installing a SUP block disc in the pressure supply passage of a manifold valve, it is possible to supply two or more different high and low pressures to one manifold. (This is the same block disc used with the individual SUP block assembly.)



Series	Part No.
10-SY3000	SY3000-52-6A
10-SY5000	SY5000-52-4A
10-SY7000	SY7000-70-2A

■EXH block disc

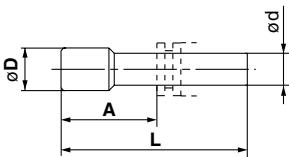
By installing an EXH block disc in the exhaust passage of a manifold valve, it is possible to divide the valve's exhaust so that it does not affect another valve. (Two block disks are needed to separate both EXH passages. It is the same block disk that is used in the individual EXH block assembly.)



Series	Part no.
10-SY3000	SY3000-52-6A
10-SY5000	SY5000-52-4A
10-SY7000	SY7000-70-2A

■Plug (White)

These are inserted in unused cylinder ports and SUP/EXH ports. Purchasing order is available in units of 10 pieces.



Dimensions

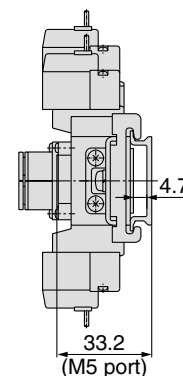
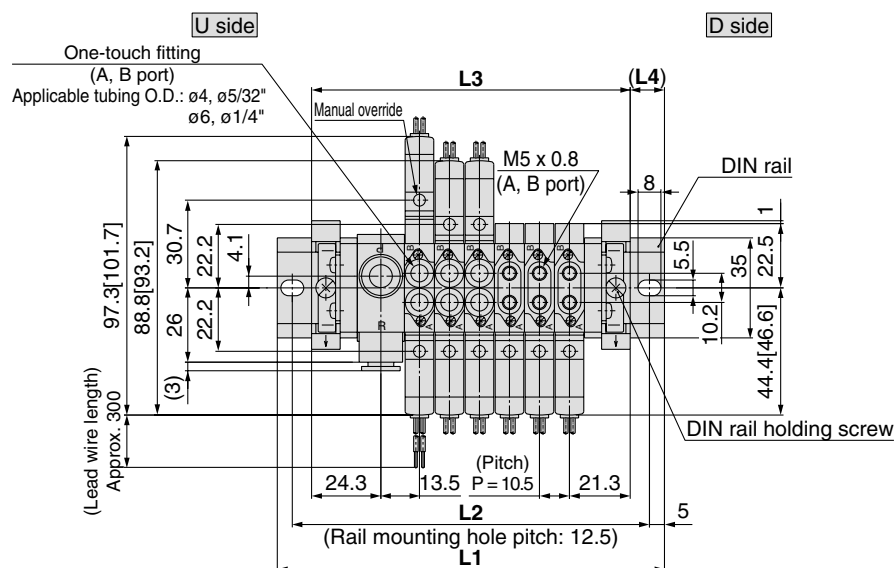
Applicable fitting size ød	Model	A	L	D
4	10-KQP-04	16	32	6
6	10-KQP-06	18	35	8
8	10-KQP-08	20.5	39	10
10	10-KQP-10	22	43	12
12	10-KQP-12	24	45.5	14
5/32"	10-KQP-03	16	32	6
1/4"	10-KQP-07	18	35	8.5
5/16"	10-KQP-09	20.5	39	10
3/8"	10-KQP-11	22	43	11.5



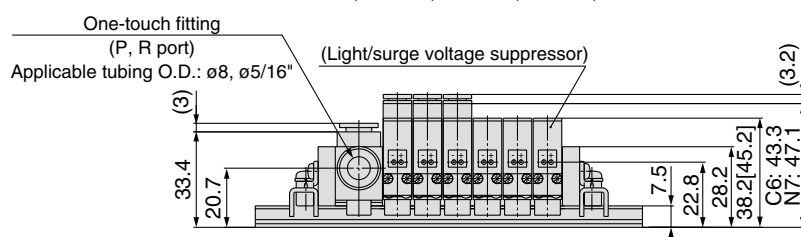
Note) [] : AC

Dimensions

10-SS5Y3-60- Stations U

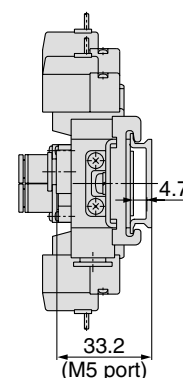
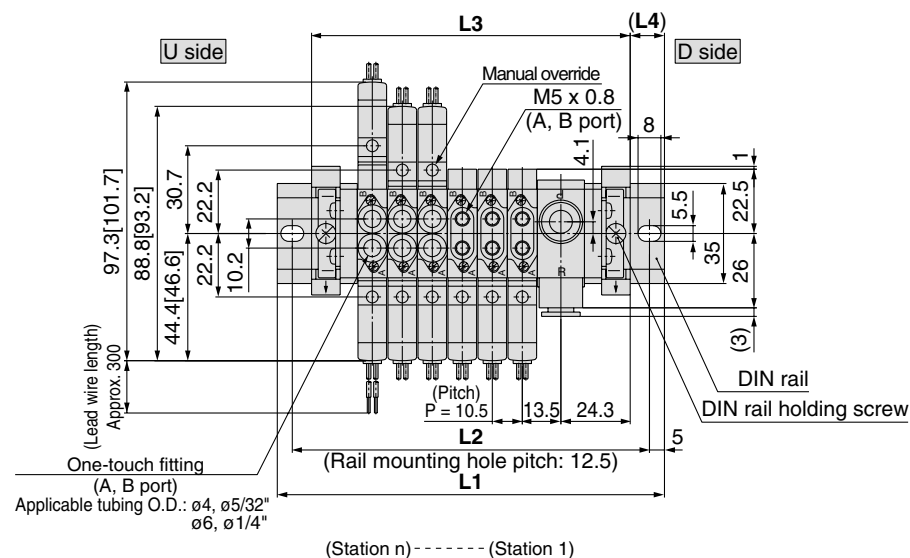


(Station n) ----- (Station 1)

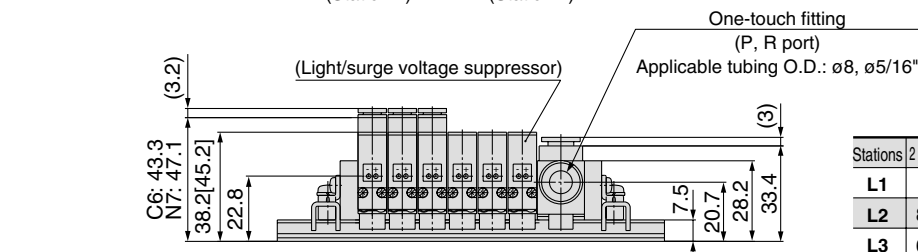


Stations	2 stations	3	4	5	6	7	8	9	10 stations
L1	98	110.5	123	135.5	135.5	148	160.5	173	185.5
L2	87.5	100	112.5	125	125	137.5	150	162.5	175
L3	69.5	80	90.5	101	111.5	122	132.5	143	153.5
L4	14	15	16	17	12	13	14	15	16

10-SS5Y3-60- Stations D



(Station n) ----- (Station 1)

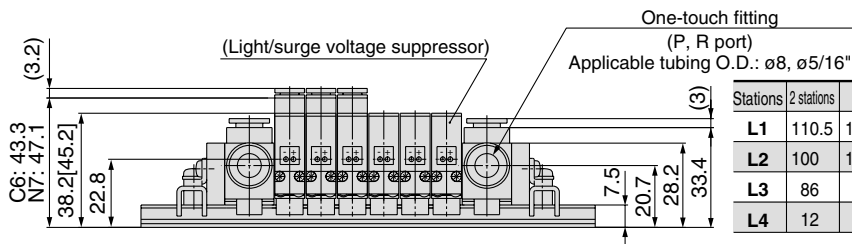
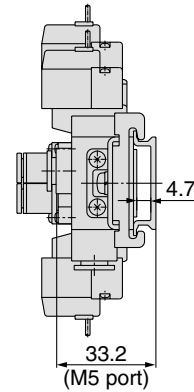
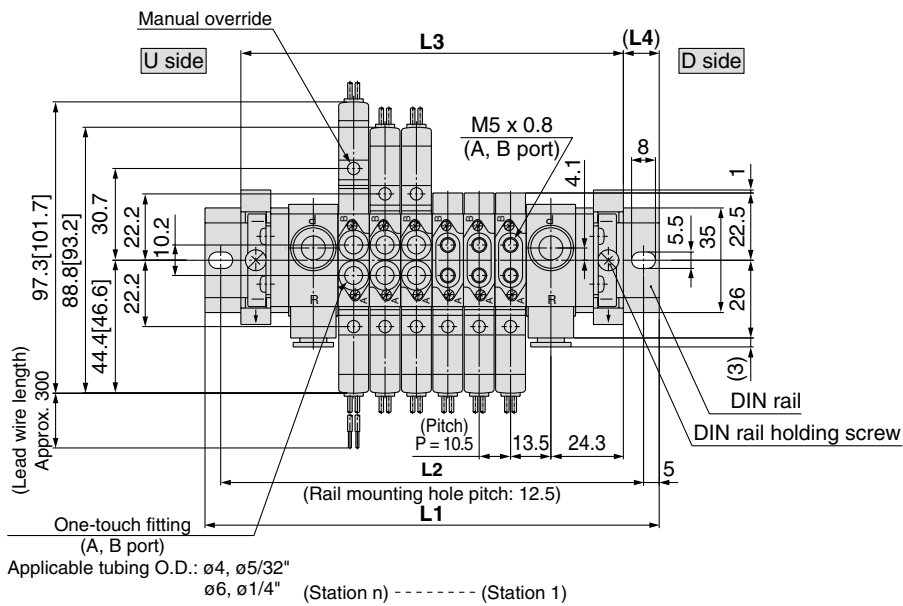


Stations	2 stations	3	4	5	6	7	8	9	10 stations
L1	98	110.5	123	135.5	135.5	148	160.5	173	185.5
L2	87.5	100	112.5	125	125	137.5	150	162.5	175
L3	69.5	80	90.5	101	111.5	122	132.5	143	153.5
L4	14	15	16	17	12	13	14	15	16



Note) [] : AC

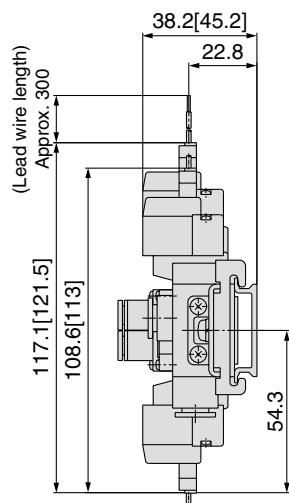
10-SS5Y3-60- Stations B



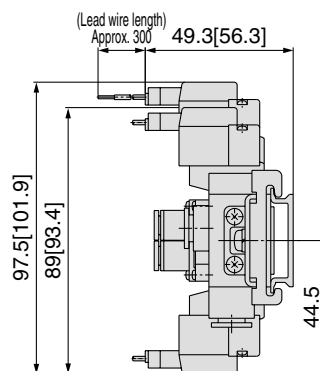
Stations	2 stations	3	4	5	6	7	8	9	10 stations
L1	110.5	123	135.5	148	160.5	173	173	185.5	198
L2	100	112.5	125	137.5	150	162.5	162.5	175	187.5
L3	86	96.5	107	117.5	128	138.5	149	159.5	170
L4	12	13	14	15	16	17	12	13	14

Stations	11 stations	12	13	14	15	16	17	18	19	20 stations
L1	210.5	223	235.5	235.5	248	260.5	273	285.5	298	310.5
L2	200	212.5	225	225	237.5	250	262.5	275	287.5	300
L3	180.5	191	201.5	212	222.5	233	243.5	254	264.5	275
L4	15	16	17	11.5	12.5	13.5	14.5	15.5	16.5	17.5

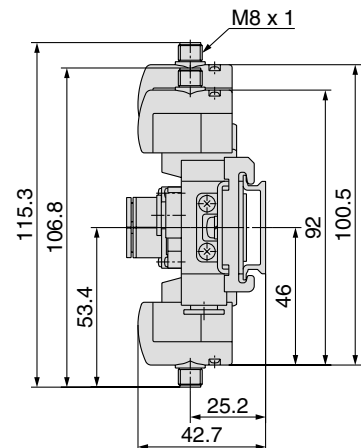
L plug connector (L)



M plug connector (M)



M8 connector (WO)



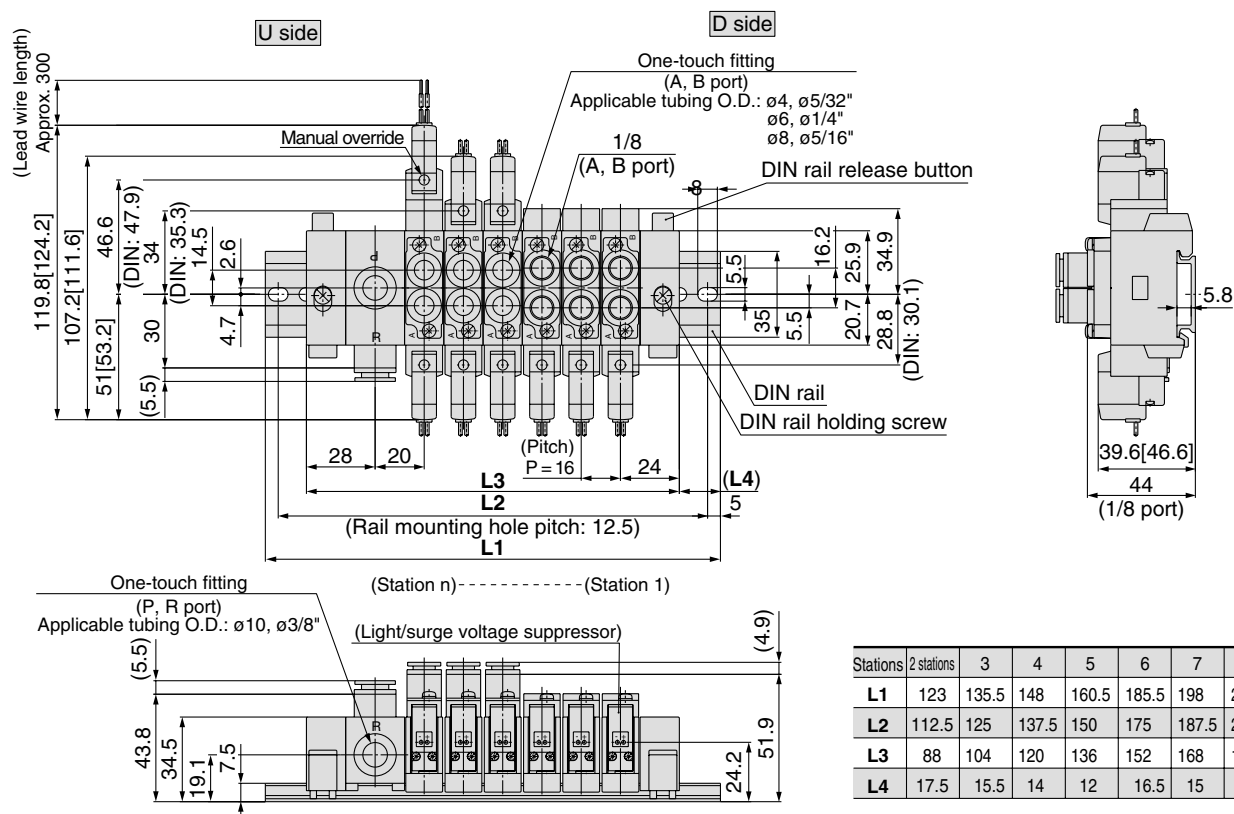
Note) Refer to page 490 for dimensions of connector types.

Dimensions

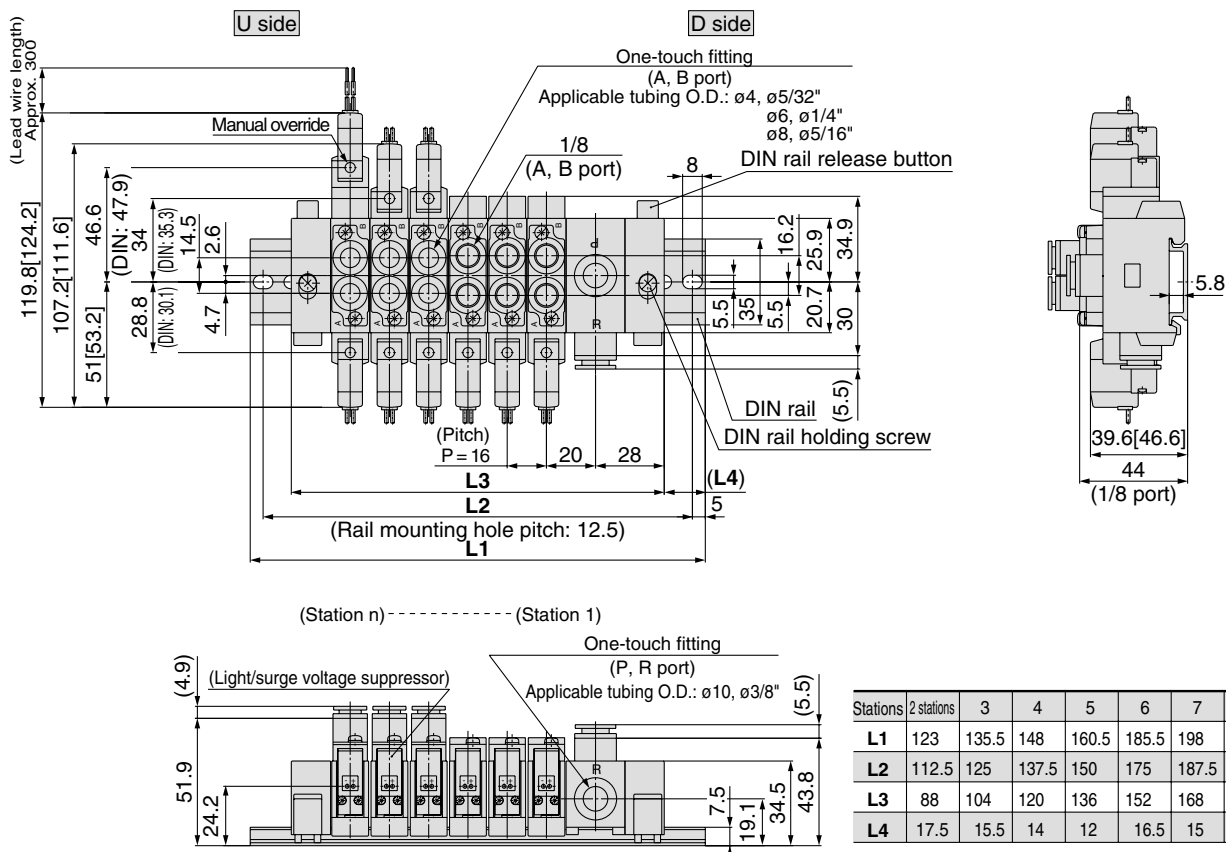


Note) [] : AC

10-SS5Y5-60- Stations U



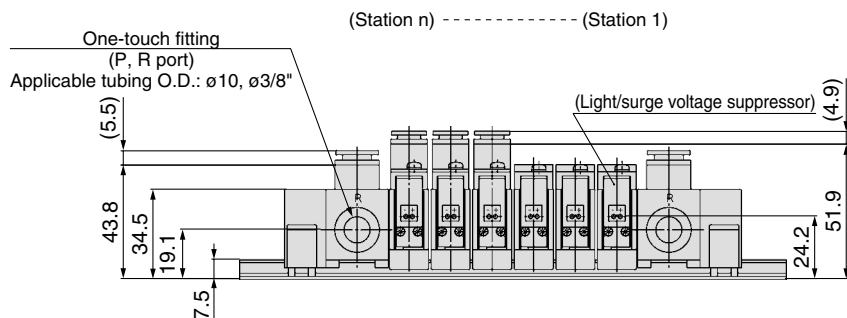
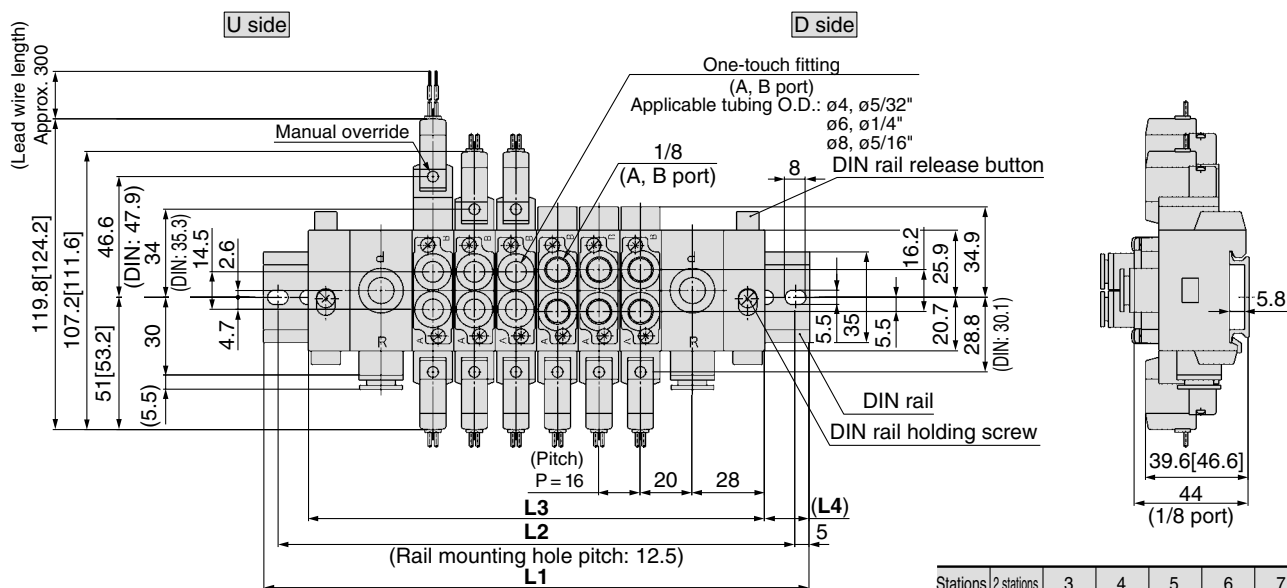
10-SS5Y5-60- Stations D





Note) [] : AC

10-SS5Y5-60- Stations B

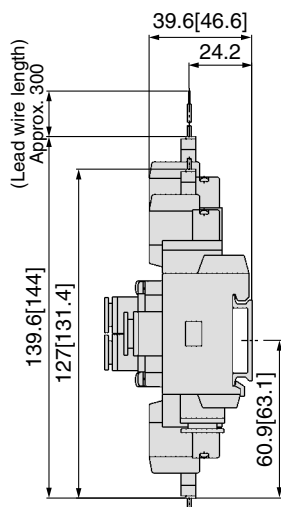


Stations	2 stations	3	4	5	6	7	8 stations
L1	135.5	160.5	173	185.5	210.5	223	235.5
L2	125	150	162.5	175	200	212.5	225
L3	112	128	144	160	176	192	208
L4	11.5	16	14.5	12.5	17.5	15.5	13.5

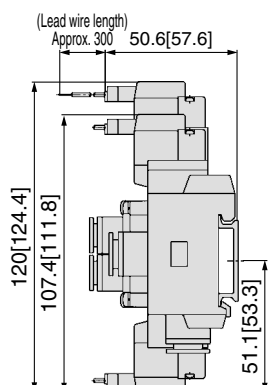
Stations	9 stations	10	11	12	13	14	15 stations
L1	248	273	285.5	298	323	335.5	348
L2	237.5	262.5	275	287.5	312.5	325	337.5
L3	224	240	256	272	288	304	320
L4	12	16.5	14.5	13	17.5	15.5	14

Stations	16 stations	17	18	19	20 stations
L1	360.5	385.5	398	410.5	435.5
L2	350	375	387.5	400	425
L3	336	352	368	384	400
L4	12	16.5	15	13	17.5

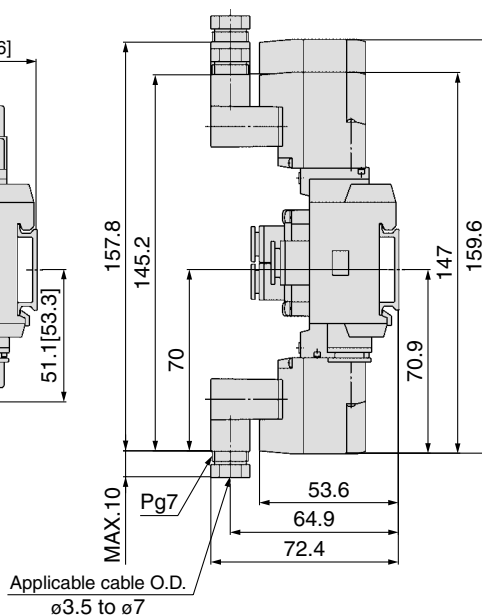
L plug connector (L)



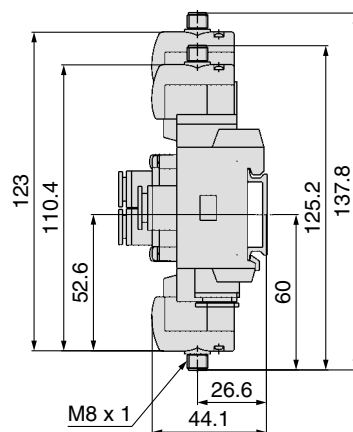
M plug connector (M)



DIN terminal (D)



M8 connector (WO)



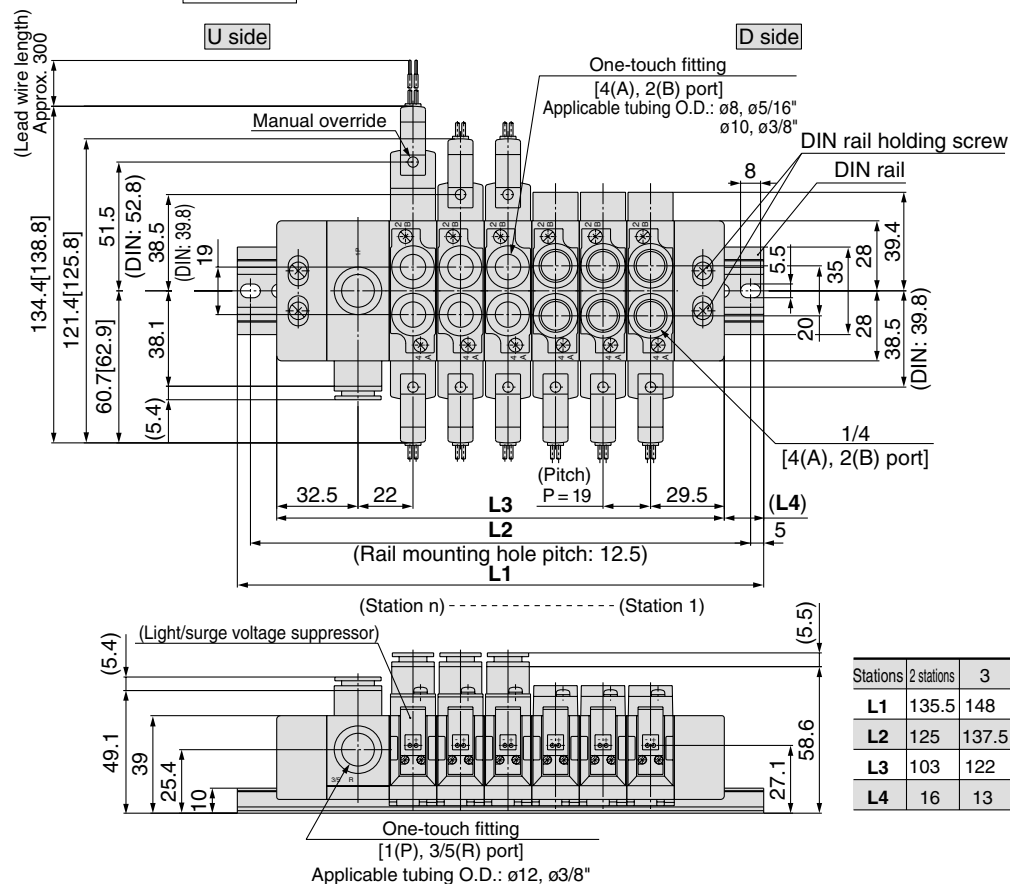
Note) Refer to page 490 for dimensions of connector types.

Dimensions

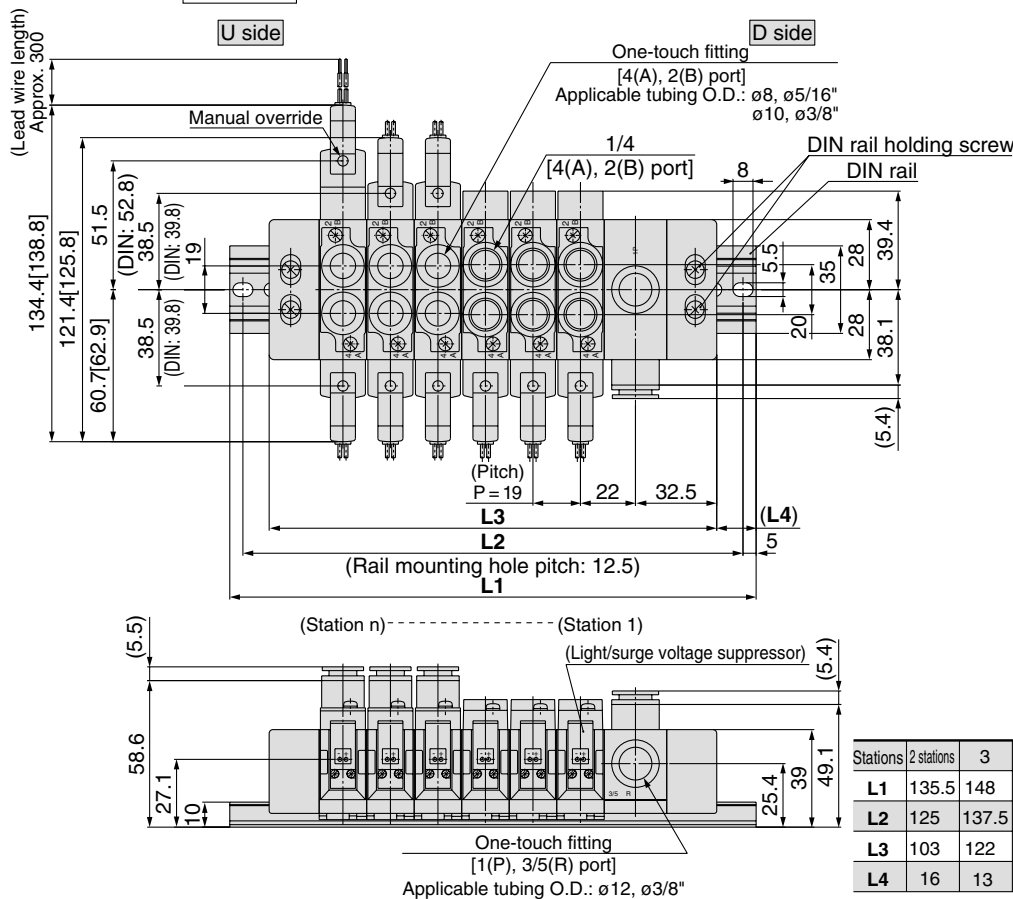


Note) [] : AC

10-SSY7-60- Stations U



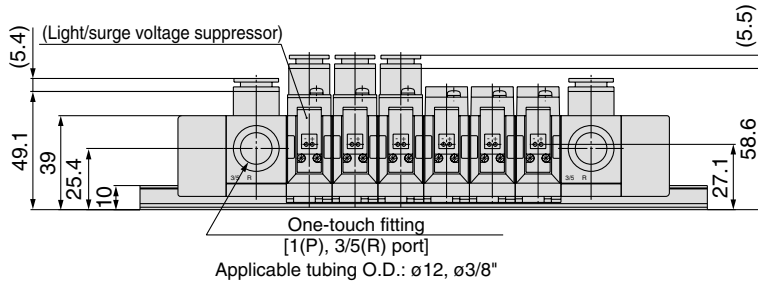
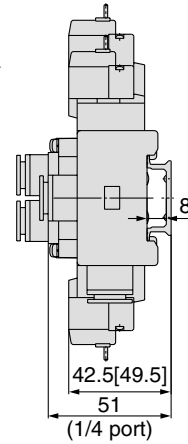
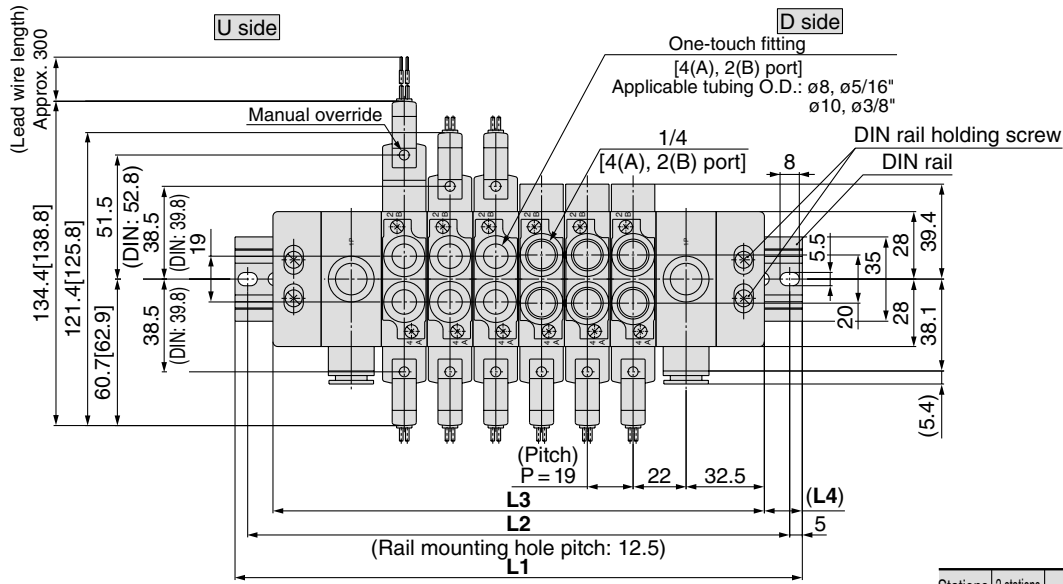
10-SSY7-60- Stations D





Note) []: AC

10-SS5Y7-60-Stations B

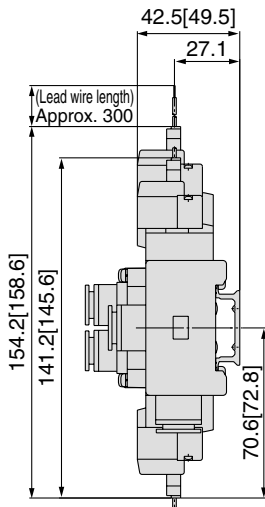


Stations	2 stations	3	4	5	6	7	8 stations
L1	160.5	173	198	210.5	235.5	248	273
L2	150	162.5	187.5	200	225	237.5	262.5
L3	128	147	166	185	204	223	242
L4	16	13	16	12.5	15.5	12.5	15.5

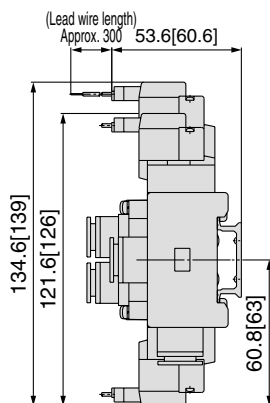
Stations	9 stations	10	11	12	13	14	15 stations
L1	285.5	310.5	323	348	360.5	385.5	410.5
L2	275	300	312.5	337.5	350	375	400
L3	261	280	299	318	337	356	375
L4	12	15	12	15	11.5	14.5	17.5

Stations	16 stations	17	18	19	20 stations
L1	423	448	460.5	485.5	498
L2	412.5	437.5	450	475	487.5
L3	394	413	432	451	470
L4	14.5	17.5	14	17	14

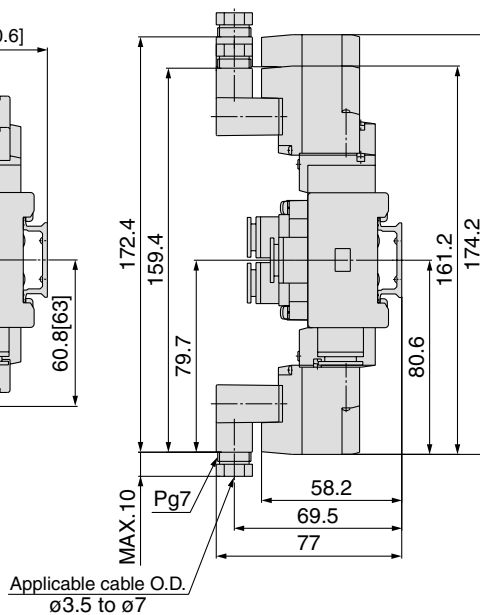
L plug connector (L)



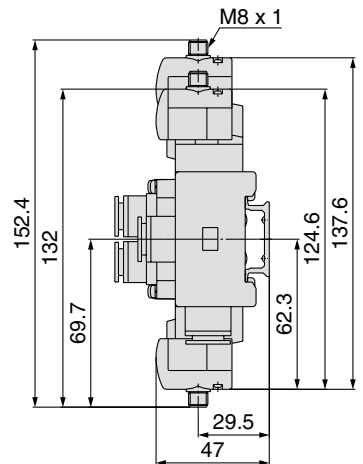
M plug connector (M)



DIN terminal (D)



M8 connector (WO)



Note) Refer to page 490 for dimensions of connector types.

Series 10-SY3000/5000/7000

Type 41
Type 42

Base mounted manifold
Bar stock type /
Individual wiring

How to Order Manifold

Type 41 / Compact type

10 — SS5Y 5 — 41 — 05 — C8

Clean series

Manifold series

3	10-SY3000
5	10-SY5000

Stations

02	2 stations
:	:
20	20 stations



* This also includes the number of blanking plate assemblies.

A, B port size

Thread piping

Symbol	Port size	Applicable series
M5	M5 x 0.8	10-SY3000
01	1/8	10-SY5000

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

* Except M5

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	10-SY3000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY5000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	5/32 One-touch fitting for ø	10-SY3000
N7	1/4 One-touch fitting for ø	10-SY3000
N7	1/4 One-touch fitting for ø	10-SY5000
N9	5/16 One-touch fitting for ø	10-SY5000

Type 42/External pilot capable type

10 — SS5Y 5 — 42 — 05 — C8

Clean series

Manifold series

3	10-SY3000
5	10-SY5000
7	10-SY7000

Stations

02	2 stations
:	:
20	20 stations

A, B port size

Thread piping

Symbol	Port size	Applicable series
01	1/8	10-SY3000
02	1/4	10-SY5000
02	1/4	10-SY7000

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

One-touch fitting (Metric size)

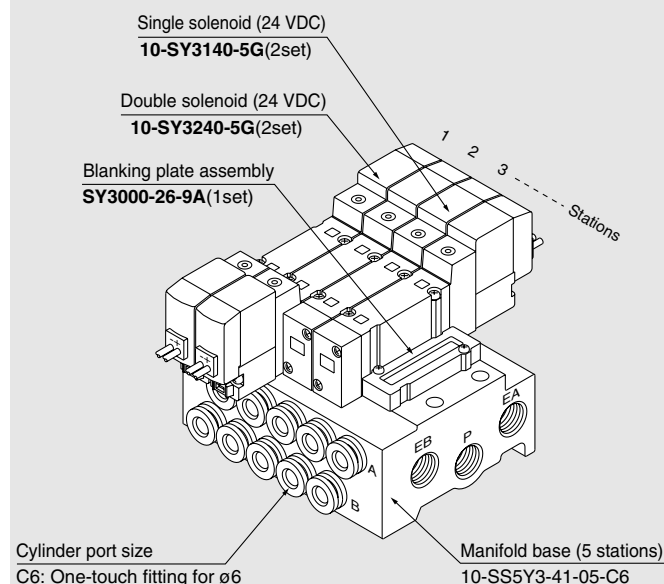
Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	10-SY3000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY5000
C10	One-touch fitting for ø10	10-SY7000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø5/32"	10-SY3000
N7	One-touch fitting for ø1/4"	10-SY3000
N7	One-touch fitting for ø1/4"	10-SY5000
N9	One-touch fitting for ø5/16"	10-SY5000
N11	One-touch fitting for ø3/8"	10-SY7000

How to Order Valve Manifold Assembly

Ordering example



10-SS5Y3-41-05-C6 · 1 set (Type 41, 5 stations manifold base part no.)
 *10-SY3240-5G2 sets (Double solenoid part no.)
 *10-SY3140-5G2 sets (Single solenoid part no.)
 *SY3000-26-9A1 set (Blanking plate assembly part no.)

→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part numbers under the manifold base part no. In the case of complex arrangement, specify them on the manifold specification sheet.

How to Order Valves

10 — SY 5 2 40 □ □ — 5 L □ □

• Clean series

Series •

3	10-SY3000
5	10-SY5000
7	10-SY7000

Type of actuation •

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Pilot type •

Nil	Internal pilot
R	External pilot

Coil specifications •

Nil	Standard
T	With power saving circuit <only 24 VDC and 12 VDC>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage •

DC specifications

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

AC specifications (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", only DC voltage is available.

• Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

• Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", only DC voltage is available.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
* For AC, there is no "S" option. It is already built-in to the rectifier circuit.

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			24, 12 VDC 100, 110 VAC 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 connector
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm) LN: Without lead wire LO: Without connector	M: With lead wire (length 300 mm) MN: Without lead wire MO: Without connector	D: With connector DO: Without connector	WO: Without connector cable W□: With connector cable ^{Note 1)}



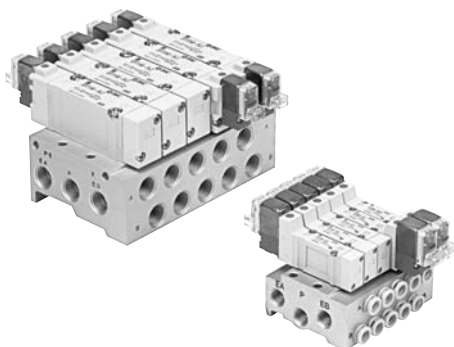
* "LN", "MN" type: with 2 sockets.

* For DIN terminal of 10-SY3000 series, refer to page 488.

* DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 482.

* For connector cable of M8 connector, refer to page 490.

Note 1) Please enter cable length in □ with reference to page 491.



Manifold Specifications

Model		10-SS5Y3-41	10-SS5Y3-42	10-SS5Y5-41	10-SS5Y5-42	10-SS5Y7-42
Applicable valve		10-SY3□40		10-SY5□40		10-SY7□40
Manifold type		Single base / B mount				
P(SUP)/R(EXH)		Common SUP, Common EXH				
Stations		2 to 20 stations ^{Note 1)}				
A, B port piping specifications	Location	Base				
	Direction	Side				
Port size	P, EA, EB port	1/8		1/4		1/4
	A, B port	M5 x 0.8	1/8	1/8	1/4	1/4
		C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)	C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)	C10 (One-touch fitting for ø10)
Manifold base weight W (g) n: Stations		W = 30n + 50	W = 37n + 63	W = 61n + 101	W = 79n + 127	W = 100n + 151



Note 1) For more than 10 stations (more than 5 stations in the case of 10-SS5Y7), supply pressure to P port on both sides and exhaust from EA and EB port on both sides.

Note 2) Refer to "Manifold Option" on page 458.

Flow Characteristics

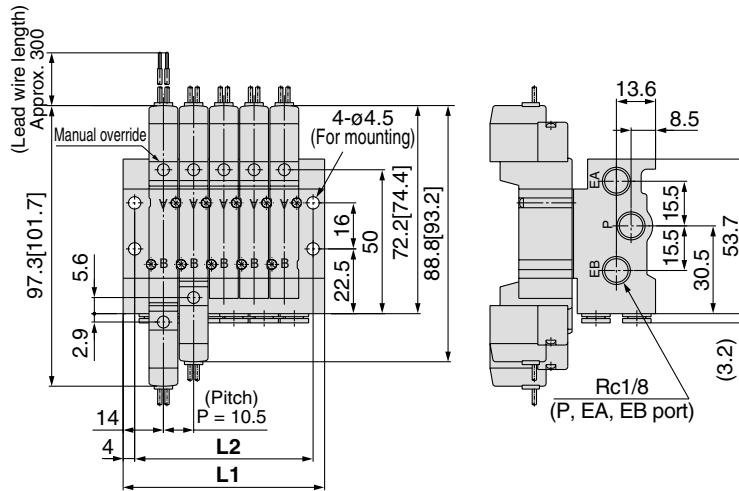
Model	Port size		Flow characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5Y3-41	1/8	C6	0.75	0.19	0.18	0.81	0.23	0.20
10-SS5Y3-42	1/8	C6	0.75	0.20	0.18	0.82	0.20	0.20
10-SS5Y5-41	1/4	C8	1.8	0.23	0.44	1.9	0.16	0.45
10-SS5Y5-42	1/4	C8	1.9	0.20	0.46	1.9	0.12	0.43
10-SS5Y7-42	1/4	C10	3.0	0.25	0.75	3.0	0.12	0.66



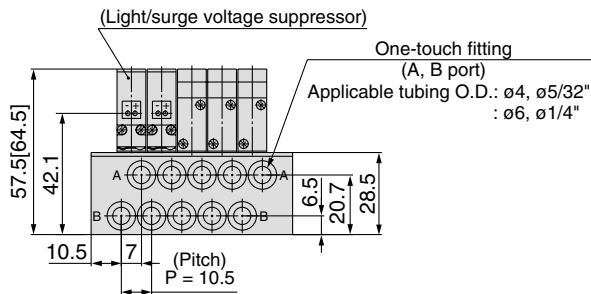
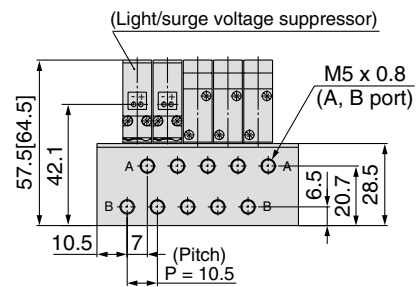
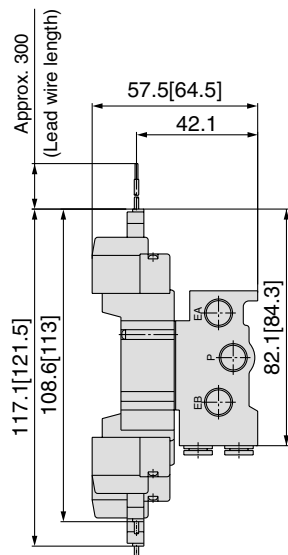
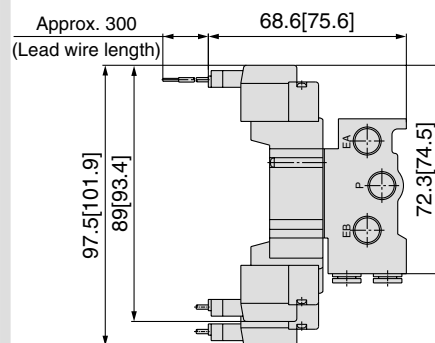
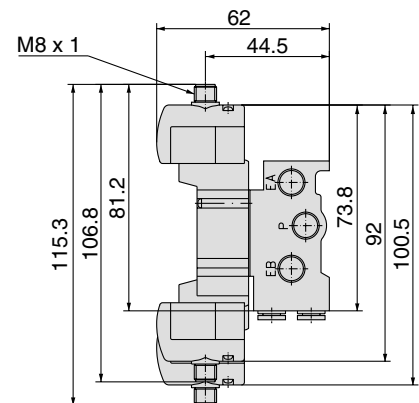
Note) The value is for manifold base with 5 stations and individually operated 2 position type.

10-SY3000: 10-SS5Y3-41- Stations -M5, ^{C4,N3}
^{C6,N7}

Note) []: AC

Grommet (G)

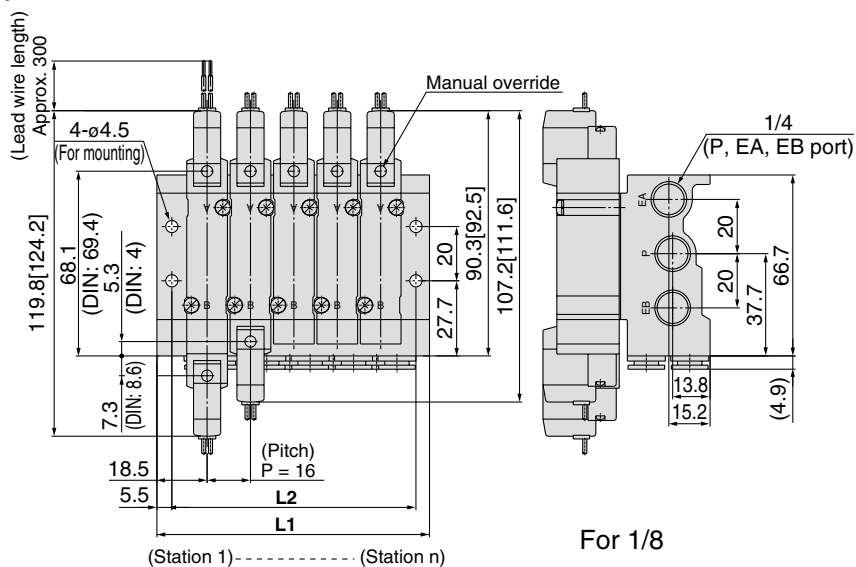
(Station 1) ----- (Station n)

**M5****L plug connector (L)****M plug connector (M)****M8 connector (WO)**

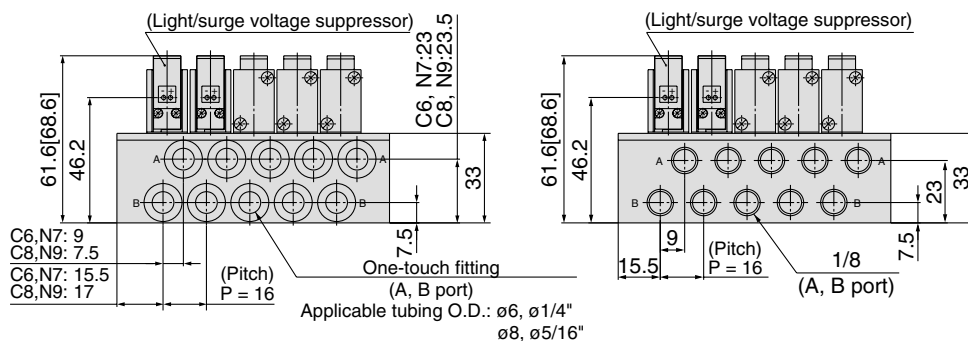
Note) Refer to page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	38.5	49	59.5	70	80.5	91	101.5	112	122.5	133	143.5	154	164.5	175	185.5	196	206.5	217	227.5
L2	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5

Grommet (G)



For 1/8

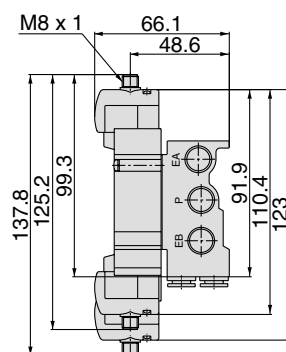
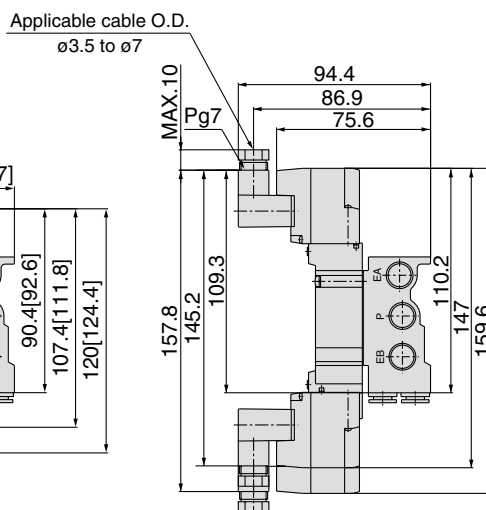
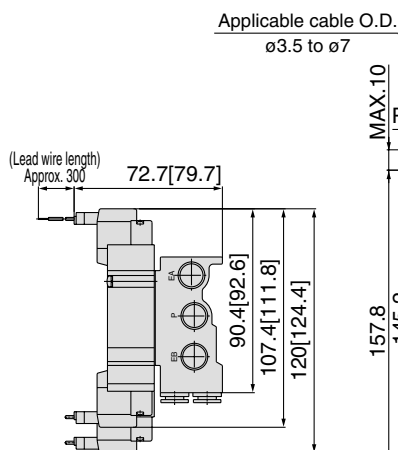
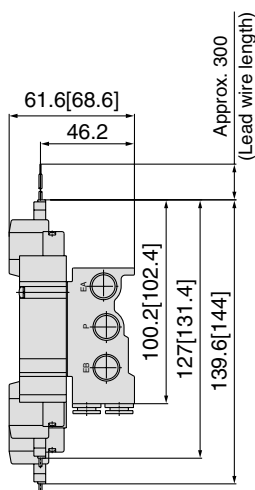


L plug connector (L)

M plug connector (M)

DIN terminal (D)

M8 connector (WO)



Note) Refer to page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	52.5	68.5	84.5	100.5	116.5	132.5	148.5	164.5	180.5	196.5	212.5	228.5	244.5	260.5	276.5	292.5	308.5	324.5	340.5
L2	42	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282	298	314	330

10-SY3000:10-SS5Y3-42-

Stations

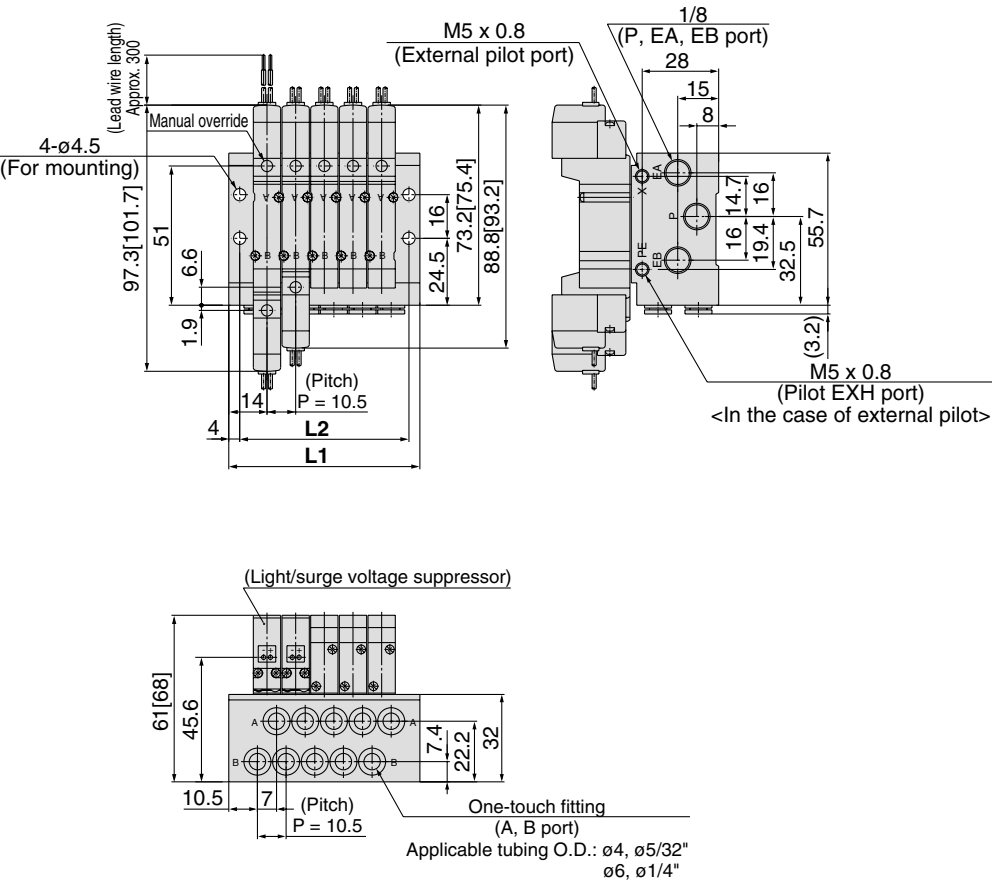
C4,N3

C6,N7

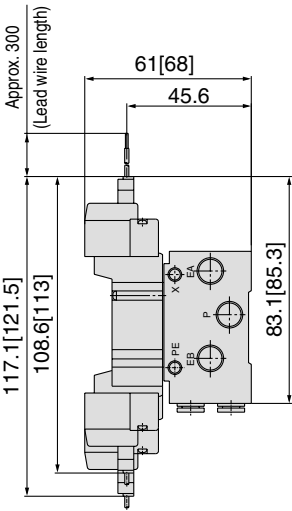


Note) []: AC

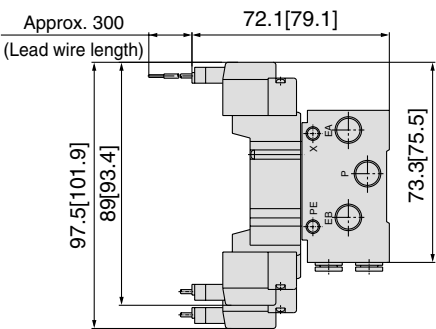
Grommet (G)



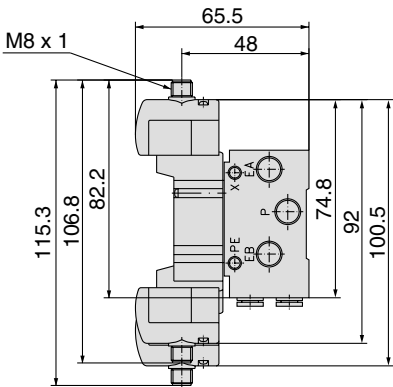
L plug connector (L)



M plug connector (M)



M8 connector (WO)

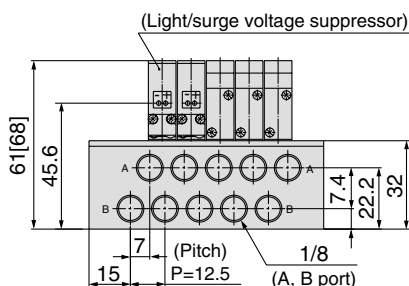
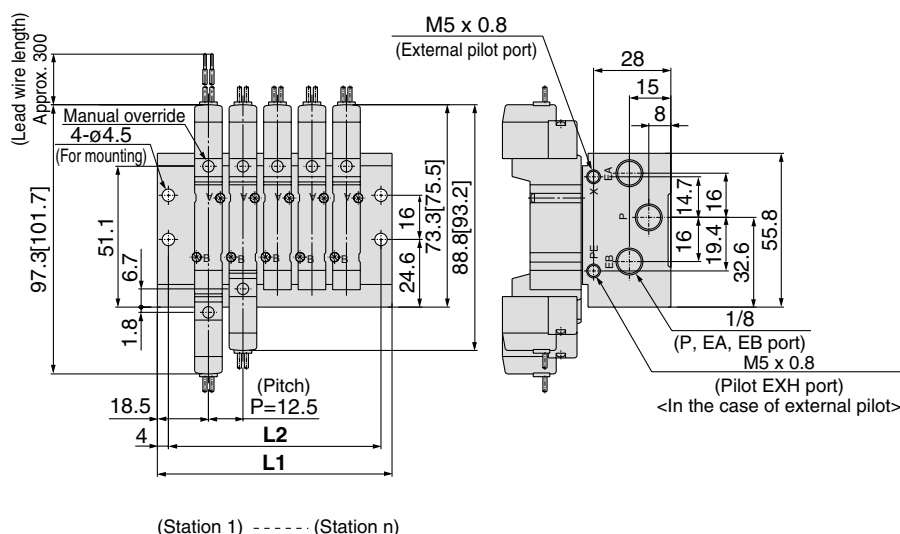


Note) Refer to page 490 for dimensions of connector types.

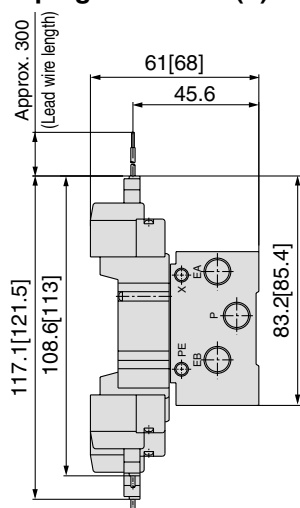
Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	38.5	49	59.5	70	80.5	91	101.5	112	122.5	133	143.5	154	164.5	175	185.5	196	206.5	217	227.5
L2	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5



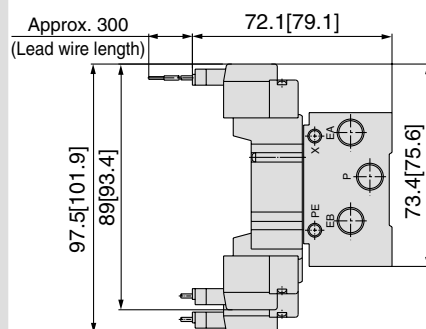
Grommet (G)



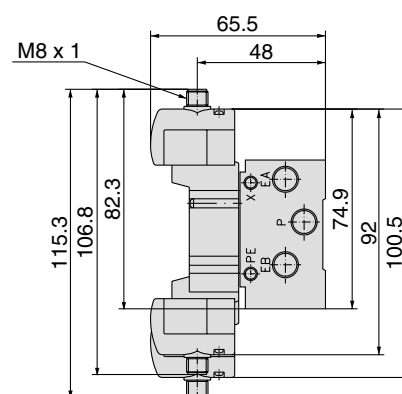
L plug connector (L)



M plug connector (M)



M8 connector (WO)

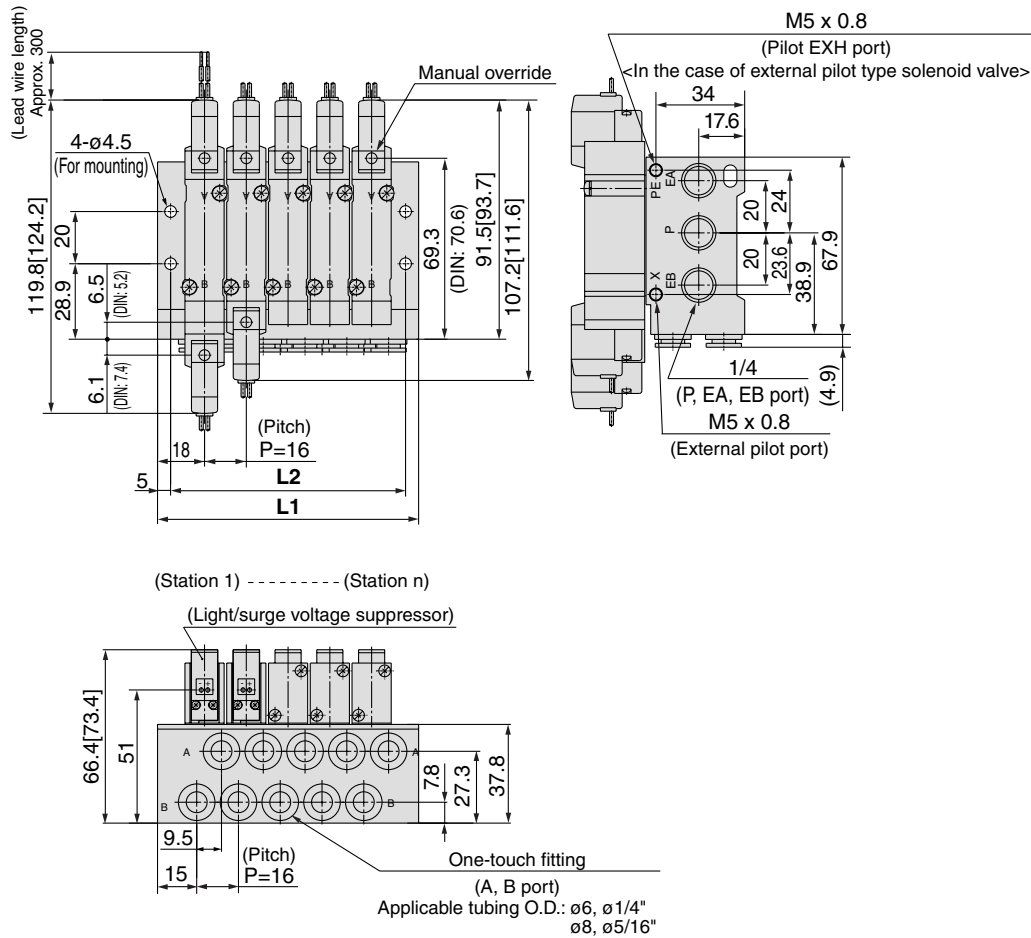
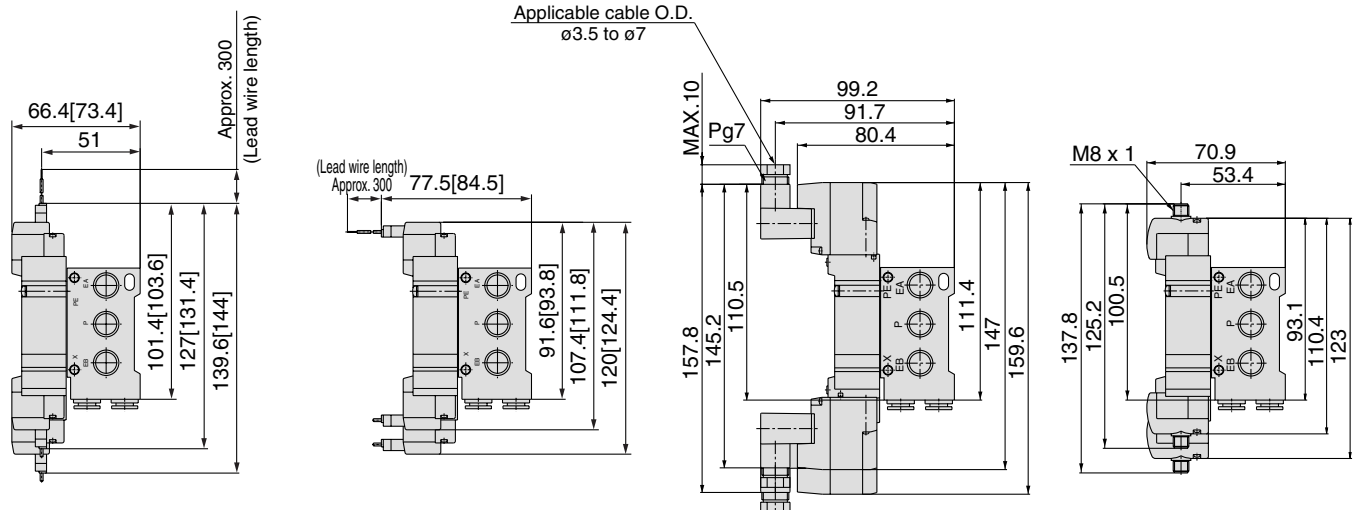


Note) Refer to page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	47.5	60	72.5	85	97.5	110	122.5	135	147.5	160	172.5	185	197.5	210	222.5	235	247.5	260	272.5
L2	39.5	52	64.5	77	89.5	102	114.5	127	139.5	152	164.5	177	189.5	202	214.5	227	239.5	252	264.5

10-SY5000: 10-SS5Y5-42- Stations - C4,N3
C6,N7

Note) []: AC

Grommet (G)**L plug connector (L)****M plug connector (M)****DIN terminal (D)****M8 connector (WO)**

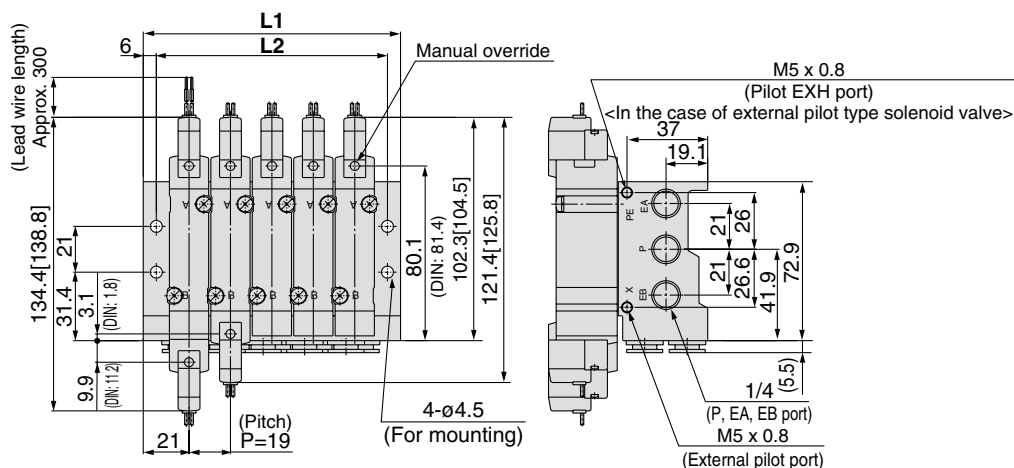
Note) Refer to page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
L2	42	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282	298	314	330

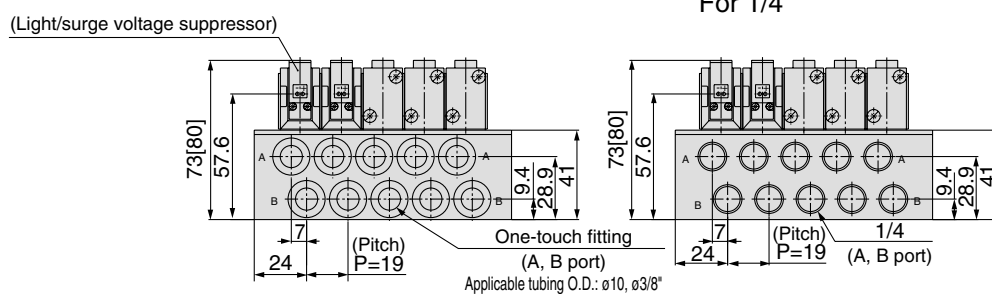


10-SY7000: 10-SS5Y7-42- Stations -02, C10, N11

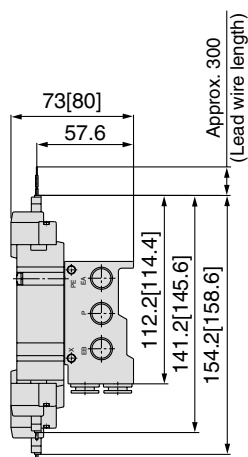
Grommet (G)



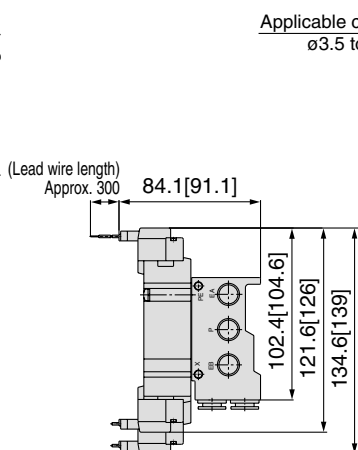
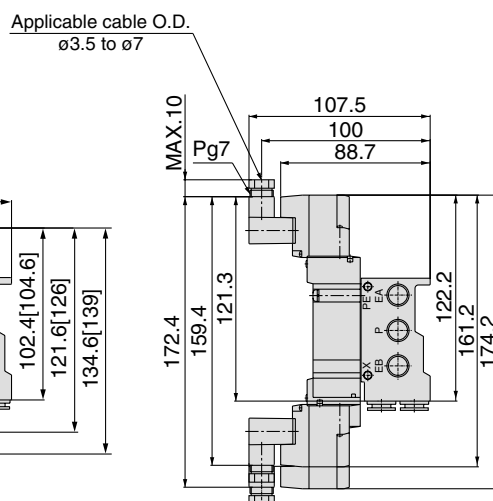
(Station 1)----- (Station n)



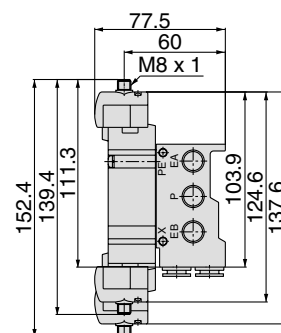
L plug connector (L)



M plug connector (M)

**DIN terminal (D)**

M8 connector (WO)



Note) Refer to page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	61	80	99	118	137	156	175	194	213	232	251	270	289	308	327	346	365	384	403
L2	49	68	87	106	125	144	163	182	201	220	239	258	277	296	315	334	353	372	391

Series 10-SY9000

Type 43

Base mounted manifold
Stacking type / Individual wiring

How to Order Manifold

10-SS5Y9-43-05U...C8

Clean series

Manifold series

9	10-SY9000
---	-----------

Valve stations

Symbol	Stations
02	2 stations
...	...
20	20 stations

* This also includes the number of blanking plate assemblies.

P, R port outlets

Symbol	Port outlet	Applicable number of stations
U	U side	2 to 10 stations
D	D side	
B	Both sides	2 to 20 stations

SUP/EXH block assembly specifications

Symbol	Specifications
Nil	Standard/Internal pilot
R	External pilot

Thread type

Symbol	Thread type
Nil	Rc
F	G
N	NPT
T	NPTF

Option

Symbol	Mounting
Nil	Direct mounting
D	DIN rail mounting (with DIN rail)
DO	DIN rail mounting (without DIN rail)
D*	When a DIN rail longer than the specified stations is required, specify the station number in asterisk part.

A, B port size

Thread piping

Symbol	Port size
02	1/4
03	3/8

One-touch fitting (Metric size)

Symbol	Port size
C8	One-touch fitting for ø8
C10	One-touch fitting for ø10
C12	One-touch fitting for ø12
M	Mixed

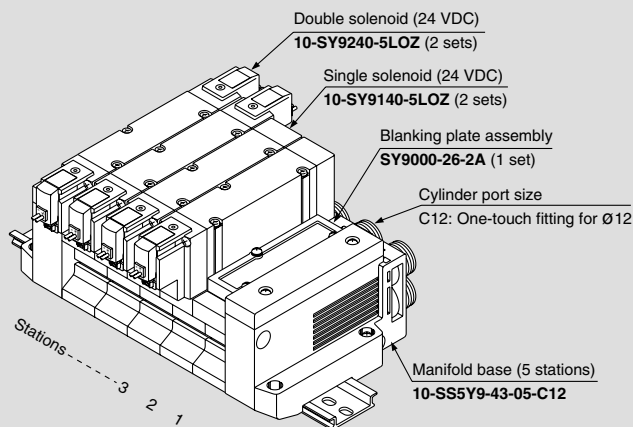
One-touch fitting (Inch size)

Symbol	Port size
N9	One-touch fitting for ø5/16"
N11	One-touch fitting for ø3/8"
M	Mixed

* In the case of mixed specifications (M), indicate separately on the manifold specification sheet.

How to Order Manifold Assembly (Example)

Ordering example



10-SS5Y9-43-05B-C12.....1 set (Type 43, 5 station manifold base part no.)
 * SY9000-26-2A1 set (Blanking plate assembly part no.)
 * 10-SY9140-5LOZ.....2 sets (Single solenoid part no.)
 * 10-SY9240-5LOZ.....2 sets (Double solenoid part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part numbers under the manifold base part number. In the case of complex arrangement, specify them on the manifold specification sheet.

How to Order Valves

10 — SY 9 2 40 — — 5 L — —

• Clean series

Series

9	10-SY9000
---	-----------

Type of actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Pilot type

Nil	Internal pilot
R	External pilot

Coil specifications

Nil	Standard
T	With power saving circuit <24, 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage

For DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

For AC (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", only DC voltage is available.

• Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

• Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", only DC voltage is available.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			24, 12 VDC 100, 110 VAC 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	D: With connector	WO: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	MN: Without lead wire	DO: Without connector	W□: With connector cable ^{Note 1)}
	LO: Without connector	MO: Without connector		

* "LN", "MN" type: with 2 sockets.
* DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 482.
* For connector cable of M8 connector, refer to page 490.
Note 1) Be sure to enter the symbol of cable length with reference to page 491.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

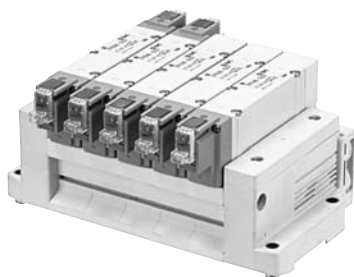
Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Manifold Specifications

Model		10-SS5Y9-43
Applicable valve		10-SY9□40
Manifold type		Stacking type
P(SUP)/R(EXH)		Common SUP, Common EXH
Valve stations		2 to 20 stations ^{Note 1)}
A, B port piping specifications	Location	Base
	Direction	Side
Port size	P, EA, EB port	C12 (One-touch fitting for ø12)
	A, B port	1/4
		3/8
		C8 (One-touch fitting for ø8) C10 (One-touch fitting for ø10) C12 (One-touch fitting for ø12)
Manifold base weight W (g) n: Stations		W = 107n + 330



Note 1) For more than 10 stations, supply pressure to P port on both sides and exhaust from EA and EB port on both sides.

Note 2) Refer to "Manifold Option" on page 458.

Flow Characteristics

Model	Port size		Flow characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5Y9-43	C12	C12	6.4	0.29	1.6	7.3	0.29	1.8



Note) The value is for manifold base with 5 stations and individually operated 2 position type.

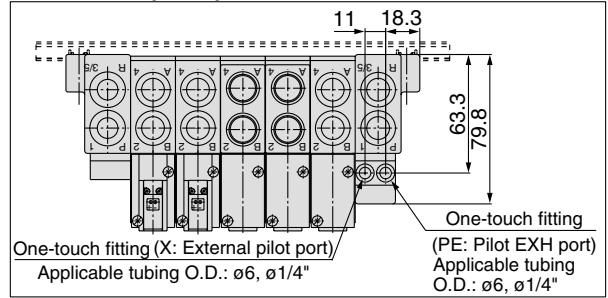
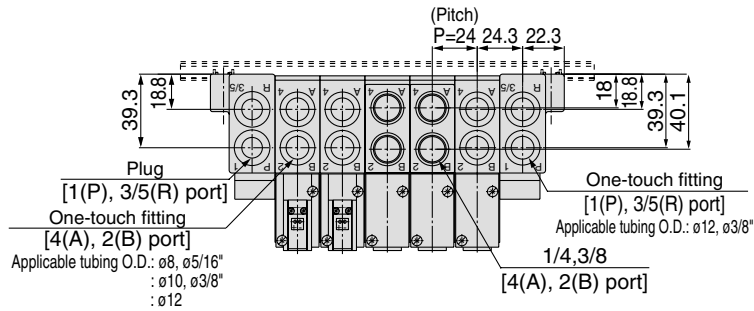
10-SY9000:10-SS5Y9-43- Stations D- 02, C8, N9
03, C10, N11
C12 **(-D)**

Note) [] : AC

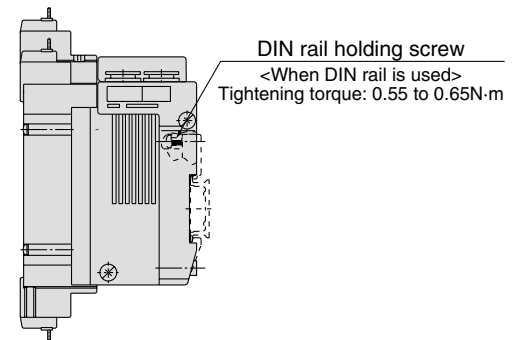
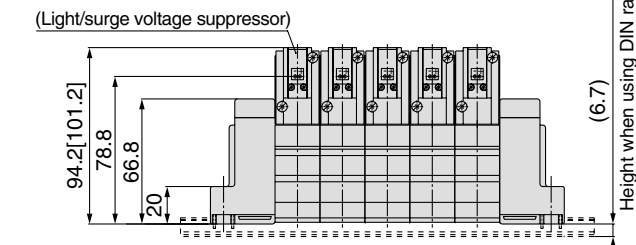
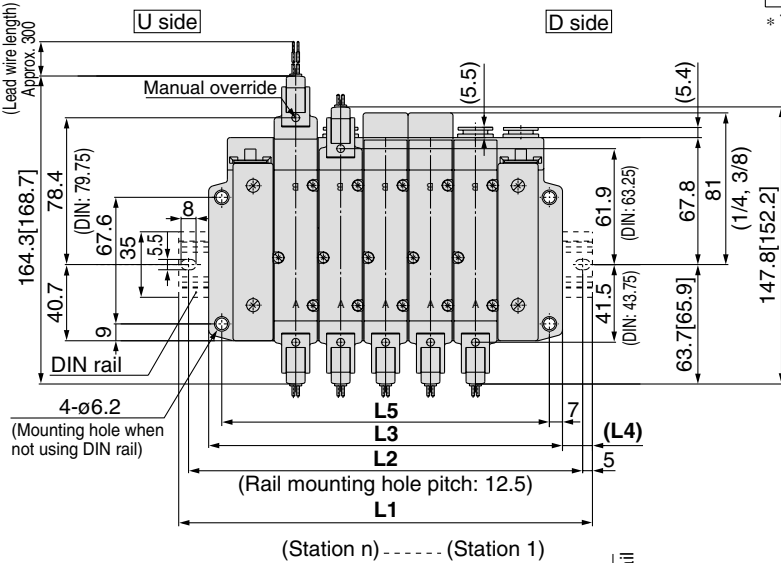
Grommet (G)

* When P, R port outlets are indicated on the D side, the P, R ports on the opposite side are plugged.

With external pilot specifications



* The external pilot's extracting position is in the D side.



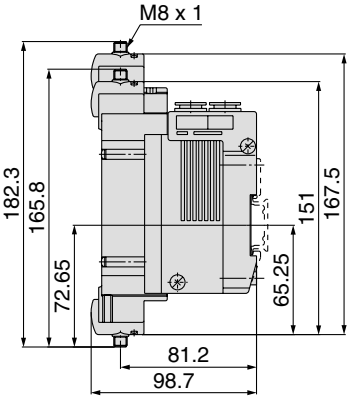
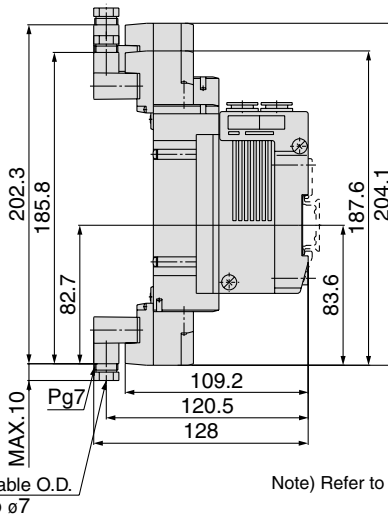
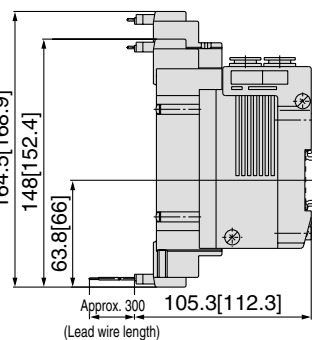
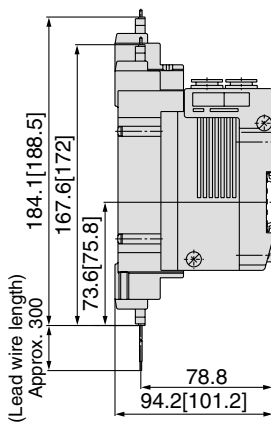
Stations n	2 stations	3	4	5	6	7	8	9	10 stations
L1	148	173	198	223	248	260.5	285.5	310.5	335.5
L2	137.5	162.5	187.5	212.5	237.5	250	275	300	325
L3	117	141	165	189	213	237	261	285	309
L4	15.5	16	16.5	17	17.5	12	12.5	13	13.5
L5	103	127	151	175	199	223	247	271	295

L plug connector (L)

M plug connector (M)

DIN terminal (D)

M8 connector (WO)



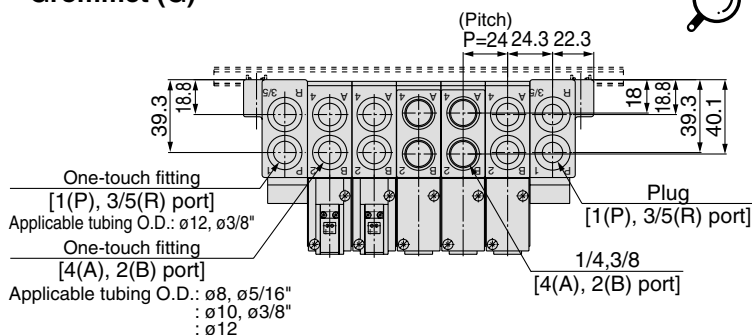
Applicable cable O.D.
ø3.5 to ø7

Note) Refer to page 490 for dimensions of connector types.

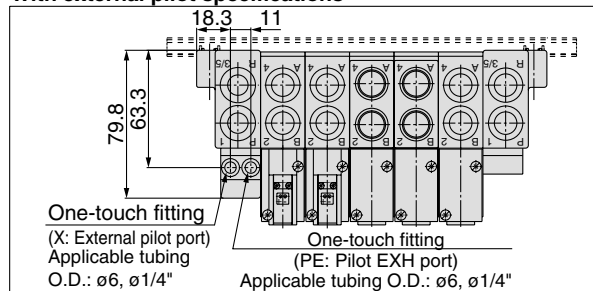


Note) [] : AC

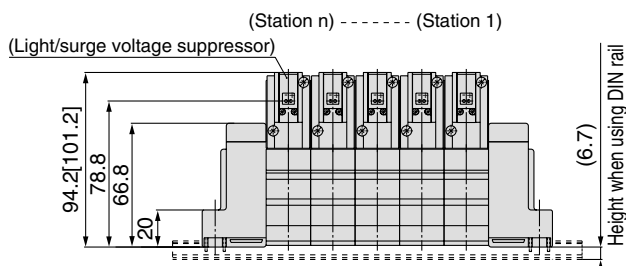
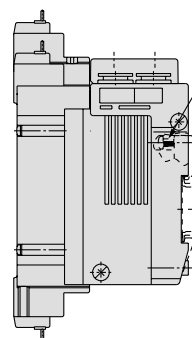
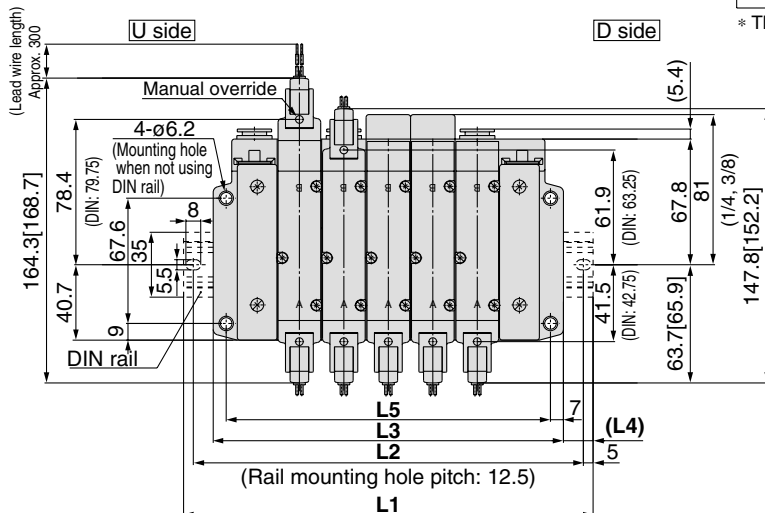
Grommet (G)



With external pilot specifications

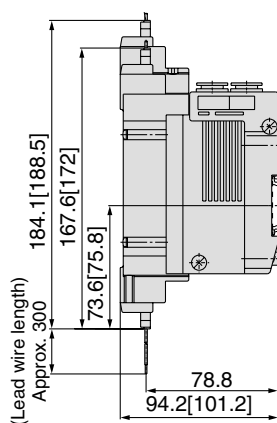


* The external pilot's extracting position is in the U side.

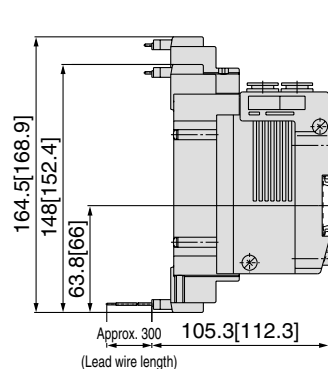


Stations n	2 stations	3	4	5	6	7	8	9	10 stations
L1	148	173	198	223	248	260.5	285.5	310.5	335.5
L2	137.5	162.5	187.5	212.5	237.5	250	275	300	325
L3	117	141	165	189	213	237	261	285	309
L4	15.5	16	16.5	17	17.5	12	12.5	13	13.5
L5	103	127	151	175	199	223	247	271	295

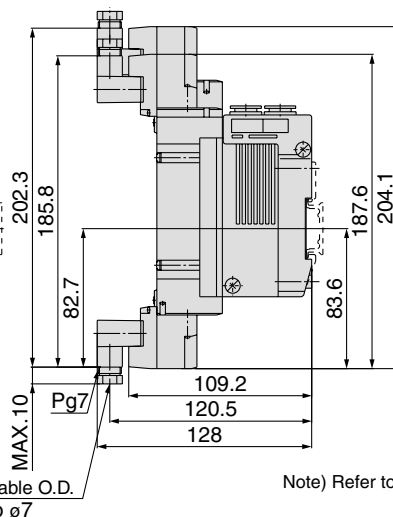
L plug connector (L)



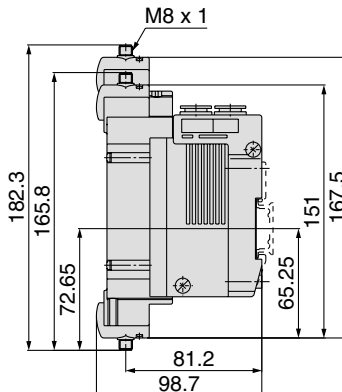
M plug connector (M)



DIN terminal (D)



M8 connector (WO)

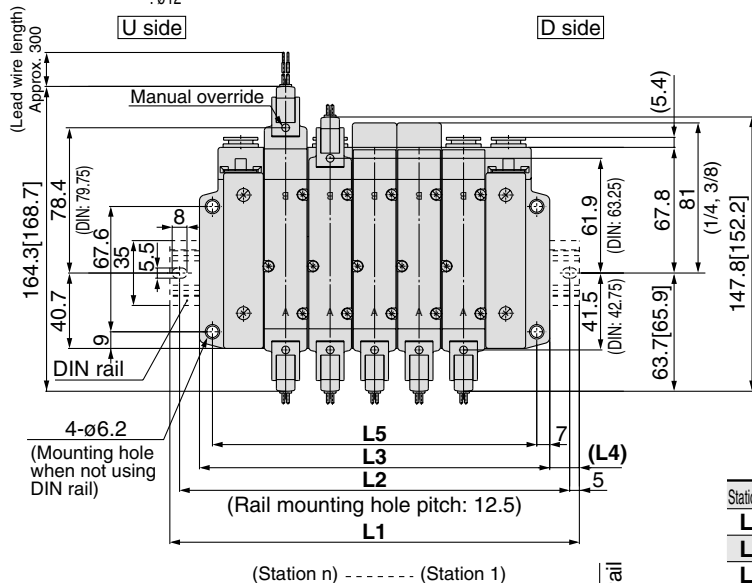
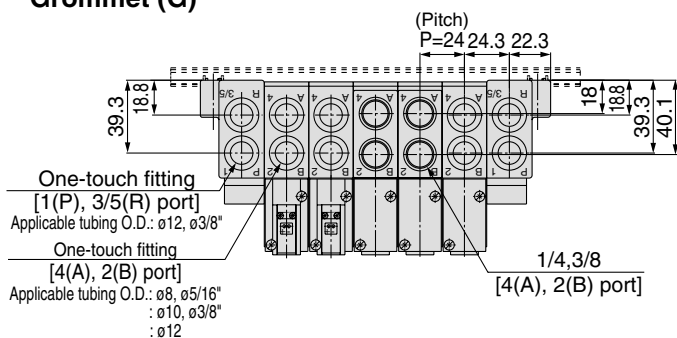


Note) Refer to page 490 for dimensions of connector types.

10-SY9000:10-SS5Y9-43- Stations B- 02, C8, N9
03, C10, N11
C12 (-D)

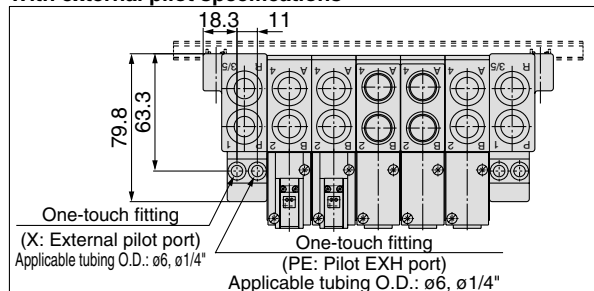
Note) [] : AC

Grommet (G)

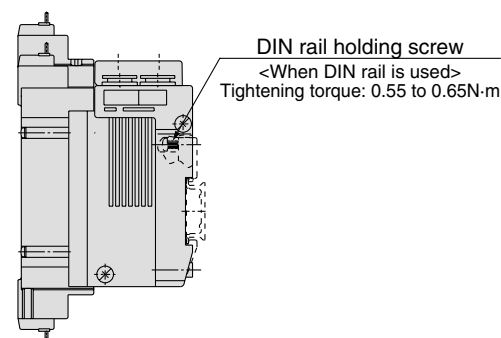


* When P, R port outlets are indicated on the B side, the P, R ports on the both sides are in the open state.

With external pilot specifications



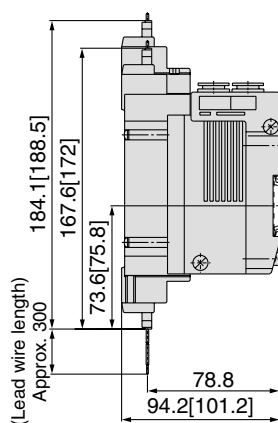
* The external pilot's extracting position is in the B side (both sides).



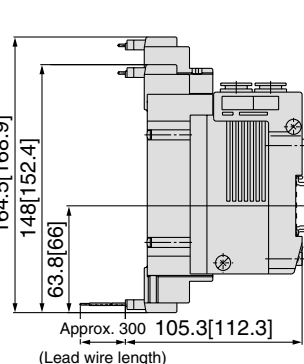
Stations n	2 stations	3	4	5	6	7	8	9	10 stations
L1	148	173	198	223	248	260.5	285.5	310.5	335.5
L2	137.5	162.5	187.5	212.5	237.5	250	275	300	325
L3	117	141	165	189	213	237	261	285	309
L4	15.5	16	16.5	17	17.5	12	12.5	13	13.5
L5	103	127	151	175	199	223	247	271	295

Stations n	11 stations	12	13	14	15	16	17	18	19	20 stations
L1	360.5	385.5	410.5	435.5	460.5	485.5	510.5	535.5	560.5	573
L2	350	375	400	425	450	475	500	525	550	562.5
L3	333	357	381	405	429	453	477	501	525	549
L4	14	14.5	15	15.5	16	16.5	17	17.5	18	12
L5	319	343	367	391	415	439	463	487	511	535

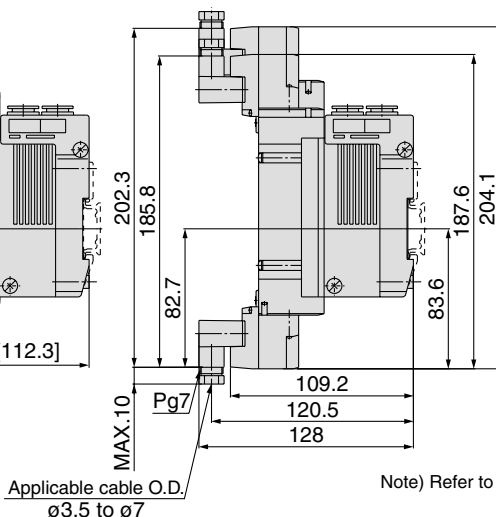
L plug connector (L)



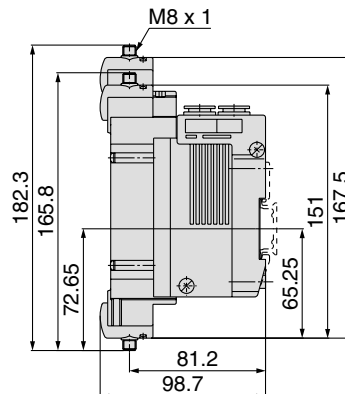
M plug connector (M)



DIN terminal (D)



M8 connector (WO)



Note) Refer to page 490 for dimensions of connector types.

Series 10-SY3000/5000/7000

Type **41P**

Type **42P**

Base mounted manifold
Bar stock type / Flat ribbon cable

How to Order Manifold

Type 41P / Compact type

10—SS5Y 5—41P—05—C8

- Clean series**
- Manifold series**

3	10-SY3000
5	10-SY5000
- Stations**

03	3 stations
12	12 stations

* 10-SS5Y3 has 4 to 12 stations.
- Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

* Except M5
- A, B port size**
- Thread piping**

Symbol	Port size	Applicable series
M5	M5 x 0.8	10-SY3000
01	1/8	10-SY5000

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	10-SY3000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY5000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø 5/32"	10-SY3000
N7	One-touch fitting for ø 1/4"	10-SY3000
N7	One-touch fitting for ø 1/4"	10-SY5000
N9	One-touch fitting for ø 5/16"	10-SY5000

42P Type 42P / Common external pilot type

10—SS5Y 5—42P—05—C8

- Clean series**
- Manifold series**

3	10-SY3000
5	10-SY5000
7	10-SY7000
- Stations**

03	3 stations
12	12 stations

* 4 to 12 stations in the case of 10-SS5Y3.
- Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF
- A, B port size**
- Thread piping**

Symbol	Port size	Applicable series
01	1/8	10-SY3000
02	1/4	10-SY5000
02	1/4	10-SY7000

One-touch fitting (Metric size)

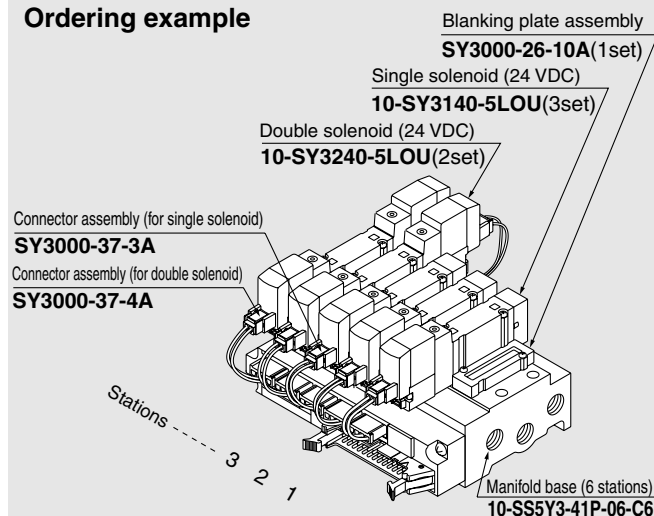
Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	10-SY3000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY5000
C10	One-touch fitting for ø10	10-SY7000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø 5/32"	10-SY3000
N7	One-touch fitting for ø 1/4"	10-SY3000
N7	One-touch fitting for ø 1/4"	10-SY5000
N9	One-touch fitting for ø 5/16"	10-SY5000
N11	One-touch fitting for ø 3/8"	10-SY7000

How to Order Manifold Assembly (Example)

Ordering example



10-SS5Y3-41P-06-C6 ..1 set (Type 41P, 6 station manifold base part no.)

* **SY3000-26-10A**1 set (Blanking plate assembly part No.)

* **10-SY3140-5LOU**3sets (Single solenoid part no.)

* **10-SY3240-5LOU**2 sets (Double solenoid part no.)

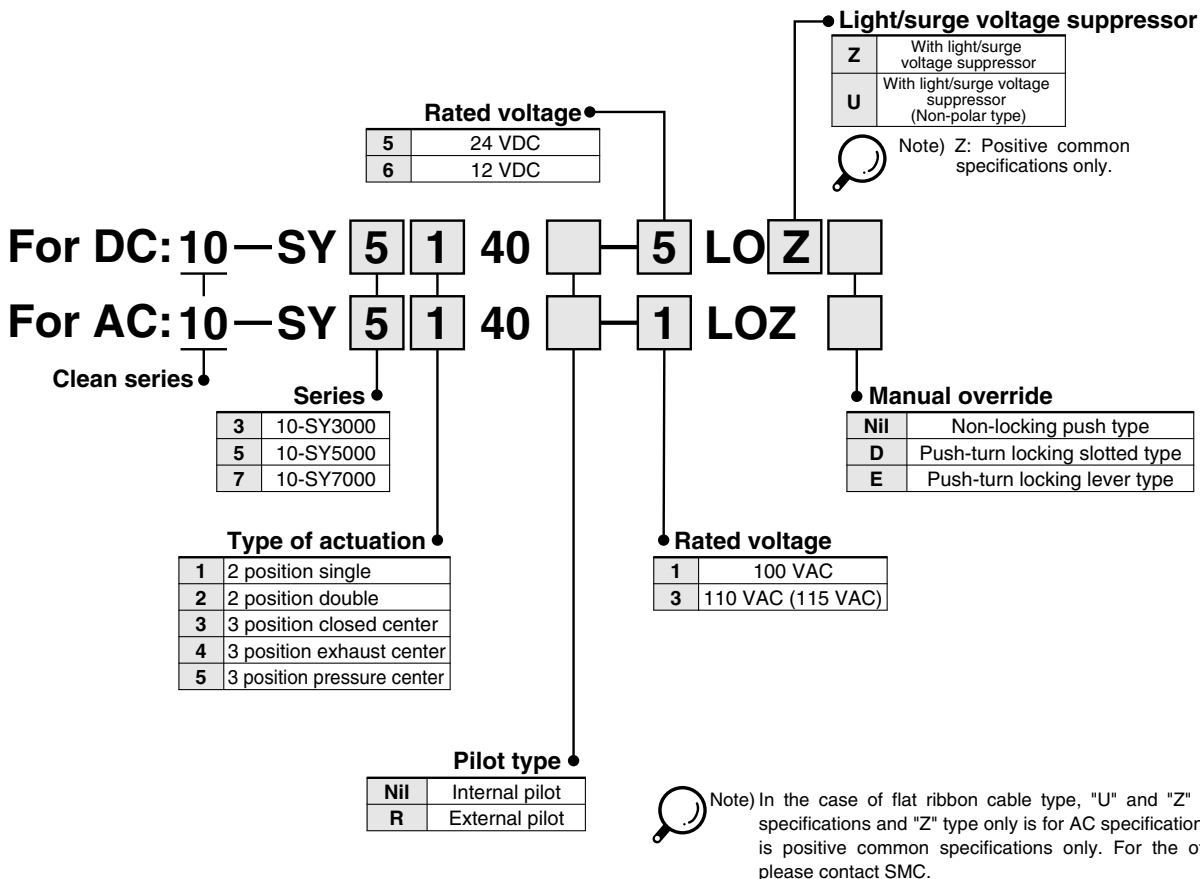
* **SY3000-37-3A**3 sets (Connector assembly part no.)

* **SY3000-37-4A**2 sets (Connector assembly part No.)

→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part number under the manifold base part no. In the case of complex arrangement, specify them on the manifold specification sheet.

How to Order Valves



How to Order Connector Assembly

For 12, 24 VDC

Specifications	For 10-SY3000	For 10-SY5000/7000
For single solenoid	SY3000-37-3A	SY5000-37-3A
Double solenoid 3 position	SY3000-37-4A	SY5000-37-4A
Single with spacer assembly	SY5000-37-3A	SY5000-37-5A
Double, 3 position with spacer assembly	SY3000-37-6A	SY5000-37-6A

For 100 VAC

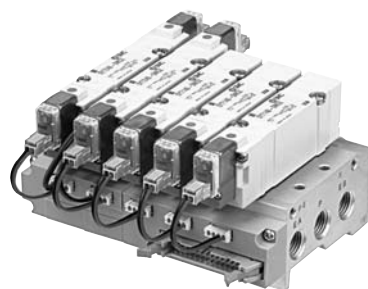
Specifications	For 10-SY3000	For 10-SY5000/7000
For single solenoid	SY3000-37-32A	SY5000-37-15A
Double solenoid 3 position type	SY3000-37-33A	SY5000-37-16A
Single with spacer assembly	SY5000-37-15A	SY5000-37-17A
Double, 3 position with spacer assembly	SY3000-37-34A	SY5000-37-18A

110 VAC (115 VAC)

Specifications	For 10-SY3000	For 10-SY5000/7000
For single solenoid	SY3000-37-35A	SY5000-37-19A
Double solenoid 3 position type	SY3000-37-36A	SY5000-37-20A
Single with spacer assembly	SY5000-37-19A	SY5000-37-21A
Double, 3 position with spacer assembly	SY3000-37-37A	SY5000-37-22A

- Multiple valve wiring is simplified through the use of the flat cable connector
- Clean appearance

In the case of a flat ribbon cable type, each valve is wired on the print board of manifold base to allow the external wiring to be piped all together with 26 pins MIL connector.



Flat ribbon cable manifold specifications

Model	10-SS5Y3-41P	10-SS5Y3-42P	10-SS5Y5-41P	10-SS5Y5-42P	10-SS5Y7-42P
Applicable valve	10-SY3□40		10-SY5□40		10-SY7□40
Manifold type	Single base / B mount				
P(SUP) / R(EXH)	Common SUP, Common EXH				
Valve stations	4 to 12 stations ^{Note 1)}		3 to 12 stations ^{Note 1)}		
A, B port Piping	Location		Base		
specifications	Direction		Side		
Port size	P, EA, EB port	1/8		1/4	
	A, B port	M5 x 0.8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	1/8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	1/8 C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)	1/4 C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8) C10 (One-touch fitting for ø10)
Manifold base weight W (g) n: Stations	W = 39n + 83	W = 48n + 99	W = 67n + 118	W = 88n + 151	W = 109n + 174
Applicable flat ribbon cable connector	Flat ribbon cable connector, Socket: 26 pins MIL type with strain relief, Conforming to MIL-C-83503				
Internal wiring	In common between +COM and -COM (Z type: +COM only)				
Rated voltage	12, 24 VDC 100, 110 VAC				

Note 1) For more than 10 stations (more than 5 stations in the case of 10-SS5Y7), supply pressure to P port on both sides and exhaust from EA and EB port on both sides.

Note 2) The withstand voltage specification for the wiring unit section is JIS C 0704, Grade 1 or its equivalent.

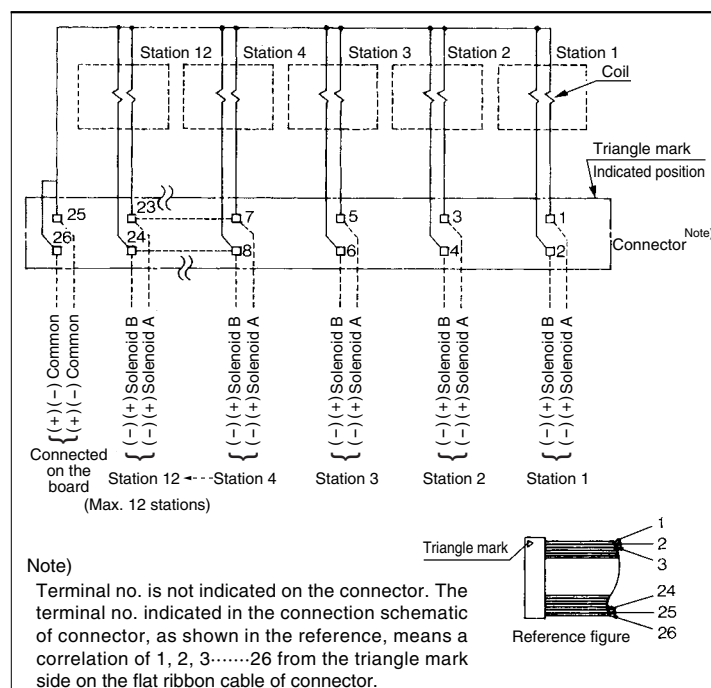
Note 3) Refer to "Manifold Option" on page 458.

Flow Characteristics

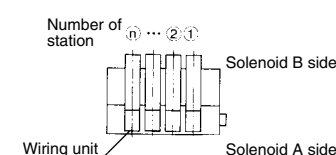
Model	Port size		Flow characteristics					
	1,5,3 (P,EA,EB)	4,2 (A,B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5Y3-41P	$\frac{1}{8}$	C6	0.75	0.19	0.18	0.81	0.23	0.20
10-SS5Y3-42P	$\frac{1}{8}$	C6	0.75	0.20	0.18	0.82	0.20	0.20
10-SS5Y5-41P	$\frac{1}{4}$	C8	1.8	0.23	0.44	1.9	0.16	0.45
10-SS5Y5-42P	$\frac{1}{4}$	C8	1.9	0.20	0.46	1.9	0.12	0.43
10-SS5Y7-42P	$\frac{1}{4}$	C10	3.0	0.25	0.75	3.0	0.12	0.66

Note) The value is for manifold base with 5 stations and individually operated 2 position type.

Internal wiring of manifold (Non-polar type)



- For more than 10 stations, both poles of the common should be wired.
- For single solenoid, connect to the solenoid A side.
- The maximum number of stations that can be accommodated is 12.
- For more stations, please contact SMC.

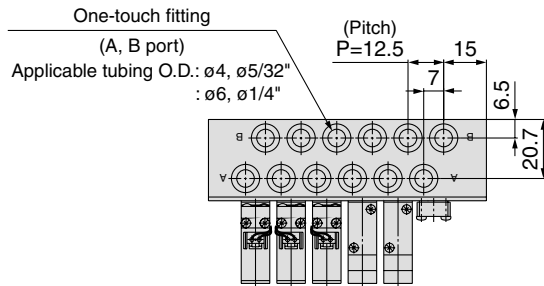
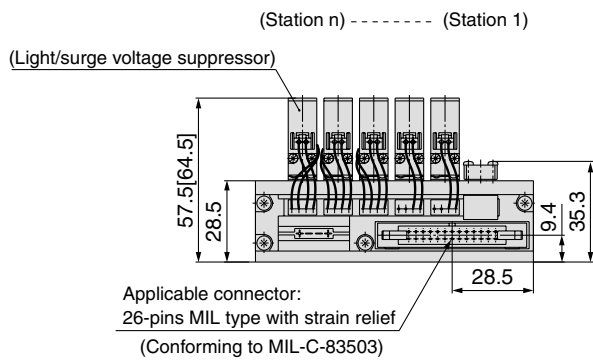
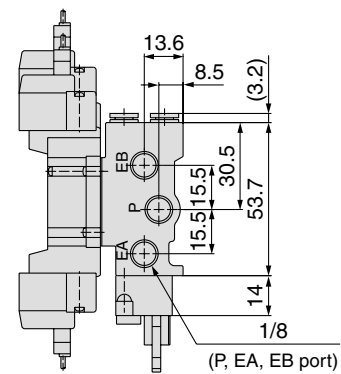
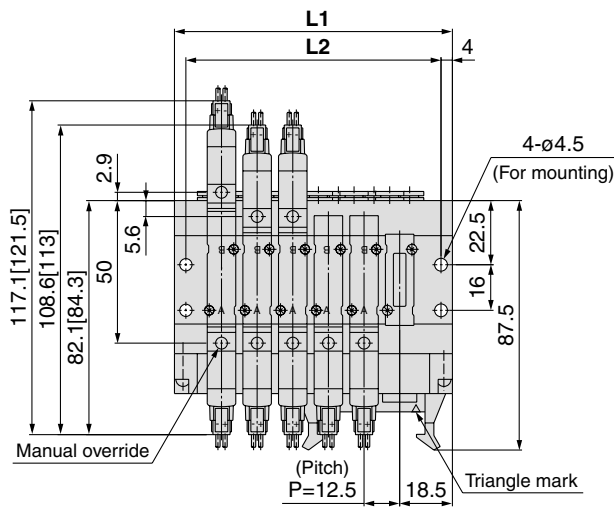
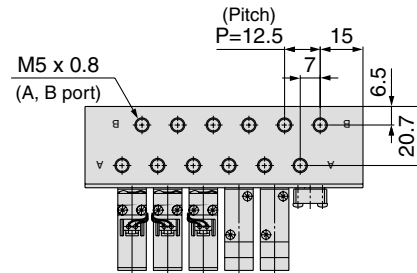


Caution

- For non-polar (U) valves, the electrical DC connections can be used with either positive and negative COM. For type (Z), only use with positive COM as the valve does not operate correctly when used with negative COM.

10-SY3000: 10-SS5Y3-41P- Stations -M5, C4,N3
C6,N7

(Note) [] : AC

**M5 x 0.8**

Stations n	4	5	6	7	8	9	10	11	12
L1	72.5	85	97.5	110	122.5	135	147.5	160	172.5
L2	64.5	77	89.5	102	114.5	127	139.5	152	164.5

Air cylinder

Rotary actuator

Air gripper

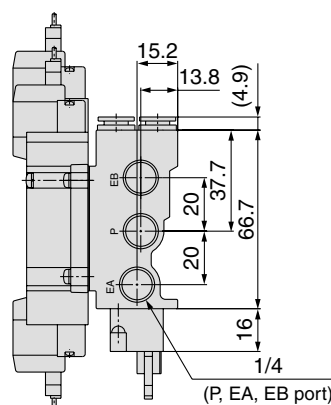
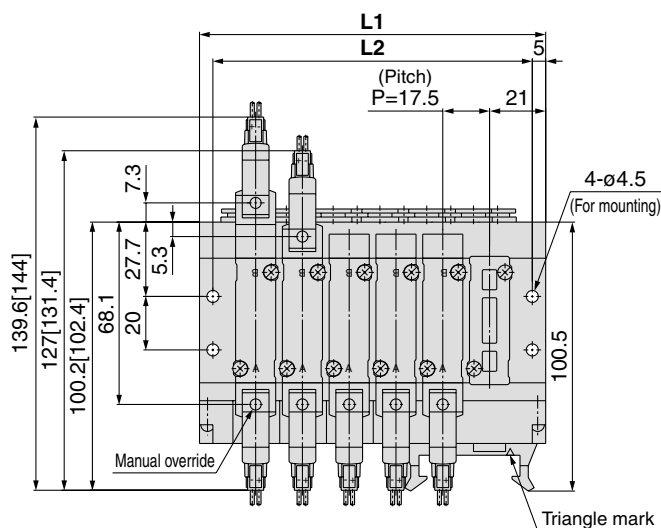
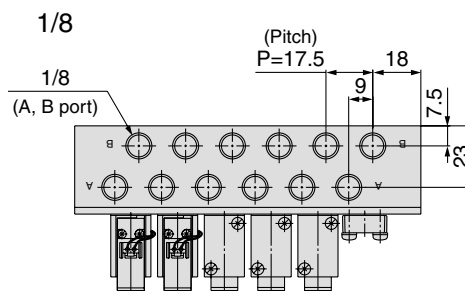
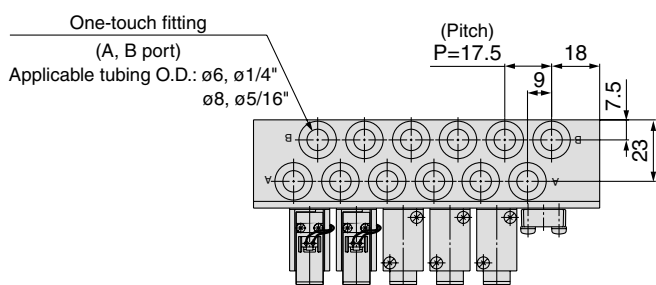
Directional control
valveFlow control
equipmentFilter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

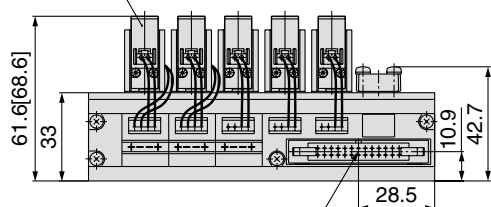
Pressure switch

Clean gas filter



(Station n) ----- (Station 1)

(Light/surge voltage suppressor)



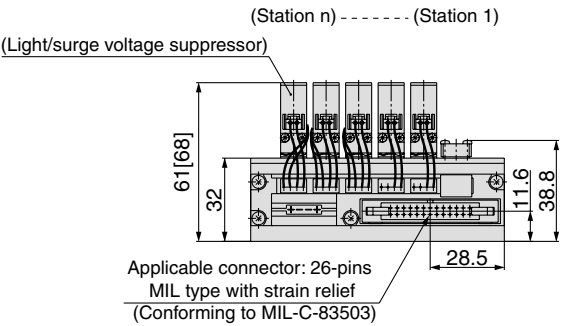
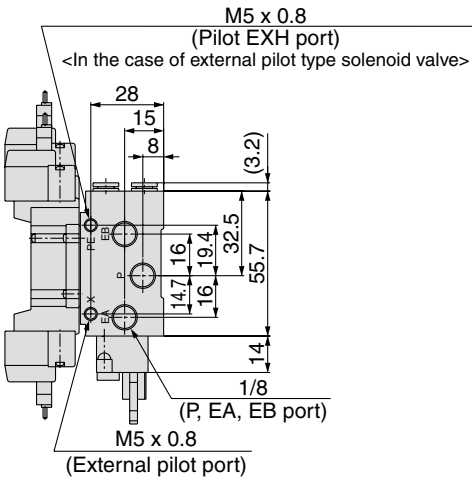
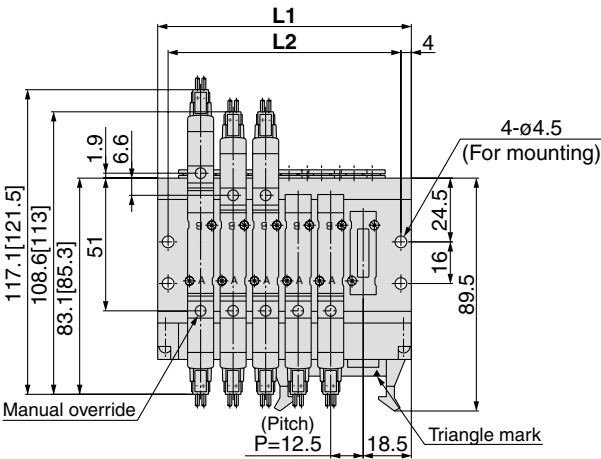
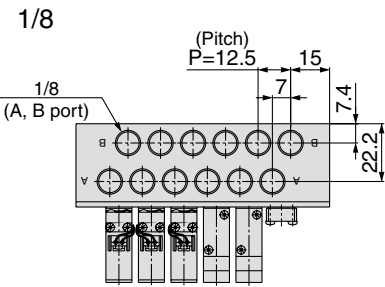
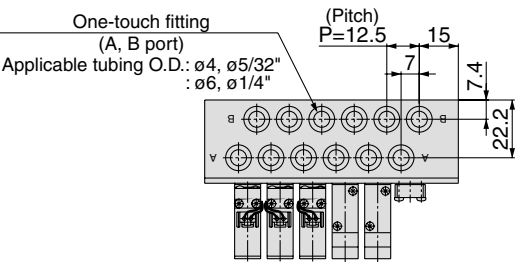
Applicable connector:
26-pins MIL type with strain relief
(Conforming to MIL-C-83503)

Stations n	3	4	5	6	7	8	9	10	11	12
L1	77	94.5	112	129.5	147	164.5	182	199.5	217	234.5
L2	67	84.5	102	119.5	137	154.5	172	189.5	207	224.5

10-SY3000: 10-SS5Y3-42P-**Stations**-01,

C4,N3
C6,N7

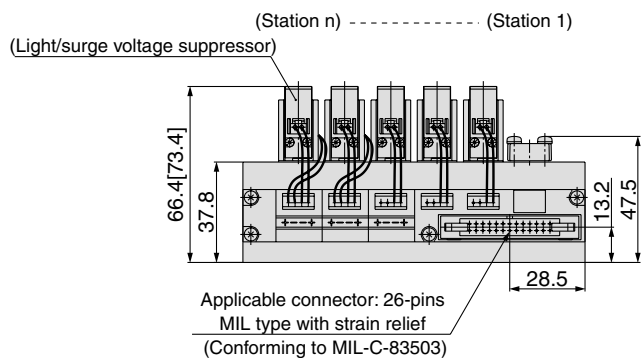
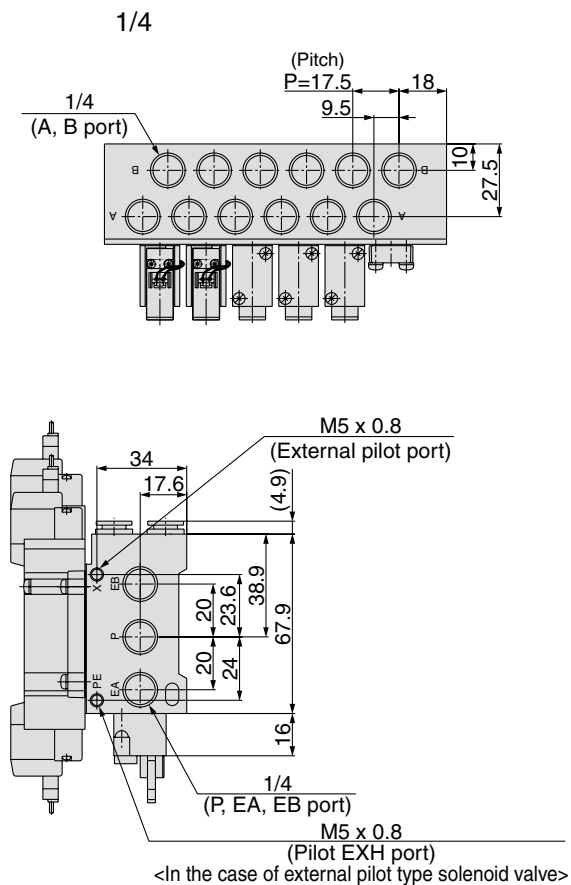
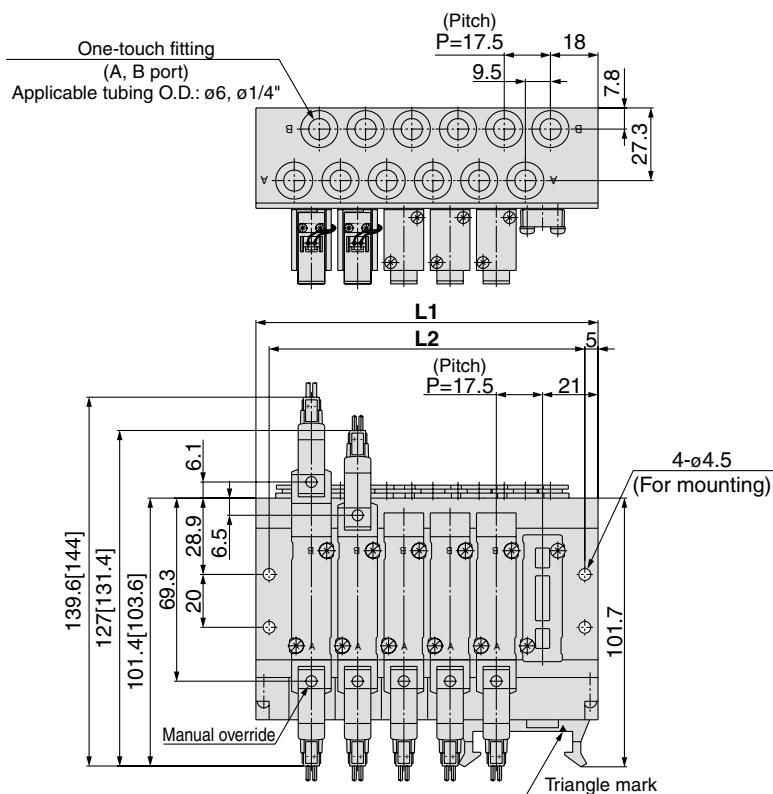
 Note) [] : AC



Stations n	4	5	6	7	8	9	10	11	12
L1	72.5	85	97.5	110	122.5	135	147.5	160	172.5
L2	64.5	77	89.5	102	114.5	127	139.5	152	164.5

- Air cylinder
- Rotary actuator
- Air gripper
- Directional control valve
- Flow control equipment
- Filter, Pressure control equipment
- Fittings & Tubing
- Air preparation equipment
- Pressure switch
- Clean gas filter

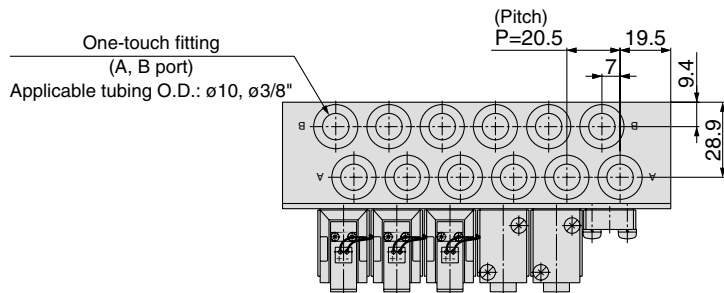
Grommet (G)



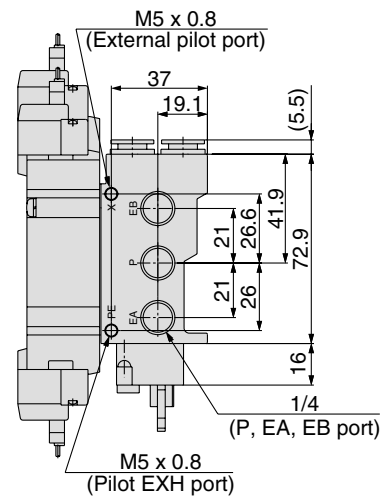
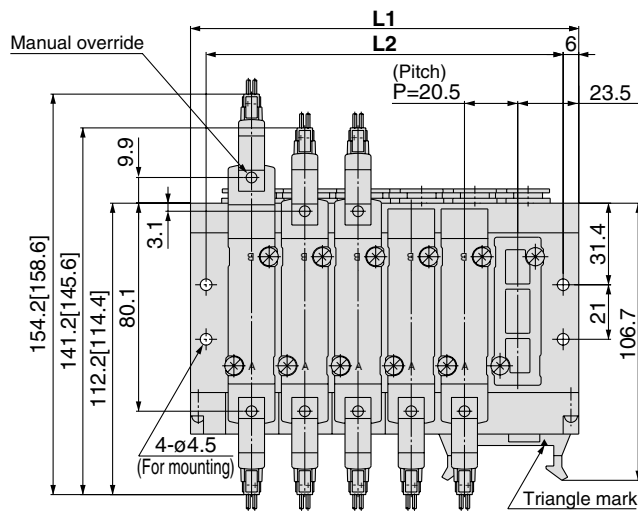
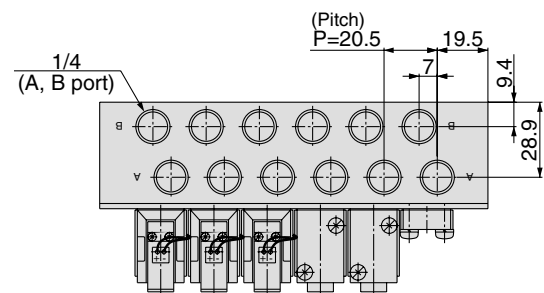
Station n	3	4	5	6	7	8	9	10	11	12
L1	77	94.5	112	129.5	147	164.5	182	199.5	217	234.5
L2	67	84.5	102	119.5	137	154.5	172	189.5	207	224.5

10-SY7000: 10-SS5Y7-42P-Stations -02, C10,N11

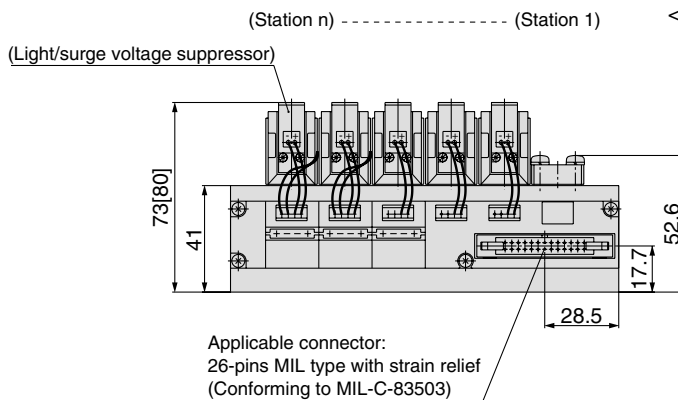
(Note) [] : AC

Grommet (G)

For 1/4



<In the case of external pilot type solenoid valve>



Station n	3	4	5	6	7	8	9	10	11	12
L1	88	108.5	129	149.5	170	190.5	211	231.5	252	272.5
L2	76	96.5	117	137.5	158	178.5	199	219.5	240	260.5

Series 10-SY9000

Type **43P**

Base mounted manifold
Stacking type / Flat ribbon cable

How to Order Manifold

10-SS5Y9-43P-05 U C8

Clean series

Manifold series
9 10-SY9000

Valve stations

Symbol	Stations
4	4 stations
⋮	⋮
12	12 stations

* This also includes the number of blanking plate assemblies.

P, R port outlets

Symbol	Port outlet	Applicable stations
U	U side	4 to 10 stations
D	D side	4 to 10 stations
B	Both sides	4 to 12 stations

SUP/EXH block

assembly specifications

Symbol	Specifications
Nil	Standard / Internal pilot specifications
R	External pilot specifications

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Option

Symbol	Mounting
Nil	Direct mounting
D	DIN rail mounting (with DIN rail)
D0	DIN rail mounting (without DIN rail)
D *	When a DIN rail longer than the specified stations is required, specify the station number in asterisk part.

A, B port size

Thread piping

Symbol	Port size
02	1/4
03	3/8

One-touch fitting (Metric size)

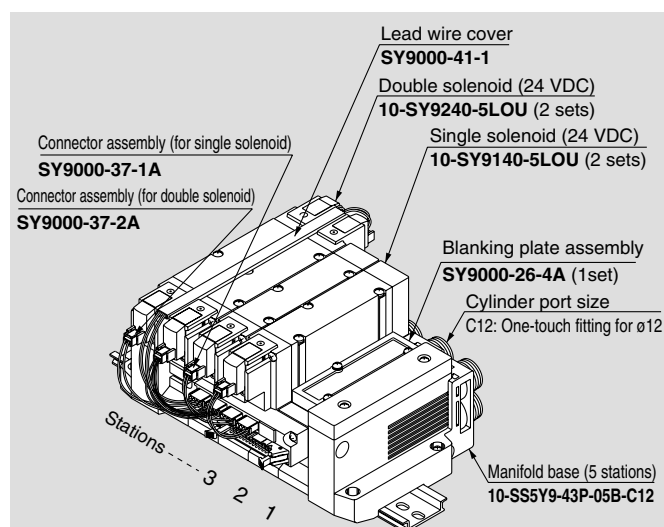
Symbol	Port size
C8	One-touch fitting for ø8
C10	One-touch fitting for ø10
C12	One-touch fitting for ø12
M	Mixed

One-touch fitting (Inch size)

Symbol	Port size
N9	One-touch fitting for ø 5/16"
N11	One-touch fitting for ø 3/8"
M	Mixed

* In the case of mixed specifications, indicate separately on the manifold specification sheet.

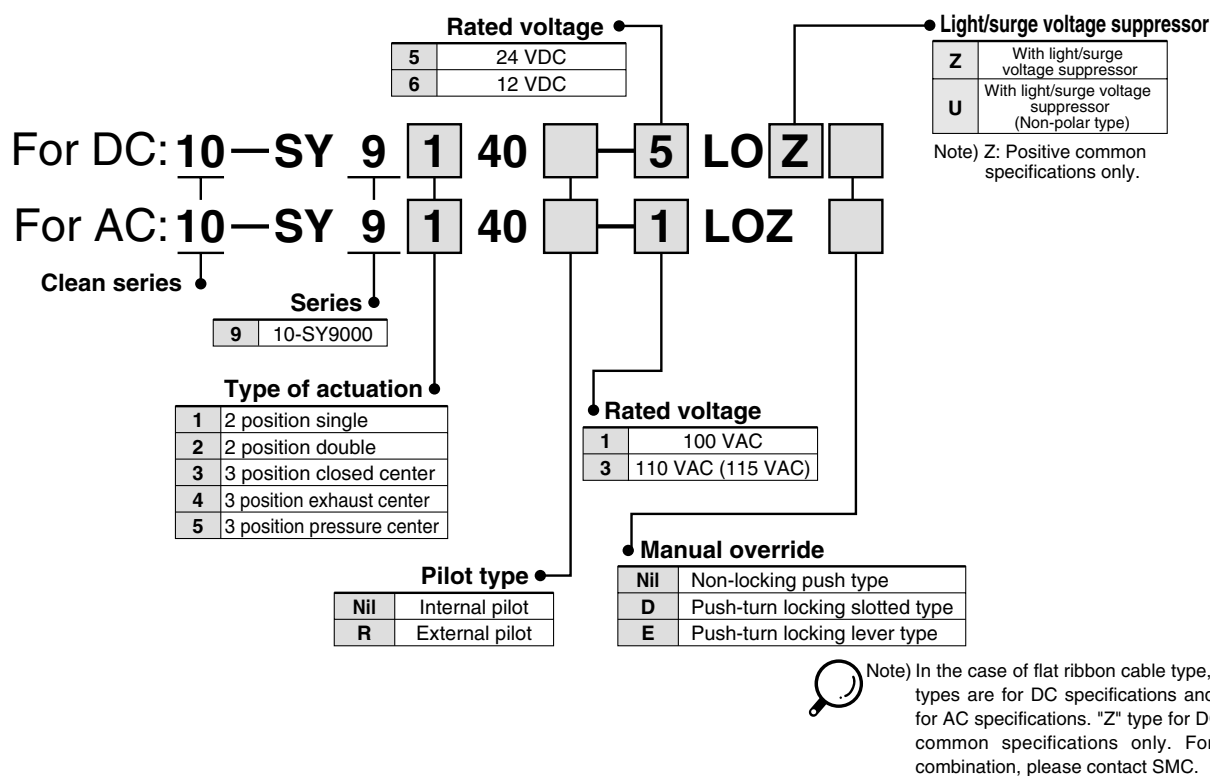
How to Order Valve Manifold Assembly



10-SS5Y9-43P-05B-C12.....1 set (Type 43P type, 5 station manifold base part no.)
 * SY9000-26-4A.....1 set (Blanking plate assembly part no.)
 * 10-SY9140-5LOU.....2 sets (Single solenoid part no.)
 * 10-SY9240-5LOU.....2 sets (Double solenoid part no.)
 * SY9000-37-1A.....2 sets (Connector assembly part no.)
 * SY9000-37-2A.....2 sets (Connector assembly part no.)
 * SY9000-41-1.....1 set (Lead wire cover)
 ↳ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part numbers under the manifold base part number. In the case of complex arrangement, specify them on the manifold specification sheet.

How to Order Valves



How to Order Connector Assembly

For 12, 24 VDC

Specifications	For 10-SY9000
For single solenoid	SY9000-37-1A
Double solenoid 3 position	SY9000-37-2A
Single with spacer assembly	SY9000-37-3A
Double, 3 position with spacer assembly	SY9000-37-4A

For 100 VAC

Specifications	For 10-SY9000
For single solenoid	SY9000-37-1B
Double solenoid 3 position	SY9000-37-2B
Single with spacer assembly	SY9000-37-3B
Double, 3 position with spacer assembly	SY9000-37-4B

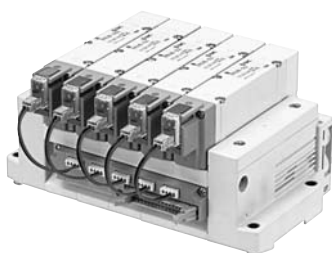
110 VAC (115 VAC)

Specifications	For 10-SY9000
For single solenoid	SY9000-37-1C
Double solenoid 3 position	SY9000-37-2C
Single with spacer assembly	SY9000-37-3C
Double, 3 position with spacer assembly	SY9000-37-4C

- Multiple valve wiring is simplified through the use of the flat cable connector.

• Clean appearance

In the case of a flat ribbon cable style, each valve is wired on the print board of manifold base to allow the external wiring to be piped all together with 26 pins MIL connector.



Flat ribbon cable manifold specifications

Model	10-SS5Y9-43P	
Applicable valve	10-SY9□40	
Manifold type	Stacking type	
P(SUP) / R(EXH)	Common SUP, Common EXH	
Valve stations	4 to 12 stations ^{Note 1)}	
A, B port piping specifications	Location	Base
	Direction	Side
Port size	P, EA, EB port	C12 (One-touch fitting for ø12)
	A, B port	1/4 3/8 C8 (One-touch fitting for ø8) C10 (One-touch fitting for ø10) C12 (One-touch fitting for ø12)
Manifold base weight W (g) n: Stations	W=114n+343	
Applicable flat ribbon cable connector	Flat ribbon cable connector, Socket: 26 pins MIL type with strain relief conforming to MIL-C-83503	
Internal wiring	In common between +COM and -COM (Z type: +COM only)	
Rated voltage	12, 24 VDC, 100, 110 VAC	



Note 1) For more than 10 stations, supply pressure to P port on both sides and exhaust from EA and EB port on both sides.

Note 2) The withstand voltage specification for the wiring unit section is JISC 0704, Grade 1 or its equivalent.

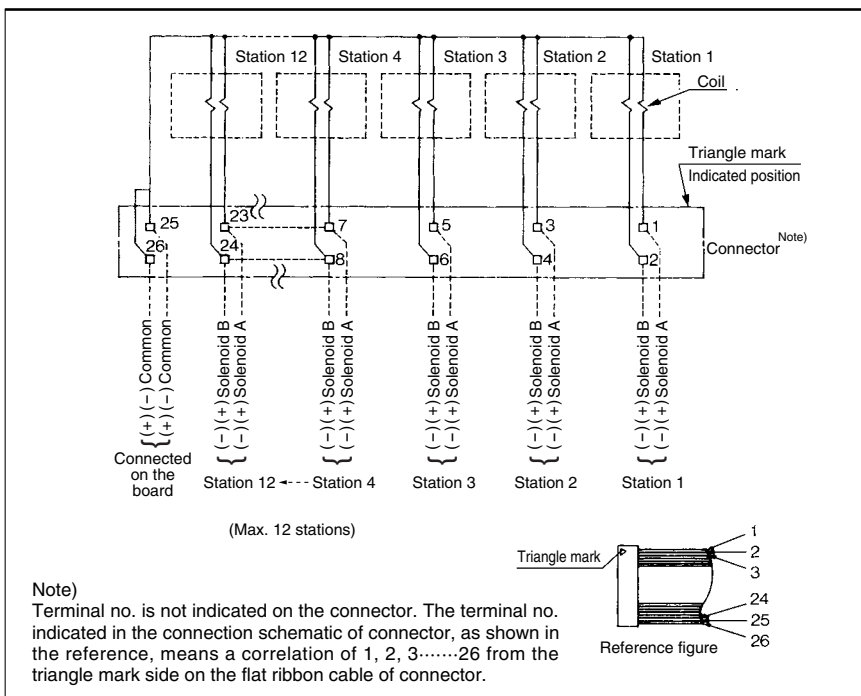
Flow Characteristics

Model	Port size		Flow characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv
10-SS5Y9-43P	C12	C12	6.4	0.29	1.6	7.3	0.29	1.8



Note) The value is for manifold base with 5 stations and individually operated 2 position type.

Internal wiring of manifold (Non-polar type)



⚠ Caution

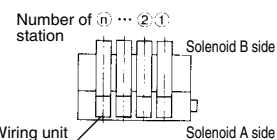
- For non-polar (U) valves, the electrical DC connections can be used with either positive and negative COM. For type (Z), only use with positive COM as the valve does not operate correctly when used with negative COM.



• For more than 10 stations, both poles of the common should be wired.

• For single solenoid, connect to the solenoid A side.

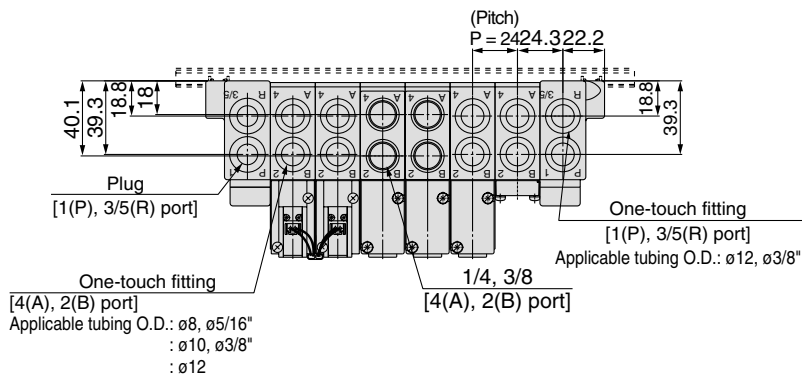
• The maximum number of stations that can be accommodated is 12. For more stations, please contact SMC.



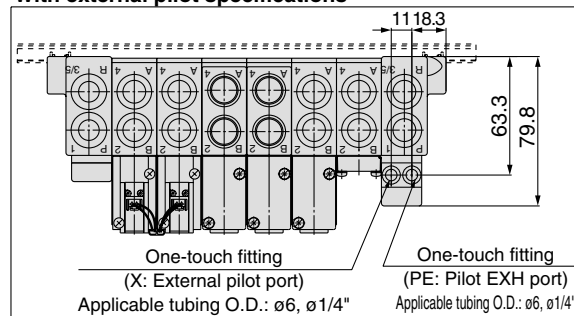
10-SY9000: 10-SS5Y9-43P-stations D 02 C8, N9 03 C10, N11 C12 **(-D)**

Note) [] : AC

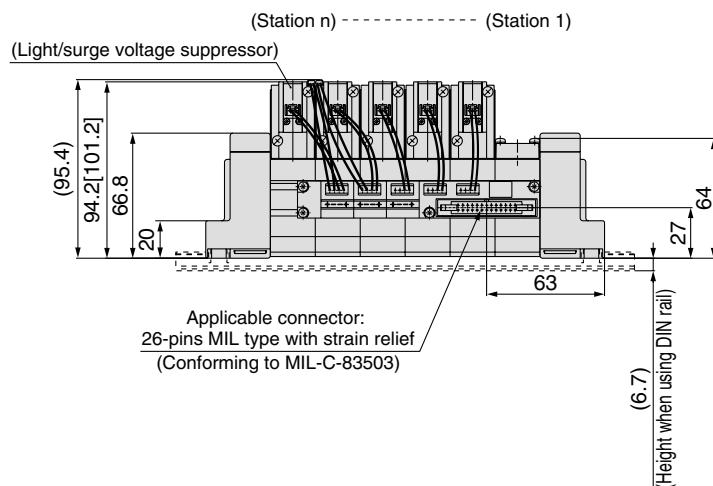
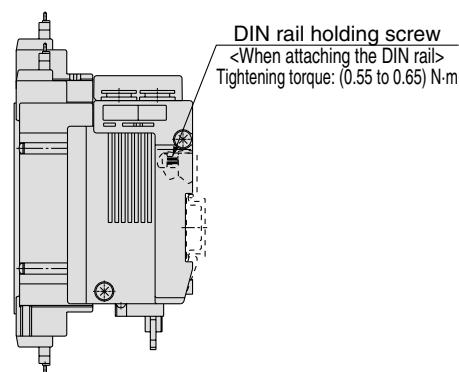
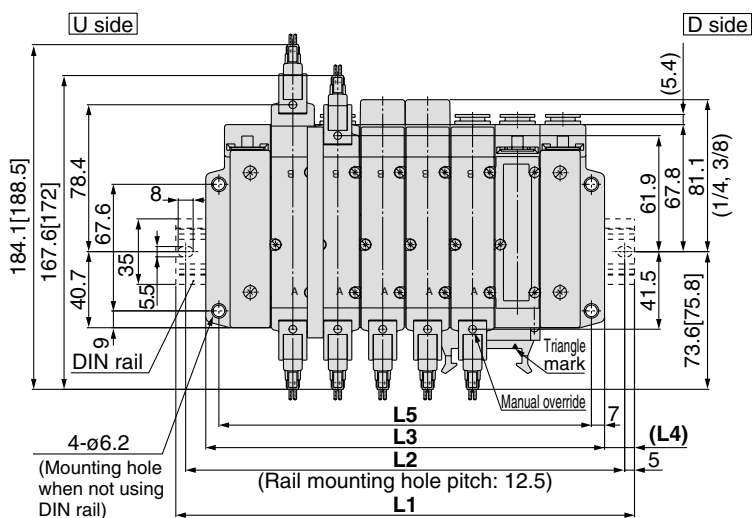
* When P, R port outlets are indicated on the D side, the P, R ports on the opposite side are plugged.



With external pilot specifications



* The external pilot's extracting position is in the D side



Stations n	4 stations	5	6	7	8	9	10 stations
L1	198	223	248	260.5	285.5	310.5	335.5
L2	187.5	212.5	237.5	250	275	300	325
L3	165	189	213	237	261	285	309
L4	16.5	17	17.5	12	12.5	13	13.5
L5	151	175	199	223	247	271	295

Type 43P Base mounted 10-SY9000

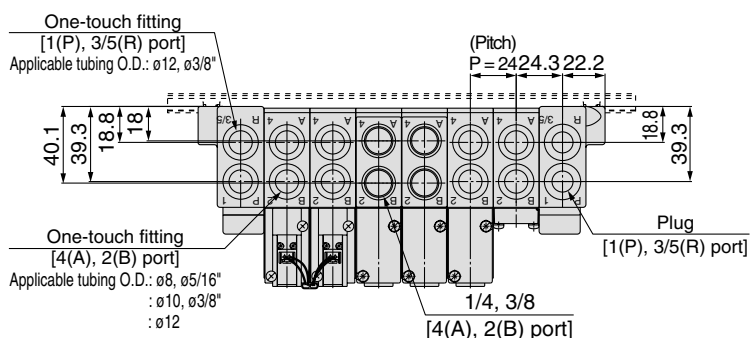
10-SY9000: 10-SS5Y9-43P- Stations U ☐ - ⁰²C8, ^{N9}C10, ^{N11}C12 ☐ (-D)



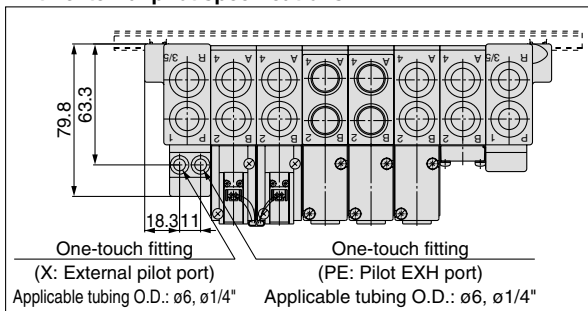
Note) [] : AC



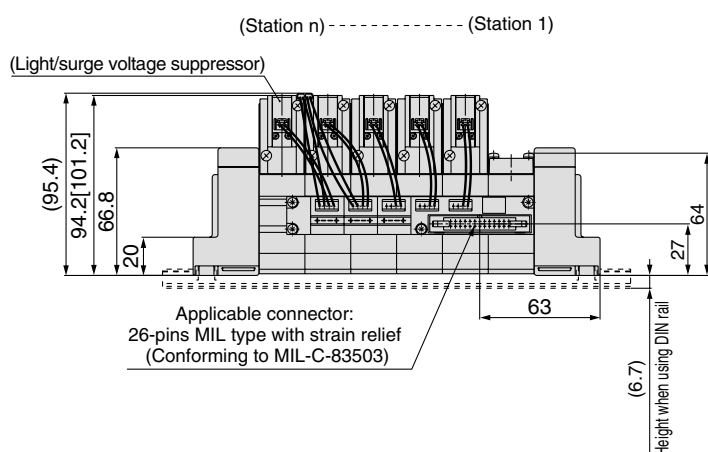
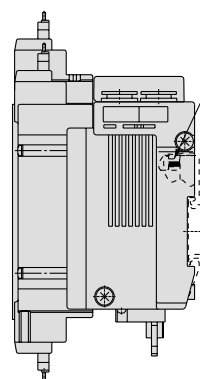
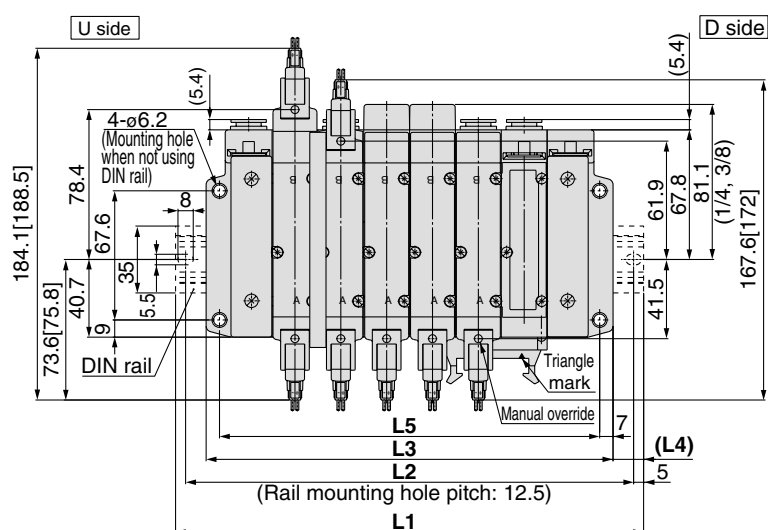
* When P, R port outlets are indicated on the U side, the P, R ports on the opposite side are plugged.



With external pilot specifications



* The external pilot's extracting position is in the U side.

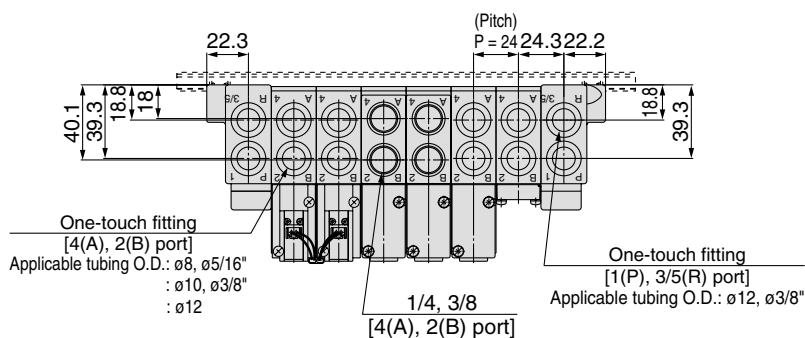


Stations n	4 stations	5	6	7	8	9	10 stations
L1	198	223	248	260.5	285.5	310.5	335.5
L2	187.5	212.5	237.5	250	275	300	325
L3	165	189	213	237	261	285	309
L4	16.5	17	17.5	12	12.5	13	13.5
L5	151	175	199	223	247	271	295

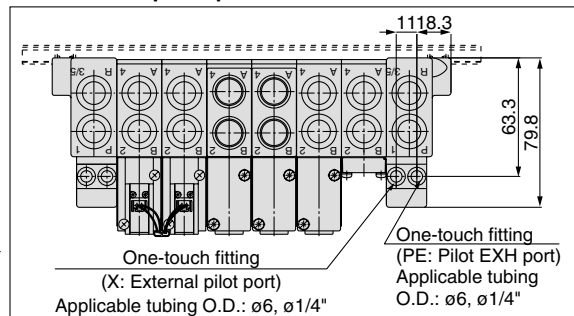
10- SY9000:10-SS5Y9-43P- Stations B 02 C8, N9
03 C10, N11
C12 (-D)

 (Note) [] : AC

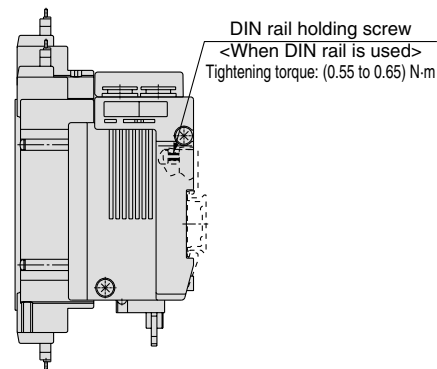
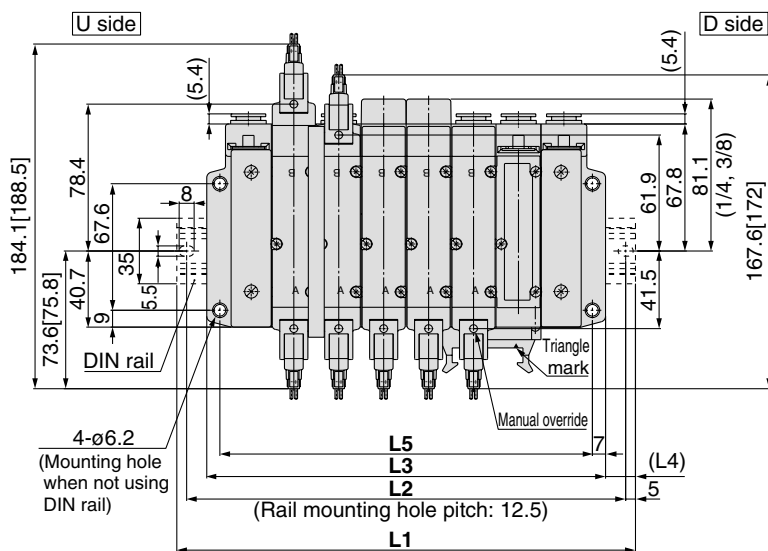
 * When P, R port outlets are indicated on the B side, the P, R ports on the both sides are in the open state.



With external pilot specifications

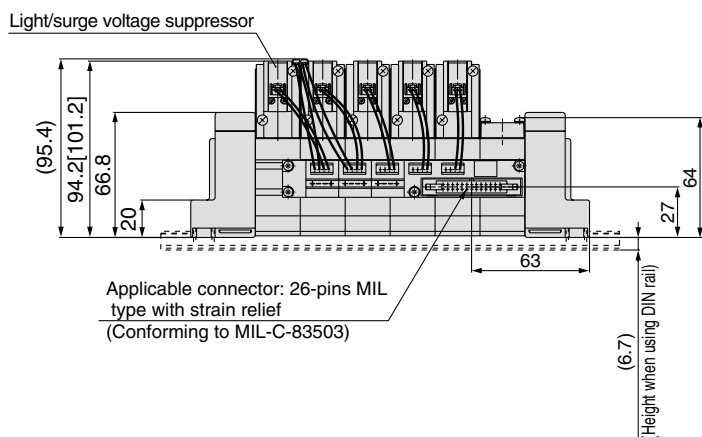


* The external pilot's extracting position is in the B side (both sides).



DIN rail holding screw
<When DIN rail is used>
Tightening torque: (0.55 to 0.65) N·m

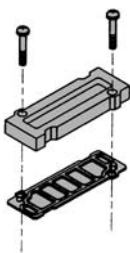
(Station n) ----- (Station 1)



Stations n	4 stations	5	6	7	8	9	10	11	12 stations
L1	198	223	248	260.5	285.5	310.5	335.5	360.5	385.5
L2	187.5	212.5	237.5	250	275	300	325	350	375
L3	165	189	213	237	261	285	309	333	357
L4	16.5	17	17.5	12	12.5	13	13.5	14	14.5
L5	151	175	199	223	247	271	295	319	343

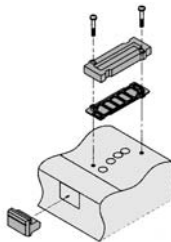
Manifold Option

■ Type 41, 42, 43 Blanking plate assembly



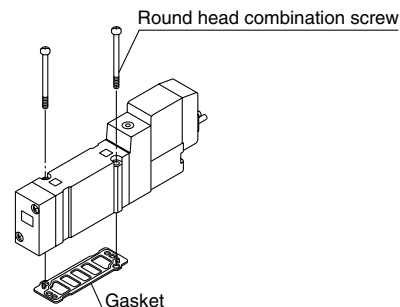
Series	Assembly part no.
10-SY3000	SY3000-26-9A
10-SY5000	SY5000-26-20A
10-SY7000	SY7000-26-22A
10-SY9000	SY9000-26-2A

■ Type 41P, 42P, 43P Blanking plate assembly



Series	Assembly part No.
10-SY3000	SY3000-26-10A
10-SY5000	SY5000-26-21A
10-SY7000	SY7000-26-23A
10-SY9000	SY9000-26-4A

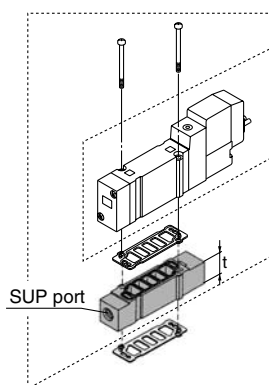
■ Gasket assembly part no.



Series	Gasket assembly
10-SY3000	SY3000-GS-2
10-SY5000	SY5000-GS-2
10-SY7000	SY7000-GS-2
10-SY9000	SY9000-GS-2

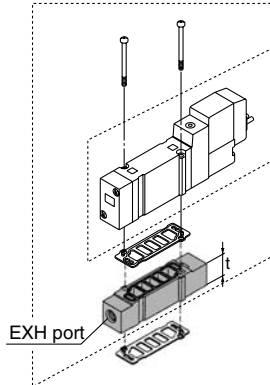
Note) Gasket assembly consists of mounting screws and a gasket.

■ Individual SUP spacer assembly ■ Individual EXH spacer assembly ■ Individual SUP spacer assembly + Individual EXH spacer assembly (stacked)



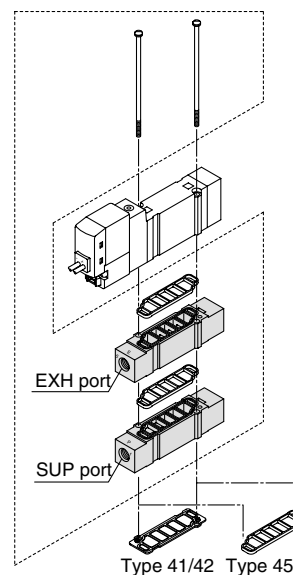
Series	Assembly part no.	Port size	t
10-SY3000	SY3000-38-2A	M5 x 0.8	11
10-SY5000	SY5000-38-16 * A	1/8	15
10-SY7000	SY7000-38-16 * A	1/4	18
10-SY9000	SY9000-38-2 * A	1/4	20

Note) The SUP port of SY3000/5000/7000 may be either on the lead wire side or end plate side. (An assembly is shipped under the conditions shown in the figure.)
The end plate side is only available to SY9000.



Series	Assembly part no.	Port size	t
10-SY3000	SY3000-39-2A	M5 x 0.8	11
10-SY5000	SY5000-39-16 * A	1/8	15
10-SY7000	SY7000-39-16 * A	1/4	18
10-SY9000	SY9000-39-2 * A	1/4	20

Note) In case of types 41P, 42P and 43P, for protection of the wiring unit section from drainage, piping at the EA port should be arranged so that it will not be directly exposed to exhaust from the valve.



⚠ Caution * : Thread type

Mounting screw tightening torque

M2: 0.16N·m
M3: 0.8N·m
M4: 1.4N·m

	Nil	Rc
F	G	
N	NPT	
T	NPTF	

⚠ Warning

When mounting a valve or spacer on the manifold base or sub-plate, etc., those mounting directions are determined. If mounted in the wrong direction, the equipment to be connected may cause malfunction. Refer to external dimensions, and then mount it.

[○: Available ×: Not available -: No part no. setting]

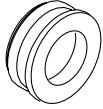
Series	Individual SUP + Individual EXH assembly part No.	Port size	Applicable manifold type						
			41	41P	42	42P	45	45-A 45-NA	45 *
10-SY3000	SY3000-120-2A	M5 x 0.8	●	×	●	×	●	×	×
10-SY5000	SY5000-75-1 * A	1/8	●	×	●	×	●	×	×
10-SY7000	SY7000-73-1 * A	1/4	●	×	●	×	-	-	-

Note) The SUP port of SUP spacer can be mounted in either direction. When connecting to the pilot valve side, be sure to connect each port to protect the pilot valve wiring part from drainage.
An individual SUP spacer and an individual EXH spacer can be mounted on either top or bottom. (An assembly is shipped under the condition shown in the figure above.)

Manifold Option

■ SUP block disk (for SY9000)

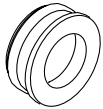
By installing a SUP block disk in the pressure supply passage of a manifold base, it is possible to supply two or more different high and low pressures to one manifold.



Series	Part no.
10-SY9000	SY9000-57-1A

■ EXH block disk (for SY9000)

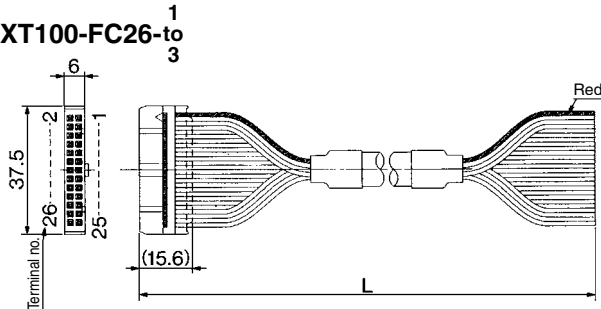
By installing an EXH block disk in the exhaust passage of a manifold valve, it is possible to divide the valve's exhaust so that it does not affect another valve.
(Two block disks are needed to divide both exhausts.)



Series	Part no.
10-SY9000	SY9000-57-1A

■ Cable assembly

AXT100-FC26-to-3



Flat ribbon cable connector assembly

Cable length (L)	Assembly part no.	Note
1.5m	AXT100-FC26-1	Cable 26 cores x 28AWG
3m	AXT100-FC26-2	
5m	AXT100-FC26-3	



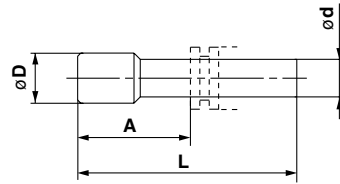
* For other connectors in the marketplace, use a 26 pins with strain relief conforming to MIL-C-83503.

Example of connector manufacturers

- Hirose Electric Co.,Ltd.
- Sumitomo 3M Ltd.
- Fujitsu Ltd.
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg Co., Ltd.

■ Plug (White)

To be inserted into unused cylinder ports and SUP, EXH ports.
The minimum order quantity is 10 pieces.



Dimensions

Applicable fitting size ød	Model	A	L	D
4	10-KQP-04	16	32	6
6	10-KQP-06	18	35	8
8	10-KQP-08	20.5	39	10
10	10-KQP-10	22	43	12
12	10-KQP-12	24	44.5	14
1/8"	10-KQP-01	16	31.5	5
5/32"	10-KQP-03	16	32	6
1/4"	10-KQP-07	18	35	8.5
5/16"	10-KQP-09	20.5	39	10
3/8"	10-KQP-11	22	43	11.5

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-SY3000/5000

Type **45**

Base mounted manifold
Stacking type / DIN rail mounted
Individual wiring

How to Order Manifold

10-SS5Y **3** - 45 - **05** **U** - **C6** -

• Clean series

Series

3	10-SY3000
5	10-SY5000

Valve stations

02	2 stations
⋮	⋮
20	20 stations

SUP/EXH block assembly mounting position

Symbol	Mounting position	Applicable no. of stations
U	U side	2 to 10 stations
D	D side	
B	Both sides	2 to 20 stations
M*	Special specifications	

* For special specifications, indicate separately on the manifold specification sheet.

A, B port size

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	
M	Mixed	
C4	One-touch fitting for ø4	10-SY5000
C6	One-touch fitting for ø6	
C8	One-touch fitting for ø8	
M	Mixed	

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	5/32" One-touch fitting for ø	10-SY3000
N7	1/4" One-touch fitting for ø	
M	Mixed	
N3	5/32" One-touch fitting for ø	10-SY5000
N7	1/4" One-touch fitting for ø	
N9	5/16" One-touch fitting for ø	
M	Mixed	

* In the case of mixed specifications, indicate separately on the manifold specification sheet.

Option

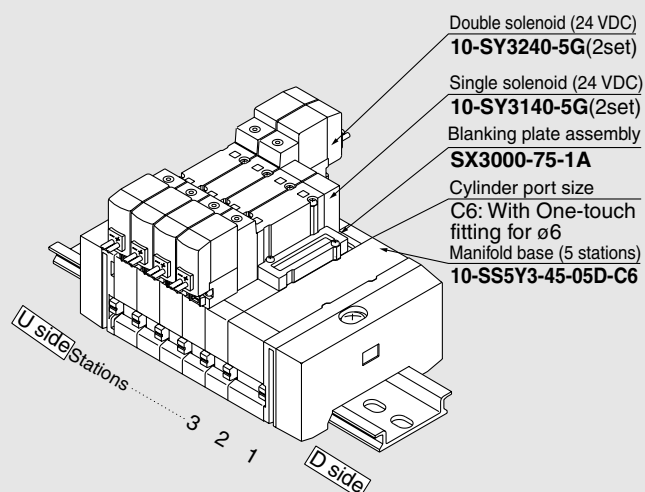
When a DIN rail longer than the specified stations is required, specify the station number. (20 stations maximum)



Refer to pages 477 to 479 for the external pilot specifications.

How to Order Manifold Assembly

Ordering example



10-SS5Y3-45-05D-C6...1 set (Type 45, 5 stations manifold base part no.)

*SX3000-75-1A1 set (Blanking plate assembly part no.)

*10-SY3140-5G2 sets (Single solenoid part no.)

*10-SY3240-5G2 sets (Double solenoid part no.)

→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

The valve arrangement is numbered as the 1st. station from D side regardless of the mounting position of SUP/EXH block assembly. In ordering, specify the part nos. in the order from the 1st. station on D side. Besides, when the arrangement will be complicated, fill out the manifold specification sheet to instruct SMC.

How to Order Valves

10—SY 5 2 40 5 L

• **Clean series**

• **Series**

3	10-SY3000
5	10-SY5000

• **Type of actuation**

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

• **Coil specifications**

Nil	Standard
T	With power saving circuit <24 and 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

• **Rated voltage**

DC specifications

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

AC specifications (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
 * For type "W□", only DC voltage is available.
 * "D" and "DO" are only available for 10-SY5000.

• **Manual override**

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

• **Light/surge voltage suppressor**

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
 * For "R" and "U", only DC voltage is available.
 * Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
 * For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

• **Electrical entry**

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			24, 12 VDC 100, 110, 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 connector
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm) LN: Without lead wire LO: Without connector	M: With lead wire (length 300 mm) MN: Without lead wire MO: Without connector	(10-SY5000 only) D: With connector DO: Without connector	WO: Without connector cable W□: With connector cable ^{Note 1)}

* LN, MN: with 2 sockets.
 * "D" and "DO" are only available for 10-SY5000.
 * DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 482.
 * For connector cable of M8 connector, refer to page 490.
 Note 1) Please enter cable length in □ with reference to page 491.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

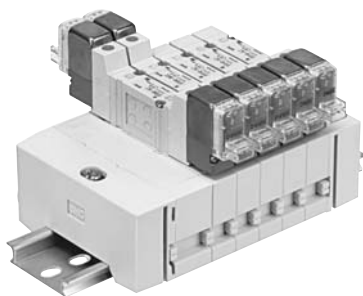
Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Manifold Specifications

Model	10-SS5Y3-45		10-SS5Y5-45
Applicable valve	10-SY3□40		10-SY5□40
Manifold type	Stacking type / DIN rail mounted		
P (SUP), R (EXH)	Common SUP/EXH		
Valve stations	2 to 20 stations ^{Note 1)}		
A, B port piping specifications	Location	Base	
	Direction	Side	
Port size	P, R port	C8 (One-touch fitting for ø8)	C10 (One-touch fitting for ø10)
	A, B port	C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)
Manifold base weight W (g)		2 to 10 stations: W = 22n + 118	2 to 10 stations: W = 47n + 156
n: Stations		11 to 20 stations: W = 22n + 140	11 to 20 stations: W = 47n + 190



Note 1) For more than 11 stations, supply pressure to P port on both sides and exhaust from R port on both sides.

Flow Characteristics

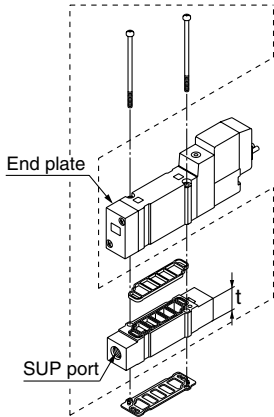
Model	Port size		Flow characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-SS5Y3-45	C8	C6	0.88	0.21	0.22	0.95	0.18	0.22
10-SS5Y5-45	C10	C8	2.2	0.24	0.53	2.5	0.18	0.58



Note) The value is for manifold base with 5 stations and individually operated 2 position type.

Manifold Option

Individual SUP spacer assembly

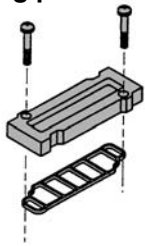


Series	Assembly part no.	Port size	t
10-SY3000	SY3000-38-2A	M5 x 0.8	11
10-SY5000	SY5000-38-16 * A	1/8	15



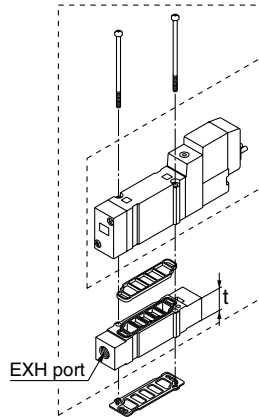
Note) The SUP port may be either on the lead wire side or on the end plate side. (An assembly is shipped under the conditions shown in the figure.)

Blanking plate assembly



Series	Assembly part no.
10-SY3000	SX3000-75-1A
10-SY5000	SX5000-76-5A

Individual EXH spacer assembly



Series	Assembly part no.	Port size	t
10-SY3000	SY3000-39-2A	M5 x 0.8	11
10-SY5000	SY5000-39-16 * A	1/8	15



Note) The EXH port may be either on the lead wire side or on the end plate side. (An assembly is shipped under the conditions shown in the figure.)

* : Thread type

Nil	Rc
F	G
N	NPT
T	NPTF



Caution

Mounting screw tightening torque

M2: 0.16N·m
M3: 0.8N·m
M4: 1.4N·m

SUP block disk

By installing a supply block disk in the pressure supply passage of a manifold valve, it is possible to supply two or more different high and low pressures to one manifold.



Series	Part no.
10-SY3000	SX3000-77-1A
10-SY5000	SX5000-77-1A

EXH block disk

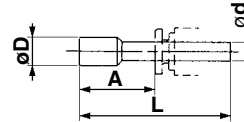
By installing an EXH block disk in the exhaust passage of a manifold valve, it is possible to divide the valve's exhaust so that it does not affect another valve. (Two block disks are needed to divide exhausts.)



Series	Part no.
10-SY3000	SX3000-77-1A
10-SY5000	SX5000-77-1A

Plug (White)

These are inserted in unused cylinder ports and SUP, EXH ports. Purchasing order is available in units of 10 pieces.



Dimensions

Applicable fitting size ϕd	Model	A	L	D
4	10-KQP-04	16	32	6
6	10-KQP-06	18	35	8
8	10-KQP-08	20.5	39	10
10	10-KQP-10	22	43	12
1/8"	10-KQP-01	16	31.5	5
5/32"	10-KQP-03	16	32	6
1/4"	10-KQP-07	18	35	8.5
5/16"	10-KQP-09	20.5	39	10

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

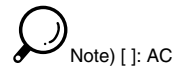
Fittings & Tubing

Air preparation equipment

Pressure switch

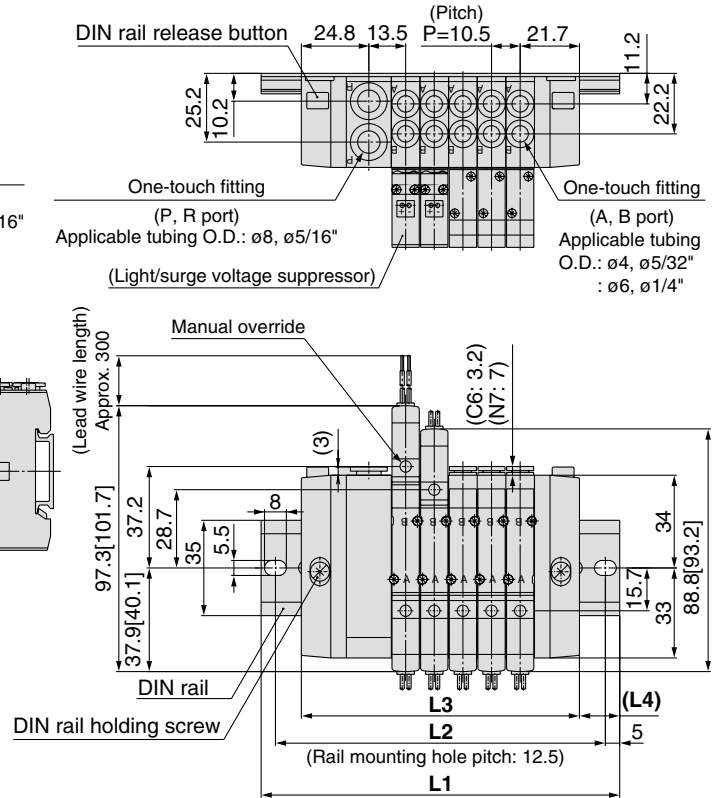
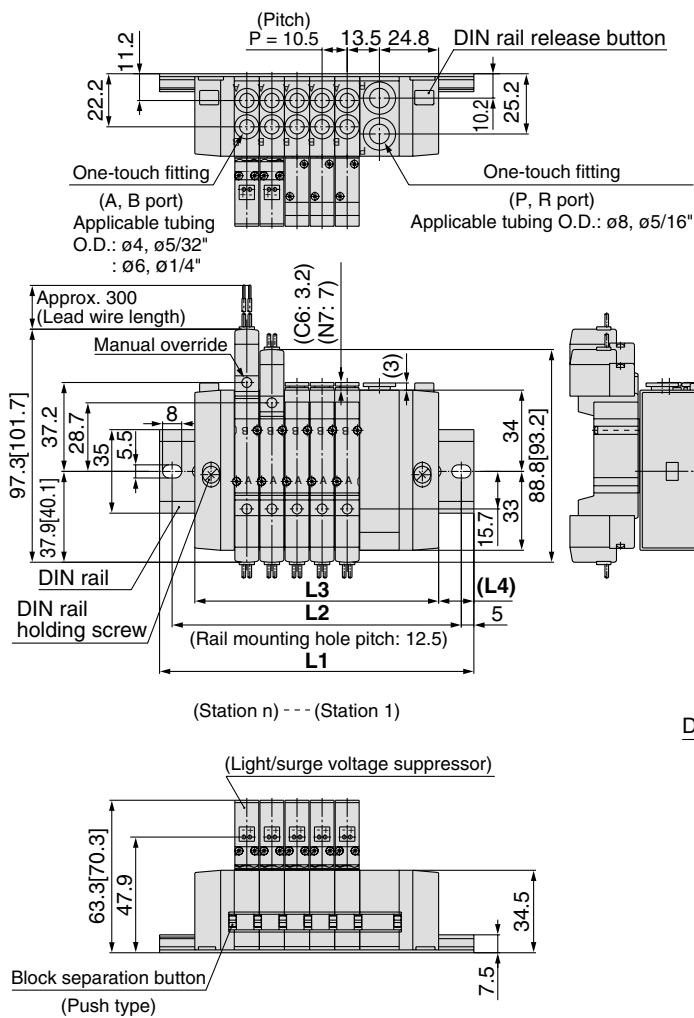
Clean gas filter

Dimensions: Series 10-SY3000



10-SS5Y3-45- Stations D- C4,N3
C6,N7

10-SS5Y3-45- Stations U- C4,N3
C6,N7



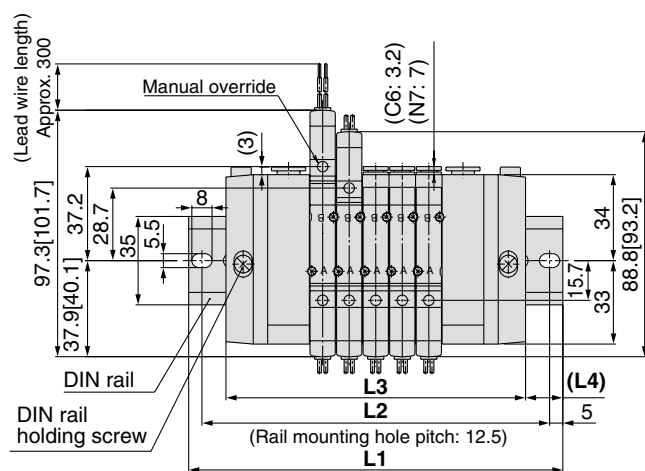
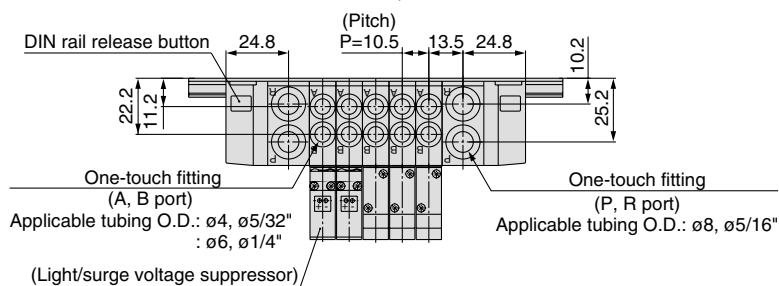
Stations n	2 stations	3	4	5	6	7	8	9	10 stations
L1	98	110.5	123	135.5	148	148	160.5	173	185.5
L2	87.5	100	112.5	125	137.5	137.5	150	162.5	175
L3	70.5	81	91.5	102	112.5	123	133.5	144	154.5
L4	13.5	14.5	15.5	16.5	17.5	12.5	13.5	14.5	15.5



Note) []: AC

Dimensions: Series 10-SY3000

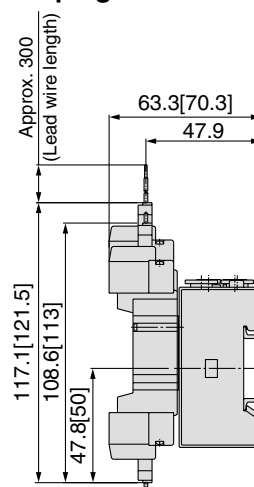
10-SS5Y3-45- Stations B- C4,N3 C6,N7



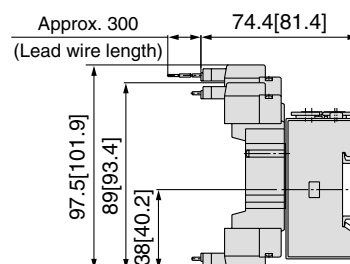
Stations n	2 stations	3	4	5	6	7	8	9	10 stations
L1	110.5	123	135.5	148	160.5	173	185.5	185.5	198
L2	100	112.5	125	137.5	150	162.5	175	175	187.5
L3	87	97.5	108	118.5	129	139.5	150	160.5	171
L4	11.5	12.5	13.5	14.5	15.5	16.5	17.5	12.5	13.5

Stations n	11 stations	12	13	14	15	16	17	18	19	20 stations
L1	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5
L2	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300
L3	181.5	192	202.5	213	223.5	234	244.5	255	265.5	276
L4	14.5	15.5	16.5	17.5	12	13	14	15	16	17

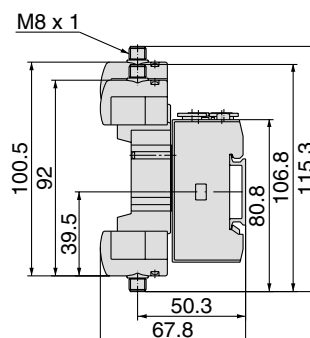
L plug connector



M plug connector



M8 connector (WO)

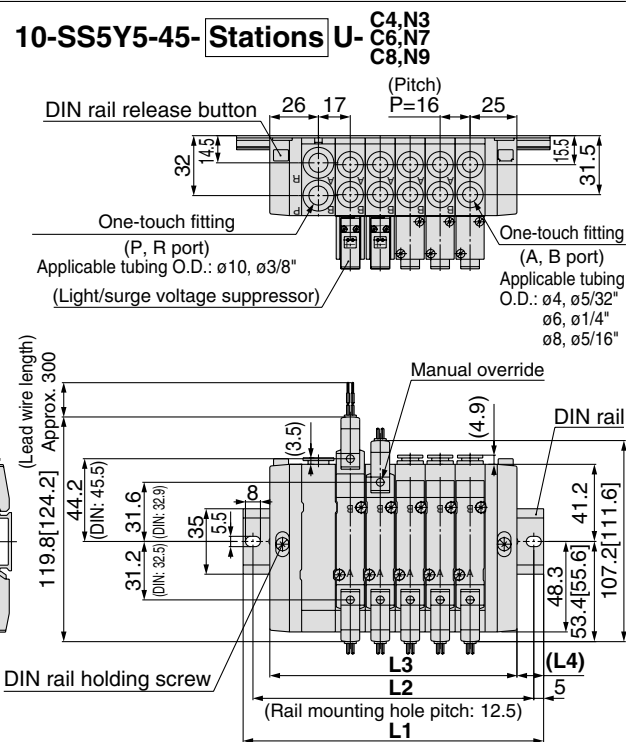
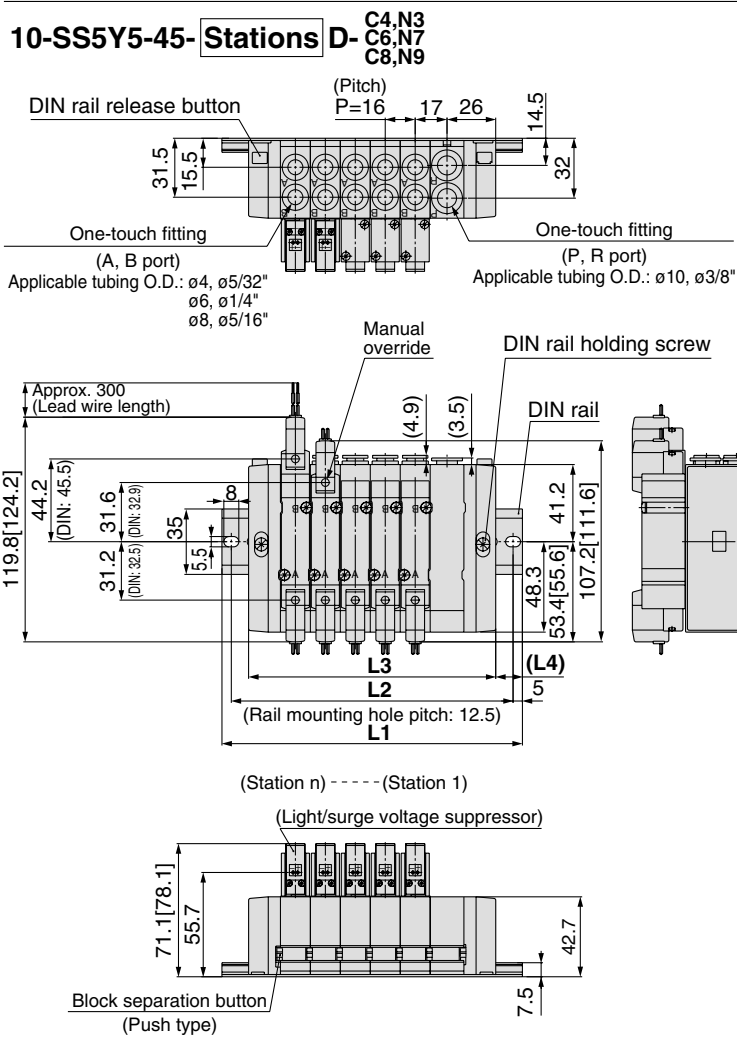


Note) Refer to page 490 for dimensions of connector types.

Dimensions: Series 10-SY5000



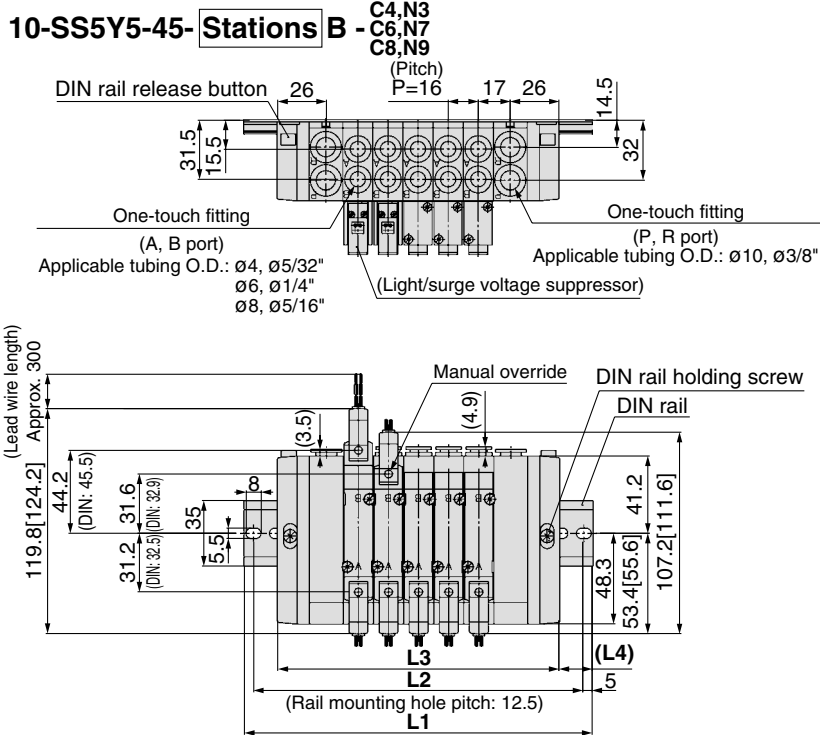
Note) []: AC



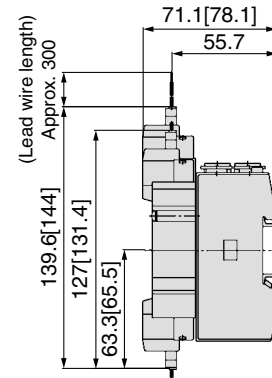
Stations n	2 stations	3	4	5	6	7	8	9	10 stations
L1	110.5	135.5	148	160.5	173	198	210.5	223	235.5
L2	100	125	137.5	150	162.5	187.5	200	212.5	225
L3	84	100	116	132	148	164	180	196	212
L4	13	17.5	16	14	12.5	17	15	13.5	11.5



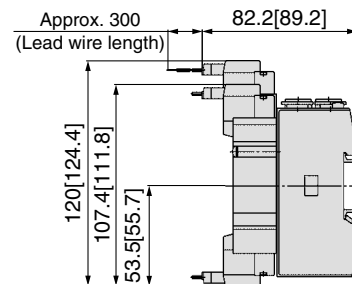
Dimensions: Series 10-SY5000



L plug connector



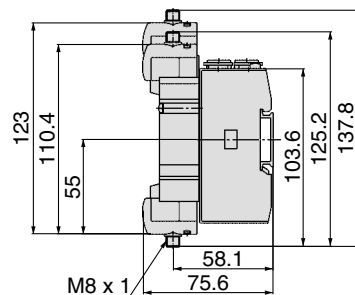
M plug connector



Stations n	2 stations	3	4	5	6	7	8	9	10 stations
L1	135.5	148	160.5	185.5	198	210.5	223	248	260.5
L2	125	137.5	150	175	187.5	200	212.5	237.5	250
L3	102	118	134	150	166	182	198	214	230
L4	16.5	15	13	17.5	16	14	12.5	17	15

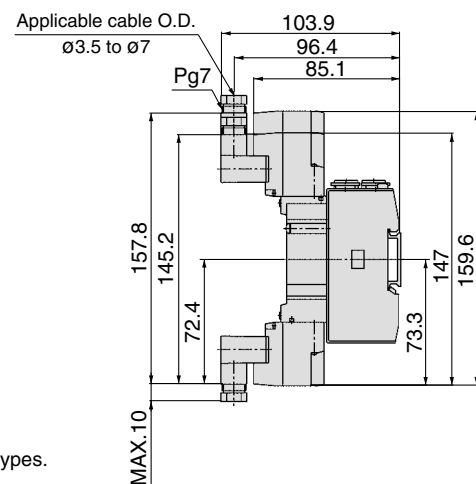
Stations n	11 stations	12	13	14	15	16	17	18	19	20 stations
L1	273	285.5	310.5	323	335.5	360.5	373	385.5	398	423
L2	262.5	275	300	312.5	325	350	362.5	375	387.5	412.5
L3	246	262	278	294	310	326	342	358	374	390
L4	13.5	11.5	16	14.5	12.5	17	15.5	13.5	12	16.5

M8 connector (WO)



Note) Refer to page 490 for dimensions of connector types.

DIN terminal (D)



Series 10-SY3000/5000

Type 45-A-NA

Base mounted manifold
Stacking type / DIN rail mounted
Connector box

How to Order Manifold

10-SS5Y **3** -45- **A** **U** -05 **D** -C6 -

• Clean series

Series

3	10-SY3000
5	10-SY5000

Specifications

Symbol	Specifications
A	With connector box (+COM specifications)
NA	With connector box (-COM specifications)



The style of attached lead wire assembly is different.

Connector box mounting position

Symbol	Mounting position
U	U side
D	D side

Stations

Symbol	Stations	Note
02	2 stations	Available up to 16 solenoid valves.
⋮	⋮	
16	16 stations	

SUP/EXH block assembly mounting position

Symbol	Mounting position	Applicable stations
U	U side	2 to 10 stations
D	D side	
B	Both sides	2 to 16 stations
M*	Special specifications	

* For special specifications, indicate separately on the manifold specification sheet.

A-B port size

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	
M	Mixed	
C4	One-touch fitting for ø4	10-SY5000
C6	One-touch fitting for ø6	
C8	One-touch fitting for ø8	
M	Mixed	

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø5/32"	10-SY3000
N7	One-touch fitting for ø1/4"	
M	Mixed	
N3	One-touch fitting for ø5/32"	10-SY5000
N7	One-touch fitting for ø1/4"	
N9	One-touch fitting for ø5/32"	
M	Mixed	

* In the case of mixed specifications, indicate separately on the manifold specification sheet.

Option

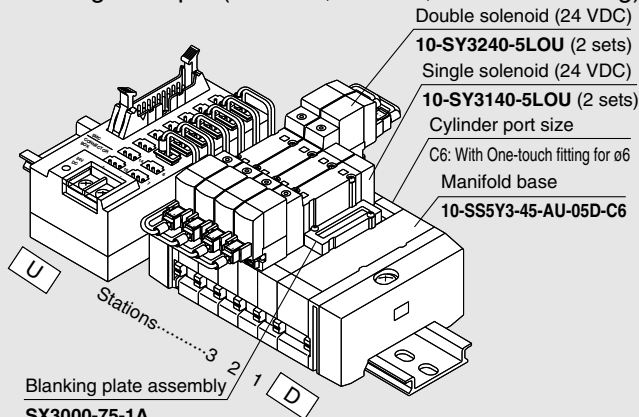
When a DIN rail longer than the specified stations is necessary, indicate the number of required stations. (20 stations at the maximum)



Refer to catalog pages 477 to 479 for the external pilot specifications.

How to Order Valve Manifold Assembly

Ordering example (SY3000, + COM, U side mounting)



10-SS5Y3-45-AU-05D-C6 · 1set (Type 45, 5 stations manifold base part no.)
* SX3000-75-1A 1set (Blanking plate assembly part no.)
* 10-SY3140-5LOU 2sets (Single solenoid part no.)
* 10-SY3240-5LOU 2sets (Double solenoid part no.)
→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

The valve arrangement is numbered as the 1st. station from D side regardless of the mounting position of connector box. In ordering, specify the part nos. in the order from the 1st. station on D side.

When the arrangement will be complicated, fill out the manifold specification sheet to instruct SMC.

10-SS5Y²-45-A³□□-C□□ is assembled with solenoid valve and lead wire assembly when shipping. Be sure to indicate a solenoid valve part no. in ordering.

How to Order Valves

10-SY **5** **2** 40-5 LOU □

• Clean series

Series

3	10-SY3000
5	10-SY5000

• Manual override

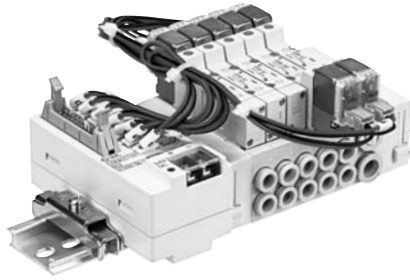
Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

Type of actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Rated voltage

5	24 VDC
---	--------



Manifold Specifications

Model		10-SS5Y3-45-A-NA		10-SS5Y5-45-A-NA	
Applicable valve		10-SY3□40		10-SY5□40	
Manifold type		Stacking type / DIN rail mounted			
P (SUP), R (EXH)		Common SUP, Common EXH			
Valve stations		2 to 16 stations ^{Note1, 2)}			
A, B port piping specifications	Location	Base			
	Direction	Side			
Port size	P, R port	C8 (One-touch fitting for ø8)		C10 (One-touch fitting for ø10)	
	A, B port	C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)		C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)	
Manifold base weight W (g) n: Stations		2 to 10 stations: W = 26n + 207 11 to 20 stations: W = 26n + 229		2 to 10 stations: W = 52n + 245 11 to 16 stations: W = 52n + 279	
Applicable flat ribbon cable connector		Flat ribbon cable connector socket: 20 pins MIL with strain relief conforming to MIL-C-83503			
Wiring specifications		+COM specifications (Type 45-A), -COM specifications (Type 45-NA)			



Note 1) For more than 11 stations, supply pressure to P port on both sides and exhaust from R port on both sides.

Note 2) There is a limit depending on the number of solenoids. Refer to "How to Order".

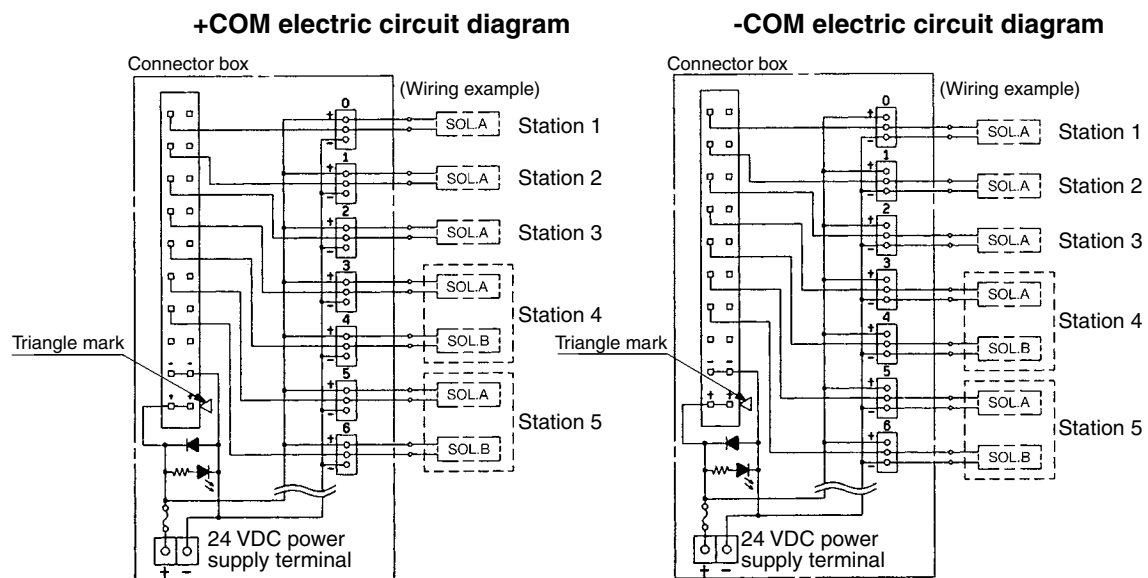
Flow Characteristics

Model	Port size		Flow characteristics					
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv
10-SS5Y3-45-□	C8	C6	0.88	0.21	0.22	0.95	0.18	0.22
10-SS5Y5-45-□	C10	C8	2.2	0.24	0.53	2.5	0.18	0.58

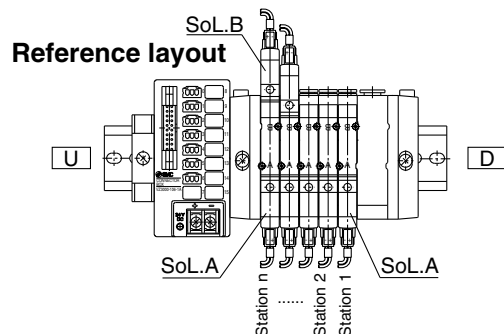


Note) The value is for manifold base with 5 stations and individually operated 2 position type.

Manifold wiring diagram (Circuit diagram for the reference layout)

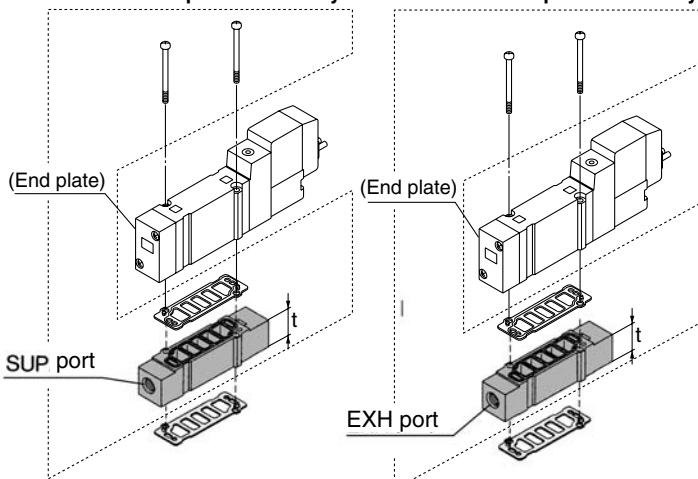


- Connector box for +COM allows transmission unit G71-0D16, manufactured by OMRON Corp. to be connected directly for serial transmission. Additionally, it can also be used for the PC wiring system.
- When an external power source must be supplied to the manifold, correct polarity must be observed, otherwise damage to PLC may occur.
- The wiring of solenoid valves corresponds to the labeled connector box 0 to 15 from D side.
- If valves other than non-polar type are used, this may cause malfunction.



Manifold Option

Individual SUP spacer assembly ■ Individual EXH spacer assembly



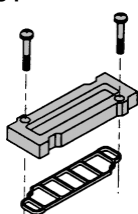
Series	Assembly part no.	Port size	t
10-SY3000	SY3000-38-2A	M5 x 0.8	11
10-SY5000	SY5000-38-16 * A	1/8"	15

Note) The SUP port may be either on the lead wire side or on the end plate side. (An assembly is shipped under the condition shown in the figure.)

Series	Assembly part no.	Port size	t
10-SY3000	SY3000-39-2A	M5 x 0.8	11
10-SY5000	SY5000-39-16 * A	1/8"	15

Note) The EXH port may be either on the lead wire side or on the end plate side. (An assembly is shipped under the condition shown in the figure.)

Blanking plate assembly



Series	Assembly part no.
10-SY3000	SX3000-75-1A
10-SY5000	SX5000-76-1A

* : Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

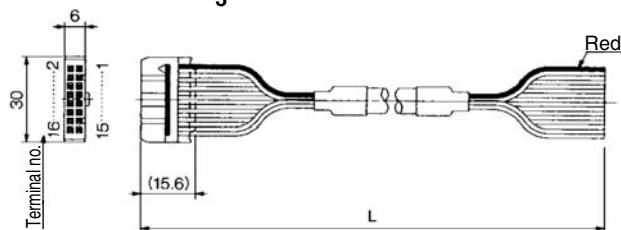
Caution

Mounting screw tightening torque

M2: 0.16N·m
M3: 0.8N·m
M4: 1.4N·m

Cable assembly

AXT100-FC20-1
to
3



Flat ribbon cable connector assembly

Cable length (L)	Assembly part no.	Note
1.5m	AXT100-FC20-1	Cable 20 cores x 22AWG
3m	AXT100-FC20-2	
5m	AXT100-FC20-3	

* For other connectors in the marketplace, use a 20 pins with strain relief conforming to MIL-C-83503.

Example of connector manufacturers

- Sumitomo 3M Ltd.
- Fujitsu Ltd.
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg Co., Ltd.

SUP block disk

By installing a SUP block disk in the pressure supply passage of a manifold valve, it is possible to supply two or more different high and low pressures to one manifold.



Series	Part no.
10-SY3000	SX3000-77-1A
10-SY5000	SX5000-77-1A

EXH block disk

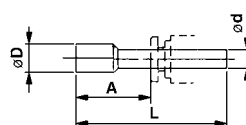
By installing an EXH block disk in the exhaust passage of a manifold valve, it is possible to divide the valve's exhaust so that it does not affect another valve. (Two block disks are needed to divide both exhausts.)



Series	Part no.
10-SY3000	SX3000-77-1A
10-SY5000	SX5000-77-1A

Plug (White)

These are inserted in unused cylinder ports and SUP, EXH ports. Purchasing order is available in units of 10 pieces.

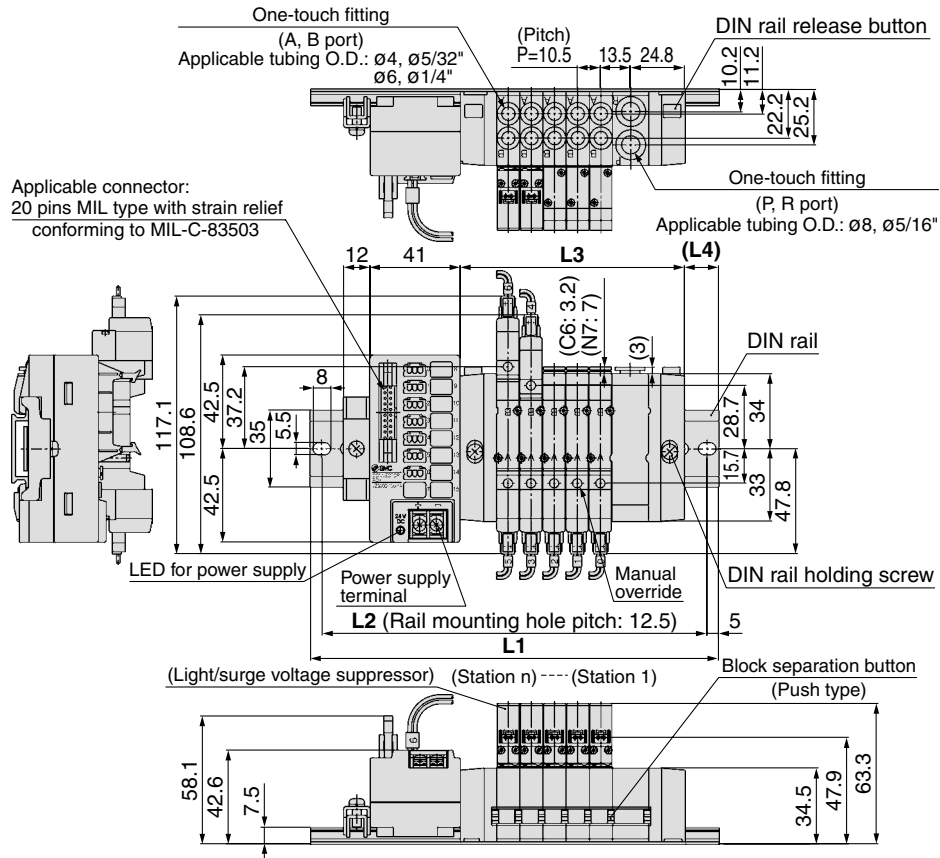


Dimensions

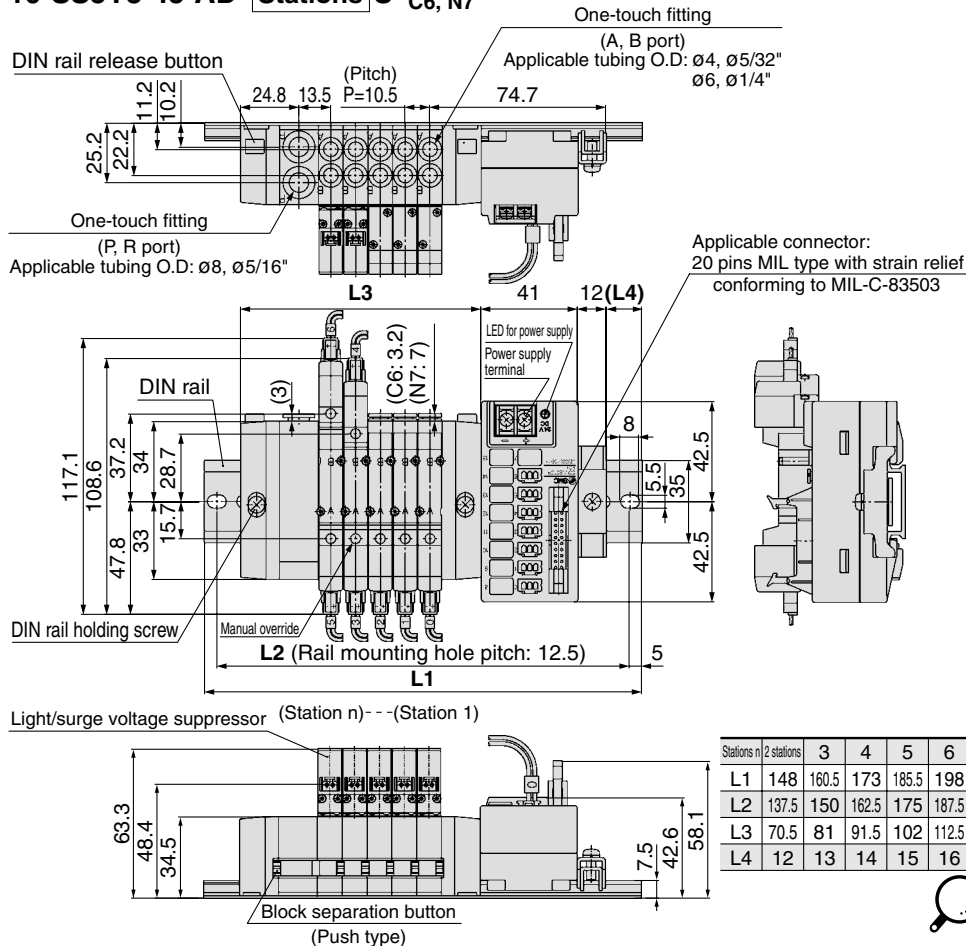
Applicable fitting size ød	Model	A	L	D
4	10-KQP-04	16	32	6
6	10-KQP-06	18	35	8
8	10-KQP-08	20.5	39	10
10	10-KQP-10	22	43	12
1/8"	10-KQP-01	16	31.5	5
5/32"	10-KQP-03	16	32	6
1/4"	10-KQP-07	18	35	8.5
5/16"	10-KQP-09	20.5	39	10

Dimensions: Series 10-SY3000

10-SS5Y3-45-AU- Stations D-C4, N3 C6, N7



10-SS5Y3-45-AD- Stations U-C4, N3 C6, N7



Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16 stations
L1	148	160.5	173	185.5	198	210.5	210.5	223	235.5	260.5	273	285.5	298	310.5	310.5
L2	137.5	150	162.5	175	187.5	200	200	212.5	225	250	262.5	275	287.5	300	300
L3	70.5	81	91.5	102	112.5	123	133.5	144	154.5	181.5	192	202.5	213	223.5	234
L4	12	13	14	15	16	17	12	13	14	13	14	15	16	17	11.5



* Two SUP/EXH blocks are provided for models with 11 stations or more.

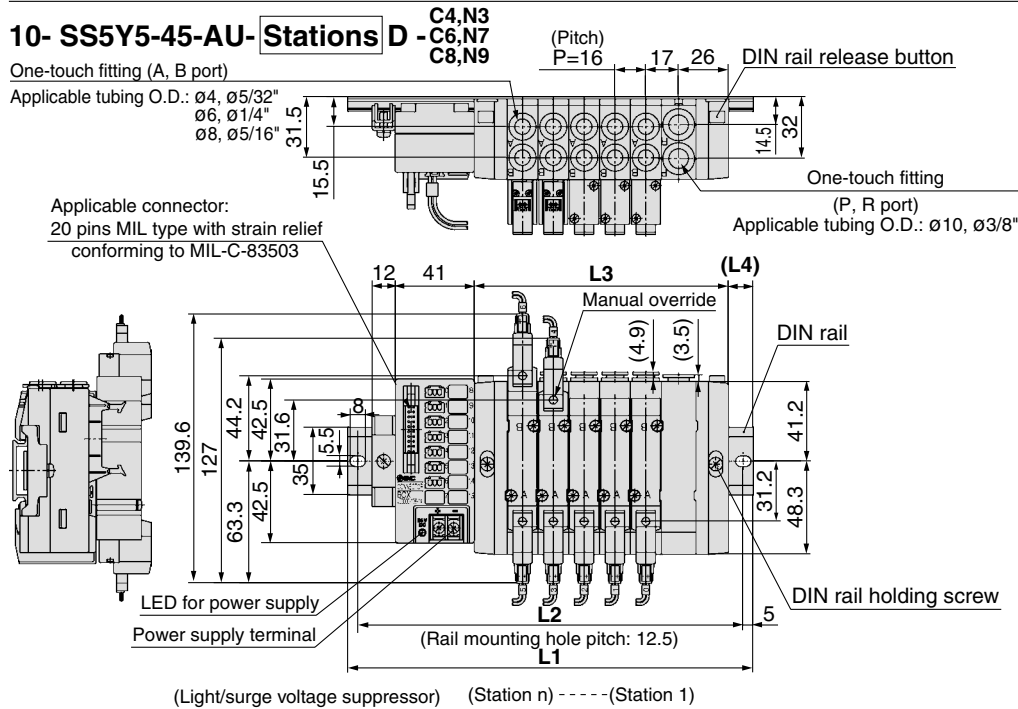
Dimensions: Series 10-SY5000

10-SS5Y5-45-AU- Stations D - C4,N3 C6,N7 C8,N9

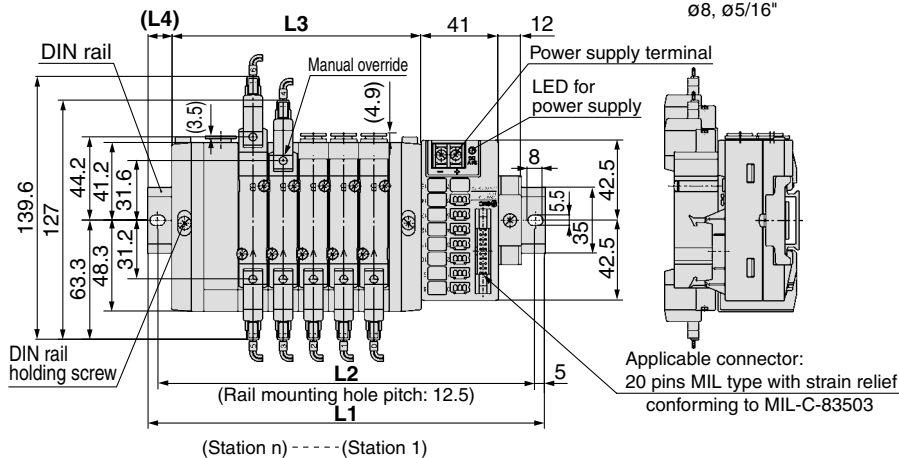
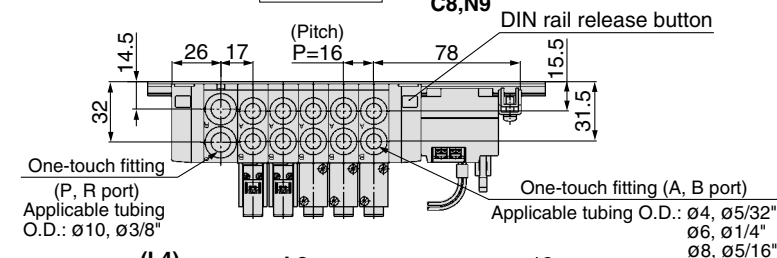
One-touch fitting (A, B port)

Applicable tubing O.D.: $\varnothing 4$, $\varnothing 5/32$ "
 $\varnothing 6$, $\varnothing 1/4$ "
 $\varnothing 8$, $\varnothing 5/16$ "

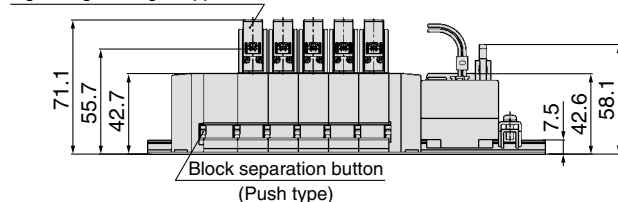
Applicable connector:
20 pins MIL type with strain relief
conforming to MIL-C-83503



10-SS5Y5-45-AD- Stations U - C4,N3 C6,N7 C8,N9



Light/surge voltage suppressor



Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16 stations
L1	160.5	185.5	198	210.5	235.5	248	260.5	273	298	323	348	360.5	373	398	410.5
L2	150	175	187.5	200	225	237.5	250	262.5	287.5	312.5	337.5	350	362.5	387.5	400
L3	84	100	116	132	148	164	180	196	212	246	262	278	294	310	326
L4	11.5	16	14.5	12.5	17	15.5	13.5	12	16.5	12	16.5	14.5	13	17.5	15.5

* Two SUP/EXH blocks are provided for models with 11 stations or more.

Series

10-SY300/500

Mixed mounting type
on 5 port valve manifold

3 port valve can be mounted on manifold for 5 port valve.

Application

Possible to be mounted on all kinds of manifolds for Series 10-SY3000/5000. Refer to "How to Order Manifolds" for details.

How to Order Valve Manifold Assembly

Ordering example

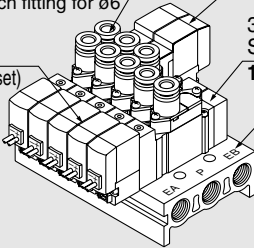
Cylinder port size
C6: With One-touch fitting for ø6

5 port valve:
Single solenoid
10-SY3120-5G-C6 (1set)

5 port valve:
Double solenoid
10-SY3220-5G-C6 (2 sets)

3 port valve:
Single solenoid (N.C)
10-SY313-5G-C6 (2 sets)

Manifold base (5 stations)
10-SS5Y3-20-05



10-SS5Y3-20-05

1 set (Type 20, 5 station manifold base part no.)

* 10-SY313-5G-C6

2 sets (3 port valve, type N.C part no.)

* 10-SY3120-5G-C6

1 set (5 port valve, single solenoid part no.)

* 10-SY3220-5G-C6

2 sets (5 port valve, double solenoid part no.)

The asterisk denotes the symbol for assembly.
Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part number under the manifold base part number.
When the arrangement will be complicated, fill out the manifold specification sheet to instruct SMC.

- Air cylinder
- Rotary actuator
- Air gripper
- Directional control valve
- Flow control equipment
- Filter, Pressure control equipment
- Fittings & Tubing
- Air preparation equipment
- Pressure switch
- Clean gas filter

Body ported / How to Order Valve

Individual wiring: For 10-SS5Y³₅-20

10—SY 5 1 3 5 L 01

Clean series Series

3	10-SY300
5	10-SY500

Type of actuation

1	Normally closed (N.C.)
2	Normally open (N.O.)

Solenoid type

Nil	Single solenoid
D	Double solenoid

Coil specifications

Nil	Standard
T	With power saving circuit <24 and 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage

DC specifications		AC specifications	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
V	6 VDC	3	110 VAC [115 VAC]
S	5 VDC	4	220 VAC [230 VAC]
R	3 VDC		

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", only DC voltage is available.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

* Except M5

A port size
Thread piping

Symbol	Port size	Applicable series
M5	M5 x 0.8	10-SY300
01	1/8	10-SY500

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY300
C6	One-touch fitting for ø6	10-SY300
C6	One-touch fitting for ø6	10-SY500
C8	One-touch fitting for ø8	10-SY500

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø 3/8"	10-SY300
N7	One-touch fitting for ø 1/4"	10-SY300
N7	One-touch fitting for ø 1/4"	10-SY500
N9	One-touch fitting for ø 3/16"	10-SY500

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", only DC voltage is available.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D (Only 10-SY500)

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "DOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

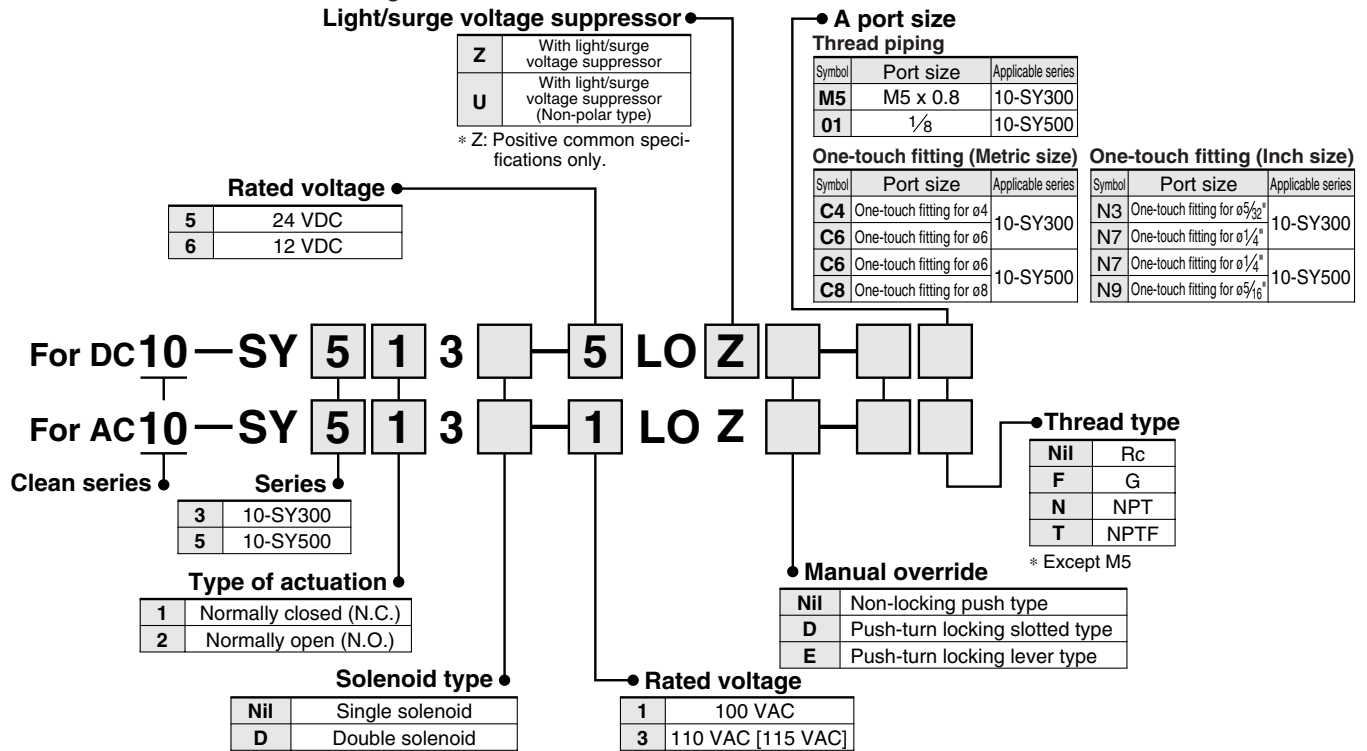
24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			24, 12 VDC 100, 110, 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	D: With connector	WO: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	MN: Without lead wire	DO: Without connector	W□: With connector cable (Note 1)
	LO: Without connector	MO: Without connector		

* LN, MN types: with 2 sockets.
* Refer to page 488 for Series 10-SY300 DIN terminal.
* DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 482.

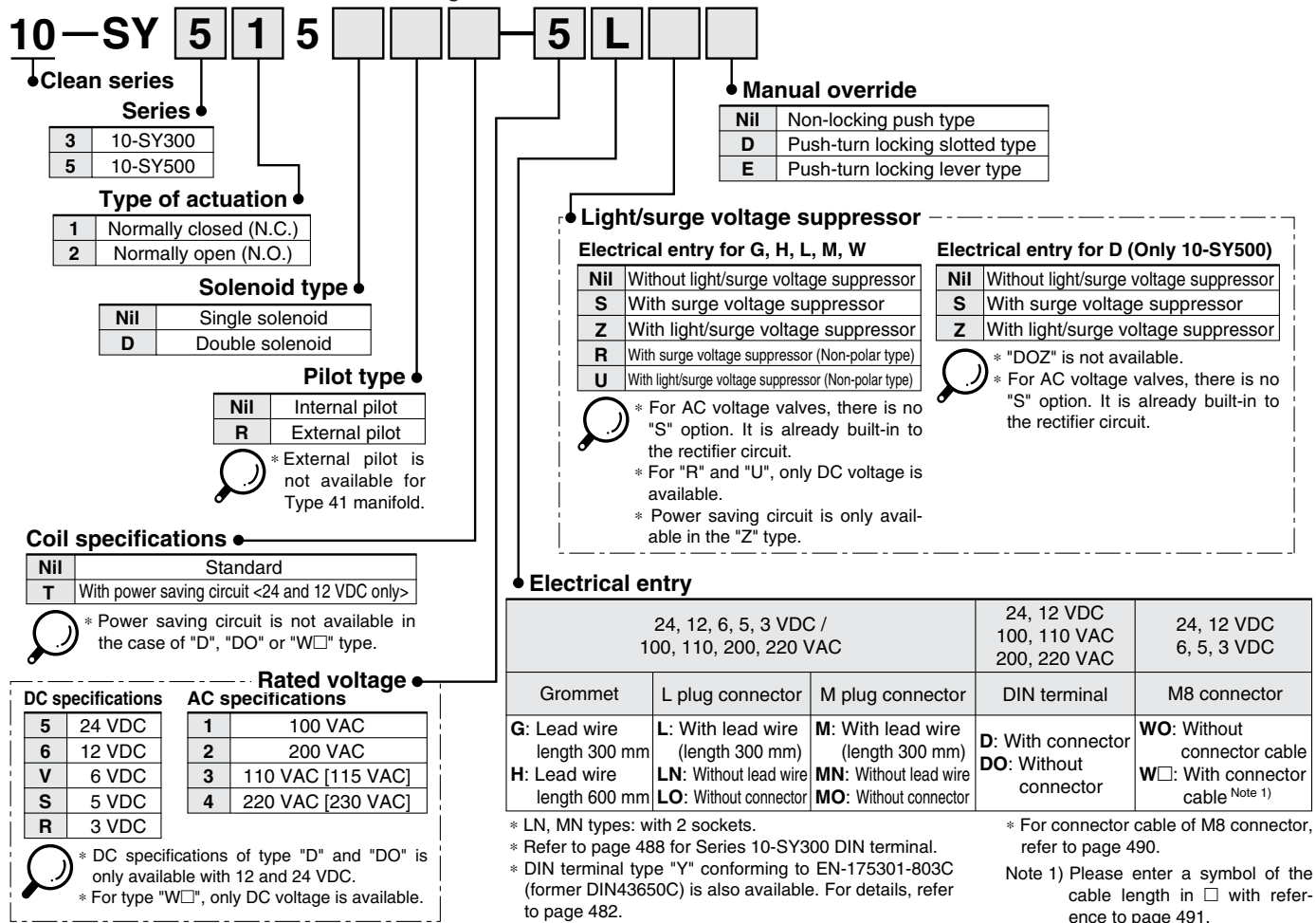
* For connector cable of M8 connector, refer to page 490.
Note 1) Please enter a symbol of a cable length with reference to page 491.

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to page 413.)

Body Ported / How to Order Valves

Flat ribbon cable: 10-SS5Y³-20P

Base Mounted / How to Order Valves

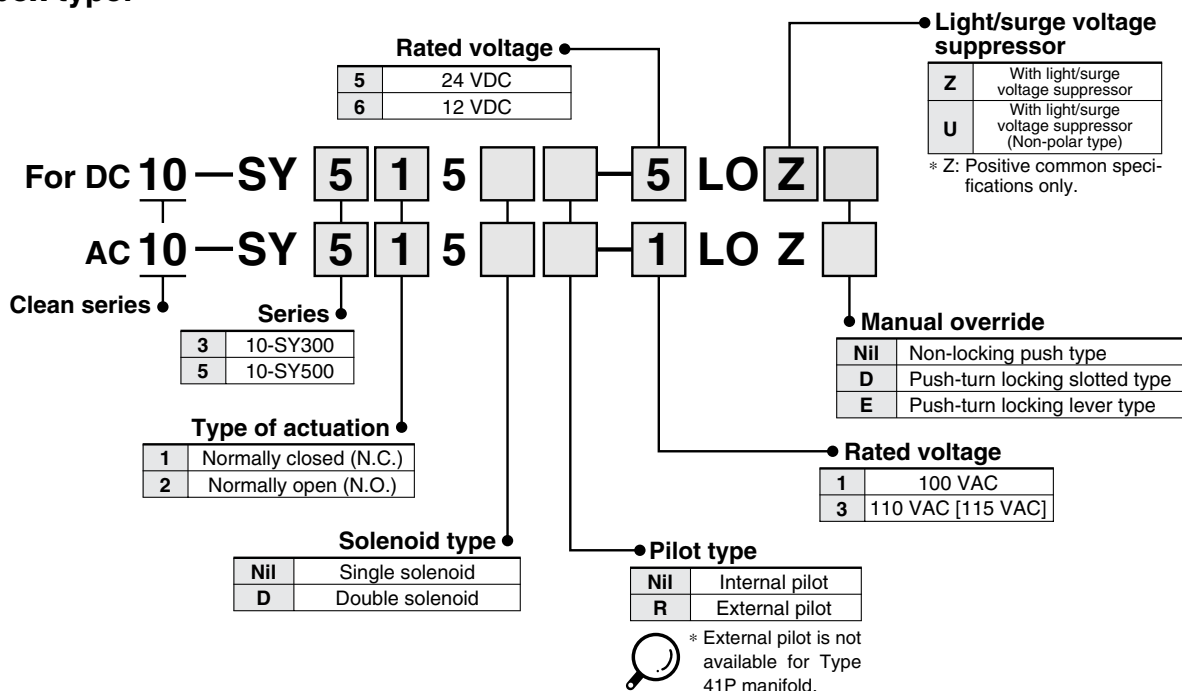
Individual wiring: For 10-SS5Y³-41/42/45 type

Base Mounted / How to Order Valve

Flat ribbon cable:
Connector box type: For 10-SS5Y³₅-41P/42P/45-A

41P/42P
45-A

41P/42P



Series 10-SY3000/5000

Type 45

Made to Order Specifications
External pilot

External pilot manifold bases for low-pressure/vacuum use are added to stacking style/DIN rail manifolds.

Individual wiring / Connector box type

How to Order Manifold

Type 45

10-SS5Y³₅-45(-A)-05 U R C6

Clean series

Series	
3	10-SY3000
5	10-SY5000

Valve stations

Symbol	Stations
02	2 stations
⋮	⋮
20	20 stations

The number of blanking plate assembly is included.

SUP/EXH block assembly mounting position

Symbol	Mounting position	Stations
U	U side	2 to 10 stations
D	D side	
B	Both sides	2 to 20 stations
M	Special specifications	

For special specifications, indicate separately on the manifold specification sheet.

SUP/EXH block assembly specifications

Symbol	Specifications
R	External pilot specifications

Option

When a DIN rail longer than the specified stations is required, specify the station number. (20 stations maximum)

A, B port size

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY3000
C6	One-touch fitting for ø6	
M	Mixed	
C4	One-touch fitting for ø4	10-SY5000
C6	One-touch fitting for ø6	
C8	One-touch fitting for ø8	
M	Mixed	

One-touch fitting (Inch size)

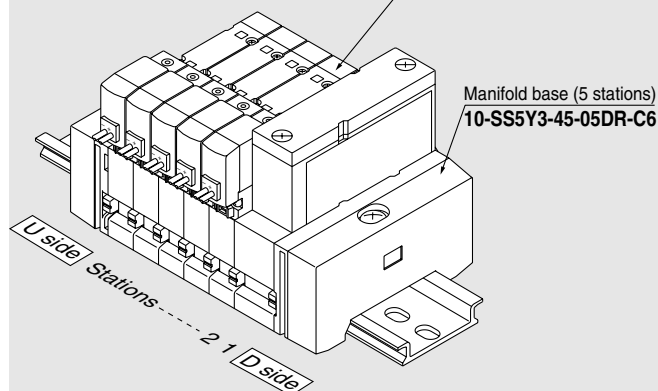
Symbol	Port size	Applicable series
N3	One-touch fitting for ø 5/32"	10-SY3000
N7	One-touch fitting for ø 1/4"	
M	Mixed	
N3	One-touch fitting for ø 5/32"	10-SY5000
N7	One-touch fitting for ø 1/4"	
N9	One-touch fitting for ø 5/16"	
M	Mixed	

* In the case of mixed specifications, indicate separately on the manifold specification sheet.

How to Order Valve Manifold Assembly

Ordering example

Single solenoid (External pilot specifications)
10-SY3140R-5G(5set)



10-SS5Y3-45-05DR-C6.....1 set (external pilot specifications part no.)
* 10-SY3140R-5G.....5 sets (Single solenoid part number)

→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

The valve arrangement is numbered as the 1st. station from D side regardless of the mounting position of SUP/EXH block assembly. In ordering, specify the part nos. in the order from the 1st. station on D side. Besides, when the arrangement will be complicated, fill out the manifold specification sheet to instruct SMC. For manifolds with SUP/EXH block assembly at each end of the manifold, external pilot ports will be also located at each end of the manifold.

How to Order Valves

10 — SY **5** **2** **40** **5** **L**

• Clean series

• Series

3	10-SY3000
5	10-SY5000

• Type of actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

• Pilot type

Nil	Internal pilot
R	External pilot

• Coil specifications

Nil	Standard
T	With power saving circuit <only 24 and 12 VDC>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

• Rated voltage

DC specifications

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

AC specifications (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", only DC voltage is available.
* "D" and "DO" types are only available for SY5000.

• Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

• Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", only DC voltage is available.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D (SY5000 only)

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			24, 12 VDC 100, 110 VAC 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 Connector
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm) LN: Without lead wire LO: Without connector	M: With lead wire (length 300 mm) MN: Without lead wire MO: Without connector	(10-SY5000 only) D: With connector DO: Without connector	WO: Without connector cable W□: With connector cable ^{Note 1)}

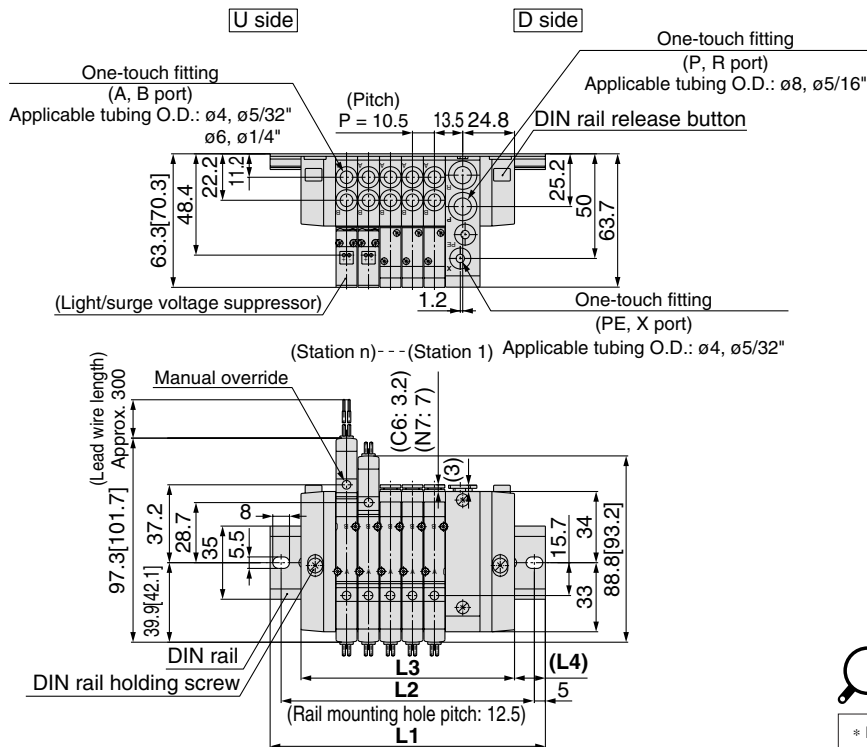
* LN, MN: with 2 sockets
* "D" and "DO" only available for 10-SY5000.
* DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 482.
* Setting "-5LOU" is available only for connector box type.
* For connector cable of M8 connector, refer to page 490.
Note 1) Please enter a symbol of the cable length in □ with reference to page 491.

External Pilot



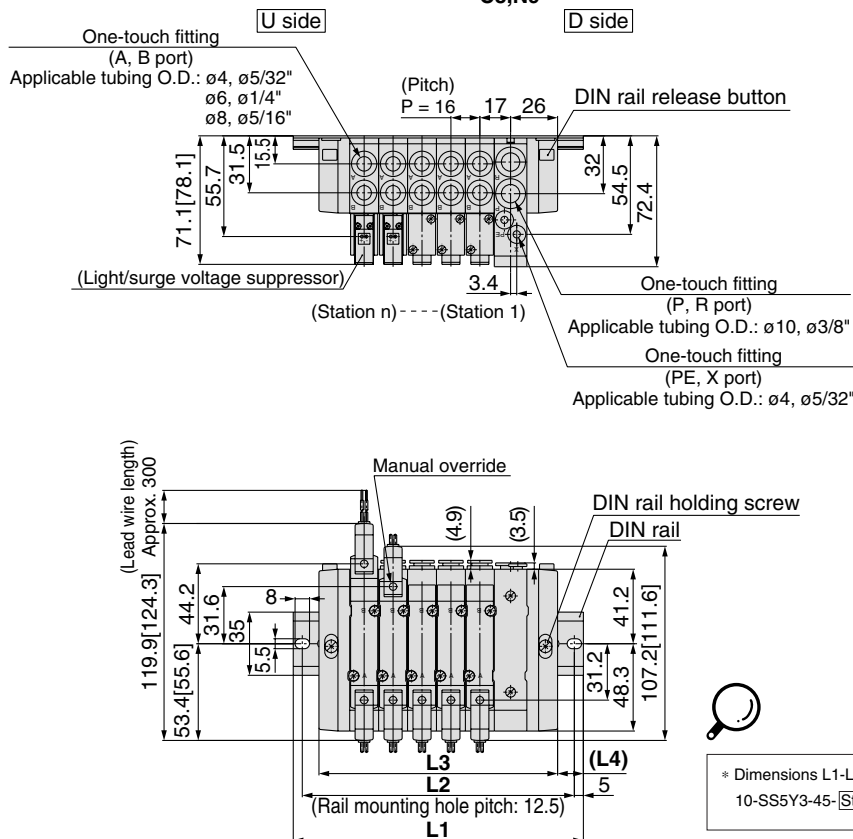
Note) []: AC

10-SY3000: 10-SS5Y3-45- Stations DR-^{C4,N3}_{C6,N7}



* Dimensions L1-L4 are the same as those of
10-SS5Y3-45- Stations^U_{C4,N3}
^D_{C6,N7}

10-SY5000: 10-SS5Y5-45- Stations DR-^{C4,N3}_{C6,N7}
^{C8,N9}



* Dimensions L1-L4 are the same as those of
10-SS5Y3-45- Stations^U_{C4,N3}
^D_{C6,N7}
^B_{C8,N9}

* Dimensions of 10-SS5Y³-45- Stations-UR are the same as those of
10-SS5Y³-45- Stations-DR.

Series 10-SY3000/5000

Type M45

Made to Order Specifications
Mixed mounting

Non plug-in type

10-SY3000 can be mounted on 10-SY5000 base.

How to Order Manifolds

Type M45 (Mixed mounting type)

10-SS5Y5-M45-05 U-C86

Clean series

Mixed mounting type

Valve stations

SUP/EXH block assembly mounting position

Symbol	Stations
02	2 stations
...	...
20	20 stations

The number of blanking plate assemblies is also included.

Symbol	Mounting position	Stations
U	U side	2 to 10 stations
D	D side	
B	Both sides	2 to 20 stations
M	Special specifications	

For special specifications, indicate separately on the manifold specification sheet.

Option

When a DIN rail longer than the specified stations is required, specify the station number. (20 stations maximum)

A, B port size

One-touch fitting (Metric size)

Symbol	Port size
C44	SY5000: One-touch fitting for $\phi 4$ SY3000: One-touch fitting for $\phi 4$
C46	SY5000: One-touch fitting for $\phi 4$ SY3000: One-touch fitting for $\phi 6$
C64	SY5000: One-touch fitting for $\phi 6$ SY3000: One-touch fitting for $\phi 4$
C66	SY5000: One-touch fitting for $\phi 6$ SY3000: One-touch fitting for $\phi 6$
C84	SY5000: One-touch fitting for $\phi 8$ SY3000: One-touch fitting for $\phi 4$
C86	SY5000: One-touch fitting for $\phi 8$ SY3000: One-touch fitting for $\phi 6$
M	Mixed

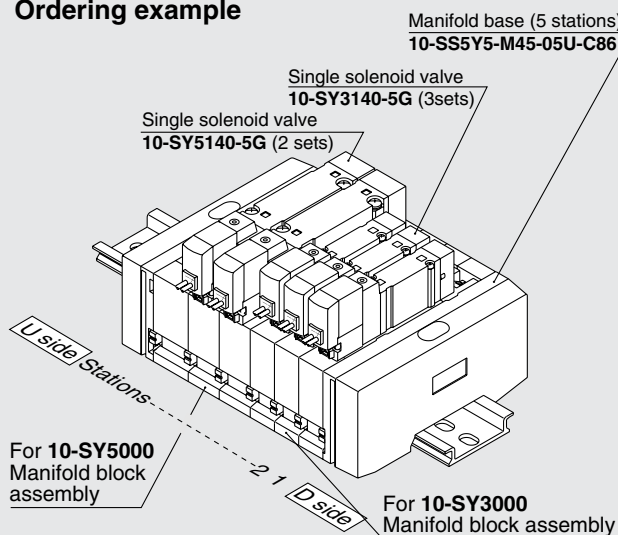
One-touch fitting (Inch size)

Symbol	Port size
N33	SY5000: One-touch fitting for $\phi 5/32$ " SY3000: One-touch fitting for $\phi 5/32$ "
N37	SY5000: One-touch fitting for $\phi 5/32$ " SY3000: One-touch fitting for $\phi 1/4$ "
N73	SY5000: One-touch fitting for $\phi 1/4$ " SY3000: One-touch fitting for $\phi 5/32$ "
N77	SY5000: One-touch fitting for $\phi 1/4$ " SY3000: One-touch fitting for $\phi 1/4$ "
N93	SY5000: One-touch fitting for $\phi 5/16$ " SY3000: One-touch fitting for $\phi 5/32$ "
N97	SY5000: One-touch fitting for $\phi 5/16$ " SY3000: One-touch fitting for $\phi 1/4$ "
M	Mixed

* In the case of mixed specifications, indicate separately on the manifold specification sheet.

How to Order Valve Manifold Assembly

Ordering example



10-SS5Y5-M45-05U-C861set (Type M45 manifold base part no.)
* 10-SY3140-5G3 sets (Single solenoid part no.)
* 10-SY5140-5G2 sets (Single solenoid part no.)
The asterisk denotes the symbol for assembly.
Prefix it to the part nos. of the solenoid valve, etc.

The valve arrangement is numbered as the 1st. station from D side regardless of the mounting position of SUP/EXH block assembly. In ordering, specify the part nos. in the order from the 1st. station on D side. Besides, when the arrangement will be complicated, fill out the manifold specification sheet to instruct SMC.

How to Order Valves

10-SY 5 2 40 5 L

Clean series

Series

3	10-SY3000
5	10-SY5000

Actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Coil specifications

Nil	Standard
T	With power saving circuit <only 24V and 12 VDC>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Rated voltage

DC specifications

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

AC specifications (50/60 Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* For type "W□", only DC voltage is available.

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			24, 12, 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	WO: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	MN: Without lead wire	W□: With connector cable ^{Note 1)}
	LO: Without connector	MO: Without connector	

* LN, MN: with 2 sockets

* For connector cable of M8 connector, refer to page 490.

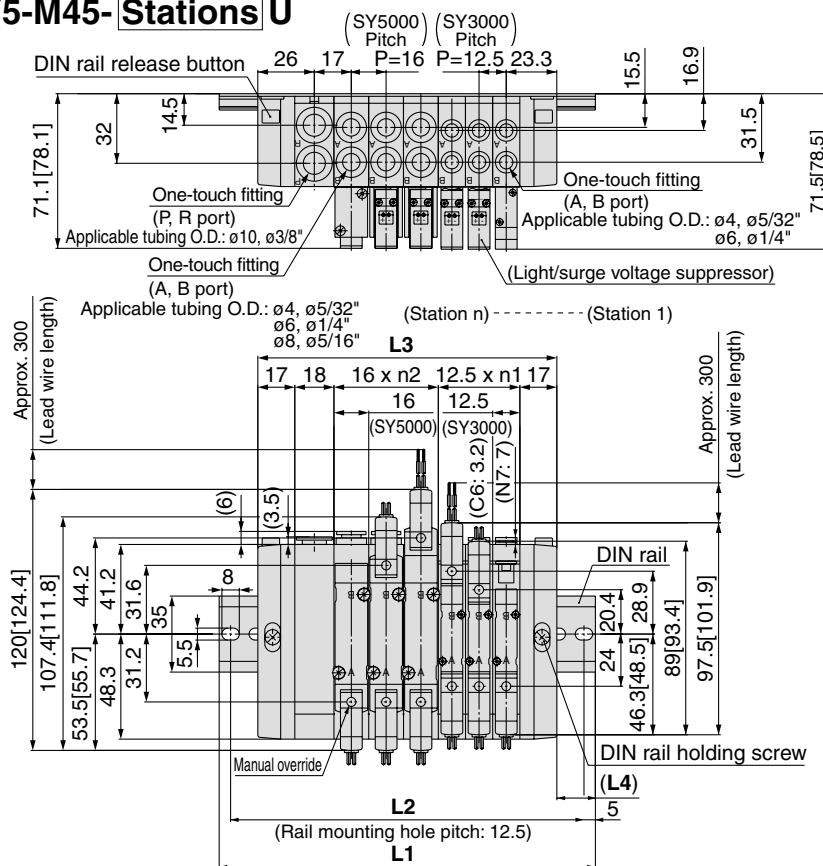
Note 1) Please enter a symbol of the cable length in □ with reference to page 491.

Dimensions: Mixed Mounting



Note) []: AC

10-SS5Y5-M45- Stations U



L dimension: Formulae for L1 to L4
 $L3 = 12.5 \times n1 + 16 \times n2 + 52$

$M = \left(\frac{L3}{12.5} + 1 \right)$ Omit decimals

$L1 = 12.5 \times M + 23$

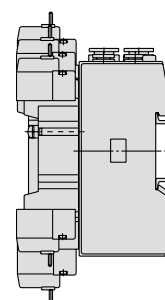
$L2 = L1 - 10.5$

$L4 = (L1 - L3)/2$

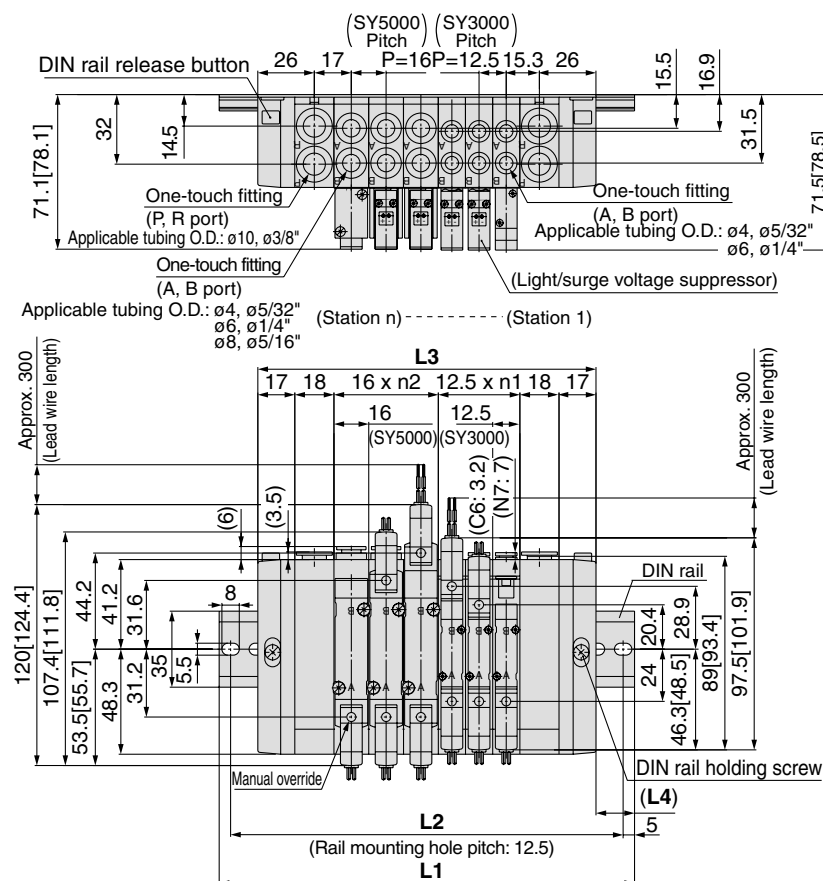
n1: Number of 10-SY3000
 n2: Number of 10-SY5000



* The L1 to L4 dimensions of 10-SS5Y5-M45- Stations D are identical to those of 10-SS5Y5-M45- Stations U.



10-SS5Y5-M45- stations B



L dimension: Formula for L1 to L4
 $L3 = 12.5 \times n1 + 16 \times n2 + 70$

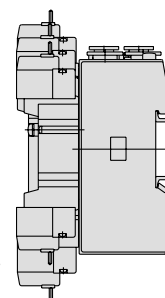
$M = \left(\frac{L3}{12.5} + 1 \right)$ Omit decimals

$L1 = 12.5 \times M + 23$

$L2 = L1 - 10.5$

$L4 = (L1 - L3)/2$

n1: Number of 10-SY3000
 n2: Number of 10-SY5000



Series 10-SYJ5000/7000/9000/500

Made to Order Specifications
DIN terminal type conforming
to EN-175301-803C (former DIN 43650C) standard

DIN terminal type conforming to DIN 43650C (DIN pitch 8mm) standard

How to Order Valves

Series

5	10-SY500
---	----------

Type of actuation

1	Normally open
2	Normally closed

Type of actuation

3	Body ported
5	Base mounted

A port size

Symbol	Port size
Nil	Base mounted
01	1/8
C4	One-touch fitting for ø4
C6	One-touch fitting for ø6
C8	One-touch fitting for ø8
N3	One-touch fitting for ø5/32"
N7	One-touch fitting for ø1/4"
N9	One-touch fitting for ø5/16"

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

5 port valve mixed mounting style 3 port valve

5 port valve

Clean series

Series

5	10-SY5000
7	10-SY7000
9	10-SY9000

Type of actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Body type

2	Body ported
4	Base mounted

Pilot type

Nil	Internal pilot
R	External pilot

* R: Base mounted type only

Rated voltage

DC	
5	24 VDC
6	12 VDC
AC (50/60 Hz)	
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

Electrical entry

Y: With connector

YO: Without connector

Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "YOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

Body ported Thread piping

Symbol	Port size	Applicable series
01	1/8	10-SY5000
02	1/8	10-SY7000
03	3/8	10-SY9000

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	10-SY5000
C6	One-touch fitting for ø6	10-SY5000
C8	One-touch fitting for ø8	10-SY7000
C8	One-touch fitting for ø8	10-SY7000
C10	One-touch fitting for ø10	10-SY9000
C8	One-touch fitting for ø8	10-SY9000
C12	One-touch fitting for ø10	10-SY9000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø5/32"	10-SY5000
N7	One-touch fitting for ø1/4"	10-SY5000
N9	One-touch fitting for ø5/16"	10-SY7000
N9	One-touch fitting for ø5/16"	10-SY7000
N11	One-touch fitting for ø3/8"	10-SY7000
N9	One-touch fitting for ø5/16"	10-SY9000
N11	One-touch fitting for ø3/8"	10-SY9000

For base mounted

Symbol	Port size	Applicable series
Nil	Without sub-plate	10-SY5000
02	With sub-plate	10-SY7000
03	With sub-plate	10-SY7000
04	With sub-plate	10-SY9000

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary.
(For details, refer to catalog on page 413.)

How to Order Pilot Valve Assembly

10-V115-5Y

Clean series

Rated voltage

DC	
5	24 VDC
6	12 VDC
AC (50/60 Hz)	
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "YOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

Y	DIN terminal	With connector
YO		Without connector

DIN terminal part no.

Without light			SY100-82-1
With light			
Rated voltage	Voltage symbol	Part no.	
24 VDC	24VN	SY100-82-3-05	
12 VDC	12VN	SY100-82-3-06	
100 VAC	100VN	SY100-82-3-01	
200 VAC	200VN	SY100-82-3-02	
110 VAC [115 VAC]	110VN	SY100-82-3-03	
220 VAC [230 VAC]	220VN	SY100-82-3-04	

Caution

- Use caution in wiring because IP65 (enclosure) standard cannot be met if the cable other than the specified cable (ø3.5 to ø7.5) is used. Observe the specified torque range when tightening the ground nuts or holding screws. For DIN terminals (wiring procedures, procedures for changing electrical entries, precautions, applicable cable, circuit diagram), refer to pages 487 and 488.
- Type D, DIN terminal with 9.4 mm pitch between terminals is not interchangeable.
- To distinguish from the type D, DIN connector, "N" is listed at the end of voltage symbol. (For connector parts without lights, "N" is not indicated. Please refer to the name plate to distinguish.)
- Dimensions are the same as those of Type D connector.
- When replacing a pilot valve assembly only, "10-V115-□□" is interchangeable with "10-V115-□□". Do not replace 10-V111 (G, L, M) with 10-V115-□□/□□ (DIN terminal), and vice versa.

Series 10-SY3000/5000/7000/9000

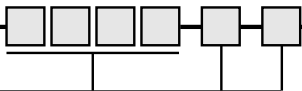
Made to order specifications
Main valve / Fluoro rubber

Main valve / Fluoro rubber

Fluoro rubber is used for rubber parts of the main valve to allow use in applications such as the following.

- When using a lubricant other than the recommended turbine oil, and there is a possibility of malfunction due to swelling of the spool valve seals.

Applicable solenoid valve series 10-SY3 $\frac{2}{6}$ 0, 10-SY5 $\frac{2}{6}$ 0, 10-SY7 $\frac{2}{6}$ 0, 10-SY9 $\frac{2}{6}$ 0

Model no. 10-SY $\frac{3}{5/7/9}$ $\frac{20}{40/60}$ -  - X90

• Clean series

• Entry is the same as standard products.

Specifications and performance are the same as standard products.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Series 10-SY

Specific Product Precautions 1

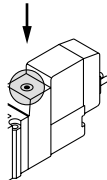
Be sure to read before handling.

Manual override operation

⚠ Warning

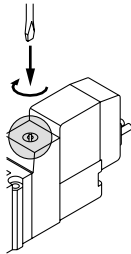
■ Non-locking push type [Standard type]

Press in the direction of the arrow.



■ Push-turn locking slotted type [Type D]

While pressing, turn in the direction of the arrow. If it is not turned, it can be operated the same way as the non-locking type.



Locked position



⚠ Caution

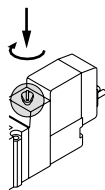
When operating the locking type D with a screwdriver, turn it gently using a watchmaker's screwdriver..

[Torque: Less than 0.1 N·m]

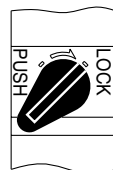
■ Push-turn locking lever type [Type E]

While pressing, turn in the direction of the arrow.

If it is not turned, it can be operated the same way as the non-locking type.



Locked position



⚠ Caution

When locking the manual override on the push-turn locking types (D, E), be sure to push it down before turning.

Turning without first pushing it down can cause damage to the manual override and trouble such as air leakage, etc.

Solenoid valve for 200/220 VAC specifications

⚠ Warning

Solenoid valves with grommet and L/M type plug connector AC specifications have a built-in rectifier circuit in the pilot section to operate the DC coil.

With 200/220 VAC specification pilot valves, this built-in rectifier generates heat when energized. The surface may become hot depending on the energized condition. Therefore, do not touch the solenoid valves.

Exhaust throttle

⚠ Caution

With series 10-SY, the pilot valve and main valve share a common exhaust inside the valve. Therefore, do not block the exhaust port when arranging the piping.

Series 10-SY3000, 5000, 7000, 9000 Used as a 3 port valve

⚠ Caution

In the case of using a 5 port valve as a 3 port valve Series 10-SY 3000/5000/7000/9000 can be used as normally closed (N.C.) or normally open (N.O.) 3 port valves by closing one of the cylinder ports (A or B) with a plug. However, they should be used with the exhaust ports kept open. (Refer to pages 473 to 476 for dedicated 3 port solenoid valve.)

Plug position		B port	A port
Actuation		N.C.	N.O.
Number of solenoids	Single		
	Double		



Series 10-SY

Specific Product Precautions 2

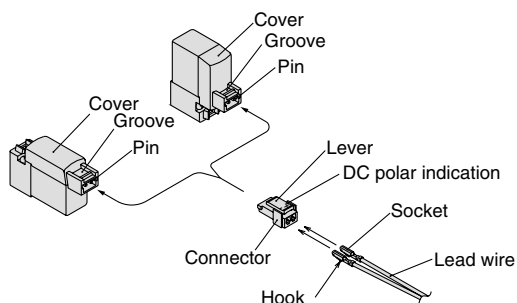
Be sure to read before handling.

How to use plug connector

⚠ Caution

1. Attaching and detaching connectors

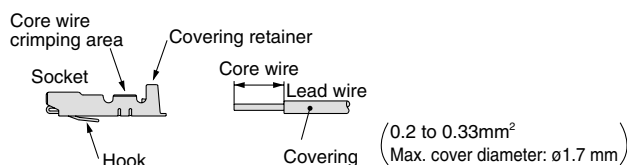
- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



2. Crimping connection of lead wire and socket

Strip 3.2 to 3.7 mm at the end of lead wires, insert the end of the core wires evenly into the sockets, and then crimp it by a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.

(Crimping tool: Model no. DXT170-75-1)



3. Attaching and detaching lead wires with sockets

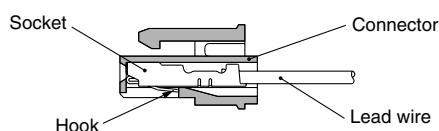
• Attaching

Insert the sockets into the square holes of the connector (+, - indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

• Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm).

If the socket will be used again, first spread the hook outward.



Surge voltage suppressor

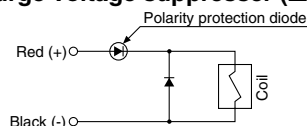
⚠ Caution

(For DC)

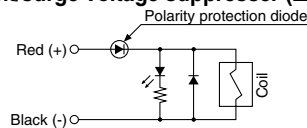
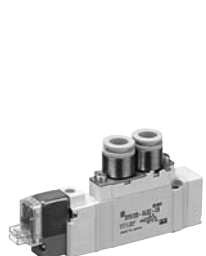
Grommet, L/M plug connector

■ Standard type (With polarity)

With surge voltage suppressor (□S)

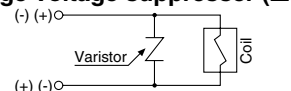


With light/surge voltage suppressor (□Z)

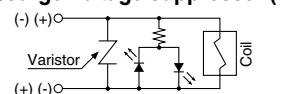


■ Non-polar type

With surge voltage suppressor (□R)



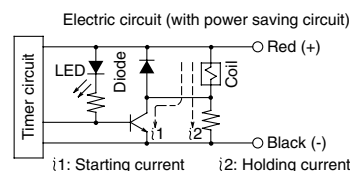
With light/surge voltage suppressor (□U)



- Connect the standard type in accordance with the +, - polarity indication. (The non-polar type can be used with the connections made either way.)
- Since voltage specifications other than standard 24 and 12 VDC do not have diodes for polarity protection, be careful not to make errors in the polarity.
- Since the valves with diode for polarity protection have a voltage drop of about 1V, be careful about allowable voltage fluctuation. (Refer to the solenoid specifications of each valve for detail.)
- When wiring is done at the factory, positive (+) is red and negative (-) is black.

■ With power saving circuit

Power consumption is decreased by 1/4 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 62 ms at 24 VDC.)

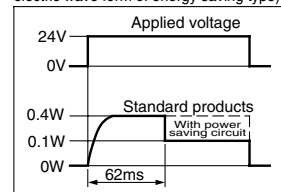


Working principle

With the above circuit, the current consumption when holding is reduced to save energy. Please refer to the electric wave data below.

- When a power saving circuit is installed, a diode to prevent reverse current is not provided. Therefore, use caution not to connect in reverse.
- Be careful about the allowable voltage fluctuation since voltage drop of about 0.5V occurs due to a transistor. (Refer to the solenoid specifications of each valve for details.)

(In the case of 10-SV³₇***0T, the electric wave form of energy saving type)





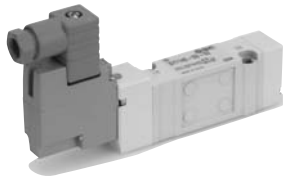
Series 10-SY

Specific Product Precautions 3

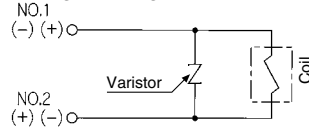
Be sure to read before handling.

Surge voltage suppressor

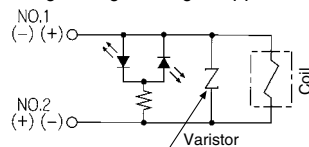
DIN terminal



With surge voltage suppressor (DS)

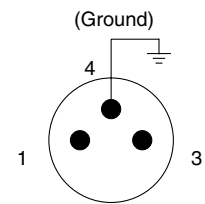


With light/surge voltage suppressor (DZ)



DIN terminal has no polarity.

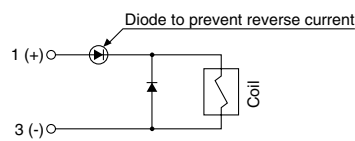
M8 connector type



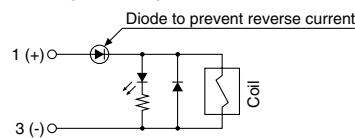
Solenoid valve side
Pin wiring diagram

Standard type (With polarity)

With surge voltage suppressor (□S)

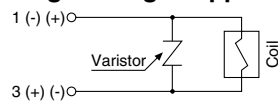


With light/surge voltage suppressor (□Z)

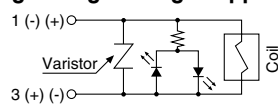


Non-polar type

With surge voltage suppressor (□R)



With light/surge voltage suppressor (□U)

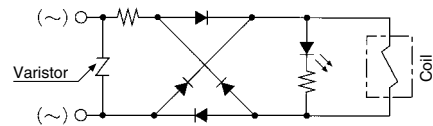


- In the case of standard type, connect + (positive) to 1 and - (negative) to 3 according the polarity.
- For DC voltage other than 12, 24 VDC, incorrect wiring will cause damage to the surge suppressor circuit. (Use caution to polarity.)
- Since the valves with diode for polarity protection have a voltage drop of about 1V, be careful about allowable voltage fluctuation. (Refer to the solenoid specifications of each valve for detail.)

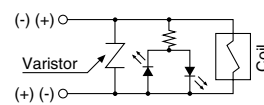
Grommet, L/M plug connector

With indicator light

GZ
LZ, LOZ, MZ, MOZ



Non-polar type (□U)

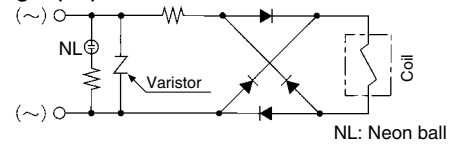


<For AC >

(There is no "S" option, because the generation of surge voltage is prevented by a rectifier.)

DIN terminal

With indicator light (DZ)



Note) Surge voltage suppressor of varistor has residual voltage corresponding to the protective element and rated voltage. Therefore, protect the controller side from the surge voltage. The residual voltage of the diode is approximately 1V.



Series 10-SY

Specific Product Precautions 4

Be sure to read before handling.

Plug connector lead wire length

⚠ Caution

Standard length is 300 mm, but the following lengths are also available.

How to Order Connector Assembly

For DC: **SY100-30-4A**

For 100 VAC: **SY100-30-1A**

For 200 VAC: **SY100-30-2A**

For other voltages of AC: **SY100-30-3A**

Without lead wire: **SY100-30-A**

(with connector and 2 of sockets only)

How to Order

Specify the part numbers of the solenoid valve without connector and the connector assembly.

<Example> Lead wire length 2000 mm

For DC

10-SY3120-5LO-M5

SY100-30-4A-20

For AC

10-SY3120-1LO-M5

SY100-30-1A-20

● Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to use DIN terminal

⚠ Caution

Connection

1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3. Loosen the terminal screws (slotted screws) on the terminal block, insert the cores of the lead wires into the terminals according to the connection method, and fasten them securely with the terminal screws.
4. Secure the cord by fastening the ground nut.

⚠ Caution

When making connections, please note that using other than the specified size (ø3.5 to ø7) cabtire cable will not satisfy IP65 (enclosure) standards. Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

Changing the entry direction

After separating terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90 intervals).

* When equipped with a light, be careful not to damage the light with the cord's lead wires.

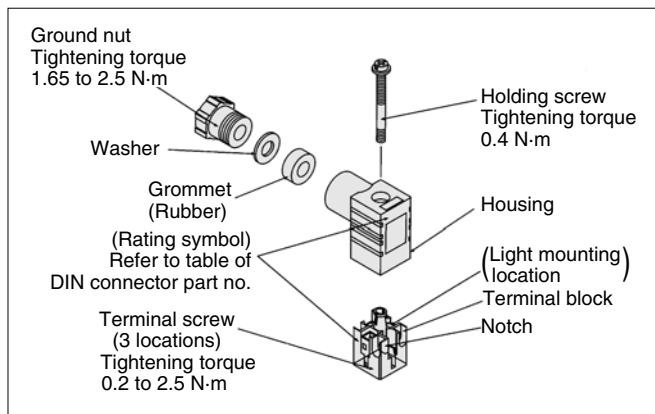
Precautions

Plug in and pull out the connector vertically without tilting to one side.

Compatible cable

Cord O.D.: ø3.5 to ø7

(Reference) 0.5 mm², 2 cores or 3 cores, equivalent to JIS C 3306





Series 10-SY

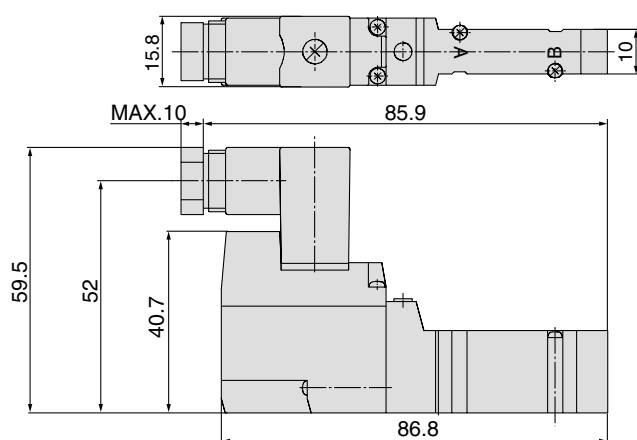
Specific Product Precautions 5

Be sure to read before handling.

Series 10-SY300, 10-SY3000 How to Use DIN Terminal

⚠ Caution

- SMC can provide a DIN style terminal connector (body ported type, sub-plate type) for the series 10-SY300 and 10-SY3000. This cannot be assembled to a standard manifold since the DIN connector width (15.8 mm) exceeds that of the valve body (10 mm). Please contact SMC if you wish to use with a manifold. Please also note that brackets F1, F2 cannot be mounted.

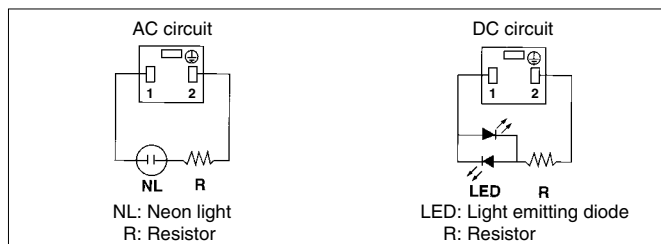


DIN connector part no.

⚠ Caution

Without light		SY100-61-1
With light		
Rated voltage	Voltage symbol	Part no.
24 VDC	24V	SY100-61-3-05
12 VDC	12V	SY100-61-3-06
100 VAC	100V	SY100-61-2-01
200 VAC	200V	SY100-61-2-02
110 VAC	110V	SY100-61-2-03
220 VAC	220V	SY100-61-2-04

Circuit diagram with light



Note) Refer to page 482 for DIN connector (Y) conforming to EN-175301-803C(former DIN43650C).

Connector assembly with cover

⚠ Caution

Connector assembly with dust proof protective cover

- Effective to prevent short circuit failure due to the entry of foreign matter into the connector.
- Chloroprene rubber for electrical use, which provides outstanding weather resistance and electrical insulation, is used for the cover material. However, do not allow contact with cutting oil, etc.
- Simple and unencumbered appearance by adopting round-shaped cord.

How to Order

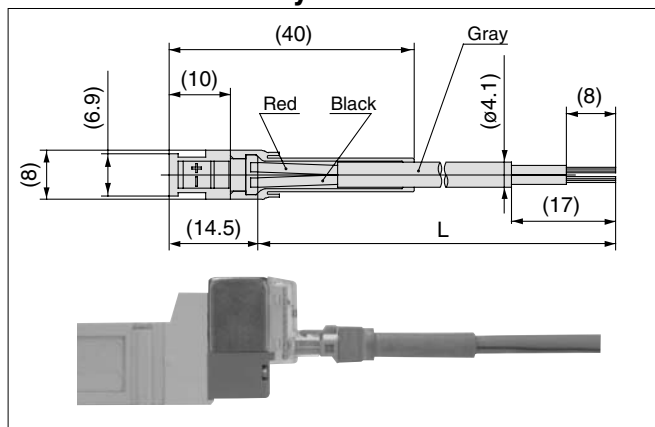
SY100-68-A



• Lead wire length(L)

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

Connector assembly with cover: Dimensions



How to Order

Enter the part numbers for a plug connector solenoid valve without connector together with the part number for a connector assembly with cover.

<Example 1> Lead wire length of 2000 mm

10-SY3120-5LOZ-M5

SY100-68-A-20

<Example 2> Lead wire length of 300mm (Standard)

10-SY3120-5LPZ-M5

Symbol for connector assembly with cover

* In this case, part number for the connector assembly with cover is not required.



Series 10-SY

Specific Product Precautions 6

Be sure to read before handling.

DIN rail for Series 10-SY7000, 10-SY9000

⚠ Caution

The DIN rail used with Series 10-SY7000 and 10-SY9000 is stronger than that used with Series 10-SY3000 and 10-SY5000. Use this exclusive DIN rail with Series 10-SY7000 and 10-SY9000. Furthermore, if using a DIN rail other than that supplied by SMC, refer to the manifold mounting section below, and mount using the same method as prescribed for side facing and rear facing, regardless of the mounting orientation.

Manifold mounting

⚠ Caution

For Type 23, 43, 45 and 60 DIN rail mounting, when attaching a manifold to a mounting surface, etc., with bolts, if the entire bottom surface of the DIN rail contacts the mounting surface in a horizontal mounting, it can be used by simply securing both ends of the DIN rail. However, for any other mounting method or for side facing and rear facing, etc., secure the DIN rail with bolts at uniform intervals using the following as a guide: 2 to 5 stations at 2 locations, 6 to 10 stations at 3 locations, 11 to 15 stations at 4 locations, and 16 to 20 stations at 5 locations. In addition, even in the case of a horizontal mounting, if the mounting surface is subject to vibration, etc., take the same measures indicated above. If secured at fewer than the specified number of locations, warping or twisting may occur in the DIN rail and manifold, causing trouble such as air leakage.

When attaching the DIN rail to the bottom (in the L3 dimension) of the manifold valve body using the mounting screws, please use the screws with a head/cap height as shown below.

Type 23,43(10-SY9000): 8mm or less

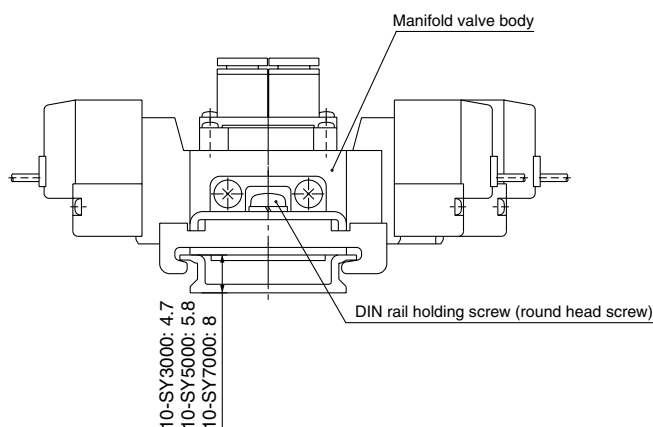
Type 45(10-SY3000,5000):5.8mm or less

Type 60

10-SY3000: 4.7mm or less

10-SY5000: 5.8mm or less

10-SY7000: 8mm or less



[For type 60]

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Series 10-SY

Specific Product Precautions 7

Be sure to read before handling.

One-touch fittings

Caution

The pitch for each piping port (P, A, B, etc.) of series 10-SY is determined based on the assumption that Series KJ One-touch fittings will be used. For this reason, other pipe fittings may interfere with each other depending on their type and size. Dimensions should be confirmed in a pipe fitting catalog before they are used.

• Tubing attachment/detachment for One-touch fittings

1. Attaching of tube

- 1) Cut off a tubing having no flaws on its periphery at a right angle. When cutting the tubing, use tubing cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tubing cutters, the tubing may be cut diagonally or become flattened, etc., making a secure installation impossible, and causing problems such as the tubing pulling out after installation or air leakage. Allow some extra length in the tubing.
- 2) Grasp the tubing and push it in slowly, inserting it securely all the way into the fitting.
- 3) After inserting the tubing, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tube pulling out.

2. Detaching of tube

- 1) Push in the release button sufficiently, pushing the collar equally around the circumference.
 - 2) Pull out the tubing while holding down the release button so that it does not come out. If the release button is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.
 - 3) When the removed tubing is to be used again, cut off the portion which has been chewed before reusing it. If the chewed portion of the tubing is used as is, this can cause trouble such as air leakage or difficulty in removing the tubing.
- The pitch for each piping port (P, A, B, etc.) of series 10-SY is determined based on the assumption that Series KJ One-touch fittings will be used. For this reason, other pipe fittings may interfere

Other tubing brands

Caution

1. When using other than SMC brand tubing, confirm that the following specifications are satisfied with respect to the outside diameter tolerance of the tubing.

- 1) Nylon tubing within ± 0.1 mm
- 2) Soft nylon tubing within ± 0.1 mm
- 3) Polyurethane tubing within $+0.15$, within -0.2 mm

Do not use tubing which do not meet these outside diameter tolerances. Such tubing may not be possible to connect, or they may cause other trouble, such as air leakage or the tubing pulling out after connection.

M8 connector

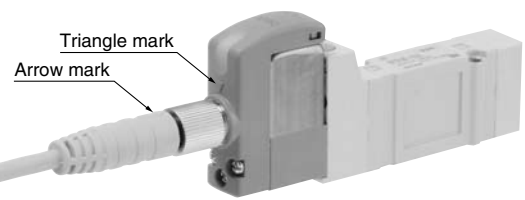
Caution

1. M8 connector types have an IP65 (enclosure) rating, offering protection from dust and water. However please note that these products are not intended for use in water. Select a SMC connector cable (V100-49-1-□) or a FA sensor type connector, with M8 threaded 3 pin specifications confirming to Nippon Electric Control Equipment Association Standard, NECA4202 (IEC60947-5-2). Make sure the connector O.D. is 10.5 mm or less when used with the Series 10-SY3000 manifold. If more than 10.5mm, it cannot be mounted due to the size.
2. Do not use a tool to mount the connector, as this may cause damage. Only tighten by hand. (0.4 to 0.6N·m)
3. Do not apply force over 30N to the connector cable since IP65 cannot be satisfied.

Caution

Failure to meet IP65 performance may result if using alternative connectors than those shown above, or when insufficiently tightened.

• Connector cable mounting



Note) Connector cable should be mounted in the correct direction. Make sure that the arrow symbol on the connector is facing the triangle symbol on the valve when using SMC connector cable (V100-49-1-□).

Be careful not to squeeze it in the wrong direction, as problems such as pin damage may occur.



10-SY Series

Specific Product Precautions 8

Be sure to read before handling.

M8 connector

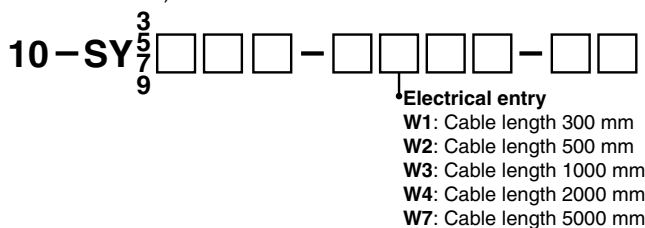
⚠ Caution

■Connector cable

Connector cable for M8 can be ordered as follows:

How to Order

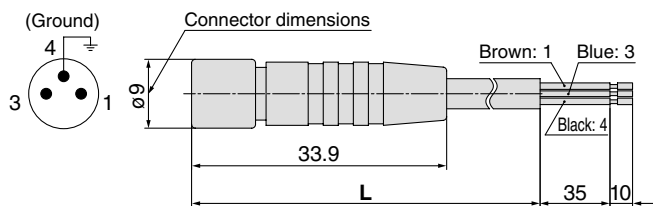
- To order solenoid valve and connector cable at the same time.(Connector cable will be included in the shipment of the solenoid valve.)



(Example 1) Cable length 300 mm
 10-SY312-5W1ZE-C4

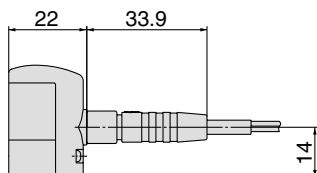
•Symbol for electrical entry

- To order connector cable only



Cable length (L)	Part no.
300mm	V100-49-1-1
500mm	V100-49-1-2
1000mm	V100-49-1-3
2000mm	V100-49-1-4
5000mm	V100-49-1-7

[Dimension when installed]



Solenoid valve mounting

⚠ Caution

Mount it so that there is no slippage or deformation in gaskets, and tighten with the tightening torque as shown below.

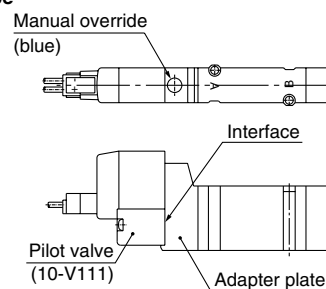
Model	Thread size	Tightening torque
10-SY3000	M2	0.16N·m
10-SY5000	M3	0.8N·m
10-SY7000	M4	1.4N·m
10-SY9000	M3	0.8N·m

Replacement of pilot valve

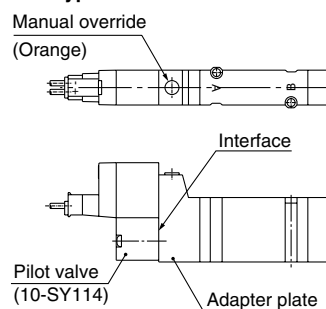
⚠ Caution

Pilot valves in this series are improved to provide excellent energy saving results. However following this improvement, these new valves are no longer compatible with the conventional pilot valve used at the interface. Please consult with SMC when you need to exchange these pilot valves, in the case of manual override (marked in orange) of the adapter plate.

New type



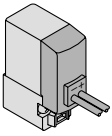
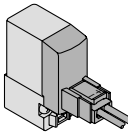
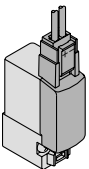
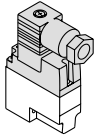
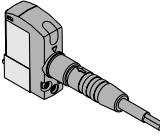
Conventional type



Series 10-SYJ3000/5000/7000

Rubber seal
4/5 port solenoid valve

Variations

	Series	Sonic conductance C[dm ³ /(s·bar)]	Type of actuation	Voltage	Electrical entry	Option	Manual override
						Light/Surge voltage suppresser	
Body ported	10-SYJ3000  P.494	Effective area 0.9mm ² { 4/2→5/3 } (A/B→EA/EB)	2 position · Single · Double	For DC ■ 24 VDC 12 VDC 6 VDC 5 VDC 3 VDC	Grommet  L plug connector  M plug connector 	For DC ■ With surge voltage suppresser	
	10-SYJ5000  P.515	0.47 { 4/2→5/3 } (A/B→EA/EB)				■ With light/surge voltage suppresser	
	10-SYJ7000  P.537	2.4 { 4/2→5/3 } (A/B→EA/EB)					
Base mounted type	10-SYJ3000  P.494	0.46 { 4/2→5/3 } (A/B→EA/EB)	3 position · Closed center · Exhaust center · Pressure center	For AC ■ AC 100V ^{50/60} Hz AC 110V ^{50/60} Hz AC 200V ^{50/60} Hz AC 220V ^{50/60} Hz	DIN terminal  (10-SYJ5000/7000 only) M8 connector 	For AC Note) ■ With light/surge voltage suppresser	■ Non-locking push type ■ Push-turn locking slotted type ■ Push-turn locking lever type
	10-SYJ5000  P.515	0.83 { 4/2→5/3 } (A/B→EA/EB)					
	10-SYJ7000  P.537	2.9 { 4/2→5/3 } (A/B→EA/EB)					

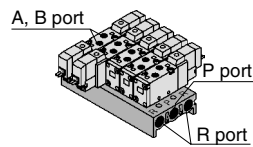


Note) All standard AC voltage models have built-in surge voltage suppresser.

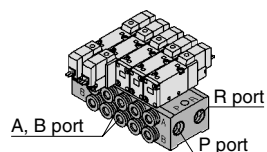
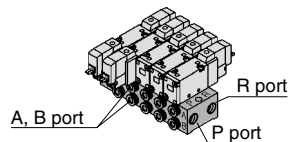
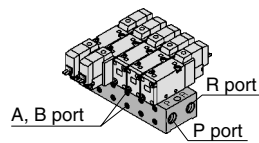
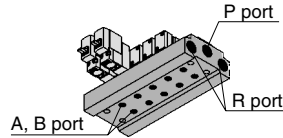
Manifold variations

Valve series		A, B port location	A, B port size									Manifold option		Flat ribbon cable manifold
			M3	M5	1/8	One-touch fitting						Individual SUP spacer assembly	Individual EXH spacer assembly	
						Applicable tubing O.D.								
						ø4	ø6	ø8	N3	N7	N9			
Body ported	10-SYJ3000	Top	●	—	—	—	—	—	—	—	—	—	—	●
	10-SYJ5000		—	●	—	●	●	—	●	●	—	●	●	
	10-SYJ7000		—	—	●	—	●	●	—	●	●	—	●	
Base mounted	10-SYJ3000	Side	●	●	—	●	—	—	●	—	—	—	—	●
		Bottom	—	—	—	—	—	—	—	—	—	—	—	
	10-SYJ5000	Side	—	●	—	●	●	—	●	●	—	●	●	
		Bottom	—	●	—	—	—	—	—	—	—	—	—	
	10-SYJ7000	Side	—	—	●	—	●	●	—	●	●	—	—	
		Bottom	—	—	●	—	—	—	—	—	—	—	—	

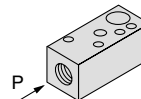
Body ported



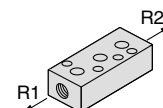
Base mounted



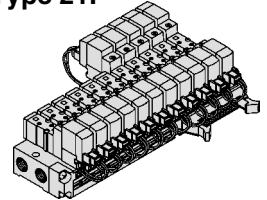
Individual SUP spacer assembly



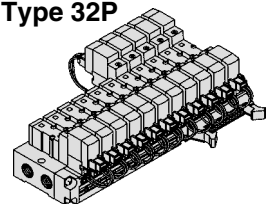
Individual EXH spacer assembly



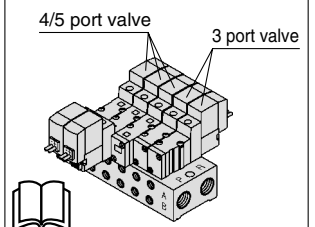
Type 21P



Type 32P



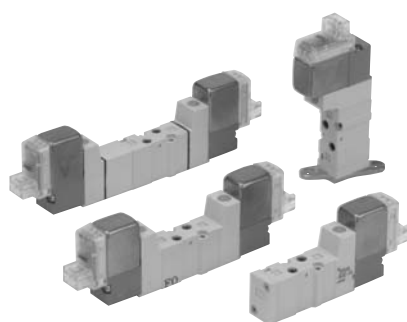
Mixed mounting of 3 port valves and 4, 5 port valves



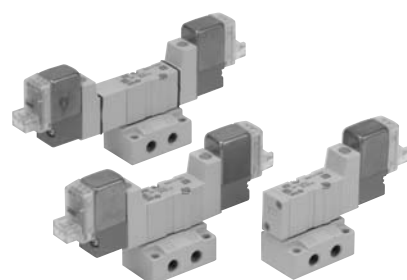
For detailed specifications about 10-SYJ3000, refer to page 507. For 10-SYJ5000, refer to page 529, and for 10-SYJ7000, refer to page 550.

Series 10-SYJ3000

Rubber seal
4/5 port solenoid valve



Body ported



Base mounted

Specifications

Fluid		Air
Operating pressure range (MPa)	2 position single	0.15 to 0.7
	2 position double	0.1 to 0.7
	3 position	0.2 to 0.7
Ambient and fluid temperature (°C)		-10 to 50 (with no freezing. Refer to page 714.)
Response time ms (0.5MPa) Note 1)	2 position single, double	15 or less
	3 position	30 or less
Max. operating frequency (Hz)	2 position single, double	10
	3 position	3
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type
Pilot exhaust method		Common exhaust for the pilot and main valve
Lubrication		Not required
Mounting orientation		Unrestricted
Shock/Vibration resistance m/s ² Note 2)		150/30
Enclosure		Dustproof (* M8 connector conforms to IP65.)



* Based on IEC60529

Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature : 20°C, at rated voltage and without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep test between 45 and 2000Hz. Test was performed to axis and right angle directions of the main valve when pilot signal is ON and OFF. (Value in the initial state)

Solenoid specifications

Electrical entry		Grommet (G)/(H), L plug connector (L), M plug connector (M), M8 connector (W)
Coil rated voltage V	DC	24, 12, 6, 5, 3
	AC50/60Hz	100, 110, 200, 220
Allowable voltage fluctuation		±10% of rated voltage *
Power consumption (W)	DC	Standard 0.35 (With indicator light: 0.4) With power saving circuit 0.1 (With indicator light only)
	AC	100 VAC 0.78 (With indicator light: 0.81) 110 VAC 0.86 (With indicator light: 0.89) [115 VAC] [0.94(With indicator light: 0.97)] 200 VAC 1.18 (With indicator light: 1.22) 220 VAC 1.30 (With indicator light: 1.34) [230 VAC] [1.42 (With indicator light: 1.46)]
Surge voltage suppressor		Diode (Non-polar type: Varistor)
Indicator light		LED



* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

* For the allowable voltage fluctuation for S, Z and T types (with power saving circuit), please observe the following range because they have voltage drop due to internal circuit.

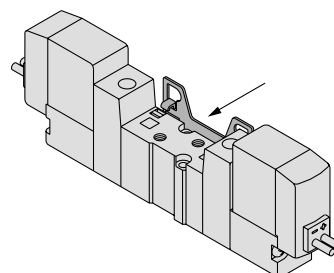
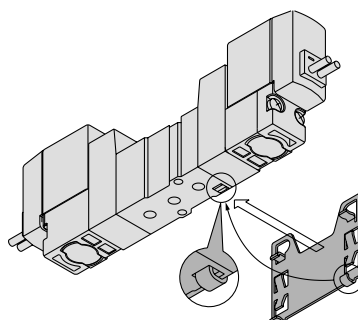
S and Z types 24 VDC: -7% to +10% 12 VDC: -4% to +10%

T type 24 VDC: -8% to +10% 12 VDC: -6% to +10%

Bracket mounting

(1) Insert the lower hook of the mounting bracket into the groove on the bottom of the valve as shown.

(2) Press the valve and mounting bracket together until the upper hook of the bracket snaps into place in the groove on top of the valve.



Made to order specifications
(Refer to page 557 for details.)

Flow characteristics / Weight

Valve model		Type of actuation		Port size		Weight (g) ^{Note 3, 4)}			Effective area mm ²	Flow characteristics ^{Note 2)}											
				1, 5, 3 (P, EA, EB)	4, 2 (A, B)	Grommet	L/M plug connector	M8 Connector		1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)								
										C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv						
5 port base mounted (With sub-plate)	10-SYJ3143	2 position	Single	M5 x 0.8	M5 x 0.8	62(36)	63(37)	67(41)	—	0.46	0.36	0.12	0.46	0.35	0.12						
	10-SYJ3243		Double			79(53)	81(55)	89(63)													
	3 position	Closed center	82(56)			84(58)	92(66)	—								0.47	0.33	0.12	0.47	0.31	0.12
		Exhaust center						—								0.36	0.39	0.10	0.59[0.40]	0.43[0.33]	0.16[0.11]
		Pressure center						—								0.58[0.32]	0.42[0.33]	0.16[0.080]	0.46	0.32	0.11
5 port body ported	10-SYJ3123	2 position	Single	M3 x 0.5	M3 x 0.5	36	37	41	0.9	0.58[0.32]	0.42[0.33]	0.16[0.080]	0.46	0.32	0.11						
	10-SYJ3223		Double			53	55	63													
	3 position	Closed center	56			58	66	—								—	—	—	—	—	
		Exhaust center						—								—	—	—	—	—	
		Pressure center						—								—	—	—	—	—	
4 port base mounted (For manifold base only) ^{Note 1)}	10-SYJ3133	2 position	Single	1/8	M5 x 0.8	36	37	41	—	—	—	—	—	—	—						
	10-SYJ3233		Double			53	55	63													
	3 position	Closed center	56			58	66	—								—	—	—	—	—	
		Exhaust center						—								—	—	—	—	—	
		Pressure center						—								—	—	—	—	—	



Note 1) Dedicated for manifold base, refer to page 11 for details.

Note 2) [] denotes normal position. Exhaust center: 4/2 → 5/3, Pressure center: 1 → 4/2

Note 3) (): Without sub-plate

Note 4) For DC voltages. For AC voltages add 3g to the weight of the single solenoid and 6g to the weight of the double solenoid and 3 position types.

Air cylinder

Rotary actuator

Air gripper

Directional control
valveFlow control
equipmentFilter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

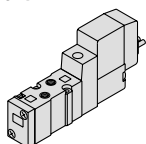
Clean gas filter

How to Order

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

5 port



(Type 20 manifold)

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Rated voltage

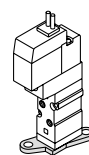
DC		AC (50/60Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
V	6 VDC	3	110 VAC [115 VAC]
S	5 VDC	4	220 VAC [230 VAC]
R	3 VDC		

* For type "W□", DC voltage is only available.

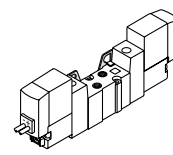
Bracket

Nil: Without bracket

F: With bracket



Single
(Bracket cannot be retrofitted.)



Double

Note) The double solenoid mounting bracket is supplied unattached.
To order the double solenoid bracket for use with a single solenoid valve without a bracket and double solenoid bracket separately by specifying the part number of the bracket VJ3000-13-1 besides the part number of the solenoid valve.
[Example] 10-SYJ3123-5M-M3
VJ3000-13-1

Body ported

10—SYJ3 1 23 □ 5 M □ □ — M3 — □

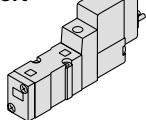
Base mounted (4 port)

10—SYJ3 2 33 □ 5 M □ □ (Manifold use only)

Base mounted (5 port)

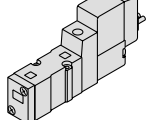
10—SYJ3 2 43 □ 5 M □ □

4 port



(For manifold type 31, S31, 32, S32)

5 port



(For sub-plate, manifold type 41, S41, 46, S46)

Clean series

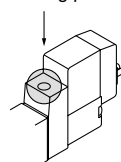
Coil specifications

Nil	Standard
T	With power saving circuit <24, 12 VDC only>

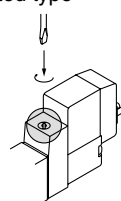
* Power saving circuit is not available in the case of "W□" type.

Manual override

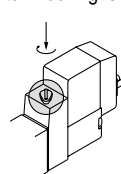
Nil: Non-locking push type



D: Push-turn locking slotted type

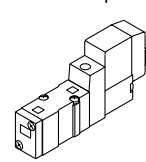


E: Push-turn locking lever type



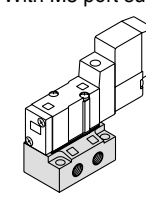
Port size

Nil: Without sub-plate



(With gasket and screws)

M5: With M5 port sub-plate



Electrical entry

24, 12, 6, 5, 3 VDC 100, 110, 200, 220 VAC				24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector		M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	MN: Without lead wire	WO: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	W□: With connector cable Note 1)

* "LN", "MN" types: with 2 sockets.

* For connector cable of M8 connector, refer to page 562.

Note 1) Be sure to enter a symbol of the cable length in □ with reference to P562.

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary.
(Refer to catalog page 508 for details.)

How to Order Pilot Valve Assembly

10—V111  — **5** **G** 

• **Clean series**

• **Coil specifications**

Nil	Standard
T	With power saving circuit <24, 12 VDC only>

* Power saving circuit is not available in the case of "W□" type.

• **Light/Surge voltage suppressor**

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
 * For "R" and "U", DC voltage is only available.
 * Power saving circuit is only available in the "Z" type.

• **Rated voltage**

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC50/60Hz
2	200 VAC50/60Hz
3	110 VAC50/60Hz [115 VAC50/60Hz]
4	220 VAC50/60Hz [230 VAC50/60Hz]

* For type "W□", DC voltage is only available.

• **Electrical entry**

G	Grommet (Lead wire length 300 mm)
H	Grommet (Lead wire length 600 mm)
L	L plug connector With lead wire
LN	L plug connector Without lead wire
LO	L plug connector Without connector
M	M plug connector With lead wire
MN	M plug connector Without lead wire
MO	M plug connector Without connector
WO	M8 Without connector cable
W□	Connector With connector cable ^{Note 1)}

* For connector cable of M8 connector, refer to page 562.
 Note 1) Be sure to enter a symbol of the cable length in □ with reference to page 562.

How to Order Connector Assembly for L/M Plug Connector

For DC: **SY100-30-4A-** 

For 100 VAC: **SY100-30-1A-** 

For 200 VAC: **SY100-30-2A-** 

For other voltages of AC: **SY100-30-3A-** 

Without lead wire (With connector and 2 of sockets only): **SY100-30-A**

• **Lead wire length**

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order M8 Connector Cable

V100-49-1- 

• **Cable length**

1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

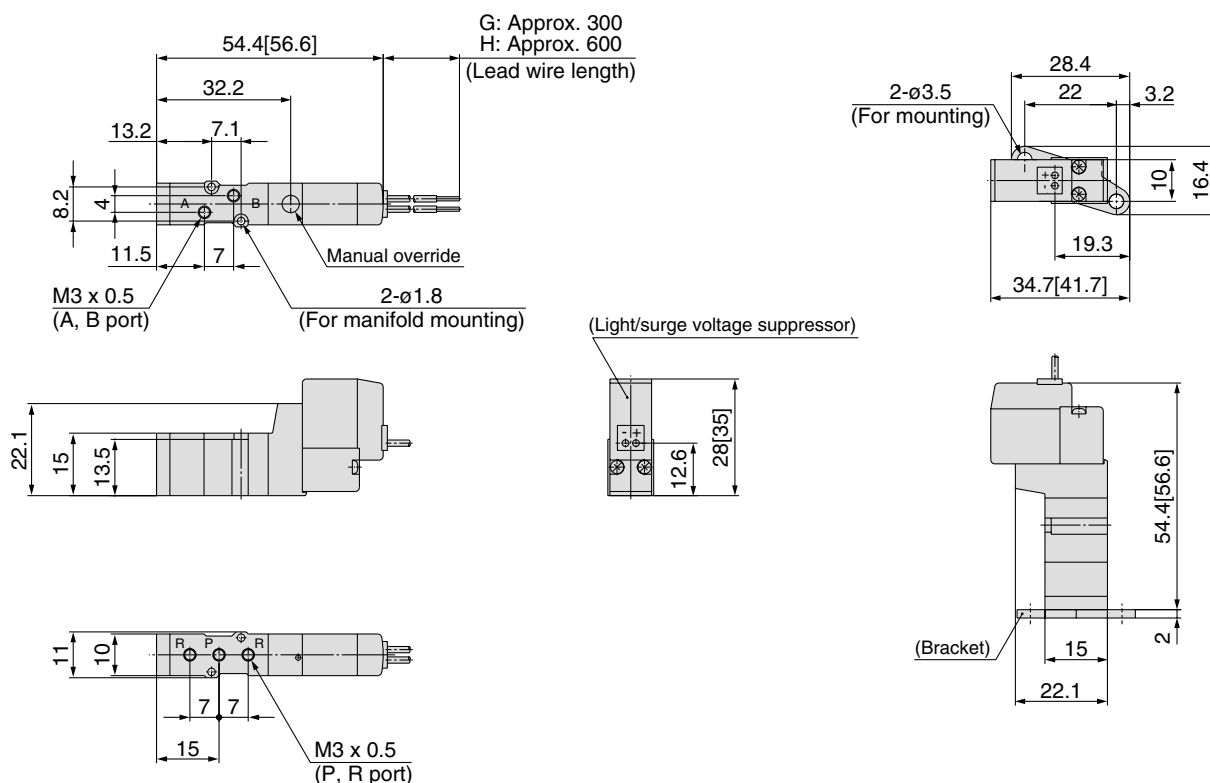
Clean gas filter

2 position single



Grommet (G), (H): 10-SYJ3123-□^G□□-M3

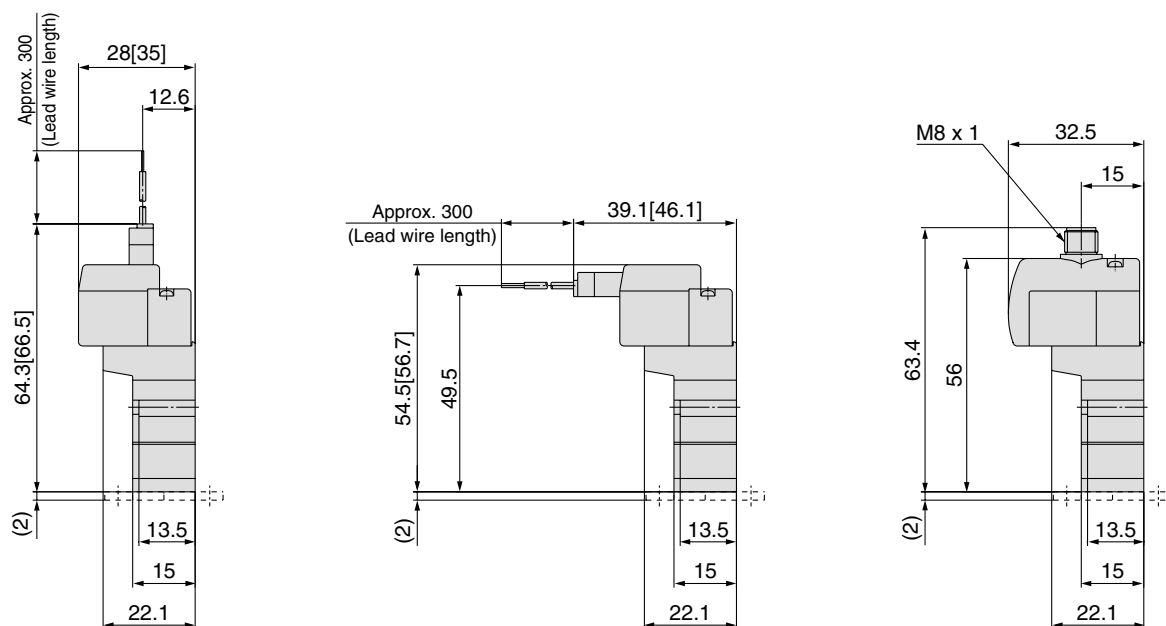
With bracket: 10-SYJ3123-□^G□□-M3-F



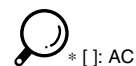
L plug connector (L):
10-SYJ3123-□L□□-M3 (-F)

M plug connector (M):
10-SYJ3123-□M□□-M3 (-F)

M8 Connector (WO):
10-SYJ3123-□WO□□-M3 (-F)

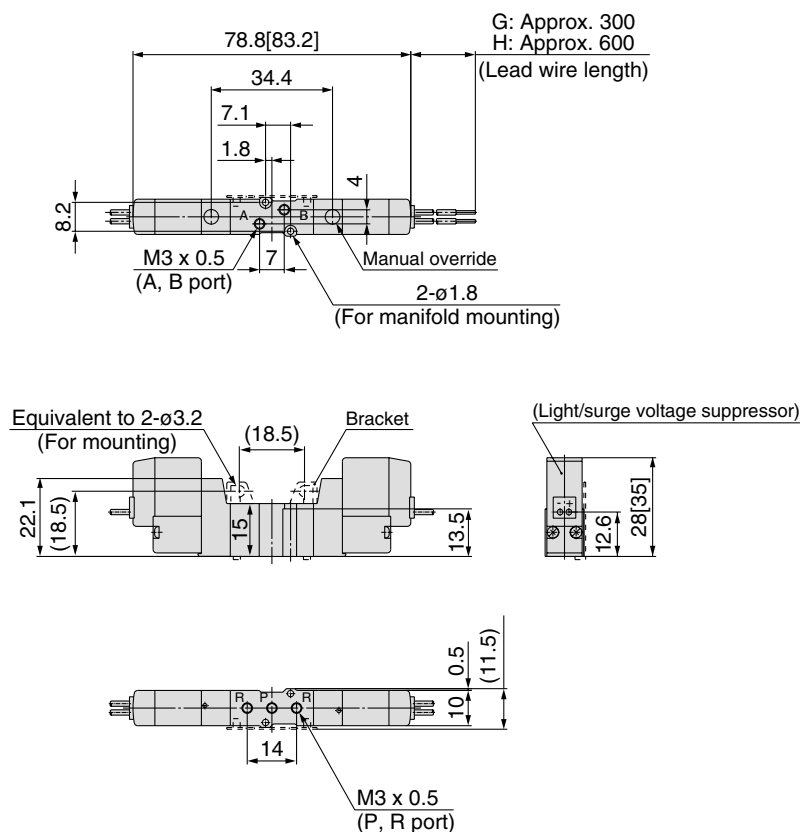


* Refer to page 563 for dimensions with connector cable.

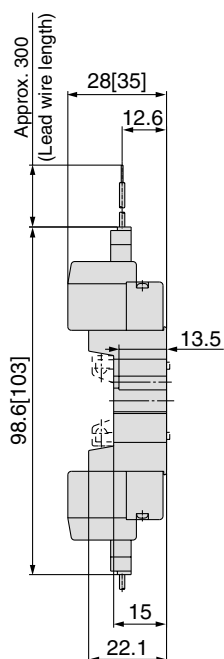


2 position double

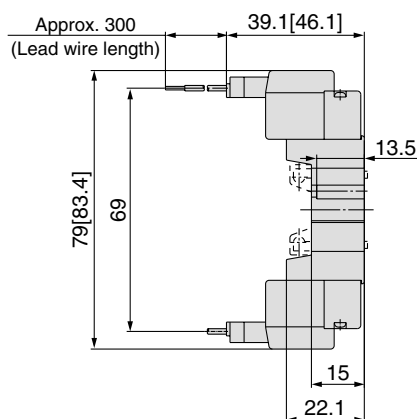
Grommet (G), (H): 10-SYJ3223-□^G□^H□□-M3 (-F)



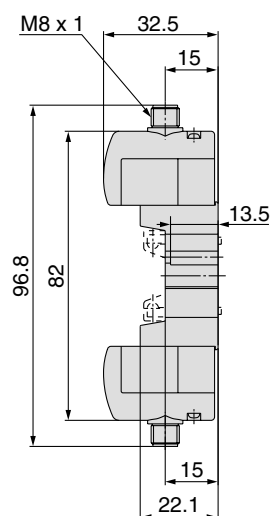
L plug connector (L):
10-SYJ3223-□L□□-M3 (-F)



M plug connector (M):
10-SYJ3223-□M□□-M3 (-F)

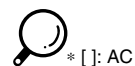


M8 connector (WO):
10-SYJ3223-□WO□□-M3 (-F)

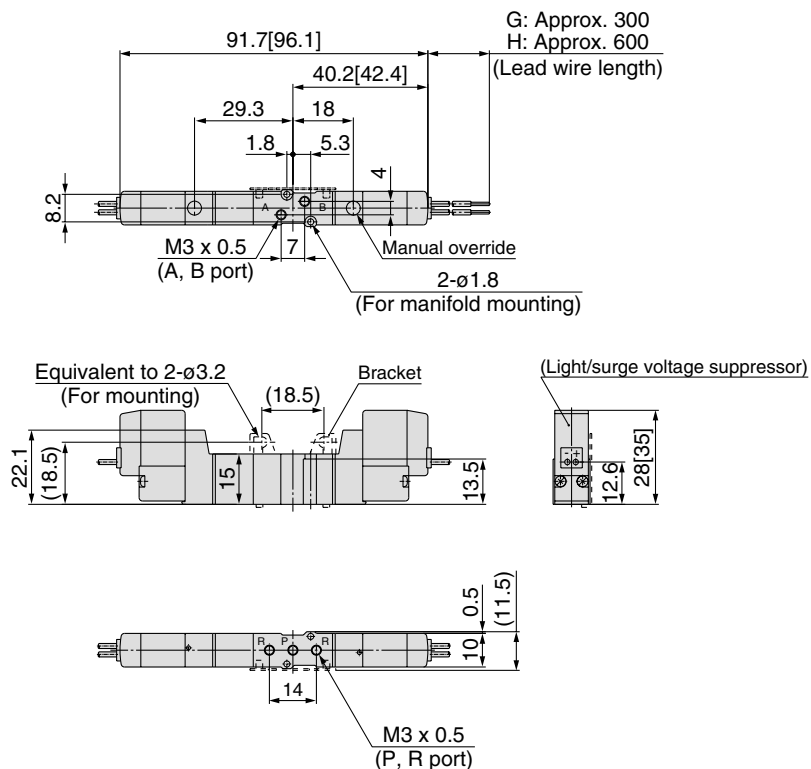


* Refer to page 563 for dimensions with connector cable.

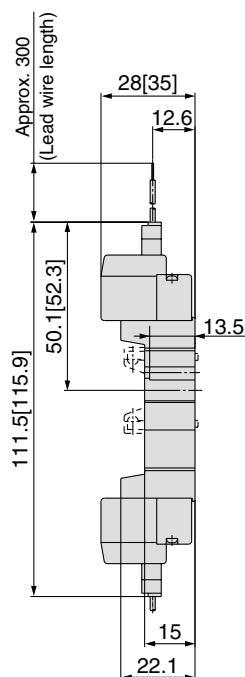
3 position closed center / exhaust center / pressure center



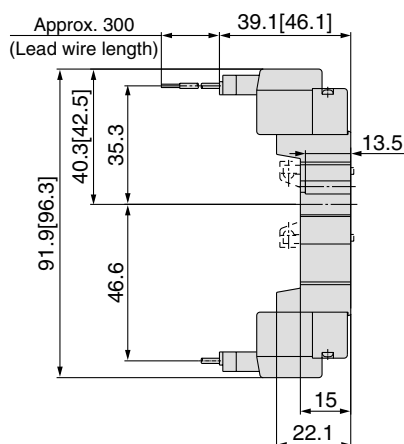
Grommet (G), (H): 10-SYJ3³₅23-□GH□□-M3 (-F)



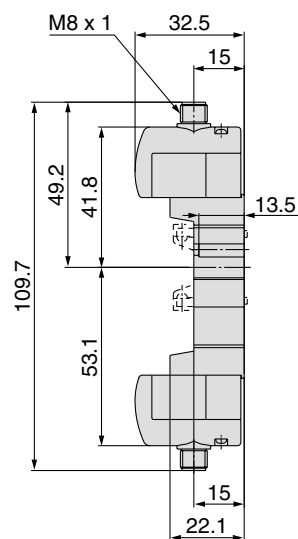
L plug connector (L):
10-SYJ3³₅23-□L□□-M3 (-F)



M plug connector (M):
10-SYJ3³₅23-□M□□-M3 (-F)



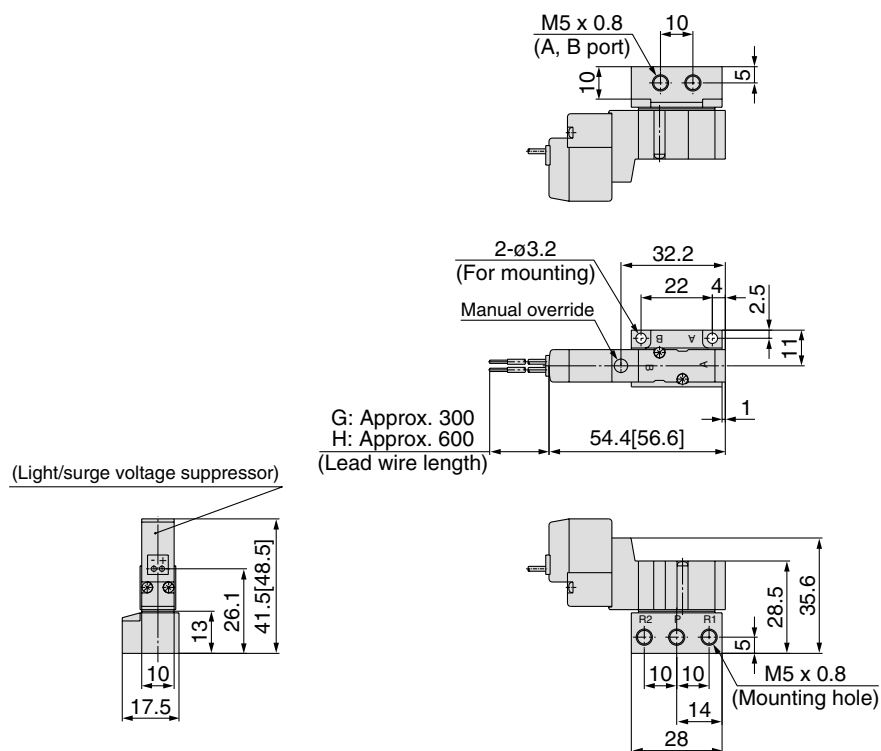
M8 Connector (WO):
10-SYJ3³₅23-□WO□□-M3 (-F)



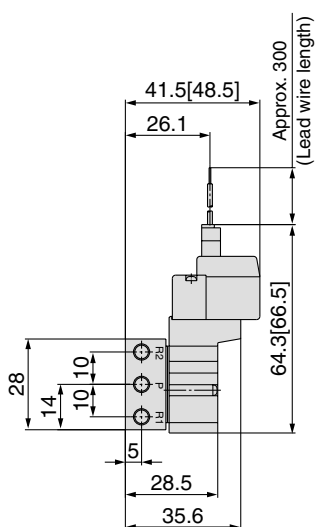
* Refer to page 563 for dimensions with connector cable.

2 position single

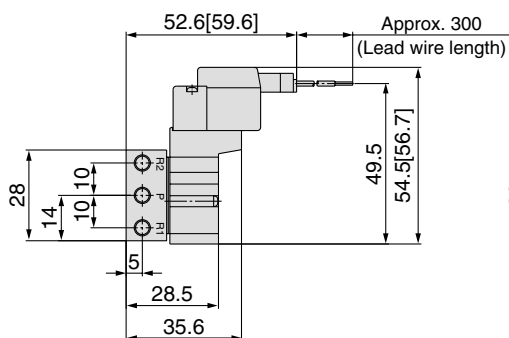
Grommet (G), (H): 10-SYJ3143-□^G_H□□-M5



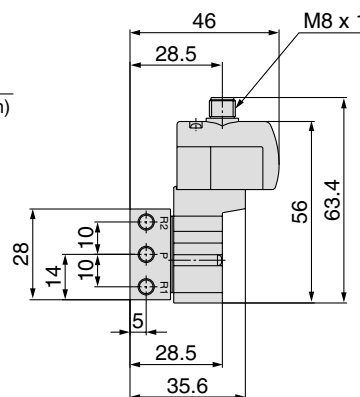
L plug connector (L):
10-SYJ3143-□L□□-M5



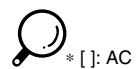
M plug connector (M):
10-SYJ3143-□M□□-M5



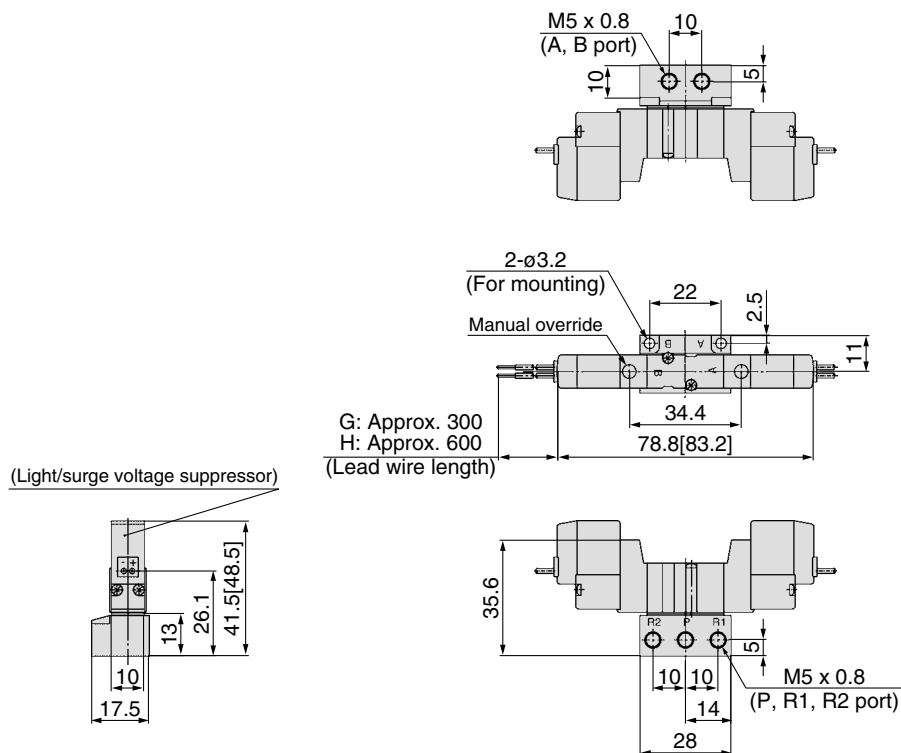
M8 Connector (WO):
10-SYJ3143-□WO□□-M5



2 position double



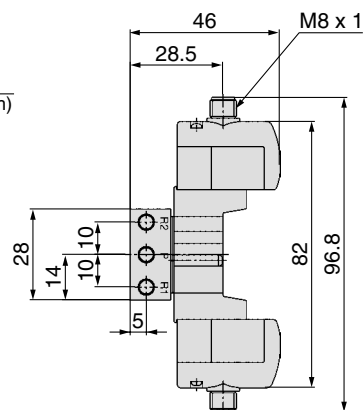
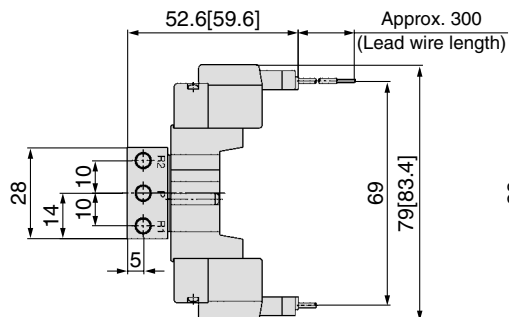
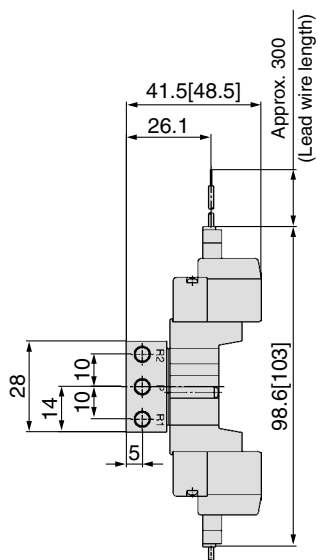
Grommet (G), (H): 10-SYJ3243-□^G□□-M5



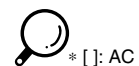
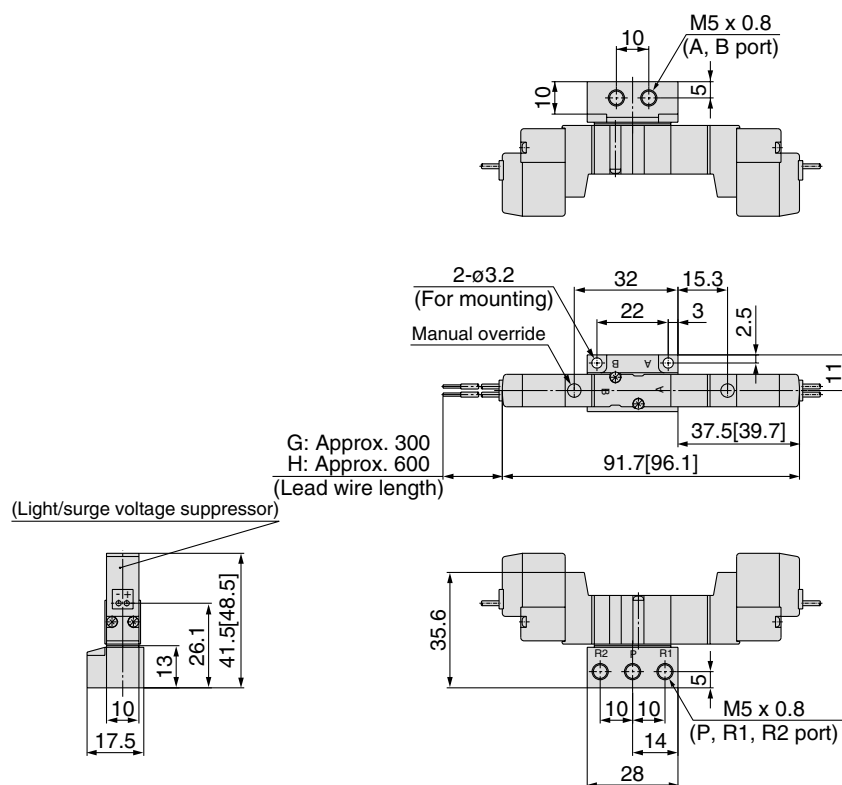
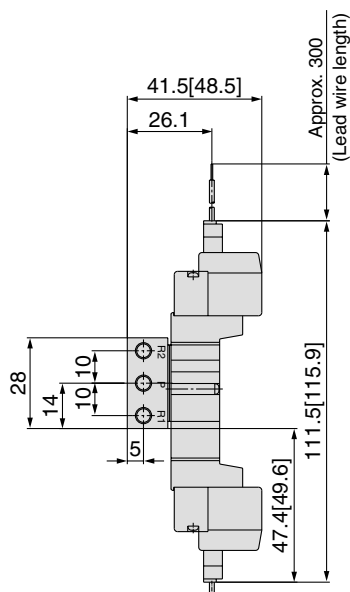
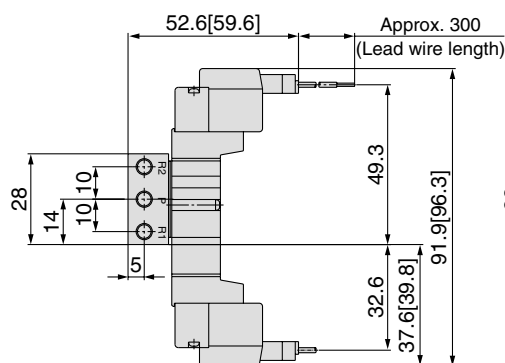
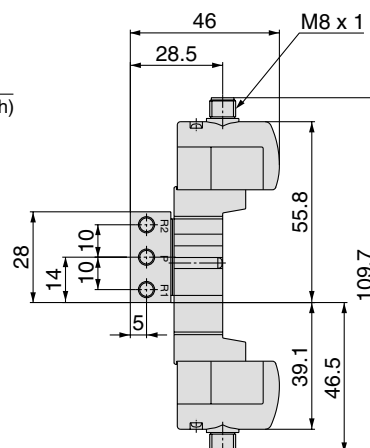
L plug connector (L):
10-SYJ3243-□L□□-M5

M plug connector (M):
10-SYJ3243-□M□□-M5

M8 connector (WO):
10-SYJ3243-□WO□□-M5



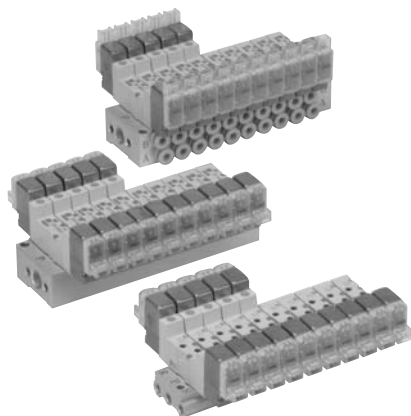
* Refer to page 563 for dimensions with connector cable.

3 position closed center / Exhaust center / Pressure center

Grommet (G), (H): 10-SYJ3³/₅43-□^G_H□□-M5

L plug connector (L):
10-SYJ3³/₅43-□L□□-M5

M plug connector (M):
10-SYJ3³/₅43-□M□□-M5

M8 Connector (WO):
10-SYJ3³/₅43-□WO□□-M5□


* Refer to page 563 for dimensions with connector cable.

Series 10-SYJ3000 Manifold specifications

Manifold standard



Manifold specifications

Model		Type 20	Type 31/S31	Type 32/S32	Type 41/S41	Type 46/S46
Manifold type		Single base / B mount				
P (SUP) / R (EXH)		Common SUP / Common EXH				
Valve stations		2 to 20 stations				
A, B port porting specifications	Location	Valve	Base			
	Direction	Top	Side			
Port size	P, R port	M5 x 0.8		1/8		P: 1/8 R: M5 x 0.8
	A, B port	M3 x 0.5		M5 X 0.8, C4 (One-touch fitting for ø4)		

Flow characteristics

Manifold			Port size		Flow characteristics						Effective area (mm ²)
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R)			
			1(P), 5/3(R) port	2(B), 4(A) port	C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	
Body ported for internal pilot	10-SS5YJ3-20	10-SYJ3□23	M5 x 0.8	M3 x 0.5	—	—	—	—	—	—	0.9
	10-SS5YJ3-31-S31	10-SYJ3□33	M5 x 0.8	M3 x 0.5	—	—	—	—	—	—	0.9
Base mounted for internal pilot	10-SS5YJ3-32-M5	10-SYJ3□33	1/8	M5 x 0.8	0.25	0.19	0.060	0.32	0.25	0.077	—
	C4			0.25	0.18	0.059	0.30	0.27	0.075	—	
	M5 x 0.8			0.25	0.26	0.060	0.29	0.15	0.062	—	
	C4			0.24	0.21	0.057	0.27	0.18	0.062	—	
	10-SS5YJ3-41-M5	10-SYJ3□43	1/8	M5 x 0.8	0.32	0.25	0.081	0.33	0.19	0.079	—
	C4			0.32	0.28	0.079	0.35	0.24	0.084	—	
	M5 x 0.8			0.33	0.29	0.082	0.34	0.17	0.081	—	
	C4			0.32	0.27	0.079	0.34	0.24	0.084	—	
	10-SS5YJ3-S41-M5	10-SYJ3□43	1/8	M5 x 0.8	0.20	0.25	0.048	0.10	0.12	0.024	—
	C4			0.21	0.27	0.050	0.21	0.13	0.047	—	
	M5 x 0.8			0.20	0.25	0.048	0.19	0.16	0.024	—	
	C4			0.22	0.34	0.057	0.10	0.090	0.024	—	



Note) Value at manifold base mounted, 2 position single operating

How to Order Manifold (Example)

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

Example

●10-SS5YJ3-20-03..... 1 set (Manifold base)

●10-SS5YJ3-S41-03-C4..... 1 set (Manifold base)

* 10-SYJ3123-5G-M3..... 2 sets (Valve)

* 10-SYJ3143-5LZ..... 2 sets (Valve)

* SYJ3000-21-1A..... 1 set (Blanking plate assembly)

* SYJ3000-21-2A..... 1 set (Blanking plate assembly)

→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

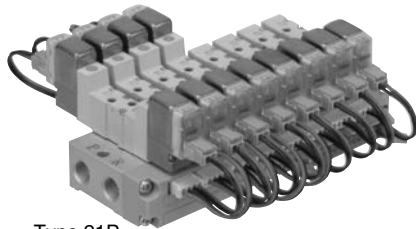
* Use manifold specification sheet.

Flat ribbon cable manifold

- Multiple valve wiring is simplified through the use of the flat ribbon cable connector.

• Clean appearance

In the case of a flat ribbon cable type, each valve is wired on the print board of manifold base to allow the external wiring to be piped all together with 26 pins MIL connector.



Type 21P

Flat ribbon cable manifold specifications

Model	Type 21P	Type 32P
Manifold	Single base / B mount	
P(SUP) / R(EXH)	Common SUP / Common EXH	
Valve stations	4 to 12 stations	
A, B port piping specifications	Location	Valve
	Direction	Top
Port size	P, R port	1/8
	A, B port	M3 x 0.5
Applicable flat ribbon cable connector	Socket: 26 pins MIL type with strain relief (conforming to MIL-C-83503)	
Internal wiring	In common between +COM and -COM (Z type: +COM only).	
Rated voltage	12, 24 VDC, 100, 110 VAC	



Note) The withstand voltage specification for the wiring unit section conforms to JIS C0704, Grade 1 or its equivalent.

Flow characteristics

Manifold			Port size		Flow characteristics						Effective area (mm²)
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R)			
			1(P), 5/3(R) port	2(B), 4(A) port	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv	
Body ported for internal pilot	10-SS5YJ3-21P	10-SYJ3□23	1/8	M3 x 0.5	—	—	—	—	—	—	0.9
Base mounted for internal pilot	10-SS5YJ3-32P-M5	10-SYJ3□33	1/8	M5 x 0.8	0.25	0.19	0.060	0.32	0.25	0.077	—
	C4			0.25	0.18	0.059	0.3	0.27	0.075	—	



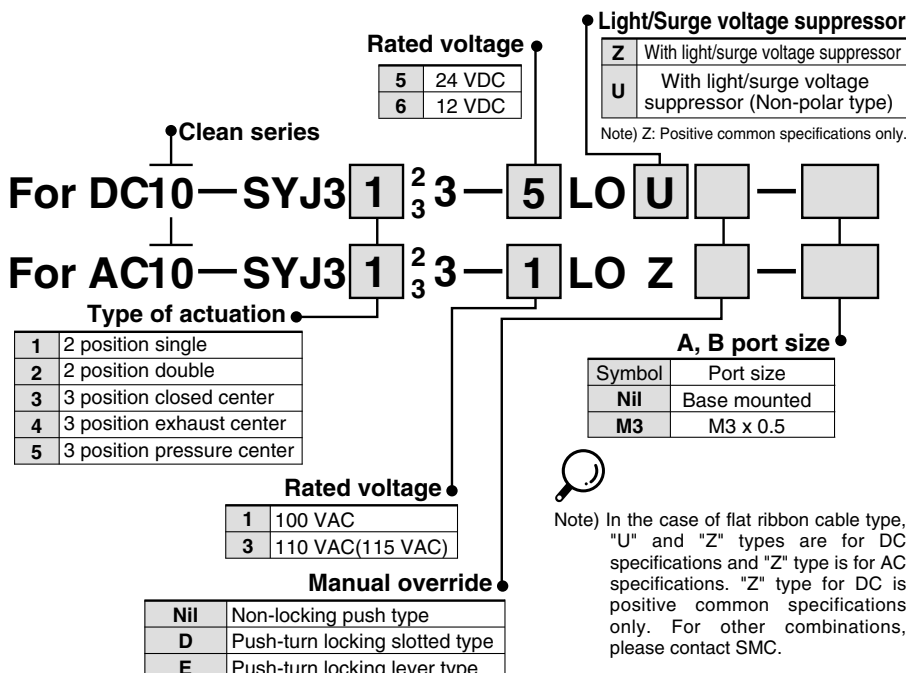
Note) Value at manifold base mounted, 2 position single operating

How to Order Manifolds

- **10-SS5YJ3-32P-07-C4** ..1 set (Manifold base)
 - * **10-SYJ3133-5LOU**3 sets (Valve)
 - * **10-SYJ3233-5LOU**3 sets (Valve)
 - * **SYJ3000-21-4A** ..1 set (Blanking plate assembly)
 - * **SY3000-37-28A** ..3 sets (Connector assembly)
 - * **SY3000-37-29A** ..3 sets (Connector assembly)
- The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

* Use manifold specification sheet.

How to Order Valves



How to Order Connector Assemblies

For 12, 24 VDC

For single solenoid	SY3000-37-28A
Double solenoid 3 position type	SY3000-37-29A

For 100 VAC

For single solenoid	SY3000-37-46A
Double solenoid 3 position type	SY3000-37-47A

110 VAC (115 VAC)

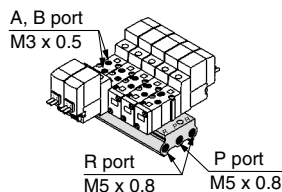
For single solenoid	SY3000-37-54A
Double solenoid 3 position type	SY3000-37-55A

Common SUP / Common EXH



Note) For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 20 (5 port / Body ported)



How to Order

10-SS5YJ3-20-05

• Clean series

• Stations

02	2 stations
:	:
20	20 stations

Applicable solenoid valve
10-SYJ3□23-□□□□-M3

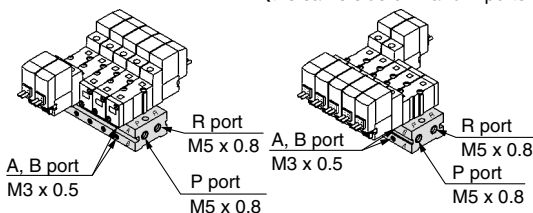
Applicable blanking plate
assembly
SYJ3000-21-1A

Type 31 (4 port / Base mounted)

Type 31

Type S31

(Single solenoid coil is located on the same side of A and B ports.)



How to Order

10-SS5YJ3-31-05-M3

• Clean series

• Valve mounting direction

Nil	Single solenoid coil is located on the opposite side of A and B ports.
S	Single solenoid coil is located on the same side of A and B ports.

Applicable solenoid valve
10-SYJ3□33-□□□□

Applicable blanking plate
assembly
SYJ3000-21-2A

• Manifold stations

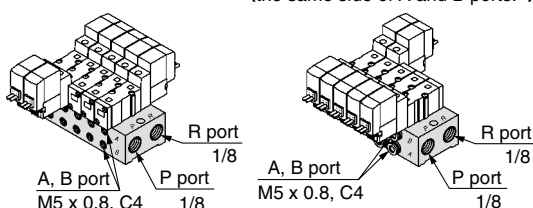
02	2 stations
:	:
20	20 stations

Type 32 (4 port / Base mounted)

Type 32

Type S32

(Single solenoid coil is located on the same side of A and B ports.)



How to Order

10-SS5YJ3-32-05-M5

• Clean series

• Valve mounting direction

Nil	Single solenoid coil is located on the opposite side of A and B ports.
S	Single solenoid coil is located on the same side of A and B ports.

• Manifold stations

02	2 stations
:	:
20	20 stations

• A, B port size

M5	M5 x 0.8
C4	One-touch fitting for ø4
N3	One-touch fitting for ø5/32"

• P, R port thread type

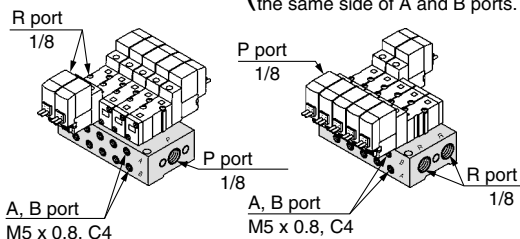
Nil	Rc
F	G
N	NPT
T	NPTF

Type 41 (5 port / Base mounted)

Type 41

Type S41

(Single solenoid coil is located on the same side of A and B ports.)



How to Order

10-SS5YJ3-41-05-C4

• Clean series

• Valve mounting direction

Nil	Single solenoid coil is located on the opposite side of A and B ports.
S	Single solenoid coil is located on the same side of A and B ports.

• Manifold stations

02	2 stations
:	:
20	20 stations

• A, B port size

M5	M5 x 0.8
C4	One-touch fitting for ø4
N3	One-touch fitting for ø5/32"

Applicable solenoid valve
10-SYJ3□43-□□□□

Applicable blanking
plate assembly
SYJ3000-21-2 A

• P, R port thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Common SUP / Individual EXH



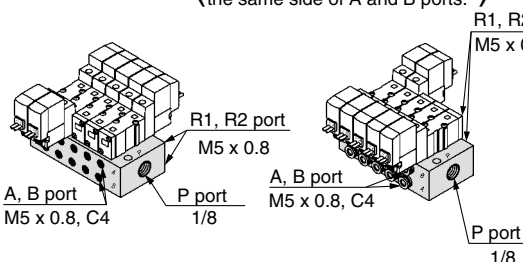
Note) For more than 10 stations, supply air to both sides of P port.

Type 46 (5 port / Base mounted)

Type 46

Type S46

(Single solenoid coil is located on the same side of A and B ports.)



How to Order

10-SS5YJ3-46-05-M5

• Clean series

• Valve mounting direction

Nil	Single solenoid coil is located on the opposite side of A and B ports.
S	Single solenoid coil is located on the same side of A and B ports.

• Manifold stations

02	2 stations
:	:
20	20 stations

• A, B port size

M5	M5 x 0.8
C4	One-touch fitting for ø4
N3	One-touch fitting for ø5/32"

Applicable solenoid valve
10-SYJ3□43-□□□□

Applicable blanking
plate assembly
SYJ3000-21-2A

• P port thread type

Nil	Rc
F	G
N	NPT
T	NPTF

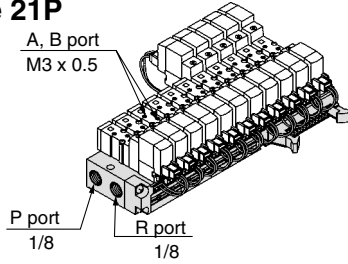
Flat ribbon cable manifold

Common SUP / Common EXH



Note) For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 21P



How to Order

10-SS5YJ3-21P-07-

• Clean series

Manifold stations

04	4 stations
:	:
12	12 stations

• P, R port thread type

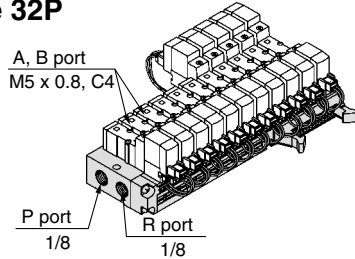
Nil	Rc
00F	G
00N	NPT
00T	NPTF

Applicable solenoid valve
Refer to page 505.

Applicable connector
assembly
Refer to page 505.

Applicable blanking
plate assembly
SYJ3000-21-3A
(With dust cap)

Type 32P



How to Order

10-SS5YJ3-32P-07-C4-

• Clean series

Manifold stations

04	4 stations
:	:
12	12 stations

A, B port size

M5	M5 x 0.8
C4	One-touch fitting for ø4
N3	One-touch fitting for ø5/32"

• P, R port thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable solenoid valve
Refer to page 505.

Applicable connector
assembly
Refer to page 505.

Applicable blanking
plate assembly
SYJ3000-21-4A
(With dust cap)

Mixed installation of the 10-SYJ300 and the 10-SY3000 valves on the same manifold

Series 10-SYJ300 valves can be mounted on the manifolds for 10-SY3000.

① 10-SS5YJ3-20, 10-SS5YJ3-21P

The 3 port valve can be used by simply sealing off the unused "R" port with rubber plug, SYJ3000-33-1.

Applicable solenoid valves: Type 10-SYJ312M
Type 10-SYJ322M

② 10-SS5YJ3-31/-S31, 10-SS5YJ3-32/-S32, 10-SS5YJ3-46/-S46, 10-SS5YJ3-32P

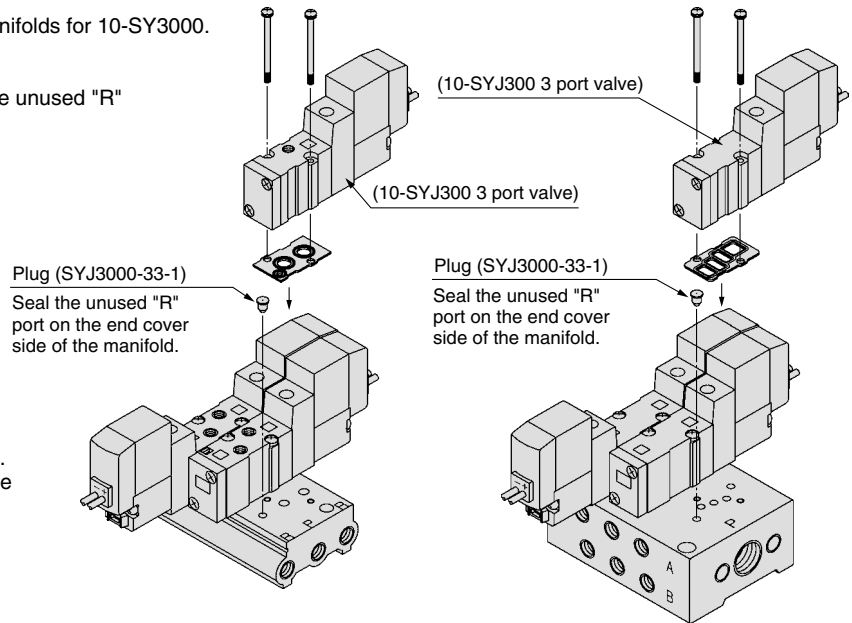
The 3 port valve can be used without modification. The A port of the valve will flow out of the B port of the manifold.

Applicable solenoid valve: Type 10-SYJ314M
Type 10-SYJ324M

③ 10-SS5YJ3-41/-S41

The 3 port valve can be used by simply sealing off the unused "R" port with rubber plug (SYJ3000-33-1). The A port of the valve will flow out of the B port of the manifold.

Applicable solenoid valve: Type 10-SYJ314M
Type 10-SYJ324M



Type 10-SS5YJ3-20

Type 10-SS5YJ3-41

"B" port becomes "A" port of 3 port valve.



Caution

Mounting screw tightening torque

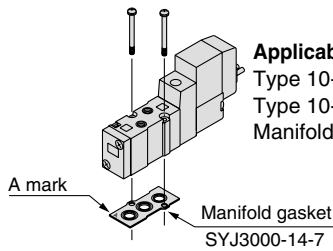
M1.7: 0.12N·m

Use caution to the assembly orientation for solenoid valves, gasket, and optional parts.

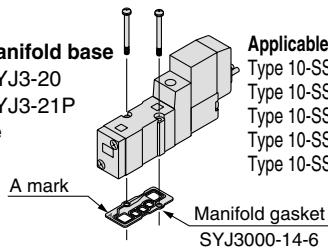
<Manifold option>

Combinations of solenoid valve, manifold gasket and manifold base

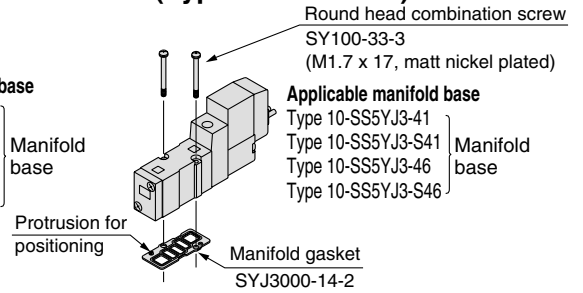
**5 port body ported
(Type 10-SYJ3□23)**



**4 port base mounted
(Type 10-SYJ3□33)**



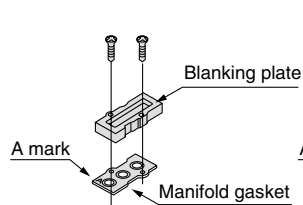
**5 port base mounted
(Type 10-SYJ3□43)**



Note) Please insert the protrusion for positioning of the manifold gasket into the hole of the valve body completely.

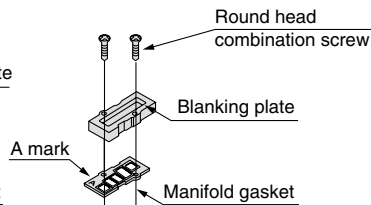
Combination of blanking plate assembly and manifold base

**Blanking plate assembly
SYJ3000-21-1A**



Applicable base
Type SS5YJ3-20 manifold base

**Blanking plate assembly
SYJ3000-21-2A**



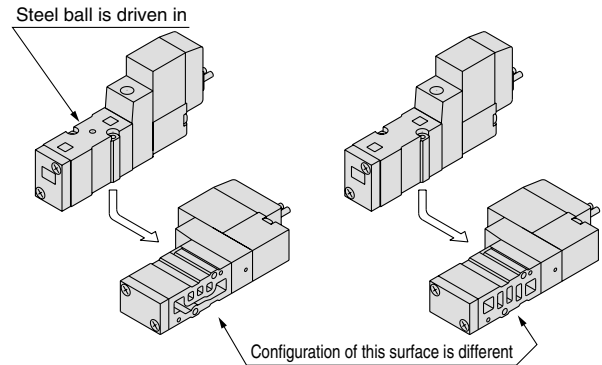
Applicable base sub-plate
Type 10-SS5YJ3-41
Type 10-SS5YJ3-S41
Type 10-SS5YJ3-46
Type 10-SS5YJ3-S46
Type 10-SS5YJ3-31
Type 10-SS5YJ3-S31
Type 10-SS5YJ3-32
Type 10-SS5YJ3-S32
Manifold base

Note) The SYJ3000-14-2 manifold gasket can be used for 10-SS5YJ3-31/-S31 and 10-SS5YJ3-32/-S32 manifold bases.

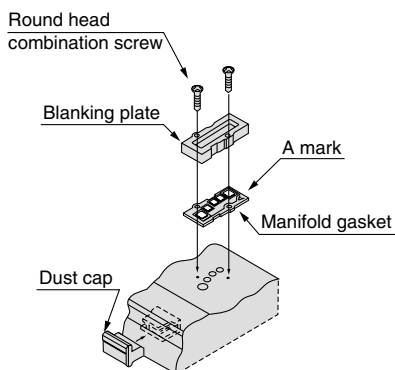
Difference between types 10-SYJ3□33 and 10-SYJ3□43

Type 10-3□33 (4 port)

Type 10-3□43 (5 port)

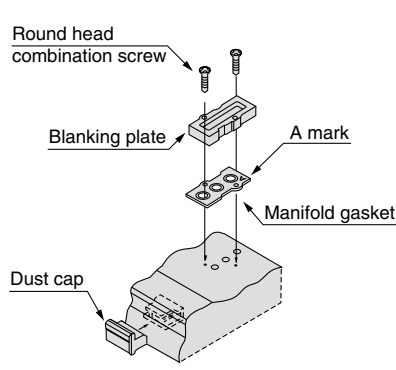


**Blanking plate assembly
SYJ3000-21-4A**



Applicable base
Type 10-SS5YJ3-32P manifold base

**Blanking plate assembly
SYJ3000-21-3A**



Applicable base
Type 10-SS5YJ3-21P manifold base

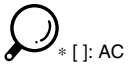
⚠ Caution

Mounting screw tightening torque

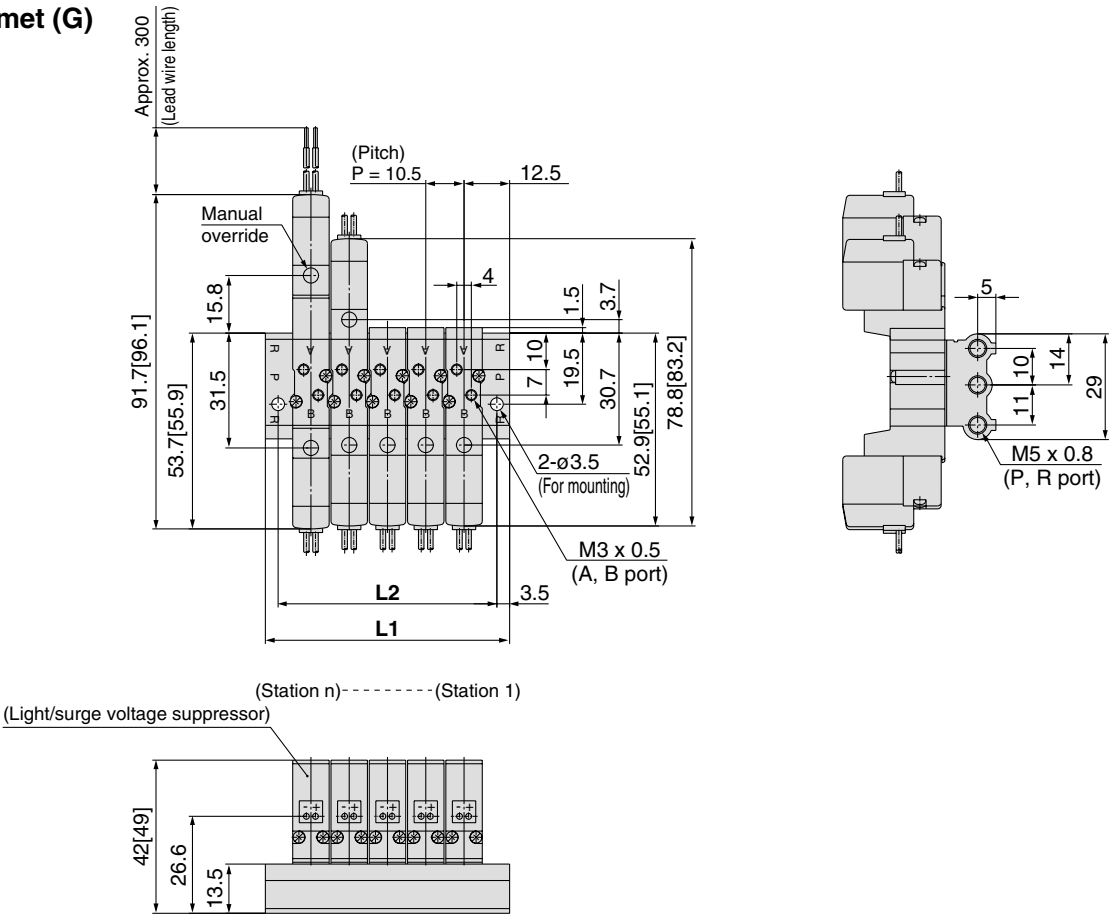
M1.7: 0.12N·m

Use caution to the assembly orientation for solenoid valves, gasket and option parts.

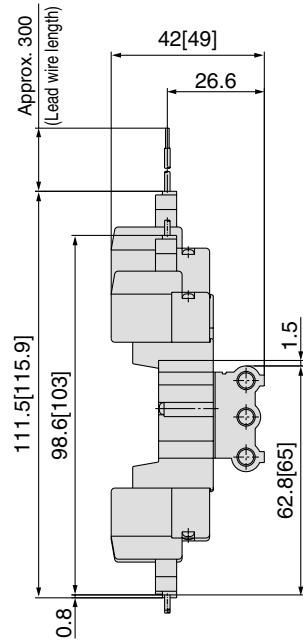
Type 20 manifold: Top ported / 10-SS5YJ3-20- Stations



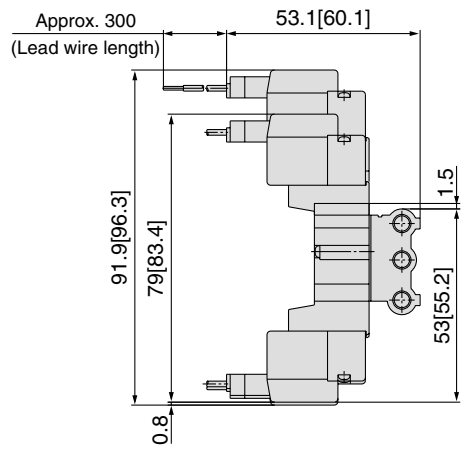
Grommet (G)



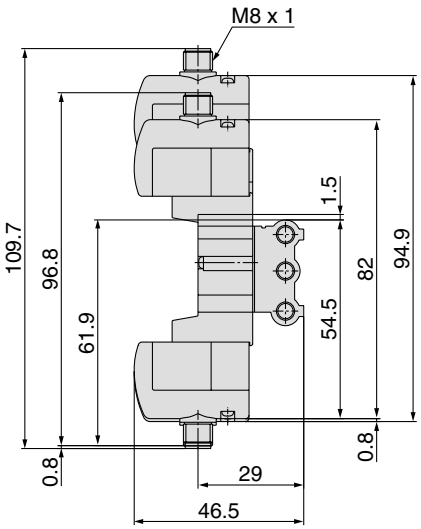
L plug connector (L)



M plug connector (M)



M8 connector (WO)

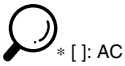


* Refer to page 563 for dimensions with connector cable.

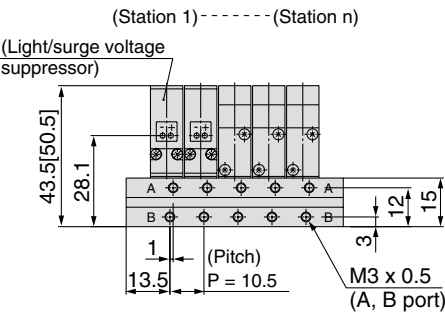
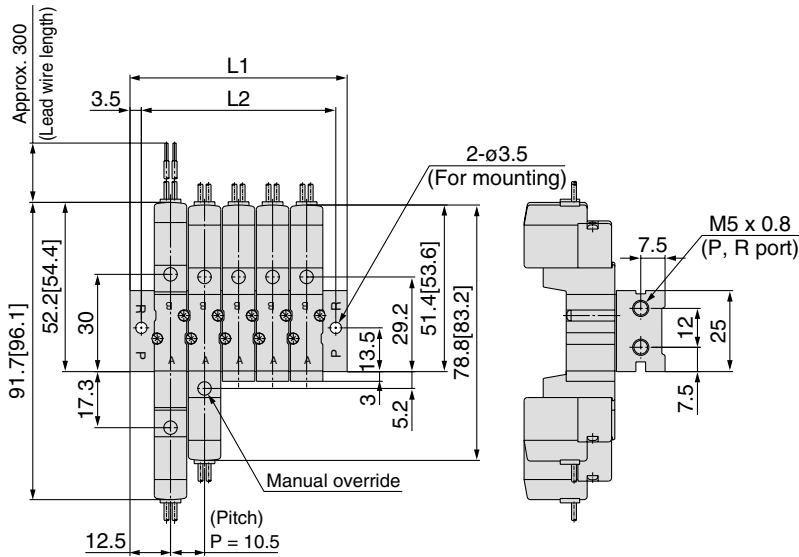
Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	35.5	46	56.5	67	77.5	88	98.5	109	119.5	130	140.5	151	161.5	172	182.5	193	203.5	214	224.5
L2	28.5	39	49.5	60	70.5	81	91.5	102	112.5	123	133.5	144	154.5	165	175.5	186	196.5	207	217.5

- Air cylinder
- Rotary actuator
- Air gripper
- Directional control valve
- Flow control equipment
- Filter, Pressure control equipment
- Fittings & Tubing
- Air preparation equipment
- Pressure switch
- Clean gas filter

Type 31 manifold: Side ported / 10-SS5YJ3-31- Stations -M3

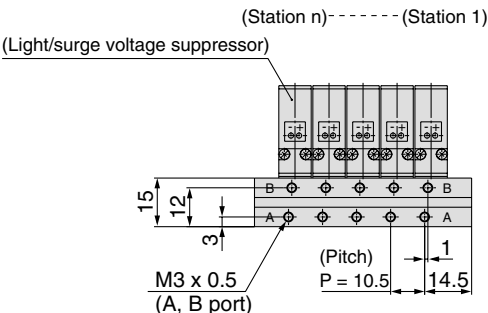
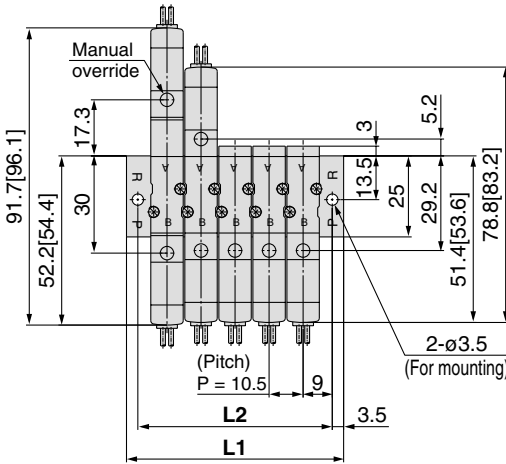


Grommet (G)

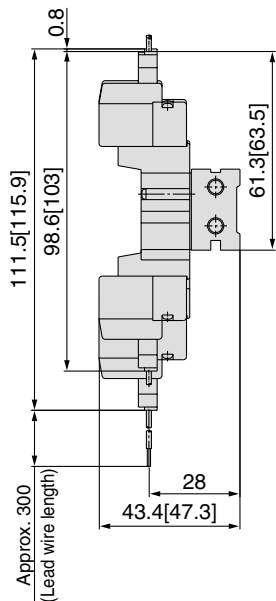


**Type S3: Side ported
10-SS5YJ3-S31- Stations -M3**

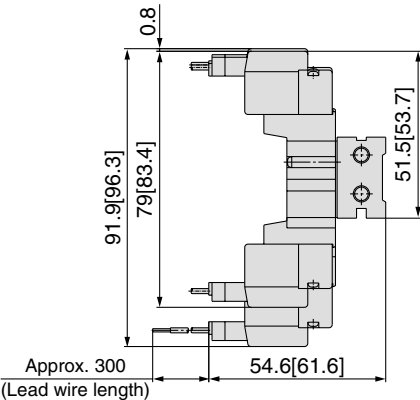
Pilot valve of single solenoid valve is located on the same side of A and B ports.



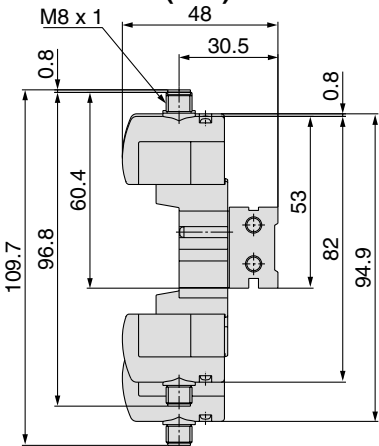
L plug connector (L)



M plug connector (M)



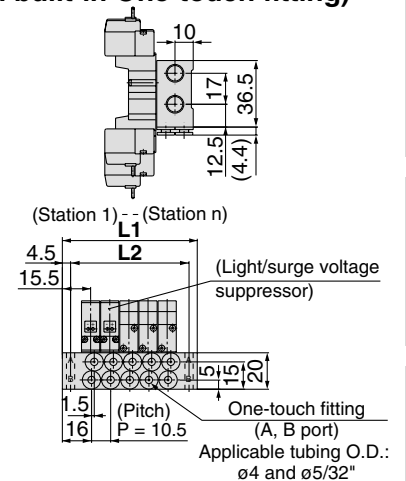
M8 connector (WO)



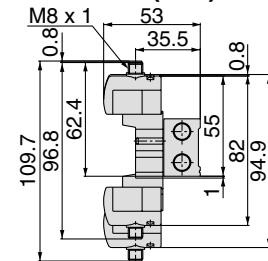
* Refer to page 563 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	35.5	46	56.5	67	77.5	88	98.5	109	119.5	130	140.5	151	161.5	172	182.5	193	203.5	214	224.5
L2	28.5	39	49.5	60	70.5	81	91.5	102	112.5	123	133.5	144	154.5	165	175.5	186	196.5	207	217.5

C4
N3 (With built-in One-touch fitting)

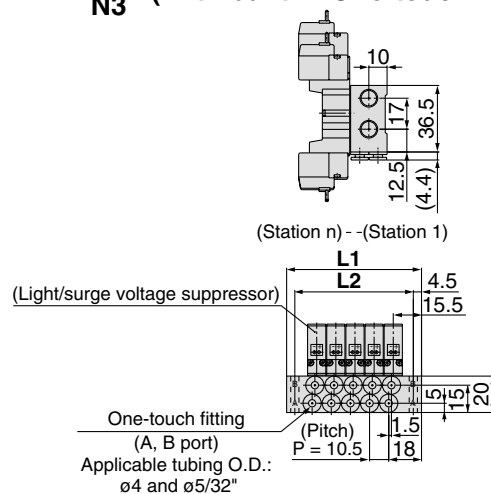


M8 connector (WO)



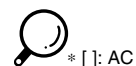
 * Refer to page 563 for dimensions with connector cable.

C4
N3 (With built-in One-touch fitting)

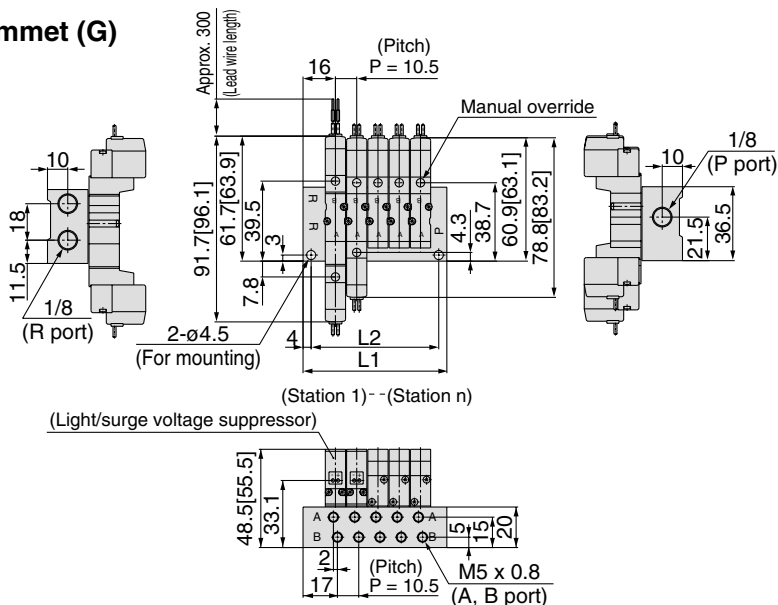


Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	42.5	53	63.5	74	84.5	95	105.5	116	126.5	137	147.5	158	168.5	179	189.5	200	210.5	221	231.5
L2	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5

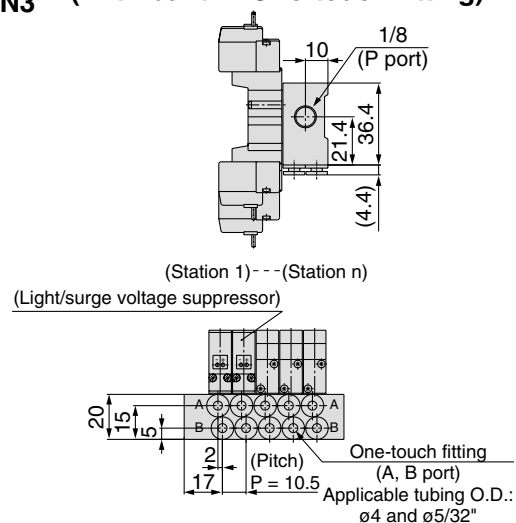
Type 41 manifold: Side ported / 10-SS5YJ3-41- Stations -M5, **C4**
N3 □



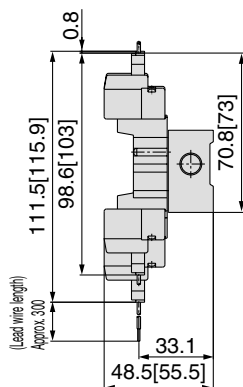
Grommet (G)
M5



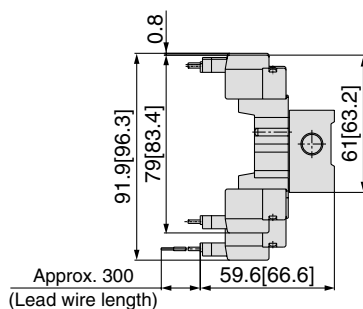
C4
N3 □ (With built-in One-touch fitting)



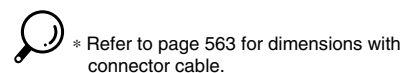
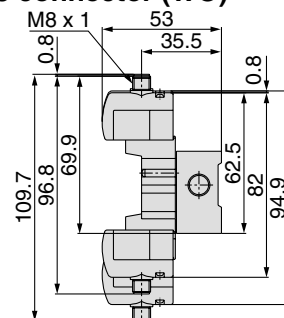
L plug connector (L)



M plug connector (M)

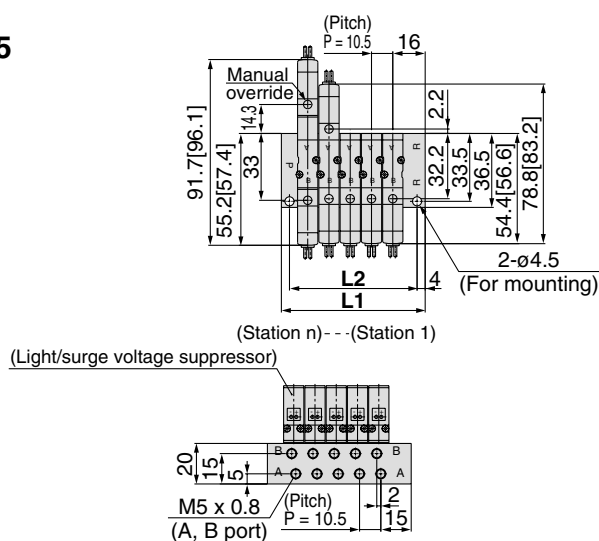


M8 connector (WO)

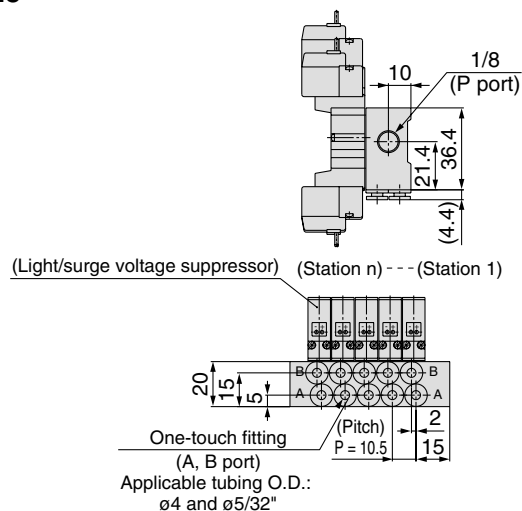


Type S41 manifold: Side ported (Pilot valve of single solenoid valve is located on the same side of A and B ports.) **10-SS5YJ3-S41-** Stations -M5, **C4**
N3 □

M5



C4
N3 □ (With built-in One-touch fitting)

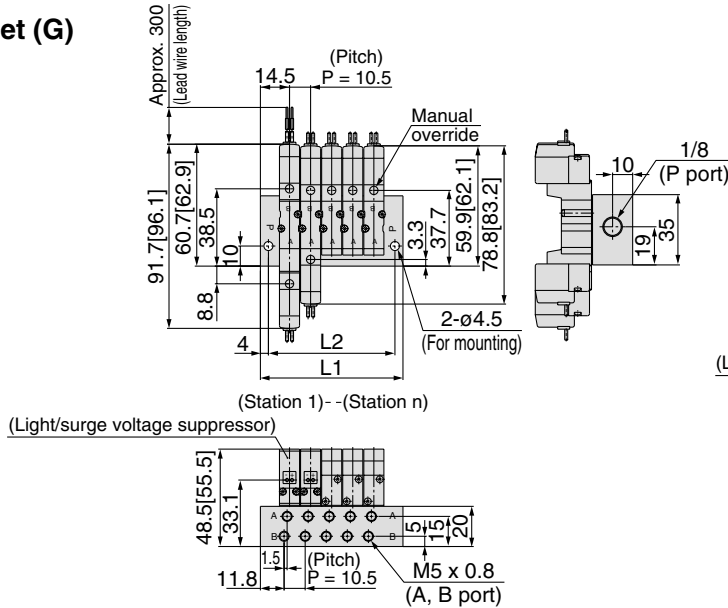


Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	39.5	50	60.5	71	81.5	92	102.5	113	123.5	134	144.5	155	165.5	176	186.5	197	207.5	218	228.5
L2	31.5	42	52.5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.5	189	199.5	210	220.5

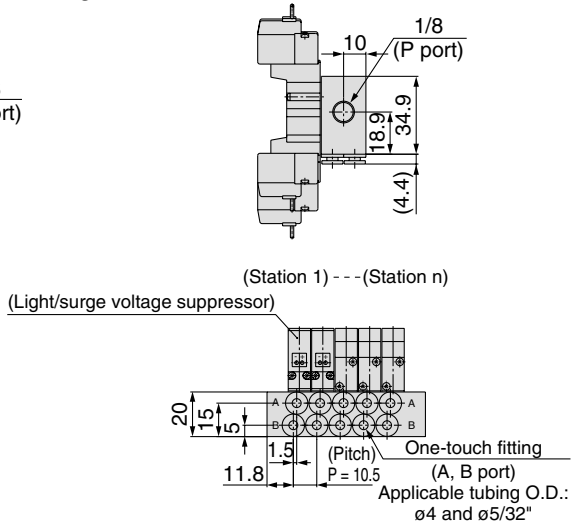
Type 46 manifold: Side ported / 10-SS5YJ3-46- Stations -M5, **C4**
N3 □

* []: AC

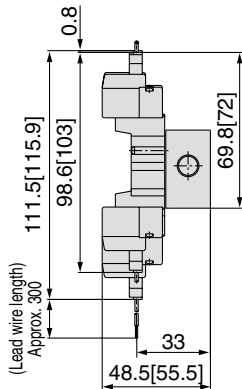
Grommet (G)
M5



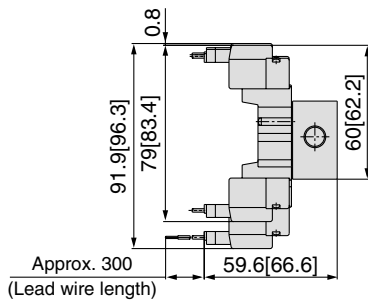
C4
N3 □ (With built-in One-touch fitting)



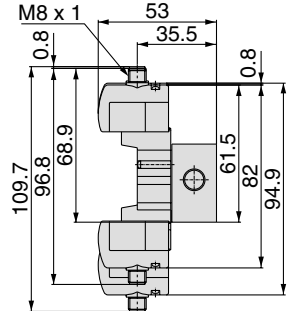
L plug connector (L)



M plug connector (M)



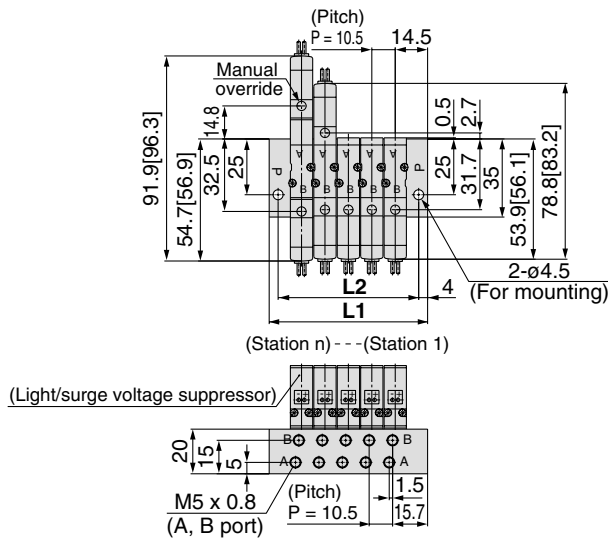
M8 connector (WO)



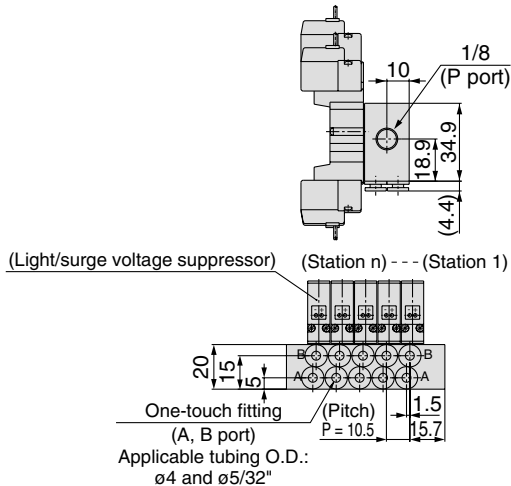
* Refer to page 563 for dimensions with connector cable.

Type S46 manifold: Side ported (Pilot valve of single solenoid valve is located on the same side of A and B ports.) /10-SS5YJ3-S46- Stations -M5, **C4**
N3 □

M5



C4
N3 □ (With built-in One-touch fitting)

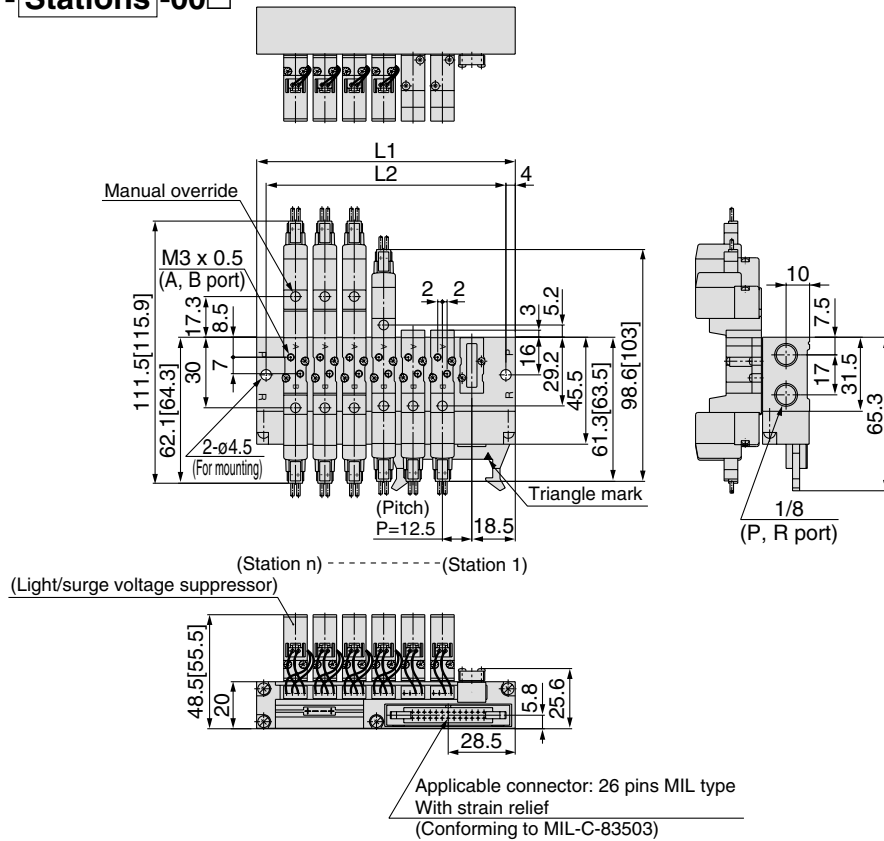


Stations n	2 Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 Stations
L1	39.5	50	60.5	71	81.5	92	102.5	113	123.5	134	144.5	155	165.5	176	186.5	197	207.5	218	228.5
L2	31.5	42	52.5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.5	189	199.5	210	220.5

Flat ribbon cable manifold

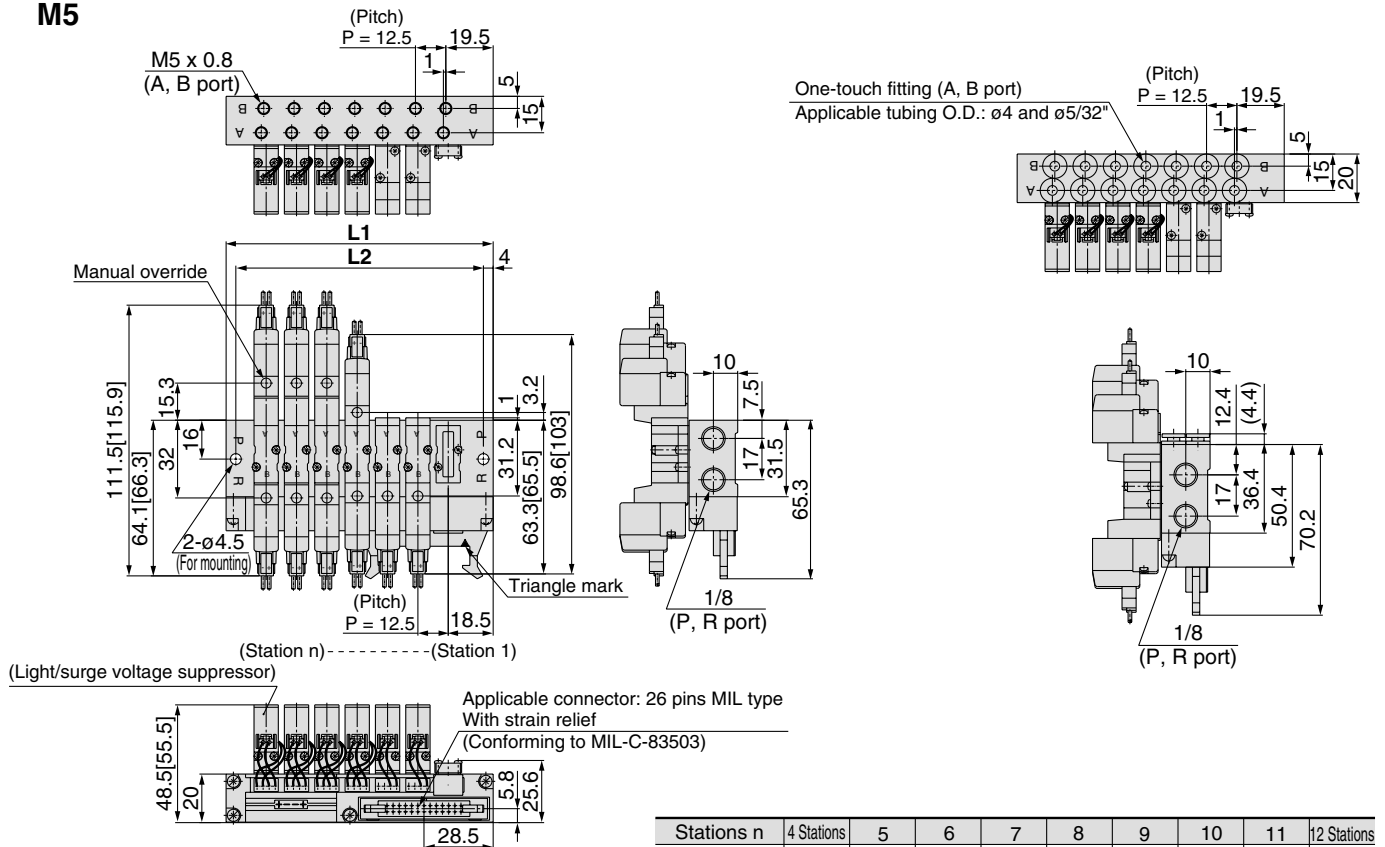


10-SS5YJ3-21P- Stations -00



10-SS5YJ3-32P- Stations -M5, C4 N3

C4 N3 (With built-in One-touch fitting)



Series 10-SYJ5000

Rubber seal
5 port solenoid valve

Specifications

Fluid		Air
Operating pressure range MPa	2 position single	0.15 to 0.7
	2 position double	0.1 to 0.7
	3 position	0.15 to 0.7
Ambient and fluid temperature		-10 to 50°C (with no freezing. Refer to page 714.)
Response time ms ^{Note 1)}	2 position single, double	25 or less
	3 position	40 or less
Max. operating frequency (Hz)	2 position single, double	5
	3 position	3
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type
Pilot exhaust method		Common exhaust for the main and pilot valve
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance m/s² ^{Note 2)}		150/30
Enclosure		Dustproof (* DIN terminal, M8 connector conforms to IP65.)

* Based on IEC60529

Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

Solenoid specifications

Electrical entry			Grommet(G), (H) , L plug connector (L), M plug connector (M), DIN terminal (D), M8 connector (W)	
			G, H, L, M, W	D
Rated coil voltage V	DC		24, 12, 6, 5, 3	24, 12
	AC 50/60Hz		100, 110, 200, 220	
Allowable voltage fluctuation			±10% of rated voltage *	
Power consumption (W)	DC	Standard	0.35 (With indicator light: 0.4 (DIN terminal with indicator light: 0.45))	
		With power saving circuit	0.1 (With indicator light only)	
Apparent power (VA) *	AC	100V	0.78 (With indicator light: 0.81)	0.78 (With indicator light: 0.87)
		110V	0.86 (With indicator light: 0.89)	0.86 (With indicator light: 0.97)
		[115V]	[0.94 (With indicator light: 0.97)]	[0.94 (With indicator light: 1.07)]
		200V	1.18 (With indicator light: 1.22)	1.15 (With indicator light: 1.30)
		220V [230V]	1.30 (With indicator light: 1.34) [1.42 (With indicator light: 1.46)]	1.27 (With indicator light: 1.46) [1.39 (With indicator light: 1.60)]
Surge voltage suppressor			Diode (DIN terminal, varistor for non-polar types)	
Indicator light			LED (Neon light for DIN terminal AC)	

* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* For 115 and 230 VAC, the allowable voltage fluctuation is -15% to +5% of rated voltage.

* For the allowable voltage fluctuation for S, Z and T types (with power saving circuit), please observe the following range because they have voltage drop due to internal circuit.

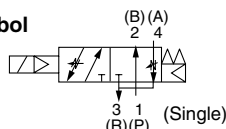
S and Z types 24 VDC: -7% to +10% 12 VDC: -4% to +10%
T type 24 VDC: -8% to +10% 12 VDC: -6% to +10%

Built-in speed controller

10-SYJ5□53

- Built-in exhaust flow controls enable simple cylinder speed adjustments.
- When mounted on the manifold, the common exhaust discharges the pilot and main valve exhaust through a common EXH port to enable simple exhausting.

JIS Symbol

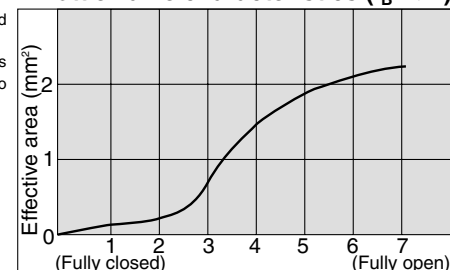


How to order valve with built-in speed controller

10-SYJ5□53-□□□□□□□□□□

- Type of actuation
- Clean series
- Rated voltage
- Electrical entry
- Port size
- Manual override
- Light/Surge voltage suppressor

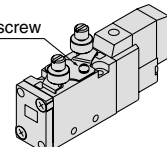
Throttle valve characteristics (A_B → R)



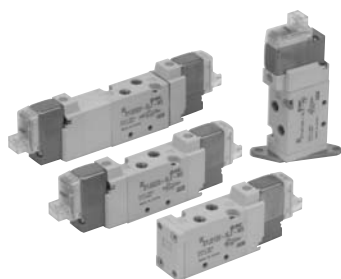
Note) ● When using 10-SYJ5□53 model, the speed controller must be opened more than 1 complete rotation from fully closed in order to function properly.

● Adjust the speed controller with a torque of 0.3 N·m or less.

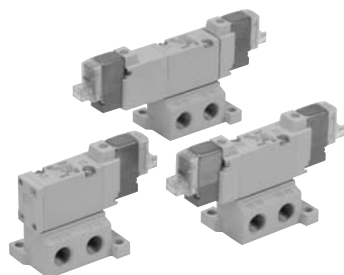
Plate fixing screw



Note) Do not loosen plate fixing screw.



Body ported

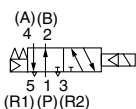


Base mounted

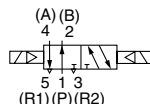
JIS Symbol

Body ported

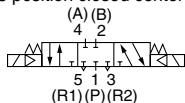
2 position single



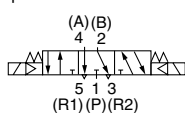
2 position double



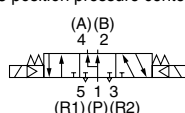
3 position closed center



3 position exhaust center

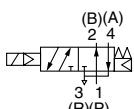


3 position pressure center

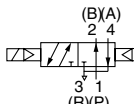


Base mounted (With sub-plate)

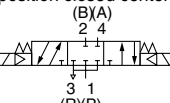
2 position single



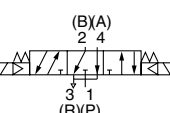
2 position double



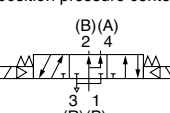
3 position closed center



3 position exhaust center



3 position pressure center



Made to order specifications
(Refer to page 557 for details.)

Flow characteristics / Weight

Valve model		Type of actuation		Port size		Flow characteristics ^{Note 1)}						Weight (g) ^{Note 2, 3)}						
				1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Grommet	L/M plug connector	DIN terminal	M8 connector			
						C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv							
Body ported	10-SYJ5□23-□-M5	2 position	Single	M5 x 0.8	M5 x 0.8	0.47	0.41	0.13	0.47	0.41	0.13	46	47	68	51			
			Double			64	66	108	74									
		3 position	Closed center			0.49	0.44	0.13	0.44	0.40	0.12	75	77	119	85			
			Exhaust center			0.46	0.37	0.12	0.47[0.39]	0.43[0.35]	0.13[0.10]							
	10-SYJ5□23-□-C4	2 position	Single	M5 x 0.8	C4 (One-touch fitting for ø4)	0.69	0.39	0.18	0.44	0.39	0.12	53	54	75	58			
			Double			71	73	115	81									
		3 position	Closed center			0.69	0.40	0.19	0.43	0.40	0.12	82	84	126	72			
			Exhaust center			0.56	0.40	0.15	0.41[0.41]	0.37[0.37]	0.10[0.11]							
		Pressure center	0.57[0.41]			0.4[0.37]	0.15[0.10]	0.41	0.37	0.10								
		10-SYJ5□23-□-C6	2 position			Single	M5 x 0.8	C6 (One-touch fitting for ø6)	0.70	0.36	0.19	0.47	0.40	0.12	53	54	75	58
						Double			71	73	115	81						
	3 position		Closed center	0.72	0.37	0.19			0.44	0.34	0.12	82	84	126	92			
			Exhaust center	0.67	0.54	0.19			0.41[0.41]	0.38[0.38]	0.11[0.11]							
	Base mounted	10-SYJ5□43-□-01	2 position	Single	1/8	1/8	0.79	0.21	0.19	0.83	0.32	0.21	80 (49)	81 (47)	102 (68)	51		
				Double			98 (64)	100 (66)	142 (108)	74								
3 position			Closed center	0.80			0.28	0.18	0.86	0.34	0.20	109 (75)	111 (77)	153 (119)	85			
			Exhaust center	0.71			0.26	0.18	1.1[0.60]	0.24[0.44]	0.26[0.18]							
3 position			Pressure center	0.99[0.47]			0.29[0.38]	0.24[0.12]	0.72	0.38	0.18							
			Pressure center	0.99[0.47]			0.29[0.38]	0.24[0.12]	0.72	0.38	0.18							



Note 1) [] denotes normal position. Exhaust center: 4/2 → 5/3, Pressure center: 1 → 4/2

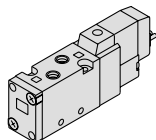
Note 2) (): Without sub-plate

Note 3) For DC voltages. For AC voltages add 3g to the weight of the single solenoid and 6g to the weight of the double solenoid and 3 position types.

How to Order

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center



(For manifold type 20)

Light/Surge voltage suppressor Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Rated voltage DC specifications

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.

AC specifications (50/60Hz)

1	100 VAC
2	200 VAC
3	110 VAC[115 VAC]
4	220 VAC[230 VAC]

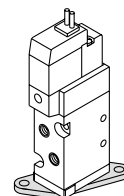
* For type "W□", DC voltage is only available.

A, B port size

M5	M5 x 0.8
C4	One-touch fitting for ø4
C6	One-touch fitting for ø6
N3	One-touch fitting for ø5/32"
N7	One-touch fitting for ø1/4"

Bracket

Nil: Without bracket
F: With bracket



Note) The mounting bracket is supplied unattached.

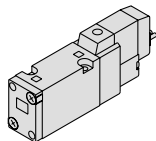
Body ported

10-SYJ5 1 23 □ 5 L □ □ M5 □

Base mounted

10-SYJ5 2 43 □ 5 L □ □ □ □

Clean series



(Sub-plate, 40, 41, 42, 43 manifold)

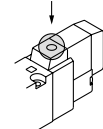
Coil specifications

Nil	Standard
T	With power saving circuit <For 24 and 12 VDC only>

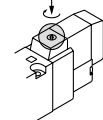
* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Manual override

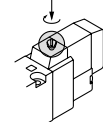
Nil: Non-locking push type



D: Push-turn locking slotted type



E: Push-turn locking lever type

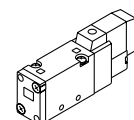


Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

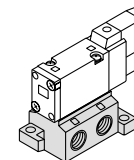
Port size

Nil: Without sub-plate



(With gasket and screws)

01: 1/8 with sub-plate



Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC				24, 12 VDC, 100, 110, 200, 220 VAC	24, 12 VDC, 6, 5, 3 VDC
Grommet	L plug connector	M plug connector		DIN terminal	M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	MN: Without lead wire	D: With connector	W0: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	DO: Without connector	W□: With connector cable (Note 1)

Note 1) Be sure to enter a symbol of the cable length with reference to page 562.

* "LN", "MN" types: with 2 sockets.
* DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 557.
* For connector cable of M8 connector, refer to page 562.

How to Order Pilot Valve Assembly

10—V111  **5** **G** 

• Clean series

• Coil specifications

Nil	Standard
T	With power saving circuit <24 and 12 VDC only>

 * Power saving circuit is not available in the case of "W□" type.

• Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC 50/60Hz
2	200 VAC 50/60Hz
3	110 VAC 50/60Hz [115 VAC 50/60Hz]
4	220 VAC 50/60Hz [230 VAC 50/60Hz]

 * For type "W□", DC voltage is only available.

• Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

 * For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

• Electrical entry

G	Grommet (Lead wire length 300 mm)
H	Grommet (Lead wire length 600 mm)
L	L plug connector
LN	connector
LO	Without connector
M	M plug connector
MN	connector
MO	Without connector
WO	M8 connector
W□	connector

 * For connector cable of M8 connector, refer to page 562.

Note 1) Be sure to enter a symbol of the cable length with reference to page 562.

10—V115  **5** **D** 

• Clean series

• Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC 50/60Hz
2	200 VAC 50/60Hz
3	110 VAC 50/60Hz [115 VAC 50/60Hz]
4	220 VAC 50/60Hz [230 VAC 50/60Hz]

 * DC specifications of type "D" and "DO" is only available with 12 and 24 V DC.

* Power saving circuit is not available in the case of "D" or "DO" type.

• Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

 * "DOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

• Electrical entry

D	DIN	With connector
DO	terminal	Without connector

 (Note) Do not replace 10-V111 (G, H, L, M, W) to 10-V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

How to Order Connector Assembly for L/M Plug Connector

For DC: **SY100-30-4A-** 

For 100 VAC: **SY100-30-1A-** 

For 200 VAC: **SY100-30-2A-** 

For other voltages of AC: **SY100-30-3A-** 

Without lead wire: **SY100-30-A**
(With connector and 2 of sockets only)

• Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order M8 Connector Cable

V100-49-1- 

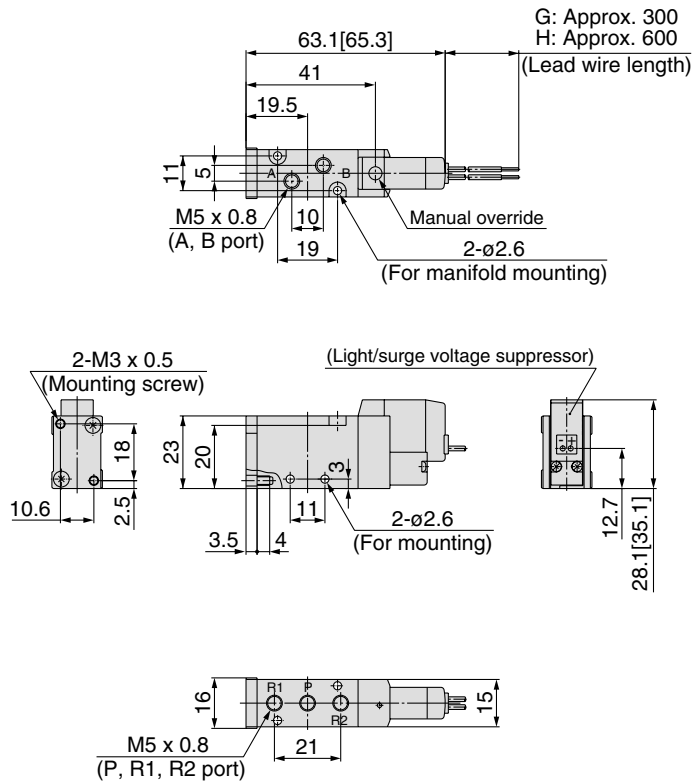
• Cable length

1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm

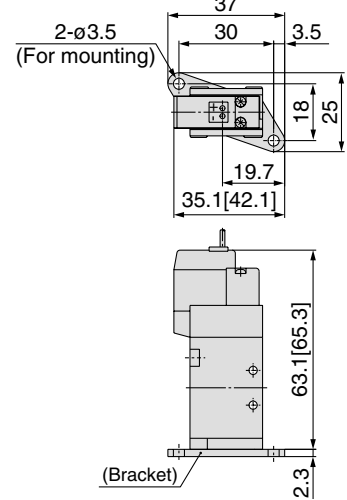
2 position single



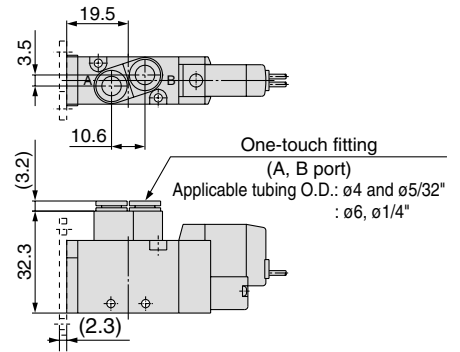
Grommet (G), (H): 10-SYJ5123-□^G□□-M5



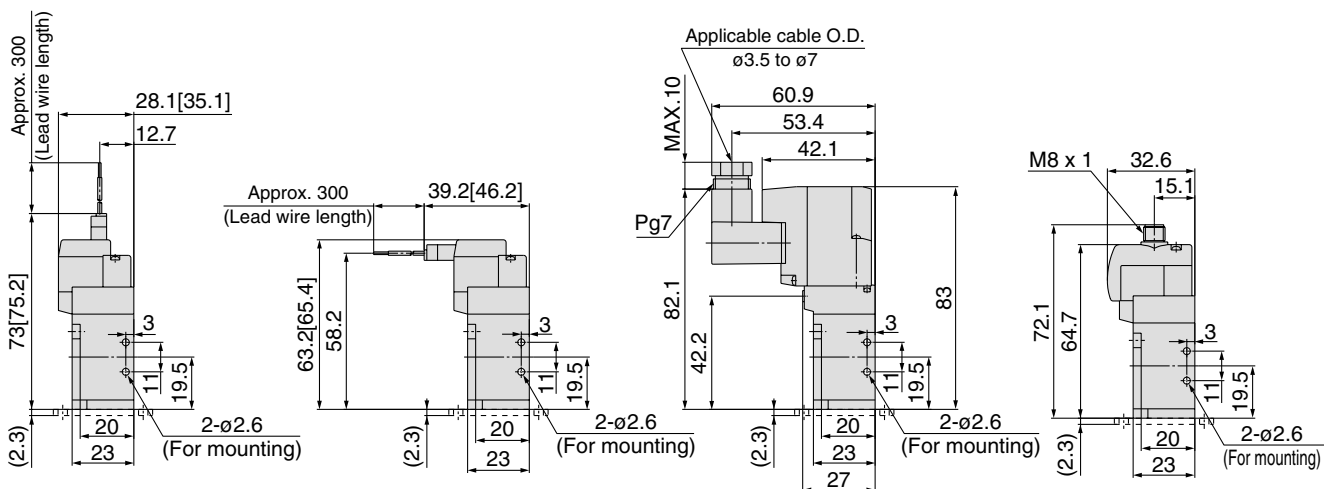
With bracket
10-SYJ5123-□^G□□-M5-F



Built-in One-touch Fitting:
10-SYJ5123-□^G□□-C4,N3
C6,N7 (-F)

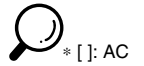


L plug connector (L): 10-SYJ5123-□L□□-M5(-F) **M plug connector (M):** 10-SYJ5123-□M□□-M5(-F) **DIN Terminal (D):** 10-SYJ5123-□D□□-M5(-F) **M8 connector (WO):** 10-SYJ5123-□WO□□-M5(-F)



* Refer to page 563 for dimensions with connector cable.

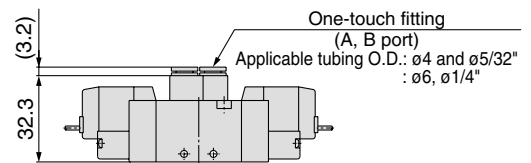
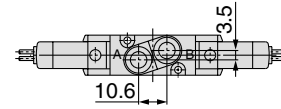
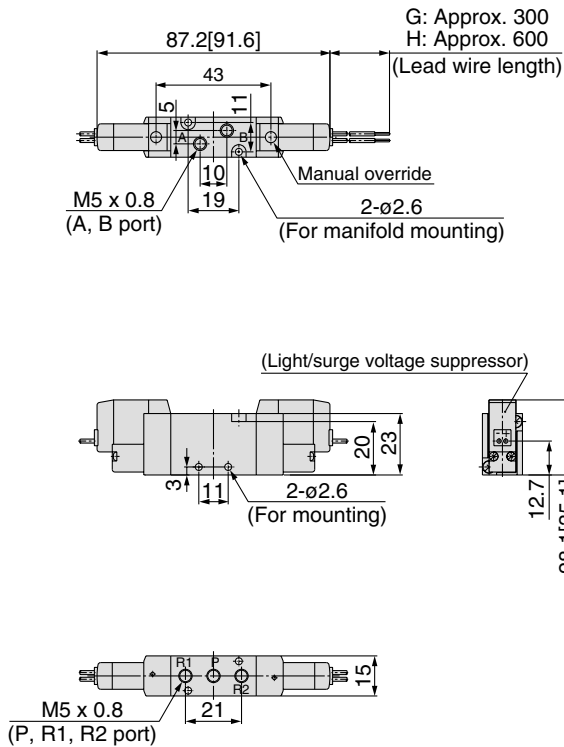
2 position double



Grommet (G), (H): 10-SYJ5223-□^G□□-M5

Built-in One-touch fitting

10-SYJ5223-□^G□□-C4,N3
C6,N7

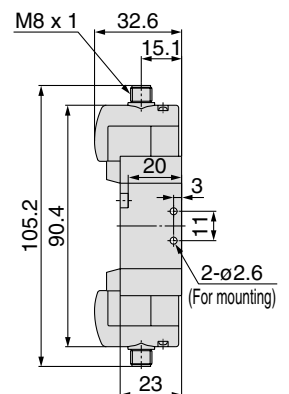
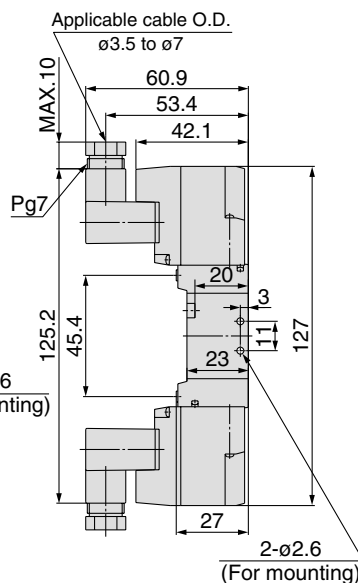
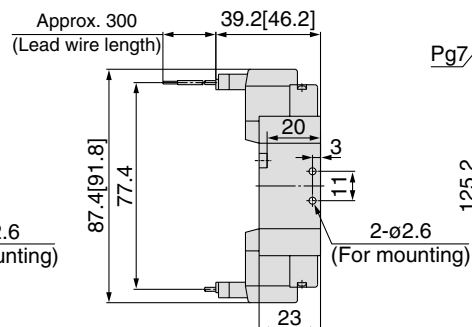
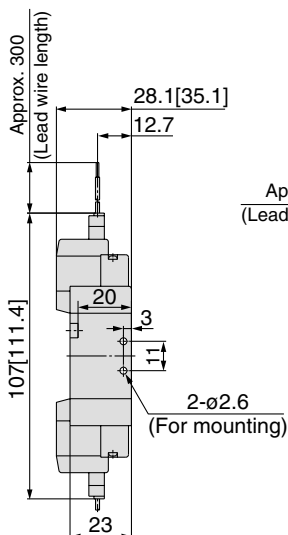


L plug connector (L):
10-SYJ5223-□L□□-M5

M plug connector (M):
10-SYJ5223-□M□□-M5

DIN Terminal (D):
10-SYJ5223-□D□□-M5

M8 connector (WO):
10-SYJ5223-□WO□□-M5



* Refer to page 563 for dimensions with connector cable.

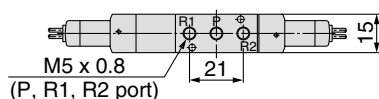
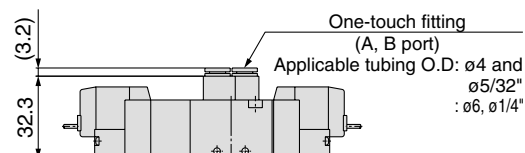
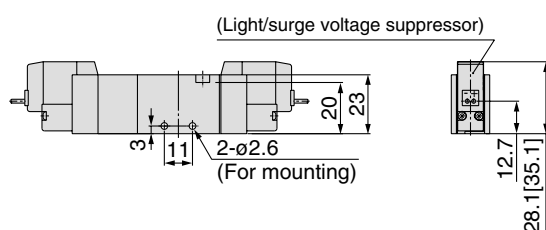
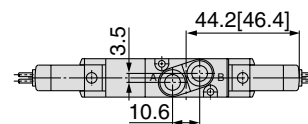
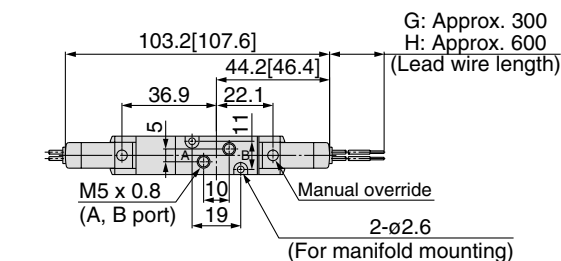
3 position closed center / exhaust center / pressure center



Grommet (G), (H): 10-SYJ5³₅23-□^G_H□□-M5

Built-in One-touch fitting:

10-SYJ5³₅23-□^G_H□□-C4,N3
C6,N7

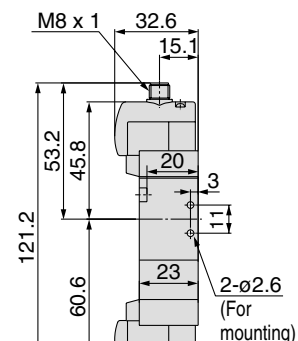
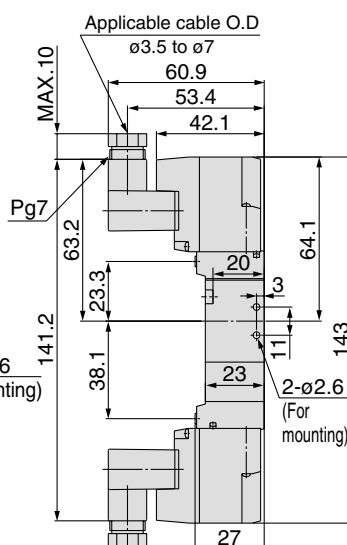
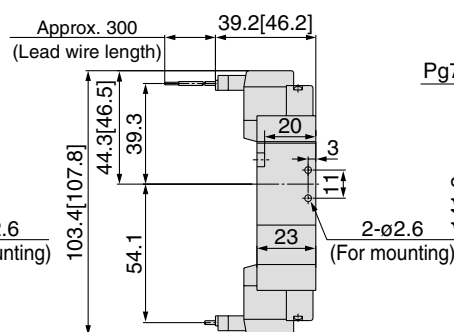
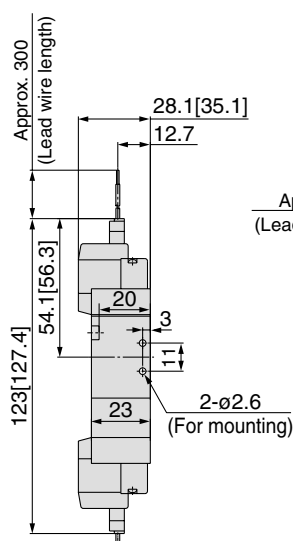


L plug connector (L):
10-SYJ5³₅23-□^L□□-M5

M plug connector (M):
10-SYJ5³₅23-□^M□□-M5

DIN Terminal (D):
10-SYJ5³₅23-□^D□□-M5

M8 connector (WO):
10-SYJ5³₅23-□^{WO}□□-M5



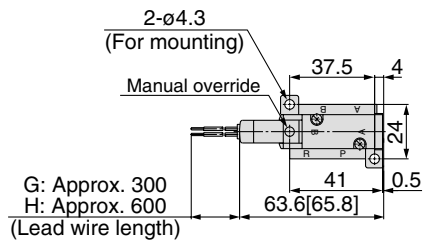
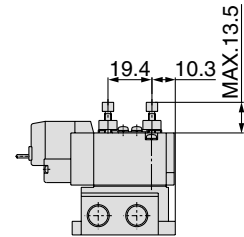
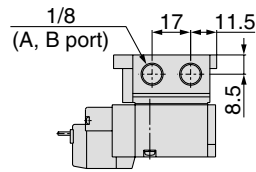
* Refer to page 563 for dimensions with connector cable.

2 position single

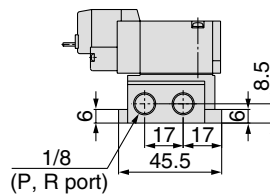
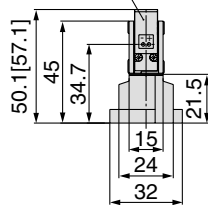


Grommet (G), (H): 10-SYJ5143-□^G_H□□-01□

Built-in speed controller:
10-SYJ5153-□^G_H□□-01□



(Light/surge voltage suppressor)

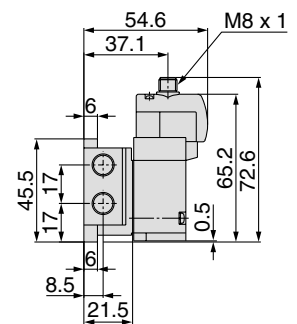
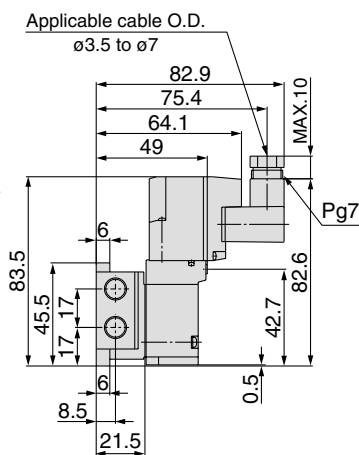
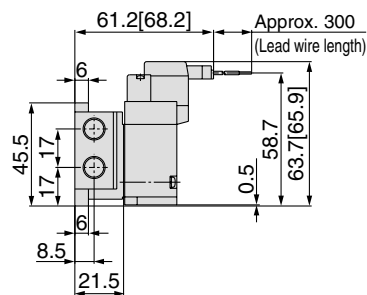
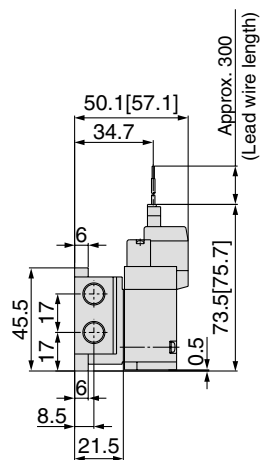


L plug connector (L):
10-SYJ5143-□L□□-01□

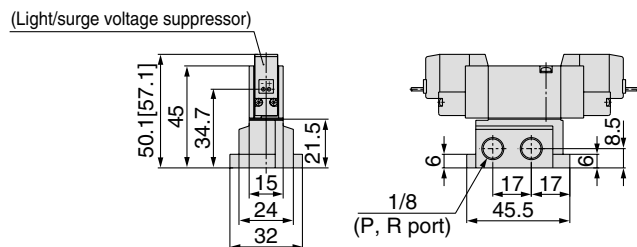
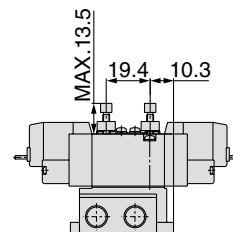
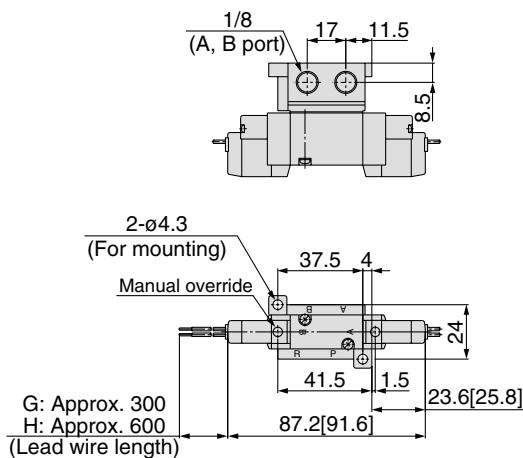
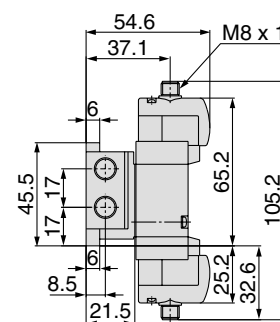
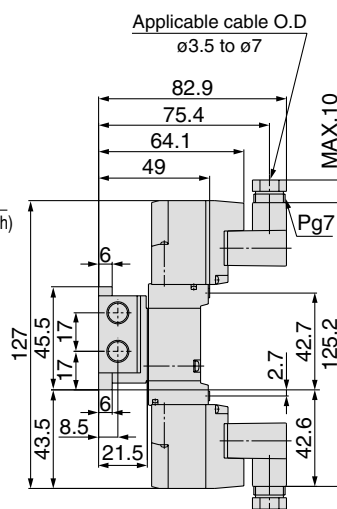
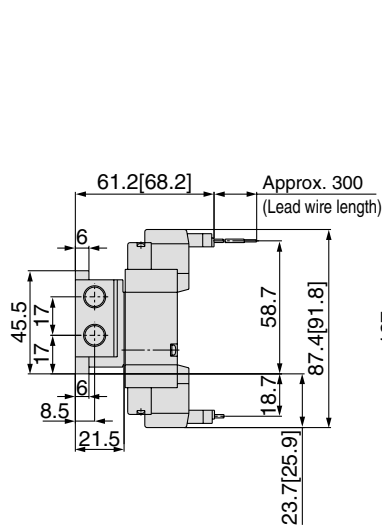
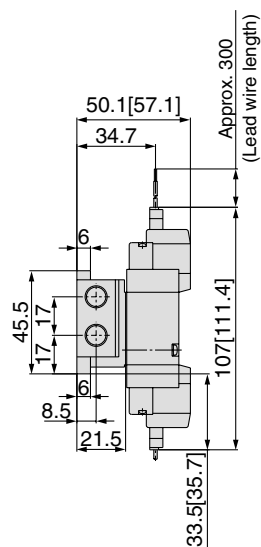
M plug connector (M):
10-SYJ5143-□M□□-01□

DIN Terminal (D):
10-SYJ5143-□D□□-01□

M8 connector (WO):
10-SYJ5143-□WO□□-01□



* Refer to page 563 for dimensions with connector cable.

2 position doubleGrommet (G), (H): 10-SYJ5243-□^G_H□□-01□Built-in speed controller:
10-SYJ5253-□^G_H□□-01□**L plug connector (L):**
10-SYJ5243-□L□□-01□**M plug connector (M):**
10-SYJ5243-□M□□-01□**DIN Terminal (D):**
10-SYJ5243-□D□□-01□**M8 connector (WO):**
10-SYJ5243-□WO□□-01□

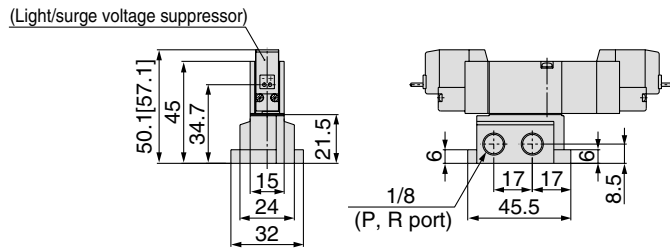
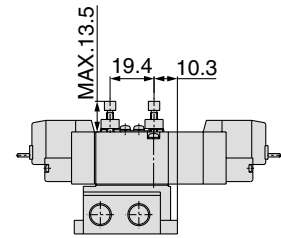
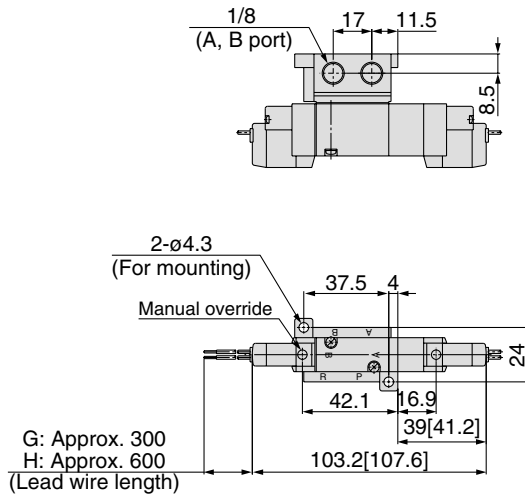
5 port solenoid valve Series 10-SYJ5000

3 position closed center / Exhaust center / Pressure center



Grommet (G), (H): 10-SYJ5³₄43-□^G□□-01□

Built-in speed controller:
10-SYJ5³₄53-□^G□□-01□

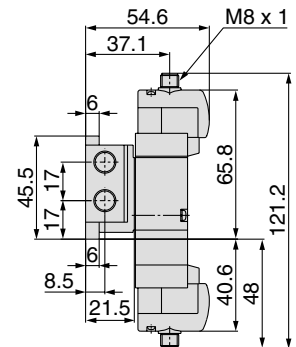
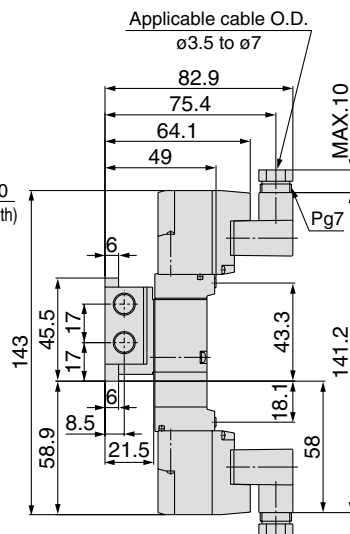
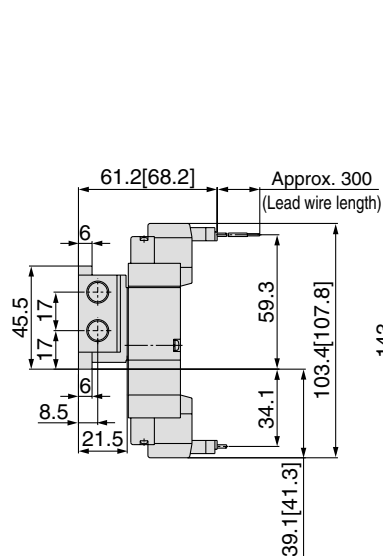
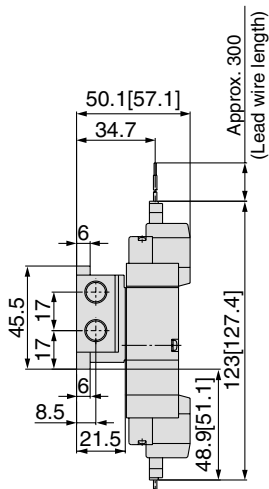


L plug connector (L):
10-SYJ5³₄43-□^L□□-01□

M plug connector (M):
10-SYJ5³₄43-□^M□□-01□

DIN Terminal (D):
10-SYJ5³₄43-□^D□□-01□

M8 connector (WO):
10-SYJ5³₄43-□^{WO}□□-01□



* Refer to page 563 for dimensions with connector cable.

Series 10-SYJ5000

Manifold specifications

Manifold standard



Manifold specifications

Model		Type 20	Type 40	Type 41	Type 42	Type 43
Manifold type		Single base / B mount				
P (SUP) / R (EXH)		Common SUP / Common EXH				
Valve stations		2 to 20 stations				
A, B port piping specifications	Location	Valve	Base	Base		
	Direction	Top	Bottom	Side		
Port size	P, R port	1/8			1/4	1/8
	A, B port	M5 x 0.8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	M5 x 0.8		1/8, C6 (One-touch fitting for ø6)	C4 (One-touch fitting for ø4)

Flow characteristics

Manifold model			Port size		Flow characteristics					
					1→4/2 (P→A/B)			4/2→5/3(A/B→R)		
			1(P), 5/3(R) port	2(B), 4(A) port	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv
Body ported for internal pilot	10-SS5YJ5-20	10-SYJ5□23	1/8	M5 x 0.8	0.46	0.39	0.12	0.75	0.32	0.19
			1/8	C4	0.62	0.33	0.16	0.83	0.27	0.20
			1/8	C6	0.79	0.36	0.21	0.91	0.36	0.24
Base mounted for internal pilot	10-SS5YJ5-40	10-SYJ5□43	1/8	M5 x 0.8	0.55	0.35	0.15	0.64	0.26	0.16
	10-SS5YJ5-41		1/8	M5 x 0.8	0.59	0.35	0.16	0.68	0.23	0.17
	10-SS5YJ5-42-01		1/4	1/8	0.74	0.22	0.18	0.82	0.31	0.21
	10-SS5YJ5-42-C6		1/4	C6	0.71	0.24	0.17	0.8	0.29	0.20
	10-SS5YJ5-43		1/8	C4	0.55	0.29	0.14	0.74	0.32	0.19



Note) Value at manifold base mounted, 2 position single operating

How to Order Manifold (Example)

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model number.

Example **10-SS5YJ5-20-03** 1 set (Manifold base)
 * **10-SYJ5123-5G-M5** 2 sets (Valve)
 * **SYJ5000-21-4A** 1 set (Blanking plate assembly)

10-SS5YJ5-43-03-C4 1 set (Manifold base)
 * **10-SYJ5143-5LZ** 1 set (Valve)
 * **10-SYJ5243-5LZ** 1 set (Valve)
 * **SYJ5000-21-4A** 1 set (Blanking plate assembly)

└─ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

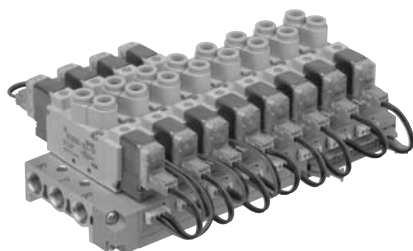
* Use manifold specification sheet.

Flat ribbon cable manifold

- Multiple valve wiring is simplified through the use of the flat ribbon cable connector.

Clean appearance

In the case of a flat ribbon cable type, each valve is wired on the print board of manifold base to allow the external wiring to be piped all together with 26 pins MIL connector.



Flat ribbon cable manifold specifications

Model	Type 20P	Type 41P	Type 43P
Manifold type	Single base / B mount		
P(SUP) / R(EXH)	Common SUP / Common EXH		
Valve stations	3 to 12 stations		
A, B port piping specifications	Location	Valve	Base
	Direction	Top	Side
Port size	P, R port	1/8	1/8
	A, B port	M5 x 0.8 C4 (One-touch fitting for ø4) C6 (One-touch fitting for ø6)	M5 x 0.8 C4 (One-touch fitting for ø4)
Applicable flat ribbon cable connector	Socket: 26 pins MIL type with strain relief (Conforming to MIL-C-83503)		
Internal wiring	In common between +COM and -COM (Z type: +COM only)		
Rated voltage	12, 24 VDC 100, 110 VAC		

Note) The withstand voltage specification for the wiring section conforms to JIS C0704, Grade 1 or its equivalent.

Flow characteristics

Manifold			Port size		Flow characteristics					
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R)		
			1(P), 5/3(R) port	2(B), 4(A) port	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv
Body ported for internal pilot	10-SS5YJ5-20P	10-SYJ5□23	1/8	M5 x 0.8	0.46	0.39	0.12	0.75	0.32	0.19
			1/8	C4	0.62	0.33	0.16	0.83	0.27	0.20
			1/8	C6	0.79	0.36	0.21	0.91	0.36	0.24
Base mounted for internal pilot	10-SS5YJ5-41P	10-SYJ5□43	1/8	M5 x 0.8	0.59	0.35	0.16	0.68	0.23	0.17
			1/8	C4	0.55	0.29	0.14	0.74	0.32	0.19

Note) Value at manifold base mounted, 2 position single operating

How to Order Manifolds (Example)

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model number.

Example

10-SS5YJ5-41P-07-C4 1 set (Manifold base)

* 10-SYJ5143-5LOU 3 sets (Valve)

* 10-SYJ5243-5LOU 3 sets (Valve)

* SYJ5000-21-3A 1 set (Blanking plate assembly)

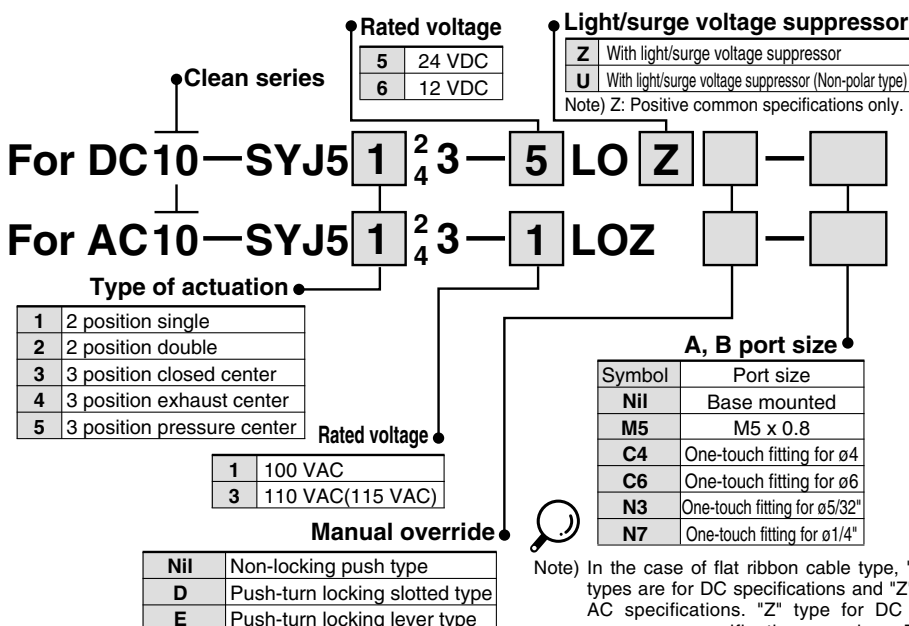
* SY3000-37-28A 3 sets (Connector assembly)

* SY3000-37-29A 3 sets (Connector assembly)

→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

* Use manifold specification sheet.

How to Order Valves



Note) In the case of flat ribbon cable type, "U" and "Z" types are for DC specifications and "Z" type is for AC specifications. "Z" type for DC is positive common specifications only. For other combinations, please contact SMC.

How to Order Connector Assembly

12, 24 VDC

Single solenoid	SY3000-37-28A
Double solenoid 3 position type	SY3000-37-29A
For single solenoid, individual SUP/EXH spacer	SY3000-37-3A
For double solenoid, 3 position individual SUP/EXH spacer	SY3000-37-4A
For 3 port adaptor plate	SY3000-37-3A

For 100 VAC

For single solenoid	SY3000-37-46A
Double solenoid 3 position type	SY3000-37-47A
For single solenoid, individual SUP/EXH spacer	SY3000-37-32A
For double solenoid, 3 position individual SUP/EXH spacer	SY3000-37-33A
3 port adaptor plate	SY3000-37-32A

For 100 VAC (115 VAC)

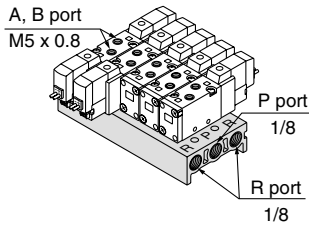
For single solenoid	SY3000-37-54A
Double solenoid 3 position type	SY3000-37-55A
For single solenoid, individual SUP/EXH spacer	SY3000-37-35A
For double solenoid, 3 position individual SUP/EXH spacer	SY3000-37-36A
For 3 port adaptor plate	SY3000-37-35A

Common SUP / Common EXH



Note) For more than 8 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 20 (5 port / Body ported)



How to Order

10—SS5YJ5—20—05—

- Clean series
- Number of stations

02	2 stations
:	:
20	20 stations
- P, R port thread type

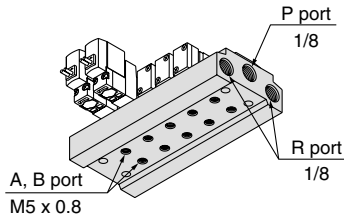
Nil	Rc
00F	G
00N	NPT
00T	NPTF

Applicable solenoid valve
10-SYJ5□23-□□□□-^{M5}C4C6

Applicable blanking plate assembly
SYJ5000-21-4A

Applicable individual EXH spacer assembly
SYJ5000-17-1A

Type 40 (5 port / Base mounted)



How to Order

10—SS5YJ5—40—05—M5—

- Clean series
- Number of stations

02	2 stations
:	:
20	20 stations
- P, R port thread type

Nil	Rc
F	G
N	NPT
T	NPTF
- A, B port size

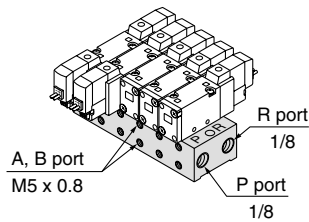
M5	M5 x 0.8
----	----------

Applicable solenoid valve
10-SYJ5□43-□□□□
10-SYJ5□53-□□□□

Applicable blanking plate assembly
SYJ5000-21-4A

Applicable individual EXH spacer assembly
SYJ5000-17-1A

Type 41 (5 port / base mounted)



How to Order

10—SS5YJ5—41—05—M5—

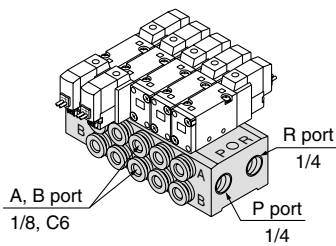
- Clean series
- Number of stations

02	2 stations
:	:
20	20 stations
- P, R port thread type

Nil	Rc
F	G
N	NPT
T	NPTF
- A, B port size

M5	M5 x 0.8
----	----------

Type 42 (5 port / base mounted)



How to Order

10—SS5YJ5—42—05—C6—

- Clean series
- Number of stations

02	2 stations
:	:
20	20 stations
- A, B port size

01	1/8
C6	One-touch fitting for ø6
N7	One-touch fitting for ø1/4"
- Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

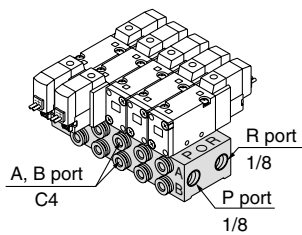
Applicable solenoid valve
10-SYJ5□43-□□□□
10-SYJ5□53-□□□□

Applicable blanking plate assembly
SYJ5000-21-4A

Applicable individual EXH spacer assembly
SYJ5000-17-1A

Applicable individual SUP spacer assembly
SYJ5000-16-2A

Type 43 (5 port / base mounted)



How to Order

10—SS5YJ5—43—05—C4—

- Clean series
- Manifold stations

02	2 stations
:	:
20	20 stations
- A, B port size

C4	One-touch fitting for ø4
N3	One-touch fitting for ø5/32"
- P, R port thread type

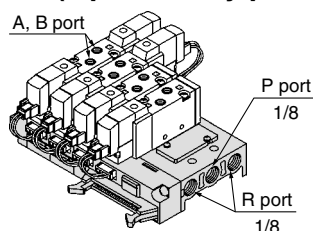
Nil	Rc
F	G
N	NPT
T	NPTF

Flat ribbon cable manifold

Common SUP / Common EXH

Note) For more than 8 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 20P (5 port / body ported)



How to Order

10—SS5YJ5—20P—05—

• Clean series

Number of stations •	
03	3 stations
:	:
12	12 stations

• P, R port thread type

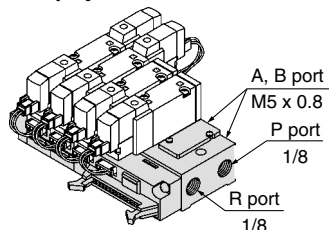
Nil	Rc
00F	G
00N	NPT
00T	NPTF

Applicable solenoid valve
Refer to page 526.

Applicable blanking
plate assembly
SYJ5000-21-3A

Applicable connector
assembly
Refer to page 526.

Type 41P (5 port / base mounted)



How to Order

10—SS5YJ5—41P—05—M5—

• Clean series

Number of stations •	
03	3 stations
:	:
12	12 stations

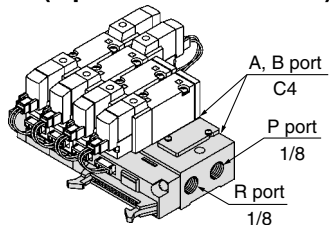
• P, R port size

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable solenoid valve
Refer to page 526.

Applicable blanking
plate assembly
SYJ5000-21-3A

Type 43P (5 port / base mounted)



How to Order

10—SS5YJ5—43P—05—C4—

• Clean series

Number of stations •	
03	3 stations
:	:
12	12 stations

• A, B port size •

C4	One-touch fitting for ø4
N3	One-touch fitting for ø5/32"

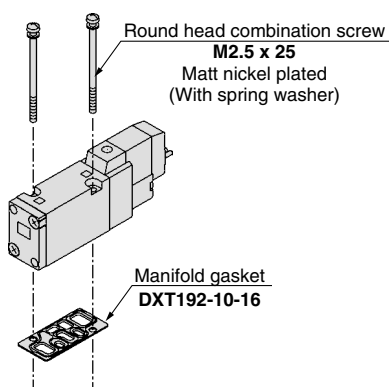
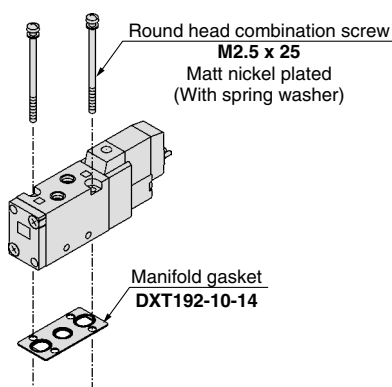
• P, R port thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable connector
assembly
Refer to page 526.

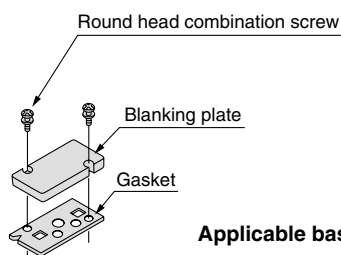
<Manifold option>

Combinations of solenoid valve, manifold gasket and manifold base



Blanking plate assembly

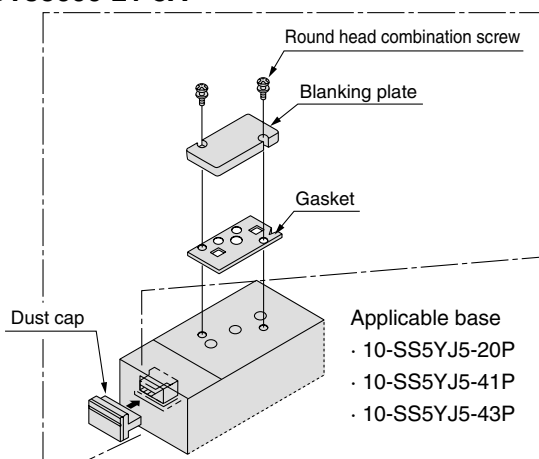
SYJ5000-21-4A



Applicable base

- 10-SS5YJ5-20
- 10-SS5YJ5-40
- 10-SS5YJ5-41
- 10-SS5YJ5-42
- 10-SS5YJ5-43

SYJ5000-21-3A



- Applicable base
- 10-SS5YJ5-20P
 - 10-SS5YJ5-41P
 - 10-SS5YJ5-43P

⚠ Caution

Mounting screw tightening torque

M2.5: 0.45N·m

Use caution to the assembly
orientation for solenoid valve,
gasket, and optional parts.

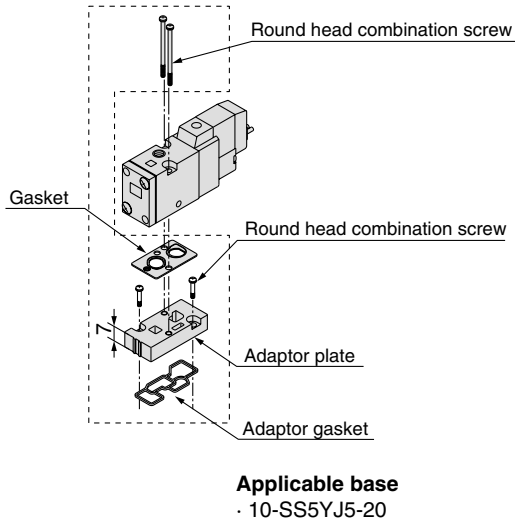
<Manifold option>

Mix installation of the 10-SYJ500 and the 10-SYJ5000 valves on the same manifold

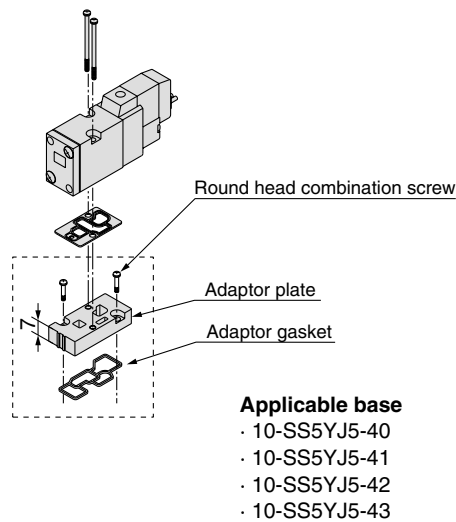
- Use of an adapter plate makes it possible to mount Series 10-SYJ500 on the manifold bases of series 10-SYJ5000.
- When mounting the 10-SYJ500 valve on the 10-SYJ5000 manifold, the 10-SYJ500 solenoid must be positioned on the same side of the manifold as a single solenoid of 10-SYJ5000.
- For base mounted style, the A port of the 3 port valve flows out the B port of manifold base.

Adaptor plate assembly

SYJ500-3-2A

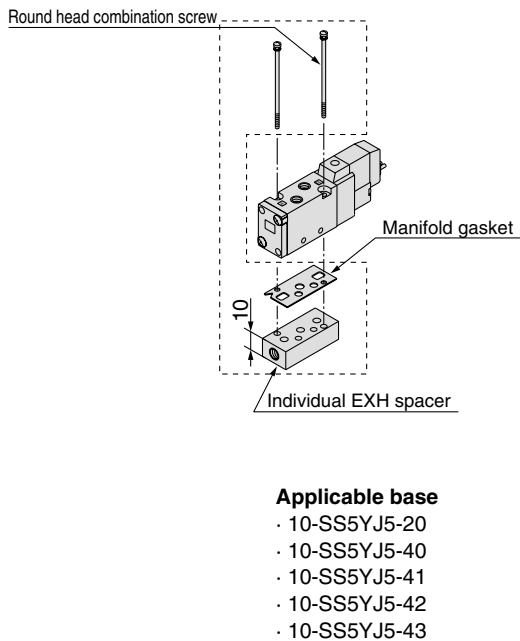


SYJ500-3-1A



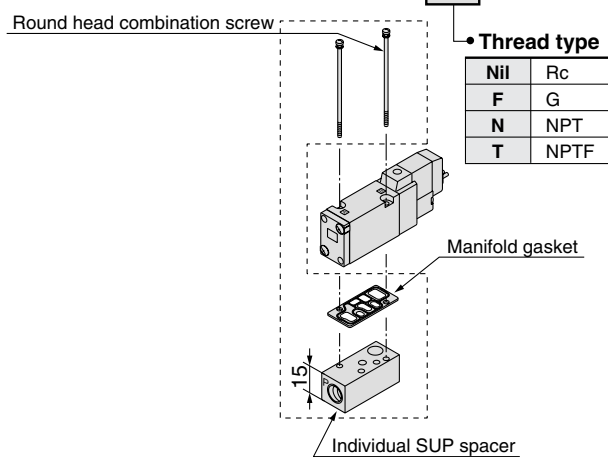
Individual EXH spacer assembly

SYJ5000-17-1A



Individual SUP spacer assembly

SYJ5000-16-2 A



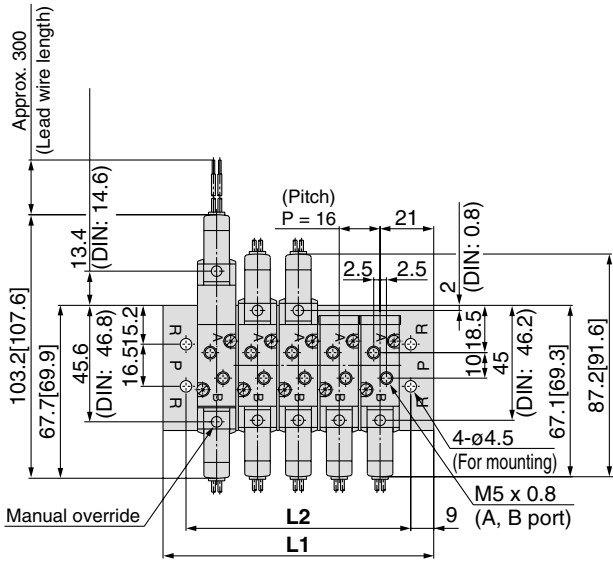
Caution

Mounting screw tightening torque

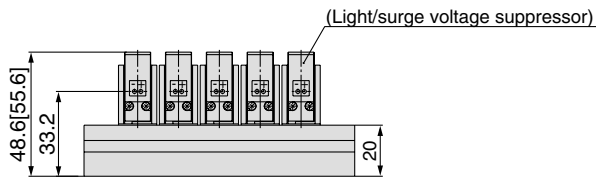
M2.5: 0.45N·m

Use caution to the assembly orientation for solenoid valves, gasket, and optional parts.

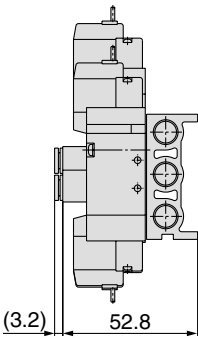
Grommet (G)



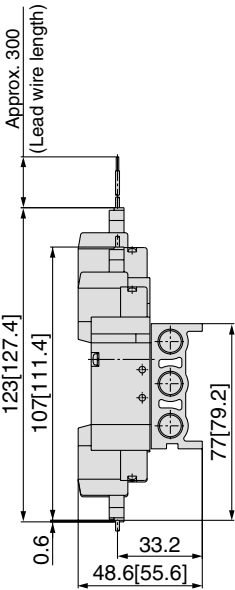
(Station n) ----- (Station 1)



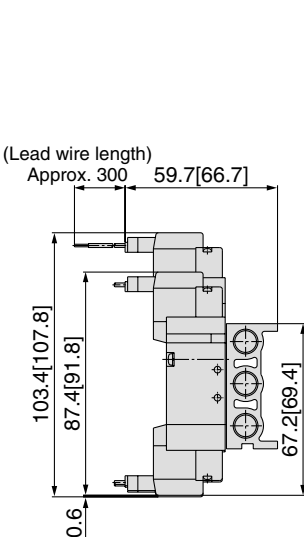
Built-in One-touch fitting



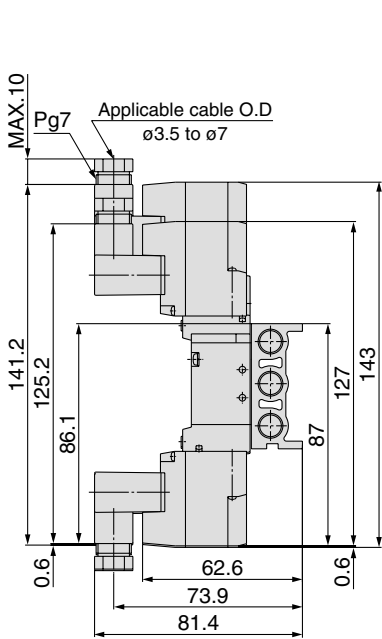
L plug connector (L)



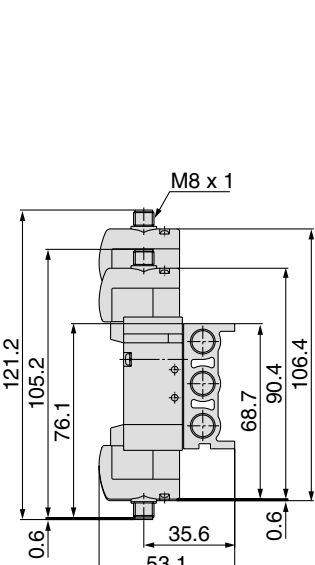
M plug connector (M)



DIN Terminal (D)

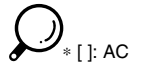
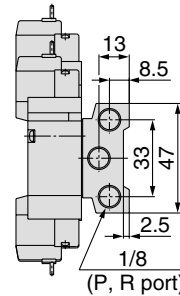
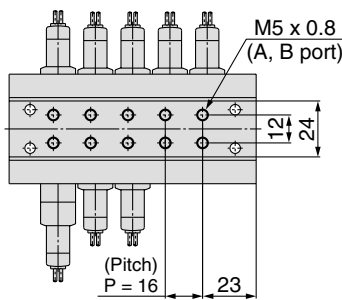
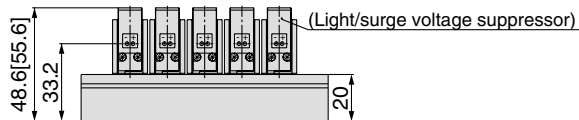
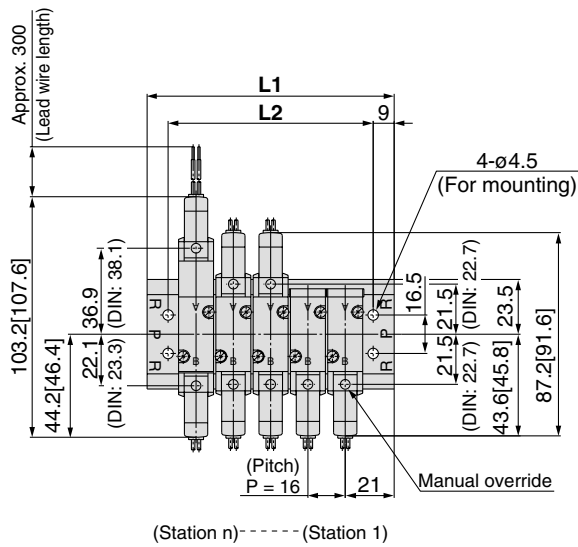
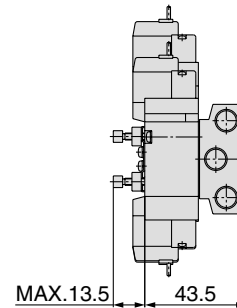
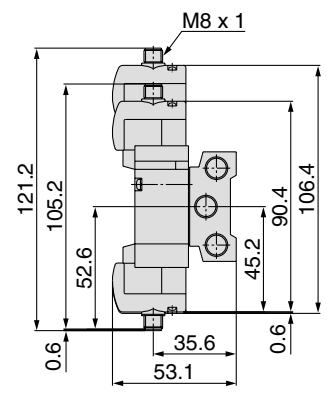
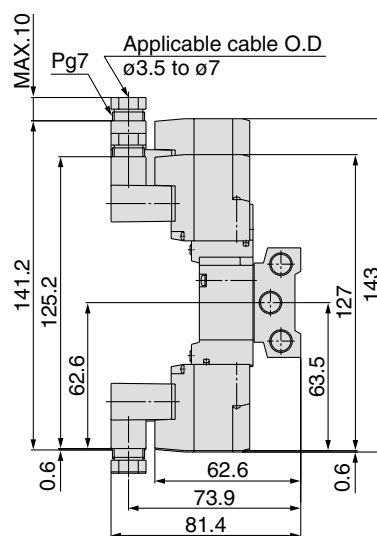
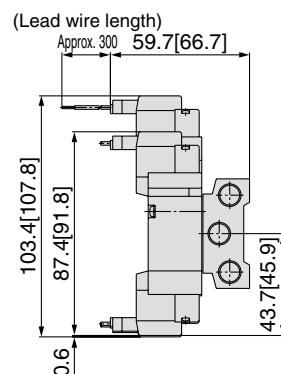
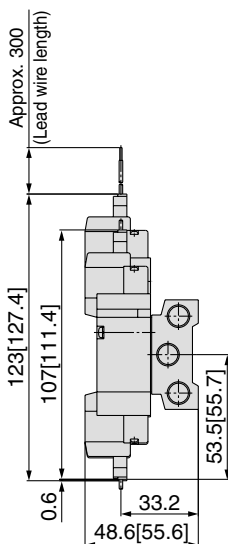


M8 connector (WO)



* Refer to page 563 for dimensions with connector cable.

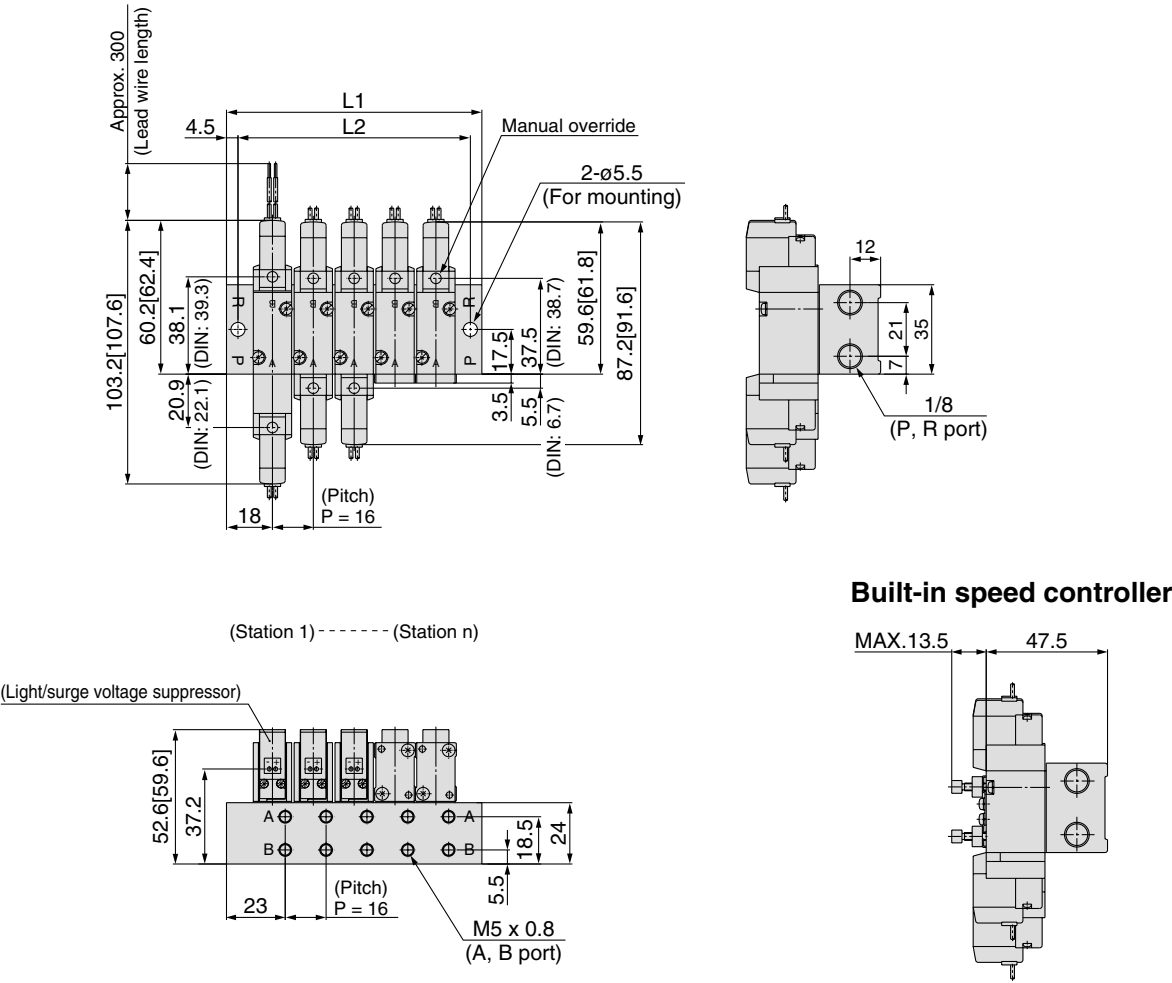
Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282	298	314	330	346
L2	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328

Type 40: Bottom ported / 10-SS5YJ5-40- Stations -M5

Grommet (G)

Built-in speed controller

L plug connector (L)
M plug connector (M)
DIN Terminal (D)
M8 connector (WO)


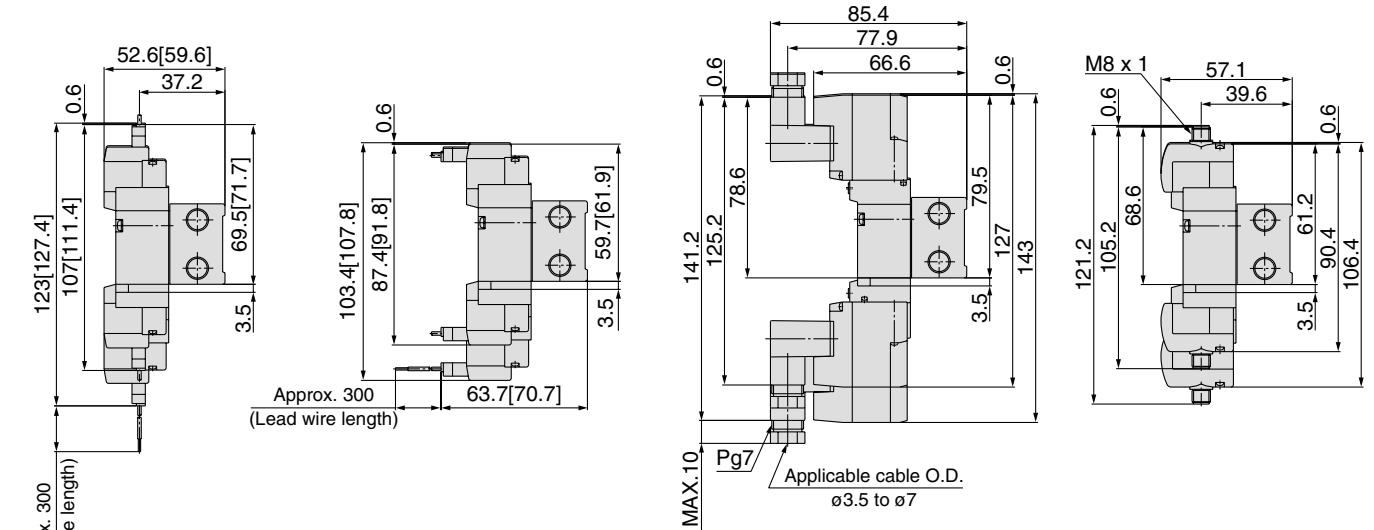
* Refer to page 563 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	58	74	90	106	122	138	154	170	186	202	218	234	250	266	282	298	314	330	346
L2	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328

Type 41: Side ported / 10-SS5YJ5-41- Stations -M5□
Grommet (G)



L plug connector (L) M plug connector (M) DIN Terminal (D) M8 connector (WO)



* Refer to page 563 for dimensions with connector cable.

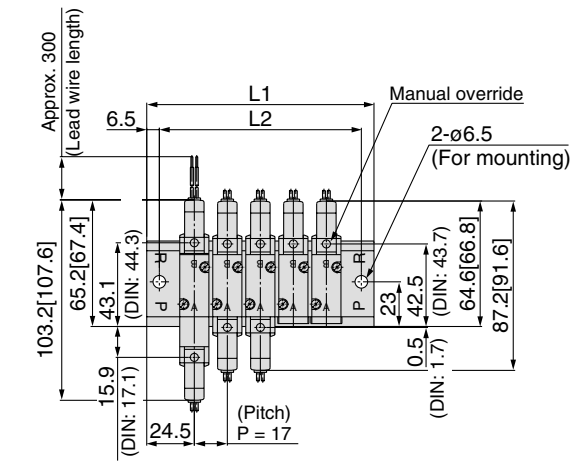
Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
L2	43	59	75	91	107	123	139	155	171	187	203	219	235	251	267	283	299	315	331

Type 42: Side ported / 10-SS5YJ5-42- Stations -01, C6 N7 □

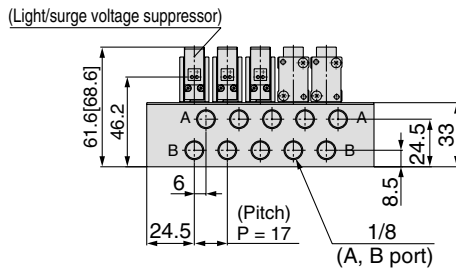
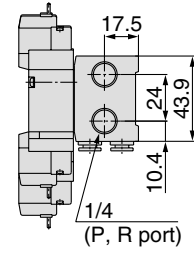
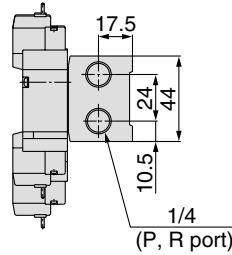
* []: AC

Grommet (G)
01 □

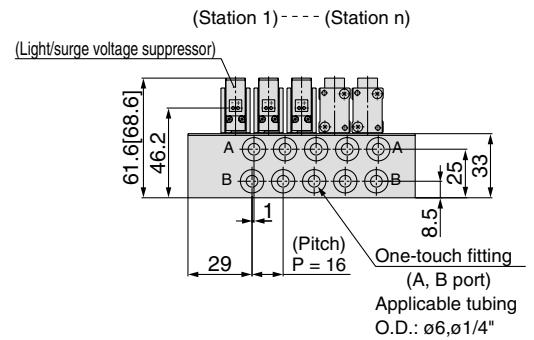
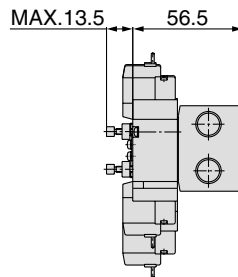
C6 N7 □ (With built-in One-touch fitting)



(Station 1) ---- (Station n)



Built-in speed controller



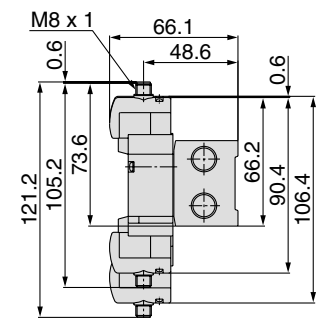
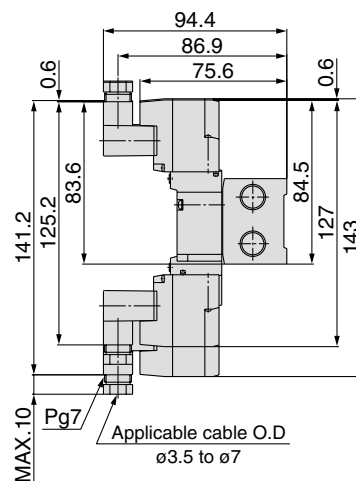
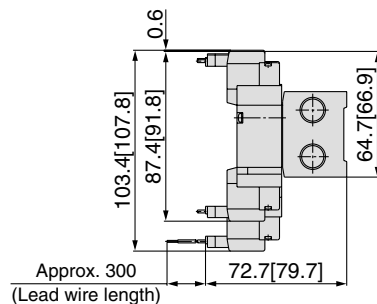
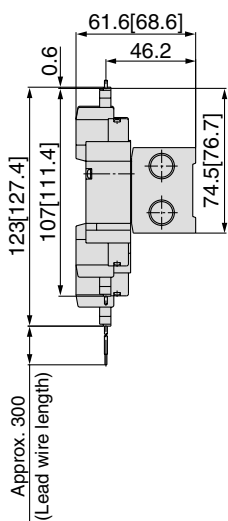
* Other dimensions are the same as the grommet type.

L plug connector (L)

M plug connector (M)

DIN Terminal (D)

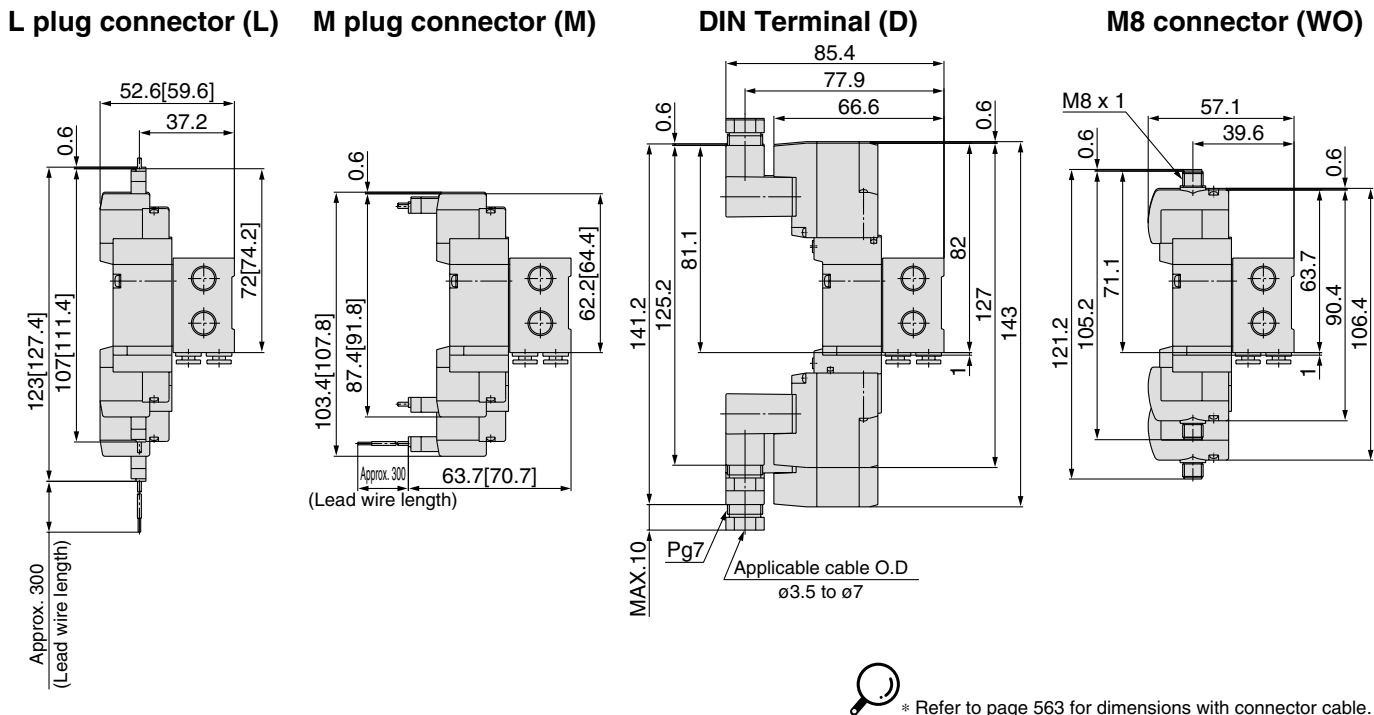
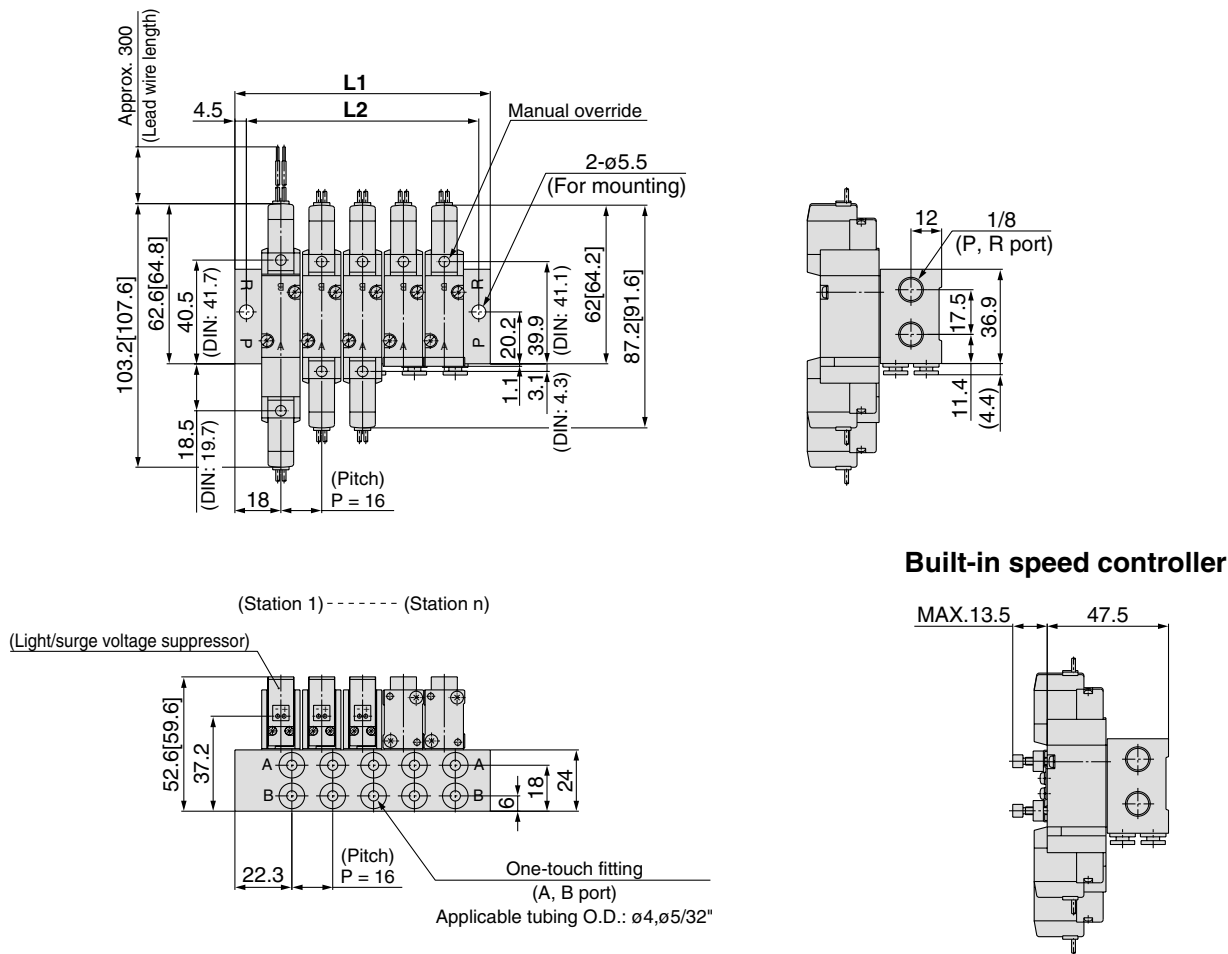
M8 connector (WO)



* Refer to page 563 for dimensions with connector cable.

A, B port size	Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
1/8	L1	66	83	100	117	134	151	168	185	202	219	236	253	270	287	304	321	338	355	372
	L2	53	70	87	104	121	138	155	172	189	206	223	240	257	274	291	308	325	342	359
C6/N7	L1	65	81	97	113	129	145	161	177	193	209	225	241	257	273	289	305	321	337	353
	L2	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340

Grommet (G)

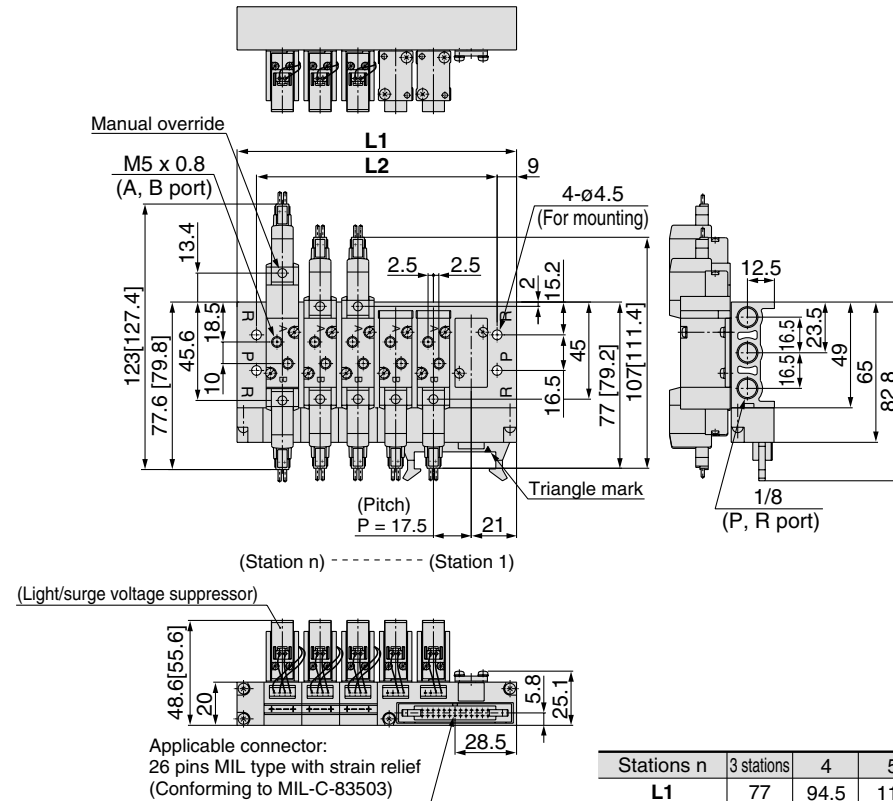


* Refer to page 563 for dimensions with connector cable.

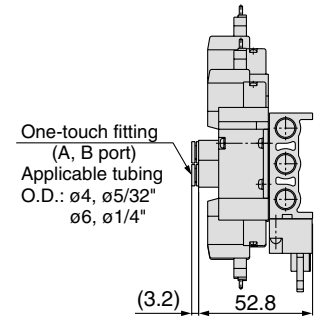
Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
L2	43	59	75	91	107	123	139	155	171	187	203	219	235	251	267	283	299	315	331

Flat ribbon cable manifold

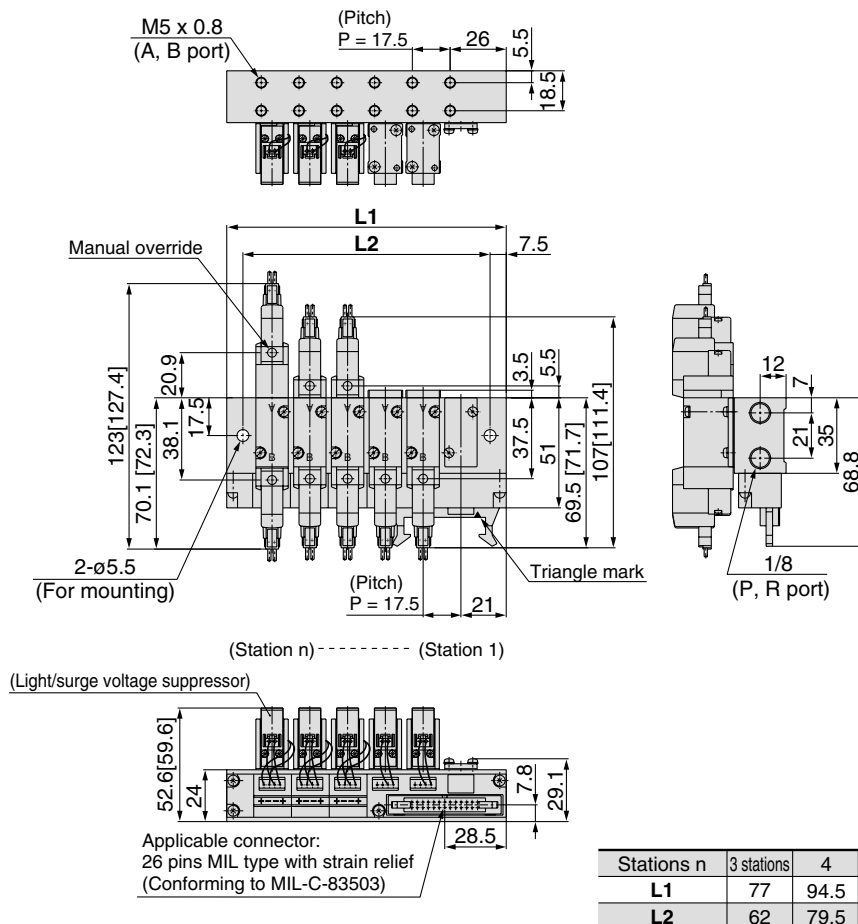
10-SS5YJ5-20P- Stations -00□



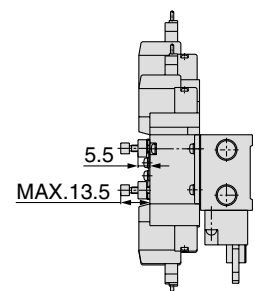
C4, N3
C6, N7
(With built-in One-touch fitting)



10-SS5YJ5-41P- Stations -M5□

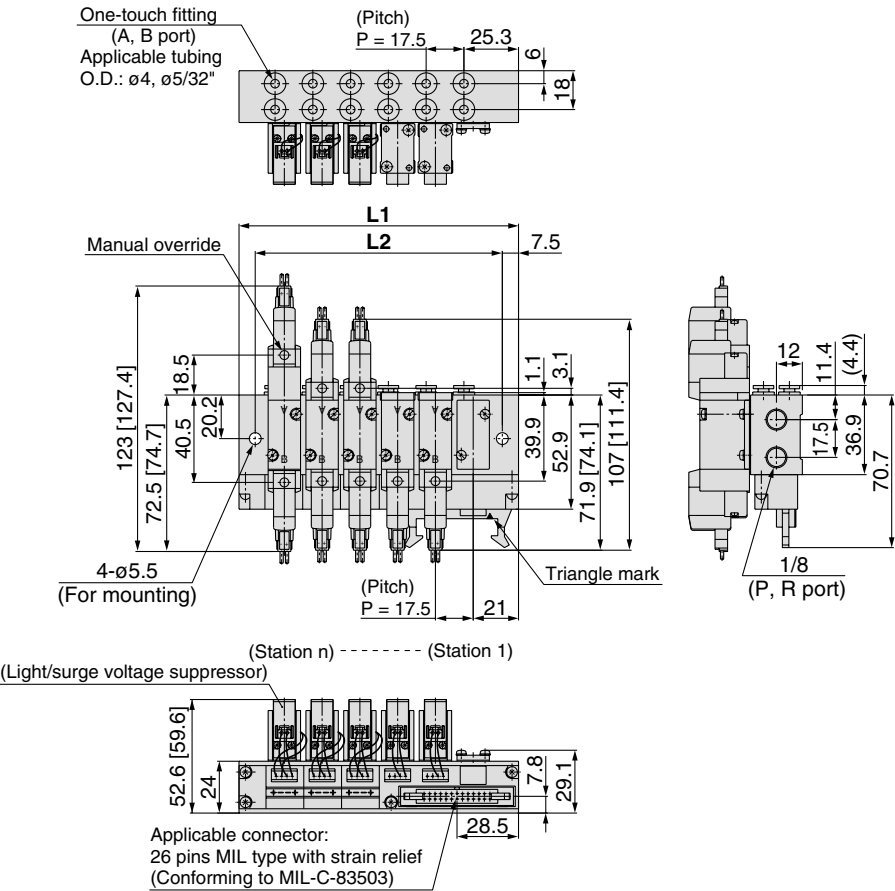


Built-in speed controller

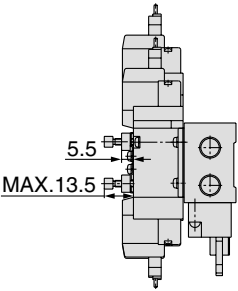


Flat ribbon cable manifold

10-SS5YJ5-43P- Stations C4 N3 □

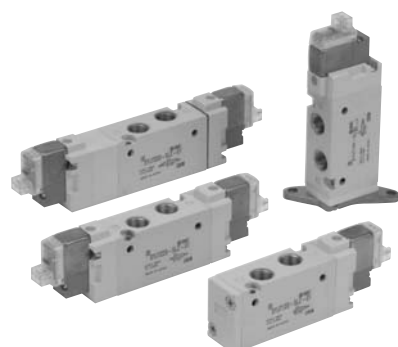


Built-in speed controller



Stations n	3 stations	4	5	6	7	8	9	10	11	12 stations
L1	77	94.5	112	129.5	147	164.5	182	199.5	217	234.5
L2	62	79.5	97	114.5	132	149.5	167	184.5	202	219.5

Series 10-SYJ7000 Rubber seal 5 port solenoid valve



Body ported



Base mounted

Specifications

Fluid	Air	
Operating pressure range (MPa)	2 position single	0.15 to 0.7
	2 position double	0.1 to 0.7
	3 position	0.15 to 0.7
Ambient and fluid temperature (°C)	-10 to 50 (with no freezing. Refer to page 714.)	
Response time ms (0.5MPa) Note 1)	2 position single, double	30 or less
	3 position	60 or less
Max. operating frequency (Hz)	2 position single, double	5
	3 position	3
Manual override (Manual operation)	Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type	
Pilot exhaust method	Common exhaust for the pilot and main valve	
Lubrication	Not required	
Mounting orientation	Unrestricted	
Impact/Vibration resistance m/s² Note 2)	150/30	
Enclosure	Dustproof (*DIN terminal, M8 connector conforms to IP65.)	



* Based on IEC60529

Note 1) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature : 20°C, at rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Value in the initial state)

Solenoid specifications

Electrical entry			Grommet (G), (H) L plug connector (L) M plug connector (M) DIN terminal (D) M8 connector (W)	
			G, H, L, M, W	D
Coil rated voltage V	DC	24, 12, 6, 5, 3		24, 12
	AC 50/60Hz	100, 110, 200, 220		
Allowable voltage fluctuation			±10% of rated voltage *	
Power consumption (W)	DC	Standard	0.35 (With indicator light: 0.4 (DIN connector with indicator light: 0.45))	
		With power saving circuit	0.1 (With indicator light only)	
Apparent power (VA) *	AC	100V	0.78 (With indicator light: 0.81)	0.78 (With indicator light: 0.87)
		110V	0.86 (With indicator light: 0.89)	0.86 (With indicator light: 0.97)
		[115V]	[0.94 (With indicator light: 0.97)]	[0.94 (With indicator light: 1.07)]
		200V	1.18 (With indicator light: 1.22)	1.15 (With indicator light: 1.30)
		220V [230V]	1.30 (With indicator light: 1.34) [1.42 (With indicator light: 1.46)]	1.27 (With indicator light: 1.46) [1.39 (With indicator light: 1.60)]
Surge voltage suppressor			Diode (DIN terminal, varistor for non-polar type)	
Indicator light			LED (Neon light when AC with DIN terminal)	



* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* For 115 and 230 VAC, the allowable voltage fluctuation is -15% to +5% of rated voltage.

* For the allowable voltage fluctuation for S, Z and T types (with power saving circuit), please observe the following range because they have voltage drop due to internal circuit.

S and Z types 24 VDC: -7% to +10%

12 VDC: -4% to +10%

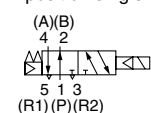
T type 24 VDC: -8% to +10%

12 VDC: -6% to +10%

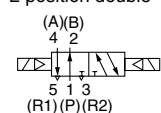
JIS Symbol

Body ported

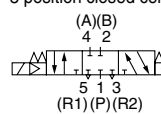
2 position single



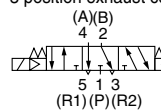
2 position double



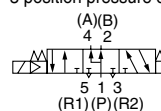
3 position closed center



3 position exhaust center

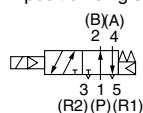


3 position pressure center

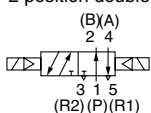


Base mounted

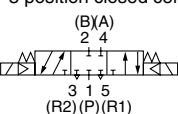
2 position single solenoid



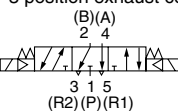
2 position double solenoid



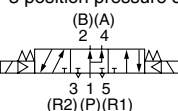
3 position closed center



3 position exhaust center



3 position pressure center



Made to order specifications (Refer to page 557 for details.)

Flow characteristics / Weight

Valve model		Type of actuation		Port size		Flow characteristics ^{Note 1)}						Weight (g) ^{Note 2, 3)}			
						1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Grommet	L/M plug connector	DIN terminal	M8 connector
						1,5,3 (P,EA,EB)	4,2 (A,B)	C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]				
Body ported	10-SYJ7□23-□-01	2 position	Single	1/8	1/8	2.2	0.36	0.58	2.4	0.34	0.63	85	86	107	90
			Double			98	100	142	108						
		3 position	Closed center			1.8	0.37	0.45	2.0	0.35	0.49	108	110	152	118
			Exhaust center			1.2	0.50	0.34	3.0[1.3]	0.35[0.52]	0.73[0.39]				
			Pressure center			3.0[0.83]	0.37[0.50]	0.78[0.25]	1.8	0.37	0.45				
	10-SYJ7□23-□-C6	2 position	Single	1/8	C6 (One-touch fitting for ø6)	1.6	0.33	0.4	2.2	0.32	0.53	96	97	98	101
			Double			109	111	153	119						
		3 position	Closed center			1.4	0.27	0.35	1.9	0.33	0.49	119	121	163	129
			Exhaust center			1.1	0.37	0.27	2.5[1.3]	0.32[0.54]	0.61[0.38]				
			Pressure center			1.8[0.78]	0.36[0.40]	0.45[0.22]	1.6	0.30	0.39				
	10-SYJ7□23-□-C8	2 position	Single	1/8	C8 (One-touch fitting for ø8)	2.0	0.39	0.52	2.3	0.34	0.61	96	97	98	101
			Double			109	111	153	119						
		3 position	Closed center			1.7	0.35	0.42	2.0	0.29	0.49	119	121	163	129
			Exhaust center			1.2	0.38	0.33	2.6[1.3]	0.35[0.49]	0.67[0.38]				
			Pressure center			1.9[0.86]	0.57[0.46]	0.59[0.25]	1.7	0.39	0.42				
	Base mounted	10-SYJ7□43-□-01	2 position	Single	1/8	1/8	2.3	0.45	0.57	2.8	0.37	0.71	165(85)	166(86)	187(107)
Double				178(98)			180(100)	222(142)	188(108)						
3 position			Closed center	1.9			0.36	0.48	2.1	0.46	0.57	188(108)	190(110)	232(152)	198(118)
			Exhaust center	1.2			0.48	0.35	3.4[1.3]	0.36[0.57]	0.86[0.41]				
			Pressure center	3.3[0.85]			0.43[0.54]	0.78[0.25]	2.1	0.45	0.56				
10-SYJ7□43-□-02		2 position	Single	1/4	1/4	2.3	0.41	0.61	2.9	0.35	0.74	165(85)	166(86)	187(107)	170(90)
			Double			178(98)	180(100)	222(142)	188(108)						
		3 position	Closed center			1.9	0.46	0.50	2.2	0.44	0.60	188(108)	190(110)	232(152)	198(118)
			Exhaust center			1.3	0.45	0.35	3.7[1.4]	0.27[0.56]	0.87[0.43]				
			Pressure center			3.6[0.83]	0.23[0.55]	0.84[0.25]	2.1	0.47	0.58				



Note 1) [] denotes normal position. Exhaust center: 4/2 → 5/3, Pressure center: 1 → 4/2

Note 2) (): Without sub-plate

Note 3) For DC voltages. For AC voltages add 3g to the weight of the single solenoid and 6g to the weight of the double solenoid and 3 position types.

How to Order

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Light/Surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
 * For "R" and "U", DC voltage is only available.
 * Power saving circuit is only available in the "Z" type.

Rated voltage

DC specifications	AC specifications (50/60Hz)
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

* DC specifications of type "D" and "DO" is only available with 12 and 24 V DC.
 * For type "W□", DC voltage is only available.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
 * For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

A, B port size

01	1/8
C6	One-touch fitting for ø6
C8	One-touch fitting for ø8
N7	One-touch fitting for ø1/4"
N9	One-touch fitting for ø5/16"

Bracket

Nil: Without bracket
 F: With bracket

Note) Do not remove the factory installed bracket from models with the bracket option. Removal of the bracket will cause the valve to leak. Brackets cannot be retrofitted.

Body ported 10-SYJ7 **1** 23 **5** M **01**

Base mounted 10-SYJ7 **2** 43 **5** M

(Sub-plate, 40, 41, 42) manifold

Coil specifications

Nil	Standard
T	With power saving circuit <For 24 and 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Manual override

Nil: Non-locking push type

D: Push-turn locking slotted type

E: Push-turn locking lever type

Port size

Nil: Without sub-plate

01: 1/8 with sub-plate (Note)

02: 1/4 with sub-plate

Note) R1, R2 ports : 1/4

Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC				24, 12 VDC, 100, 110, 200, 220 VAC	24, 12 VDC, 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	MN: Without lead wire	DIN terminal	M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	MN: Without lead wire	D: With connector	WO: Without connector
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	DO: Without connector	W□: With connector cable (Note 1)

Note 1) Be sure to enter a symbol of the cable length with reference to page 562.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

How to Order Pilot Valve Assembly

10—V111 — **5** **G**

• Clean series

• Coil specifications

Nil	Standard
T	With power saving circuit <24 and 12 VDC only>

* Power saving circuit is not available in the case of "W□" type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC 50/60Hz
2	200 VAC 50/60Hz
3	110 VAC 50/60Hz [115 VAC 50/60Hz]
4	220 VAC 50/60Hz [230 VAC 50/60Hz]

* For type "W□", DC voltage is only available.

• Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

* For "R" and "U", DC voltage is only available.

* Power saving circuit is only available in the "Z" type.

• Electrical entry

G	Grommet (Lead wire length 300 mm)
H	Grommet (Lead wire length 600 mm)
L	L plug connector
LN	Without lead wire
LO	Without connector
M	M plug connector
MN	Without lead wire
MO	Without connector
WO	M8 connector
W□	connector

* For connector cable of M8 connector, refer to page 562.

10—V115 — **5** **D**

• Clean series

• Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC 50/60Hz
2	200 VAC 50/60Hz
3	110 VAC 50/60Hz [115 VAC 50/60Hz]
4	220 VAC 50/60Hz [230 VAC 50/60Hz]

• Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

• Electrical entry

D	DIN terminal	With connector
DO	terminal	Without connector

Note) Do not replace 10-V111 (G, H, L, M, W) to 10-V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

Note 1) Be sure to enter a symbol of the cable length with reference to page 562.

How to Order L/M Plug Connector Assembly

For DC: **SY100-30-4A-**

For 100 VAC: **SY100-30-1A-**

For 200 VAC: **SY100-30-2A-**

For other voltages of AC: **SY100-30-3A-**

Without lead wire
(With connector and 2 of sockets only): **SY100-30-A**

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order M8 Connector Cable

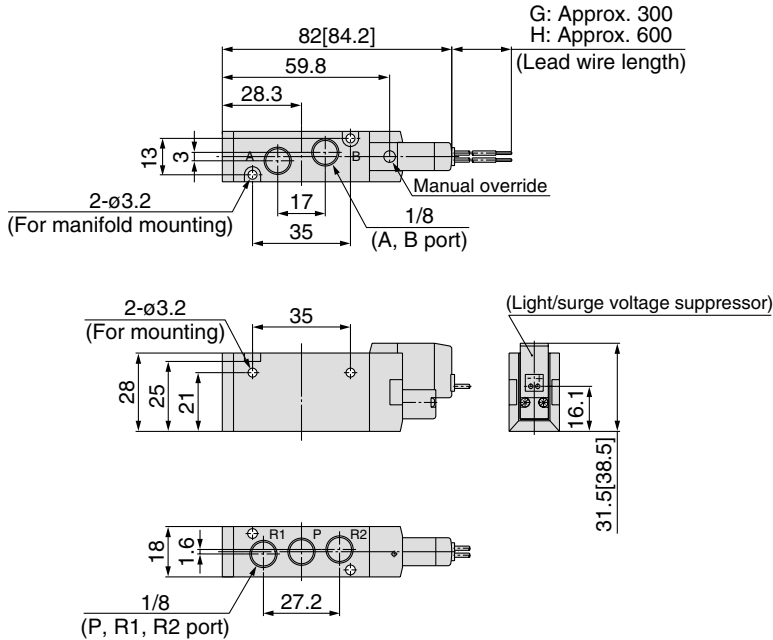
V100-49-1-

• Cable length

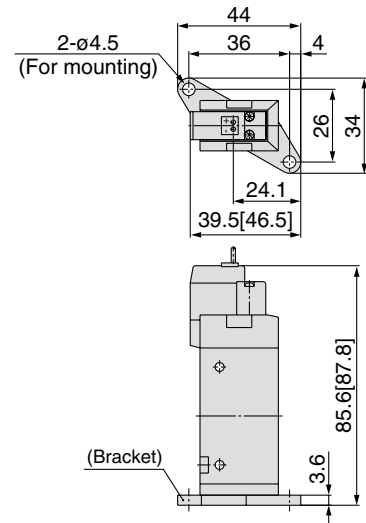
1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm

2 position single

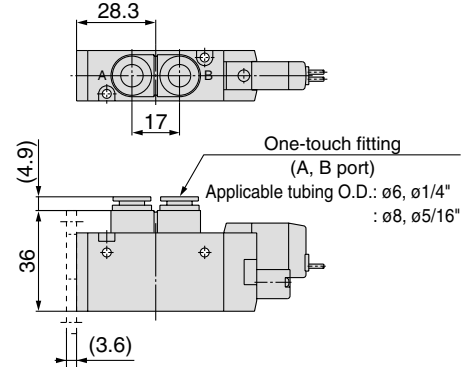
Grommet (G), (H): 10-SYJ7123-□^G□□-01□



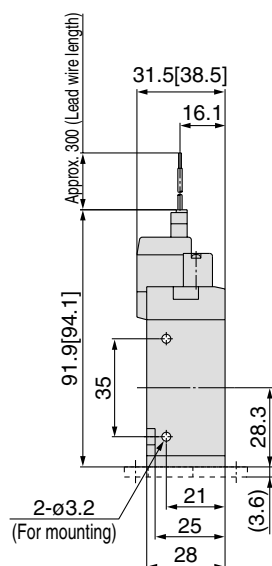
With bracket
10-SYJ7123-□^G□□-01□-F



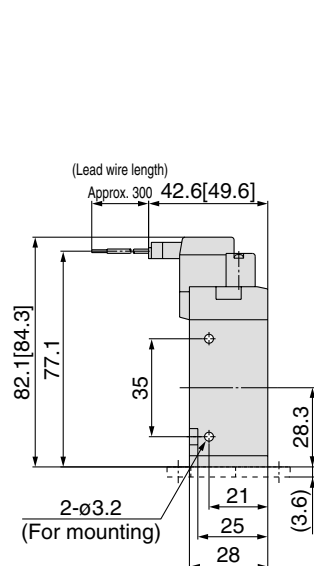
Built-in One-touch fitting:
10-SYJ7123-□^G□□-C₆, N₇ □ -C₈, N₉ □ (-F)



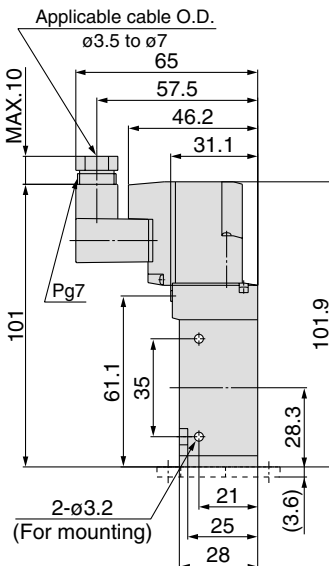
L plug connector (L)
10-SYJ7123-□^L□□-01□ (-F)



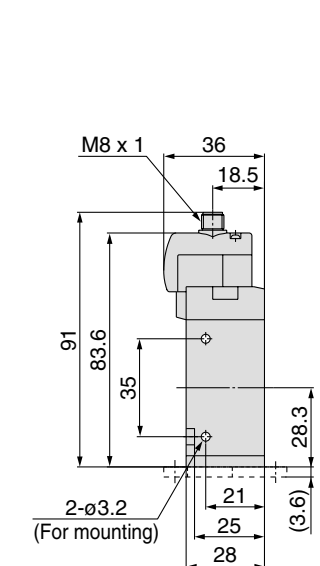
M plug connector (M)
10-SYJ7123-□^M□□-01□ (-F)



DIN Terminal (D):
10-SYJ7123-□^D□□-01□ (-F)



M8 connector (WO):
10-SYJ7123-□^{WO}□□-01□ (-F)



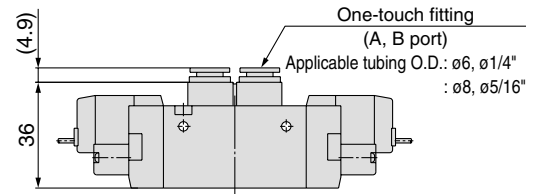
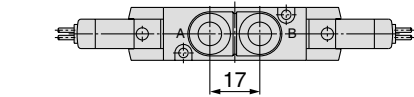
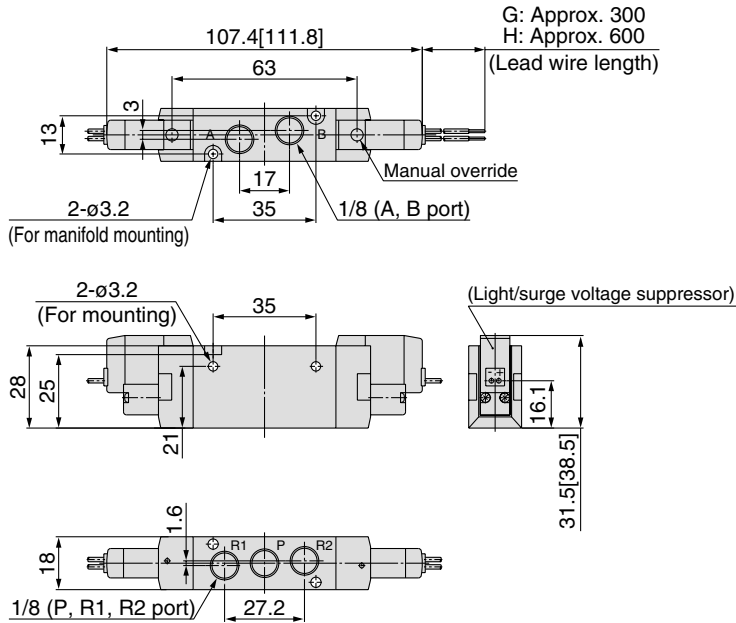
* Refer to page 563 for dimensions with connector cable.

2 position double



Grommet (G), (H): 10-SYJ7223-□^G□□-01□

Built-in One-touch fitting:
10-SYJ7223-□^G□□- C6, N7
C8, N9 □

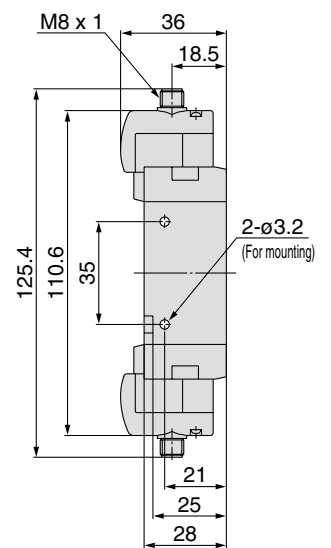
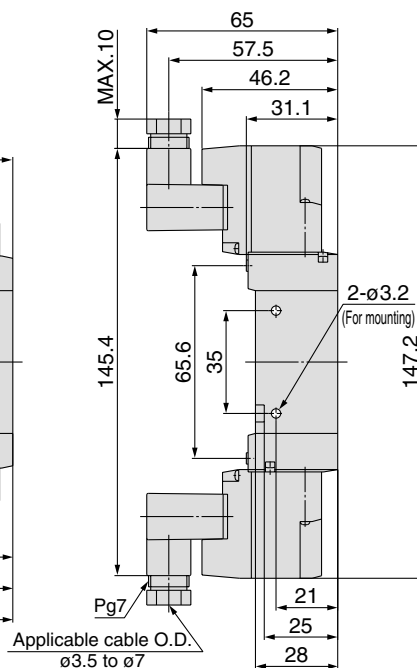
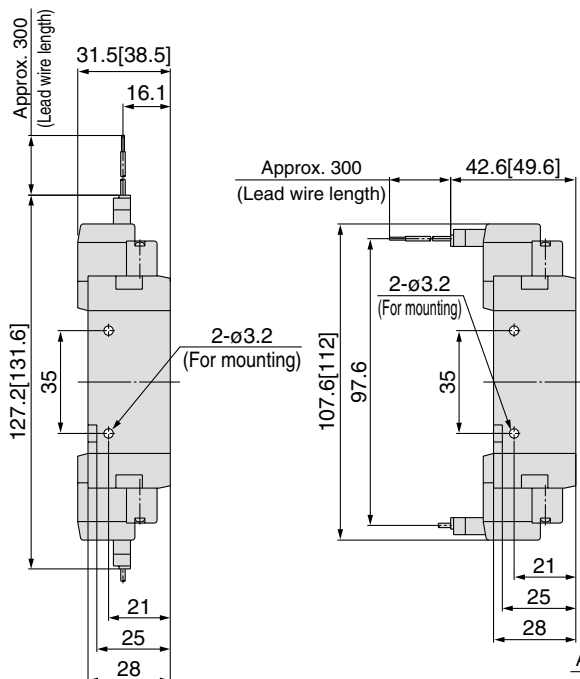


L plug connector (L):
10-SYJ7223-□^L□□-01□

M plug connector (M):
10-SYJ7223-□^M□□-01□

DIN Terminal (D):
10-SYJ7223-□^D□□-01□

M8 connector (WO):
10-SYJ7223-□^{WO}□□-01□



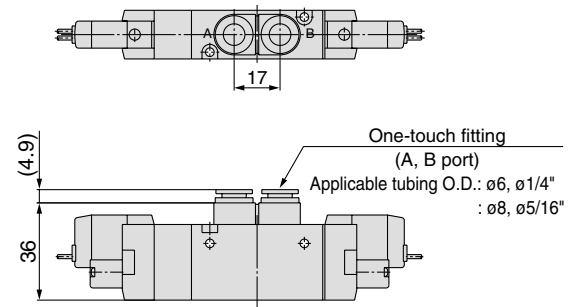
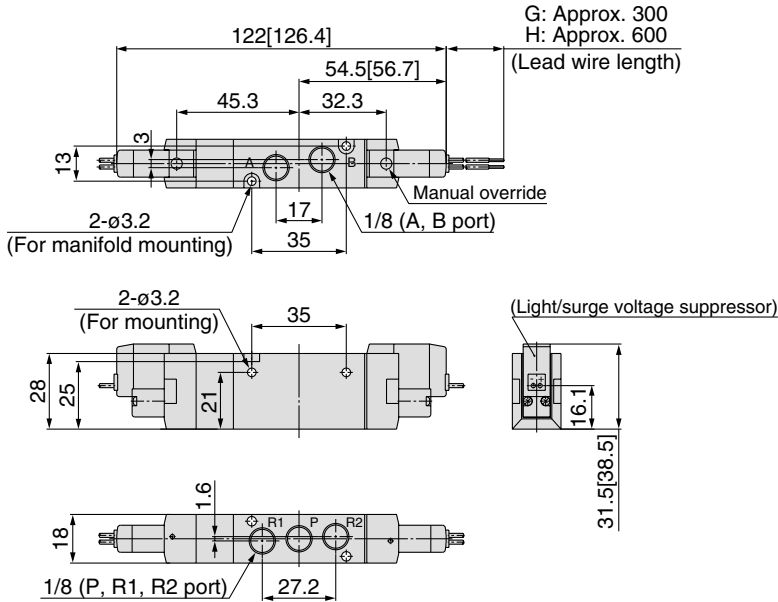
* Refer to page 563 for dimensions with connector cable.

3 position closed center / Exhaust center / Pressure center


Grommet (G), (H): 10-SYJ7³/₅23-□^G□□-01□

Built-in One-touch fitting:

10-SYJ7³/₅23-□^G□□-C6, N7
C8, N9□

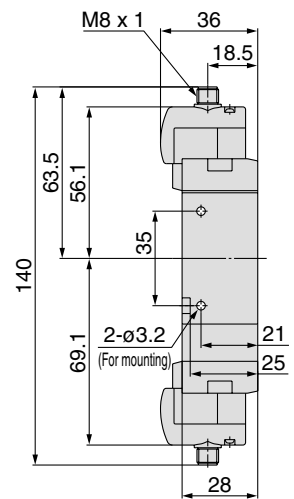
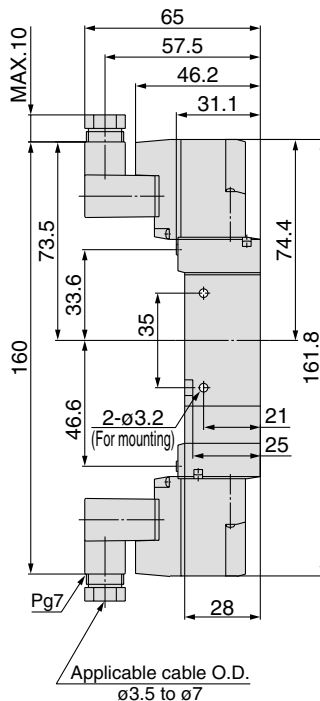
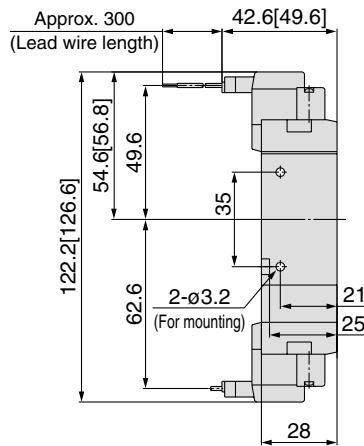
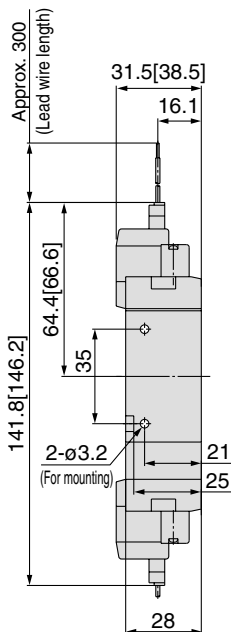


L plug connector (L):
10-SYJ7³/₅23-□^L□□-01□

M plug connector (M):
10-SYJ7³/₅23-□^M□□-01□

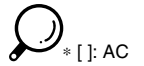
DIN Terminal (D):
10-SYJ7³/₅23-□^D□□-01□

M8 connector (WO):
10-SYJ7³/₅23-□^{WO}□□-01□

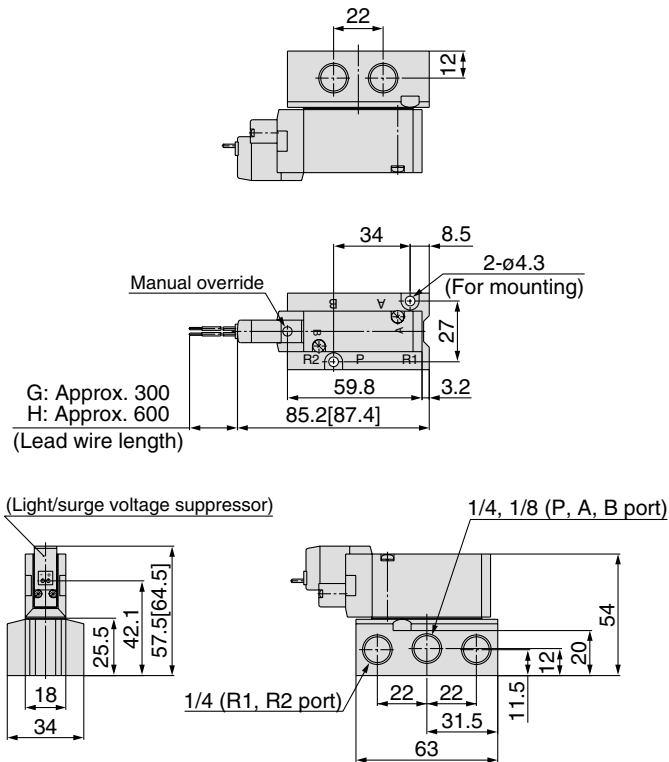


* Refer to page 563 for dimensions with connector cable.

2 position single



Grommet (G), (H): 10-SYJ7143-□^G□□□-01□₀₂□

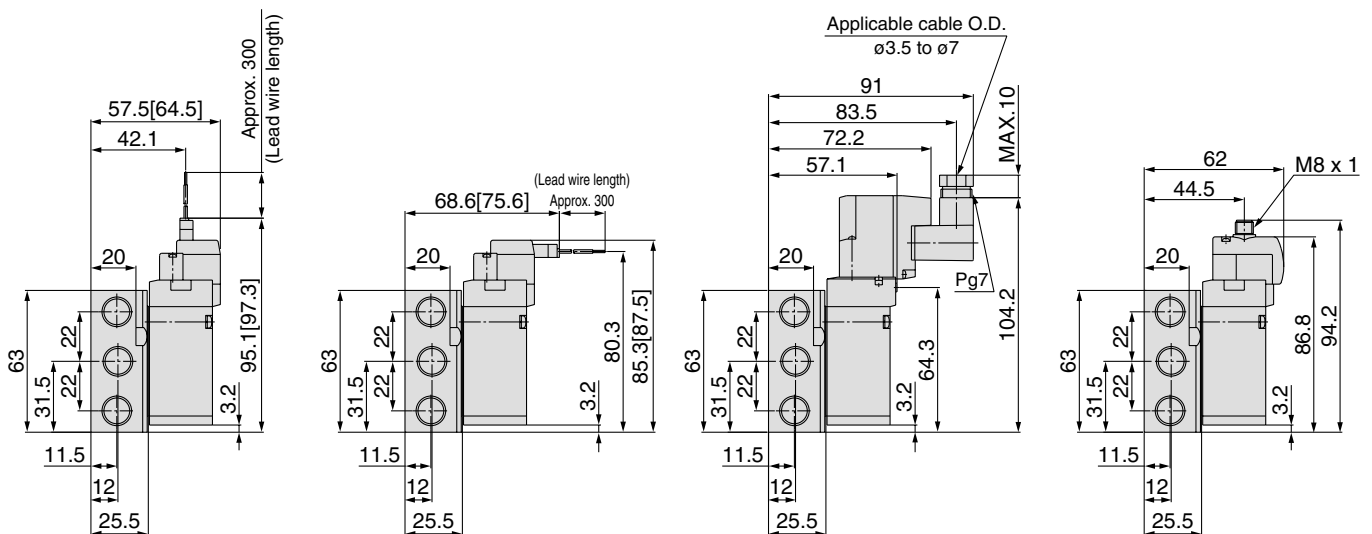


L plug connector (L):
10-SYJ7143-□L□□□-01□₀₂□

M plug connector (M):
10-SYJ7143-□M□□□-01□₀₂□

DIN Terminal (D):
10-SYJ7143-□D□□□-01□₀₂□

M8 connector (WO):
10-SYJ7143-□WO□□□-01□₀₂□

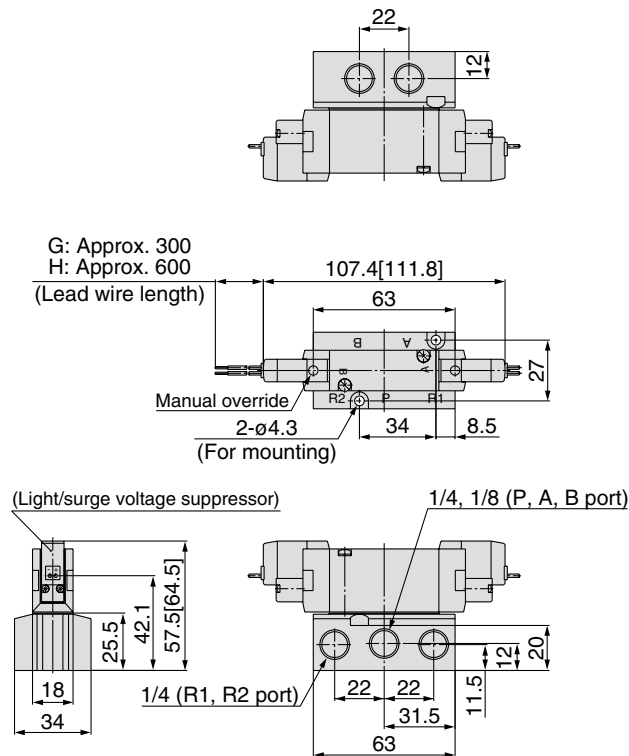


* Refer to page 563 for dimensions with connector cable.

2 position double



Grommet (G), (H): 10-SYJ7243-□^G□^H□□-⁰¹□⁰²□

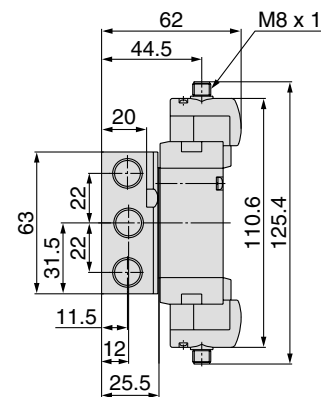
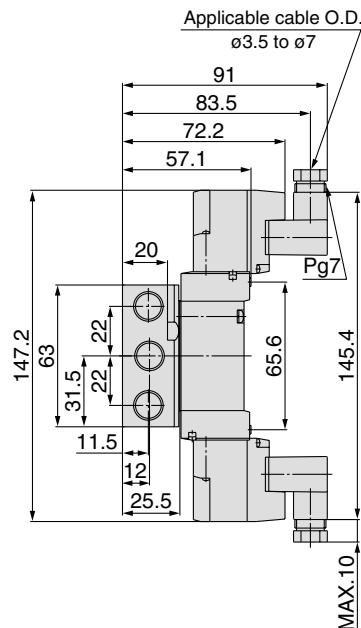
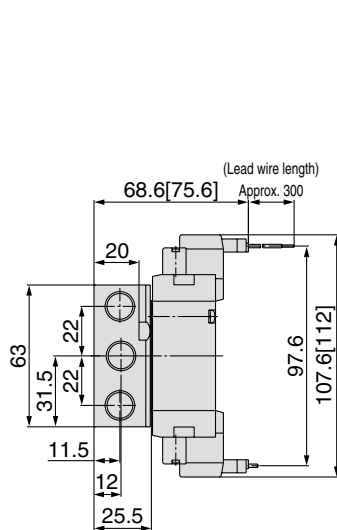
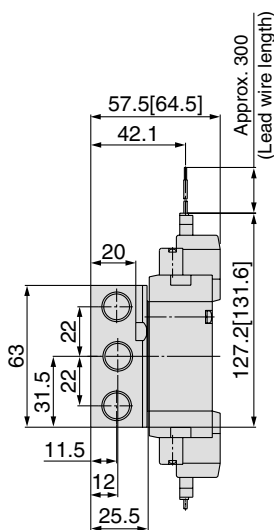


L plug connector (L):
10-SYJ7243-□^L□□-⁰¹□⁰²□

M plug connector (M):
10-SYJ7243-□^M□□-⁰¹□⁰²□

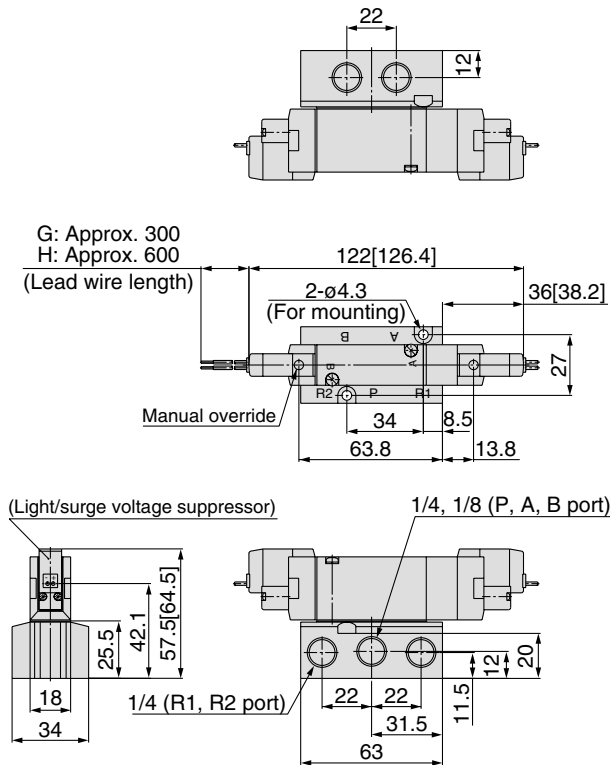
DIN Terminal (D):
10-SYJ7243-□^D□□-⁰¹□⁰²□

M8 connector (WO):
10-SYJ7243-□^{WO}□□-⁰¹□⁰²□



* Refer to page 563 for dimensions with connector cable.

Grommet (G), (H): 10-SYJ7³₄43-□^G□□-⁰¹₀₂□

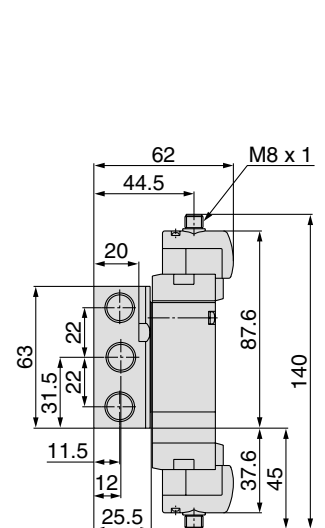
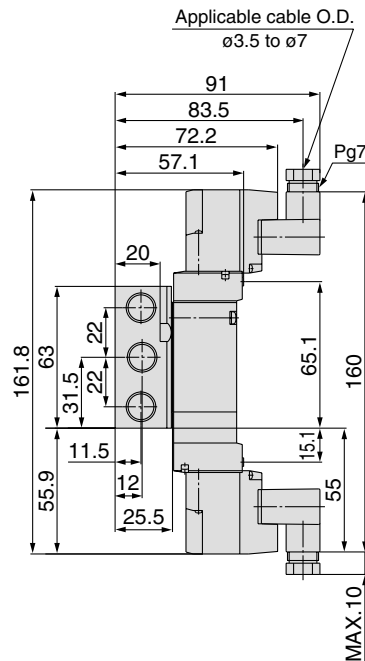
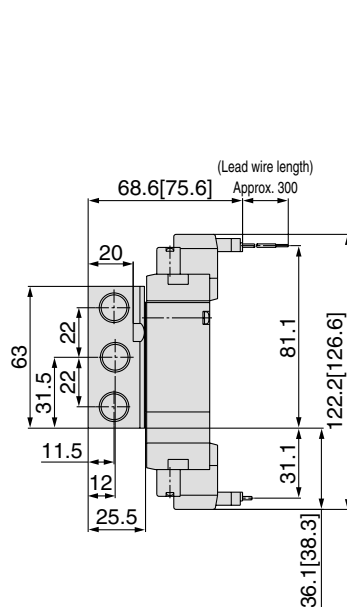
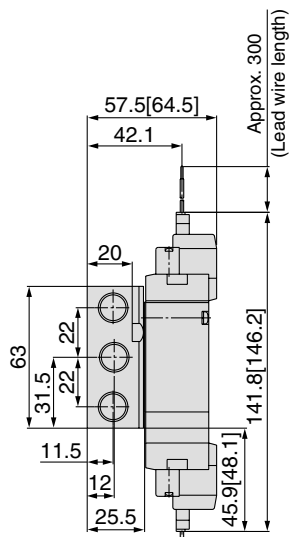


L plug connector (L):
10-SYJ7³₄43-□^L□□-⁰¹₀₂□

M plug connector (M):
10-SYJ7³₄43-□^M□□-⁰¹₀₂□

DIN Terminal (D):
10-SYJ7³₄43-□^D□□-⁰¹₀₂□

M8 connector (WO):
10-SYJ7³₄43-□^{WO}□□-⁰¹₀₂□

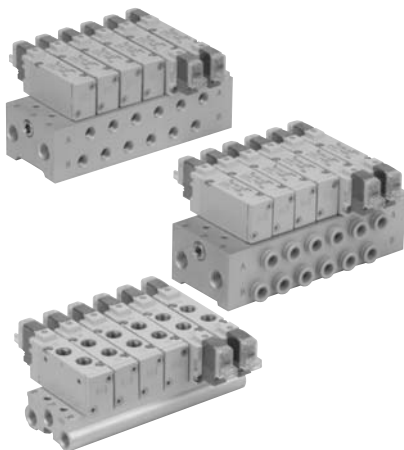


* Refer to page 563 for dimensions with connector cable.

Series 10-SYJ7000

Manifold specifications

Manifold standard



Manifold specifications

Model		Type 20	Type 21	Type 40	Type 41	Type 42
Manifold type		Single base / B mount				
P (SUP) / R (EXH)		Common SUP / Common EXH				
Valve stations		2 to 15 stations		2 to 20 stations		
A, B port porting specifications	Location	Valve		Base		Base
	Direction	Top		Bottom		Side
Port size	P, R port	1/8		1/4		
	A, B port	1/8 C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)		1/8		C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)

Flow characteristics

Manifold			Port size		Flow characteristics					
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R)		
			1(P), 5/3(R) port	2(B), 4(A) port	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv
Body ported for internal pilot	10-SS5YJ7-20	10-SYJ7□23	1/8	1/8	2.2	0.35	0.57	2.3	0.26	0.55
			1/8	C6	1.4	0.32	0.37	2.0	0.25	0.49
			1/8	C8	1.7	0.38	0.45	2.1	0.25	0.51
	10-SS5YJ7-21		1/4	1/8	2.1	0.36	0.55	2.3	0.26	0.54
			1/4	C6	1.4	0.32	0.36	2.1	0.24	0.50
			1/4	C8	1.8	0.37	0.50	2.1	0.20	0.50
Base mounted for internal pilot	10-SS5YJ7-40	10-SYJ7□43	1/4	1/8	2.1	0.28	0.51	2.5	0.23	0.59
	10-SS5YJ7-41		1/4	1/8	2.0	0.30	0.50	2.2	0.30	0.55
	10-SS5YJ7-42-C6		1/4	C6	1.5	0.32	0.38	2.2	0.23	0.52
	10-SS5YJ7-42-C8		1/4	C8	1.9	0.24	0.46	2.2	0.26	0.53

Note) Value at manifold base mounted, 2 position single operating



How to Order Manifold

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model number.

Example

- 10-SS5YJ7-20-03 1 set (Manifold base)
- * 10-SYJ7123-5G-01 2 sets (Valve)
- * SYJ7000-21-1A 1 set (Blanking plate assembly)
- 10-SS5YJ7-41-03-01 .. 1 set (Manifold base)
- * 10-SYJ7143-5LZ 1 set (Valve)
- * 10-SYJ7243-5LZ 1 set (Valve)
- * SYJ7000-21-1A 1 set (Blanking plate assembly)

→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

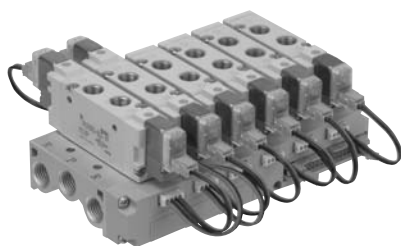
* Use manifold specification sheet.

Flat ribbon cable manifold

- Multiple valve wiring is simplified through the use of the flat ribbon cable connector.

• Clean appearance

In the case of a flat ribbon cable type, each valve is wired on the print board of manifold base to allow the external wiring to be piped all together with 26 pins MIL connector.



Flat ribbon cable manifold specifications

Model		Type 21P
Manifold type		Single base / B mount
P(SUP) / R(EXH)		Common SUP / Common EXH
Valve stations		3 to 12 stations
A, B port porting specifications		Valve
Port size	P, R port	1/4
	A, B port	1/8, C6, C8
Applicable flat ribbon cable connector		Socket: 26 pins MIL type with strain relief (Conforming to MIL-C-83503) (MIL-C-83503 compliant)
Internal wiring		In common between +COM and -COM (Z type: +COM only)
Rated voltage		24, 12 VDC



Note) The value is for manifold base and individually operated 2 position type.

Note 2) The withstand voltage specification for the wiring unit section is JIS C0704, Grade 1 or its equivalent.

Flow characteristics

Manifold			Port size		Flow characteristics					
					1→4/2 (P→A/B)			4/2→5/3 (A/B→R)		
			1(P), 5/3(R) port	2(B), 4(A) port	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv
Body ported for internal pilot	10-SS5YJ7-21P-01	10-SYJ7□23	1/4	1/8	2.1	0.36	0.55	2.3	0.26	0.54
	10-SS5YJ7-21P-C6		1/4	C6	1.4	0.32	0.36	2.1	0.24	0.50
	10-SS5YJ7-21P-C8		1/4	C8	1.8	0.37	0.50	2.1	0.20	0.50



Note) Value at manifold base mounted, 2 position single operating

How to Order Manifold (Example)

Instruct by specifying the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model number.

(Example) ● 10-SS5YJ7-21P-07 1 set (Manifold base)

* 10-SYJ7123-5LOU-C83 sets (Valve)

* 10-SYJ7223-5LOU-C83 sets (Valve)

* SYJ7000-21-3A 1 set (Blanking plate assembly)

* SY3000-37-3A 3 sets (Connector assembly)

* SY3000-37-4A 3 sets (Connector assembly)

└─ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

* Use manifold specification sheet.

How to Order Valve

Rated voltage

5	24 VDC
6	12 VDC

Light/Surge voltage suppressor

Z	With light/surge voltage suppressor
U	With light/surge voltage suppressor (Non-polar type)

Note) Z: Positive common specifications only.

For DC10—SYJ7 1 23—5 LO Z — 01

For AC10—SYJ7 1 23—1 LOZ — 01

Type of actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Rated voltage

1	100 VAC
3	110 VAC (115 VAC)

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

A, B port size

Symbol	Port size
01	1/8
C6	One-touch fitting for ø6
C8	One-touch fitting for ø8
N7	One-touch fitting for ø1/4"
N9	One-touch fitting for ø5/16"

Note) In the case of flat ribbon cable type, "U" and "Z" types are for DC specifications and "Z" type is for AC specifications. "Z" type for DC is positive common specifications only. For other combinations, please contact SMC.

How to Order Connector Assembly

12V, 24 VDC

For single solenoid	SY3000-37-3A
For double solenoid 3 position type	SY3000-37-4A
For single solenoid, individual SUP/EXH spacer	SY3000-37-3A
For double solenoid, 3 position individual SUP/EXH spacer	SY3000-37-6A
3 port adaptor plate	SY3000-37-3A

100 VAC

For single solenoid	SY3000-37-32A
For double solenoid 3 position type	SY3000-37-33A
For single solenoid, individual SUP/EXH spacer	SY3000-37-15A
For double solenoid, 3 position individual SUP/EXH spacer	SY3000-37-34A
3 port adaptor plate	SY3000-37-32A

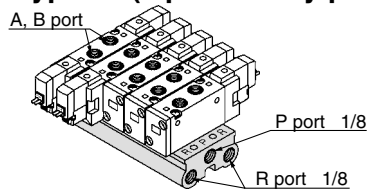
100 VAC (115 VAC)

For single solenoid	SY3000-37-35A
For double solenoid 3 position type	SY3000-37-36A
For single solenoid, individual SUP/EXH spacer	SY3000-37-19A
For double solenoid, 3 position individual SUP/EXH spacer	SY3000-37-37A
3 port adaptor plate	SY3000-37-35A

Manifold standard

Common SUP / Common EXH

Type 20 (5 port / Body ported)



How to Order

10-SS5YJ7-20-05-

Stations	
02	2 stations
:	:
15	15 stations

P, R port
thread type

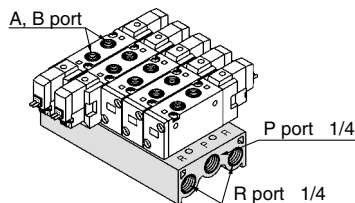
Nil	Rc
00F	G
00N	NPT
00T	NPTF

Applicable solenoid valve

10-SYJ7□23-□□□□⁰¹_{-C6 C8}
Applicable blanking plate assembly
SYJ7000-21-1A

Applicable individual EXH spacer assembly
SYJ7000-17-1A

Type 21 (5 port / Body ported)



How to Order

10-SS5YJ7-21-05-

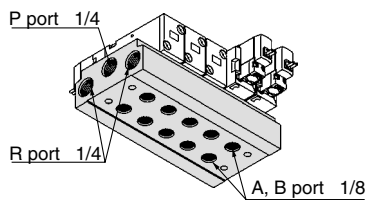
Stations	
02	2 stations
:	:
20	20 stations

P, R port
thread type

Nil	Rc
00F	G
00N	NPT
00T	NPTF

Note) For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 40 (5 port / Base mounted)



How to Order

10-SS5YJ7-40-05-01

Stations	
02	2 stations
:	:
20	20 stations

A, B port size

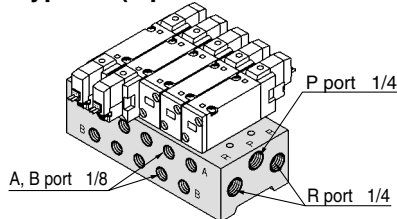
01 1/8

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Note) For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 41 (5 port / Base mounted)



How to Order

10-SS5YJ7-41-05-01

Stations	
02	2 stations
:	:
20	20 stations

A, B port size

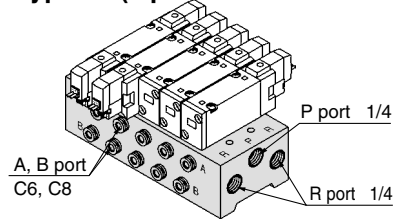
01 1/8

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Note) For more than 8 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 42 (5 port / Base mounted)



How to Order

10-SS5YJ7-42-05-C6

Stations	
02	2 stations
:	:
20	20 stations

A, B port size

C6	One-touch fitting for ø6
C8	One-touch fitting for ø8
N7	One-touch fitting for ø1/4"
N9	One-touch fitting for ø5/16"

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Note) For more than 8 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Applicable solenoid valve

10-SYJ7□43-□□□□

Applicable blanking plate assembly
SYJ7000-21-1A

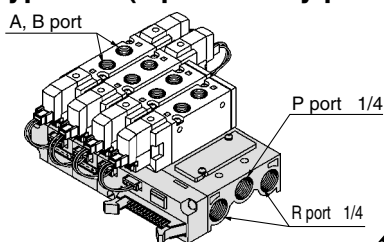
Applicable individual EXH spacer assembly
SYJ7000-17-2A

Applicable individual SUP spacer assembly
SYJ7000-16-2A

Flat ribbon cable manifold

Common SUP / Common EXH

Type 21P (5 port / Body ported)



How to Order

10-SS5YJ7-21P-05-

Stations	
03	3 stations
:	:
12	12 stations

P, R port
thread type

Nil	Rc
00F	G
00N	NPT
00T	NPTF

Applicable solenoid valve
Refer to page 548.

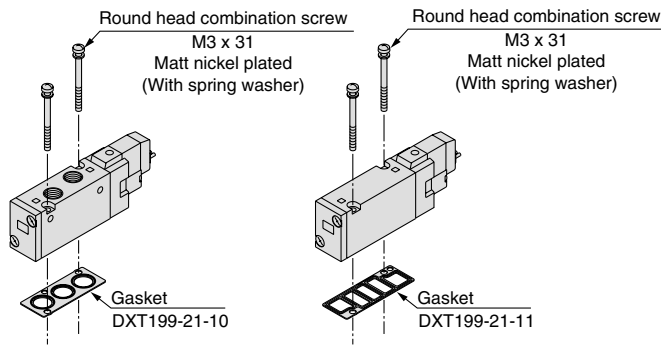
Applicable blanking plate assembly
SYJ7000-21-3A

Applicable connector assembly
Refer to page 548.

Note) For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

<Manifold option>

Combinations of solenoid valve, manifold gasket and manifold base



Applicable base

- 10-SS5YJ7-20
- 10-SS5YJ7-21

Applicable base

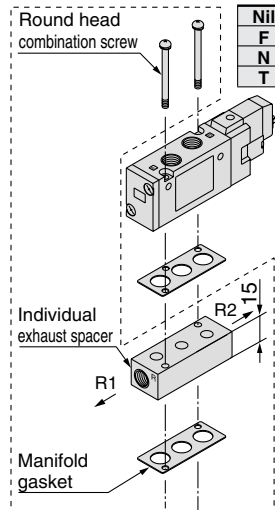
- Sub-plate
- 10-SS5YJ7-40
- 10-SS5YJ7-41
- 10-SS5YJ7-42

Individual EXH spacer assembly

SYJ7000-17-1 □ A

• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF



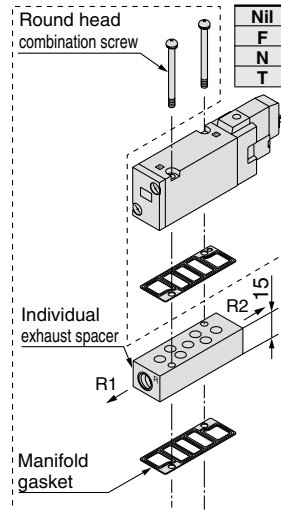
Applicable base

- 10-SS5YJ7-20
- 10-SS5YJ7-21

SYJ7000-17-2 □ A

• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

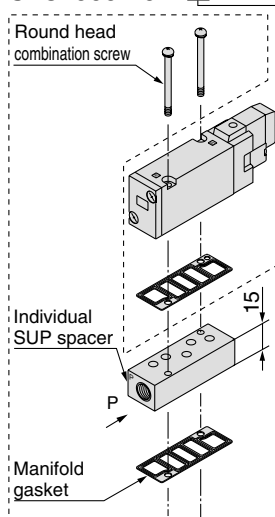


Applicable base

- 10-SS5YJ7-40
- 10-SS5YJ7-41
- 10-SS5YJ7-42

Individual SUP spacer assembly

SYJ7000-16-2 □ A



• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable base

- 10-SS5YJ7-40
- 10-SS5YJ7-41
- 10-SS5YJ7-42



Caution

Mounting screw tightening torque

M3: 0.8N·m

Use caution to the assembly orientation of solenoid valves, gasket, and optional parts.

Mix installation of 10-SYJ700 and 10-SYJ7000 valves on the same manifold

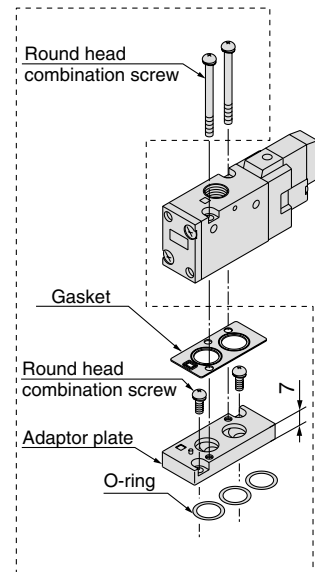
- Use of an adapter plate makes it possible to mount series 10-SYJ700 on the manifold bases of series 10-SYJ7000.
- When mounting the 10-SYJ700 valve on the 10-SYJ7000 manifold, the 10-SYJ700 solenoid must be positioned on the same side of a single solenoid of the 10-SYJ7000.
- For base mounted style, the A port of the 3 port valve become the B port of manifold base.

Adaptor plate assembly SYJ700-3-1A

Series 10-SYJ700 body ported type

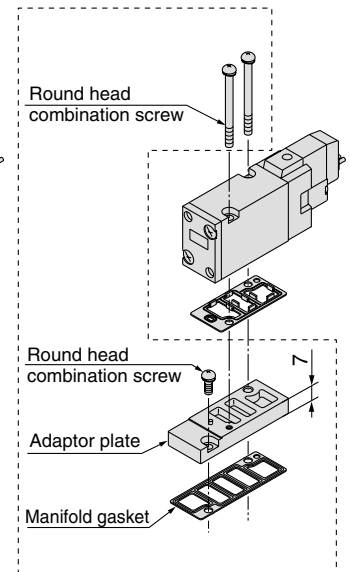
Adaptor plate assembly SYJ700-3-2A

Series 10-SYJ700 base mounted type



Applicable base

- 10-SS5YJ7-20
- 10-SS5YJ7-21

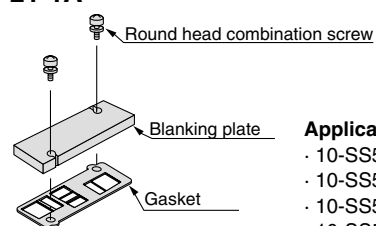


Applicable base

- 10-SS5YJ7-40
- 10-SS5YJ7-41
- 10-SS5YJ7-42

Blanking plate assembly

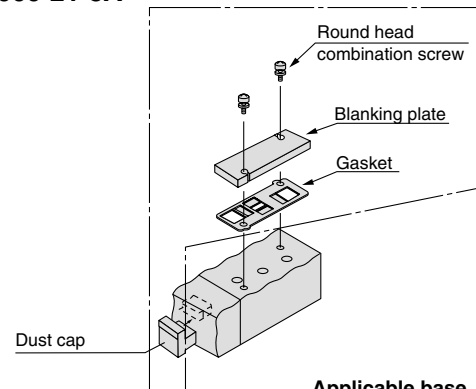
SYJ7000-21-1A



Applicable base

- 10-SS5YJ7-20
- 10-SS5YJ7-21
- 10-SS5YJ7-40
- 10-SS5YJ7-41
- 10-SS5YJ7-42

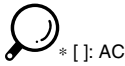
SYJ7000-21-3A



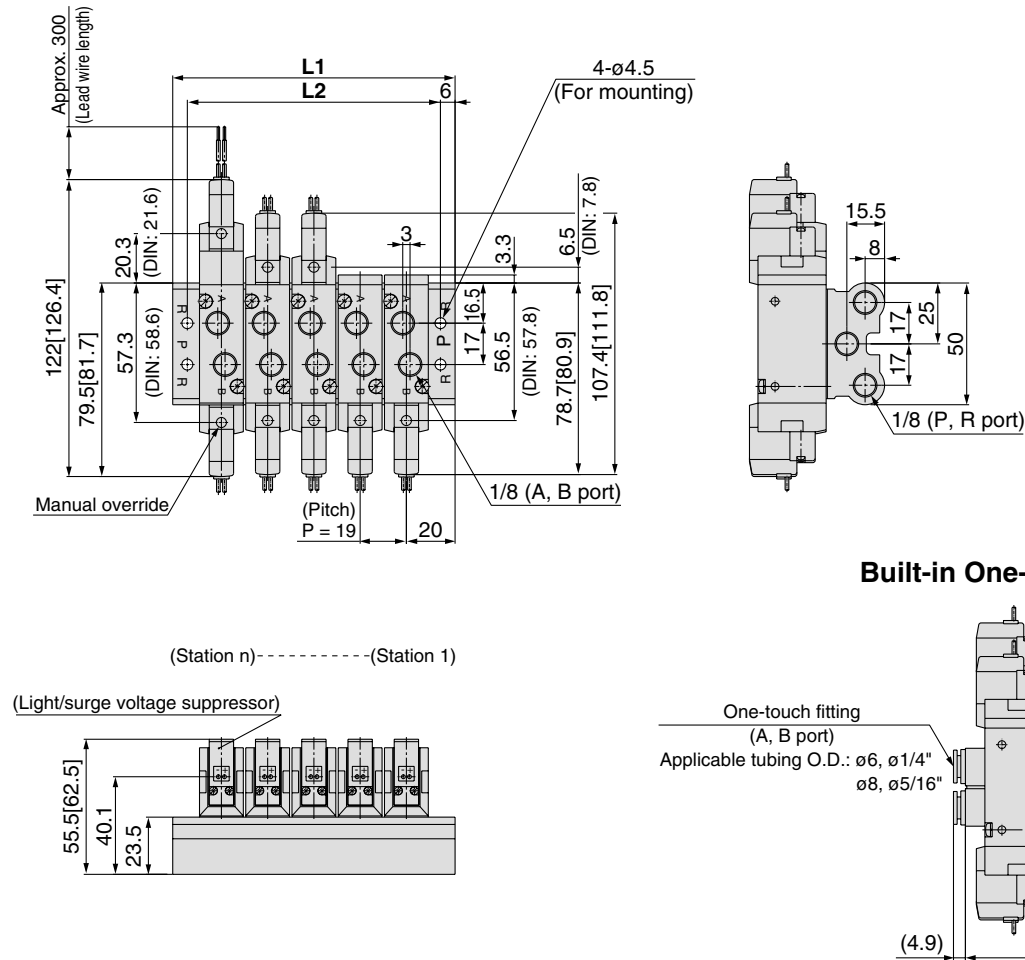
Applicable base

- 10-SS5YJ7-21P

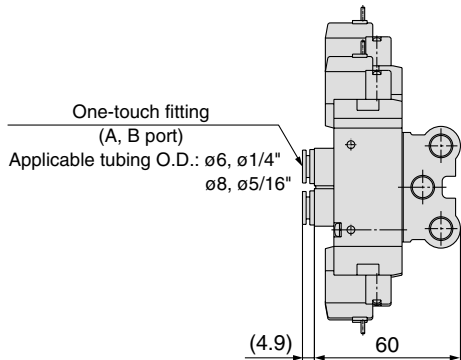
Type 20: Top ported / 10-SS5YJ7-20- Stations -00



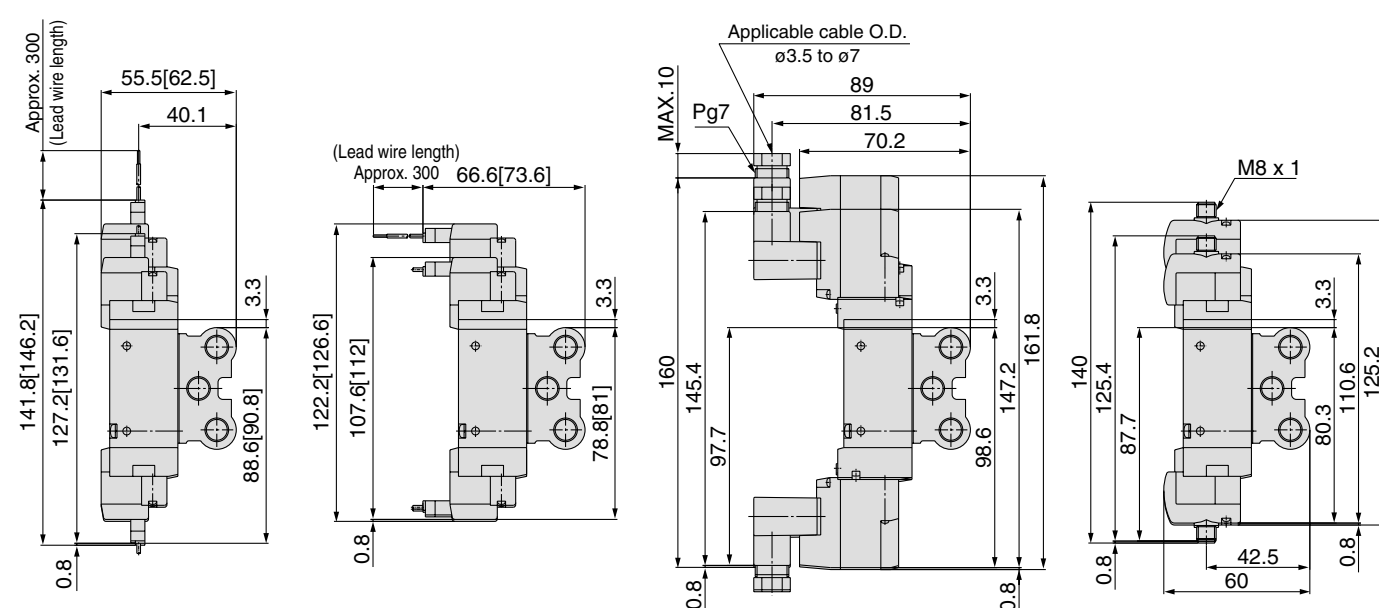
Grommet (G)



Built-in One-touch fitting



L plug connector (L) M plug connector (M) DIN Terminal (D) M8 connector (WO)

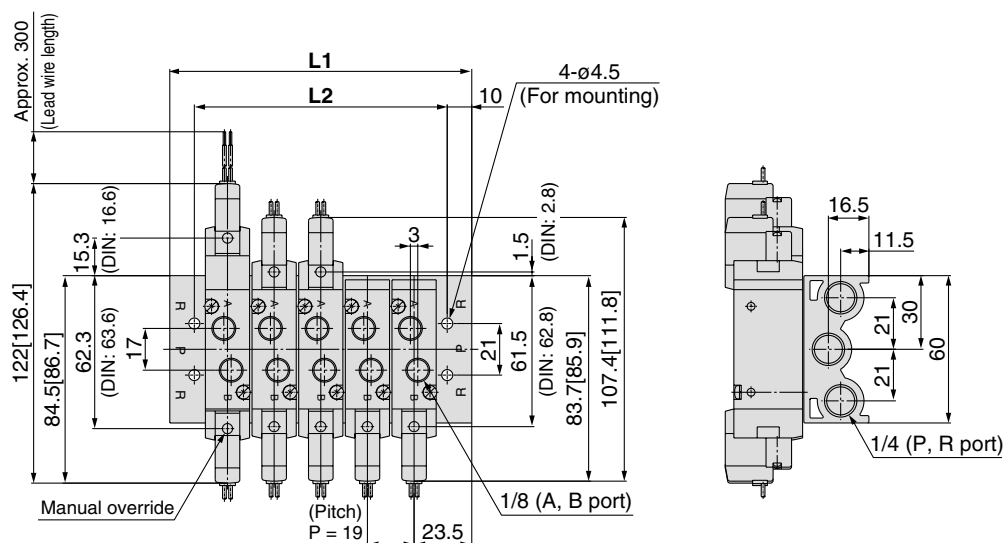


* Refer to page 563 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15 stations
L1	59	78	97	116	135	154	173	192	211	230	249	268	287	306
L2	47	66	85	104	123	142	161	180	199	218	237	256	275	294

Air cylinder
Rotary actuator
Air gripper
Directional control valve
Flow control equipment
Filter, Pressure control equipment
Fittings & Tubing
Air preparation equipment
Pressure switch
Clean gas filter

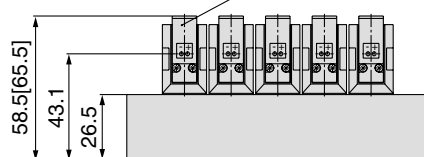
Grommet (G)



Built-in One-touch fitting

(Station n) ----- (Station 1)

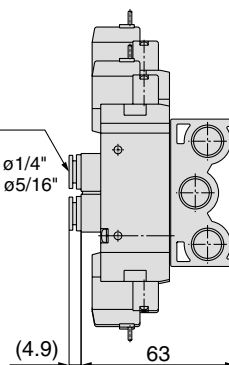
(Light/surge voltage suppressor)



One-touch fitting

(A, B port)

Applicable tubing O.D.: ø6, ø1/4" ø8, ø5/16"

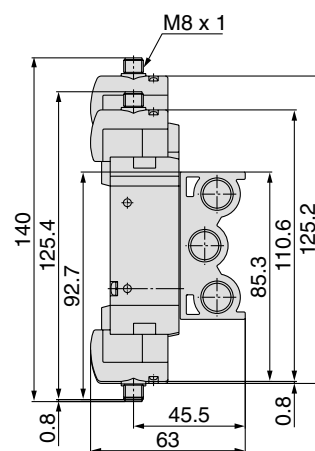
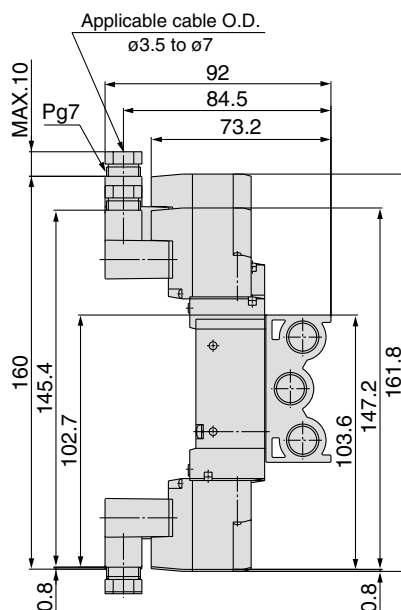
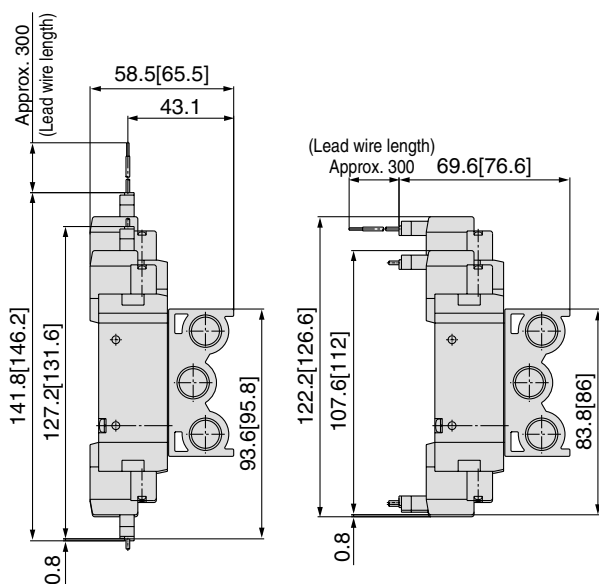


L plug connector (L)

M plug connector (M)

DIN Terminal (D)

M8 connector (WO)

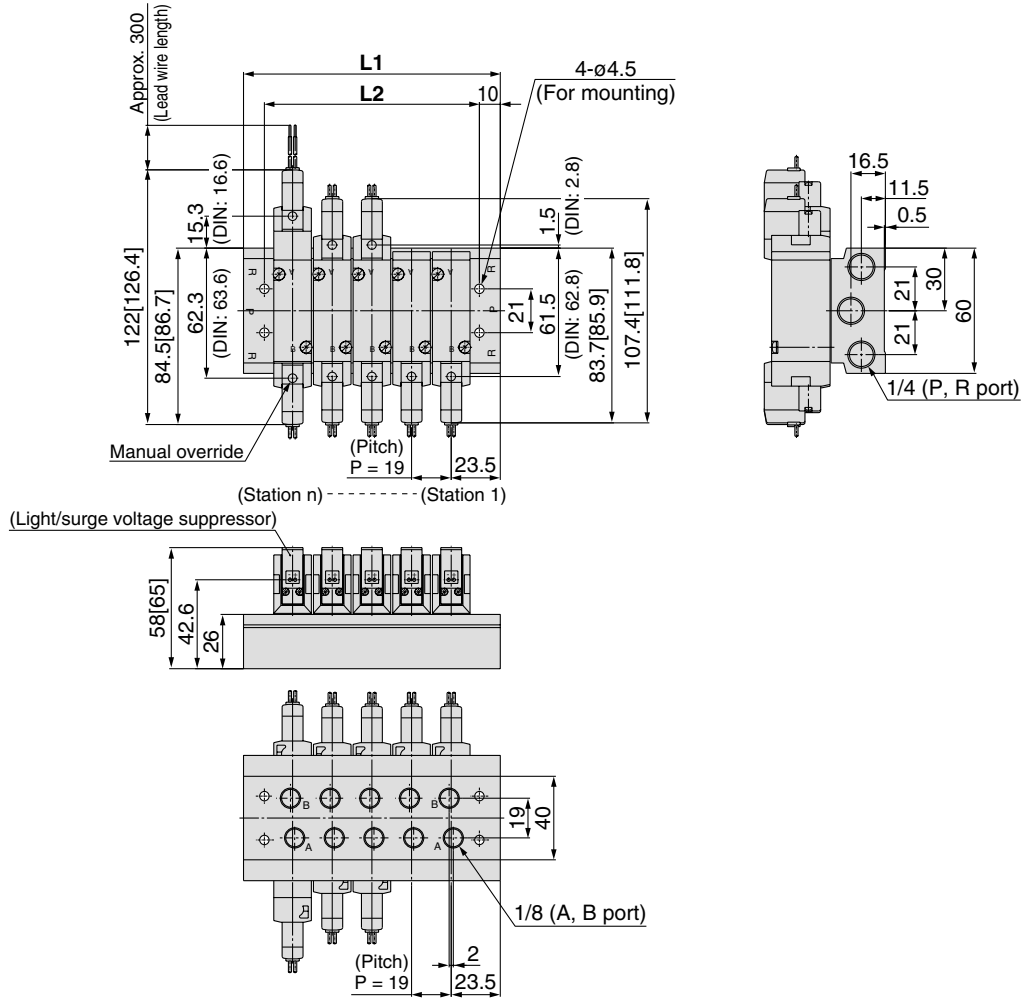

 * Refer to page 563 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	66	85	104	123	142	161	180	199	218	237	256	275	294	313	332	351	370	389	408
L2	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

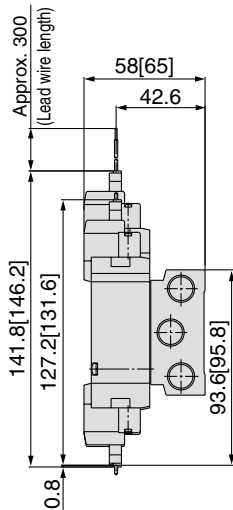
Type 40: Bottom ported / 10-SS5YJ7-40- Stations -01



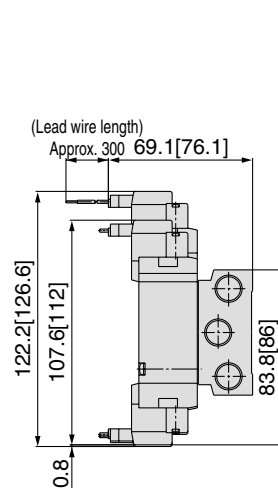
Grommet (G)



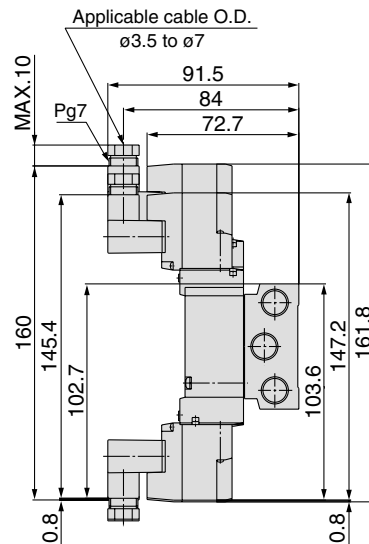
L plug connector (L)



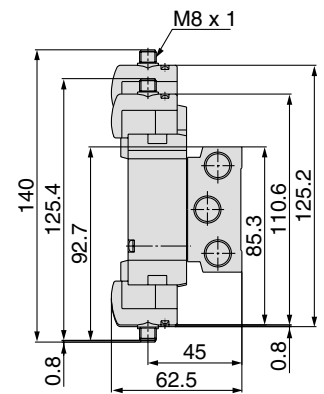
M plug connector (M)



DIN Terminal (D)



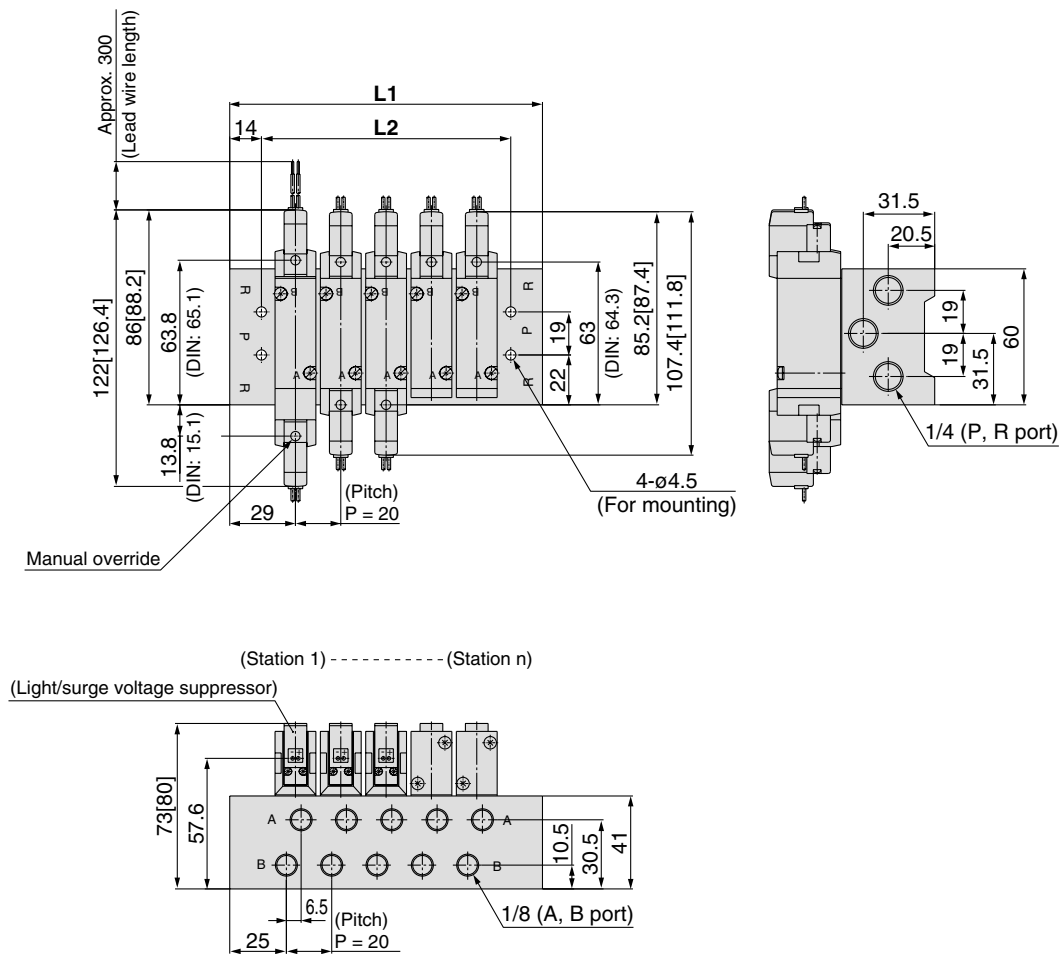
M8 connector (WO)



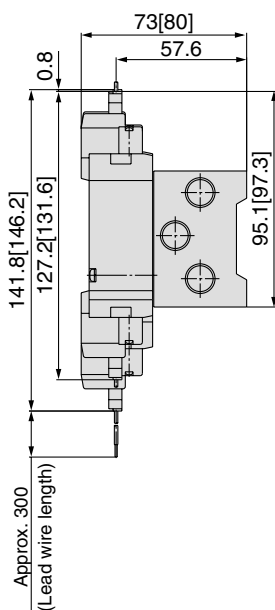
* Refer to page 563 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	66	85	104	123	142	161	180	199	218	237	256	275	294	313	332	351	370	389	408
L2	46	65	84	103	122	141	160	179	198	217	236	255	274	293	312	331	350	369	388

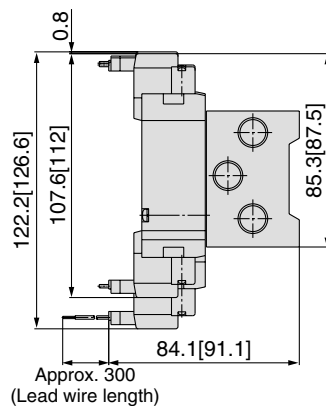
Grommet (G)



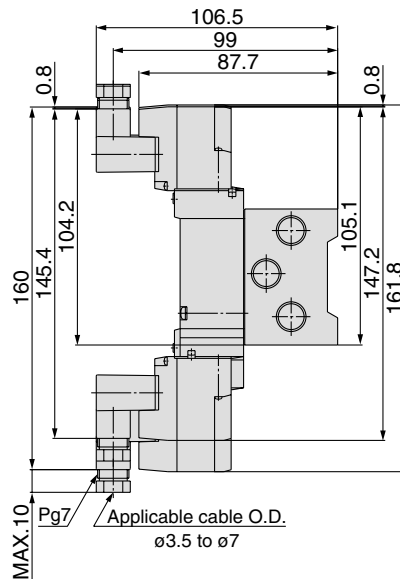
L plug connector (L)



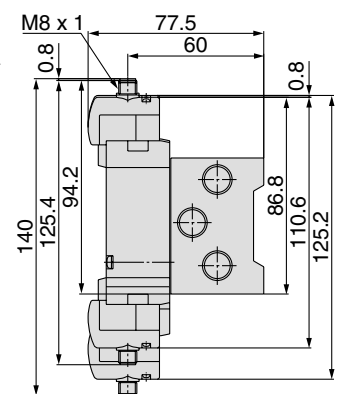
M plug connector (M)



DIN Terminal (D)



M8 connector (WO)



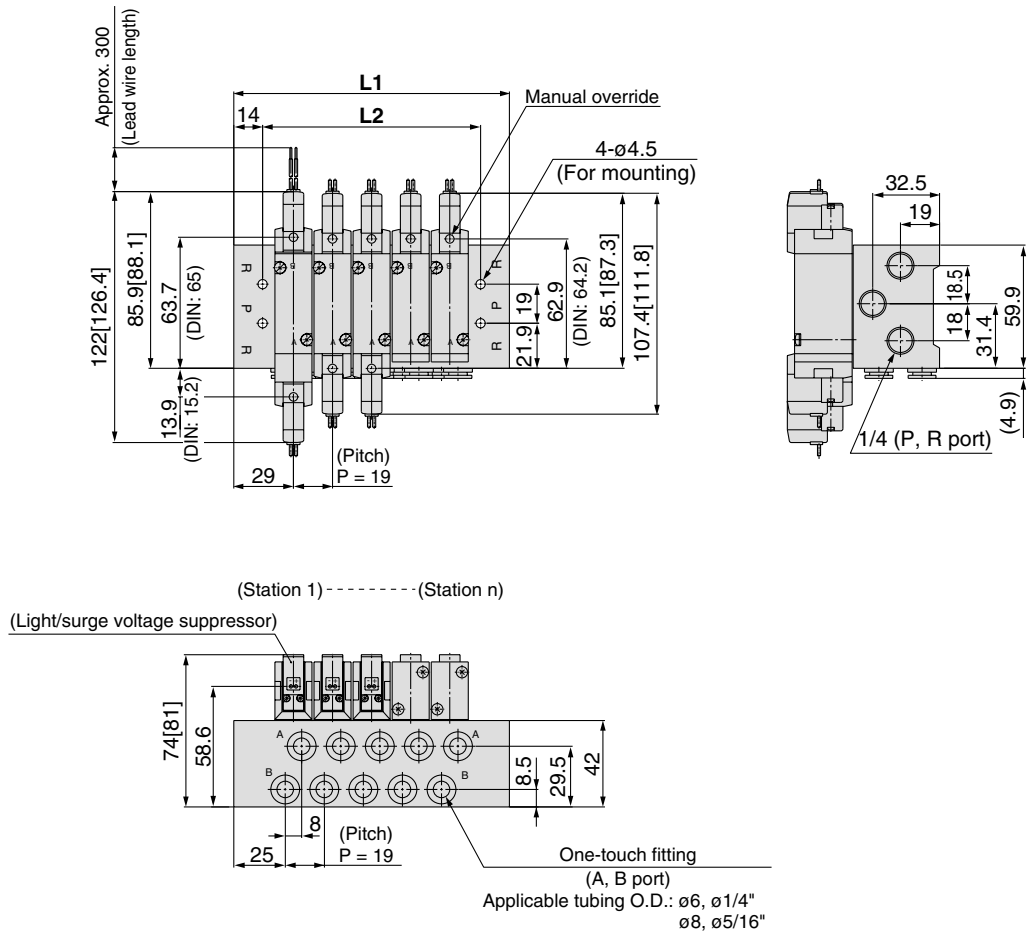
 * Refer to page 563 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	78	98	118	138	158	178	198	218	238	258	278	298	318	338	358	378	398	418	438
L2	50	70	90	110	130	150	170	190	210	230	250	270	290	310	330	350	370	390	410

Type 42: Side ported / 10-SS5YJ7-42- Stations C6,N7
C8,N9

* []: AC

Grommet (G)

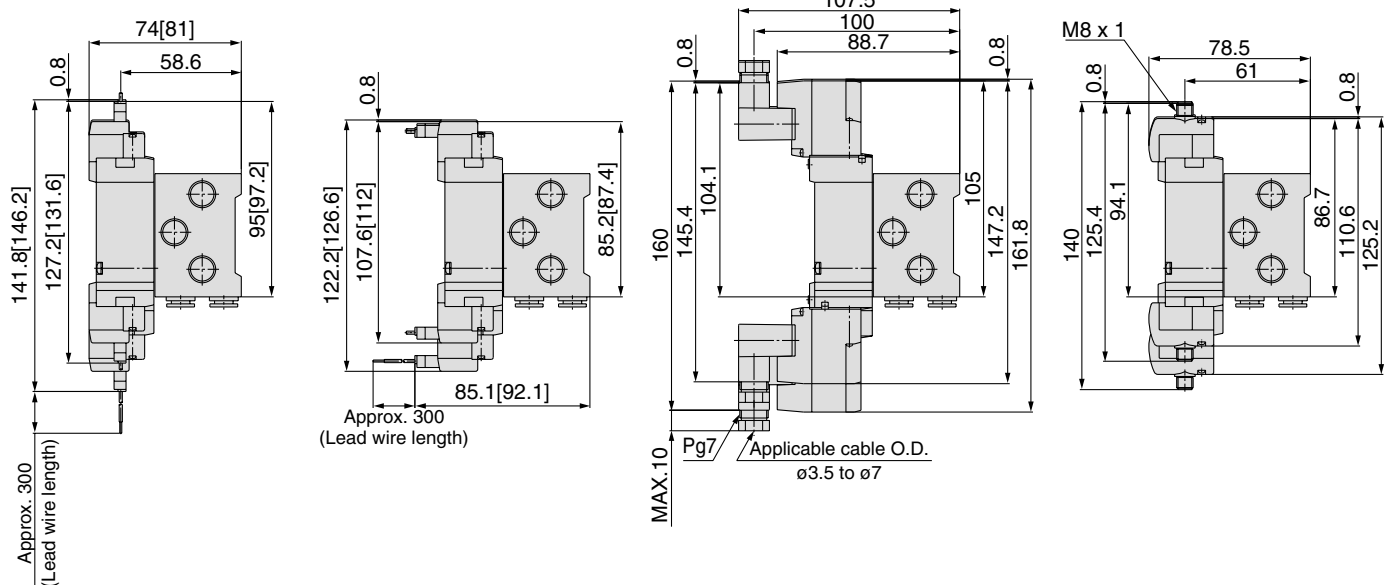


L plug connector (L)

M plug connector (M)

DIN Terminal (D)

M8 connector (WO)

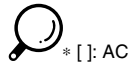


* Refer to page 563 for dimensions with connector cable.

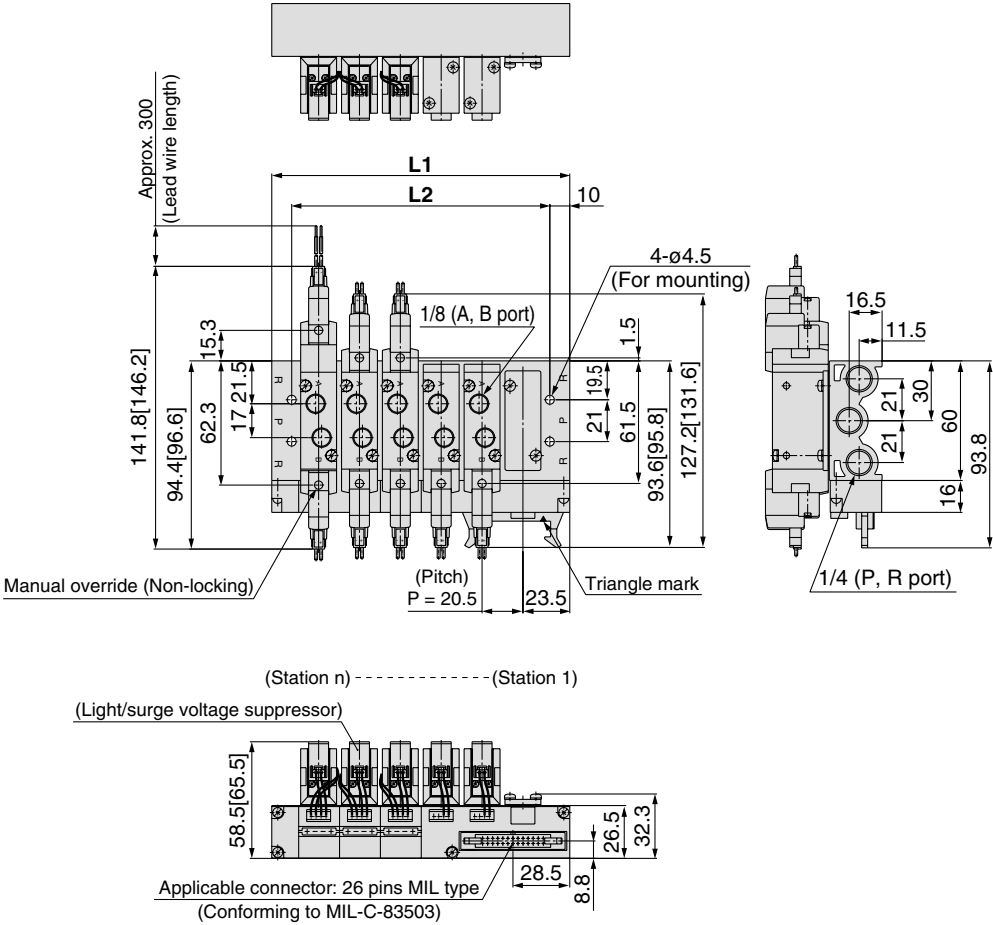
Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	77	96	115	134	153	172	191	210	229	248	267	286	305	324	343	362	381	400	419
L2	49	68	87	106	125	144	163	182	201	220	239	258	277	296	315	334	353	372	391

- Air cylinder
- Rotary actuator
- Air gripper
- Directional control valve
- Flow control equipment
- Filter, Pressure control equipment
- Fittings & Tubing
- Air preparation equipment
- Pressure switch
- Clean gas filter

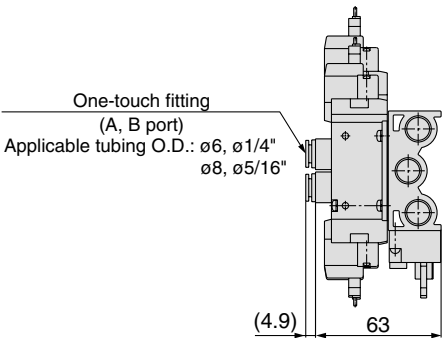
Flat ribbon cable manifold



10-SS5YJ7-21P- Stations (-00)



With built-in One-touch fitting



Stations n	3 stations	4	5	6	7	8	9	10	11	12 stations
L1	88	108.5	129	149.5	170	190.5	211	231.5	252	272.5
L2	68	88.5	109	129.5	150	170.5	191	211.5	232	252.5

Series 10-SYJ5000/7000

Made to order specifications
DIN terminal connector conforming to EN-175301-803C
(former DIN 43650C) standard

DIN terminal type conforming to DIN 43650C (DIN pitch 8mm) standard

How to Order Valves

Type of actuation

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "YOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Rated voltage

DC specifications		AC specifications (50/60Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
		3	110 VAC [115 VAC]
		4	220 VAC [230 VAC]

A, B port size

M5	M5 x 0.8
01	1/8 (10- SYJ7000 only)
C4	One-touch fitting for ø4
C6	One-touch fitting for ø6
N3	One-touch fitting for ø5/32"
N7	One-touch fitting for ø1/4

Bracket

Nil	Without bracket
F	With bracket

Note) Do not remove the factory installed bracket from models with the bracket option. Removal of the bracket will cause air leakage.

Body ported 10—SYJ 5 1 23—5 Y [] [] M5 [] []

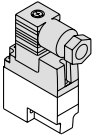
Base mounted 10—SYJ 5 2 43—5 Y [] [] [] []

Series

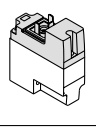
5	10-SYJ5000
7	10-SYJ7000

Electrical entry

Y: With connector



YO: Without connector



Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Nil	Without sub-plate	
1	1/8	10-SYJ5000
		10-SYJ7000
2	1/4	10-SYJ7000

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

How to Order Pilot Valve Assembly

10—V115—5 Y []

Rated voltage

DC specifications		AC specifications (50/60Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
		3	110 VAC [115 VAC]
		4	220 VAC [230 VAC]

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "YOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

Y	DIN terminal	With connector
YO		Without connector

DIN connector part no.

Without light		SY100-82-1
With light		
Rated voltage	Voltage symbol	Part no.
24 VDC	24VN	SY100-82-3-05
12 VDC	12VN	SY100-82-3-06
100 VAC	100VN	SY100-82-3-01
200 VAC	200VN	SY100-82-3-02
110 VAC [115 VAC]	110VN	SY100-82-3-03
220 VAC [230 VAC]	220VN	SY100-82-3-04

Caution

- Use caution in wiring because it won't meet the IP65 (enclosure) standard if you use the other cord than prescribed cable of size (ø3.5 to ø7). Also be sure to tighten the ground nut and set screw within the specified range of torque.
For how to use DIN terminal (wiring procedures, procedures for changing electrical entries, precautions, applicable cable, circuit diagram), refer to page 560.
- D type DIN connector with 9.4 mm pitch between terminals is not interchangeable.
- DIN connector except D type has the "N" indication in the end of voltage symbol. In case of DIN connector without light, "N" is not indicated. Please refer to the name plate to distinguish.
- Dimensions are completely the same as D type connector.
- When exchanging the pilot valve assembly only, "10-V115-□D" is interchangeable with "10-V115-□Y". Do not replace 10-V114 (G, H, L, M, W) to 10-V115-□D/□Y (DIN terminal), and vice versa.



Series 10-SYJ3000/5000/7000 Specific Product Precautions 1

Be sure to read before handling.

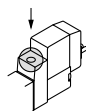
Manual override operation

⚠ Warning

When the manual override is operated, connected equipment will be actuated. Confirm safety before operating.

■ Non-locking push type (Standard)

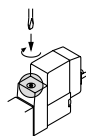
Press in the direction of the arrow.



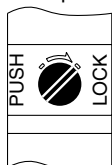
■ Push-turn locking slotted [Type D]

While pressing, turn in the direction of the arrow.

If it is not turned, it can be operated in the same way as the non-locking type.



Locked position



⚠ Caution

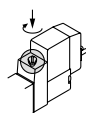
When handling the locking type D with a screwdriver, turn it gently using a watchmaker's screwdriver.

[Torque: 0.1 N·m or less]

■ Push-turn locking lever [Type E]

While pressing, turn in the direction of the arrow.

If it is turned, it can be operated in the same way as the non-locking type.



Locked position



⚠ Caution

When locking the manual override on the push-turn locking types (D, E), be sure to push it down before turning.

Turning without first pushing it down can cause damage to the manual override and trouble such as air leakage, etc.

Solenoid valve for 200/220 VAC specifications

⚠ Warning

Solenoid valves with grommet and L/M type plug connector AC specifications have a built-in rectifier circuit in the pilot section to operate the DC coil.

With 200/220 VAC specification pilot valves, this built-in rectifier generates heat when energized. The surface may become hot depending on the energized condition. Therefore, do not touch the solenoid valves.

Series 10-SYJ3000, 5000, 7000 Mixed installation of 3 port and 5 port valves on the same manifold.

⚠ Caution

Series 10-SYJ3000/5000/7000 and Series 10-SYJ300/500/700 can be mounted on the same manifold. How to mount on the same manifold is shown on the following pages.

10-SYJ3000, 10-SYJ300 Page 507

10-SYJ5000, 10-SYJ500 Page 529

10-SYJ7000, 10-SYJ700 Page 550

If 4 or 5 port valve is used as a 3 port valve

Series 10-SY 3000/5000/7000 may be used as a N.C. or N.O. 3 port valve by plugging one of the A, B ports. Be sure not to plug the exhaust ports (R). Can be used when a double solenoid, 3 port valve is required.

Plug position		B port	A port
Type of actuation		N.C.	N.O.
Number of solenoids	Single		
	Double		

(JIS Symbols above: Series 10-SYJ5000)



Series 10-SYJ3000/5000/7000

Specific Product Precautions 2

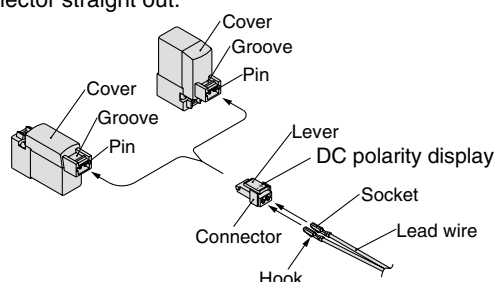
Be sure to read before handling.

How to use plug connector

⚠ Caution

1. Attaching and detaching connectors

- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



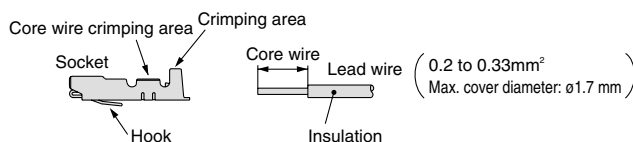
2. Crimping of lead wires and sockets

Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool.

When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.

Use an exclusive crimping tool for crimping.

(For special crimping tools, please contact SMC.)



3. Attaching and detaching sockets with lead wires

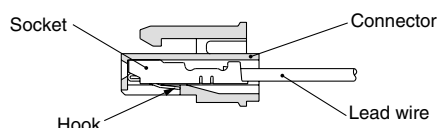
● Attaching

Insert the sockets into the square holes of the connector (+ and - indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

● Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm).

If the socket will be used again, first spread the hook outward.



Plug connector lead wire length

⚠ Caution

Standard length is 300 mm, but the following lengths are also available.

How to Order Connector Assembly

For DC: **SY100-30-4A**

For 100 VAC: **SY100-30-1A**

For 200 VAC: **SY100-30-2A**

For other voltages of AC: **SY100-30-3A**

Without lead wire: **SY100-30-A**
(with connector and 2 of sockets only)

● Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order

Specify the connector assembly part number together with the part number for the plug connector's solenoid valve without connector.

<Example> Lead wire length 2000 mm

(For DC)

10-SYJ3123-5LO-M3
SY100-30-4A-20

For AC

10-SYJ3123-1LO-M3
SY100-30-1A-20

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Series 10-SYJ3000/5000/7000

Specific Product Precautions 3

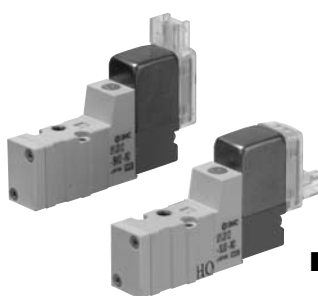
Be sure to read before handling.

Surge voltage suppressor

Caution

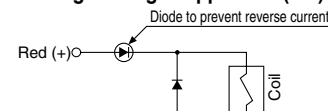
(For DC)

Grommet, L/M plug connector type

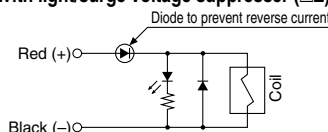


Standard type (with polarity)

With surge voltage suppressor (□S)

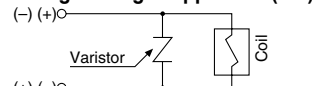


With light/surge voltage suppressor (□Z)

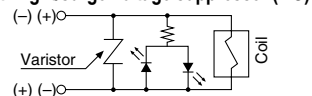


Non-polar type

With surge voltage suppressor (□R)



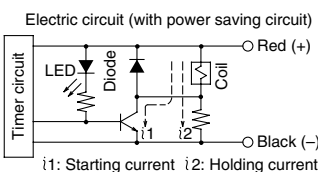
With light/surge voltage suppressor (□U)



- Connect the standard type in accordance with the +, - polarity indication.
(The non-polar type can be used with the connections made either way.)
- Since voltage specifications other than standard 24 and 12 VDC do not have diodes for polarity protection, be careful not to make errors in the polarity.
- Be careful about the allowable voltage fluctuation since the valves with a diode to prevent reverse current has about a 1V voltage drop. (Refer to the solenoid specifications of each valve for details.)
- When wiring is done at the factory, positive (+) is red and negative (-) is black.

With power saving circuit

Power consumption is decreased by 1/4 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 62 ms at 24 VDC.)



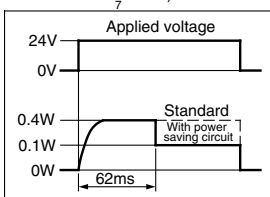
Working principle

With the above circuit, the current consumption when holding is reduced to save energy. Please refer to the electric wave data to the right.

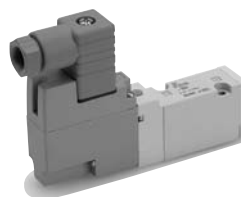
- When a power saving circuit is installed, a diode to prevent reverse current is not provided. Therefore, use caution not to connect in reverse.

- Be careful about the allowable voltage fluctuation since voltage drop of about 0.5V occurs due to a transistor. (Refer to the solenoid specifications of each valve for details.)

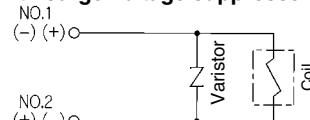
(Energy saving type's electrical power waveform : SYJ□□□0T)



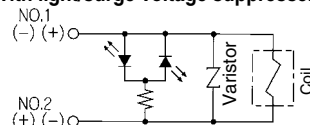
DIN terminal



With surge voltage suppressor (DS)

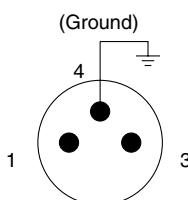


With light/surge voltage suppressor (DZ)



DIN terminal has no polarity.

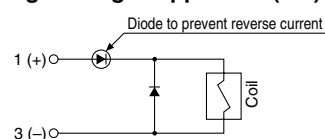
M8 connector type



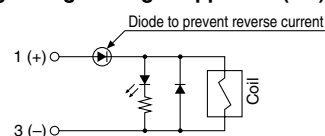
Solenoid valve side Pin wiring diagram

Standard type (with polarity)

With surge voltage suppressor (□S)

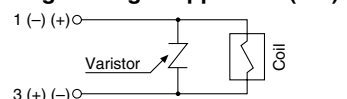


With light/surge voltage suppressor (□Z)

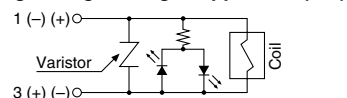


Non-polar type

With surge voltage suppressor (□R)



With light/surge voltage suppressor (□U)



Solenoid valve side Pin wiring diagram

- In the case of standard type, connect + to 1 and - to 3 according to the polarity.
- For DC voltages other than standard 12/24 VDC, use caution not to mistake the polarity because a diode to prevent reverse current is not provided.
- Be careful about the allowable voltage fluctuation since the valves with a diode to prevent reverse current has about a 1V voltage drop. (Refer to the solenoid specifications of each valve for details.)



Series 10-SYJ3000/5000/7000

Specific Product Precautions 4

Be sure to read before handling.

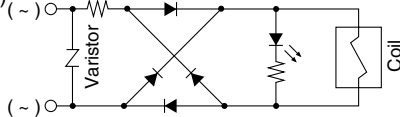
Surge voltage suppressor

<For AC>

(There is no "S" type because the generation of surge voltage is prevented by a rectifier.)

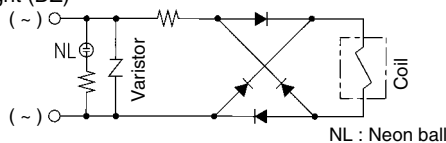
Grommet, L/M plug connector

With indicator light (□Z)



DIN terminal

With indicator light (DZ)



NL : Neon ball

Note) Surge voltage suppressor of varistor has residual voltage corresponding to the protective element and rated voltage. Therefore, protect the controller side from the surge. The residual voltage of the diode is approximately 1 V.

How to use DIN Terminal

⚠ Caution

Connection

1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3. Loosen the terminal screws (slotted screws) on the terminal block, insert the cores of the lead wires into the terminals according to the connection method, and fasten them securely with the terminal screws.
4. Secure the cord by fastening the ground nut.

⚠ Caution

When making connections, note that using other than the supported size (ø3.5 to ø7) cable will not satisfy IP65 (enclosure) standards.

Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

⚠ Caution

Changing the entry direction

After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90° intervals).

* When equipped with an indicator light, be careful not to damage the light with the cord's lead wires.

Precautions

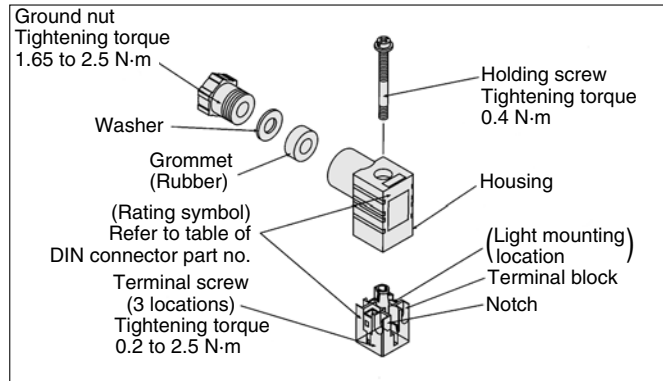
Plug in and pull out the connector vertically without tilting to one side.

Compatible cable

Cord O.D.: ø3.5 to ø7

(Reference) 0.5 mm², 2 core or 3 core, equivalent to JIS C 3306

How to use DIN Terminal

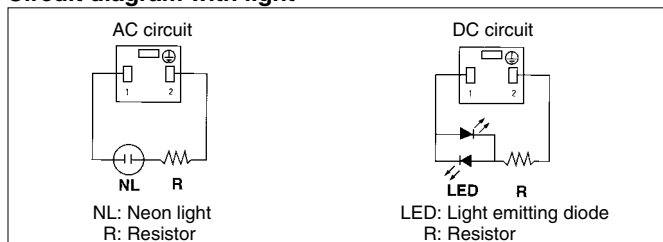


DIN connector part no.

⚠ Caution

Without light		SY100-61-1
With light		
Rated voltage	Voltage symbol	Part no.
24 VDC	24V	SY100-61-3-05
12 VDC	12V	SY100-61-3-06
100 VAC	100V	SY100-61-2-01
200 VAC	200V	SY100-61-2-02
110 VAC	110V	SY100-61-2-03
220 VAC	220V	SY100-61-2-04

Circuit diagram with light



Note) Refer to page 557 for DIN connector (Y) conforming to EN-175301-803C (former DIN 43650C).



Series 10-SYJ3000/5000/7000

Specific Product Precautions 5

Be sure to read before handling.

Connector assembly with cover

⚠ Caution

Connector assembly with dustproof protective cover

- Effective to prevent short circuit failure due to the entry of foreign matter into the connector
- Chloroprene rubber for electrical use, which provides outstanding weather resistance and electrical insulation, is used for the cover material. However, do not allow contact with cutting oil, etc.
- Simple and unencumbered appearance by adopting round-shaped cord.

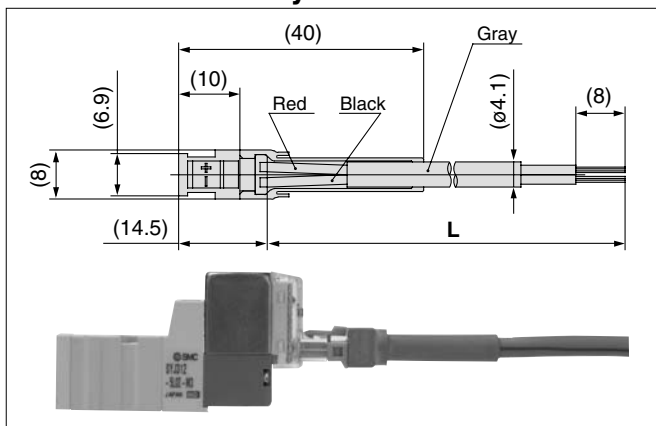
How to Order

SY100-68-A

• Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

Connector assembly with cover: Dimensions



How to Order

Enter the part number for a plug connector solenoid valve without connector together with the part number for a connector assembly with cover.

<Example 1> Lead wire length 2000 mm
10-SYJ3123-5LOZ-M3
SY100-68-A-20

<Example 2> Lead wire length 300mm (Standard)
10-SYJ3123-5LPZ-M3

Symbol for connector assembly with cover

* In this case, the part number for the connector assembly with cover is not required.

M8 connector

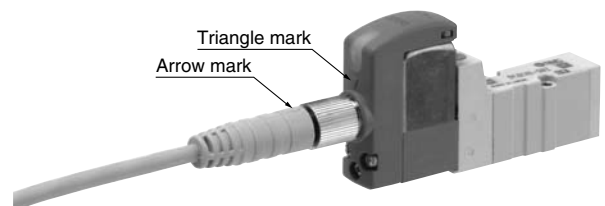
⚠ Caution

1. M8 connector types have an IP65 (enclosure) rating, offering protection from dust and water. However please note that these products are not intended for use in water. Select a SMC connector cable (V100-49-1-□) or a FA sensor type connector, with M8 threaded 3 pin specifications conforming to Nippon Electric Control Equipment Association Standard, NECA4202 (IEC60947-5-2). Make sure the connector O.D. is 10.5 mm or less when used with the Series 10-SY3000 manifold. If more than 10.5mm, it cannot be mounted due to the size.
2. Do not use a tool to mount the connector, as this may cause damage. Only tighten by hand. (0.4 to 0.6N)
3. Do not apply excessive power greater than 30N to the connector cable, otherwise IP65 cannot be satisfied.

⚠ Caution

Failure to meet IP65 performance may result if using alternative connectors than shown above, or when insufficiently tightened.

- Connector cable mounting



Note) Connector cable should be mounted in the correct direction. Make sure that the arrow symbol on the connector is facing the triangle symbol on the valve when using SMC connector cable (V100-49-1-□). Be careful not to squeeze it in the wrong direction, as problems such as pin damage may occur.

MConnector cable

- Connector cable for M8 can be ordered as follows:

How to Order

1. To order solenoid valve and connector cable at the same time. (Connector cable will be included in the shipment of the solenoid valve.)

10-SYJ³₅ □ □ 3 - □ □ □ □ - □ □

• Electrical entry

W1: Cable length 300 mm
W2: Cable length 500 mm
W3: Cable length 1000 mm
W4: Cable length 2000 mm
W7: Cable length 5000 mm

(Example 1) Cable length 300 mm
10-SYJ3123-5W1ZE-M3

Symbol for electrical entry



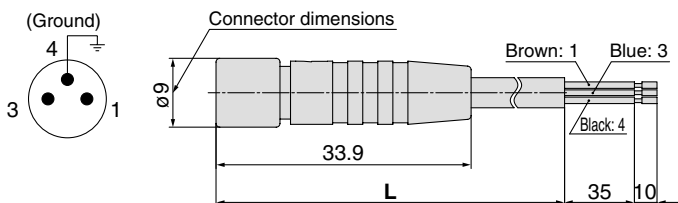
Series 10-SYJ3000/5000/7000

Specific Product Precautions 6

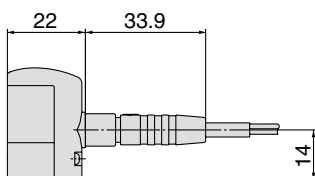
Be sure to read before handling.

M8 connector

2. To order connector cable only



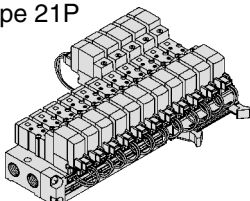
Cable length (L)	Part no.
300mm	V100-49-1-1
500mm	V100-49-1-2
1000mm	V100-49-1-3
2000mm	V100-49-1-4
5000mm	V100-49-1-7



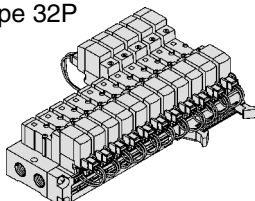
Flat ribbon cable manifold

Caution

Type 21P



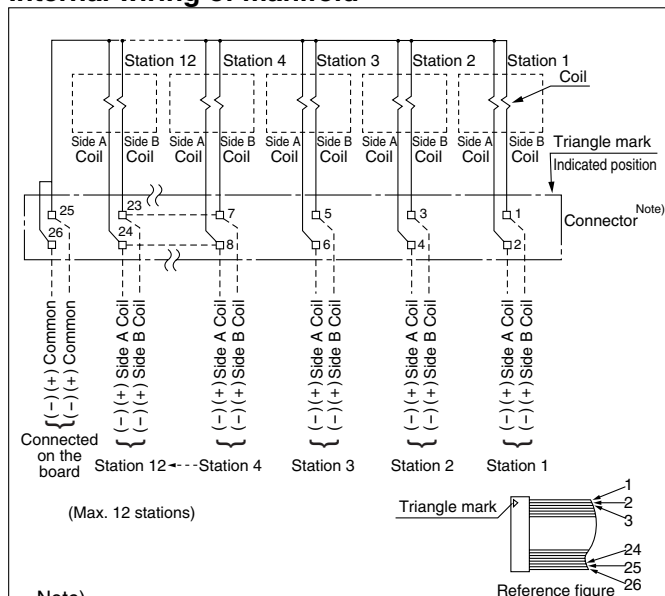
Type 32P



- In the manifold valves, the wiring to the individual valves is provided on a printed circuit board, and the connection to the external wires is consolidated through the use of a flat cable.
- A single MIL flat cable connects the entire manifold to your power source. This greatly reduces installation time and provides clean appearance.

Flat ribbon cable manifold

Internal wiring of manifold



Note)
Terminal no. is not indicated on the connector. The terminal no. indicated in the connection schematic of connector, as shown in the reference, means a correlation of 1, 2, 3...26 from the triangle mark side on the flat ribbon cable of connector.

- For more than 10 stations, both poles of the common should be wired.
- For single solenoid, connect to the solenoid B side.
- The maximum number of stations that can be accommodated is 12. Please contact SMC for more stations.
- Only non-polar valves are available for the DC flat ribbon cable manifold, therefore negative COM or positive COM wiring of the manifold is possible. The valve does not switch with negative COM if a Z type is used. Be sure to use positive COM.

Bracket

Caution

For 10-SYJ3000 (Single) or 10-SYJ7000 with bracket, do not use it without bracket.

Replacement of solenoid valve

Caution

Mount it so that there is no slippage or deformation in gaskets, and tighten with the tightening torque as shown below.

Model	Thread size	Tightening torque
10-SYJ3000	M1.7	0.12N·m
10-SYJ5000	M2.5	0.45N·m
10-SYJ7000	M3	0.8N·m



Series 10-SYJ3000/5000/7000

Specific Product Precautions 7

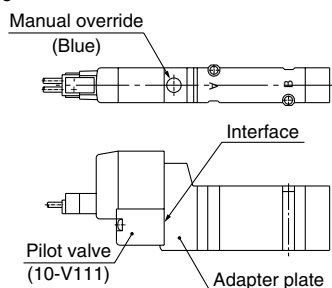
Be sure to read before handling.

Replacement of pilot valve

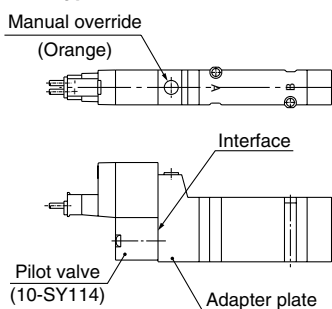
Caution

Pilot valves in this series are improved to provide excellent energy saving results. However, following this improvement, these new valves are no longer compatible with the conventional pilot valve used at the interface. Please consult with SMC when you need to exchange these pilot valves, in the case of manual override (marked in orange) of the adapter plate.

New type



Conventional type



Series 10-SQ1000

5 port solenoid valve
Plug-in unit

How to Order Manifold

10 — **SS5Q13** — **08** **FD2** — **D**

Clean series

Stations

01	1 station
⋮	⋮
24 Note 1)	24 stations

Note 1) The maximum number of stations depends on the type of electrical entries.

Option

Nil	No
02 to 24	DIN rail length specified Note 1)
B	Back pressure check valve
K	Special wiring specifications (except double wiring) Note 2)
N	With name plate (side ported only)

Note 1) Specify DIN rail length with "D□" at the end. (Enter the number of stations inside "□".)
Example: -D08

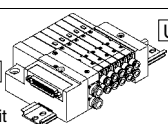
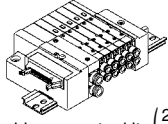
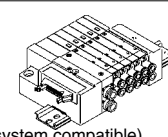
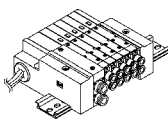
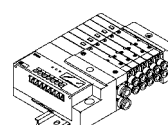
Note 2) Standard wiring specifications are for double wiring. Indicate wiring specifications for single wiring or mixed single and double wiring, or when exceeding the standard maximum number of stations. (Except L kit.)

Note 3) For specifying two or more options, enter them alphabetically. Example: -BKN

Manifold mounting

D	DIN rail mounting style
E	Direct mounting style

Electrical entry

Kit type		Lead wire connector location	Cable specifications	Station	Max. number of stations for special wiring specifications	Max. number of solenoids ^{Note 2)}
F Kit  D-sub connector kit	FD0	D side	D-sub connector (25P) kit without cable	1 to 12 stations	24 stations	24
	FD1		D-sub connector (25P) kit with 1.5 m cable			
	FD2		D-sub connector (25P) kit with 3.0 m cable			
	FD3		D-sub connector (25P) kit with 5.0 m cable			
P kit  Flat ribbon cable connector kit (26P / 20P)	PD0	D side	Flat ribbon cable (26P) kit without cable	1 to 12 stations	24 stations	24
	PD1		Flat ribbon cable (26P) kit with 1.5 m cable			
	PD2		Flat ribbon cable (26P) kit with 3.0 m cable			
	PD3		Flat ribbon cable (26P) kit with 5.0 m cable			
	PDC	Note 1)	Flat ribbon cable (20P) kit without cable	1 to 9 stations	18 stations	18
J kit  Flat ribbon cable (20P) (PC wiring system compatible)	JD0	D side	Flat ribbon cable (20P) PC wiring system compatible	1 to 8 stations	16 stations	16
L kit  Lead wire kit	LD0	D side	Lead wire kit (lead wire length: 0.6 mm)	1 to 12 stations	—	—
	LU0	U side				
	LD1	D side	Lead wire kit (lead wire length: 1.5 mm)			
	LU1	U side				
	LD2	D side	Lead wire kit (lead wire length: 3.0 mm)			
	LU2	U side				
S kit  Serial transmission kit	SDF	D side	NKE Corp.: Uni-wire system	1 to 8 stations	16 stations	16
	SDH		NKE Corp.: Uni-wire H system			
	SDJ1		SUNX Corp.: S-LINK system (16 output points)	1 to 4 stations	8 stations	8
	SDJ2		SUNX Corp.: S-LINK system (8 output points)			
	SDQ		DeviceNet and CompoBus/D (OMRON Corp.)	1 to 8 stations	16 stations	16
	SDR1		OMRON Corp.: CompoBus/S (16 output points)			
	SDR2		OMRON Corp.: CompoBus/S (8 output points)	1 to 4 stations	8 stations	8
	SDV		Mitsubishi Electric Corp.: CC -Link	1 to 8 stations	16 stations	16

Note 1) Separately order the 20P type cable assembly for the P kit.

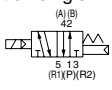
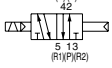
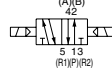
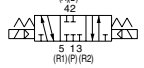
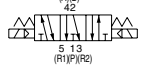
Note 2) The maximum number of stations should not be more than the maximum number of solenoids. (The number of solenoids are counted as: 1 for single solenoids and 2 for type 3P and 4P double solenoids.)

How to Order Valves

10	SQ1	1	3	1		5		C6		
-----------	------------	----------	----------	----------	--	----------	--	-----------	--	--

● **Clean series**

● **Type of actuation**

1	2 position single 
2	2 position double (Latching)  2 position double (double solenoid) Note 1 
3	3 position closed center 
4	3 position exhaust center 
5	3 position pressure center 

Note 1) For double solenoid specifications, the function symbol below is "D"

● **Seal**

1	Rubber seal
----------	-------------

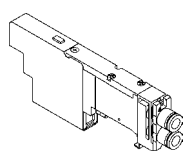
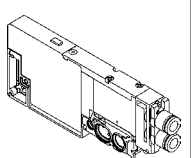
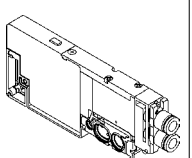
● **Function**

Nil	Standard type (1.0 W DC)
D	2 position double (double solenoid specifications)
N	Negative common
Y Note 1)	Low wattage type (0.5 W DC)

Note 1) Use the low wattage type under continuous energization. Select a low wattage type of double solenoid spec. since the latching spec. of 2 position double type does not provide a low wattage type.

Note 2) When two or more symbols are specified, indicate them alphabetically.

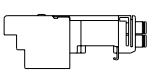
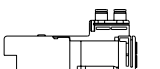
● **With/Without manifold block**

Nil	M	MB
Without manifold block 	With manifold block  * Lead wire is not included.	With manifold block Built-in back pressure check valve  * Lead wire is not included.
• When ordering with manifolds • When only valves are required		For adding stations

● **Port plug mounting port**

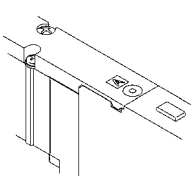
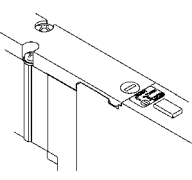
Nil	None
A	Port A
B	Port B

● **Cylinder port size**

C3	One-touch fitting for ø3.2	Side ported 
C4	One-touch fitting for ø4	
C6	One-touch fitting for ø6	
M5	M5 thread	Note) Top ported 
L3	One-touch fitting for ø3.2	
L4	One-touch fitting for ø4	
L6	One-touch fitting for ø6	
L5	M5 thread	

Note) Can be changed to side ported specification.

● **Manual override**

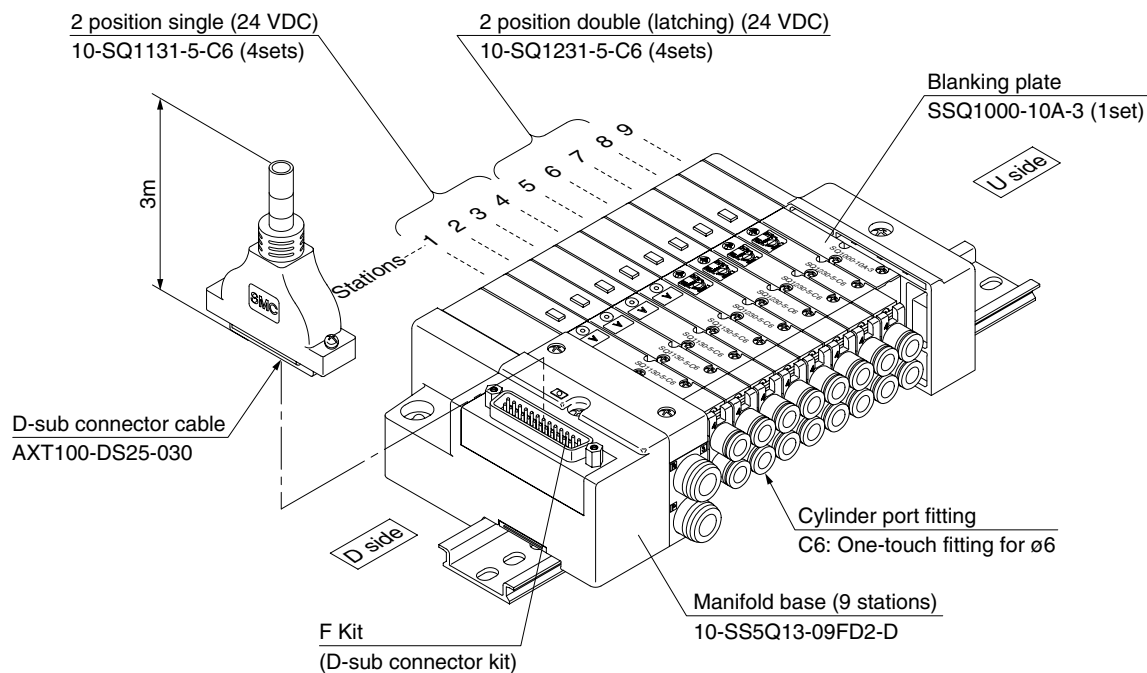
Nil	B Note)
Non-locking push type (tool required) 	Locking type (tool required) 

Note) Except double (latching) type.

● **Coil voltage**

5	24 VDC
6	12 VDC

Note) Light/surge voltage suppressor is built-in.

How to order manifold assembly (Example)**Example) D-sub connector kit, with cable (3 m)**

10-SS5Q13-09FD2-D.....1 set: F kit 9 station manifold base

*** 10-SQ1131-5-C6.....4 sets: 2 position single**

*** 10-SQ1231-5-C6.....4 sets: 2 position double (latching)**

*** SSQ1000-10A-3.....1 set: Blanking plate**

→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part numbers in order starting from the first station on the D side.

When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

Air cylinder

Rotary actuator

Air gripper

Directional control
valveFlow control
equipmentFilter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

5 port solenoid valve Plug-in unit 10-SQ1000

Model

Series		Number of solenoids	Model		Flow characteristics ^{Note 1)}						Response time (ms) ^{Note 2)}		Weight (g)
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)			Standard: 1W	Low wattage	
					C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv			
10-SQ1000	2 position	Single	Rubber seal	10-SQ1131	0.79	0.20	0.19	0.80	0.20	0.19	15 or less	20 or less	80
		Double (latching)	Rubber seal	10-SQ1231	0.79	0.20	0.19	0.80	0.20	0.19	20 or less	—	80
		Double (double solenoid)	Rubber seal	10-SQ1231D	0.79	0.20	0.19	0.80	0.20	0.19	15 or less	20 or less	95
	3 position	Closed center	Rubber seal	10-SQ1331	0.64	0.20	0.15	0.58	0.26	0.16	25 or less	33 or less	100
		Exhaust center	Rubber seal	10-SQ1431	0.64	0.20	0.15	0.80	0.20	0.19	25 or less	33 or less	100
		Pressure center	Rubber seal	10-SQ1531	0.79	0.21	0.19	0.59	0.20	0.14	25 or less	33 or less	100

Note 1) Values for the cylinder port size of C6 from CYL to EXH.

Note 2) Based on JIS B 8375-1981. (Values with a supply pressure of 0.5 MPa and light/surge voltage suppressor. Values fluctuate depending on the pressure and air quality.)

Specifications



Valve specifications	Valve construction		Rubber seal	
	Fluid		Air, Inert gas	
	Maximum operating pressure		0.7MPa	
	Minimum operating pressure	Single	0.15MPa	
		Double (Latching)	0.18MPa	
		Double (Double solenoid)	0.1MPa	
		3 position	0.2MPa	
	Ambient and fluid temperature		-10 to 50°C ^{Note 1)}	
	Lubrication		Not required	
	Pilot valve manual override		Push type / Locking type (tool required)	
Solenoid specifications	Vibration / impact resistance ^{Note 2)}		30/150 m/s ²	
	Enclosure		Dust tight	
	Coil rated voltage		12, 24 VDC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Equivalent to class B	
	Power consumption (Current)	24 VDC	1 W DC (42 mA), 0.5 W DC (21 mA) ^{Note 3)}	
		12 VDC	1 W DC (83 mA), 0.5 W DC (42 mA) ^{Note 3)}	

Note 1) Use dry air to prevent condensation when operating at low temperatures.

Note 2) Vibration resistance: No malfunction occurred in one sweep between 8.3 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states.

Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition.

Note 3) Values for low wattage (0.5W) specifications

Manifold specifications

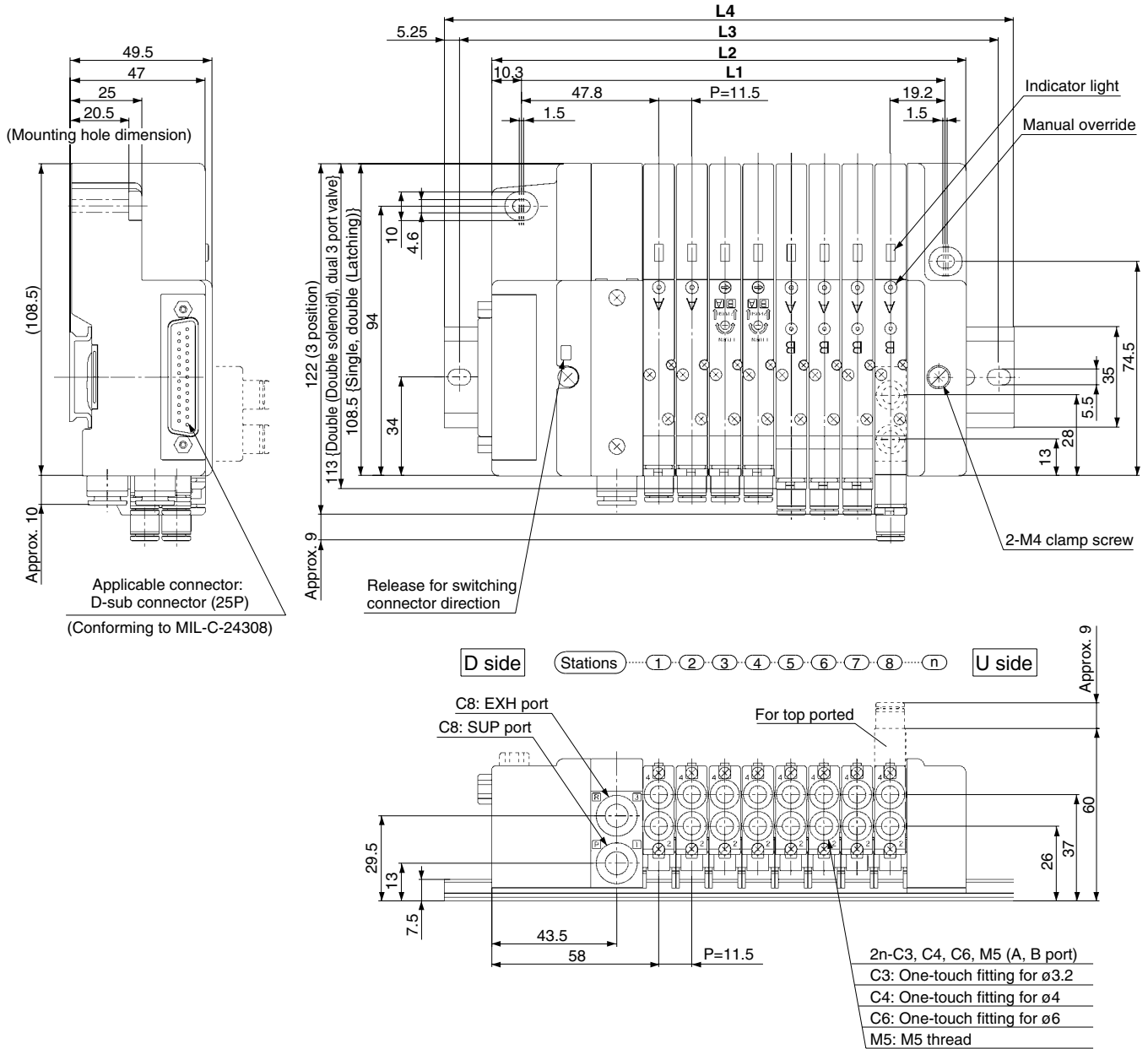
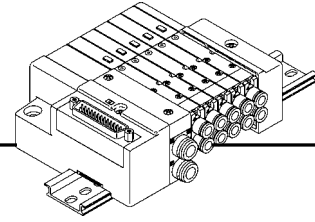
Base model	Piping specifications			Applicable solenoid valve	Connection type	Applicable stations ^{Note 3)}	5 station weight (g) ^{Note 4)}	1 station weight (g) ^{Note 4)}	
	Port size ^{Note 1)}								
	P, R	A, B							
		Port location	Port size						
10-SS5Q13-□□-□	C8 (For ø8)	Side	C3 (For ø3.2) C4 (For ø4) C6 (For ø6) M5 (M5 thread)	10-SQ1□31	F kit: D-sub connector		1 to 12 stations	420	20
					P kit: Flat ribbon cable	26P	1 to 12 stations	420	20
						20P	1 to 9 stations		
		J kit: Flat ribbon cable PC wiring system compatible			1 to 8 stations	420	20		
		L kit: Lead wire			1 to 12 stations	460	35		
		S kit: Serial transmission			1 to 8 stations	475	20		
Top ^{Note 2)}		L3 (For ø3.2) L4 (For ø4) L6 (For ø6) L5 (M5 thread)							

Note 1) One-touch fittings in inch sizes are also available.

Note 2) Can be changed to side ported configuration.

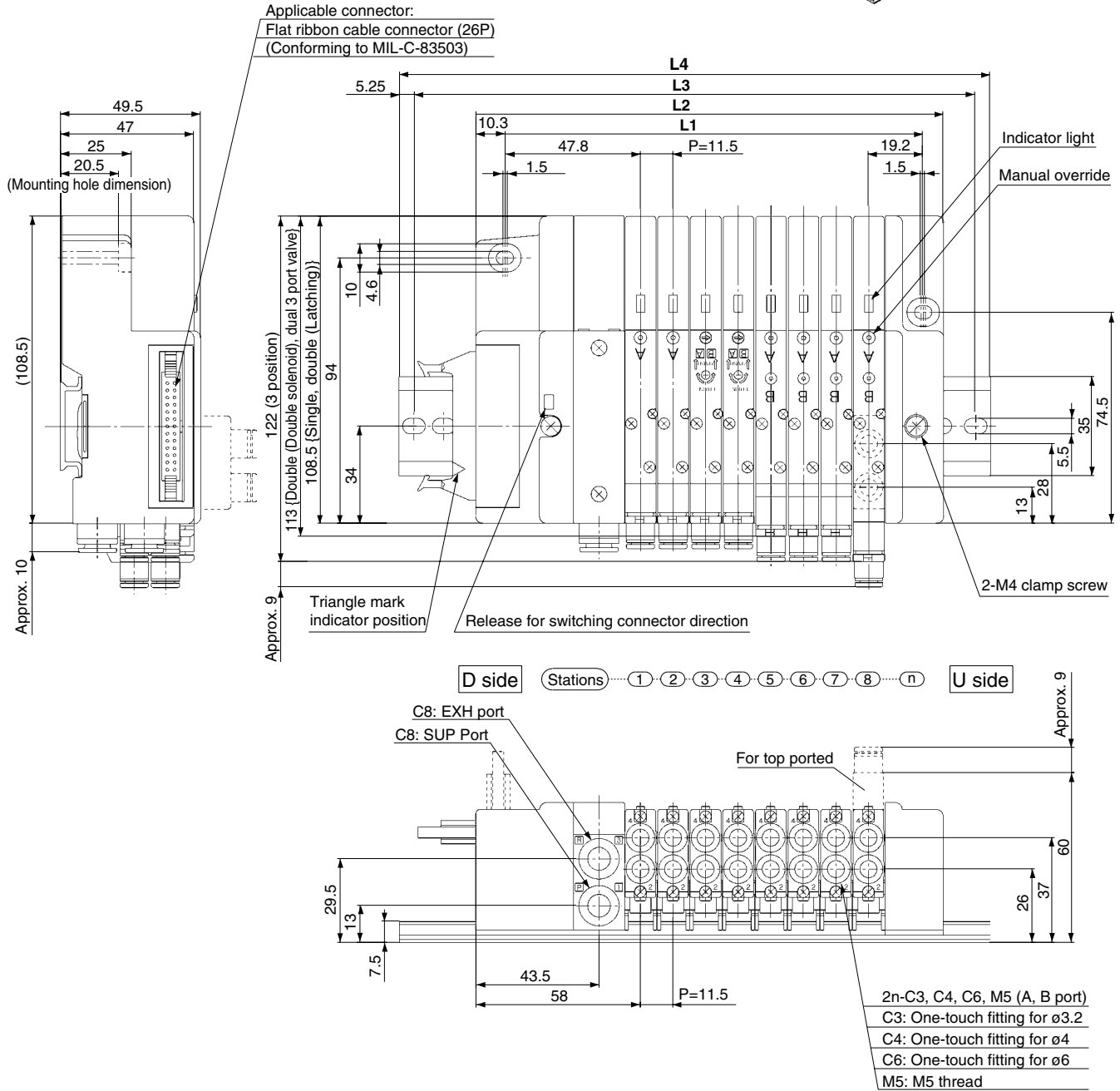
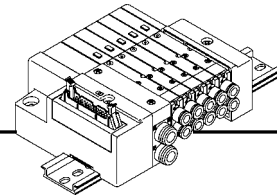
Note 3) An optional specification for special wiring is available to increase the maximum number of stations.

Note 4) Except valves.

F
Kit (D-sub connector kit)

Dimensions

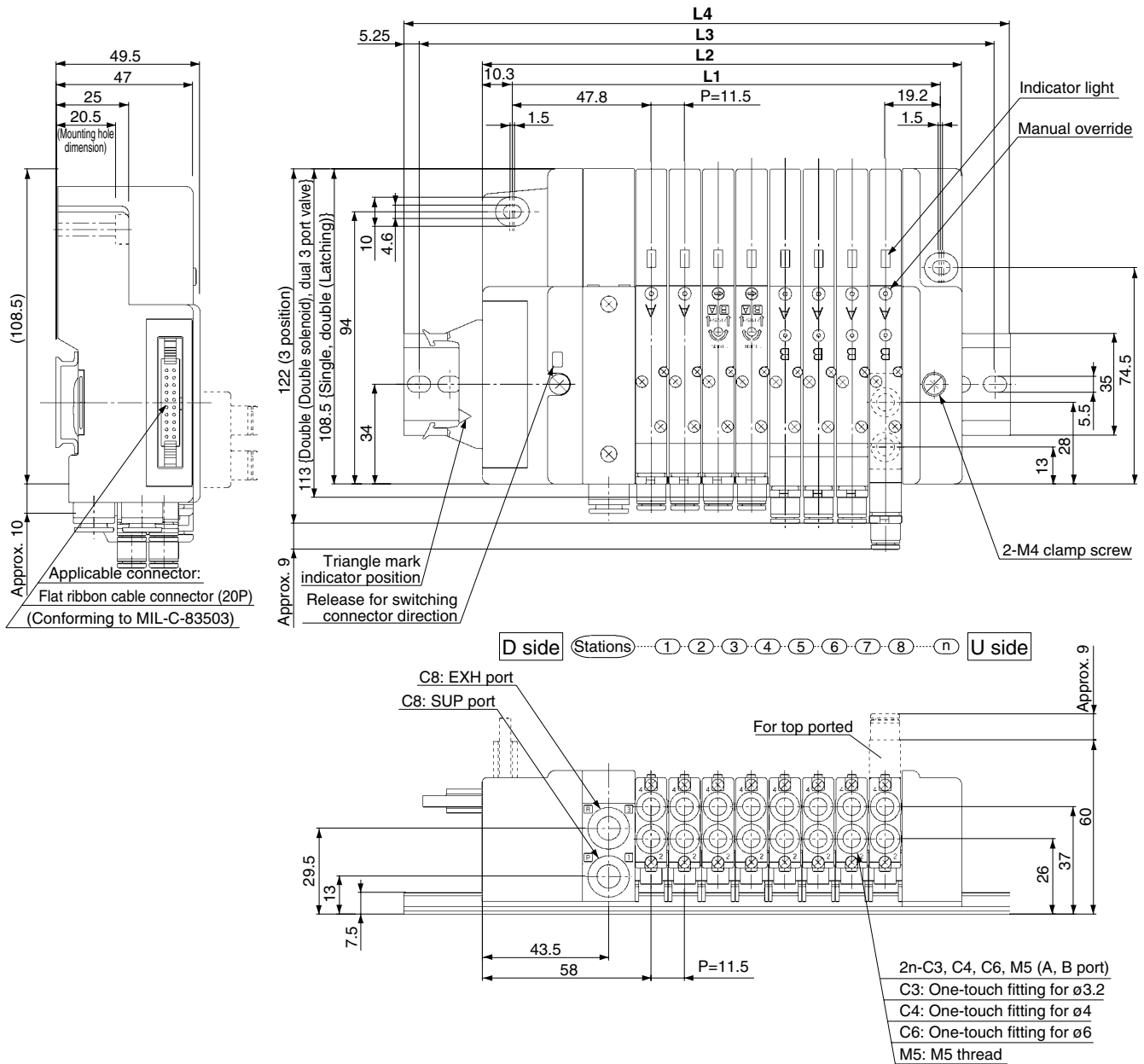
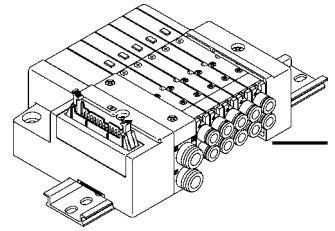
Formula $L1 = 11.5n + 55.5$ $L2 = 11.5n + 73$ n: Stations (Max. 24 stations)

L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1		67	78.5	90	101.5	113	124.5	136	147.5	159	170.5	182	193.5	205	216.5	228	239.5	251	262.5	274	285.5	297	308.5	320	331.5
L2		84.5	96	107.5	119	130.5	142	153.5	165	176.5	188	199.5	211	222.5	234	245.5	257	268.5	280	291.5	303	314.5	326	337.5	349
L3		112.5	125	137.5	150	162.5	175	187.5	200	212.5	225	237.5	250	262.5	275	287.5	300	312.5	325	337.5	350	362.5	375		
L4		123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5		

P
Kit (Flat ribbon cable connector)

Dimensions

Formula $L1 = 11.5n + 55.5$ $L2 = 11.5n + 73$ n: Stations (Max. 24 stations)

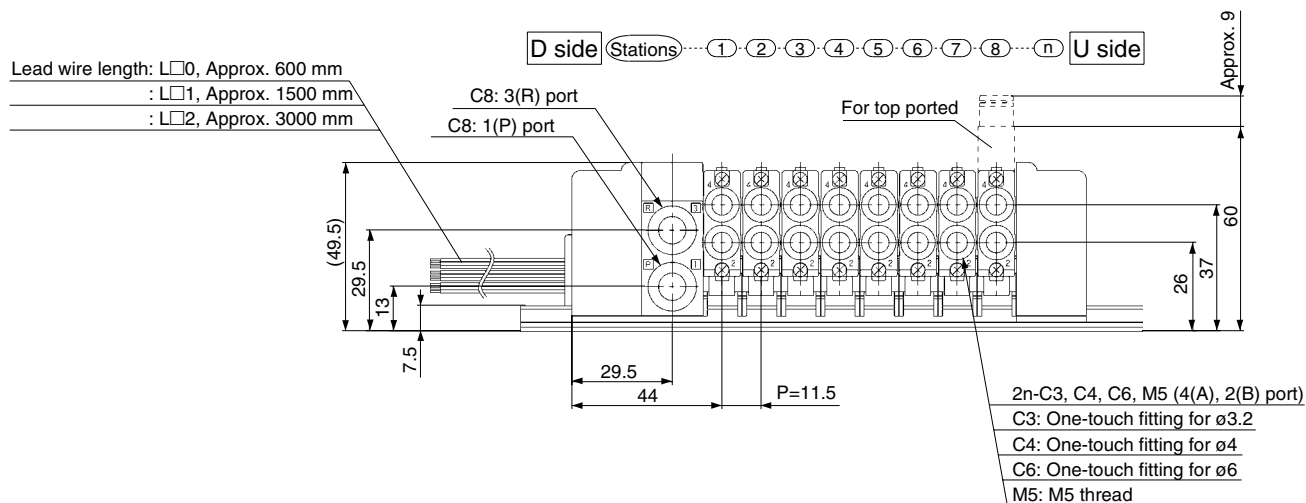
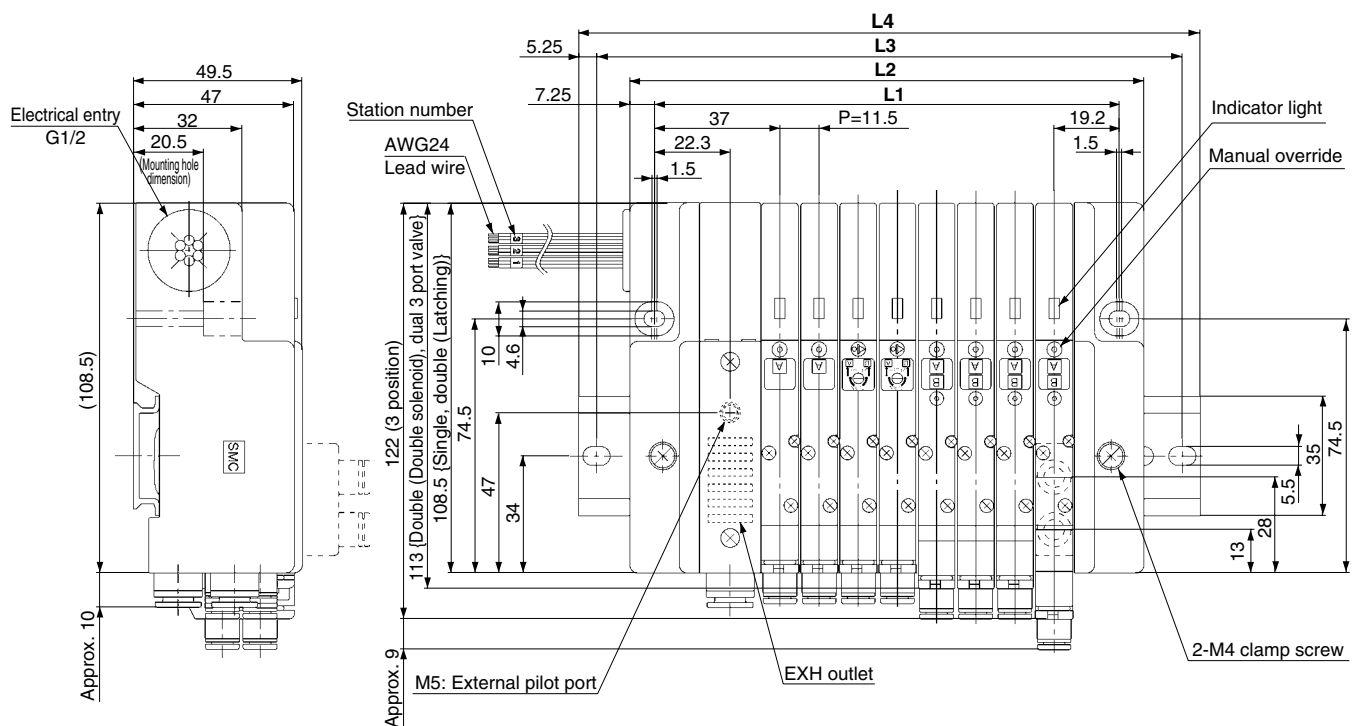
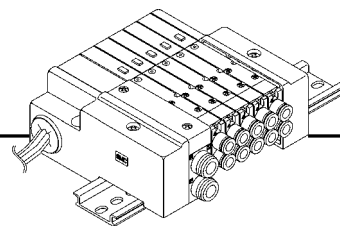
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	67	78.5	90	101.5	113	124.5	136	147.5	159	170.5	182	193.5	205	216.5	228	239.5	251	262.5	274	285.5	297	308.5	320	331.5
L2	84.5	96	107.5	119	130.5	142	153.5	165	176.5	188	199.5	211	222.5	234	245.5	257	268.5	280	291.5	303	314.5	326	337.5	349
L3	112.5	125	137.5	150	162.5	175	187.5	200	212.5	225	237.5	250	262.5	275	287.5	300	312.5	325	337.5	350	362.5	375		
L4	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5		

J
Kit (PC wiring system compatible flat ribbon cable kit)

Dimensions

Formula $L1 = 11.5n + 55.5$ $L2 = 11.5n + 73$ n: Stations (Max. 16 stations)

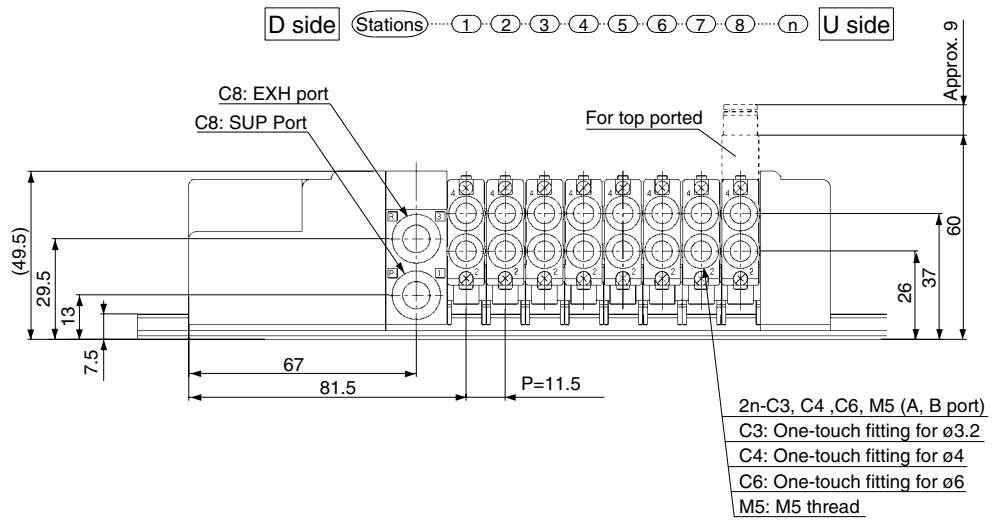
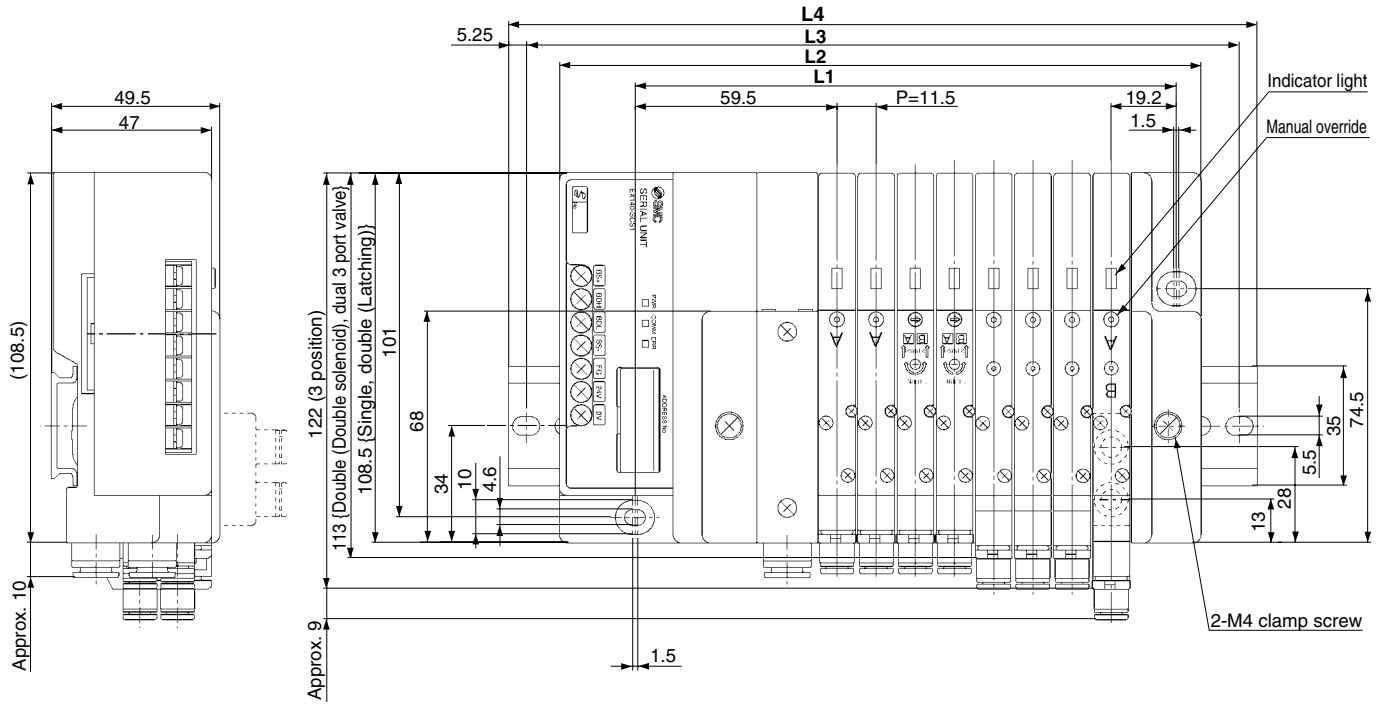
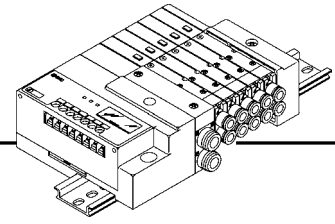
L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		67	78.5	90	101.5	113	124.5	136	147.5	159	170.5	182	193.5	205	216.5	228	239.5
L2		84.5	96	107.5	119	130.5	142	153.5	165	176.5	188	199.5	211	222.5	234	245.5	257
L3		112.5	125	137.5	150	162.5	175	187.5	200	212.5	225	237.5	250	262.5	275	287.5	
L4		123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5	273	285.5	298	

L Kit (Lead wire cable)



Dimensions Formula $L1 = 11.5n + 44.5$ $L2 = 11.5n + 59$ n: Stations (Max. 12 stations)

n	1	2	3	4	5	6	7	8	9	10	11	12
L1	56	67.5	79	90.5	102	113.5	125	136.5	148	159.5	171	182.5
L2	70.5	82	93.5	105	116.5	128	139.5	151	162.5	174	185.5	197
L3	100	112.5	125	137.5	150	162.5	175	187.5	200	212.5	225	237.5
L4	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248

S
Kit (Serial transmission unit)

Dimensions

Formula $L1 = 11.5n + 67$ $L2 = 11.5n + 96.5$ n: Stations (Max. 16 stations)

L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		78.5	90	101.5	113	124.5	136	147.5	159	170.5	182	193.5	205	216.5	228	239.5	251
L2		108	119.5	131	142.5	154	165.5	177	188.5	200	211.5	223	234.5	246	257.5	269	280.5
L3		137.5	150	162.5	175	187.5	200	212.5	225	237.5	250	262.5	275	287.5	300	312.5	325
L4		148	160.5	173	185.5	198	210.5	223	235.5	248	260.5	273	285.5	298	310.5	323	335.5

Series 10-SQ2000

5 port solenoid valve
Plug-in unit

How to Order Manifold

10 — SS5Q23 — 08 FD2 — D

Stations

01	1 station
⋮	⋮
16 ^{Note)}	16 stations

Note) The maximum number of stations depends on the type of electrical entries.

Manifold mounting

D	DIN rail mounting
E	Direct mounting

Option

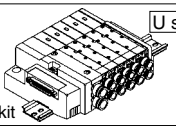
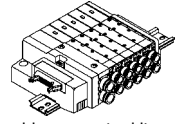
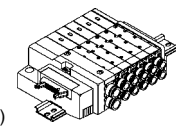
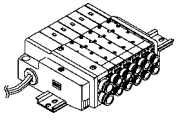
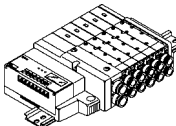
Nil	Nil
02 to 24	DIN rail length specified ^{Note 1)}
B	Back pressure check valve
K	Special wiring specifications (Except double wiring) ^{Note 2)}
N	With name plate (Side ported only)

Note 1) Specify DIN rail length with "D□" at the end. (Enter the number of stations inside "□".) Example: -D08

Note 2) Standard wiring specifications are for double wiring. Indicate wiring specifications for single wiring or mixed single and double wiring, or when exceeding the standard maximum number of stations. (Except L kit.)

Note 3) For specifying two or more options, enter them alphabetically. Example: -BKN

Electrical entry

Kit type	Electrical wire connector location	Cable specifications	Stations	Max. number of stations for special wiring specifications	Max. number of solenoids ^{Note 2)}		
F Kit  D-sub connector kit	FD0 FD1 FD2 FD3 D side	D-sub connector (25P) kit without cable	1 to 12 stations	16 stations	24		
		D-sub connector (25P) kit with 1.5 m cable					
		D-sub connector (25P) kit with 3.0 m cable					
		D-sub connector (25P) kit with 5.0 m cable					
P Kit  Flat ribbon cable connector kit (26P/20P)	PD0 PD1 PD2 PD3 PDC D side ^{Note 1)}	Flat ribbon cable (26P) kit without cable	1 to 12 stations	16 stations	24		
		Flat ribbon cable (26P) kit with 1.5 m cable					
		Flat ribbon cable (26P) kit with 3.0 m cable					
		Flat ribbon cable (26P) kit with 5.0 m cable					
		Flat ribbon cable (20P) kit without cable	1 to 9 stations	18			
J kit  Flat ribbon cable (20P) PC wiring system compatible	JD0 D side	Flat ribbon cable (20P) PC wiring system compatible	1 to 8 stations	16 stations	16		
L kit  Lead wire kit	LD0 LU0 LD1 LU1 LD2 LU2 D side U side D side U side D side U side	Lead wire kit (lead wire length: 0.6 mm)	1 to 12 stations	—	—		
		Lead wire kit (lead wire length: 1.5 mm)					
		Lead wire kit (lead wire length: 3.0 mm)					
		S kit  Serial transmission kit	SDF SDH SDJ1 SDJ2 SDQ SDR1 SDR2 SDV D side	NKE Corp.: Uni-wire System compatible	1 to 8 stations	16 stations	16
				NKE Corp.: Uni-wire H System compatible			
				SUNX Corp.: S-LINK System (16 output points) compatible	1 to 4 stations	8 stations	8
SUNX Corp.: S-LINK System (8 output points) compatible							
DeviceNet and CompoBus/D (OMRON Corp.)	1 to 8 stations			16 stations	16		
OMRON Corp.: CompoBus/S (16 output points) compatible							
OMRON Corp.: CompoBus/S (8 output points) compatible	1 to 4 stations			8 stations	8		
Mitsubishi Electric Corp.: CC -Link compatible	1 to 8 stations			16 stations	16		

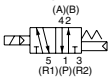
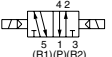
Note 1) Separately order the 20P type cable assembly for the P kit.

Note 2) The maximum number of stations should not be more than the maximum number of solenoids. (The number of solenoids are counted as: 1 for single solenoid and 2 for type 3P and 4P double solenoids.)

How to Order Valves

10 — SQ2 1 3 1 5 C6

Type of actuation

1	2 position single  (A)(B) 4 2 5 1 3 (R1)(P)(R2)
2	2 position double (latching)  (A)(B) 4 2 5 1 3 (R1)(P)(R2)
	2 position double (double solenoid) Note 1)  (A)(B) 4 2 5 1 3 (R1)(P)(R2)
3	3 position closed center  (A)(B) 4 2 5 1 3 (R1)(P)(R2)
4	3 position exhaust center  (A)(B) 4 2 5 1 3 (R1)(P)(R2)
5	3 position pressure center  (A)(B) 4 2 5 1 3 (R1)(P)(R2)

Note 1) For double solenoid specifications, the function symbol below is "D"

Seal type

1	Rubber seal
----------	-------------

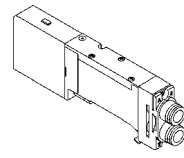
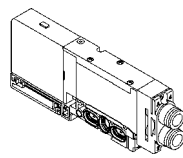
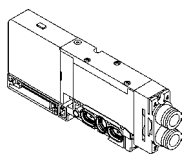
Function

Nil	Standard (1.0 WDC)
D	2 position double (Double solenoid)
N	Negative common
Y Note 1)	Low wattage type (0.5 W DC)

Note 1) Use a low wattage type under continuous energization. Select a low wattage type of double solenoid spec. since the latching spec. of 2 position double type does not provide the low wattage type.

Note 2) When two or more symbols are specified, indicate them alphabetically.

With/without manifold block

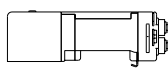
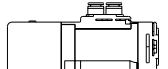
Nil	M	MB
Without manifold block	With manifold block	With manifold block built-in back pressure check valve
		
• When ordering with manifolds • When only valves are required	For adding stations	

* Lead wire is not included. * Lead wire is not included.

Port plug mounting port

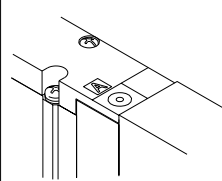
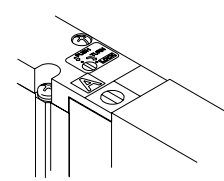
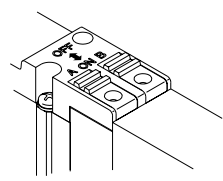
Nil	Nil
A	A port
B	B port

Cylinder port size

C4	One-touch fitting for ø4	Side ported	
C6	One-touch fitting for ø6		
C8	One-touch fitting for ø8		
L4	One-touch fitting for ø4	Top Note) ported	
L6	One-touch fitting for ø6		
L8	One-touch fitting for ø8		

Note) Can be changed to side ported configuration.

Manual override

Nil	B Note)	D Note)
Non-locking push type (tool required)	Locking type (tool required)	Slide locking type (Manual type) * Only side ported type applicable
		

Note) Except double (latching) type.

Coil voltage

5	24 VDC
6	12 VDC

Note) Light/surge voltage suppressor is built-in.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

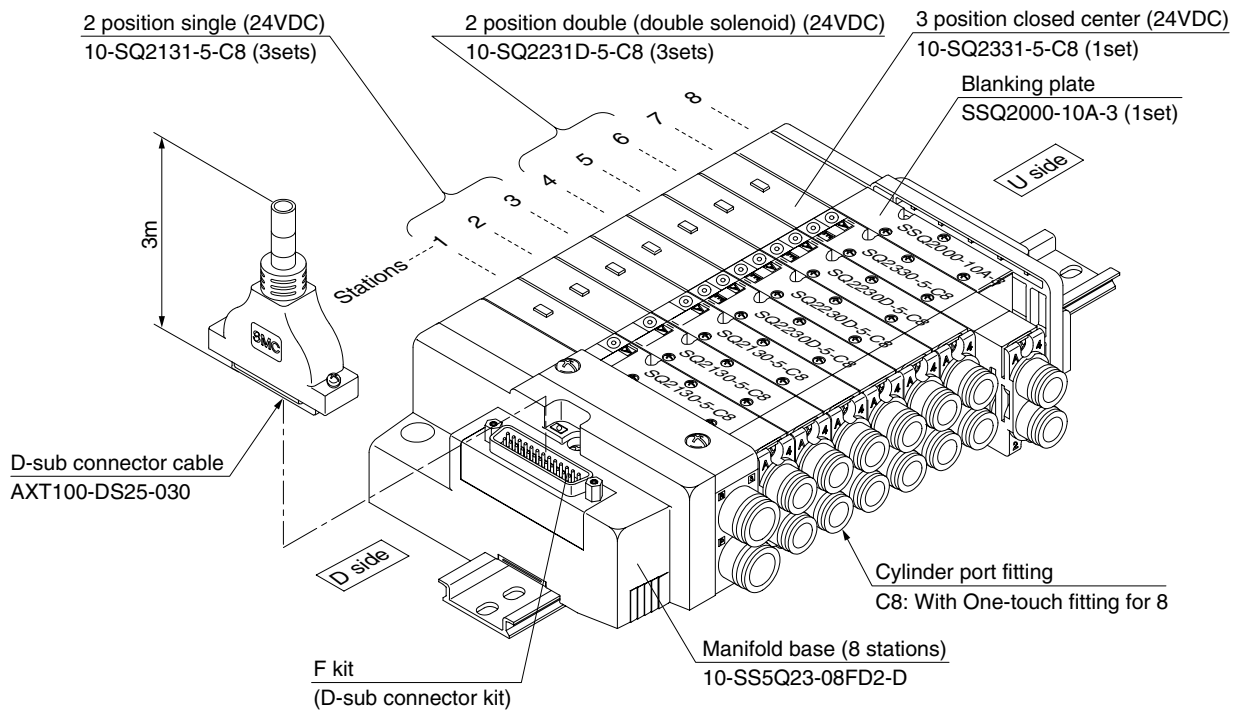
Air preparation equipment

Pressure switch

Clean gas filter

How to Order Manifold Assembly (Example)

Example) D-sub connector kit, with cable (3 m)



10-SS5Q23-08FD2-D.....1 set: F kit 8 station manifold base
 * 10-SQ2131-5-C8.....3 sets: 2 position single
 * 10-SQ2231D-5-C8.....3 sets: 2 position double (double solenoid)
 * 10-SQ2331-5-C8.....1 set: 3 position closed center
 * SSQ2000-10A-3.....1 set: Blanking plate

→ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Add the valve and option part numbers in order starting from the first station on the D side.
 When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

Model

Series		Number of solenoids	Model		Flow characteristics ^{Note 1)}						Response time (ms) ^{Note 2)}		Weight (g)
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)			Standard: 1W	Low wattage	
					C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv			
10-SQ2000	2 position	Single	Rubber seal	10-SQ2131	2.3	0.17	0.51	3.1	0.18	0.71	24 or less	31 or less	140
		Double (latching)	Rubber seal	10-SQ2231	2.3	0.17	0.51	3.1	0.18	0.71	31 or less	—	140
		Double (double solenoid)	Rubber seal	10-SQ2231D	2.3	0.17	0.51	3.1	0.18	0.71	20 or less	26 or less	155
	3 position	Closed center	Rubber seal	10-SQ2331	1.9	0.17	0.46	1.8	0.29	0.47	34 or less	44 or less	175
		Exhaust center	Rubber seal	10-SQ2431	1.9	0.17	0.46	3.1	0.14	0.65	34 or less	44 or less	175
		Pressure center	Rubber seal	10-SQ2531	2.5	0.17	0.56	1.8	0.30	0.47	34 or less	44 or less	175

Note 1) Values for the top ported cylinder port size of C8 (CYL—EXH). The side ported type will be about 10% less.

Note 2) Based on JIS B 8375-1981. (Values with a supply pressure of 0.5 MPa and indicator light/surge voltage suppressor. Values fluctuate depending on the pressure and air quality.)

Specifications

Valve specifications	Valve construction		Rubber seal	
	Fluid		Air, Inert gas	
	Maximum operating pressure		0.7MPa	
	Minimum operating pressure	Single	0.15MPa	
		Double (latching)	0.18MPa	
		Double (double solenoid)	0.1MPa	
		3 position	0.2MPa	
	Ambient and fluid temperature		-10 to 50°C ^{Note 1)}	
	Lubrication		Not required	
	Pilot valve manual override		Push type (tool required)/Locking type (tool required)/Slide locking type (manual type)	
Solenoid specifications	Vibration/impact resistance ^{Note 2)}		30/150 m/s ²	
	Enclosure		Dust tight	
	Coil rated voltage		12, 24 VDC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Equivalent to class B	
	Power consumption (Current)	24 VDC	1 W DC (42mA), 0.5 W DC (21mA) ^{Note 3)}	
		12 VDC	1 W DC (83mA), 0.5 W DC (42mA) ^{Note 3)}	

Note 1) Use dry air to prevent condensation when operating at low temperatures.

Note 2) Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000 Hz. The test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized status every once for each condition.

Note 3) Values for the low wattage (0.5W) specifications

Manifold specifications

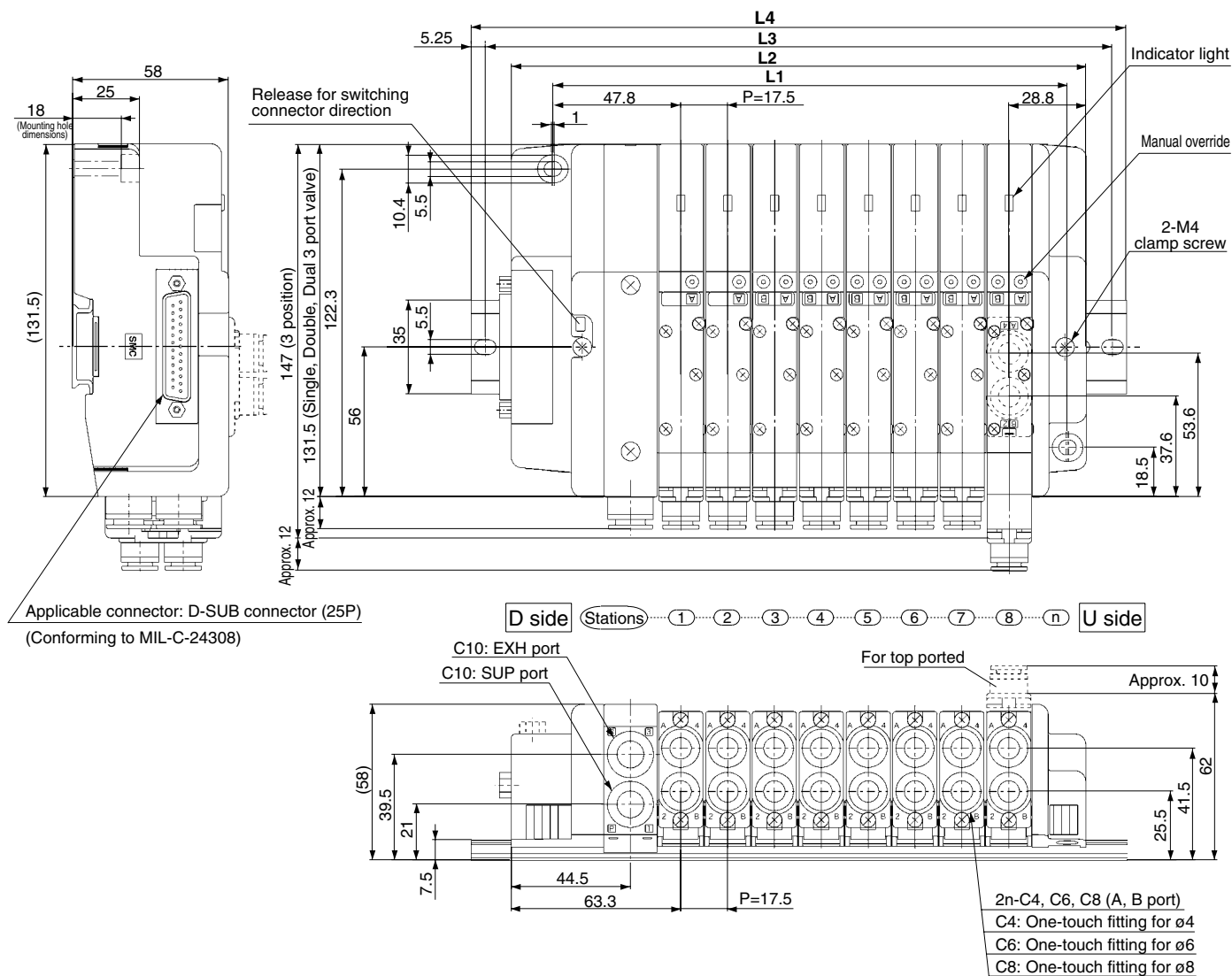
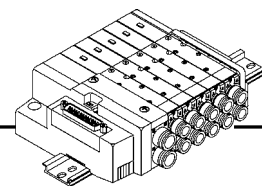
Base model	Piping specifications			Applicable solenoid valve	Connection type		Applicable stations ^{Note 3)}	5 stations weight (g) ^{Note 4)}	1 station weight (g) ^{Note 4)}
	Port size ^{Note 1)}								
	P, R	A, B							
		Port location	Port size						
Series 10-SQ2000	C10 (For ø10)	Side	C4 (For ø4) C6 (For ø6) C8 (For ø8)	10-SQ2□31	F kit: D-sub connector		1 to 12 stations	580	35
10-SS5Q23-□□-□			P kit: Flat ribbon cable		26P	1 to 12 stations	580	35	
					20P	1 to 9 stations			
		J kit: Flat ribbon cable PC wiring system compatible	1 to 8 stations		580	35			
			L. Kit: Lead wire		1 to 12 stations	620	50		
			S Kit: Serial transmission		1 to 8 stations	650	35		

Note 1) One-touch fittings in inch sizes are also available.

Note 2) Can be changed to side ported configuration.

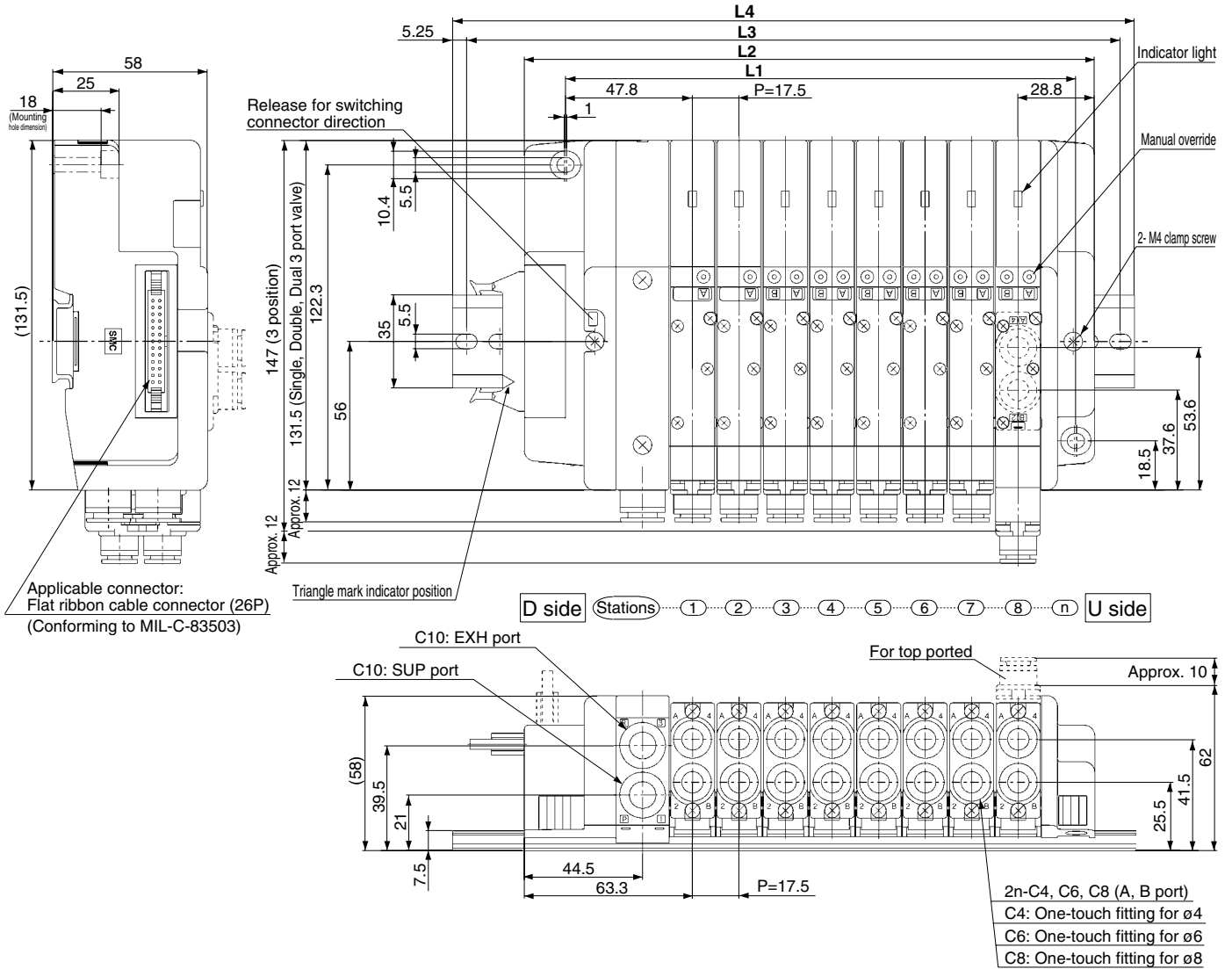
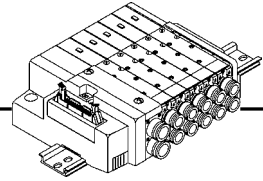
Note 3) An optional specification for special wiring is available to increase the maximum number of stations.

Note 4) Except valves.

F
Kit (D-sub connector kit)

Dimensions

Formula: $L1 = 17.5n + 52$, $L2 = 17.5n + 74.5$ n: Stations (Max. 16 stations)

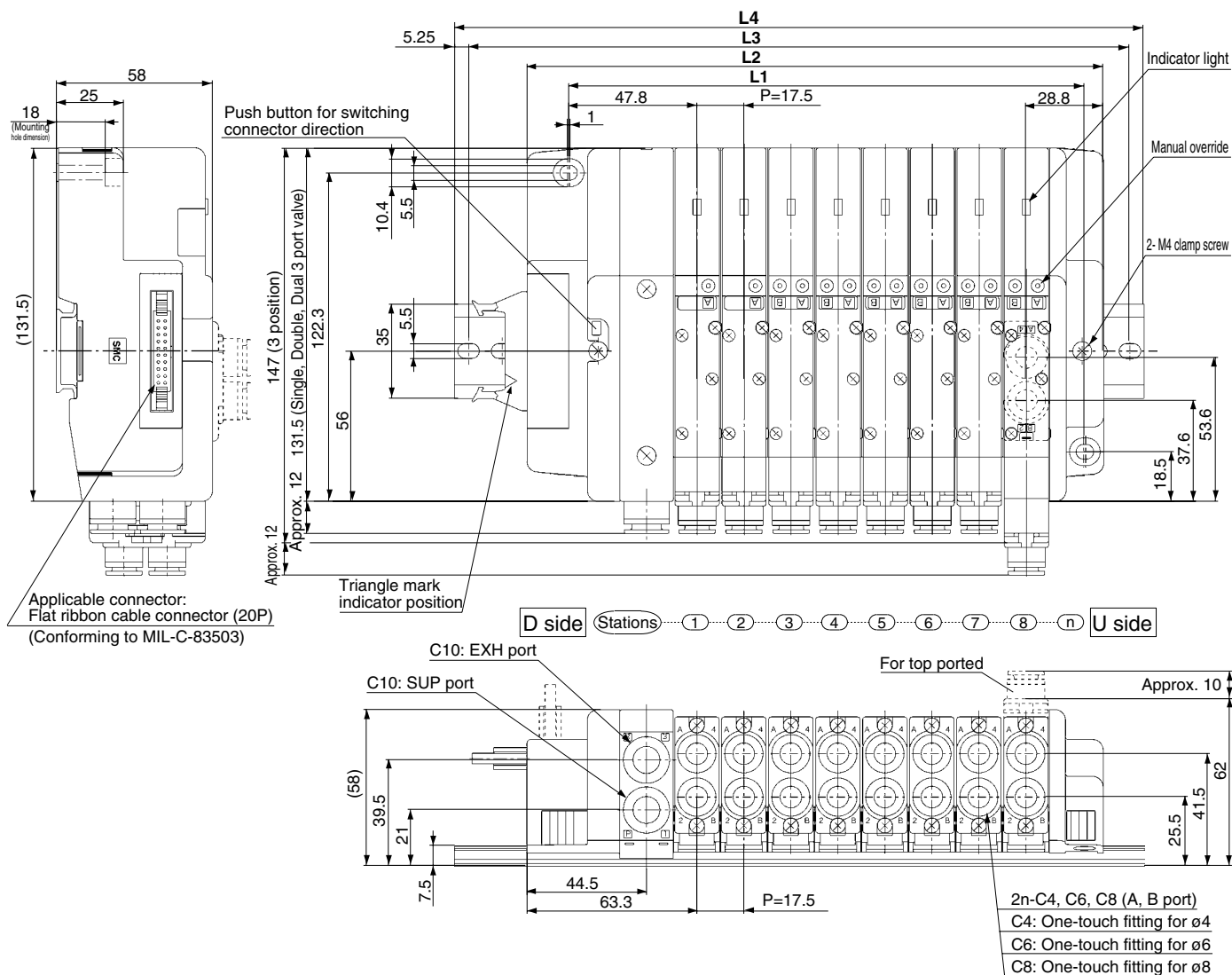
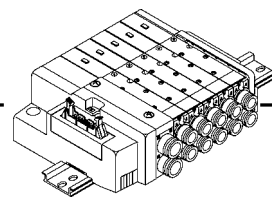
L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		69.5	87	104.5	122	139.5	157	174.5	192	209.5	227	244.5	262	279.5	297	314.5	332
L2		92	109.5	127	144.5	162	179.5	197	214.5	232	249.5	267	284.5	302	319.5	337	354.5
L3		112.5	137.5	150	175	187.5	200	225	237.5	262.5	275	287.5	312.5	325	350	362.5	375
L4		123	148	160.5	185.5	198	210.5	235.5	248	273	285.5	298	323	335.5	360.5	373	385.5

P
Kit (Flat ribbon cable kit)

Dimensions

Formula: $L1 = 17.5n + 52$, $L2 = 17.5n + 74.5$ n: Stations (Max. 16 stations)

L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		69.5	87	104.5	122	139.5	157	174.5	192	209.5	227	244.5	262	279.5	297	314.5	332
L2		92	109.5	127	144.5	162	179.5	197	214.5	232	249.5	267	284.5	302	319.5	337	354.5
L3		112.5	137.5	150	175	187.5	200	225	237.5	262.5	275	287.5	312.5	325	350	362.5	375
L4		123	148	160.5	185.5	198	210.5	235.5	248	273	285.5	298	323	335.5	360.5	373	385.5

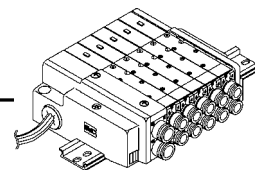
J Kit (PC wiring system compatible flat ribbon cable kit)



Dimensions

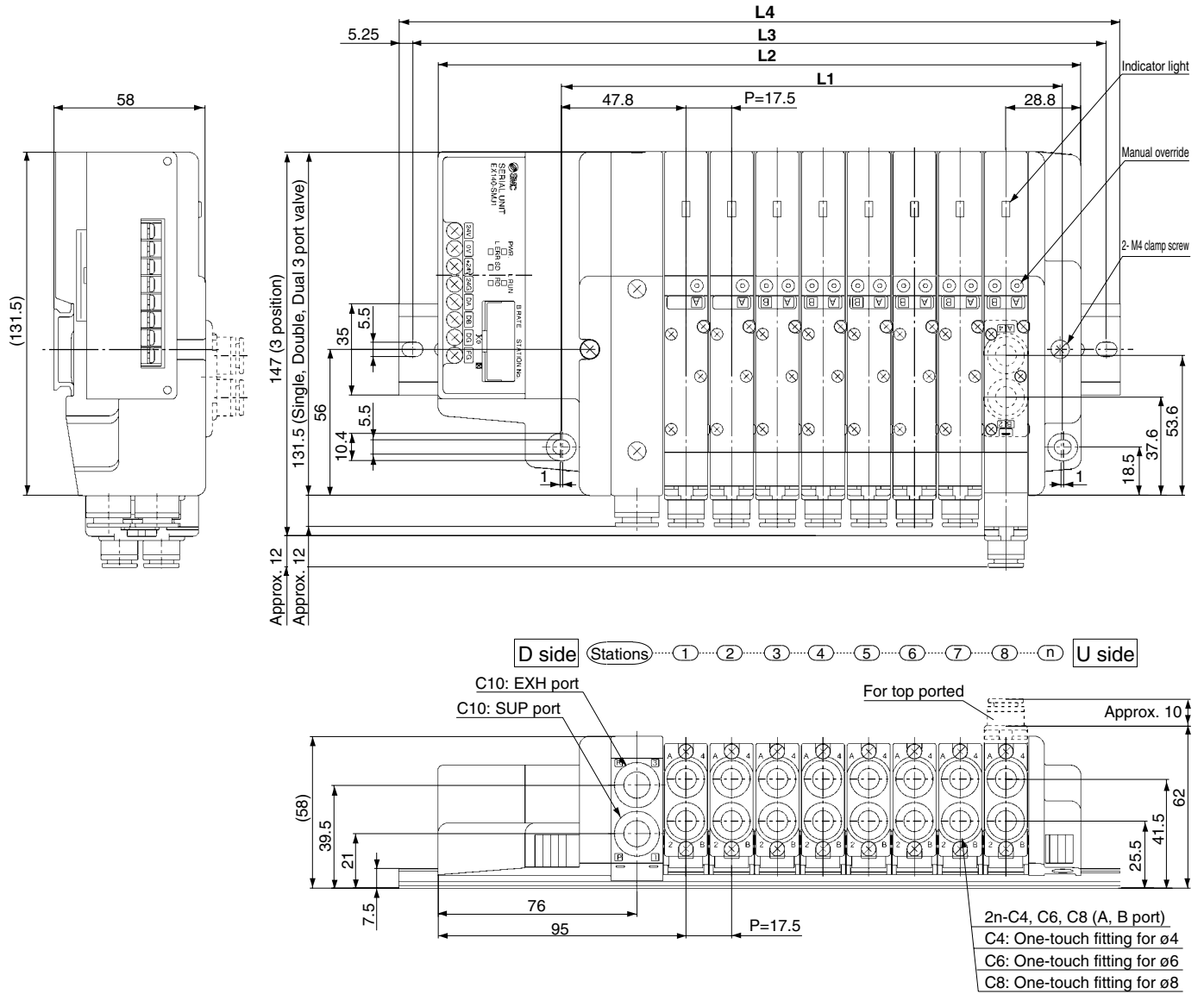
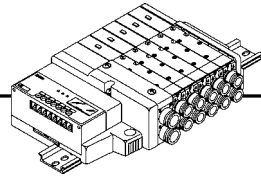
Formula: $L1 = 17.5n + 52$, $L2 = 17.5n + 74.5$ n: Stations (Max. 16 stations)

L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1		69.5	87	104.5	122	139.5	157	174.5	192	209.5	227	244.5	262	279.5	297	314.5	332
L2		92	109.5	127	144.5	162	179.5	197	214.5	232	249.5	267	284.5	302	319.5	337	354.5
L3		112.5	137.5	150	175	187.5	200	225	237.5	262.5	275	287.5	312.5	325	350	362.5	375
L4		123	148	160.5	185.5	198	210.5	235.5	248	273	285.5	298	323	335.5	360.5	373	385.5



Station	n	1	2	3	4	5	6	7	8	9	10	11	12
L1	63.5	81	98.5	116	133.5	151	168.5	186	203.5	221	238.5	256	
L2	77.5	95	112.5	130	147.5	165	182.5	200	217.5	235	252.5	270	
L3	100	125	137.5	150	175	187.5	212.5	225	237.5	262.5	275	300	
L4	110.5	135.5	148	160.5	185.5	198	223	235.5	248	273	285.5	310.5	

S Kit (Serial transmission kit)



Dimensions

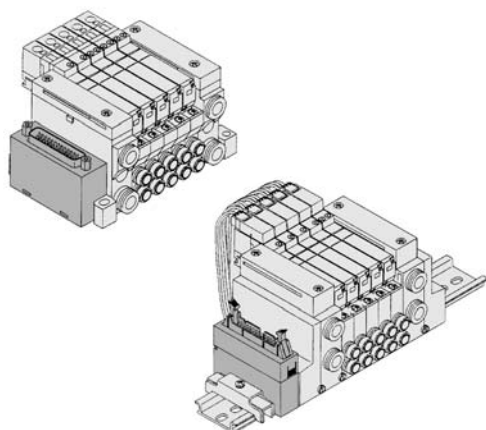
Formula: $L1 = 17.5n + 52$, $L2 = 17.5n + 106$ n: Stations (Max. 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	69.5	87	104.5	122	139.5	157	174.5	192	209.5	227	244.5	262	279.5	297	314.5	332
L2	123.5	141	158.5	176	193.5	211	228.5	246	263.5	281	298.5	316	333.5	351	368.5	386
L3	150	162.5	187.5	200	225	237.5	250	275	287.5	312.5	325	337.5	362.5	375	400	412.5
L4	160.5	173	198	210.5	235.5	248	260.5	285.5	298	323	335.5	348	373	385.5	410.5	423

Series 10-21-VQ1000/2000

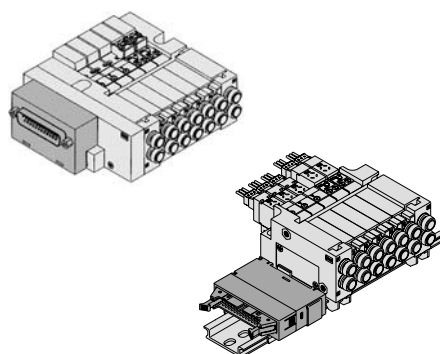
5 port solenoid valve

Base mounted



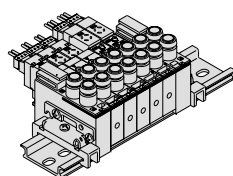
Manifold Model	Series	D-sub connector	Flat ribbon cable	Connector	Serial
Plug-in	10-/21-VQ1000	●	●	—	●
	10-/21-VQ2000	●	●	—	●
Plug lead	10-/21-VQ1000	●	●	●	●

Body ported / flip type



Manifold Model	Series	D-sub connector	Flat ribbon cable	Connector	Serial
Plug-in	10-/21-VQ1000	●	●	—	●
Plug lead	10-/21-VQ1000	●	●	●	●
	10-/21-VQ2000	●	●	●	●

Body ported / cassette type



Manifold Model	Series	D-sub connector	Flat ribbon cable	Connector	Serial
Plug lead	10-/21-VQ1000	●	●	●	●

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series ¹⁰⁻₂₁₋VQ1000/2000

Base mounted
Plug-in unit

VQ1000/Base mounted Plug-in unit

How to Order Manifold

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

Series VQ1000

Plug-in unit

Stations
The maximum and minimum number of stations are varied depending on kit. (Refer to the table below.).

10 - V V 5 Q 1 1 - 06 C6 F U1 - N

Cylinder port
C3 — With one-touch fitting for ø3.2
C4 — With one-touch fitting for ø4
C6 — With one-touch fitting for ø6
M5 — M5 thread ^{Note 1)}
CM — Mixed size/with port plug ^{Note 2)}

Note 1) In the case of M5, P and R ports are Rc1/8.
Note 2) Specify mixed size and with port plug in the manifold specification sheet.

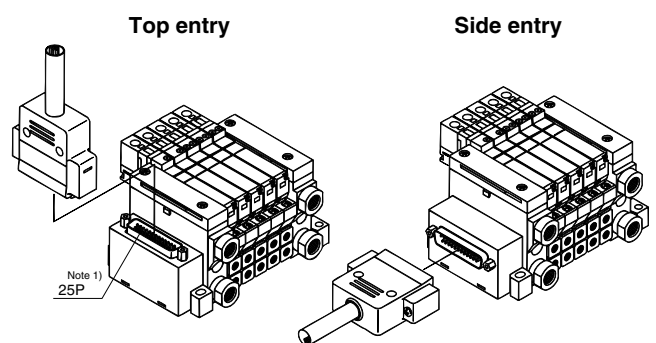
Kit / Electrical entry / Cable length
Refer to the figure below.

Option
Nil — None
B — With back pressure check valve ^{Note 2)}
D — DIN rail mount style
K — Special wiring specification (except double wiring) ^{Note 3)}
N — With name plate
R — External pilot ^{Note 4)}

Note 1) When two or more symbols are specified, indicate them alphabetically. Example) -BDN
Note 2) Models with a suffix "-B" have check valves for prevention of back pressure at all manifold stations.
If not all stations need this check valve, specify the stations where check valves are installed by using the manifold specification sheet.
Note 3) Indicate the wiring specification in the manifold specification sheet.
Note 4) Indicate "R" for the valve with external pilot.

Kit / Electrical entry / Cable length

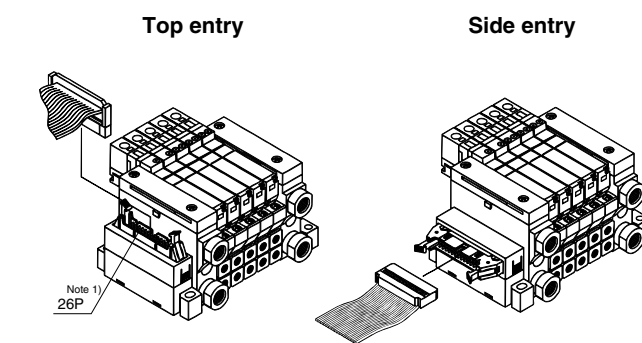
F Kit (D-sub connector kit)



Connector entry direction					
Top entry		Side entry			
F Kit	U0	F Kit	S0	Without cable	Note 2) 2 to 12 stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

Note 1) Besides the above, F kits with different number of pins are available.
Note 2) Using special wiring, the maximum stations can be increased as an option.

P Kit (Flat ribbon cable kit)



Connector entry direction					
Top entry		Side entry			
P Kit	U0	P Kit	S0	Without cable	Note 2) 2 to 12 stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

Note 1) Besides the above, P kits with different number of pins are available.
Note 2) Using special wiring, the maximum stations can be increased as an option.

How to Order Valves

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

10 - V Q 1 1 0 0 - 5

VQ1000

Type of actuation	
1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

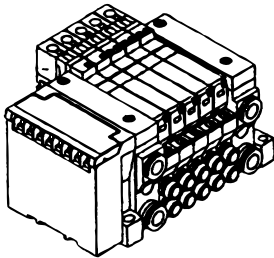
Manual override
Nil — Non-locking push type (tool required)
B — Locking type (tool required)
C — Locking type (manual)

Coil voltage
5 — 24 VDC/With light/surge voltage suppresser
6 — 12 VDC/With light/surge voltage suppresser

Function
Nil — Standard type (1W)
H — High pressure type (1.5W)
N — Negative COM
R — External pilot
Y — Low wattage type (0.5W)
 (Note) Use a low wattage type when operated under continuous energization.

Seal type
0 — Metal seal
1 — Rubber seal

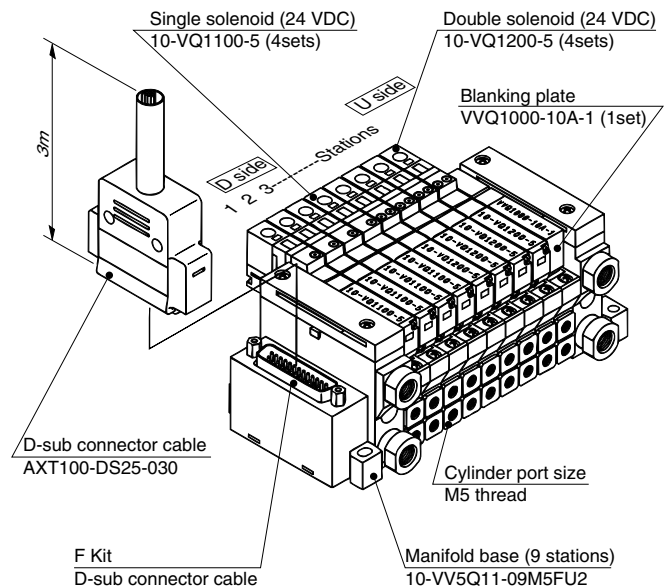
S Kit (Serial transmission kit)



S Kit	0	Without SI unit	
	A	With general type SI unit, Series EX300	
	B	Mitsubishi Electric Corp.: MELSECNET/mini-S3 data link system compatible	
	C	OMRON Corp.: SYSBUS wire system compatible	
	D	SHARP Corp.: Satellite I/O Link System compatible	
	E	Matsushita Electric Works, Ltd.: MEWNET-F System compatible	
	F1	NKE Corp.: Uni-wire System (16 outputs) compatible	
	G	Allen-Bradley Remote I/O (RIO) System compatible	
	H	NKE Corp.: Uni wire H system (16 outputs) compatible	
	J1	SUNX Corp.: S-LINK System (16 outputs) compatible	
	J2	SUNX Corp.: S-LINK System (8 outputs) compatible	Max. 8 stations
	K	Fuji Electric Co., Ltd.: T Link Mini System compatible	
	Q	DeviceNet and CompoBus/D (OMRON Corporation) compatible	Max. 16 stations
	R1	OMRON Corp.: CompoBus/S (16 outputs) compatible	
	R2	OMRON Corp.: CompoBus/S (8 outputs) compatible	Max. 8 stations
	V	Mitsubishi Electric Corp.: CC -Link compatible	Max. 16 stations

Note) Maximum stations can be increased as an option by using special wiring.

How to Order Manifold Assembly / Example



10-VV5Q11-09M5FU2 1 set (F kit, 9 station manifold part no.)
 * **10-VQ1100Y-05** 4 sets (Single solenoid part no.)
 * **10-VQ1200Y-05** 4 sets (Double solenoid part no.)
 * **VVQ1000-10A-1** 1 set (Blanking plate part no.)
 * The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

VQ2000/Base mounted Plug-in unit

How to Order Manifold

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

Series VQ2000

Plug-in unit

Stations
The maximum and minimum number of stations are varied depending on kit.
(Refer to the table below.).

10 - V V 5 Q 2 1 - 08 C6 F U1 - N

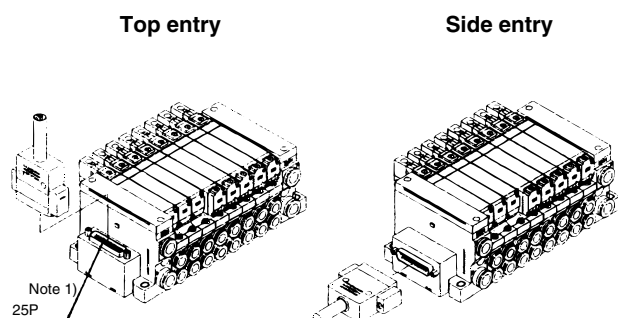
Cylinder port size
C4 — With one-touch fitting for ø4
C6 — With one-touch fitting for ø6
C8 — With one-touch fitting for ø8
01 — Rc1/8 thread ^{Note 1)}
CM — Mixed size/with port plug ^{Note 2)}
^{Note 1)} In the case of 01, P and R ports are Rc1/4.
^{Note 2)} Specify mixed size and with port plug in the manifold specification sheet.

Kit / Electrical entry / Cable length
Refer to the figure below.

Option
Nil — None
B — With back pressure check valve ^{Note 2)}
D — DIN rail mount style
K — Special wiring specification (except double wiring) ^{Note 3)}
N — With name plate
R — External pilot ^{Note 4)}
^{Note 1)} When two or more symbols are specified, indicate them alphabetically. Example) - BDN
^{Note 2)} Models with a suffix "-B" have check valves for prevention of back pressure at all manifold stations. If not all stations need this check valve, specify the stations where check valves are installed by using the manifold specification sheet.
^{Note 3)} Indicate the wiring specification in the manifold specification sheet.
^{Note 4)} Indicate "R" for the valve with external pilot.

Kit / Electrical entry / Cable length

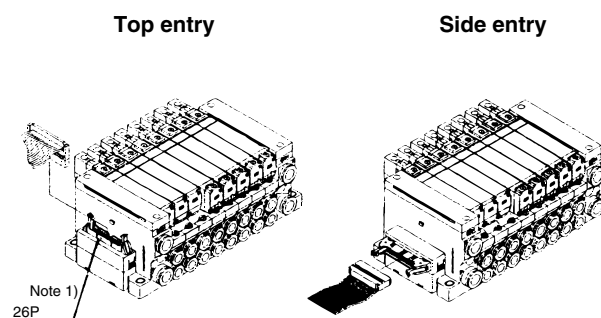
F Kit (D-sub connector kit)



Connector entry direction					
Top entry		Side entry			
F Kit	U0	F Kit	S0	Without cable	Note 2) 2 to 12 stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

^{Note 1)} Besides the above, F kits with different number of pins are available.
^{Note 2)} Using special wiring, the maximum stations can be increased as an option.

P Kit (Flat ribbon cable kit)



Connector entry direction					
Top entry		Side entry			
P Kit	U0	P Kit	S0	Without cable	Note 2) 2 to 12 stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

^{Note 1)} Besides the above, P kits with different number of pins are available.
^{Note 2)} Using special wiring, the maximum stations can be increased as an option.

How to Order Valves

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

10 - V Q 2 1 0 0 - 5

VQ2000

Type of actuation

1	2 position single
2	2 position double
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

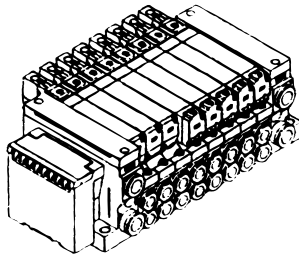
Manual override
Nil — Non-locking push type (tool required)
B — Locking type (tool required)
C — Locking type (manual)

Coil voltage
5 — 24 VDC/With light/surge voltage suppresser
6 — 12 VDC/With light/surge voltage suppresser

Function
Nil — Standard type (1W)
H — High pressure type (1.5W)
N — Negative COM
R — External pilot
Y — Low wattage type (0.5W)
 (Note) Use a low wattage type when operated under continuous energization.

Seal type
0 — Metal seal
1 — Rubber seal

S Kit (Serial transmission kit)

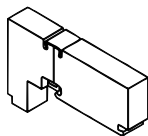


S Kit	0	Without SI unit	Max. 16 stations ^{Note)}
	A	With general style SI unit, Series EX300	
	B	Mitsubishi Electric Corp.: MELSECNET/MINI-S3 data link system compatible	
	C	OMRON Corp.: SYSBUS wire system compatible	
	D	SHARP Corp.: Satellite I/O Link System compatible	
	E	Matsushita Electric Corp.: MEWNET-F System compatible	
	F1	NKE Corp.: Uni-wire System (16 outputs) compatible	
	G	Allen-Bradley Co.: Remote I/O (RIO) System compatible	
	H	NKE Corp.: Uni wire H system (16 outputs) compatible	
	J1	SUNX Corp.: S-LINK System (16 outputs) compatible	
	J2	SUNX Corp.: S-LINK System (8 outputs) compatible	Max. 8 stations
	K	Fuji Electric Co., Ltd.: T Link Mini System compatible	Max. 16 stations
	Q	DeviceNet and CompoBus/D (OMRON Corporation) compatible	
	R1	OMRON Corp.: CompoBus/S (16 outputs) compatible	
	R2	OMRON Corp.: CompoBus/S (8 outputs) compatible	Max. 8 stations
	V	Mitsubishi Electric Corp.: CC-Link compatible	Max. 16 stations

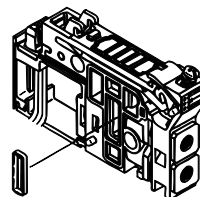
Note) Maximum stations can be increased as an option by using special wiring.

Manifold option

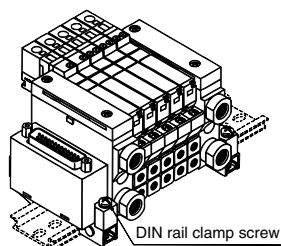
Blanking plate assembly
VVQ1000-10A-1
VVQ2000-10A-1



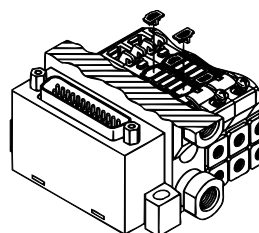
SUP blocking plate
VVQ1000-16A
VVQ2000-16A



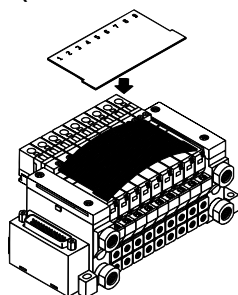
DIN rail mounting bracket [-D]
VVQ1000-57A
VVQ2000-57A



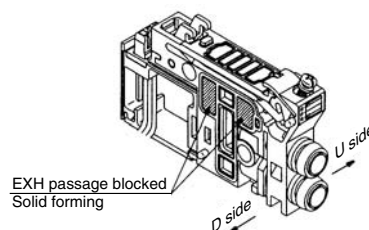
Back pressure check valve assembly [-B]
VVQ1000-18A
VVQ2000-18A



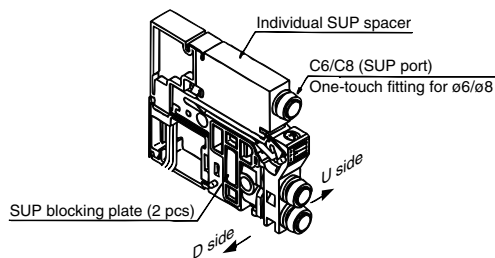
Name plate [-N]
VVQ1000-N-stations (1 to maximum stations)
VVQ2000-N-stations (1 to maximum stations)



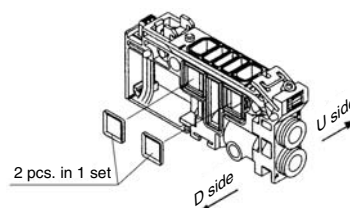
EXH blocking base assembly (For 10-/21-VQ1000)
10-/21-VVQ1000-19A-F□-(C3, C4, C6, M5)



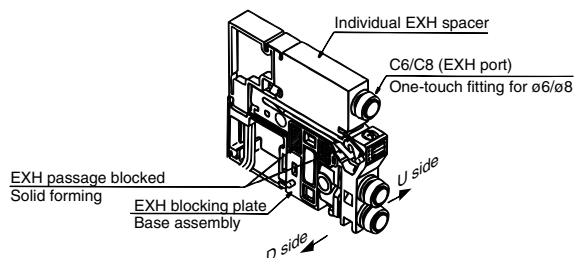
Individual SUP spacer
10-/21-VVQ1000-P-1-C6
10-/21-VVQ2000-P-1-C8



EXH blocking plate (For 10-/21-VQ2000)
VVQ2000-19A

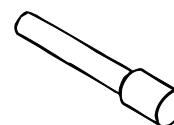


Individual EXH spacer
10-/21-VVQ1000-R-1-C6
10-/21-VVQ2000-R-1-C8



Blanking plug (For One-touch fitting)

23
04
KQ2P06
08
10



Model

Series	Number of solenoids		Model		Flow characteristics ^{Note 1)}						Response time (ms) ^{Note 2)}			Weight g
					1→2/4(P→A/B)			2/4→3/5 (A/B→R1/R2)			Standard: 1W H: 1.5W	Low wattage: 0.5 W	AC	
					C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv				
10-VQ1000	2 position	Single	Metal seal	10-/21-VQ1100	0.70	0.15	0.16	0.72	0.25	0.18	12 or less	15 or less	29 or less	64
			Rubber seal	10-/21-VQ1101	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	34 or less	
		Double	Metal seal	10-/21-VQ1200	0.70	0.15	0.16	0.72	0.25	0.18	10 or less	13 or less	13 or less	
			Rubber seal	10-/21-VQ1201	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	20 or less	
	3 position	Closed center	Metal seal	10-/21-VQ1300	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	78
			Rubber seal	10-/21-VQ1301	0.70	0.20	0.16	0.65	0.42	0.18	25 or less	33 or less	47 or less	
		Exhaust center	Metal seal	10-/21-VQ1400	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
			Rubber seal	10-/21-VQ1401	0.70	0.20	0.16	1.0	0.30	0.25	25 or less	33 or less	47 or less	
		Pressure center	Metal seal	10-/21-VQ1500	0.70	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
			Rubber seal	10-/21-VQ1501	0.85	0.20	0.21	0.65	0.42	0.18	25 or less	33 or less	47 or less	
10-VQ2000	2 position	Single	Metal seal	10-/21-VQ2100	2.0	0.15	0.46	2.6	0.15	0.60	22 or less	29 or less	49 or less	90
			Rubber seal	10-/21-VQ2101	2.2	0.28	0.55	3.2	0.30	0.80	24 or less	31 or less	51 or less	
		Double	Metal seal	10-/21-VQ2200	2.0	0.15	0.46	2.6	0.15	0.60	15 or less	20 or less	20 or less	
			Rubber seal	10-/21-VQ2201	2.2	0.28	0.55	3.2	0.30	0.80	20 or less	26 or less	26 or less	
	3 position	Closed center	Metal seal	10-/21-VQ2300	2.0	0.15	0.46	2.0	0.18	0.46	29 or less	38 or less	58 or less	110
			Rubber seal	10-/21-VQ2301	2.0	0.28	0.49	2.2	0.31	0.60	34 or less	44 or less	64 or less	
		Exhaust center	Metal seal	10-/21-VQ2400	2.0	0.15	0.46	2.6	0.15	0.60	29 or less	38 or less	58 or less	
			Rubber seal	10-/21-VQ2401	2.0	0.28	0.49	3.2	0.30	0.80	34 or less	44 or less	64 or less	
		Pressure center	Metal seal	10-/21-VQ2500	2.4	0.17	0.57	2.0	0.18	0.46	29 or less	38 or less	58 or less	
			Rubber seal	10-/21-VQ2501	3.2	0.28	0.80	2.2	0.31	0.60	34 or less	44 or less	64 or less	

Note 1) Cylinder port size: C6 (10-VQ1000), C8 (10-VQ2000), without back pressure check valve

Note 2) Based on JIS B 8375-1981. (Supply pressure; 0.5 MPa; with light/ surge voltage suppressor; clean air) Subject to the pressure and air quality.

The values at ON state given for double styles.

Specifications

Valve specifications	Valve construction		Metal seal	Rubber seal
	Fluid		Air / Inert gas	
	Maximum operating pressure		0.7MPa	0.7MPa
	Minimum operating pressure	Single	0.1MPa	0.15MPa
		Double	0.1MPa	0.1MPa
		3 position	0.1MPa	0.2MPa
	Ambient and fluid temperature		−10 to 50°C Note 1)	−10 to 50°C Note 1)
	Lubrication		Not required	
	Pilot valve manual override		Push type / Locking type (tool required, manual) option	
	Enclosure		Dust tight	
Solenoid	Grease		10-: Fluorine grease, 21-: Lithium soap base grease	
	Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-: Grade 1, 21-: Grade 2	
	Coil rated voltage		12, 24 VDC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Equivalent to class B	
	Power consumption DC (Current)	24 VDC	1 W DC (42mA), 0.5 W DC (21mA)	
		12 VDC	1 W DC (83mA), 0.5 W DC (42mA)	

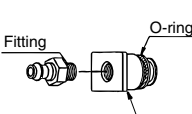
Note 1) Use dry air to prevent condensation when operating at low temperatures.

Precautions to install threaded fitting assemblies

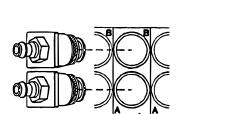
Threaded fitting assemblies used for this manifold are not mounted on the manifold base or valve at factory, but attached to this manifold in order to improve installation efficiency.

Install a threaded fitting following the procedures below.

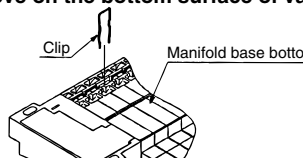
1. Screw in the fitting to the threaded fitting assembly attached.



2. Insert the threaded fitting assembly into the port.



3. Insert the clip into the groove on the bottom surface of valve.



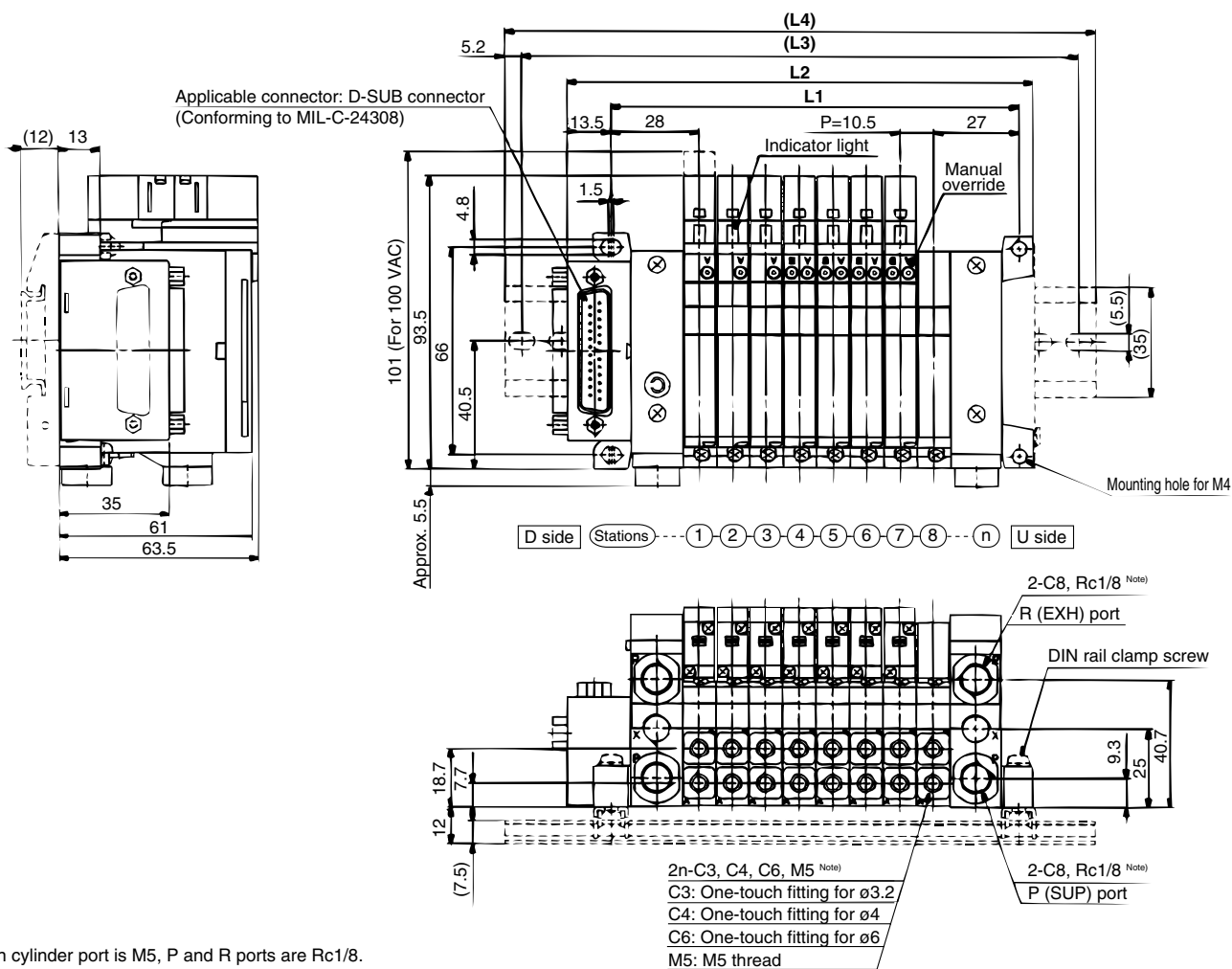
10-VQ1000

■Precautions

- Be careful not to scratch or damage the O-ring of the fitting assembly. It may cause air leakage.
- Do not screw in the fitting to the threaded fitting assembly already installed on the manifold base. If the tightening torque is large, the manifold base may be damaged.
- To prevent the exhaust air at EXH from being pressurized (0.3 MPa or more) by throttling, EXH port on both sides is recommended. (Otherwise delay in response or air leakage may occur)

Fkit (D-sub connector) / ¹⁰⁻₂₁₋ VQ1000

The broken lines indicate the DIN rail mounted style [-D] and the side entry connection [-FS].



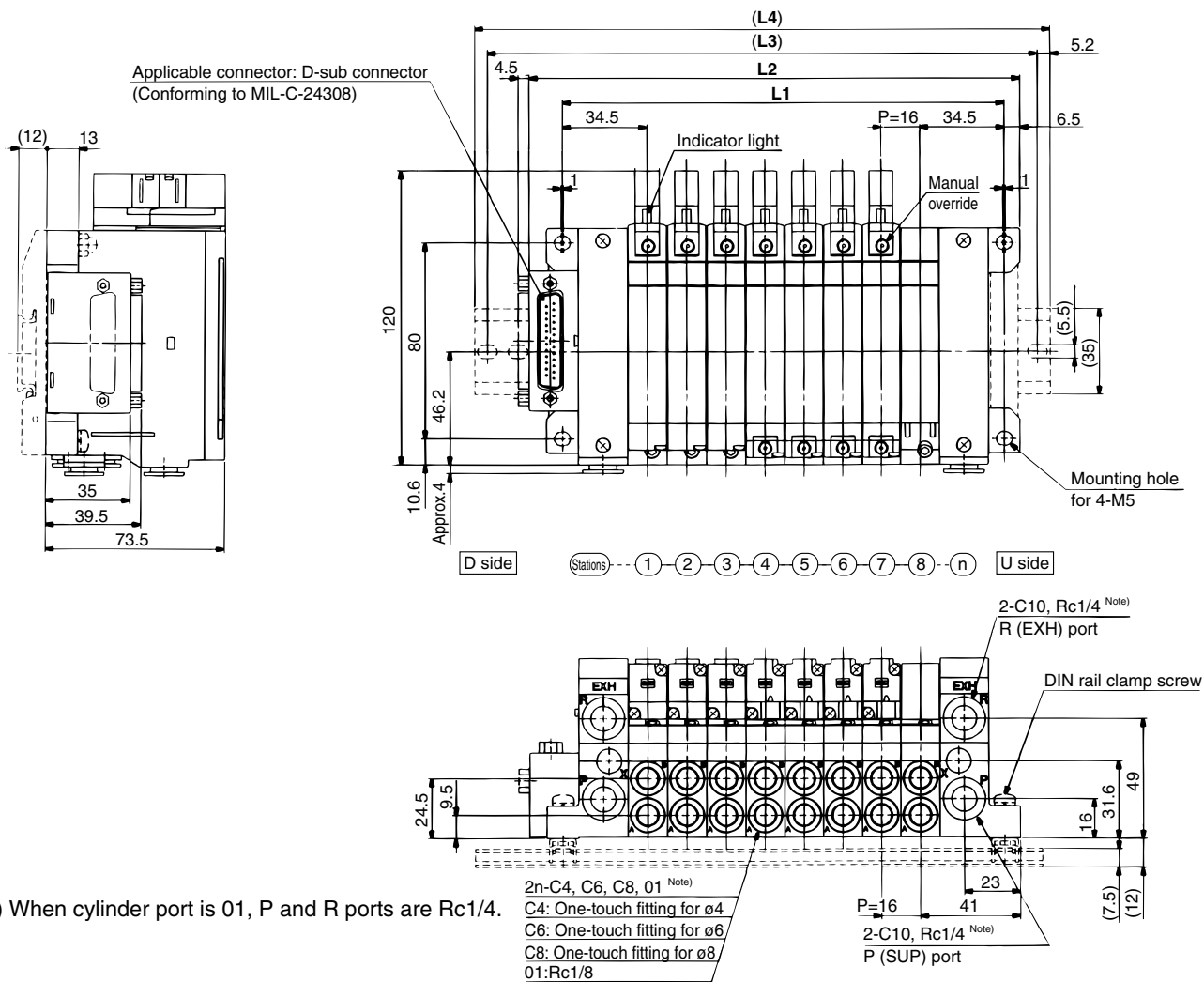
Note) When cylinder port is M5, P and R ports are Rc1/8.

Formula $L1 = 10.5n + 44.5$ / $L2 = 10.5n + 62.5$ / n: Stations (Max. 12 stations)

Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	65.5	76	86.5	97	107.5	118	128.5	139	149.5	160	170.5	181	191.5	202	212.5	223	233.5	244	254.5	265	275.5	286	296.5
L2	83.5	94	104.5	115	125.5	136	146.5	157	167.5	178	188.5	199	209.5	220	230.5	241	251.5	262	272.5	283	293.5	304	314.5
(L3)	112.5	125	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5	275	287.5	300	312.5	325	325	337.5
(L4)	123	135.5	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273	285.5	298	310.5	323	335.5	335.5	348

**10-
21- VQ2000**

The broken lines indicate DIN rail mounted style [-D] and the side entry connection [-FS].



Note) When cylinder port is 01, P and R ports are Rc1/4.

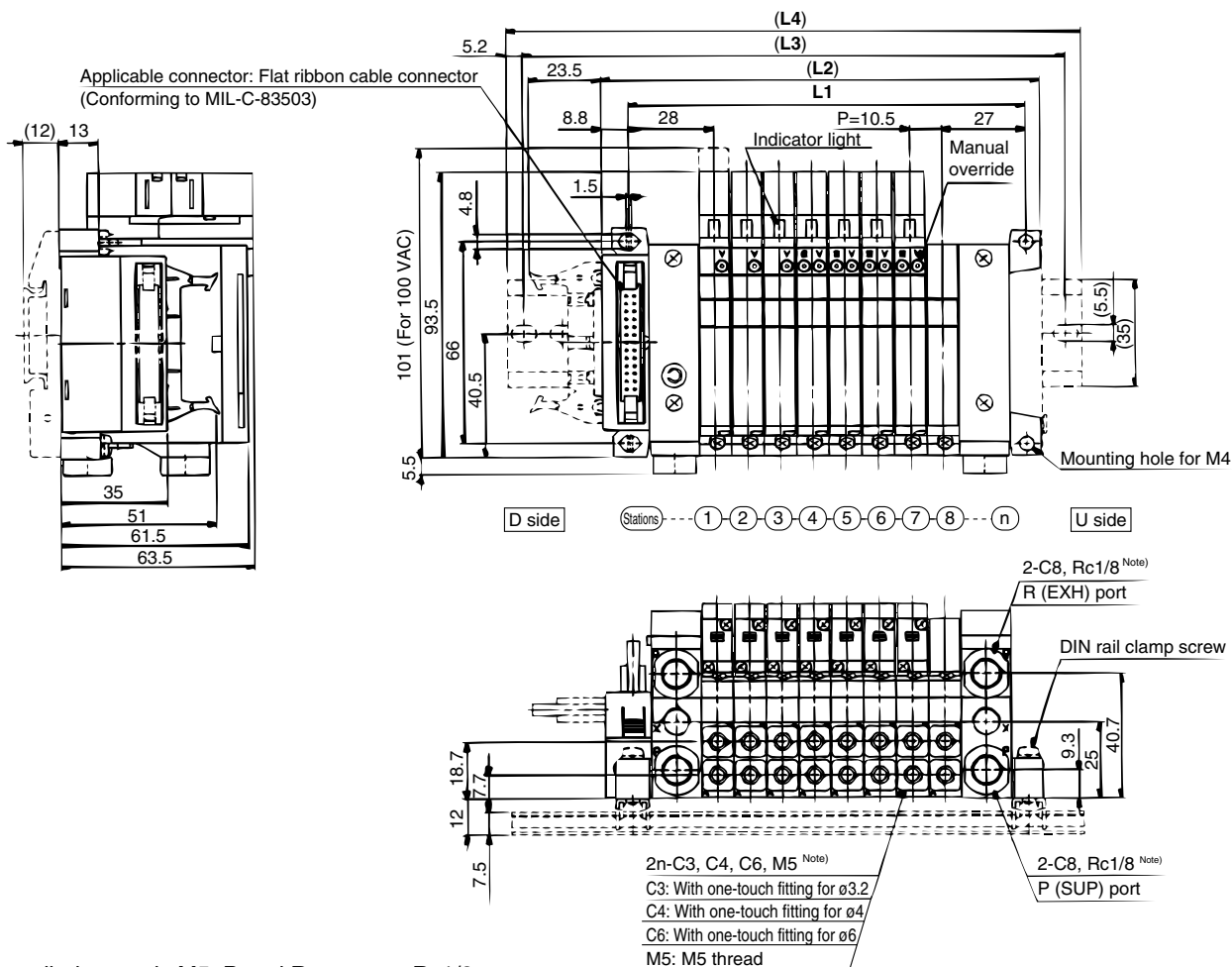
Formula $L1 = 16n + 53$ / $L2 = 16n + 73$ / n: Stations (Max. 12 stations)

Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	85	101	117	133	149	165	181	197	213	229	245	261	277	293	309	325	341	357	373	389	405	421	437
L2	105	121	137	153	169	185	201	217	233	249	265	281	297	313	329	345	361	377	393	409	425	441	457
(L3)	137.5	150	162.5	187.5	200	212.5	225	250	262.5	275	300	312.5	325	337.5	350	375	387.5	400	412.5	437.5	450	462.5	487.5
(L4)	148	160.5	173	198	210.5	223	235.5	260.5	273	285.5	310.5	323	335.5	348	360.5	385.5	398	410.5	423	448	460.5	473	498

Clean gas filter

P kit (Flat ribbon cable kit) / ¹⁰⁻₂₁₋ VQ1000

The broken lines indicate DIN rail mounting style [-D] and side entry connection [-PS].

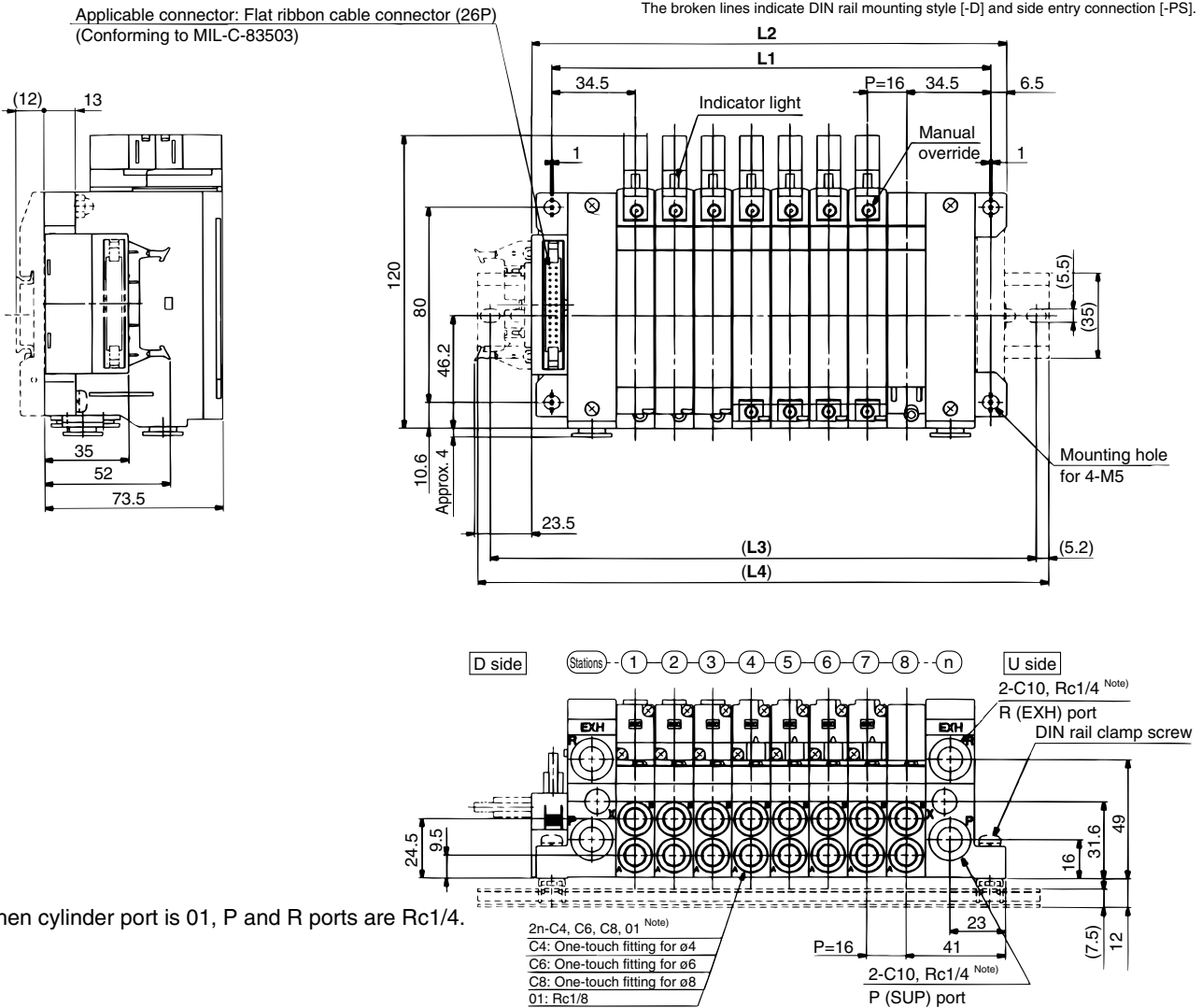


Note) When cylinder port is M5, P and R ports are Rc1/8.

Formula $L1 = 10.5n + 44.5$ / $L2 = 10.5n + 57.5$ / n: Stations (Max. 12 stations)

Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	65.5	76	86.5	97	107.5	118	128.5	139	149.5	160	170.5	181	191.5	202	212.5	223	233.5	244	254.5	265	275.5	286	296.5
L2	78.5	89	99.5	110	120.5	131	141.5	152	162.5	173	183.5	194	204.5	215	225.5	236	246.5	257	267.5	278	288.5	299	309.5
(L3)	112.5	125	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5	287.5	300	312.5	325	337.5
(L4)	123	135.5	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298	298	310.5	323	335.5	348

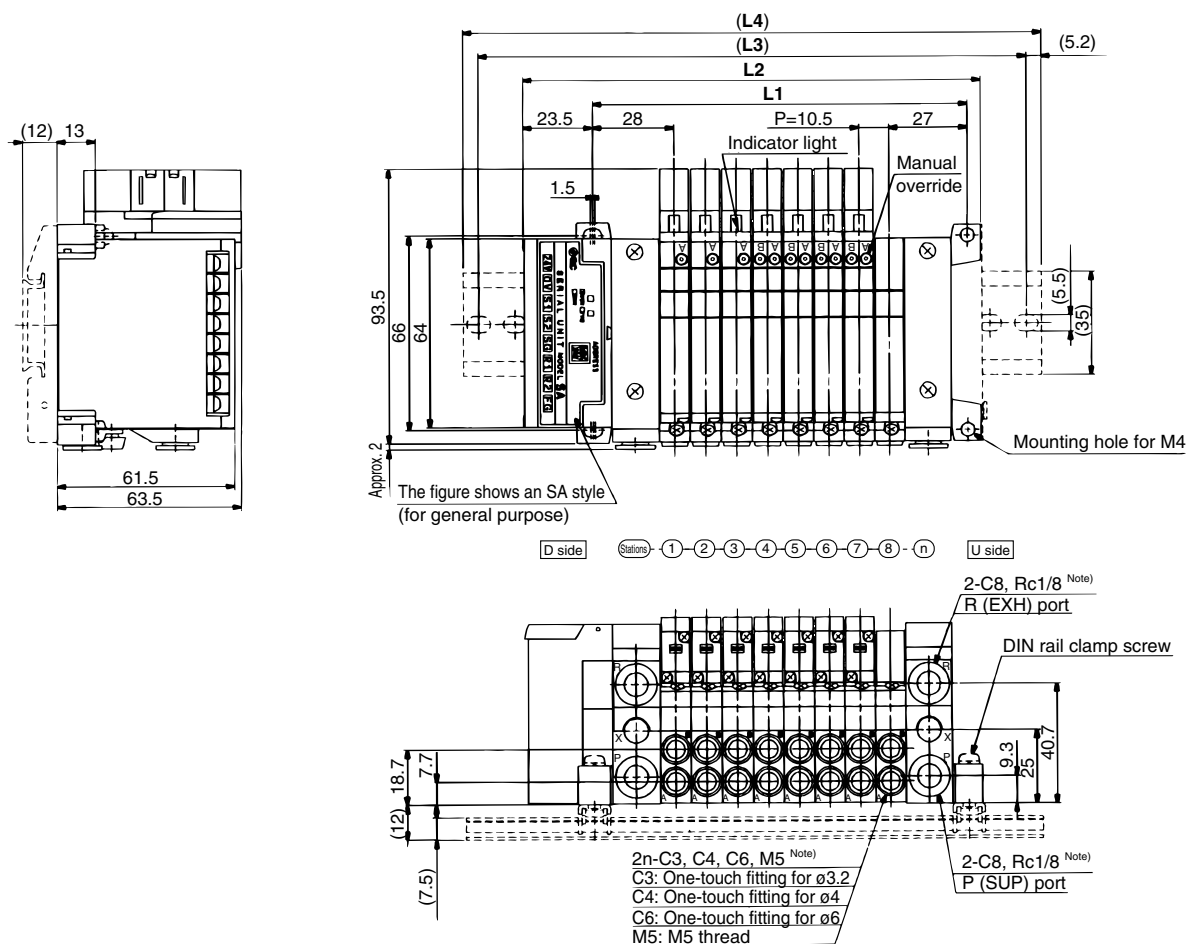
P kit (Flat ribbon cable kit) / ¹⁰⁻₂₁₋VQ2000



Formula $L1 = 16n + 53$ / $L2 = 16n + 68$ / n: Stations (Max. 12 stations)

Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	85	101	117	133	149	165	181	197	213	229	245	261	277	293	309	325	341	357	373	389	405	421	437
L2	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340	356	372	388	404	420	436	452
(L3)	125	150	162.5	175	187.5	212.5	225	237.5	262.5	275	287.5	300	312.5	337.5	350	362.5	387.5	400	412.5	425	450	462.5	475
(L4)	135.5	160.5	173	185.5	198	223	235.5	248	273	285.5	298	310.5	323	348	360.5	373	398	410.5	423	435.5	460.5	473	485.5

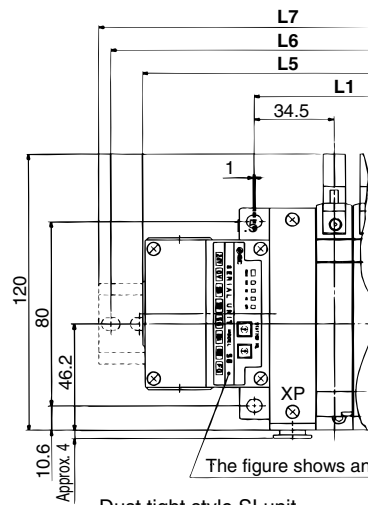
Dust tight style SI unit



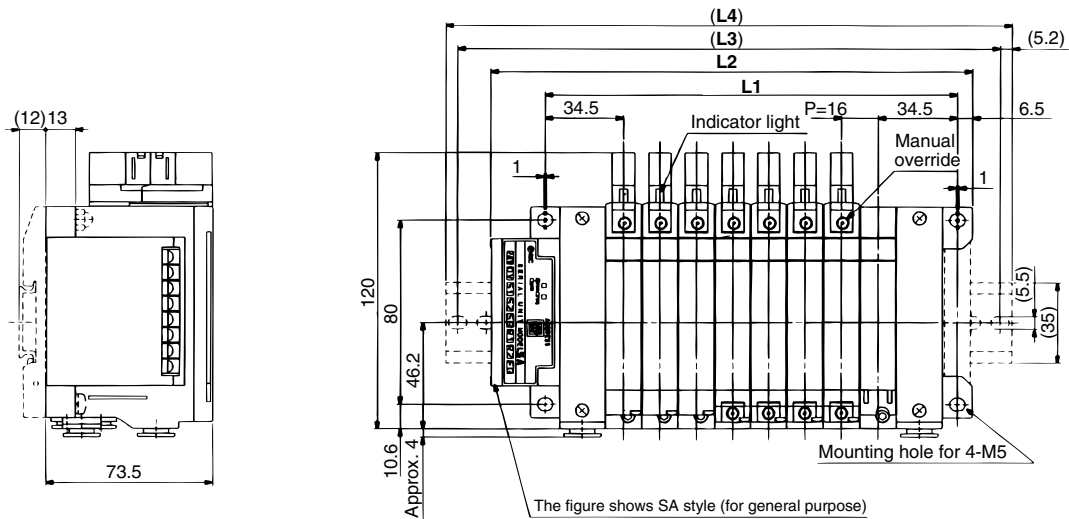
Dust tight style SI unit, L5 = 10.5n + 97 / L6 = L3 + 25 / L7 = L4 + 25

Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	65.5	76	86.5	97	107.5	118	128.5	139	149.5	160	170.5	181	191.5	202	212.5
L2	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5	230	240.5
(L3)	125	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5
(L4)	135.5	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273

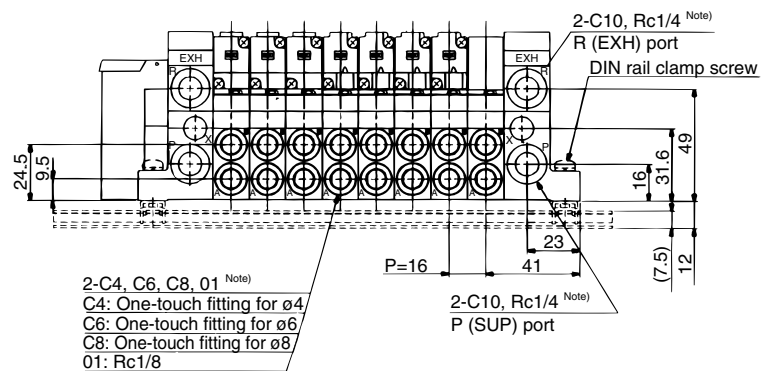
Note) Manifolds with SI unit for Matsushita Electric Corp. (MEWNET FP) or Allen Bradley Co. have the same L5, L6 and L7 dimensions as the dust tight style SI unit.

S kit (Serial transmission kit) / ¹⁰⁻₂₁₋ VQ2000

Dust tight style SI unit



D side Stations 1 2 3 4 5 6 7 8 n U side



Note) When cylinder port is 01, P and R ports are Rc1/4.

Formula $L1 = 16n + 53$ / $L2 = 16n + 83$ / n: Stations (Max. 8 stations)In the case of dust tight style SI unit, $L5 = 16n + 108$ / $L6 = L3 + 25$ / $L7 = L4 + 25$

Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	85	101	117	133	149	165	181	197	213	229	245	261	277	293	309
L2	115	131	147	163	179	195	211	227	243	259	275	291	307	323	339
(L3)	137.5	162.5	175	187.5	200	225	237.5	250	262.5	287.5	300	312.5	337.5	350	362.5
(L4)	148	173	185.5	198	210.5	235.5	248	260.5	273	298	310.5	323	348	360.5	373

Note) Manifolds with SI unit for Matsushita Electric Corp. (MEWNET FP) or Allen Bradley Co. have the same L5, L6 and L7 dimensions as the dust tight style SI unit.

Series ¹⁰⁻₂₁₋ VQ1000 Base mounted Plug lead unit

VQ1000/Base mounted Plug lead unit

How to Order Manifold

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

Series VQ1000

Plug lead unit

Stations
The number of minimum and maximum stations differs from kit to kit.
(Refer to the table below.).

Option
Nil — None
B — With back pressure check valve ^{Note 2)}
D — DIN rail mount style ^{Note 3)}
K — Special wiring specifications
 (except double wiring) ^{Note 4)}
N — With name plate

Note 1) When two or more symbols are specified, indicate them alphabetically. Example) -BDN
 Note 2) Models with a suffix "-B" have check valves for prevention of back pressure at all manifold stations. If not all stations need this check valve, specify the stations where check valves are installed by using the manifold specification sheet.
 Note 3) Manifold is a DIN rail mounting style, so suffix "-D" should be indicated.
 Note 4) Specify the wiring specifications in the manifold specification sheet. (Except C kit)

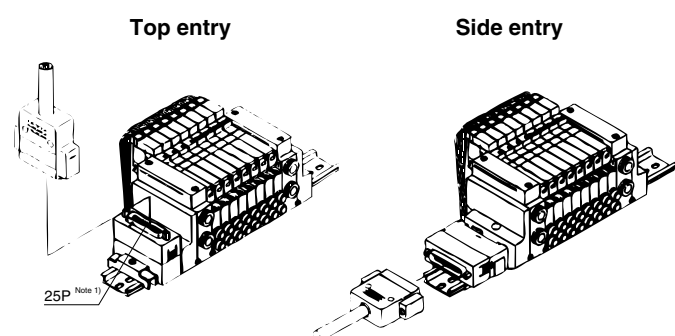
10 - V V 5 Q 1 2 - 08 C6 F U1 - D N

Cylinder port
C3 — With one-touch fitting for ø3.2
C4 — With one-touch fitting for ø4
C6 — With one-touch fitting for ø6
M5 — M5 thread ^{Note 1)}
CM — With mixed size/with port plug ^{Note 2)}
Note 1) In the case of M5, P and R ports are Rc1/8.
 Note 2) In the case of mixture or a type with port plug, specify it in the manifold specification sheet.

Kit / Electrical entry / Cable length
Refer to the figure below.

Kit / Electrical entry / Cable length

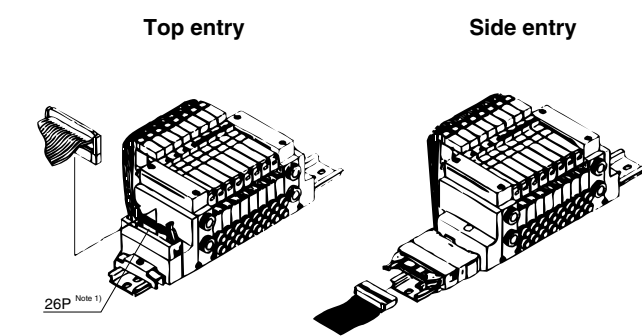
F Kit (D-sub connector kit)



Connector entry direction					
Top entry	Side entry				
F Kit	F Kit	U0	S0	Without cable	^{Note 2)} Max. 8 stations
		U1	S1	With 1.5 m cable	
		U2	S2	With 3 m cable	
		U3	S3	With 5 m cable	

Note 1) Besides the above, F kits with different number of pins are available.
 Note 2) The maximum number of stations can be increased by using optional special wiring specifications.

P Kit (Flat ribbon cable kit)



Connector entry direction					
Top entry	Side entry				
P Kit	P Kit	U0	S0	Without cable	^{Note 2)} Max. 8 stations
		U1	S1	With 1.5 m cable	
		U2	S2	With 3 m cable	
		U3	S3	With 5 m cable	

Note 1) Besides the above, P kits with different number of pins are available.
 Note 2) The maximum number of stations can be increased by using optional special wiring specifications.

How to Order Valves

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

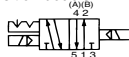
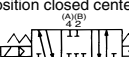
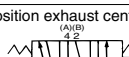
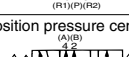
VQ1000

Seal
0 — Metal seal
1 — Rubber seal

Function
Nil — Standard style (1W)
H — High pressure style (1.5W)
N — Negative COM
Y — Low wattage style (0.5W)
 Use a low wattage type when operated under continuous energization.

10 - V Q 1 1 1 0 - 5 LO

Type of actuation

1	2 position single 
2	2 position double 
3	3 position closed center 
4	3 position exhaust center 
5	3 position pressure center 

Coil voltage

5 — 24 VDC / With light/surge voltage suppressor
6 — 12 VDC / With light/surge voltage suppressor

Electrical entry

L — L plug connector with lead wire
LO — L plug connector without connector

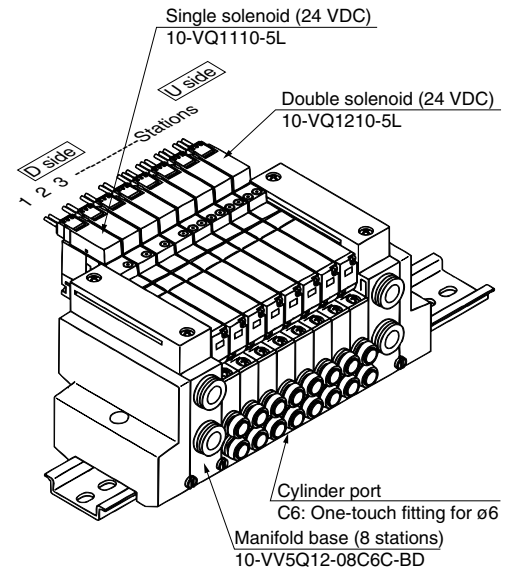
Note) LO style valve is used for F, P and S kits. Plug connectors and lead wires are attached to the manifold.

Manual override

Nil — Non-locking push type (tool required)
B — Locking type (tool required)
C — Locking type (manual)

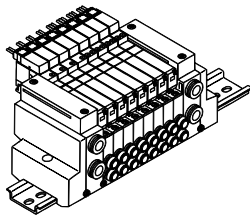
How to Order Manifold Assembly / Example

Specify the part numbers for valves and options together beneath the manifold base part numbers.



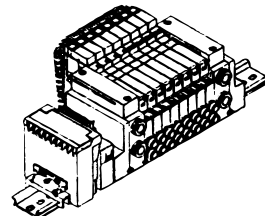
10-VV5Q12-08C6C-BD 1 set (C kit/8 station manifold part no.)
 ***10-VQ1110Y-5L** 4 sets (Single solenoid part no.)
 ***10-VQ1210Y-5L** 4 sets (Double solenoid part no.)
 The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

C Kit (Connector)



C	Connector kit	Max. 16 stations
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S Kit (Serial transmission kit)



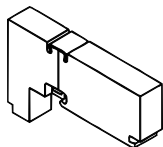
O	Without SI unit	Max. 16 stations
A	With general style SI unit, Series EX300	
B	Mitsubishi Electric Corp.: MELSECNET/mini-S3 data link system compatible	
C	OMRON Corp.: SYSBUS wire system compatible	
D	SHARP Corp.: Satellite I/O Link System compatible	
E	Matsushita Electric Corp.: MEWNET-F System compatible	
F1	NKE Corp.: Uni-wire System (16 outputs) compatible	
G	Allen-Bradley Co.: Remote I/O (RIO) System compatible	
H	NKE Corp.: Uni wire H system (16 outputs) compatible	
J1	SUNX Corp.: S-LINK System (16 outputs) compatible	
J2	SUNX Corp.: S-LINK System (8 outputs) compatible	Max. 8 stations
K	Fuji Electric Co., Ltd.: T Link Mini System compatible	Max. 16 stations
Q	DeviceNet and CompoBus/D (OMRON Corporation) compatible	
R1	OMRON Corp.: CompoBus/S (16 outputs) compatible	
R2	OMRON Corp.: CompoBus/S (8 outputs) compatible	Max. 8 stations
V	Mitsubishi Electric Corp.: CC -Link compatible	Max. 16 stations



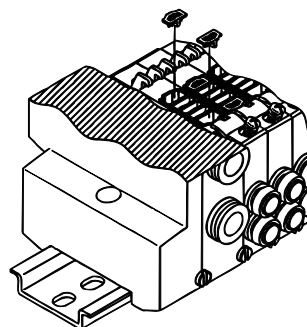
Note 1) For the general purpose style, a transmission unit is required on the CPU side.

Manifold option

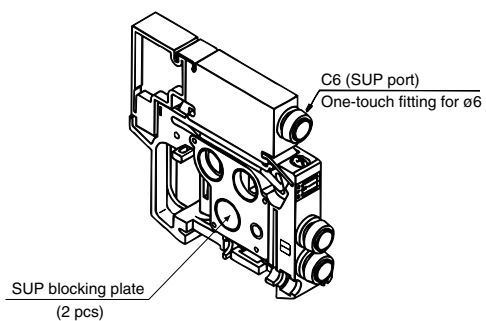
Blanking plate assembly
VVQ1000-10A-1



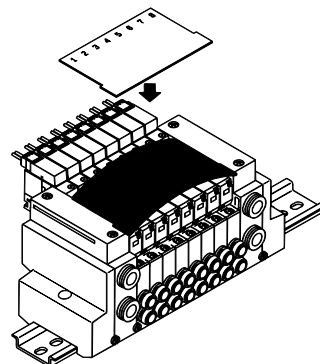
Back pressure check valve assembly [-B]
VVQ1000-18A



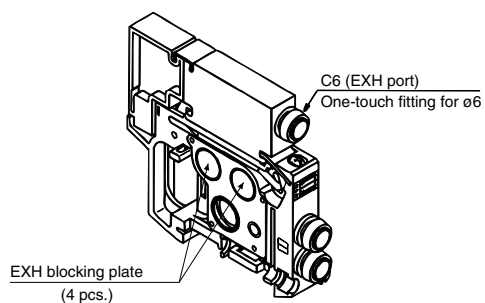
Individual SUP spacer
10-/21-VVQ1000-P-2-C6



Name plate [-N]
VVQ1000-N2-stations (1 to maximum stations)

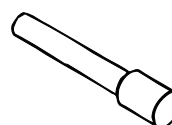


Individual EXH spacer
10-/21-VVQ1000-R-2-C6

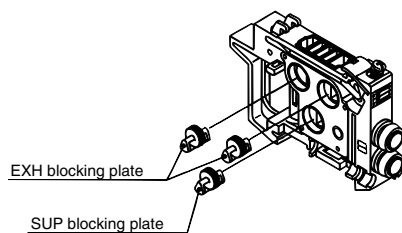


Blanking plug (For One-touch fitting)

23
04
KQ2P-06
08



SUP/EXH blocking plate
10-/21-VVQ1000-16A-2



Model

Series	Number of solenoids		Model		Flow characteristics Note 1)						Response time ms Note 2)			Weight g
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)			Standard: 1W H : 1.5W	Low wattage: 0.5 W Note 3)	AC Note 3)	
					C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv				
10-VQ1000	3 position	Single	Metal seal	10-/21-VQ1110	0.70	0.15	0.16	0.72	0.25	0.18	12 or less	15 or less	29 or less	50
			Rubber seal	10-/21-VQ1111	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	34 or less	
		Double	Metal seal	10-/21-VQ1210	0.70	0.15	0.16	0.72	0.25	0.18	10 or less	13 or less	13 or less	64
			Rubber seal	10-/21-VQ1211	0.85	0.20	0.21	1.0	0.30	0.25	15 or less	20 or less	20 or less	
	2 position	Closed center	Metal seal	10-/21-VQ1310	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	78
			Rubber seal	10-/21-VQ1311	0.70	0.20	0.16	0.65	0.42	0.18	25 or less	33 or less	47 or less	
		Exhaust center	Metal seal	10-/21-VQ1410	0.68	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
			Rubber seal	10-/21-VQ1411	0.70	0.20	0.16	1.0	0.30	0.25	25 or less	33 or less	47 or less	
		Pressure center	Metal seal	10-/21-VQ1510	0.70	0.15	0.16	0.72	0.25	0.18	20 or less	26 or less	40 or less	
			Rubber seal	10-/21-VQ1511	0.85	0.20	0.21	0.65	0.42	0.18	25 or less	33 or less	47 or less	

Note 1) Cylinder port : C6 (10-VQ1000), without back pressure check valve

Note 2) Based on JIS B 8375-1981 (Supply pressure; 0.5 MPa; with light/surge voltage suppressor; clean air. Response time values will change depending on pressure and air quality.) The values at the time of ON are given for double styles.

Note 3) AC: VQ0000 only

Specifications

Valve specifications	Valve construction		Metal seal	Rubber seal
	Fluid		Air/Inert gas	
	Maximum operating pressure		0.7MPa	0.7MPa
	Minimum operating pressure	Single	0.1MPa	0.15MPa
		Double	0.1MPa	0.1MPa
		3 position	0.1MPa	0.2MPa
	Ambient and fluid temperature		−10 to 50°C ^{Note 1)}	−10 to 50°C ^{Note 1)}
	Lubrication		Not required	
	Manual override		Push style/Locking style (tool required, lever), Option	
	Enclosure		Dust tight	
Grease		10-: Fluorine grease 21-: Lithium soap base grease		
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-: Grade 1 21-: Grade 2		
Electrical specification	Coil rated voltage		12, 24 VDC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Equivalent to class B	
	Power consumption DC (Current)	24 VDC	1 W DC(42mA), 0.5 W DC(21mA)	
		12 VDC	1 W DC(83mA), 0.5 W DC(42mA)	

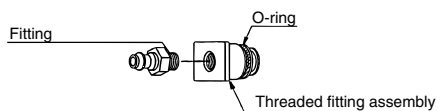
Note 1) Use dry air to prevent condensation when operating at low temperatures.

Precautions to install threaded fitting assemblies

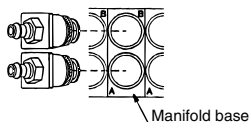
Threaded fitting assemblies used for this manifold are not mounted on the manifold base at a factory, but attached to this manifold in order to improve installation efficiency.

Install a threaded fitting following the procedures below.

1. Screw in the fitting to the threaded fitting assembly attached.



2. Insert the threaded fitting assembly into the port.

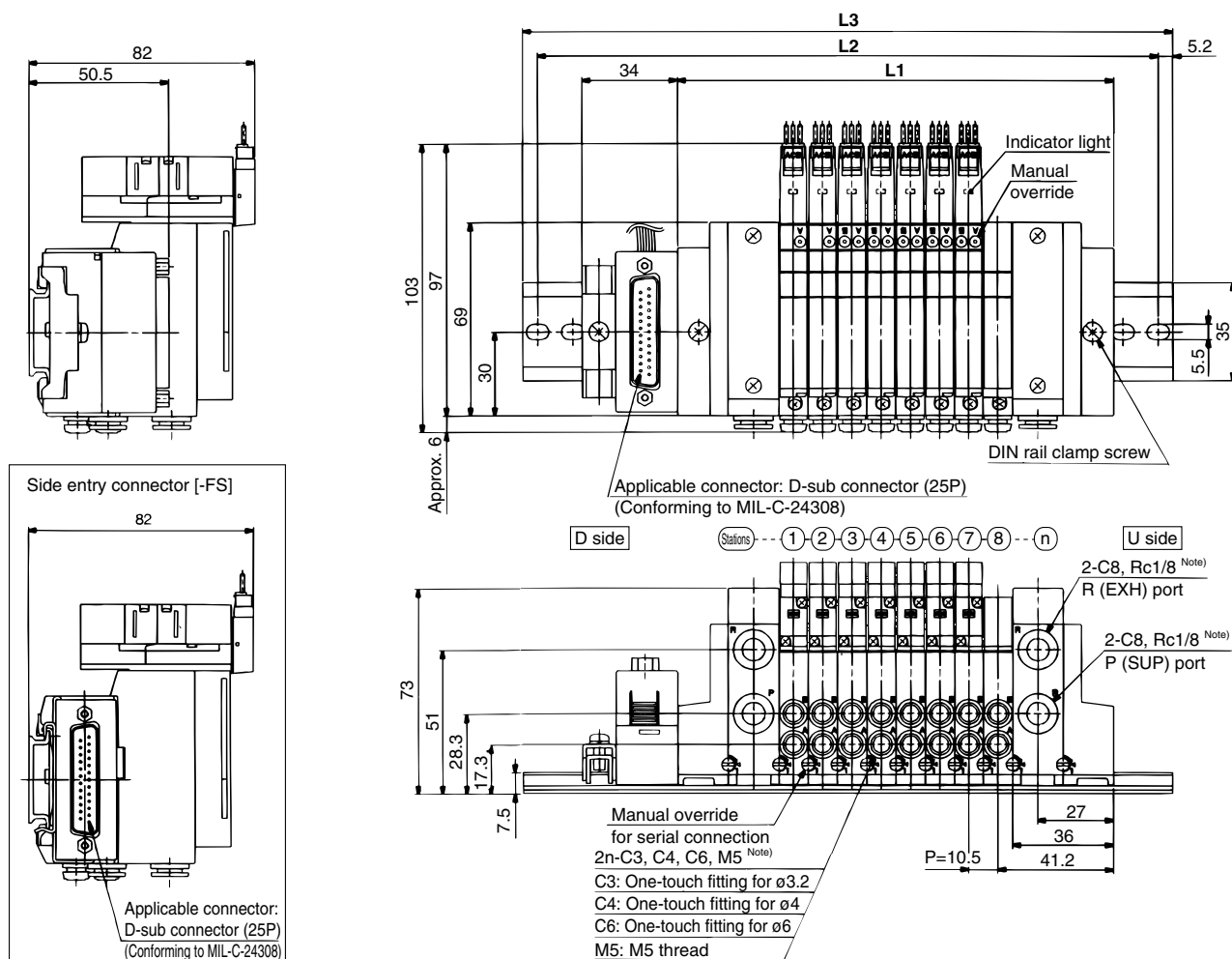


3. Insert the clip into the groove on the bottom surface of valve.

■ Precautions

1. Be careful not to scratch or damage the O-ring of the fitting assembly. It may cause air leakage.
 2. Do not screw in the fitting to the threaded fitting assembly already installed on the manifold base. If the tightening torque is large, the manifold base may be damaged.
- To prevent the exhaust air at EXH from being pressurized (0.3 MPa or more) by throttling, EXH port on both sides is recommended. (Otherwise delay in response or air leakage may occur)

F Kit (D-sub connector kit) / ¹⁰⁻₂₁₋ **VQ1000**



Side entry connector [-FU]

Formula $L1 = 10.5n + 72$ / n: Stations (Max. 8 stations)

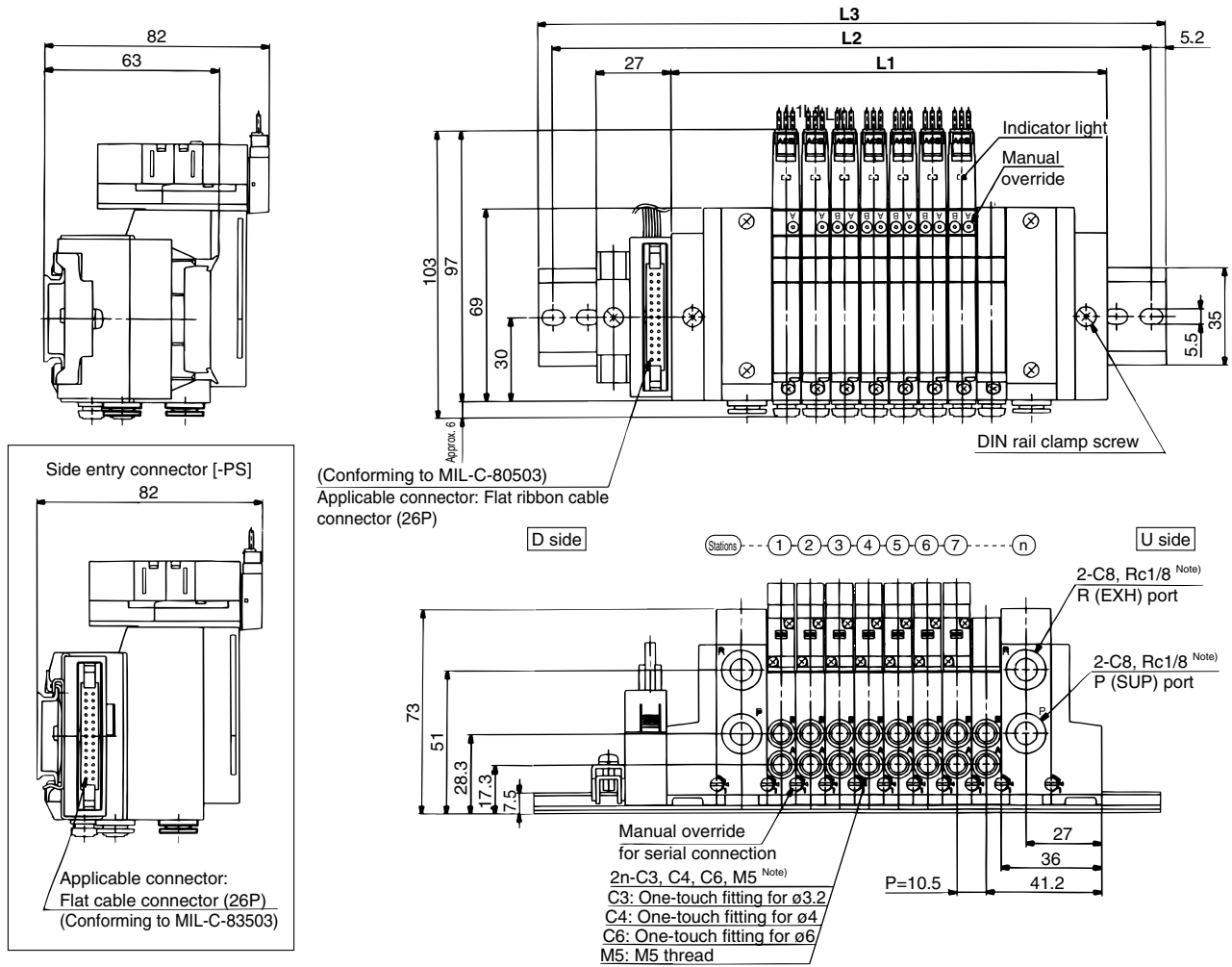
Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	82.5	93	103.5	114	124.5	135	145.5	156	166.5	177	187.5	198	208.5	219	229.5	240
L2	137.5	150	162.5	175	187.5	200	200	212.5	225	237.5	250	262.5	262.5	275	287.5	300
L3	148	160.5	173	185.5	198	210.5	210.5	223	235.5	248	260.5	273	273	285.5	298	310.5

Side entry connector [-FS]

Formula $L1 = 10.5n + 72$ / n: Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L2	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5	275	287.5	300	312.5	312.5
L3	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273	285.5	298	310.5	323	323

P Kit (Flat ribbon cable kit) / ¹⁰⁻₂₁₋ VQ1000



Note) When the cylinder port is M5, P and R ports are Rc1/8.

Top entry connector [-PU]

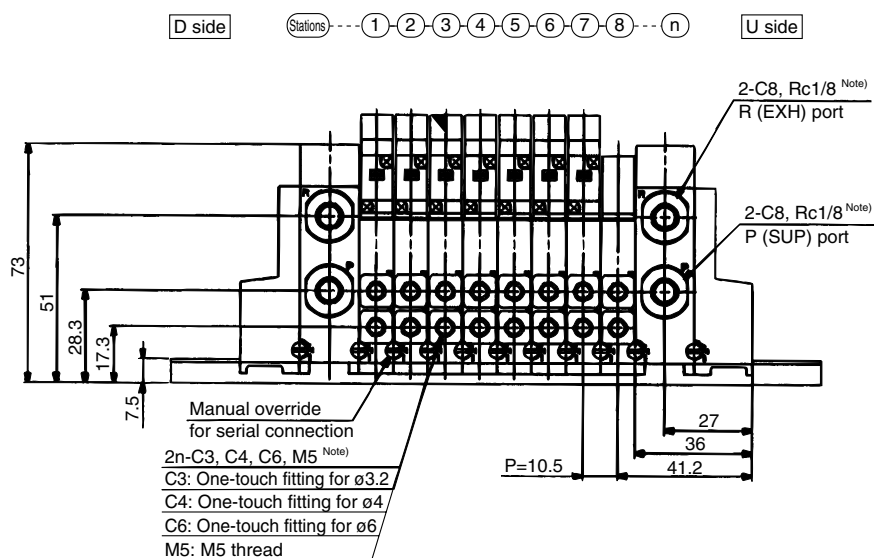
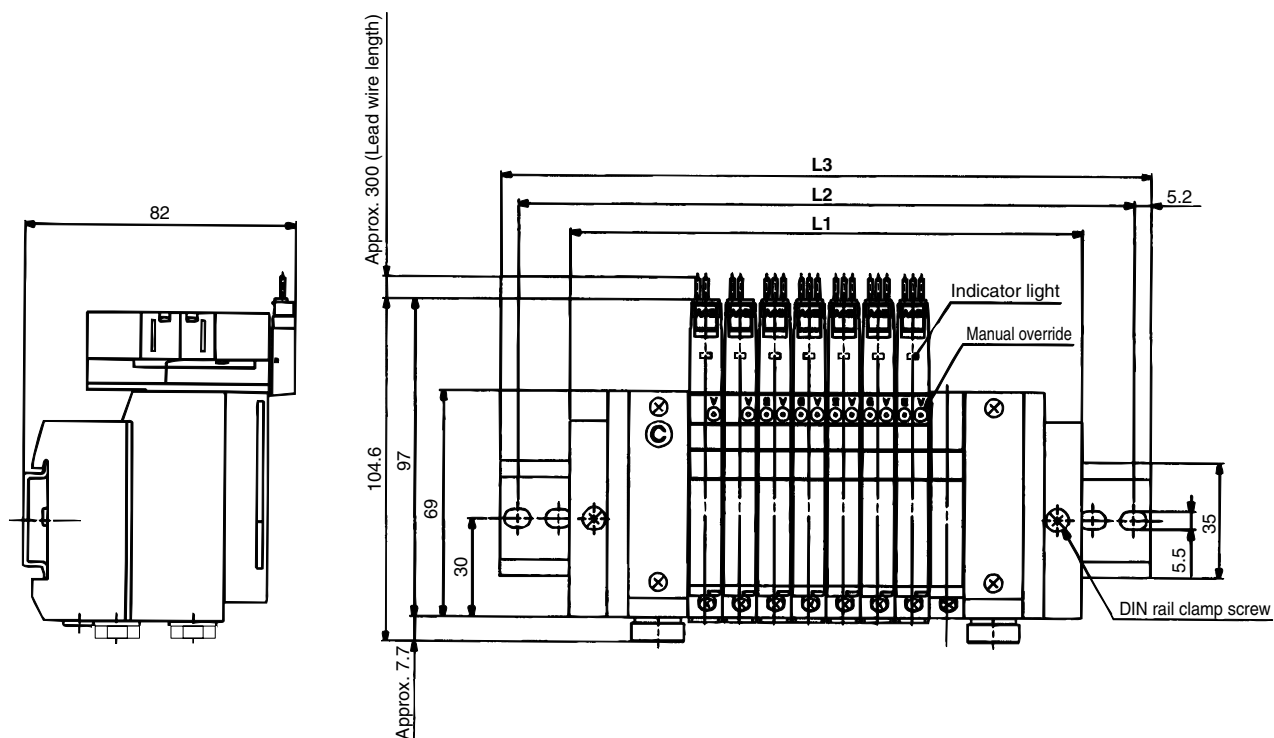
Formula $L1 = 10.5n + 72$ / n: Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	82.5	93	103.5	114	124.5	135	145.5	156	166.5	177	187.5	198	208.5	219	229.5	240
L2	137.5	150	150	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5	287.5
L3	148	160.5	160.5	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298	298

Side entry connector [-PS]

Formula $L1 = 10.5n + 72$ / n: Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L2	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5	275	287.5	300	312.5	312.5
L3	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273	285.5	298	310.5	323	323

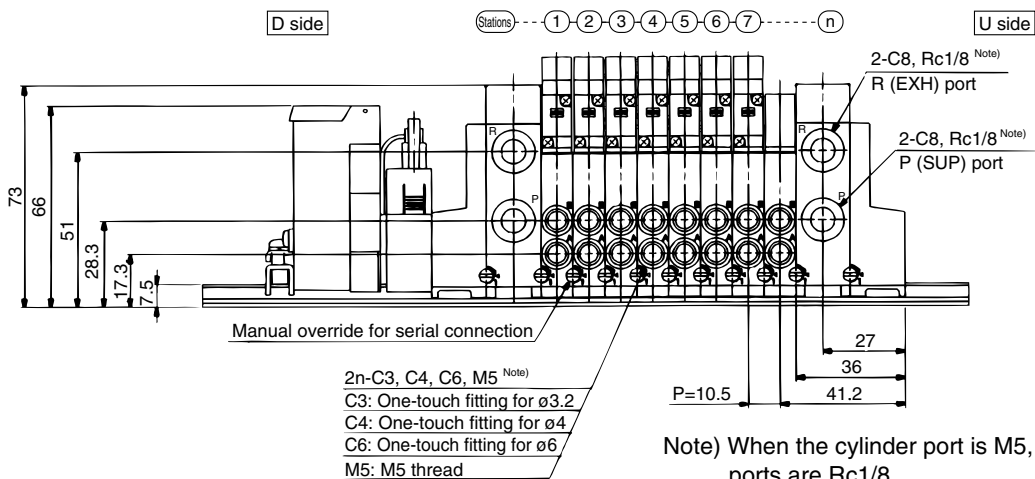
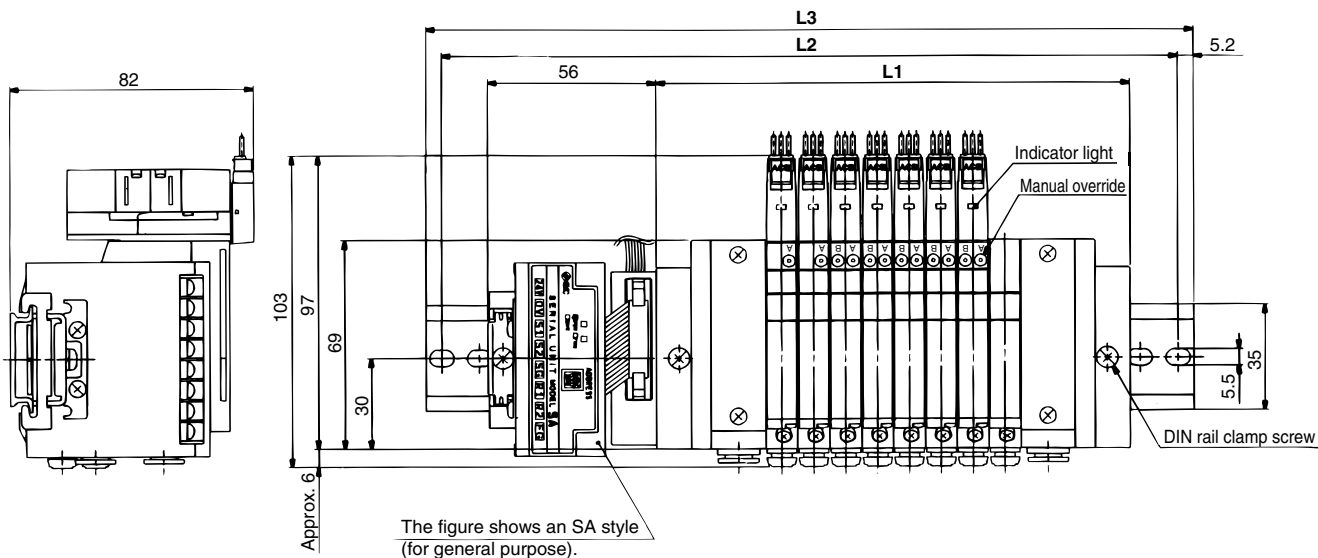
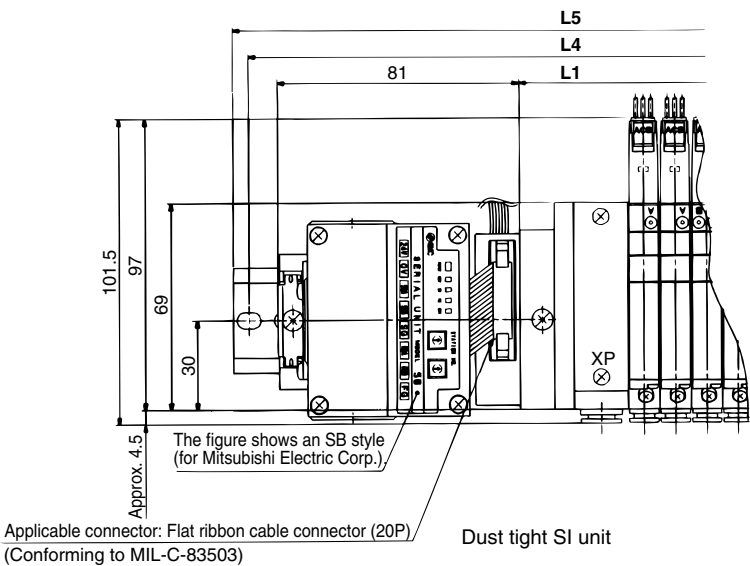


Note) When the cylinder port is M5, P and R ports are Rc1/8.

Formula $L1 = 10.5n + 72$ / n: Stations (Max. 16 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	82.5	93	103.5	114	124.5	135	145.5	156	166.5	177	187.5	198	208.5	219	229.5	240
L2	112.5	112.5	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5
L3	123	123	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273

Kit (Serial transmission Kit) 10-21- VQ1000



Formula $L1 = 10.5n + 72 / n$: Stations (Max. 16 stations)
In the case of dust tight style SI unit, $L4 = L3 + 25 / L5 = L4 + 25$.

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	82.5	93	103.5	114	124.5	135	145.5	156	166.5	177	187.5	198	208.5	219	229.5	240
L2	162.5	175	187.5	200	200	212.5	225	237.5	250	262.5	275	275	287.5	300	312.5	325
L3	173	185.5	198	210.5	210.5	223	235.5	248	260.5	273	285.5	285.5	298	310.5	323	335.5

Note) Manifolds with SI unit for Matsushita Electric Corp. (MEWNET FP) or Allen Bradley Co. have the same L4, L5 dimensions as the dust tight style SI unit.

Series¹⁰⁻²¹⁻**VQ1000**

Body ported / flip type
Plug-in unit

VQ1000/Body ported type Flip plug-in unit

How to Order Manifold

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

Series VQ1000

Flip plug-in unit

Stations
The number of minimum and maximum stations differs from kit to kit.
(Refer to the table below.).

P, R port size
A: One-touch fitting for ø6
B: Rc1/8 thread

10 - V V 5 Q 1 3 - 08

A

F S1 - N

-X25

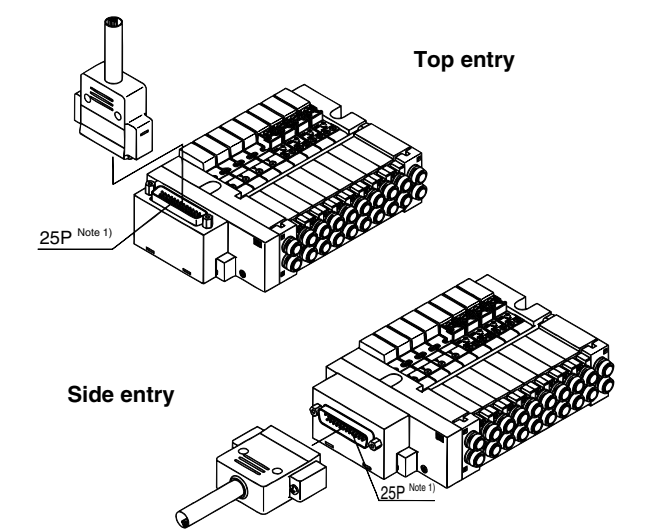
Kit / Electrical entry / Cable length
Refer to the figure below.

Option
Nil — None
D — DIN rail mount style^{Note 2)}
K — Special wiring specification (Except double wiring)^{Note 3)}
N — With name plate
Note 1) When two or more symbols are specified, indicate them alphabetically. Example) -DKN
Note 2) All S kits are DIN rail mounting styles, so include suffix "D".
Note 3) Specify the wiring specifications in the manifold specification sheet.

When selecting an S kit (serial transmission kit), indicate "-X25".

Kit / Electrical entry / Cable length

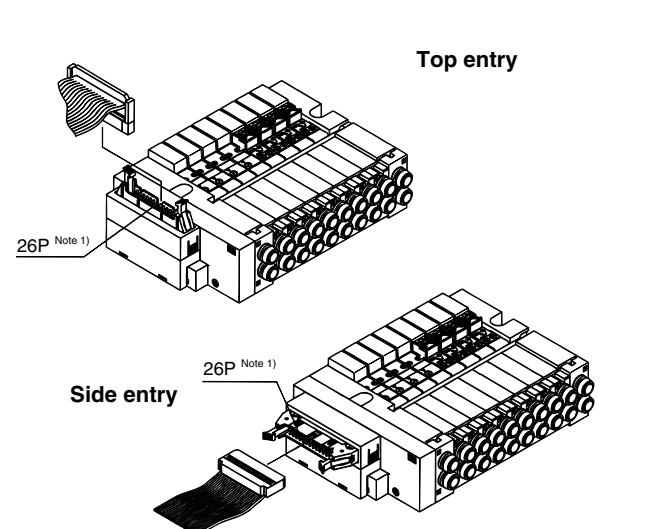
F Kit (D-sub connector kit)



Connector entry direction				
Top entry		Side entry		
F Kit	U0	F Kit	S0	Without cable
	U1		S1	With 1.5 m cable
	U2		S2	With 3 m cable
	U3		S3	With 5 m cable
				(Note) Max. 12 stations

Note 1) Besides the above, F kits with different number of pins are available.
Note 2) The number of maximum stations can be increased by using optional special wiring specifications.

P Kit (Flat ribbon cable kit)



Connector entry direction					
Top entry		Side entry			
P Kit	U0	P Kit	S0	Without cable	Note) Max. 12 stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

Note 1) Besides the above, P kits with different number of pins are available.
Note 2) The number of maximum stations can be increased by using optional special wiring specifications.

How to Order Valves

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

10 - V Q 1 1 3 0 - 5 B - C6

VQ1000

Type of actuation

1
2 position single
(A)(B)
5 1 3
(R1)(P)(R2)

2
2 position double (latching)
(A)(B)
4 2
(R1)(P)(R2)
Metal seal
(A)(B)
4 2
(R1)(P)(R2)
Rubber seal

Note)
3
3 position closed center
(A)(B)
4 2
(R1)(P)(R2)

Note)
4
3 position exhaust center
(A)(B)
4 2
(R1)(P)(R2)

Note)
5
3 position pressure center
(A)(B)
4 2
(R1)(P)(R2)

Cylinder port
C3 — With one-touch fitting for ø3.2
C4 — With one-touch fitting for ø4
C6 — With one-touch fitting for ø6
M5 — M5 thread

Manual override
Nil — Non-locking push type (tool required)
B — Locking type (tool required)
C — Locking type (manual)
Note) A manual override for pilot valve is provided to the standard model of double (latching) style.

Coil voltage
5 — 24 VDC/With light/surge voltage suppressor
6 — 12 VDC/With light/surge voltage suppressor

Function
Nil — Standard style (1W)
H — High pressure (1.5 W) style: Except double (latching) style
Y — Low wattage (0.5 W) style: Except double (latching) style
Note) Use a low wattage type when operated under continuous energization.

Seal
0 — Metal seal
1 — Rubber seal

Note) The 3 position style occupies 2 stations and only rubber seal is available.

S Kit (Serial transmission kit)

S Kit	O	Without SI unit	Max. 16 stations
	A	With general style SI unit, Series EX300	
	B	Mitsubishi Electric Corp.: MELSECNET/mini-S3 data link system compatible	
	C	OMRON Corp.: SYSBUS wire system compatible	
	D	SHARP Corp.: Satellite I/O Link System compatible	
	E	Matsushita Electric Corp.: MEWNET-F System compatible	
	F1	NKE Corp.: Uni-wire System (16 outputs) compatible	
	G	Allen-Bradley Co.: Remote I/O (RIO) System compatible	
	H	NKE Corp.: Uni wire H system (16 outputs) compatible	
	J1	SUNX Corp.: S-LINK System (16 outputs) compatible	
	J2	SUNX Corp.: S-LINK System (8 outputs) compatible	Max. 8 stations
	K	Fuji Electric Co.,Ltd.: T Link Mini System compatible	Max. 16 stations
	Q	DeviceNet and CompoBus/D (OMRON Corporation) compatible	
	R1	OMRON Corp.: CompoBus/S (16 outputs) compatible	
	R2	OMRON Corp.: CompoBus/S (8 outputs) compatible	Max. 8 stations
	V	Mitsubishi Electric Corp.: CC -Link compatible	Max. 16 stations

Note) For the general purpose style, a transmission unit is required on the CPU side.

How to Order Manifold Assembly/Example

Double solenoid (24 VDC)
10-VQ1230-5B-C6 (4 sets)

Single solenoid (24 VDC)
10-VQ1130-5-C6 (4set)

3m

D-sub connector cable

F Kit
D-sub connector kit

Manifold base (8 stations)
10-VV5Q13-08BFU2

Cylinder port
C6: With one-touch fitting for ø6

D side
U side
Stations

10-VV5Q13-08BFU2 1 set (F kit/8 station manifold part no.)
*10-VQ1130-5-C6 4 sets (Single solenoid part no.)
*10-VQ1230-5B-C6 4 sets (Double latching solenoid part no.)
The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

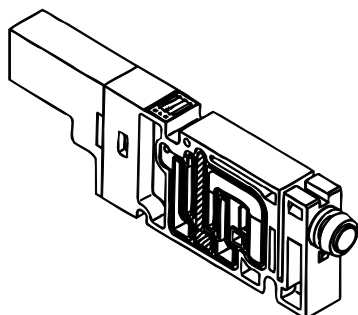
Specify the part numbers for valves and options together beneath the manifold base part number. Besides, when the arrangement will be complicated, specify them in the manifold specification sheet.

605

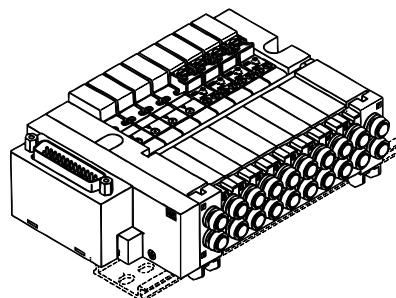
Air cylinder
Rotary actuator
Air gripper
Directional control valve
Flow control equipment
Filter, Pressure control equipment
Fittings & Tubing
Air preparation equipment
Pressure switch
Clean gas filter

Manifold option

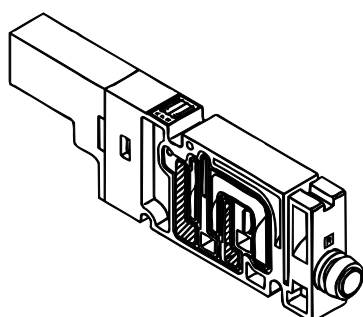
Individual SUP spacer
10-/21-VVQ1000-P-3-C6



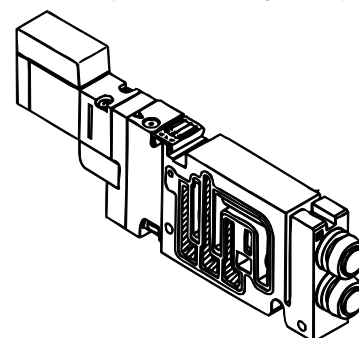
DIN rail mounting bracket [-D]
VVQ1000-57A-3



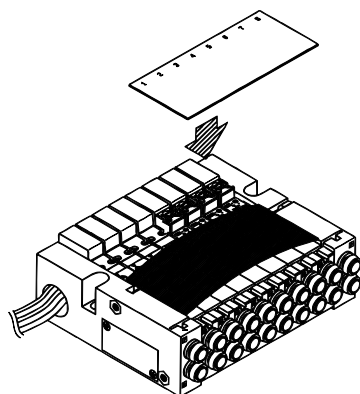
Individual EXH spacer
10-/21-VVQ1000-R-3-C6



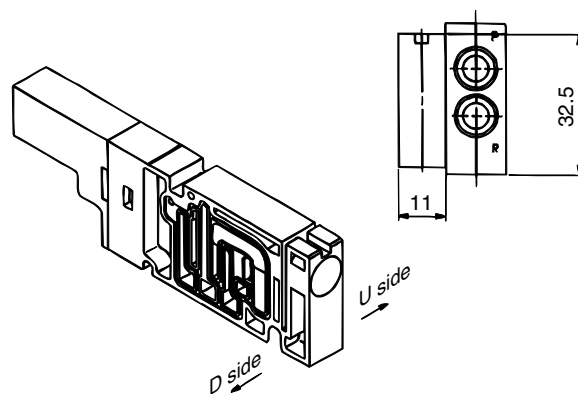
P
R Blocking valve
PR
10-/21-VQ1¹₂₃⁰₁-□-□-□-
P (SUP passage block)
R (EXH passage block)
PR (SUP/EXH passage block)



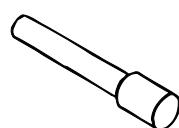
Name plate [-N3]
VVQ1000-N3-stations (1 to maximum stations)



Blanking plate assembly
10-/21-VVQ1000-10A-3



Blanking plug (For one-touch fitting)
²³
KQ2P-₀₄
₀₆



Model

Series	Number of solenoids		Model		Flow characteristics ^{Note 1)}						Response time ms ^{Note 2)}			Weight g
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)			Standard: 1W	Low wattage:	AC	
					C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv	H : 1.5W	0.5W		
10-VQ1000	2 position	Single	Metal seal	10-/21-VQ1130	0.77	0.14	0.18	0.84	0.14	0.19	12 or less	15 or less	29 or less	57
			Rubber seal	10-/21-VQ1131	0.91	0.19	0.21	1.0	0.21	0.25	15 or less	20 or less	34 or less	
		Double (latching)	Metal seal	10-/21-VQ1230	0.77	0.14	0.18	0.84	0.14	0.19	12 or less	15 or less	29 or less	
			Rubber seal	10-/21-VQ1231	0.91	0.19	0.21	1.0	0.21	0.25	15 or less	20 or less	34 or less	
	3 position	Closed center	Rubber seal	10-/21-VQ1331	0.78	0.22	0.18	0.84	0.21	0.20	25 or less	33 or less	47 or less	105
			Rubber seal	10-/21-VQ1431	0.78	0.28	0.19	1.0	0.21	0.24	25 or less	33 or less	47 or less	
		Exhaust center	Rubber seal	10-/21-VQ1431	0.78	0.28	0.19	1.0	0.21	0.24	25 or less	33 or less	47 or less	
			Rubber seal	10-/21-VQ1531	0.78	0.28	0.19	0.84	0.21	0.22	25 or less	33 or less	47 or less	

Note 1) Cylinder port: C6

Note 2) Based on JIS B 8375-1981 (Supply pressure; 0.5 MPa; with light/surge voltage suppressor; clean air. The value differs with the pressure and the quality of air.)

Specifications

Valve specifications	Valve construction		Metal seal	Rubber seal
	Fluid		Air/Inert gas	
	Maximum operating pressure		0.7MPa	0.7MPa
	Minimum operating pressure	Single	0.1MPa	0.15MPa
		Double (latching)	0.18MPa	0.18MPa
		3 position	—	0.2MPa
	Ambient and fluid temperature		−10 to 50°C ^{Note 1)}	−10 to 50°C ^{Note 1)}
	Lubrication		Not required	
	Manual override		Push type / Locking type (tool required, lever) Option	
	Enclosure		Dust tight	
	Grease		10-: Fluorine grease 21-: Lithium soap base grease	
Electrical specification	Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-: Grade 1 21-: Grade 2	
	Coil rated voltage		12, 24 VDC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Equivalent to class B	
	Power consumption DC (Current)	24 VDC	1 W DC(42mA), 0.5 W DC(21mA)	
		12 VDC	1 W DC(83mA), 0.5 W DC(42mA)	

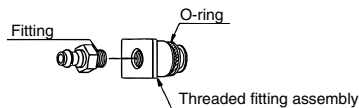
Note 1) Use dry air to prevent condensation when operating at low temperatures.

Precautions to install threaded fitting assemblies

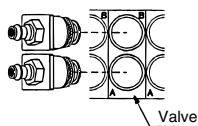
Threaded fitting assemblies used for this manifold are not mounted on the manifold base at a factory, but attached to this manifold in order to improve installation efficiency.

Install a threaded fitting following the procedures below.

1. Screw in the fitting to the threaded fitting assembly attached.



2. Insert the threaded fitting assembly into the port.

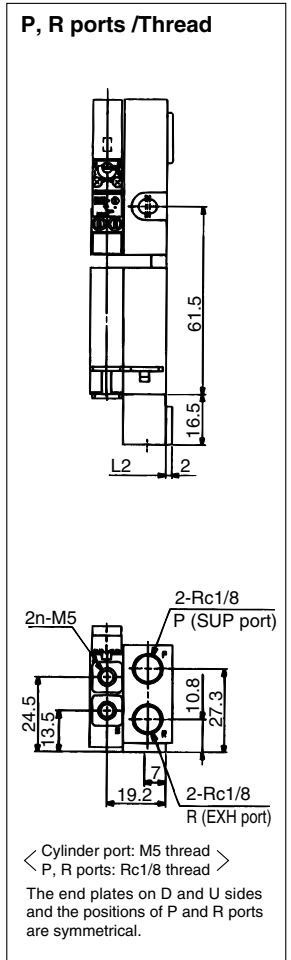


3. Insert the clip into the groove on the bottom surface of valve.

■ Precautions

1. Be careful not to scratch or damage the O-ring of the fitting assembly. It may cause air leakage.
- To prevent the exhaust air at EXH from being pressurized (0.3 MPa or more) by throttling, EXH port on both sides is recommended. (Otherwise delay in response or air leakage may occur)

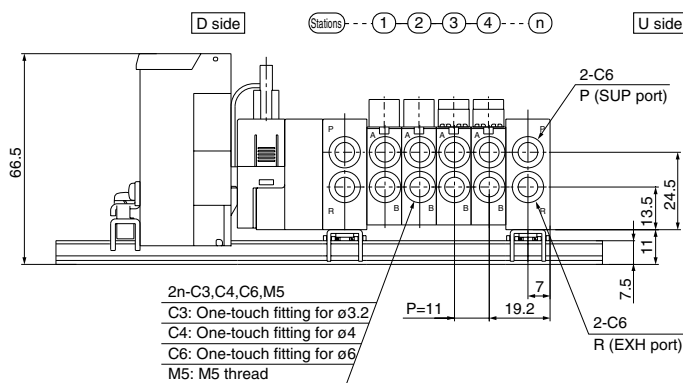
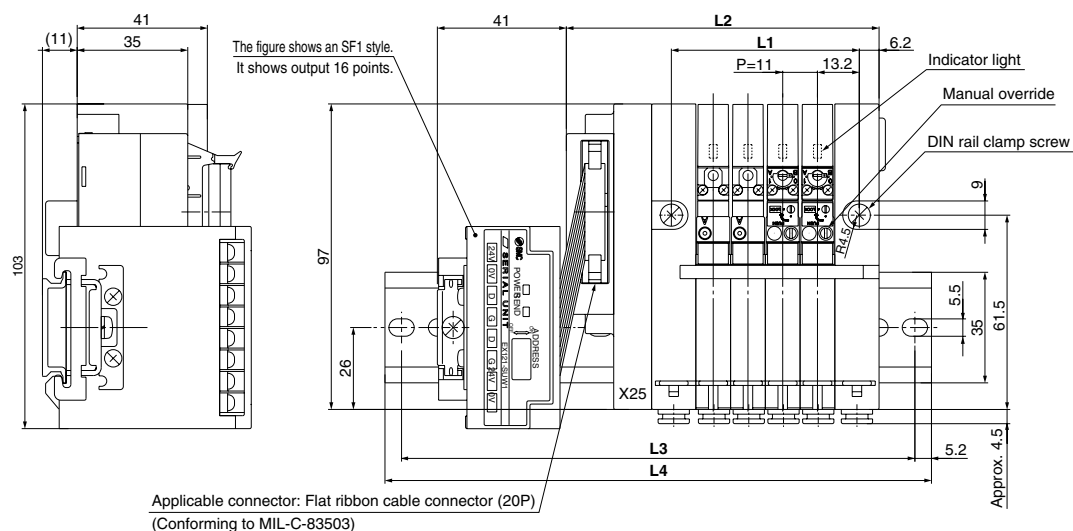
10-21- VQ1000



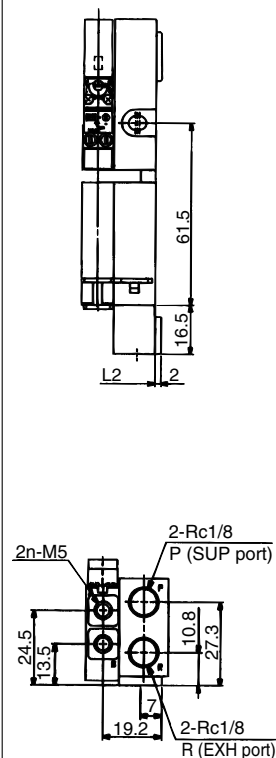
Note) The 3 position type occupies 2 stations. The cylinder port is located on the U side of body.

Stations	1	2	3	4	5	6	7	8	9	10	11	12
L1	26.5	37.5	48.5	59.5	70.5	81.5	92.5	103.5	114.5	125.5	136.5	147.5
L2	66	77	88	99	110	121	132	143	154	165	176	187
(L3)	87.5	100	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5
(L4)	98	110.5	123	135.5	148	160.5	173	173	185.5	198	210.5	223

S kit (Serial transmission kit) / $\frac{10-}{21-}$ VQ1000



P, R ports / Thread



< Cylinder port: M5 thread >
P, R ports: Rc1/8 thread
The end plates on D and U sides and the positions of P and R ports are symmetrical.

Note 3) The 3 position type occupies 2 stations.
The cylinder port is located on the U side of body.

Formula $L1 = 11n + 15.5$ / $L2 = 11n + 55$ / n: Stations (Max. 16 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	26.5	37.5	48.5	59.5	70.5	81.5	92.5	103.5	114.5	125.5	136.5	147.5	158.5	169.5	180.5	191.5
L2	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220	231
L3	137.5	137.5	150	162.5	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300
L4	148	148	160.5	173	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5

Series ¹⁰⁻₂₁₋VQ1000/2000 Body ported / Flip type Plug lead unit

VQ1000 / Body ported Flip plug lead unit

How to Order Manifold

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

VQ1000

Flip plug lead unit

Stations
 The number of minimum and maximum stations differs from kit to kit. (Refer to the table below.)

10 - V V 5 Q 1 4 - 08 A C - D N -X25

P, R port size
A: One-touch fitting for $\phi 6$
B: Rc1/8 thread

Kit / Electrical entry / Cable length
 Refer to the figure below.

Option
Nil — None
D — DIN rail mount style ^{Note 2)}
K — Special wiring specification (Except double wiring) ^{Note 3)}
N — With name plate

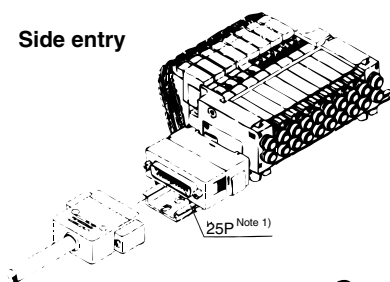
^{Note 1)} When two or more symbols are specified, indicate them alphabetically. Example) -DKN
^{Note 2)} F, P and S kits are DIN rail mount styles, so include suffix "-D".
^{Note 3)} Indicate the wiring specification in the manifold specification sheet. (Except C kit)

When selecting an S kit (serial transmission kit), indicate -X25.

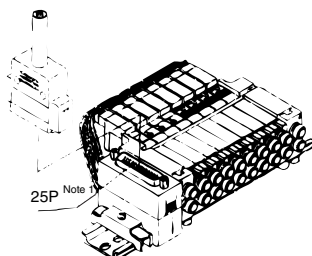
Kit / Electrical entry / Cable length

F Kit (D-sub connector kit)

Side entry



Top entry



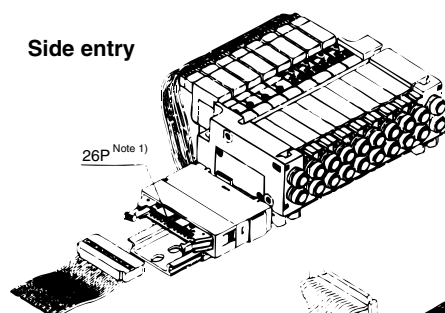
Connector entry direction					
Top entry		Side entry			
F Kit	U0	F Kit	S0	Without cable	Max. 8 ^{Note 2)} stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

^{Note 1)} Besides the above, F kits with different number of pins are available.

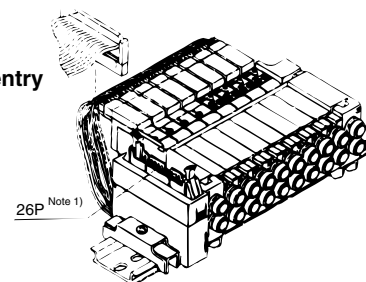
^{Note 2)} The number of the maximum stations can be increased by using optional special wiring specifications.

P Kit (Flat ribbon cable kit)

Side entry



Top entry



Connector entry direction					
Top entry		Side entry			
P Kit	U0	P Kit	S0	Without cable	Max. 8 ^{Note 2)} stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

^{Note 1)} Besides the above, P kits with different number of pins are available.

^{Note 2)} The number of the maximum stations can be increased by using optional special wiring specifications.

How to Order Valves

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

10-VQ 1 1 4 0 5 L C6

VQ1000

Type of actuation

1	2 position single
2	2 position double (latching) Metal seal Rubber seal
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center

Note) 3 position style is available with rubber seal only.

Cylinder port size
C3 - With one-touch fitting for ø3.2
C4 - With one-touch fitting for ø4
C6 - With one-touch fitting for ø6
M5 - M5 thread

Manual override
Nil — Non-locking push type (tool required)
B — Locking type (tool required)
C — Locking type (manual)
Note) The standard double (latching) type is B, locking type (tool required). Specify the symbol B or C.

Electrical entry
L plug connector
L — With lead wire
LO — Without connector
M plug connector
M — With lead wire
MO — Without connector
Note) LO and MO valves are used for F, P and S kits.
Plug connectors and lead wires are attached to the manifold.

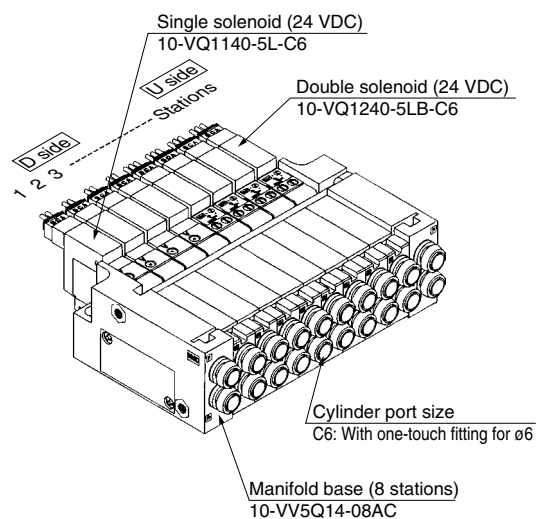
Coil voltage
5 — 24 VDC/With light/surge voltage suppresser
6 — 12 VDC/With light/surge voltage suppresser

Function
Nil — Standard style (1W)
H — High pressure style (1.5W) Except double (latching) style
Y — Low wattage (0.5 W) style: Except double (latching) style
Note) Use a low wattage style when operated under continuous energization.

Seal
0 — Metal seal
1 — Rubber seal

How to Order Manifold Assembly/Example

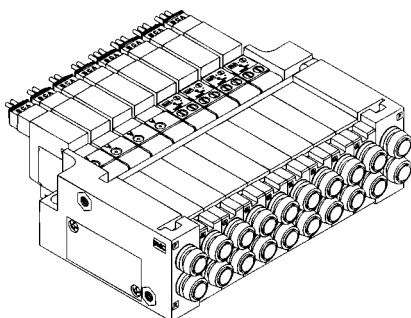
Please indicate the part numbers of the valve to be installed and option beneath the manifold base part number.



10-VV5Q14-08AC 1 set (C kit / 8 station manifold part no.)
* **10-VQ1140-5L-C6** 4 sets (Single solenoid part no.)
* **10-VQ1240-5LB-C6** 4 sets (Double solenoid part no.)
The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

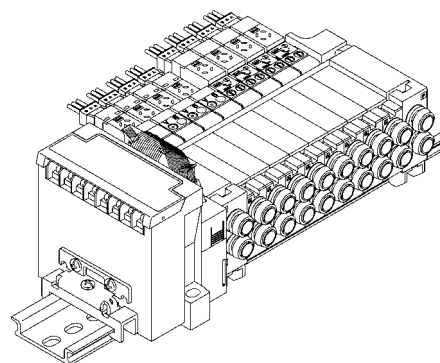
Kit / Electrical entry / Cable length

C Kit (Connector kit)



C	Connector kit	Max. 16 stations
----------	---------------	------------------

S Kit (Serial transmission kit)



S Kit	O	Without SI unit	Max. 16 stations
	A	With general style SI unit, Series EX300	
	B	Mitsubishi Electric Corp.: MELSECNET/mini-S3 data link system compatible	
	C	OMRON Corp.: SYSBUS wire system compatible	
	D	SHARP Corp.: Satellite I/O Link System compatible	
	E	Matsushita Electric Corp.: MEWNET-F System compatible	
	F1	NKE Corp.: Uni-wire System (16 outputs) compatible	
	G	Allen-Bradley Co.: Remote I/O (RIO) System compatible	
	H	NKE Corp.: Uni wire H system (16 outputs) compatible	
	J1	SUNX Corp.: S-LINK System (16 outputs) compatible	
	J2	SUNX Corp.: S-LINK System (8 outputs) compatible	
	K	Fuji Electric Co., Ltd.: T Link Mini System compatible	
	Q	DeviceNet and CompoBus/D (OMRON Corporation) compatible	
	R1	OMRON Corp.: CompoBus/S (16 outputs) compatible	
	R2	OMRON Corp.: CompoBus/S (8 outputs) compatible	
	V	Mitsubishi Electric Corp.: CC-Link compatible	

Note) For the general purpose type, a transmission unit is required on the CPU side.

VQ2000 / Body ported Flip plug lead unit

How to Order Manifold

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

Series VQ2000

Plug lead unit

Stations
The number of minimum and maximum stations differs from kit to kit. (Refer to the table below.)

When selecting an S kit (serial transmission kit), indicate -X25.

10 - V V 5 Q 2 4 - 08 A F S1 - D N -X25

P, R port size
A: One-touch fitting for ø8
B: Rc1/4 thread

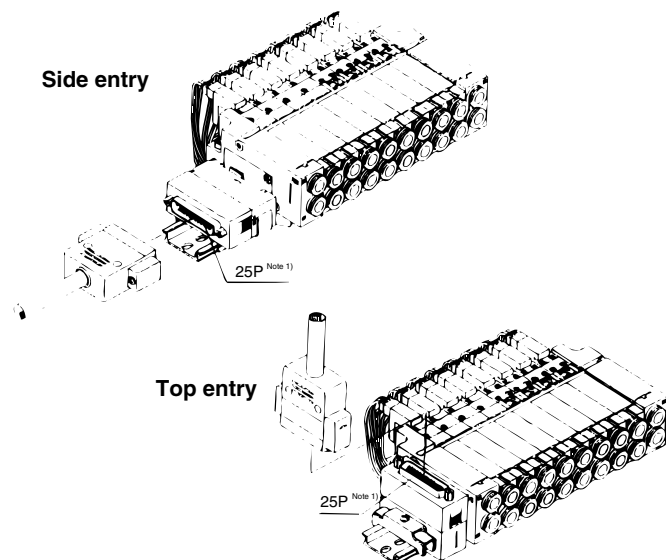
Kit / Electrical entry / Cable length
Refer to the figure below.

Option
Nil — None
D — DIN rail mounting style ^{Note 2)}
K — Special wiring specification (except double wiring) ^{Note 3)}
N — With name plate

^{Note 1)} When two or more options are specified, indicate them alphabetically (e.g. -DKN).
^{Note 2)} F, P and S kits are DIN rail mounting styles, so specify suffix "-D".
^{Note 3)} Indicate the wiring specification in the manifold specification sheet. (Except C kit)

Kit / Electrical entry / Cable length

F Kit (D-sub connector kit)

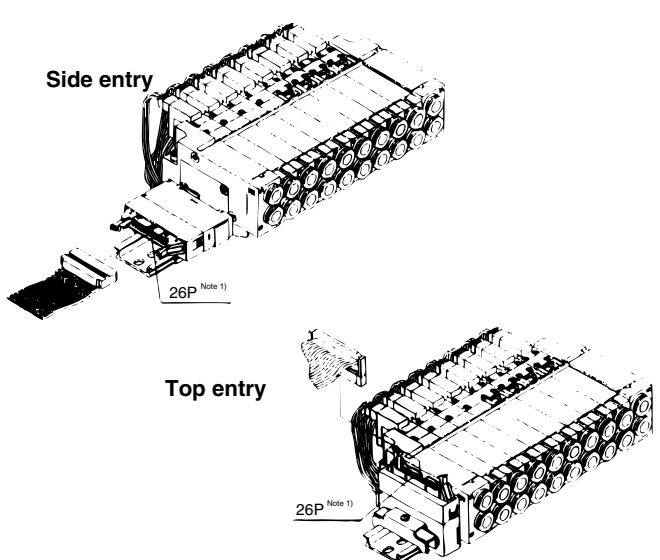


Connector entry direction					
Top entry		Side entry			
F Kit	U0	F Kit	S0	Without cable	Max. 8 ^{Note 1)} stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

Note 1) Besides the above, F kits with different number of pins are available.

Note 2) The number of the maximum stations can be increased by using optional special wiring specifications.

P Kit (Flat ribbon cable kit)



Connector entry direction					
Top entry		Side entry			
P Kit	U0	P Kit	S0	Without cable	Max. 8 ^{Note 2)} stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

Note 1) Besides the above, P kits with different number of pins are available.

Note 2) The number of the maximum stations can be increased by using optional special wiring specifications.

How to Order Valves

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

10-VQ

2

1

4

0

-

5

L

-

C6

VQ2000

Type of actuation

1

2 position single

2

2 position double (latching)

Metal seal

Rubber seal

Seal

0 — Metal seal
1 — Rubber seal

Cylinder port size

C4 - With one-touch fitting for ø4
C6 - With one-touch fitting for ø6
C8 - With one-touch fitting for ø8

Manual override

Nil — Non-locking push type (tool required)
B — Locking type (tool required)
C — Locking type (manual)
Note) The standard double (latching) style is equipped with manual override for pilot valve.

Electrical entry

L plug connector
L — With lead wire
LO — Without connector
Note) LO and MO valves are used for F, P and S kits.

M plug connector
M — With lead wire
MO — Without connector
Plug connectors and lead wires are attached to the manifold.

Coil voltage

5 — 24 VDC/With light/surge voltage suppresser
6 — 12 VDC/With light/surge voltage suppresser

Function

Nil - Standard (1W) specifications
H — High pressure (1.5W) specifications: Single style only
Y — Low wattage (0.5W) specifications: Single style only
Note) Use a low wattage style when used under continuous energization.

C Kit (Connector kit)

C	Connector kit	Max. 16 stations
---	---------------	------------------

S Kit (Serial transmission kit)

s Kit	O	Without SI unit	Max. 16 stations
	A	With general style SI unit, Series EX300	
	B	Mitsubishi Electric Corp.: MELSECNET/MINI-S3 data link system compatible	
	C	OMRON Corp.: SYSBUS wire system compatible	
	D	SHARP Corp.: Satellite I/O Link System compatible	
	E	Matsushita Electric Corp.: MEWNET-F System compatible	
	F1	NKE Corp.: Uni-wire System (16 outputs) compatible	
	G	Allen-Bradley Co.: Remote I/O (RIO) System compatible	
	H	NKE Corp.: Uni wire H system (16 outputs) compatible	
	J1	SUNX Corp.: S-LINK System (16 outputs) compatible	
	J2	SUNX Corp.: S-LINK System (8 outputs) compatible	Max. 8 stations
	K	Fuji Electric Co.,Ltd.: T Link Mini System compatible	Max. 16 stations
	Q	DeviceNet and CompoBus/D (OMRON Corporation) compatible	
	R1	OMRON Corp.: CompoBus/S (16 outputs) compatible	
	R2	OMRON Corp.: CompoBus/S (8 outputs) compatible	Max. 8 stations
	V	Mitsubishi Electric Corp.: CC -Link compatible	Max. 16 stations

Note) For the general purpose type, a transmission unit is required on the CPU side.

614

Upper row: For¹⁰⁻₂₁-VQ1000

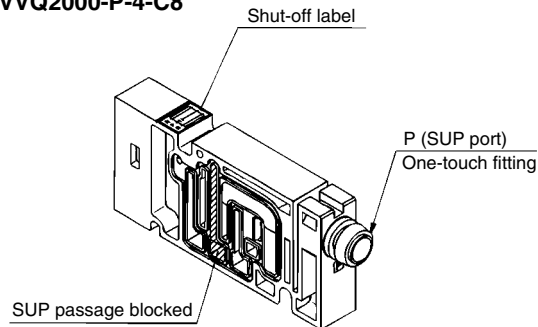
Lower row: For $^{10}_{21}\text{VQ2000}$

Manifold option

Individual SUP spacer

10-/21-VVQ1000-P-4-C6

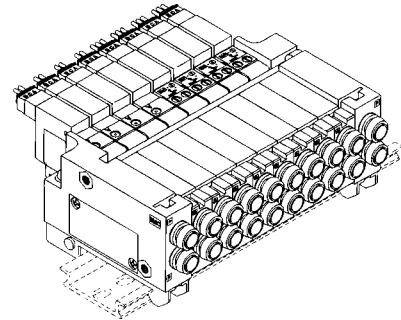
10-/21-VVQ2000-P-4-C8



DIN rail mounting bracket

VVQ1000-57A-4

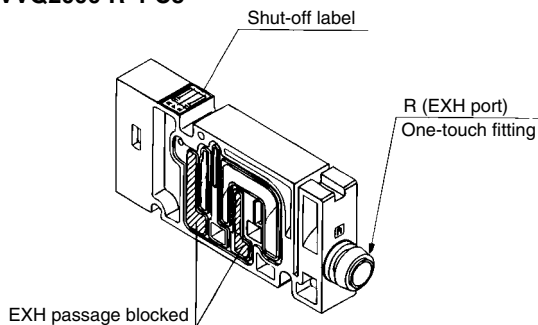
VVQ2000-57A-4



Individual EXH spacer

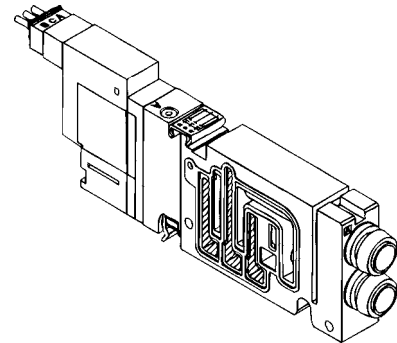
10-/21-VVQ1000-R-4-C6

10-/21-VVQ2000-R-4-C8



**P
R
PR** Block valve

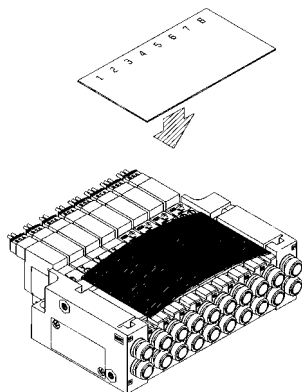
10-/21-VQ¹₂4⁰₁-□-□-□
P (SUP passage block)
R (EXH passage block)
PR (SUP/EXH passage block)



Name plate [-N4]

VVQ1000-N4-stations (1 to Max. stations)

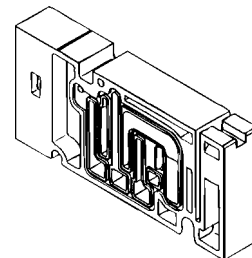
VVQ2000-N4-stations (1 to Max. stations)



Blanking plate

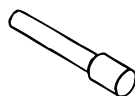
10-/21-VVQ1000-10A-4

10-/21-VVQ2000-10A-4



Blanking plug (For One-touch fitting)

KQ2P-23040608



Model

Series	Number of solenoids		Model		Flow characteristics ^{Note 1)}						Response time ^{Note 2)}			Weight g
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)			Standard: 1W H: 1.5W	Low wattage: 0.5 W	AC	
					C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv				
10-VQ1000	2 position	Single	Metal seal	10-/21-VQ1140	0.77	0.14	0.18	0.84	0.14	0.19	12 or less	15 or less	29 or less	57
			Rubber seal	10-/21-VQ1141	0.91	0.19	0.21	1.0	0.21	0.25	15 or less	20 or less	34 or less	
		Double (latching)	Metal seal	10-/21-VQ1240	0.77	0.14	0.18	0.84	0.14	0.19	12 or less	15 or less	29 or less	
			Rubber seal	10-/21-VQ1241	0.91	0.19	0.21	1.0	0.21	0.25	15 or less	20 or less	34 or less	
	3 position	Closed center	Rubber seal	10-/21-VQ1341	0.78	0.22	0.18	0.84	0.21	0.20	25 or less	33 or less	47 or less	72
		Exhaust center	Rubber seal	10-/21-VQ1441	0.78	0.28	0.19	1.0	0.21	0.24	25 or less	33 or less	47 or less	
		Pressure center	Rubber seal	10-/21-VQ1541	0.80	0.28	0.19	0.84	0.21	0.22	25 or less	33 or less	47 or less	
10-VQ2000	2 position	Single	Metal seal	10-/21-VQ2140	2.0	0.13	0.43	2.3	0.15	0.58	22 or less	29 or less	49 or less	103
			Rubber seal	10-/21-VQ2141	2.3	0.21	0.54	2.7	0.25	0.62	24 or less	31 or less	51 or less	
		Double (latching)	Metal seal	10-/21-VQ2240	2.0	0.13	0.43	2.3	0.15	0.58	22 or less	29 or less	49 or less	
			Rubber seal	10-/21-VQ2241	2.3	0.21	0.54	2.7	0.25	0.62	24 or less	31 or less	51 or less	

Note 1) When cylinder ports are C4: (VQ0000), C6: (VQ1000), and C8: (VQ2000)

Note 2) Based on JIS B 8375-1981 (Supply pressure: 0.5 MPa; with light/surge voltage suppressor; clean air. The value differs with the pressure and the quality of air.).

Specifications

Valve specifications	Valve construction		Metal seal		Rubber seal	
	Fluid		Air/Inert gas			
	Maximum operating pressure		0.7MPa		0.7MPa	
	Minimum operating pressure	Single	0.1MPa		0.15MPa	
		Double (latching)	0.18MPa		0.18MPa	
		3 position	—		0.2MPa	
	Ambient and fluid temperature		−10 to 50°C ^{Note1)}		−10 to 50°C ^{Note1)}	
	Lubrication		Not required			
	Manual override		Push style / Locking style (tool required, lever) Option			
	Enclosure		Dust tight			
Electrical specification	Grease		10-: Fluorine grease 21-: Lithium soap base grease			
	Particle generation grade (Refer to front matter pages 13 to 22 for details.)		10-: Grade 1 21-: Grade 2			
	Coil rated voltage		12, 24 VDC			
	Allowable voltage fluctuation		±10% of rated voltage			
	Coil insulation type		Equivalent to class B			
	Power consumption DC (Current)	24 VDC	1 W DC(42mA), 0.5 W DC(21mA)			
		12 VDC	1 W DC(83mA), 0.5 W DC(42mA)			

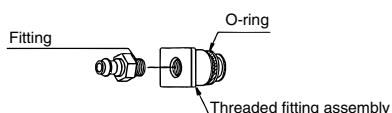
Note 1) Use dry air to prevent condensation when operating at low temperatures.

Precautions to install threaded fitting assemblies

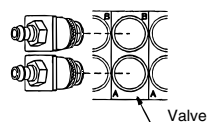
Threaded fitting assemblies used for this manifold are not mounted on the manifold base at a factory, but attached to this manifold in order to improve installation efficiency.

Install a threaded fitting following the procedures below.

1. Screw in the fitting to the threaded fitting assembly attached.



2. Insert the threaded fitting assembly into the port.

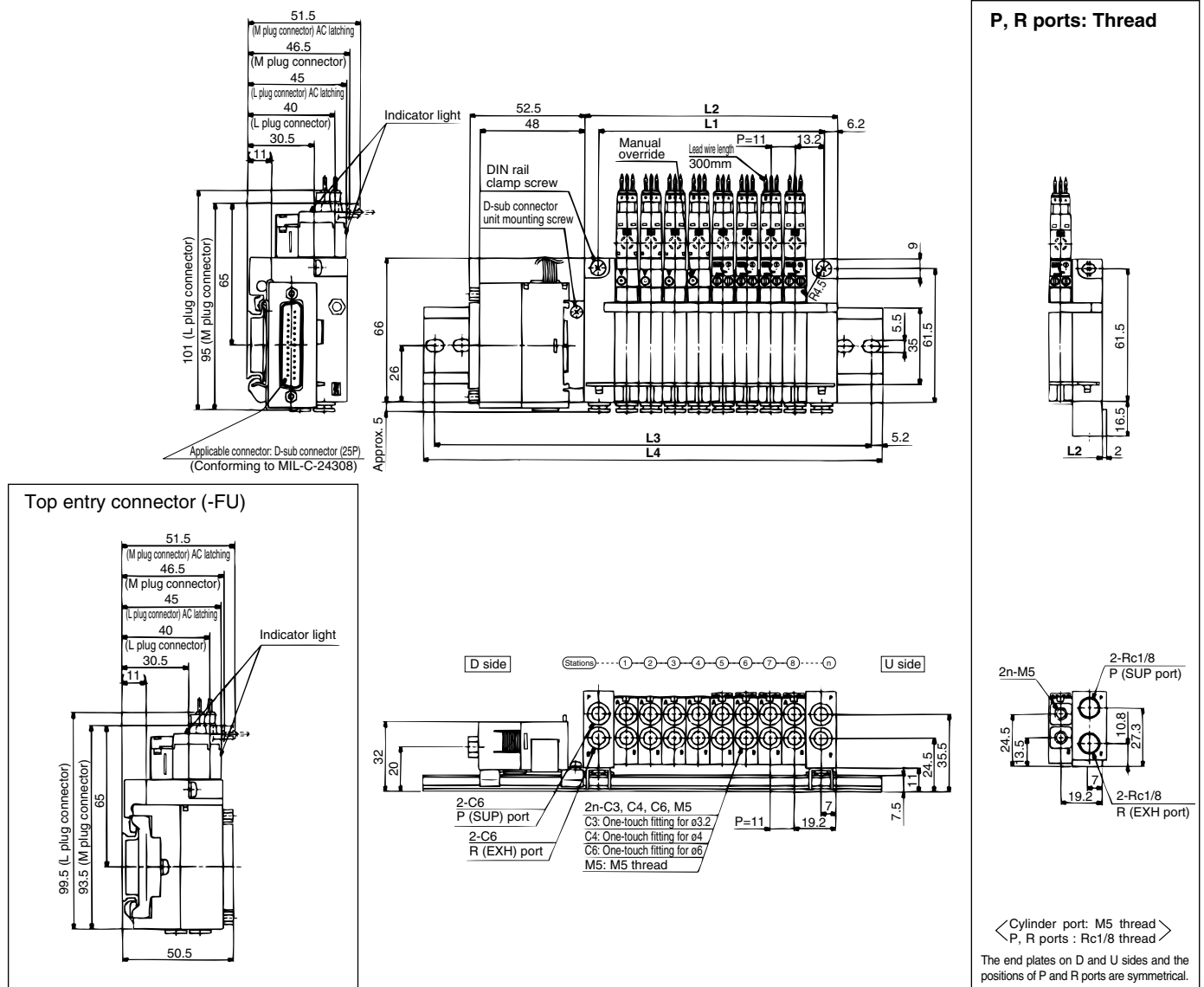


3. Insert the clip into the groove on the valve.

■ Precautions

1. Be careful not to scratch or damage the O-ring of the fitting assembly. It may cause air leakage.
- To prevent the exhaust air at EXH from being pressurized (0.3 MPa or more) by throttling, EXH port on both sides is recommended. (Otherwise delay in response or air leakage may occur)

kit (D-sub connector kit) / ¹⁰⁻₂₁₋ VQ1000



Dimensions / Side entry connector [-FS]

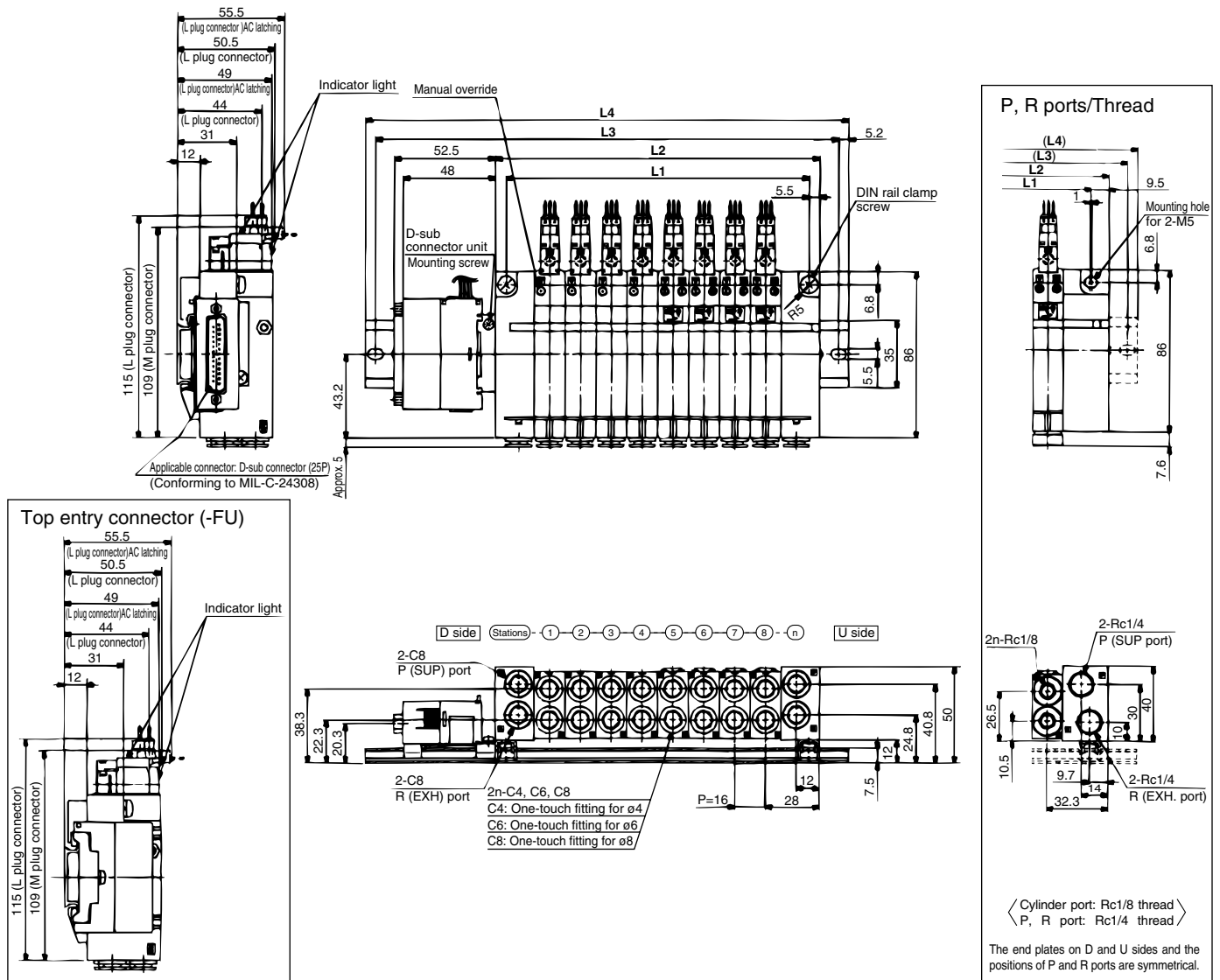
Formula $L1 = 11n + 15.5$ / $L2 = 11n + 28$ / n: Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	26.5	37.5	48.5	59.5	70.5	81.5	92.5	103.5	114.5	125.5	136.5	147.5	158.5	169.5	180.5	191.5
L2	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204
L3	112.5	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	262.5	275	287.5
L4	123	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	273	285.5	298

Dimensions / Top entry connector [-FU]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	100	112.5	125	137.5	137.5	150	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5
L4	110.5	123	135.5	148	148	160.5	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273

Kit (D-sub connector kit) / 10- 21-VQ2000



P, R ports: In the case of one-touch fittings

Dimensions / Side entry connector [-FS]

Formula $L1 = 16n + 29$ / $L2 = 16n + 40$ / n : Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
L2	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296
L3	137.5	150	162.5	187.5	200	212.5	225	250	262.5	275	300	312.5	325	337.5	362.5	375
L4	148	160.5	173	198	210.5	223	235.5	260.5	273	285.5	310.5	323	335.5	348	373	385.5

Dimensions / Side entry connector [-FU]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	112.5	137.5	150	162.5	175	200	212.5	225	237.5	262.5	275	287.5	312.5	325	337.5	350
L4	123	148	160.5	173	185.5	210.5	223	235.5	248	273	285.5	298	323	335.5	348	360.5

P, R ports: In the case of thread

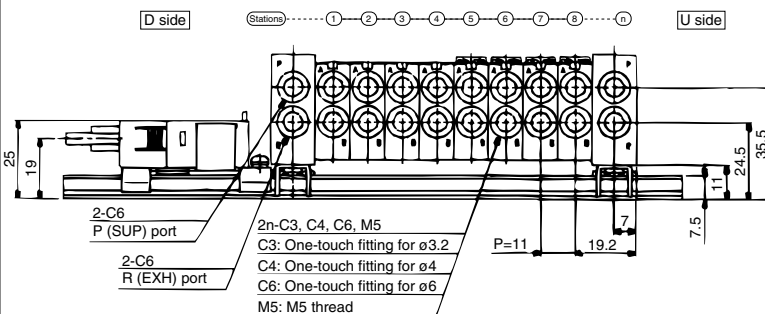
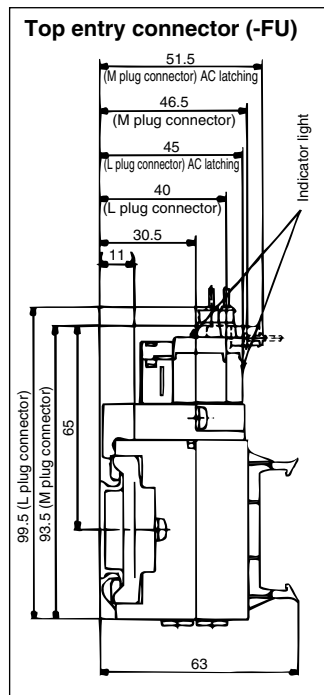
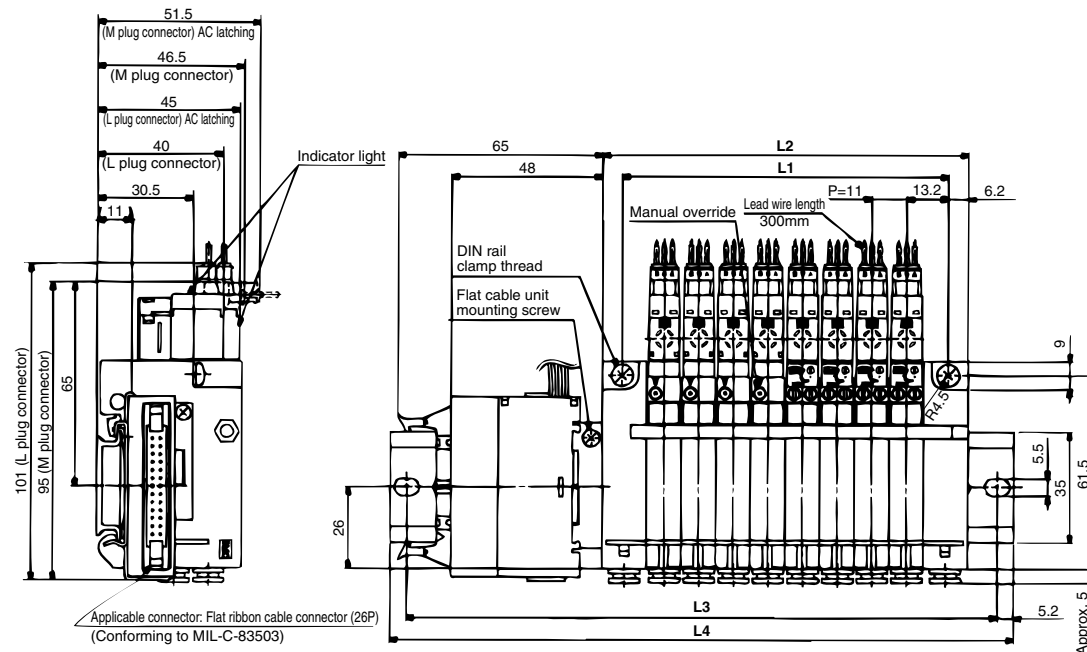
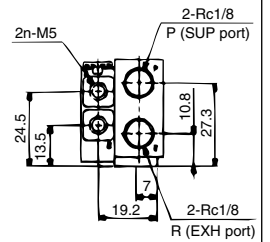
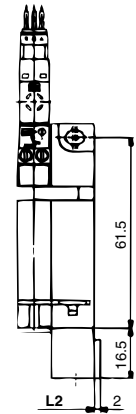
Dimensions / Side entry connector [-FS]

Formula $L1 = 16n + 29$ / $L2 = 16n + 48$ / n : Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
L2	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304
L3	137.5	162.5	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	362.5	387.5
L4	148	173	185.5	198	210.5	235.5	248	260.5	285.5	298	310.5	323	348	360.5	373	398

Dimensions / Side entry connector [-FU]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	125	137.5	150	175	187.5	200	225	237.5	250	262.5	287.5	300	312.5	337.5	350	362.5
L4	135.5	148	160.5	185.5	198	210.5	235.5	248	260.5	273	298	310.5	323	348	360.5	373

P kit (Flat ribbon cable kit) / ¹⁰⁻₂₁₋ VQ1000

P, R ports / Thread


< Cylinder port: M5 thread >

The end plates on D and U sides and the positions of P and R ports are symmetrical.

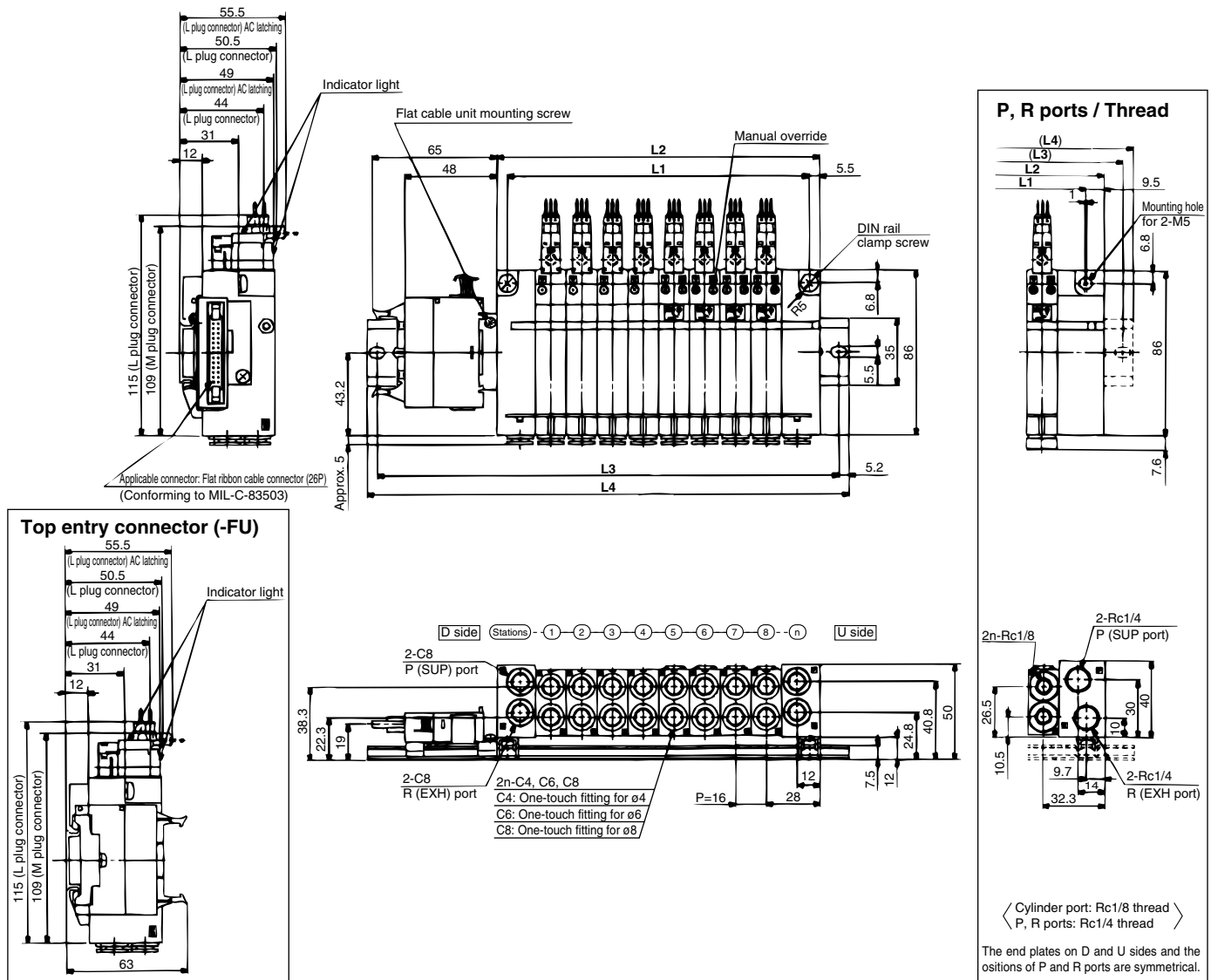
Dimensions / Side entry connector [-PS]

Formula $L1 = 11n + 15.5$ / $L2 = 11n + 28$ / n : Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	26.5	37.5	48.5	59.5	70.5	81.5	92.5	103.5	114.5	125.5	136.5	147.5	158.5	169.5	180.5	191.5
L2	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204
L3	112.5	125	137.5	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	262.5	275	287.5
L4	123	135.5	148	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	273	285.5	298

Dimensions / Top entry connector [-PU]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	87.5	100	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	225	237.5	250	262.5
L4	98	110.5	123	135.5	148	160.5	173	173	185.5	198	210.5	223	235.5	248	260.5	273

P kit (Flat ribbon cable kit) / ¹⁰⁻₂₁₋VQ2000

P, R ports: In the case of One-touch fittings
Dimensions / Side entry connector [-PS]

Formula L1 = 16n + 29 / L2 = 16n + 40 / n: Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
L2	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296
L3	137.5	150	162.5	187.5	200	212.5	225	250	262.5	275	287.5	312.5	325	337.5	362.5	375
L4	148	160.5	173	198	210.5	223	235.5	260.5	273	285.5	298	323	335.5	348	373	385.5

Dimensions / Top entry connector [-PU]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	112.5	125	137.5	162.5	175	187.5	200	225	237.5	250	262.5	287.5	300	312.5	337.5	350
L4	123	135.5	148	173	185.5	198	210.5	235.5	248	260.5	273	298	310.5	323	348	360.5

P, R ports: In the case of thread
Dimensions / Side entry connector [-PS]

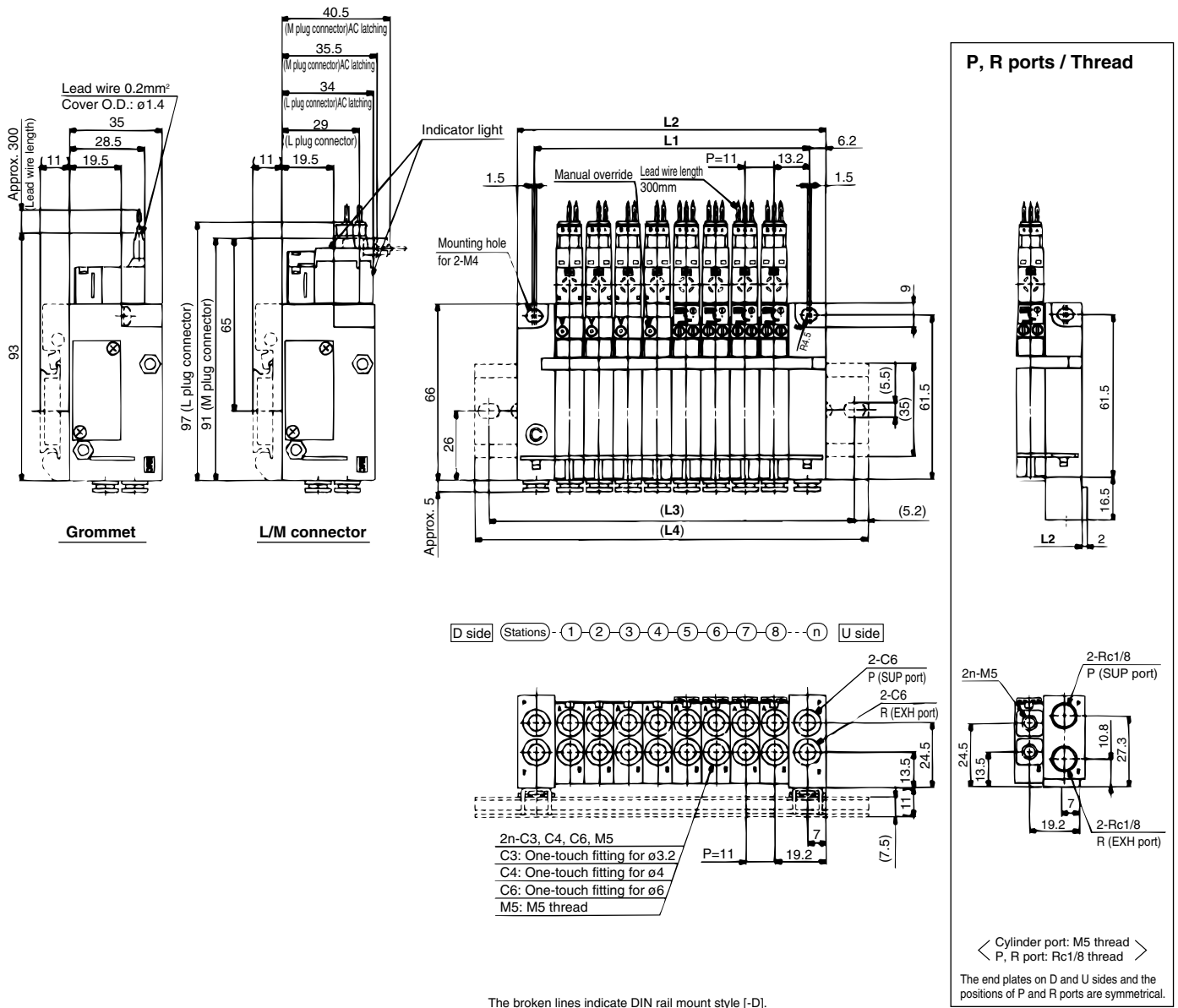
Formula L1 = 16n + 29 / L2 = 16n + 48 / n: Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
L2	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304
L3	137.5	162.5	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	362.5	387.5
L4	148	173	185.5	198	210.5	235.5	248	260.5	285	298	310.5	323	348	360.5	373	398

Dimensions / Top entry connector [-PU]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	112.5	137.5	150	162.5	175	200	206.5	225	250	262.5	275	287.5	312.5	325	337.5	362.5
L4	123	148	160.5	173	185.5	210.5	217	235.5	260.5	273	285.5	298	323	335.5	348	373

C kit (Connector kit) / ¹⁰⁻₂₁₋VQ1000

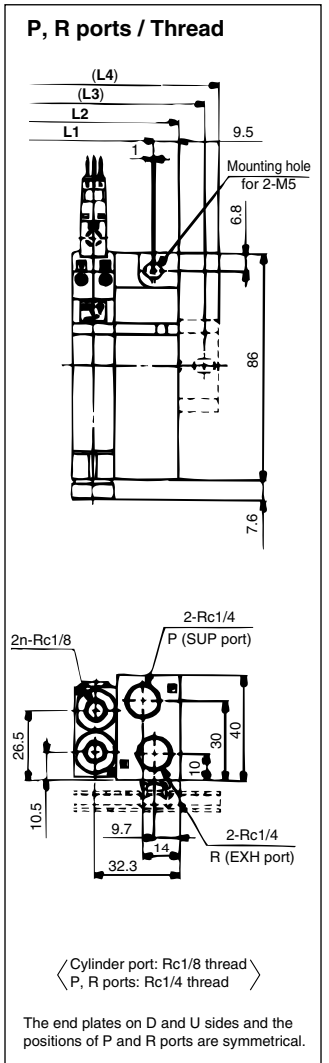


Dimensions

Formula $L1 = 11n + 15.5$ / $L2 = 11n + 28$ / n : Stations (Max. 16 stations)

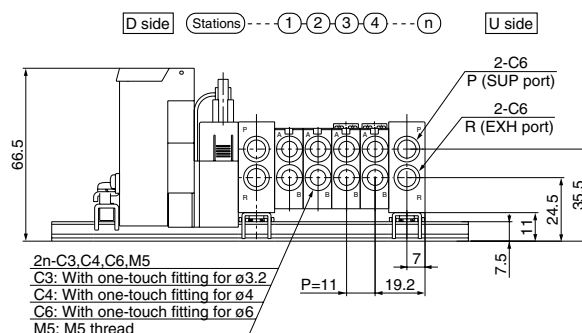
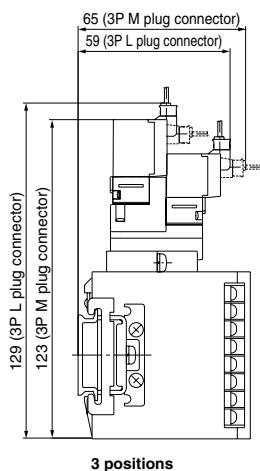
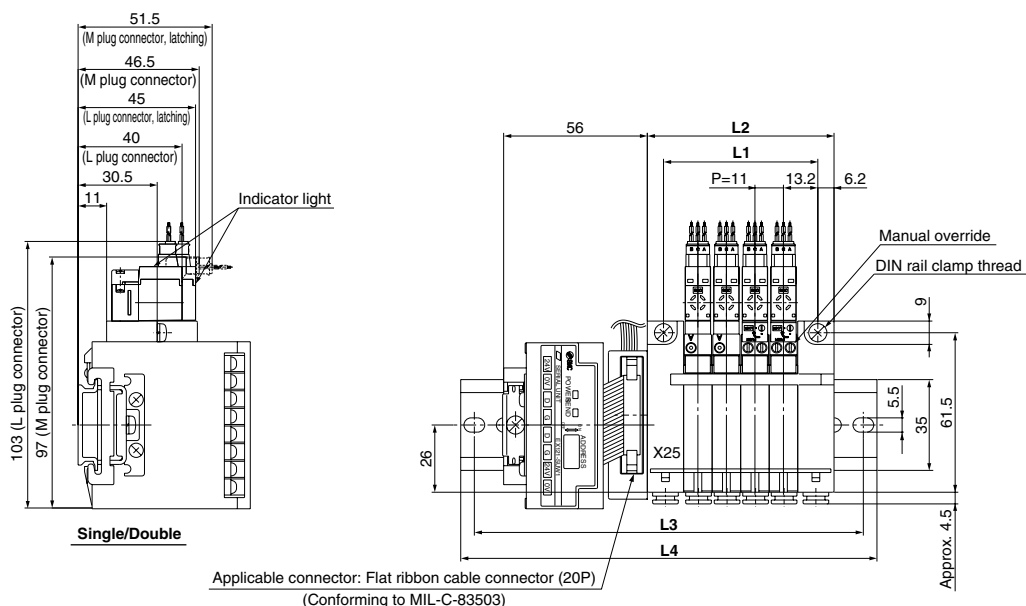
Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	26.5	37.5	48.5	59.5	70.5	81.5	92.5	103.5	114.5	125.5	136.5	147.5	158.5	169.5	180.5	191.5
L2	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204
(L3)	62.5	75	87.5	100	112.5	125	125	137.5	150	162.5	175	187.5	200	212.5	212.5	225
(L4)	73	85.5	98	110.5	123	135.5	135.5	148	160.5	173	185.5	198	210.5	223	223	235.5

**10-
21-VQ2000**

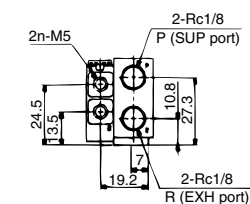
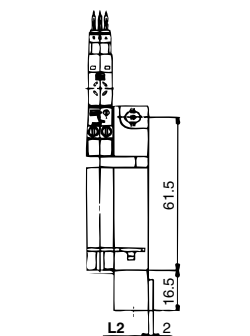


Dimensions / P, R ports: In the case of thread							Formula L1 = 16n + 29 / L2 = 16n + 48 / n: Stations (Max. 16 stations)									
Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
L2	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304
(L3)	87.5	100	125	137.5	150	175	187.5	200	212.5	237.5	250	262.5	287.5	300	312.5	325
(L4)	98	110.5	135.5	148	160.5	185.5	198	210.5	223	248	260.5	273	298	310.5	323	335.5

kit (Serial transmission kit) / ¹⁰⁻₂₁₋VQ1000



P, R ports / Thread



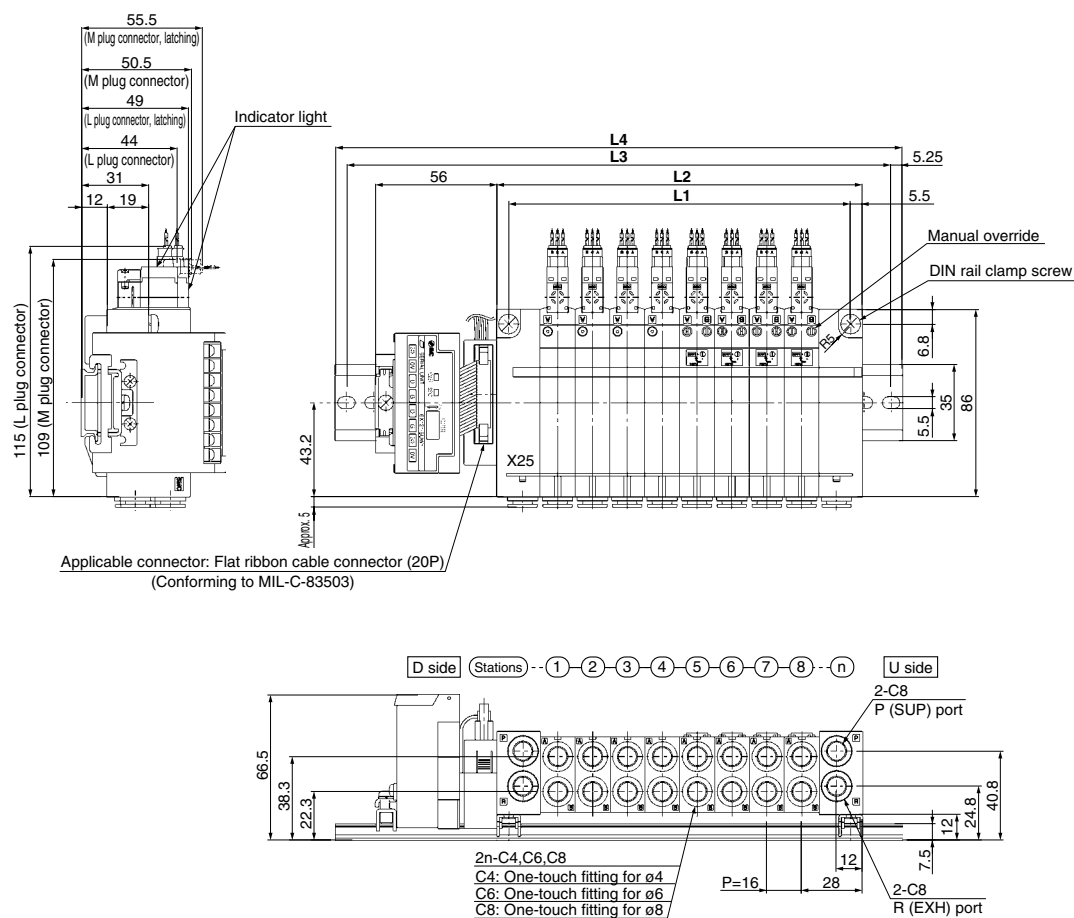
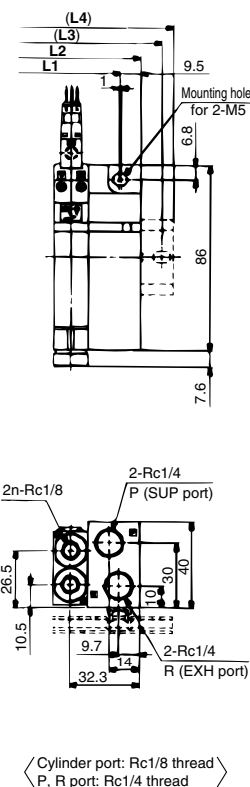
< Cylinder port: M5 thread >
< P, R ports: Rc1/8 thread >

The end plates on D and U sides and the positions of P and R ports are symmetrical.

Dimensions

Formula $L1 = 11n + 15.5$ / $L2 = 11n + 28$ / n : Stations (Max. 16 stations: standard)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	26.5	37.5	48.5	59.5	70.5	81.5	92.5	103.5	114.5	125.5	136.5	147.5	158.5	169.5	180.5	191.5
L2	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204
L3	125	137.5	137.5	150	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275	287.5
L4	135.5	148	148	160.5	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5	298

S kit (Serial transmission kit) / ¹⁰⁻₂₁₋VQ2000

P / R ports: Thread

Dimensions / P, R ports: In the case of One-touch fittings Formula $L1 = 16n + 29$ / $L2 = 16n + 40$ / n: Stations (Max. 16 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
L2	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296
L3	137.5	150	175	187.5	200	212.5	237.5	250	262.5	287.5	300	312.5	325	350	362.5	375
L4	148	160.5	185.5	198	210.5	223	248	260.5	273	298	310.5	323	335.5	360.5	373	385.5

Dimensions / P, R ports: In the case of thread Formula $L1 = 16n + 29$ / $L2 = 16n + 48$ / n: Stations (Max. 16 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	45	61	77	93	109	125	141	157	173	189	205	221	237	253	269	285
L2	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304
L3	150	162.5	175	187.5	212.5	225	237.5	262.5	275	287.5	300	325	337.5	350	375	387.5
L4	160.5	173	185.5	198	223	235.5	248	273	285.5	298	310.5	335.5	348	360.5	385.5	398

Series ¹⁰⁻₂₁₋ VQ1000

Body ported / Cassette style
Plug lead unit

VQ1000/Body ported Cassette plug lead unit

How to Order Manifold

Series VQ1000
Cassette plug lead unit

Valve stations
The number of minimum and maximum stations differs from kit to kit.
(Refer to the table below.)

P, R port size
A: One-touch fitting for ø6
B: Rc (PT) 1/8 thread

10 - V V 5 Q 1 7 - 08 A F U1 - D

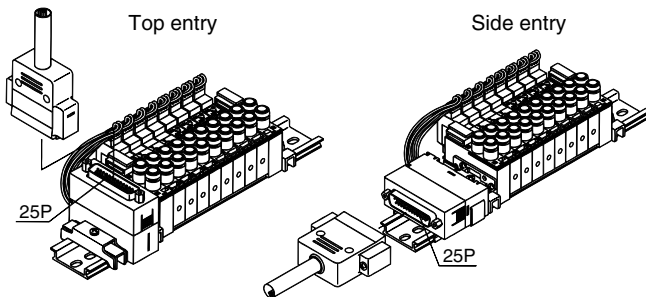
Kit / Electrical entry / Cable length
Refer to the figure below.

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

Option
D — DIN rail mounting style ^{Note 1)}
K — Special wiring specification (Except double wiring) ^{Note 2)}
N — With name plate ^{Note 3)}
^{Note 1)} Since the manifold is all with DIN rail, so suffix "D" to the part number.
^{Note 2)} Indicate the wiring specifications in the manifold specification sheet. (Except C kit)
^{Note 3)} Unmountable when the valve's manual override is a locking lever type.
^{Note 4)} When two or more symbols are specified, indicate them alphabetically

Kit / Electrical entry / Cable length

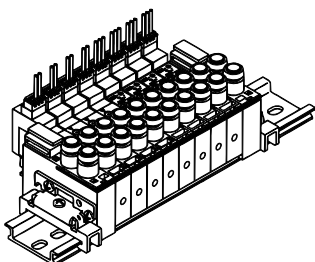
F Kit (D-sub connector kit)



Connector entry direction					
Top entry		Side entry			
F Kit	U0	F Kit	S0	Without cable	Max. 8 ^{Note)} stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

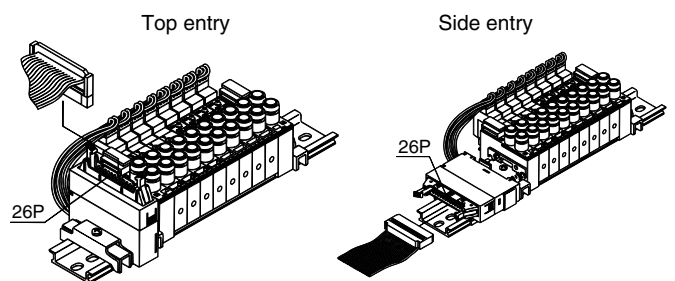
Note 1) Besides the above, F kits with different number of pins are available.
Note 2) The number of maximum stations can be increased by using optional special wiring specifications.

C Kit (Connector)



C	Connector kit	Max. 16 stations
---	---------------	------------------

P Kit (Flat ribbon cable kit)



Connector entry direction					
Top entry		Side entry			
P Kit	U0	P Kit	S0	Without cable	Max. 8 ^{Note)} stations
	U1		S1	With 1.5 m cable	
	U2		S2	With 3 m cable	
	U3		S3	With 5 m cable	

Note 1) Besides the above, P kits with different number of pins are available.
Note 2) The number of maximum stations can be increased by using optional special wiring specifications.

How to Order Valves

10 — Clean series
21 — Copper, fluorine and silicon-free + Low particle generation

10 - VQ1 1 7 0 - 5 M - C6

VQ1000

Type of actuation

1	2 position single (A)(B) 4 2 5 1 3 (R1)(P)(R2)
2	2 position double (latching) (A)(B) 4 2 5 1 3 (R1)(P)(R2) Metal seal (A)(B) 4 2 5 1 3 (R1)(P)(R2) Rubber seal
3 (Note)	3 position closed center (A)(B) 4 2 5 1 3 (R1)(P)(R2)
4 (Note)	3 position exhaust center (A)(B) 4 2 5 1 3 (R1)(P)(R2)
5 (Note)	3 position pressure center (A)(B) 4 2 5 1 3 (R1)(P)(R2)

Note) 3 position style is available with rubber seal only.

Cylinder port size
C3 — With one-touch fitting for ø3.2
C4 — With one-touch fitting for ø4
C6 — With one-touch fitting for ø6
M5 — M5 thread

Manual override
Nil — Non-locking push type (tool required)
B — Locking type (tool required)
C — Locking type (manual)
Note) The standard double (latching) style is equipped with a manual override for pilot valve.

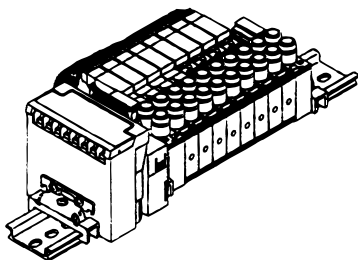
Electrical entry
L plug connector
L — With lead wire
LO — Without connector
M plug connector
M — With lead wire
MO — Without connector
Note 1) LO and MO valves are used for F and P kits.
The plug connector and lead wire are attached to the manifold.

Coil voltage
5 — 24 VDC/With light/surge voltage suppresser
6 — 12 VDC/With light/surge voltage suppresser

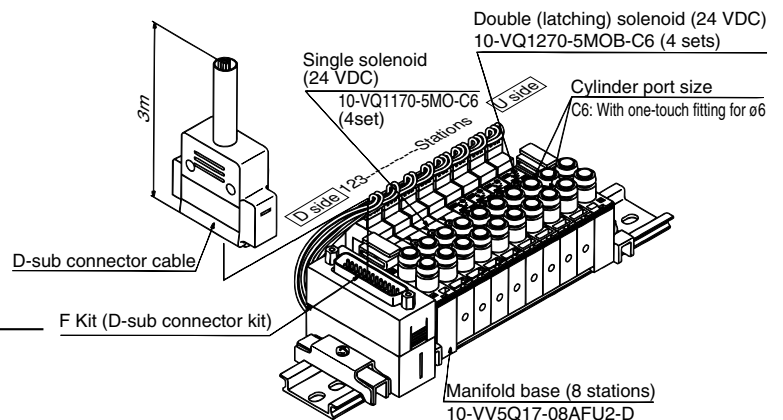
Function
Nil — Standard (1W) specifications
H — High pressure (1.5 W) specifications: Except double (latching) style
Y — Low wattage (0.5 W) specifications: Except double (latching) style
Note) Use a low wattage style when operated under continuous energization.

Seal
0 — Metal seal
1 — Rubber seal

S Kit (Serial transmission kit)



How to Order Manifold Assembly / Example



S Kit	O	Without SI unit	Max. 16 stations
	A	With general style SI unit, Series EX300	
	B	Mitsubishi Electric Corp.: MELSECNET/MINI-S3 data link system compatible	
	C	OMRON Corp.: SYSBUS wire system compatible	
	D	SHARP Corp.: Satellite I/O Link System compatible	
	E	Matsushita Electric Corp.: MEWNET-F System compatible	
	F1	NKE Corp.: Uni-wire System (16 outputs) compatible	
	G	Allen-Bradley Co.: Remote I/O (RIO) System compatible	
	H	NKE Corp.: Uni wire H system (16 outputs) compatible	
	J1	SUNX Corp.: S-LINK System (16 outputs) compatible	
	J2	SUNX Corp.: S-LINK System (8 outputs) compatible	Max. 8 stations
	K	Fuji Electric Co., Ltd.: T Link Mini System compatible	Max. 16 stations
	Q	DeviceNet and CompoBus/D (OMRON Corporation) compatible	
	R1	OMRON Corp.: CompoBus/S (16 outputs) compatible	Max. 8 stations
	R2	OMRON Corp.: CompoBus/S (8 outputs) compatible	Max. 16 stations
	V	Mitsubishi Electric Corp.: CC -Link compatible	

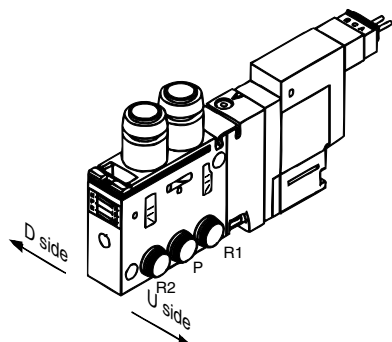
Note) For the general purpose type, a transmission unit is required on the CPU side

10-VV5Q17-08AFU2-D 1 set (F kit/8 station manifold part no.)
 * **10-VQ1170-5MO-C6** 4 sets (Single solenoid part no.)
 * **10-VQ1270-5MOB-C6** 4 sets (Double solenoid part no.)
 ↳The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

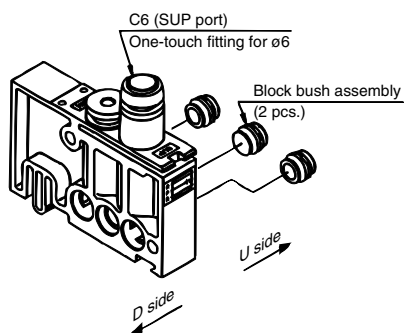
Specify the valve and option part numbers under the manifold base part number.
 In the case of complex arrangement, specify them in the manifold specification sheet.

Manifold option

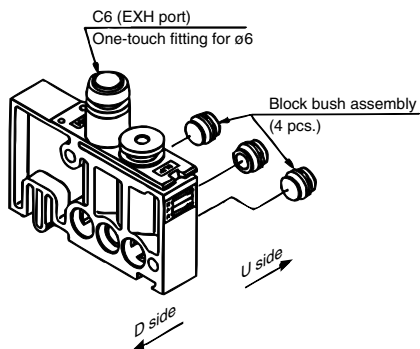
SUP/EXH block bush assembly 10-/21-VVQ1000-87A-B-50



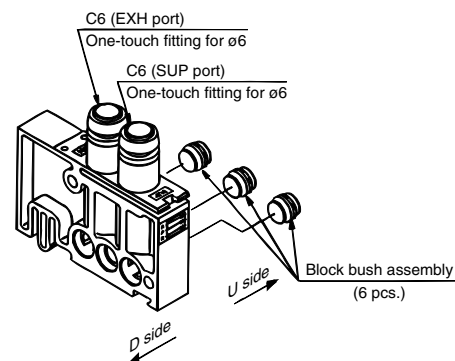
Individual SUP spacer 10-/21-VVQ1000-P-7-C6



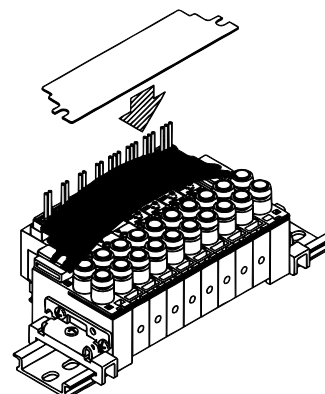
Individual EXH spacer 10-/21-VVQ1000-R-7-C6



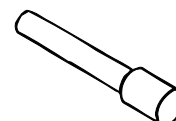
Individual SUP/EXH spacer 10-/21-VVQ1000-PR-7-C6



Name plate [-N7] VVQ1000-N7-Stations (1 to maximum stations)



Blanking plug (For One-touch fitting) 23 KQ2P-04 06



Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Model

Series	Number of solenoids		Model		Flow characteristics ^{Note 1)}						Response time ms ^{Note 2)}		AC	Weight g
					1→4/2(P→A/B)			4/2→5/3(A/B→R1/R2)			Standard: 1W H: 1.5W	Low wattage: 0.5 W		
					C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv				
10-VQ1000	2 position	Single	Metal seal	10-/21-VQ1170	0.56	0.15	0.13	0.60	0.12	0.14	12 or less	15 or less	29 or less	67
			Rubber seal	10-/21-VQ1171	0.71	0.20	0.17	0.80	0.16	0.19	15 or less	20 or less	34 or less	
		Double (latching)	Metal seal	10-/21-VQ1270	0.56	0.15	0.13	0.60	0.12	0.14	12 or less	15 or less	29 or less	
			Rubber seal	10-/21-VQ1271	0.71	0.20	0.17	0.80	0.16	0.19	15 or less	20 or less	34 or less	
	3 position	Closed center	Rubber seal	10-/21-VQ1371	0.65	0.23	0.16	0.70	0.20	0.17	25 or less	33 or less	47 or less	82
		Exhaust center	Rubber seal	10-/21-VQ1471	0.65	0.23	0.16	0.80	0.16	0.19	25 or less	33 or less	47 or less	
		Pressure center	Rubber seal	10-/21-VQ1571	0.70	0.20	0.17	0.72	0.20	0.17	25 or less	33 or less	47 or less	

Note 1) Cylinder port size: C6

Note 2) Based on JIS B 8375-1981 (Supply pressure: 0.5 MPa; with light/surge voltage suppressor; clean air. The value differs with the pressure and the quality of air.)

Specifications

Valve specifications	Valve construction		Metal seal		Rubber seal	
	Fluid		Air/Inert gas			
	Maximum operating pressure		0.7MPa		0.7MPa	
	Minimum operating pressure	Single	0.1MPa		0.15MPa	
		Double (latching)	0.18MPa		0.18MPa	
		3 position	—		0.2MPa	
	Ambient and fluid temperature		−10 to 50°C Note 1)		−10 to 50°C Note 1)	
	Lubrication		Not required			
	Manual override		Push style / Locking type (tool required, lever), Option			
	Enclosure		Dust tight			
	Grease		10-: Fluorine grease 21-: Lithium soap base grease			
Electrical specification	Particle generation grade (Refer to front matters 13 to 22 for details.)		10-: Grade 1 21-: Grade 2			
	Coil rated voltage		12, 24 VDC			
	Allowable voltage fluctuation		±10% of rated voltage			
	Coil insulation type		Equivalent to class B			
	Power consumption DC (Current)	24 VDC	1 W DC(42mA), 0.5 W DC(21mA)			
		12 VDC	1 W DC(83mA), 0.5 W DC(42mA)			

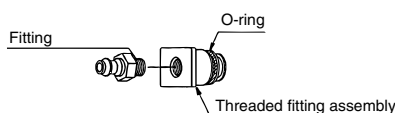
Note 1) Use dry air to prevent condensation when operating at low temperatures.

Precautions to install threaded fitting assemblies

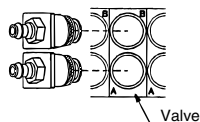
Threaded fitting assemblies used for this manifold are not mounted on the manifold base at a factory, but attached to this manifold in order to improve installation efficiency.

Install a threaded fitting following the procedures below.

1. Screw in the fitting to the threaded fitting assembly attached.



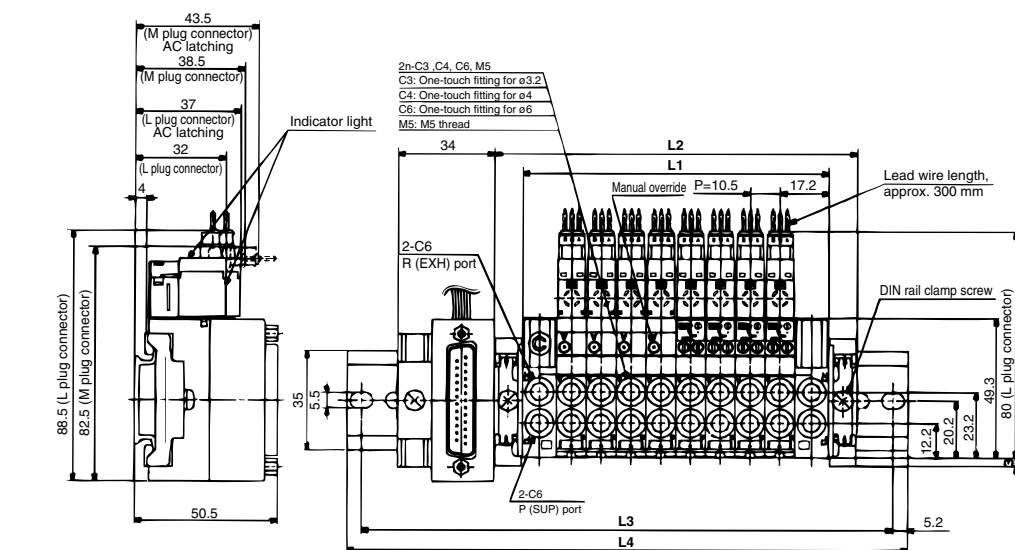
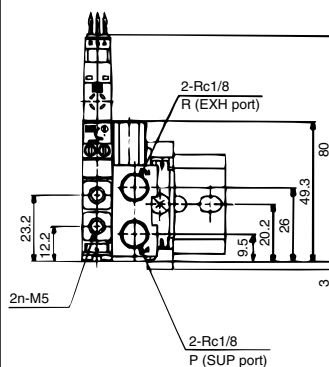
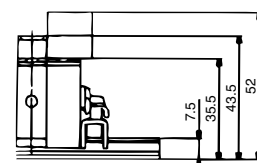
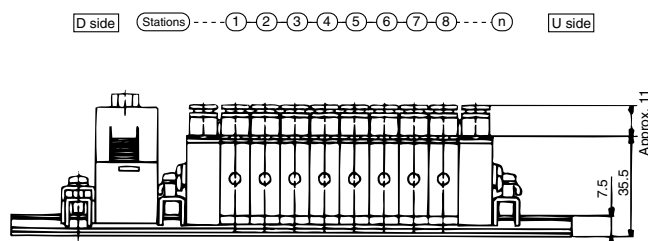
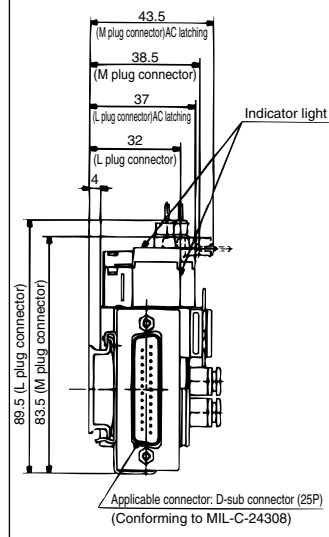
2. Insert the threaded fitting assembly into the port.



3. Insert the clip into the groove on the valve.

■Precautions

- Be careful not to scratch or damage the O-ring of the fitting assembly. It may cause air leakage.
- To prevent the exhaust air at EXH from being pressurized (0.3 MPa or more) by throttling, EXH port on both sides is recommended. (Otherwise delay in response or air leakage may occur)

**Kit (D-sub connector kit) / 10-
21-VQ1000****Top entry connector [-FU]****P, R ports / Thread****Top entry connector (-FU)**

< Cylinder port: M5 thread >

The end plates on D and U sides and the positions of P and R ports are symmetrical.

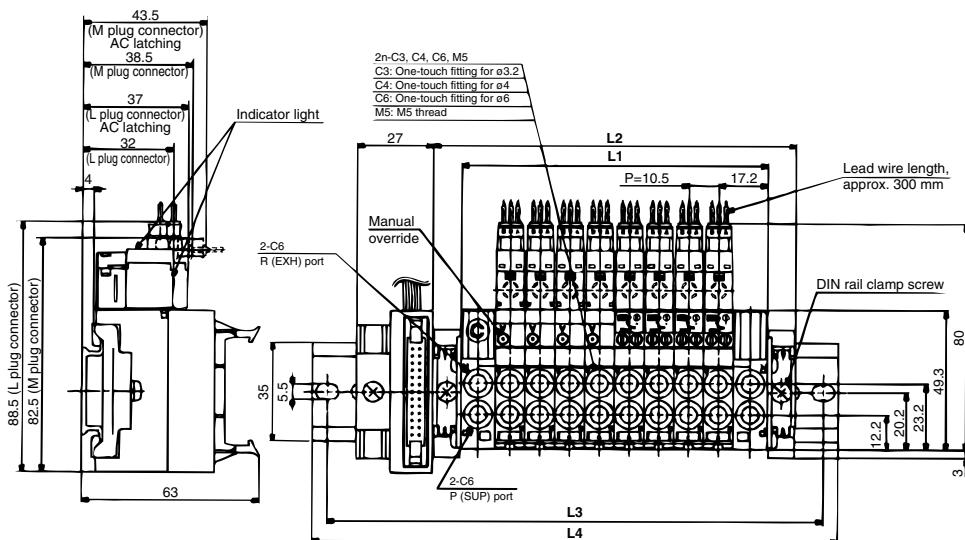
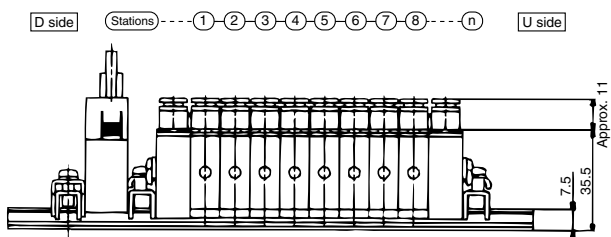
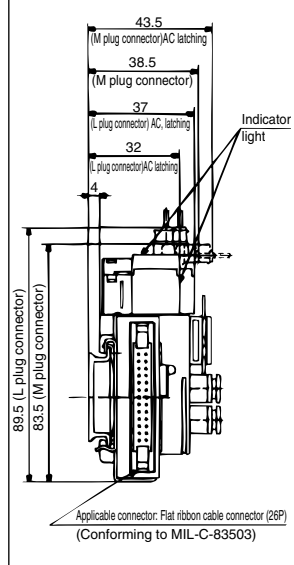
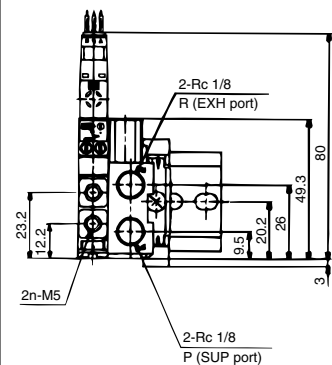
Dimensions / Top entry connector [-FU]

Formula $L1 = 10.5n + 24$ / $L2 = 10.5n + 44$ / n : Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	34.5	45	55.5	66	76.5	87	97.5	108	118.5	129	139.5	150	160.5	171	181.5	192
L2	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212
L3	112.5	125	137.5	150	150	162.5	175	187.5	200	212.5	225	225	237.5	250	262.5	275
L4	123	135.5	148	160.5	160.5	173	185.5	198	210.5	223	235.5	235.5	248	260.5	273	285.5

Dimensions / Side entry connector [-FS]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	137.5	137.5	150	162.5	175	187.5	200	200	212.5	225	237.5	250	262.5	262.5	275	287.5
L4	148	148	160.5	173	186.5	198	210.5	210.5	223	235.5	248	260.5	273	273	285.5	298

P kit (Flat ribbon cable kit) / ¹⁰⁻₂₁₋VQ1000
Top entry connector [-PU]

Top entry connector (-FU)

P, R ports / Thread


< Cylinder port: M5 thread
P, R ports: Rc1/8 thread >

The end plates on D and U sides and the positions of P and R ports are symmetrical.

Dimensions / Top entry connector [-PU]

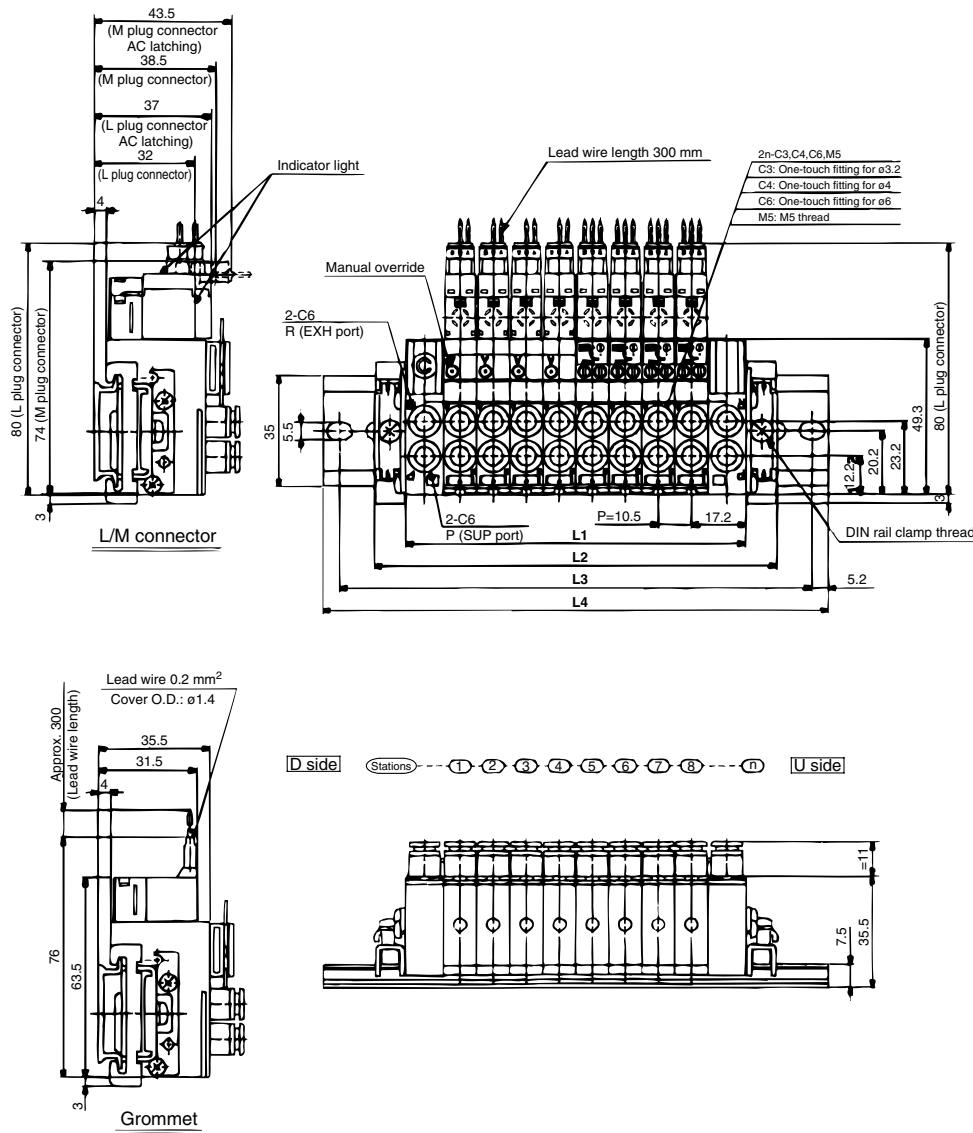
Formula $L1 = 10.5n + 24$ / $L2 = 10.5n + 44$ / n : Stations (Max. 8 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	34.5	45	55.5	66	76.5	87	97.5	108	118.5	129	139.5	150	160.5	171	181.5	192
L2	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212
L3	112.5	112.5	125	137.5	150	162.5	175	175	187.5	200	212.5	225	237.5	237.5	250	262.5
L4	123	123	135.5	148	160.5	173	185.5	185.5	198	210.5	223	235.5	248	248	260.5	273

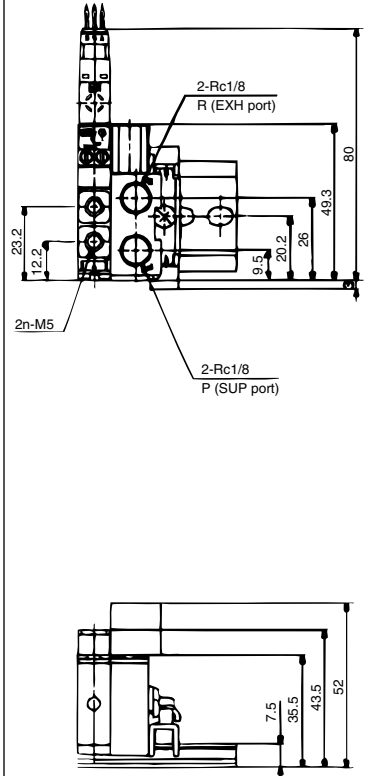
Dimensions / Side entry connector [-PS]

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L3	137.5	137.5	150	162.5	175	187.5	200	200	212.5	225	237.5	250	262.5	262.5	275	287.5
L4	148	148	160.5	173	185.5	198	210.5	210.5	223	235.5	248	260.5	273	273	285.5	298

kit (Connector kit) /¹⁰⁻₂₁₋VQ1000



P, R ports / Thread



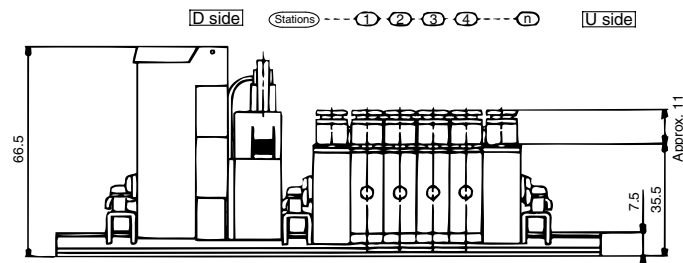
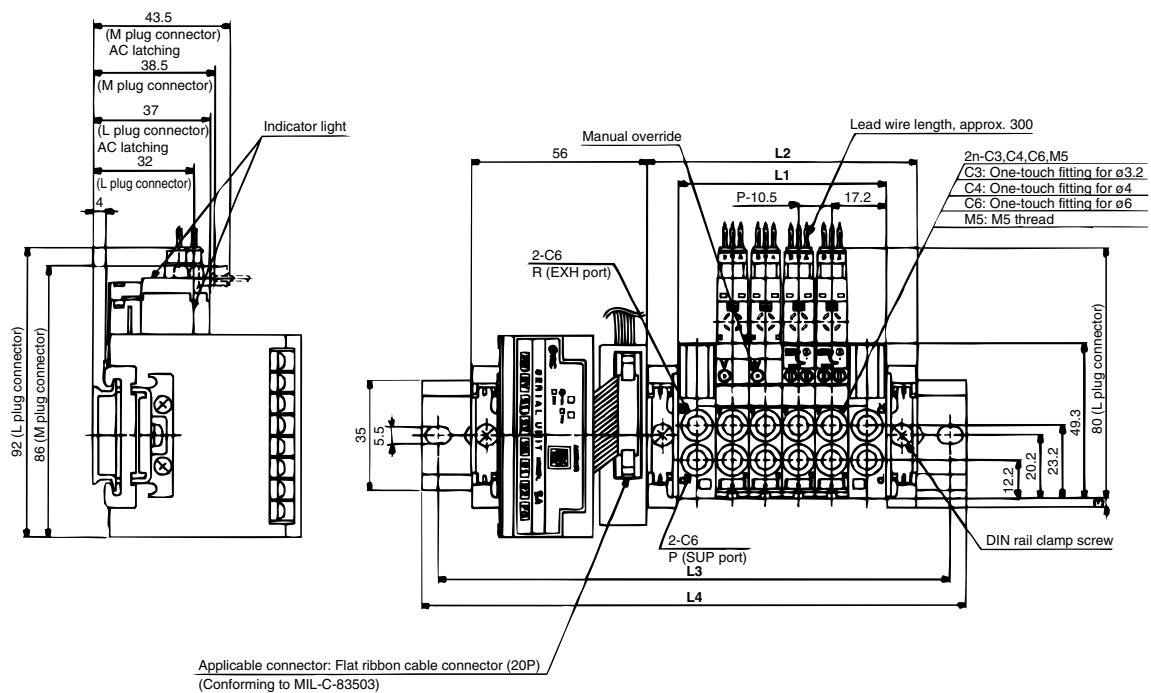
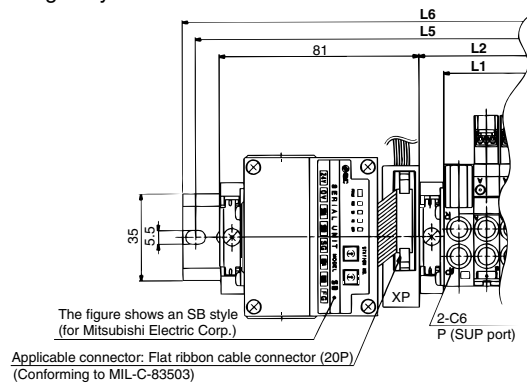
Dimensions

Formula $L1 = 10.5n + 24$ / $L2 = 10.5n + 44$ / n: Stations (Max. 16 stations)

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	34.5	45	55.5	66	76.5	87	97.5	108	118.5	129	139.5	150	160.5	171	181.5	192
L2	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212
L3	75	87.5	100	112.5	125	137.5	137.5	150	162.5	175	187.5	200	200	212.5	225	237.5
L4	85.5	98	110.5	123	135.5	148	148	160.5	173	185.5	198	210.5	210.5	223	235.5	248

Kit (Serial transmission Kit) / ¹⁰⁻₂₁₋VQ1000

Dust tight style SI unit


Dimensions

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	34.5	45	55.5	66	76.5	87	97.5	108	118.5	129	139.5	150	160.5	171	181.5	192
L2	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212
L3	137.5	150	162.5	162.5	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	287.5	300
L4	148	160.5	173	173	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	298	310.5

Manifolds with SI unit for Matsushita Electric Co. (MEWNET FP) or Allen Bradley Co. have the same L5, L6 dimensions as the dust tight style SI unit.

Series 10-VQD1000

4 port direct operated poppet solenoid valve

How to Order Valves

Clean series

Body type

- 2 — Body ported (Single unit)
- 5 — Base mounted

Valve option

- Nil — Standard (2W)
- V — Vacuum (2W)
- * U — For large flow (3.2W)
- * W — For large flow, Vacuum (3.2W)
- * Power saving style

Rated voltage

- 5 — 24 VDC
- 6 — 12 VDC
- * Please consult with SMC for other voltages.

10 - VQD11 5 1 U - 5 L - M5

Electrical entry

- L — L plug connector, With lead wire
- LO — L plug connector, Without lead wire
- M — M plug connector, With lead wire
- MO — M plug connector, Without lead wire

Port size

- Body ported — M5 x 0.8 thread
- Base mounted — M5 x 0.8 (with sub-plate)
- Note) No "Nil".



L plug connector
Base mounted



L plug connector
Body ported

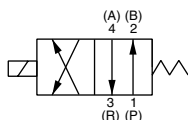


M plug connector
Base mounted



M plug connector
Body ported

Symbol



Standard specifications

Items		Type	Standard type (2W)	Large flow type (3.2 W / Energy saving type)
Valve specifications	Valve construction		4 port direct operated poppet valve	
	Fluid		Air/Inert gas	
	Maximum operating pressure		0.7MPa	
	Minimum operating pressure / Vacuum		0MPa/10Torr	
	Response time Note 1)		ON:4ms,OFF:2ms	
	Ambient and fluid temperature		-10 to 50°C Note 2)	
	Lubrication		Not required	
	Manual override		Non-locking push type	
	Impact / Vibration resistance Note 3)		150/30m/s ²	
	Mounting orientation		Unrestricted	
	Enclosure		Dust tight	
Electrical specification	Weight		34g (without sub-plate)	
	Coil rated voltage	DC	24V,12V	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Equivalent to class B	
	Power consumption	DC	2W	3.2 W (Energy saving type) (Inrush 3.2 W, Holding 2W)
	Electrical entry		L plug connector, M plug connector With light/surge voltage suppressor	

Note 1) Based on JIS B 8375-1981. With light/surge voltage suppressor (Use clean air). Dispersion accuracy: ±1 ms.
Note 2) Use dry air to prevent condensation when operating at low temperatures.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Initial value)

Vibration resistance: No malfunction occurred in one sweep between 8.3 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states. (Initial value)

Flow characteristics

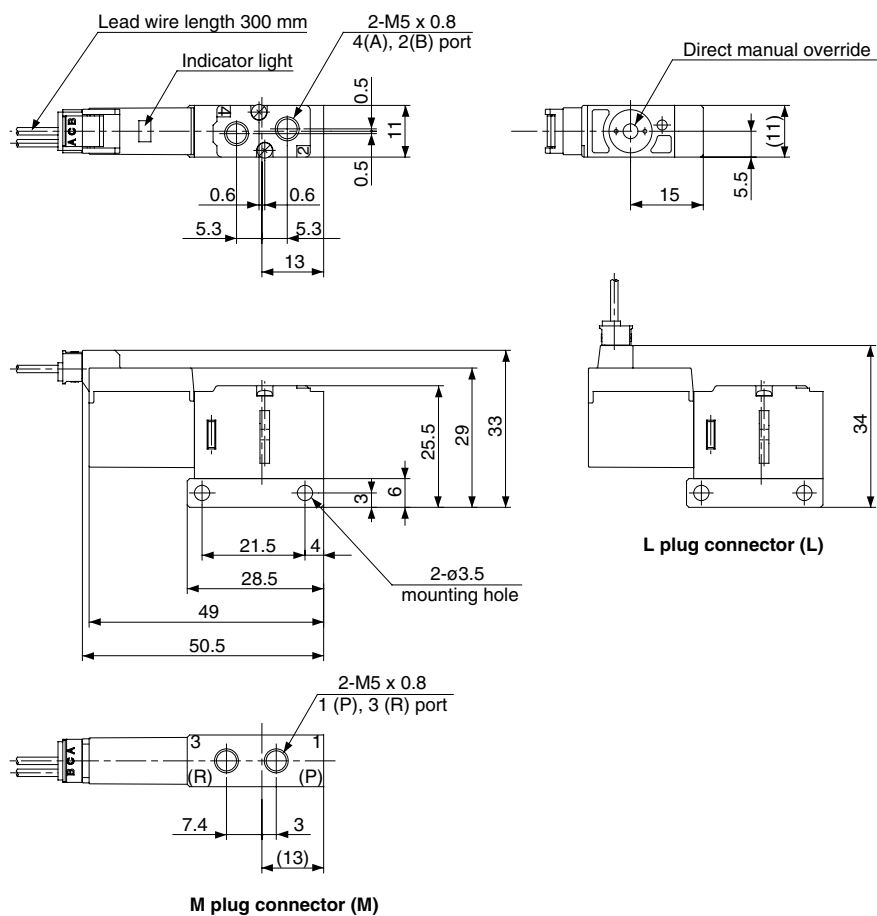
Valve model		Port size	Flow characteristics					
			1→4/2(P→A/B)			4/2→5/3(A/B→EA/EB)		
			C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv
Body ported	10-VQD1121-□ _M -M5	M5 x 0.8	0.22	0.16	0.05	0.19	0.31	0.05
	10-VQD1121 _W -□ _M -M5		0.27	0.24	0.07	0.28	0.28	0.07
Base mounted (With sub-plate)	10-VQD1151-□ _M -M5		0.22	0.10	0.05	0.22	0.31	0.06
	10-VQD1151 _W -□ _M -M5		0.27	0.25	0.07	0.27	0.28	0.07

4 port direct operated poppet solenoid valve 10-VQD1000

Dimensions

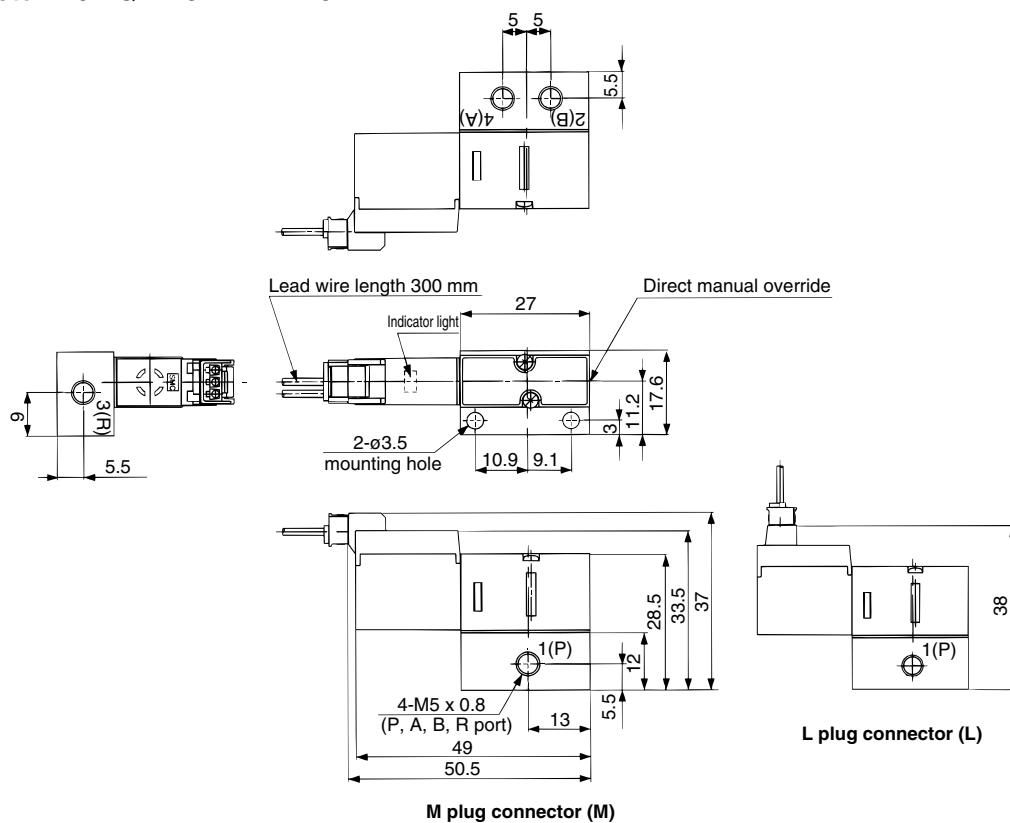
L plug connector: 10-VQD1121□-□L-M5

M plug connector: 10-VQD1121□-□M-M5



L plug connector: 10-VQD1151□-□L-M5

M plug connector: 10-VQD1151□-□M-M5



Manifold specifications

How to Order

10 - V V 4 Q D 1 5 -

Clean series

Manifold type
2 — Body ported
5 — Base mounted

Valve stations
02 — 2 stations
...
20 — 20 stations (Maximum)

Port size
M5 — M5 x 0.8
C4 — ø4 cassette
Note) 1(P), 3(R) ports: Rc1/8.

How to Order Valves

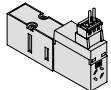
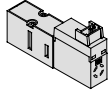
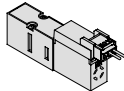
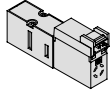
10 - V Q D 1 1 5 1 - 5 L - M5

Clean series

Body type
3 — Body ported
5 — Base mounted

Valve option
Nil — Standard (2 W)
V^{Note)} — Vacuum (2 W)
U^{Note)} — For large flow (3.2 W)
W — For large flow, Vacuum (3.2 W)
Note) Energy saving type

Rated voltage
5 — 24 VDC
6 — 12 VDC

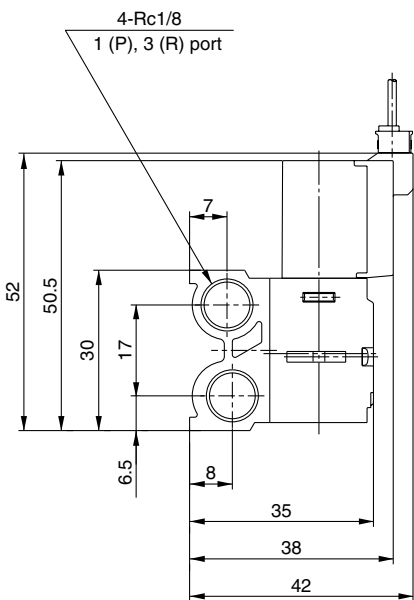
Electrical entry	
L: Plug lead type L plug connector, With lead wire With light/surge voltage suppresser	
LO: Plug lead type L plug connector, Without connector With light/surge voltage suppresser	
M: Plug lead type M plug connector, With lead wire With light/surge voltage suppresser	
MO: Plug lead type M plug connector, Without connector With light/surge voltage suppresser	

Port size (Body ported only)
M5 — M5 thread

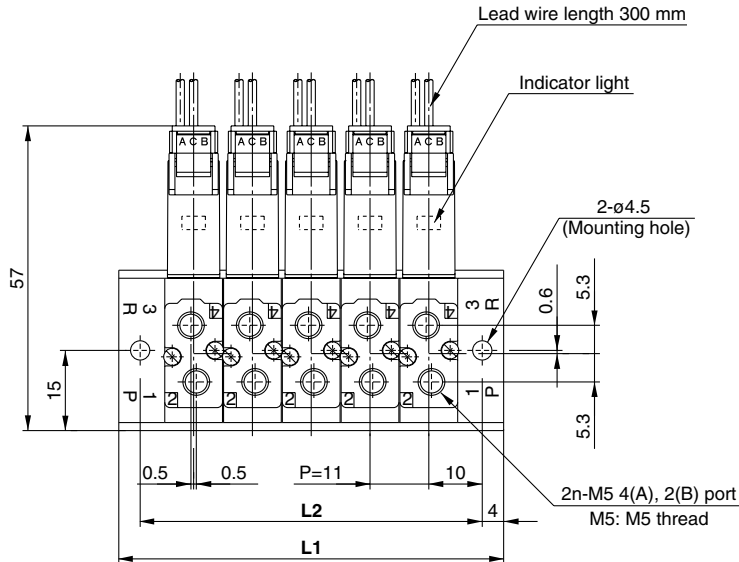
4 port direct operated poppet solenoid valve 10-VQD1000

Dimensions

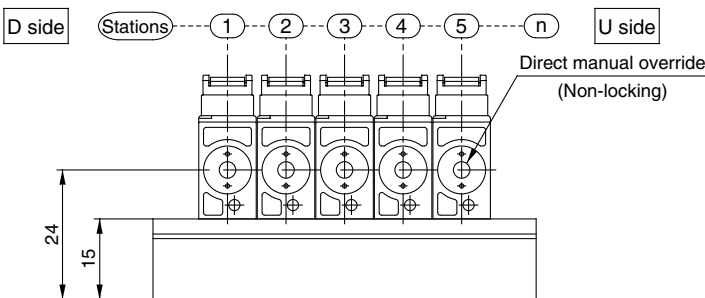
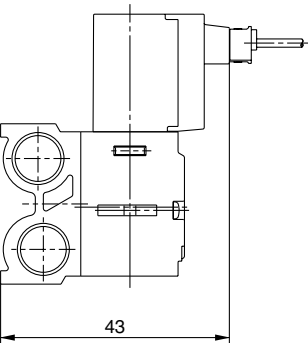
Plug lead unit manifold: 10-VV4QD12-□



M plug connector (M)



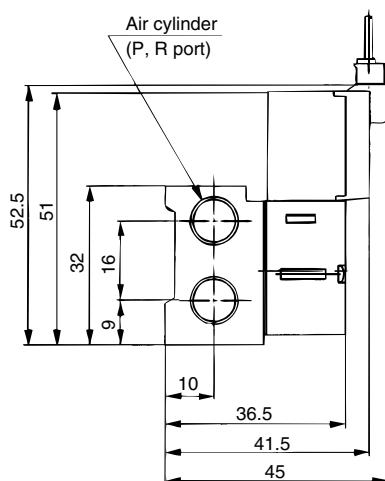
L plug connector (L)



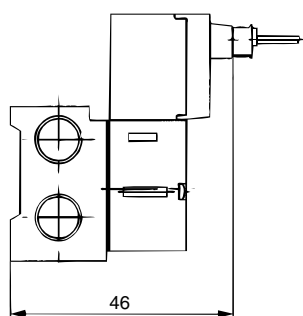
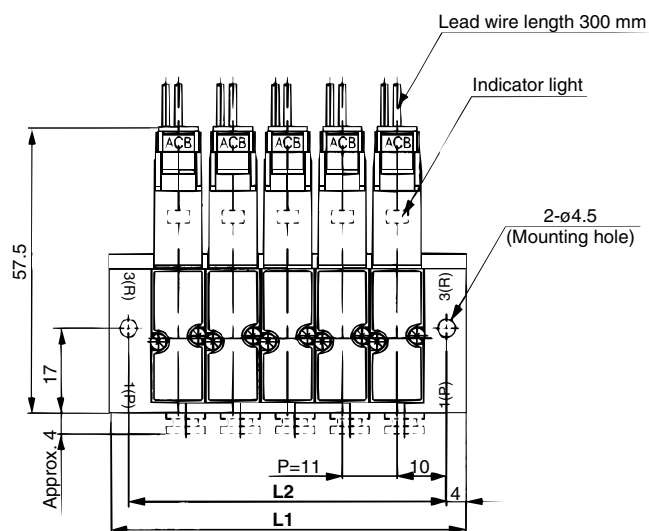
Dimensions																				n: Stations
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	28	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204	215	226	237
L2	20	31	42	53	64	75	86	97	108	119	130	141	152	163	174	185	196	207	218	229

Dimensions

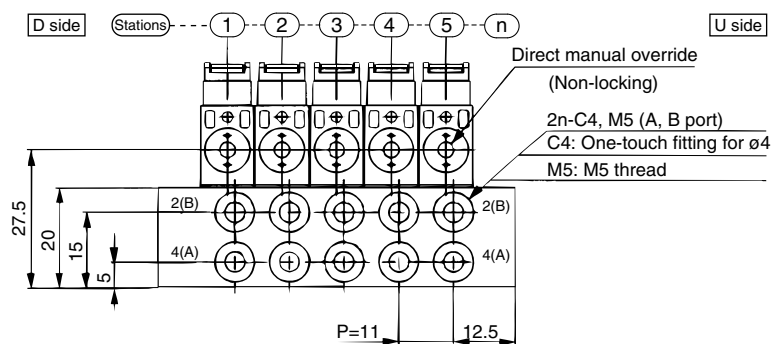
Plug lead unit manifold: 10-VV4QD15-□□



M plug connector (M)



L plug connector (L)



Dimensions

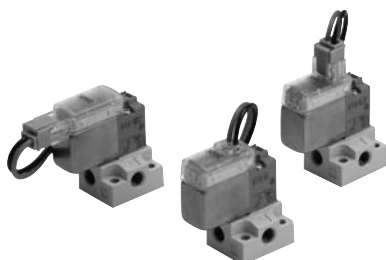
n: Stations

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	39	50	61	72	83	94	105	116	127	138	149	160	171	182	193	204	215	226	237
L2	31	42	53	64	75	86	97	108	119	130	141	152	163	174	185	196	207	218	229

Series 10-V100

Rubber seal
3 port direct operated solenoid valve

Specifications



Fluid	Air
Ambient and fluid temperature (°C)	−10 to 50 (With no freezing. Refer to page 714.)
Response time (DC) ms ^{Note 1)}	ON: 5 or less, OFF: 4 or less
Max. operating frequency (Hz)	20
Manual override	Non-locking push type, push-turn locking slotted type
Lubrication	Not required
Mounting position	Unrestricted
Impact / vibration resistance (m/s ²) ^{Note 2)}	150/30
Enclosure	Dust tight



Note 1) Based on dynamic performance test, JIS B 8374-1981 (Standard type :Coil temperature 20°C, at rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Initial value)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states. (Initial value)

Solenoid specifications

Series			10-V114/V124	10-V114A/V124A
Electrical entry			Grommet (G)/(H), L plug connector (L) M plug connector (M)	
Coil rated voltage V	DC		24, 12, 6, 5, 3	
	AC ⁵⁰ /60Hz		100, 110, 200, 220	—
Allowable voltage fluctuation			−10 to 10%	
Power consumption (W)	DC		Standard: 0.35 (With indicator light: 0.4) With power saving circuit: 0.1	1 W (With indicator light: 1.1)
Apparent power (VA)	AC	100V	0.78 (With indicator light: 0.81)	—
		110V [115V]	0.86 (With indicator light: 0.89) 0.94 (With indicator light: 0.97)	— —
		200V	1.18 (With indicator light: 1.22)	—
		220V [230V]	1.30 (With indicator light: 1.34) [1.42 (With indicator light: 1.46)]	— —
		Surge voltage suppressor		
Indicator light			LED	

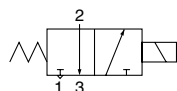


* In common between 110VAC and 115VAC, and between 220VAC and 230VAC.

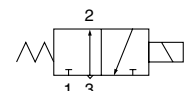
* For 115VAC and 230VAC, the allowable voltage fluctuation will be −15% to 5% of rated voltage.

JIS Symbol

10-V114 (A)



10-V124 (A)



Model

Valve model	Type of actuation	Type	Operating pressure range (MPa)	Vacuum specification (MPa)		Port size		Weight (g) ^{Note 2)}	
				Port 1	Port 3	Ports 1, 3	Port 2	Grommet type	L/M plug connector
10-V114	N.C.	Standard	0 to 0.7	−100kPa to 0.6	−100kPa to 0	M5 x 0.8	M5 x 0.8	10-V1□4: 13(27) 10-V1□4A: 16(30)	10-V1□4: 12(26) 10-V1□4A: 15(29)
10-V114A	N.C.	Large flow capacity	0 to 0.7	−100kPa to 0.6	−100kPa to 0	M5 x 0.8	M5 x 0.8		
10-V124 ^{Note 1)}	N.O.	Standard	0 to 0.7	−100kPa to 0	−100kPa to 0.6	M5 x 0.8	M5 x 0.8		
10-V124A ^{Note 1)}	N.O.	Large flow capacity	0 to 0.7	−100kPa to 0	−100kPa to 0.6	M5 x 0.8	M5 x 0.8		

Valve model	Flow characteristics					
	1→2			2→3		
	C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-V114	0.037	0.11	0.008	0.054	0.35	0.015
10-V114A	0.076	0.07	0.016	0.099	0.23	0.024
10-V124 ^{Note 1)}	0.054	0.35	0.015	0.037	0.11	0.008
10-V124A ^{Note 1)}	0.099	0.23	0.024	0.076	0.07	0.016



Note 1) 10-V124 and 10-V124A: Supply pressure to port 3 and exhaust from port 1.

Note 2) (): With sub-plate

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

How to Order

Standard type

Base mounted **10—V1** **1** **4** **5** **M**

3 port

• Clean series

• Port size

Nil: Without sub-plate M5: With sub-plate

For sub-plate type,
For manifold type S41

(With gasket and screws)

• Type of actuation

1	Normally closed
2	Normally open

• Coil specifications

Nil	0.35W
T	0.1 W (with power saving circuit) (24 VDC and 12 VDC only)

* All types with power saving circuit are with light/surge voltage suppressor.

• Rated voltage

For DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

For AC (50/60Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

• Manual operation

Nil: Non-locking push type

B: Locking slotted type

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			
Grommet	L plug connector	M plug connector	
G: Lead wire length 300 mm	L: With lead wire (Lead wire length 300 mm)	M: With lead wire (Lead wire length 300 mm)	MN: Without lead wire
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector

• Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor	DC, AC specifications
S	With surge voltage suppressor	DC specifications
Z	With light/surge voltage suppressor	DC, AC specifications
R	With surge voltage suppressor (Non-polar type)	DC specifications
U	With light/surge voltage suppressor (Non-polar type)	DC specifications

* Power saving circuit is only available in the "Z" type.

* "LN", "MN" type: with 2 sockets.

How to Order

Large flow type

Base mounted 10-V1 1 4 A-5 M

3 port
For sub-plate type,
For manifold type S41

Clean series

Type of actuation

1	Normally closed
2	Normally open

Large flow type

Port size

Nil: Without sub-plate M5: With sub-plate

(With gasket and screws)

Manual override

Nil: Non-locking push type

B: Locking slotted type

Rated voltage

For DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

Electrical entry

24, 12, 6, 5, 3 VDC			
Grommet	L plug connector	M plug connector	
G: Lead wire Length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	MN: Without lead wire
H: Lead wire Length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor	For DC
R	With surge voltage suppressor	
U	With light/surge voltage suppressor	

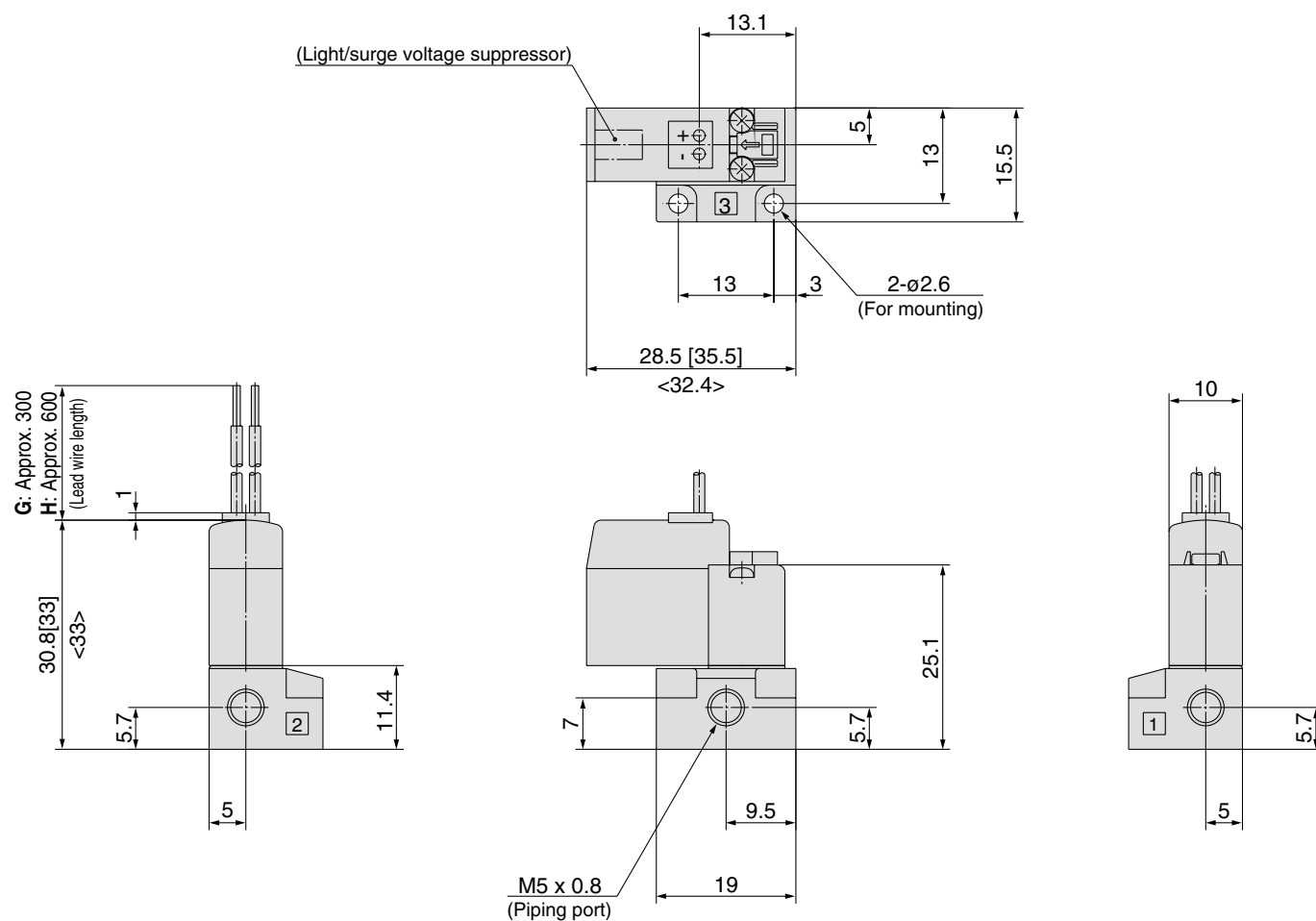
* "LN", "MN" types: with 2 sockets.

3 port solenoid valve 10-V100

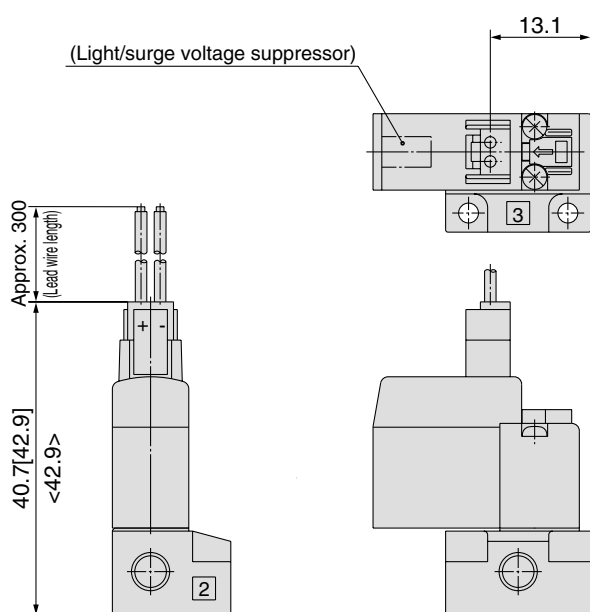
Base mounted (with sub-plate)

Note) []: AC
< >: Large flow type (A)

Grommet (G)/(H): 10-V1₂¹4(A)-□_H□□-M5

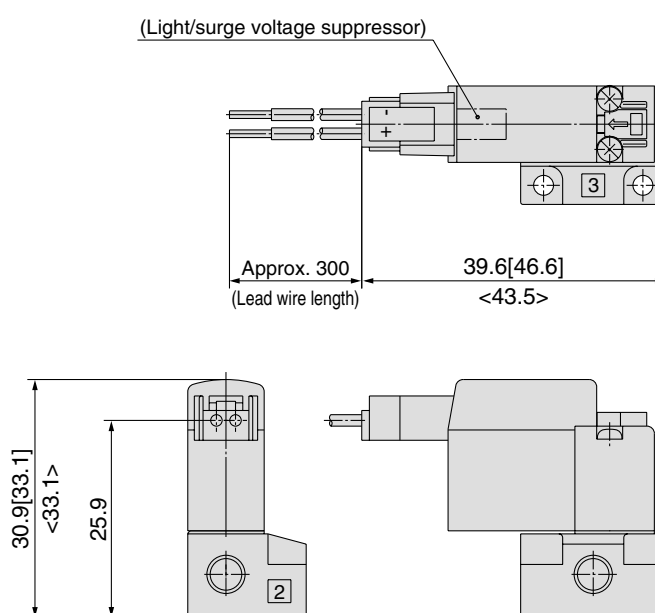


L plug connector (L): 10-V1₂¹4(A)-□L□□-M5



* Other dimensions are same as grommet style.

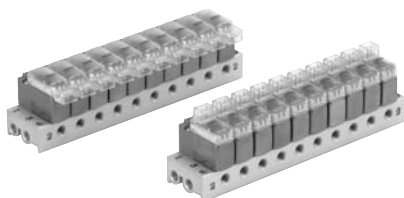
M plug connector (M): 10-V1₂¹4(A)-□M□□-M5



* Other dimensions are same as grommet style.

Series 10-V100

3 port solenoid valve Manifold specifications



Manifold specifications

Model		S41 type
Manifold		Single base / B mount
P (SUP), R (EXH)		Common SUP / Common EXH
Stations		2 to 20 stations
Output port Porting specifications	Location	Base
	Direction	Side
Port size	1, 2, 3 port	M5 x 0.8



Note 1) 10-V114(A) and 10-V124(A) cannot be mounted on the same manifold.
Note 2) For 10-V124(A), supply pressure to port 3 and exhaust from port 1.

Flow characteristics

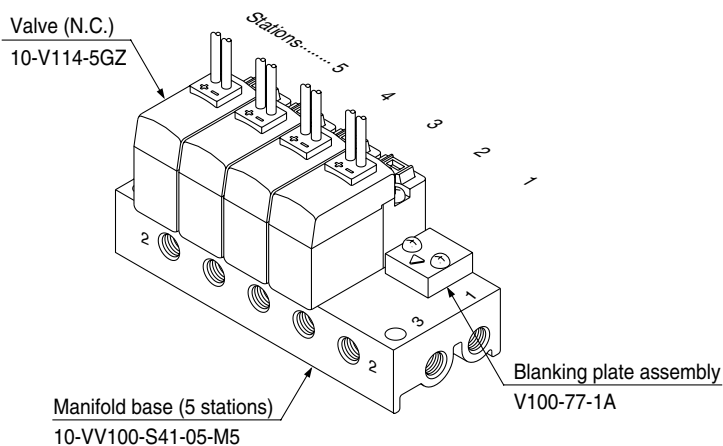
Manifold		Port size 1, 2, 3 port	Flow characteristics					
			1→2			2→3		
			C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
10-VV100-S41 type	10-V114	M5 x 0.8	0.032	0.13	0.007	0.050	0.26	0.012
	10-V114A		0.070	0.10	0.016	0.085	0.16	0.020
	10-V124		0.050	0.26	0.012	0.032	0.13	0.007
	10-V124A		0.085	0.16	0.020	0.070	0.10	0.016



Note) Values when manifold base (5 stations) is mounted.

How to Order Valve Manifold Assembly

Ordering example



10-VV100-S41-05-M5.....1 set (S41 type 5 station manifold part no.)

* V100-77-1A.....1 set (blanking plate assembly part no.)

* 10-V114-5GZ.....4 sets (valve)

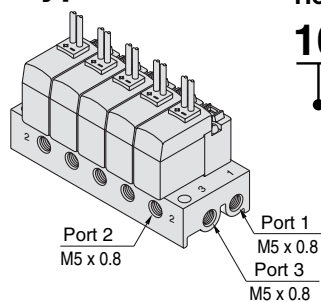
→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Indicate part numbers of valve and option beneath the manifold part no.

Manifold specifications 10-V100

Common SUP / Common EXH

S41 type



How to Order

10 – VV100 – S41 – 05 – M5

● Clean series

● Stations

02	2 stations
⋮	⋮
20	20 stations

● 2 port size

M5	M5 x 0.8
----	----------

Applicable solenoid valve ^{Note)}

10-V114-□□□□

10-V114A-□□□□

10-V124-□□□□

10-V124A-□□□□

Applicable blanking plate assembly
V100-77-1A



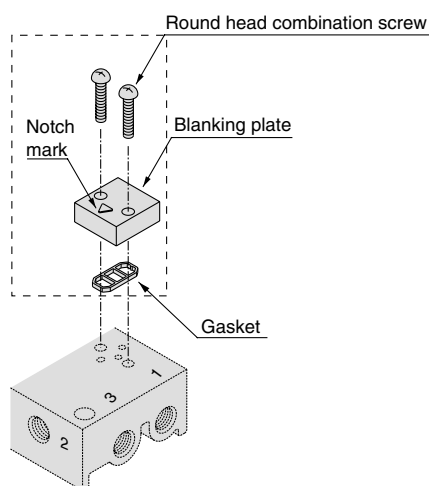
Note) 10-V114(A) and 10-V124(A) cannot be mounted on the same manifold.

(Manifold option)

Blanking plate assembly

Part no: V100-77-1A

Place notch mark on the blanking plate to 2 port side when assembling.



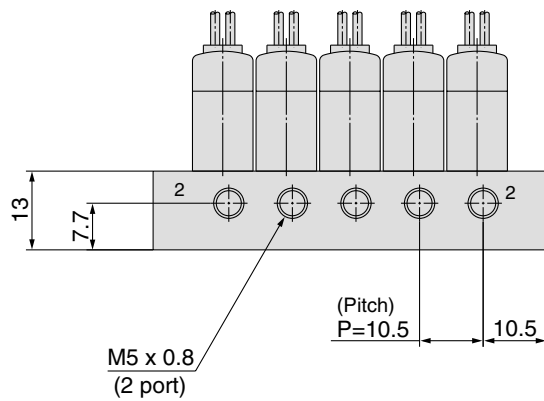
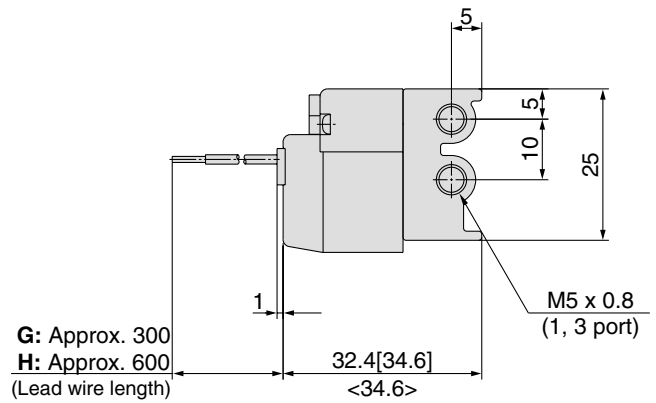
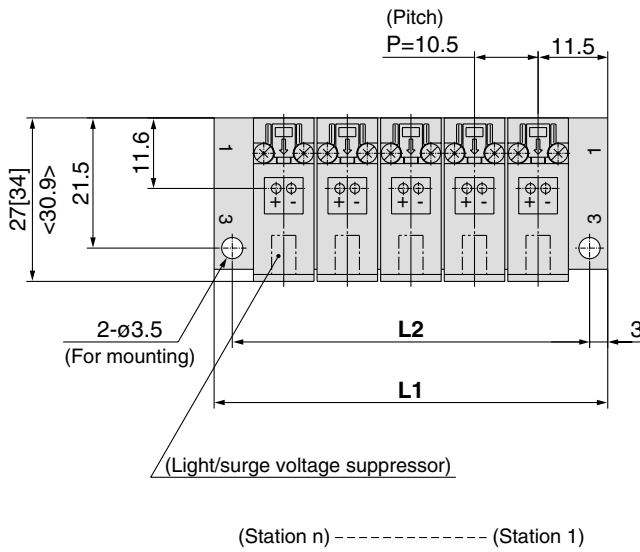
Base

- Sub-plate
- 10- VV100-S41 type manifold base

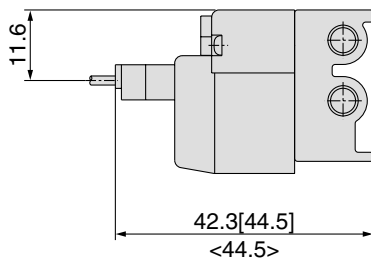
Type S41 manifold: Side ported / 10-VV100-S41- Stations -M5

Note) []: AC
< >: For large flow type (A)

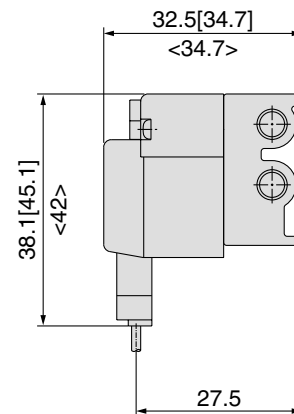
Grommet (G), (H)



L plug connector (L)



M plug connector (M)



* Other dimensions are same as grommet style.

* Other dimensions are same as grommet style.

Stations	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5
L2	27.5	38	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5



Series 10-V100

Specific Product Precautions 1

Be sure to read before handling.

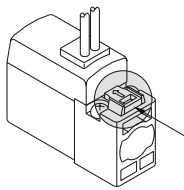
⚠ Warning

Manual override operation

Since connected equipment will be actuated when the manual override is operated, first confirm that conditions are safe.

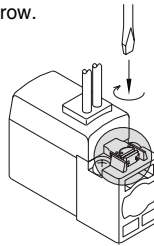
■ Non-locking push type [Standard]

Press in the direction of the arrow.



■ Locking slotted type [B]

Turn in the direction of the arrow.



⚠ Caution

When operating with a screwdriver, turn it gently using a watchmaker's screwdriver.

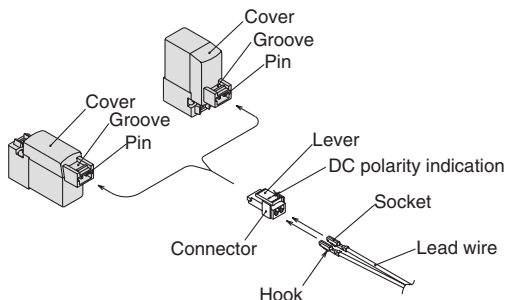
[Torque: Less than 0.1 N·m]

⚠ Caution

How to use plug connector

1. Attaching and detaching connectors

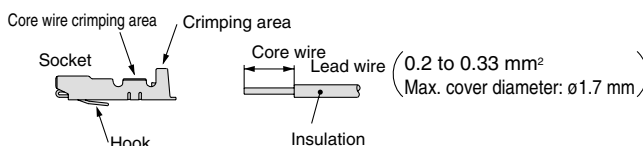
- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



2. Crimping of lead wires and sockets

Strip 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.

Use special tool when crimping. (For the crimping tool, please consult with SMC.)



⚠ Caution

How to use plug connector

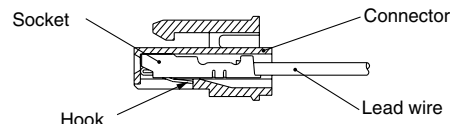
3. Attaching and detaching sockets with lead wires

• Attaching

Insert the sockets into the square holes of the connector (with ⊕ and ⊖ indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

• Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm). If the socket will be used again, first spread the hook outward.



Plug connector lead wire length

Standard length is 300 mm, however, the following lengths are also available.

How to Order Connector Assembly

For DC : **SY100-30-4A** - []

For 100 VAC : **SY100-30-1A** - []

For 200 VAC : **SY100-30-2A** - []

For other voltages of AC : **SY100-30-3A** - []

Without lead wire : **SY100-30-A**

(with connector and 2 pcs. of sockets only)

How to Order

Indicate part numbers of the valve without connector and the required connector assembly separately.

<Example> Lead wire length 2000 mm

For DC
10-V114-5LO
SY100-30-4A-20

For AC
10-V114A-1LO
SY100-30-1A-20

• Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm



Series 10-V100

Specific Product Precautions 2

Be sure to read before handling.

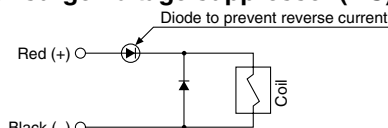
Surge voltage suppressor

(For DC)

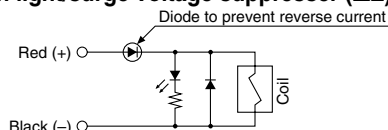
Grommet, L/M plug connector

Standard type (with polarity)

With surge voltage suppressor (□S)

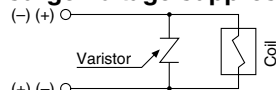


With light/surge voltage suppressor (□Z)

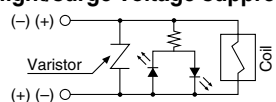


Non-polar type

With surge voltage suppressor (□R)



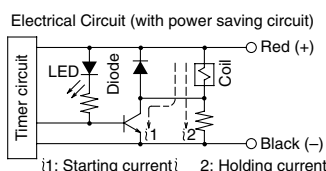
With light/surge voltage suppressor (□U)



- Please connect correctly the lead wires to + (positive) and - (negative) indications on the connector.
- For DC voltages other than 12 and 24 VDC, use caution not to connect in reverse due to the absence of a diode to prevent reverse current. (Wrong polarity will cause trouble.)
- Solenoids, whose lead wires have been pre-wired: positive side red and negative side black.

With power saving circuit

Power consumption is reduced by approximately 75% compared with the standard product by eliminating the need for electrical current for holding. (Effective after more than 62ms energized and 24 VDC rated voltage applied.)



Working principle

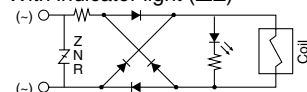
The electrical circuit as shown above, allows reduced holding current consumption and measures power saving. Refer to electric waveform on the right.

- When a power saving circuit is installed, a diode to prevent reverse current is not provided. Therefore, use caution not to connect in reverse.

<For AC>

Grommet, L / M plug connectors

With indicator light (□Z)



Caution

In the case of ZNR surge voltage suppressor, take note the surge voltage to be suppressed at controller side as there will be a residual voltage according to the protective element and rated voltage. Moreover, the residual voltage of the diode is approximately 1V.

Connector assembly with cover

Connector assembly with protective cover enhances dust protection

- Effective in preventing possible short circuit problems due to contaminants in contact with connector section
- Cover material is chloroprene rubber which has excellent weatherability and electric insulation properties. However, be careful not to allow contact with cutting oil, etc.
- Round cord provides neat appearance.

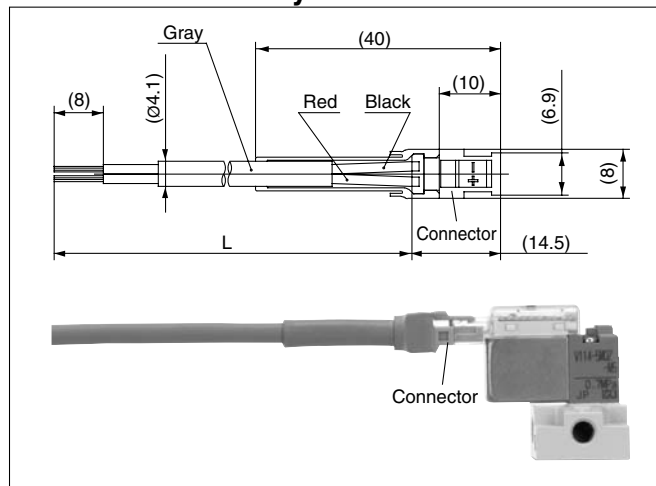
How to Order

SY100 - 68 - A -

Lead wire length (L)

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

Connector assembly with cover / Dimensions



How to Order

Specify the part numbers of the solenoid valve without connector together with the part number of the connector assembly with protective cover.

<Example> Lead wire length 2000 mm

10-V114-5LOZ-M5

SY100-68-A-20

<Example 2 >Lead wire length 300 mm (Standard)

10-V114-5LPZ-M5

Symbol of connector assembly with protective cover

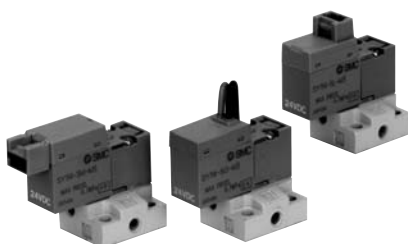
- * No part numbers of connector assembly with cover are needed to be indicated in this case.

Series 10-SY100

Rubber seal
3 port / Direct operated



Body ported

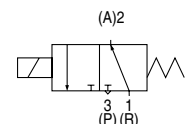
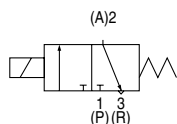


Base mounted

JIS Symbol

10-SY11³/₄(A)

10-SY12³/₄(A)



Specifications

Fluid	Air
Ambient and fluid temperature °C	−10 to 50 (With no freezing. Refer to page 714.)
Response time ms ^{Note 1)}	10 or less
Max. operating frequency (Hz)	20
Manual override	Non-locking push type, Locking slotted type Push-turn locking slotted type Push-turn locking lever type {SY1 ¹ / ₄ and SY1 ¹ / ₄ A only}
Lubrication	Not required
Mounting position	Unrestricted
Impact / vibration resistance m/s ² ^{Note 2)}	150/30
Enclosure	Dust tight



Note 1) Based on dynamic performance test, JIS B 8374-1981 (Coil temperature: 20.C, at rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the armature in both energized and de-energized states every once for each condition. (Initial value)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz. Test was performed in the axial direction and at the right angles to the armature in both energized and de-energized states. (Initial value)

Solenoid specifications

Series		10-SY1 ¹³ ₂₄	10-SY1 ¹³ ₂₄ A	
Electrical entry		Grommet (G)/(H), L plug connector (L) M plug connector (M)		
Coil rated voltage (V)	DC	24, 12, 6, 5, 3		
	AC ⁵⁰ /60Hz	100, 110, 200, 220	—	
Allowable voltage fluctuation		−10 to +10%		
Power consumption (W)	DC	0.5 (With indicator light: 0.55)	0.75 (With indicator light: 0.8)	
Apparent power (VA)	AC	100V	0.9 (With indicator light: 1.0)	—
		110V [115V]	1.0 (With indicator light: 1.1) [1.1 (with indicator light: 1.2)]	
		200V	1.8 (With indicator light: 1.9)	
		220V [230V]	1.9 (With indicator light: 2.0) [2.2 (with indicator light: 2.3)]	
Surge voltage suppressor		Diode		
Indicator light		LED		



* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.

* [Energy saving type [0.22 W] is also available. For details, refer to Best Pneumatics.]

* [Low wattage [0.45 W] is also available. For details, refer to Best Pneumatics.]

Model

Type of actuation	Valve model	Type	Operating pressure range (MPa)	Vacuum specifications (MPa)		Port size		Effective area (mm ²)	Weight(g) ^{Note 2)}	
				1(P) port	3(R) port	1(P), 3(R) port	2(A) port		Grommet type	L/M plug connector
N.C.	10-SY11 ³ / ₄	Standard	0 to 0.7	−100kPa to 0.6	−100kPa to 0	M3 x 0.5	M3 x 0.5	0.14	10-SY1□3(A):13 10-SY1□4(A):24 (12)	10-SY1□3(A): 15 10-SY1□4(A): 26 (14)
N.C.	10-SY11 ³ / ₄ A	Large flow	0 to 0.7	−100kPa to 0.6	−100kPa to 0	M3 x 0.5	M3 x 0.5	0.22		
N.O.	10-SY12 ³ / ₄ ^{Note 1)}	Standard	0 to 0.7	−100kPa to 0	−100kPa to 0.6	M3 x 0.5	M3 x 0.5	0.14		
N.O.	10-SY12 ³ / ₄ A ^{Note 1)}	Large flow	0 to 0.7	−100kPa to 0	−100kPa to 0.6	M3 x 0.5	M3 x 0.5	0.22		

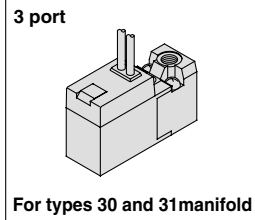


Note 1) For 10-SY12³/₄ and 10-SY12³/₄A, supply pressure to port 1 (R) and exhaust from port 3 (P).

Note 2) Value for DC. Add 1g for AC. (): Without sub-plate.

How to Order

Standard type

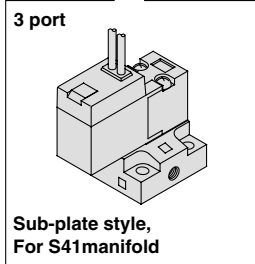


Standard: Body ported

10-SY1 1 3-5 L [] [] M3- []

Standard: Base mounted

10-SY1 1 4-5 M [] [] []



• Clean series

• Type of actuation

1	Normally closed
2	Normally open

• Rated voltage

For DC	
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
For AC (50/60Hz)	
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

• Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC			
Grommet	L plug connector	M plug connector	
G: Lead wire Length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	MN: Without lead wire
H: Lead wire Length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector

* "LN", "MN" type: with 2 sockets.

• Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

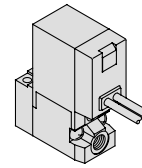
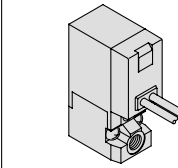


* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.

• Porting specifications

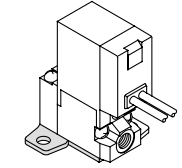
Nil: For manifold

P: For body ported type to P, R, A port



• Bracket

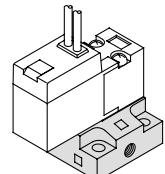
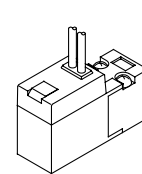
Nil: Without bracket
F: With bracket



"P" piping specification only.

• Port size

Nil: Without sub-plate M3: With sub-plate

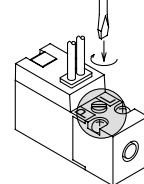
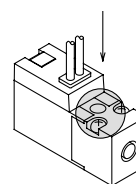


(With gasket and screws)

• Manual override

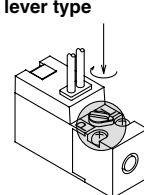
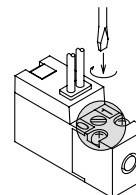
Nil: Non-locking push type

D: Push-turn locking Slotted type



B: Locking slotted type

E: Push-turn locking lever type



SY1 $\frac{1}{2}$ 4 and SY1 $\frac{1}{2}$ 4A only

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

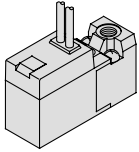
Pressure switch

Clean gas filter

How to Order

Large flow type

3 port



For 30, 31 types manifold

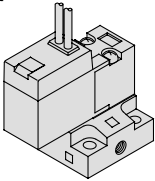
Large flow type: Body ported

10-SY1 1 3 A - 5 L [] [] [] M3 - []

Large flow type: Base mounted

10-SY1 1 4 A - 5 M [] [] []

3 port



For sub-plate, S42 manifold type

Type of actuation

1	Normally closed
2	Normally open

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

Porting specifications

Nil:	For manifold
P:	For body ported type to P, R, A port

Bracket

Nil:	Without bracket
F:	With bracket

"P" piping specification only

Rated voltage

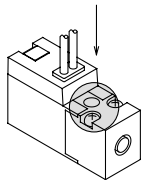
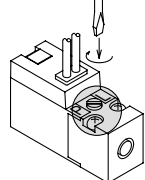
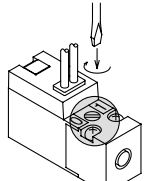
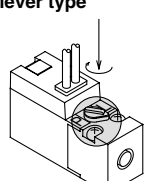
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

Port size

Nil:	Without sub-plate
M3:	With sub-plate

(With gasket and screws)

Manual override

Nil: Non-locking push type 	D: Push-turn locking slotted type 
B: Locking slotted type 	E: Push-turn locking lever type 

SY1 $\frac{1}{2}$ 4 and SY1 $\frac{1}{2}$ 4A only

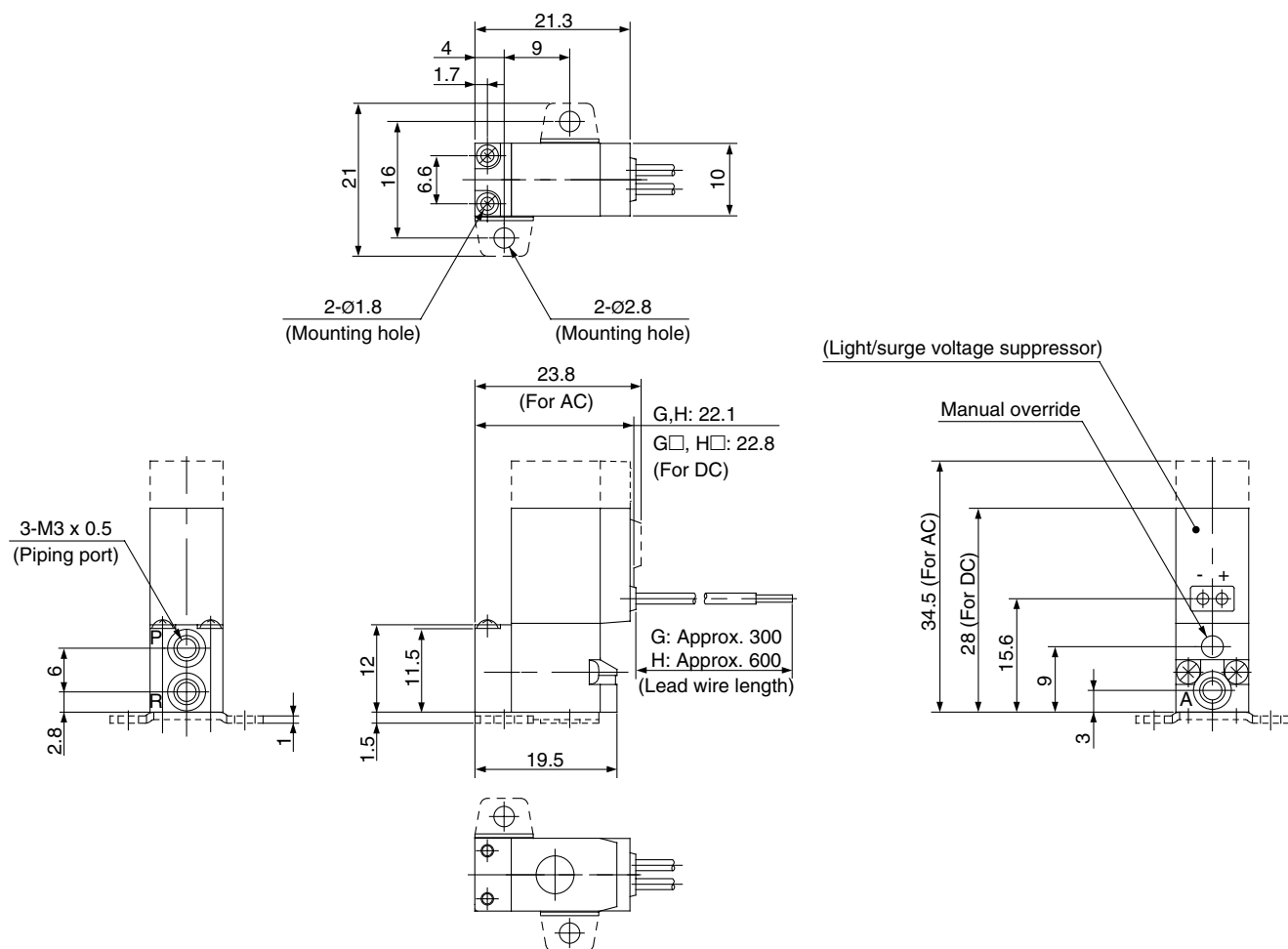
Electrical entry

24, 12, 6, 5, 3 VDC			
Grommet	L plug connector	M plug connector	
G: Lead wire Length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	MN: Without lead wire
H: Lead wire Length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector

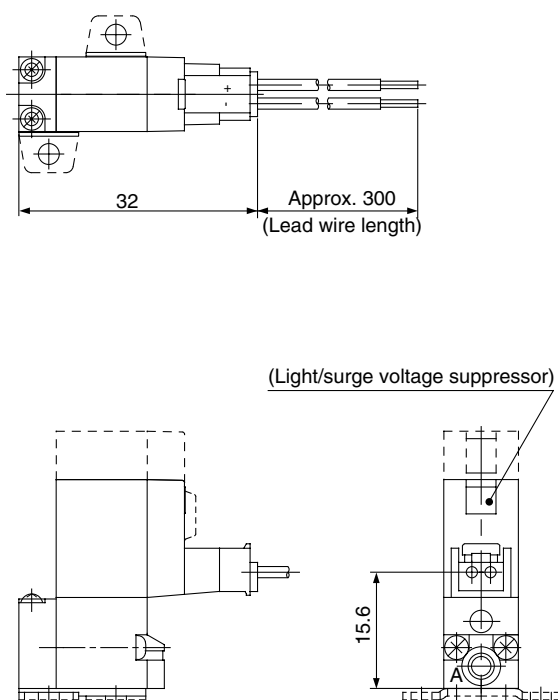
* "LN", "MN" types: with 2 sockets.

Body ported

Grommet (G)/(H): 10-SY1¹₂3(A)-□^G_H□□-PM3(-F)

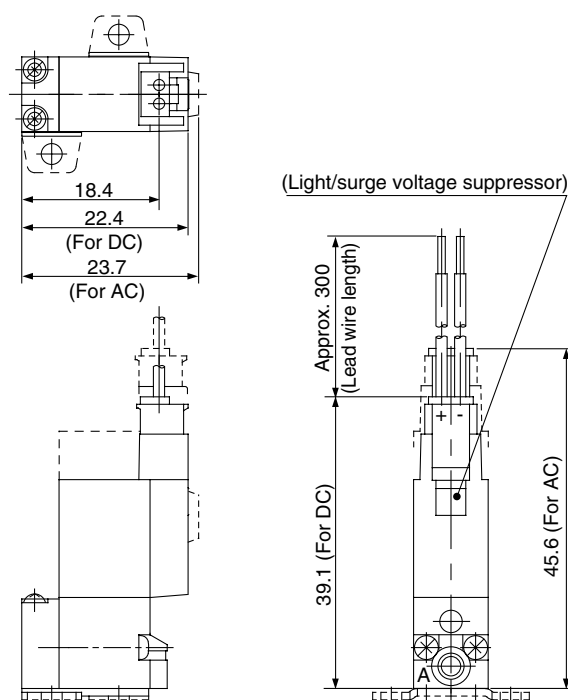


L plug connector (L): 10-SY1¹₂3(A)-□L□□-PM3(-F)



* Other dimensions are same as grommet style.

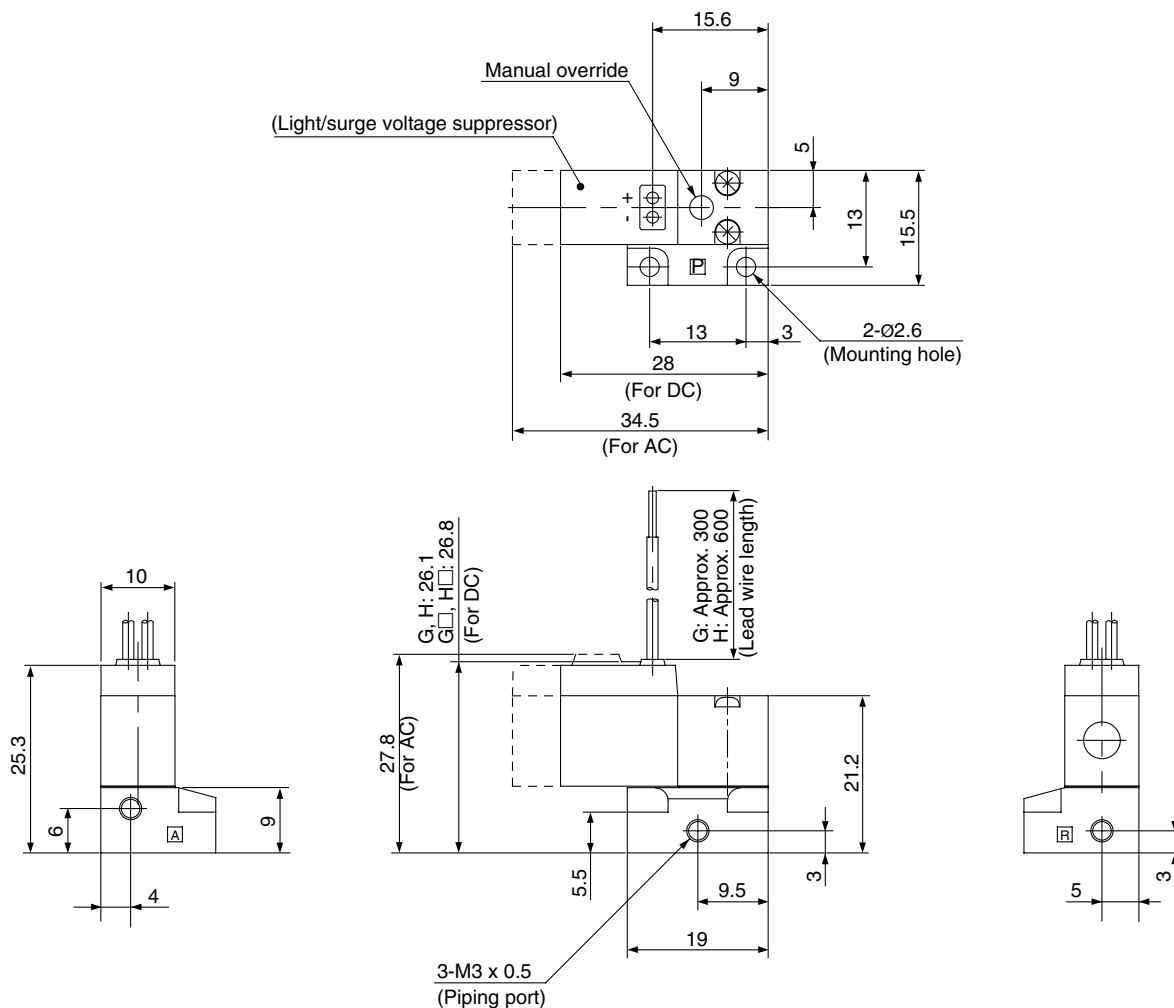
M plug connector (M): 10-SY1¹₂3(A)-□M□□-PM3(-F)



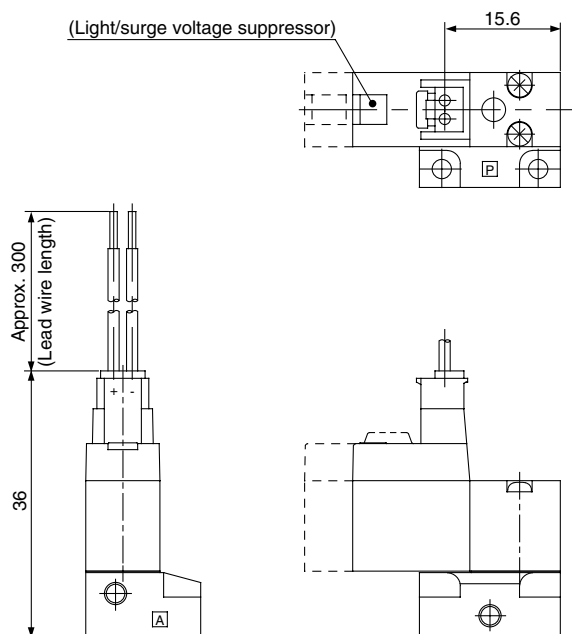
* Other dimensions are same as grommet style.

Base mounted (With sub-plate)

Grommet (G)/(H): 10-SY1¹/₂4(A)-□^G□□-M3

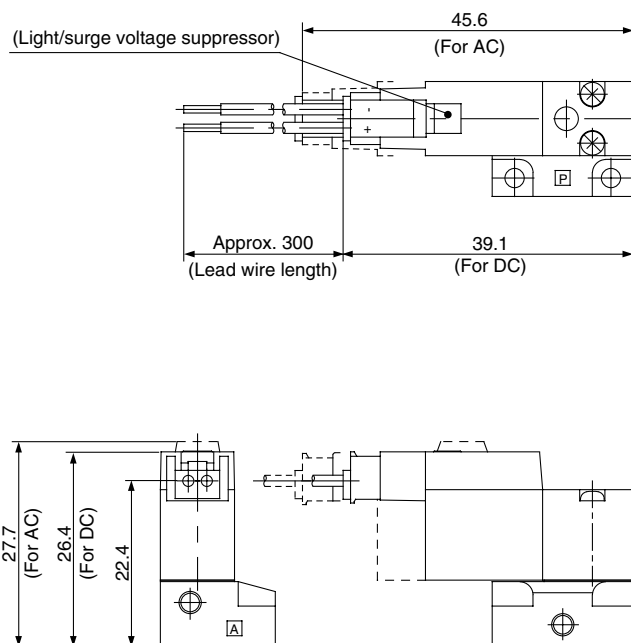


L plug connector (L): 10-SY1¹/₂4(A)-□L□□-M3



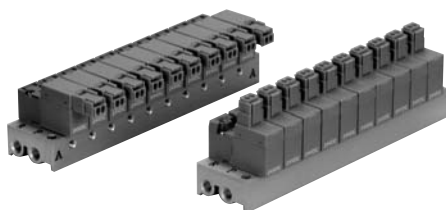
⦿ * Other dimensions are same as grommet style.

M plug connector (M): 10-SY1¹/₂4(A)-□M□□-M3



⦿ * Other dimensions are same as grommet style.

Series 10-SY100 Manifold specifications



Manifold specifications

Model		Type 31	Type S41
Manifold		Single base / B mount	
P(SUP) / R(EXH)		Common SUP / Common EXH	
Stations		2 to 20 stations	
A port piping specifications	Location	Valve	Base
	Direction	Top	Side
Port size	P, R ports	M5 x 0.8	
	A port	M3 x 0.5	M3 x 0.5, M5 x 0.8

10-SY114 (A) and 10-SY124 (A) cannot be mounted on the same manifold.
 Note 2) In the case of 10-SY124 (A), supply pressure to R port and exhaust from P port.

Flow characteristics

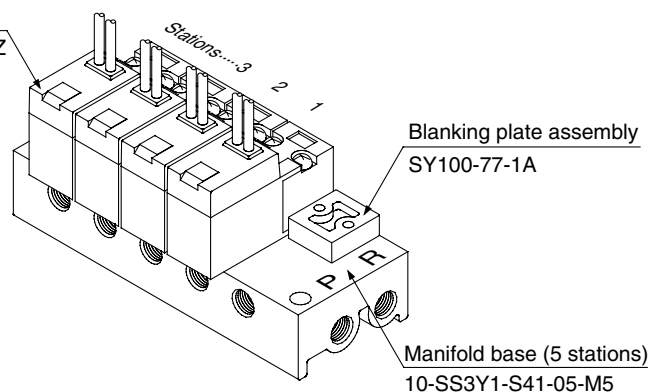
Manifold		Port size		Effective area (mm ²)
		1(P), 3(R) port	2(A) port	
Type 10- SS3Y1-31	10-SY1□3	M5 x 0.8	M3 x 0.5	0.14
	10-SY1□3(A)			0.21
Type 10- SS3Y1-S41	10-SY1□4	M5 x 0.8	M3 x 0.5	0.14
	10-SY1□4(A)			0.21
	10-SY1□4	M5 x 0.8	M5 x 0.8	0.14
	10-SY1□4(A)			0.21
	10-SY1□4(A)			0.21

Note) Value at manifold base mounted.

How to Order Manifold Assembly (Example)

Ordering example

Valve (N.C.)
 10-SY114-5GZ

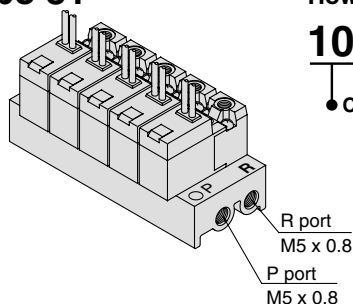


10-SS3Y1-S41-05-M5.....1 set (Type S41 5 station manifold part no.)
 * SY100-77-1A.....1 set (Blanking plate assembly part no.)
 * 10-SY114-5GZ.....4 sets (Valve)
 ↳The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Indicate the part numbers of the valve and option beneath the part number of manifold.

Common SUP / Common EXH

Type 31



How to Order

10-SS3Y1-31-05

● Clean series

● Stations

02	2 stations
⋮	⋮
20	20 stations

Applicable solenoid valve ^{Note)}

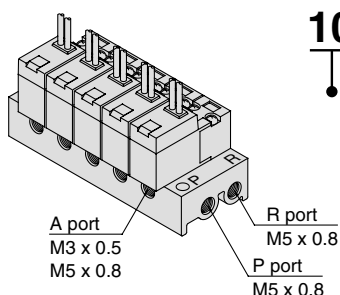
10-SY113-□□□□-M3
10-SY113A-□□□□-M3
10-SY123-□□□□-M3
10-SY123A-□□□□-M3

Applicable blanking plate assembly
SY100-77-1A



Note) 10-SY113(A) and 10-SY123(A) cannot be mounted on the same manifold.

Type S41



How to Order

10-SS3Y1-S41-05-M3

● Clean series

● Stations

02	2 stations
⋮	⋮
20	20 stations

● A port size

M3	M3 x 0.5
M5	M5 x 0.8

Applicable solenoid valve ^{Note)}

10-SY114-□□□□
10-SY114A-□□□□
10-SY124-□□□□
10-SY124A-□□□□

Applicable blanking plate assembly
SY100-77-1A



Note) 10-SY114(A) and 10-SY124(A) cannot be mounted on the same manifold.

(Manifold option)

How to Order Connector Assembly

For DC: **SY100-30-4A** - □

For 100 VAC: **SY100-30-1A** - □

For 200 VAC: **SY100-30-2A** - □

For other voltages of AC: **SY100-30-3A** - □

Without lead wire: **SY100-30-A**

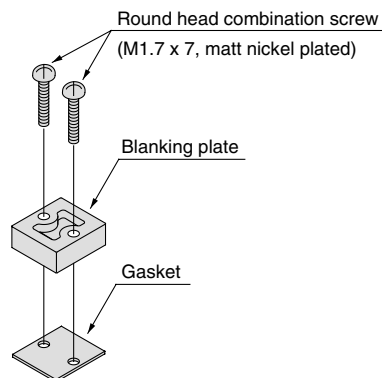
(with connector and
2 pcs. of sockets only)

● Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

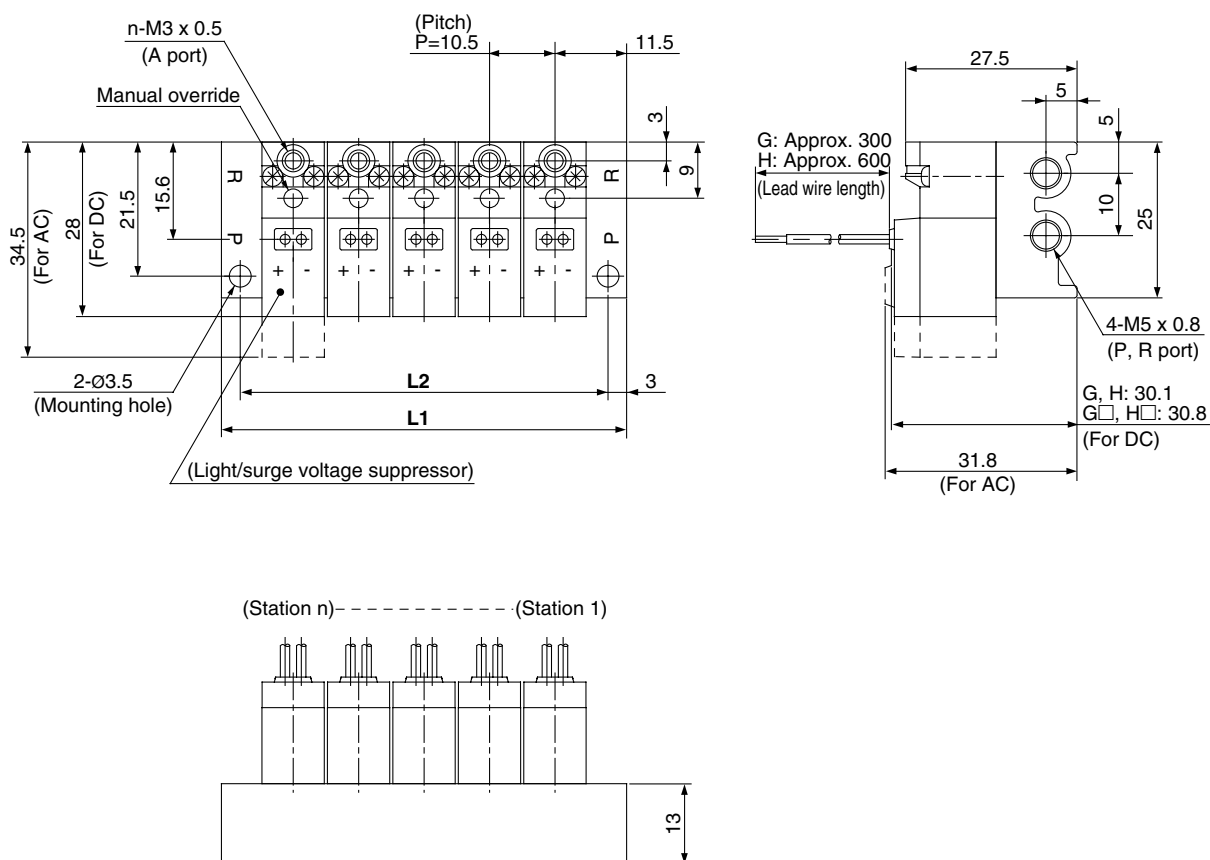
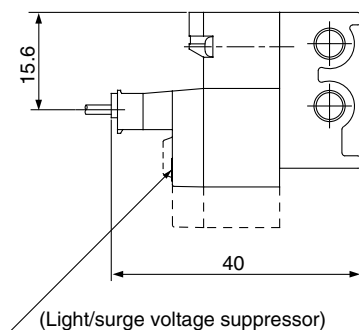
Blanking plate assembly

Part no: SY100-77-1A

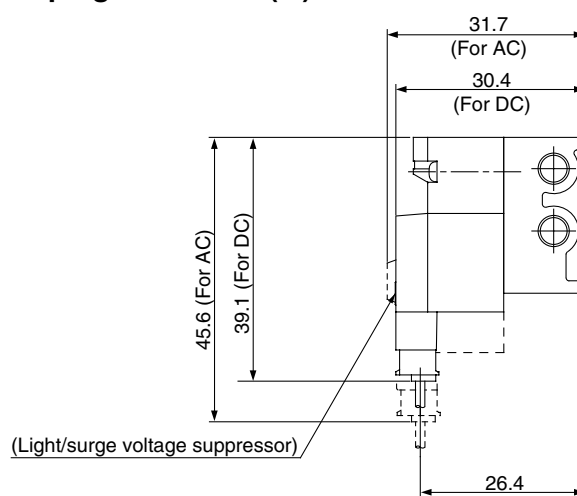


Applicable base

- Sub-plate
 - Type 10- SS3Y1-31
 - Type 10- SS3Y1-S41
- } Manifold base

Type 31 Manifold: Top ported / 10-SS3Y1-31- Stations
Grommet (G), (H)

L plug connector (L)


* Other dimensions are same as grommet style.

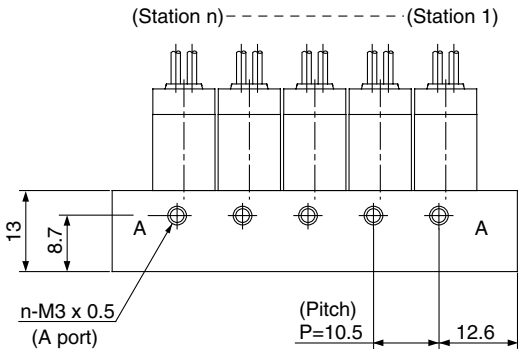
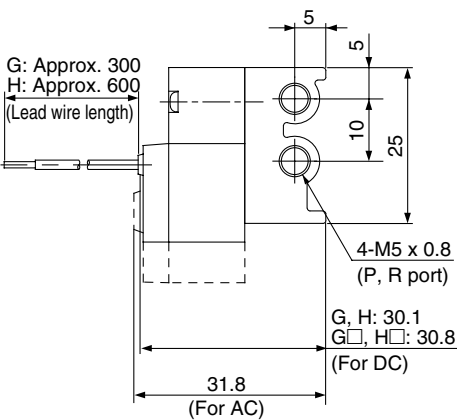
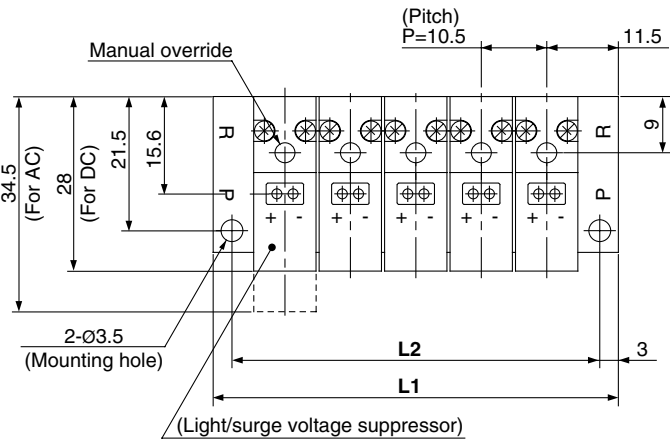
M plug connector (M)


* Other dimensions are same as grommet style.

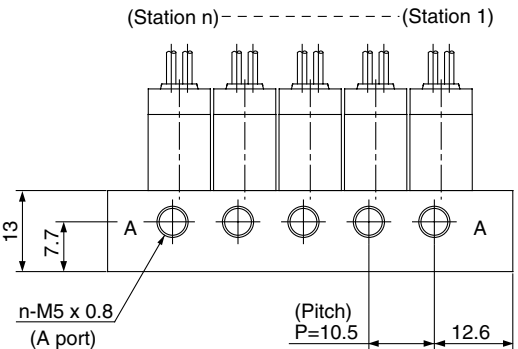
Stations	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5
L2	27.5	38	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5

Type S41 manifold: Side ported / 10-SS3Y1-S41- Stations -M3/M5

Grommet (G), (H)

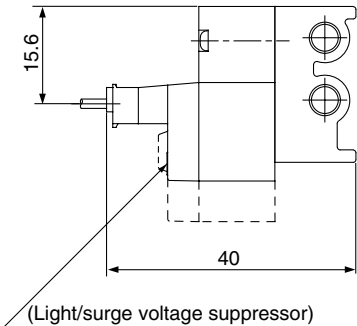


For M3



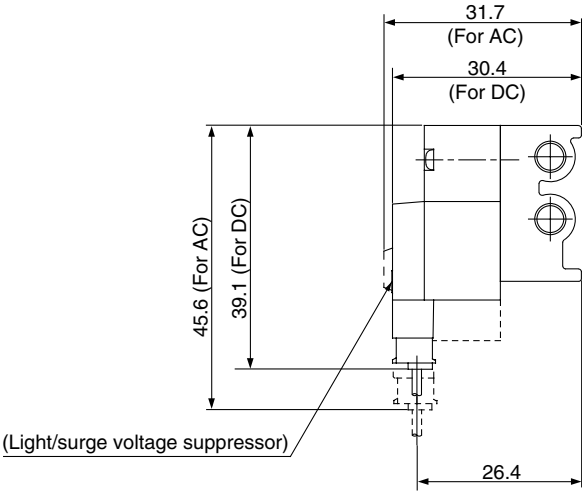
With M5

L plug connector (L)



* Other dimensions are same as grommet style.

M plug connector (M)

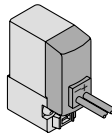
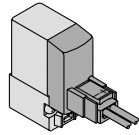
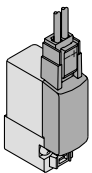
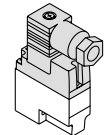
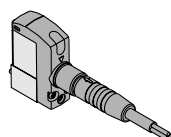


* Other dimensions are same as grommet style.

Stations	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5
L2	27.5	38	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5

Series 10-SYJ300/500/700 Rubber seal 3 port solenoid valve

Variations

		Series	Port size	Sonic conductance C[dm ³ /(s·bar)]	Type of actuation	Voltage	Electrical entry	Option	Manual override	
								Light/Surge voltage suppressor		
Body ported	10-SYJ300  P.659	M3 x 0.5	[Effective area 0.9 mm ² { 2→3 } { (A→R) }]	· N.C. · N.O.		For DC ■24 VDC 12 VDC 6 VDC 5 VDC 3 VDC For AC ■100 VAC ^{50/60} Hz 110 VAC ^{50/60} Hz 200 VAC ^{50/60} Hz 220 VAC ^{50/60} Hz	Grommet 	For DC ■With surge voltage suppressor ■With light/surge voltage suppressor For AC ^{Note)} ■With light/surge voltage suppressor	■Non-locking push type ■Push-turn locking slotted type ■Push-turn locking lever type	
	10-SYJ500  P.671	M5 x 0.8	0.66 { 2→3 } { (A→R) }				L plug connector 			
	10-SYJ700  P.684	1/8	2.5 { 2→3 } { (A→R) }				M plug connector 			
Base mounted	10-SYJ300  P.659	M5 x 0.8	0.36 { 2→3 } { (A→R) }				For AC ■100 VAC ^{50/60} Hz 110 VAC ^{50/60} Hz 200 VAC ^{50/60} Hz 220 VAC ^{50/60} Hz			DIN terminal  (SYJ500, 700 only)
	10-SYJ500  P.671	1/8	1.2 { 2→3 } { (A→R) }							
	10-SYJ700  P.684	1/8-1/4	2.7 { 2→3 } { (A→R) }							M8 Connector 

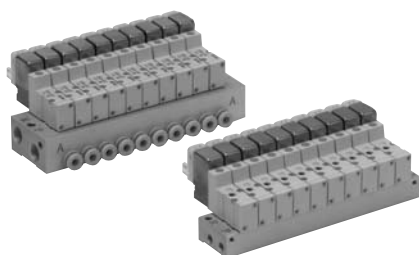


Note) All standard AC voltage models have built-in surge voltage suppressor.

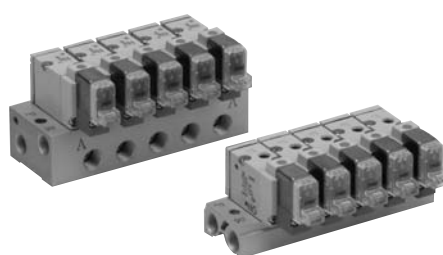
3 port solenoid valve 10-SYJ300/500/700

Manifold variations

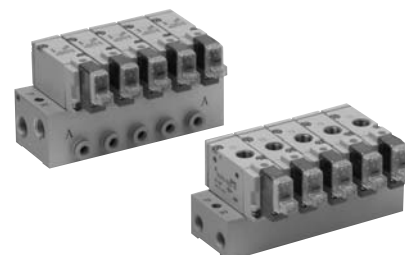
Valve series	A port location	P, R port size	A port size									
			M3	M5	1/8	With one-touch fitting						
						Applicable tubing O.D.						
						ø4	ø6	ø8	N3	N7	N9	
Body ported	10-SYJ300	Top	M5 x 0.8	●	—	—	—	—	—	—	—	—
	10-SYJ500	Top	1/8	—	●	—	—	—	—	—	—	—
	10-SYJ700	Top	1/8	—	—	●	—	—	—	—	—	—
			1/4	—	—	●	—	—	—	—	—	—
Base mounted	10-SYJ300	Side	M5 x 0.8	●	—	—	—	—	—	—	—	—
			1/8	—	●	—	●	—	—	●	—	—
	10-SYJ500	Bottom	1/8	—	●	●	—	—	—	—	—	—
		Side		—	●	●	●	●	—	●	●	—
	10-SYJ700	Bottom	1/8	—	—	●	—	—	—	—	—	—
			1/4	—	—	●	—	—	—	—	—	—
		Side	1/4	—	—	●	—	●	●	—	●	●



Series 10-SYJ300

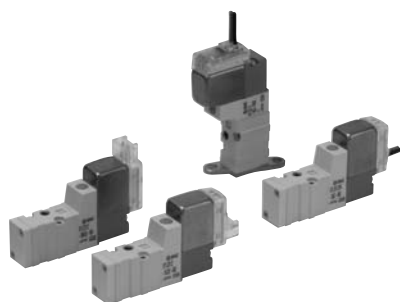


Series 10-SYJ500

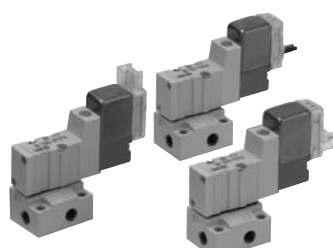


Series 10-SYJ700

Series 10-SYJ300 Rubber seal 3 Port / Pilot operated solenoid valve



Body ported

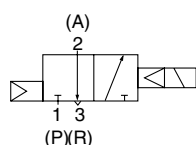


Base mounted

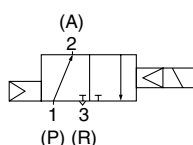
JIS symbol

Internal pilot

10-SYJ31²₄



10-SYJ32²₄



Made to Order Specifications
(For details, refer to page 698.)

Specifications

Fluid		Air
Operating pressure range (MPa)	Internal pilot	0.15 to 0.7
Ambient and fluid temperature (°C)		-10 to 50 (No freezing. Refer to page 714.)
Response time ms (at 0.5 MPa) Note 1)		15 or less
Max. operating frequency (Hz)		10
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type
Pilot exhaust method		Common exhaust for the main and pilot valve
Lubrication		Not required
Mounting orientation		Unrestricted
Impact / Vibration resistance (m/s²) Note 2)		150/30
Enclosure		Dust tight (* M8 connector conforms to IP65.)



* Based on IEC60529

Note 1) Based on dynamic performance test, JIS B 8375-1981. (With coil temperature of 20°C, at rated voltage and without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Initial value)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states. (Initial value)

Solenoid specifications

Electrical entry		Grommet (G)/(H), L plug connector (L), M plug connector (M), M8 connector (W)
Coil rated voltage (V)	DC	24, 12, 6, 5, 3
	AC^{50/60}Hz	100, 110, 200, 220
Allowable voltage fluctuation		±10% of rated voltage *
Power consumption (W)	DC	Standard 0.35 (With indicator light: 0.4) With power saving circuit 0.1 (With indicator light type only)
	AC	100V 0.78 (With indicator light: 0.81) 110V [115V] 0.86 (With indicator light: 0.89) [0.94 (With indicator light: 0.97)] 200V 1.18 (With indicator light: 1.22) 220V [230V] 1.30 (With indicator light: 1.34) [1.42 (With indicator light: 1.46)]
Surge voltage suppressor		Diode (varistor for non-polar type)
Indicator light		LED



* 110VAC and 115VAC are common, as are 220VAC and 230VAC.

* For 115VAC and 230VAC, the allowable voltage is -15% to +5% of rated voltage. Since S, Z and T types (with power saving circuit) have a voltage drop due to internal circuit, observe the following allowable voltage fluctuation range.

S and Z types 24VDC: -7% to +10%
12VDC: -4% to +10%
T type 24VDC: -8% to +10%
12VDC: -6% to +10%

3 port / Pilot operated solenoid valve **10-SYJ300**

Flow characteristics / Weight

Valve model		Type of actuation	Port size	Flow characteristics						Effective area (mm ²)	Weight (g) ^{Note)}		
				1→2(P→A)			2→3(A→R)				Grommet	L/M plug connector	M8 connector
				C[dm³/(s·bar)]	b	Cv	C[dm³/(s·bar)]	b	Cv				
Body ported	10-SYJ312	N.C.	M3 x 0.5	—	—	—	—	—	—	0.9	32	33	37
	10-SYJ322	N.O.		—	—	—	—	—					
Base mounted (with sub-plate)	10-SYJ314	N.C.	M5 x 0.8	0.41	0.18	0.086	0.35	0.33	0.086	—	53(32)	54(33)	58(37)
	10-SYJ324	N.O.		0.36	0.31	0.089	0.36	0.31	0.089				

 Note) Value for DC. Add 1 g for AC. (): Without sub-plate.

How to Order

3 port
(For type 20 manifold)

Body ported 10—SYJ3 1 2M 5 M M3

Base mounted 10—SYJ3 1 4M 5 M

Type of actuation

1	Normally closed
2	Normally open

Rated voltage

For DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

AC (50/60Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* For type "W□", DC voltage is only available.

Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Brackets

Nil: Without bracket
F: With bracket

* Bracket is mounted.
* Bracket cannot be retrofitted.

Clean series

Coil specifications

Nil	Standard
T	With power saving circuit <24, 12 VDC only>

* Power saving circuit is not available in the case of "W□" type.

Port size

Nil: Without sub-plate
M5: M5 port with sub-plate

(With gasket and screws)

Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC				24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector	M plug connector		M8 connector
G: Lead wire length 300 mm	L: With lead wire (Length 300 mm)	M: With lead wire (Length 300 mm)	MN: Without lead wire	WO: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	W□: With connector cable (Note 1)

* "LN", "MN" types: with 2 sockets.
* For connector cable of M8 connector, refer to page 703.
Note 1) Be sure to enter a symbol of the cable length in □ with reference to page 704.

Manual override

Nil: Non-locking push type

D: Push-turn locking slotted type

E: Push-turn locking lever type

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to page 666.)

How to Order Pilot Valve Assembly

10—V111 ☐ — **5** **G** ☐

• Clean series

• Coil specifications

Nil	Standard
T	With power saving circuit <24, 12 VDC only>

* Power saving circuit is not available in the case of "W□" type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC50/60Hz
2	200 VAC50/60Hz
3	110 VAC50/60Hz [115 VAC50/60Hz]
4	220 VAC50/60Hz [230 VAC50/60Hz]

* For type "W□", DC voltage is only available.

Electrical entry

G	Grommet (Lead wire length 300 mm)
H	Grommet (Lead wire length 600 mm)
L	With lead wire
LN	Without lead wire
LO	Without connector
M	With lead wire
MN	Without lead wire
MO	Without connector
WO	Without connector cable
W□	With connector cable ^{Note 1)}

* For connector cable of M8 connector, refer to page 703.

• Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

* For "R" and "U", DC voltage is only available.

* Power saving circuit is only available in the "Z" type.

How to Order Connector Assembly for L/M Plug Connector

For DC : **SY100-30-4A-** ☐

For 100 VAC : **SY100-30-1A-** ☐

For 200 VAC : **SY100-30-2A-** ☐

For other voltages of AC : **SY100-30-3A-** ☐

Without lead wire : **SY100-30-A**

(with connector and 2 of sockets only)

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order M8 Connector Cable

V100-49-1- ☐

Cable length

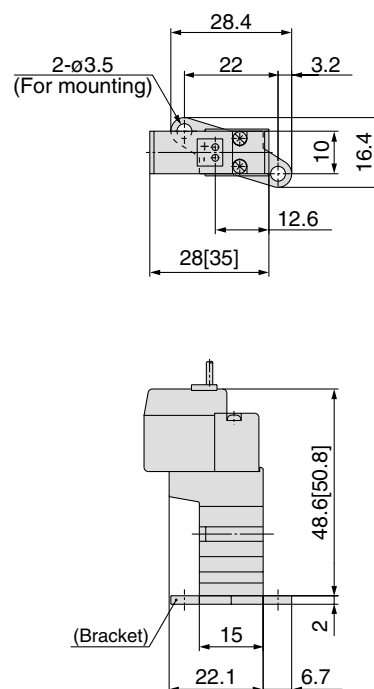
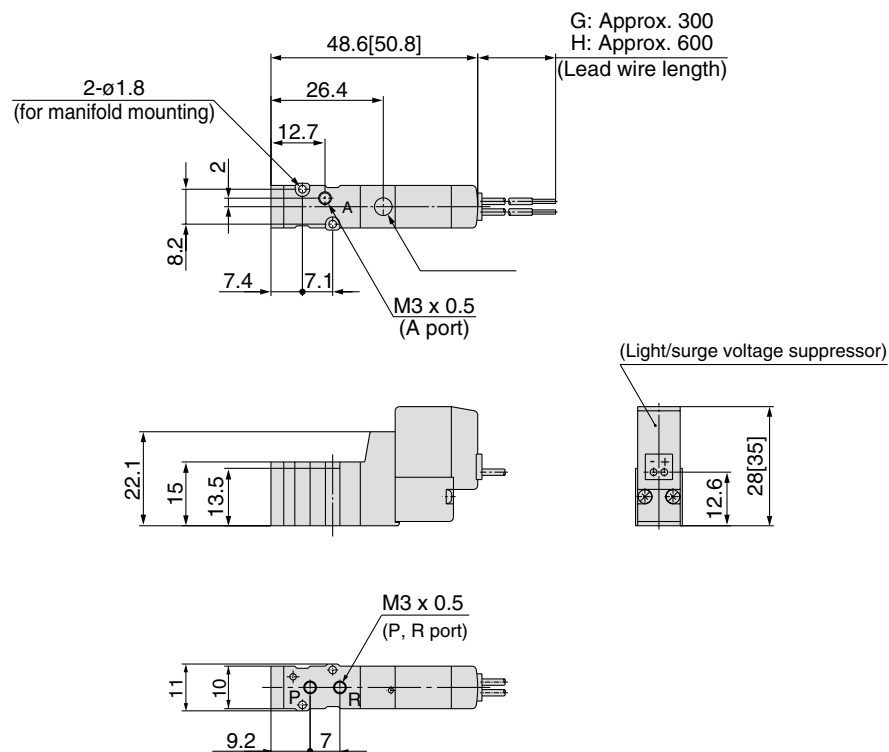
1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm

Note 1) Be sure to enter a symbol of the cable length in □ with reference to page 704.

Body ported

Grommet (G), (H): 10-SYJ3□2M-□^G□□-M3

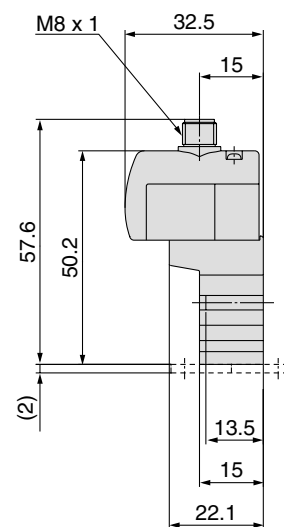
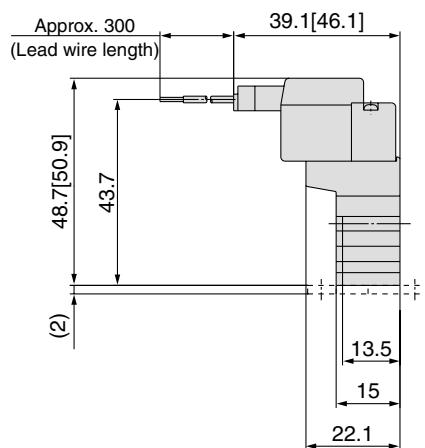
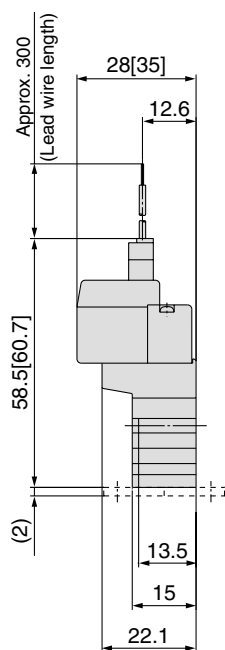
With bracket:
10-SYJ3□2M-□^G□□-M3-F

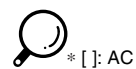
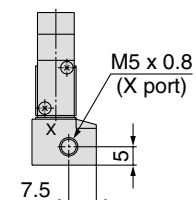
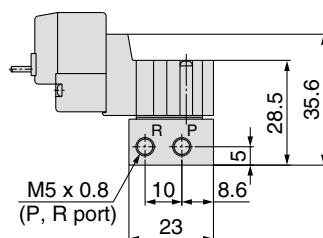
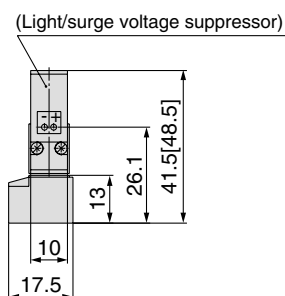
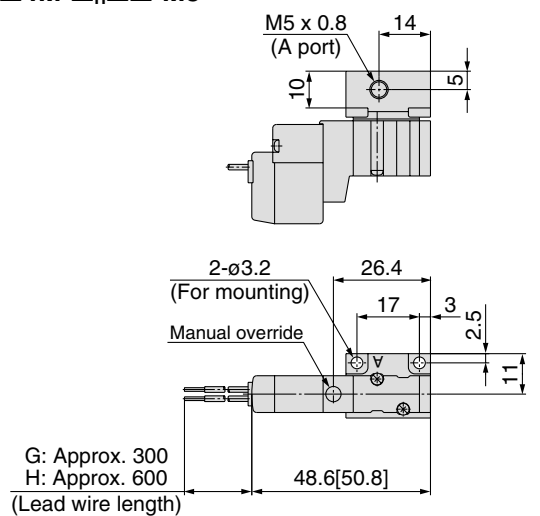


L plug connector (L):
10-SYJ3□2M-□L□□-M3

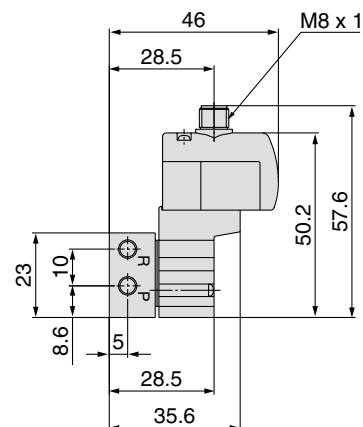
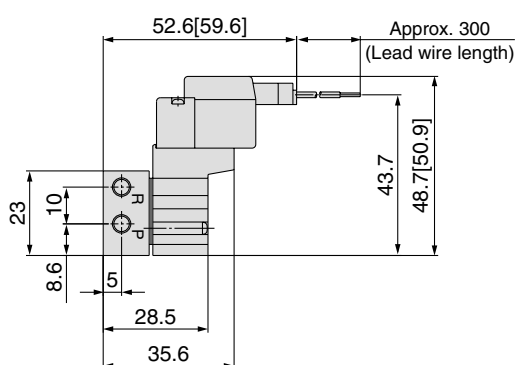
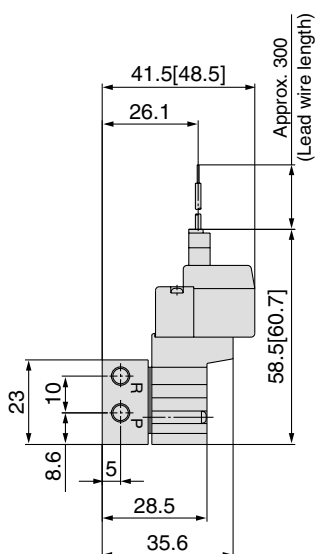
M plug connector (M):
10-SYJ3□2M-□M□□-M3

M8 connector (WO):
10-SYJ3□2M-□WO□□-M3



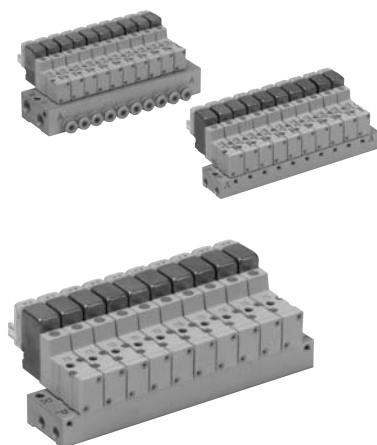
Base mounted (With sub-plate)

Grommet (G), (H): 10-SYJ3□4M-□^G□□-M5

L plug connector (L):
10-SYJ3□4M-□L□□-M5

M plug connector (M):
10-SYJ3□4M-□M□□-M5

M8 connector (WO):
10-SYJ3□4M-□WO□□-M5


* Refer to page 704 for dimensions with connector cable.

Series 10-SYJ300 Manifold specifications



Manifold specifications

Model	For internal pilot	Type 20	Type 41, S41	Type 42, S42
Manifold type		Single base / B mount		
P (SUP), R (EXH)		Common SUP / Common EXH		
Valve stations		2 to 20 stations		
A port Porting specifications	Location	Valve	Base	
	Direction	Top	Side	
Port size	P, R port	M5 x 0.8 1/8	M5 x 0.8	1/8
	A port	M3 x 0.5	M3 x 0.5	M5 x 0.8 C4 (One-touch fitting for ø4)

Flow characteristics

Manifold			Port size		Flow characteristics						Effective area (mm ²)
					1→2(P→A)			2→3(A→R)			
			1 (P), 3 (R) port	2 (A) port	C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	
Body ported for internal pilot	Type 10-SS3YJ3-20	10-SYJ3□2M	M5 x 0.8	M3 x 0.5	—	—	—	—	—	—	0.9
Base mounted for internal pilot	Type 10-SS3YJ3-41 S41	10-SYJ3□4M	M5 x 0.8	M3 x 0.5	—	—	—	—	—	—	1.5
	Type 10-SS3YJ3-42-M5	10-SYJ3□4M	1/8	M5 x 0.8	0.31	0.17	0.075	0.32	0.11	0.072	—
	Type 10-SS3YJ3-42-C4			C4	0.33	0.36	0.086	0.33	0.2	0.082	—
	Type 10-SS3YJ3-S42-M5	10-SYJ3□4M	1/8	M5 x 0.8	0.32	0.3	0.079	0.33	0.35	0.086	—
	Type 10-SS3YJ3-S42-C4			C4	0.35	0.17	0.082	0.35	0.26	0.086	—



Note) Value at manifold base mounted, 2 position single operating.

How to Order Manifold (Example)

Specify the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

Example

10-SS3YJ3-20-03 1 set (Manifold base)

* 10-SYJ312M-5LZ-M3 ... 2 sets (Valve)

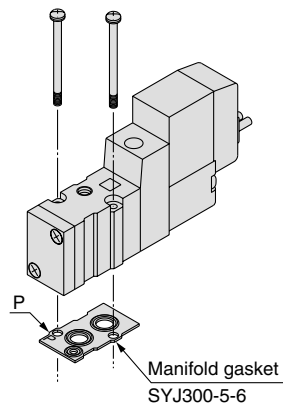
* SYJ300-10-1A 1 set (Blanking plate assembly)

→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

<Manifold option>

Combinations of solenoid valve, manifold gasket and manifold base

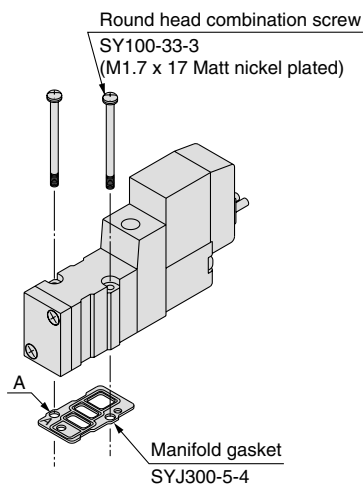
Body ported (10-SYJ3□2M)



Applicable base

10-SS3YJ3-20 } Manifold base

Base mounted (10-SYJ3□4M)

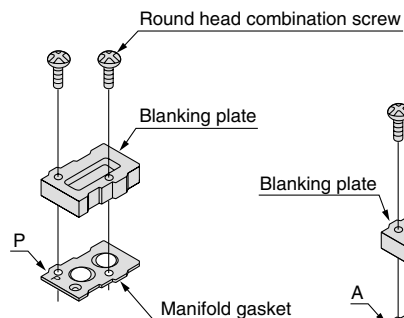


Applicable base sub-plate

10-SS3YJ3-41 }
10-SS3YJ3-S41 } Manifold base
10-SS3YJ3-42 }
10-SS3YJ3-S42 }

Blanking plate assembly

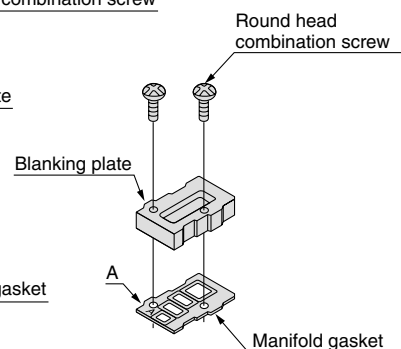
Part no.: SYJ300-10-1A



Applicable base

10-SS3YJ3-20 } Manifold base

Part no.: SYJ300-10-2A



Applicable base sub-plate

10-SS3YJ3-41 }
10-SS3YJ3-S41 } Manifold base
10-SS3YJ3-42 }
10-SS3YJ3-S42 }

⚠ Caution

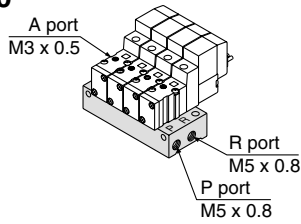
Mounting screw tightening torque

M1.7: 0.12N·m

Use caution to the assembly orientation of solenoid valve, gasket and optional parts.

How to Order Manifolds

Type 20



How to Order

10-SS3YJ3-20-05

•Clean series

•Stations

02	2 stations
:	:
20	20 stations

•Bracket

Nil	Without bracket
F	With bracket

Applicable solenoid valve
10-SYJ312M-□□□□-M3
10-SYJ322M-□□□□-M3

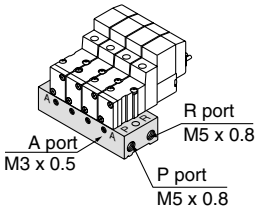
Applicable blanking plate assembly
SYJ300-10-1A



Note) For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

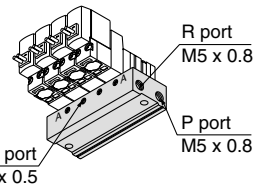
Type 41

Type 41



Type S41

(Pilot valve is on the same side of A port.)



How to Order

10-SS3YJ3-41-05-M3

•Clean series

•Valve mounting direction

Nil	Pilot valve is on the opposite side of A port.
S	Pilot valve is on the same side of A port.

•Stations

02	2 stations
:	:
20	20 stations

Applicable solenoid valve
10-SYJ314M-□□□□
10-SYJ324M-□□□□

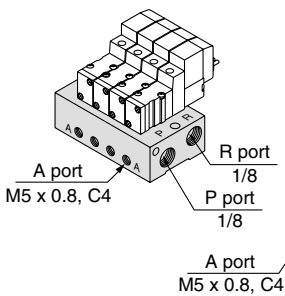
Applicable blanking plate assembly
SYJ300-10-2A



Note) For more than 10 stations, supply air to both sides of P port and exhaust air from both sides of R port.

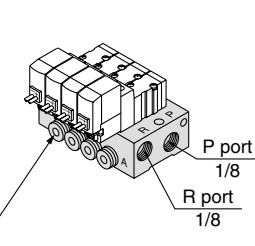
Type 42

Type 42



Type S42

(Pilot valve is on the same side of A port.)



How to Order

10-SS3YJ3-42-05-M5

•Clean series

•Valve mounting direction

Nil	Pilot valve is on the opposite side of A port.
S	Pilot valve is on the same side of A port.

•Stations

02	2 stations
:	:
20	20 stations

•A port size

M5	M5 x 0.8
C4	One-touch fitting for ø4
N3	One-touch fitting for ø5/32"

Applicable solenoid valve
10-SYJ314M-□□□□
10-SYJ324M-□□□□

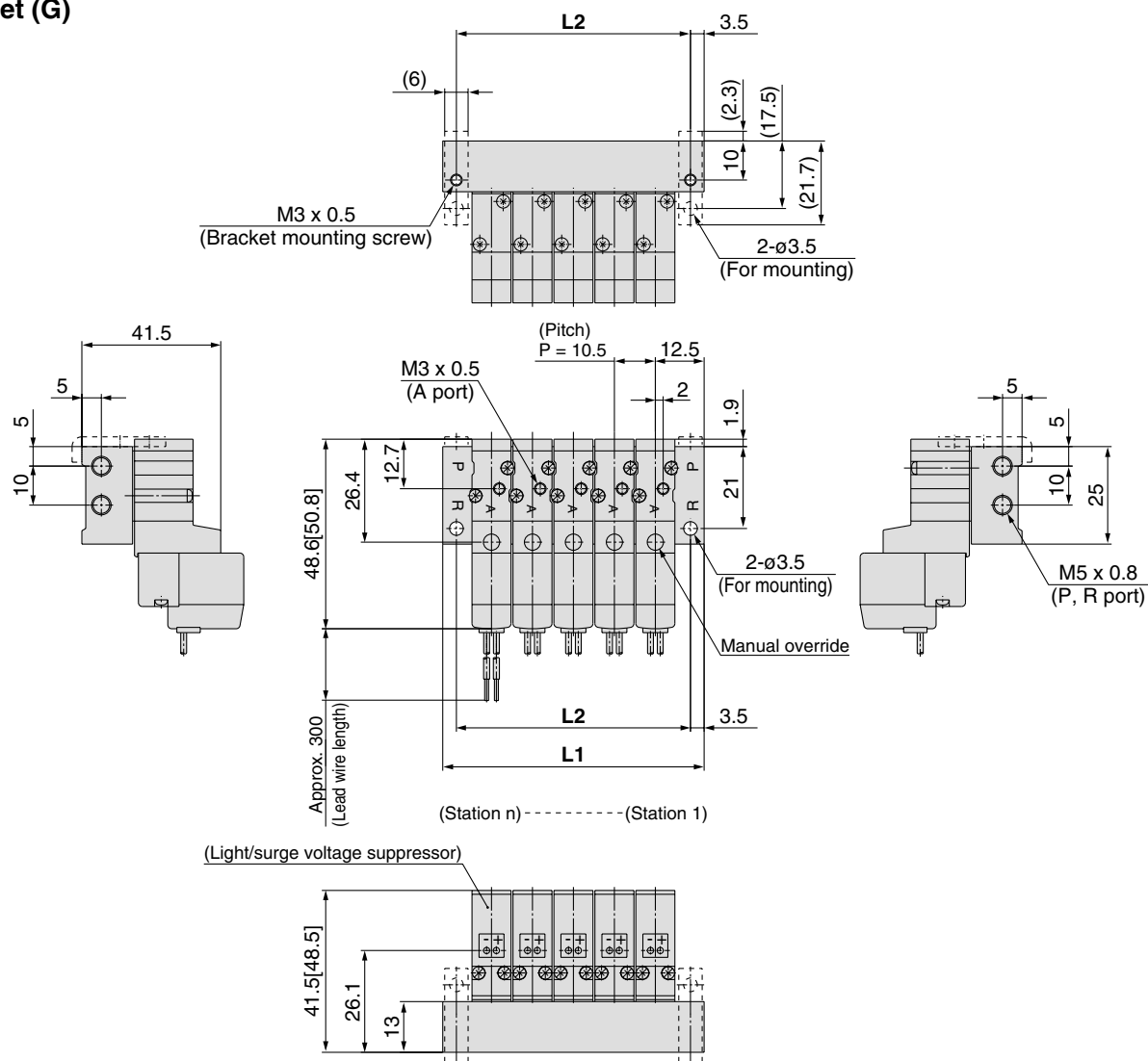
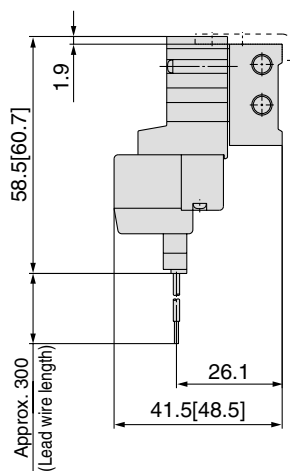
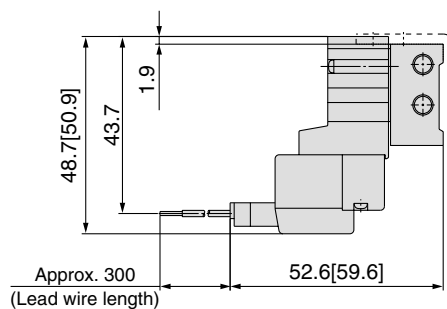
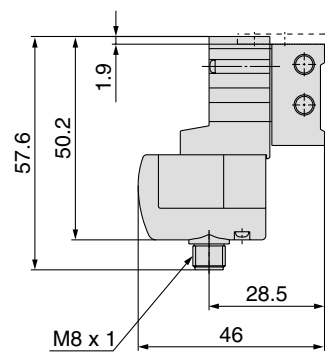
Applicable blanking plate assembly
SYJ300-10-2A

•P, R port thread type

Nil	Rc
F	G
N	NPT
T	NPTF

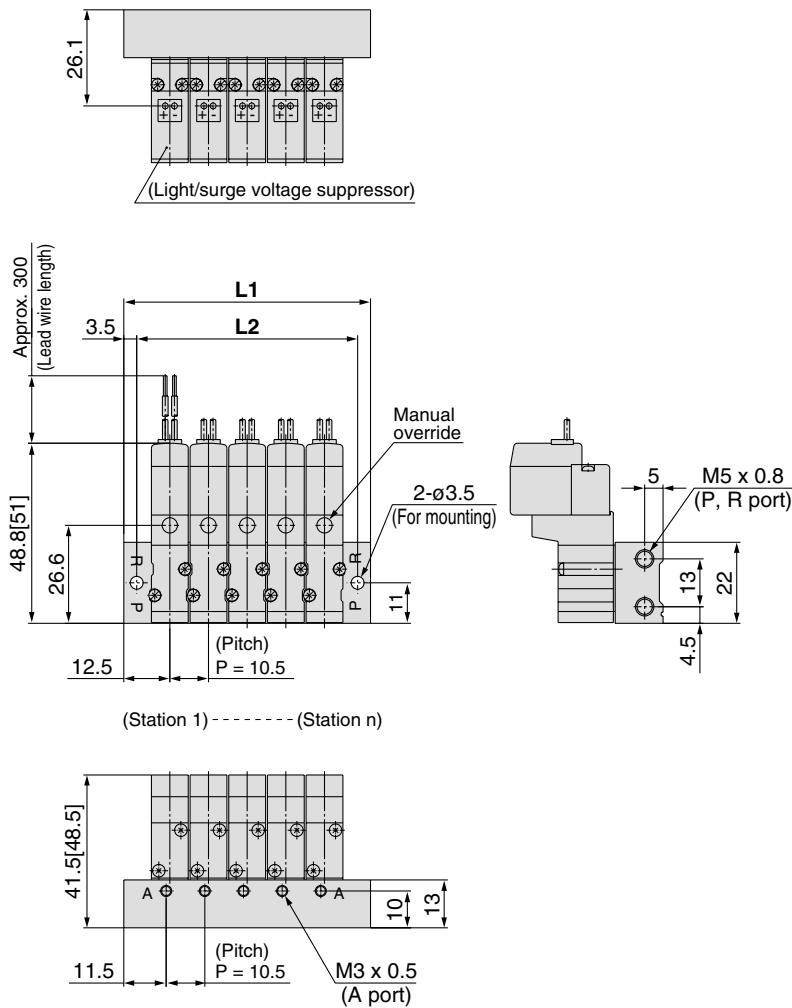


Note) For more than 8 stations, supply air to both sides of P port and exhaust air from both sides of R port.

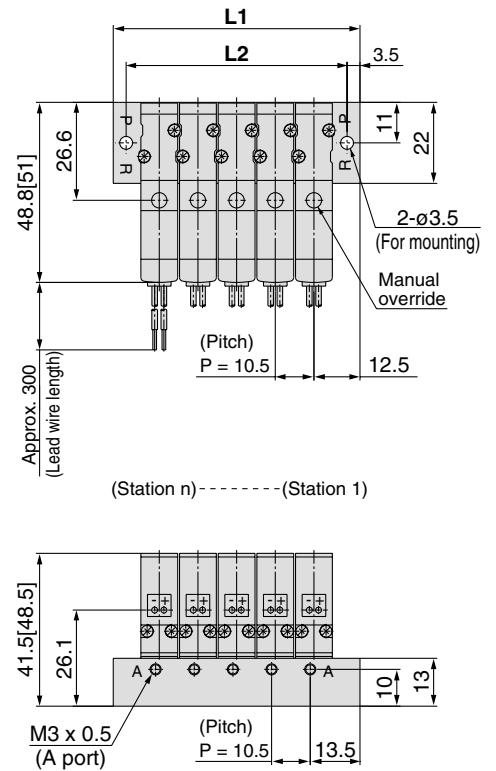
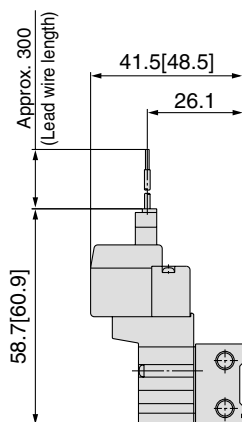
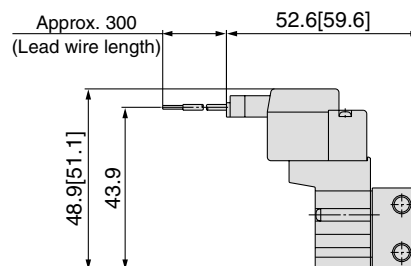
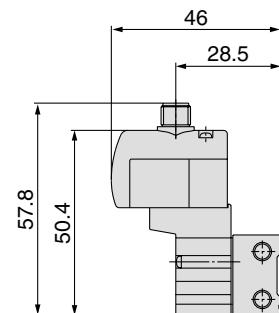
Grommet (G)

L plug connector (L)

M plug connector (M)

M8 connector (WO)

 * Refer to page 704 for dimensions with connector cable.

Stations n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	35.5	46	56.5	67	77.5	88	98.5	109	119.5	130	140.5	151	161.5	172	182.5	193	203.5	214	224.5
L2	28.5	39	49.5	60	70.5	81	91.5	102	112.5	123	133.5	144	154.5	165	175.5	186	196.5	207	217.5

Type 41 manifold: Side ported / 10-SS3YJ3-41- Station -M3
 Note) []: AC

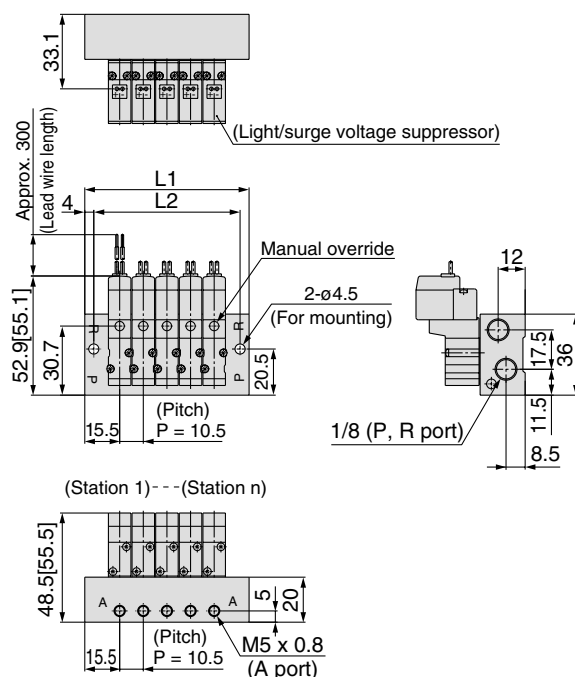
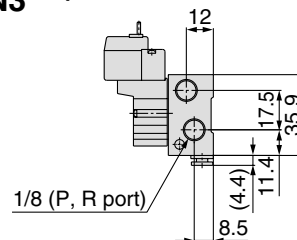
Grommet (G)

Type S41 manifold: Side ported

(Pilot valve is on the same side of A port.)

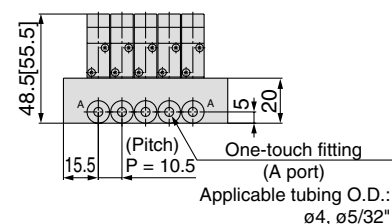
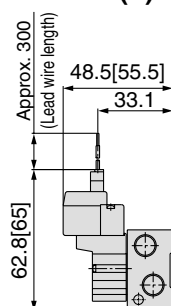
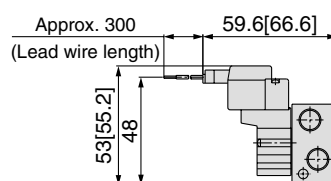
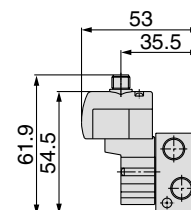
10-SS3YJ3-S41- Stations -M3

L plug connector (L)

M plug connector (M)

M8 connector (WO)

 * Refer to page 704 for dimensions with connector cable.

Stations n	2 Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 Stations
L1	35.5	46	56.5	67	77.5	88	98.5	109	119.5	130	140.5	151	161.5	172	182.5	193	203.5	214	224.5
L2	28.5	39	49.5	60	70.5	81	91.5	102	112.5	123	133.5	144	154.5	165	175.5	186	196.5	207	217.5

Type 42 manifold: Side ported / 10-SS3YJ3-42- Station -M5, **C4** ☐ **N3** ☐

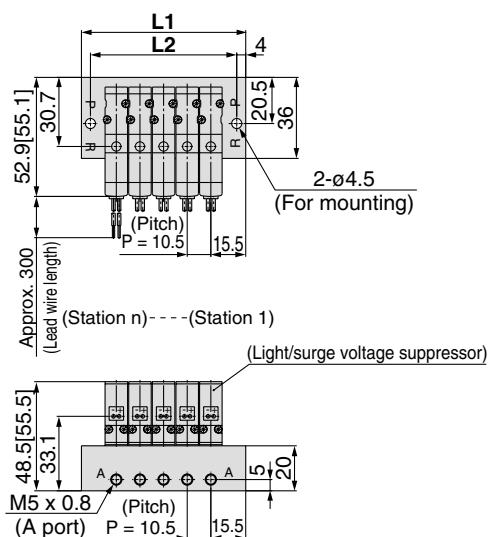
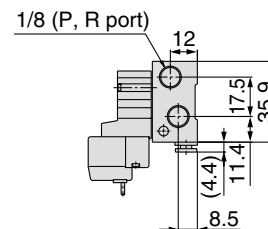
Grommet (G)
M5

C4 ☐ **N3** ☐ (With built-in one-touch fitting)


(Station 1) --- (Station n)

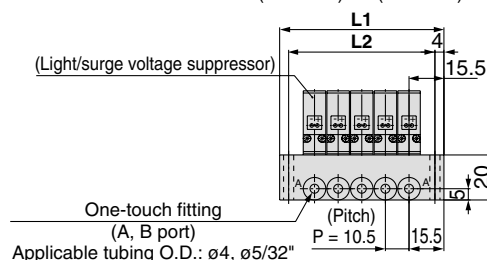

L plug connector (L)

M plug connector (M)

M8 connector (WO)


* Refer to page 704 for dimensions with connector cable.

Type S42 manifold: Side ported (Pilot valve is on the same side of A port.)

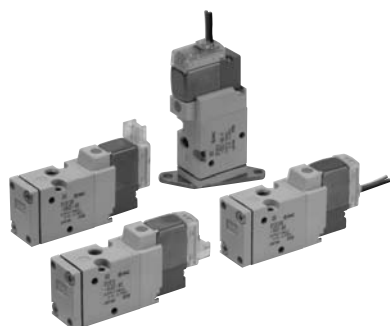
M5 10-SS3YJ3-S42- Stations -M5, **C4** ☐ **N3** ☐
Grommet (G)
M5

C4 ☐ **N3** ☐ (With built-in one-touch fitting)


(Station n) --- (Station 1)

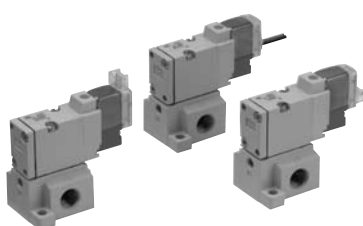


Stations n	2 Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 Stations
L1	41.5	52	62.5	73	83.5	94	104.5	115	125.5	136	146.5	157	167.5	178	188.5	199	209.5	220	230.5
L2	33.5	44	54.5	65	75.5	86	96.5	107	117.5	128	138.5	149	159.5	170	180.5	191	201.5	212	222.5

Series 10-SYJ500 Rubber seal 3 port / Pilot operated solenoid valve



Body ported



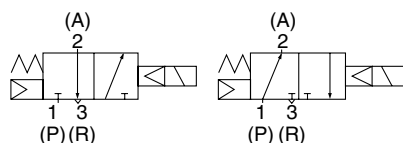
Base mounted

JIS Symbol

Internal pilot

10-SYJ51 $\frac{1}{4}$ M

10-SYJ52 $\frac{1}{4}$ M



Made to Order Specifications
(Refer to page 698 for details.)

Specifications

Fluid		Air
Operating pressure range (MPa)	Internal pilot	0.15 to 0.7
Ambient and fluid temperature (°C)		-10 to 50 (No freezing. Refer to page 714.)
Response time ms (0.5MPa) Note 1)		25 or less
Max. operating frequency (Hz)		5
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type
Pilot exhaust method		Common exhaust type for main and pilot valves
Lubrication		Not required
Mounting orientation		Unrestricted
Impact / Vibration resistance m/s² Note 2)		150/30
Enclosure		Dust tight (* DIN terminal, M8 connector conforms to IP65.)



* Based on IEC60529

Note 1) Based on dynamic performance test, JIS B 8374-1981. (With coil temperature of 20°C, at rated voltage and without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Initial value)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states. (Initial value)

Solenoid specifications

Electrical entry			Grommet(G)/(H), L plug connector (L), M plug connector (M), DIN terminal (D), M8 connector (W)	
			G, H, L, M, W	D
Rated coil voltage V	DC	24, 12, 6, 5, 3		24, 12
	AC ^{50/60} Hz	100, 110, 200, 220		
Allowable voltage fluctuation			±10% of rated voltage *	
Power consumption (W)	DC	Standard	0.35 (With indicator light: 0.4 (DIN terminal with indicator light: 0.45))	
		With power saving circuit	0.1 (With indicator light only)	
Apparent power * (VA)	AC	100V	0.78 (With indicator light: 0.81)	0.78 (With indicator light: 0.87)
		110V	0.86 (With indicator light: 0.89)	0.86 (With indicator light: 0.97)
		[115V]	[0.94 (With indicator light: 0.97)]	[0.94 (With indicator light: 1.07)]
		200V	1.18 (With indicator light: 1.22)	1.15 (With indicator light: 1.30)
		220V [230V]	1.30 (With indicator light: 1.34) [1.42 (With indicator light: 1.46)]	1.27 (With indicator light: 1.46) [1.39 (With indicator light: 1.60)]
Surge voltage suppressor			Diode (Varistor for DIN terminal and non-polar type)	
Indicator light			LED (Neon bulb for DIN terminal AC)	



* 110VAC and 115VAC are common, as are 220VAC and 230VAC.

* For 115 VAC and 230 VAC, the allowable voltage fluctuation is -15% to +5% of rated voltage.

* Since S, Z and T types (with a power saving circuit) have a voltage drop due to internal circuit, observe the following allowable voltage fluctuation range.

S and Z types, 24VDC: -7% to +10%
12VDC: -4% to +10%

T type, b 24VDC: -8% to +10%
12VDC: -6% to +10%

3 port/Pilot operated solenoid valve **10-SYJ500**

Flow characteristics / Weight

Valve model		Type of actuation	Port size	Flow characteristics						Weight (g) ^{Note)}			
				1→2(P→A)			2→3(A→R)			Grommet	L/M plug connector	DIN terminal	M8 connector
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv				
Body ported	10-SYJ512M	N.C.	M5 x 0.8	0.53	0.45	0.14	0.47	0.39	0.12	46	47	68	51
	10-SYJ522M	N.O.		0.66	0.45	0.18	0.66	0.45	0.18				
Base mounted (With sub-plate)	10-SYJ514M	N.C.	1/8	1.2	0.41	0.32	1.1	0.46	0.32	60(46)	61(47)	82(68)	65(51)
	10-SYJ524M	N.O.		1.3	0.37	0.33	1.2	0.48	0.34				



Note) Value for DC. Add 3 g for AC. (): Without sub-plate.

How to Order

Rated voltage

For DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.

AC specifications (50/60Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* For type "W□", DC voltage is only available.

Type of actuation

1	Normally closed
2	Normally open

Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

* For "R" and "U", DC voltage is only available.

* Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Bracket

Nil: Without bracket
F: With bracket

* Brackets are not installed.

3 port

(For type 20 manifold)

Body ported

10-SYJ5 1 2M □ 5 M □ □ M5 □

Base mounted

10-SYJ5 1 4M □ 5 M □ □ 01 □

3 port

(For sub-plate type, Type 40, 41 manifolds)

Clean series

Coil specifications

Nil	Standard
T	With power saving circuit <24 and 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Manual override

Nil: Non-locking push type

D: Push-turn locking slotted type

E: Push-turn locking lever type

Port size

Nil: Without sub-plate

01: With 1/8 port sub-plate

(With gasket and screws)

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC				24, 12 VDC / 100, 110, 200, 220 VAC	24, 12 VDC / 6, 5, 3 VDC
Grommet	L plug connector	M plug connector	DIN terminal	M8 connector	
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	D: With connector	WO: Without connector cable	
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	DO: Without connector	W□: With connector cable (Note 1)	
		MN: Without lead wire			
		MO: Without connector			

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary.
(For details, refer to catalog in page 678.)

* "LN", "MN" types: with 2 sockets.

* DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 698.

* For connector cable of M8 connector, refer to page 703.

Note 1) Be sure to enter a symbol of the cable length with reference to page 704.

How to Order Pilot Valve Assembly

How to Order L/M Plug Connector Assembly

10—V111 **5** **G**

Coil specifications

Nil	Standard
T	With power saving circuit 24 and 12 VDC only

* Power saving circuit is not available in the case of "W□" type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC50/60Hz
2	200 VAC50/60Hz
3	110 VAC50/60Hz [115 VAC50/60Hz]
4	220 VAC50/60Hz [230 VAC50/60Hz]

* For type "W□", DC voltage is only available.

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

* For "R" and "U", DC voltage is only available.

* Power saving circuit is only available in the "Z" type.

Electrical entry

G	Grommet (Lead wire length 300 mm)
H	Grommet (Lead wire length 600 mm)
L	With lead wire
LN	L plug connector Without lead wire
LO	Without connector
M	With lead wire
MN	M plug connector Without lead wire
MO	Without connector
WO	M8 Without connector cable
W□	connector With connector cable ^{Note 1)}

* For connector cable of M8 connector, refer to page 703.

Note 1) Be sure to enter a symbol of the cable length with reference to page 704.

For DC : **SY100-30-4A-**

For 100 VAC : **SY100-30-1A-**

For 200 VAC : **SY100-30-2A-**

For other voltages of AC : **SY100-30-3A-**

Without lead wire
(with connector and 2 of sockets only) : **SY100-30-A**

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

10—V115 **5** **D**

Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC50/60Hz
2	200 VAC50/60Hz
3	110 VAC50/60Hz [115 VAC50/60Hz]
4	220 VAC50/60Hz [230 VAC50/60Hz]

* DC specifications of types "D" and "DO" is only available with 12 and 24 VDC.

* Power saving circuit is not available in the case of "D", "DO" type.

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

D	DIN terminal With connector
DO	Without connector

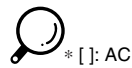
Note) Do not replace 10-V111 (G, H, L, M, W) with 10-V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

How to Order M8 Connector Cable

V100-49-1-

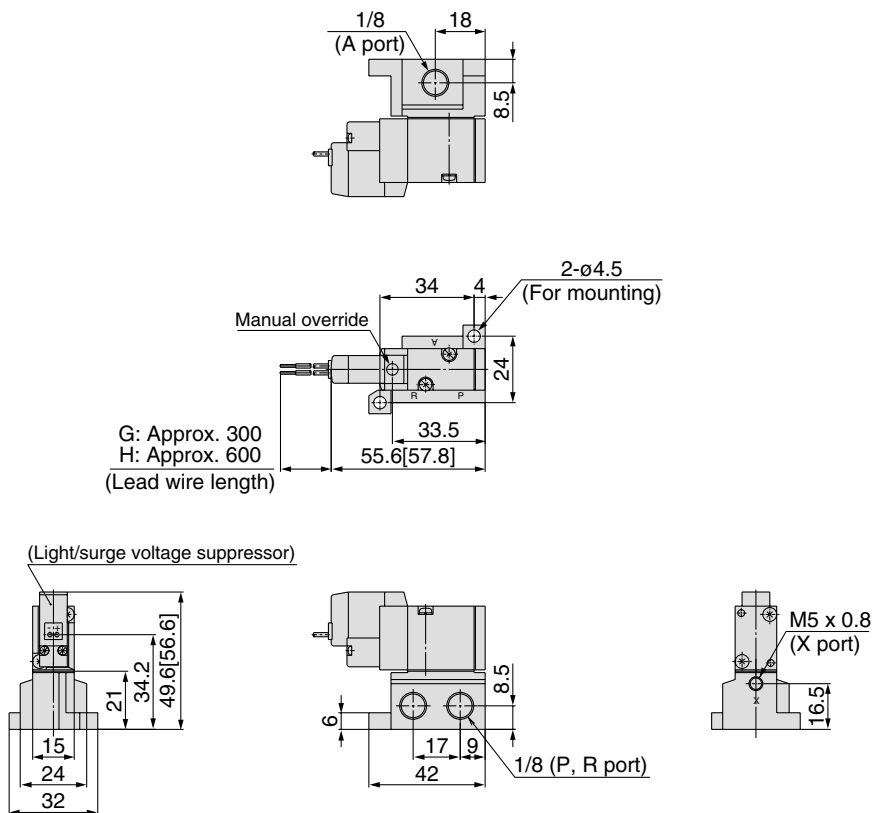
Cable length

1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm



Base mounted (With sub-plate)

Grommet (G), (H): 10-SYJ5□4M-□_H^G□□-01□

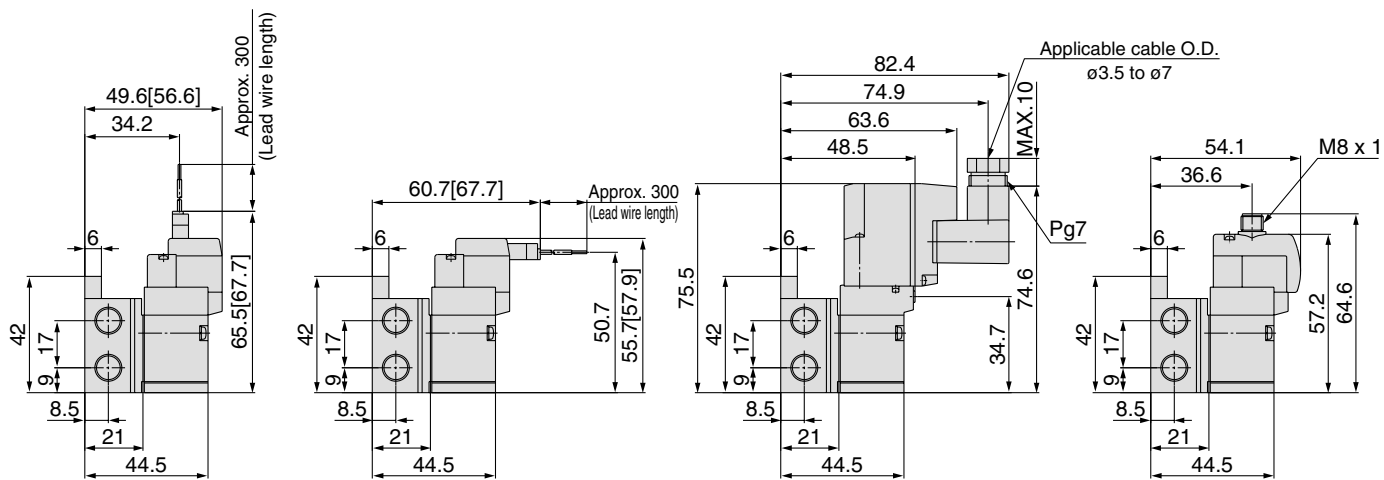


L plug connector (L):
10-SYJ5□4M-□L□□-01□

M plug connector (M):
10-SYJ5□4M-□M□□-01□

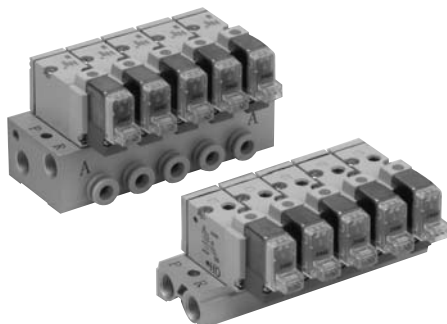
DIN terminal (D):
10-SYJ5□4M-□D□□-01□

M8 connector (WO):
10-SYJ5□4M-□WO□□-01□



* Refer to page 704 for dimensions with connector cable.

Series 10-SYJ500 Manifold specifications



Manifold specifications

Model	For internal pilot	Type 20	Type 40	Type 41
Manifold type		Single base type / B mount		
P(SUP) / R(EXH)		Common SUP / Common EXH		
Stations		2 to 20 stations		
A port Porting specifications	Location	Valve	Base	
	Direction	Top	Bottom	Side
Port size	P, R port	1/8	1/8	1/8
	A port	M5 x 0.8	M5 x 0.8 1/8	M5 x 0.8, 1/8, C4(One-touch fitting for ø4), C6(One-touch fitting for ø6)

Flow characteristics

Manifold			Port size		Flow characteristics					
					1→2(P→A)			2→3(A→R)		
			1(P), 3(R) port	2(A) port	C [dm³/(s bar)]	b	Cv	C [dm³/(s bar)]	b	Cv
Body ported for internal pilot	10-SS3YJ5-20	10-SYJ5□2M	1/8	M5 x 0.8	0.47	0.43	0.13	0.74	0.32	0.19
Base mounted for internal pilot	10-SS3YJ5-40-M5	10-SYJ5□4M	1/8	M5 x 0.8	0.71	0.52	0.21	0.81	0.28	0.20
	10-SS3YJ5-40-01		1/8	1/8	0.98	0.36	0.25	0.92	0.24	0.22
	10-SS3YJ5-41-M5		1/8	M5 x 0.8	0.71	0.49	0.20	0.80	0.23	0.19
	10-SS3YJ5-41-01		1/8	1/8	1.0	0.37	0.26	0.96	0.25	0.24
	10-SS3YJ5-41-C4		1/8	C4	0.68	0.35	0.17	1.0	0.25	0.24
	10-SS3YJ5-41-C6		1/8	C6	1.0	0.27	0.25	1.0	0.30	0.26



Note) Value at manifold base mounted, 2 position single operating

How to Order Manifold (Example)

Specify the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example)

10-SS3YJ5-20-03 1 set (Manifold base)

* 10-SYJ512M-5LZ-M5 ... 2 sets (Valve)

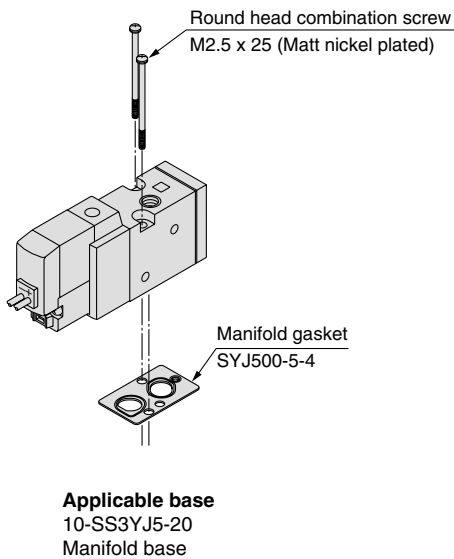
* SYJ500-10-1A 1 set (Blanking plate assembly.)

↳The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

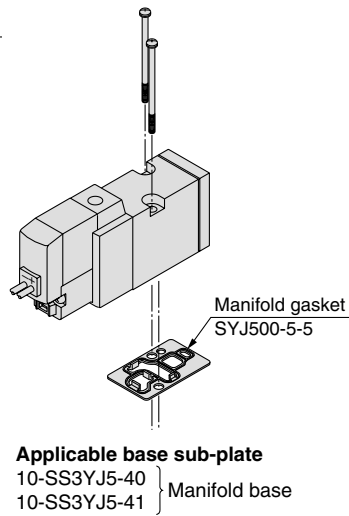
<Manifold option>

Combinations of solenoid valve, manifold gasket and manifold base

Body ported (10-SYJ5□2M)

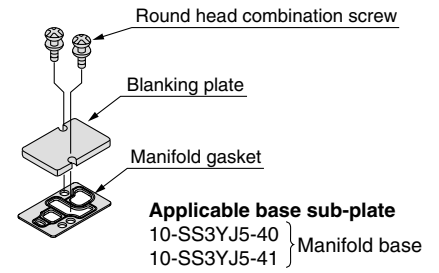


Base mounted (10-SYJ5□4M)

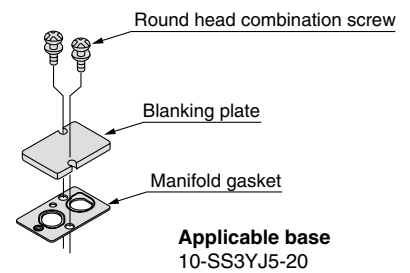


Blanking plate assembly

Part no.: SYJ500-10-3A



Part no.: SYJ500-10-1A



Caution

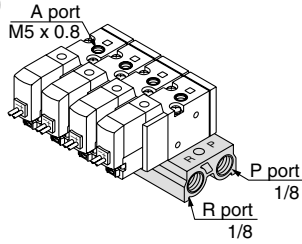
Mounting screw tightening torque

M2.5: 0.45N·m

Use caution to the assembly orientation of solenoid valve (blanking plate) and manifold gasket.

How to Order Manifolds

Type 20



How to Order

10-SS3YJ5-20-05

• Clean series

Stations	
02	2 stations
:	:
20	20 stations

P, R port thread type	
Nil	Rc
00F	G
00N	NPT
00T	NPTF

Bracket	
Nil	Without bracket
F	With bracket

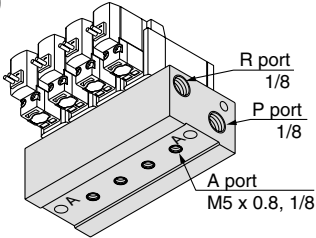
Applicable solenoid valve
10-SYJ512M-□□□□-M5
10-SYJ522M-□□□□-M5

Applicable blanking plate assembly
SYJ500-10-1A



Note) For more than 6 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 40



How to Order

10-SS3YJ5-40-05-M5

• Clean series

Stations	
02	2 stations
:	:
20	20 stations

A port size	
M5	M5 x 0.8
01	1/8

P, R port thread type	
Nil	Rc
F	G
N	NPT
T	NPTF

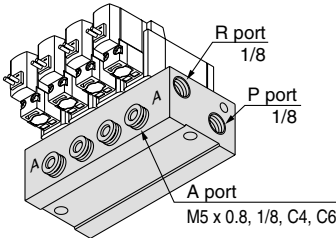
Applicable solenoid valve
10-SYJ514M-□□□□
10-SYJ524M-□□□□

Applicable blanking plate assembly
SYJ500-10-3A



Note) For more than 9 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 41



How to Order

10-SS3YJ5-41-05-C6

• Clean series

Stations	
02	2 stations
:	:
20	20 stations

A port size	
M5	M5 x 0.8
01	1/8
C4	One-touch fitting for ø4
C6	One-touch fitting for ø6
N3	One-touch fitting for ø5/32"
N7	One-touch fitting for ø1/4"

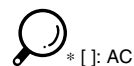
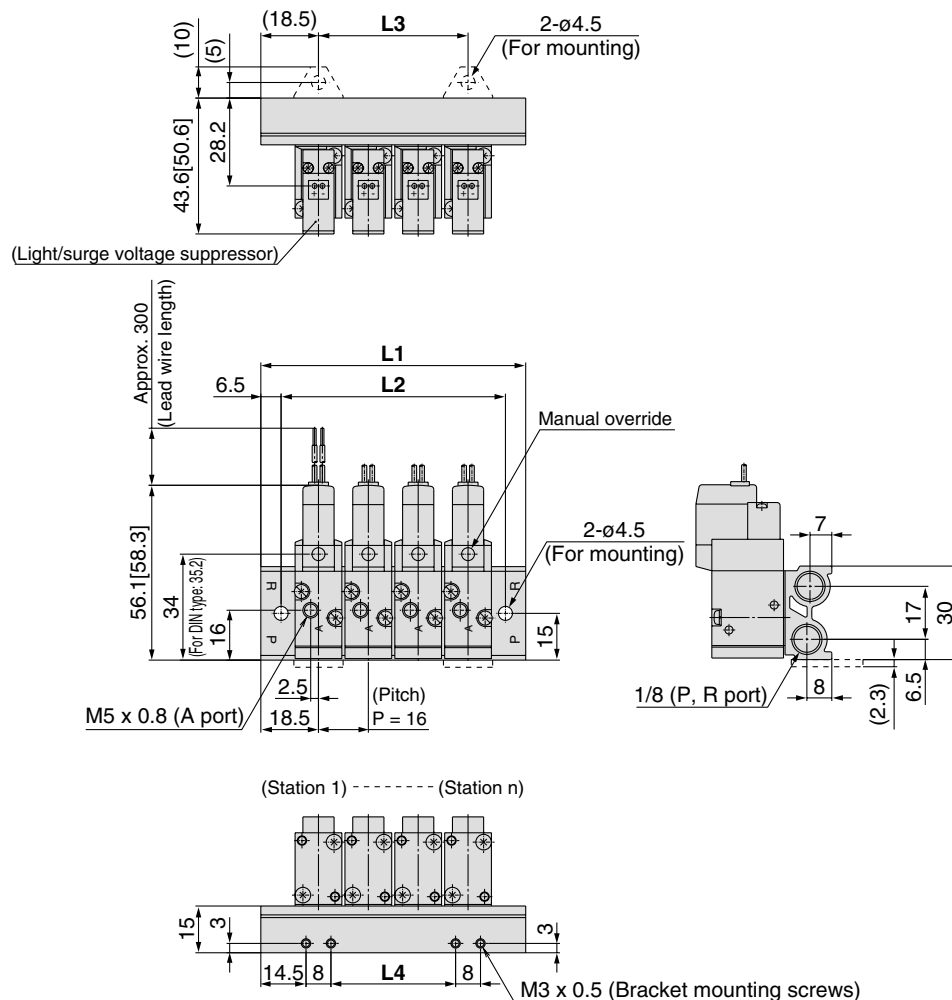
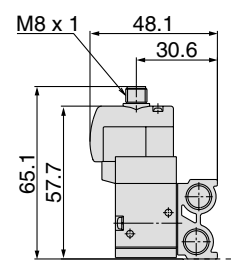
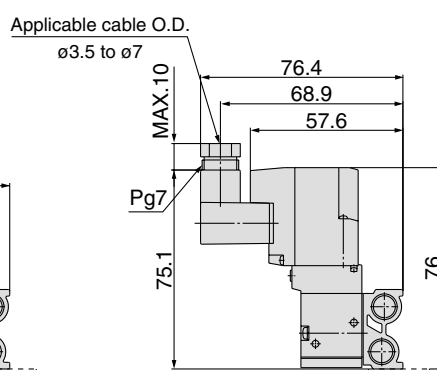
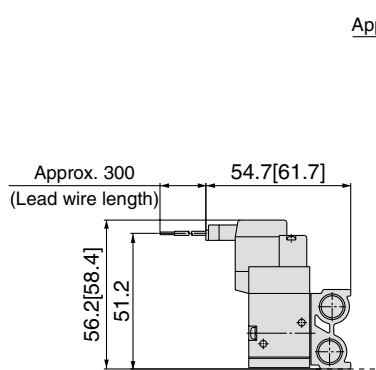
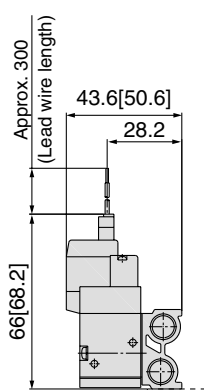
P, R port thread type	
Nil	Rc
F	G
N	NPT
T	NPTF

Applicable solenoid valve
10-SYJ514M-□□□□
10-SYJ524M-□□□□

Applicable blanking plate assembly
SYJ500-10-3A



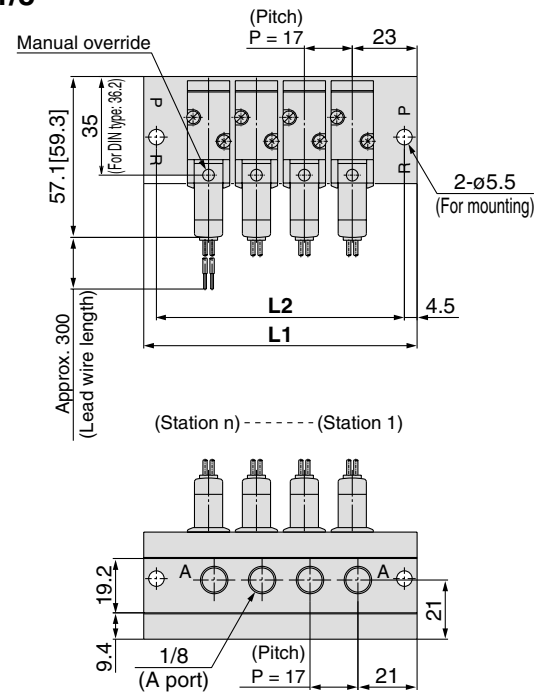
Note) For more than 9 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 20 manifold: Top ported / 10-SS3YJ5-20- Stations -00□(-F)

Grommet (G)

L plug connector (L)
M plug connector (M)
DIN terminal (D)
M8 connector (WO)


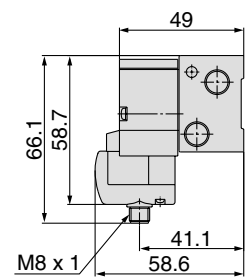
* Refer to page 704 for dimensions with connector cable.

Stations n	2 Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 Stations
L1	53	69	85	101	117	133	149	165	181	197	213	229	245	261	277	293	309	325	341
L2	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296	312	328
L3	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304
L4	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248	264	280	296

1/8



M8 connector (WO)



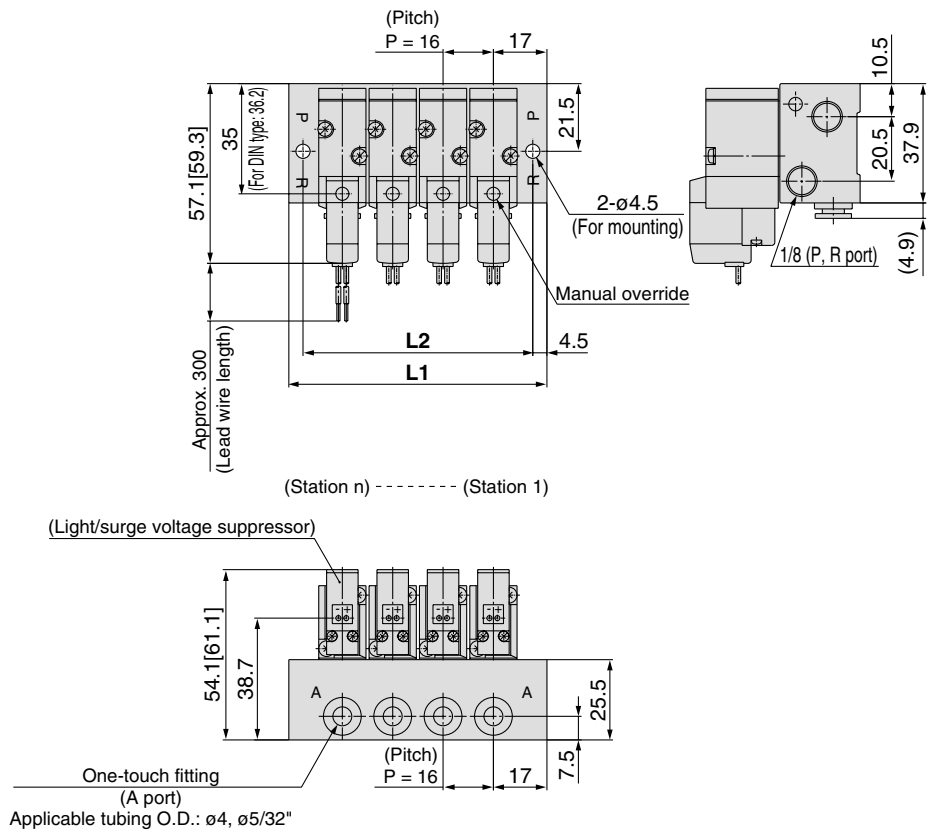
681

Clean gas filter

Type 41 manifold: Side ported / 10-SS3YJ5-41- **Station** - C4,N3
C6,N7 ☐



Grommet (G)

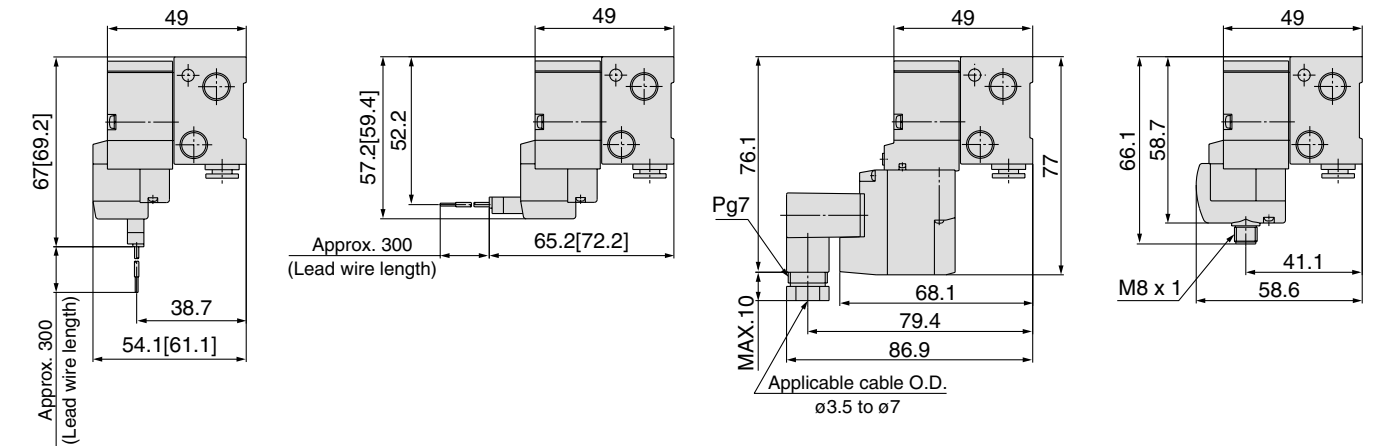


L plug connector (L)

M plug connector (M)

DIN terminal (D)

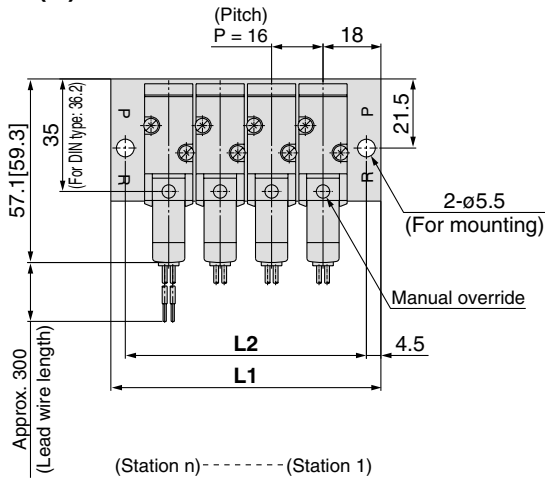
M8 connector (WO)



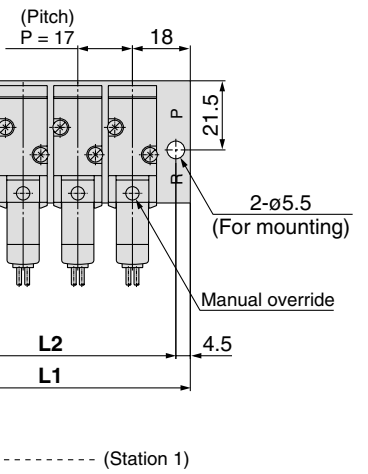
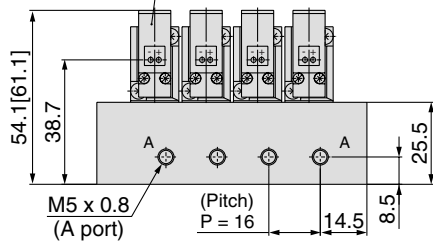
* Refer to page 704 for dimensions with connector cable.

Port size	Stations n	2 Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 Stations
One-touch fitting	L1	50	66	82	98	114	130	146	162	178	194	210	226	242	258	274	290	306	322	338
	L2	41	57	73	89	105	121	137	153	169	185	201	217	233	249	265	281	297	313	329

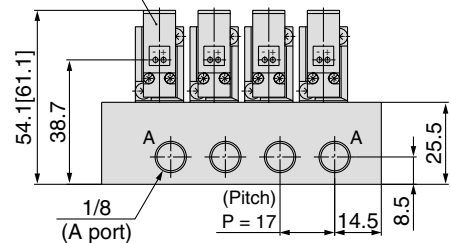
Type 41 manifold: Side ported / 10-SS3YJ5-41- Stations -M5, 01□

Grommet (G)
1/8
M5


(Light/surge voltage suppressor)



(Light/surge voltage suppressor)



Port size	Stations n	2 Stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 Stations
M5	L1	52	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324	340
	L2	43	59	75	91	107	123	139	155	171	187	203	219	235	251	267	283	299	315	331
1/8	L1	53	70	87	104	121	138	155	172	189	206	223	240	257	274	291	308	325	342	359
	L2	44	61	78	95	112	129	146	163	180	197	214	231	248	265	282	299	316	333	350

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

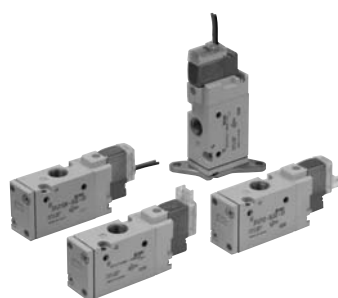
Air preparation equipment

Pressure switch

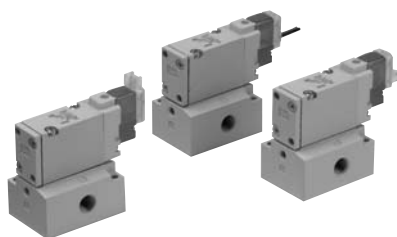
Clean gas filter

Series 10-SYJ700

Rubber seal
3 port / Pilot operated
solenoid valve



Body ported

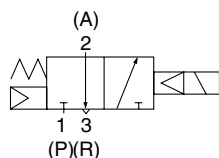


Base mounted

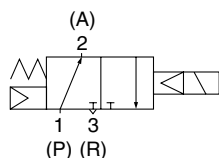
JIS Symbol

Internal pilot

10-SYJ71₂M



10-SYJ72₂M



Specifications

Fluid		Air
Operating pressure range (MPa)	Internal pilot	0.15 to 0.7
Ambient and fluid temperature (°C)		-10 to 50 (No freezing. Refer to page 714.)
Response time ms (0.5MPa) ^{Note 1)}		30 or less
Max. operating frequency (Hz)		5
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type
Pilot exhaust method		Common exhaust type for main and pilot valves
Lubrication		Not required
Mounting orientation		Unrestricted
Impact / Vibration resistance m/s² ^{Note 2)}		150/30
Enclosure		Dust tight (*DIN terminal, M8 connector conforms to IP65.)



* Based on IEC60529

Note 1) Based on dynamic performance test, JIS B 8375-1981. (With coil temperature of 20°C, at rated voltage and without surge voltage suppressor)

Note 2) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Initial value)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz. Test was performed in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states. (Initial value)

Solenoid specifications

Electrical entry		Grommet(G)/(H), L plug connector (L), M plug connector (M), DIN terminal (D), M8 connector (W)	
		G, H, L, M, W	D
Coil rated voltage V	DC	24, 12, 6, 5, 3	24, 12
	AC 50/60Hz	100, 110, 200, 220	
Allowable voltage fluctuation		±10% of rated voltage *	
Power consumption (W)	DC	Standard	0.35 (With indicator light: 0.4 (DIN terminal with indicator light: 0.45))
		With power saving circuit	0.1 (With indicator light only)
Apparent power * (VA)	AC	100V	0.78 (With indicator light: 0.81) 0.78 (With indicator light: 0.87)
		110V	0.86 (With indicator light: 0.89) 0.86 (With indicator light: 0.97)
		[115V]	[0.94 (With indicator light: 0.97)] [0.94 (With indicator light: 1.07)]
		200V	1.18 (With indicator light: 1.22) 1.15 (With indicator light: 1.30)
		220V	1.30 (With indicator light: 1.34) 1.27 (With indicator light: 1.46)
		[230V]	[1.42 (With indicator light: 1.46)] [1.39 (With indicator light: 1.60)]
Surge voltage suppressor		Diode (Varistor for DIN terminal and non-polar type)	
Indicator light		LED (Neon bulb for DIN terminal AC)	



* 110VAC and 115VAC are common, as are 220VAC and 230VAC.

* For 115 VAC and 230 VAC, the allowable voltage fluctuation is -15% to +5% of rated voltage.

* Since S, Z and T types (with a power saving circuit) have a voltage drop due to internal circuit, do not exceed the following allowable voltage fluctuation range.

S and Z types, 24VDC: -7% to +10%

12VDC: -4% to +10%

T type 24VDC: -8% to +10%

12VDC: -6% to +10%



Made to Order Specifications
(Refer to page 698 for details.)

Flow characteristics / Weight

Valve model		Type of actuation	Port size	Flow characteristics						Weight (g) ^{Note)}			
				1→2(P→A)			2→3(A→R)			Grommet	L/M plug connector	DIN terminal	M8 connector
				C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv				
Body ported	10-SYJ712M	N.C.	1/8	2.8	0.43	0.77	2.5	0.51	0.76	75	76	97	80
	10-SYJ722M	N.O.		2.7	0.38	0.72	2.4	0.42	0.69				
Base mounted (With sub-plate)	10-SYJ714M	N.C.	1/8	2.9	0.32	0.71	2.7	0.34	0.69	135(75)	136(76)	157(97)	140(80)
	10-SYJ724M	N.O.		2.8	0.21	0.70	2.3	0.45	0.63				
	10-SYJ714M	N.C.	1/4	3.0	0.31	0.74	2.6	0.33	0.66				
	10-SYJ724M	N.O.		2.7	0.31	0.68	2.3	0.48	0.64				



Note) Value for DC. Add 3 g for AC. (): Without sub-plate.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

How to Order

Rated voltage

For DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.

Type of actuation

1	Normally closed
2	Normally open

AC specifications (50/60Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* For type "W□", DC voltage is only available.

Light/surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
 * For "R" and "U", DC voltage is only available.
 * Power saving circuit is only available in the "Z" type.

Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
 * For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Bracket

Nil: Without bracket
 F: With bracket

* Brackets are not installed.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Body ported 10-SYJ7 1 2M □ 5 M □ □ 01 □ □

Base mounted 10-SYJ7 1 4M □ 5 M □ □ 01 □ □

Clean series

Coil specifications

Nil	Standard
T	With power saving circuit <24 and 12 VDC only>

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

Manual override

Nil: Non-locking push type

D: Push-turn locking slotted type

E: Push-turn locking lever type

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

Nil: Without sub-plate 01: With 1/8 sub-plate 02: With 1/4 sub-plate

(With gasket and screws)

Electrical entry

24, 12, 6, 5, 3 VDC / 100, 110, 200, 220 VAC				24, 12 VDC 100, 110, 200, 220 VAC	24, 12 VDC 6, 5, 3 VDC
Grommet	L plug connector (length 300 mm)	M plug connector		DIN terminal	M8 connector
G: Lead wire length 300 mm	L: With lead wire (length 300 mm)	M: With lead wire (length 300 mm)	MN: Without lead wire	D: With connector	WO: Without connector cable
H: Lead wire length 600 mm	LN: Without lead wire	LO: Without connector	MO: Without connector	DO: Without connector	W□: With connector cable (Note 1)

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to catalog in page 691.)

* "LN", "MN" types : with 2 sockets.
 * DIN terminal type "Y" conforming to EN-175301-803C (former DIN43650C) is also available. For details, refer to page 698.
 * For connector cable of M8 connector, refer to page 703.
 Note 1) Be sure to enter a symbol of the cable length in □ with reference to page 704.

How to Order Pilot Valve Assembly

10—V111 ☐ **5** **G** ☐

Clean series

Coil specifications

Nil	Standard
T	With power saving circuit <24 and 12 VDC only>

* Power saving circuit is not available in the case of "W□" type.

Rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC50/60Hz
2	200 VAC50/60Hz
3	110 VAC50/60Hz [115 VAC50/60Hz]
4	220 VAC50/60Hz [230 VAC50/60Hz]

* For type "W□", DC voltage is only available.

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

Electrical entry

G	Grommet (Lead wire length 300 mm)
H	Grommet (Lead wire length 600 mm)
L	L plug connector
LN	With lead wire
LO	Without lead wire
M	M plug connector
MN	With lead wire
MO	Without lead wire
WO	Without connector
W	M8 connector
	With connector cable (Note 1)

* For connector cable of M8 connector, refer to page 703.
Note 1) Be sure to enter a symbol of the cable length in □ with reference to page 704.

10—V115 ☐ **5** **D** ☐

Clean series

Rated voltage

5	24 VDC
6	12 VDC
1	100 VAC ^{50/60} Hz
2	200 VAC ^{50/60} Hz
3	110 VAC ^{50/60} Hz [115 VAC ^{50/60} Hz]
4	220 VAC ^{50/60} Hz [230 VAC ^{50/60} Hz]

* DC specifications of type "D" and "DO" is only available with 12 and 24 V DC.

* Power saving circuit is not available in the case of "D", "DO" type.

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Non-polar type)

* "DOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

D	DIN terminal	With connector
DO		Without connector

Note) Do not replace 10-V111 (G, H, L, M, W) with 10-V115 (DIN terminal) and vice versa when replacing pilot valve assembly only.

How to Order L/M Plug Connector Assembly

For DC : **SY100-30-4A-** ☐

For 100 VAC : **SY100-30-1A-** ☐

For 200 VAC : **SY100-30-2A-** ☐

For other voltages of AC : **SY100-30-3A-** ☐

Without lead wire : **SY100-30-A**
(With connector and 2 of sockets only)

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order M8 Connector Cable

V100-49-1- ☐

Cable length

1	300mm
2	500mm
3	1000mm
4	2000mm
7	5000mm

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

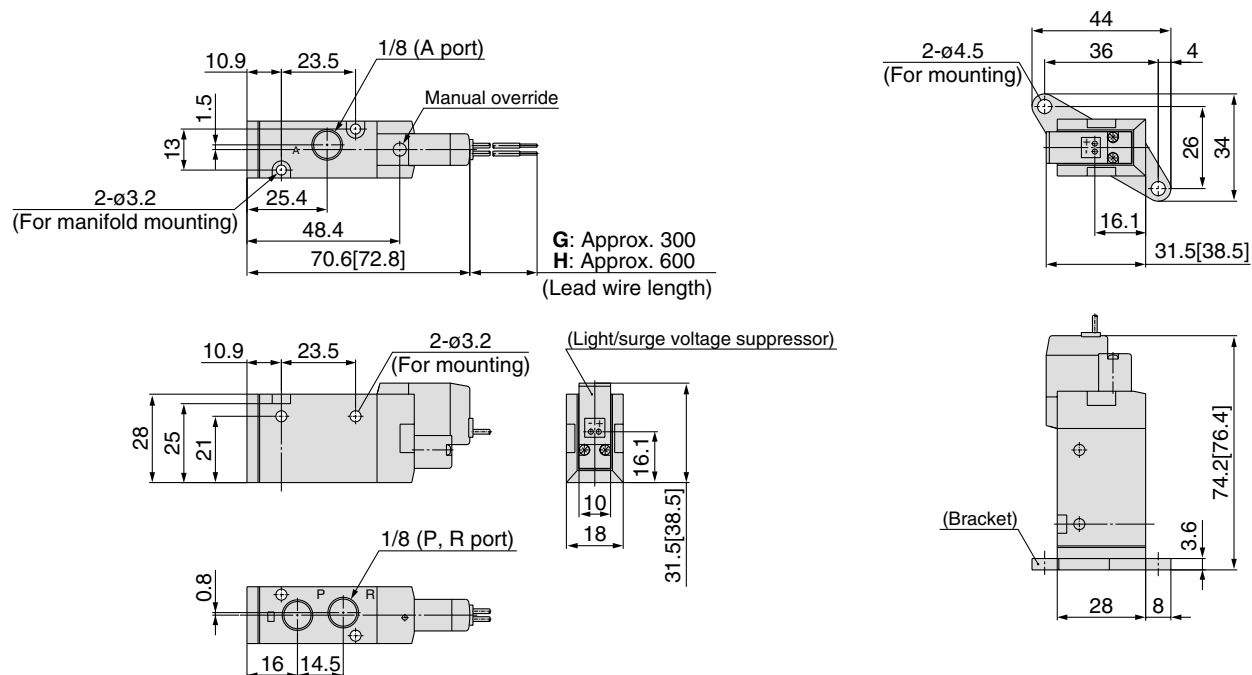
Pressure switch

Clean gas filter

Body ported

Grommet (G), (H): 10-SYJ7□4M-□_G□□-01□

With bracket: 10-SYJ7□2M-□_G□□-01□-F



L plug connector (L):

10-SYJ7□2M-□L□□-01□ (-F)

M plug connector (M):

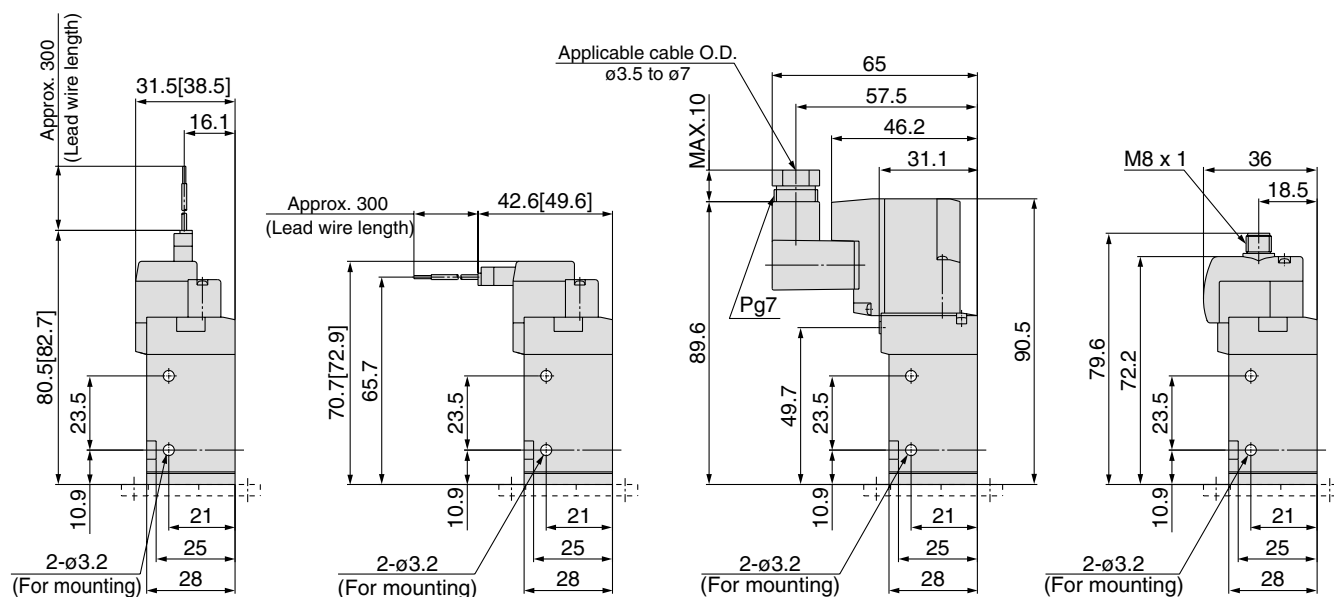
10-SYJ7□2M-□M□□-01□ (-F)

DIN terminal (D):

10-SYJ7□2M-□D□□-01□ (-F)

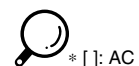
M8 connector (WO):

10-SYJ7□2M-□WO□□-01□ (-F)

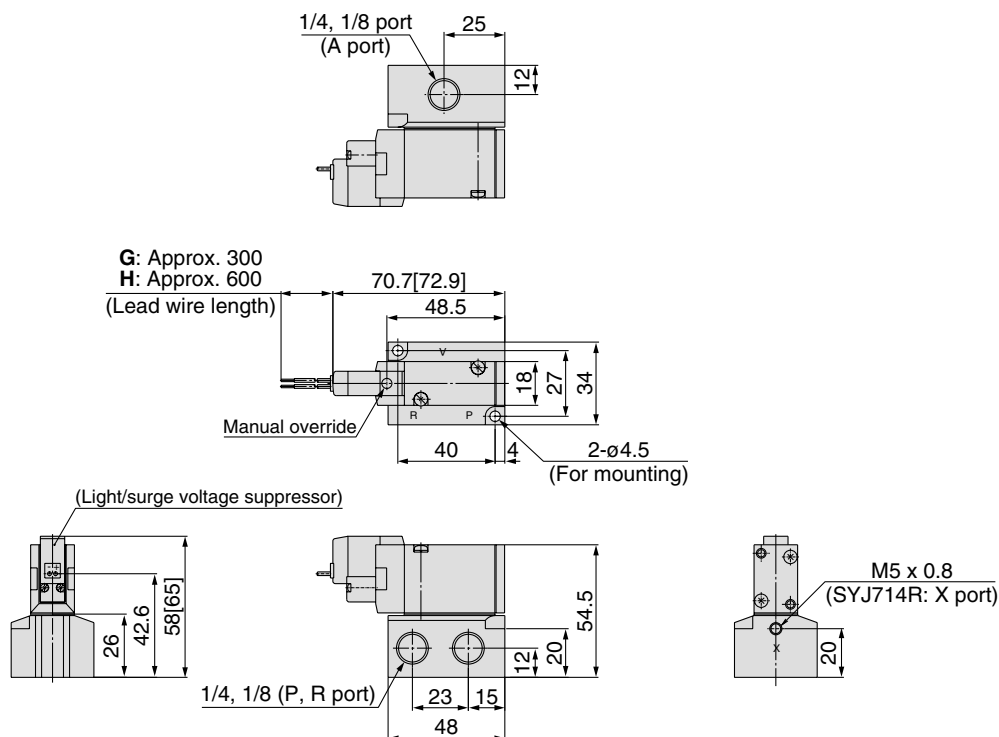


* Refer to page 704 for dimensions with connector cable.

Base mounted (With sub-plate)



Grommet (G), (H): 10-SYJ7□4M-□^G_H□□-⁰¹₀₂□

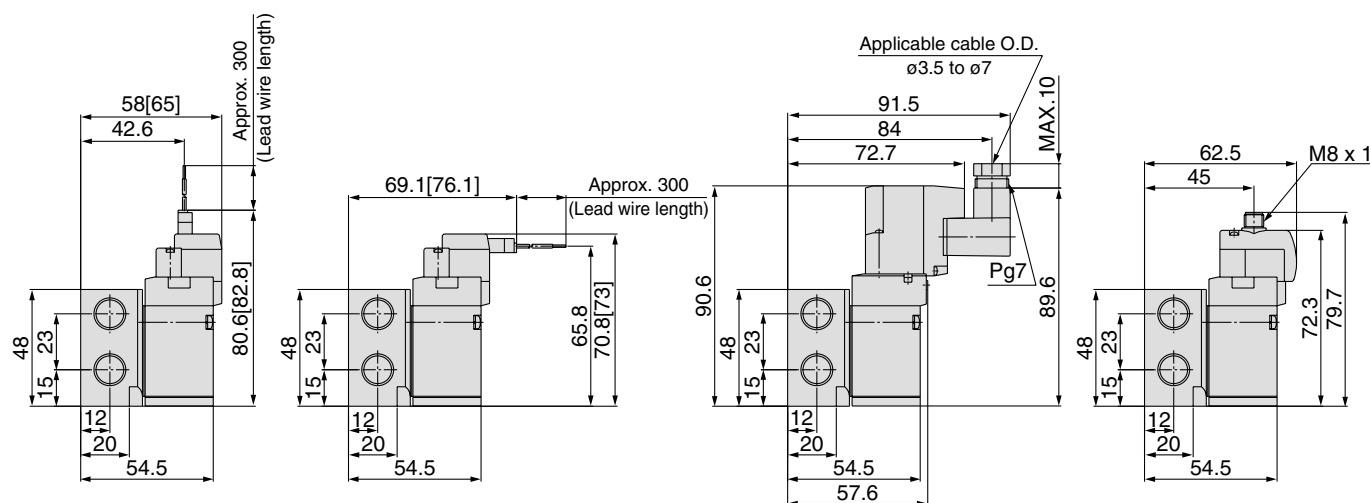


L plug connector (L):
10-SYJ7□4M-□^L₀₂□

M plug connector (M):
10-SYJ7□4M-□^M₀₂□

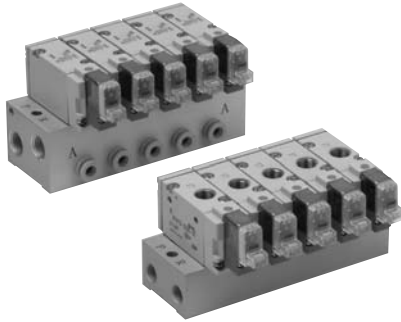
DIN terminal (D):
10-SYJ7□4M-□^D₀₂□

M8 connector (WO):
10-SYJ7□4M-□^{WO}₀₂□



* Refer to page 704 for dimensions with connector cable.

Series 10-SYJ700 Manifold specifications



Manifold specifications

Model	For internal pilot	Type 20	Type 21	Type 40	Type 41	Type 42
Manifold type		Single base type / B mount				
P(SUP) / R(EXH)		Common SUP / Common EXH				
Stations		2 to 20 stations				
A port Porting specifications	Location	Valve	Valve	Base	Base	Base
	Direction	Top	Top	Bottom	Bottom	Side
Port size	P, R port	1/8	1/4	1/8	1/4	1/4
	A port	1/8	1/8	1/8	1/8	1/8 C6 (One-touch fitting for ø6) C8 (One-touch fitting for ø8)

Flow characteristics

Manifold			Port size		Flow characteristics					
					1→2(P→A)			2→3(A→R)		
			1(P), 3(R) port	2(A) port	C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv
Body ported for internal pilot	10-SS3YJ7-20	10-SYJ7□2M	1/8	1/8	2.2	0.34	0.55	2.3	0.27	0.59
	10-SS3YJ7-21		1/4	1/8	2.2	0.39	0.59	2.4	0.32	0.62
Base mounted for internal pilot	10-SS3YJ7-40	10-SYJ7□4M	1/8	1/8	2.1	0.35	0.59	2.3	0.27	0.54
	10-SS3YJ7-41		1/4	1/8	2.2	0.35	0.59	2.4	0.36	0.66
	10-SS3YJ7-42-01		1/4	1/8	2.0	0.27	0.47	2.2	0.32	0.56
	10-SS3YJ7-42-C6		1/4	C6	1.6	0.32	0.39	2.2	0.27	0.54
	10-SS3YJ7-42-C8		1/4	C8	2.1	0.24	0.51	2.3	0.31	0.59



Note) Value at manifold base mounted, 2 position single operating

How to Order Manifold (Example)

Specify the valves and blanking plate assembly to be mounted on the manifold along with the manifold base model no.

(Example)

10-SS3YJ7-20-03 1 set (Manifold base)

* 10-SYJ712M-5LZ-01 2 sets (Valve)

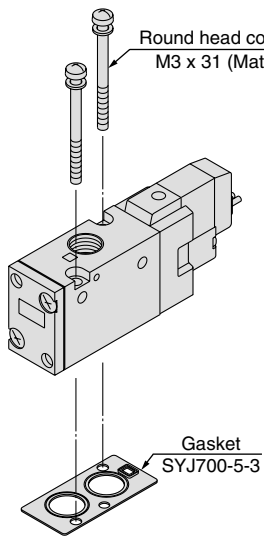
* SYJ700-10-1A 1 set (Blanking plate assembly)

→The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

<Manifold option>

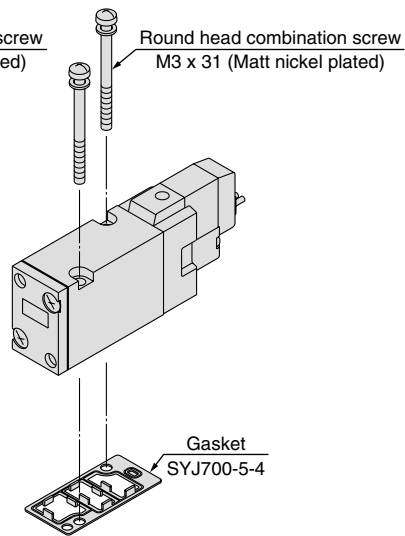
Combinations of solenoid valve, manifold gasket and manifold base

Body ported (10-SYJ7□2M)



Applicable base
 10-SS3YJ7-20 } Manifold base
 10-SS3YJ7-21 }

Base mounted (10-SYJ7□4M)

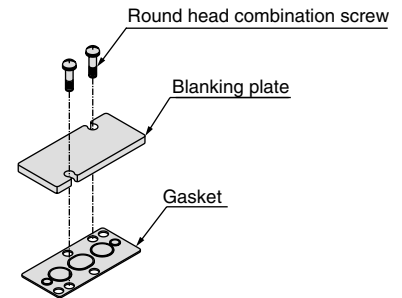


Applicable base sub-plate
 10-SS3YJ7-40 }
 10-SS3YJ7-41 } Manifold base
 10-SS3YJ7-42 }

Blanking plate assembly

Part no.: SYJ700-10-2A

(For both body ported type and base mounted type)



⚠ Caution

Mounting screw tightening torque

M3: 0.8N·m

Use caution to the assembly orientation of solenoid valve, gasket and optional parts.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

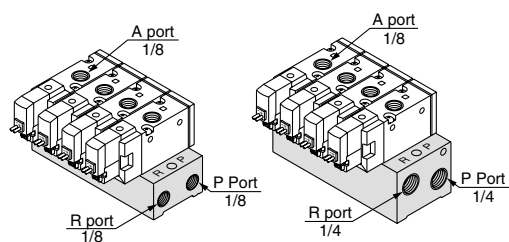
Air preparation equipment

Pressure switch

Clean gas filter

How to Order Manifolds

Type 20/21



How to Order

10-SS3YJ7-20-05-

• Clean series

Manifold type

20	Type 20
21	Type 21

Stations

02	2 stations
:	:
20	20 stations

• P, R port thread

Nil	Rc
00F	G
00N	NPT
00T	NPTF

Applicable solenoid valve

10-SYJ712M-□□□□-01

10-SYJ722M-□□□□-01

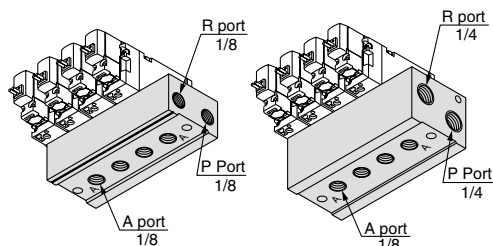
Applicable blanking plate assembly

SYJ700-10-2A



Note) For more than 6 stations for type 20 and more than 9 stations for type 21, supply air to both sides of P port and exhaust air from both sides of R port.

Type 40/41



How to Order

10-SS3YJ7-40-05-01-

• Clean series

Manifold

40	Type 40
41	Type 41

Stations

02	2 stations
:	:
20	20 stations

A port size

01	1/8
----	-----

• P, R port thread

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable solenoid valve

10-SYJ714M-□□□□

10-SYJ724M-□□□□

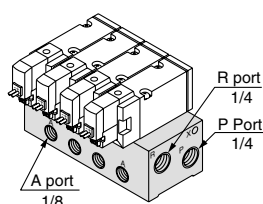
Applicable blanking plate assembly

SYJ700-10-2A



Note) For more than 6 stations for type 40 and more than 9 stations for type 41, supply air to both sides of P port and exhaust air from both sides of R port.

Type 42



How to Order

10-SS3YJ7-42-05-C6-

• Clean series

Stations

02	2 stations
:	:
20	20 stations

A port size

01	Rc1/8
C6	One-touch fitting for øf6
C8	One-touch fitting for ø8
N7	One-touch fitting for ø1/4"
N9	One-touch fitting for ø5/16"

• P, R port thread

Nil	Rc
F	G
N	NPT
T	NPTF

Applicable solenoid valve

10-SYJ714M-□□□□

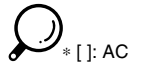
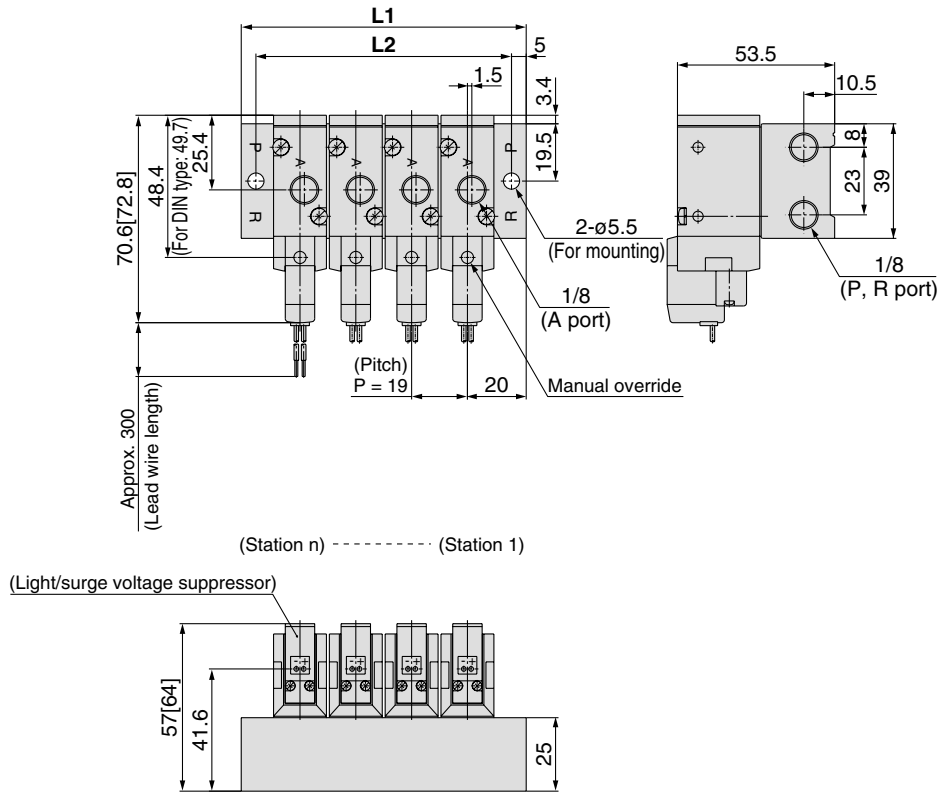
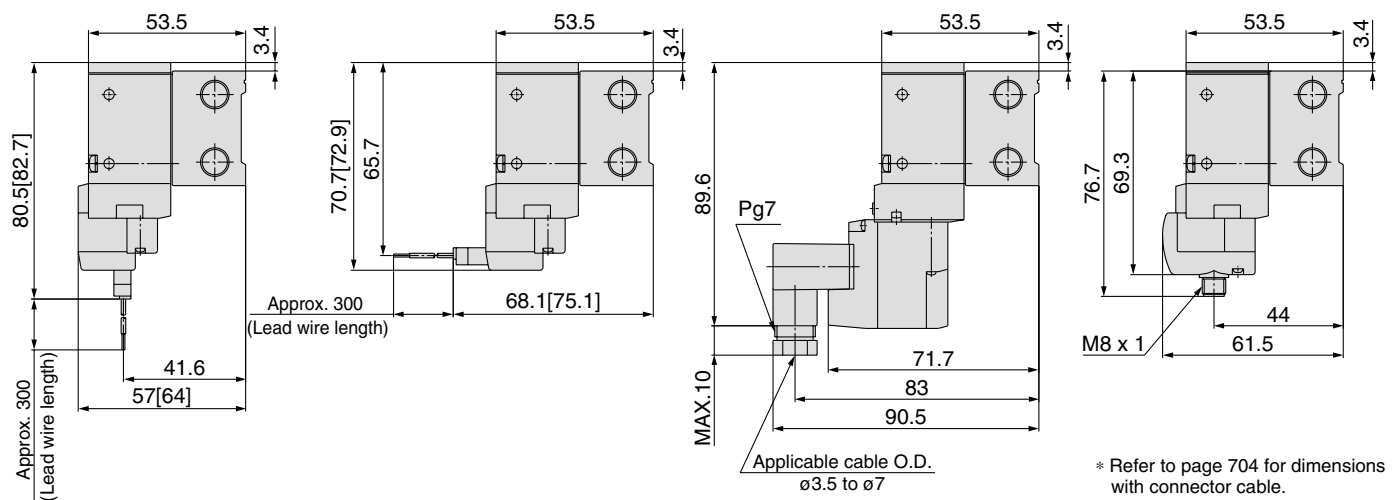
10-SYJ724M-□□□□

Applicable blanking plate assembly

SYJ700-10-2A

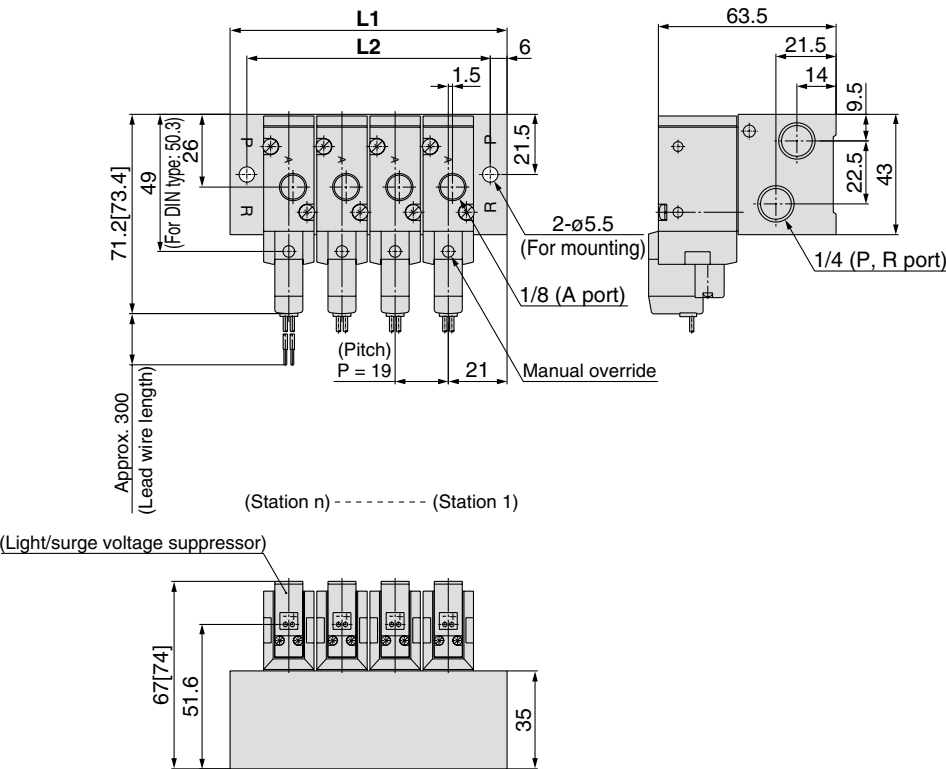


Note) For more than 9 stations, supply air to both sides of P port and exhaust air from both sides of R port.

Type 20 manifold: Top ported / 10-SS3YJ7-20- Stations (-00□)

Grommet (G)

L plug connector (L)
M plug connector (M)
DIN terminal (D)
M8 connector (WO)


Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	59	78	97	116	135	154	173	192	211	230	249	268	287	306	325	344	363	382	401
L2	49	68	87	106	125	144	163	182	201	220	239	258	277	296	315	334	353	372	391

Grommet (G)

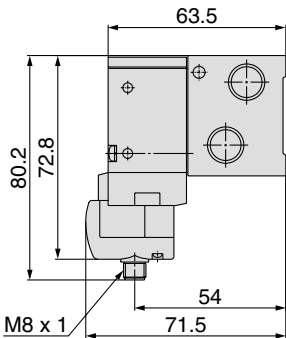
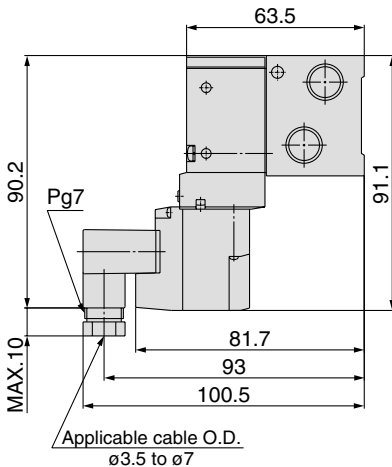
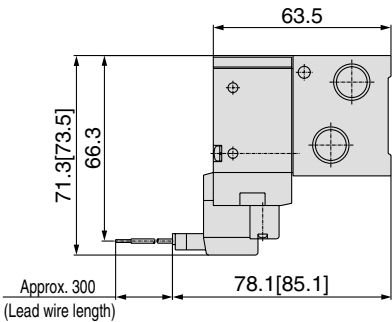
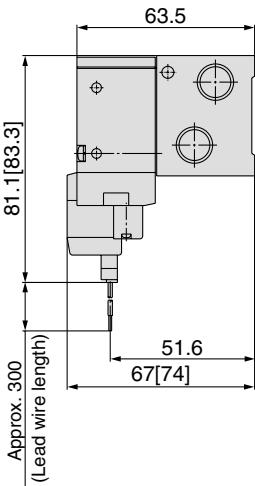


L plug connector (L)

M plug connector (M)

DIN terminal (D)

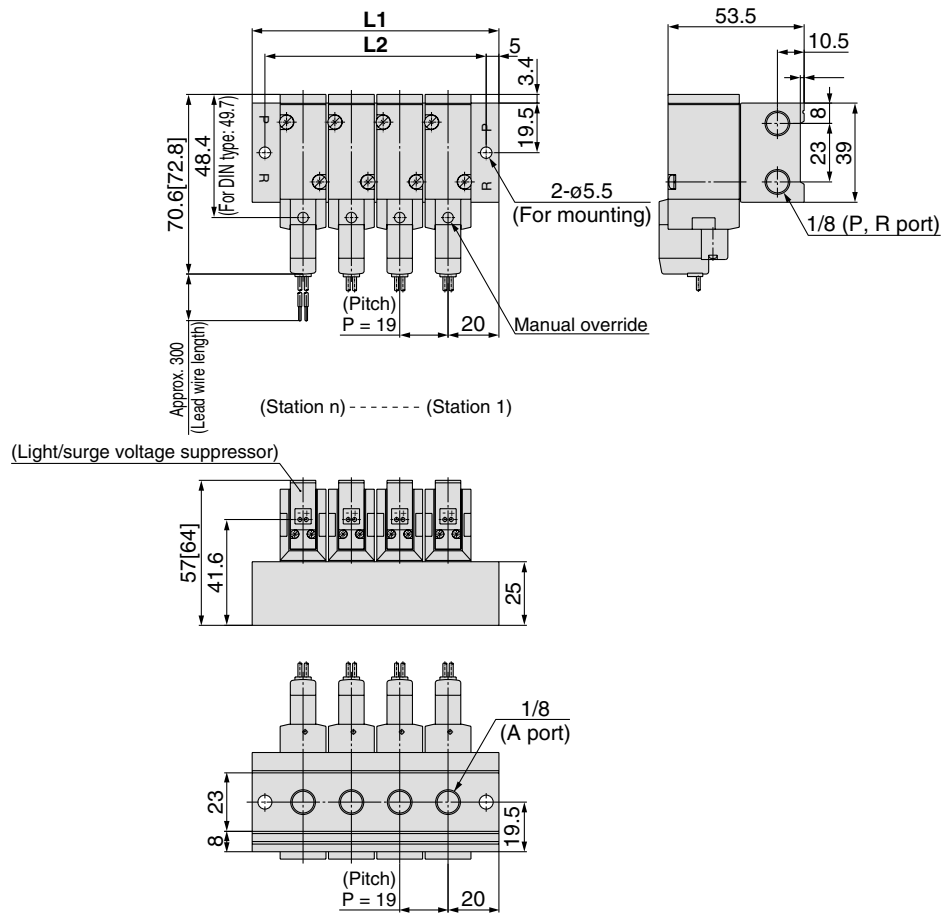
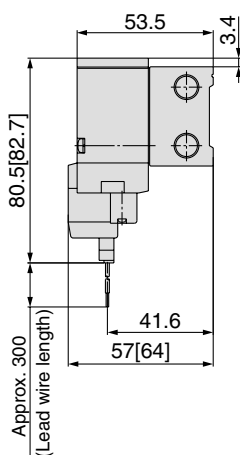
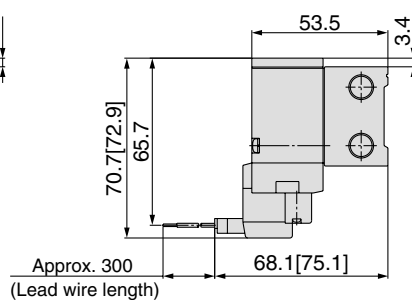
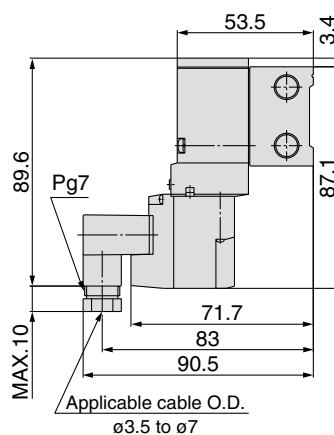
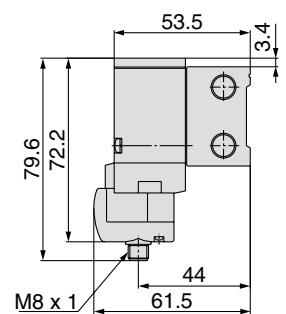
M8 connector (WO)



* Refer to page 704 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	61	80	99	118	137	156	175	194	213	232	251	270	289	308	327	346	365	384	403
L2	49	68	87	106	125	144	163	182	201	220	239	258	277	296	315	334	353	372	391

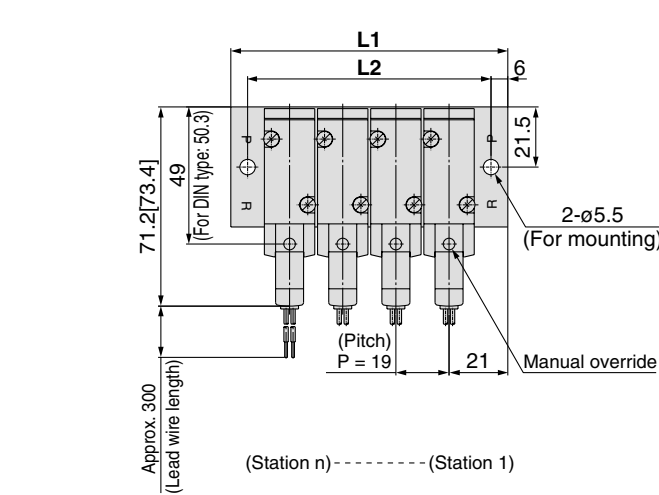
Type 40 manifold: Bottom ported / 10-SS3YJ7-40- Stations - 01

Grommet (G)

L plug connector (L)

M plug connector (M)

DIN terminal (D)

M8 connector (WO)


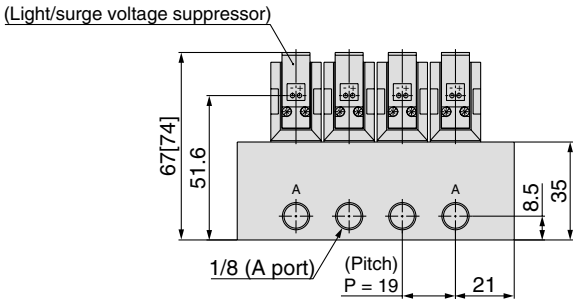
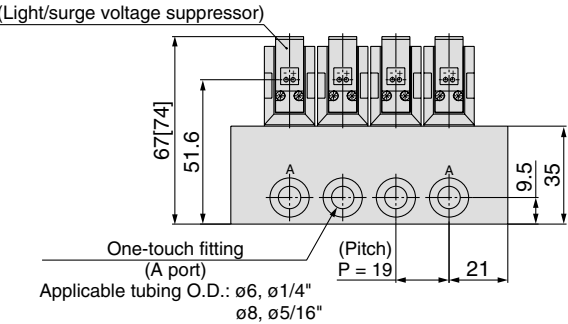
* Refer to page 704 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	59	78	97	116	135	154	173	192	211	230	249	268	287	306	325	344	363	382	401
L2	49	68	87	106	125	144	163	182	201	220	239	258	277	296	315	334	353	372	391

Grommet (G)
^{C6, N7}_{C8, N9} ☐ (With built-in one-touch fitting)



1/8

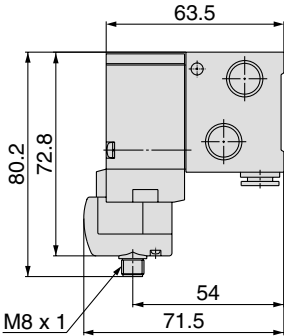
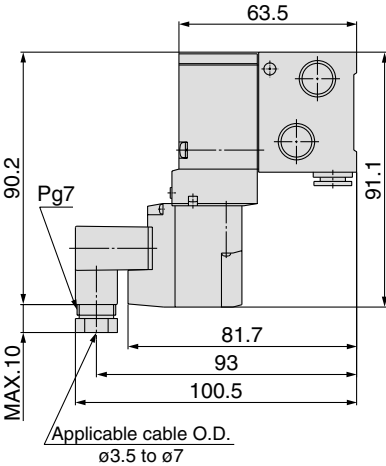
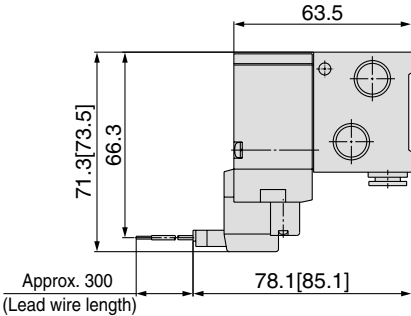
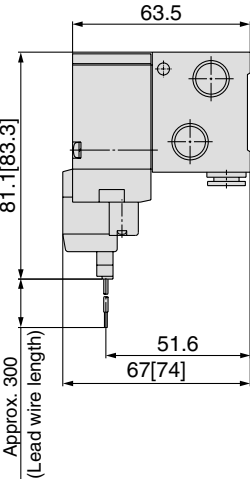


L plug connector (L)

M plug connector (M)

DIN terminal (D)

M8 connector (WO)



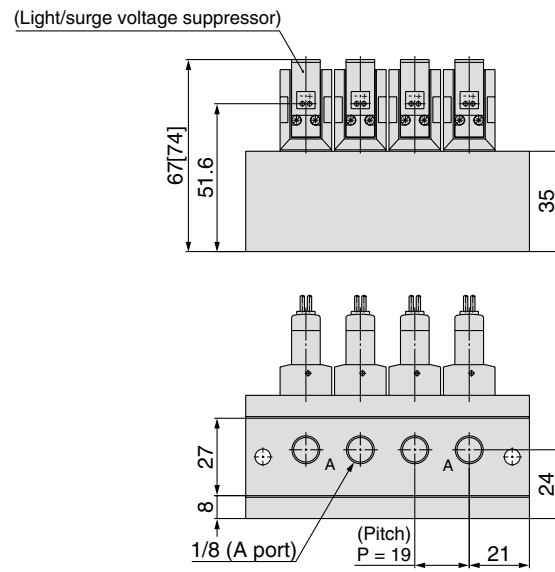
* Refer to page 704 for dimensions with connector cable.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	61	80	99	118	137	156	175	194	213	232	251	270	289	308	327	346	365	384	403
L2	49	68	87	106	125	144	163	182	201	220	239	258	277	296	315	334	353	372	391

Type 41 manifold: Bottom ported / 10-SS3YJ7-41- Stations -01



Grommet (G)



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-SYJ500/700

Made to Order Specifications
DIN connector conforming to
EN-175301-803C (former DIN 43650C)

DIN terminal type conforming to DIN 43650C (DIN pitch 8mm) standard

How to Order Valves

Rated voltage

DC		AC (50/60Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
V	6 VDC	3	110 VAC [115 VAC]
S	5 VDC	4	220 VAC [230 VAC]
R	3 VDC		

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "YOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Bracket

Nil	Without bracket
F	With bracket

Note) Mounting brackets are supplied unattached.

Series

5	10-SYJ500
7	10-SYJ700

Type of actuation

1	Normally closed
2	Normally open

Port size

M5	M5 x 0.8
01	1/8 (SYJ700 only)

Body ported 10—SYJ 5 1 2M—5 Y [] [] M5 []

Base mounted 10—SYJ 5 1 4M—5 Y [] [] 01 []

3 port
(For type 20 manifold)

3 port
(For sub-plate type, types 40 and 41 manifolds)

Clean series

Electrical entry

Y: With connector

YO: Without connector

Port size

Nil	Without sub-plate
01	1/8 port with sub-plate
02	1/4 port with sub-plate (SYJ700 only)

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Manual override

Nil	Non-locking push type
D	Push-turn locking slotted type
E	Push-turn locking lever type

How to Order Pilot Valve Assembly

10—V115—5 Y []

Clean series

Rated voltage

DC		AC (50/60Hz)	
5	24 VDC	1	100 VAC
6	12 VDC	2	200 VAC
		3	110 [115] VAC
		4	220 [230] VAC

Light/surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

* "YOZ" is not available.
* For AC voltage valves, there is no "S" option. It is already built-in to the rectifier circuit.

Electrical entry

Y	DIN terminal	With connector
YO		Without connector

DIN connector part no.

Without indicator light		
SY100-82-1		
With indicator light		
Rated voltage	Voltage symbol	Part no.
24 VDC	24VN	SY100-82-3-05
12 VDC	12VN	SY100-82-3-06
100 VAC	100VN	SY100-82-3-01
200 VAC	200VN	SY100-82-3-02
110 [115] VAC	110VN	SY100-82-3-03
220 [230] VAC	220VN	SY100-82-3-04

Caution

- Use caution in wiring because it won't meet the IP65 (enclosure) standard if you use the other cord than prescribed cable of size (ø3.5 to ø7). Also be sure to tighten the ground nut and holding screw with the prescribed torque range. For how to use DIN terminal (wiring procedures, procedures for changing electrical entries, precautions, applicable cable circuit diagram), refer to page 702.
- Type D, DIN terminal with 9.4 mm pitch between terminals is not interchangeable.
- DIN terminal except type D has the "N" indication in the end of voltage symbol. In case of DIN terminal without indicator light, "N" is not indicated. Please refer to the name plate to distinguish.
- Dimensions are completely the same as type D connector.
- When exchanging the pilot valve assembly only, "10-V115-□D" is interchangeable with "10-V115-□Y". Do not replace 10-V111 (G, H, L, M, W) with 10-V115-□D/□Y (DIN terminal), and vice versa.



Series 10-SYJ300/500/700

Specific Product Precautions 1

Be sure to read before handling.

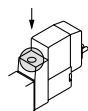
Manual override operation

⚠ Warning

When the manual override is operated, connected equipment will be actuated. Confirm safety before operating.

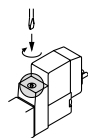
■ Non-locking push type (Standard)

Press in the direction of the arrow.

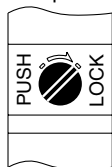


■ Push-turn locking slotted type [Type D]

While pressing, turn in the direction of the arrow. If it is not turned, it can be operated in the same way as the non-locking push type.



Locked position



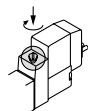
⚠ Caution

When operating the locking type D with a screwdriver, turn it gently using a watchmaker's screwdriver.

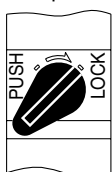
[Torque: 0.1 N·m or less]

■ Push-turn locking lever type [Type E]

While pressing, turn in the direction of the arrow. If it is not turned, it can be operated in the same way as the non-locking push type.



Locked position



⚠ Caution

When locking the manual override on the push-turn locking types (D, E), be sure to push it down before turning.

Turning without first pushing it down can cause damage to the manual override and other trouble such as air leakage, etc.

Solenoid valve for 200/220 VAC specification

⚠ Warning

Solenoid valves with grommet and L/M plug connector AC specifications have a built-in rectifier circuit in the pilot section to operate the DC coil.

For 200/220 VAC specification pilot valves, the built-in rectifier generates heat when energized, and the surface may become hot depending on the energized condition. Therefore, do not touch the solenoid valves.

Bracket

⚠ Caution

For the 10-SYJ300 with bracket, do not use it without bracket.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Series 10-SYJ300/500/700

Specific Product Precautions 2

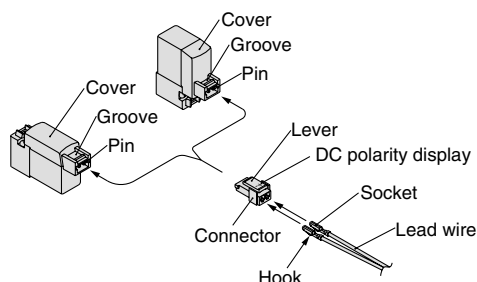
Be sure to read before handling.

How to Use Plug Connector

⚠ Caution

1. Attaching and detaching connectors

- To attach a connector, hold the lever and connector unit between your fingers and insert straight onto the pins of the solenoid valve so that the lever's pawl is pushed into the groove and locks.
- To detach a connector, remove the pawl from the groove by pushing the lever downward with your thumb, and pull the connector straight out.



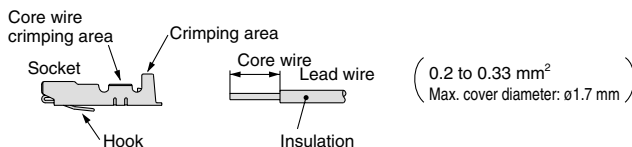
2. Crimping of lead wires and sockets

Strip approximately 3.2 to 3.7 mm at the end of the lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool.

Take care that the coverings of the lead wires do not enter the core wire crimping area.

Use an exclusive crimping tool for crimping.

(For exclusive crimping tools, please contact SMC.)



3. Attaching and detaching a socket with lead wire

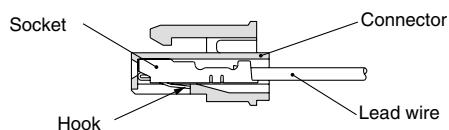
• Attaching

Insert a socket into the square hole of the connector (with ⊕ and ⊖ indication), and continue to push the socket all the way in until they lock by hooking into the seat in the connector. (When it is pushed in, their hook opens and it is locked automatically.) Then confirm that it is locked by pulling lightly on the lead wire.

• Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm).

If the socket will be used again, first spread the hook outward.



Plug connector lead wire length

⚠ Caution

Standard length is 300 mm, but the following lengths are also available.

How to Order Connector Assembly

For DC: **SY100-30-4A**

For 100 VAC: **SY100-30-1A**

For 200 VAC: **SY100-30-2A**

For other voltages of AC: **SY100-30-3A**

Without lead wire: **SY100-30-A**
(With connector and 2 of sockets only)

Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector.

<Example> Lead wire length 2000 mm

For DC

10-SYJ312M-5LO-M3
SY100-30-4A-20

For AC

10-SYJ312M-1LO-M3
SY100-30-1A-20



Series 10-SYJ300/500/700

Specific Product Precautions 3

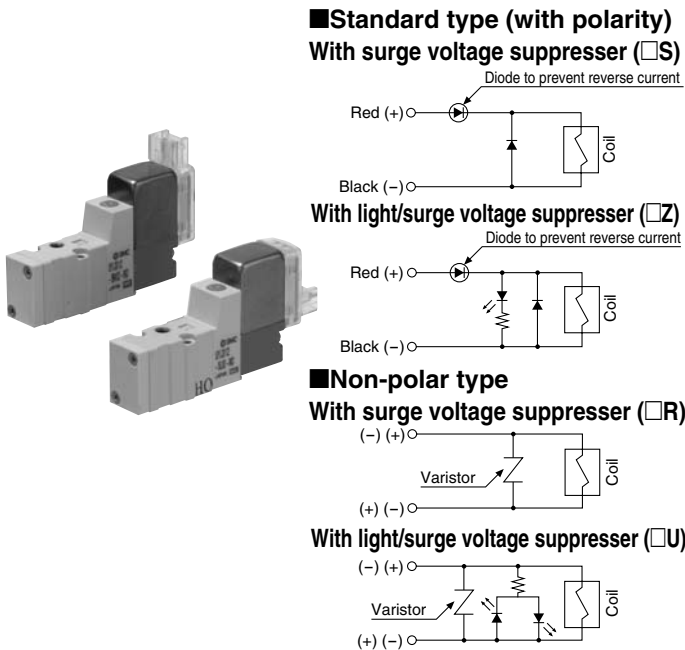
Be sure to read before handling.

Surge voltage suppressor

Caution

(For DC)

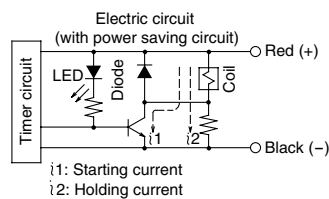
Grommet, L/M plug connector



- Connect the standard type in accordance with the + (positive) and – (negative) polarity indication.
(The non-polar type can be used with the connections made either way.)
 - Since voltage specifications other than standard 24/12 VDC do not have diodes to prevent reverse current, be careful not to make errors in the polarity.
 - Be careful about the allowable voltage fluctuation since valves with diode to prevent reverse current have an approx. 1V voltage drop. (Refer to the solenoid specifications of each valve for details.)
- When wiring is done at the factory, positive (+) is red and negative (–) is black.

With power saving circuit

Power consumption is decreased by 1/4 by reducing the wattage required to hold the valve in an energized state. (Effective energizing time is over 62 ms at 24 VDC.)

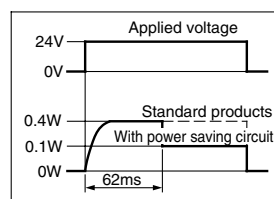


Working principle

With the above circuit, the current consumption when holding is reduced to save energy. Please refer to the electrical waveform to the right.

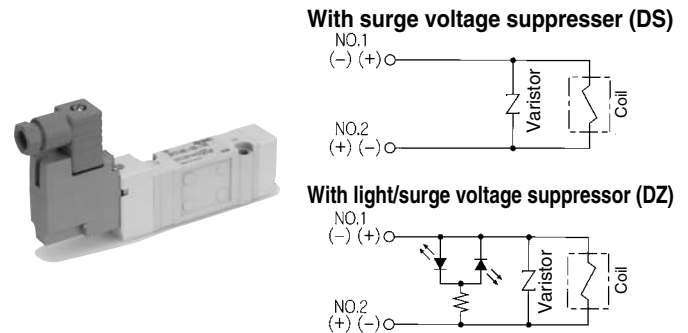
- When a power saving circuit is installed, a diode to prevent reverse current is not provided. Therefore, use caution not to connect in reverse.

(Energy saving type's electrical waveform for SYJ3□□T)



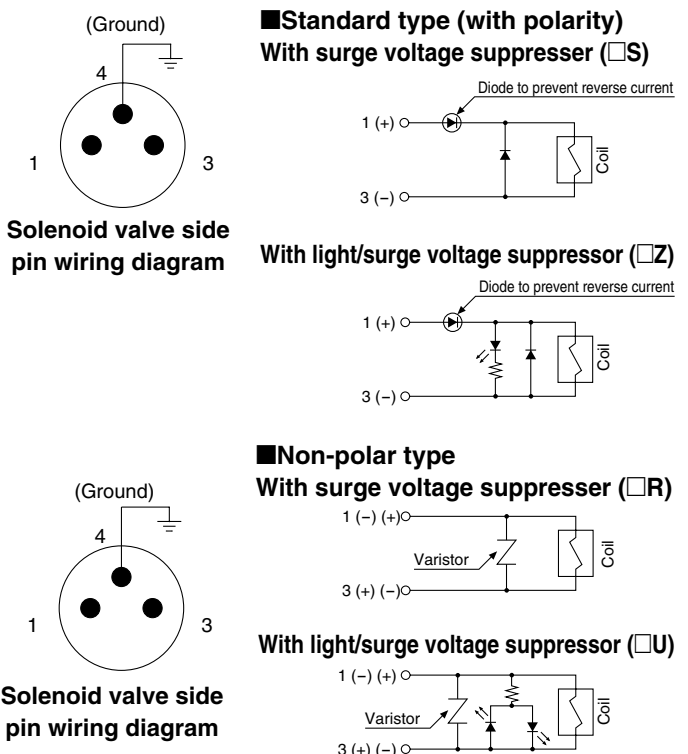
- Be careful about the allowable voltage fluctuation since voltage drop of about 0.5V occurs due to a transistor. (Refer to the solenoid specifications of each valve for details.)

DIN terminal



DIN terminal has no polarity.

M8 connector type



Solenoid valve side pin wiring diagram

Solenoid valve side pin wiring diagram

- In the case of standard type, connect + to 1 and – to 3 according to the polarity.
- For DC voltages other than 12 and 24 VDC, do not connect in reverse because a diode to prevent reverse current is not installed.
- Be careful about the allowable voltage fluctuation since valves with diode to prevent reverse current have an approx. 1V voltage drop. (Refer to the solenoid specifications of each valve for details.)



Series 10-SYJ300/500/700

Specific Product Precautions 4

Be sure to read before handling.

Surge voltage suppressor

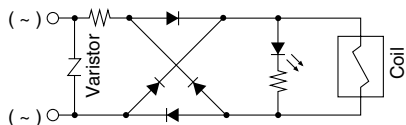
<For AC>

(There is no "S" type because the generation of surge voltage is prevented by a rectifier.)

⚠ Caution

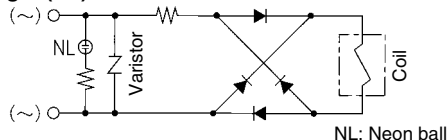
Grommet, L and M plug connector

With indicator light (□Z)



DIN terminal

With indicator light (DZ)



Note) Surge voltage suppressor of varistor has residual voltage corresponding to the protective element and rated voltage. Therefore, protect the controller side from the surge. The residual voltage of the diode is approximately 1V.
The residual voltage of the diode is approximately 1V.

How to Use DIN Terminal

⚠ Caution

Connection

1. Loosen the holding screw and pull the connector out of the solenoid valve terminal block.
2. After removing the holding screw, insert a flat head screwdriver, etc. into the notch on the bottom of the terminal block and pry it open, separating the terminal block and the housing.
3. Loosen the terminal screws (slotted screws) on the terminal block, insert the cores of the lead wires into the terminals according to the connection method, and fasten them securely with the terminal screws.
4. Secure the cord by fastening the ground nut.

⚠ Caution

When making connections, take note that using other than the supported size (ø3.5 to ø7) cable will not satisfy IP65 (enclosure) standards.

Also, be sure to tighten the ground nut and holding screw within their specified torque ranges.

Changing the entry direction

After separating the terminal block and housing, the cord entry can be changed by attaching the housing in the desired direction (4 directions at 90 intervals).

*When equipped with an indicator light, be careful not to damage the light with the cord's lead wires.

How to Use DIN Terminal

⚠ Caution

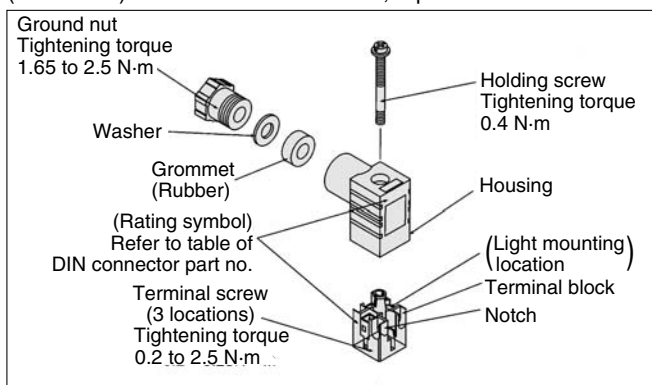
Precautions

Plug in and pull out the connector vertically without tilting to one side.

Compatible cable

Cord O.D.: ø3.5 to ø7

(Reference) 0.5 mm² 2-core or 3-core, equivalent to JIS C 3306



Solenoid valve mounting

⚠ Caution

Mount it so that there is no slippage or deformation in gaskets, and tighten with the tightening torque as shown below.

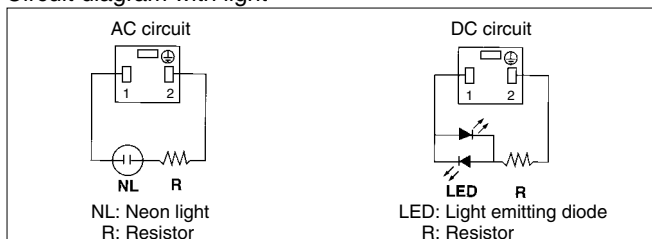
Model	Thread size	Tightening torque
10-SYJ300	M1.7	0.12N·m
10-SYJ500	M2.5	0.45N·m
10-SYJ700	M3	0.8N·m

DIN terminal part no.

⚠ Caution

Without light		SY100-61-1
With light		
Rated voltage	Voltage symbol	Part no.
24 VDC	24 VDC	SY100-61-3-05
12 VDC	12 VDC	SY100-61-3-06
100 VAC	100 VAC	SY100-61-2-01
200 VAC	200 VAC	SY100-61-2-02
110 VAC	110 VAC	SY100-61-2-03
220 VAC	220 VAC	SY100-61-2-04

Circuit diagram with light



Note) For DIN connector (Y) conforming to EN-175301-803C(former DIN 43650C), refer to page 698.



Series 10-SYJ300/500/700

Specific Product Precautions 5

Be sure to read before handling.

Connector assembly with cover

⚠ Caution

Connector assembly with dust proof protective cover

- Effective to prevention of short circuit failure due to the entry of foreign matter into the connector.
- Chloroprene rubber for electrical use, which provides outstanding weather resistance and electrical insulation, is used for the cover material. However, do not allow contact with cutting oil, etc.
- Simple and unencumbered appearance by adopting round-shaped cord.

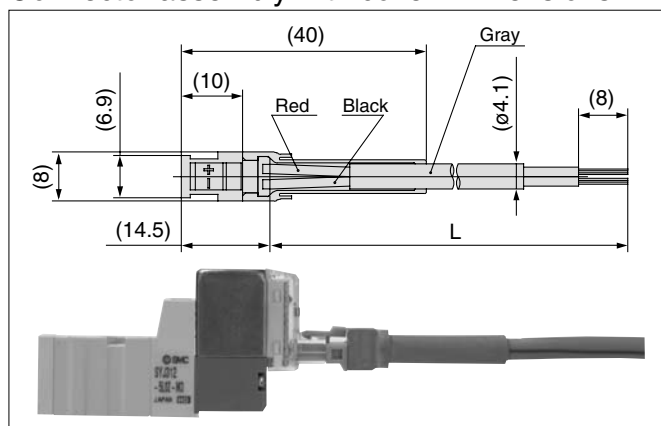
How to Order

SY100-68-A

• Lead wire length

Nil	300mm
6	600mm
10	1000mm
15	1500mm
20	2000mm
25	2500mm
30	3000mm
50	5000mm

Connector assembly with cover: Dimensions



How to Order

Specify the part no. for a solenoid valve without connector together with part no. for a connector assembly with cover.

<Example 1> Lead wire length 2000 mm

10-SYJ312-5LOZ-M3
SY100-68-A-20

<Example 2> Lead wire length 300mm (Standard)

10-SYJ312-5LPZ-M3

Symbol for connector assembly with cover

* In this case, the part number for the connector assembly with cover is not required.

M8 connector

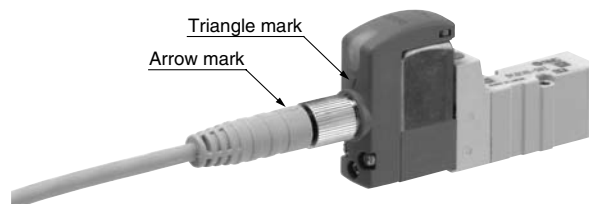
⚠ Caution

1. M8 connector types have an IP65 (enclosure) rating, offering protection from dust and water. However please note that these products are not intended for use in water.
Select a SMC connector cable (V100-49-1-□) or a FA sensor type connector, with M8 threaded 3 pin specifications confirming to Nippon Electric Control Equipment Association Standard, NECA4202 (IEC60947-5-2). Make sure the connector O.D. is 10.5 mm or less when used with the Series 10-SY300 manifold. If more than 10.5mm, it cannot be mounted due to the size.
2. Do not use a tool to mount the connector, as this may cause damage. Only tighten by hand. (0.4 to 0.6N·m)
3. Do not apply excessive force over 30N to the connector cables because IP65 will not be satisfied.

⚠ Caution

Failure to meet IP65 performance may result if using alternative connectors than those shown above, or when insufficiently tightened.

• Connector cable mounting



Note) Connector cable should be mounted in the correct direction. Make sure that the arrow symbol on the connector is facing the triangle symbol on the valve when using SMC connector cable (V100-49-1-□). Be careful not to squeeze it in the wrong direction, as problems such as pin damage may occur.



Series 10-SYJ300/500/700

Specific Product Precautions 6

Be sure to read before handling.

M8 connector

■Connector cable

- Connector cable for M8 can be ordered as follows:

How to Order

1. To order solenoid valve and connector cable at the same time.
(Connector cable will be included in the shipment of the solenoid valve.)

10-SYJ³₇□□ M - □□□□ - □□

• Electrical entry

W1: Cable length 300 mm

W2: Cable length 500 mm

W3: Cable length 1000 mm

W4: Cable length 2000 mm

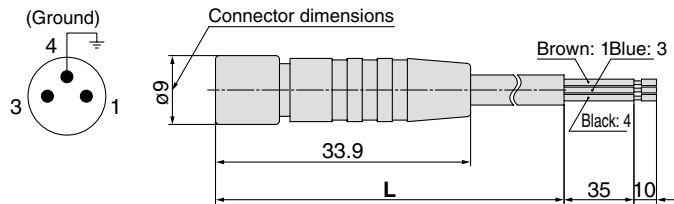
W7: Cable length 5000 mm

(Example 1) Cable length 300 mm

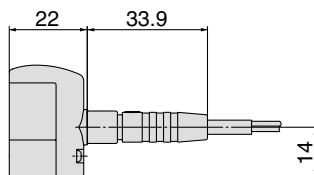
10-SYJ312M-5W1ZE-M3

• Symbol for electrical entry

2. To order connector cable only



Cable length (L)	Part no.
300mm	V100-49-1-1
500mm	V100-49-1-2
1000mm	V100-49-1-3
2000mm	V100-49-1-4
5000mm	V100-49-1-7

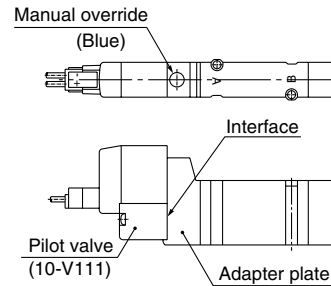


Replacement of pilot valve

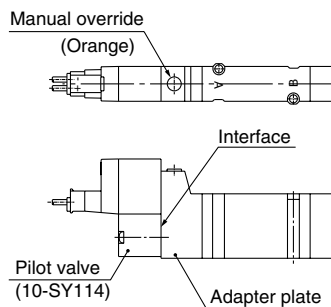
⚠ Caution

Pilot valves in this series are improved to provide excellent energy saving results. However, following this improvement, these new valves are no longer compatible with the conventional pilot valves used at the interface. Please consult with SMC when you need to exchange these pilot valves, in the case of manual override (marked in orange) of the adapter plate.

New type



Conventional type



Series 10-VQ100 3 port solenoid valve

How to Order Valves

10 — VQ1 1 0 [] — 5 F [] — []

Clean series

Series VQ
Compact 3 port valve

Type of actuation

1	Normally closed
2^{Note)}	Normally open

Note) Normally open type is available only with DC1W type.

Function

Nil	Standard (1W)
H	High pressure type (1.5W)
Y^{Note)}	Low wattage type (0.5W)
L*	Latching type Positive common
N*	Latching type Negative common
U*	Large flow type

*: Option
Note) Except latching and large flow types. Use a low wattage type when operated under continuous energization.

Coil rated voltage

1	100 VAC (50/60Hz)
2	200 VAC (50/60Hz)
3	110 VAC (50/60Hz)
4	220 VAC (50/60Hz)
5	24 VDC
6	12 VDC
9	Other special voltages

*: Option
Note) For the special voltages, please consult with SMC.

Port size

Nil	Without sub-plate
M3	With sub-plate
M5	With sub-plate

Manual override

Nil	Non-locking push type (Tool required)
B*	Latching type: Push-locking type (Tool required)
B*	Locking type (Tool required)

*: Option
Note) Latching manual override: Push-locking type only.

Electrical entry

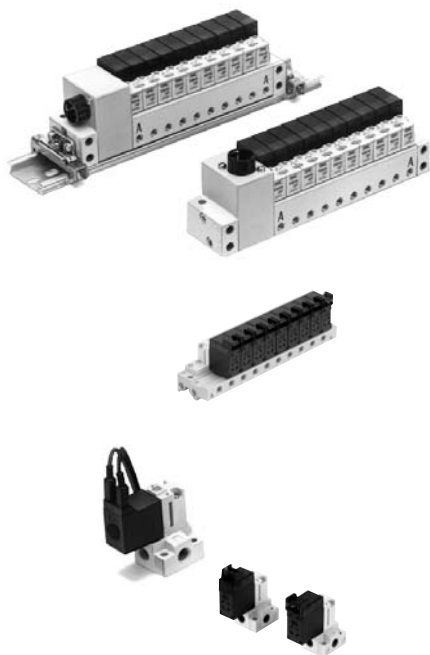
F	Plug-in With light/surge voltage suppressor (Only for plug-in manifold)	
L	L plug connector, with lead wire With light/surge voltage suppressor	
LO	L plug connector, without connector With light/surge voltage suppressor	
M	M plug connector, with lead wire With light/surge voltage suppressor	
MO	M plug connector, without connector With light/surge voltage suppressor	
G	Grommet	

Note) Grommet: No latching, AC and large flow types

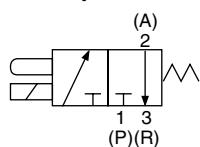
L plug connector

M plug connector

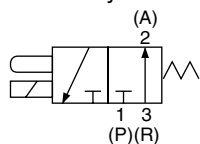
Grommet



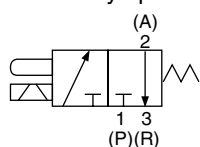
JIS Symbol



Normally closed



Normally open



Latching type

Standard specifications

Item			Type	Standard type (1 W)	High pressure type (1.5 W)	Low wattage type (0.5 W)
Valve specifications	Valve construction			3 port direct operated poppet		
	Fluid			Air / Inert gas		
	Maximum operating pressure			0.7MPa	0.8MPa	0.7MPa
	Minimum operating pressure (vacuum)			0 MPa (−100 kPa) ^{Note 5)}		
	Flow characteristics	1→2	C[dm³/(s·bar)]	0.055		0.042
			b	0.22		0.27
			Cv	0.014		0.011
		2→3	C[dm³/(s·bar)]	0.083		0.045
			b	0.28		0.28
			Cv	0.021		0.012
	Response time ^{Note 1)}			ON: 3.5ms, OFF: 2ms		ON: 3.5ms, OFF: 2.5ms
	Ambient and fluid temperature			−10 to 50°C ^{Note 2)}		
	Lubrication			Not required		
	Manual override			Non-locking push type / Locking type (tool required) ^{Note 3)}		
	Mounting orientation			Unrestricted		
Shock/Vibration resistance ^{Note 4)}			150/30 m/s²			
Enclosure			Dust tight			
Weight			12.6g (L, M plug connector, Without sub-plate)			
Electrical specification	Coil rated voltage		DC	24V, 12V		
	Allowable voltage fluctuation			±10% of rated voltage		
	Coil insulation type			Equivalent to class B		
	Power consumption (Current)		DC	1 W (42 mA)	1.5 W (63 mA)	0.5 W (21 mA)
	Electrical entry			Grommet Plug-in, L plug connector, M plug connector (With light/surge voltage suppresser)		



Note 1) Based on JIS B8374-1993. With light/surge voltage suppresser (clean air).
Dispersion accuracy of ±1ms

Note 2) Use dry air to prevent condensation when operating at low temperatures.

Note 3) Locking style: Option.

Note 4) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the armature in both energized and de-energized states every once for each condition. (Initial value)

Vibration resistance: No malfunction occurred in one sweep between 45 and 2000Hz.
Test was performed in the axial direction and at the right angles to the armature in both energized and de-energized states. (Initial value)

Note 5) In vacuum applications, 3 (R) port vacuum and 1 (P) port vacuum release pressure can be used.
(Differential pressure between 3 (P) and 1 (P) is up to the maximum operating pressure for each type.)

Option

Item			Type	Latching type	AC type	Large flow type	Normally open
Valve specifications	Model			10-VQ110L-□	10-VQ110- $\frac{1}{2}$ □	10-VQ110U-□	10-VQ120-□
	Maximum operating pressure			0.7MPa		0.6 MPa	0.5 MPa
	Minimum operating pressure			0 MPa (−100 kPa) ^{Note 4)} ^{Note 5)}			
	Flow characteristics	1→2 ^{Note 6)}	C[dm ³ /(s·bar)]	0.042		0.14	0.04
			b	0.27		0.26	0.11
		(3→2)	Cv	0.011		0.036	0.009
			Cv	0.012		0.036	0.011
		2→3 ^{Note 6)}	C[dm ³ /(s·bar)]	0.045		0.14	0.044
			b	0.28		0.25	0.3
(2→1)			Cv	0.012		0.036	0.011
Response time ^{Note 2)}			5 ms or less	15 ms or less	5 ms or less	5ms or less	
Electrical specification	Power consumption (Current)	24 VDC	1 W (42 mA)	—	0.7 W (29 mA) ^{Note 3)}	1 W (42 mA) ^{Note 7)}	
		12 VDC	1 W (83 mA)	—	0.7 W (58 mA) ^{Note 3)}	1 W (83 mA) ^{Note 7)}	
		100 VAC	0.6 VA (6 mA)	0.5 VA (5 mA)	—		
		110 VAC	0.65 VA (5.9 mA)	0.55 VA (5 mA)	—		
		200 VAC	1.2 VA (6 mA)	1.0 VA (5 mA)	—		
		220 VAC	1.3 VA (5.9mA)	1.1 VA (5 mA)	—		
	Electrical entry ^{Note 1)}		Plug-in, L plug connector, M plug connector (With light/surge voltage suppresser)				



Note 1) Grommet is available only for normally open type (without light/surge voltage suppressor).

Note 2) Based on JIS B 8374-1993, With light/surge voltage suppressor (clean air)

Note 3) Starting 3.1 W (10 ms after energization), Holding 0.7 W.

Note 4) In vacuum applications, 3 (R) port vacuum and 1 (P) port vacuum release pressure can be used. (Differential pressure between 3 (P) and 1 (P) is up to the maximum operating pressure for each type.)

Note 5) In the case of 1 (P) port vacuum and 3 (R) port vacuum release, use VQ120 (normally open type).

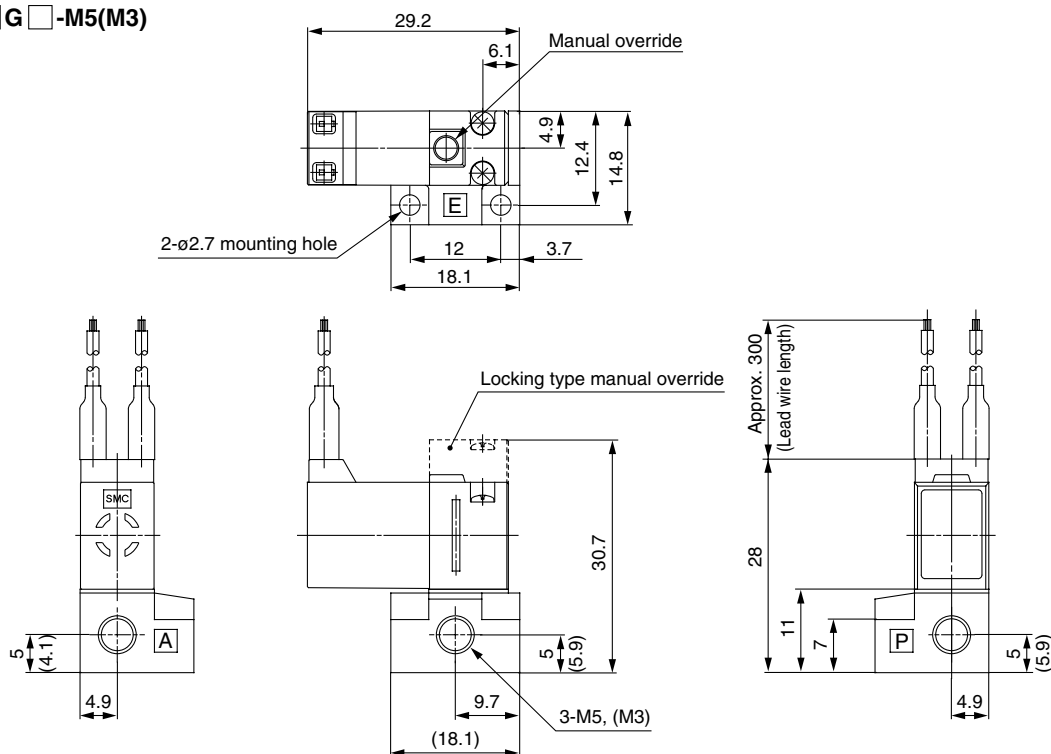
Note 6) () denote the air passage for normally open type.

Note 7) Normally open type is available only with DC1W specification.

Dimensions

Grommet

10-VQ1 0 - G -M5(M3)



· (): M3

• Broken line: Locking type manual override.

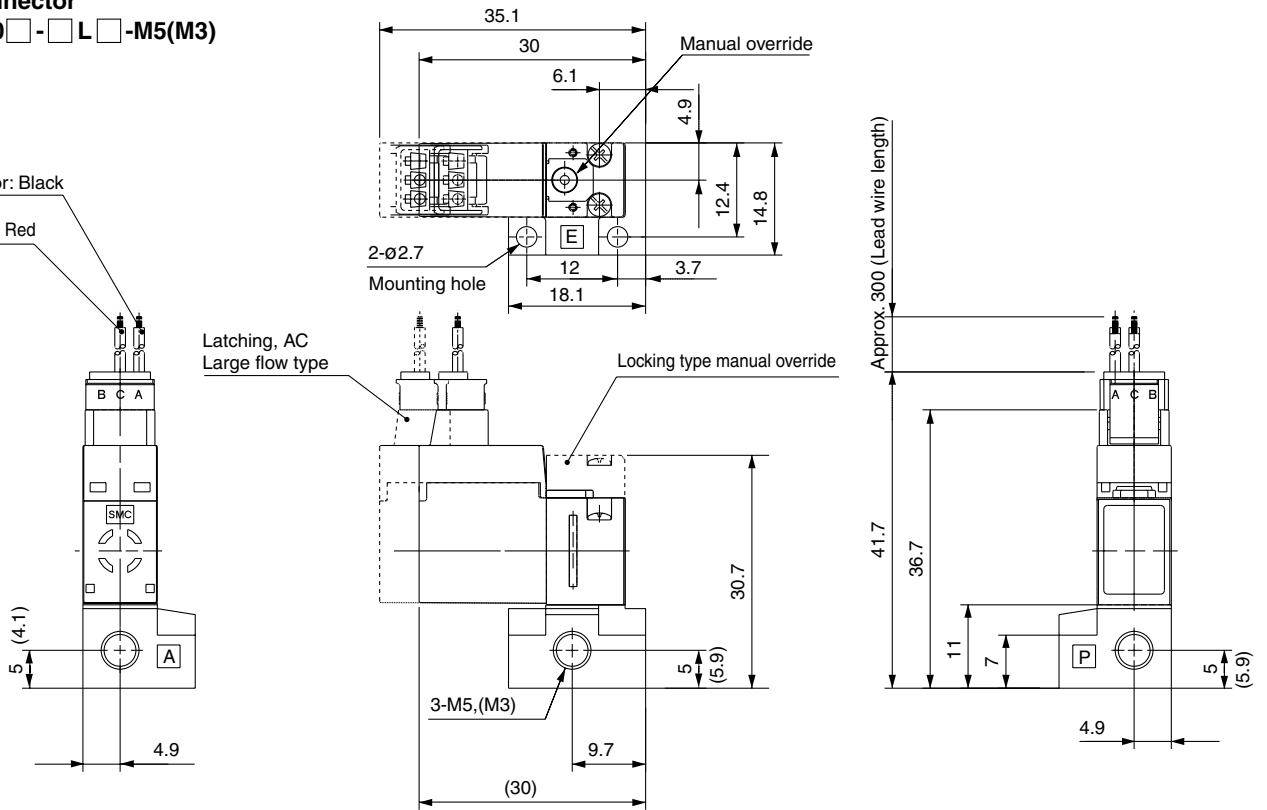
Dimensions

L plug connector

10-VQ1□0□-□L□-M5(M3)

Lead wire color: Black

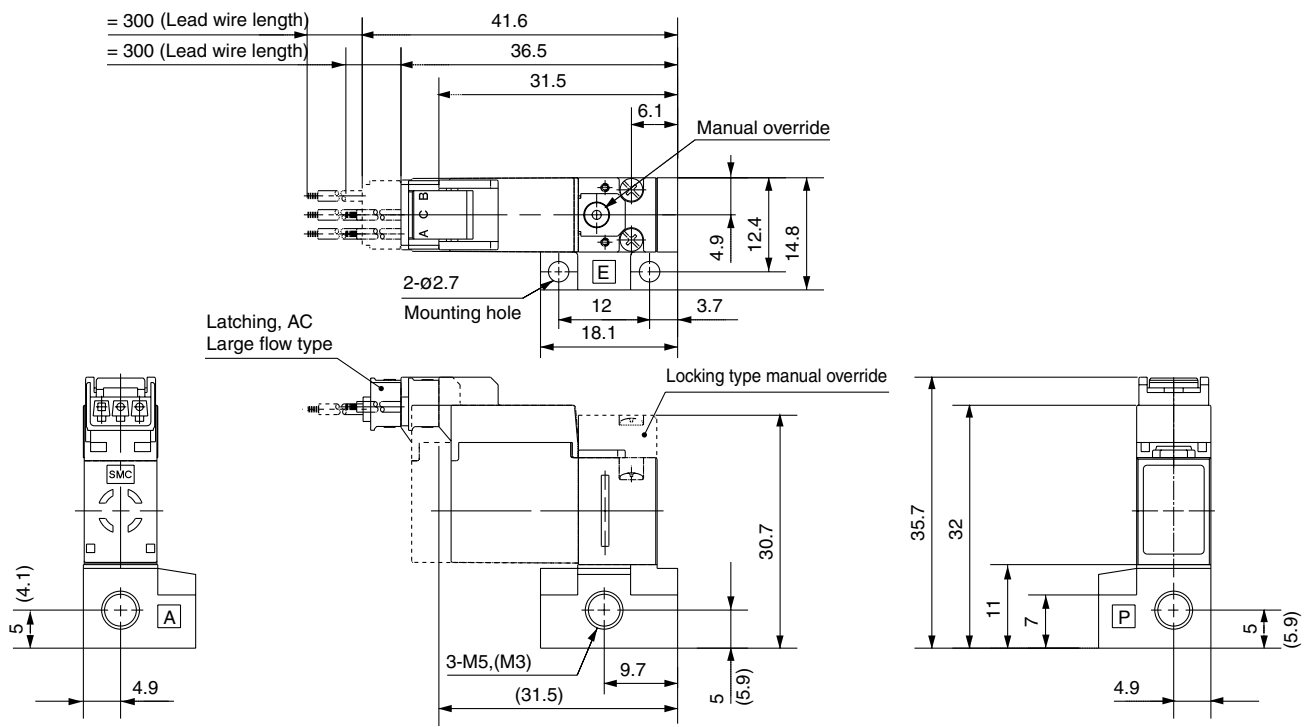
Lead wire color: Red



- (): M3
- Broken line: Latching, AC and large flow
- Dashed line: Locking type manual override and push-locking type manual override (latching).

M plug connector

10-VQ1□0□-□M□-M5(M3)



- (): M3
- Broken line: Latching, AC and large flow
- Dashed line: Locking type manual override and push-locking type manual override (latching).

How to Order Manifold

Plug-in unit Manifold

Applicable solenoid valve (Plug-in type)
10-VQ1□0□-□F
 • When mounting a latching type, please consult with SMC.
 • Possible to mount U (large flow) type.

Clean series

Series
1 VQ100

Manifold base model no.
1 Plug-in unit

Stations

02	2 stations
⋮	⋮
18	18 stations

Electrical entry
C Multi-connector type

Electrical entry

U	Top entry
S	Side entry

Cable length

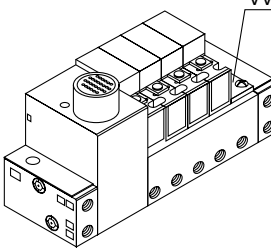
0	Without cable
1	With cable (1.5 m)
2	With cable (3 m)
3	With cable (5 m)

Option

Nil	None
D	DIN rail mounted (With standard length of DIN rail)
DO ^{Note 1)}	DIN rail mounted (Without DIN rail)

Note 1) Order DIN rail separately.
 For DIN rail model number, refer to page 713.

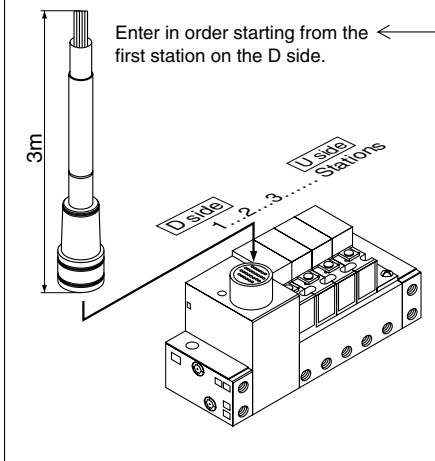
VVQ100-10A-1



How to Order Manifold Assembly

Specify the part numbers for valves and options together beneath the manifold base part number.

<Example>
 Plug-in unit manifold with cable (3 m)
10-VV3Q11-05CU2 ...1 set — Manifold
 Base part no.
 * **10-VQ110-5F** 4 sets — Valve part no.
 (1st to 4th station)
 * **VVQ100-10A-1** 1 set — Blanking plate
 Part no. (5th station)
 → Prefix the asterisk to the part nos. of the solenoid valve, etc.



How to Order Valves

Clean series

Series VQ
 Compact 3 port valve

Type of actuation

1	Normally closed
2 ^{Note)}	Normally open

Note) Normally open type is available only with standard type. (1 W)

Function

Nil	Standard type (1W)
H	High pressure type (1.5W)
Y ^{Note)}	Low wattage type(0.5W)
U *	Large flow type

*: Option
 Note) Except large flow type. Use a low wattage type when operated under continuous energization.

Manual override

Nil	Non-locking push type (tool required)
B *	Locking type (tool required)

*: Option

Electrical entry

F	Plug-in With light/surge voltage suppressor (Only for plug-in manifold)
----------	---

Coil rated voltage

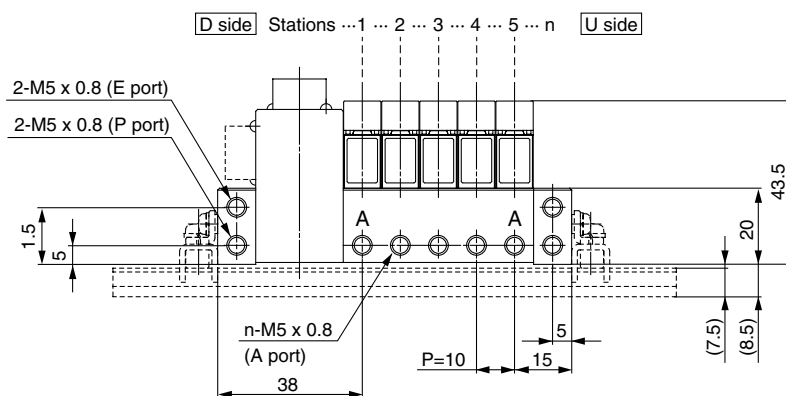
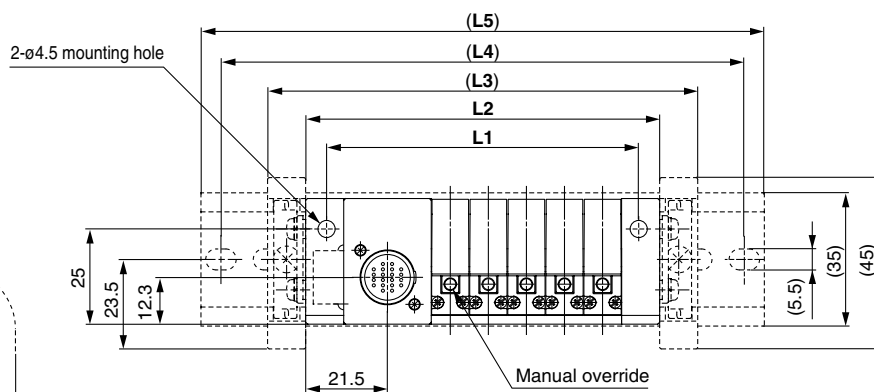
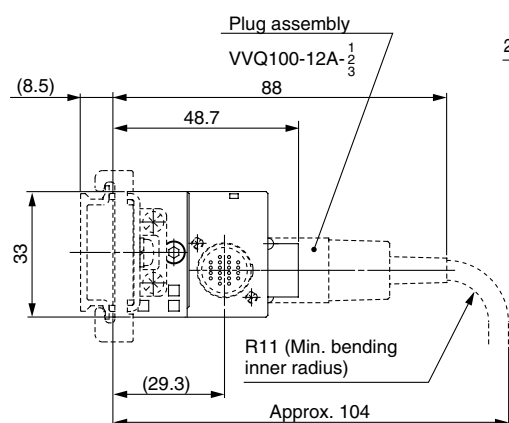
1	100 VAC (50/60Hz)
2	200 VAC (50/60Hz)
3	110 VAC (50/60Hz)
4	220 VAC (50/60Hz)
5	24 VDC
6	12 VDC
9	Other special voltages

For the special voltages, please consult with SMC.

Plug-in unit (10-VV3Q11) Manifold with multi-connector



The broken line indicates DIN rail mounted style (-D) and side entry connection (S).



Dimensions

Formula: $L1 = 10n + 32$ $L2 = 10n + 43$ n: Stations (Max. 18 stations)

L \ n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
L1	52	62	72	82	92	102	112	122	132	142	152	162	172	182	192	202	212
L2	63	73	83	93	103	113	123	133	143	153	163	173	183	193	203	213	223
(L3)	83	93	103	113	123	133	143	153	163	173	183	193	203	213	223	233	243
(L4)	112.5	112.5	125	137.5	150	162.5	162.5	175	187.5	200	212.5	212.5	225	237.5	250	262.5	262.5
(L5)	123	123	135.5	148	160.5	173	173	185.5	198	210.5	223	223	235.5	248	260.5	273	273

How to Order Manifold

Plug lead unit Manifold **10 — VV3Q 1 2 — 08 01N**

• **Clean series**
Applicable solenoid valve (Plug lead type)
 10-VQ1□0□-□L
 10-VQ1□0□-□M
 10-VQ1□0□-□G

• **Series**
 1 VQ100

• **Manifold base model no.**
 2 Plug lead unit
 2U Plug lead unit Type U (large flow) mounting base

Note) Normally closed and normally open styles cannot be mounted on the same manifold.

VVQ1000-10A-2

• **Stations**
 02 2 stations
 ...
 20 20 stations

• **Port size * and thread**

Nil	M5, Rc1/8
01N	NPT1/8
01T	NPTF1/8
01F	PF1/8

* Only thread port size 1/8 (2U type, P, E ports) has choice of thread.

How to Order Valve Manifold Assembly

Specify the part numbers for valves and options together beneath the manifold base part number.

<Example>

Plug lead unit manifold

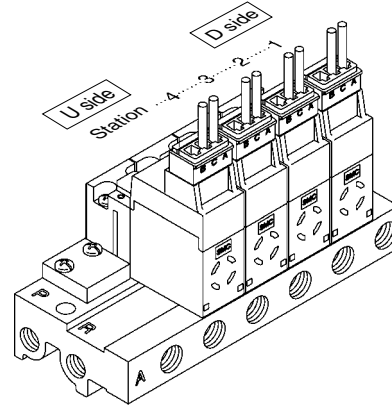
10-VV3Q12-05 1 set ————— Manifold base part no.

* **10-VQ110-5L** 4 sets ————— Valve part no. (1st to 4th stations)

* **VVQ100-10A-2** 1 set — Blanking plate part no. (5th station)

↳ Prefix the asterisk to the part nos. of the solenoid valve, etc.

Enter in order starting from the first station on the D side.



How to Order Valves

10 — VQ1 1 0 — 5 L

• **Clean series**

• **Series VQ**
 Compact 3 port valve

• **Type of actuation**
 1 Normally closed
 2 Note) Normally open
 Note) Normally open type is available only with standard type. (1 W)

• **Function**

Nil	Standard type (1W)
H	High pressure type (1.5W)
Y Note)	Low wattage type (0.5W)
L *	Latching Positive common
N *	Latching Negative common
U *	Large flow type

*: Option
 Note) Except latching and large flow types. Use a low wattage type when operated under continuous energization.

• **Coil rated voltage**

1	100 VAC (50/60Hz)
2	200 VAC (50/60Hz)
3	110 VAC (50/60Hz)
4	220 VAC (50/60Hz)
5	24 VDC
6	12 VDC
9	Other special voltages

For the special voltages, please consult with SMC.

• **Manual override**

Nil	Non-locking push type (tool required)
	Latching type: Push-locking type (tool required)
B *	Locking type (tool required)

*: Option
 Note) Latching manual override: Push-locking type only.

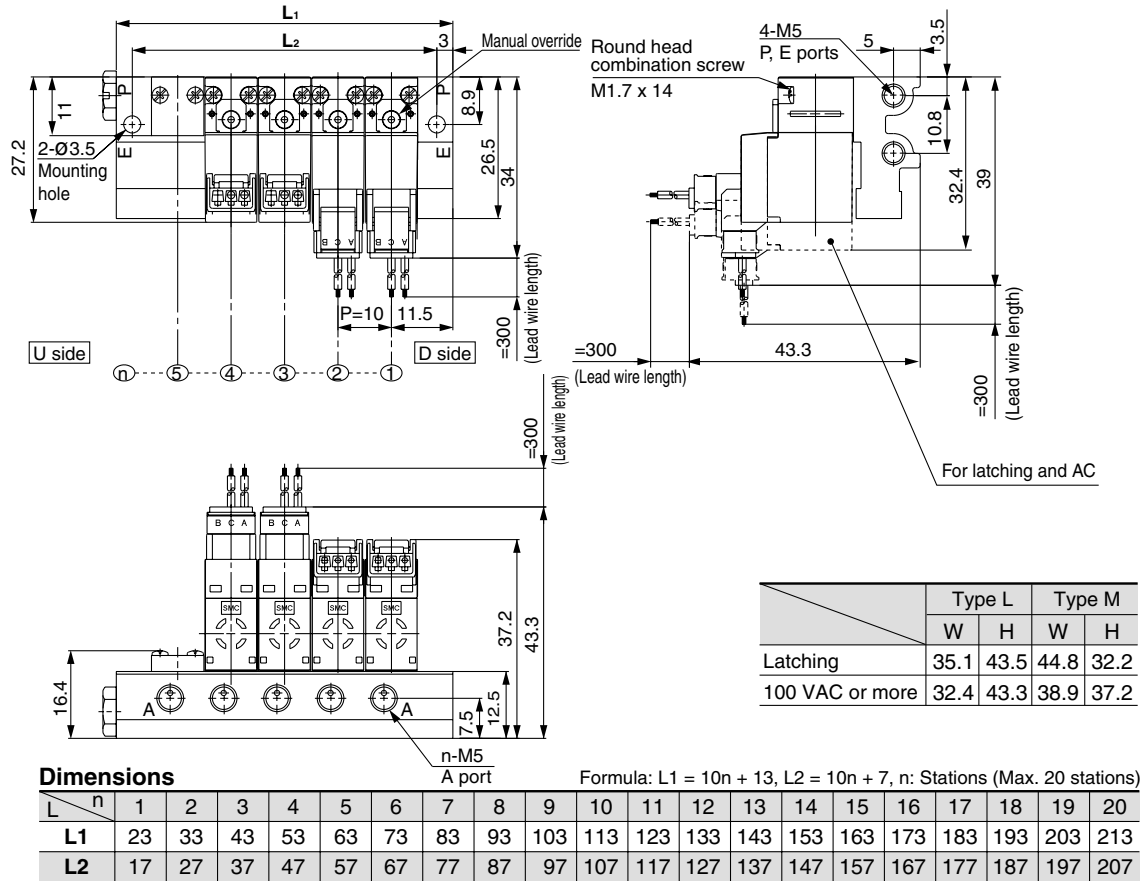
• **Electrical entry**

L	L plug connector, With lead wire With light/surge voltage suppresser
LO	L plug connector, Without connector With light/surge voltage suppresser
M	M plug connector, With lead wire With light/surge voltage suppresser
MO	M plug connector, Without connector With light/surge voltage suppresser
G	Grommet

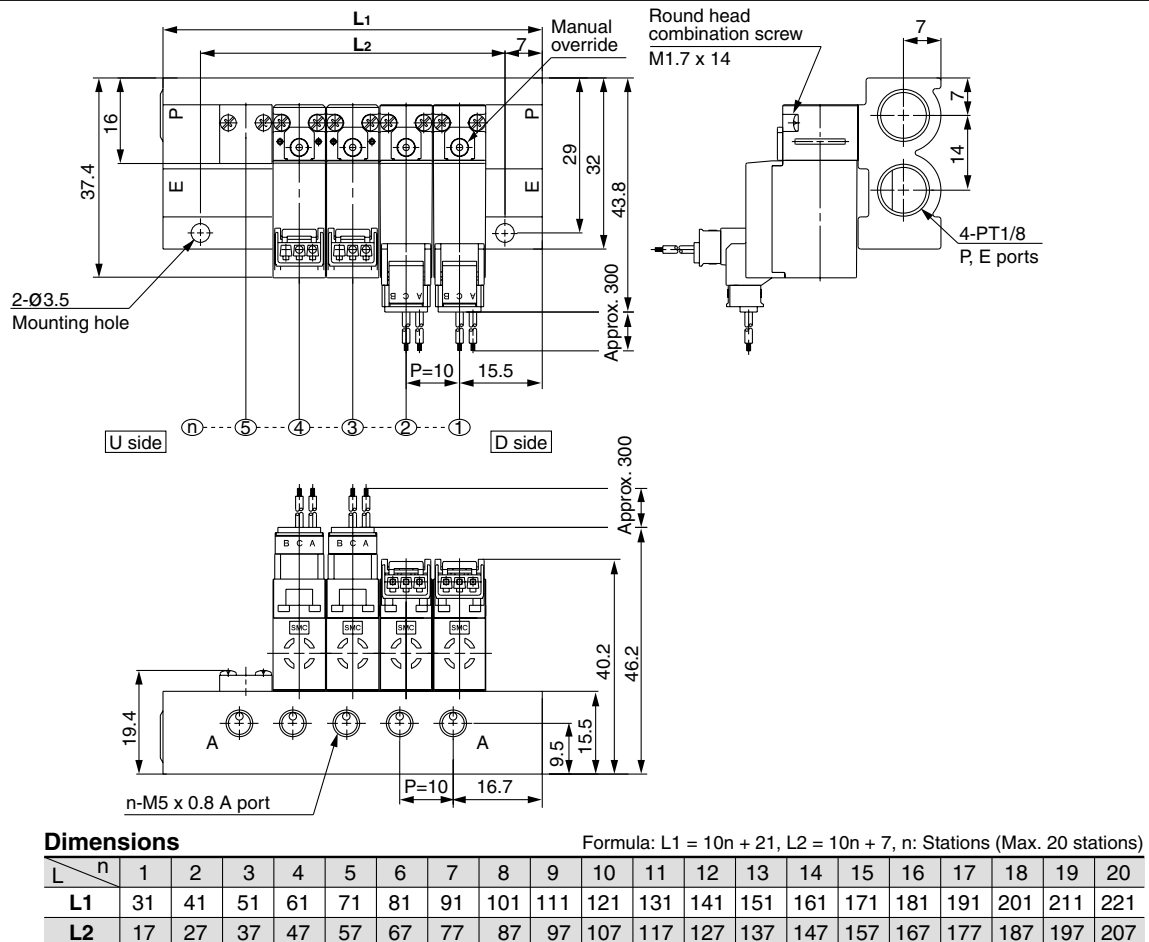
Note) Grommet: No latching, AC and large flow types

3 port solenoid valve 10-VQ100

Plug lead unit manifold (10-VV3Q12)

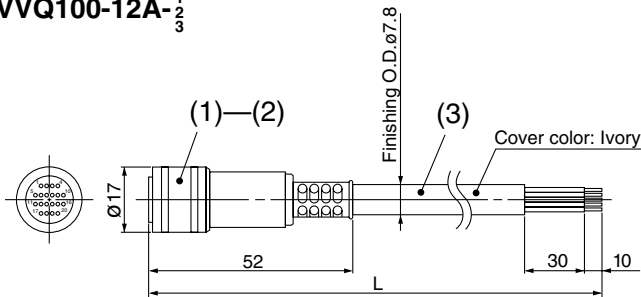


Plug lead unit, Type U (large flow) mounted manifold (10-VV3Q12U)



Manifold option

Plug assembly

VVQ100-12A-¹/₂/₃


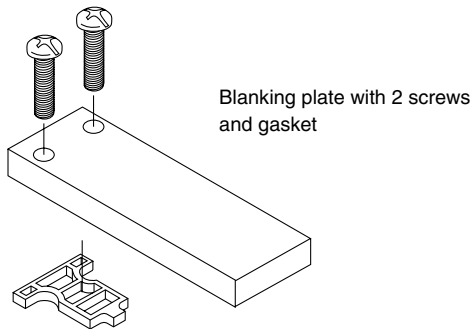
1	Plug	RP13A-12PS-20SC <Made by Hirose Electric Co., Ltd.>
2	Female contact	RP19-SC-222 <Made by Hirose Electric Co., Ltd.>
3	Vinyl multi-core cable	VVRF 0.2mm ² 20 core

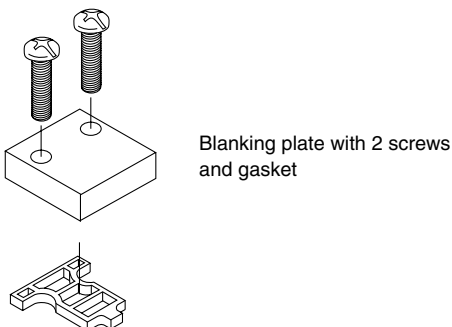
Cable length

Part no.	L dimension
VVQ100-12A-1	1.5 m
VVQ100-12A-2	3m
VVQ100-12A-3	5m

Blanking plate assembly

VVQ100-10A-1

Plug-in unit (**VV3Q11**) for manifold with multiple connectors

VVQ100-10A-2

Plug lead unit (**VV3Q12**) for manifold


VV3Q11 For manifold with multi-connector

<D side end plate assembly>

D side end plate assembly part no.

VVQ100-3A-

Option

1	Standard type
2	DIN rail mounting type

<U side end plate assembly>

U side end plate assembly part no.

VVQ100-2A-

Option

1	Standard type
2	DIN rail mounting type

<DIN rail mounting bracket assembly>

DIN rail mounting bracket assembly part no.

AXT802-1A-

Mounting direction

D	D side mounting
U	U side mounting

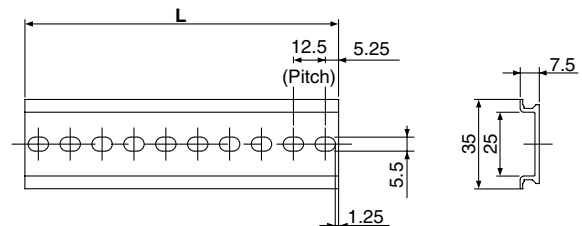


Note) The number of manifold stations cannot be changed.

How to Order Only DIN Rail

DIN rail part no.: **AXT100-DR-**

* Refer to DIN rail dimension table below and put number into □ to order DIN rail.
Refer to the manifold dimensions on page 710 to determine L dimension.



L dimensions

L=12.5n+10.5

No.	1	2	3	4	5	6	7	8	9	10
L dimension	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5
No.	11	12	13	14	15	16	17	18	19	20
L dimension	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30
L dimension	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5
No.	31	32	33	34	35	36	37	38	39	40
L dimension	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5



3/4/5 Port Solenoid Valve Common Precautions 1

Be sure to read before handling.

Refer to the main text for detailed precautions on every series.

Caution on design

⚠ Warning

1. Actuator drive

When an actuator, such as a cylinder, is to be driven using a valve, take appropriate measures to prevent potential danger caused by actuator operation.

2. Intermediate stop

In the case of 3 position closed center or perfect valve style, it is difficult to make an intermediate stop at the required position accurately and precisely due to compressibility of air.

Furthermore, since valves and cylinders are not guaranteed for zero air leakage, it may not be possible to hold a stopped position for an extended period of time.

Consult SMC if it is necessary to hold a stopped position for an extended period of time.

3. Effect of back pressure when using a manifold

Use caution when valves are used on a manifold, as actuator may malfunction due to back-pressure.

In the case of 3 position closed exhaust center valve or single acting cylinder, take appropriate measures to prevent the malfunction using an individual EXH interface assembly or individual exhaust manifold.

4. Holding of pressure (including vacuum)

Since valves are subject to air leakage, they cannot be used for applications such as holding pressure (including vacuum) in a pressure vessel.

5. Cannot be used as an emergency shut-off valve.

The valves presented in this catalog are not designed for safety applications such as an emergency shut-off valve. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

6. Maintenance space

The installation should allow sufficient space for maintenance activities.

7. Release of residual pressure

Install a system for releasing of residual pressure for maintenance purpose. Especially in the case of 3 position closed center valve or double check valve, ensure the release of residual pressure between valve and cylinder.

8. Vacuum applications

When valves are used for vacuum switching, etc., take measures to prevent suction of external dust or other contaminants that may lead to valve malfunction. Direct operated or external pilot operated style is recommended for this application. Please contact SMC if necessary to use internal pilot operated or air operated style.

Selection

⚠ Warning

1. Confirm the specifications.

The products presented in this catalog are designed only for use in compressed air systems (including vacuum). Do not operate at pressures or temperatures, etc., beyond the range of specifications, as this can cause damage or malfunction. (Refer to specifications.)

Contact SMC when using fluid other than compressed air (including vacuum).

2. Extended periods of continuous energization

Contact SMC if valves will be continuously energized for a long period of time.

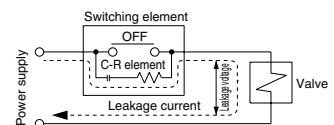
⚠ Caution

1. Momentary energization

If a double solenoid valve will be operated with momentary energization, it should be energized for at least 0.1 second.

2. Leakage voltage

When C-R device (surge voltage suppressor) is used for the protection of switching device, note that voltage leakage will be increased by passing voltage leakage through C-R device.



Residual voltage leakage should not exceed the following values.

DC coil

- SZ/SY/SYJ: 3% or less of rated voltage
- SQ/VQ/VQZ/VQD: 2% or less of rated voltage

AC coil

- SQ: 12.5% or less of rated voltage
- SZ/SY/SYJ: 8% or less of rated voltage
- VQ/VQZ/VQD: 2% or less of rated voltage

3. Use in low temperature environments

Unless otherwise specified, valve can be used to temperature extremes to -10°C . However, appropriate measures should be taken to avoid freezing, drainage or condensation.

4. Operation for air blowing

When using a solenoid valve for air blow, use an external pilot type or direct solenoid operated type.

Also, supply compressed air within the pressure range specified in the specifications to the external pilot port.

5. Mounting orientation

Rubber seal: Refer to the specifications of each series.

Metal seal: Mounting orientation of single solenoid is universal. When installing double solenoid or 3 position style, mount the valve so that spool valve will be horizontal.



3/4/5 port solenoid valve

Common precautions 2

Be sure to read before handling.

Refer to the main text for detailed precautions on every series.

Mounting

Warning

1. If air leakage increases or equipment does not operate properly, stop operation.

Check mounting conditions when air and power supplies are connected. Function and leakage tests should be performed after installation.

2. Instruction manuals

Install the products and operate them only after reading the instruction manual carefully and understanding its contents.

Also keep the manual where it can be referred to as necessary.

3. Painting and coating

Warnings or specifications printed on or affixed to the products should not be erased, removed or covered up.

Please consult with SMC if paint is to be applied to resin parts, as this may have an adverse effect due to the paint solvent.

Piping

Caution

1. When closed center and double check valve are used.

When a closed center and perfect valve are used, check the piping to prevent air leakage from the piping between valve and cylinder.

2. Strictly observe the specified tightening torque.

When installing fittings onto a valve, tighten with the proper tightening torque shown below.

Tightening torque

Connection thread	Appropriate tightening torque N·m
M3	0.3 to 0.5
M5	1.5 to 2
Rc1/8	7 to 9
Rc1/4	12 to 14
Rc3/8	22 to 24
Rc1/2	28 to 30
Rc3/4	28 to 30
Rc1	36 to 38
Rc1 1/4	40 to 42
Rc1 1/2	48 to 50
Rc2	48 to 50

3. Piping to products

When piping to a product, refer to the instruction manual to avoid mistakes regarding the supply port, etc.

Wiring

Caution

1. Polarity

When connecting power to a DC specification solenoid valve equipped with light/surge voltage suppressor, check for polarity. If there is polarity, take note of the following points.

Without diode to protect polarity:

If a mistake is made regarding polarity, the diode in the valve, the control device switching element or power supply equipment, etc. may burn out.

With diode to protect polarity:

If polarity connection is wrong, the valve does not switch.

2. Applied voltage

When electric power is connected to a solenoid valve, be careful to apply the proper voltage. Improper voltage may cause malfunction or coil damage.

3. Confirmation of connections

After completing the wiring, confirm that the connections are correct.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



3/4/5 Port Solenoid Valve

Common Precautions 3

Be sure to read before handling.

Refer to the main text for detailed precautions on every series.

Air Supply

Warning

1. Use clean air.

Do not use compressed air which contains chemicals, salt or corrosive gases, etc. as this can cause damage or malfunction.

Caution

1. Install air filters.

Install air filter close to valves at their inlet side. A filtration degree of the filter should be 5 μ m or less.

2. Install an aftercooler, air dryer or water separator (drain catch), etc.

Air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer, aftercooler or water separator, etc.

3. When a large amount of carbon dust is generated, install a mist separator on the inlet side of the valve to eliminate dust.

When a large amount of carbon dust is generated from the compressor, it may attach to the inside of the valve, which may cause malfunction.

Operating environment

Warning

1. Do not use in atmospheres where the valve is in direct contact with corrosive gases or chemicals.

2. Do not use in explosive atmosphere.

3. Do not use in a place subject to heavy vibrations and/or shocks. Check the specifications for each series.

4. Install a protection cover if the product is exposed to direct sunlight.

5. Remove the emissive heat when there is a source of heat around the product.

6. When the solenoid valve is mounted in a control panel or is energized for a long time, make sure that ambient temperature is within the valve specification range.

Maintenance

Warning

1. Perform maintenance procedures as shown in the instruction manual.

If it is handled improperly, malfunction or damage of machinery or equipment may occur.

2. Removal of equipment, and supply/exhaust of compressed air

Before detaching the equipment, first confirm that measures are in place to prevent dropping of workpieces and run-away of equipment, etc. Then cut the supply pressure and power, and exhaust all compressed air from the system using its residual pressure release function.

In the case of 3 position closed center or perfect valve style, exhaust the residual pressure between valve and cylinder.

When the equipment is started again after remounting or replacement, first confirm that measures are in place to prevent lurching of actuators, etc. and then confirm that the equipment is operating normally.

3. Low frequency operation

Valves should be switched at least once every 30 days to avoid malfunctions. (Use caution regarding the air supply.)

4. Manual override operation

When the manual override is operated, connected equipment will be actuated.

Confirm safety before operation.

Caution

1. Drain flushing

Remove drainage from air filters regularly.

• Maintenance

When placing an order of optional part separately, the part is not double packed if its part no. does not include a prefix of "10-". When such part is brought into a clean room, give flushing to the part with highly purified air to remove dust attached to the valve surface completely.

When replacing or mounting a valve (including pilot valve) or an optional part, be sure to tighten it with the specified tightening torque and make sure that no leakage occurs.

• In the case of external pilot

When an external pilot solenoid valve is used, air is exhausted also from PE port (pilot exhaust). Therefore, such air should be exhausted to the outside of cleanroom. (If the port is plugged, it may cause malfunction.)

For Clean Rooms Flow Control Equipment

Description	Series	Page
\\ Clean Speed Controller	(21-)AS-FPQ/FPG	P.720
\\ Speed Controller (Elbow / Universal Type)	10-AS-F	P.723
\\ Speed Controller (In-line Type)	10-AS-F	P.727
\\ Dual Speed Controller	10-ASD	P.730
\\ Speed Controller Stainless Series (Elbow / Universal Type)	10-AS-FG	P.733
\\ Speed Controller Stainless Series (In-line Type)	10-AS-FG	P.737
\\ Dual Speed Controller Stainless Series	10-ASD-FG	P.740
\\ Speed Controller for Low Speed Operation (Elbow / Universal Type)	10-AS-FM	P.743
\\ Speed Controller for Low Speed Operation (In-line Type)	10-AS-FM	P.747
\\ Dual Speed Controller for Low Speed Operation	10-ASD-FM	P.750
\\ Metal Body Speed Controller (Elbow Type)	10-AS1200 to 4200	P.753
\\ Metal Body Speed Controller (In-line Type)	10-AS1000 to 5000	P.755
\\ Flow Control Equipment / Precautions		P.758

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Flow control equipment

Particle generation grade		Model	Port size in the cylinder side	Applicable tubing O.D. (mm)						Applicable cylinder bore size	
Grade 1				3.2	4	6	8	10	12		
Clean speed controller	Elbow type	(21-) AS12□1FP□	M5		●	●					ø2.5 to ø6
		(21-) AS22□1FP□	R1/8		●	●	●				ø6 to ø20
		(21-) AS22□1FP□	R1/4		●	●	●	●	●		ø20 to ø40
		(21-) AS32□1FP□	R3/8			●	●	●	●	●	ø40 to ø63
		(21-) AS42□1FP□	R1/2					●	●	●	ø63 to ø100

		Model	Port size in the cylinder side	Applicable tubing O.D. (mm)						Applicable cylinder bore size	
				3.2	4	6	8	10	12		
Grade 3	Elbow Type	10-AS12□1F	M3	●	●						ø2.5 to ø6
		10-AS12□1F	M5	●	●	●					ø6 to ø20
		10-AS22□1F	R1/8	●	●	●	●	●			ø20 to ø32
		10-AS22□1F	R1/4		●	●	●	●	●		ø20 to ø40
		10-AS32□1F	R1/4, R3/8			●	●	●	●	●	ø40 to ø63
		10-AS42□1F	R1/2					●	●	●	ø63 to ø100
	Universal type	10-AS13□1F	M3	●	●						ø2.5 to ø6
		10-AS13□1F	M5	●	●	●					ø6 to ø20
		10-AS23□1F	R1/8	●	●	●	●	●			ø20 to ø32
		10-AS23□1F	R1/4		●	●	●	●	●		ø20 to ø40
		10-AS33□1F	R1/4, R3/8			●	●	●	●	●	ø40 to ø63
		10-AS43□1F	R1/2					●	●	●	ø63 to ø100
	In-line type	10-AS1001F		●	●	●					ø2.5 to ø6
		10-AS2001F			●	●					ø6 to ø20
		10-AS2051F				●	●				ø20 to ø40
		10-AS3001F				●	●	●	●		ø40 to ø63
		10-AS4001F						●	●	●	ø63 to ø100
	Dual speed controller	10-ASD230F	M5		●	●					ø6 to ø20
		10-ASD330F	R1/8			●	●				ø20 to ø32
		10-ASD430F	R1/4			●	●	●	●		ø20 to ø40
		10-ASD530F	R1/4, R3/8			●	●	●	●	●	ø40 to ø63
		10-ASD630F	R1/2					●	●	●	ø63 to ø100

Particle
generation
grade

Grade 3

		Model	Port size in the cylinder side	Applicable tubing O.D. (mm)						Applicable cylinder bore size
				3.2	4	6	8	10	12	
Speed controller stainless series	Elbow type	10-AS12□1FG	M5	●	●	●	●	●	●	ø6 to ø20
		10-AS22□1FG	R1/8	●	●	●	●	●	●	ø20 to ø32
		10-AS22□1FG	R1/4	●	●	●	●	●	●	ø20 to ø40
		10-AS32□1FG	R1/4, R3/8	●	●	●	●	●	●	ø40 to ø63
		10-AS42□1FG	R1/2	●	●	●	●	●	●	ø63 to ø100
	Universal type	10-AS13□1FG	M5	●	●	●	●	●	●	ø6 to ø20
		10-AS23□1FG	R1/8	●	●	●	●	●	●	ø20 to ø32
		10-AS23□1FG	R1/4	●	●	●	●	●	●	ø20 to ø40
		10-AS33□1FG	R1/4, R3/8	●	●	●	●	●	●	ø40 to ø63
		10-AS43□1FG	R1/2	●	●	●	●	●	●	ø63 to ø100
	In-line type	10-AS1001FG		●	●	●	●	●	●	ø2.5 to ø6
		10-AS2001FG		●	●	●	●	●	●	ø6 to ø20
		10-AS2051FG		●	●	●	●	●	●	ø20 to ø40
		10-AS3001FG		●	●	●	●	●	●	ø40 to ø63
		10-AS4001FG		●	●	●	●	●	●	ø63 to ø100
	Dual speed controller	10-ASD230FG	M5	●	●	●	●	●	●	ø6 to ø20
		10-ASD330FG	R1/8	●	●	●	●	●	●	ø20 to ø32
		10-ASD430FG	R1/4	●	●	●	●	●	●	ø20 to ø40
		10-ASD530FG	R1/4, R3/8	●	●	●	●	●	●	ø40 to ø63
		10-ASD630FG	R1/2	●	●	●	●	●	●	ø63 to ø100

		Model	Port size in the cylinder side	Applicable tubing O.D. (mm)						Applicable cylinder bore size
				3.2	4	6	8	10	12	
Speed controller for low speed operation	Elbow type	10-AS12□1FM	M5	●	●	●	●	●	●	ø6 to ø20
		10-AS22□1FM	R1/8	●	●	●	●	●	●	ø20 to ø32
		10-AS22□1FM	R1/4	●	●	●	●	●	●	ø20 to ø40
	Universal type	10-AS13□1FM	M5	●	●	●	●	●	●	ø6 to ø20
		10-AS23□1FM	R1/8	●	●	●	●	●	●	ø20 to ø32
		10-AS23□1FM	R1/4	●	●	●	●	●	●	ø20 to ø40
	In-line type	10-AS1001FM		●	●	●	●	●	●	ø2.5 to ø6
		10-AS2001FM		●	●	●	●	●	●	ø6 to ø20
		10-AS2051FM		●	●	●	●	●	●	ø20 to ø40
	Dual speed controller	10-ASD230FM	M5	●	●	●	●	●	●	ø6 to ø20
		10-ASD330FM	R1/8	●	●	●	●	●	●	ø20 to ø32
		10-ASD430FM	R1/4	●	●	●	●	●	●	ø20 to ø40

Grade 1

		Model	Port size in the cylinder side	Port size on piping side						Applicable cylinder bore size
				M3	M5	1/8	1/4	3/8	1/2	
Speed controller standard type	Elbow type	10-AS1200	M3	●	●	●	●	●	●	ø2.5 to ø6
		10-AS1200	M5	●	●	●	●	●	●	ø6 to ø20
		10-AS2200	R1/8	●	●	●	●	●	●	ø20 to ø32
		10-AS2200	R1/4	●	●	●	●	●	●	ø20 to ø40
		10-AS3200	R1/4, R3/8	●	●	●	●	●	●	ø40 to ø63
		10-AS4200	R1/2	●	●	●	●	●	●	ø63 to ø100
	In-line type	10-AS1000	M3	●	●	●	●	●	●	ø2.5 to ø6
		10-AS1000	M5	●	●	●	●	●	●	ø6 to ø25
		10-AS2000	R1/8, R1/4	●	●	●	●	●	●	ø20 to ø40
		10-AS3000	R1/4, R3/8	●	●	●	●	●	●	ø32 to ø63
		10-AS4000	R1/4, R3/8, R1/2	●	●	●	●	●	●	ø40 to ø100
		10-AS5000	R1/4, R3/8, R1/2	●	●	●	●	●	●	ø40 to ø100

Series (21-)AS-FPQ/FPG Clean speed controller with one-touch fittings (Elbow type)

How to Order

AS 2 2 1 1 F P G 01 06
21 - AS 2 2 1 1 F P Q 01 06

AS-FPQ / Brass (Electroless nickel plated)
 Release button color: Light gray

AS-FPG / Stainless steel (SUS304)
 Release button color: Light blue

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
---	-------

Control type

0	Meter-out
1	Meter-in

With one-touch fittings
Clean specification

Metal part material

Q	Brass (Electroless nickel plated)
G	Stainless steel (SUS304)

Applicable tubing O.D. (mm)
Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Connection port size

M5	M5 x 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

Metal part material

Q	Brass (Electroless nickel plated)
---	-----------------------------------

Model

Elbow type	Connection port size	Applicable tubing O.D. (mm)					Applicable cylinder bore size (mm)
		4	6	8	10	12	
(21-) AS12□1FP□-M5	M5 x 0.8	●	●				6, 10, 16, 20
(21-) AS22□1FP□-01	R1/8	●	●	●			20, 25, 32
(21-) AS22□1FP□-02	R1/4	●	●	●	●		20, 25, 32, 40
(21-) AS32□1FP□-03	R3/8		●	●	●	●	40, 50, 63
(21-) AS42□1FP□-04	R1/2				●	●	63, 80, 100

Specifications

Proof pressure (20°C)	1.5 MPa
Max. operating pressure (20°C)	1 MPa ^{Note 2)}
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Number of needle rotations	10 turns (8 turns ^{Note 1)})
Grease	Fluorine grease 21-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 1

Note 1) In the case of AS12□1FP□

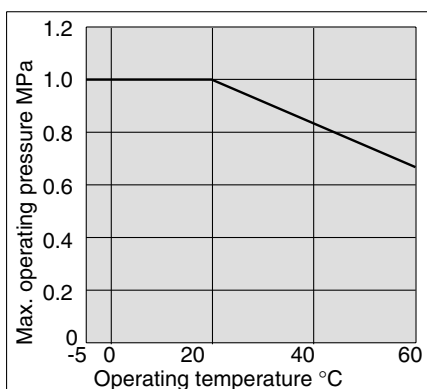
Note 2) The maximum operating pressure is the value at 20°C. Refer to operating pressure curve for values at other temperatures.

Flow rate and effective area

Model		(21-)AS12□1FP□-M5	(21-)AS22□1FP□-01		(21-)AS22□1FP□-02			(21-)AS32□1FP□-03			(21-)AS42□1FP□-04	
Tubing O.D.	Metric size	ø4 ø6	ø4	ø6 ø8	ø4	ø6	ø8 ø10	ø6	ø8	ø10 ø12	ø10	ø12
	Flow rate ℓ/min (ANR)	100	180	230	260	390	460	660	790	920	1580	1710
Controlled flow (Free flow)	Effective area (mm²)	1.5	2.7	3.5	4	6	7	10	12	14	24	26

Note) Flow rate values are measured at 0.5 MPa and 20°C.

Relationship between operating temperature and maximum operating pressure



Recommended applicable tubing

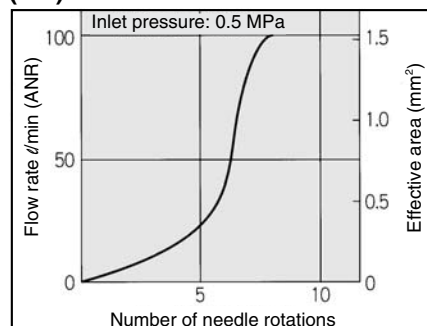
Tubing material	Clean series polyurethane tubing: 10-series
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Polyurethane tubing: TU series, Nylon tubing: T series

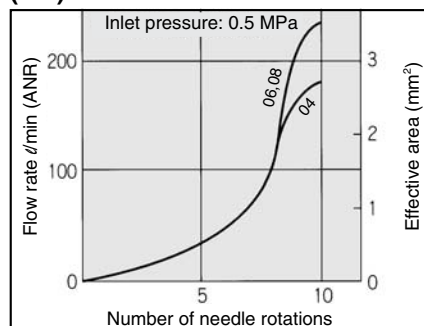
Soft nylon tubing TS series can also be used. However, the degree of cleanliness will decline.

Needle valve / Flow characteristics

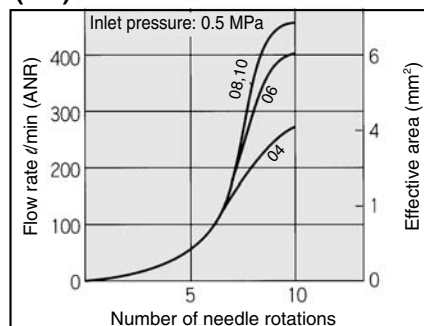
(21-)AS12□1FP□-M5



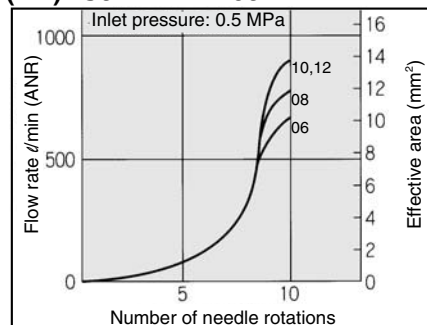
(21-)AS22□1FP□-01



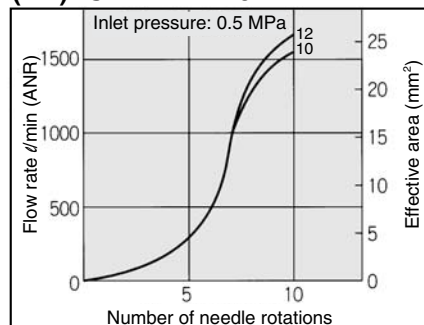
(21-)AS22□1FP□-02



(21-)AS32□1FP□-03

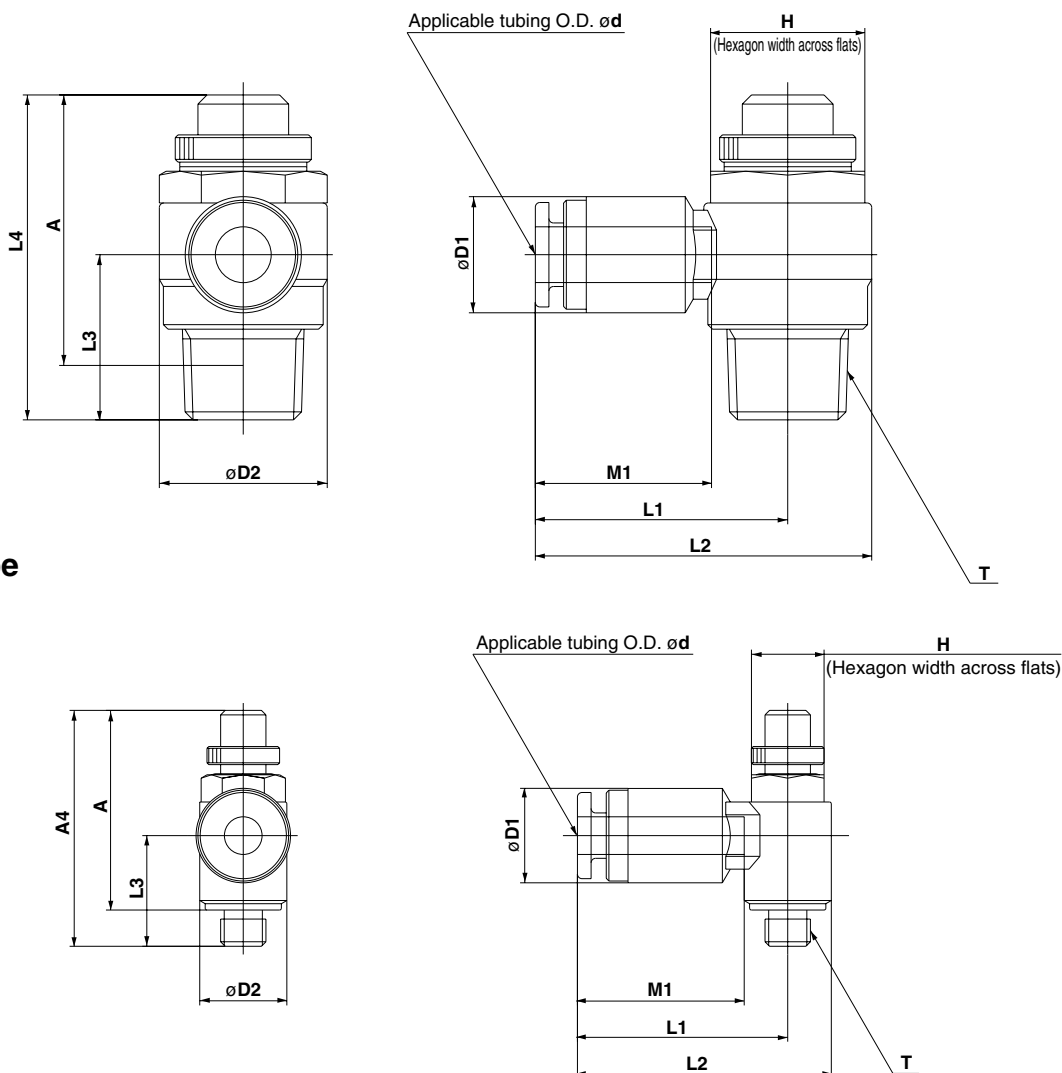


(21-)AS42□1FP□-04



Dimensions

M5 type



Model	Tubing O.D. d	T	H	D1	D2	L1	L2	L3	L4		A ^{Note 1)}		M1	Weight (g) ^{Note 2)}					
									MAX.	MIN.	MAX.	MIN.		* 1	* 2				
(21-) AS12□1FP□-M5-04	4	M5 x 0.8	8	10.4	9.6	23.2	28	12.2	28.3	25.5	25	22.2	18.4	7	7				
(21-) AS12□1FP□-M5-06	6			12.8		24.2	29						19.4	8	8				
(21-) AS22□1FP□-01-04	4	R1/8	12	10.4	14.2	25.3	32.4	14.3	36.4	31.4	32.4	27.4	18.4	17	17				
(21-) AS22□1FP□-01-06	6			12.8		26.3	33.4						19.4	18	18				
(21-) AS22□1FP□-01-08	8			15.2		28.5	35.6						21.9	20	20				
(21-) AS22□1FP□-02-04	4	R1/4	17	10.4	18.5	27.8	37	18.2	40.8	35.8	34.8	29.8	18.4	33	33				
(21-) AS22□1FP□-02-06	6			12.8		30.4	39.6						19.4						
(21-) AS22□1FP□-02-08	8			15.2		38.3	47.5	20					21.9	35	35				
(21-) AS22□1FP□-02-10	10			18.5		38.3	47.5						20						
(21-) AS32□1FP□-03-06	6	R3/8	19	12.8	23	30.4	41.9	20.9	46.9	41.9	40.6	35.6	19.4	59	55				
(21-) AS32□1FP□-03-08	8			15.2		32.9	44.4						21.9	61	57				
(21-) AS32□1FP□-03-10	10			18.5		34.6	46.1						23.8	63	59				
(21-) AS32□1FP□-03-12	12			20.9		35.8	47.3						25	65	61				
(21-) AS42□1FP□-04-10	10	R1/2	24	18.5	28.6	36.6	50.9	25.4	55.6	50.6	47.4	42.4	23.8	107	100				
(21-) AS42□1FP□-04-12	12			20.9		38.2	52.5						25	109	102				

Note 1) Reference dimensions of threads after installation.

Note 2) * 1 is the weight of type (21-)AS□2□1FPQ (Brass + Electroless nickel plated). * 2 is the weight of type AS□2□1FPG (SUS304).

Series 10-AS-F

Speed controller with one-touch fittings
(Elbow type / Universal type)

How to Order

Clean series

Body size
 1 — M3, M5 standard
 2 — 1/8, 1/4 standard
 3 — 3/8 standard
 4 — 1/2 standard

Type
 2 — Elbow
 3 — Universal

Control type
 0 — Meter-out
 1 — Meter-in

With one-touch fittings



Elbow **Universal**

10 - AS 2 2 1 1 F - 01 - 06 (N)

Bore size
 M3 — M3 x 0.5
 M5 — M5 x 0.8
 01 — R1/8
 02 — R1/4
 03 — R3/8
 04 — R1/2

Applicable tubing O.D.
Metric size
 23 — ø3.2 *
 04 — ø4
 06 — ø6
 08 — ø8
 10 — ø10
 12 — ø12
 * Use ø1/8" tubing.

Option *
 Nil — None
 S — With seal
 K — Hexagonal lock nut
 * Write option part numbers in the order of "S", "K".

Nickel plated specification
 Add "N" only for bore sizes of R3/8 and R1/2.
 "N" is not necessary for M3, M5, R1/8, and R1/4.

Model

Elbow type	Universal type	Bore size	Applicable tubing O.D.						Applicable cylinder bore size (mm)
			Metric size						
			3.2	4	6	8	10	12	
10-AS12□1F-M3	10-AS13□1F-M3	M3 x 0.5	●	●					2.5, 4, 6
10-AS12□1F-M5	10-AS13□1F-M5	M5 x 0.8	●	●	●				6, 10, 16, 20
10-AS22□1F-01	10-AS23□1F-01	R1/8	●	●	●	●	Note 1)		20, 25, 32
10-AS22□1F-02	10-AS23□1F-02	R1/4		●	●	●	●		20, 25, 32, 40
10-AS32□1F-02	10-AS33□1F-02	R1/4			●	●	●	●	40, 50, 63
10-AS32□1F-03	10-AS33□1F-03	R3/8			●	●	●	●	40, 50, 63
10-AS42□1F-04	10-AS42□1F-04	R1/2					●	●	63, 80, 100

Note 1) Elbow type only

Note 2) Meter-out and meter-in types can be visually differentiated by the lock nut.

The lock nut on the meter-out type is electroless nickel plated, while the meter-in type is black zinc chromate plated.

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	-5 to 60 °C (No freezing)
Number of needle rotations	10 turns (8 turns ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Option ^{Note 3)}	With seal, Hexagonal lock nut
Grease	Fluorine grease
Particle generation grade (Refer to pages 13 to 22 of Front Matter for details.)	Grade 3

Note 1) In the case of AS12□1F and AS13□1F-M5 types

Note 2) The maximum operating pressure for polyurethane is 0.8 MPa (at 20°C). (Refer to Best Pneumatics catalog.)

Note 3) M3 and M5 type ports are not available with seal.

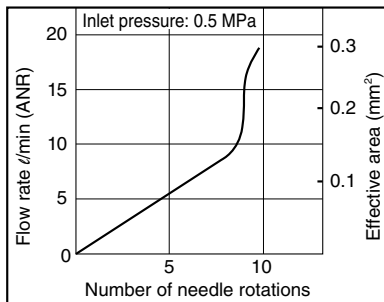
Flow rate and effective area

Model		10-AS12□1F-M3	10-AS12□1F-M5	10-AS22□1F-01		10-AS22□1F-02		10-AS32□1F			10-AS42□1F			
		10-AS13□1F-M3	10-AS13□1F-M5	10-AS23□1F-01		10-AS23□1F-02		10-AS33□1F			10-AS43□1F			
Tubing O.D. (mm)		ø3.2, ø4	ø3.2, ø4, ø6	ø3.2, ø4	ø6, ø8, ø10	ø4	ø6	ø8, ø10		ø6	ø8	ø10, ø12	ø10	ø12
Controlled flow (Free flow)	Flow rate <i>ℓ</i> /min (ANR)	20	100	180	230	260	390	460		660	790	920	1580	1710
	Effective area (mm²)	0.3	1.5	2.7	3.5	4	6	7		10	12	14	24	26

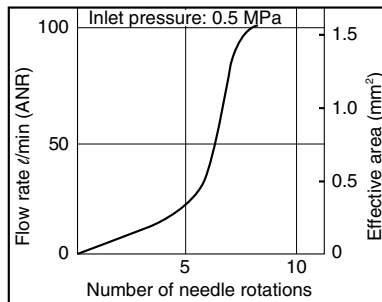
Note) Flow rate values are measured at 0.5 MPa and 20°C.

Needle valve / Flow characteristics

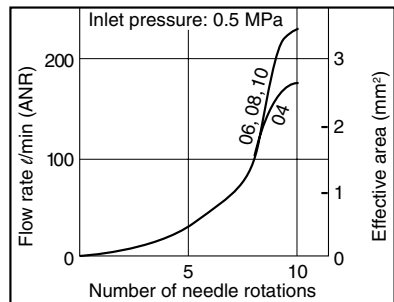
**10-AS1201F-M3,10-AS1211F-M3
10-AS1301F-M3,10-AS1311F-M3**



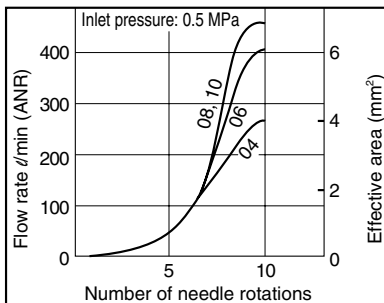
**10-AS1201F-M5,10-AS1211F-M5
10-AS1301F-M5,10-AS1311F-M5**



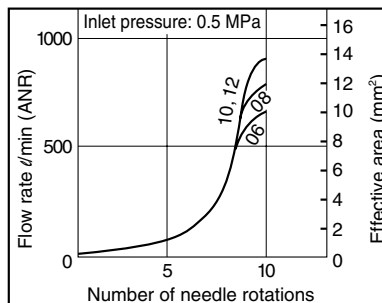
**10-AS2201F-01,10-AS2211F-01
10-AS2301F-01,10-AS2311F-01**



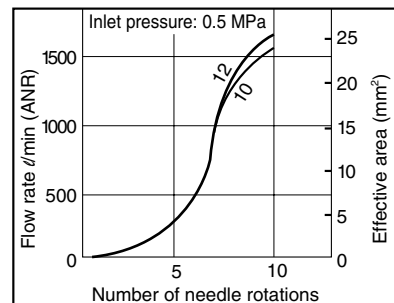
**10-AS2201F-02,10-AS2211F-02
10-AS2301F-02,10-AS2311F-02**



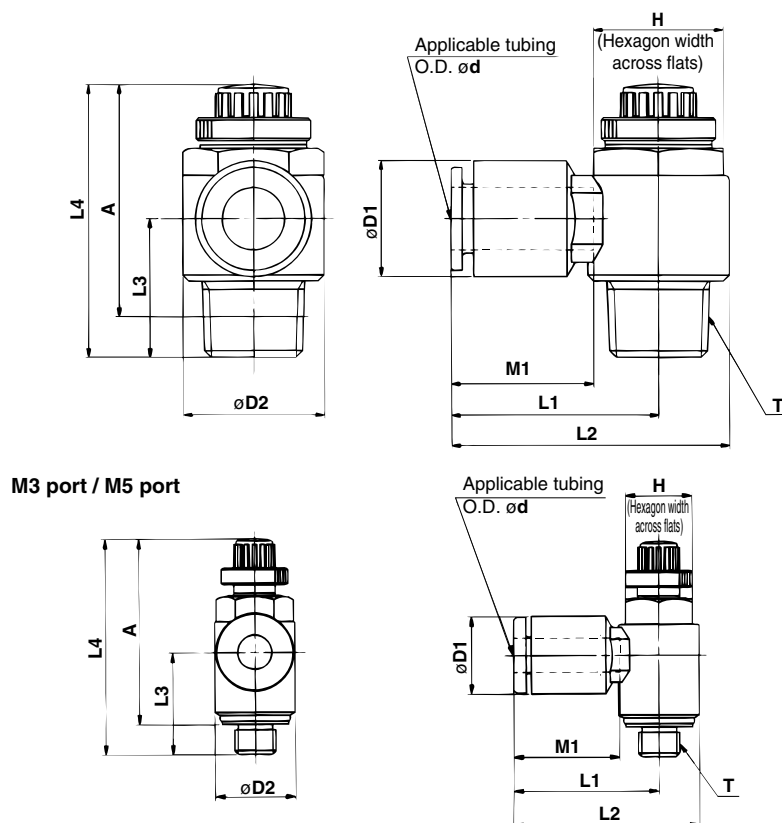
**10-AS3201F,10-AS3211F
10-AS3301F,10-AS3311F**



**10-AS4201F,10-AS4211F
10-AS4301F,10-AS4311F**



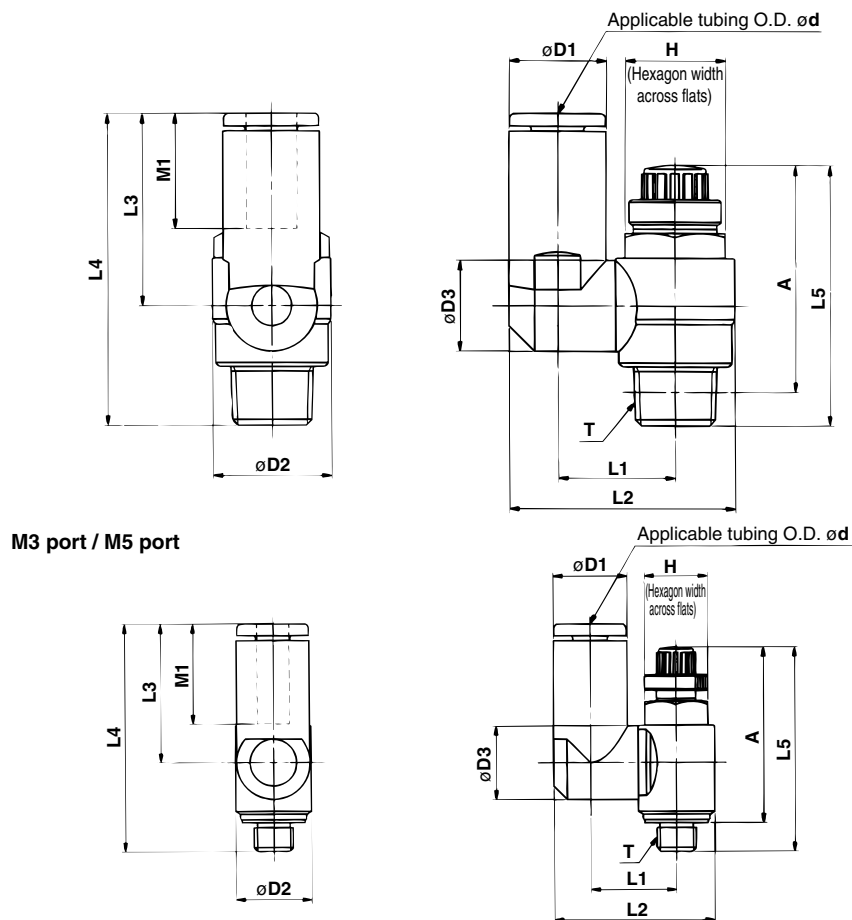
Elbow type



Model	Applicable tubing O.D. ød	T	H	D1	D2	L1	L2	L3	L4		A *		M1	Weight (g)
									MAX.	MIN.	MAX.	MIN.		
10-AS12□1F-M3-23	3.2	M3 x 0.5	5.5	8.4	7.2	16.1	19.7	10.5	26.6	24.1	24	21.5	12.7	4
10-AS12□1F-M3-04	4			9.3				10						
10-AS12□1F-M5-23	3.2	M5 x 0.8	8	8.4	9.6	17.3	22.1	12.3	28.6	25.8	25	22.2	13.5	7
10-AS12□1F-M5-04	4			9.3										
10-AS12□1F-M5-06	6			11.6				18.1						
10-AS22□1F-01-23	3.2	R1/8	12	9.3	14.2	20.4	27.5	14.3	36.1	31.1	32.1	27.1	12.7	16
10-AS22□1F-01-04	4			11.6									13.5	17
10-AS22□1F-01-06	6			15.2		25.3	32.4	18.5					19	
10-AS22□1F-01-08	8			18.5		33.1	40.2	21					21	
10-AS22□1F-01-10	10			18.5		33.1	40.2	15					21	21
10-AS22□1F-02-04	4	R1/4	17	10.4	18.5	25.2	34.4	18.2	40.4	35.4	34.4	29.4	16	32
10-AS22□1F-02-06	6			12.8		27.2	36.4						17	
10-AS22□1F-02-08	8			15.2		27.2	36.4	18.5					34	
10-AS22□1F-02-10	10			18.5		35.3	44.5	20					21	36
10-AS32□1F-02-06	6			R1/4		19	12.8	23					27.8	39.3
10-AS32□1F-02-08	8	15.2	29.5		41		18.5		63					
10-AS32□1F-02-10	10	18.5	31.8		43.3		21		67					
10-AS32□1F-02-12	12	20.9	32.8		44.3		22		69					
10-AS32□1F-03-06	6	R3/8	19		12.8		23		27.8	39.3	20.9	46.5	41.5	40.2
10-AS32□1F-03-08	8			15.2	29.5	41		18.5	57					
10-AS32□1F-03-10	10			18.5	31.8	43.3		21	59					
10-AS32□1F-03-12	12			20.9	32.8	44.3		22	61					
10-AS42□1F-04-10	10	R1/2	24	18.5	28.6	33.6	47.9	25.4	57.6	50.1	49.6	42.1	21	100
10-AS42□1F-04-12	12			20.9		34.6	48.9						22	101

* Reference thread dimensions after installation.

Universal type



Model	Applicable tubing O.D. ød	T	H	D1	D2	D3	L1	L2	L3	L4	L5		A *		M1	Weight (g)
											MAX.	MIN.	MAX.	MIN.		
10-AS13□1F-M3-23	3.2	M3 x 0.5	5.5	8.4	7.2	7.2	10.1	17.9	17.6	28.3	26.6	24.1	24	21.5	12.7	4
10-AS13□1F-M3-04	4			9.3				18.3	17.9	28.6						5
10-AS13□1F-M5-23	3.2	M5 x 0.8	8	8.4	9.6	9.3	10.8	19.8	17.5	28.7	28.6	25.8	25	22.2	13.5	7
10-AS13□1F-M5-04	4			9.3				20.3	20.6	31.8						
10-AS13□1F-M5-06	6	R1/8	12	11.6	14.2	10.9	13.1	21.4	20.6	31.8	36.1	31.1	32.1	27.1	13.5	17
10-AS23□1F-01-23	3.2			8.4				24.4	17.5	31.8						18
10-AS23□1F-01-04	4			9.3				24.9	22.9	37.2						21
10-AS23□1F-01-06	6			11.6				30.9	28.2	41.7						32
10-AS23□1F-01-08	8	R1/4	17	15.2	18.5	10.9	16.2	30.6	21.9	40.1	40.4	35.4	34.4	29.4	18.5	33
10-AS23□1F-02-04	4			10.4				34	25.2	42.6						36
10-AS23□1F-02-06	6			12.8				35.2	28.2	45.6						40
10-AS23□1F-02-08	8			15.2				38.7	31	48.4						60
10-AS23□1F-02-10	10			18.5				38.5	25.2	47						63
10-AS33□1F-02-06	6			12.8				39.7	28.2	50	48.8	43.8	42.8	37.8	21	67
10-AS33□1F-02-08	8	R3/8	19	15.2	23	16.2	23	43.7	32.6	54.4						69
10-AS33□1F-02-10	10			18.5				44.9	34.4	56.2						56
10-AS33□1F-02-12	12			20.9				38.5	25.2	46.1	46.5	41.5	40.2	35.2	17	59
10-AS33□1F-03-06	6			12.8				39.7	28.2	49.1						63
10-AS33□1F-03-08	8			15.2				43.7	32.6	53.5						65
10-AS33□1F-03-10	10			18.5				44.9	34.4	55.3						104
10-AS33□1F-03-12	12	R1/2	24	20.9	28.6	16.2	23	25.8	49.4	32.6	58	57.6	50.1	49.6	42.1	106
10-AS43□1F-04-10	10			21.7				26.8	52	36.3	61.7					106
10-AS43□1F-04-12	12															

* Reference thread dimensions after installation.

Series

10-AS-F

Speed Controller with One-touch Fittings (Inline Type)

How to Order

10

AS

200

1

F

06

K

Clean series

Body size

Applicable tubing O.D.Metric size

With one-touch fitting

Nil	None
K	Hexagon lock nut

23	ø3.2*
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

100	M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

* ø1/8 tube should be used.



Model

Model	Applicable tubing O.D.						Applicable cylinder bore size (mm)
	Metric size						
	3.2	4	6	8	10	12	
10-AS1001F	●	●	●				6, 10, 16, 20
10-AS2001F		●	●				20, 25, 32
10-AS2051F			●	●			20, 25, 32, 40
10-AS3001F			●	●	●	●	40, 50, 63
10-AS4001F					●	●	63, 80, 100

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	-5 to 60°C (no freezing)
Number of needle rotations	10 rotations (8 rotations ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of 10-AS1001F type

Note 2) The maximum operating pressure for polyurethane is 0.8 MPa. (Refer to Best Pneumatics catalog).

* Brass parts are all electroless nickel plated.

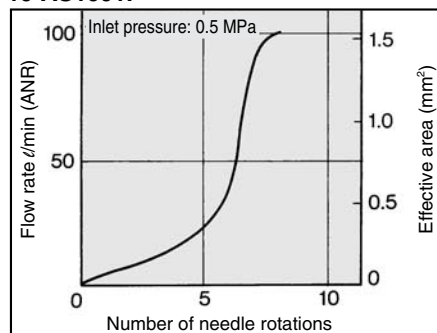
Air flow / Effective area

Model		10-AS1001F	10-AS2001F		10-AS2051F		10-AS3001F			10-AS4001F	
Tubing O.D.	Metric size	ø3.2 ø4 ø6	ø4	ø6	ø6	ø8	ø6	ø8	ø10 ø12	ø10	ø12
Controlled (free) flow	Flow rate ℓ/min (ANR)	100	130	230	290	460	420	660	920	1050	1390
	Effective area (mm ²)	1.5	2	3.5	4.5	7	6.5	10	14	16	21

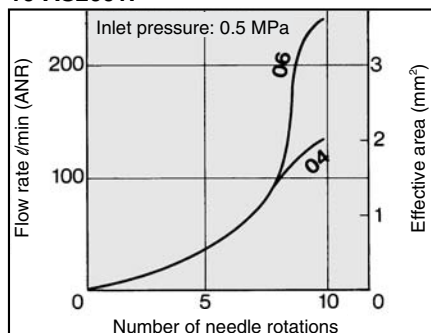
Note) Supply pressure: 0.5 MPa, Temperature: 20°C.

Needle valve / Flow characteristics

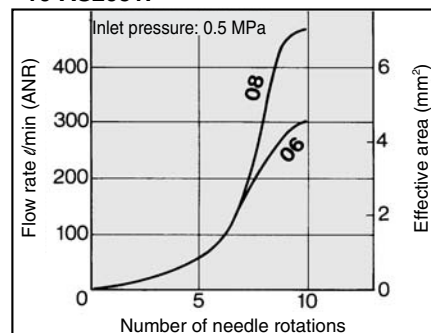
10-AS1001F



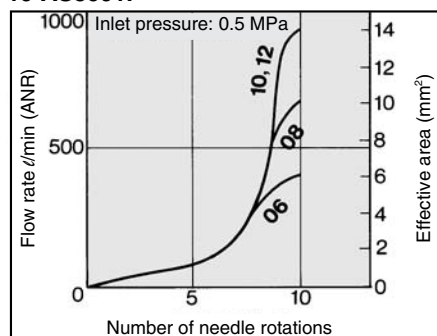
10-AS2001F



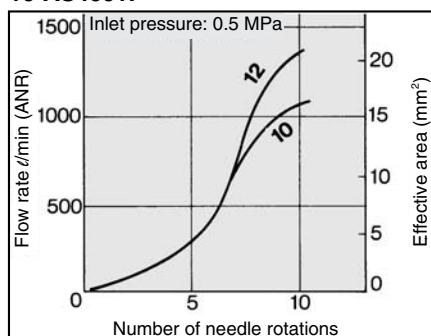
10-AS2051F

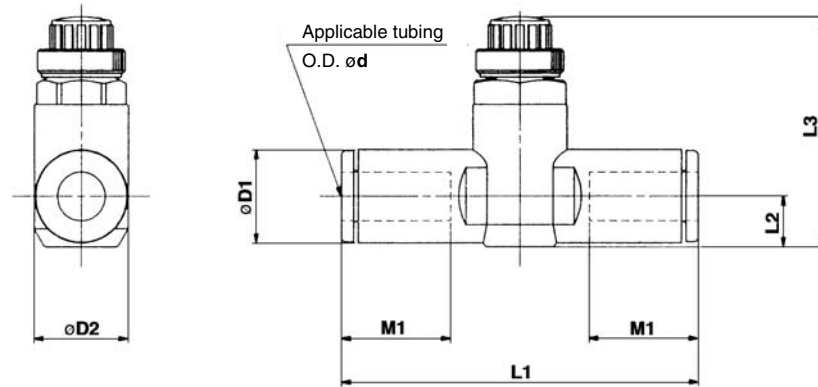


10-AS3001F



10-AS4001F



Dimensions**Metric size**

Model	d	D1	D2	L1	L2	L3		M1	Weight (g)
						MAX.	MIN.		
10-AS1001F-23	3.2	8.4	10	38	4.5	23.5	20.7	12.7	6
10-AS1001F-04	4	9.3		39.2	5.2	24.2	21.4		7
10-AS1001F-06	6	11.6		40.7	6.2	25.2	22.4		8
10-AS2001F-04	4	9.3	11.8	44.8	5.2	32.6	27.6	12.7	12
10-AS2001F-06	6	11.6		44.8	6.3	33.7	28.7	13.5	13
10-AS2051F-06	6	12.8		53.2	6.7	35.2	30.2	17	26
10-AS2051F-08	8	15.2	14.8	59.8	8.1	32.6	27.6	18	31
10-AS3001F-06	6	12.8		59	7.4	38.3	33.3	17	18
10-AS3001F-08	8	15.2		64.4	8.2	39.1	34.1	18	21
10-AS3001F-10	10	18.5	19.8	71.6	9.8	40.6	35.6	21	32
10-AS3001F-12	12	20.9		76	11	41.8	36.8	22	33
10-AS4001F-10	10	18.5	26.5	82	11.3	51.1	43.6	21	36
10-AS4001F-12	12	20.9				52.1	44.6	22	40

Series 10-ASD

Dual Speed Controller with
One-touch Fitting

How to Order

10 — ASD 3 30 F — 01 — 06 S K

Clean series

Body size

2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard
6	1/2 standard

Type

3	Universal
---	-----------

With one-touch fittings

Option

Nil	None
K	Hexagon lock nut

With sealant

Applicable tubing O.D. Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Port size

M5	M5 x 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2



Model

Model	Port size	Applicable tubing O.D.				
		Metric size				
		ø4	ø6	ø8	ø10	ø12
10-ASD230F-M5	M5 x 0.8	●	●			
10-ASD330F-01	R1/8		●	●		
10-ASD430F-02	R1/4		●	●	●	
10-ASD530F-02	R1/4		●	●	●	●
10-ASD530F-03	R3/8		●	●	●	●
10-ASD630F-04	R1/2				●	●

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	-5 to 60°C (no freezing)
Number of needle rotations	10 rotations (8 rotation ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Option	Hexagon lock nut
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of 10-ASD230F type

Note 2) The maximum operating pressure for polyurethane (at 20°C) is 0.8 MPa.
(refer to page 15-6-4 of Best Pneumatics vol. 15 for details.)

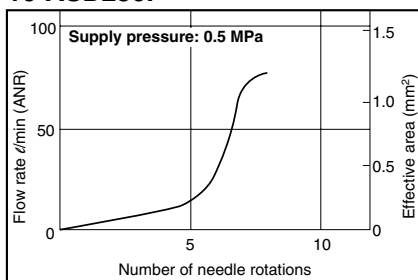
Air flow / Effective area

Model		10-ASD230F	10-ASD330F	10-ASD430F		10-ASD530F			10-ASD630F	
Tubing O.D.	Metric size	ø4, ø6	ø6, ø8	ø6	ø8, ø10	ø6	ø8	ø10, ø12	ø10	ø12
Controlled (free) / flow	Flow rate ℓ /min (ANR)	75	175	295	350	500	600	700	1200	1300
	Effective area (mm ²)	1.1	2.7	4.5	5.3	7.6	9.1	10.7	18.3	19.8

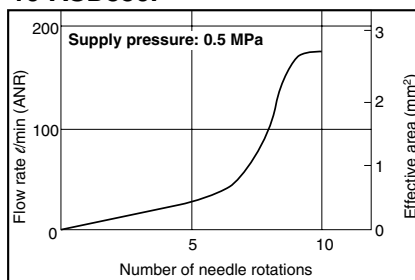
Note) Supply pressure: 0.5 MPa, Temperature: 20°C.

Needle valve / Flow characteristics

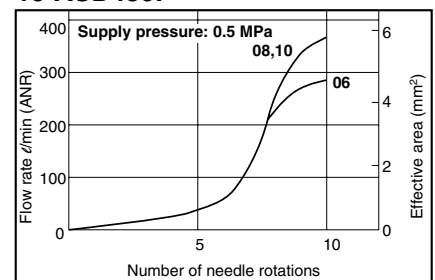
10-ASD230F



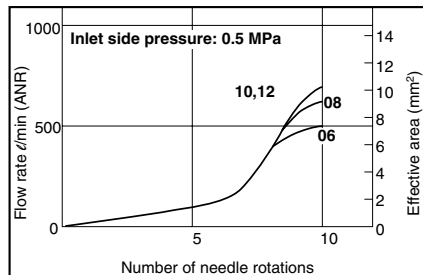
10-ASD330F



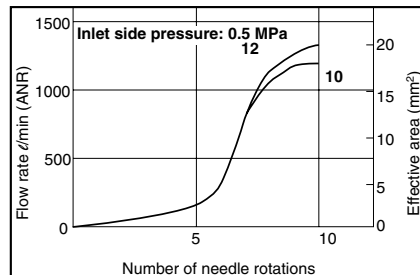
10-ASD430F



10-ASD530F

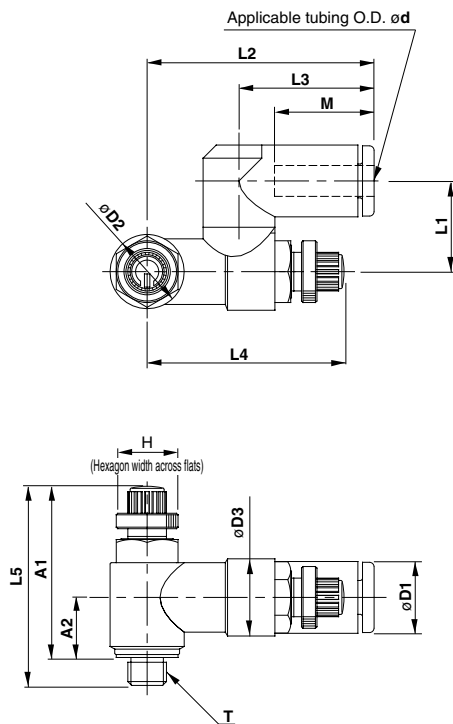


10-ASD630F

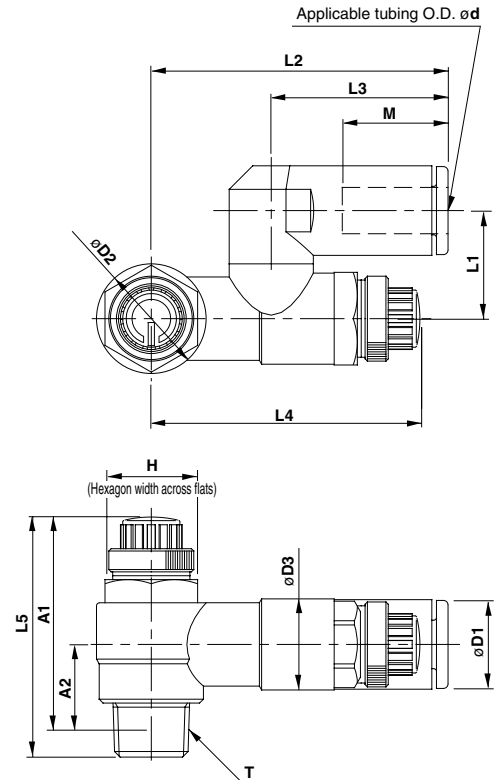


Dimensions

10-ASD230F



10-ASD330F/430F 10-ASD530F/630F



Model	d	T	H	D1	D2	D3	L1	L2	L3	L4		L5		A1 *		A2 *	M	Weight (g)
										MAX.	MIN.	MAX.	MIN.	MAX.	MIN.			
10-ASD230F-M5-04	4	M5 x 0.8	8	9.3	9.6	10	11.7	29.4	17.5	28.3	25.5	28.6	25.8	25	22.2	7.8	12.7	12
10-ASD230F-M5-06	6			11.6				32.5	20.6								13.5	13
10-ASD330F-01-06S	6			15.2				44.8	28.2								18.5	29
10-ASD330F-01-08S	8	R1/8	12	15.2	14.2	11.8	15.8	43.5	25.2	39.6	34.6	36.1	31.1	32.1	27.1	10.6	17	31
10-ASD430F-02-06S	6			12.8				46.5	28.2								18.5	55
10-ASD430F-02-08S	8			15.2				49.3	31								21	58
10-ASD430F-02-10S	10	R1/4	17	18.5	18.5	15	19.7	48.3	25.2	41.7	36.7	40.4	35.4	34.4	29.4	11	17	53
10-ASD530F-02-06S	6			12.8				51.3	28.2								18.5	55
10-ASD530F-02-08S	8			15.2				54.1	32.6								21	58
10-ASD530F-02-10S	10	R3/8	19	20.9	23	19.8	23.1	55.9	34.4	46.9	41.9	48.8	43.8	42.8	37.8	15.4	22	83
10-ASD530F-02-12S	12			12.8				48.3	25.2								17	74
10-ASD530F-03-06S	6			15.2				51.3	28.2								18.5	93
10-ASD530F-03-08S	8	R1/2	24	18.5	28.6	26.5	25.9	54.1	32.6	64.8	57.3	57.6	50.1	49.6	42.1	18.6	21	177
10-ASD530F-03-10S	10			20.9				55.9	34.4								22	179
10-ASD530F-03-12S	12			20.9				66.1	34.4									

* Reference dimensions of after M5 x 0.8, R thread being screwed in.

Series 10-AS-FG

Stainless Steel Speed Controller with One-touch Fittings (Elbow / Universal Type)

How to Order

10 — AS 2 3 1 1 F G — 01 — 06

Clean series

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
3	Universal

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

Stainless steel specifications (SUS303)

Option

Nil	None
S	With sealant *

* Sealant is not available with the M5 type.

Applicable tubing O.D. Metric size

23	ø3.2 *
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* ø1/8" tubing should be used.

Port size

M5	M5 x 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

Elbow type **Universal type**

Model

Elbow type	Universal type	Port size	Applicable tubing O.D.						Applicable cylinder bore size (mm)
			Metric size						
			3.2	4	6	8	10	12	
10-AS12□1FG-M5	10-AS13□1FG-M5	M5 x 0.8	●	●	●				6, 10, 16, 20
10-AS22□1FG-01	10-AS23□1FG-01	R1/8	●	●	●	●	●*		20, 25, 32
10-AS22□1FG-02	10-AS23□1FG-02	R1/4		●	●	●	●		20, 25, 32, 40
10-AS32□1FG-02	10-AS33□1FG-02	R1/4			●	●	●	●	40, 50, 63
10-AS32□1FG-03	10-AS33□1FG-03	R3/8			●	●	●	●	40, 50, 63
10-AS42□1FG-04	10-AS43□1FG-04	R1/2					●	●	63, 80, 100

Note 1) The meter-out and meter-in types can be visually determined by the flow direction symbol on the resin body.

Note 2) * Elbow type only.

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	-5 to 60°C (no freezing)
Number of needle rotations	10 rotation (8 rotations ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of 10- AS12□1FG and 10- AS13□1FG types

Note 2) The maximum operating pressure for polyurethane (at 20 °C) is 0.8 MPa.
(Refer to Best Pneumatics catalog for details.)

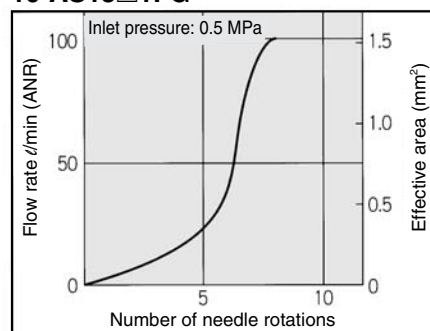
Air flow / Effective area

Model		10-AS12□1FG 10-AS13□1FG	10-AS22□1FG-01 10-AS23□1FG-01		10-AS22□1FG-02 10-AS23□1FG-02			10-AS32□1FG 10-AS33□1FG			10-AS42□1FG 10-AS43□1FG	
Tubing O.D.	Metric size	ø3.2 ø4 ø6	ø3.2 ø4	ø6 ø8 ø10	ø4	ø6	ø8 ø10	ø6	ø8	ø10 ø12	ø10	ø12
Controlled (free) flow	Flow rate ℓ/min (ANR)	100	180	230	260	390	460	660	790	920	1580	1710
	Effective area (mm²)	1.5	2.7	3.5	4	6	7	10	12	14	12	26

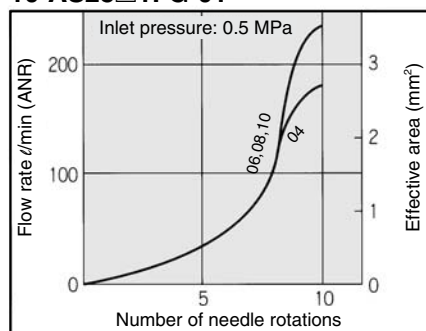
Note) Supply pressure: 0.5MPa, Temperature: 20°C.

Needle valve / Flow characteristics

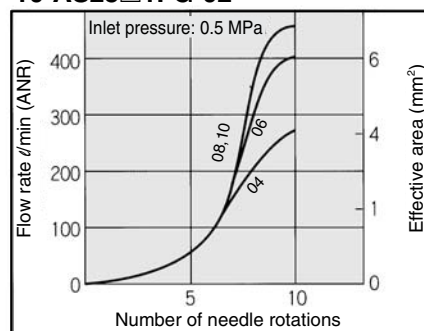
10-AS12□1FG
10-AS13□1FG



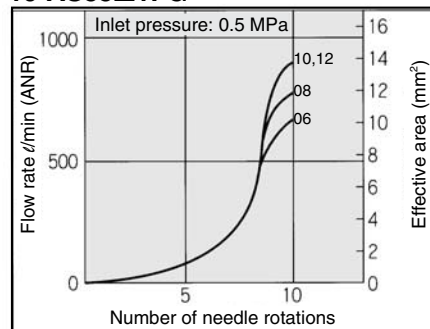
10-AS22□1FG-01
10-AS23□1FG-01



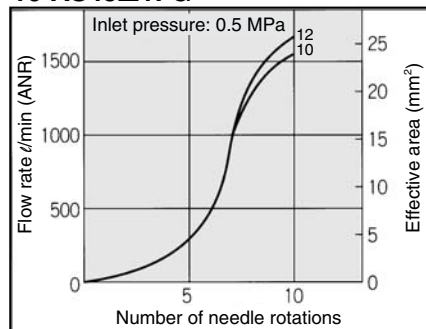
10-AS22□1FG-02
10-AS23□1FG-02

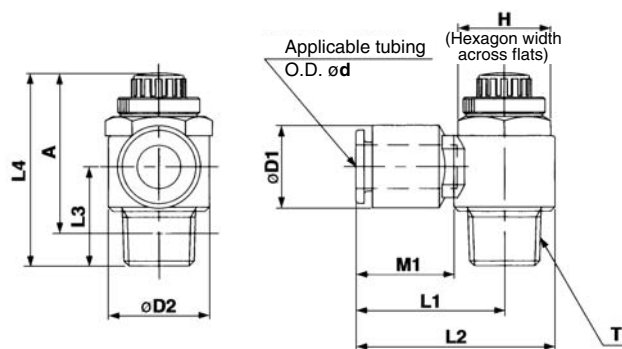
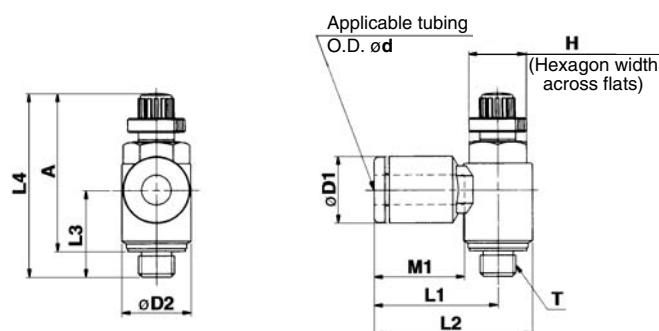


10-AS32□1FG
10-AS33□1FG



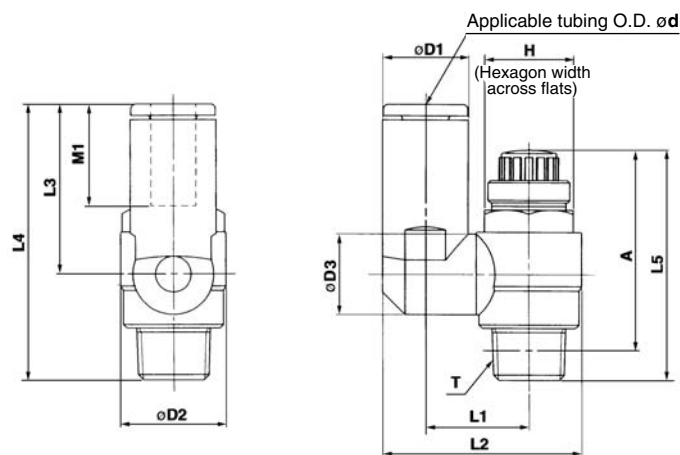
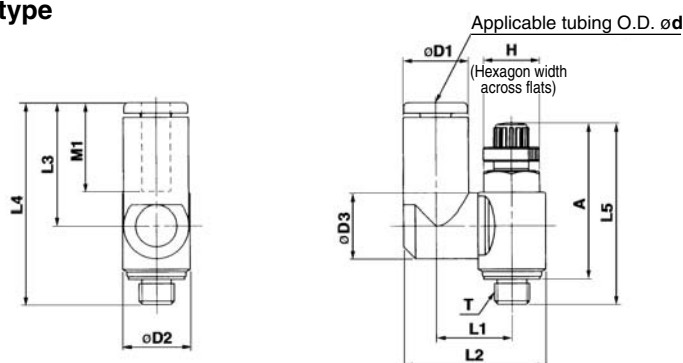
10-AS42□1FG
10-AS43□1FG



Dimensions / Elbow type**M5 type**

Model	d	T	H	D1	D2	L1	L2	L3	L4		A *		M1	Weight (g)		
									MAX.	MIN.	MAX.	MIN.				
10-AS12□1FG-M5-23	3.2	M5 x 0.8	8	8.4	9.6	17.3	22.1	12.3	28.6	25.8	25	22.2	12.7	7		
10-AS12□1FG-M5-04	4			9.3												
10-AS12□1FG-M5-06	6			11.6												
10-AS22□1FG-01-23	3.2	R1/8	12	9.3	14.2	20.4	27.5	14.3	36.1	31.1	32.1	27.1	12.7	16		
10-AS22□1FG-01-04	4			11.6									25.3	32.4	18.5	19
10-AS22□1FG-01-06	6															
10-AS22□1FG-01-08	8															
10-AS22□1FG-01-10	10															
10-AS22□1FG-02-04	4			R1/4		17	10.4	18.5					25.2	34.4	18.2	40.4
10-AS22□1FG-02-06	6	12.8	27.2		36.4		18.5		34							
10-AS22□1FG-02-08	8	15.2								35.3	44.5	20	21	36		
10-AS22□1FG-02-10	10	18.5														
10-AS32□1FG-02-06	6	19	12.8		23	27.8	39.3	21.8	48.8	43.8	42.8	37.8	17	60		
10-AS32□1FG-02-08	8		15.2			29.5	41						18.5	63		
10-AS32□1FG-02-10	10		18.5			31.8	43.3								21	67
10-AS32□1FG-02-12	12		20.9			32.8	44.3	22	69							
10-AS32□1FG-03-06	6		R3/8			12.8	27.8			39.3	20.9	46.5	41.5	40.2	35.2	17
10-AS32□1FG-03-08	8			15.2		29.5	41	18.5	57							
10-AS32□1FG-03-10	10	18.5		31.8	43.3	21	59									
10-AS32□1FG-03-12	12	20.9		32.8	44.3			22	61							
10-AS42□1FG-04-10	10	R1/2	24	18.5	28.6	33.6	47.9			25.4	57.6	50.1	49.6	42.1	21	100
10-AS42□1FG-04-12	12			20.9		34.6	48.9	22	101							

* Reference thread dimensions after being screwed in.

Dimensions / Universal type**In case of M5 type**

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5		A *		M1	Weight (g)
											MAX.	MIN.	MAX.	MIN.		
10-AS13□1FG-M5-23	3.2	M5 x 0.8	8	8.4	9.6	9.3	10.8	19.8	17.5	28.7	28.6	25.8	25	22.2	12.7	7
10-AS13□1FG-M5-04	4			9.3				20.3								
10-AS13□1FG-M5-06	6			11.6				21.4								
10-AS23□1FG-01-23	3.2	R1/8	12	8.4	14.2	10.9	13.1	24.4	17.5	31.8	36.1	31.1	32.1	27.1	12.7	17
10-AS23□1FG-01-04	4			9.3				24.9							13.5	18
10-AS23□1FG-01-06	6			11.6				26.9							18.5	21
10-AS23□1FG-01-08	8			15.2				30.9							16	32
10-AS23□1FG-02-04	4	R1/4	17	10.4	18.5	10.9	16.2	30.6	21.9	40.1	40.4	35.4	34.4	29.4	17	33
10-AS23□1FG-02-06	6			12.8				34							18.5	36
10-AS23□1FG-02-08	8			15.2				35.2							21	40
10-AS23□1FG-02-10	10			18.5				38.7							17	60
10-AS33□1FG-02-06	6			12.8	23	12.9	20.6	38.5	25.2	47	48.8	43.8	42.8	37.8	18.5	63
10-AS33□1FG-02-08	8			15.2				39.7							21	67
10-AS33□1FG-02-10	10			18.5				43.7							22	69
10-AS33□1FG-02-12	12			20.9				44.9							17	56
10-AS33□1FG-03-06	6	R3/8	19	12.8		12.9	20.6	38.5	25.2	46.1	46.5	41.5	40.2	35.2	18.5	59
10-AS33□1FG-03-08	8			15.2				39.7							21	63
10-AS33□1FG-03-10	10			18.5				43.7							22	65
10-AS33□1FG-03-12	12			20.9				44.9							21	104
10-AS43□1FG-04-10	10	R1/2	24	18.5	28.6	16.2	25.8	49.4	32.6	58	57.6	50.1	49.6	42.1	22	105
10-AS43□1FG-04-12	12			20.9		19.4	26.8	52							22	105

* Reference thread dimensions after M5 x 0.8, R thread being screwed in.

Series 10-AS-FG

Stainless Steel Speed Controller with One-touch Fittings (Inline Type)

How to Order

10 — AS 200 1 F G — 06

• Clean series

• Body size

100	M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

• Applicable tubing O.D. Metric size

23	ø3.2*
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

• With one-touch fitting

• Stainless steel specifications (SUS303)

* ø1/8" tubing should be used.



Model

Model	Applicable tubing O.D.						Applicable cylinder bore size (mm)
	Metric size						
	3.2	4	6	8	10	12	
10-AS1001FG	●	●	●				6, 10, 16, 20
10-AS2001FG		●	●				20, 25, 32
10-AS2051FG			●	●			20, 25, 32, 40
10-AS3001FG			●	●	●	●	40, 50, 63
10-AS4001FG					●	●	63, 80, 100

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	-5 to 60°C (no freezing)
Number of needle rotations	10 rotation (8 rotations ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of 10-AS1001FG type

Note 2) The maximum operating pressure for polyurethane (at 20°C) is 0.8 MPa.
(For detail, refer to Best Pneumatics catalog)

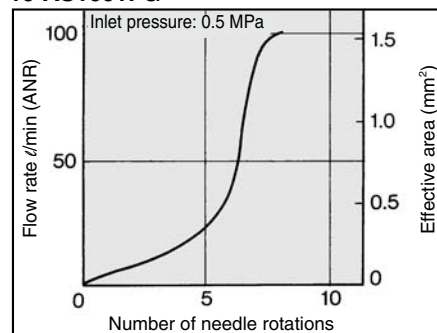
Air flow / Effective area

Model		10-AS1001FG	10-AS2001FG		10-AS2051FG		10-AS3001FG			10-AS4001FG	
Tubing O.D.	Metric size	ø3.2 ø4 ø6	ø4	ø6	ø6	ø8	ø6	ø8	ø10 ø12	ø10	ø12
Controlled (free) flow	Flow rate ℓ /min (ANR)	100	130	230	290	460	420	660	920	1050	1390
	Effective area (mm ²)	1.5	2	3.5	4.5	7	6.5	10	14	16	21

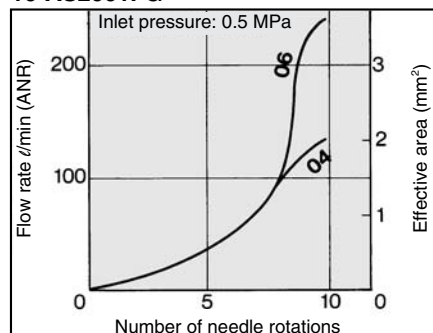
Note) Supply pressure: 0.5MPa, Temperature: 20°C.

Needle valve / Flow characteristics

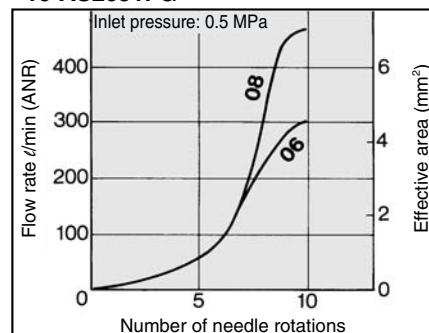
10-AS1001FG



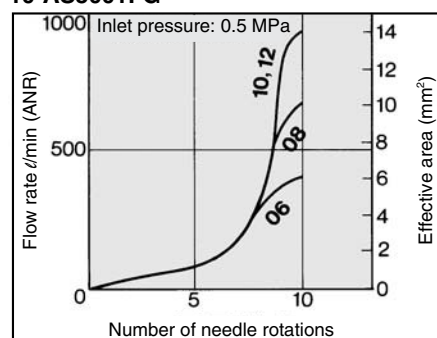
10-AS2001FG



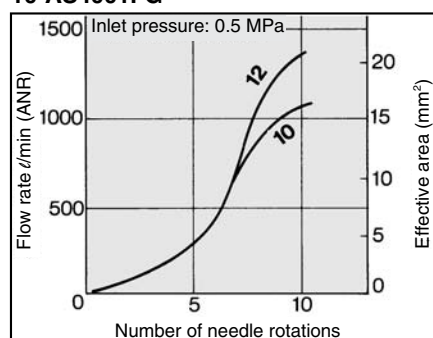
10-AS2051FG



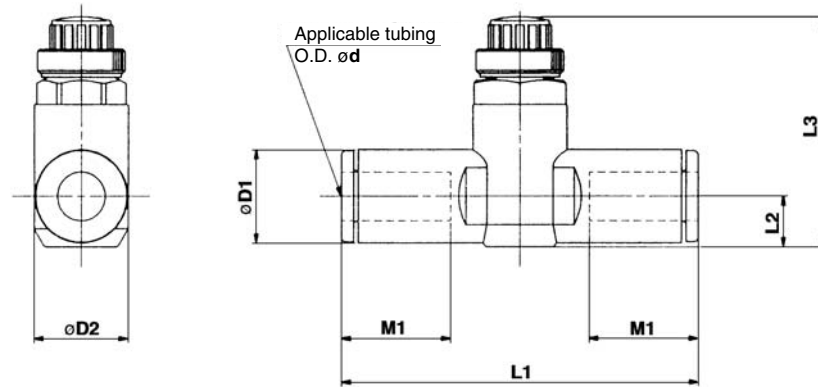
10-AS3001FG



10-AS4001FG



Dimensions



Model	d	D1	D2	L1	L2	L3		M1	Weight (g)
						MAX.	MIN.		
10-AS1001FG-23	3.2	8.4	10	38	4.5	23.5	20.7	12.7	6
10-AS1001FG-04	4	9.3		39.2	5.2	24.2	21.4		7
10-AS1001FG-06	6	11.6		40.7	6.2	25.2	22.4		8
10-AS2001FG-04	4	9.3	11.8	44.8	5.2	32.6	27.6	12.7	12
10-AS2001FG-06	6	11.6		44.8	6.3	33.7	28.7	13.5	13
10-AS2051FG-06	6	12.8		53.2	6.7	35.2	30.2	17	26
10-AS2051FG-08	8	15.2	14.8	59.8	8.1	32.6	27.6	18	31
10-AS3001FG-06	6	12.8		59	7.4	38.3	33.3	17	18
10-AS3001FG-08	8	15.2		64.4	8.2	39.1	34.1	18	21
10-AS3001FG-10	10	18.5	19.8	71.6	9.8	40.6	35.6	21	32
10-AS3001FG-12	12	20.9		76	11	41.8	36.8	22	33
10-AS4001FG-10	10	18.5	26.5	82	11.3	51.1	43.6	21	36
10-AS4001FG-12	12	20.9				52.1	44.6	22	40

Series 10-ASD-FG

Stainless Steel Dual Speed
Controller with One-touch Fittings

How to Order

10 — ASD 3 3 0 F G — 01 — 06 S

Clean series •

Body size •

2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard
6	1/2 standard

Type •

3	Universal
---	-----------

With one-touch fitting •

Stainless Steel Specifications (SUS303) •

With sealant •
* Sealant is not available with the M5 type.

Applicable tubing O.D. Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Port size

M5	M5 x 0.8
01	1/8
02	1/4
03	3/8
04	1/2



Model

Model	Port size	Applicable tubing O.D.				
		Metric size				
		4	6	8	10	12
10-ASD230FG-M5	M5 x 0.8	●	●			
10-ASD330FG-01	R1/8		●	●		
10-ASD430FG-02	R1/4		●	●	●	
10-ASD530FG-02	R1/4		●	●	●	●
10-ASD530FG-03	R3/8		●	●	●	●
10-ASD630FG-04	R1/2				●	●

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	−5 to 60°C (no freezing)
Number of needle rotations	10 rotation (8 rotations ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of type 10-ASD230FG.

Note 2) The maximum operating pressure for polyurethane (at 20°C) is 0.8 MPa.
(Refer to Best Pneumatics catalog for details)

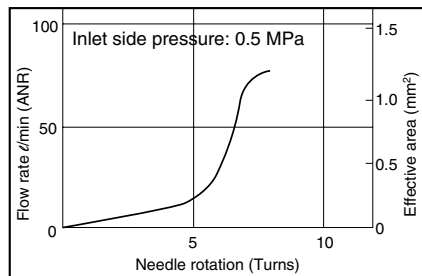
Air flow / Effective area

Model		10-ASD230FG	10-ASD330FG	10-ASD430FG	10-ASD530FG			10-ASD630FG	
Tubing O.D.	Metric size	ø4, ø6	ø6, ø8	ø6, ø8, ø10	ø6, ø8	ø10, ø12	ø10, ø12	ø10, ø12	ø12
Controlled (free) flow	Flow rate ℓ/min (ANR)	75	175	295	350	500	600	700	1200
	Effective area (mm^2)	1.1	2.7	4.5	5.3	7.6	9.1	10.7	18.3

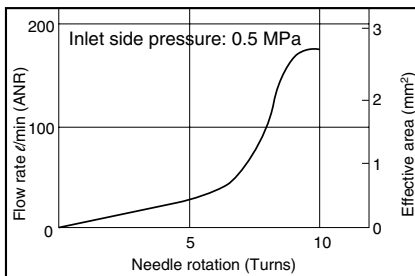
Note 1) Supply pressure: 0.5MPa, Temperature: 20°C.

Needle valve / Flow characteristics

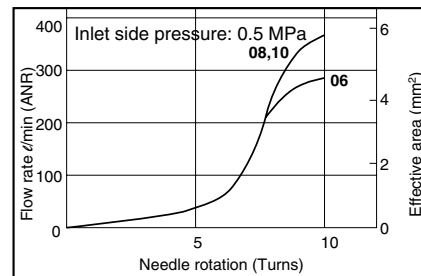
10-ASD230FG



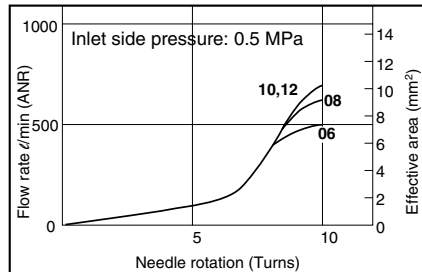
10-ASD330FG



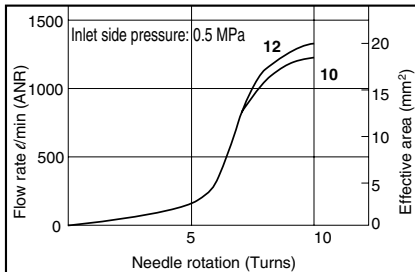
10-ASD430FG



10-ASD530FG

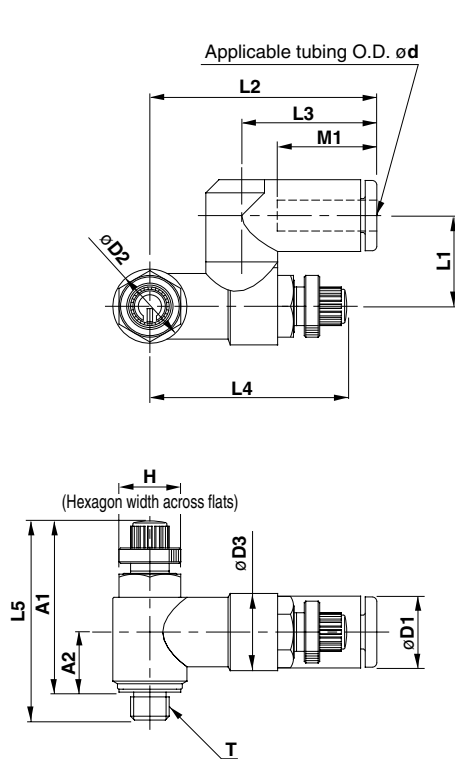


10-ASD630FG

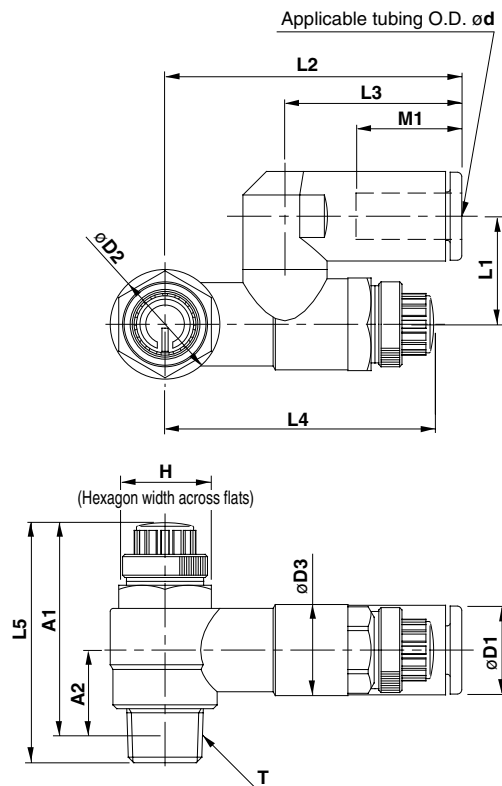


Dimensions

10-ASD230FG



10-ASD330FG/430FG 10-ASD530FG/630FG



Model	d	T	H	D1	D2	D3	L1	L2	L3	L4		L5		A1 *		A2 *	M1			
										MAX.	MIN.	MAX.	MIN.	MAX.	MIN.					
10-ASD230FG-M5-04	4	M5 x 0.8	8	9.3	9.6	10	11.7	29.4	17.5	28.3	25.5	28.6	25.8	25	22.2	7.8	12.7			
10-ASD230FG-M5-06	6			11.6				32.5	20.6								13.5			
10-ASD330FG-01-06S	6			R1/8				12	14.2								11.8	14	38.5	22.9
10-ASD330FG-01-08S	8	15.2	44.8		28.2	38.9	33.9		40.4	35.4	34.4	29.4	11	17						
10-ASD430FG-02-06S	6	R1/4	17	12.8	18.5	15	18	43.5	25.2	41.7	36.7	40.4	35.4	34.4	29.4	11	21			
10-ASD430FG-02-08S	8			15.2				46.5	28.2								18.5			
10-ASD430FG-02-10S	10			18.5				49.3	31								17			
10-ASD530FG-02-06S	6		19	23	19.8	20.3	23.1	48.3	25.2	46.9	41.9	48.8	43.8	42.8	37.8	15.4	17			
10-ASD530FG-02-08S	8							51.3	28.2								18.5			
10-ASD530FG-02-10S	10							18.5	54.1								32.6	21		
10-ASD530FG-02-12S	12	20.9					55.9	34.4	22											
10-ASD530FG-03-06S	6	R3/8					12.8	20.3	48.3					25.2	54.1	32.6	40	35	14	17
10-ASD530FG-03-08S	8																			15.2
10-ASD530FG-03-10S	10		18.5	54.1	32.6	21														
10-ASD530FG-03-12S	12		20.9	55.9	34.4	22														
10-ASD630FG-04-10S	10	R1/2	24	18.5	28.6	26.5	25.9	64.3	32.6	64.8	57.3	57.6	50.1	49.6	42.1	18.6	21			
10-ASD630FG-04-12S	12			20.9				66.1	34.4								22			

* Reference thread dimensions after R thread being screwed in.

Series 10-AS-FM

Speed Controller for Low-Speed Operation with One-touch Fittings (Elbow Type / Universal Type)

How to Order

10 – AS 2 2 1 1 F M – 01 – 06

Clean series

Body size

1	M5 standard
2	1/8, 1/4 standard

Type

2	Elbow
3	Universal

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

For low speed operation

Option

Nil	None
S	With sealant

* Sealant is not available with the M5 type.

Applicable tubing O.D. Metric size

23	ø3.2 *
04	ø4
06	ø6
08	ø8
10	ø10

* ø1/8" tubing should be used.

Port size

M5	M5 x 0.8
01	R1/8
02	R1/4



Model

Elbow type	Universal type	Port size	Applicable tubing O.D.				
			Metric size				
			3.2	4	6	8	10
10-AS12□1FM-M5	10-AS13□1FM-M5	M5 x 0.8	●	●	●		
10-AS22□1FM-01	10-AS23□1FM-01	R1/8	●	●	●	●	
10-AS22□1FM-02	10-AS23□1FM-02	R1/4		●	●	●	●

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	−5 to 60°C (no freezing)
Number of needle rotations	10 rotations (20 rotations ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Option ^{Note 3)}	With sealant
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of 10-AS12□1FM and 10-AS13□1FM types

Note 2) The maximum operating pressure for polyurethane (at 20 °C) is 0.8 MPa.

(Refer to Best Pneumatics catalog for details.)

Note 3) Sealant is not available in case of types with M5 port.

* Brass parts are all electroless nickel plated.

* The knob of the M5 type and the lock nut of the meter-in type are black zinc chromated.

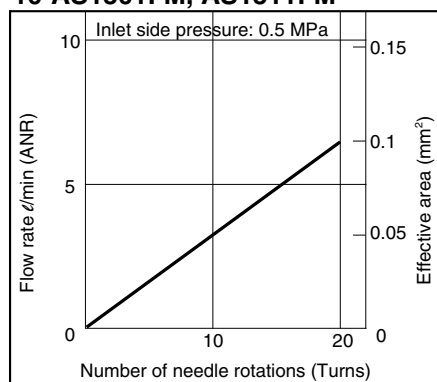
Air flow / Effective area

Model		10-AS12□1FM 10-AS13□1FM	10-AS22□1FM-01 10-AS23□1FM-01	10-AS22□1FM-02 10-AS23□1FM-02
Tubing O.D.	Metric size	ø3.2, ø4, ø6	ø3.2, ø4 ø6, ø8	ø4 ø6 ø8, ø10
Controlled flow	Flow rate $\ell/\text{min}(\text{ANR})$	7	12	38
	Effective area (mm^2)	0.1	0.2	0.6
Free flow	Flow rate $\ell/\text{min}(\text{ANR})$	100	180 230	260 390 460
	Effective area (mm^2)	1.5	2.7 3.5	4 6 7

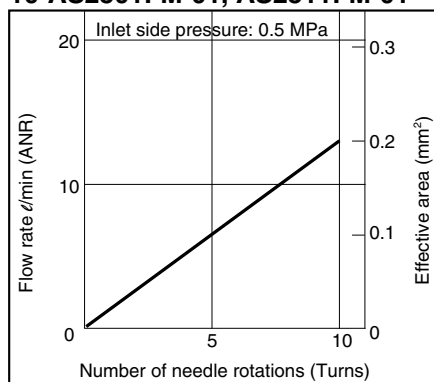
Note) Supply pressure: 0.5MPa, Temperature: 20°C.

Needle Valve / Flow Characteristics

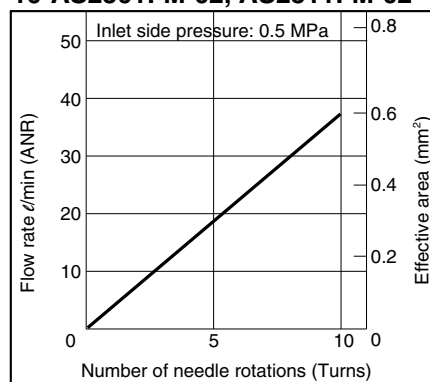
10-AS1201FM, AS1211FM
10-AS1301FM, AS1311FM



10-AS2201FM-01, AS2211FM-01
10-AS2301FM-01, AS2311FM-01

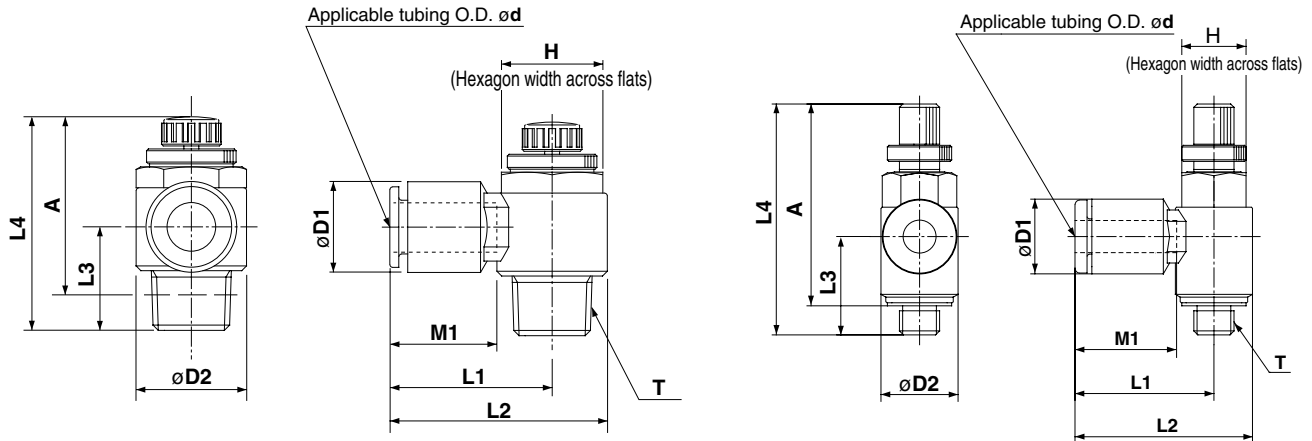


10-AS2201FM-02, AS2211FM-02
10-AS2301FM-02, AS2311FM-02



Dimensions / Elbow type

M5 type

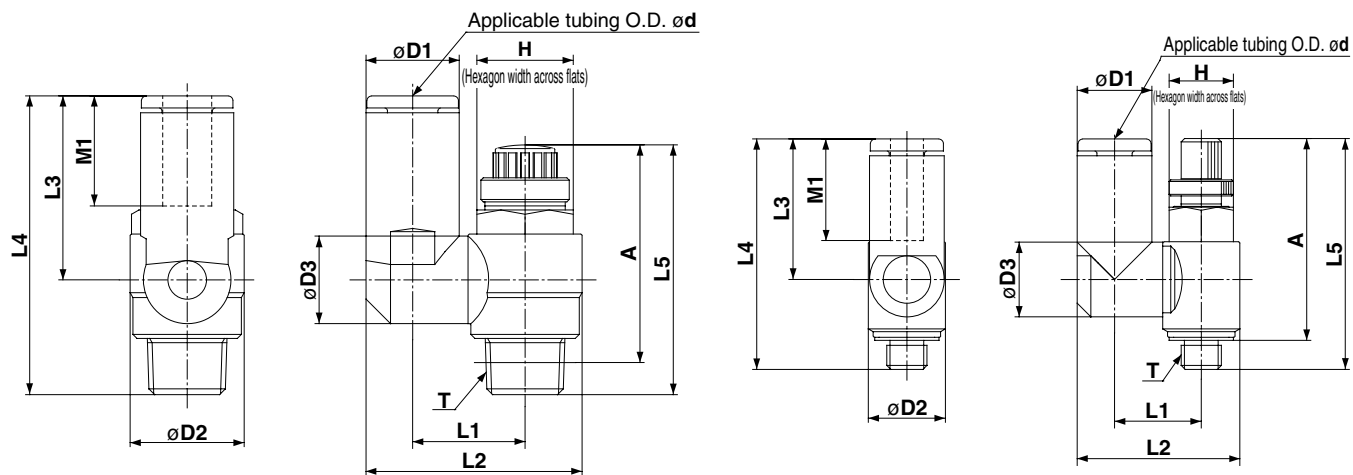


Model	d	T	H	D1	D2	L1	L2	L3	L4		A *		M1	Weight (g)
									MAX.	MIN.	MAX.	MIN.		
10-AS12□1FM-M5-23	3.2	M5 x 0.8	8	8.4	9.6	17.3	22.1	12.3	33.8	28.8	30.1	25.1	12.7	7
10-AS12□1FM-M5-04	4			9.3									13.5	
10-AS12□1FM-M5-06	6			11.6									13.5	
10-AS22□1FM-01-23	3.2	R1/8	12	9.3	14.2	20.4	27.5	14.3	36.1	31.1	32.1	27.1	12.7	17
10-AS22□1FM-01-04	4			11.6									13.5	
10-AS22□1FM-01-06	6			15.2									18.5	
10-AS22□1FM-01-08	8	R1/4	17	10.4	18.5	25.2	34.4	18.2	40.4	35.4	34.4	29.4	16	32
10-AS22□1FM-02-04	4			12.8									17	
10-AS22□1FM-02-06	6			15.2									18.5	
10-AS22□1FM-02-08	8			18.5									21.0	
10-AS22□1FM-02-10	10					35.3	44.5	20.0					21.0	36

* Reference threaded dimensions after being screwed in.

Dimensions / Universal type

M5 type



Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5		A *		M1	Weight (g)
											MAX.	MIN.	MAX.	MIN.		
10-AS13□1FM-M5-23	3.2	M5 x 0.8	8	8.4	9.6	9.3	10.8	19.8	17.5	28.7	33.8	28.8	30.1	25.1	12.7	8
10-AS13□1FM-M5-04	4			9.3				20.3							13.5	
10-AS13□1FM-M5-06	6			11.6				21.4							13.5	
10-AS23□1FM-01-23	3.2	R1/8	12	8.4	14.2	10.9	14	24.4	17.5	31.8	36.1	31.1	32.1	27.1	12.7	17
10-AS23□1FM-01-04	4			9.3				24.9							13.5	
10-AS23□1FM-01-06	6			11.6				26.9							13.5	
10-AS23□1FM-01-08	8	R1/4	17	15.2	18.5	12.9	16.2	30.9	28.2	41.7	40.4	35.4	34.4	29.4	18.5	36
10-AS23□1FM-02-04	4			10.4				30.6							16	
10-AS23□1FM-02-06	6			12.8				34							17	
10-AS23□1FM-02-08	8			15.2				35.2							18.5	
10-AS23□1FM-02-10	10			18.5				38.7							21	

* Reference thread dimensions after being screwed in.

Series 10-AS-FM

Speed Controller for Low-Speed Operation
with One-touch Fittings (Inline Type)

How to Order

10 — AS 200 1 F M — 06

- Clean series**
- Body size**

100	M5 standard
200	1/8 standard
205	1/4 standard
- With one-touch fittings**
- For low speed control**
- Applicable tubing O.D. Metric size**

23	ø3.2*
04	ø4
06	ø6
08	ø8

* ø1/8 tubing should be used.



Model

Model	Applicable tubing O.D				Applicable tubing I.D. (mm)
	Metric size				
	3.2	4	6	8	
10-AS1001FM	●	●	●		6, 10, 16, 20
10-AS2001FM		●	●		20, 25, 32
10-AS2051FM			●	●	20, 25, 32, 40

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	–5 to 60°C (no freezing)
Number of needle rotations	10 rotation (8 rotations ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of 10-AS1001FM type

Note 2) The maximum operating pressure for polyurethane (at 20 °C) is 0.8 MPa.

(Refer to Best Pneumatics catalog for details.)

* Brass parts are all electroless nickel plated.

* The knob of the M5 type is black zinc chromated.

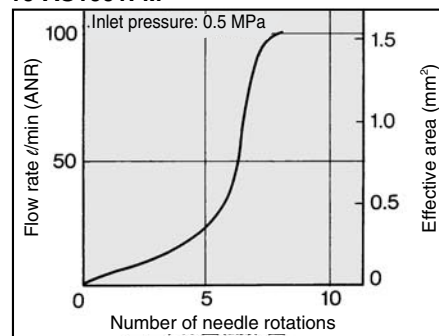
Air flow / Effective area

Model		10-AS1001FM	10-AS2001FM		10-AS2051FM	
Tubing O.D.	Metric size	ø3.2	ø4	ø6	ø6	ø8
		ø4 ø6				
Controlled (free) flow	Flow rate ℓ /min (ANR)	100	130	230	290	460
	Effective area (mm ²)	1.5	2	3.5	4.5	7

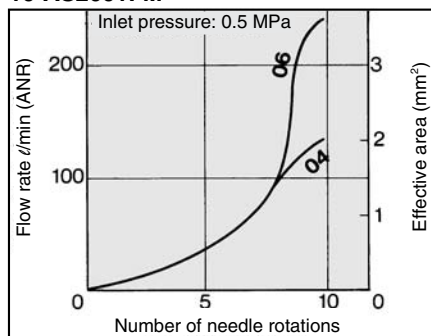
(Note) Supply pressure: 0.5MPa, Temperature: 20°C.

Needle valve / Flow characteristics

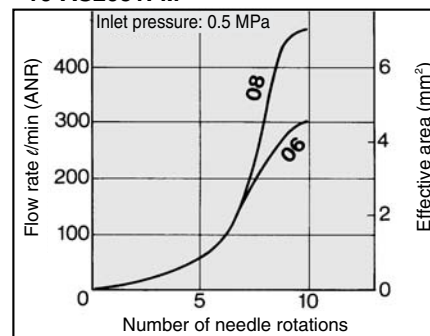
10-AS1001FM



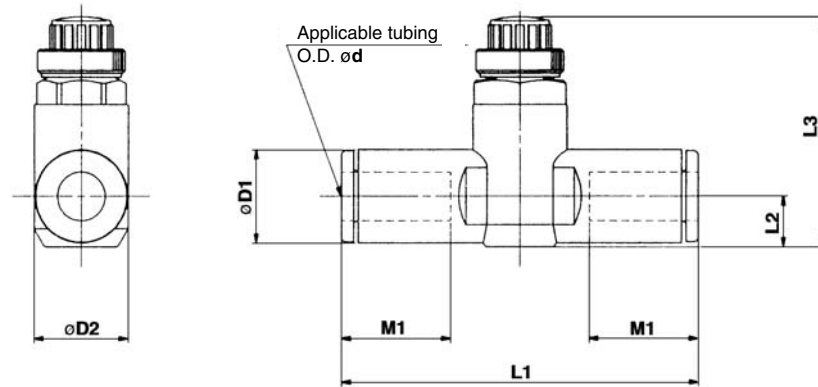
10-AS2001FM



10-AS2051FM



Dimensions



Model	d	D1	D2	L1	L2	L3		M1	Weight (g)
						MAX.	MIN.		
10-AS1001FM-23	3.2	8.4	10	38	4.5	27.7	24.9	12.7	6
10-AS1001FM-04	4	9.3		39.2	5.2	28.5	25.5		7
10-AS1001FM-06	6	11.6		11.8	40.7	6.2	29.8	26.6	13.5
10-AS2001FM-04	4	9.3	5.2			32.6	27.6	12.7	12
10-AS2001FM-06	6	11.6	14.8		44.8	6.3	33.7	28.7	13.5
10-AS2051FM-06		12.8		53.2	6.7	35.2	30.2	17	26
10-AS2051FM-08		8	15.2	59.8	8.1	36.5	31.5	18	31

Series 10-ASD-FM

Dual Speed Controller for Low-Speed Operation

How to Order

10 — ASD 3 3 0 F M — 01 — 06 S

Clean series •

Body size •

2	M5 standard
3	1/8 standard
4	1/4 standard

Type •

3	Universal
---	-----------

With one-touch fittings •

For low speed control •

With sealant •
* S is not necessary in case of M5 types, which are not provided with sealant.

Applicable tubing O.D. Metric size

04	ø4
06	ø6
08	ø8
10	ø10

Port size

M5	M5 x 0.8
01	R1/8
02	R1/4



Model

Model	Applicable tubing			
	Metric size			
	4	6	8	10
10-ASD230FM-M5	●	●		
10-ASD330FM-01		●	●	
10-ASD430FM-02		●	●	●

Specifications

Proof pressure	1.5MPa
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	-5 to 60°C (no freezing)
Number of needle rotations	10 rotations (20 rotations ^{Note 1)})
Applicable tubing material	Polyurethane ^{Note 2)}
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) In case of 10-ASD230FM type

Note 2) The maximum operating pressure for polyurethane (at 20 °C) is 0.8 MPa.

(Refer to page Best Pneumatics catalog for details.)

* The knob of the M5 type and the lock nut of the meter-in type are black zinc chromated.

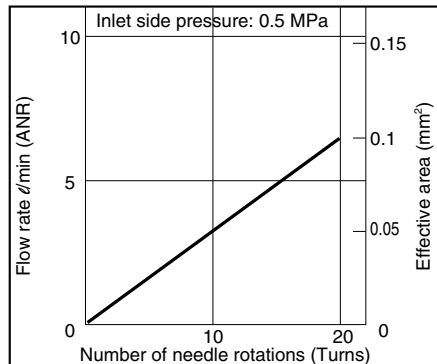
Air flow / Effective area

Model		10-ASD230FM	10-ASD330FM	10-ASD430FM	
Tubing O.D.	Metric size	ø4, ø6	ø6, ø8	ø6	ø8, ø10
Controlled flow	Flow rate ℓ /min (ANR)	7	12	38	
	Effective area (mm ²)	0.1	0.2	0.6	
Free flow	Flow rate ℓ /min (ANR)	75	175	295	350
	Effective area (mm ²)	1.1	2.7	4.5	5.3

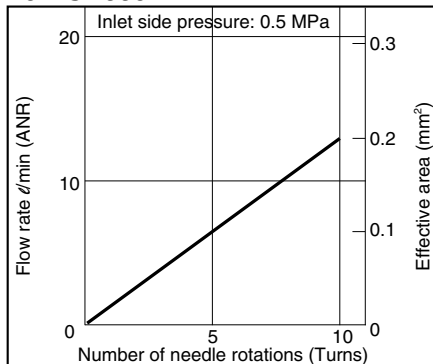
Note 1) Supply pressure: 0.5MPa, Temperature: 20°C.

Needle valve / Flow characteristics

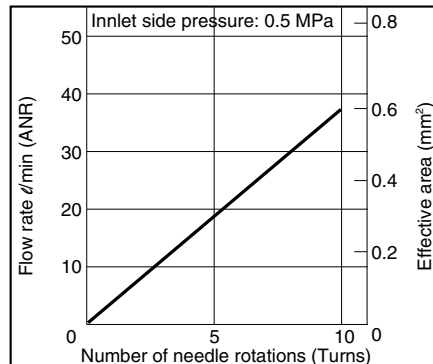
10-ASD230FM



10-ASD330FM

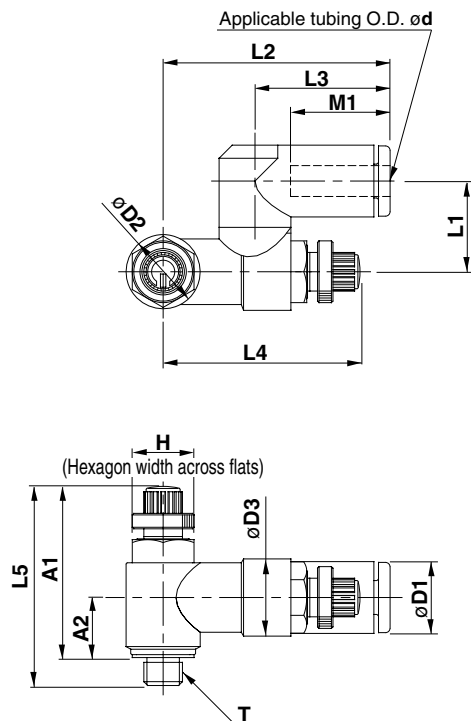


10-ASD430FM

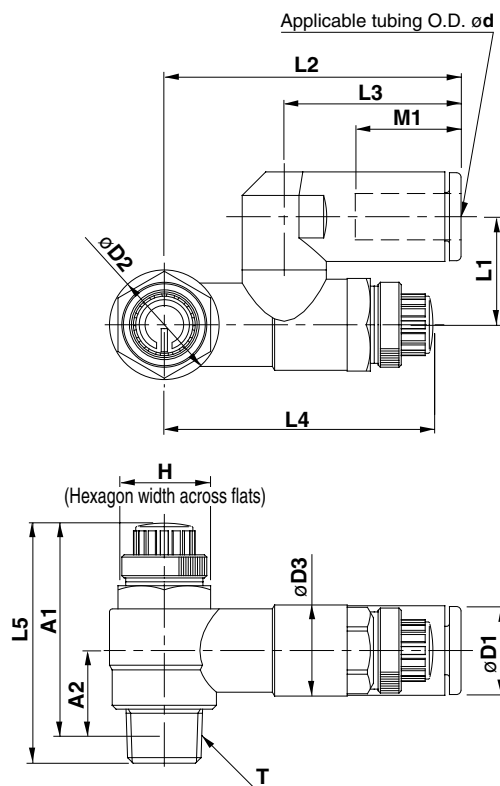


Dimensions

10-ASD230FM



10-ASD330FM/430FM



Model	d	T	H	D1	D2	D3	L1	L2	L3	L4		L5		A1 *		A2 *	M1	Weight (g)
										MAX.	MIN.	MAX.	MIN.	MAX.	MIN.			
10-ASD230FM-M5-04	4	M5 x 0.8	8	9.3	9.6	10	11.7	29.4	17.5	34.6	29.6	33.8	28.8	30.1	25.1	7.8	12.7	12
10-ASD230FM-M5-06	6			11.6				32.5	20.6								13.5	13
10-ASD330FM-01-06S	6	R1/8	12	11.6	14.2	11.8	14	38.5	22.9	39.6	34.6	36.1	31.1	32.1	27.1	10.6	13.5	29
10-ASD330FM-01-08S	8			15.2			15.8	44.8	28.2	38.9	33.9						18.5	31
10-ASD430FM-02-06S	6	R1/4	17	12.8	18.5	15	18	43.5	25.2	41.8	36.8	40.4	35.4	34.4	29.4	11	17	53
10-ASD430FM-02-08S	8			15.2				46.5	28.2								18.5	55
10-ASD430FM-02-10S	10			18.5				49.3	31								21	58

* Reference threaded dimensions after being screwed in.

Series 10-AS

Speed Controller
Cylinder Direct Mount Type / Metal Elbow Type
10-AS1200, 2200, 3200, 4200

How to Order



Clean series

Body size
1 — M3, M5 standard
2 — 1/8, 1/4 standard
3 — 3/8 standard
4 — 1/2 standard

Elbow

10 - AS 2 2 0 0 - 02 - (N)

Control method
0 — Meter-out
1 — Meter-in

Port size
M3 — M3 x 0.5
M5 — M5 x 0.8
01 — R1/8
02 — R1/4
03 — R3/8
04 — R1/2

Option *
S - With sealant
K - Hexagon lock nut
* Please give the order SK to the option.

Nickel plated specification
Add "N" only for piping port sizes of R 3/8 and R 1/2.
"N" is not necessary for M3, M5, R1/8, and R1/4.

Specifications

Model	10-AS1200-M3	10-AS1200-M5	10-AS2200-01	10-AS2200-02	10-AS3200-03	10-AS4200-04
Port size	M3 x 0.5	M5 x 0.8	R1/8	R1/4	R3/8	R1/2
Applicable cylinder bore size (mm)	2.5, 4, 6	6, 10, 15, 20, 25	20, 25, 32, 40	32, 40, 50, 63	80, 100	
Proof pressure	1.05MPa	1.5MPa				
Max. operating pressure	0.7MPa	1MPa				
Min. operating pressure	0.1MPa	0.1MPa				
Ambient and fluid temperature	-5 to 60°C (no freezing)					
Number of needle rotations	10 rotations	8 rotations	10 rotations			
Option	Hexagon lock nut					
Weight (g)	3	10	29	64	106	181
Grease	Fluorine grease					
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 1					

Controlled flow	Flow rate ℓ/min (ANR)	20	105	230	460	920	1700
(Free flow)	Effective area (mm ²)	0.3	1.6	3.5	7	14	26

Note 1) Supply pressure: 0.5 MPa, Temperature: 20°C.

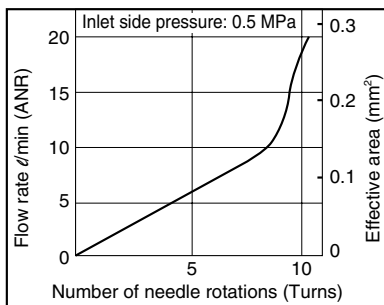
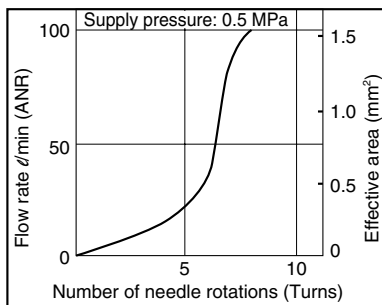
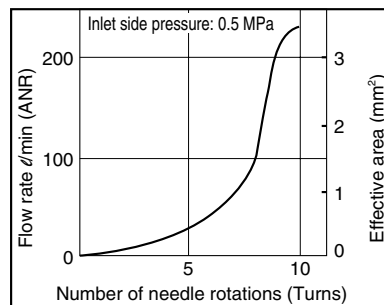
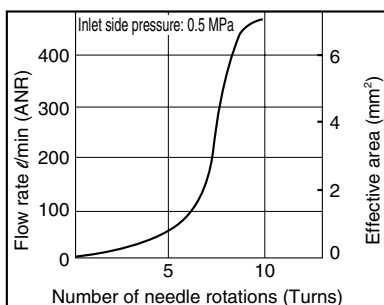
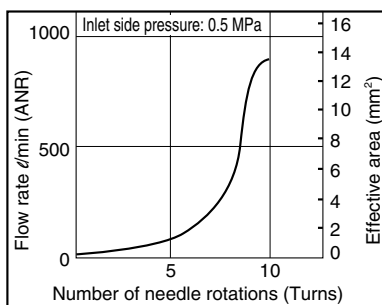
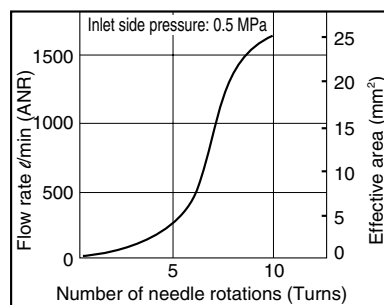
Note 2) A meter-in type is not available with AS1200-M3.

Note 3) Visual distinction between meter-out and meter-in types

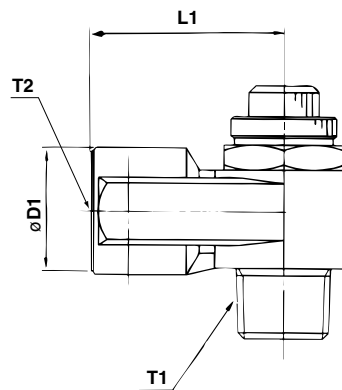
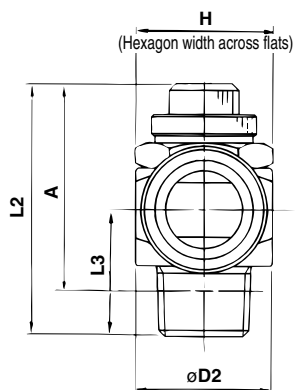
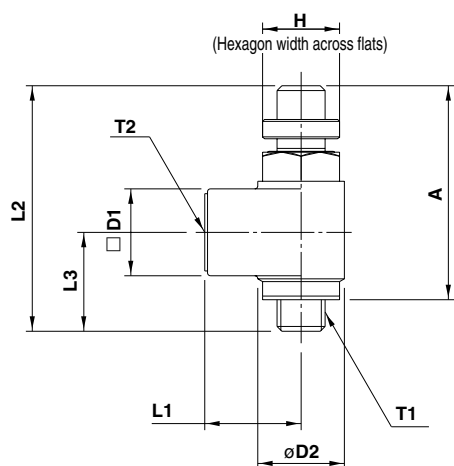
The meter-out and meter-in types can be visually determined by the lock nut.

The lock nut of the meter-out type is electroless nickel plated while that of the meter-in type is black zinc chromate plated.

Needle valve / Flow characteristics

10-AS1200-M3

10-AS12□0-M5

10-AS22□0-01

10-AS22□0-02

10-AS32□0

10-AS42□0


Dimensions

10-AS1200-M3
10-AS12□0-M5
10-AS2200/3200/4200


Dimensions

Model	T1	T2	H	L1	L2		L3	D1	D2	A	
					MAX.	MIN.				MAX.	MIN.
10-AS1200-M3	M3 x 0.5	M3 x 0.5	4.5	6.6	23.5	21.5	8	5	5	20.5	18.5
10-AS12□0-M5	M5 x 0.8	M5 x 0.8	8	10	28.3	25.5	10.3	9	9	25	22.2
10-AS22□0-01	R1/8	Rc1/8	12	18	36.4	31.4	14.1	14.3	14.6	32.4	27.4
10-AS22□0-02	R1/4	Rc1/4	17	27.2	40.8	35.8	18	18	19.5	34.8	29.8
10-AS32□0-03	R3/8	Rc3/8	19	30	46.9	41.9	20.8	22.5	24.3	40.6	35.6
10-AS42□0-04	R1/2	Rc1/2	24	38.5	55.6	50.6	26.7	27.5	28.5	47.4	42.4

Series 10-AS

Speed Controller / Inline Type
10-AS1000, 2000, 3000, 4000, 5000

How to Order

Clean series

Body size

- 1 — M3, M5 standard
- 2 — 1/8, 1/4 standard
- 3 — 3/8 standard
- 4 — 1/2 standard
- 5 — 1/2 standard

Inline type



10 - AS 1 000 - M5

Port size

- M3 — M3 x 0.5
- M5 — M5 x 0.8
- 01 — Rc1/8
- 02 — Rc1/4
- 03 — Rc3/8
- 04 — Rc1/2

Model / Flow rate / Effective area

Model	Port size	Free flow		Controlled flow		Applicable cylinder bore size (mm)
		Flow rate l/min (ANR)	Effective area (mm ²)	Flow rate l/min (ANR)	Effective area (mm ²)	
10-AS1000-M3	M3 x 0.5	20	0.3	20	0.3	2.5, 4, 6
10-AS1000-M5	M5 x 0.8	90	1.4	80	1.2	6, 10, 15, 20, 25
10-AS2000-01	Rc1/8	340	5.2	250	3.8	20, 25, 30, 40
10-AS2000-02	Rc1/4	340	5.2	250	3.8	
10-AS3000-02	Rc1/4	810	12.3	810	12.3	30, 40, 50, 63
10-AS3000-03	Rc3/8	810	12.3	810	12.3	
10-AS4000-02	Rc1/4	1670	25.5	1670	25.5	40, 50, 63, 80, 100
10-AS4000-03	Rc3/8	1670	25.5	1670	25.5	
10-AS4000-04	Rc1/2	1670	25.5	1670	25.5	
10-AS5000-02	Rc1/4	2840	44	2840	44	40, 50, 63, 80, 100
10-AS5000-03	Rc3/8	4270	66	4270	66	
10-AS5000-04	Rc1/2	4270	66	4270	66	

Note) Supply pressure: 0.5MPa, Temperature: 20°C.

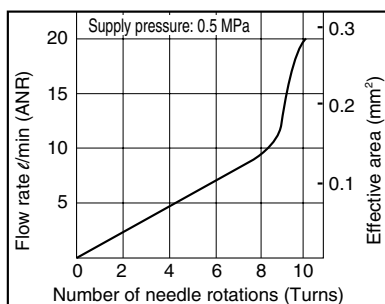
Specifications

Proof pressure ^{Note)}	1.5MPa (1.05MPa)
Operating pressure range ^{Note)}	0.05 to 1.0 MPa (0.1 to 0.7MPa)
Ambient and fluid temperature	-5 to 60°C (no freezing)
Number of needle rotations ^{Note)}	8 rotations (10 rotations)
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 1

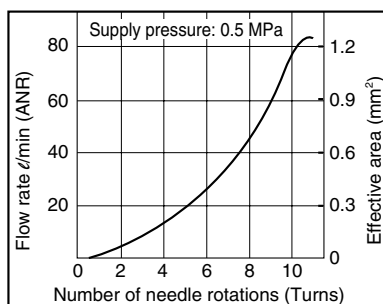
Note) Descriptions in parentheses are for 10-AS1000.

Needle valve / Flow characteristics

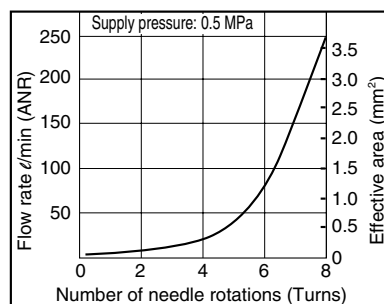
10-AS1000-M3



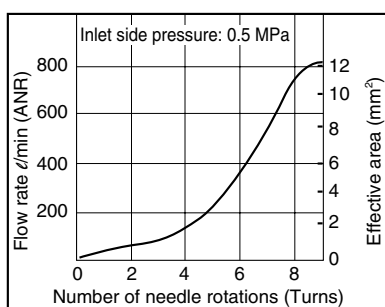
10-AS1000-M5



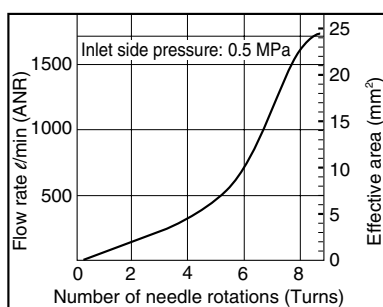
10-AS2000



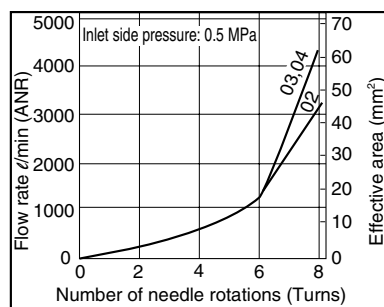
10-AS3000



10-AS4000

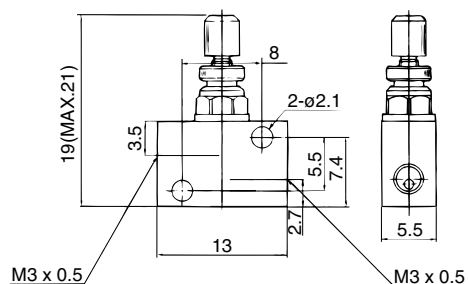


10-AS5000

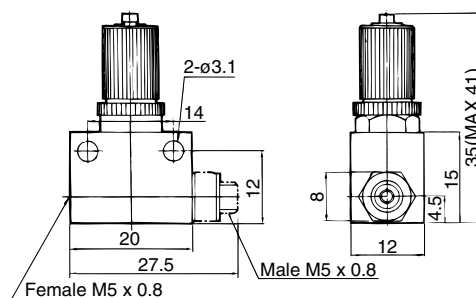


Dimensions

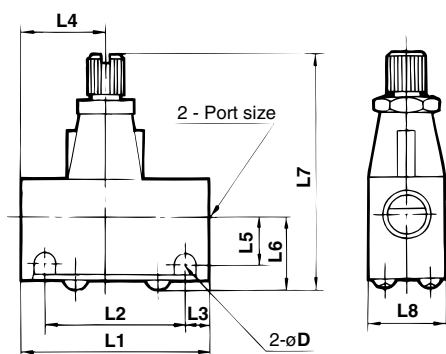
10-AS1000-M3



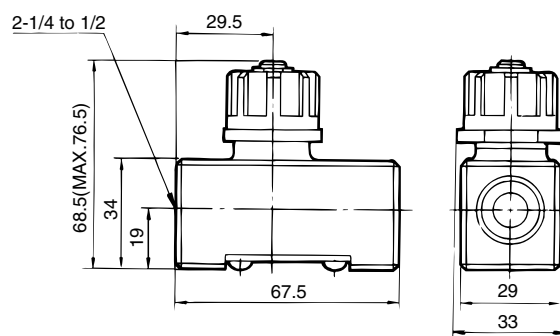
10-AS1000-M5



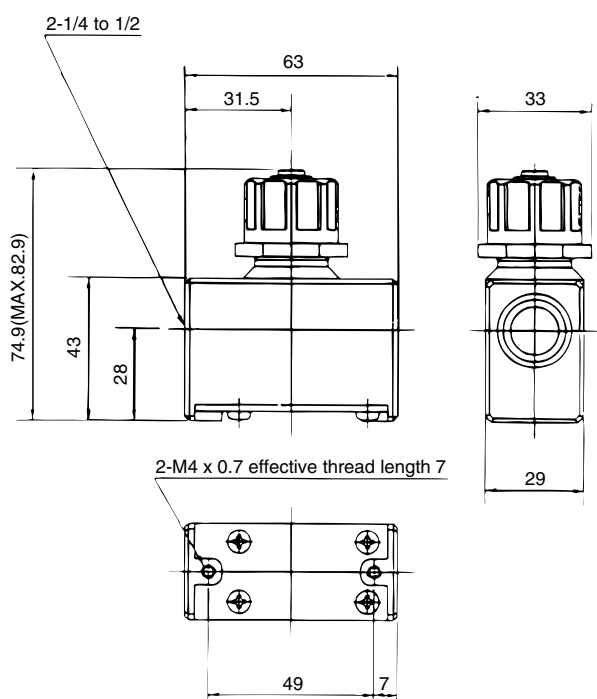
10-AS2000 / 3000



10-AS4000



10-AS5000



Dimensions

Model	Port size	L1	L2	L3	L4	L5	L6	L7		L8	D
								MAX.	MIN.		
10-AS2000-01	Rc1/8	40	30	5	17	10	15.5	54.5	50	16	4.5
10-AS2000-02	Rc1/4	23	11.5	17	56	51.5	20				
10-AS3000-02/03	Rc1/4, Rc3/8	56	45.5	5.25	25	13.2	20.6	68	61	26	5.5



Flow Control Equipment Common Precautions

Be sure to read before handling.

Selection

Warning

1. **Products mentioned in this catalog are not designed for the use as stop valve with zero air leakage.**
Products specification allows for a small amount of air leakage.

Mounting

Warning

1. **Check that the lock nut is tightened.**
A loose lock nut is dangerous since it may cause actuator speed changes.
2. **Confirm the degree of rotation of the needle valve.**
Products mentioned in this catalog are retainer type so that the needle is not removed completely. Over rotation will cause damage.
Confirm the number of rotations of used products.
3. **Confirm air flow direction.**
If mounted in the wrong direction, the speed adjustment needle may not function and may cause uncontrolled extension of the piston rod.
4. **Adjust needle by opening the needle slowly after having closed it completely.**
Loose needle valves may cause unexpected sudden actuator extension. When needle valve is turned clockwise, it is closed and cylinder speed decreases. When needle valve is turned counter clockwise, it is open and cylinder speed increases.
5. **Do not tighten the handle with such tools as cutting pliers.**
It will cause damage or the handle to idle spin.
6. **Do not hit the body and fitting parts with an impacting tool.**
It will cause damage or air leakage.



Flow Control Equipment

Specific Product Precautions

Be sure to read before handling.

Refer to the main text for precautions for each series.

Handling of One-touch Fittings

⚠ Caution

Refer to Best Pneumatics vol. 15 for handling of one-touch fittings.

Series 10-ASD Specific Product Precautions

Operation

⚠ Caution

1. Single acting cylinder

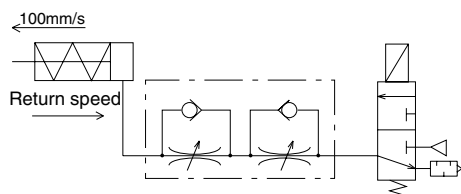
When single acting cylinder is controlled, cylinder retracted speed depends on operating condition. Confirm the maximum retracted speed mentioned in the table below.

Speed controller	Cylinder	Solenoid valve	Tubing	Silencer	Max. retracted speed mm/s
					100 200 300
ASD230F	CJ2	VJ500	TU0604 1m	AN110-01	ø6
					ø10
					ø16
					Cylinder size
ASD330F	CM2	VZ500	TU0604 1m	AN110-01	ø20
					ø25
					ø32
					Cylinder size

<Specification condition >

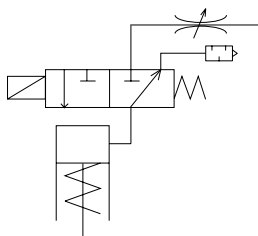
* At pressure 0.5 MPa, temperature 20°C

- Cylinder extending speed: 100mm/s
- Needle fully open at meter-out side



(Reference) Recommended circuit to accelerate the return speed.

When extended speed is low speed and retracted speed is required high speed, below circuit with 3 port is recommended.



Note) Use -X214 of AS-F series as speed controller.

Selection

⚠ Warning

1. Please confirm if it is compatible with PTFE.

PTFE powder (polytetrafluoroethylene resin) is included in sealant. Confirm if the use of it may cause any adverse effect in the system.

Mounting

⚠ Warning

1. To install/remove the Flow Control Equipment, tighten/loosen at wrench flat B as close to the thread as possible using the appropriate wrench.

Do not apply torque at other points as the product may be damaged. Rotate Body A manually for positioning after installation.

2. Do not use universal type fittings for applications involving continuous rotation.

It may cause failure of the fittings.

Tightening torque

⚠ Caution

1. Suitable torque for tightening fittings is shown in the table below. For standard installation, turn 2 to 3 turns using tool after fastening by hand.

Take care not to damage the product by over torque.

Male thread	Appropriate tightening torque (N·m)	Hexagonal width (mm)	Adjustable spanner nominal (mm)
M3	1/4 rotation after manual tightening	4.5	—
M5	1/6 rotation after manual tightening	8	100
1/8	7 to 9	12	150
1/4	12 to 14	17	200
3/8	22 to 24	19	200
1/2	28 to 30	24	200

Tightening Torque for Lock Nuts

⚠ Caution

1. Suitable tightening torque for a hexagon lock nut is shown in the table below. For standard installation, turn 15 to 30° using tool, after fastening by hand. Pay attention not to apply exceeded torque to the product.

Body size	Appropriate tightening torque (N·m)
M3	0.07
M5	0.3
1/8	1
1/4	1.5
3/8	4
1/2	10

For Clean Rooms Filter & Pressure Control Equipment

Description	Series	Page
\\ Air Filter	10-21- AF20 to 60	P.762
\\ Mist Separator	10-21- AFM20 to 40	P.764
\\ Micro Mist Separator	10-21- AFD20 to 40	P.766
\\ Regulator	10-21- AR20 to 60	P.768
\\ Regulator with Back Flow Mechanism	10-21- AR20K to 60K	P.770
\\ Filter Regulator	10-21- AW20 to 40	P.772
\\ Filter Regulator with Back Flow Mechanism	10-21- AW20K to 40K	P.774
\\ Mist Separator Regulator	10-21- AWM20 to 40	P.776
\\ Micro Mist Separator Regulator	10-21- AWD20 to 40	P.778
\\ Direct Operated Precision Regulator	10-21- ARP3000	P.780
\\ Precision Regulator	10-IR1000 to 3000	P.782
\\ Precision Regulator for Vacuum	10-IRV1000 to 3000	P.788
\\ Clean Regulator	SRH3000/4000	P.792
\\ Precision Clean Regulator	SRP1000	P.796
\\ F.R./Precautions		P.800

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-21-AF Air filter

How to Order

Clean series

10-AF 30-F 03 B-J

21-AF 30-F 03 B-J

* "J" must always be selected.

Copper, fluorine and silicon-free + Low particle generation

Air filter

Body size

20 30 40 50 60

Thread type

Nil	Rc
N Note 1)	NPT
F Note 2)	G

Note 1) Drain guide is NPT 1/8 (applicable to size 20), and NPT 1/4 (applicable to size 30 to 60).

Note 2) Drain guide is G 1/8 (applicable to size 20), and G 1/4 (applicable to size 30 to 60).

Port size

Symbol	Port size	20	30	40	50	60
01	1/8	●	—	—	—	—
02	1/4	●	●	—	—	—
03	3/8	—	●	—	—	—
04	1/2	—	—	●	—	—
06	3/4	—	—	●	●	—
10	1	—	—	—	●	●

Accessory

Symbol	Description	Applicable model
Nil	—	—
B Note 3)	With bracket	20 to 60

Note 3) Bracket is not assembled and is supplied loose at the time of shipment.

Option

Symbol	Description	Applicable model
2	Metal bowl	20 to 60
6	Nylon bowl	20 to 60
8	Metal bowl with level gauge	30 to 60
C	With bowl guard	20
J Note 4)	Drain guide 1/8	20
J Note 4)	Drain guide 1/4	30 to 60
R	Flow direction: Right to left	20 to 60
Z Note 5)	Name plate and caution plate for bowl in imperial units (PSI, °F)	20 to 60

Note 4) Without a valve function.

Note 5) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan).



Accessory/Optional specifications combinations

Combination		Optional specifications								Applicable filter	
Accessory	Symbol	B	2	6	8	C	J	R	Z	10-/21-AF20	10-/21-AF30 to 60
With bracket	B	○	○	○	○	○	○	△	△	○	○
Metal bowl	-2	○	○	○	○	○	○	△	△	○	○
Nylon bowl	-6	○	○	○	○	○	○	△	△	○	○
Metal bowl with level gauge	-8	○	○	○	○	○	○	△	△	○	○
With bowl guard	-C	○	○	○	○	○	○	△	△	○	○
Drain guide	-J	○	○	○	○	○	○	△	△	○	○
Flow direction: Right to left	-R	○	○	○	○	○	○	△	△	○	○
Name plate and caution plate for bowl in imperial units (PSI, °F)	-Z	△	△	△	△	△	△	△	△	△	△

Standard specifications

Model	10-/21-AF20	10-/21-AF30	10-/21-AF40	10-/21-AF40-06	10-/21-AF50	10-/21-AF60
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Ambient & fluid temperature	-5 to 60°C (No freezing)					
Nominal filtration rating	5 μm					
Air flow capacity Note 6) (ℓ/min (ANR))	800 (1/8) 1000 (1/4)	1600 (1/4) 2100 (3/8)	1600 (1/4) 2800 (3/8) 3700 (1/2)	4200 (3/4)	6100 (3/4) 7000 (1)	8200 (1)
Drain capacity (cm³)	8	25	45	45	45	45
Drain guide port size	1/8	1/4	1/4	1/4	1/4	1/4
Grease	10-: Fluorine grease 21-: Lithium soap based grease					
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1 21-: Grade 1					

Note 6) Inlet side pressure: 0.5 MPa, Pressure drop: 0.05 MPa (Representative value).

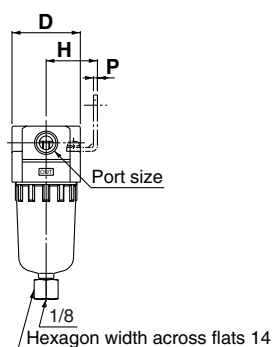
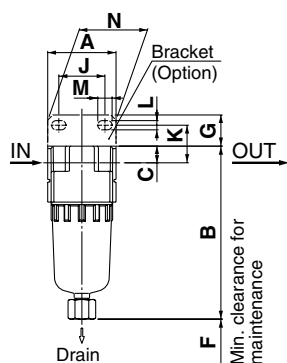
Accessory part no.

Accessory	Applicable model	10-/21-AF20	10-/21-AF30	10-/21-AF40	10-/21-AF40-06	10-/21-AF50	10-/21-AF60
Bracket assembly Note 7)		AF20P-050AS	AF30P-050AS	AF40P-050AS	AF40P-070AS	AF50P-050AS	AF50P-050AS

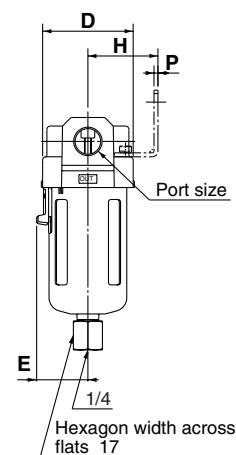
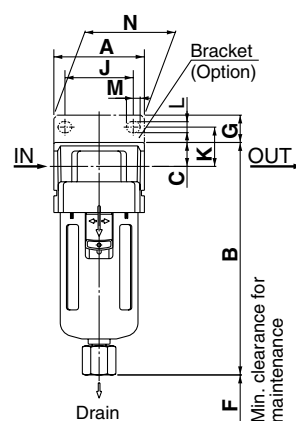
Note 7) Assembly includes a bracket and 2 mounting screws.

Dimensions

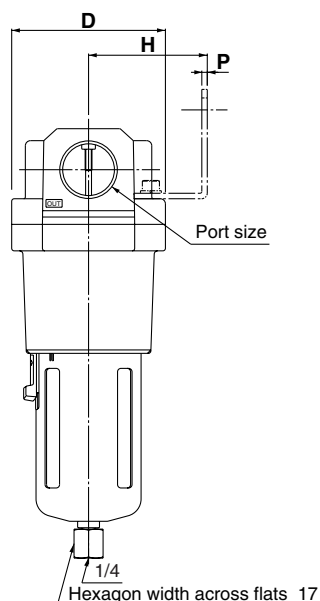
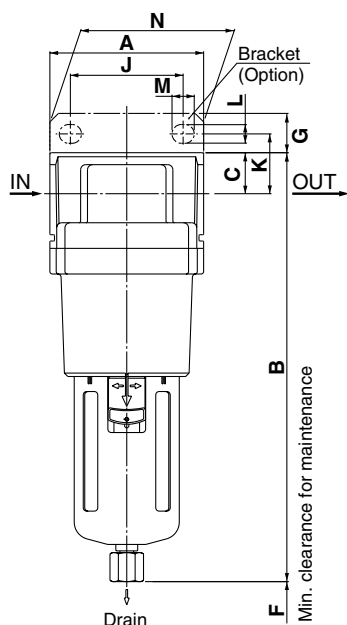
10-21-**AF20**

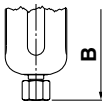
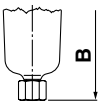
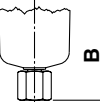
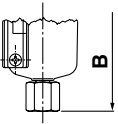


10-21-**AF30 to 40-06**



10-21-**AF50/60**



Applicable model	10-21-AF20				10-21-AF30 to 60			
Optional specifications	With bowl guard	Metal bowl			Metal bowl	Metal bowl with level gauge		
Dimensions								

Model	Port size	Standard specifications							Accessory specifications							Optional specifications		
									Bracket mounting size							With bowl guard	Metal bowl	Metal bowl with level gauge
		A	B	C	D	E	F	G	H	J	K	L	M	N	P			
10-21-AF20	1/8, 1/4	40	101	10	40	—	40	18	30	27	22	5.4	8.4	40	2.3	101	104	—
10-21-AF30	1/4, 3/8	53	136	14	53	30	50	16	41	40	23	6.5	8	53	2.3	—	136	156
10-21-AF40	1/4, 3/8, 1/2	70	172	18	70	38	75	17	50	54	26	8.5	10.5	70	2.3	—	172	192
10-21-AF40-06	3/4	75	176	20	70	38	75	14	50	54	25	8.5	10.5	70	2.3	—	176	196
10-21-AF50	3/4, 1	90	252	24	90	—	20	23	70	66	35	11	13	90	3.2	—	252	272
10-21-AF60	1	95	265	24	95	—	20	23	70	66	35	11	13	90	3.2	—	265	285

Series 10-21-AFM Mist separator

How to Order

Clean series

10-AFM 30-F 03 B-J

21-AFM 30-F 03 B-J

* "J" must always be selected.

Copper, fluorine and silicon-free + Low particle generation

Mist separator

Body size

20 30 40

Thread type

Nil	Rc
N Note 1)	NPT
F Note 2)	G

Note 1) Drain guide is NPT 1/8 (applicable to size 20), and NPT 1/4 (applicable to size 30 and 40).

Note 2) Drain guide is G 1/8 (applicable to size 20), and G 1/4 (applicable to size 30 and 40).

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●
06	3/4	—	—	●

Accessory

Symbol	Description	Applicable model
Nil	—	—
B Note 3)	With bracket	20 to 40

Note 3) Bracket is not assembled and is supplied loose at the time of shipment.

Option

Symbol	Description	Applicable model
2	Metal bowl	20 to 40
6	Nylon bowl	20 to 40
8	Metal bowl with level gauge	30, 40
C	With bowl guard	20
J Note 4)	Drain guide 1/8	20
	Drain guide 1/4	30, 40
R	Flow direction: Right to left	20 to 40
Z Note 5)	Name plate and caution plate for bowl in imperial units (PSI, °F)	20 to 40

When more than one specification is required, indicate in ascending alphanumeric order.

Note 4) Without a valve function.

Note 5) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)



Accessory/Optional specifications combinations

Accessory/Optional specifications combinations

○Combination available ■Combination not available
○Varies depending on the model △Available only with NPT thread

Combination		Symbol	Accessory	Optional specifications							Applicable mist separator	
Accessory/Optional specifications				B	2	6	8	C	J	R	Z	10-/21-AFM20
Optional specifications	With bracket	B	■	○	○	○	○	○	○	△	○	○
	Metal bowl	-2	○	■	■	■	○	○	△	○	○	
	Nylon bowl	-6	○	■	■	○	○	○	△	○	○	
	Metal bowl with level gauge	-8	○	■	■	○	○	△	■	○		
	With bowl guard	-C	○	○	■	○	○	△	○	■		
	Drain guide	-J	○	○	○	○	○	○	△	○	○	
	Flow direction: Right to left	-R	○	○	○	○	○	○	△	○	○	
	Name plate and caution plate for bowl in imperial units (PSI, °F)	-Z	△	△	△	△	△	△	△	△	△	

Standard specifications

Model	10-/21-AFM20	10-/21-AFM30	10-/21-AFM40	10-/21-AFM40-06
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Minimum operating pressure	0.05 MPa			
Ambient & fluid temperature	-5 to 60°C (No freezing)			
Nominal filtration rating	0.3 μm (95% filtered particle size)			
Outlet side oil mist concentration	Maximum 1.0 mg/m ³ (ANR) (approx. 0.8 ppm) Note 6)			
Rated flow (ℓ/min (ANR)) Note 7)	200	450	1100	1100
Drain capacity (cm ³)	8	25	45	45
Drain guide port size	1/8	1/4	1/4	1/4
Grease	10-: Fluorine grease 21-: Lithium soap based grease			
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1 21-: Grade 1			

Note 6) When the compressor oil mist discharge concentration is 30 mg/m³ (ANR).

Note 7) When the inlet pressure is 0.7 MPa. Flow rate varies depending on the inlet pressure.

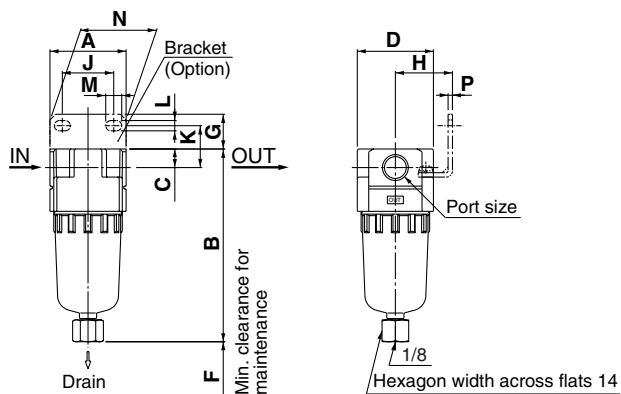
Accessory part no.

Accessory	Applicable model	10-/21-AFM20	10-/21-AFM30	10-/21-AFM40	10-/21-AFM40-06
Bracket assembly Note 8)		AF20P-050AS	AF30P-050AS	AF40P-050AS	AF40P-070AS

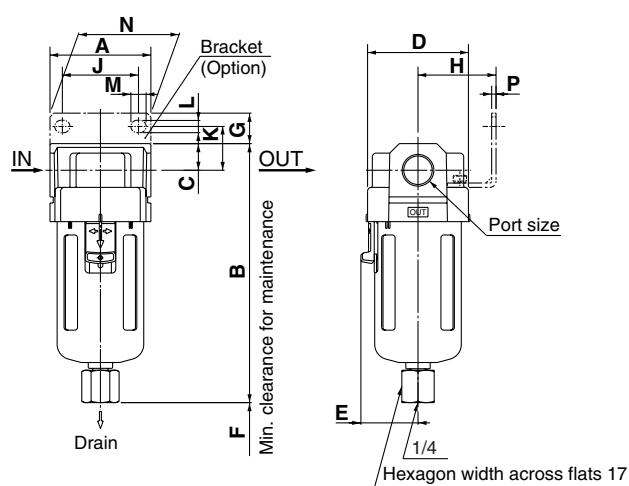
Note 8) Assembly includes a bracket and 2 mounting screws.

Dimensions

10-21-AFM20



10-21-AFM30 to 40-06



Applicable model	10-/21-AFM20		10-/21-AFM30 to 40-06	
Optional specifications	With bowl guard	Metal bowl	Metal bowl	Metal bowl with level gauge
Dimensions				

Model	Port size	Standard specifications						Accessory specifications								Optional specifications		
								Bracket mounting size								With bowl guard	Metal bowl	Metal bowl with level gauge
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	B	B	B
10-/21-AFM20	1/8, 1/4	40	101	10	40	—	45	18	30	27	22	5.4	8.4	40	2.3	101	104	—
10-/21-AFM30	1/4, 3/8	53	136	14	53	30	50	16	41	40	23	6.5	8	53	2.3	—	136	156
10-/21-AFM40	1/4, 3/8, 1/2	70	172	18	70	38	75	17	50	54	26	8.5	10.5	70	2.3	—	172	192
10-/21-AFM40-06	3/4	75	176	20	70	38	75	14	50	54	25	8.5	10.5	70	2.3	—	176	196

Series 10-21-AFD Micro mist separator

How to Order

Clean series 

10-AFD 30-F 03 B-J

21-AFD 30-F 03 B-J

* "J" must always be selected.

Copper, fluorine and silicon-free + Low particle generation

Micro mist separator

Body size

20 30 40

Thread type

Nil	Rc
N Note 1)	NPT
F Note 2)	G

Note 1) Drain guide is NPT 1/8 (applicable to size 20), and NPT 1/4 (applicable to size 30 and 40).

Note 2) Drain guide is G 1/8 (applicable to size 20), and G 1/4 (applicable to size 30 and 40).

Port size

Symbol	Port size	Body size
		20 30 40
01	1/8	● — —
02	1/4	— ● —
03	3/8	— — ●
04	1/2	— — ●
06	3/4	— — ●

Accessory

Symbol	Description	Applicable size
Nil	—	—
B Note 3)	With bracket	20 to 40

Note 3) Bracket is not assembled and is supplied loose at the time of shipment.

Option

Symbol	Description	Applicable size
2	Metal bowl	20 to 40
6	Nylon bowl	20 to 40
8	Metal bowl with level gauge	30, 40
C	With bowl guard	20
J Note 4)	Drain guide 1/8	20
	Drain guide 1/4	30, 40
R	Flow direction: Right to left	20 to 40
Z Note 5)	Name plate and caution plate for bowl in imperial units (PSI, °F)	20 to 40

Note 4) Without a valve function.

Note 5) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)



Accessory/Optional specifications combinations

Combination		Symbol	Access-ory	Optional specifications							Applicable to micro mist separator	
				B	2	6	8	C	J	R	Z	10-/21-AFD20
Accessory/Optional specifications												
Accessory Optional specifications	With bracket	B		⊙	⊙	○	○	⊙	⊙	△	⊙	⊙
	Metal bowl	-2	⊙					⊙	⊙	△	⊙	⊙
	Nylon bowl	-6	⊙				○	⊙	⊙	△	⊙	⊙
	Metal bowl with level gauge	-8	⊙					⊙	⊙	△		⊙
	With bowl guard	-C	⊙		⊙			⊙	⊙	△	⊙	
	Drain guide	-J	⊙	⊙	⊙	○	○		⊙	△	⊙	⊙
	Flow direction: Right to left	-R	⊙	⊙	⊙	○	○	⊙		△	⊙	⊙
	Name plate and caution plate for bowl in imperial units (PSI, °F)	-Z	△	△	△	△	△	△	△		△	△

Standard specifications

Model	10-/21-AFD20	10-/21-AFD30	10-/21-AFD40	10-/21-AFD40-06
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Minimum operating pressure	0.05 MPa			
Ambient & fluid temperature	-5 to 60°C (No freezing)			
Nominal filtration rating	0.01 µm (95% filtered particle size)			
Outlet side oil mist concentration	Max. 0.1mg/m ³ (ANR) (Before saturated with oil: 0.01 mg/m ³ (ANR) or less, approx. 0.008 ppm) Note 6)			
Rated flow (ℓ/min (ANR)) Note 7)	120	240	600	600
Drain capacity (cm ³)	8	25	45	45
Drain guide port size	1/8	1/4	1/4	1/4
Grease	10-: Fluorine grease 21-: Lithium soap based grease			
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1 21-: Grade 1			

Note 6) When the compressor oil mist discharge concentration is 30 mg/m³ (ANR).

Note 7) When the inlet pressure is 0.7 MPa. The flow rate varies depending on the inlet pressure.

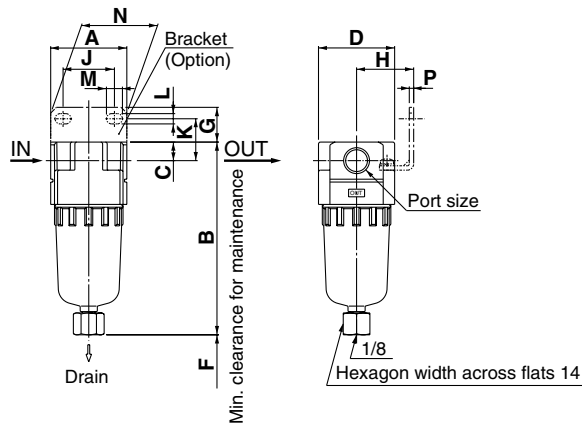
Accessory part no.

Accessory	Applicable model	10-/21-AFD20	10-/21-AFD30	10-/21-AFD40	10-/21-AFD40-06
Bracket assembly Note 8)		AF20P-050AS	AF30P-050AS	AF40P-050AS	AF40P-070AS

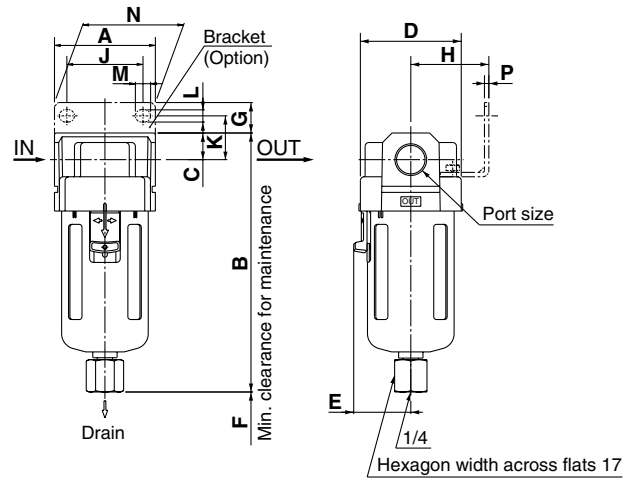
Note 8) Assembly includes a bracket and 2 mounting screws.

Dimensions

10-21-**AFD20**



10-21-**AFD30 to 40-06**



Applicable model	10-/21-AFD20		10-/21-AFD30 to 40-06	
Optional specifications	With bowl guard	Metal bowl	Metal bowl	Metal bowl with level gauge
Dimensions				

Model	Port size	Standard specifications							Accessory specifications							Optional specifications		
									Bracket mounting size							With bowl guard	Metal bowl	Metal bowl with level gauge
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	B	B	B
10-/21-AFD20	1/8, 1/4	40	101	10	40	—	45	18	30	27	22	5.4	8.4	40	2.3	101	104	—
10-/21-AFD30	1/4, 3/8	53	136	14	53	30	50	16	41	40	23	6.5	8	53	2.3	—	136	156
10-/21-AFD40	1/4, 3/8, 1/2	70	172	18	70	38	75	17	50	54	26	8.5	10.5	70	2.3	—	172	192
10-/21-AFD40-06	3/4	75	176	20	70	38	75	14	50	54	25	8.5	10.5	70	2.3	—	176	196

Series 10-21-AR Regulator

How to Order

Clean series ☐ **10-AR** **30** **F** **03** **BG** **1N**

Copper, fluorine and silicon-free + Low particle generation **21-AR** **30** **F** **03** **BG** **1N**

Regulator

Body size
20 25 30 40 50 60

Thread type

Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	20	25	30	40	50	60
01	1/8	●	—	—	—	—	—
02	1/4	●	●	●	●	—	—
03	3/8	—	●	●	●	—	—
04	1/2	—	—	—	●	—	—
06	3/4	—	—	—	●	●	—
10	1	—	—	—	—	●	●

Accessory Note 1)

Symbol	Description	Applicable model
Nil	—	—
B	With bracket	20 to 60
G	With round pressure gauge (Without limit indicator)	20 to 60
H	With set nut (For panel mount)	20 to 40

Note 1) Optional parts are not assembled and are supplied loose at the time of shipment.
Note 2) Pressure gauge mounting screw is 1/8 for 10-AR20 to 30, and 1/4 for 10-AR40 to 60. Pressure gauge is G49 type.

Option

Symbol	Description	Applicable model
Nil	—	—
1	0.02 to 0.2 MPa setting	20 to 60
N	Non-relieving	20 to 60
R	Flow direction: Right to left	20 to 60
Y	Upward handle	20 to 60
Z	Name plate and pressure gauge in imperial units (PSI, °F)	20 to 60

When more than one specification is required, indicate in ascending alphanumeric order.
Note 3) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more.
Note 4) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.).



Accessory/Optional specifications combinations

Combination		Symbol	Accessory			Optional specifications				Applicable regulator		
Accessory/Optional specifications			B	G	H	1	N	R	Y	Z	10-/21-AR20 to 40	10-/21-AR50 to 60
Accessory	With bracket	B		⊙		⊙	⊙	⊙	⊙	△	⊙	⊙
	Round pressure gauge	G	⊙		⊙	⊙	⊙	⊙	⊙	△	⊙	⊙
	With set nut	H		⊙		⊙	⊙	⊙	⊙	△	⊙	
Optional specifications	0.02 to 0.2 MPa setting	−1	⊙	⊙	⊙		⊙	⊙	⊙	△	⊙	⊙
	Non-relieving type	−N	⊙	⊙	⊙	⊙		⊙	⊙	△	⊙	⊙
	Flow direction: Right to left	−R	⊙	⊙	⊙	⊙	⊙		⊙	△	⊙	⊙
	Upward handle	−Y	⊙	⊙	⊙	⊙	⊙	⊙		△	⊙	⊙
	Name plate and pressure gauge in imperial units (PSI, °F)	−Z	△	△	△	△	△	△	△		△	△

Standard specifications

Model	10-21-AR20	10-21-AR25	10-21-AR30	10-21-AR40	10-21-AR40-06	10-21-AR50	10-21-AR60
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Fluid	Air						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Set pressure range	0.05 to 0.85 MPa						
Pressure gauge port size	1/8	1/8	1/8	1/4	1/4	1/4	1/4
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 l/min (ANR))						
Ambient and fluid temperature	-5 to 60°C (No freezing)						
Construction	Relieving type						
Grease	10-: Fluorine grease						
	21-: Lithium soap based grease						
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1						
	21-: Grade 1						

Accessory part no.

Accessory	Applicable model	10-21-AR20	10-21-AR25	10-21-AR30	10-21-AR40	10-21-AR40-06	10-21-AR50	10-21-AR60
Bracket assembly Note 5)		AR20P-270AS	AR25P-270AS	AR30P-270AS	AR40P-270AS	AR40P-270AS	AR50P-270AS Note 6)	AR60P-270AS Note 6)
Pressure gauge Note 7)	1.0MPa	G49-10-□01	G49-10-□01	G49-10-□01	G49-10-□02	G49-10-□02	G49-10-□02	G49-10-□02
	0.2MPa	G49-2-□01	G49-2-□01	G49-2-□01	G49-2-□02	G49-2-□02	G49-2-□02	G49-2-□02

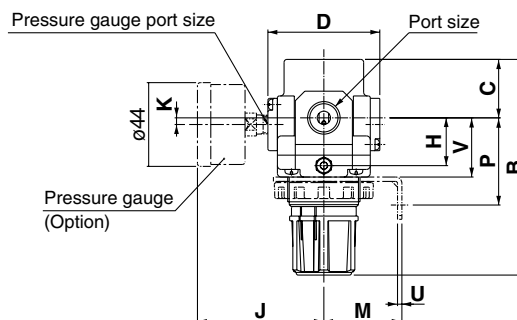
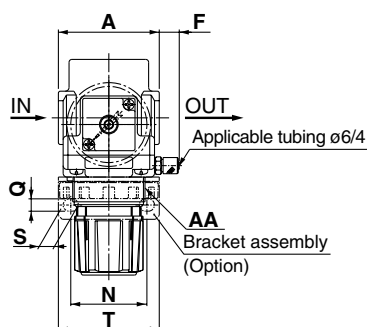
Note 5) Assembly includes a bracket and set nuts.

Note 6) Assembly includes a bracket and 2 mounting screws.

Note 7) □ in part numbers for a pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT.

Dimensions

10-21-AR20 to 40-06



Panel fitting dimension

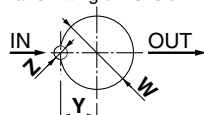
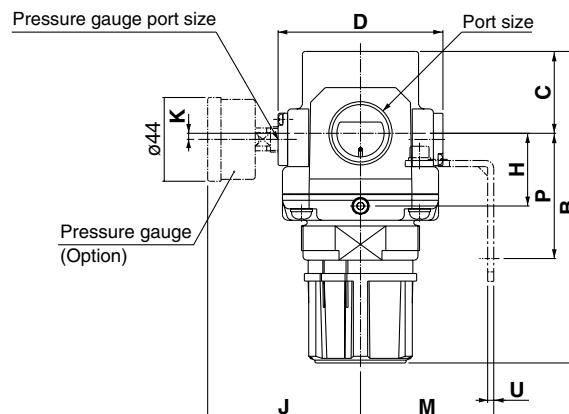
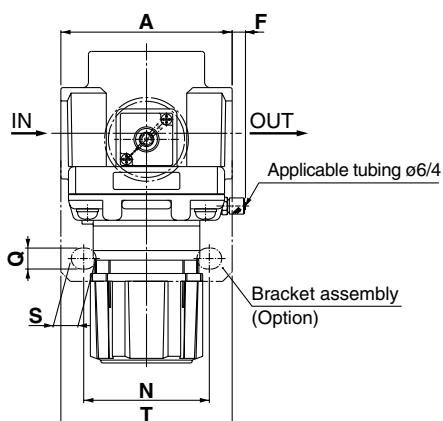


Plate thickness
10-/21-AR20/30: Max. 3.5
10-/21-AR40: Max. 5

10-21-AR50/60



Model	Port size	Pressure gauge port size	Standard specifications							Accessory specifications													
										With pressure gauge		Bracket mounting size							Panel mount				
			A	B	C	D	F	H	J	K	M	N	P	Q	S	T	U	V	W	Y	Z	AA	
10-/21-AR20	1/8, 1/4	1/8	40	94	26.5	57	11	20	66	2 ^{Note)}	30	34	44	5.4	15.4	55	2.3	25	28.5	14	6	M28 x 1	
10-/21-AR25	1/4, 3/8	1/8	53	101	28	55	10	20.5	65	0	30	34	44	5.4	15.4	55	2.3	26	32.5	16	6	M32 x 1.5	
10-/21-AR30	1/4, 3/8	1/8	53	116	31	59	10.5	25	67	3.5	41	40	46	6.5	8	53	2.3	31	38.5	19	7	M38 x 1.5	
10-/21-AR40	1/4, 3/8, 1/2	1/4	70	128	36	68	10.5	29	71	3.5	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	M42 x 1.5	
10-/21-AR40-06	3/4	1/4	75	129	36	68	8	30.5	71	3	50	54	56	8.5	10.5	70	2.3	37	42.5	21	7	M42 x 1.5	
10-/21-AR50	3/4, 1	1/4	90	169	43	87	7	38	81	3.3	70	66	65.8	11	13	90	3.2	—	—	—	—	—	
10-/21-AR60	1	1/4	95	176	46	87	4.5	42.5	81	3.3	70	66	65.8	11	13	90	3.2	—	—	—	—	—	

Note) For 10-/21-AR20 only, the position of the pressure gauge is above the center of the piping.

Series 10-21-AR□K Regulator with back flow mechanism

How to Order

Clean series

10-AR30K-F03BG-1N

21-AR30K-F03BG-1N

Copper, fluorine and silicon-free + Low particle generation

Regulator

Body size

20 25 30 40 50 60

With back flow mechanism

Thread type

Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Body size					
		20	25	30	40	50	60
01	1/8	●	—	—	—	—	—
02	1/4	●	●	—	—	—	—
03	3/8	—	●	●	—	—	—
04	1/2	—	—	●	—	—	—
06	3/4	—	—	—	●	●	—
10	1	—	—	—	—	●	●

Accessory Note 1)

Symbol	Description	Applicable model
Nil	—	—
B	With Bracket	20 to 60
G Note 2)	With round pressure gauge (Without limit indicator)	20 to 60
H	With set nut (For panel mount)	20 to 40

Note 1) Optional parts are not assembled and are supplied loose at the time of shipment.

Note 2) Pressure gauge mounting screw is 1/8 for size 20 to 30, and 1/4 for 40 to 60. Pressure gauge is G49 type.

Option

Symbol	Description	Applicable model
Nil	—	—
1 Note 3)	0.02 to 0.2 MPa setting	20 to 60
N	Non-relieving	20 to 60
R	Flow direction: Right to left	20 to 60
Y	Upward handle	20 to 60
Z Note 4)	Name plate and pressure gauge in imperial units (PSI, °F)	20 to 60

When more than one specification is required, indicate in ascending alphanumeric order.

Note 3) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more.

Note 4) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.).



Accessory/Optional specifications combinations

○Combination available ■Combination not available
○Varies depending on the model △Available only with NPT thread

Combination		Symbol	Accessory			Optional specifications				Applicable regulator with backflow mechanism			
			B	G	H	1	N	R	Y	Z	10-/21-AR20K to 40K	10-/21-AR50K to 60K	
Accessory	Accessory/Optional specifications												
	With bracket	B		○		○	○	○	○	△	○	○	
	Round pressure gauge	G	○		○	○	○	○	○	△	○	○	
	With set nut	H		○		○	○	○	○	△	○		
Optional specifications	0.02 to 0.2 MPa setting		−1	○	○	○		○	○	○	△	○	○
	Non-relieving type		−N	○	○	○	○		○	○	△	○	○
	Flow direction: Right to left		−R	○	○	○	○	○		○	△	○	○
	Upward handle		−Y	○	○	○	○	○	○		△	○	○
	Name plate and pressure gauge in imperial units (PSI, °F)		−Z	△	△	△	△	△	△	△		△	△

Standard specifications

Model	10-/21-AR20K	10-/21-AR25K	10-/21-AR30K	10-/21-AR40K	10-/21-AR40K-06	10-/21-AR50K	10-/21-AR60K
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Fluid	Air						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Set pressure range	0.05 to 0.85 MPa						
Pressure gauge port size	1/8	1/8	1/8	1/4	1/4	1/4	1/4
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 l/min (ANR))						
Ambient and fluid temperature	-5 to 60°C (No freezing)						
Construction	Relieving type						
Grease	10-: Fluorine grease 21-: Lithium soap based grease						
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1 21-: Grade 1						

Accessory part no.

Accessory	Applicable model	10-/21-AR20K	10-/21-AR25K	10-/21-AR30K	10-/21-AR40K	10-/21-AR40K-06	10-/21-AR50K	10-/21-AR60K
Bracket assembly Note 5)		AR20P-270AS	AR25P-270AS	AR30P-270AS	AR40P-270AS	AR40P-270AS	AR50P-270AS Note 6)	AR60P-270AS Note 6)
Pressure gauge Note 7)	1.0MPa	G49-10-□01	G49-10-□01	G49-10-□01	G49-10-□02	G49-10-□02	G49-10-□02	G49-10-□02
	0.2MPa	G49-2-□01	G49-2-□01	G49-2-□01	G49-2-□02	G49-2-□02	G49-2-□02	G49-2-□02

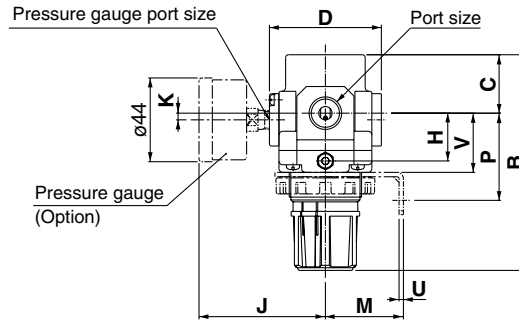
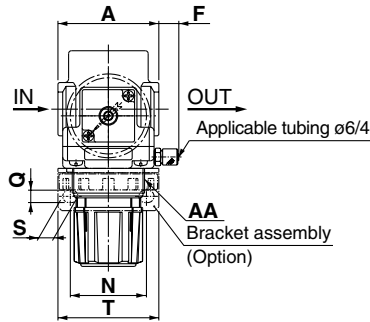
Note 5) Assembly includes a bracket and set nuts.

Note 6) Assembly includes a bracket and 2 mounting screws.

Note 7) □ in part numbers for a pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT.

Dimensions

10-21-AR20K to 40K-06



Panel fitting dimension

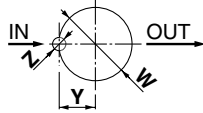
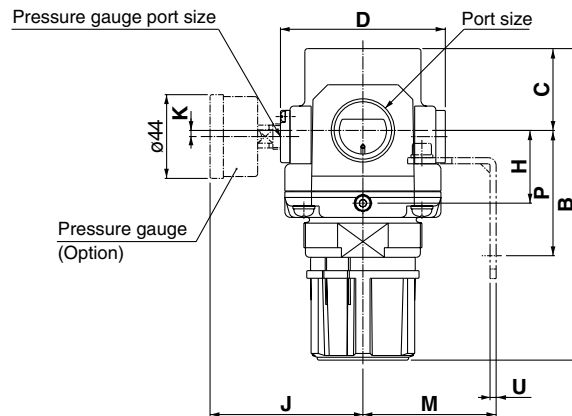
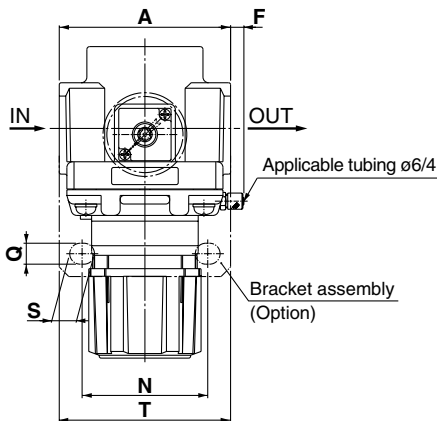


Plate thickness
10-/21-AR20K, 30K: Max. 3.5
10-/21-AR40K: Max. 5

10-21-AR50K/60K



Model	Port size	Pressure gauge connection port size	Standard specifications							Accessory specifications												
										With pressure gauge		Bracket mounting size							Panel mount			
			A	B	C	D	F	H	J	K	M	N	P	Q	S	T	U	V	W	Y	Z	AA
10-/21-AR20K	1/8, 1/4	1/8	40	94	26.5	57	11	20	66	2 ^{Note}	30	34	44	5.4	15.4	55	2.3	25	28.5	14	6	M28 x 1
10-/21-AR25K	1/4, 3/8	1/8	53	101	28	55	10	20.5	65	0	30	34	44	5.4	15.4	55	2.3	26	32.5	16	6	M32 x 1.5
10-/21-AR30K	1/4, 3/8	1/8	53	116	31	59	10.5	25	67	3.5	41	40	46	6.5	8	53	2.3	31	38.5	19	7	M38 x 1.5
10-/21-AR40K	1/4, 3/8, 1/2	1/4	70	128	36	68	10.5	29	71	3.5	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	M42 x 1.5
10-/21-AR40K-06	3/4	1/4	75	129	36	68	8	30.5	71	3	50	54	56	8.5	10.5	70	2.3	37	42.5	21	7	M42 x 1.5
10-/21-AR50K	3/4, 1	1/4	90	169	43	87	7	38	81	3.3	70	66	65.8	11	13	90	3.2	—	—	—	—	—
10-/21-AR60K	1	1/4	95	176	46	87	4.5	42.5	81	3.3	70	66	65.8	11	13	90	3.2	—	—	—	—	—

Note) For 10-/21-AR20K only, the position of the pressure gauge is above the center of the piping.

Series 10-21-AW Filter regulator

How to Order

Clean series

10-AW 30-F 03 BG-JN

21-AW 30-F 03 BG-JN

Copper, fluorine and silicon-free + Low particle generation

Filter regulator

Body size

20 30 40

Thread type

Nil	Rc
N Note 1)	NPT
F Note 2)	G

Note 1) Drain guide is NPT 1/8 (applicable to size 20), and NPT 1/4 (applicable to size 30 and 40).

Note 2) Drain guide is G 1/8 (applicable to size 20), and G 1/4 (applicable to size 30 and 40).

Port size

Symbol	Port size	Body size
01	1/8	20
02	1/4	20
03	3/8	20
04	1/2	20
06	3/4	20

Accessory Note 3)

Symbol	Description	Applicable model
Nil	—	—
B	With bracket	20 to 40
G Note 4)	With round pressure gauge (Without limit indicator)	20 to 40
H	With set nut (For panel mount)	20 to 40

Note 3) Optional parts are not assembled and are supplied loose at the time of shipment.

Note 4) Pressure gauge mounting screw is 1/8 for size 20 and 30, and 1/4 for size 40. Pressure gauge is G49 type.

* "J" must always be selected.

Option

Symbol	Description	Applicable model
1 Note 5)	0.02 to 0.2 MPa setting	20 to 40
2	Metal bowl	20 to 40
6	Nylon bowl	20 to 40
8	Metal bowl with level gauge	30, 40
C	With bowl guard	20
J Note 6)	Drain guide 1/8	20
	Drain guide 1/4	30, 40
N	Non-relieving	20 to 40
R	Flow direction: Right to left	20 to 40
Z Note 7)	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	20 to 40

When more than one specification is required, indicate in ascending alphanumeric order.

Note 5) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more. Note 6) Without a valve function.

Note 7) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)



Accessory/Optional specifications combinations

○Combination available ■Combination not available
○Varies depending on the model △Available only with NPT thread

Combination		Symbol	Accessory	Optional specifications												Applicable filter regulator	
Accessory/Optional specifications			B	G	H	1	2	6	8	C	J	N	R	Z		10-/21-AW20	10-/21-AW30, 40
Accessory/Optional specifications	With bracket	B	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Round pressure gauge	G	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	With set nut	H	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	0.02 to 0.2 MPa setting	-1	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Metal bowl	-2	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Nylon bowl	-6	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Metal bowl with level gauge	-8	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	With bowl guard	-C	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Drain guide	-J	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Non-relieving type	-N	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Flow direction: Right to left	-R	○	○	○	○	○	○	○	○	○	○	○	△	○	○	○
	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	-Z	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△

Standard specifications

Model	10-/21-AW20	10-/21-AW30	10-/21-AW40	10-/21-AW40-06
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Set pressure range	0.05 to 0.85 MPa			
Pressure gauge connection port size	1/8	1/8	1/4	1/4
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 l/min (ANR))			
Ambient and fluid temperature	-5 to 60°C (No freezing)			
Nominal filtration rating	5 µm			
Drain capacity (cm³)	8	25	45	45
Drain guide port size	1/8	1/4	1/4	1/4
Construction	Relieving type			
Grease	10-: Fluorine grease 21-: Lithium soap based grease			
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1 21-: Grade 1			

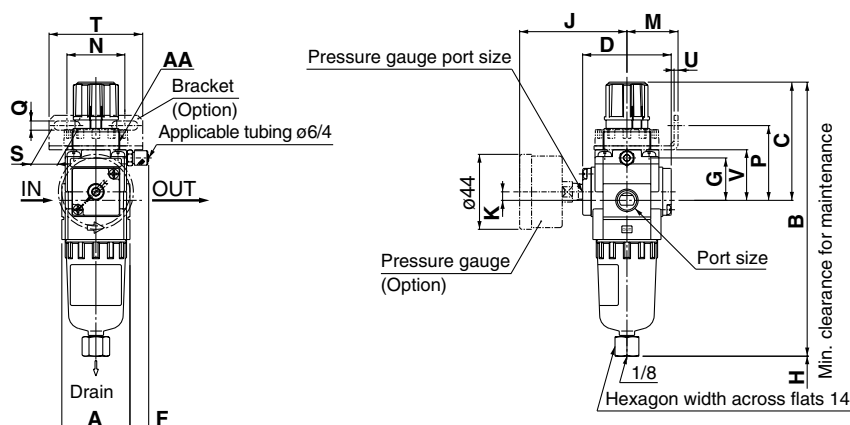
Accessory part no.

Accessory	Applicable model	10-/21-AW20	10-/21-AW30	10-/21-AW40	10-/21-AW40-06
Bracket assembly Note 8)		AW20P-270AS	AR30P-270AS	AR40P-270AS	AR40P-270AS
Pressure gauge Note 9)	1.0MPa	G49-10-□01	G49-10-□01	G49-10-□02	G49-10-□02
	0.2MPa	G49-2-□01	G49-2-□01	G49-2-□02	G49-2-□02

Note 8) Assembly includes a bracket and set nuts. Note 9) □ in part numbers for a pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT.

Dimensions

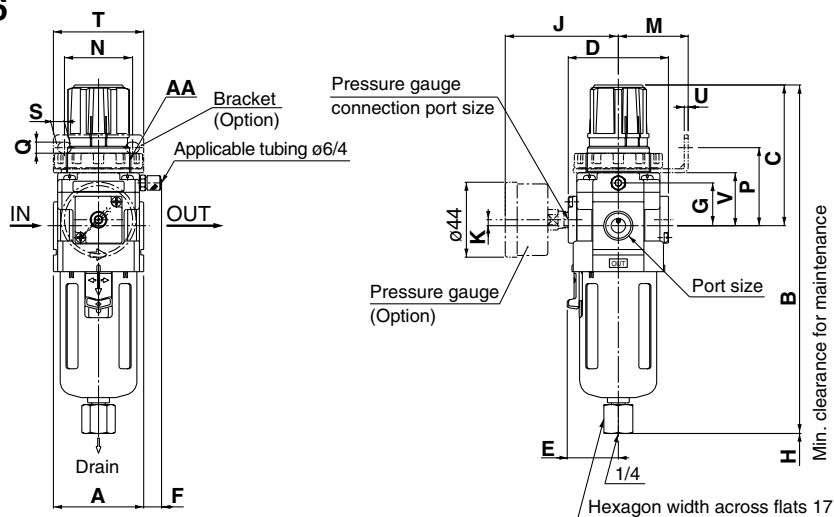
10-21-AW20



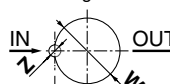
Panel fitting dimension


Plate thickness
10-/21-AW20: Max. 3.5

10-21-AW30 to 40-06



Panel fitting dimension


Plate thickness
10-/21-AW30: Max. 3.5
10-/21-AW40: Max. 5

Applicable model	10-/21-AW20		10-/21-AW30 to 40-06	
Optional specifications	With bowl guard	Metal bowl	Metal bowl	Metal bowl with level gauge
Dimensions				

Model	Port size	Pressure gauge port size	Standard specifications								Accessory specifications													
											With pressure gauge		Bracket mounting size							Panel mount				
			A	B	C	D	E	F	G	H	J	K	M	N	P	Q	S	T	U	V	W	Y	Z	AA
10-/21-AW20	1/8, 1/4	1/8	40	164	73	52	—	11	25	40	63	5	30	34	44	5.4	15.4	55	2.3	30	28.5	14	6	M28 x 1
10-/21-AW30	1/4, 3/8	1/8	53	208	86	59	30	10.5	25	55	67	3.5	41	40	46	6.5	8	53	2.3	31	38.5	19	7	M38 x 1.5
10-/21-AW40	1/4, 3/8, 1/2	1/4	70	246	92	75	38	10.5	29	80	75	1.5	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	M42 x 1.5
10-/21-AW40-06	3/4	1/4	75	249	93	75	38	8	30.5	80	75	1.2	50	54	56	8.5	10.5	70	2.3	37	42.5	21	7	M42 x 1.5

Model	Optional specifications		
	With bowl guard	Metal bowl	Metal bowl with level gauge
	B	B	B
10-/21-AW20	164	167	—
10-/21-AW30	—	208	228
10-/21-AW40	—	246	266
10-/21-AW40-06	—	249	269

Series 10-21-AW□K

Filter regulator with back flow mechanism

How to Order

Clean series

10-AW30K-F03BG-JN

21-AW30K-F03BG-JN

* "J" must always be selected.

Copper, fluorine and silicon-free + Low particle generation

Filter regulator

Body size

20 30 40

With backflow mechanism

Thread type

Nil	Rc
N Note 1)	NPT
F Note 2)	G

Note 1) Drain guide is NPT 1/8 (applicable to size 20), and NPT 1/4 (applicable to size 30 and 40).

Note 2) Drain guide is G 1/8 (applicable to size 20), and G 1/4 (applicable to size 30 and 40).

Port size

Symbol	Port size	Body size
01	1/8	20 30 40
02	1/4	20 30 40
03	3/8	20 30 40
04	1/2	20 30 40
06	3/4	20 30 40

Accessory Note 3)

Symbol	Description	Applicable model
Nil	—	—
B	With bracket	20 to 40
G Note 4)	With round pressure gauge (Without limit indicator)	20 to 40
H	With set nut (For panel mount)	20 to 40

Note 3) Optional parts are not assembled and are supplied loose at the time of shipment.

Note 4) Pressure gauge mounting screw is 1/8 for size 20 and 30, and 1/4 for size 40. Pressure gauge is G49 type.

Option

Symbol	Description	Applicable model
1 Note 5)	0.02 to 0.2 MPa setting	20 to 40
2	Metal bowl	20 to 40
6	Nylon bowl	20 to 40
8	Metal bowl with level gauge	30, 40
C	With bowl guard	20
J Note 6)	Drain guide 1/8	20
	Drain guide 1/4	30, 40
N	Non-relieving type	20 to 40
R	Flow direction: Right to left	20 to 40
Z Note 7)	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	20 to 40

When more than one specification is required, indicate in ascending alphanumeric order.

Note 5) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more. Note 6) Without a valve function. Note 7) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

Accessory/Optional specifications combinations

○Combination available ■Combination not available
○Varies depending on the model △Available only with NPT thread

Combination		Symbol	Accessory			Optional specifications									Applicable filter regulator with backflow mechanism	
			B	G	H	1	2	6	8	C	J	N	R	Z	10-21-AW20K	10-21-AW30K, 40K
Accessory	With bracket	B		○		○	○	○	○	○	○	○	○	△	○	○
	Round pressure gauge	G	○		○	○	○	○	○	○	○	○	○	△	○	○
	With set nut	H		○		○	○	○	○	○	○	○	○	△	○	○
Optional specifications	0.02 to 0.2 MPa setting	-1	○	○	○		○	○	○	○	○	○	○	△	○	○
	Metal bowl	-2	○	○	○	○					○	○	○	△	○	○
	Nylon bowl	-6	○	○	○	○				○	○	○	○	△	○	○
	Metal bowl with level gauge	-8	○	○	○	○					○	○	○	△		○
	With bowl guard	-C	○	○	○	○		○			○	○	○	△	○	
	Drain guide	-J	○	○	○	○	○	○	○			○	○	△	○	○
	Non-relieving type	-N	○	○	○	○	○	○	○	○			○	△	○	○
	Flow direction: Right to left	-R	○	○	○	○	○	○	○	○	○			△	○	○
	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	-Z	△	△	△	△	△	△	△	△	△	△			△	△

Standard specifications

Model	10-21-AW20K	10-21-AW30K	10-21-AW40K	10-21-AW40K-06
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Set pressure range	0.05 to 0.85 MPa			
Pressure gauge connection port size	1/8	1/8	1/4	1/4
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 l/min (ANR))			
Ambient and fluid temperature	-5 to 60°C (No freezing)			
Nominal filtration rating	5 µm			
Drain capacity (cm³)	8	25	45	45
Drain guide port size	1/8	1/4	1/4	1/4
Construction	Relieving type			
Grease	10-: Fluorine grease 21-: Lithium soap based grease			
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1 21-: Grade 1			

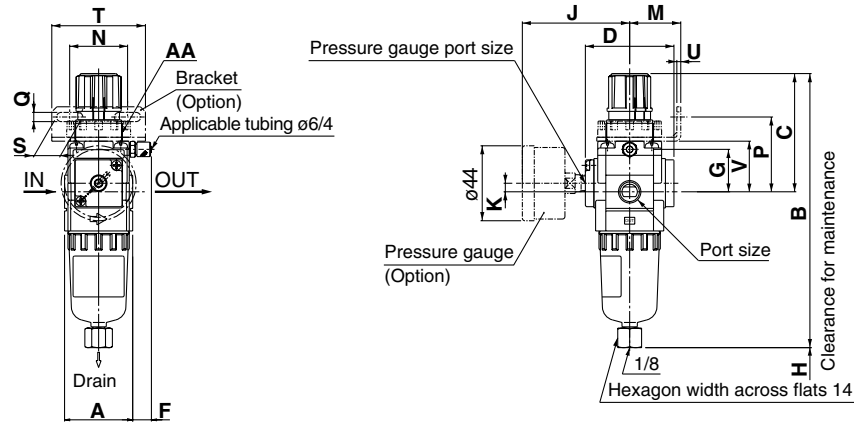
Accessory part no.

Accessory	Applicable model	10-21-AW20K	10-21-AW30K	10-21-AW40K	10-21-AW40K-06
Bracket assembly Note 8)		AW20P-270AS	AR30P-270AS	AR40P-270AS	AR40P-270AS
Pressure gauge Note 9)	1.0MPa	G49-10-□01	G49-10-□01	G49-10-□02	G49-10-□02
	0.2MPa	G49-2-□01	G49-2-□01	G49-2-□02	G49-2-□02

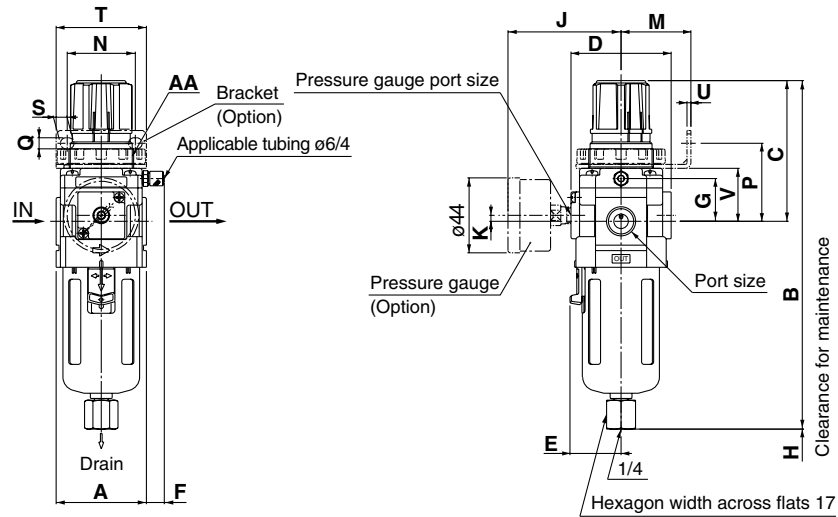
Note 8) Assembly includes a bracket and set nuts. Note 9) □ in part numbers for a pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT.

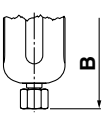
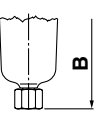
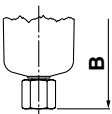
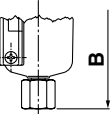
Dimensions

10-21-AW20K



10-21-AW30K to 40K-06



Applicable model	10-21-AW20K		10-21-AW30K to 40K-06	
Optional specifications	With bowl guard	Metal bowl	Metal bowl	Metal bowl with level gauge
Dimensions				

Model	Port size	Pressure gauge port size	Standard specifications								Accessory specifications													
											With pressure gauge		Bracket mounting size							Panel mount				
			A	B	C	D	E	F	G	H	J	K	M	N	P	Q	S	T	U	V	W	Y	Z	AA
10-/21-AW20K	1/8, 1/4	1/8	40	164	73	52	—	11	25	40	63	5	30	34	44	5.4	15.4	55	2.3	30	28.5	14	6	M28 x 1
10-/21-AW30K	1/4, 3/8	1/8	53	208	86	59	30	10.5	25	55	67	3.5	41	40	46	6.5	8	53	2.3	31	38.5	19	7	M38 x 1.5
10-/21-AW40K	1/4, 3/8, 1/2	1/4	70	246	92	75	38	10.5	29	80	75	1.5	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	M42 x 1.5
10-/21-AW40K-06	3/4	1/4	75	249	93	75	38	8	30.5	80	75	1.2	50	54	56	8.5	10.5	70	2.3	37	42.5	21	7	M42 x 1.5

Model	Optional specifications		
	With bowl guard	Metal bowl	Metal bowl with level gauge
	B	B	B
10-21-AW20K	164	167	—
10-21-AW30K	—	208	228
10-21-AW40K	—	246	266
10-21-AW40K-06	—	249	269

Series 10-21-AWM Mist separator regulator

How to Order

Clean series

10-AWM 30-F 03 BG JN

21-AWM 30-F 03 BG JN

Copper, fluorine and silicon-free + Low particle generation

Mist separator regulator

Body size

20 30 40

Thread type

Nil	Rc
N Note 1)	NPT
F Note 2)	G

Note 1) Drain guide is NPT 1/8 (applicable to size 20), and NPT 1/4 (applicable to size 30 and 40).

Note 2) Drain guide is G 1/8 (applicable to size 20), and G 1/4 (applicable to size 30 and 40).

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Accessory Note 3)

Symbol	Description	Applicable size
Nil	—	—
B	With bracket	20 to 40
G Note 4)	With round pressure gauge (Without limit indicator)	20 to 40
H	With set nut (For panel mount)	20 to 40

Note 3) Optional parts are not assembled and are supplied loose at the time of shipment.

Note 4) Pressure gauge mounting screw is 1/8 for size 20 to 30, and 1/4 for size 40. Pressure gauge is G49 type.

Option

Symbol	Description	Applicable size
1 Note 5)	0.05 to 0.2 MPa setting	20 to 40
2	Metal bowl	20 to 40
6	Nylon bowl	20 to 40
8	Metal bowl with level gauge	30, 40
C	With bowl guard	20
J Note 6)	With drain guide 1/8	20
	With drain guide 1/4	30, 40
N	Non-relieving	20 to 40
R	Flow direction: Right to left	20 to 40
Z Note 7)	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	20 to 40

* "J" must always be selected.

When more than one specification is required, indicate in ascending alphanumeric order.

Note 5) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more. Note 6) Without a valve function. Note 7) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.).

Accessory/Optional specifications combinations

◎Combination available ◻Combination not available
○Varies depending on the model △Available only with NPT thread

Combination		Symbol	Accessory			Optional specifications									Applicable mist separator regulator	
			B	G	H	1	2	6	8	C	J	N	R	Z	10-/21-AWM20	10-/21-AWM30, 40
Accessory	With bracket	B	◻	◎	◻	◎	◎	◎	○	○	◎	◎	◎	△	◎	◎
	Round pressure gauge	G	◎	◻	◎	◎	◎	◎	○	○	◎	◎	◎	△	◎	◎
	With set nut	H	◻	◎	◻	◎	◎	◎	○	○	◎	◎	◎	△	◎	◎
Optional specifications	0.05 to 0.2 MPa setting	-1	◎	◎	◎	◻	◎	◎	○	○	◎	◎	◎	△	◎	◎
	Metal bowl	-2	◎	◎	◎	◎	◻	◻	◻	◻	◎	◎	◎	△	◎	◎
	Nylon bowl	-6	◎	◎	◎	◎	◻	◻	◻	○	◎	◎	◎	△	◎	◎
	Metal bowl with level gauge	-8	◎	◎	◎	◎	◻	◻	◻	◻	◎	◎	◎	△	◻	◎
	With bowl guard	-C	◎	◎	◎	◎	◻	◎	◻	◻	◎	◎	◎	△	◎	◻
	Drain guide	-J	◎	◎	◎	◎	◎	◎	◎	○	◻	◎	◎	△	◎	◎
	Non-relieving type	-N	◎	◎	◎	◎	◎	◎	◎	○	◎	◻	◎	△	◎	◎
	Flow direction: Right to left	-R	◎	◎	◎	◎	◎	◎	○	○	◎	◎	◻	△	◎	◎
	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	-Z	△	△	△	△	△	△	△	△	△	△	△	◻	△	△

Standard specifications

Model	10-21-AWM20	10-21-AWM30	10-21-AWM40
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Set pressure range	0.05 to 0.85 MPa		
Pressure gauge connection port size	1/8	1/8	1/4
Ambient and fluid temperature	-0.5 to 60°C (No freezing)		
Nominal filtration rating	0.3 µm (95% filtered particle size)		
Outlet side oil mist concentration	Max. 1.0 mg/m ³ (ANR) (approx. 0.8 ppm) Note 9)		
Rated flow (ℓ/min (ANR)) Note 8)	150	330	820
Drain capacity (cm ³)	8	25	45
Drain guide port size	1/8	1/4	1/4
Construction	Relieving type		
Grease	10-: Fluorine grease		
	21-: Lithium soap based grease		
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1		
	21-: Grade 1		

Note 8) When the outlet pressure is 0.5 MPa. The rated flow varies depending on the set pressure. Note 9) When the compressor oil mist discharge concentration is 30 mg/m³ (ANR).

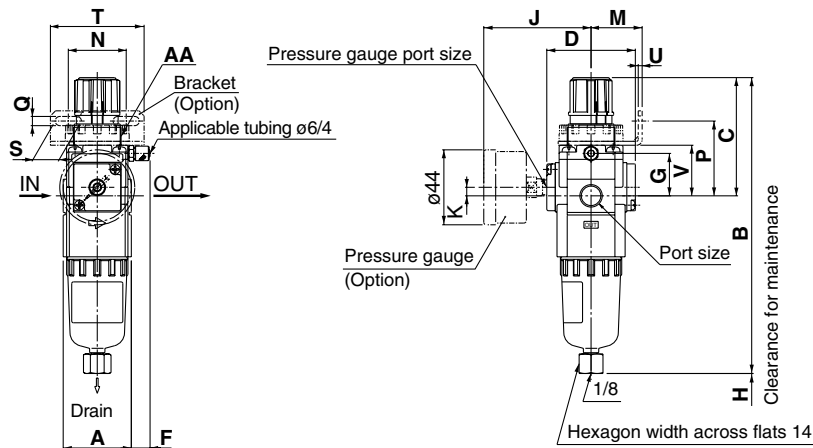
Accessory part no.

Accessory	Applicable model	10-21-AWM20	10-21-AWM30	10-21-AWM40
Bracket assembly Note 10)		AW20P-270AS	AR30P-270AS	AR40P-270AS
Pressure gauge Note 11)	1.0MPa	G49-10-□01	G49-10-□01	G49-10-□02
	0.2MPa	G49-2-□01	G49-2-□01	G49-2-□02

Note 10) Assembly includes a bracket and set nuts. Note 11) □ in part numbers for a pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT.

Dimensions

10-21-AWM20



Panel fitting dimension

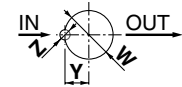
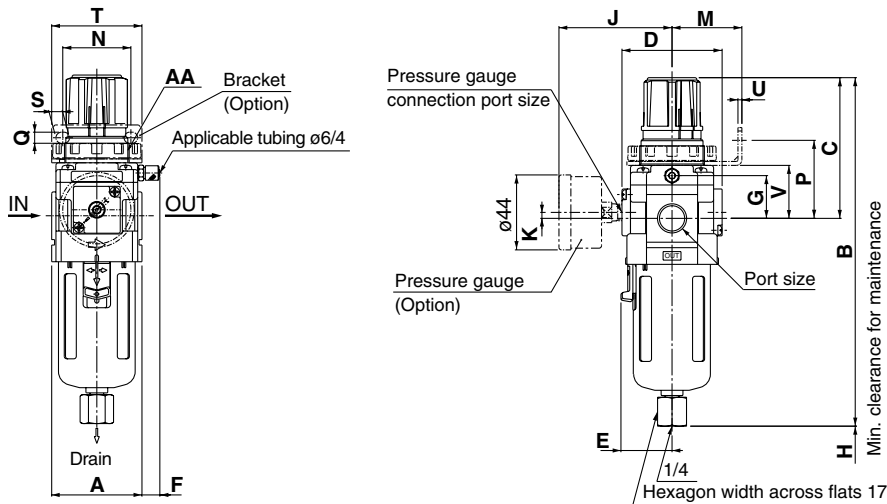


Plate thickness
10-/21-AWM20: Max. 3.5

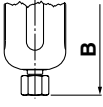
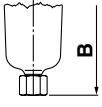
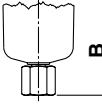
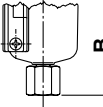
10-21-AWM30/40



Panel fitting dimension



Plate thickness
10-/21-AWM30: Max. 3.5
10-/21-AWM40: Max. 5

Applicable model	10-21-AWM20				10-21-AWM30/40			
Optional specifications	With bowl guard	Metal bowl			Metal bowl	Metal bowl with level gauge		
Dimensions								

Model	Port size	Pressure gauge connection port size	Standard specifications									Accessory specifications												
												With pressure gauge						Bracket mounting size						
			A	B	C	D	E	F	G	H	J	K	M	N	P	Q	S	T	U	V	W	Y	Z	AA
10-/21-AWM20	1/8, 1/4	1/8	40	177	73	52	—	11	25	45	63	5	30	34	44	5.4	15.4	55	2.3	30	28.5	14	6	M28 x 1
10-/21-AWM30	1/4, 3/8	1/8	53	208	86	59	30	10.5	25	50	67	3.5	41	40	46	6.5	8	53	2.3	31	38.5	19	7	M38 x 1.5
10-/21-AWM40	1/4, 3/8, 1/2	1/4	70	246	92	75	38	10.5	29	70	75	1.5	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	M42 x 1.5

Model	Optional specifications		
	With bowl guard	Metal bowl	Metal bowl with level gauge
	B	B	B
10-/21-AWM20	177	180	—
10-/21-AWM30	—	208	228
10-/21-AWM40	—	246	266

Series 10-21-AWD

Micro mist separator regulator

How to Order

Clean series

10-AWD 30-F 03 BG JN

21-AWD 30-F 03 BG JN

Copper, fluorine and silicon-free + Low particle generation

Micro mist separator regulator

Body size

20 30 40

Thread type

Nil	Rc
N Note 1)	NPT
F Note 2)	G

Port size

Symbol	Port size	Body size
01	1/8	20
02	1/4	30
03	3/8	40
04	1/2	40

Accessory Note 3)

Symbol	Description	Applicable model
Nil	—	—
B	With bracket	20 to 40
G Note 4)	With round pressure gauge (Without limit indicator)	20 to 40
H	With set nut (For panel mount)	20 to 40

* "J" must always be selected.

Option

Symbol	Description	Applicable model
1 Note 5)	0.05 to 0.2 MPa setting	20 to 40
2	Metal bowl	20 to 40
6	Nylon bowl	20 to 40
8	Metal bowl with level gauge	30, 40
C	With bowl guard	20
J Note 6)	Drain guide 1/8	20
	Drain guide 1/4	30, 40
N	Non-relieving	20 to 40
R	Flow direction: Right to left	20 to 40
Z Note 7)	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	20 to 40

Note 1) Drain guide is NPT 1/8 (applicable to size 20), and NPT 1/4 (applicable to size 30 and 40).
 Note 2) Drain guide is G 1/8 (applicable to size 20), and G 1/4 (applicable to size 30 and 40).
 Note 3) Optional parts are not assembled and are supplied loose at the time of shipment.
 Note 4) Pressure gauge mounting screw is 1/8 for size 20 to 30, and 1/4 for size 40. Pressure gauge is G49 type.
 Note 5) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more. Note 6) Without a valve function.
 Note 7) For NPT thread type. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)



Accessory/Optional specifications combinations

○ Combination available ■ Combination not available
 ○ Varies depending on the model △ Available only with NPT thread

Combination		Symbol	Accessory			Optional specifications								Applicable micro mist separator regulator		
Accessory/Optional specifications			B	G	H	1	2	6	8	C	J	N	R	Z	10-21-AWD20	10-21-AWD30, 40
Accessory	With bracket	B	□	○	□	○	○	○	○	○	○	○	○	△	○	○
	Round pressure gauge	G	○	□	○	○	○	○	○	○	○	○	○	△	○	○
	With set nut	H	□	○	□	○	○	○	○	○	○	○	○	△	○	○
Optional specifications	0.05 to 0.2 MPa setting	-1	○	○	○	□	○	○	○	○	○	○	○	△	○	○
	Metal bowl	-2	○	○	○	○	□	□	□	○	○	○	○	△	○	○
	Nylon bowl	-6	○	○	○	○	□	□	□	○	○	○	○	△	○	○
	Metal bowl with level gauge	-8	○	○	○	○	□	□	□	○	○	○	○	△	□	○
	With bowl guard	-C	○	○	○	○	□	○	□	○	○	○	○	△	○	□
	Drain guide	-J	○	○	○	○	○	○	○	○	□	○	○	△	○	○
	Non-relieving type	-N	○	○	○	○	○	○	○	○	○	□	○	△	○	○
	Flow direction: Right to left	-R	○	○	○	○	○	○	○	○	○	○	□	△	○	○
	Name plate, caution plate for bowl, and pressure gauge in imperial units (PSI, °F)	-Z	△	△	△	△	△	△	△	△	△	△	△		△	△

Standard specifications

Model	10-21-AWD20	10-21-AWD30	10-21-AWD40
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Set pressure range	0.05 to 0.85 MPa		
Pressure gauge port size	1/8	1/8	1/4
Ambient and fluid temperature	-0.5 to 60°C (No freezing)		
Nominal filtration rating	0.01 μm (95% filtered particle size)		
Outlet side oil mist concentration	Max. 0.1 mg/m ³ (ANR) Note 9)		
	(Before saturated with oil: 0.01 mg/m ³ (ANR) or less, approx. 0.008 ppm)		
Rated flow (ℓ/min (ANR)) Note 8)	90	180	450
Drain capacity (cm ³)	8	25	45
Drain guide port size	1/8	1/4	1/4
Construction	Relieving type		
Grease	10-: Fluorine grease 21-: Lithium soap based grease		
Particle generation grade	10-: Grade 1 21-: Grade 1		
(Refer to front matter pages 13 to 22 for details.)			

Note 8) When the outlet pressure is 0.5 MPa. The rated flow varies depending on the set pressure. Note 9) When the compressor oil mist discharge concentration is 30 mg/m³ (ANR).

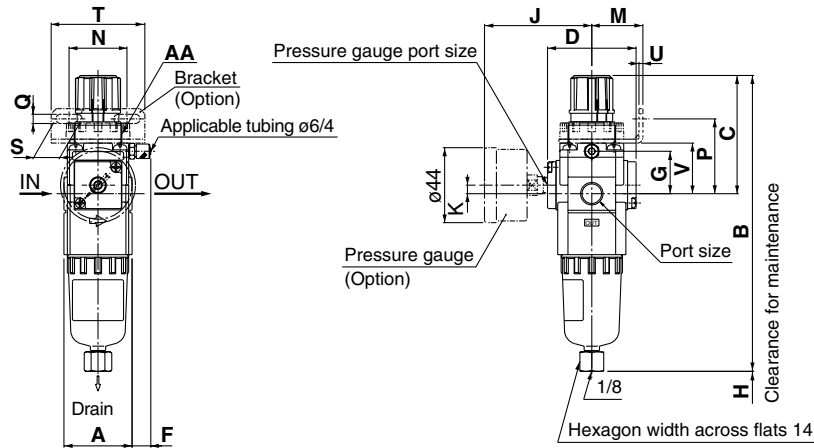
Accessory part no.

Accessory	Applicable model	10-21-AWD20	10-21-AWD30	10-21-AWD40
Bracket assembly Note 10)		AW20P-270AS	AR30P-270AS	AR40P-270AS
Pressure gauge Note 11)	1.0MPa	G49-10-□01	G49-10-□01	G49-10-□02
	0.2MPa	G49-2-□01	G49-2-□01	G49-2-□02

Note 10) Assembly includes a bracket and set nuts. Note 11) □ in part numbers for a pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT.

Dimensions

10-21-**AWD20**



Panel fitting dimension

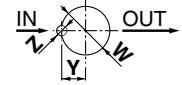
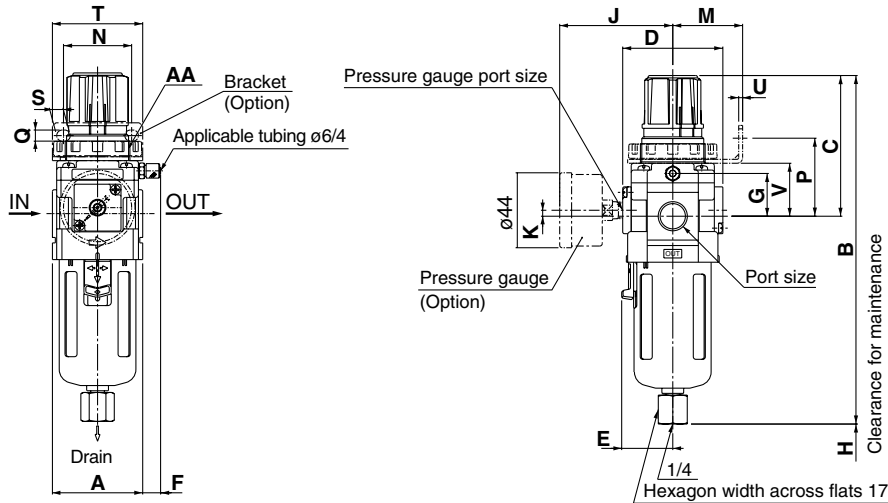


Plate thickness
10-/21-AWD20: Max. 3.5

10-21-**AWD30/40**



Panel fitting dimension

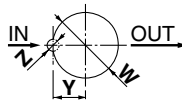


Plate thickness
10-/21-AWD30: Max. 3.5
10-/21-AWD40: Max. 5

Applicable model	10-/21-AWD20			10-/21-AWD30/40	
Optional specifications	With bowl guard	Metal bowl		Metal bowl	Metal bowl with level gauge
Dimensions					

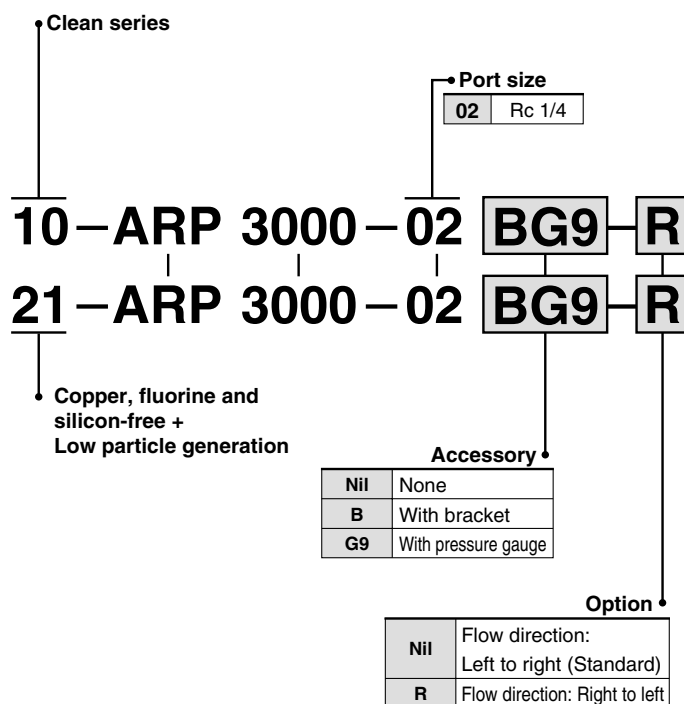
Model	Port size	Pressure gauge port size	Standard specifications									Accessory specifications														
												With pressure gauge		Bracket mounting size								Panel mount				
			A	B	C	D	E	F	G	H	J	K	M	N	P	Q	S	T	U	V	W	Y	Z	AA		
10-/21-AWD20	1/8, 1/4	1/8	40	177	73	52	—	11	25	45	63	5	30	34	44	5.4	15.4	55	2.3	30	28.5	14	6	M28 x 1		
10-/21-AWD30	1/4, 3/8	1/8	53	208	86	59	30	10.5	25	50	67	3.5	41	40	46	6.5	8	53	2.3	31	38.5	19	7	M38 x 1.5		
10-/21-AWD40	1/4, 3/8, 1/2	1/4	70	246	92	75	38	10.5	29	70	75	1.5	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	M42 x 1.5		

Model	Optional specifications		
	With bowl guard	Metal bowl	Metal bowl with level gauge
	B	B	B
10-/21-AWD20	177	180	—
10-/21-AWD30	—	208	228
10-/21-AWD40	—	246	266

10-21-ARP3000

Direct operated precision regulator

How to Order



Model

Model	Port size Rc	Set pressure range (MPa)	Application
10-/21-ARP3000-02	1/4	0.005 to 0.3	Fitting attached to bonnet breathing hole (Applicable tubing O.D. ø6, inside diameter ø4)

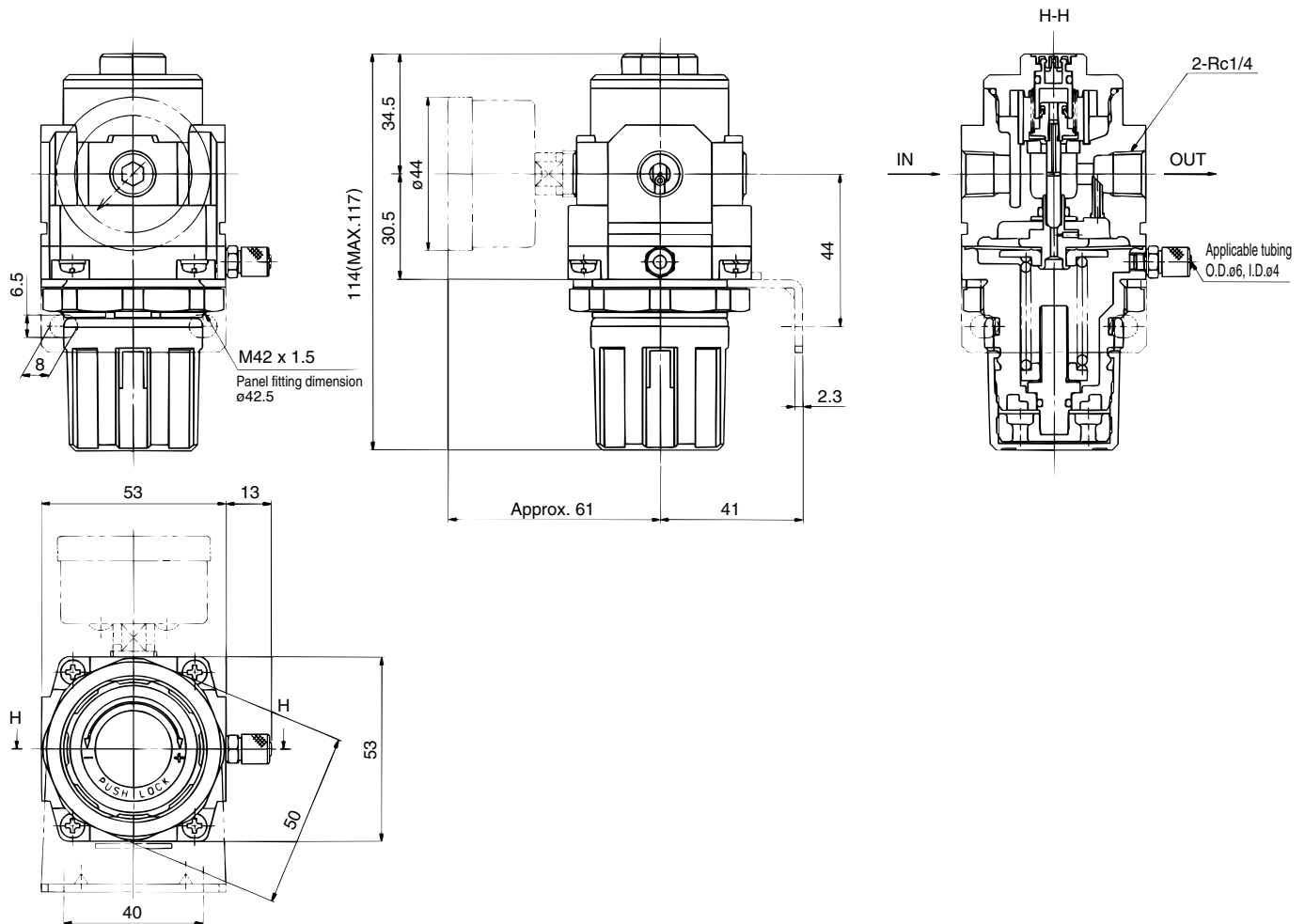
Specifications

Proof pressure	1.2MPa
Maximum operating pressure	0.8MPa
Set pressure range	0.005 to 0.3 MPa
Setting sensitivity	0.001MPa
Air consumption	4 to 6 ℓ/min (ANR) (0.3 MPa)
Ambient and fluid temperature	-5 to 60°C (No freezing)
Construction	Bleed type
Grease	10-: Fluorine grease 21-: Lithium soap based grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-: Grade 1 21-: Grade 1

Accessory (Option) / Part number

Description		Part no.
Accessory	Bracket	B320
	Pressure gauge	10-:G49-4-02 21-:G49-4-02-X3

Dimensions



⚠ Specific Product Precautions

Be sure to read before handling.

Selection

⚠ Caution

1. Set the outlet pressure to 90% or less of the inlet pressure. Failure to observe this procedure could result in an excessive pressure drop.

Air supply

⚠ Warning

1. Use a mist separator on the inlet side. If the air contains drain or debris, it could clog the bleed holes and lead to a malfunction.
2. Do not use a lubricator on the inlet side because it could clog the bleed holes and lead to a malfunction.

Mounting / Adjustment

⚠ Warning

1. The adjustment handle must be operated manually. Using a tool to turn the handle could lead to damage.

⚠ Caution

1. Release the lock to adjust the pressure. After the adjustment, engage the lock. Failure to observe this procedure could damage the handle or cause the outlet pressure to fluctuate.
 - 1) Pull the adjustment handle to release the lock. (An orange colored line is provided at the bottom of the adjustment handle for visual checking.) Push the adjustment handle to engage the lock. If it does not lock easily, turn the handle slightly clockwise or counterclockwise; then, push it until the orange colored line is no longer visible.
2. Install a valve guide (on the opposite side of the handle) 60 mm away from the ground surface. Maintenance and inspection will be facilitated.
3. Air is normally released from the bleed hole. This is necessary for direct operated precision regulator construction.
4. Please contact SMC if this product is to be used between solenoid valve and actuator.

Series 10-IR1000/2000/3000

Precision regulator

How to Order

Clean series

10-IR 2 0 0 0 - 02 - R

Precision regulator

Body size

1	IR1000 type
2	IR2000 type
3	IR3000 type

Type of setting

0	Basic (Handle)
1	Air operated (Only for series IR 2000/3000)

Set pressure range

10-IR1000/2000

0	0.005 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air-operated type is IR2120 only.

10-IR3000 series

0	0.01 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air-operated type is IR3120 only.

Port size

Symbol	Port size	Application
		10-IR1000 10-IR2000 10-IR3000
01	1/8	●
02	1/4	● ●
03	3/8	● ●
04	1/2	● ●

Thread type

Nil	Rc
N*	NPT
F*	G

* Option

Suffix

R Note) Pressure gauge mounted on reverse side

Note) The standard mounting position of the pressure gauge is on the front, when viewing the regulator with the SUP side to the left and the OUT side to the right.

Accessory

Nil	None
B	With bracket
G	With pressure gauge

Standard specifications

Model	Basic type			Air-operated type	
	10-IR10□0	10-IR20□0	10-IR30□0	10-IR2120	10-IR3120
Max. supply pressure	MAX.1.0MPa				
Min. supply pressure ^{Note 1)}	Set pressure + 0.05 MPa		Set pressure + 0.1 MPa	Set pressure + 0.05 MPa	Set pressure + 0.1 MPa
Set pressure range	10-IR1000: 0.005 to 0.2 MPa 10-IR1010: 0.01 to 0.4 MPa 10-IR1020: 0.01 to 0.8 MPa	10-IR2000: 0.005 to 0.2 MPa 10-IR2010: 0.01 to 0.4 MPa 10-IR2020: 0.01 to 0.8 MPa	10-IR3000: 0.01 to 0.2 MPa 10-IR3010: 0.01 to 0.4 MPa 10-IR3020: 0.01 to 0.8 MPa	0.01 to 0.8 MPa	0.01 to 0.8 MPa
Input signal pressure ^{Note 2)}	—			0.01 to 0.8 MPa	0.01 to 0.8 MPa
Sensitivity	Within 0.2% of full span				
Repeatability	Within ±0.5% of full span				
Linearity ^{Note 3)}	—			Within ±1% of full span	
Air consumption ^{Note 4)}	Within 5 ℓ/min (ANR) (Supply pressure: 1.0 MPa)	Within 4 ℓ/min (ANR) (Supply pressure: 1.0 MPa) Within 3 ℓ/min (ANR) (Supply pressure 0.7 MPa)	Bleed port: Within 9.5 ℓ/min (ANR) (Supply pressure: 1.0 MPa) Exhaust port: Within 2 ℓ/min (ANR) (At max. set pressure)	Within 4 ℓ/min (ANR) (Supply pressure: 1.0 MPa) Within 3 ℓ/min (ANR) (Supply pressure: 0.7 MPa)	Bleed port: Within 9.5 ℓ/min (ANR) (Supply pressure: 1.0 MPa) Exhaust port: Within 2 ℓ/min (ANR) (At max. set pressure)
Port sizes	Rc1/8	Rc1/4	Rc1/4, 3/8, 1/2	Rc1/4	Rc1/4, 3/8, 1/2
Pressure gauge port	Rc1/8 (2 positions)				
Ambient & fluid temperatures	-5 to 60°C (with no freezing)				
Weight (kg)	0.16	0.32	0.66	0.37	0.73
Cleanliness	Class 10000				
Bleed port	With M5 fitting (applicable tubing O.D. ø6)				
EXH port	With M5 fitting (applicable tubing O.D. ø6)		Rc1/2 female thread	With M5 fitting (applicable tubing O.D. ø6)	Rc1/2 female thread
Grease	Fluorine grease				

Note 1) With the condition of no flow on the output side. Together with the set pressure, be sure to maintain a minimum differential pressure of 0.05 MPa for models IR1000 and IR2000, and 0.1 MPa for model IR3000.

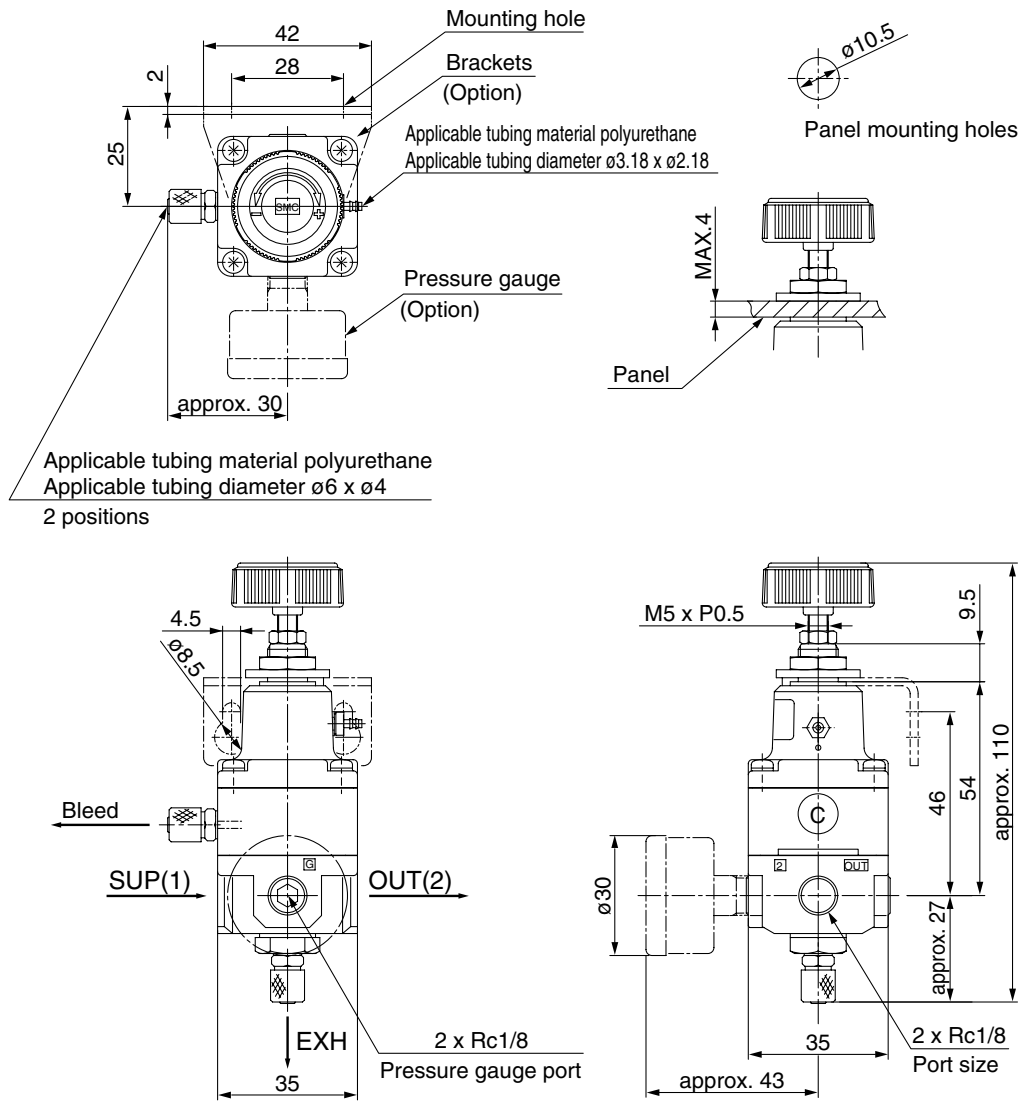
Note 2) Applicable only to air operated types IR2120 and IR3120. The basic type is excepted.

Note 3) Indicates the linearity of the output pressure with respect to the input signal pressure.

Note 4) Air is normally being discharged to the atmosphere.

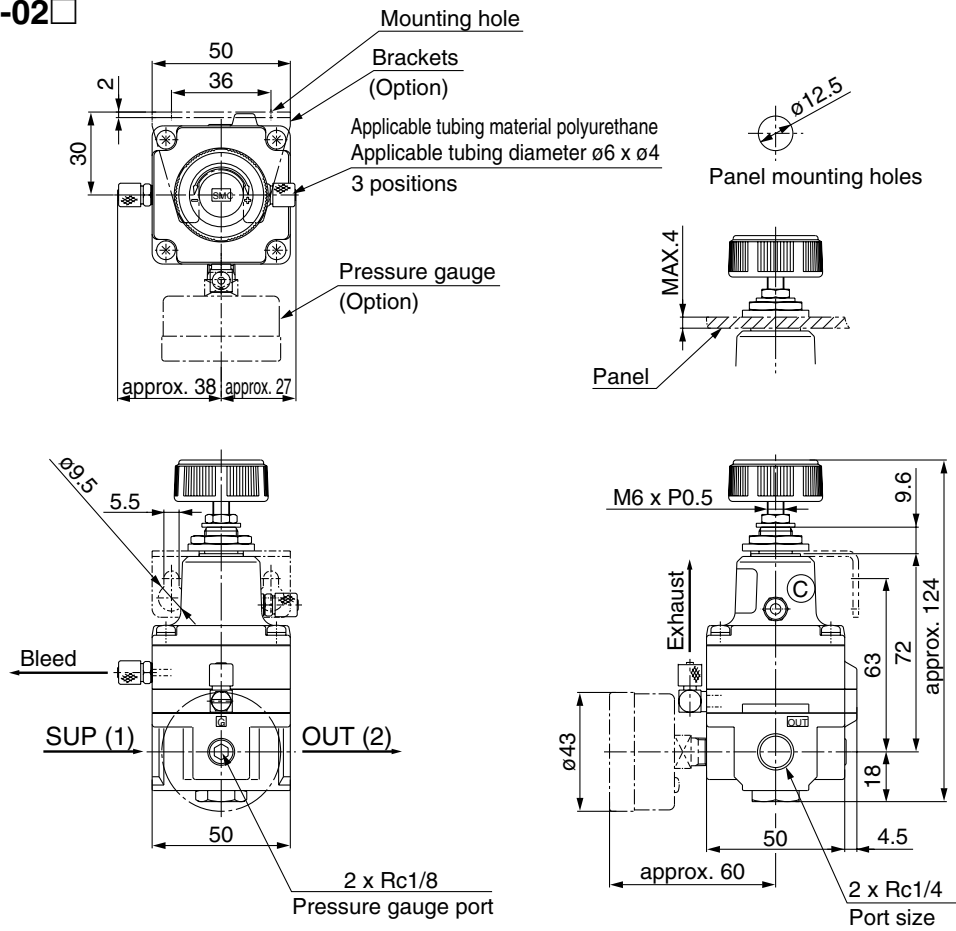
Dimensions

10-IR10□0-01□

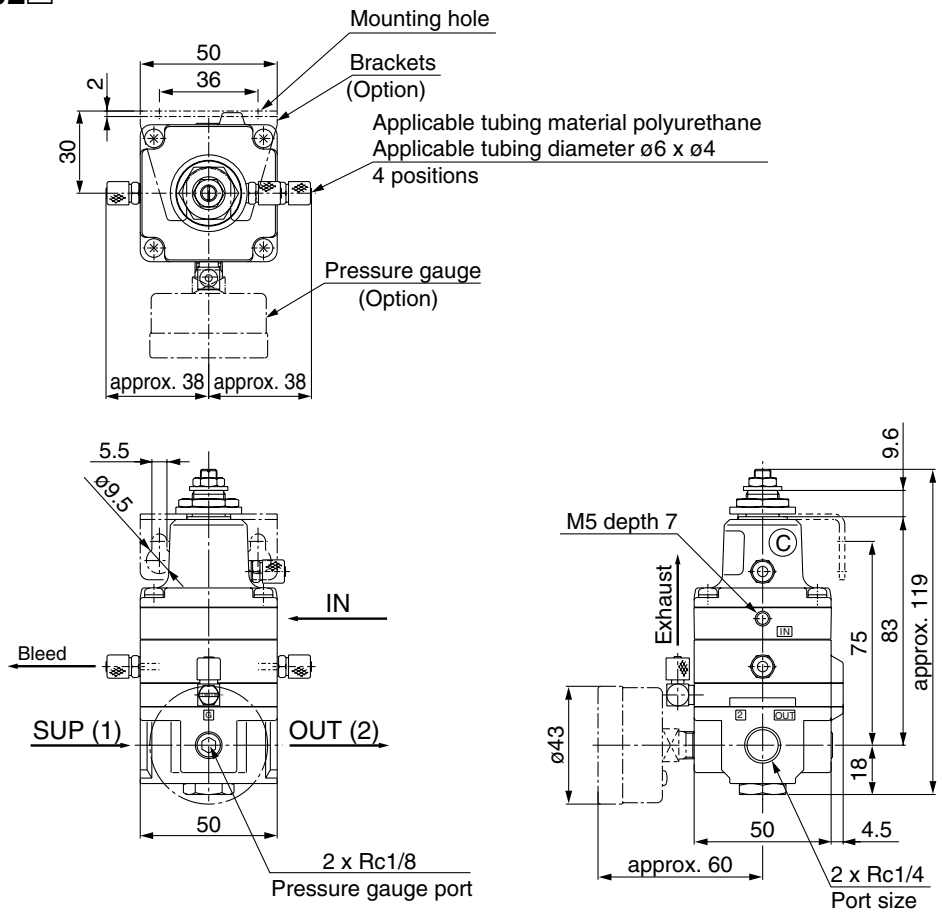


Dimensions

10-IR20□0-02□

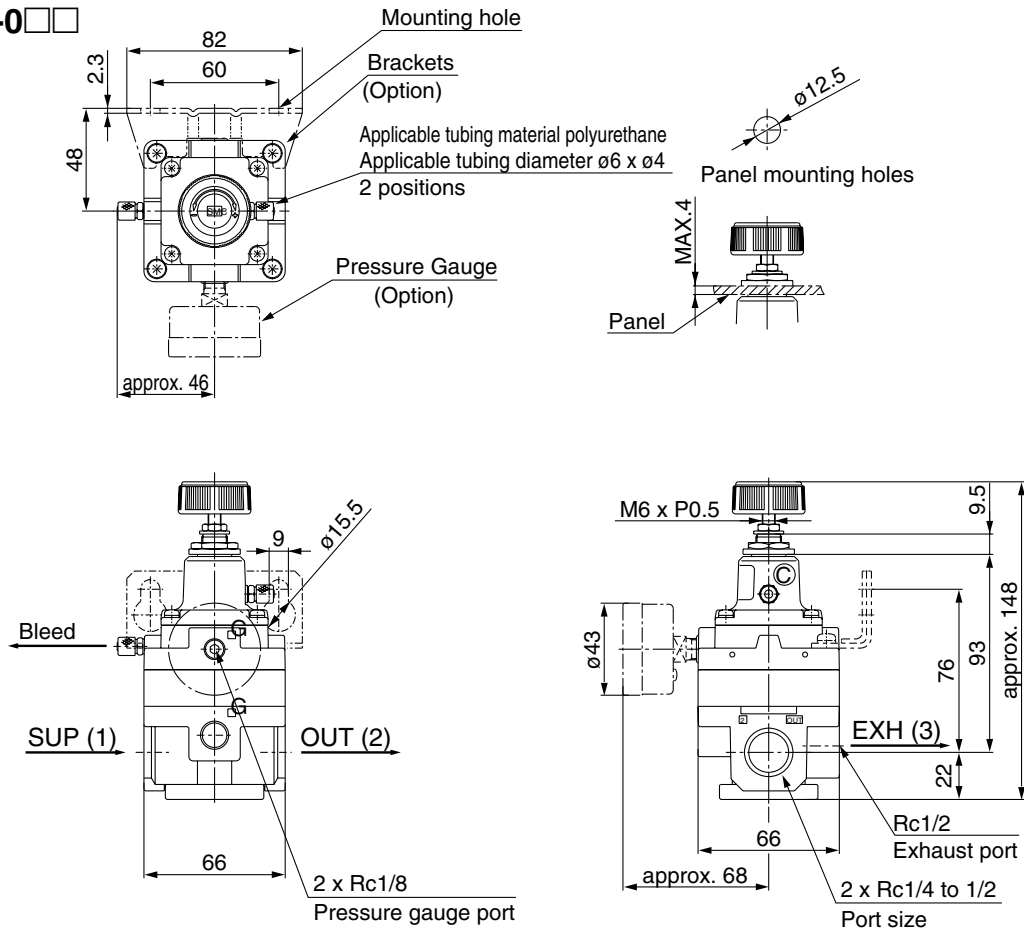


10-IR2120-02□

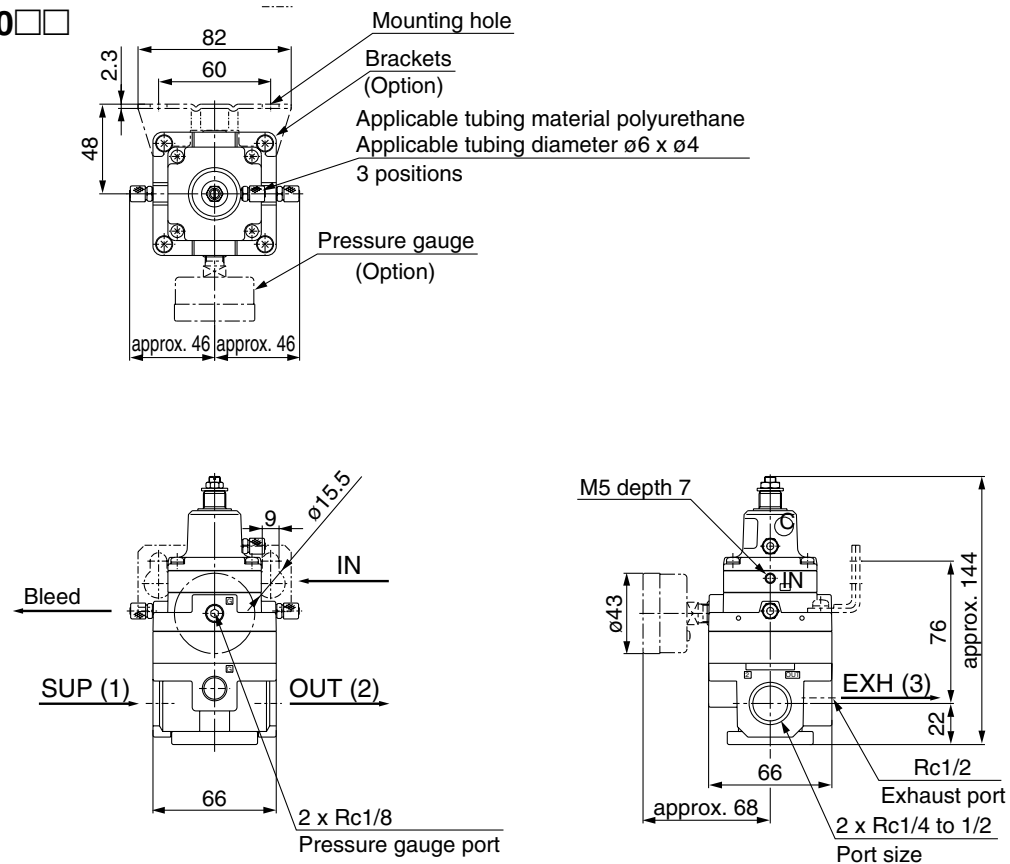


Dimensions

10-IR30□0-0□□



10-IR3120-0□□





Specific Product Precautions

Air supply

⚠ Caution

1. If the supply pressure line contains drain or particulate, etc., the fixed throttle can become clogged, leading to malfunction, and therefore, in addition to an air filter (SMC's AF series), be sure to use a mist separator (SMC's AM and AFM series).
Refer to SMC's Best Pneumatics catalog vol. 14 regarding air quality.
2. Never use a lubricator on the supply side of the regulator, as this will positively cause the fixed throttle to become clogged and result in a malfunction. If lubrication is required for terminal devices, connect a lubricator on the output side of the regulator.

Maintenance

⚠ Warning

1. When the valve guide is to be removed during maintenance, first reduce the set pressure to "0" and completely shut off the supply pressure.
2. When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to "0".

Precautions for 10-IR10□0 only

⚠ Warning

1. When remounting the valve guide after removing it for maintenance, use a tightening torque of 0.6Nm or smaller.
Since the valve guide on this product is made of resin, there is a danger of damage if tightened with a torque exceeding the prescribed range.

Operation

⚠ Caution

1. Do not use a precision regulator outside of the specifications range as this can cause failure. (Refer to specifications.)
2. When mounting is performed, make connections while confirming port indications.
3. Screw a panel nut with the recommended proper torque when mounting onto a panel. Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will occur if the torque is excessive.

Operation

Recommended proper torque N·m

10-IR1000	10-IR2000	10-IR3000
12.5	21	21

4. If a directional switching valve (solenoid valve, mechanical valve, etc.) is mounted on the supply side of the regulator and repeatedly switched ON and OFF, wear of the nozzle/flapper section will be accelerated and a discrepancy in the setting value may occur. Therefore, avoid using a directional switching valve on the supply side. In the event a directional switching valve will be used, install it on the output side of the regulator.
5. Air is normally released from the bleed port (the hole on the side of the body's mid-section). This is a necessary consumption of air based on the construction of the precision regulator, and is not an abnormality.
6. Make sure to tighten the lock nut after pressure adjustment.

Precautions for 10-IR30□0 and IR3120 only

⚠ Caution

1. When the supply pressure is relatively high (approx. 0.5 MPa or more), the set pressure is low (approx. 0.1MPa or less), and operated with the output side released to the atmosphere, there may be pulsations in the setting pressure. In this kind of situation, operate with the supply pressure reduced as much as possible, or increase the set pressure somewhat and restrict the output line (add and adjust a stop valve, etc.).
2. If the product is used for a relief function with a large capacity on the output side, there will be a large exhaust sound at the time of relief. Therefore, install a silencer (SMC AN series) on the exhaust port (EHXm). The connection is Rc1/2.

Precautions for 10-IR2120 and IR3120 (air-operated types) only

⚠ Caution

1. Since the output types of IR2120 and IR3120 are the same pressure as the input signal pressure, select a type of regulator (general purpose or precision type) for input signal pressure adjustment according to the application.
2. The screw on the topmost section is a zero point adjustment screw which is locked at the factory and requires no adjustment for operation.

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

**Filter, Pressure
control equipment**

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Series 10-IRV1000/2000/3000

Precision regulator
for vacuum

How to Order

10-IRV 1 000- 01

Clean series → Precision regulator for vacuum

Body size

1	IRV1000 type
2	IRV2000 type
3	IRV3000 type

Thread type

Nil	Rc
N*	NPT
F*	G

* Option

Port size

Symbol	Port size	Size		
		10-IRV1000	10-IRV2000	10-IRV3000
01	1/8	●	—	—
02	1/4	—	●	●
03	3/8	—	—	●
04	1/2	—	—	●

Accessory

Nil	None
B	With bracket ^{Note)}
G	With pressure gauge

Note) Brackets are shipped together, (but not assembled).

Suffix

Nil: Standard

VAC (Vacuum pump side) → SET (Pad side)

Pressure gauge

R Pressure gauge mounted on reverse side

VAC (Vacuum pump side) → SET (Pad side)

Pressure gauge

Symbol



Specification list

◎ Standard specification ○ Valid combination ■ Invalid combination

Specifications		Symbol	Applicable model		
			10-IRV1000	10-IRV2000	10-IRV3000
Standard specifications	Connection Rc1/8	01	◎	■	■
	Connection Rc1/4	02	■	◎	◎
	Connection Rc3/8	03	■	■	◎
	Connection Rc1/2	04	■	■	◎
Accessory	Brackets	B	○	○	○
	Pressure gauge	G	○	○	○
Options	Pressure gauge mounted on reverse side	R	○	○	○
	Connection NPT1/8	N01	○	■	■
	Connection NPT1/4	N02	■	○	○
	Connection NPT3/8	N03	■	■	○
	Connection NPT1/2	N04	■	■	○
	Connection G1/8	F01	○	■	■
	Connection G1/4	F02	■	○	○
	Connection G3/8	F03	■	■	○
	Connection G1/2	F04	■	■	○

Standard specifications

Model	10-IRV1000	10-IRV2000	10-IRV3000
Fluid	Air		
Set pressure range ^{Note 1)}	-100 to -1.3kPa		
Atmospheric intake consumption ^{Note 2)}	Within 0.6 ℓ/min (ANR)		Within 1.1 ℓ/min (ANR)
Knob resolution	0.13 kPa or less		
Ambient and fluid temperatures	5 to 60°C		
Port size	Rc1/8	Rc1/4	Rc1/4, 3/8, 1/2
Pressure gauge port size	Rc1/8 (2 positions)		
Weight (kg) [without accessory]	0.12	0.27	0.7
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 1		

Note 1) Use caution it varies depending on the pressure in vacuum pump side.

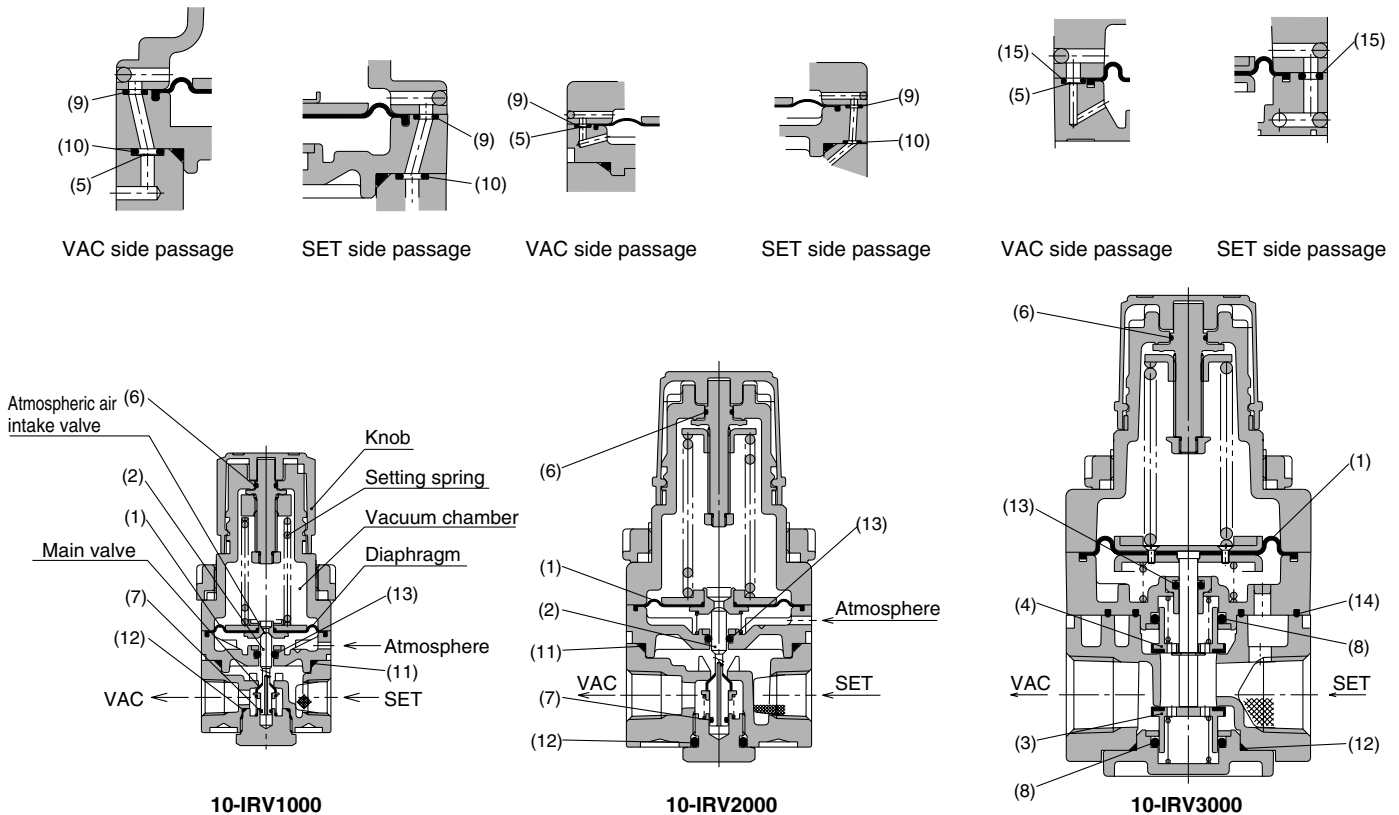
Note 2) Taking air from atmosphere all the time.

Accessory (Option) / Part Number

Description	10-IRV1000	10-IRV2000	10-IRV3000
Brackets	P53801018	P53802016	P53803013
Pressure gauge *	GZ33-K-01-X4	GZ43-K-01-X4	GZ43-K-01-X4

* Precision of pressure gauge within ±3% (Full span)

Construction



Working principle (10- IRV1000)

When the handle is turned to the right, the adjusting spring's generated force pushes down the diaphragm and the main valve. This connects the VAC side and SET side, and the degree of vacuum on the SET side increases (becomes closer to an absolute vacuum). Furthermore, the SET side vacuum pressure moves through the air passage into the vacuum chamber, where it is applied to the top side of the diaphragm and counters the adjusting spring's compression force; and this adjusts the SET side pressure. When the degree of vacuum on the SET side is higher than the designated setting value (becomes closer to an absolute vacuum), the balance between the adjusting spring and the SET side pressure in the vacuum chamber is lost, and the diaphragm is pushed up. This causes the main valve to close and the atmospheric intake valve to open, which lets atmospheric air into the SET side. When the adjusting spring's compression force and the SET side pressure are balanced, the SET side pressure is set. Also, when the degree of vacuum of the SET side pressure is lower than the designated setting value (becomes closer to the atmosphere), the balance between the adjusting spring and the SET side pressure of the vacuum chamber is lost, and the diaphragm is pushed down. This causes the atmospheric intake valve to close and the main valve to open, which lets air into the VAC side. When the adjusting spring's compression force and the SET side pressure are balanced, the SET side pressure is set.

Replacement Parts

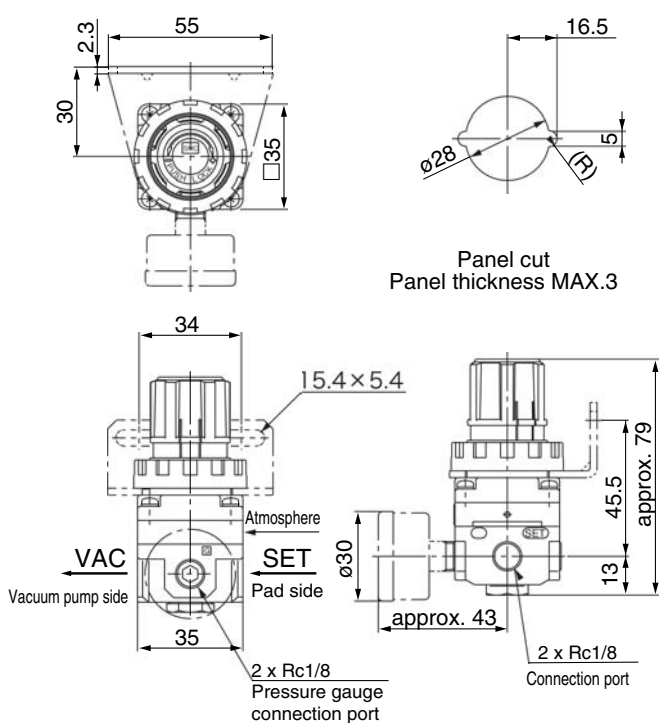
No.	Description	Materials	Part Number		
			10-IRV1000	10-IRV2000	10-IRV3000
1	Diaphragm assembly	H-NBR, other	P538010-6	P538020-3	P538030-5
2	Valve	Stainless steel/H-NBR	P53801005	P53802005	—
3	Valve	Brass/H-NBR	—	—	P53803015
4	Valve	Brass/H-NBR	—	—	P53803016
5	Fixed orifice	SUS304	P36202018	P36202018	P36203017
6	O-ring	H-NBR	ø4.35 x 1	ø6 x 1	ø8.31 x 1
7	O-ring	H-NBR	ø2 x 0.6	ø3.2 x 1	—
8	O-ring	NBR	—	—	JISB2401 P16 ^{Note 1)}
9	O-ring	NBR	ø1.7 x 0.85	ø2.5 x 1	—
10	O-ring	NBR	ø2.5 x 1	ø3 x 1	—
11	O-ring	NBR	ø24 x 1.5	ø39.5 x 2	—
12	O-ring	NBR	ø10 x 1.3	JISB2401 P11	ø27.8 x 1.5
13	O-ring	NBR	JISB2401 P3 ^{Note 1)}	JISB2401 P4 ^{Note 1)}	JISB2401 P5 ^{Note 1)}
14	Seal (A)	NBR	—	—	P36203015
15	Seal (B)	NBR	—	—	P36203016
Repair kit no. (A set of above nos. (1) to (15))			KT-IRV1000	KT-IRV2000	KT-IRV3000

Note 1) For O-ring numbers 8 and 13, use mini-flicking type.

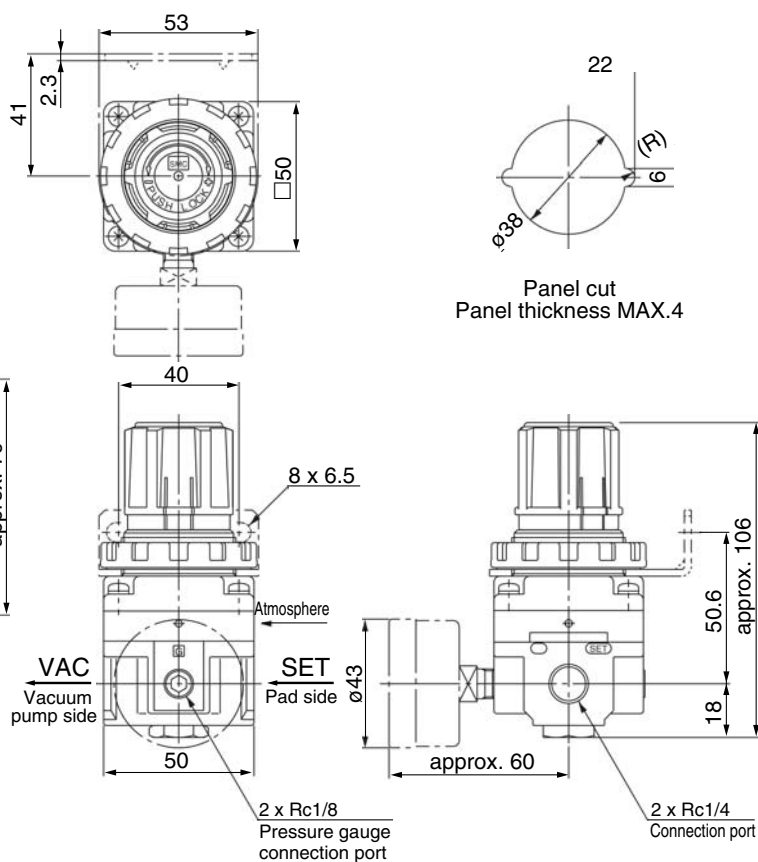
Note 2) Replacement part numbers correspond to the item numbers in the figures.

Dimensions

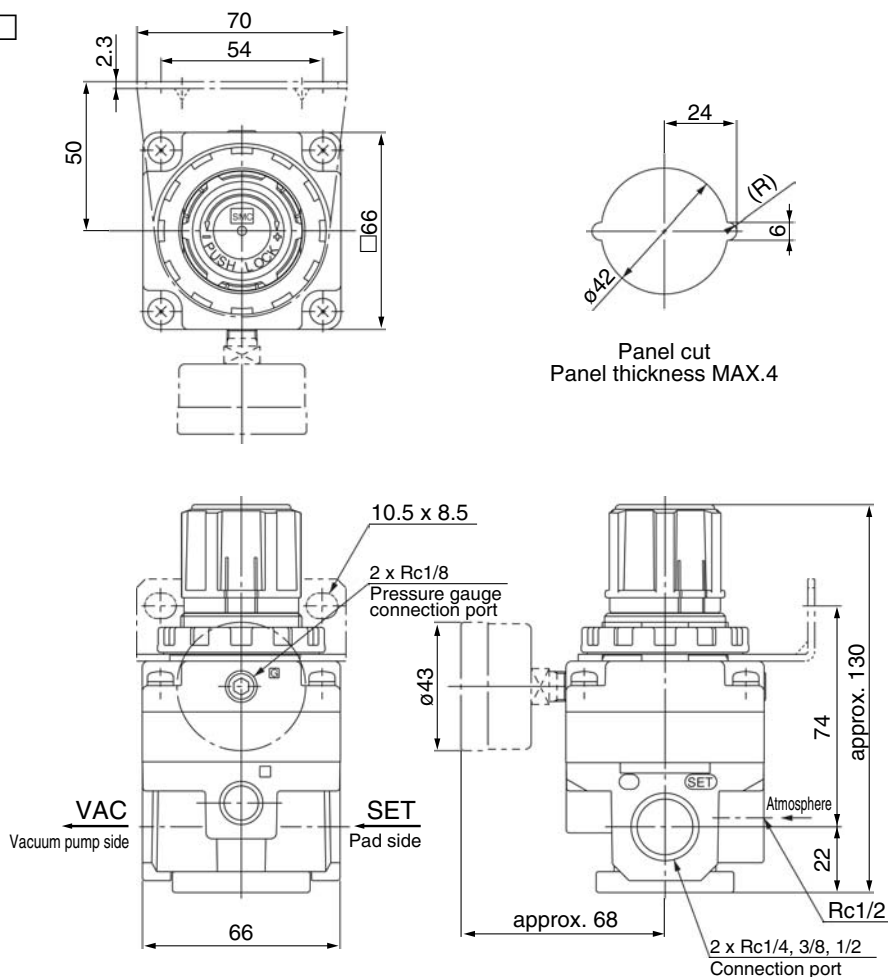
10-IRV1000-01



10-IRV2000-02



10-IRV3000-03 04





Specific Product Precautions

Be sure to read before handling.

Handling

Warning

1. When a system hazard can be expected due to a drop in vacuum pressure caused by power loss or vacuum pump trouble, install a safety circuit and configure the system so that it can avoid the danger.
2. When a system hazard can be expected with a malfunction of the vacuum regulator, install a safety circuit and configure the system so that it can avoid the danger.

Caution

1. When installing an additional pressure gauge, be sure to reduce the set pressure to 0 (atmospheric pressure) before removing the plug.
2. Do not remove the body screw while the negative pressure is applied.
3. Before removing the valve guide for inspection, reduce the set pressure to 0 (atmospheric pressure) and also shut down the vacuum pump pressure completely.

Operating Environment

Warning

1. Do not use valves in such environments where corrosive gases, chemicals, brine, water or steam is airborne, or where valves can be directly exposed to any of those.
2. Do not use in locations subject to vibrations or impacts.
3. This vacuum regulator always uses atmospheric air, therefore, do not use in dusty environments.
4. In locations where the regulator is exposed to direct sunlight, provide a protective cover, etc.
5. If there is a heat source in close proximity, block off any radiated heat.

Vacuum supply

Caution

1. This vacuum regulator is not to be used for adjustment of vacuum pump pressures.
2. Note that an ejector's flow rate is smaller than that of the vacuum regulator, and therefore, it is not suitable as a "vacuum supply."

Air

Caution

1. These products are designed for use with air. Contact SMC if any other fluid will be used.
2. Do not use air which includes chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, etc., as this can cause damage or malfunction.

Operation

Caution

1. Connect piping to the port with "VAC" indication (upper right of the port) for connection to the vacuum pump.
2. To adjust the pressure, turn the knob to clockwise direction for changing "atmospheric pressure to vacuum pressure" and to counterclockwise direction for changing "vacuum pressure to atmospheric pressure."
3. When adjusting pressure, do not touch the lateral hole in the mid-section of the body and the lateral hole (atmospheric air suction hole) below the "VAC" indication.
4. When locking the knob after setting the pressure, press down the knob until the orange band is hidden and a click is heard. On the other hand, when unlocking the knob, pull it up until the orange band is visible and a click is heard.
5. This vacuum regulator is for use with negative pressure only. Be sure that positive pressure is not applied instead. In the event that positive pressure is applied, the vacuum regulator will not be damaged; however, the main valve of the pressure adjustment valve will open and positive pressure will enter the vacuum pump. This may cause malfunction of the vacuum pump.
6. When the capacity of the vacuum pump is relatively small or when the inside diameter of the piping is small, a change in the set pressure (the pressure difference between the non-flow and flow conditions) may be large. In this case, change the vacuum pump or the inside diameter of the piping. When changing the vacuum pump is not possible, add a capacity tank (the capacity depends on the operating conditions) to the VAC side.
7. The pressure response time after opening and closing of valves (such as solenoid valves) is influenced by the internal capacity of the setting side (includes piping capacity). Since the vacuum pump capacity also affects the response time, consider all these points when operating.
8. When using a pressure gauge upside down as shown in Fig. 1, it may cause a shifting of the zero point reading. Make sure to use it in the direction as shown in Fig. 2.

10-IRV1000

Zero position



Figure 1

Top

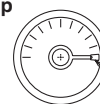


Figure 2

Zero position

Ground

10- IRV2000 and IRV3000

Zero position

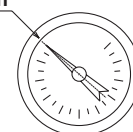
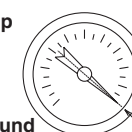


Figure 1

Top



Ground

Figure 2

Zero position

Series **SRH** Clean regulator

How to Order



SRH 3 0 0 0 02 R

Body size

3	1/4
4	3/8

Washing grade

0	Grade A
1	Grade B

Set pressure

0	0.01 to 0.2 MPa
1	0.05 to 0.7 MPa

Relief mechanism

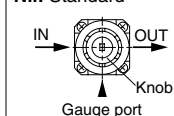
0	Non-relief
1	Relief

Port size

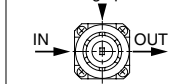
Symbol	Port size	SRH3000	SRH4000
01	Rc1/8	●	—
02	Rc1/4	●	●
03	Rc3/8	—	●
04	Rc1/2	—	●
A2	With metal gasket seal fitting	URJF1/4	—
A3	With metal gasket seal fitting	—	URJF3/8

Gauge port orientation

Nil: Standard



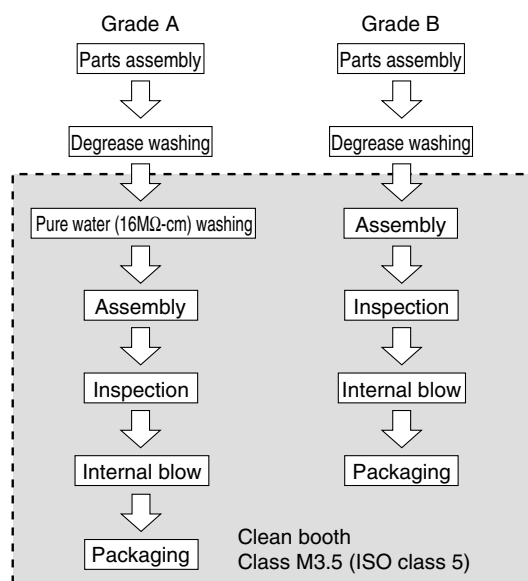
R: R Specification
Gauge port



* There is only one gauge port.

Note) Please refer to option specifications for pressure gauges.

Production process

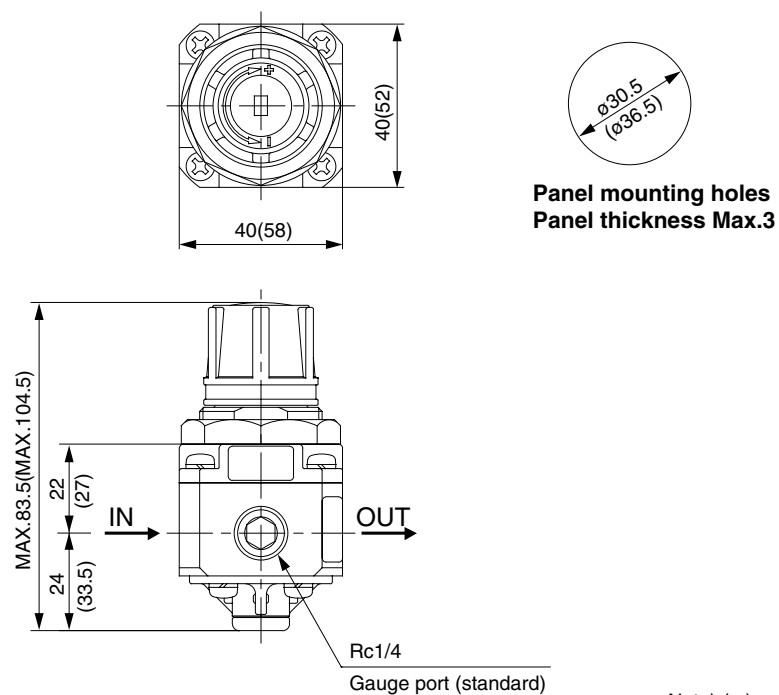


Specifications

Model		SRH3□□0	SRH4□□0	SRH3□□1	SRH4□□1
Relief mechanism		Non-relief		Relief	
Port size		Rc1/8, 1/4 URJF1/4	Rc1/4, 3/8, 1/2 URJF3/8	Rc1/8, 1/4	Rc1/4, 3/8, 1/2
Fluid	Grade A	Clean air, N ₂ , Ar, CO ₂ , pure water		Clean air, N ₂	
	Grade B	Air, N ₂ , Ar, CO ₂ , water		Air, N ₂	
Proof pressure		1.5MPa			
Max. operating pressure		1MPa			
Set pressure	Low pressure type	0.01 to 0.2MPa			
	High pressure type	0.05 to 0.7MPa			
Ambient & fluid temperatures		0 to 60°C (with no freezing)			
Wetted part material (metal)		Stainless steel SUS316 (body is stainless steel SUS316L)			
Diaphragm material	Grade A	PTFE			
	Grade B	Fluororubber			
Weight		360g	730g	360g	730g
Particle generation grade (Refer to front matters 13 to 22 for details.)		Grade 1			

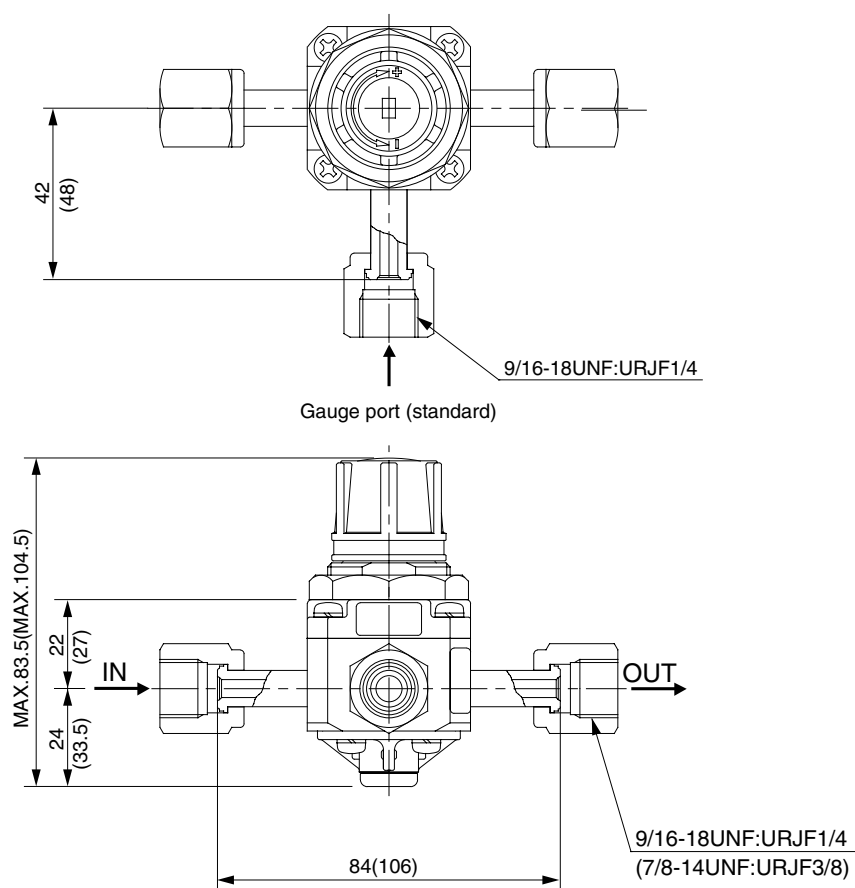
Dimensions

Rc thread type

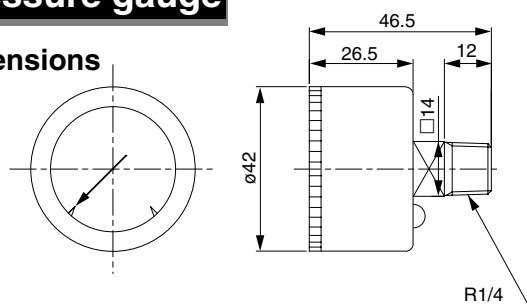


Note) () are the dimensions of SRH4000.

Metal gasket seal fitting type



Note) () are the dimensions of SRH4000.

Options**Pressure gauge****Dimensions****Specifications**

Item	Model	G46-□-02-SRA	G46-□-02-SRB
Port size		R1/4	
Operating temperature range		0 to 60°C (with no freezing)	
Accuracy		±3% F.S.	
Scale range		270°	
Parts washing (wetted parts)		Precision washing	General degreasing
Assembly & adjustment environment		Clean room	General production line
Oil free / Water free		Oil free / Water free	
Materials	Wetted parts	Stainless steel SUS316	
	Case	Stainless steel SUS304 (Black melamine coating)	
	Clear cover	Polycarbonate (Hard coated) Part No. G46-00-00-2	
	Internal parts	Brass	
Weight		80 g	

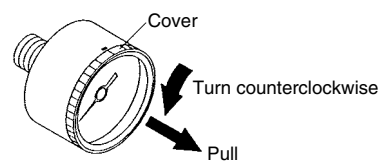
Note) Consult SMC for the supply of models with fitting of metal gasket seal.

Model

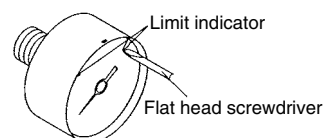
Model	Pressure range	Display unit
	MPa	
G46-2-02-SRA	0 to 0.2	MPa
G46-2-02-SRB		
G46-4-02-SRA	0 to 0.4	
G46-4-02-SRB		
G46-7-02-SRA	0 to 0.7	
G46-7-02-SRB		
G46-10-02-SRA	0 to 1.0	
G46-10-02-SRB		

Procedure for setting the limit gauge indicator

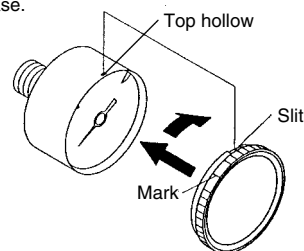
- 1) Before setting the limit indicator (green), turn the cover counterclockwise (approximately 6 to 7 mm) until it stops. Then, pull the cover and remove it.



- 2) Use a flat head screwdriver (with a 2.9 mm blade width) to set the limit indicator. Be careful not to bend other needle or damage the dial plate.



- 3) After completing the setting, fit the cover as before. Fit the cover by aligning the cutout in the cover to the groove on the top of the black case. Turn the cover clockwise (approximately 6 to 7 mm) and make sure that the matching mark on the cover is aligned with the groove on the top of the case.

**Brackets**

	For SRH3000	For SRH4000
Model	B21-1-T1	1350112-T1
Materials	Rolled steel plate (Electroless nickel plated)	
Dimensions		



Specific Product Precautions

Be sure to read before handling.

Design and Selection

Warning

1. Confirm the fluid.

Because the fluid to be used differs depending on the product, be certain to confirm the specifications. If an incompatible fluid is used, characteristics may change, which will cause malfunction.

2. Residual pressure relief is not possible without inlet side pressure.

For SRH series, if the inlet side pressure is cut off while pressure still remains on the outlet side, it is not possible to release the outlet side pressure (residual pressure relief). If pressure release from the outlet side is required, a circuit should be provided for residual pressure relief.

Caution

1. Vibrations (noise) may be generated due to the operating conditions, etc., even if the regulator is used within the catalog specification range. If noise is generated, please consult SMC.

Pressure gauge

1. Avoid use in locations subject to strong pulsation or vibration.
2. Consult SMC regarding the operation at high frequency.

Mounting

Caution

1. Open the sealed package in a clean room.

These products are packaged in airtight double packaging in a clean room. It is recommended that the inside packaging be opened in a clean room or other clean environment.

2. Flush the piping.

Connect these products to piping only after it has been flushed and cleaned properly. If debris or scale etc. remains in the piping, this can cause malfunction or failure.

3. Be certain that sealing material does not get inside the piping.

When screwing in pipes and joints etc., take care that cutting dust from the pipe threads, sealing material, and the like do not get inside the piping. If debris or scale etc. remains in the piping, this can cause malfunction or failure. Also, when thread tape is used, leave 1.5 or 2 threads exposed at the end of the pipe.

4. Confirm the mounting orientation of the product.

The side marked with an "IN" is the fluid supply port, and that marked with an "OUT" is the fluid exhaust port. If mounted backwards, the device will not operate properly.

Mounting

Caution

Pressure gauge

1. Do not apply impacts to the regulator by dropping or hitting it during transfer or installation.
It may cause inaccuracy in indication.
2. Do not install the regulator in an environment where it is exposed to high temperature or humidity.
It may cause malfunction or failure.
3. When screwing in the pressure gauge, be sure to apply the wrench to the square wrench flats. If it is applied to other parts, it may cause air leakage or damage.

Pressure adjustment

Warning

1. Do not use tools when handling the pressure adjustment knob.

The pressure adjustment knob may be damaged if handled with tools. Handle this knob only by hand.

Caution

1. Release the lock to adjust the pressure.

When the pressure adjustment knob will not turn, it is locked. Pull the pressure adjustment knob to release the lock. The knob may be damaged when it is turned by force.

Push the knob to lock again after adjusting the pressure.

2. Adjust the pressure in an upward direction.

A correct pressure setting cannot be achieved by adjusting the pressure downward. The outlet side pressure increases when turning the knob clockwise, and decreases when turning it counterclockwise.

3. In the case of non-relief type, the pressure cannot be reduced by turning the knob counterclockwise.

In the case of the non-relief type regulator, the outlet side pressure will not decrease even if the knob is turned counterclockwise unless outlet side fluid is consumed. The knob will be damaged if it is turned by force.

In case the pressure setting is too high, reduce the pressure on the outlet side to less than the desired setting pressure by consuming fluid on the outlet side, and then reset to the desired pressure.

4. Confirm the inlet side pressure.

Set the outlet side pressure to no more than 85% of the inlet side pressure. If the supply pressure is too low, a correct setting pressure cannot be obtained.

5. Do not use fluid containing solid matter.

This will cause malfunction.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series **SRP** Precision clean regulator

How to Order



SRP 1 1 0 1 - 01 - R

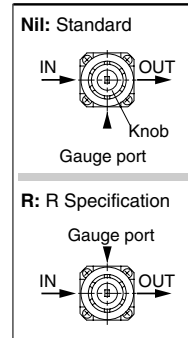
Set pressure

0	0.005 to 0.2 MPa
1	0.01 to 0.4 MPa

Port size

Symbol	Port size
M5	M5 x 0.8
01	Rc1/8

Gauge port orientation



* The gauge port position is indicated with the knob on top.

Note) The pressure gauge is optional. Please refer to "option specifications".

Options

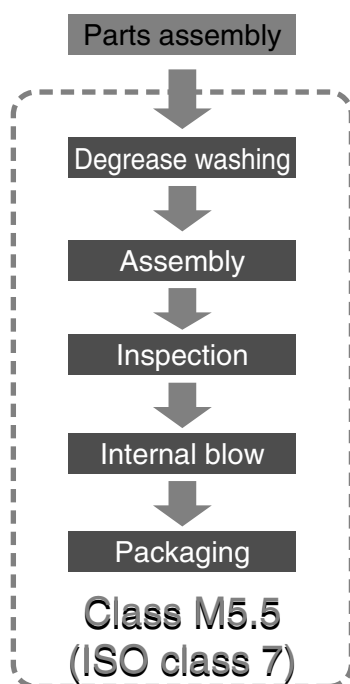
Description	Model	Material
Brackets	B21-1-T1	Rolled steel plate (Electroless nickel plated)

Specifications

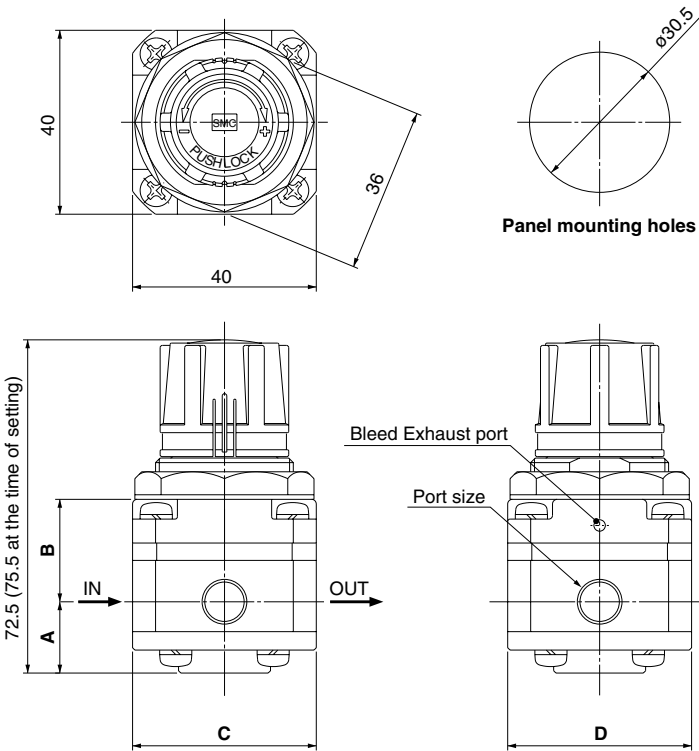
Port sizes		M5, Rc1/8
Fluid		Air, N ₂ , CO ₂ , Ar
Proof pressure (MPa)		1.5
Max. operating pressure (MPa)		1
Set pressure range (MPa)	Low pressure type	0.005 to 0.2
	High pressure type	0.01 to 0.4
Ambient & fluid temperature (°C)		0 to 60°C (with no freezing)
Fluid consumption /min (ANR) Note 1)		0.5 or less
Sensitivity		Within 0.3% of full span
Repeatability		Within ±1% of full span
Wetted part material	Metal	Stainless steel SUS316
	Resin	Fluoro resin
	Rubber	Fluororubber
	Other	Ceramics
Assembly environment		Clean room class 10000
Parts washing (wetted parts)		General degreasing
Particle generation grade (Refer to front matters 13 to 22 for details.)		Grade 3

Note 1) At set pressure of 0.2MPa

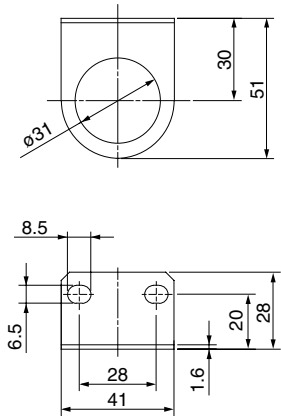
Production process



Dimensions



Brackets (B21-1-T1)



Model	Port size	A	B	C	D
SRP11□1-M5	M5 x 0.8	14	23.5	30	30
SRP11□1-01	Rc1/8	15	22.5	40	40

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

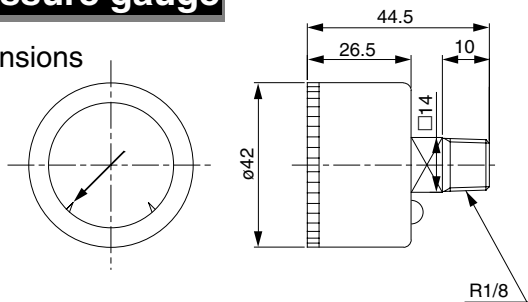
Pressure switch

Clean gas filter

Options

Pressure gauge

Dimensions



Specifications

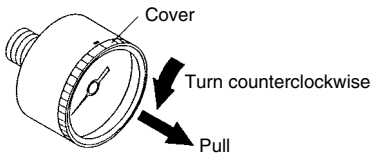
Item	Model	G46-□-01-SRA	G46-□-01-SRB
Port size		R1/8	
Operating temperature range		0 to 60°C (with no freezing)	
Accuracy		±6% F.S.	
Scale range		270°	
Parts washing (wetted parts)		Precision wash	General degrease
Assembly & adjustment environment		Clean room	General production line
Oil free / Water free		Oil free / Water free	
Materials	Wetted parts	Stainless steel SUS316	
	Case	Stainless steel SUS304 (Black melamine coating)	
	Clear cover	Polycarbonate	
	Internal parts	Brass	
Weight		80g	

Model

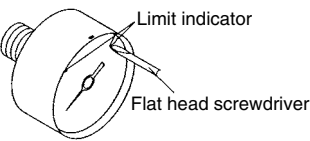
Mode	Pressure range	Display unit
	MPa	
G46-2-01-SRA	0 to 0.2	MPa
G46-2-01-SRB		
G46-4-01-SRA	0 to 0.4	
G46-4-01-SRB		

Procedure for setting the limit gauge indicator

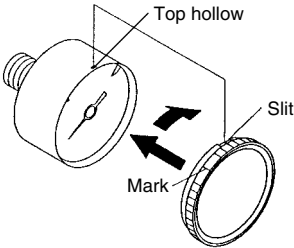
- 1) Before setting the limit indicator, turn the cover counterclockwise (approximately 6 to 7 mm) until it stops. Then, pull the cover and remove it.



- 2) Use a flat head screwdriver (with a 2.9 mm blade width) to set the limit indicator. Be careful not to bend other needle or damage the dial plate.



- 3) After completing the setting, mount the cover as before. Fit the cover by aligning the cutout in the cover to the groove on the top of the black case. Turn the cover clockwise (approximately 6 to 7 mm) and make sure that the matching mark on the cover is aligned with the groove on the top of the case.





Specific Product Precautions

Be sure to read before handling.

Design and Selection

Warning

1. Types of fluid

Use with air, N₂, CO₂ or Ar as fluids. Consult SMC if the product is to be used with other fluids.

Do not use toxic or corrosive gases because the bleed mechanism is adopted to discharge fluids from the bleed port.

2. Do not use fluid containing solid matter.

To prevent malfunction caused by such substances, install a mist separator on the upstream side of the regulator.

3. When using air containing a large amount of drainage, install an air dryer or after cooler upstream of the regulator.

It will cause malfunction or failure.

4. Do not use in a place subject to heavy vibrations and/or shocks.

5. Install a protection cover if the product is exposed to direct sunlight.

6. Block off heat radiation with a cover if there is a heat source in close proximity.

Caution

1. SMC recommends the outlet side pressure be set within a 25 to 85% range of the inlet side pressure.

2. Vibrations (noise) may be generated due to the operating conditions, etc., even if the regulator is used within the catalog specification range. If noise is generated, please consult SMC.

Pressure gauge

1. Avoid use in an environment where the regulator is exposed to strong pulsation or vibration.
2. Consult SMC regarding the operation at high frequency.

Mounting

Caution

1. Open the sealed package in a clean room.

These products are packaged in airtight double packaging in a clean room. It is recommended that the inside packaging be opened in a clean room or other clean environment.

2. Flush the piping.

Connect these products to piping only after it has been flushed and cleaned properly. If debris or scale etc. remains in the piping, this can cause malfunction or failure.

3. Be certain that sealing material does not get inside the piping.

When screwing in pipes and joints etc., take care that cutting dust from the pipe threads, sealing material, and the like do not get inside the piping. If debris or scale etc. remains in the piping, this can cause malfunction or failure. Also, when thread tape is used, leave 1.5 or 2 threads exposed at the end of the pipe.

4. Confirm the mounting orientation of the product.

The side marked with an "IN" is the fluid supply port, and the side marked with an "OUT" is the fluid exhaust port. If mounted backwards, the device will not operate properly.

Mounting

Caution

5. Do not plug the bleed port.

If it is plugged, the product will not operate properly.

Pressure gauge

1. Do not apply impacts to the regulator by dropping or hitting it during transfer or installation.
It can cause inaccuracy in indication.
2. Do not install the regulator in an environment where it is exposed to high pressure or humidity.
It will cause malfunction or failure.
3. When screwing in the pressure gauge, be sure to apply the wrench to the square wrench flats. If it is applied to other parts, it may cause air leakage or damage.

Pressure adjustment

Warning

1. Do not use tools when handling the pressure adjustment knob.

The pressure adjustment knob may be damaged if handled with tools. Handle this knob only by hand.

2. Set up the regulator while checking the pressure that is indicated on both of inlet and outlet sides pressure gauges.

If the knob is turned excessively, it may damage the internal parts.

Caution

1. Release the lock to adjust the pressure.

When the pressure adjustment knob will not turn, it is locked. Pull the pressure adjustment knob to release the lock. The knob may be damaged when it is turned by force.

Push the knob to lock again after adjusting the pressure.

2. Adjust the pressure in an upward direction.

A correct pressure setting cannot be achieved by adjusting the pressure downward. The outlet side pressure increases when turning the knob clockwise, and decreases when turning it counterclockwise.

3. Confirm the inlet side pressure.

Set the outlet side pressure to no more than 85% of the inlet side pressure. If the inlet side pressure is too low, a correct setting pressure cannot be obtained.

4. A small amount of fluid is consumed from the bleed port.

The bleed mechanism is adopted to achieve high precision pressure adjustment. Therefore, a small amount of fluid is constantly consumed from the bleed port but this is not abnormality.



F.R. Precautions 1

Be sure to read before handling.

Design

Warning

1. The standard bowl for the air filter and filter regulator are made of polycarbonate. Do not use in an environment where they are exposed to or come in contact with organic solvents, chemicals, cutting oil, synthetic oil, ester based compressor oil, alkali, and thread lock solutions.
2. Avoid applications where pressurized air is frequently introduced to and released from the standard bowl of an air filter, or filter regulator. It may cause the bowl to be damaged. Use of a metal bowl is recommended for such applications.

3. Regulator and filter regulator

Be sure to install a safety device to prevent damage or malfunction of the outlet side components when the output pressure exceeds the set pressure value.

Caution

1. Select a model that is suitable for desired purity by referring to the SMC's Best Pneumatics catalog.
2. Components cannot be used for applications that are outside the range of specifications. Please consult with SMC when you anticipate using the component outside the range of its specifications (such as temperature and pressure).
3. **Mist separator and micro mist separator**
Design the system so that the mist separator and micro-mist separator are installed where there is less pulsation. A pressure difference between internal and external pressure inside the element should be kept within 0.1 MPa, as exceeding this value can cause damage.
4. **Regulator and filter regulator**
Air consumption is 0.1 ℓ/min (ANR) or less under standard specifications. Please consult with SMC, if this value is not allowable.

Selection

Warning

1. The grease (10-: Fluorine, 21-: Mineral) used on internal sliding parts and seals may run down to outlet side components. Please consult with SMC if this is not desirable.

2. Regulator and filter regulator

- 1) Residual pressure release (outlet pressure release) is not complete by releasing the inlet pressure. To release residual pressure, select a model with a back flow mechanism. Using a model without a back flow mechanism makes for inconsistent residual pressure release (i.e., residual pressure may or may not be released) depending upon the operating conditions.
- 2) Please contact SMC if air will not be consumed in the system for a long period of time, or if the outlet side will be used with a sealed circuit and a balanced circuit, as this may cause the set pressure of the outlet side to fluctuate.
- 3) Set the regulating pressure range for the outlet pressure of the regulator in a range that is 85% or less of the inlet pressure. If set to above 85%, the outlet pressure will be easily affected by fluctuations in the flow rate and inlet pressure, and become unstable.
- 4) A safety margin is calculated into the maximum set pressure range appearing in the catalog's specification table. Therefore, the outlet pressure may exceed the set pressure.
- 5) Please contact SMC when a circuit requires relief sensitivity or setting accuracy with high precision.



F.R. Precautions 2

Be sure to read before handling.

Mounting

⚠ Caution

1. To avoid reversed connections of the air inlet/outlet, make connections after confirming the "IN/OUT" mark or arrows that indicate the direction of air flow. Reversed connections can cause malfunction.
2. Components with a bowl, e.g., air filter, filter regulator must be installed vertically with the bowl downward so that faulty drain discharge and dripping can be verified.
3. Ensure sufficient top, bottom, and front clearance for maintenance and operation of each component. Refer to the dimensions section for the minimum clearance for each component.
4. **Regulator and filter regulator**
Be sure to unlock the knob before adjusting the pressure and to lock it after the pressure is set.
5. **Drain piping**
 - 1) The drain guide bowl of a filter or filter regulator is not provided with a valve function to exhaust drainage. Install valves onto the drain guide before supplying air to discharge air and drainage.
 - 2) When piping the drain guide bowl of the filter or filter regulator, first secure the drain guide with a wrench. Failure to secure the drain guide may result in bowl damage.

Air supply

⚠ Caution

1. **When there is excessive drainage**
Install the dryer or water separator (Drain Catch) before the air filter or filter regulator.

Adjustment

⚠ Warning

1. Regulator and filter regulator

- 1) Set the regulator while verifying the displayed values of the inlet and outlet pressure gauges. Turning the knob excessively can cause damage to the internal parts.
- 2) Do not use a tool on the pressure regulator knob as this can cause damage. It must be operated manually.

⚠ Caution

1. Regulator and filter regulator

- 1) Be sure to check the inlet pressure before setting the outlet pressure.
- 2) The pressure gauge included with regulators for 0.02 to 0.2 MPa setting is for up to 0.2 MPa only. Do not apply pressure exceeding 0.2 MPa. It can damage the pressure gauge.
- 3) To set the pressure using the knob, turn the knob in the direction that increases pressure and lock the knob after the pressure is set. If this is done in the direction that decreases pressure, the pressure may drop from the original set pressure. Turning the knob clockwise increases the outlet pressure, and turning it counterclockwise reduces the pressure.

Piping

⚠ Warning

1. To screw piping materials into components, tighten with a recommended tightening torque while holding the female thread side. If the minimum tightening torque is not observed, this can cause a looseness and seal failure. On the other hand, excess tightening torque can cause damage to the thread. Furthermore, tightening without holding the female thread side can cause damage due to the excess force that is applied directly to the piping bracket.

Recommended tightening torque

Unit: N·m

Connection thread	1/8	1/4	3/8	1/2	3/4	1
Torque	7 to 9	12 to 14	22 to 24	28 to 30	28 to 30	36 to 38



F.R. Precautions 3

Be sure to read before handling.

Maintenance

Warning

1. When disassembly or installation is required during the maintenance, repair, or replacement of a device, be sure to follow the instructions provided in the instruction manual or safety instructions in this catalog.
2. Perform periodical inspections to detect any cracks, scratches, or other deterioration of the transparent resin bowl of the air filter and filter regulator.
Replace with a new bowl or metal bowl when any kind of deterioration is found, otherwise this can cause damage.
3. Perform periodical inspections to detect dirt on the transparent resin bowl of the air filter and filter regulator. When you find dirt on any of the above devices, clean with a household neutral detergent. Do not use other cleaning agents, otherwise this can cause damage.
4. **Air filter**
 - 1) Replace the element every 2 years or when the pressure drop becomes 0.1 MPa, whichever comes first, to prevent damage to the element.
 - 2) Release accumulated condensate periodically before it reaches the maximum capacity. Condensate that flows out to the outlet side can cause malfunctions.
5. **Mist separator and micro mist separator**
 - 1) Replace the element every 2 years or when the pressure drop becomes 0.1 MPa, whichever comes first, to prevent damage to the element.
 - 2) Release accumulated condensate periodically before it reaches the maximum capacity. Condensate that flows out to the outlet side can cause malfunctions.

Caution

1. Perform periodical inspections of the filter element and replace it as necessary. Check the element whenever the outlet pressure drops below normal or air does not flow smoothly during operation.
2. **Regulator and filter regulator**
Check the sliding part or seat of the internal valve when a setting malfunction or relief leakage occur and temporary or emergency repairs need to be made.

For Clean Room Fittings & Tubing

Description	Series	Page
\\ Clean One-touch Fittings for Blowing	KP	P.806
\\ Clean One-touch Fittings for Drive System Air Piping	(21-) KPQ/KPG	P.812
\\ Miniature One-touch Fittings	10- KJ	P.816
\\ One-touch Fittings	10- KQ	P.824
\\ Stainless One-touch Fittings	10- KG	P.843
\\ Insert Fittings	10- KF	P.854
\\ Miniature Fittings	10- M	P.860
\\ Stainless Miniature Fittings	10- MS	P.866
\\ Rectangular Multi-connector	10- KDM	P.870
\\ Clean Tubing Polyolefin Tubing	TPH	P.874
\\ Clean Tubing Soft Polyolefin Tubing	TPS	P.875
\\ Polyurethane Tubing	10- TU	P.876
\\ Polyurethane Coil Tubing	10- TCU	P.877
\\ Polyurethane Flat Tubing	10- TFU	P.878
\\ Fittings & Tubing/Precautions		P.879

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Fittings & Tubing

Clean one-touch fittings

For blowing
Series KP



Applicable tubing
Material

Polyolefin
Soft polyolefin
tubing

Applicable tubing O.D.
(mm)

ø3.2 ø4 ø6 ø8 ø10 ø12 ø16

With
seal

Page

1/8	•	•	•				
1/4	•	•	•	•			
3/8				•	•		
1/2					•		

806

For drive system
air piping
Series (21-)KPQ/KPG



Polyurethane

M5	•	•					
1/8	•	•	•				
1/4	•	•	•	•			
3/8				•	•		
1/2					•		

812

One-touch connection and disconnection
Possible to use in vacuum to -100 kPa

Miniature one-touch fittings
Series 10-KJ



Polyurethane

M3	•	•					
M5	•	•	•				
1/8	•	•	•				•
Without thread	•	•	•				

816

Applicable tubing-Metric size

One-touch connection and release
Possible to use in vacuum to -100 kPa (10Torr)

One-touch fitting
Series 10-KQ



Polyurethane

M5	•	•	•				
M6	•	•	•				
1/8	•	•	•	•			•
1/4	•	•	•	•	•		•
3/8		•	•	•	•	•	•
1/2				•	•	•	•
Without thread	•	•	•	•	•	•	•

824

Applicable tubing-Metric size

For use in corrosive environments
Stainless steel series

One-touch fittings
Series 10-KG



Polyurethane

M5	•	•					
1/8	•	•	•	•			•
1/4	•	•	•	•	•		•
3/8		•	•	•	•	•	•
1/2				•	•	•	•
Without thread	•	•	•	•	•	•	•

843

Applicable tubing-Metric size

Possible to use in medium vacuum
up to 1.0 MPa

Insert fittings
Series 10-KF



Polyurethane

1/8	•	•	•				
1/4	•	•	•	•	•		
3/8		•	•	•	•	•	
1/2				•	•	•	
Without thread	•	•	•	•	•	•	

854

Applicable tubing-Metric size

Tubing connection/disconnection
without use of tools

Miniature fittings
Series 10-M



Polyurethane

M3	•	•					
M5	•	•	•				
1/8	•	•					

860

Applicable tubing-Metric size

For use in corrosive environments
Stainless steel (SUS316)

Miniature fittings
Series 10-MS



Polyurethane

M5	•	•	•				
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866

Applicable tubing-Metric size

Rectangular
multi-connector
Series 10-KDM



Polyurethane

10 tubes	•	•	•	•			
20 tubes	•	•	•	•			

870

Applicable tubing-Metric size

Clean tubing
Polyolefin tubing
Series TPH

Color	Tubing O.D.						Page
	ø3.2 (ø1/8")	ø4 (ø5/32")	ø6	ø8 (ø5/16")	ø10	ø12	
Black		●	●	●	●	●	874
White		●	●	●	●	●	
Red		●	●	●	●	●	
Blue		●	●	●	●	●	
Yellow		●	●	●	●	●	
Green		●	●	●	●	●	

Clean tubing
Soft polyolefin tubing
Series TPS

Color	Tubing O.D.						Page
	ø3.2 (ø1/8")	ø4 (ø5/32")	ø6	ø8 (ø5/16")	ø10	ø12	
Black		●	●	●	●	●	875
White		●	●	●	●	●	
Red		●	●	●	●	●	
Blue		●	●	●	●	●	
Yellow		●	●	●	●	●	
Green		●	●	●	●	●	

Flexible 0.8 MPa or less at 20°C
Polyurethane tubing
Series 10-TU

Color	Tubing O.D.						Page
	ø3.2 (ø1/8")	ø4 (ø5/32")	ø6	ø8 (ø5/16")	ø10	ø12	
Black	●	●	●	●	●	●	876
White	●	●	●	●	●	●	
Red	●	●	●	●	●	●	
Blue	●	●	●	●	●	●	
Yellow	●	●	●	●	●	●	
Green	●	●	●	●	●	●	
Clear	●	●	●	●	●	●	
Orange	●	●	●	●	●	●	

For flexible and moving applications
Polyurethane coil tubing
Series 10-TCU

Number of cores	Tubing O.D.						Page
	ø3.2 (ø1/8")	ø4 (ø5/32")	ø6	ø8 (ø5/16")	ø10	ø12	
1-core		●	●	●			877
2-cores		●	●				
3-cores		●	●				

For flexible multi-tube applications
Polyurethane flat tubing
Series 10-TFU

Number of cores	Tubing O.D.						Page
	ø3.2 (ø1/8")	ø4 (ø5/32")	ø6	ø8 (ø5/16")	ø10	ø12	
2-cores		●	●	●			878
3-cores		●	●	●			

Series KP

Clean one-touch fittings For blowing



Recommended applicable tubing

Tubing material	Polyolefin: Series TPH Soft polyolefin: Series TPS
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Note 1) Polyurethane tubing Series TU, Nylon tubing Series T, and Soft nylon tubing Series TS can also be used. However, the degree of cleanliness will decline.

Note 2) Due to the softness of polyurethane tubing, it may fold when being inserted. Hold the end of the tubing and insert it all the way in. Refer to "Installation and Removal of Tubing".

Specifications

Particle generation grade	Grade 1 (Refer to front matter pages 13 to 22 for details.)
Fluid	Air, Nitrogen gas, Water (Pure water) ^{Note 1)}
Maximum operating pressure (20°C)	1 MPa ^{Note 2)}
Operating vacuum pressure	–100 kPa
Proof pressure (20°C)	3 MPa
Ambient and fluid temperature	–20°C to 80°C
Threads	JIS B0203 (Taper thread for piping)

Note 1) Consult SMC regarding other fluids.

Note 2) The maximum operating pressure is the value at 20°C. Refer to the operating pressure curve for other temperatures.

Principal parts material

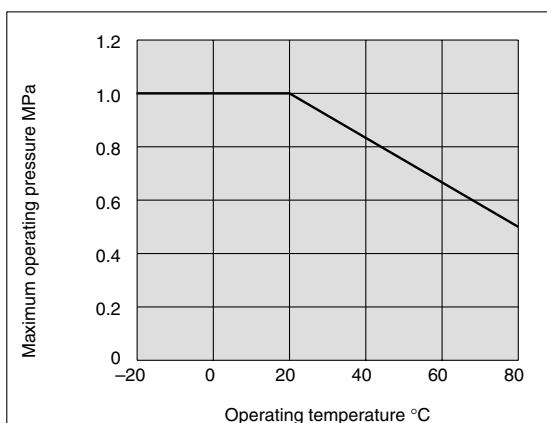
Body	Polypropylene resin
Stud	Polypropylene resin
Chuck	Stainless steel 304
Guide, Stopper, Drive bushing	Stainless steel 304
Collet, Release button	Polypropylene resin
Seal, O-ring, Bumper	EPDM

⚠ Caution

Series KP is a line of special one-touch fittings for use in **clean room blowing** and **washing lines**. Please consult with SMC regarding other types of applications.

Seal material: The durability of EPDM with respect to mineral oils is inferior, which makes it unsuitable for piping in general pneumatic equipment.

Relationship between operating temperature and maximum operating pressure



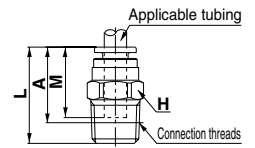
Dimensions

Male connector: KPH



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	L	A *	M	Effective area (mm ²)		Weight (g)
							TPH	TPS	
4	1/8	KPH04-01	12	25.4	21.5	18	4	4	3
	1/4	KPH04-02		25.4	19.5				4
6	1/8	KPH06-01	14	25.9	22	19.5	10	10	4
	1/4	KPH06-02		26.4	20.5				5
8	1/8	KPH08-01	17	32.3	28.5	21.5	26	18	6
	1/4	KPH08-02		30.3	24.5				7
10	1/4	KPH10-02	19	37.5	32	24	41	29	10
	3/8	KPH10-03		33	27				11
12	3/8	KPH12-03	22	34	28	25	58	46	12
	1/2	KPH12-04		34.5	27				13

* Reference dimension for R threads after installation

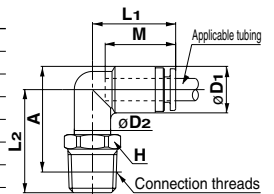


Male elbow: KPL



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD1 (Note 1)	øD2	L1	L2	A *	M	Effective area (mm ²)		Weight (g)
										TPH	TPS	
4	1/8	KPL04-01	12	10.4	10	20.7	23.2	24.5	18	3.5	3.5	4
	1/4	KPL04-02	14				27.2	26.5				5
6	1/8	KPL06-01	12	12.8	10	22.8	24.4	27	19.5	9	9	5
	1/4	KPL06-02	14				28.4	29				6
8	1/8	KPL08-01	14	15.2	12	26.3	26.6	30	21.5	22	15	8
	1/4	KPL08-02					29.4	31.5				9
10	1/4	KPL10-02	17	18.5	17	29.4	32.1	35.5	24	35	25	13
	3/8	KPL10-03					33.1	36.5				14
12	3/8	KPL12-03	17	20.9	22	31.4	34.3	38.5	25	50	40	15
	1/2	KPL12-04					38.3	41.5				18

* Reference dimension for R threads after installation
Note 1) øD1 indicates the maximum diameter.

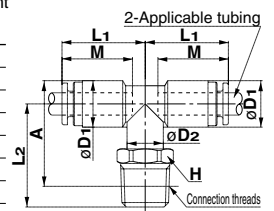


Male branch tee: KPT



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD1 (Note 1)	øD2	L1	L2	A *	M	Effective area (mm ²)		Weight (g)
										TPH	TPS	
4	1/8	KPT04-01	12	10.4	10	20.7	23.2	24.5	18	4.1	4.1	6
	1/4	KPT04-02	14				27.2	26.5				7
6	1/8	KPT06-01	12	12.8	10	22.8	24.4	27	19.5	11	11	8
	1/4	KPT06-02	14				28.4	29				9
8	1/8	KPT08-01	14	15.2	12	26.3	26.6	30	21.5	26.3	18.2	12
	1/4	KPT08-02					29.4	31.5				13
10	1/4	KPT10-02	17	18.5	17	29.4	32.1	35.5	24	40.8	29	20
	3/8	KPT10-03					33.1	36.5				21
12	3/8	KPT12-03	17	20.9	22	31.4	34.3	38.5	25	57.2	45.2	24
	1/2	KPT12-04					38.3	41.5				27

* Reference dimension for R threads after installation
Note 1) øD1 indicates the maximum diameter.

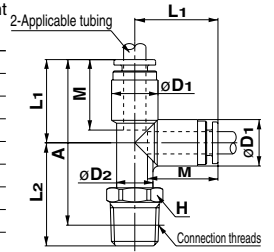


Male run tee: KPY



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD1 (Note 1)	øD2	L1	L2	A *	M	Effective area (mm ²)		Weight (g)
										TPH	TPS	
4	1/8	KPY04-01	12	10.4	10	20.7	23.2	40	18	7.5	7.5	6
	1/4	KPY04-02	14				27.2	42				7
6	1/8	KPY06-01	12	12.8	10	22.8	24.4	43	19.5	11	11	8
	1/4	KPY06-02	14				28.4	45.5				9
8	1/8	KPY08-01	14	15.2	12	26.3	26.6	49	21.5	21	21	12
	1/4	KPY08-02					29.4	50				13
10	1/4	KPY10-02	17	18.5	17	29.4	32.1	56	24	45	45	19
	3/8	KPY10-03					33.1	56.5				20
12	3/8	KPY12-03	17	20.9	22	31.4	34.3	59.5	25	57	57	21
	1/2	KPY12-04					38.3	62.5				24

* Reference dimension for R threads after installation
Note 1) øD1 indicates the maximum diameter.

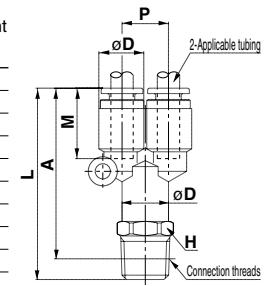


Male branch "Y": KPU



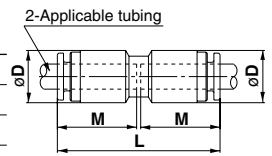
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD (Note 1)	L	P	A *	M	Effective area (mm ²)		Weight (g)
									TPH	TPS	
4	1/8	KPU04-01	12	10.4	45.4	10.4	41.5	18	7.5	7.5	7
	1/4	KPU04-02	14				43.5				8
6	1/8	KPU06-01	14	12.8	49.6	12.8	45.5	19.5	18	18	9
	1/4	KPU06-02	14		52.4		46.5				10
8	1/8	KPU08-01	17	15.2	56.7	15.2	52.5	21.5	26	26	15
	1/4	KPU08-02	17		61.3		55.5				17
10	1/4	KPU10-02	19	18.5	64.5	18.5	59	24	45	45	23
	3/8	KPU10-03			67.5		61.5				25
12	3/8	KPU12-03	22	20.9	69.7	20.9	63.5	25	70	70	29
	1/2	KPU12-04			72.7		65.5				30

* Reference dimension for R threads after installation
Note 1) øD indicates the maximum diameter.



Dimensions**Straight union: KPH**

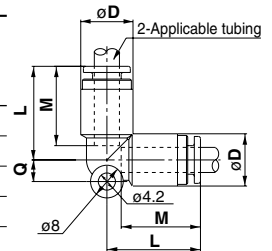
Applicable tubing O.D. (mm)	Model	øD ^{Note 1)}	L	M	Effective area (mm ²)		Weight (g)
					TPH	TPS	
4	KPH04-00	10.4	37.4	18	4	4	4
6	KPH06-00	12.8	39.6	19.5	10	10	6
8	KPH08-00	15.2	44.4	21.5	26	18	10
10	KPH10-00	18.5	48.6	24	41	29	15
12	KPH12-00	20.9	50.6	25	58	46	18



Note 1) øD indicates the maximum diameter.

Elbow: KPL

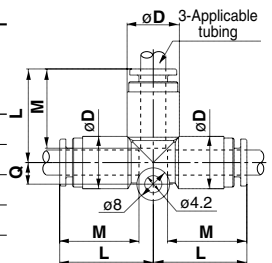
Applicable tubing O.D. (mm)	Model	øD ^{Note 1)}	L	Q	M	Effective area (mm ²)		Weight (g)
						TPH	TPS	
4	KPL04-00	10.4	20.7	4.5	18	3.5	3.5	3
6	KPL06-00	12.8	22.8	5.3	19.5	9	9	7
8	KPL08-00	15.2	26.3	6	21.5	22	15	11
10	KPL10-00	18.5	29.4	6.8	24	35	25	16
12	KPL12-00	20.9	31.4	7.5	25	50	40	20



Note 1) øD indicates the maximum diameter.

Union tee: KPT

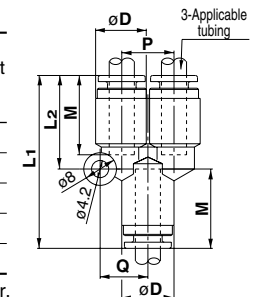
Applicable tubing O.D. (mm)	Model	øD ^{Note 1)}	L	Q	M	Effective area (mm ²)		Weight (g)
						TPH	TPS	
4	KPT04-00	10.4	20.7	4.5	18	4	4	7
6	KPT06-00	12.8	22.8	5.3	19.5	10	10	9
8	KPT08-00	15.2	26.3	6	21.5	26	18	16
10	KPT10-00	18.5	29.4	6.8	24	41	29	25
12	KPT12-00	20.9	31.4	7.5	25	58	46	29



Note 1) øD indicates the maximum diameter.

Union “Y”: KPU

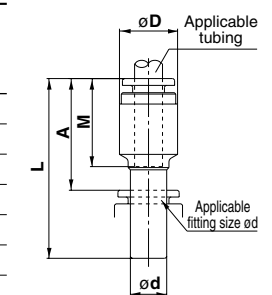
Applicable tubing O.D. (mm)	Model	øD ^{Note 1)}	L1	L2	P	Q	M	Effective area (mm ²)		Weight (g)
								TPH	TPS	
4	KPU04-00	10.4	38.8	20.6	10.4	9.7	18	4	4	7
6	KPU06-00	12.8	42.1	22.8	12.8	11.7	19.5	10	10	10
8	KPU08-00	15.2	48.7	27.5	15.2	13.7	21.5	26	18	17
10	KPU10-00	18.5	54	30.7	18.5	16.1	24	41	29	26
12	KPU12-00	20.9	57.2	32.9	20.9	18.1	25	58	46	32



Note 1) øD indicates the maximum diameter.

Plug-in reducer: KPR

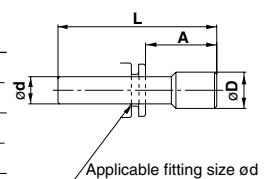
Applicable tubing O.D. (mm)	Applicable fitting size ød	Model	øD ^{Note 1)}	L	A	M	Effective area (mm ²)		Weight (g)
							TPH	TPS	
4	6	KPR04-06	10.4	39.4	20.1	18	4	4	3
	8	KPR04-08		41.9	20.2				4
6	8	KPR06-08	12.8	42.5	20.8	19.5	10	10	4
	10	KPR06-10		45	21.2				5
8	10	KPR08-10	15.2	47	23.2	21.5	26	18	5
	12	KPR08-12		48	23.2				6
10	12	KPR10-12	18.5	50.5	25.7	24	41	29	9



Note 1) øD indicates the maximum diameter.

Plug: KPP

Applicable fitting size ød	Model	øD	L	A	Weight (g)
4	KPP-04	6	32	13.8	0.4
6	KPP-06	8	35	15.7	0.7
8	KPP-08	10	39	17.3	1.1
10	KPP-10	12	43	19.2	1.7
12	KPP-12	14	45.5	20.7	2.5





Specific product precautions 1

Be sure to read before handling.

Installation of threads

⚠ Caution

Be sure to wrap sealing tape around the taper threads for resin thread.

If used without sealing tape air leakage can occur.

1. Series KP (with resin thread)

1) Wrapping of pipe tape

Wrap the pipe tape 2 to 3 times around the threads, leaving 1.5 to 2 thread ridges exposed at the end of the threads.

2) Tightening

After tightening by hand, tighten an additional 2 to 3 turns using a tightening tool.

2. Tightening tools

Tighten with an appropriate wrench using the hexagon wrench flats on the body.

Position the wrench on the base as close as possible to the threads. If the size of the wrench is not suitable for the hexagon wrench flats, the wrench flats may be crushed.

Installation and removal of tubing

⚠ Caution

1. Installation of tubing

1) Using tube cutters TK-1, 2 or 3, take a tube having no flaws on its periphery and cut it off at a right angle.

Do not use pinchers, nippers or scissors, etc. The tubing might be cut diagonally or flattened, making installation impossible or causing problems such as disconnection and leakage.

2) Hold the tube and push it in slowly, inserting it securely all the way into the fitting.

3) After inserting the tubing, pull on it lightly to confirm that it will not come out.

If it is not installed securely all the way into the fitting, problems such as leakage or disconnection of the tubing can occur.

4) Grease is not used due to the Series KP oil-free specifications. For this reason, greater insertion force is required when tubing is installed. In particular, polyurethane tubing may fold when inserted due to its softness. Hold the end of the tubing, and insert it all the way in slowly and securely. Refer to dimension "M" in the dimension drawings for guidance on the insertion depth of tubing.

Tubing size	Tubing insertion length (mm)
ø4	18
ø6	19.5
ø8	21.5
ø10	24
ø12	25

Installation and removal of tubing

2. Removal of tubing

1) Push in the release button sufficiently, pressing the collar evenly around its circumference.

2) Pull out the tubing while holding down the release button so that it does not pop out.

If the release button is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.

3) When the removed tubing is to be used again, first cut off the section of the tubing which has been chewed.

Using the chewed portion of the tube as it is can cause problems such as leakage or difficulty in removing the tubing.

Operating environment

⚠ Caution

1. Series KP/TP are special one-touch fittings for use on **clean blowing** and **washing lines**. Please consult with SMC regarding other types of applications.

Seal and tubing materials: The durability of EPDM and polyolefin with respect to mineral oils is inferior, making them unsuitable for piping in general pneumatic equipment.

Use Series KPQ, KPG, T, TS, and TU for piping to general pneumatic equipment.

Maintenance

⚠ Caution

1. Tightening of blow fittings (resin taper threads for piping)

Since Series KP taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by further tightening. If additional tightening becomes ineffective, replace the fitting with a new product.

Precaution on use of other tubing brands

⚠ Caution

1. When using tubing brands other than SMC, confirm that the tubing outside diameter tolerances satisfy the following specifications.

1) Polyolefin tubing Within ± 0.1 mm

2) Polyurethane tubing Within ± 0.15 mm
Within -0.2 mm

3) Nylon tubing Within ± 0.1 mm

4) Soft nylon tubing Within ± 0.1 mm

Do not use tubing if the outside diameter tolerance is not satisfied. It may not be possible to connect the tubing, or leakage or disconnection may occur after connection.

Polyolefin tubing is recommended for use with clean room fittings. Note that while other types of tubing will satisfy performance standards for leakage and tubing pull-out strength, etc., the degree of cleanliness will deteriorate.



Specific product precautions 2

Be sure to read before handling.

Operating environment

Warning

1. Do not use in environments or locations where there is a danger of damage to fittings and tubing.
For fitting and tubing materials, refer to specifications and construction drawings, etc.
2. Provide shade in locations which receive direct sunlight.
3. Do not operate in locations where vibration or impact occurs.
Since this can cause leakage and fitting damage, etc., please contact SMC regarding use in this kind of environment.
4. Provide shielding in locations near heat sources.
When there are heat sources in the surrounding area, the product's temperature may rise due to radiated heat and exceed its operating temperature range. Block off the heat with a cover, etc.
5. Do not use in locations where static electric charges will be a problem. Please consult with SMC regarding use in this kind of environment.
6. Do not use in locations where spatter occurs.
There is a danger of spatter causing a fire. Please consult with SMC regarding use in this kind of environment.

Caution

1. Series KP are special one-touch fittings for use on **clean blowing** and **washing lines**. Please consult with SMC regarding other types of applications.
Seal material: The durability of EPDM with respect to mineral oils is inferior, making it unsuitable for piping in general pneumatic equipment.
Use Series KPQ and KPG for piping to general pneumatic equipment.

Maintenance

Caution

1. Pre-maintenance inspection
When the product is to be removed, turn off the electric power, and be sure to cut off the supply pressure and confirm that fluid in the piping has been discharged.
2. Post maintenance inspection
After remounting and connection of piping, restore the fluid and electric power, and perform suitable function and leak tests. If leakage occurs or the equipment does not operate properly, stop operation immediately and confirm whether it is mounted correctly.
3. Tightening of blow fittings (resin taper threads for piping)
Since Series KP taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by further tightening. If additional tightening becomes ineffective, replace the fitting with a new product.
4. Check for the following during regular maintenance, and replace components as necessary.
 - a) Scratches, gouges, abrasion, corrosion
 - b) Leakage, refer to item 3 regarding taper thread leakage.
 - c) Twisting, flattening or distortion of tubing
 - d) Hardening, deterioration or softness of tubing
5. Do not repair or patch the replaced tubing or fittings for reuse.

Precaution on use of other tubing brands

Caution

1. When using tubing brands other than SMC, confirm that the tubing outside diameter tolerances satisfy the following specifications.

1) Polyolefin tubing	Within ± 0.1 mm
2) Polyurethane tubing	Within $+0.15$ mm Within -0.2 mm
3) Nylon tubing	Within ± 0.1 mm
4) Soft nylon tubing	Within ± 0.1 mm

Do not use tubing if the outside diameter tolerance is not satisfied. It may not be possible to connect the tubing, or leakage or disconnection may occur after connection.

Polyolefin tubing is recommended for use with clean room fittings. Note that while other types of tubing will satisfy performance standards for leakage and tubing pull-out strength, etc., the degree of cleanliness will deteriorate.



Specific product precautions 3

Be sure to read before handling.

Selection

⚠ Caution

1. Do not use in locations where the connecting threads and tubing connection will slide or rotate. The connecting threads and tubing connection will come apart under these conditions.
2. Use tubing at or above the minimum bending radius. Using below the minimum bending radius can cause breakage or flattening of the tube.
3. Please consult with SMC regarding fluids other than air, water and nitrogen gas.
4. In the case of liquid fluids, keep surge pressure at or below the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, this can cause damage to the fittings and tubing.

Handling

⚠ Caution

1. Store away from direct sunlight at 40°C or less.
2. Open the inner package of double packaging in a clean room or other clean environment.

Mounting

⚠ Caution

1. Before mounting confirm the model and size, etc.
Also, confirm that there are no blemishes, nicks or cracks in the product.
2. When tubing is connected, consider factors such as changes in the tubing length due to pressure, and allow sufficient leeway.
3. Mount so that fittings and tubing are not subjected to twisting, pulling or moment loads. This can cause damage to fittings and flattening, bursting or disconnection of tubing, etc.
4. Mount so that tubing is not damaged due to tangling and abrasion. This can cause flattening, bursting or disconnection of tubing, etc.

Installation of threads

⚠ Caution

Be sure to wrap sealing tape around the taper threads for both resin and metal threads.

If used without sealing tape air leakage can occur.

1. Series KP (with resin thread)
 - 1) Wrapping of pipe tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1.5 to 2 thread ridges exposed at the end of the threads.
 - 2) Tightening
After tightening by hand, tighten an additional 2 to 3 turns using a tightening tool.
2. Series KPQ/KPG (with metal thread)
 - 1) For M5
After tightening by hand, tighten approximately 1/6 turn further using a tightening tool. Excessive tightening can cause air leakage due to thread damage or deformation of the gasket, etc. Insufficient tightening can cause loose threads and air leakage, etc.

Installation of threads

⚠ Caution

2) Taper thread

- (1) Wrapping of pipe tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1.5 to 2 thread ridges exposed at the end of the threads.
- (2) When installing, tighten with the proper torque shown in the table below.
As a rule, this corresponds to two or three turns with a tool after tightening by hand.

Connection thread size	Proper tightening torque N·m
R 1/8	7 to 9
R 1/4	12 to 14
R 3/8	22 to 24
R 1/2	28 to 30

3. Tightening tools

Tighten with an appropriate wrench using the hexagon wrench flats on the body.

Position the wrench on the base as close as possible to the threads. If the size of the wrench is not suitable for the hexagon wrench flats, the wrench flats may be crushed.

Installation and removal of tubing

⚠ Caution

1. Installation of tubing

- 1) Using tube cutters TK-1, 2 or 3, take a tube having no flaws on its periphery and cut it off at a right angle.
Do not use pinchers, nippers or scissors, etc. The tubing might be cut diagonally or flattened, making installation impossible or causing problems such as disconnection and leakage.
- 2) Hold the tube and push it in slowly, inserting it securely all the way into the fitting.
- 3) After inserting the tubing, pull on it lightly to confirm that it will not come out.
If it is not installed securely all the way into the fitting, problems such as leakage or disconnection of the tubing can occur.
- 4) Grease is not used due to the Series KP oil-free specifications. For this reason, greater insertion force is required when tubing is installed. In particular, polyurethane tubing may fold when inserted due to its softness. Hold the end of the tubing, and insert it all the way in slowly and securely. Refer to dimension "M" in the dimension drawings for guidance on the insertion depth of tubing.

2. Removal of tubing

- 1) Push in the release button sufficiently, pressing the collar evenly around its circumference.
- 2) Pull out the tubing while holding down the release button so that it does not pop out.
If the release button is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.
- 3) When the removed tubing is to be used again, first cut off the section of the tubing which has been chewed.
Using the chewed portion of the tube as it is can cause problems such as leakage or difficulty in removing the tubing.

Series (21-)KPQ/KPG

Clean one-touch fittings
For drive system air piping



Series (21-) KPQ

Brass
(Electroless nickel plated)
Release button color:
Light gray



Series KPG

Stainless steel (SUS304)
Release button color:
Light blue

Recommended applicable tubing

Tubing material	Polyurethane: Series 10-
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Polyurethane tubing Series TU, Nylon tubing Series T, and Soft nylon tubing Series TS can also be used. However, the degree of cleanliness will decline.

Specifications

Particle generation grade	Grade 1 (Refer to front matter pages 13 to 22 for details.) ^{Note 1)}
Grease	Fluorine grease (21-: Lithium soap based grease)
Fluid	Air
Maximum operating pressure (20°C)	1 MPa ^{Note 2)}
Operating vacuum pressure	−100 kPa
Proof pressure (20°C)	3 MPa
Ambient and fluid temperature	−5°C to 60°C
Threads	JIS B0203 (Taper thread for piping)

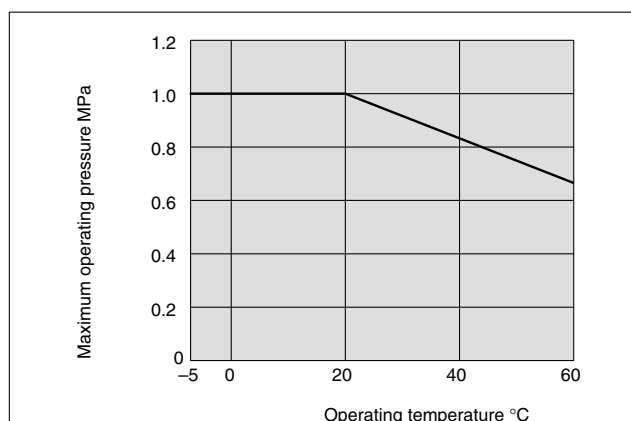
Note 1) This falls outside of the grade because grease is applied to the internal seal materials.

Note 2) The maximum operating pressure is the value at 20°C.

Principal Parts Material

Model	Series (21-)KPQ	Series KPG
Body	Polypropylene resin	
Stud	Brass (Electroless nickel plated)	Stainless steel 304
Chuck	Stainless steel 304	
Guide, Stopper	Brass (Electroless nickel plated)	Stainless steel 304
Collet, Release button	Polypropylene resin	
Seal, O-ring, Bumper	NBR	

Relationship between operating temperature and maximum operating pressure



Dimensions

Male connector: (21-)KPQH, KPGH

<M5>



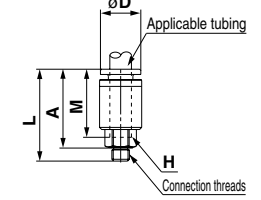
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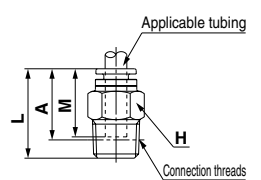
Applicable tubing O.D. (mm)	Connection thread R	Model		H (width across flats)	øD	L	A *	M	Effective area (mm ²)		Weight (g)
									TPH	TPS	
4	M5	(21-) KPQH04-M5	—	8	10	25.4	22.5	18	4	4	4
		—	KPGH04-M5			25.9					7
	1/8	(21-) KPQH04-01	KPGH04-01	10	—	25.4	19.5		10	10	14
	1/4	(21-) KPQH04-02	KPGH04-02	14	—	22.9	17				12
6	M5	(21-) KPQH06-M5	—	8	12	26.3	23	19.5	4	4	5
		—	KPGH06-M5			26.8					7
	1/8	(21-) KPQH06-01	KPGH06-01	12	—	25.6	19.5		10	10	14
	1/4	(21-) KPQH06-02	KPGH06-02	14	—	26.1	20				14
8	1/8	(21-) KPQH08-01	KPGH08-01	14	—	32.6	26.5	21.5	26	18	14
	1/4	(21-) KPQH08-02	KPGH08-02			30.6	24.5				13
	1/4	(21-) KPQH10-02	KPGH10-02	17	—	37.6	31.5	24	41	29	24
	3/8	(21-) KPQH10-03	KPGH10-03			33	26.5				23
12	3/8	(21-) KPQH12-03	KPGH12-03	19	—	34.1	27.5	25	58	46	23
	1/2	(21-) KPQH12-04	KPGH12-04	22	—	34.1	26				46

* Reference dimension for R threads after installation

<M5>



<R>



Male Elbow: (21-)KPQL, KPGL

<M5>



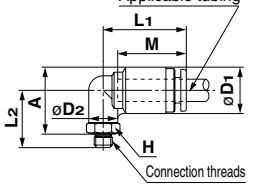
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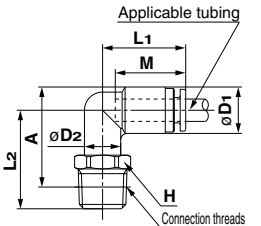
Applicable tubing O.D. (mm)	Connection thread R	Model		H (width across flats)	øD ₁ (Note 1)	øD ₂	L ₁	L ₂	A *	M	Effective area (mm ²)		Weight (g)
											TPH	TPS	
4	M5	(21-)KPQL04-M5	KPGL04-M5	8	10.4	8	20.7	15.3	17	18	4	4	4
		(21-)KPQL04-01	KPGL04-01	10		10		22	21				10
	1/4	(21-)KPQL04-02	KPGL04-02	14	10	8	22.8	26	25		3.5	3.5	19
	M5	(21-)KPQL06-M5	KPGL06-M5	8				15.8	18.5				6
6	1/8	(21-)KPQL06-01	KPGL06-01	10	12.8	10	22.8	23.2	23.5	19.5	9	9	12
		(21-)KPQL06-02	KPGL06-02	14				27.2	27.5				20
	1/4	(21-)KPQL08-01	KPGL08-01	12	15.2	12	26.3	24.4	26		26	18	13
	1/4	(21-)KPQL08-02	KPGL08-02	14				28.4	30				21
10	1/4	(21-)KPQL10-02	KPGL10-02	17	18.5	17	29.4	29.9	33	24	41	29	26
		(21-)KPQL10-03	KPGL10-03					31.9	34.5				36
	3/8	(21-)KPQL12-03	KPGL12-03	20.9	20.9	17	31.4	33.1	37		58	46	38
	1/2	(21-)KPQL12-04	KPGL12-04					37.1	39.5				65

* Reference dimension for R threads after installation
Note 1) øD₁ indicates the maximum diameter.

<M5>



<R>



Union Tee: (21-)KPQT, KPQT

<M5>



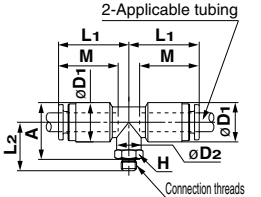
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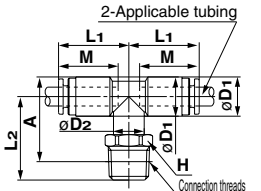
Applicable tubing O.D. (mm)	Connection thread R	Model		H (width across flats)	øD ₁ (Note 1)	øD ₂	L ₁	L ₂	A *	M	Effective area (mm ²)		Weight (g)
											TPH	TPS	
4	M5	(21-)KPQT04-M5	KPQT04-M5	8	10.4	8	20.7	15.3	17	18	4	4	6
		(21-)KPQT04-01	KPQT04-01	10		10		22	21				13
	1/4	(21-)KPQT04-02	KPQT04-02	14	10	8	22.8	26	25		4.5	4.5	19
	M5	(21-)KPQT06-M5	KPQT06-M5	8				15.8	18.5				7
6	1/8	(21-)KPQT06-01	KPQT06-01	10	12.8	10	22.8	23.2	23.5	19.5	10	10	14
		(21-)KPQT06-02	KPQT06-02	14				27.2	27.5				20
	1/4	(21-)KPQT08-01	KPQT08-01	12	15.2	12	26.3	24.4	26		26	18	14
	1/4	(21-)KPQT08-02	KPQT08-02	14				28.4	30				22
10	1/4	(21-)KPQT10-02	KPQT10-02	17	18.5	17	29.4	29.9	33	24	41	29	29
		(21-)KPQT10-03	KPQT10-03					31.9	34.5				39
	3/8	(21-)KPQT12-03	KPQT12-03	20.9	20.9	17	31.4	33.1	37		58	46	41
	1/2	(21-)KPQT12-04	KPQT12-04					37.1	39.5				38

* Reference dimension for R threads after installation
Note 1) øD₁ indicates the maximum diameter.

<M5>



<R>



Dimensions

Male Run Tee: (21-)KPQY, KPGY

<M5>

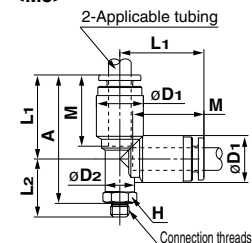


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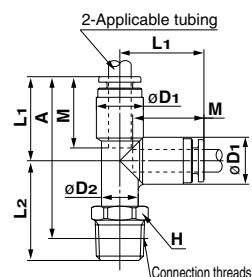
Applicable tubing O.D. (mm)	Connection thread R	Model		H (width across flats)	øD1 Note 1)	øD2	L1	L2	A *	M	Effective area (mm ²)		Weight (g)
											TPH	TPS	
4	M5	(21-)KPQY04-M5	KPGY04-M5	8	10.4	8	20.7	15.3	32.5	18	4	4	6
	1/8	(21-)KPQY04-01	KPGY04-01	10		10		22	36.5				13
	1/4	(21-)KPQY04-02	KPGY04-02	14		10		26	40.5				19
6	M5	(21-)KPQY06-M5	KPGY06-M5	8	12.8	8	22.8	15.8	35	19.5	10	10	7
	1/8	(21-)KPQY06-01	KPGY06-01	10		10		23.2	40				14
	1/4	(21-)KPQY06-02	KPGY06-02	14		10		27.2	44				20
8	1/8	(21-)KPQY08-01	KPGY08-01	12	15.2	12	26.3	24.4	44.5	21.5	26	18	14
	1/4	(21-)KPQY08-02	KPGY08-02	14		12		28.4	48.5				22
	3/8	(21-)KPQY10-03	KPGY10-03	17	17	17	29.4	29.9	53.5	24	41	29	29
10	1/4	(21-)KPQY10-02	KPGY10-02	17		17		31.9	55				39
	3/8	(21-)KPQY12-03	KPGY12-03	22		17		33.1	58				41
12	1/2	(21-)KPQY12-04	KPGY12-04	22	20.9	17	31.4	37.1	60.5	25	58	46	68
						17							

* Reference dimension for R threads after installation.
Note 1) øD1 indicates the maximum diameter.

<M5>



<R>



Male Branch: (21-)KPQU, KPGU

<M5>

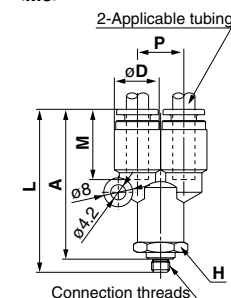


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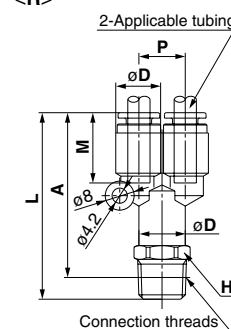
Applicable tubing O.D. (mm)	Connection thread R	Model		H (width across flats)	øD Note 1)	L	P	A *	M	Effective area (mm ²)		Weight (g)
										TPH	TPS	
4	M5	(21-)KPQU04-M5	KPGU04-M5	11	10.4	41.7	10.4	38	18	4	4	10
	1/8	(21-)KPQU04-01	KPGU04-01	10		44.2		38				11
	1/4	(21-)KPQU04-02	KPGU04-02	14		48.2		42				20
6	M5	(21-)KPQU06-M5	KPGU06-M5	13	12.8	44.9	12.8	41.5	19.5	10	10	12
	1/8	(21-)KPQU06-01	KPGU06-01	13		47.4		41.5				11
	1/4	(21-)KPQU06-02	KPGU06-02	14		51.4		45.5				21
8	1/8	(21-)KPQU08-01	KPGU08-01	17	15.2	55.5	15.2	49.5	21.5	26	18	15
	1/4	(21-)KPQU08-02	KPGU08-02	17		60.6		54.5				23
	3/8	(21-)KPQU10-03	KPGU10-03	19	18.5	63.8	18.5	58	24	41	29	30
10	1/4	(21-)KPQU10-02	KPGU10-02	19		61.3		55				40
	3/8	(21-)KPQU12-03	KPGU12-03	22		67		60.5				40
12	1/2	(21-)KPQU12-04	KPGU12-04	22	20.9	71.4	20.9	63.5	25	58	46	65

* Reference dimension for R threads after installation.
Note 1) øD indicates the maximum diameter.

<M5>



<R>

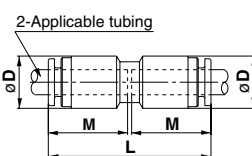


Straight Union: (21-)KPQH, KPGH



Applicable tubing O.D. (mm)	Model		øD Note 1)	L	M	Effective area (mm ²)		Weight (g)
						TPH	TPS	
4	(21-)KPQH04-00	KPGH04-00	10.4	37.4	18	4	4	4
6	(21-)KPQH06-00	KPGH06-00	12.8	39.6	19.5	10	10	6
8	(21-)KPQH08-00	KPGH08-00	15.2	44.4	21.5	26	18	10
10	(21-)KPQH10-00	KPGH10-00	18.5	48.6	24	41	29	15
12	(21-)KPQH12-00	KPGH12-00	20.9	50.6	25	58	46	18

Note 1) øD indicates the maximum diameter.



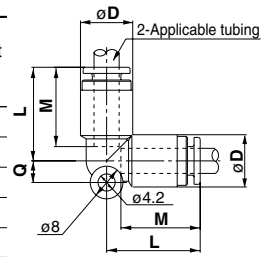
Dimensions

Elbow: (21-)KPQL, KPGL



Applicable tubing O.D. (mm)	Model		øD Note 1)	L	Q	M	Effective area (mm ²)		Weight (g)
							TPH	TPS	
4	(21-)KPQL04-00	KPGL04-00	10.4	20.7	4.5	18	3.5	3.5	3
6	(21-)KPQL06-00	KPGL06-00	12.8	22.8	5.3	19.5	9	9	7
8	(21-)KPQL08-00	KPGL08-00	15.2	26.3	6	21.5	22	15	11
10	(21-)KPQL10-00	KPGL10-00	18.5	29.4	6.8	24	35	25	16
12	(21-)KPQL12-00	KPGL12-00	20.9	31.4	7.5	25	50	40	20

Note 1) øD indicates the maximum diameter.

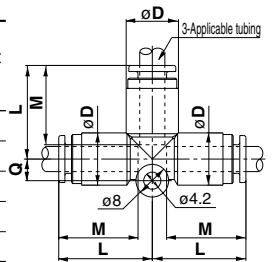


Union Tee: (21-)KPQT, KPGT



Applicable tubing O.D. (mm)	Model		øD Note 1)	L	Q	M	Effective area (mm ²)		Weight (g)
							TPH	TPS	
4	(21-)KPQT04-00	KPGT04-00	10.4	20.7	4.5	18	4	4	7
6	(21-)KPQT06-00	KPGT06-00	12.8	22.8	5.3	19.5	10	10	9
8	(21-)KPQT08-00	KPGT08-00	15.2	26.3	6	21.5	26	18	16
10	(21-)KPQT10-00	KPGT10-00	18.5	29.4	6.8	24	41	29	25
12	(21-)KPQT12-00	KPGT12-00	20.9	31.4	7.5	25	58	46	29

Note 1) øD indicates the maximum diameter.

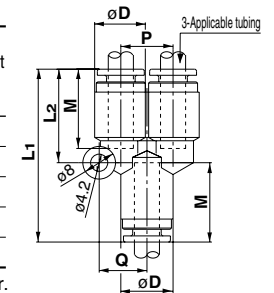


Union "Y": (21-)KPQU, KPGU



Applicable tubing O.D. (mm)	Model		øD Note 1)	L ₁	L ₂	P	Q	M	Effective area (mm ²)		Weight (g)
									TPH	TPS	
4	(21-)KPQU04-00	KPGU04-00	10.4	38.8	20.6	10.4	9.7	18	4	4	7
6	(21-)KPQU06-00	KPGU06-00	12.8	42.1	22.8	12.8	11.7	19.5	10	10	10
8	(21-)KPQU08-00	KPGU08-00	15.2	48.7	27.5	15.2	13.7	21.5	26	18	17
10	(21-)KPQU10-00	KPGU10-00	18.5	54	30.7	18.5	16.1	24	41	29	26
12	(21-)KPQU12-00	KPGU12-00	20.9	57.2	32.9	20.9	18.1	25	58	46	32

Note 1) øD indicates the maximum diameter.

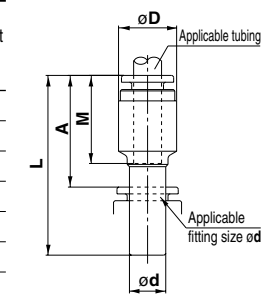


Plug-in reducer: (21-)KPQR, KPGR



Applicable tubing O.D. (mm)	Applicable fitting size ød	Model		øD Note 1)	L	A	M	Effective area (mm ²)		Weight (g)
								TPH	TPS	
4	6	(21-)KPQR04-06	KPGR04-06	10.4	39.4	20.1	18	4	4	3
	8	(21-)KPQR04-08	KPGR04-08		41.9	20.2				4
6	8	(21-)KPQR06-08	KPGR06-08	12.8	42.5	20.8	19.5	10	10	4
	10	(21-)KPQR06-10	KPGR06-10		45	21.2				5
8	10	(21-)KPQR08-10	KPGR08-10	15.2	47	23.2	21.5	26	18	5
	12	(21-)KPQR08-12	KPGR08-12		48	23.2				6
10	12	(21-)KPQR10-12	KPGR10-12	18.5	50.5	25.7	24	41	29	9

Note 1) øD indicates the maximum diameter.

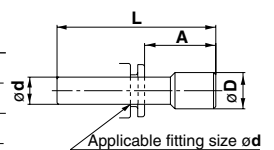


Plug: (21-)KPP



Applicable fitting size ød	Model	øD	L	A	Weight (g)
4	(21-)KPP-04	6	32	13.8	0.4
6	(21-)KPP-06	8	35	15.7	0.7
8	(21-)KPP-08	10	39	17.3	1.1
10	(21-)KPP-10	12	43	19.2	1.7
12	(21-)KPP-12	14	45.5	20.7	2.5

* The plug is common for series KPQ, KPG and KP.



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-KJ

Miniature one-touch fittings
Applicable tubing: $\phi 3.2$, $\phi 4$, $\phi 6$,
Connection thread: M3, M5, R1/8

Construction

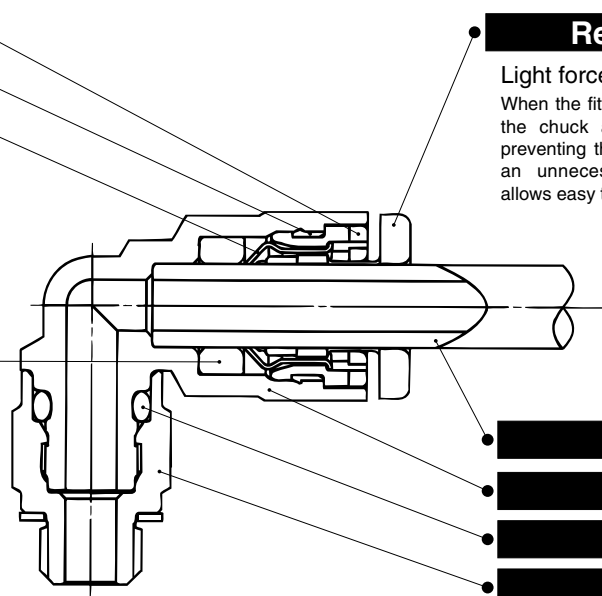


Guide 1 Guide 2 Chuck

Large retaining force
Has large retaining force while holding force is increased by the collet.

Seal

Can be used for a wide range of pressures from a low vacuum up to a pressure of 1.0 MPa.
The use of a special profile ensures sealing and reduces resistance when the tube is inserted.



Release button

Light force for removal
When the fitting is removed from the tubing, the chuck and collet are released, thus preventing them from biting into the tube to an unnecessary degree. Unique shape allows easy tube release.

Tube

Body

O-ring

Stud

Effective when piping in a confined space

- The body and the threaded portion can rotate (for positioning to some extent).
- Stud is electroless nickel plated.
- R1/8 with seal for thread

Specifications

Fluid	Air, water Note 1)
Maximum operating pressure	1.0MPa
Operating vacuum pressure	-100kPa
Proof pressure	3.0MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Thread seal	With thread seal (Standard)
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3

Note 1) Applicable for general industrial water. Please consult with SMC if using for other kinds of fluid.
Also, the surge pressure must be under the maximum operating pressure.

Principal Parts Material

Model	10-KJ
Body	Stainless steel 303, C3604BD with electroless nickel plated, PBT
Stud	C3604BD (Thread portion) with electroless nickel plated
Chuck, Guide 2	Stainless steel 304
Release button, Guide 1	POM
Seal, O-ring	NBR
Gasket	Stainless steel 304, NBR

Applicable tubing

Tubing material	Polyurethane
Tubing O.D.	$\phi 3.2$, $\phi 4$, $\phi 6$

Model

Hex. socket head male connector

10-KJS



Internal hex. allows thread connection by using an allen wrench for confined spaces.

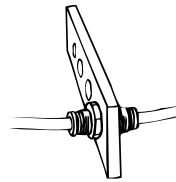


Bulkhead union

10-KJE



Use to connect tubes through a panel.

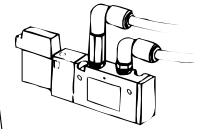


Extended male elbow

10-KJW



Basically, it is used together with male elbow. Different point is that it is used for fittings to avoid from interfering with each other by making the piping two-level.



Male connector

10-KJH



Use to pipe in the same direction from female thread. Most general style

Plug-in elbow

10-KJL



Use to change by 90° in a tube fetching direction from One-touch fittings.

Union "Y"

10-KJU



Use to branch line in the same direction.

Female connector

10-KJF



Use to pipe from male thread such as pressure gauge.

Reducer elbow

10-KJL



Use to change by 90° in tube fetching direction from One-touch fittings and to size down.

Different diameter union "Y"

10-KJU



Use to branch line with size down in the same direction.

Straight union

10-KJH



Use to connect tubes in the same direction.

Male branch tee

10-KJT



Use to branch line from female thread in both 90° directions.

Plug-in "Y"

10-KJU



Use to branch line in the same direction from One-touch fittings.

Different diameter straight

10-KJH



Use to connect different sized tubes.

Union tee

10-KJT



Use to connect tubes in both 90° directions.

Different diameter plug-in "Y"

10-KJX



Use to branch line with size down in the same direction from One-touch fittings.

Male elbow

10-KJL



Use to pipe at right angles to female threaded. Most general styles.

Different diameter tee

10-KJT



Use to connect tubes with size down in both 90° directions.

Branch "Y"

10-KJU



Use to branch line in the same direction from female thread.

Union elbow

10-KJL



Use to connect tubes at right angles.

Male run tee

10-KJY



Use to branch line in the same direction from female thread and in 90° direction.

Plug-in reducer

10-KJR



Use to size down One-touch fittings.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

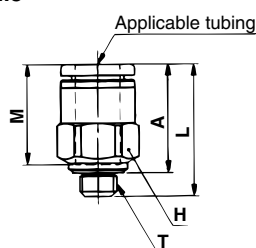
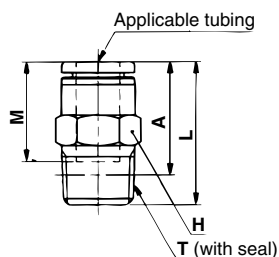
Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

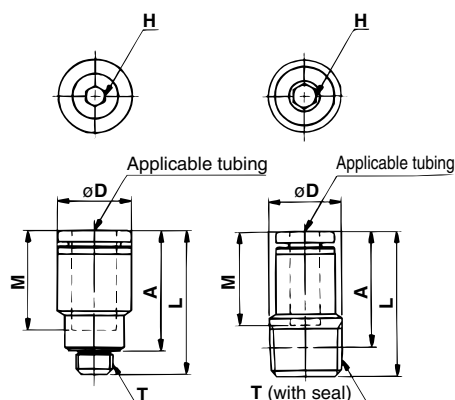
Pressure switch

Clean gas filter

Male connector: 10-KJH
M3, M5

R 1/8


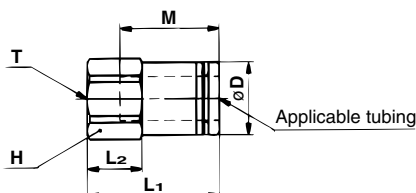
Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	L	A	M	Effective area (mm ²)	Weight (g)
							Urethane	
3.2	M3 x 0.5	10-KJH23-M3	7	16.3	13.7	12.7	0.9	1.6
	M5 x 0.8	10-KJH23-M5		16.7	13.6		2.5	2
	R1/8	10-KJH23-01S	10	13.8	9.8*			4.7
4	M3 x 0.5	10-KJH04-M3	8	16.3	13.7	12.7	0.9	1.9
	M5 x 0.8	10-KJH04-M5		17	13.9		4	2.4
	R1/8	10-KJH04-01S	10	14.8	10.8*			4.6
6	M5 x 0.8	10-KJH06-M5	10	17.8	14.7	13.5	4	3.3
	R1/8	10-KJH06-01S		19.4	15.4*		10	5.2

* Reference dimensions after R thread installation

Hexagon socket head male connector: 10-KJS
M3, M5
R 1/8


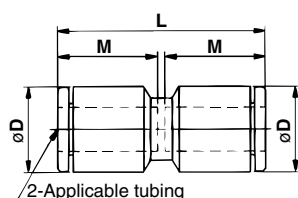
Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	D (Note)	L	A	M	Effective area (mm ²)	Weight (g)
								Urethane	
3.2	M3 x 0.5	10-KJS23-M3	1.5	7	16.3	13.7	12.7	1.4	1.3
	M5 x 0.8	10-KJS23-M5	2		19.7	16.6		2.5	2.8
4	M3 x 0.5	10-KJS04-M3	1.5	8	16.3	13.7	12.7	1.4	1.6
	M5 x 0.8	10-KJS04-M5	2.5		18.7	15.6		4	2.7
	R1/8	10-KJS04-01S	3	9.8	19.7	15.7*			5.4
6	M5 x 0.8	10-KJS06-M5	2.5	10	19.5	16.4	13.5	4	3.3
	R1/8	10-KJS06-01S	4		20	16*		10	5.2

* Reference dimensions after R thread installation
Note) øD indicates the maximum diameter.

Female connector: 10-KJF


Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	D (Note)	L ₁	L ₂	M	Effective area (mm ²)	Weight (g)
								Urethane	
3.2	M3 x 0.5	10-KJF23-M3	7	7	16.5	6.8	12.7	2.5	2.6
	M5 x 0.8	10-KJF23-M5			18.8	7.9			2.8
4	M3 x 0.5	10-KJF04-M3	8	8	16.1	6.4	12.7	4	3.2
	M5 x 0.8	10-KJF04-M5			18.7	7.8			3.8
6	M5 x 0.8	10-KJF06-M5	10	10	18	7.5	13.5	10	5.3

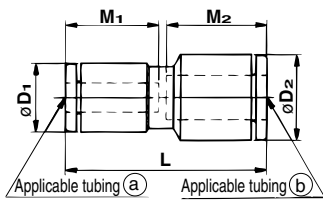
Note) øD indicates the maximum diameter.

Straight union: 10-KJH


Applicable tubing O.D. (mm)	Model	D (Note)	L	M	Effective area (mm ²) Urethane	Weight (g)
3.2	10-KJH23-00	8.4	26.3	12.7	2.5	1.4
4	10-KJH04-00	9.3	26.3	12.7	4	1.7
6	10-KJH06-00	11.6	28	13.5	10	2.5

Note) øD indicates the maximum diameter.

Different diameter straight: 10-KJH

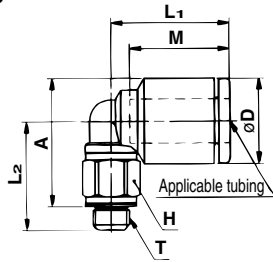


Applicable tubing O.D. (mm)		Model	D ₁ (Note)	D ₂ (Note)	L	M ₁	M ₂	Effective area (mm ²)	Weight (g)
(a)	(b)							Urethane	
3.2	4	10-KJH23-04	8.4	9.3	26.3	12.7	12.7	2.5	1.6
	6	10-KJH23-06		11.6	27.2		13.5		2
4	6	10-KJH04-06	9.3	11.6	27.2	12.7	13.5	4	2.2

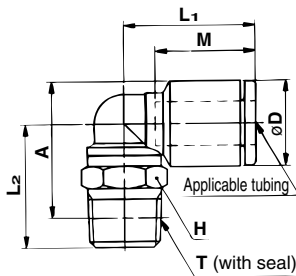
Note) øD₁, øD₂ indicate the maximum diameter.

Male elbow: 10-KJL

M3, M5



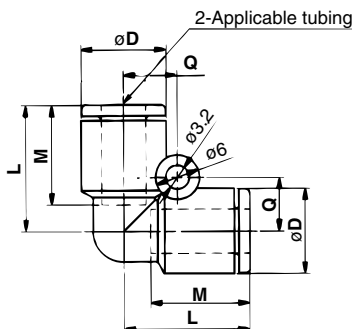
R 1/8



Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	D (Note)	L ₁	L ₂	A	M	Effective area (mm ²)		Weight (g)
									Urethane		
3.2	M3 x 0.5	10-KJL23-M3	7	8.4	15.3	12.5	14.1	12.7	2.2	0.8	2.1
	M5 x 0.8	10-KJL23-M5	7			13.2	14.3				2.5
	R1/8	10-KJL23-01S	10			15.2	15.4*				6.7
4	M3 x 0.5	10-KJL04-M3	7	9.3	15.6	13	15.1	12.7	3.5	0.8	2.2
	M5 x 0.8	10-KJL04-M5	7			13.7	15.3				2.7
	R1/8	10-KJL04-01S	10			15.7	16.4*				6.8
6	M5 x 0.8	10-KJL06-M5	7	11.6	16.1	14.7	17.4	13.5	9	3.5	3.2
	R1/8	10-KJL06-01S	10			17.8	18.5*				6.4

* Reference dimensions after R thread installation
Note) øD indicates the maximum diameter.

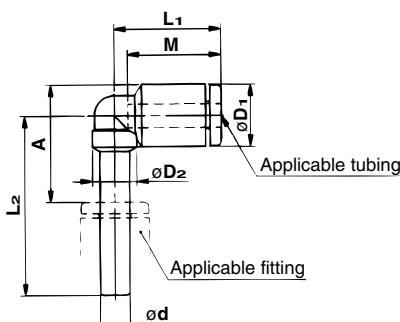
Union elbow: 10-KJL



Applicable tubing O.D. (mm)	Model	D (Note)	L	Q	M	Effective area (mm ²)		Weight (g)
						Urethane		
3.2	10-KJL23-00	8.4	15	5.8	12.7	2.2		1.6
4	10-KJL04-00	9.3	15.8	6.3	12.7	3.5		2
6	10-KJL06-00	11.6	17.1	7.3	13.5	9		3.1

Note) øD indicates the maximum diameter.

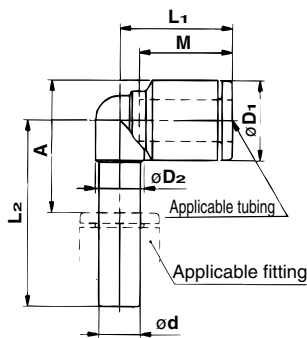
Plug-in elbow: 10-KJL



Applicable tubing O.D. (mm)	Applicable fitting size ød	Model	D ₁ (Note)	D ₂	L ₁	L ₂	A	M	Effective area (mm ²)		Weight (g)
3.2	3.2	10-KJL23-99	8.4	6	14.5	23.8	15.3	12.7	2.2		1
4	4	10-KJL04-99	9.3	6	15.6	24.7	16.7	12.7	3.5		1.2
6	6	10-KJL06-99	11.6	7	16.3	26.8	19.1	13.5	9		2

Note) øD₁ indicates the maximum diameter.

Reducer elbow: 10-KJL

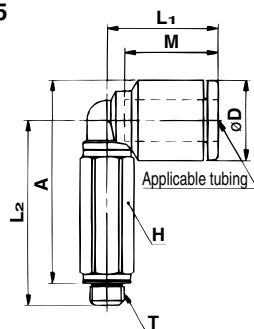


Applicable tubing O.D. (mm)	Applicable fitting size ϕd	Model	D ₁ Note	D ₂	L ₁	L ₂	A	M	Effective area (mm ²) Urethane	Weight g
3.2	4	10-KJL23-04	8.4	6	14.5	24.3	15.8	12.7	2.2	1.1
	6	10-KJL23-06				25.3	16			1.2
4	6	10-KJL04-06	9.3	6	15.6	25.7	16.9	12.7	3.5	1.4

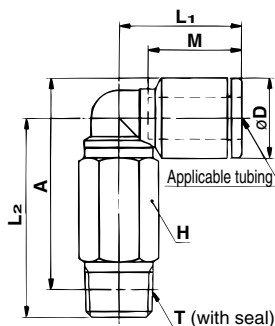
Note) ϕD_1 indicates the maximum diameter.

Extended Male Elbow: 10-KJW

M3, M5



R 1/8

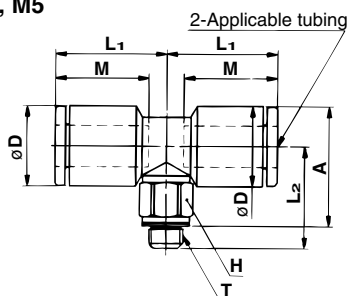


Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	D Note	L ₁	L ₂	A	M	Effective area (mm ²) Urethane	Weight (g)
3.2	M3 x 0.5	10-KJW23-M3	7	8.4	15.3	22.5	24.1	12.7	0.8	5
	M5 x 0.8	10-KJW23-M5	7			25.2	26.3		2.2	6.2
	R1/8	10-KJW23-01S	10			25.4*	25.4*		13.4	13.4
4	M3 x 0.5	10-KJW04-M3	7	9.3	15.6	23	25.1	12.7	0.8	5.1
	M5 x 0.8	10-KJW04-M5	7			25.7	27.3		3.5	6.4
	R1/8	10-KJW04-01S	10			26.4*	26.4*		13.6	13.6
6	M5 x 0.8	10-KJW06-M5	7	11.6	17.8	26.7	29.4	13.5	3.5	6.9
	R1/8	10-KJW06-01S	10			28.7	30.5*		9	13.2

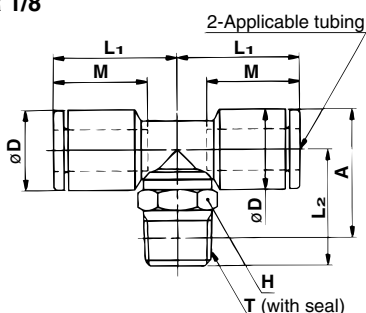
* Reference dimensions after R thread installation
Note) ϕD indicates the maximum diameter.

Male branch tee: 10-KJT

M3, M5



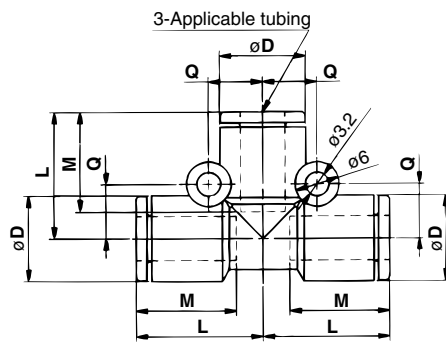
R 1/8



Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	D Note	L ₁	L ₂	A	M	Effective area (mm ²) Urethane	Weight (g)
3.2	M3 x 0.5	10-KJT23-M3	7	8.4	15.3	12.5	14.1	12.7	0.9	2.8
	M5 x 0.8	10-KJT23-M5	7			13.2	14.3		2.7	3.2
	R1/8	10-KJT23-01S	10			15.2	15.4*		7.4	7.4
4	M3 x 0.5	10-KJT04-M3	7	9.3	15.6	13	15.1	12.7	0.9	3.1
	M5 x 0.8	10-KJT04-M5	7			13.7	15.3		4.5	3.5
	R1/8	10-KJT04-01S	10			15.7	16.4*		7.7	7.7
6	M5 x 0.8	10-KJT06-M5	7	11.6	17.8	16.1	17.4	13.5	4.5	4.4
	R1/8	10-KJT06-01S	10			16.7	18.5*		11	7.6

* Reference dimensions after R thread installation
Note) ϕD indicates the maximum diameter.

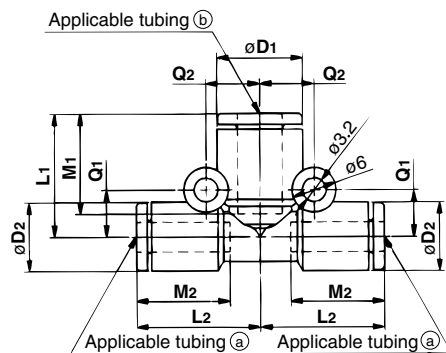
Union tee: 10-KJT



Applicable tubing O.D. (mm)	Model	D ^(Note)	L	Q	M	Effective area (mm ²)	Weight (g)
						Urethane	
3.2	10-KJT23-00	8.4	15	5.8	12.7	2.7	2.5
4	10-KJT04-00	9.3	15.8	6.3	12.7	4.5	3
6	10-KJT06-00	11.6	17.1	7.3	13.5	11	4.6

(Note) ØD indicates the maximum diameter.

Different diameter tee: 10-KJT

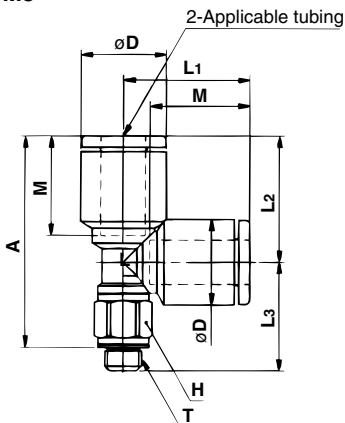


Applicable tubing O.D. (mm)		Model	D ^(Note)	D ^(Note)	L ₁	L ₂	Q ₁	Q ₂	M ₁	M ₂	Effective area (mm ²)	Weight (g)
a	b										Urethane	
3.2	4	10-KJT23-04	9.3	8.4	15.3	15.8	5.8	6.3	12.7	12.7	4.5	2.8
4	6	10-KJT04-06	11.6	9.3	16.6	16.8	6.3	7.3	13.5	12.7	8	3.7

(Note) ØD1, ØD2 indicate the maximum diameter.

Male run tee: 10-KJY

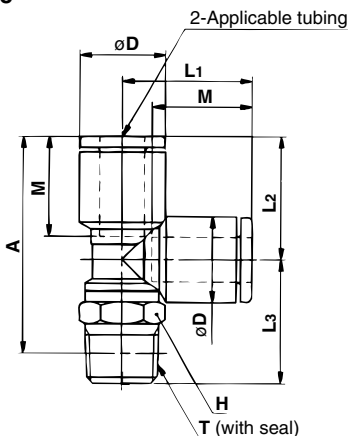
M3, M5



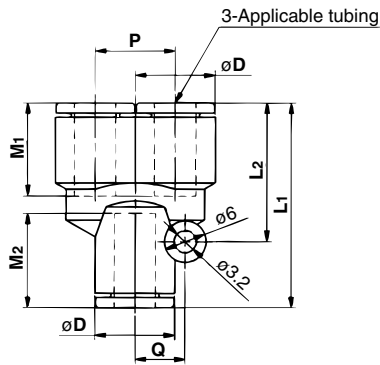
Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	D ^(Note)	L ₁	L ₂	L ₃	A	M	Effective area (mm ²)	Weight (g)
3.2	M3 x 0.5	10-KJY23-M3	7	8.4	15.4	14.8	12.5	24.7	12.7	0.9	2.8
	M5 x 0.8	10-KJY23-M5	7				13.2	24.9		2.7	3.2
	R1/8	10-KJY23-01S	10				15.2	26*		7.4	7.4
4	M3 x 0.5	10-KJY04-M3	7	9.3	15.6	14.8	13	25.2	12.7	0.9	3.1
	M5 x 0.8	10-KJY04-M5	7				13.7	25.4		4.5	3.5
	R1/8	10-KJY04-01S	10				15.7	26.5*		7.7	7.7
6	M5 x 0.8	10-KJY06-M5	7	11.6	17.1	17.1	14.7	28.7	13.5	4.5	4.5
	R1/8	10-KJY06-01S	10				16.7	29.3*		11	7.5

* Reference dimensions after R thread installation
(Note) ØD indicates the maximum diameter.

R 1/8



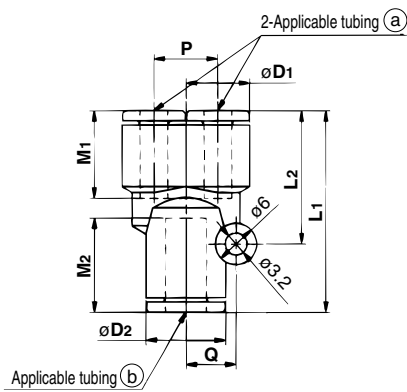
Union “Y”: 10-KJU



Applicable tubing O.D. (mm)	Model	D ^{Note)}	L ₁	L ₂	P	Q	M ₁	M ₂	Effective area (mm ²) Urethane	Weight (g)
3.2	10-KJU23-00	8.4	28.5	19	8.4	5.8	12.7	12.9	2.7	2.6
4	10-KJU04-00	9.3	27.9	18.3	9.3	6.3	12.7	12.9	4.5	3
6	10-KJU06-00	11.6	31.2	21.6	11.6	7.3	13.5	13.7	11	4.7

Note) ØD indicates the maximum diameter.

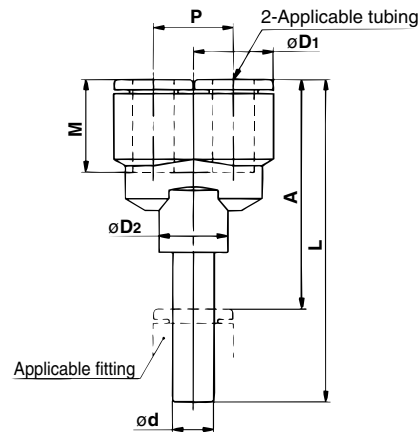
Different diameter union “Y”: 10-KJU



Applicable tubing O.D. (mm)		Model	D ₁ ^{Note)}	D ₂ ^{Note)}	L ₁	L ₂	P	Q	M ₁	M ₂	Effective area (mm ²) Urethane	Weight (g)
(a)	(b)											
3.2	4	10-KJU23-04	8.4	9.3	27.5	18.3	8.4	6.3	12.7	12.9	4.5	2.7
4	6	10-KJU04-06	9.3	11.6	29.2	19.3	9.3	7.3	12.7	13.7	8	3.7

Note) ØD₁, ØD₂ indicate the maximum diameter.

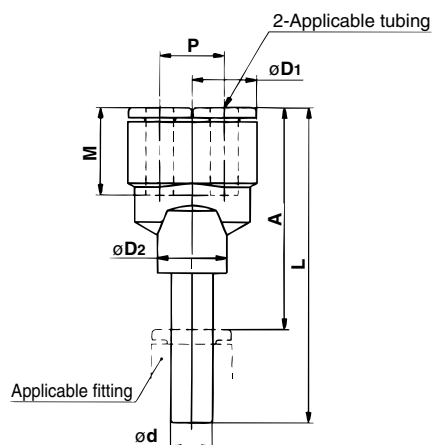
Plug-in “Y”: 10-KJU



Applicable tubing O.D. (mm)	Applicable fitting size d	Model	D ₁ ^{Note)}	D ₂	L	P	A	M	Effective area (mm ²) Urethane	Weight (g)
3.2	3.2	10-KJU23-99	8.4	10	43.5	8.4	34.1	12.7	2.7	2.7
4	4	10-KJU04-99	9.3	10	44.7	9.3	35.3	12.7	4.5	3.2
6	6	10-KJU06-99	11.6	10	47.8	11.6	37.6	13.5	11	4.5

Note) ØD₁ indicates the maximum diameter.

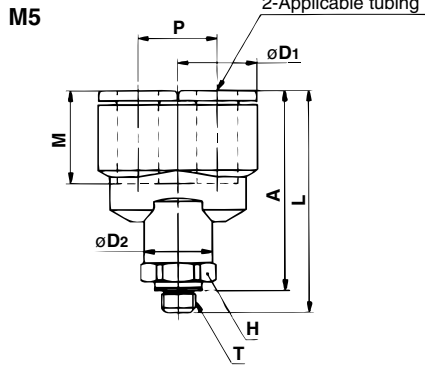
Different diameter plug-in “Y”: 10-KJX



Applicable tubing O.D. (mm)	Applicable fitting size d	Model	D ₁ ^{Note)}	D ₂	L	P	A	M	Effective area (mm ²) Urethane	Weight (g)
3.2	4	10-KJX23-04	8.4	10	44	8.4	34.6	12.7	4.5	2.8
4	6	10-KJX04-06	9.3	10	45.7	9.3	35.5	12.7	8	3.5

Note) ØD₁ indicates the maximum diameter.

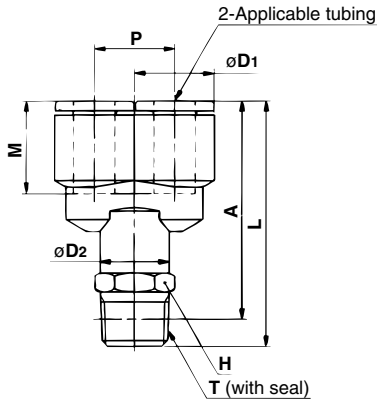
Branch: 10-KJU



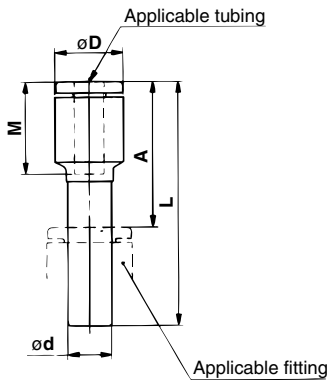
Applicable tubing O.D. (mm)	Connection thread T	Model	H (Width across flats)	D1 ^{Note)}	D2	L	P	A	M	Effective area (mm ²)		Weight (g)
										Urethane		
3.2	M5 x 0.8	10-KJU23-M5	10	8.4	10	30.6	8.4	27.5	12.7	2.2		5.9
	R1/8	10-KJU23-01S				34.1		30.1*		2.7		8.3
4	M5 x 0.8	10-KJU04-M5	10	9.3	10	31.3	9.3	28.2	12.7	2.2		6.4
	R1/8	10-KJU04-01S				34.8		30.8*		4.5		8.8
6	M5 x 0.8	10-KJU06-M5	10	11.6	10	33.4	11.6	30.3	13.5	2.2		7.4
	R1/8	10-KJU06-01S				36.9		32.9*		11		9.9

* Reference dimensions after R thread installation
Note) øD1 indicates the maximum diameter.

R 1/8



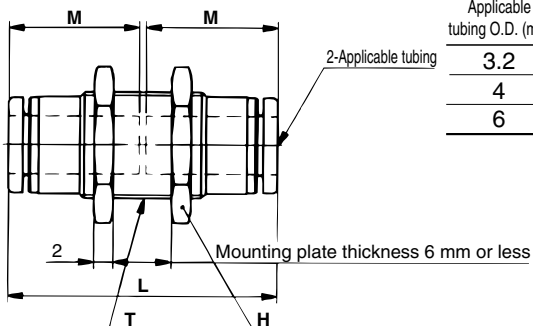
Plug-in reducer: 10-KJR



Applicable tubing O.D. (mm)	Applicable fitting size d	Model	D ^{Note)}	L	A	M	Effective area (mm ²)		Weight (g)
							Urethane		
3.2	4	10-KJR23-04	8.4	32	19.3	12.7	2.5		0.9
	6	10-KJR23-06		33	19.5				1.1
4	6	10-KJR04-06	9.3	33.5	20	12.7	4		1.3

Note) øD indicates the maximum diameter.

Bulkhead union: 10-KJE



Applicable tubing O.D. (mm)	Model	T	H (Width across flats)	L	Mounting hole	M	Effective area (mm ²)		Weight (g)
							Urethane		
3.2	10-KJE23-00	M8 x 0.75	10	26	9	12.7	2.5		4.6
4	10-KJE04-00	M9 x 0.75	11	26	10	12.7	4		5.6
6	10-KJE06-00	M11 x 0.75	14	27.7	12	13.5	10		8.5

Series 10-KQ One-touch fittings

Construction

Guide
Collet
Chuck

Large retaining force

Has large retaining force while holding force is increased by the collet.

Seal

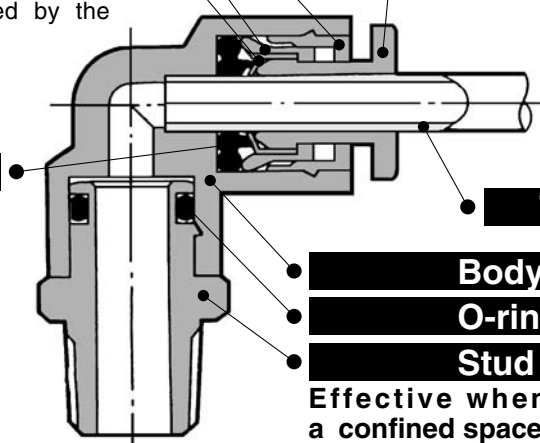
Can be used for a wide range of pressures from a low vacuum up to a pressure of 1.0 MPa

The use of a special profile ensures sealing and reduces resistance when the tube is inserted.

Release button (White)

Light force for removal

When the fitting is removed from the tube, the chuck and collet are released, thus preventing them from biting into the tube excessively.



Tubing

Body

O-ring

Stud

Effective when piping in a confined space

The body and the threaded portion can rotate (for positioning to some extent).

One-touch connection and removal Can be used for vacuum (–100 kPa)

•Applicable metric size tubing

•Tubing material Polyurethane

Applicable tubing

Tubing material	Polyurethane
Tubing O.D.	ø3.2, ø4, ø6, ø8, ø10, ø12, ø16

Product's color

Series	Body	Release button
Series 10-KQ	White	White

Specifications

Fluid	Air, Water ^{Note 1)}	
Maximum operating pressure	1.0MPa	
Operating vacuum pressure	–100 kPa	
Proof pressure	3.0MPa	
Ambient and fluid temperature	–5 to 60°C, Water: 0 to 40°C (No freezing)	
Thread	Mounting section	JIS B0203 (Taper thread for piping) JIS B0209, Class 2 (Metric coarse thread)
	Nut section	JIS B0211, Class 2 (Metric fine thread)
Seal (Thread portion)	With seal or none	
Grease	Fluorine grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 3	

Note 1) Applicable for general industrial water. Please consult with SMC if using for other kinds of fluid. Also, the surge pressure must be under the maximum operating pressure.

Principal Parts Material

Body	C3604B with electroless nickel plated, PBT, PP
Stud	C3604BD (Thread portion) with electroless nickel plated
Chuck	Stainless steel 304
Guide	Stainless steel 304, C3604BD with electroless nickel plated, POM
Collet, Release button	POM
Seal, O-ring	NBR
Gasket	Stainless steel 304, NBR



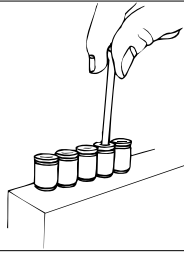
Model

Hex. socket head male connector

10-KQS



Internal hex. allows thread connection by using an allen wrench for confined spaces.

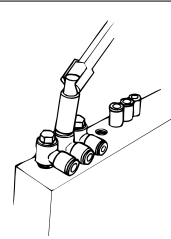


Universal male elbow

10-KQV



Universal male elbow allows thread connection by using a socket wrench for confined spaces.

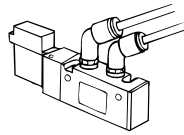


45° male elbow

10-KQK



Use to pipe in 45° angle direction from female thread. Model in-between of male connector and male elbow.

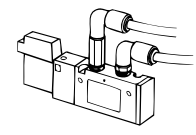


Extended male elbow

10-KQW



Basically, it is used together with male elbow. Different point is that it is used for fittings to avoid from interfering with each other by making the piping two-level.

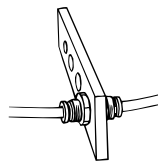


Bulkhead union

10-KQE



Use to connect male thread and tube through a panel.

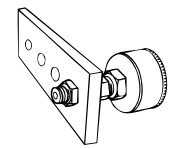


Bulkhead connector

10-KQE



Use to connect tubes through a panel.

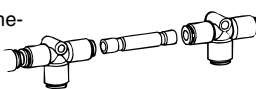


Nipple

10-KQN



Use to connect One-touch fittings.

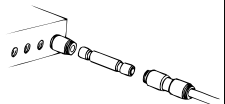


Reducer nipple

10-KQN



Use to connect One-touch fittings that are different tubing O. D. s.



Male connector

10-KQH



Use to pipe in the same direction from female thread. Most general style.

Male elbow

10-KQL



Use to pipe at right angles to female thread. Most general style.

Male Branch Tee

10-KQT



Use to branch line from female thread in both 90° directions.

Female connector

10-KQF



Use to pipe from male thread such as pressure gauge.

Union elbow

10-KQL



Use to connect tube at right angles.

Union tee

10-KQT



Use to connect tube in both 90° directions.

Straight union

10-KQH



Use to connect tube in the same direction.

Plug-in elbow

10-KQL



Use to change by 90° in a tube fetching direction from One-touch fittings and to size down.

Different diameter tee

10-KQT



Use to connect tube with size down in both 90° directions.

Different diameter straight

10-KQH



Use to connect different sized tube.

Reducer elbow

10-KQL



Use to change by 90° in tube fetching direction from One-touch fittings and to size down.

Different diameter tee

10-KQT



Use to connect tube with size down in both 90° directions.

Cross

10-KQTW



Use to four-branch line.

Different diameter cross

10-KQTX



Use to connect tube with size down in all 90° directions.

Different diameter cross

10-KQTY



Use to branch line with size down in three directions.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Model

Hexagon socket head universal male elbow

10-KQVS



Hex. on the top allows thread connection by using an allen wrench for confined spaces.

Male branch connector

10-KQLU



Use to branch piping at right angles to female thread.

Universal female elbow

10-KQVF



Use to branch line in the same direction or at the right angles from male or female thread. Multiplex connection possible.

Female elbow

10-KQLF



Use to pipe at right angles to male thread.

Double universal male elbow

10-KQVD



Use to branch line at right angles to female thread. Two individual parts rotate 360°.

Triple universal male elbow

10-KQVT



Use to three-branch line at right angles from female thread. Three individual parts rotate 360°.

Branch universal male elbow

10-KQZ



Hexagonal head allows thread connection by using a box wrench. Use for branch connection.

Branch universal female elbow

10-KQZF



Use to branch line in the same direction or at right angles from male or female thread. Multiplex connection possible.

Double branch universal male elbow

10-KQZD



Use to four-branch line at right angles from female thread. Two individual parts rotate 360°.

Male run tee

10-KQY



Use to branch line in the same direction from female thread and in 90° direction.

Triple branch universal male elbow

10-KQZT



Use to six-branch line at right angles from female thread. Three individual parts rotate 360°.

Branch union elbow

10-KQLU



Use to branch line at right angles.

Extended plug-in elbow

10-KQW



When the elbow extends over a standard elbow for ease of connection / disconnection of tube.

Male delta union

10-KQD



Use to branch line in 90° direction from female thread.

Delta union

10-KQD



Use to branch in triple 90° direction.

Double branch

10-KQUD



Use to four-branch line in the same direction from female thread.

Different diameter double union "Y"

10-KQUD



Use to four-branch line in the same direction with size down.

Different diameter plug-in "Y"

10-KQX



Use to branch line from One-touch fitting with size down.

Double plug-in "Y"

10-KQXD



Use to four-branch line from One-touch fitting.

Union "Y"

10-KQU



Use to branch line in the same direction.

Different diameter union "Y"

10-KQU



Use to branch line with size down in the same direction.

Plug-in "Y"

10-KQU



Use to branch line in the same direction from One-touch fittings.

Branch "Y"

10-KQU



Use to branch line in the same direction from female thread.

Plug-in reducer

10-KQR



Use to change size of One-touch fittings.

Bulkhead male elbow

10-KQLE



Use to connect tube through a panel, changing by 90° in a tube fetching direction.

Adaptor

10-KQN



Use to connect fitting and R female thread.

Tube cap

10-KQC



Use to plug unused tube.

Color cap

10-KQC



Mounted on the release button corresponding to its applications. Distinguished by color.

Plug

10-KQP



Use to plug unused One-touch fittings.

Male connector: 10-KQH

M5, M6



R



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note 1) ϕD	L	A *	M	Effective area (mm ²) Urethane	Weight (g)
3.2	M5 x 0.8	10-KQH23-M5	7	7	16.7	13.6	12.7	2.5	2.1
	1/8	10-KQH23-01S	10	—	22	18	15.5	2.9	9
	1/4	10-KQH23-02S	14	—	19.5	13.5	15.5	2.9	16
4	M5 x 0.8	10-KQH04-M5	8	8	17	13.9	12.7	4	2.4
	M6 x 1.0	10-KQH04-M6	8	8	18	13.9	12.7	4	2.5
	1/8	10-KQH04-01S	10	—	22	18	16	4	9
6	1/4	10-KQH04-02S	14	—	19.5	13.5	16	4	16
	M5 x 0.8	10-KQH06-M5	10	10	17.8	14.7	13.5	4	3.3
	M6 x 1.0	10-KQH06-M6	10	10	19	14.9	13.5	4	3.4
8	1/8	10-KQH06-01S	12	—	22.5	18.5	17	10.4	16
	1/4	10-KQH06-02S	14	—	23	17	17	10.4	14
	3/8	10-KQH06-03S	17	—	22	15.5	17	10.4	27
10	1/8	10-KQH08-01S	14	—	28	24	18.5	18.0	21
	1/4	10-KQH08-02S	17	—	26.5	20.5	18.5	18.0	19
	3/8	10-KQH08-03S	17	—	22	15.5	18.5	18.0	26
12	1/8	10-KQH10-01S	17	—	30	26	21	26.1	19
	1/4	10-KQH10-02S	17	—	33.5	27.5	21	26.1	30
	3/8	10-KQH10-03S	17	—	29	22.5	21	26.1	30
16	1/2	10-KQH10-04S	22	—	27	19	22	46.1	53
	1/4	10-KQH12-02S	19	—	34.5	28.5	22	46.1	42
	3/8	10-KQH12-03S	19	—	30	23.5	22	46.1	34
16	1/2	10-KQH12-04S	22	—	30	22	25	68.0	51
	3/8	10-KQH16-03S	24	25.7	39.5	33	25	68.0	61
	1/2	10-KQH16-04S	24	25.7	35.5	27.5	25	80.6	47

* Reference dimensions after R thread installation.
Note 1) ϕD indicates the maximum diameter.

Hexagon socket head male connector: 10-KQS

M5, M6



R



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note 1) ϕD_1	ϕD_2	L	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KQS04-M5	2.5	8	—	18.7	15.6	12.7	4	2.7
	M6 x 1.0	10-KQS04-M6	3	8	—	18.2	14.1	12.7	4	2.8
	1/8	10-KQS04-01S	3	9.8	—	23	19	16	3.6	8
6	M5 x 0.8	10-KQS06-M5	2.5	10	—	19.5	16.4	13.5	4	3.3
	M6 x 1.0	10-KQS06-M6	3	10	—	19.1	15	13.5	4	3.4
	1/8	10-KQS06-01S	4	11.8	—	24	20	17	9.9	9
8	1/4	10-KQS06-02S	4	13.8	—	24	18	17	10.0	15
	1/8	10-KQS08-01S	5	14	—	28	24	18.5	16.2	12
	1/4	10-KQS08-02S	6	14	—	25.5	19.5	18.5	16.2	11
10	3/8	10-KQS08-03S	5	17	—	27.5	21	21	26.6	24
	1/8	10-KQS10-01S	5	17	—	30	26	21	26.6	18
	1/4	10-KQS10-02S	8	17	—	27.5	21.5	21	26.6	12
12	3/8	10-KQS10-03S	8	19	—	28	20	22	44.5	19
	1/2	10-KQS10-04S	10	22	—	28	20	22	44.5	35
16	1/4	10-KQS12-02S	8	19	—	33.5	27.5	22	44.5	23
	3/8	10-KQS12-03S	10	22	—	29	22.5	22	44.5	18
	1/2	10-KQS12-04S	10	22	—	28	20	22	44.5	30
16	3/8	10-KQS16-03S	10	25.7	24	39	32.5	25	68.0	42
	1/2	10-KQS16-04S	12	25.7	24	35	27	25	80.6	34

* Reference dimensions after R thread installation.
Note 1) ϕD_1 indicates the maximum diameter.

Female connector: 10-KQF

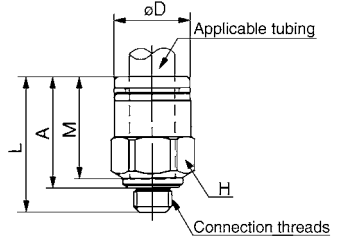
M5, M6



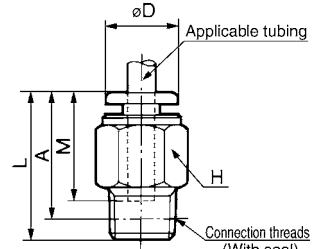
Applicable tubing O.D. (mm)	Connection thread Rc	Model	H (width across flats)	Note 1) ϕD_1	ϕD_2	L ₁	L ₂	M	Effective area (mm ²) Urethane	Weight (g)
4	1/8	10-KQF04-01	14	—	10	27	11	16	4	15
	1/4	10-KQF04-02	17	—	10	31	14	16	4	23
	1/8	10-KQF06-01	14	—	12	27.5	11	17	10.4	15
6	1/4	10-KQF06-02	17	—	12	31	13	17	10.4	22
	3/8	10-KQF06-03	19	—	12	33.5	15	17	10.4	25
8	1/8	10-KQF08-01	14	—	14	29	11	18.5	18.0	17
	1/4	10-KQF08-02	17	—	14	32.5	13	18.5	18.0	24
	3/8	10-KQF08-03	19	—	14	33.5	14	18.5	18.0	24
10	1/4	10-KQF10-02	17	—	17	34.5	14	21	29.5	27
	3/8	10-KQF10-03	19	—	17	36.5	15	21	29.5	30
12	1/4	10-KQF12-02	19	—	19	35	14	22	46.1	36
	3/8	10-KQF12-03	19	—	19	37	14	22	46.1	31
	1/2	10-KQF12-04	24	—	19	41	18	22	46.1	52
16	3/8	10-KQF16-03	24	24	25.7	38	15	25	68.0	59
	1/2	10-KQF16-04	24	24	25.7	43	19	25	80.6	58

Note 1) ϕD_2 indicates the maximum diameter.

M5, M6

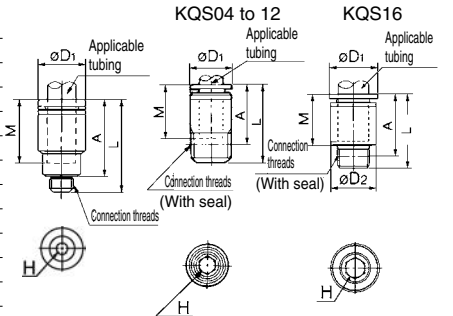


R

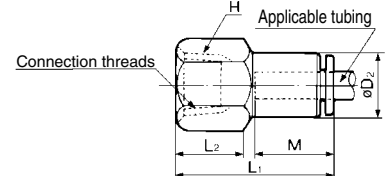


M5, M6

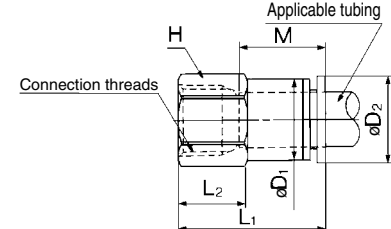
R



KQF04 to 12



KQF16



One-touch fittings 10-KQ

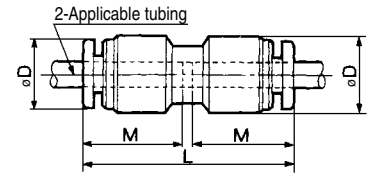
Straight union: 10-KQH



Applicable tubing O.D. (mm)	Model	Note 1) ϕD	L	M	Effective area (mm ²)	Weight (g)
					Urethane	
3.2	10-KQH23-00	9.6	31.5	15.5	2.9	3
4	10-KQH04-00	10.4	32.5	16	4	3
6	10-KQH06-00	12.8	34.5	17	10.4	4
8	10-KQH08-00	15.2	38.5	18.5	18.0	6
10	10-KQH10-00	18.5	42.5	21	29.5	11
12	10-KQH12-00	20.9	44.5	22	46.1	14
16	10-KQH16-00	26.5	51	25	81.1	24



Note 1) ϕD indicates the maximum diameter.



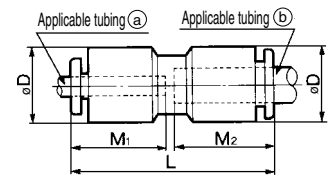
Different diameter straight: 10-KQH



Applicable tubing O.D. (mm)		Model	Note) ϕD	L	M ₁	M ₂	Effective area (mm ²)	Weight (g)
@	①						Urethane	
3.2	4	10-KQH23-04	10.4	32.5	15.5	16	2.9	3
4	6	10-KQH04-06	12.8	34.5	16	17	5.6	5
6	8	10-KQH06-08	15.2	38.5	17	18.5	10.4	6
8	10	10-KQH08-10	18.5	42	18.5	21	18.0	11
10	12	10-KQH10-12	20.9	44.5	21	22	29.5	14
12	16	10-KQH12-16	26.5	56.5	22	25	46.1	47



Note) ϕD indicates the maximum diameter.



Male elbow: 10-KQL

M5



M6



R



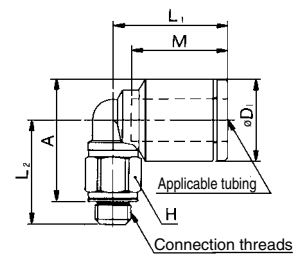
Applicable tubing O.D. mm	Connection thread R	Model	H (width across flats)	Note 1) øD ₁	øD ₂	L ₁	L ₂	A *	M	Effective area (mm ²)	Weight (g)	
										Urethane		
3.2	M5 x 0.8	10-KQL23-M5	7	8.5	—	15.3	13.2	14.3	12.7	2.2	2.5	
	1/8	10-KQL23-01S	10	9.6	10	17.5	21.5	22.5	15.5	2.5	8	
	1/4	10-KQL23-02S	14				25.5	24.5				
4	M5 x 0.8	10-KQL04-M5	7	9.3	—	15.6	13.7	15.3	12.7	3.5	2.7	
	M6 x 1.0	10-KQL04-M6	8				14.7	15.3				
	1/8	10-KQL04-01S	10	10.4	10	18	22	23	16	4.2	10	
	1/4	10-KQL04-02S	14				26	25				
6	M5 x 0.8	10-KQL06-M5	7	11.6	—	16.1	14.7	17.4	13.5	3.5	3.2	
	M6 x 1.0	10-KQL06-M6	8				15.7	17.4				
	1/8	10-KQL06-01S	10	12.8	10	20	23	25.5	17	9.0	12	
	1/4	10-KQL06-02S	14				27	27.5				
	3/8	10-KQL06-03S	17	29	29	33						
8	1/8	10-KQL08-01S	12	15.2	12	23	24.5	28	18.5	14.9	13	
	1/4	10-KQL08-02S	14				28.5	30				21
	3/8	10-KQL08-03S	17				30.5	31.5				35
10	1/8	10-KQL10-01S	12	18.5	17	26.5	27	32	21	14.9	25	
	1/4	10-KQL10-02S	17				30	33		26		
	3/8	10-KQL10-03S	22				32	34.5		36		
	1/2	10-KQL10-04S	22				36	37		63		
12	1/4	10-KQL12-02S	17	20.9	17	28.5	31	35.5	22	39.7	28	
	3/8	10-KQL12-03S	22				33	37				38
	1/2	10-KQL12-04S	22				37	39.5				65
16	3/8	10-KQL16-03S	22	26.5	20.9	34	38	44.5	25	59.9	101	
	1/2	10-KQL16-04S	22				41	46		70.9	105	



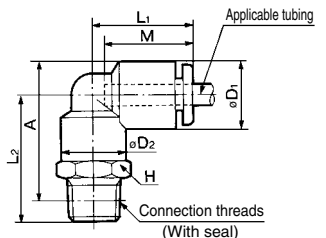
* Reference dimensions after R thread installation.

Note 1) ϕD_1 indicates the maximum diameter.

M5, M6



R



Male branch connector: 10-KQLU

M5, M6

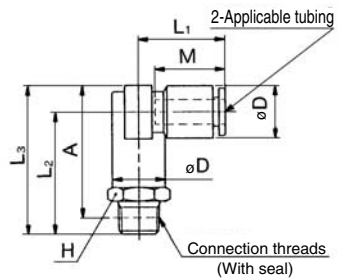
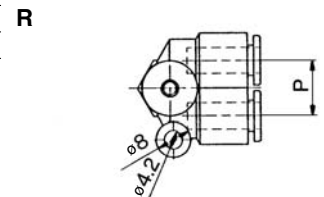
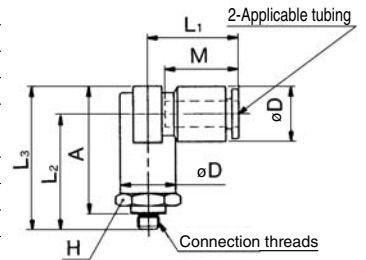
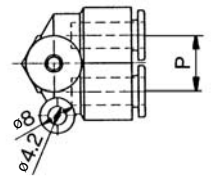
R


Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	(Note) øD	L ₁	L ₂	L ₃	A *	M	P	Effective area (mm ²)	Weight (g)
											Urethane	
4	M5 x 0.8	10-KQLU04-M5	11	10.4	18.5	24	29.5	25.5	16	10.4	4.1	10
	M6 x 1.0	10-KQLU04-M6				24.5	30					
	1/8	10-KQLU04-01S	14			26.5	32	27.5			4.1	12
	1/4	10-KQLU04-02S				30.5	36	30				21
6	M5 x 0.8	10-KQLU06-M5	13	12.8	21	26.5	33	29.5	17	12.8	4.3	13
	M6 x 1.0	10-KQLU06-M6				27	33.5					
	1/8	10-KQLU06-01S	14			29.5	36	32			11.0	15
	1/4	10-KQLU06-02S				33	39.5	33.5				22
	3/8	10-KQLU06-03S	17			35	41.5	35				35
8	1/8	10-KQLU08-01S	17	15.2	24	34	41.5	38	18.5	15.2	18.2	27
	1/4	10-KQLU08-02S				37	44.5	38.5				
	3/8	10-KQLU08-03S				38	45.5	39				35
10	1/4	10-KQLU10-02S	19	18.5	27	40	49.5	43.5	21	18.5	29.0	41
	3/8	10-KQLU10-03S				41	50.5	44				42
	1/2	10-KQLU10-04S				22	44.5	54			45.5	
12	1/4	10-KQLU12-02S	22	20.9	29	42.5	53	47	22	20.9	45.2	57
	3/8	10-KQLU12-03S				43.5	54	47.5				58
	1/2	10-KQLU12-04S				46.5	57	49				65



* Reference dimensions after R thread installation.

Note) ϕD indicates the maximum diameter.

M5, M6


45° male elbow: 10-KQK

M5, M6

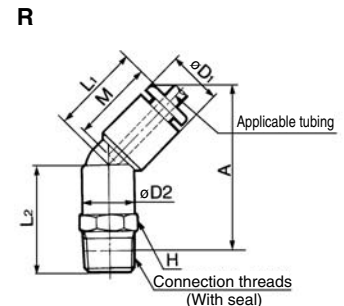
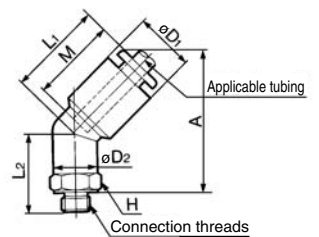
R


Applicable tubing O.D. mm	Connection thread R	Model	H (width across flats)	Note 1) øD ₁	øD ₂	L ₁	L ₂	A *	M	Effective area (mm ²)	Weight (g)					
										Urethane						
4	M5 x 0.8	10-KQK04-M5	8	10.4	8	17	14.5	26	16	3.4	4					
	M6 x 1.0	10-KQK04-M6	15				5									
	1/8	10-KQK04-01S	10		20.5		32				10					
	1/4	10-KQK04-02S	14		24.5		34				19					
6	M5 x 0.8	10-KQK06-M5	8	12.8	8	18	14.5	27.5	17	3.4	6					
	M6 x 1.0	10-KQK06-M6	18.5			15	5									
	1/8	10-KQK06-01S	10		20.5	33	6.9			12						
	1/4	10-KQK06-02S	14		24.5	35				10						
	3/8	10-KQK06-03S	17		26.5	36.5				33						
8	1/8	10-KQK08-01S	12	15.2	12	20.5	22	37	18.5	19.7	13					
	1/4	10-KQK08-02S	14				26	39			21					
	3/8	10-KQK08-03S	17				28	41			35					
10	1/8	10-KQK10-01S	17	18.5	17	24	24	42	21	23.2	25					
	1/4	10-KQK10-02S					27	43.5			26					
	3/8	10-KQK10-03S					29	45			36					
	1/2	10-KQK10-04S	22				33	47.5			63					
	1/4	10-KQK12-02S	17				20.9	17			25	27.5	45.5	22	35.1	28
3/8	10-KQK12-03S	29.5		47.5	38											
1/2	10-KQK12-04S	22		33.5	49.5	65										
16	3/8	10-KQK16-03S	22	26.5	20.9	30			32	55		25	55.6			52
	1/2	10-KQK16-04S							35	56.5			66.1			58



* Reference dimensions after R thread installation.

Note 1) ϕD_1 indicates the maximum diameter.

M5, M6


Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

One-touch fittings 10-KQ

Universal male elbow: 10-KQV

M5



R



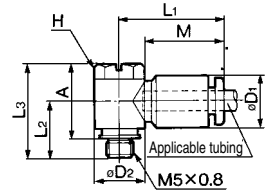
Applicable tubing O.D. (mm)	Connection thread R	Model	H (Width across flats)	Note 1) ϕD_1	ϕD_2	L ₁	L ₂	L ₃	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KQV04-M5	8	10.4	9.8	20.5	11	18.5	15	16	2.9	6
	1/8	10-KQV04-01S			13.4	22	14.5	26.5	22.5			14
6	M5 x 0.8	10-KQV06-M5	8	12.8	9.8	23.5	12	18.5	15	17	3.8	7
	1/8	10-KQV06-01S			13.4	24	14.5	26.5	22.5			15
	1/4	10-KQV06-02S	10		15.4	23.5	18.5	31	25		5.9	26
8	1/8	10-KQV08-01S	12	15.2	17.6	28.5	15.5	28.5	24.5	18.5	11.2	24
	1/4	10-KQV08-02S			18.5	31.5	25.5	30				30
	3/8	10-KQV08-03S	14		20.6	27.5	20.5	36.5	30		14.3	47
10	1/4	10-KQV10-02S	14	18.5	20.6	31	19.5	35.5	29.5	21	20.3	40
	3/8	10-KQV10-03S					20.5	36.5	30			49
12	3/8	10-KQV12-03S	17	20.9	25.2	34	22	38.5	32	22	30.8	63
	1/2	10-KQV12-04S					25	41.5	33.5			80
16	3/8	10-KQV16-03S	21	26.5	32.5	39	26.5	46.5	40.5	25	46.4	103
	1/2	10-KQV16-04S					29.5	49.5	41.5		54.9	110



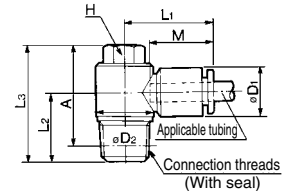
* Reference dimensions after R thread installation.

Note 1) ϕD_1 indicates the maximum diameter.

M5



R



Hexagon socket head universal male elbow: 10-KQVS

M5



R



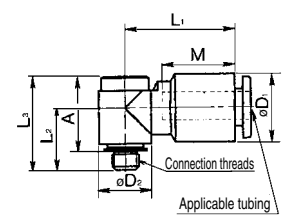
Applicable tubing O.D. mm	Connection thread R	Model	H (width across flats)	Note 1) ϕD_1	ϕD_2	L ₁	L ₂	L ₃	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5	10-KQVS04-M5	4	10.4	9.8	20.5	10.5	18	15	16	2.9	6
	1/8	10-KQVS04-01S	6		13.4	22	14.5	26.5	22.5			14
6	M5	10-KQVS06-M5	4	12.8	9.8	23.5	12	18	15	17	3.8	7
	1/8	10-KQVS06-01S			13.4	24	14.5	26.5	22.5			15
	1/4	10-KQVS06-02S	6		15.3	23.5	18.5	27	21		5.9	22
8	1/8	10-KQVS08-01S	8	15.2	17.6	28.5	15.5	27	23	18.5	11.2	24
	1/4	10-KQVS08-02S			18.5	31.5	25	30	24			30
	3/8	10-KQVS08-03S			20.6	27.5	20.5	32.5	26		14.3	47
10	1/4	10-KQVS10-02S	8	18.5	20.6	31	19.5	31.5	25	21	20.3	32
	3/8	10-KQVS10-03S					20.5	32.5	26			39
12	3/8	10-KQVS12-03S	10	20.9	25.2	34	22	36	30	22	30.8	48
	1/2	10-KQVS12-04S					25	39	31			67



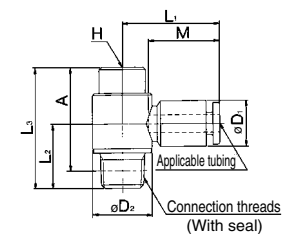
* Reference dimensions after R thread installation.

Note 1) ϕD_1 indicates the maximum diameter.

M5



R



Universal female elbow: 10-KQVF

M5



R

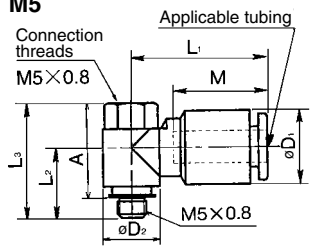


Applicable tubing O.D. (mm)	Connection thread Rc R	Model	H (width across flats)	Note) ϕD_1	ϕD_2	L ₁	L ₂	L ₃	A *	M	Weight (g)
4	M5 x 0.8	10-KQVF04-M5	8	10.4	9.8	20.5	11	20	16	16	6
	1/8	10-KQVF04-01S	14		13.4	22	15.5	29.5	25.5	16	19
	1/8	10-KQVF06-M5	8		9.8	23.5	12.5	20	16	17	7
6	1/8	10-KQVF06-01S	14	12.8	13.4	24.5	15.5	29.5	25.5	17	19
	1/4	10-KQVF06-02S	17		17.6	25	20	38.5	32.5	18.5	36
	1/8	10-KQVF08-01S	17		17.6	28.5	17	31	27	18.5	29
8	1/4	10-KQVF08-02S	19	15.2	25.2	29.5	25.5	45.5	39	21	66
	3/8	10-KQVF08-03S	22		20.6	31.5	22	41	35	21	48
	1/4	10-KQVF10-02S	19		25.2	34	24.5	45.5	39	22	70
10	3/8	10-KQVF10-03S	22	20.9	25.2	34	24.5	45.5	39	22	70
	1/2	10-KQVF12-03S	22		27	35	25.5	50	42	22	93
	1/2	10-KQVF12-04S	24								

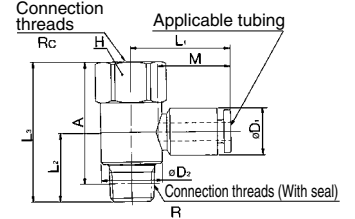


* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.

M5



R



Female elbow: 10-KQLF

M5



R

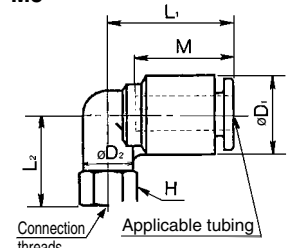


Applicable tubing O.D. (mm)	Connection thread Rc	Model	H (width across flats)	Note) ϕD_1	ϕD_2	L ₁	L ₂	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KQLF04-M5	8	10.4	8		14.5		3.5	5
	M6 x 1.0	10-KQLF04-M6	14			18.5	15.5	16		13
	1/8	10-KQLF04-01	17		10		21		4.2	20
6	M5 x 0.8	10-KQLF06-M5	8	12.8	8		15		3.5	5
	M6 x 1.0	10-KQLF06-M6	14			20.5	16	17		6
	1/8	10-KQLF06-01	17		10		22		9.0	13
8	1/4	10-KQLF06-02	17	15.2			25.5			20
	3/8	10-KQLF06-03	19				26			
	1/8	10-KQLF08-01	14		12	23.5	23	18.5	14.9	16
10	1/4	10-KQLF08-02	17	18.5	17	26.5	26.5	21		22
	3/8	10-KQLF08-03	19				27			23
	1/2	10-KQLF10-04	24				28		25.0	27
12	1/4	10-KQLF10-03	19	20.9	17	28.5	28.5	22		46
	3/8	10-KQLF12-03	19				32.5			
	1/2	10-KQLF12-04	24				29.5		39.7	29
							34			48

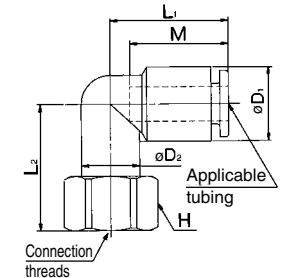


Note) ϕD_1 indicates the maximum diameter.

M5



R



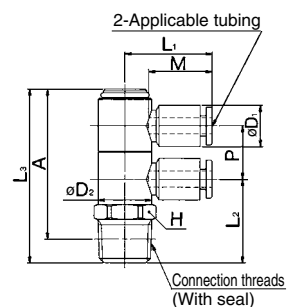
Double universal male elbow: 10-KQVD



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note) ϕD_1	ϕD_2	L ₁	L ₂	L ₃	A *	M	P	Weight (g)
4	1/8	10-KQVD04-01S	14	10.4	13.4	22	18.5	41	37	16	13.4	23
	1/4	10-KQVD04-02S	17				21.5	44	38			29
	3/8	10-KQVD04-03S	19				23.5	46	40			42
6	1/8	10-KQVD06-01S	14	12.8	13.4	24.5	18.5	41	37	17	13.4	24
	1/4	10-KQVD06-02S	17				21.5	44	38			30
	3/8	10-KQVD06-03S	19				23.5	46	40			42
8	1/8	10-KQVD08-01S	19	15.2	17.6	28.5	21	48	44	18.5	15.9	53
	1/4	10-KQVD08-02S	21				24	51	45			51
	3/8	10-KQVD08-03S	21				25	52	45.5			60
10	1/2	10-KQVD08-04S	21	18.5	20.6	31.5	28.5	55.5	47.5	21	19.2	82
	1/4	10-KQVD10-02S	21				26.5	58	52			71
	3/8	10-KQVD10-03S	21				27.5	59	53			74
12	1/2	10-KQVD10-04S	21	20.9	25.2	34	30.5	62	54	22	21.6	91
	3/8	10-KQVD12-03S	26				28.5	64.5	58.5			118
	1/2	10-KQVD12-04S	26				29.5	65.5	59			113
							32.5	68.5	60			125



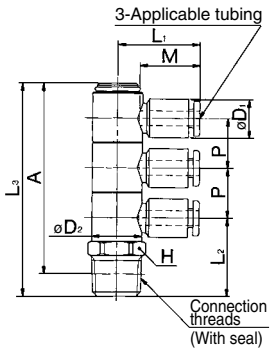
* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.



Triple universal male elbow: 10-KQVT



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note) ϕD_1	ϕD_2	L_1	L_2	L_3	A^*	M	P	Weight (g)
4	1/8	10-KQVT04-01S	14	10.4	13.4	22	18.5	54.5	50.5	16	13.4	29
	1/4	10-KQVT04-02S	14				21.5	57.5	51.5			34
	3/8	10-KQVT04-03S	17				23.5	59.5	53.5			48
6	1/8	10-KQVT06-01S	14	12.8	13.4	24.5	18.5	54.5	50.5	17	13.4	31
	1/4	10-KQVT06-02S	14				21.5	57.5	51.5			37
	3/8	10-KQVT06-03S	17				23.5	59.5	53.5			50
8	1/8	10-KQVT08-01S	19	15.2	17.6	28.5	21	64	60	18.5	15.9	71
	1/4	10-KQVT08-02S	19				24	67	61			66
	3/8	10-KQVT08-03S	21				25	68	61.5			75
	1/2	10-KQVT08-04S	21				28.5	71.5	63.5			96
10	1/4	10-KQVT10-02S	21	18.5	20.6	31.5	26.5	77.5	71.5	21	19.2	94
	3/8	10-KQVT10-03S	21				27.5	78.5	72			111
	1/2	10-KQVT10-04S	21				30.5	81.5	73.5			153
12	1/4	10-KQVT12-02S	26	20.9	25.2	34	28.5	86	80	22	21.6	142
	3/8	10-KQVT12-03S	26				29.5	87	80.5			154
	1/2	10-KQVT12-04S	26				32.5	90	82			154



* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.

Branch universal elbow: 10-KQZ

M5



R

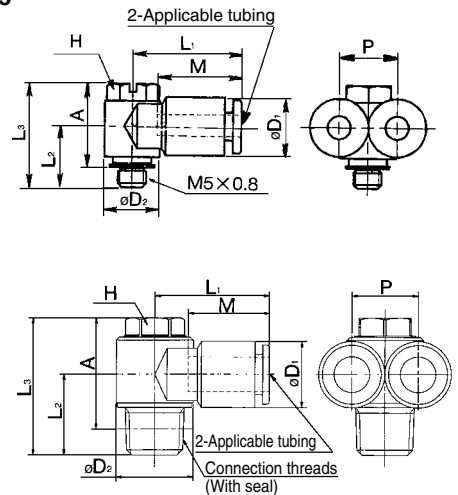


Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note) ϕD_1	ϕD_2	L_1	L_2	L_3	A^*	M	P	Effective area (mm ²)	Weight (g)
4	M5 x 0.8	10-KQZ04-M5	8	10.4	9.8	19.5	11	18.5	15	16	10.4	Urethane	8
	1/8	10-KQZ04-01S	8									4.7	16
6	1/8	10-KQZ06-01S	8	12.8	13.4	22	14.5	26.5	22.5	17	12.8	8.6	17
	1/4	10-KQZ06-02S	14										39
	3/8	10-KQZ06-03S	14										47
8	1/8	10-KQZ08-01S	12	15.2	17.6	26	15.5	28.5	24.5	18.5	15.2	14.2	27
	1/4	10-KQZ08-02S	14										33
	3/8	10-KQZ08-03S	14										49
10	1/4	10-KQZ10-02S	14	18.5	20.6	29	19.5	35.5	29.5	21	18.5	22.6	46
	3/8	10-KQZ10-03S	14										54
	3/8	10-KQZ12-03S	17										71
12	1/2	10-KQZ12-04S	17	20.9	25.2	32.5	22	39	32.5	22	20.9	35.3	88



* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.

M5



Branch universal male elbow: 10-KQZF

M5



R

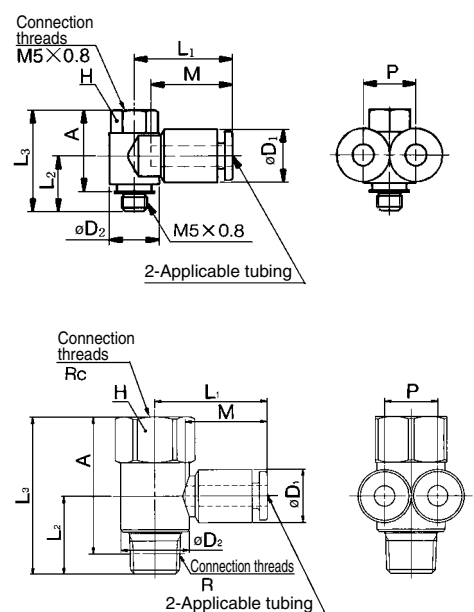


Applicable tubing O.D. (mm)	Connection thread Rc R	Model	H (width across flats)	Note) ϕD_1	ϕD_2	L_1	L_2	L_3	A^*	M	P	Weight (g)
4	M5 x 0.8	10-KQZF04-M5	8	10.4	9.8	19.5	11	20	16.5	16	10.4	8
	1/8	10-KQZF04-01S	14									21
6	1/8	10-KQZF06-01S	14	12.8	13.4	22	15.5	29.5	25.5	17	12.8	21
	1/4	10-KQZF06-02S	19									47
8	1/8	10-KQZF08-01S	17	15.2	17.6	25.5	17	31	27	18.5	15.2	32
	1/4	10-KQZF08-02S	19									49
10	1/4	10-KQZF10-02S	19	18.5	20.6	29	22	41	35	21	18.5	54
	3/8	10-KQZF10-03S	22									74
12	3/8	10-KQZF12-03S	22	20.9	25.2	32.5	24.5	45.5	39	22	20.9	77
	1/2	10-KQZF12-04S	24									101



* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.

M5



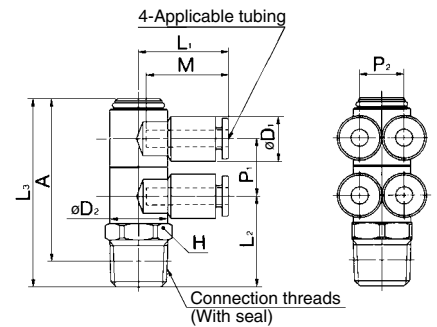
Double branch universal male elbow: 10-KQZD



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note	øD ₁	øD ₂	L ₁	L ₂	L ₃	A*	M	P ₁	P ₂	Weight (g)
4	1/8	10-KQZD04-01S	14		10.4	13.4	21	18.5	41	37	16	13.4	10.4	34
	1/4	10-KQZD04-02S	17					21.5	44	38				40
	3/8	10-KQZD04-03S	17					23.5	46	40				53
6	1/8	10-KQZD06-01S	14		12.8	13.4	22	18.5	41	37	17	13.4	12.8	38
	1/4	10-KQZD06-02S	17					21.5	44	38				43
	3/8	10-KQZD06-03S	17					23.5	46	40				57
8	1/8	10-KQZD08-01S	19		15.2	17.6	26	21	48	44	18.5	15.9	15.2	76
	1/4	10-KQZD08-02S	21					24	51	45				72
	3/8	10-KQZD08-03S	21					25	52	45.5				81
10	1/4	10-KQZD10-02S	21		18.5	20.6	29	26.5	58	52	21	19.2	18.5	111
	3/8	10-KQZD10-03S	21					27.5	59	53				128
	1/2	10-KQZD10-04S	21					30.5	62	54				128
12	1/4	10-KQZD12-02S	26		20.9	25.2	32	28.5	64.5	58.5	22	21.6	20.9	178
	3/8	10-KQZD12-03S	26					29.5	65.5	59				167
	1/2	10-KQZD12-04S	26					32.5	68.5	60				179



* Reference dimensions after R thread installation.
Note) øD₁ indicates the maximum diameter.



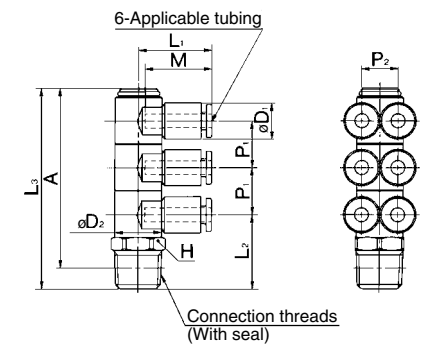
Triple branch universal male elbow: 10-KQZT



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note	øD ₁	øD ₂	L ₁	L ₂	L ₃	A*	M	P ₁	P ₂	Weight (g)
4	1/8	10-KQZT04-01S	14		10.4	13.4	21	18.5	54.5	50.5	16	13.4	10.4	25
	1/4	10-KQZT04-02S	17					21.5	57.5	51.5				31
	3/8	10-KQZT04-03S	17					23.5	59.5	53.5				44
6	1/8	10-KQZT06-01S	14		12.8	13.4	22	18.5	54.5	50.5	17	13.4	12.8	27
	1/4	10-KQZT06-02S	17					21.5	57.5	51.5				33
	3/8	10-KQZT06-03S	17					23.5	59.5	53.5				46
8	1/8	10-KQZT08-01S	19		15.2	17.6	26	21	64	60	18.5	15.9	15.2	56
	1/4	10-KQZT08-02S	21					24	67	61				54
	3/8	10-KQZT08-03S	21					25	68	61.5				62
10	1/4	10-KQZT10-02S	21		18.5	20.6	29	26.5	77.5	71.5	21	19.2	18.5	83
	3/8	10-KQZT10-03S	21					27.5	78.5	72				85
	1/2	10-KQZT10-04S	21					30.5	81.5	73.5				102
12	1/4	10-KQZT12-02S	26		20.9	25.2	32	28.5	86	80	22	21.6	20.9	134
	3/8	10-KQZT12-03S	26					29.5	87	80.5				130
	1/2	10-KQZT12-04S	26					32.5	90	82				141



* Reference dimensions after R thread installation.
Note) øD₁ indicates the maximum diameter.



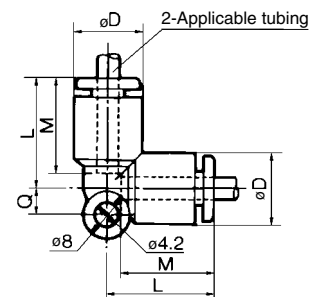
Union elbow: 10-KQL



Applicable tubing O.D. (mm)	Model	Note 1)	L	Q	M	Effective area (mm ²)	Weight (g)
3.2	10-KQL23-00	9.6	17.5	4.3	15.5	Urethane	3
4	10-KQL04-00	10.4	18	4.5	16		6
6	10-KQL06-00	12.8	20	5.3	17		6
8	10-KQL08-00	15.2	23	6	18.5		10
10	10-KQL10-00	18.5	26.5	6.8	21		17
12	10-KQL12-00	20.9	28.5	7.5	22		21
16	10-KQL16-00	26.5	34	10	25		29



Note 1) øD indicates the maximum diameter.



One-touch fittings 10-KQ

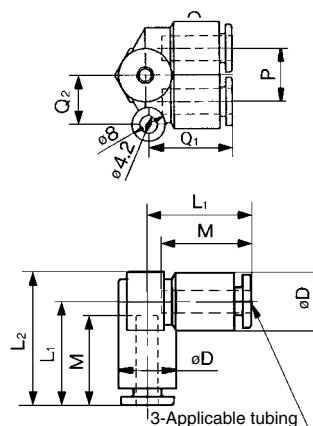
Branch union elbow: 10-KQLU



Applicable tubing O.D. (mm)	Model	Note)		L ₁	L ₂	Q ₁	Q ₂	M	P	Effective area (mm ²)	Weight (g)
		øD								Urethane	
4	10-KQLU04-00	10.4	18.5	24	18.5	10	16	10.4		4.1	6
6	10-KQLU06-00	12.8	21	27.5	20.5	12	17	12.8		11.0	8
8	10-KQLU08-00	15.2	24	32	24.5	14	18.5	15.2		18.2	15
10	10-KQLU10-00	18.5	27	36.5	28	16	21	18.5		29.0	25
12	10-KQLU12-00	20.9	29	40	30	18	22	20.9		45.2	32



Note) øD indicates the maximum diameter.



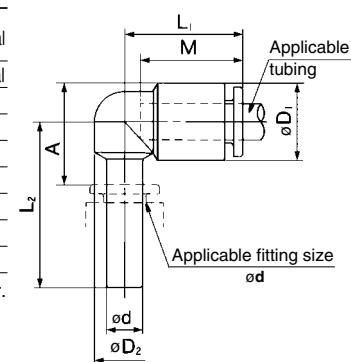
Plug-in elbow: 10-KQL



Applicable tubing O.D. (mm)	Applicable fitting size ød	Model	Note 1)		L ₁	L ₂	A	M	Effective area (mm ²)	Weight (g)	Rod material	
			øD ₁	øD ₂					Urethane		Resin	Metal
3.2	3.2	10-KQL23-99	9.6	7	17	24.5	14	15.5	2.5	2	○	
4	4	10-KQL04-99	10.4	8	18	25	14.5	16	4.2	3	○	
6	6	10-KQL06-99	12.8	10	20	27.5	17	17	9.0	3	○	
8	8	10-KQL08-99	15.2	12	22.5	31.5	21	18.5	14.9	5	○	
10	10	10-KQL10-99	18.5	14	25.5	35.5	23.5	21	25.0	9	○	
12	12	10-KQL12-99	20.9	16	27	37.5	26	22	39.7	10	○	
16	16	10-KQL16-99	26.5	20.9	34	53	41	25	70.9	42		○



Note 1) øD indicates the maximum diameter.



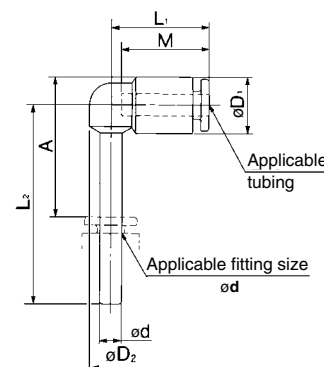
Extended plug-in elbow: 10-KQW



Applicable tubing O.D. (mm)	Applicable fitting size ød	Model	Note)		L ₁	L ₂	A	M	Effective area (mm ²)	Weight (g)
			øD ₁	øD ₂					Urethane	
3.2	3.2	10-KQW23-99	9.6	7	17.5	35	24.5	15.5	2.5	2
4	4	10-KQW04-99	10.4	8	18	37	26	16	4.2	3
6	6	10-KQW06-99	12.8	10	20	41.5	31	17	9.0	4
8	8	10-KQW08-99	15.2	10	22.5	48	37	18.5	14.9	6
10	10	10-KQW10-99	18.5	14	25.5	55	43.5	21	25.0	9
12	12	10-KQW12-99	20.9	16	27	59.5	48	22	39.7	13



Note) øD indicates the maximum diameter.



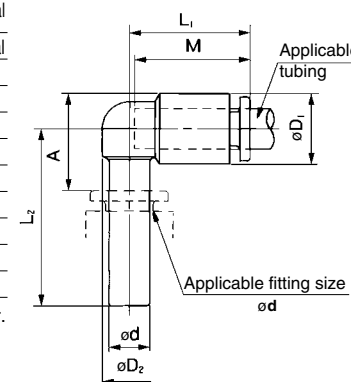
Reducer elbow: 10-KQL



Applicable tubing O.D. (mm)	Applicable fitting size ød	Model	Note)		L ₁	L ₂	A	M	Effective area (mm ²)	Weight (g)	Rod material	
			øD ₁	øD ₂					Urethane		Resin	Metal
3.2	4	10-KQL23-04	9.6	7	17	25	13.5	15.5	2.5	2	○	
4	6	10-KQL04-06	10.4	8	18	26	14.5	16	4.2	3	○	
	8	10-KQL04-08		10	18	35	22			11	○	
6	8	10-KQL06-08	12.8	10	19.5	30.5	18	17	9.0	12	○	
	10	10-KQL06-10			20	38.5	24			19	○	
8	10	10-KQL08-10	15.2	12	22.5	33.5	20.5	18.5	14.9	20	○	
	12	10-KQL08-12			23	40.5	26			27	○	
10	12	10-KQL10-12	18.5	17	26.5	42	29.5	21	25.0	29	○	
12	16	10-KQL12-16	20.9	17	28.5	49.5	34.5	22	39.7	53	○	



Note) øD₁ indicates the maximum diameter.



Extended male elbow: 10-KQW

M5

R



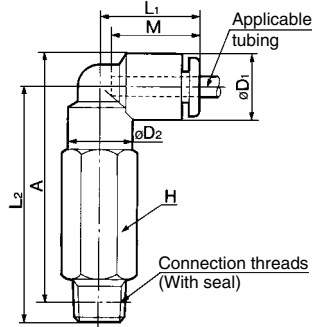
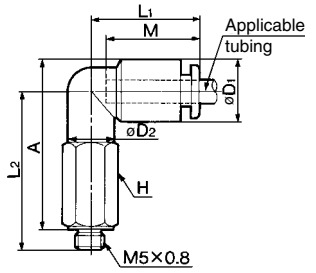
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note 1) ϕD_1	ϕD_2	L_1	L_2	A *	M	Effective area (mm ²) Urethane	Weight (g)
3.2	M5 x 0.8	10-KQW23-M5	8	9.6	8	17.5	30	31	15.5	2.4	10
	1/8	10-KQW23-01S	10				37	38			19
	1/4	10-KQW23-02S	14				43	42			41
4	M5 x 0.8	10-KQW04-M5	8	10.4	8	18	30	32	16	3.0	11
	1/8	10-KQW04-01S	10				37.5	38.5		4.0	23
	1/4	10-KQW04-02S	14				43.5	42.5			38
6	M5 x 0.8	10-KQW06-M5	8	12.8	8	20	30.5	33.5	17	3.0	11
	1/8	10-KQW06-01S	10				40	42.5		8.6	26
	1/4	10-KQW06-02S	14				46	46.5			41
8	3/8	10-KQW06-03S	17	15.2	12	23	48	48	18.5	14.2	67
	1/8	10-KQW08-01S	12				43.5	47			30
	1/4	10-KQW08-02S	14				49.5	51			47
10	3/8	10-KQW08-03S	17	18.5	17	26.5	51.5	52.5	21	23.8	74
	1/4	10-KQW10-02S	17				56.5	59.5			66
	3/8	10-KQW10-03S	17				58.5	61			76
12	1/2	10-KQW10-04S	22	20.9	17	28.5	65	66	22	37.7	145
	1/4	10-KQW12-02S	17				57.5	62			68
	3/8	10-KQW12-03S	17				59.5	63.5			78
16	1/2	10-KQW12-04S	22	26.5	20.9	34	66	68.5	25	59.9	147
	3/8	10-KQW16-03S	22				69.5	76			101
	1/2	10-KQW16-04S	22				75	80			105



* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.

M5

R



Male branch tee: 10-KQT

M5

M6

R



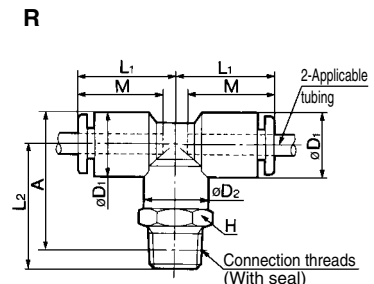
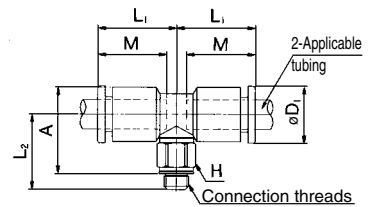
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note 1) ϕD_1	ϕD_2	L_1	L_2	A *	M	Effective area (mm ²) Urethane	Weight (g)
3.2	M5 x 0.8	10-KQT23-M5	7	8.4	—	15.3	13.2	14.3	12.7	2.7	3.2
	1/8	10-KQT23-01S	10	9.6	10	17.5	21.5	22.5	15.5	2.9	10
	1/4	10-KQT23-02S	14				25.5	24.5			20
4	M5 x 0.8	10-KQT04-M5	7	9.3	—	15.6	13.7	15.3	12.7	4.5	3.5
	M6 x 1.0	10-KQT04-M6	8				14.7				4.4
	1/8	10-KQT04-01S	10	10.4	10	18	22	23	16	4.1	13
6	1/4	10-KQT04-02S	14				26	25			19
	M5 x 0.8	10-KQT06-M5	7	11.6	—	16.1	14.7	17.4	13.5	4.5	4.4
	M6 x 1.0	10-KQT06-M6	8				15.7				5.3
8	1/8	10-KQT06-01S	10	12.8	10	20	23	25.5	17	11.0	12
	1/4	10-KQT06-02S	14				27	27.5			20
	3/8	10-KQT06-03S	17				29	29			34
10	1/8	10-KQT08-01S	12	15.2	12	23	24.5	28	18.5	18.2	14
	1/4	10-KQT08-02S	14				28.5	30			22
	3/8	10-KQT08-03S	17				30.5	31.5			36
12	1/8	10-KQT10-01S	17	18.5	17	26.5	27	32	21	14.9	31
	1/4	10-KQT10-02S	17				30	33			29
	3/8	10-KQT10-03S	17				32	34.5			39
16	1/2	10-KQT10-04S	22				36	37			66
	1/4	10-KQT12-02S	17	20.9	17	28.5	31	35.5	22	45.2	31
	3/8	10-KQT12-03S	22				33	37			41
16	1/2	10-KQT12-04S	22	26.5	20.9	34	37	39.5	25	59.9	68
	3/8	10-KQT16-03S	22				38	44.5			112
	1/2	10-KQT16-04S	22				40.5	46		84.5	116



* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.

M5, M6

R



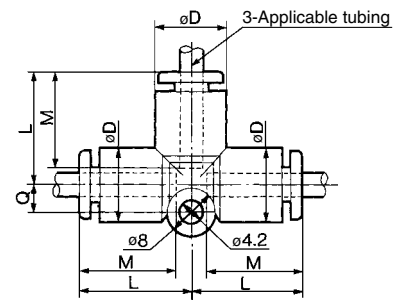
Union tee: 10-KQT



Applicable tubing O.D. (mm)	Model	Note 1) øD	L	Q	M	Effective area	Weight (g)
						(mm ²) Urethane	
3.2	10-KQT23-00	9.6	17.5	4.3	15.5	2.9	5
4	10-KQT04-00	10.4	18	4.5	16	4.4	7
6	10-KQT06-00	12.8	20	5.3	17	10.6	10
8	10-KQT08-00	15.2	23	6	18.5	17.7	15
10	10-KQT10-00	18.5	26.5	6.8	21	28.4	25
12	10-KQT12-00	20.9	28.5	7.5	22	45.4	29
16	10-KQT16-00	26.5	34	10	25	70.9	40



Note 1) øD indicates the maximum diameter.



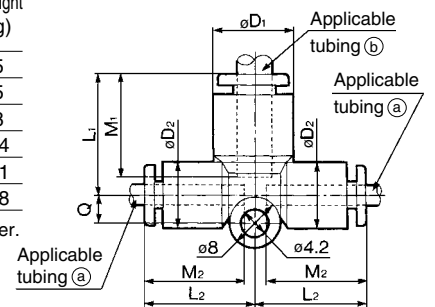
Different diameter tee: 10-KQT



Applicable tubing O.D. (mm)		Model	Note 1) øD ₁	øD ₂	L ₁	L ₂	Q	M ₁	M ₂	Effective area	Weight (g)
①	②									(mm ²) Urethane	
3.2	4	10-KQT23-04	10.4	9.6	18	17.5	4.3	16	15.5	3.5	5
4	6	10-KQT04-06	12.8	10.4	19.5	18	4.5	17	16	6.5	5
6	8	10-KQT06-08	15.2	12.8	22.5	20	5.3	18.5	17	16.4	8
8	10	10-KQT08-10	18.5	15.2	26.5	23	6	21	18.5	27.2	14
10	12	10-KQT10-12	20.9	18.5	28.5	26.5	6.8	22	21	44.5	21
12	16	10-KQT12-16	26.5	26.5	34	39	10	25	22	77.5	88



Note 1) øD₁ indicates the maximum diameter.



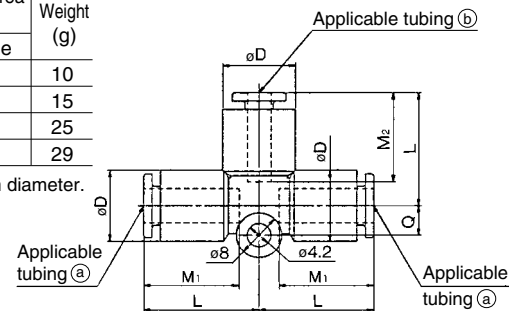
Different diameter tee: 10-KQT



Applicable tubing O.D. (mm)		Model	Note) øD	L	Q	M ₁	M ₂	Effective area	Weight (g)
①	②							(mm ²) Urethane	
6	4	10-KQT06-04	12.8	20	5.3	17	16	4.4	10
8	6	10-KQT08-06	15.2	23	6	18.5	17	10.6	15
10	8	10-KQT10-08	18.5	26.5	7.5	21	18.5	17.7	25
12	10	10-KQT12-10	20.9	28.5	7.5	22	21	28.4	29



Note) øD indicates the maximum diameter.



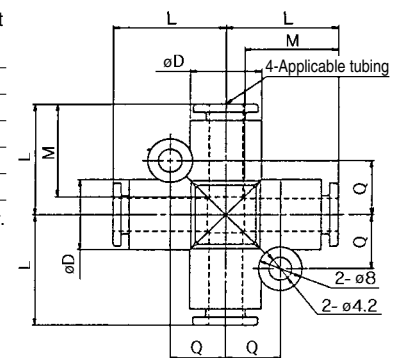
Cross: 10-KQTW



Applicable tubing O.D. (mm)	Model	Note) øD	L	Q	M	Effective area	Weight (g)
						(mm ²) Urethane	
4	10-KQTW04-00	10.4	18	8.7	16	4.4	9
6	10-KQTW06-00	12.8	20	9.9	17	10.6	13
8	10-KQTW08-00	15.2	23	11.1	18.5	17.7	20
10	10-KQTW10-00	18.5	26.5	12.8	21	28.4	33
12	10-KQTW12-00	20.9	28.5	13.9	22	45.4	39



Note) øD indicates the maximum diameter.



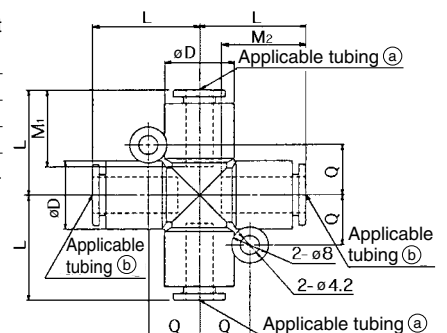
Different diameter cross: 10-KQTX



Applicable tubing O.D. (mm)		Model	Note) øD	L	Q	M ₁	M ₂	Effective area	Weight (g)
①	②							(mm ²) Urethane	
6	8	10-KQTX06-08	15.2	23	11.1	18.5	17	10.6	13
8	10	10-KQTX08-10	18.5	26.5	12.8	21	18.5	17.7	27
10	12	10-KQTX10-12	20.9	28.5	13.9	22	21	28.4	36



Note) øD indicates the maximum diameter.



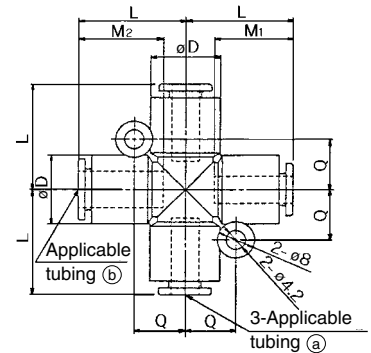
Different diameter cross: 10-KQTY



Applicable tubing O.D. (mm)		Model	øD ^{Note)}	L	Q	M ₁	M ₂	Effective area (mm ²) Urethane	Weight (g)
⑥	⑧								
6	8	10-KQTY06-08	15.2	23	11.1	17	18.5	10.6	15
8	10	10-KQTY08-10	18.5	26.5	12.8	18.5	21	17.7	23
10	12	10-KQTY10-12	20.9	28.5	13.9	21	22	28.4	35



Note) øD indicates the maximum diameter.



Male run tee: 10-KQY

M5



M6



R



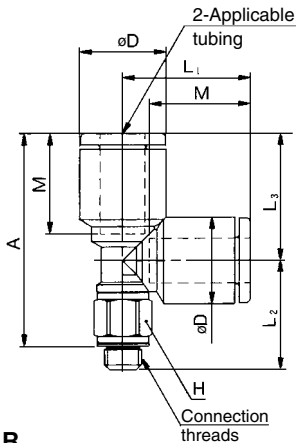
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note 1) øD ₁	øD ₂	L ₁	L ₂	L ₃	A*	M	Effective area (mm ²) Urethane	Weight (g)
3.2	M5 x 0.8	10-KQY23-M5	7	8.4	—	15.4	13.2	14.8	24.9	12.7	2.7	3.2
	1/8	10-KQY23-01S	10	9.6	10	17.5	21.5	—	35	15.5	2.9	10
	1/4	10-KQY23-02S	14	—	—	—	25.5	—	37	—	—	20
4	M5 x 0.8	10-KQY04-M5	7	9.3	—	15.6	13.7	14.8	25.4	12.7	4.5	3.5
	M6 x 1.0	10-KQY04-M6	8	—	—	—	14.7	—	—	—	—	6
	1/8	10-KQY04-01S	10	10.4	10	18	22	—	36	16	4.4	13
6	1/4	10-KQY04-02S	14	—	—	—	26	—	38	—	—	19
	M5 x 0.8	10-KQY06-M5	7	11.6	—	17.1	14.7	17.1	28.7	13.5	4.5	4.5
	M6 x 1.0	10-KQY06-M6	8	—	—	—	15.7	—	—	—	—	7
6	1/8	10-KQY06-01S	10	12.8	10	20	23	—	39	17	10.6	12
	1/4	10-KQY06-02S	14	—	—	—	27	—	41	—	—	20
	3/8	10-KQY06-03S	17	—	—	—	29	—	42.5	—	—	34
8	1/8	10-KQY08-01S	12	15.2	12	23	24.5	—	43.5	18.5	17.7	14
	1/4	10-KQY08-02S	14	—	—	—	28.5	—	45.5	—	—	22
	3/8	10-KQY08-03S	17	—	—	—	30.5	—	47	—	—	36
10	1/8	10-KQY10-01S	17	18.5	17	26.5	27	—	49.5	21	28.4	31
	1/4	10-KQY10-02S	—	—	—	—	30	—	50.5	—	—	29
	3/8	10-KQY10-03S	—	—	—	—	32	—	52	—	—	39
12	1/2	10-KQY10-04S	22	—	—	—	36	—	54.5	—	—	66
	1/4	10-KQY12-02S	17	20.9	17	28.5	31	—	53.5	22	45.4	31
	3/8	10-KQY12-03S	—	—	—	—	33	—	55	—	—	41
16	1/2	10-KQY12-04S	22	—	—	—	37	—	57.5	—	—	68
	3/8	10-KQY16-03S	22	26.5	20.9	34	38	—	65.5	25	68.4	112
	1/2	10-KQY16-04S	—	—	—	—	41	—	67	—	95.4	116



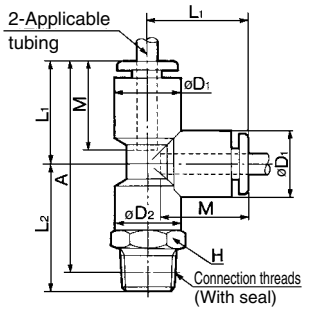
* Reference dimensions after R thread installation.

Note 1) øD₁ indicates the maximum diameter.

M5, M6



R



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Male delta union: 10-KQD

M5, M6



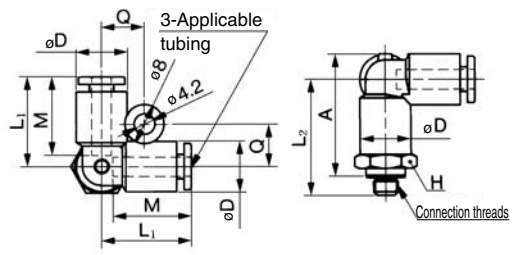
R



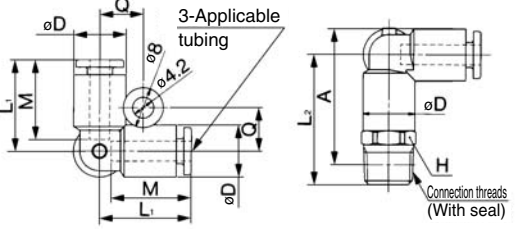
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note)	øD	L ₁	L ₂	A*	M	Q	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KQD04-M5	11	10.4	18.5		24	25.5	16	8.7	2.2	10
	M6 x 1.0	10-KQD04-M6					24.5				4.3	
	1/8	10-KQD04-01S					26.5	27.5			6.0	
	1/4	10-KQD04-02S					30.5	29.5				
6	M5 x 0.8	10-KQD06-M5	13	12.8	20.5		26	28.5	17	9.9	4.3	12
	M6 x 1.0	10-KQD06-M6					26.5					
	1/8	10-KQD06-01S					29	31.5			11.0	
	1/4	10-KQD06-02S					32.5	33				
8	3/8	10-KQD06-03S	17				34.5	34.5				34
	1/8	10-KQD08-01S					33.5	37				
	1/4	10-KQD08-02S					36.5	38			18.2	
	3/8	10-KQD08-03S					37.5	38.5				
10	1/4	10-KQD10-02S	19	18.5	26.5		39.5	43	21	12.8	29.0	40
	3/8	10-KQD10-03S					40.5	43.5				
	1/2	10-KQD10-04S					44	45				
	1/4	10-KQD12-02S	22	20.9	28.5		42	46.5	22	13.9	45.2	56
12	3/8	10-KQD12-03S					43	47				
	1/2	10-KQD12-04S					46	48.5				

* Reference dimensions after R thread installation.
Note) øD indicates the maximum diameter.

M5, M6



R

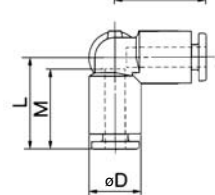
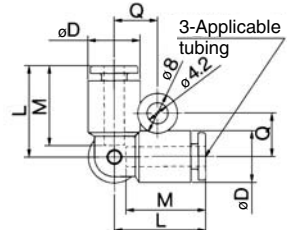


Delta union: 10-KQD



Applicable tubing O.D. (mm)	Model	Note)	øD	L	Q	M	Effective area (mm ²) Urethane	Weight (g)
4	10-KQD04-00	10.4	18.5	8.7	16		4.1	5
6	10-KQD06-00	12.8	20.5	9.9	17		11.0	7
8	10-KQD08-00	15.2	23.5	11.1	18.5		18.2	11
10	10-KQD10-00	18.5	26.5	12.8	21		29.0	19
12	10-KQD12-00	20.9	28.5	13.9	22		45.2	24

Note) øD indicates the maximum diameter.



Branch "Y": 10-KQU

M5, M6



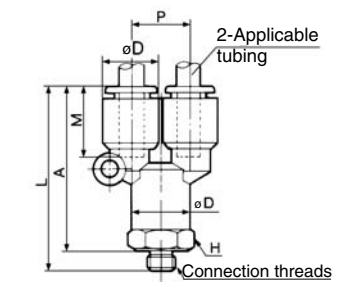
R



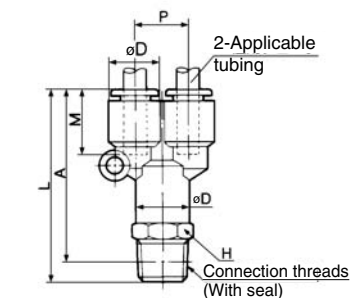
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note 1)	øD	L	P	A*	M	Effective area (mm ²) Urethane	Weight (g)
3.2	M5 x 0.8	10-KQU23-M5	10	9.6		38	9.6	34.5	15.5	2.2	9
	1/8	10-KQU23-01S	11			41		37			
	1/4	10-KQU23-02S	14			44		38		2.9	
4	M5 x 0.8	10-KQU04-M5	11	10.4		39.5	10.4	36	16	2.2	4
	M6 x 1.0	10-KQU04-M6				40		38			
	1/8	10-KQU04-01S				42		40		4.2	
	1/4	10-KQU04-02S				46		40			
6	M5 x 0.8	10-KQU06-M5	13	12.8		42.5	12.8	39	17	2.2	12
	M6 x 1.0	10-KQU06-M6				43		41.5			
	1/8	10-KQU06-01S				45.5		43		10.6	
	1/4	10-KQU06-02S				49		44.5			
8	3/8	10-KQU06-03S	17			51		50			34
	1/8	10-KQU08-01S				52.5		48.5			
	1/4	10-KQU08-02S				55.5		49.5		17.7	
	3/8	10-KQU08-03S				56.5		50			
10	1/4	10-KQU10-02S	19	18.5		61	18.5	55	21	28.4	30
	3/8	10-KQU10-03S				62		55.5			
	1/2	10-KQU10-04S				65		57			
	1/4	10-KQU12-02S	22	20.9		64.5	20.9	58.5	22	45.4	32
12	3/8	10-KQU12-03S				65.5		59			
	1/2	10-KQU12-04S				68.5		60.5			
	3/8	10-KQU16-03S	27	26.5		76	26.5	69.5	25	68.4	106
16	1/2	10-KQU16-04S				79		71		81.1	

* Reference dimensions after R thread installation.
Note 1) øD indicates the maximum diameter.

M5, M6



R



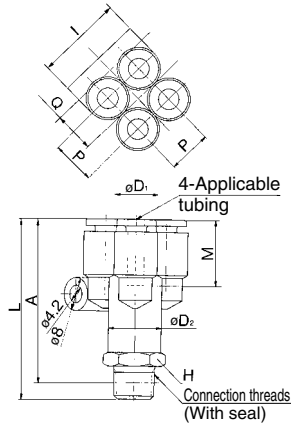
Double branch: 10-KQUD



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note) ϕD_1	Note) ϕD_2	L	I	A *	Q	M	P	Effective area (mm ²) Urethane	Weight (g)
4	1/8	10-KQUD04-01S	13	10.4	12.8	43.5	21	39.5	9.7	16	10.4	4.2	17
	1/4	10-KQUD04-02S	14			47		41					25
6	1/8	10-KQUD06-01S	17	12.8	15.2	50.5	26	46.5	11.7	17	12.8	10.6	29
	1/4	10-KQUD06-02S				53.5		47.5					



* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.



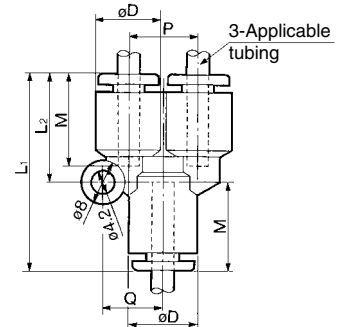
Union "Y": 10-KQU



Applicable tubing O.D. (mm)	Model	Note 1) ϕD	L ₁	L ₂	P	Q	M	Effective area (mm ²) Urethane	Weight (g)
3.2	10-KQU23-00	9.6	33	17.5	9.6	9	15.5	2.9	5
4	10-KQU04-00	10.4	34	18	10.4	9.7	16	4.2	7
6	10-KQU06-00	12.8	37	20	12.8	11.7	17	10.6	9
8	10-KQU08-00	15.2	42.5	24.5	15.2	13.7	18.5	17.7	11
10	10-KQU10-00	18.5	48	27.5	18.5	16.1	21	28.4	16
12	10-KQU12-00	20.9	51	30	20.9	18.1	22	45.4	23
16	10-KQU16-00	26.5	61.5	36.5	26.5	23	25	81.1	54



Note 1) ϕD indicates the maximum diameter.



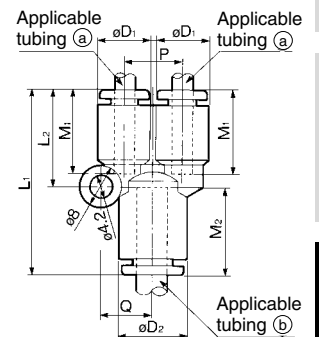
Different diameter union "Y": 10-KQU



Applicable tubing O.D. (mm)		Model	Note) ϕD_1	Note) ϕD_2	L ₁	L ₂	P	Q	M ₁	M ₂	Effective area (mm ²) Urethane	Weight (g)
3.2	4	10-KQU23-04	9.6	10.4	33.5	17.5	9.6	9	15.5	16	2.7	5
4	6	10-KQU04-06	10.4	12.8	35	18	10.4	9.7	16	17	4.2	6
6	8	10-KQU06-08	12.8	15.2	39.5	20	12.8	11.7	17	18.5	10.6	11
8	10	10-KQU08-10	15.2	18.5	45	24.5	15.2	13.7	18.5	21	17.7	18
10	12	10-KQU10-12	18.5	20.9	49	27.5	18.5	16.1	21	22	28.4	27
12	16	10-KQU12-16	26.5	26.5	66.5	41.5	26.5	23	22	25	45.4	100



Note) ϕD_1 , ϕD_2 indicate the maximum diameter.



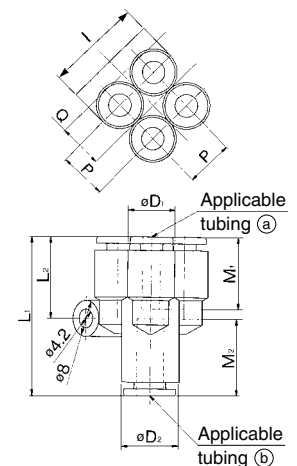
Different diameter double union "Y": 10-KQUD



Applicable tubing O.D. (mm)		Model	Note) ϕD_1	Note) ϕD_2	L ₁	L ₂	P	I	Q	M ₁	M ₂	Effective area (mm ²) Urethane	Weight (g)
4	6	10-KQUD04-06	10.4	12.8	35.5	18.2	10.4	21	9.7	16	17	4.2	10
6	8	10-KQUD06-08	12.8	15.2	40.5	20.3	12.8	26	11.7	17	18.5	10.6	17



Note) ϕD_1 , ϕD_2 indicate the maximum diameter.



One-touch fittings 10-KQ

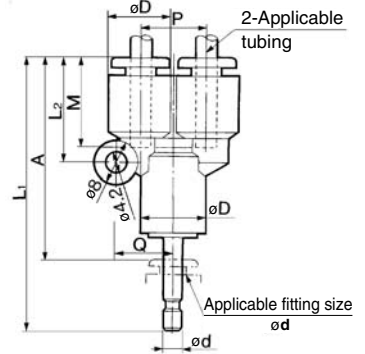
Plug-in "Y": 10-KQU



Applicable tubing O.D. (mm)	Applicable fitting size ϕd	Model	Note 1)		L_1	L_2	P	Q	A	M	Effective area (mm ²) Urethane	Weight (g)	Material	
			ϕD	ϕd									Resin	Metal
3.2	3.2	10-KQU23-99	9.6	50	17.5	9.6	9	35	15.5	2.9	6	6	○	
4	4	10-KQU04-99	10.4	51.5	18	10.4	9.7	35.5	16	4.2	12	12	○	
6	6	10-KQU06-99	12.8	55.5	20	12.8	11.7	38.5	17	10.6	18	18	○	
8	8	10-KQU08-99	15.2	64.5	24.5	15.2	13.7	46	18.5	17.7	21	21		○
10	10	10-KQU10-99	18.5	71.5	27.5	18.5	16.1	50.5	21	28.4	26	26		○
12	12	10-KQU12-99	20.9	75.5	30	20.9	18.1	53.5	22	45.4	32	32		○
16	16	10-KQU16-99	26.5	90	36.5	26.5	23	65	25	81.1	78	78		○



Note 1) ϕD indicates the maximum diameter.



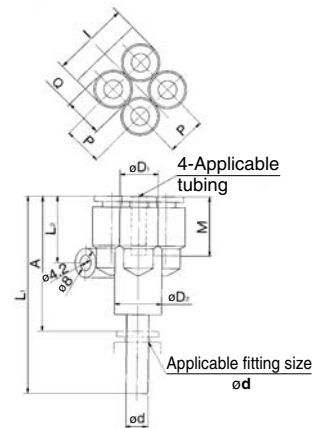
Double plug-in "Y": 10-KQXD



Applicable tubing O.D. (mm)	Applicable fitting size ϕd	Model	Note)		L_1	L_2	I	Q	A	P	M	Effective area (mm ²) Urethane	Weight (g)	Material	
			ϕD_1	ϕD_2										Resin	Metal
4	6	10-KQXD04-06	10.4	12.8	54	18.2	21	9.7	37	10.4	16	4.2	10	○	
6	8	10-KQXD06-08	12.8	15.2	62.5	20.3	26	11.7	44	12.8	17	10.6	23		○



Note) ϕD_1 indicates the maximum diameter.



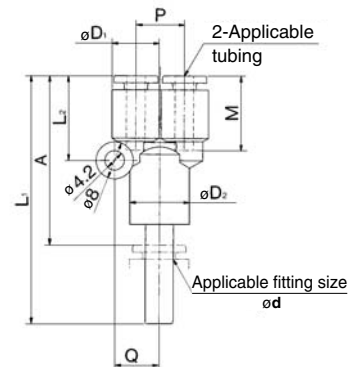
Different diameter plug-in "Y": 10-KQX



Applicable tubing O.D. (mm)	Applicable fitting size ϕd	Model	Note)		L_1	L_2	A	P	Q	M	Effective area (mm ²) Urethane	Weight (g)	Material	
			ϕD_1	ϕD_2									Resin	Metal
4	6	10-KQX04-06	10.4	12.8	53.5	18.5	36.5	10.4	9.7	16	4.2	7	○	
6	8	10-KQX06-08	12.8	15.2	61.5	20.5	43	12.8	11.7	17	10.6	18		○
8	10	10-KQX08-10	15.2	18.5	68.5	24.5	47.5	15.2	13.7	18.5	17.7	28		○
10	12	10-KQX10-12	18.5	20.9	73.5	27.5	51.5	18.5	16.1	21	28.4	42		○



Note) ϕD_1 indicates the maximum diameter.



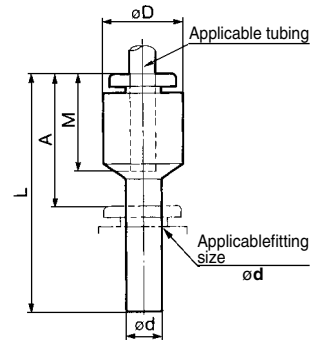
Plug-in reducer: 10-KQR



Applicable tubing O.D. (mm)	Applicable fitting size ϕd	Model	$\phi D^{(Note\ 1)}$	L	A	M	Effective area (mm ²) Urethane	Weight (g)
3.2	4	10-KQR23-04	9.6	33.5	18.5	15.5	2.9	2
4	6	10-KQR04-06	10.4	34.5	17.5	16	4	1.8
	8	10-KQR04-08		36.5	18			2.0
	10	10-KQR04-10	12.8	39.5	18.5			3.3
6	4	10-KQR06-04	12.8	37	21	17	10.4	2.5
	8	10-KQR06-08	12.8	37	18.5			2.5
	10	10-KQR06-10		39.5	18.5			3
	12	10-KQR06-12	15.2	42	20			4.7
8	10	10-KQR08-10	15.2	41	20	18.5	18.0	4.0
	12	10-KQR08-12		42				4.6
10	12	10-KQR10-12	18.5	44.5	23	21	32.8	33
	16	10-KQR10-16	20.9	50.5	25.5			42
12	16	10-KQR12-16	20.9	50.5	25.5	22	38.7	37



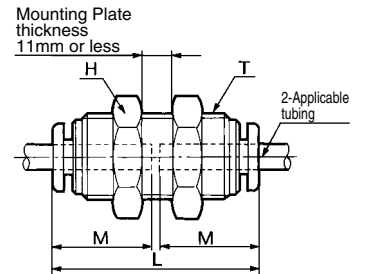
Note 1) ϕD indicates the maximum diameter.



Bulkhead Union: 10-KQE



Applicable tubing O.D. (mm)	Model	T(M)	H (width across flats)	L	Mounting hole	M	Effective area (mm ²) Urethane	Weight (g)
3.2	10-KQE23-00	M12 x 1	14	31.5	13	15.5	2.9	26
4	10-KQE04-00	M12 x 1	14	32.5	13	16	4	26
6	10-KQE06-00	M14 x 1	17	34.5	15	17	10.4	33
8	10-KQE08-00	M16 x 1	19	38	17	18.5	18.0	52
10	10-KQE10-00	M20 x 1	24	42.5	21	21	29.5	70
12	10-KQE12-00	M22 x 1	27	44	23	22	46.1	90
16	10-KQE16-00	M28 x 1.5	32	51	29	25	80.6	115



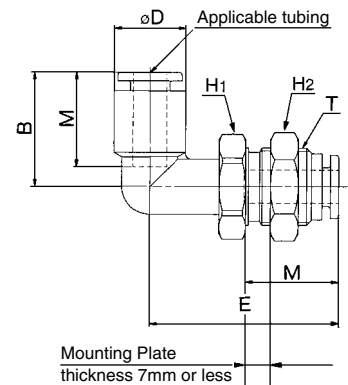
Bulkhead male elbow: 10-KQLE



Applicable tubing O.D. (mm)	Model	T	H ₁ (width across flats)	H ₂ (width across flats)	B	E	$\phi D^{(Note)}$	Mounting hole	M	Effective area (mm ²) Urethane	Weight (g)
4	10-KQLE04-00	M12 x 1	14	14	18.5	31	10.4	13	16	4.2	18
6	10-KQLE06-00	M14 x 1	17	17	20.5	34	12.8	15	17	9.0	25
8	10-KQLE08-00	M16 x 1	17	19	23.5	38.5	15.2	17	18.5	14.9	33
10	10-KQLE10-00	M20 x 1	22	24	26.5	43.5	18.5	21	21	25.0	63
12	10-KQLE12-00	M22 x 1	24	27	28.5	45.5	20.9	23	22	39.7	77



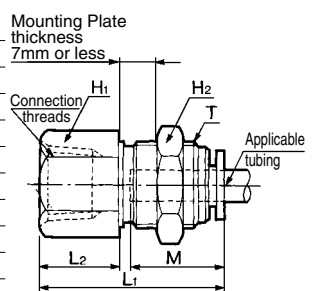
Note) ϕD indicates the maximum diameter.



Bulkhead connector: 10-KQE



Applicable tubing O.D. (mm)	Connection thread Rc	Model	T(M)	H ₁ (width across flats)	H ₂ (width across flats)	L ₁	L ₂	Mounting hole	M	Effective area (mm ²) Urethane	Weight (g)
3.2	1/4	10-KQE23-02	M12 x 1	17	14	31.5	15	13	15.5	2.9	13
4	1/8	10-KQE04-01	M12 x 1	14	14	27.5	11	13	16	4	16
	1/4	10-KQE04-02		17		31	15				35
6	1/8	10-KQE06-01	M14 x 1	17	17	28	11	15	17	10.4	25
	1/4	10-KQE06-02				31.5	15				40
	3/8	10-KQE06-03				33.5	17				29
8	1/8	10-KQE08-01	M16 x 1	17	19	27.5	7.5	17	18.5	18.0	28
	1/4	10-KQE08-02				33	13				27
	3/8	10-KQE08-03				35	15				48
10	1/4	10-KQE10-02	M20 x 1	22	24	34.5	12.5	21	21	29.5	53
	3/8	10-KQE10-03				36.5	15				67
12	3/8	10-KQE12-03	M22 x 1	24	27	37	14	23	22	46.1	92
	1/2	10-KQE12-04				41	18				59
16	3/8	10-KQE16-03	M28 x 1.5	30	32	40	14	29	25	80.6	127
	1/2	10-KQE16-04				44	18				132



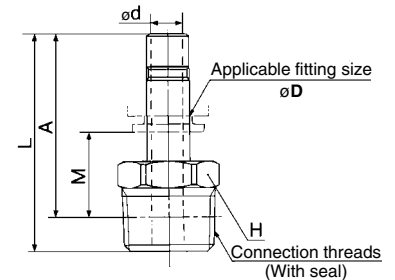
One-touch fittings 10-KQ

Adaptor: 10-KQN



Applicable fitting size ϕd	Connection thread R	Model	H (width across flats)	L	A *	M	ϕd	Weight (g)
4	M5 x 0.8	10-KQN04-M5	7	32	29	13	2.5	2
	1/8	10-KQN04-01S	10	34	30	14	2.5	6
6	M5 x 0.8	10-KQN06-M5	7	33	30	13	2.5	2
	1/8	10-KQN06-01S	10	35	31	14	4.5	5
	1/4	10-KQN06-02S	14	37.5	31.5	14.5	4.5	14
8	1/4	10-KQN08-02S	14	39	33	14.5	6	17
	3/8	10-KQN08-03S	17	41	34.5	16	6	30
10	3/8	10-KQN10-03S	17	46	39.5	18.5	7.5	31

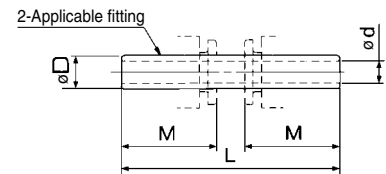
* Reference dimensions after R thread installation.



Nipple: 10-KQN



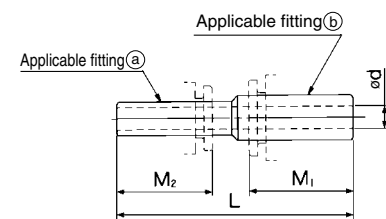
Applicable fitting ϕD	Model	L	M	ϕd	Weight (g)	Material	
						Resin	Metal
4	10-KQN04-99	37	16	2.5	1	○	
6	10-KQN06-99	39	17	4	2	○	
8	10-KQN08-99	43	18.5	6	2	○	
10	10-KQN10-99	49	21	7.5	4	○	
12	10-KQN12-99	52	22	9	20.6		○
16	10-KQN16-99	57	25	13	31		○



Reducer nipple: 10-KQN



Applicable fitting		Model	L	M ₁	M ₂	ϕd	Weight (g)	Material	
(a)	(b)							Resin	Metal
4	6	10-KQN04-06	38	17	16	2.5	2	○	
6	8	10-KQN06-08	42	18.5	17	4	2	○	
8	10	10-KQN08-10	47	21	18.5	6	13.2	○	
10	12	10-KQN10-12	51	22	21	8	18.2		○
12	16	10-KQN12-16	55	25	22	9	29		○

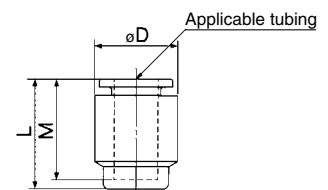


Tube cap: 10-KQC

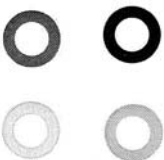


Applicable tubing O.D. (mm)	Model	$\phi D^{(Note)}$	L	M	Weight (g)
4	10-KQC04-00	10.4	17	16	3
6	10-KQC06-00	12.8	18.5	17	3
8	10-KQC08-00	15.2	20.5	18.5	4
10	10-KQC10-00	18.5	23	21	6
12	10-KQC12-00	20.9	24	22	8
16	10-KQC16-00	26.5	28	25	13

Note) ϕD indicates the maximum diameter.

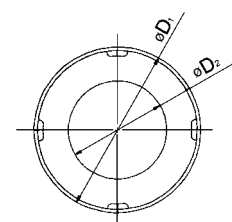


Color cap: 10-KQC



Applicable tubing O.D. (mm)	Model	ϕD_1	ϕD_2	L	Weight (g)	Application
4	10-KQC-04□	10.1	5.2	2.9	0.1	
4	10-KQC-04A-□	8.5	5	2.2	0.1	KQH, KQ2H04-M5, M6 KQS, KQ2S04-M5, M6
4	10-KQC-04B-□	9.7	5	2.2	0.1	KQL, KQ2L04-M5, M6 KQT, KQ2T04-M5, M6 KQY, KQ2Y04-M5, M6
6	10-KQC-06□	12.1	7.2	2.9	0.1	
6	10-KQC-06A-□	10.5	7	2.2	0.1	KQH, KQ2H06-M5, M6 KQS, KQ2S06-M5, M6
6	10-KQC-06B-□	12.0	7	2.2	0.1	KQL, KQ2L06-M5, M6 KQT, KQ2T06-M5, M6 KQY, KQ2Y06-M5, M6
8	10-KQC-08□	14.1	9.2		0.1	
10	10-KQC-10□	17.1	11.2	2.9	0.2	
12	10-KQC-12□	19.1	13.2		0.2	
16	10-KQC-16□	26.3	17.2	3.9	0.3	

Applicable tubing

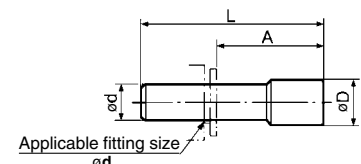


□ — B (Black), R (Red), YR (Orange), BR (Brown), Y (Yellow), G (Green), CB (Sky blue), GR (Gray), W (White), BU (Blue)

Plug: 10-KQP



Applicable fitting size ϕD	Model	ϕD	L	A	Weight (g)
3.2	10-KQP-23	5	31.5	16	1
4	10-KQP-04	6	32	16	1
6	10-KQP-06	8	35	18	1
8	10-KQP-08	10	39	20.5	2
10	10-KQP-10	12	43	22	3.5
12	10-KQP-12	14	45.5	24	5
16	10-KQP-16	20.9	47	22	8



Series 10-KG

Stainless One-touch fittings

Construction

Guide
Collet
Chuck

Large retaining force

Has large retaining force while holding force is increased by the collet.

Seal

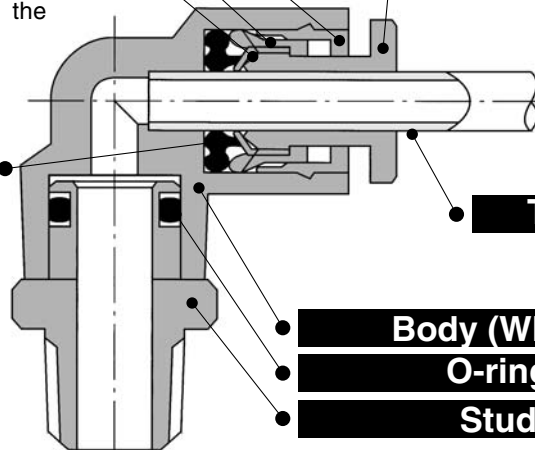
Can be used for a wide range of pressures from a low vacuum up to a pressure of 1.0 MPa

The use of a special profile ensures sealing and reduces resistance when the tube is inserted.

Release button (White)

Light force for removal

When the fitting is removed from the tubing, the chuck and collet are released, thus preventing them from biting into the tube excessively.



Tubing

Body (White)

O-ring

Stud

Effective when piping in a confined space

The body and threaded portion can rotate.

Stainless specifications applicable to corrosive environments

Stainless steel 303 adopted for metal elements

Suitable for use in CRT production lines where contact with copper must be avoided, food processing machines where water or salt water splashes and clean room where discoloration of copper material and corrosion must be avoided.

Applicable Tubing

Tubing material	Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12, ø16

Specifications

Fluid		Air, Water ^{Note 1)}
Maximum operating pressure		1.0MPa
Operating vacuum pressure		−100 kPa
Proof pressure		3.0MPa
Ambient and fluid temperature		−5 to 60°C, Water: 0 to 40°C (No freezing)
Thread	Mounting section	JIS B 0203 (Taper thread for piping)
	Nut section	JIS B0211 Class 2 (Metric fine thread)
Seal (Thread portion)		With seal or none ^{Note 2)}
Grease		Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		Grade 3



Note 1) Applicable for general industrial water. Please consult with SMC if using for other kinds of fluid. Also, the surge pressure must be under the maximum operating pressure.

Note 2) Suffix "S" to the part number, if w/ seal is desired.

Principal Parts Material

Body	Stainless steel 303, PBT
Stud	Stainless steel 303 (Thread portion)
Chuck	Stainless steel 304
Guide	Stainless steel 304, Stainless steel 303, POM
Collet, Release button	POM
Seal, O-ring	NBR



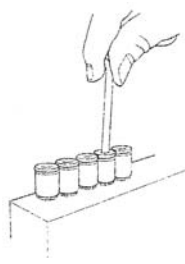
Model

Hex. socket head male connector

10-KGS



Internal hex. allows thread connection by using an allen wrench for confined spaces.

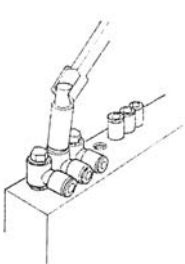


Universal male elbow

10-KGV



Universal male elbow allows thread connection by using a socket wrench for confined spaces.

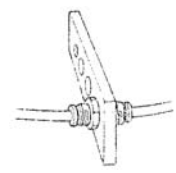


Bulkhead union

10-KGE



Use to connect tubes through a panel.

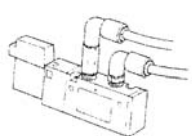


Extended male elbow

10-KGW



Basically, it is used together with male elbow. Different point is that it is used for fittings to avoid from interfering with each other by making the piping two-level.

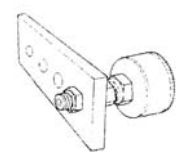


Bulkhead connector

10-KGE



Use to connect male thread and tube through a panel.



Male connector

10-KGH



Use to pipe in the same direction from female thread. Most general style.

Male elbow

10-KGL



Use to pipe at right angles to female thread. Most general style.

Male branch tee

10-KGT



Use to branch line from female thread in both 90° directions.

Female connector

10-KGF



Use to pipe from male thread such as pressure gauge.

Union elbow

10-KGL



Use to connect tubes at right angles.

Union tee

10-KGT



Use to connect tubes in both 90° directions.

Straight union

10-KGH



Use to connect tubes in the same direction.

Plug-in elbow

10-KGL



Use to change by 90° in a tube fetching direction from One-touch fittings.

Different diameter tee

10-KGT



Use to connect tubes with size down in both 90° directions.

Different diameter straight

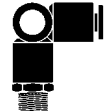
10-KGH



Use to connect different size tubes.

Male delta union

10-KGD



Use to branch line in 90° direction from female thread.

Male run tee

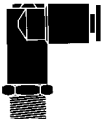
10-KGY



Use to branch line in the same direction from female thread and in 90° direction.

Male branch connector

10-KGLU



Use to branch line at right angles to female thread.

Delta union

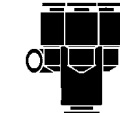
10-KGD



Use to branch line in triple 90° direction.

Different diameter double union "Y"

10-KGUD



Use to four-branch line in the same direction.

Branch union elbow

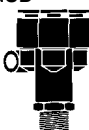
10-KGLU



Use to branch line at right angles.

Delta branch

10-KGUD



Use to four-branch line in the same direction from female thread.

Union "Y"

10-KGU



Use to branch line in the same direction.

Model

Different diameter union "Y"

10-KGU



Use to connect tubes in the same direction, reducing the size of tubes.

Plug-in reducer

10-KGR



Use to change size of One-touch fittings.

Tube cap

10-KGC



Use to plug unused tubing.

Branch "Y"

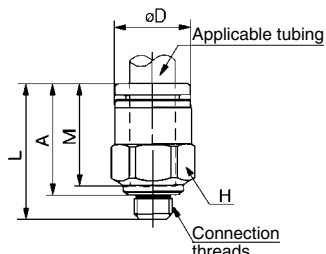
10-KGU



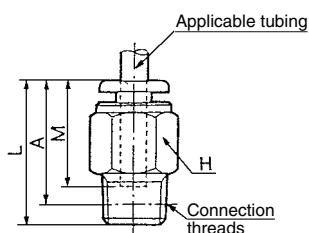
Use to branch line in the same direction from the female thread.

Male connector: 10-KGH

M5



R



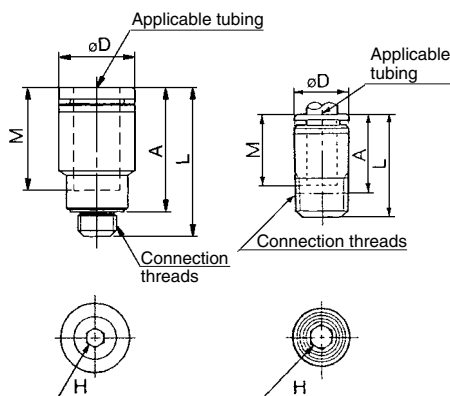
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD ^{Note 1)}	L	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KGH04-M5	8	8	17	13.9	12.7	4	2.4
	1/8	10-KGH04-01	10	—	22	18	16	4	9
	1/4	10-KGH04-02	14	—	19.5	13.5	16	4	16
6	M5 x 0.8	10-KGH06-M5	10	10	17.8	14.7	13.5	4	3.3
	1/8	10-KGH06-01	12	—	22.5	18.5	17	10.4	16
	1/4	10-KGH06-02	14	—	23	17	17	10.4	14
	3/8	10-KGH06-03	17	—	22	15.5	17	10.4	27
8	1/8	10-KGH08-01	14	—	28	24	18.5	18.0	21
	1/4	10-KGH08-02	14	—	26.5	20.5	18.5	18.0	19
	3/8	10-KGH08-03	17	—	22	15.5	18.5	18.0	26
10	1/8	10-KGH10-01	17	—	30	26	21	29.5	19
	1/4	10-KGH10-02	17	—	33.5	27.5	21	29.5	30
	3/8	10-KGH10-03	17	—	29	22.5	21	29.5	30
	1/2	10-KGH10-04	22	—	27	19	21	29.5	53
12	1/4	10-KGH12-02	19	—	34.5	28.5	22	46.1	42
	3/8	10-KGH12-03	19	—	30	23.5	22	46.1	34
	1/2	10-KGH12-04	22	—	30	22	22	46.1	51
16	3/8	10-KGH16-03	24	—	39.5	33	25	68	61
	1/2	10-KGH16-04	24	—	35.5	27.5	25	80.6	47

* Reference dimensions after R thread installation.
Note 1) øD indicates the maximum diameter.

Hexagon socket head male connector: 10-KGS

M5

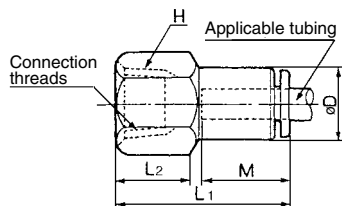
R



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD ^{Note 1)}	L	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KGS04-M5	2.5	8	18.7	15.6	12.7	4	2.7
	1/8	10-KGS04-01	3	9.8	23	19	16	3.6	8
6	M5 x 0.8	10-KGS06-M5	2.5	10	19.5	16.4	13.5	4	3.3
	1/8	10-KGS06-01	4	11.8	24	20	17	9.9	9
	1/4	10-KGS06-02	4	13.8	24	18	17	10.0	15
8	1/8	10-KGS08-01	5	14	28	24	18.5	16.2	12
	1/4	10-KGS08-02	6	14	25.5	19.5	18.5	16.2	11
	3/8	10-KGS08-03	6	14	27.5	21.5	18.5	16.2	24
10	1/8	10-KGS10-01	5	17	30	26	21	16.2	18
	1/4	10-KGS10-02	8	17	27.5	21.5	21	26.6	12
	3/8	10-KGS10-03	8	17	27.5	21	21	26.6	19
	1/2	10-KGS10-04	8	22	28	20	21	26.6	35
12	1/4	10-KGS12-02	8	19	33.5	27.5	22	44.5	23
	3/8	10-KGS12-03	10	19	29	22.5	22	44.5	18
	1/2	10-KGS12-04	10	22	28	20	22	44.5	30

* Reference dimensions after R thread installation.
Note 1) øD indicates the maximum diameter.

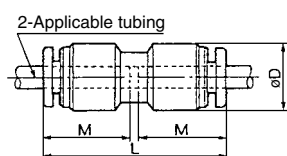
Female connector: 10-KGF



Applicable tubing O.D. (mm)	Connection thread Rc	Model	H (width across flats)	øD ^{Note)}	L ₁	L ₂	M	Effective area (mm ²) Urethane	Weight (g)
4	1/8	10-KGF04-01	14	10	27	11	16	4	15
	1/4	10-KGF04-02	17		31	14			23
6	1/8	10-KGF06-01	14	12	27.5	11	17	10.4	15
	1/4	10-KGF06-02	17		31	13			22
	3/8	10-KGF06-03	19		33.5	15			25
	1/2	10-KGF06-04	21		35.5	17			28
8	1/8	10-KGF08-01	14	14	29	11	18.5	18.0	17
	1/4	10-KGF08-02	17		32.5	13			24
	3/8	10-KGF08-03	19		33.5	14			24
	1/2	10-KGF08-04	21		35.5	15			27
10	1/4	10-KGF10-02	17	17	34.5	14	21	29.5	27
	3/8	10-KGF10-03	19		36.5	15			30
12	1/4	10-KGF12-02	19	19	35	14	22	46.1	36
	3/8	10-KGF12-03	19		37				31
	1/2	10-KGF12-04	24		41				52
	3/4	10-KGF12-05	27		45	18			61

Note) øD indicates the maximum diameter.

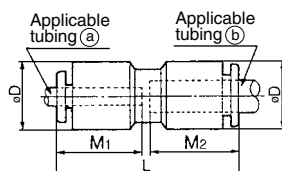
Straight union: 10-KGH



Applicable tubing O.D. (mm)	Model	øD ^{Note)}	L	M	Effective area (mm ²) Urethane	Weight (g)
4	10-KGH04-00	10.4	32.5	16	4	3
6	10-KGH06-00	12.8	34.5	17	10.4	4
8	10-KGH08-00	15.2	38.5	18.5	18.0	6
10	10-KGH10-00	18.5	42.5	21	29.5	11
12	10-KGH12-00	20.9	44.5	22	46.1	14

Note) øD indicates the maximum diameter.

Different diameter straight: 10-KGH



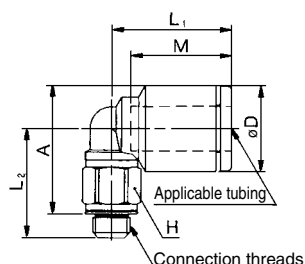
Applicable tubing O.D. (mm) (a)	Applicable tubing O.D. (mm) (b)	Model	øD ^{Note)}	L	M ₁	M ₂	Effective area (mm ²) Urethane	Weight (g)
4	6	10-KGH04-06	12.8	34.5	16	17	4	5
6	8	10-KGH06-08	15.2	38.5	17	18.5	10.4	6
8	10	10-KGH08-10	18.5	42	18.5	21	18.0	11
10	12	10-KGH10-12	20.9	44.5	21	22	29.5	14

Note) øD indicates the maximum diameter.

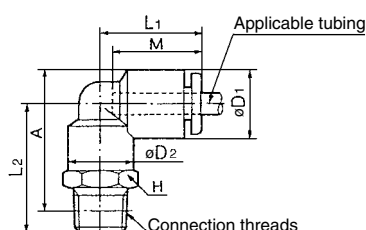
Male elbow: 10-KGL



M5

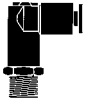


R



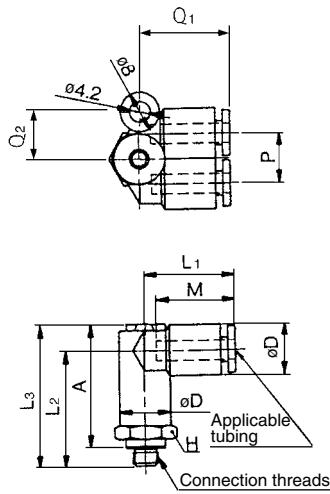
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD ₁ ^{Note 1)}	øD ₂	L ₁	L ₂	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KGL04-M5	7	9.3	—	15.6	13.7	15.3	12.7	3.5	2.7
	1/8	10-KGL04-01	10	10.4	10	18	22	23	16	4.2	10
	1/4	10-KGL04-02	14	10.4	10	18	26	25	16	4.2	19
6	M5 x 0.8	10-KGL06-M5	7	11.6	—	16.1	14.7	17.4	13.5	3.5	3.2
	1/8	10-KGL06-01	10	12.8	10	20	23	25.5	17	9.0	12
	1/4	10-KGL06-02	14				27	27.5			10
	3/8	10-KGL06-03	17				29	29			33
8	1/8	10-KGL08-01	12	15.2	12	23	24.5	28	18.5	14.9	13
	1/4	10-KGL08-02	14				28.5	30			21
	3/8	10-KGL08-03	17				30.5	31.5			35
	1/2	10-KGL08-04	21				33	34			41
10	1/8	10-KGL10-01	17	18.5	17	26.5	27	32	21	14.9	25
	1/4	10-KGL10-02	17				30	33			26
	3/8	10-KGL10-03	19				32	34.5			36
	1/2	10-KGL10-04	22				36	37			63
12	1/4	10-KGL12-02	17	20.9	17	28.5	31	35.5	22	39.7	28
	3/8	10-KGL12-03	19				33	37			38
	1/2	10-KGL12-04	22				37	39.5			65
	3/4	10-KGL12-05	25				41	42			81
16	3/8	10-KGL16-03	22	26.5	20.9	34	38	44.5	25	59.6	101
	1/2	10-KGL16-04	24				41	46		70.6	105

* Reference dimensions after R thread installation.
Note 1) øD₁ indicates the maximum diameter.



Male branch connector: 10-KGLU

M5

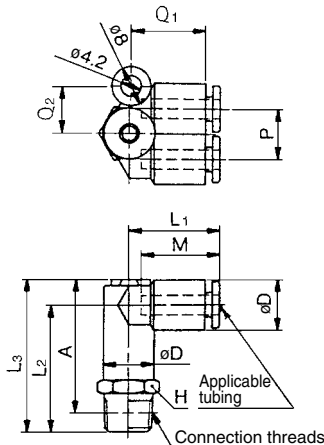


Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	ϕD_{Note}	L1	L2	L3	A *	M	P	Q1	Q2	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KGLU04-M5	11	10.4	18.5	24	29.5	25.5	16	10.4	18.5	10	4.1	10
	1/8	10-KGLU04-01	11			26.5	32	27.5					4.1	12
	1/4	10-KGLU04-02	14			30.5	36	30					4.1	21
6	M5 x 0.8	10-KGLU06-M5	13	12.8	21	26.5	33	29.5	17	12.8	20.5	12	4.3	13
	1/8	10-KGLU06-01	13			29.5	36	32					11.0	15
	1/4	10-KGLU06-02	14			33	39.5	33.5					11.0	22
	3/8	10-KGLU06-03	17			35	41.5	35					11.0	35
8	1/8	10-KGLU08-01	17	15.2	24	34	41.5	38	18.5	15.2	24.5	14	18.2	27
	1/4	10-KGLU08-02	17			37	44.5	38.5					18.2	35
	3/8	10-KGLU08-03	17			38	45.5	39					18.2	35
10	1/4	10-KGLU10-02	19	18.5	27	40	49.5	43.5	21	18.5	28	16	29.0	41
	3/8	10-KGLU10-03	19			41	50.5	44					29.0	42
	1/2	10-KGLU10-04	22			44.5	54	45.5					29.0	64
12	1/4	10-KGLU12-02	22	20.9	29	42.5	53	47	22	20.9	30	18	45.2	57
	3/8	10-KGLU12-03	22			43.5	54	47.5					45.2	58
	1/2	10-KGLU12-04	22			46.5	57	49					45.2	65



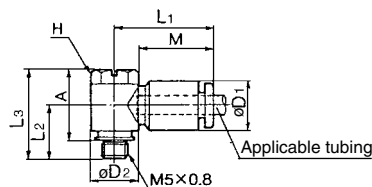
* Reference dimensions after R thread installation.
Note) ϕD indicates the maximum diameter.

R



Universal male elbow: 10-KGV

M5

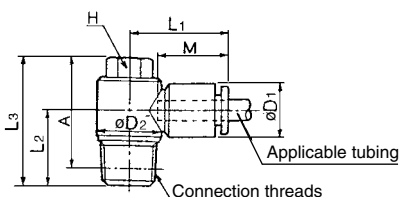


Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	ϕD_1	ϕD_2	L1	L2	L3	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KGV04-M5	8	10.4	9.8	20.5	11	18.5	15	16	2.9	6
	1/8	10-KGV04-01	8		13.4	22	14.5	26.5	22.5		2.9	14
6	M5 x 0.8	10-KGV06-M5	8	12.8	9.8	23.5	12	18.5	15	17	3.8	7
	1/8	10-KGV06-01	8		13.4	24	14.5	26.5	22.5		5.9	15
	1/4	10-KGV06-02	10		15.3	23.5	18.5	31	25		5.9	26
8	1/8	10-KGV08-01	12	15.2	17.6	28.5	15.5	28.5	24.5	18.5	11.2	24
	1/4	10-KGV08-02	12		18.5	31.5	25.5	31.5	25.5		14.3	30
	3/8	10-KGV08-03	14		20.6	27.5	20.5	36.5	30		14.3	47
10	1/4	10-KGV10-02	14	18.5	20.6	31	19.5	35.5	29.5	21	20.3	40
	3/8	10-KGV10-03	14		20.6	31	20.5	36.5	30		20.3	49
12	3/8	10-KGV12-03	17	20.9	25.2	34	22	38.5	32	22	30.8	63
	1/2	10-KGV12-04	17		25.2	34	25	41.5	33.5		30.8	80



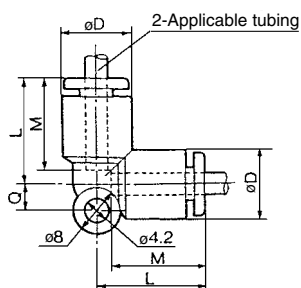
* Reference dimensions after R thread installation.
Note) ϕD_1 indicates the maximum diameter.

R





Union elbow: 10-KGL



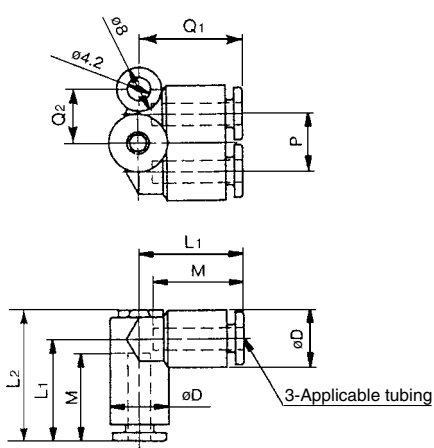
Applicable tubing O.D. (mm)	Model	ϕD ^{Note 1)}	L	Q	M2	Effective area (mm ²) Urethane	Weight (g)
4	10-KGL04-00	10.4	18	4.5	16	4.2	6
6	10-KGL06-00	12.8	20	5.3	17	9.0	6
8	10-KGL08-00	15.2	23	6	18.5	14.9	10
10	10-KGL10-00	18.2	26.5	6.8	21	25.0	17
12	10-KGL12-00	20.9	28.5	7.5	22	39.7	21
16	10-KGL16-00	26.5	34	10	25	70.6	29



Note 1) ϕD indicates the maximum diameter.



Branch union elbow: 10-KGLU



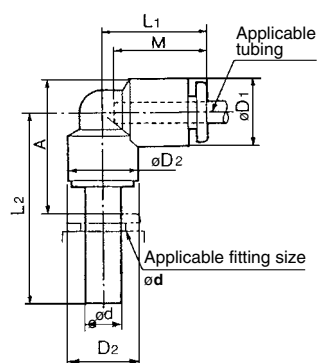
Applicable tubing O.D. (mm)	Model	ϕD ^{Note)}	L ₁	L ₂	Q ₁	Q ₂	M	P	Effective area (mm ²) Urethane	Weight (g)
4	10-KGLU04-00	10.4	18.5	24	18.5	10	16	10.4	4.1	6
6	10-KGLU06-00	12.8	21	27.5	20.5	12	17	12.8	11.0	8
8	10-KGLU08-00	15.2	24	32	24.5	14	18.5	15.2	18.2	15
10	10-KGLU10-00	18.5	27	36.5	28	16	21	18.5	29.0	25
12	10-KGLU12-00	20.9	29	40	30	18	22	20.9	45.2	32



Note) ϕD indicates the maximum diameter.



Plug-in elbow: 10-KGL



Applicable tubing O.D. (mm)	Applicable fitting size ϕd	Model	ϕD_1 ^{Note 1)}	ϕD_2	L ₁	L ₂	A	M	Effective area (mm ²) Urethane	Weight (g)
4	4	10-KGL04-99	10.4	8	18	25	14.5	16	4.2	8
6	6	10-KGL06-99	12.8	10	20	27.5	17	17	9.0	10
8	8	10-KGL08-99	15.2	12	22.5	31.5	21	18.5	14.9	14
10	10	10-KGL10-99	18.5	14	25.5	35.5	23.5	21	25.0	25
12	12	10-KGL12-99	20.9	16	27	37.5	26	22	39.7	28

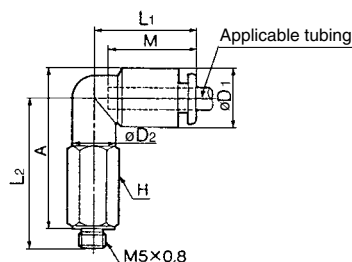


Note) ϕD_1 indicates the maximum diameter.

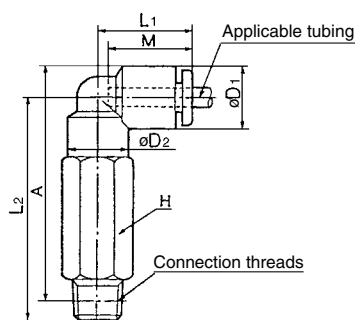


Extended male elbow: 10-KGW

M5



R

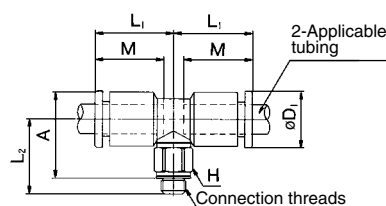


Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD ₁ (Note 1)	øD ₂	L ₁	L ₂	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KGW04-M5	8	10.4	8	18	30	32	16	3.0	11
	1/8	10-KGW04-01	10				37.5	38.5		4.0	23
	1/4	10-KGW04-02	14				43.5	42.5		3.0	38
6	M5 x 0.8	10-KGW06-M5	8	12.8	8	20	30.5	33.5	17	3.0	11
	1/8	10-KGW06-01	10				40	42.5		8.6	26
	1/4	10-KGW06-02	14				46	46.5		8.6	41
	3/8	10-KGW06-03	17				48	48		8.6	67
8	1/8	10-KGW08-01	12	15.2	12	23	43.5	47	18.5	14.2	30
	1/4	10-KGW08-02	14				49.5	51		14.2	47
	3/8	10-KGW08-03	17				51.5	52.5		14.2	74
10	1/4	10-KGW10-02	17	18.5	17	26.5	56.5	59.5	21	23.8	66
	3/8	10-KGW10-03	17				58.5	61		23.8	76
	1/2	10-KGW10-04	22				65	66		23.8	145
12	1/4	10-KGW12-02	17	20.9	17	28.5	57.5	62	22	37.7	68
	3/8	10-KGW12-03	17				59.5	63.5		37.7	78
	1/2	10-KGW12-04	22				66	68.5		37.7	147

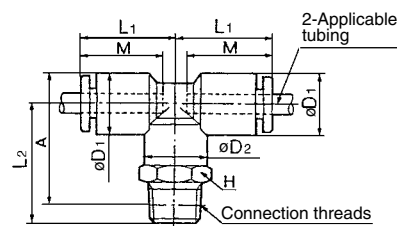

 * Reference dimensions after R thread installation.
 Note 1) øD₁ indicates the maximum diameter.


Male branch tee: 10-KGT

M5



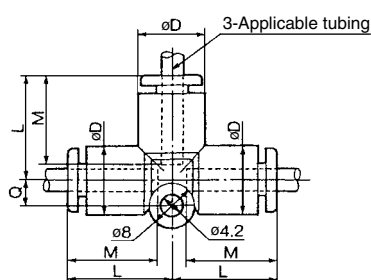
R



Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD ₁ (Note 1)	øD ₂	L ₁	L ₂	A *	M	Effective area (mm ²) Urethane	Weight (g)
4	M5 x 0.8	10-KGT04-M5	7	9.3	—	15.6	13.7	15.3	12.7	4.5	3.5
	1/8	10-KGT04-01	10	10.4	10	18	22	23	16	4.1	13
	1/4	10-KGT04-02	14	10.4	10	18	26	25	16	4.1	19
6	M5 x 0.8	10-KGT06-M5	7	11.6	—	16.1	14.7	17.4	13.5	4.5	4.4
	1/8	10-KGT06-01	10	12.8	10	20	23	25.5	17	11.0	12
	1/4	10-KGT06-02	14				27	27.5		11.0	20
	3/8	10-KGT06-03	17				29	29		11.0	34
8	1/8	10-KGT08-01	12	15.2	12	23	24.5	28	18.5	18.2	14
	1/4	10-KGT08-02	14				28.5	30		18.2	22
	3/8	10-KGT08-03	17				30.5	31.5		18.2	36
10	1/8	10-KGT10-01	17	18.5	17	26.5	27	32	21	29.0	31
	1/4	10-KGT10-02	17				30	33		29.0	29
	3/8	10-KGT10-03	17				32	34.5		29.0	39
	1/2	10-KGT10-04	22				36	37		29.0	66
12	1/4	10-KGT12-02	17	20.9	17	28.5	31	35.5	22	45.2	31
	3/8	10-KGT12-03	17				33	37		45.2	41
	1/2	10-KGT12-04	22				37	39.5		45.2	68
16	3/8	10-KGT16-03	22	26.5	20.9	34	38	44.5	25	59.6	112
	1/2	10-KGT16-04	22				40.5	46		84	116


 * Reference dimensions after R thread installation.
 Note 1) øD₁ indicates the maximum diameter.


Union tee: 10-KGT

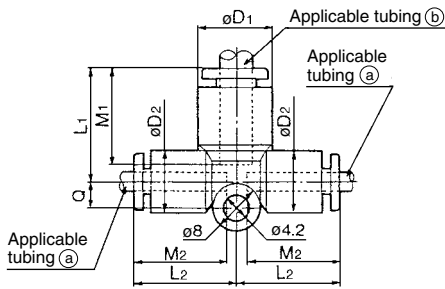


Applicable tubing O.D. (mm)	Model	øD (Note 1)	L	Q	M	Effective area (mm ²) Urethane	Weight (g)
4	10-KGT04-00	10.4	18	4.5	16	4.4	7
6	10-KGT06-00	12.8	20	5.3	17	10.6	10
8	10-KGT08-00	15.2	23	6	18.5	17.7	15
10	10-KGT10-00	18.5	26.5	6.8	21	28.4	25
12	10-KGT12-00	20.9	28.5	7.5	22	45.4	29
16	10-KGT16-00	26.5	34	10	25	70.6	40



Note 1) øD indicates the maximum diameter.

Different diameter tee: 10-KGT



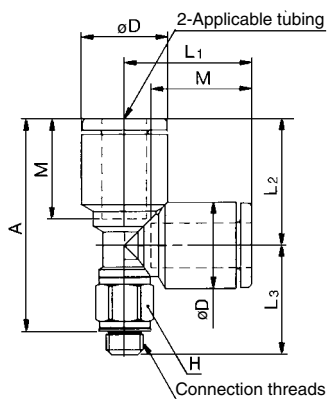
Applicable tubing O.D. (mm)		Model	øD1 ^{Note1)}	øD2	L1	L2	Q	M1	M2	Effective area (mm ²) Urethane	Weight (g)
(a)	(b)										
4	6	10-KGT04-06	12.8	10.4	19.5	18	4.5	17	16	6.5	5
6	8	10-KGT06-08	15.2	12.8	22.5	20	5.3	18.5	17	16.4	8
8	10	10-KGT08-10	18.5	15.2	26.5	23	6	21	18.5	27.2	14
10	12	10-KGT10-12	20.9	18.5	28.5	26.5	6.8	22	21	44.5	21

Note) øD1 indicates the maximum diameter.

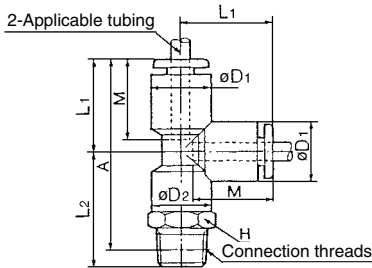
Male run tee: 10-KGY



M5



R



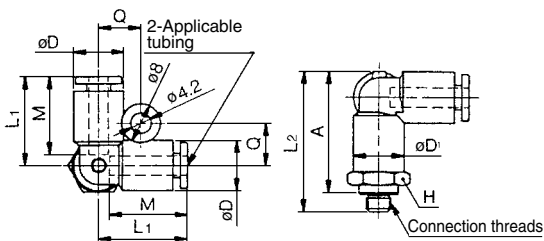
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD1 ^{Note 1)}	øD2	L1	L2	L3	A *	M	Effective area (mm ²)	Weight (g)
											Urethane	
4	M5 x 0.8	10-KGY04-M5	7	9.3	—	15.6	13.7	14.8	25.4	12.7	4.5	3.5
	1/8	10-KGY04-01	10	10.4	10	18	22	—	36	16	4.4	13
	1/4	10-KGY04-02	14				26		38			19
6	M5 x 0.8	10-KGY06-M5	7	11.6	—	17.1	14.7	17.1	28.7	13.5	4.5	4.5
	1/8	10-KGY06-01	10				23		39			12
	1/4	10-KGY06-02	14	12.8	10	20	27		41	17	10.6	20
	3/8	10-KGY06-03	17				29		42.5			34
8	1/8	10-KGY08-01	12				24.5		43.5	17	10.6	14
	1/4	10-KGY08-02	14	15.2	12	23	28.5		45.5	18.5	17.7	22
	3/8	10-KGY08-03	17				30.5		47			36
10	1/8	10-KGY10-01					27		49.5			31
	1/4	10-KGY10-02	17	18.5	17	26.5	30	—	50.5	21	28.4	29
	3/8	10-KGY10-03					32		52			39
	1/2	10-KGY10-04	22				36		54.5			66
12	1/4	10-KGY12-02	17	20.9	17	28.5	31		53.5	22	45.4	31
	3/8	10-KGY12-03					33		55			41
	1/2	10-KGY12-04	22				37		57.5			68
16	3/8	10-KGY16-03	22	26.5	20.9	34	38		65.5	25	68	112
	1/2	10-KGY16-04					41		67		94.9	116

* Reference dimensions after R thread installation.
Note 1) øD1 indicates the maximum diameter.

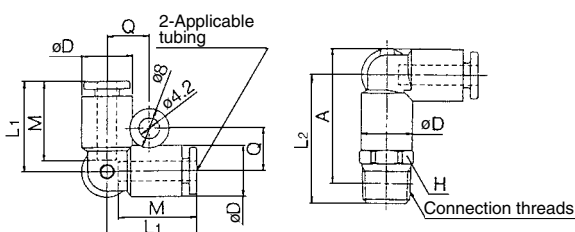
Male delta union: 10-KGD



M5



R

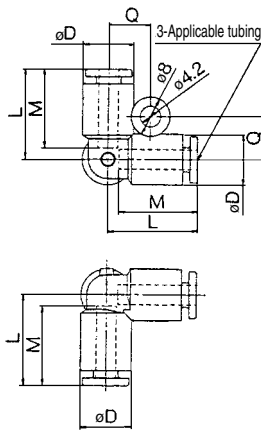


Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	øD ^{Note)}	L ₁	L ₂	A [*]	M	Q	Effective area (mm ²)	Weight (g)		
										Urethane			
4	M5 x 0.8	10-KGD04-M5	11	10.4	18.5	24	25.5	16	8.7	4.3	10		
	1/8	10-KGD04-01	14			26.5	27.5			6.0	12		
	1/4	10-KGD04-02	14			30.5	30			21			
6	M5 x 0.8	10-KGD06-M5	13	12.8	20.5	26	28.5	17	9.9	4.3	12		
	1/8	10-KGD06-01	14			29	31.5			11.0	14		
	1/4	10-KGD06-02	14			32.5	33				21		
	3/8	10-KGD06-03	17			34.5	34.5				34		
8	1/8	10-KGD08-01	17	15.2	23.5	33.5	37	18.5	11.1	18.2	26		
	1/4	10-KGD08-02				36.5	38				37.5	38.5	35
	3/8	10-KGD08-03											
10	1/4	10-KGD10-02	19	18.5	26.5	39.5	43	21	12.8	29.0	39		
	3/8	10-KGD10-03				40.5	43.5				40		
	1/2	10-KGD10-04				22	44				45	62	
12	1/4	10-KGD12-02	22	20.9	28.5	42	46.5	22	13.9	45.2	55		
	3/8	10-KGD12-03				43	47				56		
	1/2	10-KGD12-04				46	48.5				63		

* Reference dimensions after R thread installation.
Note) øD indicates the maximum diameter.



Delta union: 10-KGD



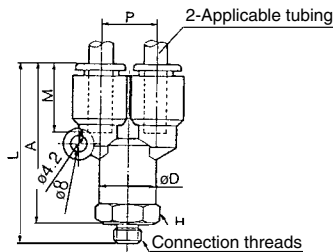
Applicable tubing O.D. (mm)	Model	ØD ^{Note)}	L	Q	M	Effective area (mm ²)	Weight (g)
						Urethane	
4	10-KGD04-00	10.4	18.5	8.7	16	4.1	5
6	10-KGD06-00	12.8	20.5	9.9	17	11.0	7
8	10-KGD08-00	15.2	23.5	11.1	18.5	18.2	11
10	10-KGD10-00	18.5	26.5	12.8	21	29.0	19
12	10-KGD12-00	20.9	28.5	13.9	22	45.2	24



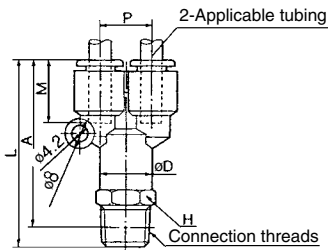
Note) ØD indicates the maximum diameter.

Branch "Y": 10-KGU

M5



R

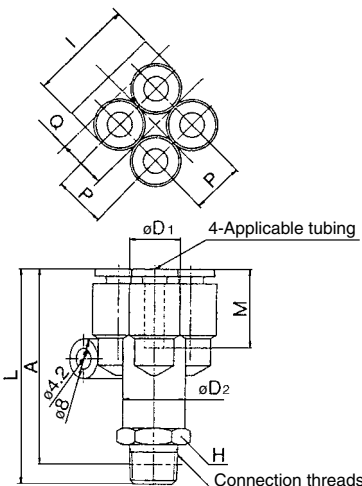


Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note) øD	L	P	A *	M	Effective area (mm ²)	Weight (g)
									Urethane	
4	M5 x 0.8	10-KGU04-M5	11	10.4	39.5	10.4	36	16	2.2	4
	1/8	10-KGU04-01	42		38		4.2		11	
	1/4	10-KGU04-02	46		40				20	
6	M5 x 0.8	10-KGU06-M5	13	12.8	42.5	12.8	39	17	2.2	12
	1/8	10-KGU06-01	45.5		41.5		10.6		11	
	1/4	10-KGU06-02	49		43				21	
	3/8	10-KGU06-03	51		44.5				34	
8	1/8	10-KGU08-01	17	15.2	52.5	15.2	48.5	18.5	17.7	15
	1/4	10-KGU08-02			55.5		49.5			23
	3/8	10-KGU08-03			56.5		50			35
10	1/4	10-KGU10-02	19	18.5	61	18.5	55	21	28.4	30
	3/8	10-KGU10-03			62		55.5			40
	1/2	10-KGU10-04			65		57			65
12	1/4	10-KGU12-02	22	20.9	64.5	20.9	58.5	22	45.4	32
	3/8	10-KGU12-03			65.5		59			40
	1/2	10-KGU12-04			68.5		60.5			65



* Reference dimensions after R thread installation.
Note) ØD indicates the maximum diameter.

Double branch: 10-KGUD



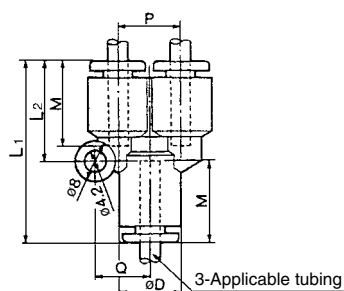
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	Note) ØD1	Note) ØD2	L	I	A *	Q	M	P	Effective area (mm ²)	Weight (g)
												Urethane	
4	1/8	10-KGUD04-01	13	10.4	12.8	43.5	21	39.5	9.7	16	10.4	4.2	17
	1/4	10-KGUD04-02	14										25
6	1/8	10-KGUD06-01	17	12.8	15.2	50.5	26	46.5	11.7	17	12.8	10.6	29
	1/4	10-KGUD06-02											



* Reference dimensions after R thread installation.
Note) ØD indicates the maximum diameter.



Union "Y": 10-KGU

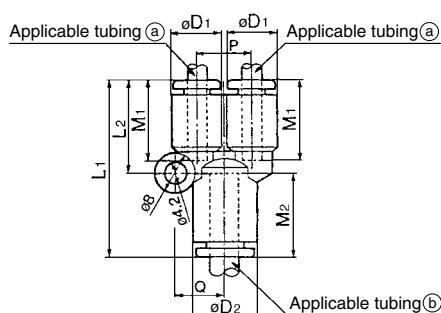


Applicable tubing O.D. (mm)	Model	Note) øD	L ₁	L ₂	P	Q	M	Effective area (mm ²)	Weight (g)
								Urethane	
4	10-KGU04-00	10.4	34	18	10.4	9.7	16	4.2	7
6	10-KGU06-00	12.8	37	20	12.8	11.7	17	10.6	9
8	10-KGU08-00	15.2	42.5	24.5	15.2	13.7	18.5	17.7	11
10	10-KGU10-00	18.5	48	27.5	18.5	16.1	21	28.4	16
12	10-KGU12-00	20.9	51	30	20.9	18.1	22	45.4	23

Note) øD indicates the maximum diameter.



Different diameter union "Y": 10-KGU

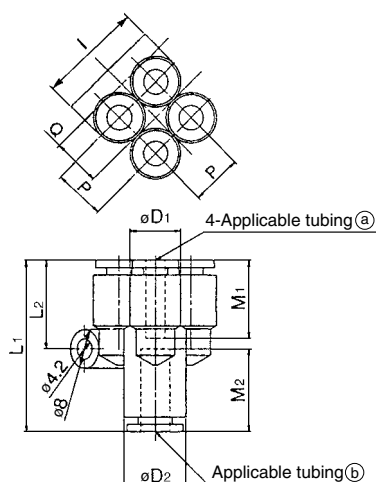


Applicable tubing O.D. (mm)		Model	Note) øD ₁	Note) øD ₂	L ₁	L ₂	P	Q	M ₁	M ₂	Effective area (mm ²)	Weight (g)
(a)	(b)										Urethane	
4	6	10-KGU04-06	10.4	12.8	35	18	10.4	9.7	16	17	4.2	6
6	8	10-KGU06-08	12.8	15.2	39.5	20	12.8	11.7	17	18.5	10.6	11
8	10	10-KGU08-10	15.2	18.5	45	24.5	15.2	13.7	18.5	21	17.7	18
10	12	10-KGU10-12	18.5	20.9	49	27.5	18.5	16.1	21	22	28.4	27

Note) øD₁ and øD₂ indicate the maximum diameter.



Different diameter double union "Y": 10-KGUD

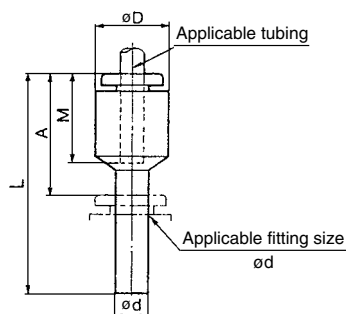


Applicable tubing O.D. (mm)		Model	Note) øD ₁	Note) øD ₂	L ₁	L ₂	P	I	Q	M ₁	M ₂	Effective area (mm ²)	Weight (g)
(a)	(b)											Urethane	
4	6	10-KGUD04-06	10.4	12.8	35.5	18.2	10.4	21	9.7	16	17	4.2	10
6	8	10-KGUD06-08	12.8	15.2	40.5	20.3	12.8	26	11.7	17	18.5	10.6	17

Note) øD₁ and øD₂ indicate the maximum diameter.



Plug-in reducer: 10-KGR



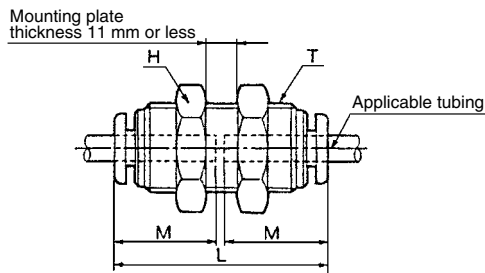
Applicable tubing O.D. (mm)	Applicable fitting size ød	Model	Note 1) øD	L	A	M	Effective area (mm ²)	Weight (g)
							Urethane	
4	6	10-KGR04-06	10.4	34.5	17.5	16	4	1.8
	8	10-KGR04-08		36.5	18			2.0
	10	10-KGR04-10	12.8	39.5	18.5			3.3
6	4	10-KGR06-04	12.8	37	21	17	10.4	3
	8	10-KGR06-08		37	18.5			2.5
	10	10-KGR06-10		39.5				3
	12	10-KGR06-12	15.2	42	20			4.7
8	10	10-KGR08-10	15.2	41	20	18.5	18.0	4.0
	12	10-KGR08-12		42				4.6
10	12	10-KGR10-12	18.5	44.5	23	21	32.8	33
	16	10-KGR10-16	20.9	50.5	25.5			42
12	16	10-KGR12-16	20.9	50.5	25.5	22	38.7	37

Note) øD indicates the maximum diameter.





Bulkhead union: 10-KGE

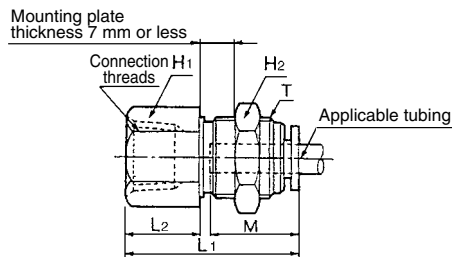


Applicable tubing O.D. (mm)	Model	T (M)	H (width across flats)	L	Mounting hole	M	Effective area (mm ²)	Weight (g)
							Urethane	
4	10-KGE04-00	M12 x 1	14	32.5	13	16	4	26
6	10-KGE06-00	M14 x 1	17	34.5	15	17	10.4	33
8	10-KGE08-00	M16 x 1	19	38	17	18.5	18.0	52
10	10-KGE10-00	M20 x 1	24	42.5	21	21	29.5	70
12	10-KGE12-00	M22 x 1	27	44	23	22	46.1	90
16	10-KGE16-00	M28 x 1.5	32	51	29	25	80.6	115

Air cylinder

Rotary actuator

Bulkhead connector: 10-KGE



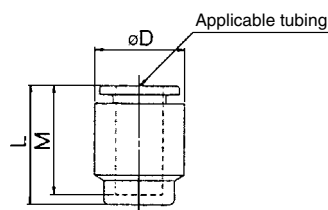
Applicable tubing O.D. (mm)	Connection thread Rc	Model	T (M)	H1 (width across flats)	H2 (width across flats)	L1	L2	Mounting hole	M	Effective area (mm ²)	Weight (g)
										Urethane	
4	1/8	10-KGE04-01	M12 x 1	14	14	27.5	11	13	16	4	16
	1/4	10-KGE04-02		17		31	15				35
6	1/8	10-KGE06-01	M14 x 1	17	17	28	11	15	17	10.4	30
	1/4	10-KGE06-02				31.5	15				29
	3/8	10-KGE06-03				33.5	17				28
8	1/8	10-KGE08-01	M16 x 1	17	19	27.5	7.5	17	18.5	18.0	27
	1/4	10-KGE08-02				33	13				48
	3/8	10-KGE08-03				35	15				53
10	1/4	10-KGE10-02	M20 x 1	22	24	34.5	12.5	21	21	29.5	67
	3/8	10-KGE10-03				36.5	14				92
12	3/8	10-KGE12-03	M22 x 1	24	27	37	14	23	22	46.1	59
	1/2	10-KGE12-04				41	18				127
16	3/8	10-KGE16-03	M28 x 1.5	30	32	40	14	29	25	80.6	132
	1/2	10-KGE16-04				44	18				

Air gripper

Directional control valve

Flow control equipment

Tube cap: 10-KGC



Applicable tubing O.D. (mm)	Model	Note) øD	L	M	Weight (g)
4	10-KGC04-00	10.4	17	16	3
6	10-KGC06-00	12.8	18.5	17	3
8	10-KGC08-00	15.2	20.5	18.5	4
10	10-KGC10-00	18.5	23	21	6
12	10-KGC12-00	20.9	24	22	8
16	10-KGC16-00	26.5	28	25	13



Note) øD indicates the maximum diameter.

Filter, Pressure control equipment

Fittings & Tubing

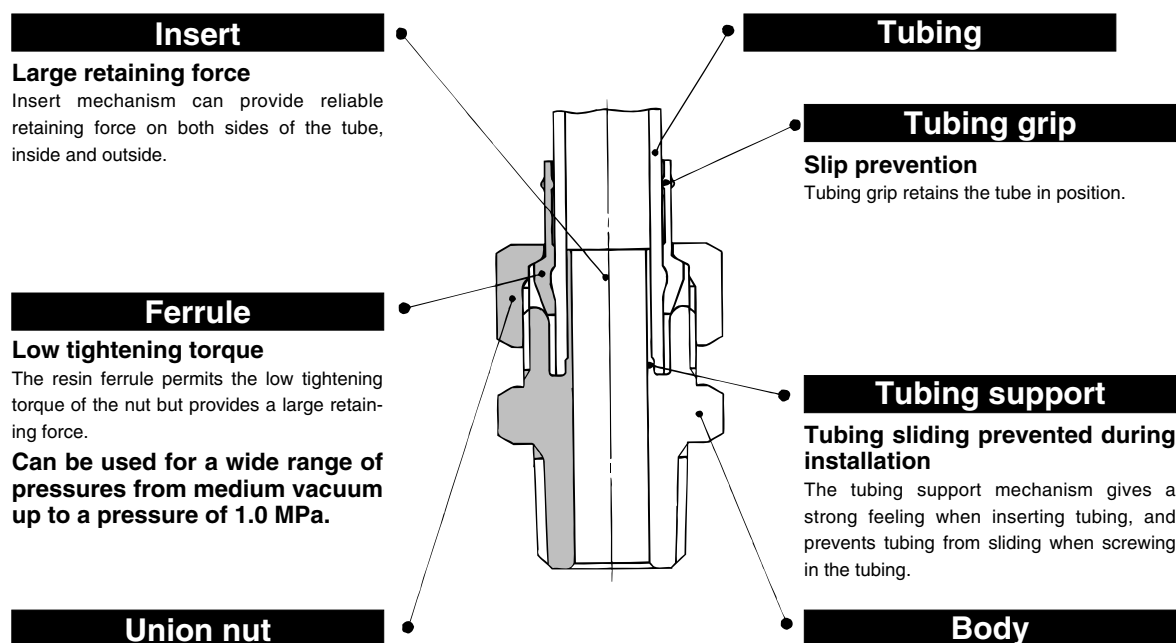
Air preparation equipment

Pressure switch

Clean gas filter

Series 10-KF Insert fittings

Construction



Specifications

Fluid	Air
Maximum operating pressure	1.0MPa
Operating vacuum pressure	-101.3kPa
Proof pressure	7.0MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Seal (Thread portion) (Note)	None or with seal
Grease	Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 1

Note) Male elbow, Male branch tee and Male run tee with seal are manufactured upon receipt of order.

Applicable tubing

Tubing size	O.D.	4	6	8	10	12
	I.D.	2.5	4	5	6.5	8
Material	Polyurethane tubing	●	●	●	●	●

Principal parts material

Body	Electroless nickel plated C3371BE, C3604BD
Nut	Electroless nickel plated C360BD
Ferrule	Nylon 66

Model

Male connector 10-KFH



Use to connect tubes in the same direction from female thread.
Most general style

Female connector 10-KFF



Use to pipe from male thread such as pressure gauge.

Straight union 10-KFH



Use to connect tubes in the same direction.

Bulkhead connector 10-KFE



Use to connect male thread and tube through a panel.

Male elbow 10-KFL



Use to pipe at right angles to female thread.
Most general style

Bulkhead union 10-KFF



Use to connect tubes through a panel.

Union tee 10-KFT



Use to connect tubes in both 90° directions.

Male run tee 10-KFY



Use to branch line in the same direction from female thread and in 90° direction.

Male branch tee 10-KFT



Use to branch line from female thread in both 90° directions.

Plug 10-KFP

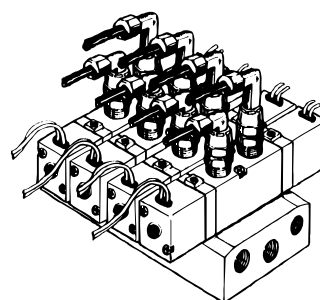


Use to plug unused fittings.

Swivel elbow 10-KFV



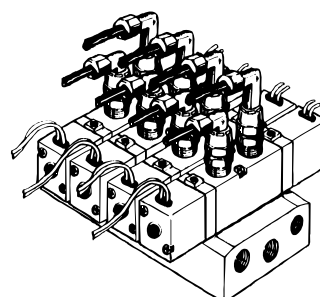
Use to pipe at right angles to female thread.
Swiveled at any direction.



Swivel extended elbow 10-KFW



Use to pipe at right angles to female thread.
Swiveled at any direction.
Solid piece moves fittings up from workpiece.



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

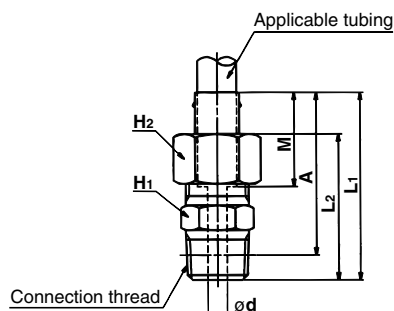
Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

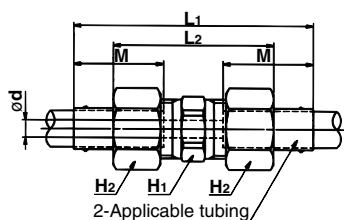
Male connector: 10-KFH



Applicable tubing (mm)		Connection thread R	Model	H1 (width across flats)	H2 (width across flats)	L1	L2	M	d	A *	Effective area (mm ²)	Weight (g)
O.D.	I.D.											
4	2.5	1/8	10-KFH04-01	10	10	30.5	23.8	15.5	1.5	26.5	1.6	13
		1/4	10-KFH04-02	14		34.5	27.8			28.5		23
6	4	1/8	10-KFH06-01	10	12	30.2	23.5	15.2	3	26.2	6	14
		1/4	10-KFH06-02	14		34.2	27.5			28.2		25
		3/8	10-KFH06-03	17		35.2	28.5			28.9		36
8	5	1/8	10-KFH08U-01	12	14	30.2	23.5	16.2	4	26.2	11	16
		1/4	10-KFH08U-02	14		34.2	27.5			28.2		25
		3/8	10-KFH08U-03	17		35.2	28.5			28.9		37
10	6.5	1/4	10-KFH10U-02	17	17	35.8	28.5	18.8	5.5	29.8	21	32
		3/8	10-KFH10U-03			36.8	29.5			30.5		40
		1/2	10-KFH10U-04			39.8	32.5			31.6		65
12	8	1/4	10-KFH12U-02	17	19	36.3	29.5	19.3	7	30.3	35	33
		3/8	10-KFH12U-03			37.3	30.5			31		41
		1/2	10-KFH12U-04			40.3	33.5			32.1		65

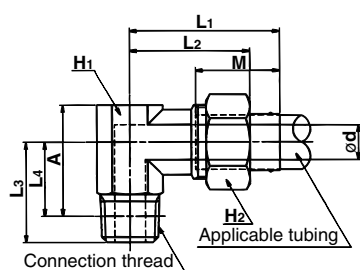
* Reference dimensions after R thread installation.

Straight union: 10-KFH



Applicable tubing (mm)		Model	H1 (width across flats)	H2 (width across flats)	L1	L2	M	d	Effective area (mm ²)	Weight (g)
O.D.	I.D.									
4	2.5	10-KFH04-00	8	10	40.9	27.6	15.5	1.5	1.6	13
6	4	10-KFH06-00	10	12	40.3	27	15.2	3	6	17
8	5	10-KFH08U-00	12	14	41.3	28	16.2	4	11	23
10	6.5	10-KFH10U-00	17	17	44.6	30	18.8	5.5	21	36
12	8	10-KFH12U-00	17	19	45.5	32	19.3	7	35	42

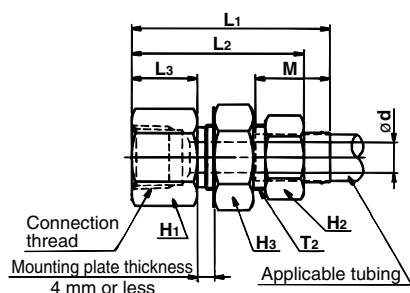
Male elbow: 10-KFL



Applicable tubing (mm)		Connection thread R	Model	H1 (width across flats)	H2 (width across flats)	L1	L2	L3	L4 *	M	d	A *	Effective area (mm ²)	Weight (g)
O.D.	I.D.													
4	2.5	1/8	10-KFL04-01	10	10	27.5	20.8	17	13	15.5	1.5	19.3	1.6	21
		1/4	10-KFL04-02											25
6	4	1/8	10-KFL06-01	10	12	27.2	20.5	17	13	15.2	3	19.3	6	22
		1/4	10-KFL06-02											27
		3/8	10-KFL06-03											38
8	5	1/8	10-KFL08U-01	12	14	28.2	21.5	18	14	16.2	4	21.3	9.5	30
		1/4	10-KFL08U-02											32
		3/8	10-KFL08U-03											39
10	6.5	1/4	10-KFL10U-02	12	17	31.8	24.5	22	16	18.8	5.5	23.3	18	38
		3/8	10-KFL10U-03											44
		1/2	10-KFL10U-04											66
12	8	1/4	10-KFL12U-02	14	19	34.3	27.5	23	17	19.3	7	25.5	24	53
		3/8	10-KFL12U-03											53
		1/2	10-KFL12U-04											68

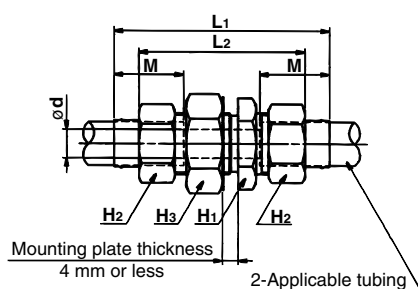
* Reference dimensions after R thread installation.

Bulkhead connector: 10-KFE



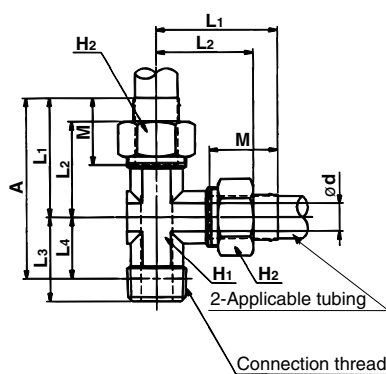
Applicable tubing (mm)		Connection thread Rc	Model	H ₁	H ₂	H ₃	L ₁	L ₂	L ₃	M	d	T ₂	Mounting hole	Effective area (mm ²)	Weight (g)
O.D.	I.D.			(width across flats)	(width across flats)	(width across flats)									
6	4	1/4	10-KFE06-02	17	12	17	44.2	37.5	16	15.2	3	M10 x 1	11	6	41
8	5	3/8	10-KFE08U-03	19	14	19	46.2	39.5	17	16.2	4	M12 x 1	13	11	49
10	6.5	3/8	10-KFE10U-03	19	17	22	48.8	41.5	17	18.8	5.5	M15 x 1	16	21	63
12	8	3/8	10-KFE12U-03	22	19	24	51.3	44.5	17	19.3	7	M17 x 1	18	35	93

Bulkhead union: 10-KFE



Applicable tubing (mm)		Model	H ₁ (width across flats)	H ₂ (width across flats)	H ₃ (width across flats)	L ₁	L ₂	M	d	Mounting hole	Effective area (mm ²)	Weight (g)
O.D.	I.D.											
4	2.5	10-KFE04-00	12	10	13	50.9	37.6	15.5	1.5	9	1.6	23
6	4	10-KFE06-00	14	12	17	51.3	38	15.2	3	11	6	34
8	5	10-KFE08U-00	17	14	19	52.3	39	16.2	4	13	11	47
10	6.5	10-KFE10U-00	19	17	22	56.6	42	18.8	5.5	16	21	67
12	8	10-KFE12U-00	22	19	24	59.5	46	19.3	7	18	35	87

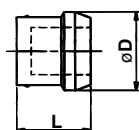
Male run tee: 10-KFY



Applicable tubing (mm)		Connection thread Rc	Model	H ₁	H ₂	L ₁	L ₂	L ₃	L ₄ *	M	d	A *	Effective area (mm ²)	Weight (g)
O.D.	I.D.			(width across flats)	(width across flats)									
4	2.5	1/8	10-KFY04-01	10	10	27.5	20.8	17	13	15.5	1.5	40.5	3.5	28
		1/4	10-KFY04-02					19						
6	4	1/8	10-KFY06-01	10	12	27.2	20.5	17	13	15.2	3	40.2	11	31
		1/4	10-KFY06-02					19						
		3/8	10-KFY06-03	12	30.2	23.5	22	15.7	45.8	13	51			
8	5	1/8	10-KFY08U-01	12	14	30.2	23.5	20	16	16.2	4	46.2	15	48
		1/4	10-KFY08U-02					23	17			47.2	21	50
		3/8	10-KFY08U-03	22	15.7	45.8	55							
10	6.5	1/4	10-KFY10U-02	12	17	31.8	24.5	23	17	18.8	5.5	48.8	30	58
		3/8	10-KFY10U-03					22	15.7			47.4	63	
		1/2	10-KFY10U-04	14	33.8	26.5	27	18.8	52.6	38	89			
12	8	1/4	10-KFY12U-02	14	19	34.3	27.5	25	19	19.3	7	53.3	34	79
		3/8	10-KFY12U-03					24	17.7			51.9	49	79
		1/2	10-KFY12U-04	27	18.8	53.1	93							

* Reference dimensions after R thread installation.

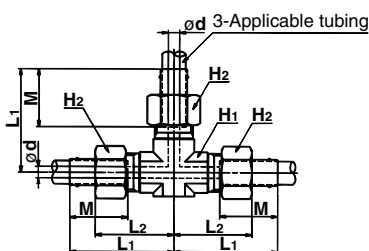
Plug: 10-KFP



Applicable tubing (mm)	Model	L	D	Weight (g)
4	10-KFP-04	12	6.5	0.3
6	10-KFP-06	12	8.5	0.5
8	10-KFP-08	12	10.4	0.7
10	10-KFP-10	13.5	13	1.0
12	10-KFP-12	14	15	1.4

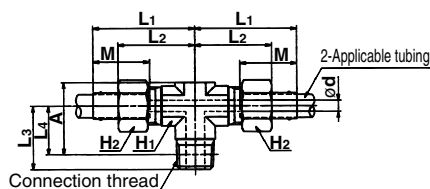
Insert fittings 10-KF

Union tee: 10-KFT



Applicable tubing (mm)		Model	H ₁ (width across flats)	H ₂ (width across flats)	L ₁	L ₂	M	d	Effective area (mm ²)	Weight (g)
O.D.	I.D.									
4	2.5	10-KFT04-00	10	10	27.5	20.8	15.5	1.5	1.6	33
6	4	10-KFT06-00		12	27.2	20.5	15.2	3	6	37
8	5	10-KFT08U-00	12	14	30.2	23.5	16.2	4	11	54
10	6.5	10-KFT10U-00	12	17	31.8	24.5	18.8	5.5	21	65
12	8	10-KFT12U-00	14	19	34.3	27.5	19.3	7	35	89

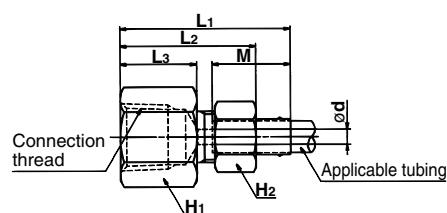
Male branch tee: 10-KFT



Applicable tubing (mm)		Connection thread R	Model	H ₁ (width across flats)	H ₂ (width across flats)	L ₁	L ₂	L ₃	L ₄ *	M	d	A *	Effective area (mm ²)	Weight (g)
O.D.	I.D.													
4	2.5	1/8	10-KFT04-01	10	10	27.5	20.8	17	13	15.5	1.5	19.3	3	29
		1/4	10-KFT04-02					19						34
6	4	1/8	10-KFT06-01	10	12	27.2	20.5	17	13	15.2	3	19.3	10	32
		1/4	10-KFT06-02					19						37
		3/8	10-KFT06-03	12		30.2	23.5	22	15.7			23	12	53
8	5	1/8	10-KFT08U-01	12	14	30.2	23.5	20	16	16.2	4	23.3	14	49
		1/4	10-KFT08U-02					23	17					50
		3/8	10-KFT08U-03			30.2	23.5	22	15.7			23	19	56
10	6.5	1/4	10-KFT10U-02	12	17	31.8	24.5	23	17	18.8	5.5	24.3	27	46
		3/8	10-KFT10U-03					22	15.7			23	34	63
		1/2	10-KFT10U-04	14		33.8	26.5	27	18.8			27.3		90
12	8	1/4	10-KFT12U-02	14	19	34.3	27.5	25	19	19.3	7	27.5	31	79
		3/8	10-KFT12U-03					24	17.7			26.2	44	81
		1/2	10-KFT12U-04					27	18.8			27.3		94

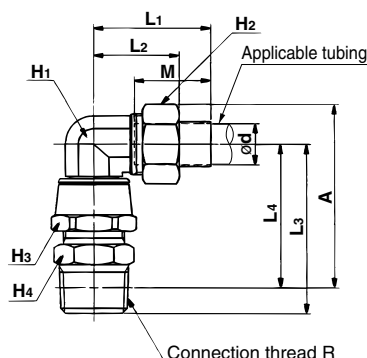
* Reference dimensions after R thread installation.

Female connector: 10-KFF



Applicable tubing (mm)		Connection thread Rc	Model	H ₁ (width across flats)	H ₂ (width across flats)	L ₁	L ₂	L ₃	M	d	Effective area (mm ²)	Weight (g)
O.D.	I.D.											
4	2.5	1/4	10-KFF04-02	17	10	33.5	26.8	15	15.5	1.5	1.6	25
6	4	1/4	10-KFF06-02	17	12	33.2	26.5	15	15.2	3	6	27
		3/8	10-KFF06-03	19		35.2	28.5	17				30
8	5	1/4	10-KFF08U-02	17	14	33.2	26.5	15	16.2	4	11	28
10	6.5	1/4	10-KFF10U-02	17	17	34.8	27.5	15	18.8	5.5	21	32
12	8	1/4	10-KFF12U-02	17	19	35.3	28.5	15	19.3	7	35	35

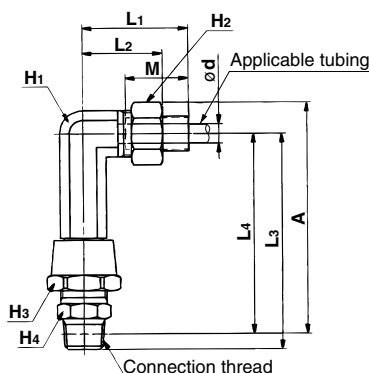
Swivel elbow: 10-KFV



Applicable tubing (mm) O.D. I.D.	Connection thread R	Model	H ₁ (width across flats)	H ₂ (width across flats)	H ₃ (width across flats)	H ₄ (width across flats)	L ₁	L ₂	L ₃	L ₄ *	M	d	A *	Effective area (mm ²)	Weight (g)
4	2.5	1/8 10-KFV04-01	10	10	14	10	26	19.3	33.7	29.7	15.5	1.5	35.5	1.4	40
	1/4	10-KFV04-02				14									
6	4	1/8 10-KFV06-01	10	12	14	10	25.7	19	33.7	31.7	15.2	3	37.5	5	52
	1/4	10-KFV06-02				14									
	3/8	10-KFV06-03				17									
8	5	1/8 10-KFV08U-01	12	14	17	12	27.2	20.5	34.7	30.7	16.2	4	37.6	9.4	61
	1/4	10-KFV08U-02				14									
	3/8	10-KFV08U-03				17									
10	6.5	1/4 10-KFV10U-02	14	17	19	17	28.8	21.5	40.7	34.7	18.8	5.5	42.8	18	73
	3/8	10-KFV10U-03				17									
	1/2	10-KFV10U-04				22									
12	8	1/4 10-KFV12U-02	17	19	22	17	30.3	23.5	41.7	35.7	19.3	7	45.7	30	92
	3/8	10-KFV12U-03				17									
	1/2	10-KFV12U-04				22									

* Reference dimensions after R thread installation.

Swivel extended elbow: 10-KFW



Applicable tubing (mm) O.D. I.D.	Connection thread R	Model	H ₁ (width across flats)	H ₂ (width across flats)	H ₃ (width across flats)	H ₄ (width across flats)	L ₁	L ₂	L ₃	L ₄ *	M	d	A *	Effective area (mm ²)	Weight (g)
4	2.5	1/8 10-KFW04-01	10	10	14	10	26	19.3	53.7	49.7	15.5	1.5	55.5	1.4	58
	1/4	10-KFW04-02				14									
6	4	1/8 10-KFW06-01	10	12	14	10	25.7	19	54.7	50.7	15.2	3	56.5	5	61
	1/4	10-KFW06-02				14									
	3/8	10-KFW06-03				17									
8	5	1/8 10-KFW08U-01	12	14	17	12	27.2	20.5	55.7	51.7	16.2	4	58.6	9.4	81
	1/4	10-KFW08U-02				14									
	3/8	10-KFW08U-03				17									
10	6.5	1/4 10-KFW10U-02	14	17	19	17	28.8	21.5	61.7	55.7	18.8	5.5	63.8	18	100
	3/8	10-KFW10U-03				17									
	1/2	10-KFW10U-04				22									
12	8	1/4 10-KFW12U-02	17	19	22	17	30.3	23.5	64.7	58.7	19.3	7	68.7	30	146
	3/8	10-KFW12U-03				17									
	1/2	10-KFW12U-04				22									

* Reference dimensions after R thread installation.

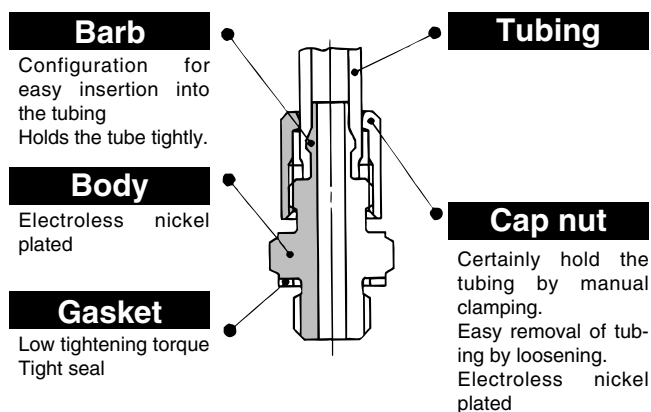
Series 10-M

Miniature fittings

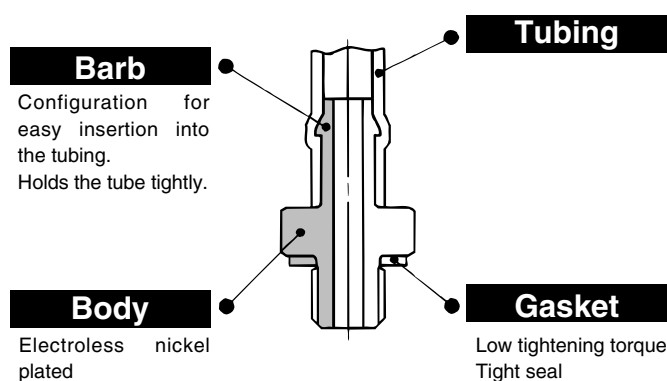
Construction



Hose nipple



Barb fitting



Specifications

Tubing material		Polyurethane
Applicable tubing	M3	ø3.18/ø2, ø4/ø2.5
	M5-R 1/8	ø3.18/ø2 ø4/ø2.5, ø6/ø4
Max. operating pressure		0.8MPa
Connection size		M3, M5, R1/8
Grease		Fluorine grease
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		Grade 1

Principal parts materials

Material	Body	Electroless nickel plated C3604BD (Nipple M-3N, M-5N: Stainless steel 303)
	Gasket	Aluminum + NBR, Stainless steel 304 + NBR

Series M3, R 1/8

Series	Model	Description	Application	Note
M3	10-M-3AU-3	Barb fitting for soft tubing 	For piping polyurethane tubing	ø3.18/2 x M3
	10-M-3AU-4			ø4/2.5 x M3
	10-M-3ALU-3	Barb elbow for soft tubing 	Body rotates at 360° around the stud axis. For piping polyurethane tubing	ø3.18/2 x M3
	10-M-3ALU-4			ø4/2.5 x M3
	10-M-3UL	Universal elbow 	Body rotates at 360° around the stud axis.	M3 female x M3 male
	10-M-3UT	Universal tee 	Body rotates at 360° around the stud axis.	M3 female x M3 female x M3 male
	10-M-3N	Nipple 	Connection for fitting to workpiece and fitting to fitting	M3 male x M3 male
	10-M-3P	Plug 	Use to plug unused M3 port	
	10-M-3G	Gasket 	To seal M3 thread	Material: Stainless steel 304 + NBR

Series	Model	Description	Application	Note
R 1/8	10-M-01AU-4	Barb fitting for polyurethane tubing 	For polyurethane tubing	ø4/2.5 x R 1/8
	10-M-01AU-6			ø6/4 x R 1/8
	10-M-01H-4	Hose nipple 		ø4/2.5 x R 1/8
	10-M-01H-6			ø6/4 x R 1/8

Series M5

Series	Model	Description	Application	Note
M5	10-M-5AU-3	Barb fitting for soft tubing 	For piping polyurethane tubing	ø3.18/2 x M5
	10-M-5AU-4			ø4/2.5 x M5
	10-M-5AU-6			ø6/4 x M5
	10-M-5ALU-3	Barb elbow for soft tubing 	Body rotates at 360° around the stud axis. For piping polyurethane tubing	ø3.18/2 x M5
	10-M-5ALU-4			ø4/2.5 x M5
	10-M-5ALU-6			ø6/4 x M5
	10-M-5ALHU-3	Barb elbow (H) for soft tubing 	Body rotates at 360° around the stud axis. For piping polyurethane tubing	ø3.18/2 x M5
	10-M-5ALHU-4			ø4/2.5 x M5
	10-M-5ALHU-6			ø6/4 x M5
	10-M-5H-4	Hose nipple 	For piping polyurethane tubing	ø4/2.5 x M5
	10-M-5H-6			ø6/4 x M5
	10-M-5HL-4	Hose elbow 	For piping polyurethane tubing	ø4/2.5 x M5
	10-M-5HL-6			ø6/4 x M5
	10-M-5HLH-4	Hose elbow (H) 		ø4/2.5 x M5
	10-M-5HLH-6			ø6/4 x M5
	10-M-5L	Elbow 	One-sided 90° elbow	M5 female x M5 female

Series	Model	Description	Application	Note
M5	10-M-5T	Tee 	Both sides allow 90° connection	M5 female x M5 female x M5 female
	10-M-5UL	Universal elbow 	Body rotates at 360° around the stud axis.	M5 female x M5 male
	10-M-5UT	Universal tee 	Body rotates at 360° around the stud axis.	M5 female x M5 female x M5 male
	10-M-5J	Extension fitting 	Solid piece moves fitting up from workpiece	M5 male x M5 female
	10-M-5N	Nipple 	Connection for fitting to workpiece and fitting to fitting	M5 male x M5 male
	10-M-5UN	Universal nipple 	Body rotates at 360° around the center of axis.	M5 male x M5 male PAT.
	10-M-5B	Bushing 	For reducing R 1/8 female to M5	R 1/8 x M5 female
	10-M-5P	Plug 	Use to plug unused M5 port	
	10-M-5G1	Gasket 	To seal M5 thread	Material: Stainless steel 304 + NBR
	10-M-5GH	Gasket (H) 	10-M-5ALU-6 10-M-5ALHU-6 10-M-5HL-4, 6 10-M-5HLH-4, 6	Material: Aluminum + NBR

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

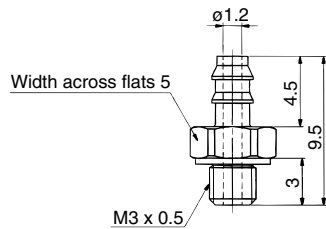
Air preparation equipment

Pressure switch

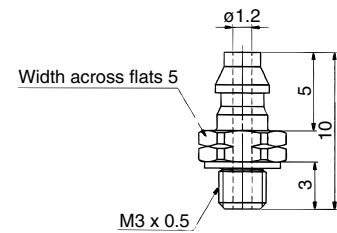
Clean gas filter

Series M3
Barb fitting for polyurethane tubing: 10-M-3AU-3

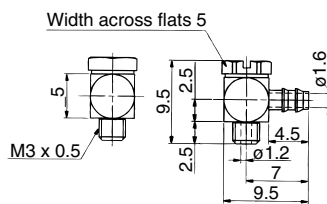
Effective area: 0.9mm²
Weight: 0.6g


Barb fitting for polyurethane tubing: 10-M-3AU-4

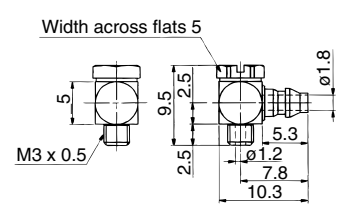
Effective area: 0.9mm²
Weight: 0.7g


Barb elbow for polyurethane tubing: 10-M-3ALU-3

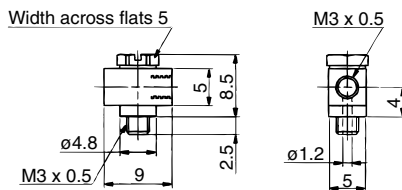
Effective area: 0.6mm²
Weight: 0.8g


Barb elbow for polyurethane tubing: 10-M-3ALU-4

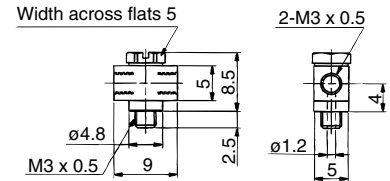
Effective area: 0.6mm²
Weight: 0.9g


Universal elbow: 10-M-3UL

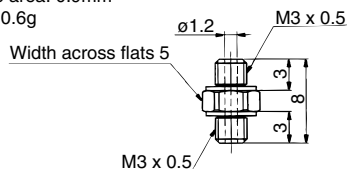
Effective area: 0.6mm²
Weight: 1.6g


Universal tee: 10-M-3UT

Effective area: 0.6mm²
Weight: 1.4g


Nipple: 10-M-3N

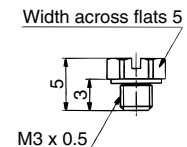
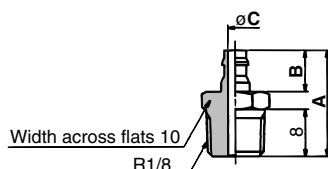
Effective area: 0.9mm²
Weight: 0.6g


Gasket: 10-M-3G

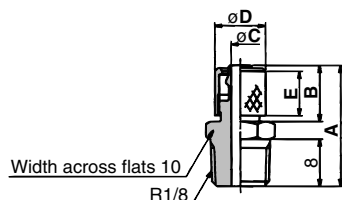
Weight: 0.005g


Plug: 10-M-3P

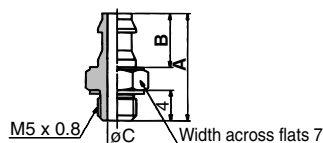
Weight: 0.5g


Series R 1/8
Barb fitting for polyurethane tubing: 10-M-01AU-4, -6


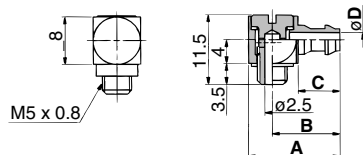
Applicable tubing	Model	A	B	C	Effective area (mm ²)	Weight (g)
Polyurethane tubing	10-M-01AU-4	16	5	1.8	2.1	6.5
	10-M-01AU-6	18	7	2.5	4.0	6.7

Hose nipple: 10-M-01H-4, -6


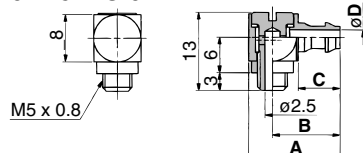
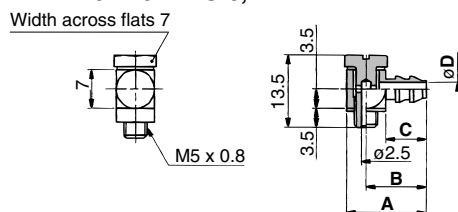
Model	A	B	C	D	E	Effective area (mm ²)	Weight (g)
10-M-01H-4	19.5	8.5	1.8	6.5	7	2.1	7.1
10-M-01H-6	20.5	9.5	3	8.5	8	5.5	7.7

Series M5
Barb fitting for polyurethane tubing: 10-M-5AU-3, -4, -6


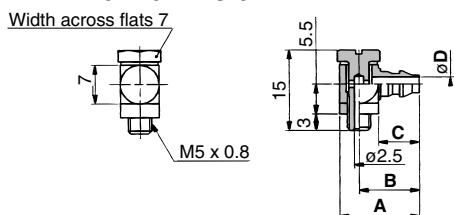
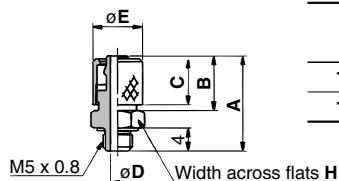
Model	A	B	C	Effective area (mm ²)	Weight (g)
10-M-5AU-3	11.5	4.5	1.6	1.7	1.5
10-M-5AU-4	12	5	1.8	2.1	1.6
10-M-5AU-6	14	7	2.5	4.0	1.8

Barb elbow for polyurethane tubing: 10-M-5ALU-3, -4, -6
10-M-5ALU-3, -4


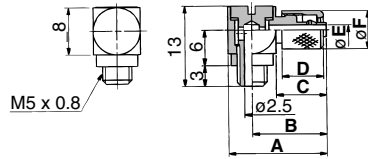
Model	A	B	C	D	Effective area (mm ²)	Weight (g)
10-M-5ALU-3	12.5	8.5	4.5	1.6	1.1	4.0
10-M-5ALU-4	13.3	9.3	5	1.8	1.4	4.1
10-M-5ALU-6	15.3	11.3	7	2.5	2.4	4.5

10-M-5ALU-6

Barb elbow for polyurethane tubing: 10-M-5ALHU-3, -4, -6
10-M-5ALHU-3, -4


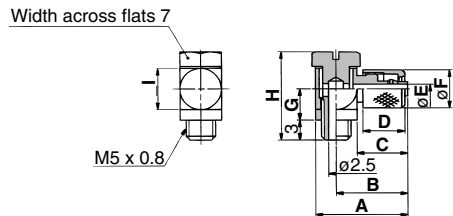
Model	A	B	C	D	Effective area (mm ²)	Weight (g)
10-M-5ALHU-3	11.5	8	4.5	1.6	1.1	3.2
10-M-5ALHU-4	12.3	8.8	5	1.8	1.4	3.3
10-M-5ALHU-6	14.3	10.8	7	2.5	2.4	3.9

10-M-5ALHU-6

Hose nipple: 10-M-5H-4, -6


Model	A	B	C	D	E	H	Effective area (mm ²)	Weight (g)
10-M-5H-4	15.5	8.5	7	1.8	6.5	7	2.1	2.7
10-M-5H-6	16.5	9.5	8	2.5	8.5	8	4.0	3.9

Series M5
Hose elbow: 10-M-5HL-4, -6


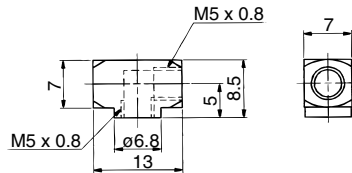
Model	A	B	C	D	E	F	Effective area (mm ²)	Weight (g)
10-M-5HL-4	16.5	12.5	8.5	7	1.8	6.5	1.4	4.4
10-M-5HL-6	17.5	13.5	9.5	8	2.5	8.5	2.4	5.2

Hose elbow: 10-M-5HLH-4, -6


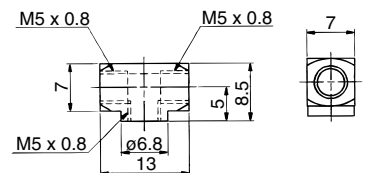
Model	A	B	C	D	E	F	G	H	I	Effective area (mm ²)	Weight (g)
10-M-5HLH-4	15.5	12	8.5	7	1.8	6.5	5.5	15	7	1.4	4.5
10-M-5HLH-6	17.5	13.5	9.5	8	2.5	8.5	6	16	8	2.4	6.6

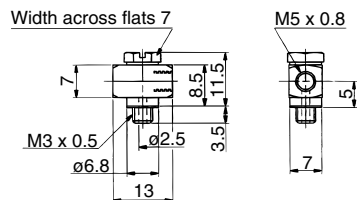
Elbow: 10-M-5L

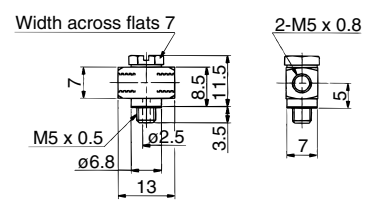
Weight: 4.2g

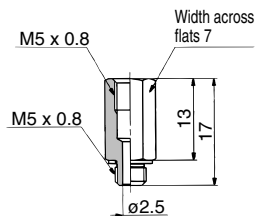

Tee: 10-M-5T

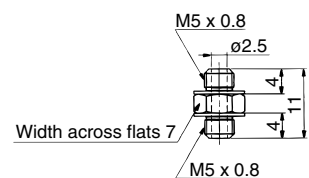
Weight: 3.5g

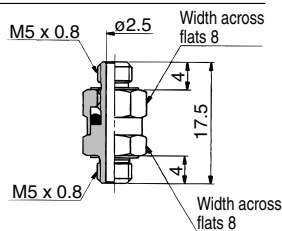

Universal elbow: 10-M-5UL

Effective area: 2.4mm²
Weight: 5.3g

Universal tee: 10-M-5UT

Effective area: 2.4mm²
Weight: 4.8g

Extension fitting: 10-M-5J

Effective area: 4.0mm²
Weight: 3.6g

Nipple: 10-M-5N

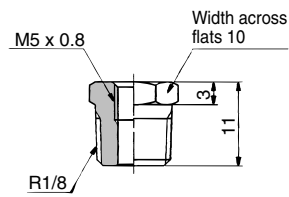
Effective area: 4.0mm²
Weight: 1.5g

Universal nipple: 10-M-5UN

Effective area: 4.0mm²
Weight: 3.9g


Series M5

Bushing: 10-M-5B

Weight: 5.8g



Plug: 10-M-5P

Weight: 1.3g



Gasket: 10-M-5G1

Weight: 0.04g



Gasket: 10-M-5GH

Weight: 0.08g



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-MS Stainless miniature fittings

Construction



Hose nipple

Barb

Configuration for easy insertion into the tube
Holds the tube tightly.

Body

Stainless steel 316

Gasket

Low tightening torque
Tight seal

Tubing

Cap nut

Certainly hold the tube by manual clamping.

Easy removal of tube by loosening.

Stainless steel 316

Barb fitting

Barb

Configuration for easy insertion into the tube
Holds the tube tightly.

Body

Stainless steel 316

Tubing

Gasket

Low tightening torque
Tight seal

Specifications

Applicable tubing material		Polyurethane
Applicable tubing diameter		ø3.18/ø2, ø4/ø2.5, ø6/ø4
Max. operating pressure		0.8MPa
Connection size		M5
Material	Body	Stainless steel 316
	Gasket	Stainless steel 316 + FKM, aluminum + FKM
Grease		Fluorine grease
Particle generation grade (Please refer to front matters 13 to 22 for details.)		Grade 1

Model

Model	Description	Application	Note	Model	Description	Application	Note
10-MS-5AU-3	Barb fittings for polyurethane tube	For polyurethane tube	ø3.18/ø2 x M5	10-MS-5UL	Universal elbow	Body rotates at 360° around the stud axis.	M5 female x M5 male
10-MS-5AU-4			ø4/ø2.5 x M5				
10-MS-5AU-6			ø6/ø4 x M5	10-MS-5UT	Universal tee	Body rotates at 360° around the stud axis.	M5 female x M5 female x M5 male
10-MS-5ALHU-3	Barb elbow for polyurethane tube	For polyurethane tube · Body rotates at 360° around the stud axis.	ø3.18/ø2 x M5	10-MS-5B	Bushing	For reducing R (PT) 1/8 to M5	R1/8 x M5 female
10-MS-5ALHU-4			ø4/ø2.5 x M5				
10-MS-5ALHU-6			ø6/ø4 x M5	10-MS-5P	Plug	Use to plug unused M5 port	
10-MS-5H-4	Hose nipple	For polyurethane tube	ø4/ø2.5 x M5	10-MS-5J	Extension fitting	Solid piece moves fitting up from workpiece.	M5 male x M5 female
10-MS-5H-6			ø6/ø4 x M5	10-MS-5N	Nipple	For fitting to workpiece or fitting to fitting connection	M5 male x M5 male
10-MS-5HLH-4	Hose elbow	For polyurethane tube · Body rotates at 360° around the stud axis.	ø4/ø2.5 x M5	10-MS-5UN	Universal nipple	Body rotates at 360° around the stud axis.	M5 male x M5 male PAT.
10-MS-5HLH-6			ø6/ø4 x M5	10-MS-5ATHU-3	Barb tee for polyurethane tube	For polyurethane tube · Body rotates at 360° around the stud axis.	ø3.18/ø2 x M5
				10-MS-5ATHU-4			ø4/ø2.5 x M5
10-M-5G3	Gasket	To seal M5 thread	Material: Stainless steel 316 + FKM	10-MS-5ATHU-6			ø6/ø4 x M5
				10-M-5GH	Gasket (H)	To seal M5 thread 10-MS-5ALHU-6 10-MS-5ALH-4 10-MS-5ALH-6 10-MS-5ATHU-6 only	Material: Aluminum + FKM
							

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

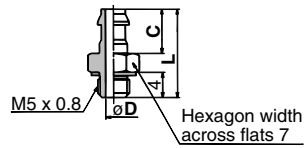
Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

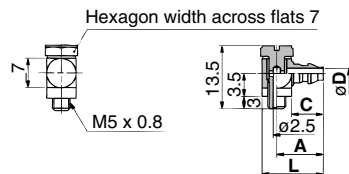
Barb fittings for polyurethane tube: 10-MS-5AU-3, -4, -6



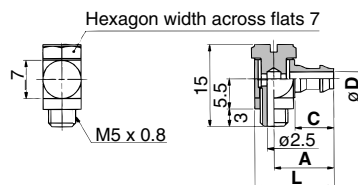
Model	C	D	L	Effective area (mm ²)	Weight (g)
10-MS-5AU-3	4.5	1.6	11.5	1.7	1.4
10-MS-5AU-4	5	1.8	12	2.1	1.5
10-MS-5AU-6	7	2.5	14	4.0	1.7

Barb elbow for polyurethane tube: 10-MS-5ALHU-3, -4, -6

10-MS-5ALHU-3,-4

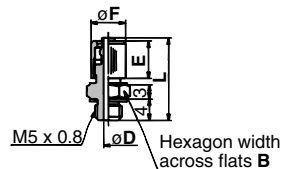


10-MS-5ALHU-6



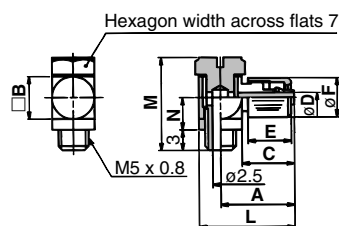
Model	A	C	D	L	Effective area (mm ²)	Weight (g)
10-MS-5ALHU-3	8	4.5	1.6	11.8	1.1	3.0
10-MS-5ALHU-4	8.8	5.0	1.8	12.6	1.4	3.1
10-MS-5ALHU-6	10.8	7.0	2.5	14.6	2.4	3.7

Hose nipple: 10-MS-5H-4, -6



Model	B	D	L	E	F	Effective area (mm ²)	Weight (g)
10-MS-5H-4	7	1.8	15.5	7	6.5	2.1	2.5
10-MS-5H-6	8	2.5	16.5	8	8.5	4.0	3.7

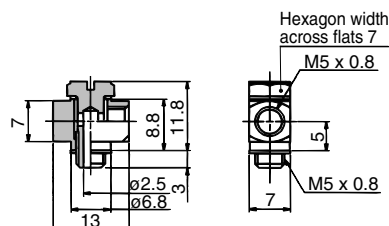
Hose elbow: 10-MS-5HLH-4, -6



Model	A	B	C	D	E	F	L	M	N	Effective area (mm ²)	Weight (g)
10-MS-5HLH-4	12	7	8.5	1.8	7	6.5	15.8	15	5.5	1.4	4.2
10-MS-5HLH-6	13.5	8	9.5	2.5	8	8.5	17.8	16	6	2.4	6.2

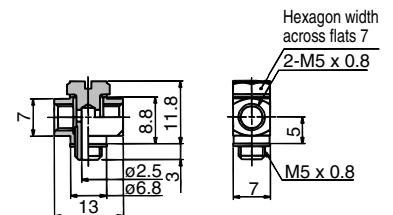
Universal elbow: 10-MS-5UL

Effective area: 2.4mm²
Weight: 4.5g



Universal tee: 10-MS-5UT

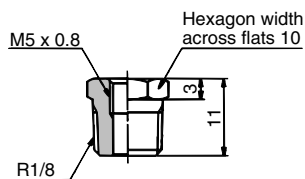
Effective area: 2.4mm²
Weight: 4.5g



Bushing: 10-MS-5B

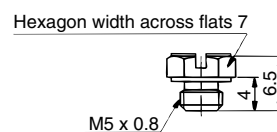
Effective area: 12mm²

Weight: 5.5g



Plug: 10-MS-5B

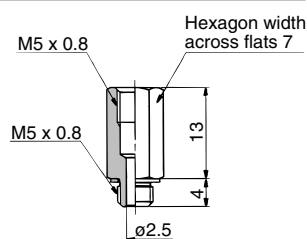
Weight: 1.2g



Extension fitting: 10-MS-5J

Effective area: 4.0mm²

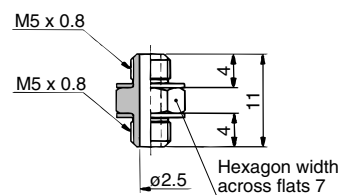
Weight: 3.4g



Nipple: 10-MS-5N

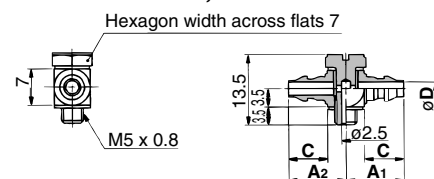
Effective area: 4.0mm²

Weight: 1.4g

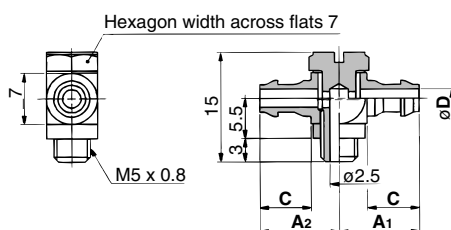


Barb tee for polyurethane tube: 10-MS-5ATHU-3, -4, -6

10-MS-5ATHU-3, -4



10-MS-5ATHU-6

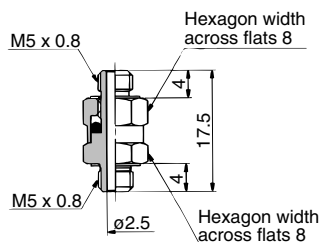


Model	A1	A2	C	D	Effective area (mm ²)	Weight (g)
10-MS-5ATHU-3	8	8.3	4.5	1.6	1.1	3.4
10-MS-5ATHU-4	8.8	8.8	5.0	1.8	1.4	3.6
10-MS-5ATHU-6	10.8	10.8	7.0	2.5	2.4	4.2

Universal nipple: 10-MS-5UN

Effective area: 4.0mm²

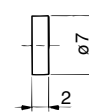
Weight: 3.7g



Gasket: 10-M-5G3, 10-M-5GH1

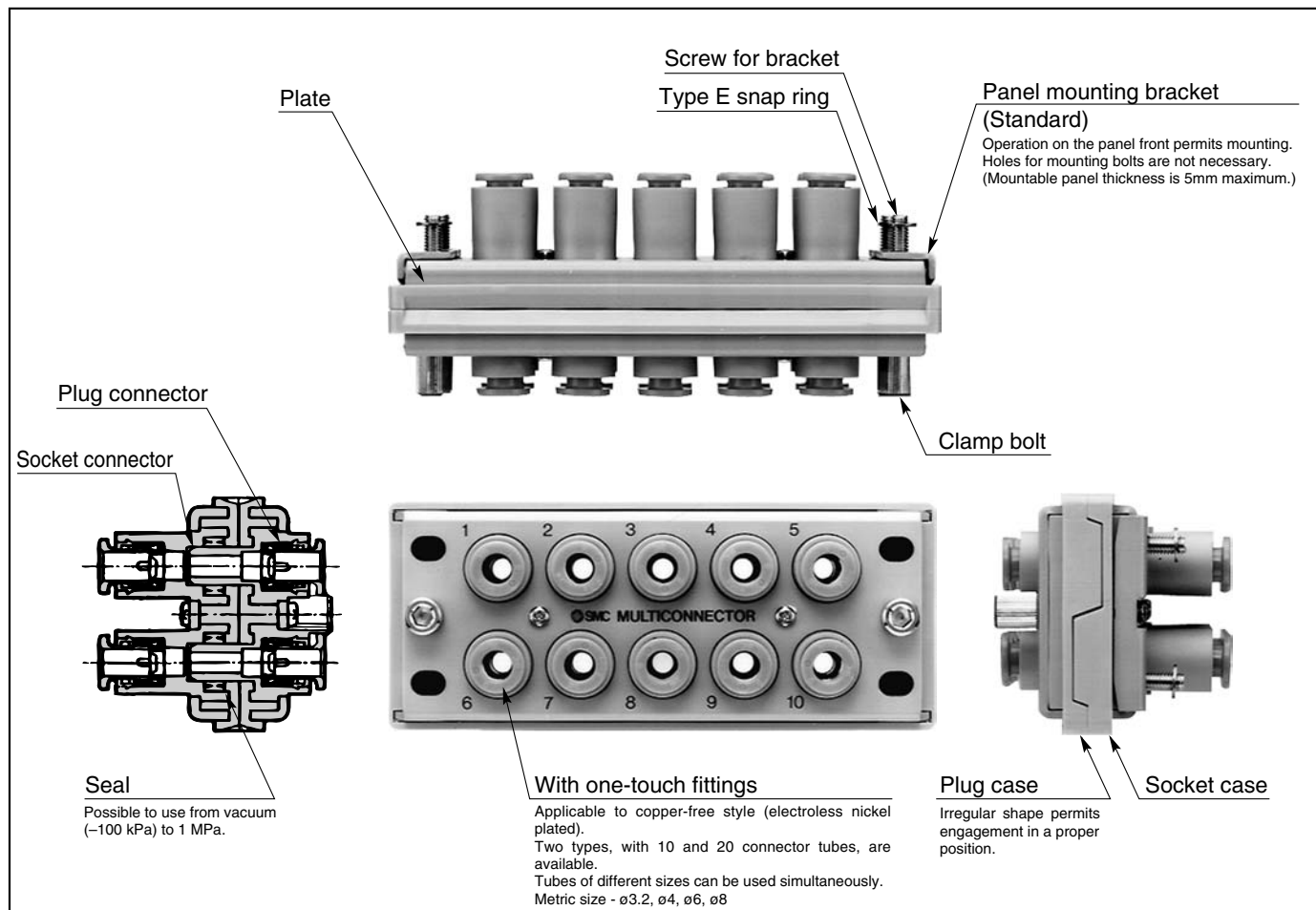
Weight: 0.04g

Weight: 0.08g



Series 10-KDM

Rectangular multi-connector
No. of connecting tubes: 10, 20



Model

No. of connecting tubes	Tubing O.D.		Model	Weight	Color of release button
10	Metric size	ø3.2	10-KDM10-23	300g	White
		ø4	10-KDM10-04		
		ø6	10-KDM10-06		
		ø8	10-KDM10-08	520g	
20	Metric size	ø3.2	10-KDM20-23	520g	White
		ø4	10-KDM20-04		
		ø6	10-KDM20-06		
		ø8	10-KDM20-08	950g	

Applicable tubing material

Tubing material		Polyurethane
Tubing O.D.	Metric size	ø3.2, ø4, ø6, ø8

Specifications

Fluid	Air
Max. operating pressure	1.0MPa
Operating vacuum pressure	−100kPa
Proof pressure	1.5MPa
Ambient and fluid temperature	−5 to 60°C (no freezing)
Grease	Fluorine grease
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 3

For Clean Room Air Preparation Equipment

Description	Series	Page
Main Line Filter	10-AFF2B to 75B	P.882
Mist Separator	10-AM150 to 850	P.886
Micro Mist Separator	10-AMD150 to 850	P.890
Micro Mist Separator with Prefilter	10-AMH150 to 850	P.894
Super Mist Separator	10-AME150 to 850	P.898
Odor Removal Filter	10-AMF150 to 850	P.902
Membrane Air Dryer	10-IDG3 to 100	P.906
Membrane Air Dryer	10-IDG3H to 100H	P.907
Membrane Air Dryer	10-IDG30L to 100L	P.908
Membrane Air Dryer	10-IDG60S to 100S	P.909
Clean Exhaust Cleaner	AMP220 to 420	P.915
Air Preparation Equipment / Common Precaution		P.919

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-AFF

Main line filter

How to Order

Clean series

Body size
2B—1/8 standard
4B—1/4 standard
8B—3/8 standard
11B—1/2 standard
22B—3/4 standard
37B—1 standard
75B—1 1/2 standard



10 - AFF 4B - 03 B - J

Port size
01—1/8
02—1/4
03—3/8
04—1/2
06—3/4
10—1
14—1 1/2
20—2

Option
Nil—None
B—Bracket

With drain guide

Model

Model	10-AFF2B	10-AFF4B	10-AFF8B	10-AFF11B	10-AFF22B	10-AFF37B	10-AFF75B
Air flow rate ℓ /min (ANR)	300	750	1500	2200	3500	6000	12000
Pressure drop MPa *	0.025	0.025	0.02	0.027	0.025	0.029	0.025
Port size	Rc1/8, 1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/8, 1/2, 3/4	Rc1/2, 3/4, 1	Rc3/4, 1	Rc1, 1 1/2	Rc1 1/2, 2

* Inlet pressure: 0.7 MPa

Specifications

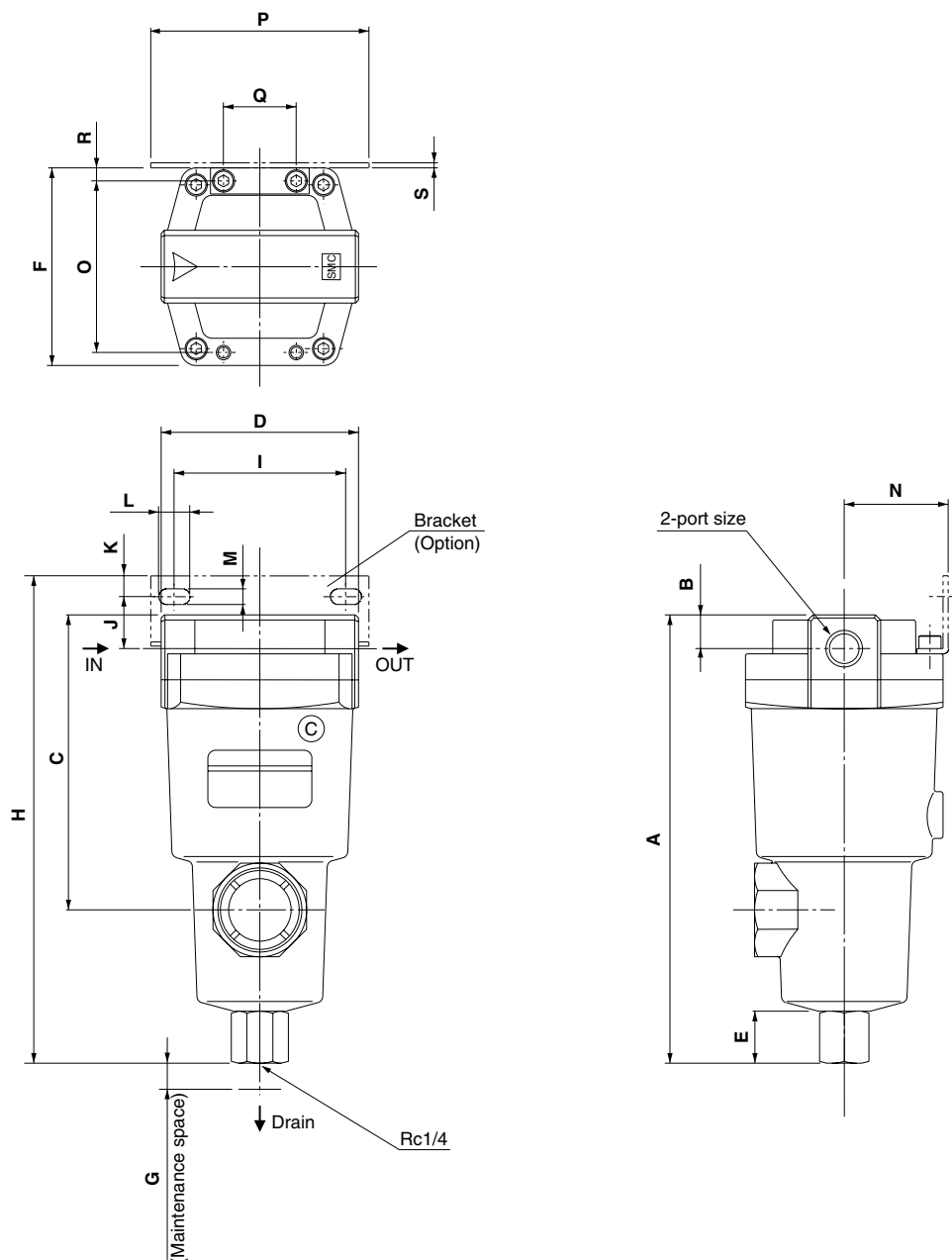
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Fluid	Air
Nominal filtration rating	0.3 μ m (95% particle size collection)
Ambient and fluid temperature	5 to 60°C
Oil mist concentration at outlet side	Max. 1.0 mg/m ³ (ANR) (approx. 0.8ppm) *
Element life	2 years or when the pressure drop reaches 0.1 MPa
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 1

* Compressor discharge oil mist concentration : 30 mg/m³ (ANR)

Replacement parts

Description	Material	Model						
		10-AFF2B	10-AFF4B	10-AFF8B	10-AFF11B	10-AFF22B	10-AFF37B	10-AFF75B
Element assembly	Glass fiber NBR	10-AFF-EL2B	10-AFF-EL4B	10-AFF-EL8B	10-AFF-EL11B	10-AFF-EL22B	10-AFF-EL37B	10-AFF-EL75B

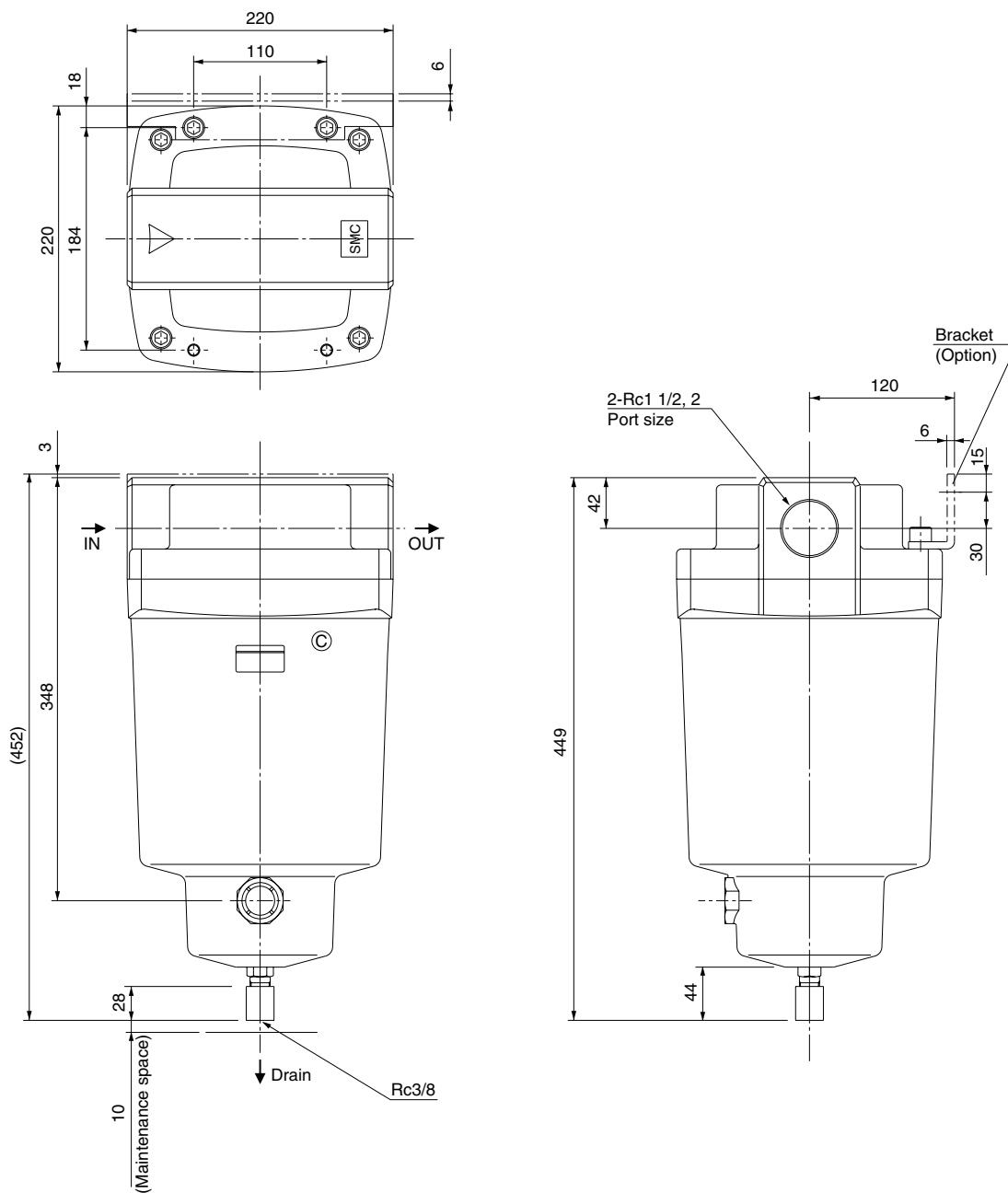
* With gasket and O-ring

Dimensions**10-AFF2B to 37B**

Model	Port size Rc	A	B	C	D	E	F	G	Dimensions with mounting bracket											
									H	I	J	K	L	M	N	O	P	Q	R	S
10-AFF2B	1/8, 1/4, 3/8	159	13	100	63	20	63	10	166	56	15	5	9	5.5	35	54	70	26	4.5	1.6
10-AFF4B	1/4, 3/8	172	13	113	76	20	76	10	187	66	20	8	12	6	40	66	84	28	5	2.0
	1/2	178	16	119	76	20	76	10	187	66	17	8	12	6	40	66	84	28	5	2.0
10-AFF8B	3/8, 1/2	204	16	145	90	20	90	10	218	80	22	8	14	7	50	80	100	34	5	2.3
	3/4	210	19	151	90	20	90	10	218	80	19	8	14	7	50	80	100	34	5	2.3
10-AFF11B	1/2, 3/4	225	19	166	106	20	106	10	241	90	25	10	14	9	55	88	110	50	9	3.2
	1	232	22	173	106	20	106	10	241	90	21	10	14	9	55	88	110	50	9	3.2
10-AFF22B	3/4, 1	259	22	200	122	20	122	10	277	100	30	10	16	9	65	102	130	60	10	4.5
10-AFF37B	1, 1 1/2	311	32	253	160	20	160	10	334	150	40	15	20	11	85	136	180	76	12	4.5

Dimensions

10-AFF75B





Specific Product Precautions

Be sure to read before use.

Caution on design

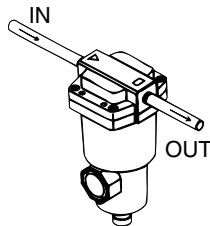
! Caution

1. Design the layout so that the product is installed in an area that is less susceptible to pulsations. The element could be damaged if the difference in the inlet and outlet pressures exceeds 0.1 MPa.
2. Use 10-AM as a prefilter of 10-AME and 10-AMF. (The air exhausted from 10-AM cannot be used in a clean room.)
3. The bracket that is provided with the product is for supporting the product itself. If piping or other items that are connected need to be supported, provide an additional support.

Mounting

! Caution

1. Verify the direction of the flow of the compressed air and the "▷" mark that indicates the inlet of the product before connecting. It cannot be used if connected in the opposite direction.
2. Make sure to install this product on horizontal piping. If it is installed diagonally, laterally or upside down, the drainage that is separated by the element will splash on the outlet side.
3. Since the drain exhaust port is a drain guide specification (Symbol -J), installation of a ball valve and piping for drain exhaust will be required.



Maintenance

! Caution

1. The replacement interval for the element is when the pressure drop reaches 0.1 MPa or after two years of operation, whichever comes first.
2. Replace the element immediately when the time for its replacement has arrived. To replace the element, please also replace the O-ring and the gasket.
3. Discharge the drainage before the drainage level reaches the center of the sight glass. If the drainage is not discharged properly, it will flow over to the outlet side.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-AM Mist separator

How to Order

Clean series

Body size
150—1/8 standard
250—1/4 standard
350—3/8 standard
450—1/2 standard
550—3/4 standard
650—1 standard
850—1 1/2 standard



10 - AM 250 - 03 B - J

Port size
01—1/8
02—1/4
03—3/8
04—1/2
06—3/4
10—1
14—1 1/2
20—2

Option
Nil—None
B—Bracket

With drain guide

Model

Model	10-AM150	10-AM250	10-AM350	10-AM450	10-AM550	10-AM650	10-AM850
Air flow rate ℓ /min (ANR)	300	750	1500	2200	3500	6000	12000
Pressure drop MPa *	0.025	0.025	0.02	0.027	0.025	0.029	0.025
Port size	Rc1/8, 1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/8, 1/2, 3/4	Rc1/2, 3/4, 1	Rc3/4, 1	Rc1, 1 1/2	Rc1 1/2, 2

* Inlet pressure: 0.7 MPa

Specifications

Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Fluid	Air
Nominal filtration rating	0.3 μ m (95% particle size collection)
Ambient and fluid temperature	5 to 60°C
Oil mist concentration at outlet side	Max. 1.0 mg/m ³ (ANR) (approx. 0.8ppm) *
Element life	2 years or when the pressure drop reaches 0.1MPa
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 1

* Compressor discharge oil mist concentration: 30 mg/m³ (ANR)

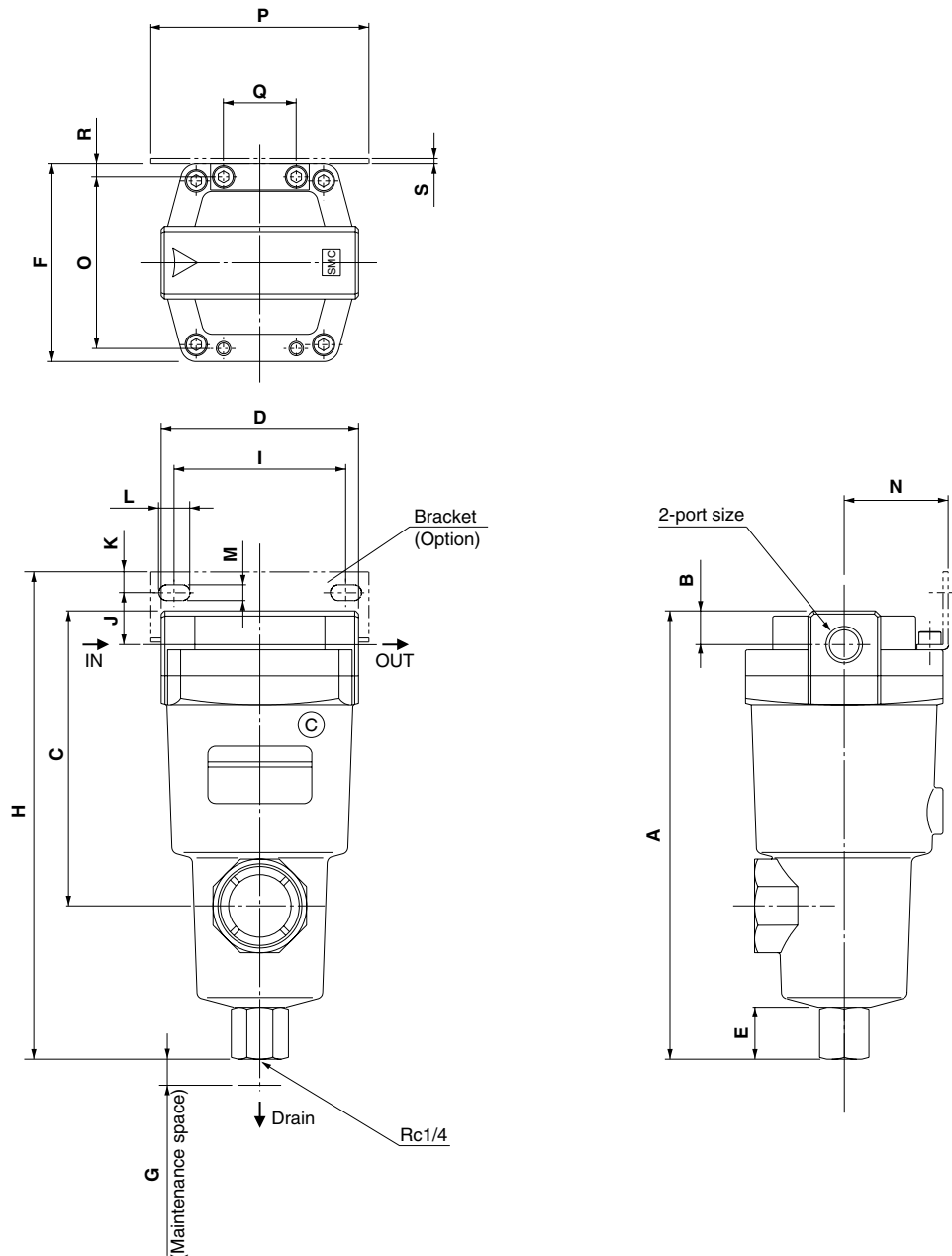
Replacement parts

Description	Material	Model						
		10-AM150	10-AM250	10-AM350	10-AM450	10-AM550	10-AM650	10-AM850
Element assembly	Glass fiber NBR	10-AM-EL150	10-AM-EL250	10-AM-EL350	10-AM-EL450	10-AM-EL550	10-AM-EL650	10-AM-EL850

* With gasket and O-ring

Dimensions

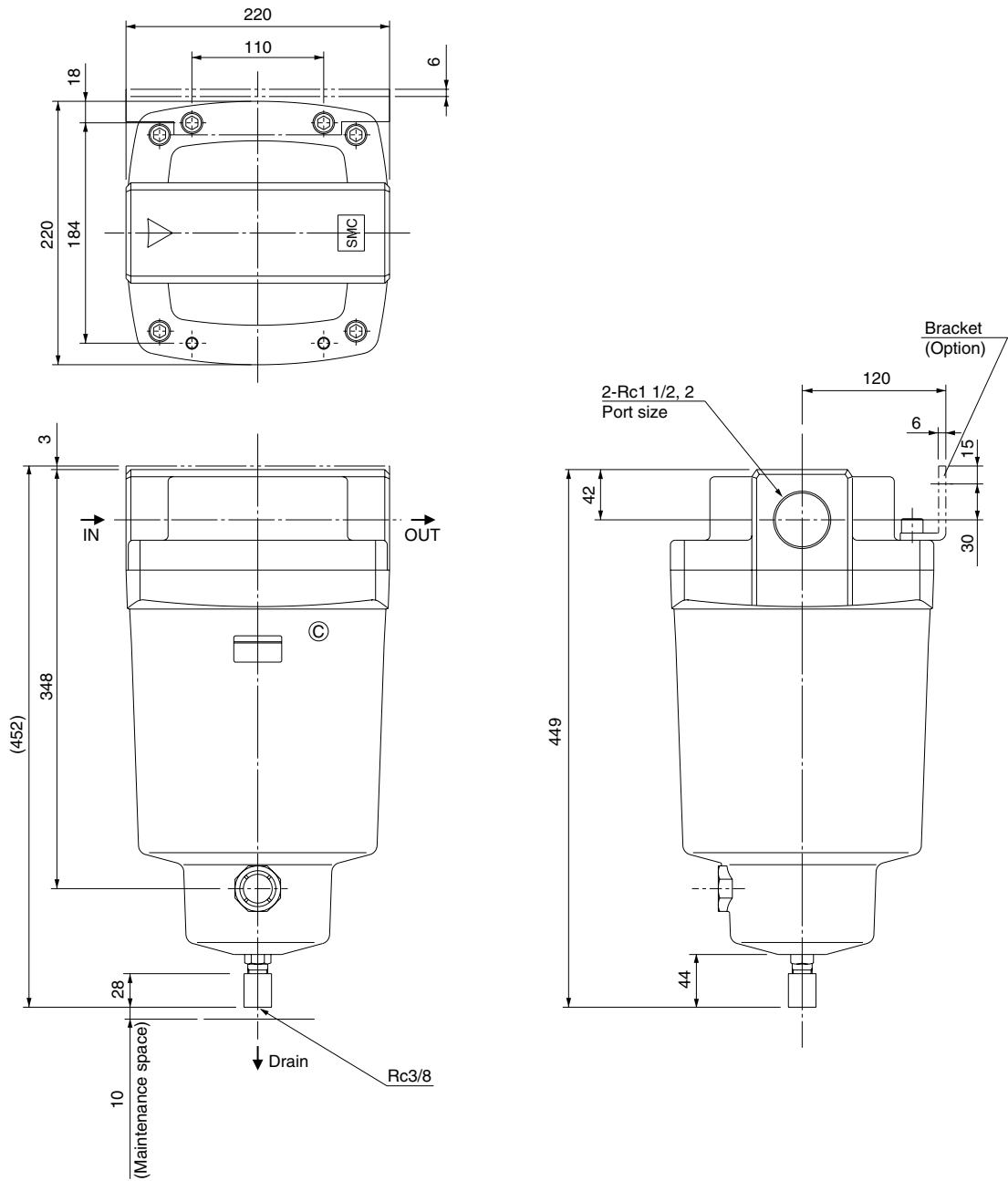
10-AM150 to 650



Model	Port size Rc	A	B	C	D	E	F	G	Dimensions with mounting bracket											
									H	I	J	K	L	M	N	O	P	Q	R	S
10-AM150	1/8, 1/4, 3/8	159	13	100	63	20	63	10	166	56	15	5	9	5.5	35	54	70	26	4.5	1.6
10-AM250	1/4, 3/8	172	13	113	76	20	76	10	187	66	20	8	12	6	40	66	84	28	5	2.0
	1/2	178	16	119	76	20	76	10	187	66	17	8	12	6	40	66	84	28	5	2.0
10-AM350	3/8, 1/2	204	16	145	90	20	90	10	218	80	22	8	14	7	50	80	100	34	5	2.3
	3/4	210	19	151	90	20	90	10	218	80	19	8	14	7	50	80	100	34	5	2.3
10-AM450	1/2, 3/4	225	19	166	106	20	106	10	241	90	25	10	14	9	55	88	110	50	9	3.2
	1	232	22	173	106	20	106	10	241	90	21	10	14	9	55	88	110	50	9	3.2
10-AM550	3/4, 1	259	22	200	122	20	122	10	277	100	30	10	16	9	65	102	130	60	10	4.5
10-AM650	1, 1 1/2	311	32	253	160	20	160	10	334	150	40	15	20	11	85	136	180	76	12	4.5

Dimensions

10-AM850





Specific Product Precautions

Be sure to read before use.

Caution on Design

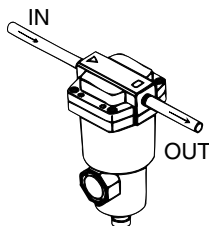
! Caution

1. Design the layout so that the mist separator is installed in an area that is less susceptible to pulsations. The element could be damaged if the difference in the inlet and outlet pressures exceeds 0.1 MPa.
2. Use 10-AM as a prefilter of 10-AME and 10-AMF. (The air exhausted from 10-AM cannot be used in a clean room.)
3. The bracket that is provided with the product is for supporting the product itself. If piping or other items that are connected need to be supported, provide an additional support.

Mounting

! Caution

1. Verify the direction of the flow of the compressed air and the "▷" mark that indicates the inlet of the product before connecting. It cannot be used if connected in the opposite direction.
2. Make sure to install this product on horizontal piping. If it is installed diagonally, laterally or upside down, the drainage that is separated by the element will splash on the outlet side.
3. Since the drain exhaust port is a drain guide specification (Symbol -J), installation of a ball valve and piping for drain exhaust will be required.



Maintenance

! Caution

1. The replacement interval for the element is when the pressure drop reaches 0.1 MPa or after two years of operation, whichever comes first.
2. Replace the element immediately when the time for its replacement has arrived. To replace the element, please also replace the O-ring and the gasket.
3. Discharge the drainage before the drainage level reaches the center of the sight glass. If the drainage is not discharged properly, it will flow over to the outlet side.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-AMD

Micro mist separator

How to Order

Clean series

Body size
150—1/8 standard
250—1/4 standard
350—3/8 standard
450—1/2 standard
550—3/4 standard
650—1 standard
850—1 1/2 standard



10 - AMD 250 - 03 B - J

Port size
01—1/8
02—1/4
03—3/8
04—1/2
06—3/4
10—1
14—1 1/2
20—2

Option
Nil—None
B—Bracket

With drain guide

Model

Model	10-AMD150	10-AMD250	10-AMD350	10-AMD450	10-AMD550	10-AMD650	10-AMD850
Air flow rate ℓ/min (ANR)	200	500	1000	2000	3500	6000	12000
Pressure drop MPa *	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Port size	Rc1/8, 1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/8, 1/2, 3/4	Rc1/2, 3/4, 1	Rc3/4, 1	Rc1, 1 1/2	Rc1 1/2, 2

* Inlet pressure: 0.7 MPa

Specifications

Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Fluid	Air
Filtration	0.01 μm (95% particle size collection)
Ambient and fluid temperature	5 to 60°C
Oil mist concentration at outlet side	Max. 1.0 mg/m ³ (ANR) (approx. 0.08ppm) * [At saturation of element oil, less than 0.01mg/m ³ (ANR) or less (approx. 0.008 ppm)]
Element life	2 years or when the pressure drop reaches 0.1 MPa
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 1

* Compressor discharge oil mist concentration: 30 mg/m³ (ANR)

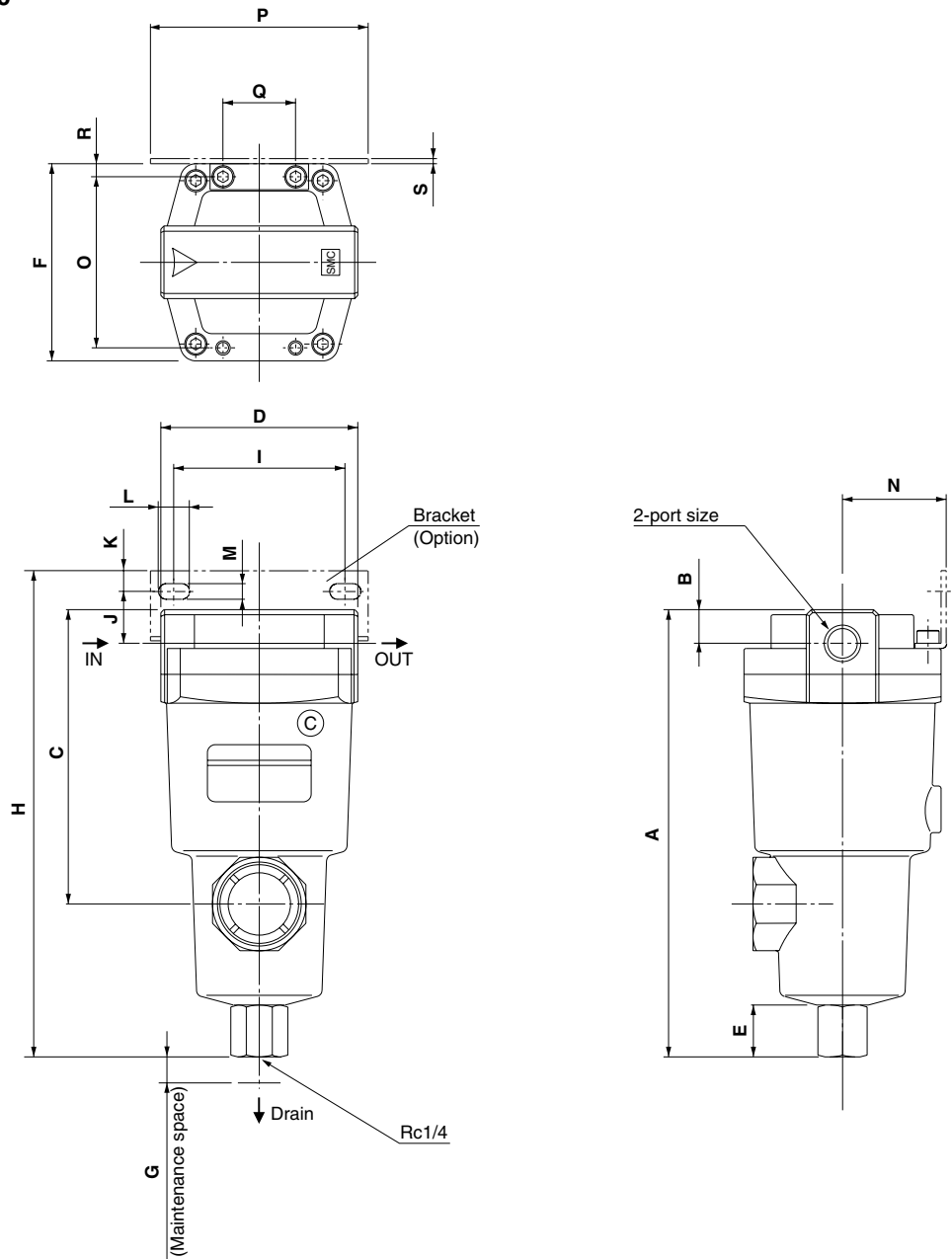
Replacement parts

Description	Material	Model						
		10-AMD150	10-AMD250	10-AMD350	10-AMD450	10-AMD550	10-AMD650	10-AMD850
Element assembly	Glass fiber NBR	10-AMD-EL150	10-AMD-EL250	10-AMD-EL350	10-AMD-EL450	10-AMD-EL550	10-AMD-EL650	10-AMD-EL850

* With gasket and O-ring

Dimensions

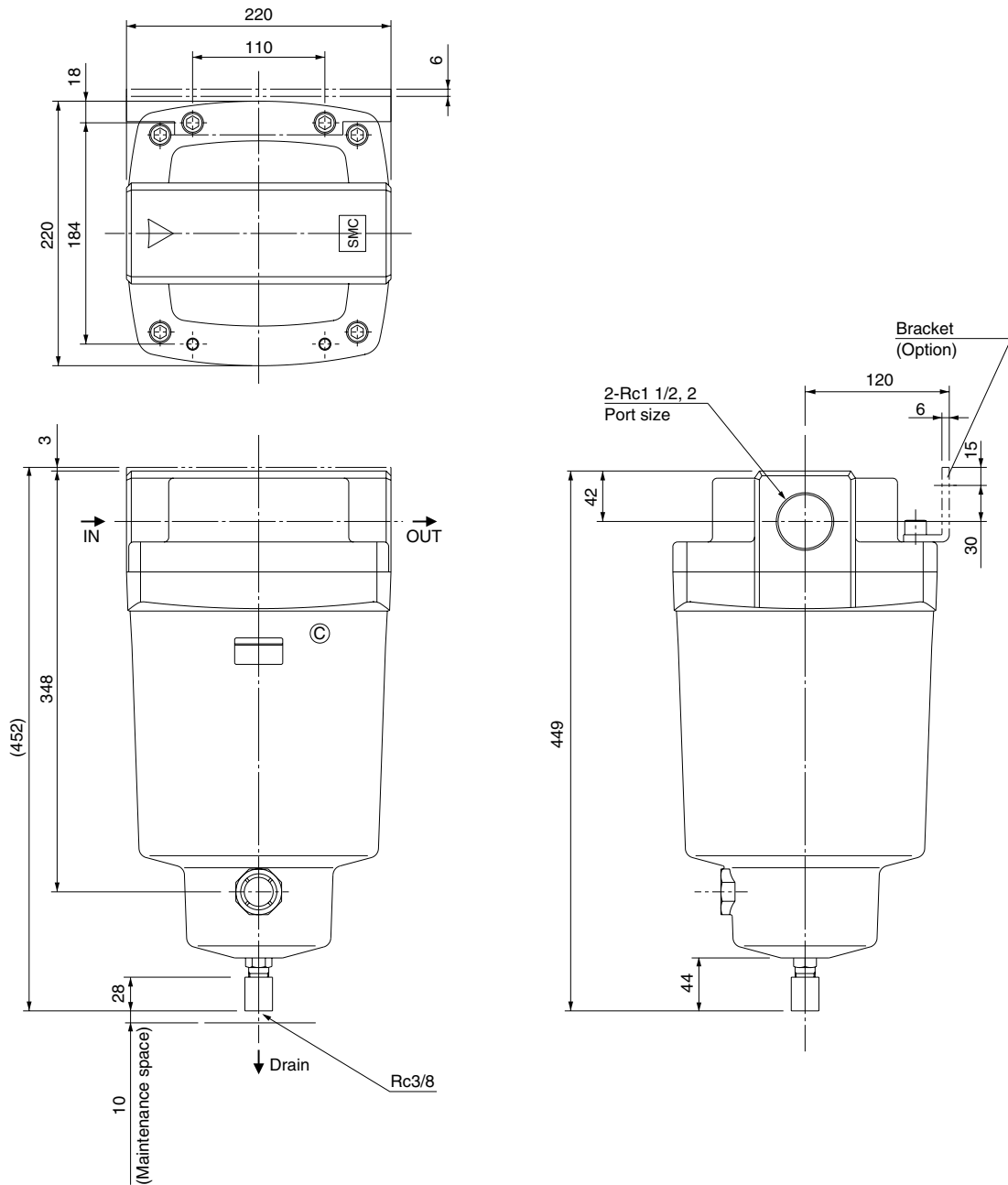
10-AMD150 to 650



Model	Port size Rc	A	B	C	D	E	F	G	Dimensions with mounting bracket											
									H	I	J	K	L	M	N	O	P	Q	R	S
10-AMD150	1/8, 1/4, 3/8	159	13	100	63	20	63	10	166	56	15	5	9	5.5	35	54	70	26	4.5	1.6
10-AMD250	1/4, 3/8	172	13	113	76	20	76	10	187	66	20	8	12	6	40	66	84	28	5	2.0
	1/2	178	16	119	76	20	76	10	187	66	17	8	12	6	40	66	84	28	5	2.0
10-AMD350	3/8, 1/2	204	16	145	90	20	90	10	218	80	22	8	14	7	50	80	100	34	5	2.3
	3/4	210	19	151	90	20	90	10	218	80	19	8	14	7	50	80	100	34	5	2.3
10-AMD450	1/2, 3/4	225	19	166	106	20	106	10	241	90	25	10	14	9	55	88	110	50	9	3.2
	1	232	22	173	106	20	106	10	241	90	21	10	14	9	55	88	110	50	9	3.2
10-AMD550	3/4, 1	259	22	200	122	20	122	10	277	100	30	10	16	9	65	102	130	60	10	4.5
10-AMD650	1, 1 1/2	311	32	253	160	20	160	10	334	150	40	15	20	11	85	136	180	76	12	4.5

Dimensions

10-AMD-850





Specific Product Precautions

Be sure to read before handling.

Caution on design

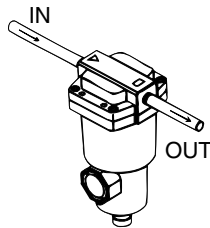
! Caution

1. Design the layout so that the product is installed in an area that is less susceptible to pulsations. The element could be damaged if the difference in the inlet and outlet pressures exceeds 0.1 MPa.
2. The bracket that is provided with the product is for supporting the product itself. If piping or other items that are connected need to be supported, provide an additional support.

Mounting

! Caution

1. Verify the direction of the flow of the compressed air and the "▷" mark that indicates the inlet of the product before connecting. It cannot be used if connected in the opposite direction.
2. Make sure to install this product on horizontal piping. If it is installed diagonally, laterally or upside down, the drainage that is separated by the element will splash on the outlet side.
3. Since the drain exhaust port is a drain guide specification (Symbol -J), installation of a ball valve and piping for drain exhaust will be required.



Maintenance

! Caution

1. The replacement interval for the element is when the pressure drop reaches 0.1 MPa or after two years of operation, whichever comes first.
2. Replace the element immediately when the time for its replacement has arrived. To replace the element, please also replace the O-ring and gasket.
3. Discharge the drainage before the drainage level reaches the center of the sight glass. If the drainage is not discharged properly, it will flow over to the outlet side.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-AMH

Micro mist separator with prefilter

How to Order

Clean series

10 - AMH

Body size

150—1/8 standard
250—1/4 standard
350—3/8 standard
450—1/2 standard
550—3/4 standard
650—1 standard
850—1 1/2 standard

250 -

Port size

01—1/8
02—1/4
03—3/8
04—1/2
06—3/4
10—1
14—1 1/2
20—2

03

Option

Nil—None
B—Bracket

B

With drain guide

- J



Model

Model	10-AMH150	10-AMH250	10-AMH350	10-AMH450	10-AMH550	10-AMH650	10-AMH850
Air flow rate ℓ/min (ANR)	300	750	1500	2200	3500	6000	12000
Pressure drop (MPa) *	0.025	0.025	0.02	0.027	0.025	0.029	0.025
Port size	Rc1/8, 1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/8, 1/2, 3/4	Rc1/2, 3/4, 1	Rc3/4, 1	Rc1, 1 1/2	Rc1 1/2, 2

* Inlet pressure: 0.7 MPa

Specifications

Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Fluid	Air
Nominal filtration rating	0.01 μm (95% particle size collection)
Ambient and fluid temperature	5 to 60°C
Oil mist concentration at outlet side	Max. 1.0 mg/m^3 (ANR) (approx. 0.8ppm) * [At saturation of element oil, 0.01 mg/m^3 (ANR) or less (approx. 0.01 ppm)]
Element life	2 years or when the pressure drop reaches 0.1 MPa
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 1

* Compressor discharge oil mist concentration: 30 mg/m^3 (ANR)

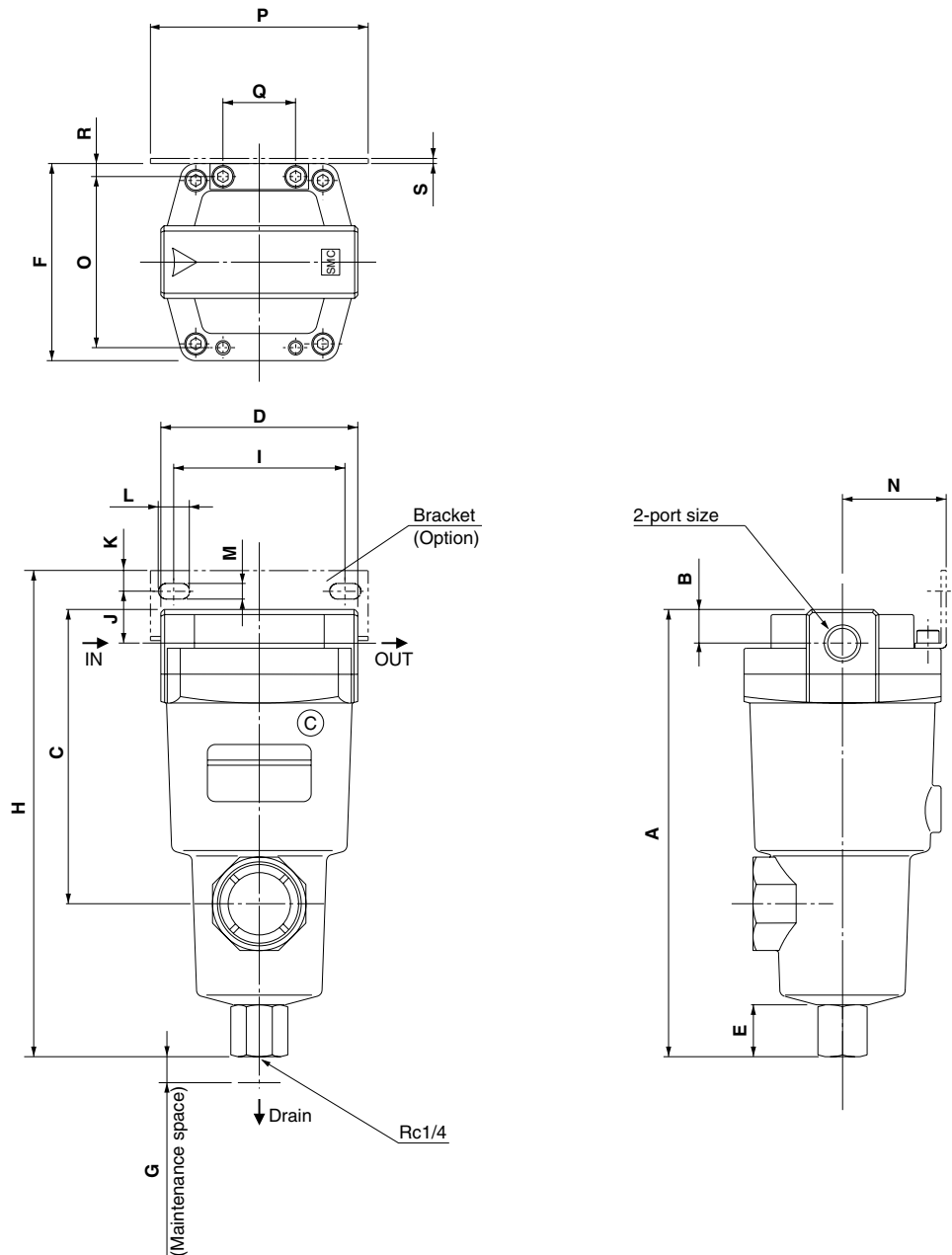
Replacement parts

Description	Material	Model						
		10-AMH150	10-AMH250	10-AMH350	10-AMH450	10-AMH550	10-AMH650	10-AMH850
Element assembly	Glass fiber NBR	10-AMH-EL150	10-AMH-EL250	10-AMH-EL350	10-AMH-EL450	10-AMH-EL550	10-AMH-EL650	10-AMH-EL850

* With gasket and O-ring

Dimensions

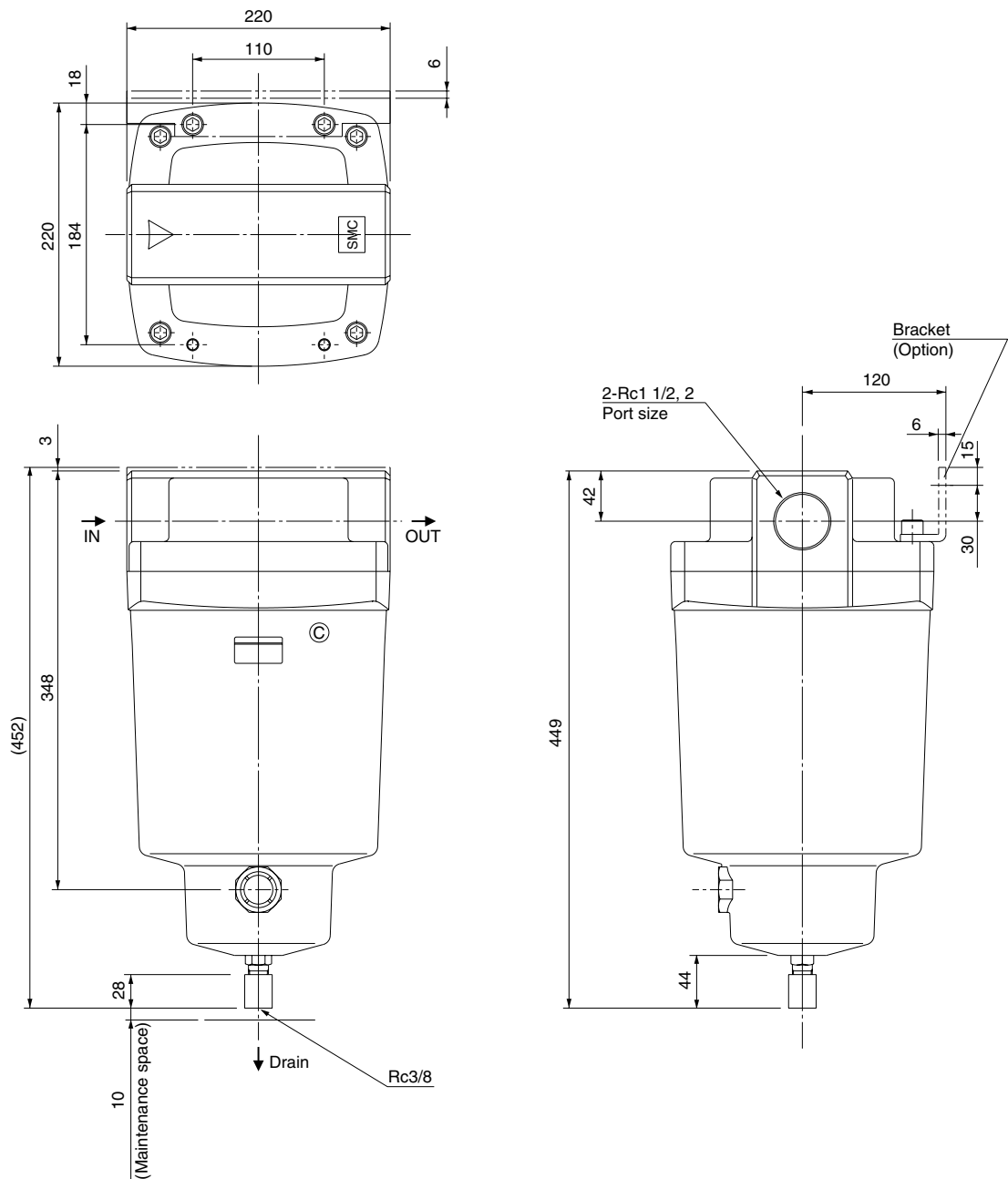
10-AMH150 to 650



Model	Port size Rc	A	B	C	D	E	F	G	Dimensions with mounting bracket											
									H	I	J	K	L	M	N	O	P	Q	R	S
10-AMH150	1/8, 1/4, 3/8	159	13	100	63	20	63	10	166	56	15	5	9	5.5	35	54	70	26	4.5	1.6
10-AMH250	1/4, 3/8	172	13	113	76	20	76	10	187	66	20	8	12	6	40	66	84	28	5	2.0
	1/2	178	16	119	76	20	76	10	187	66	17	8	12	6	40	66	84	28	5	2.0
10-AMH350	3/8, 1/2	204	16	145	90	20	90	10	218	80	22	8	14	7	50	80	100	34	5	2.3
	3/4	210	19	151	90	20	90	10	218	80	19	8	14	7	50	80	100	34	5	2.3
10-AMH450	1/2, 3/4	225	19	166	106	20	106	10	241	90	25	10	14	9	55	88	110	50	9	3.2
	1	232	22	173	106	20	106	10	241	90	21	10	14	9	55	88	110	50	9	3.2
10-AMH550	3/4, 1	259	22	200	122	20	122	10	277	100	30	10	16	9	65	102	130	60	10	4.5
10-AMH650	1, 1 1/2	311	32	253	160	20	160	10	334	150	40	15	20	11	85	136	180	76	12	4.5

Dimensions

10-AMH850





Specific Product Precautions

Be sure to read before handling.

Design

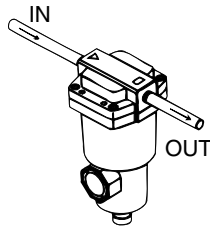
! Caution

1. Design the layout so that the product is installed in an area that is less susceptible to pulsations. The element could be damaged if the difference in the inlet and outlet pressures exceeds 0.1 MPa.
2. Use 10-AM as a prefilter of 10-AME and 10-AMF. (The air exhausted from 10-AM cannot be used in a clean room.)
3. The bracket that is provided with the product is for supporting the product itself. If piping or other items that are connected need to be supported, provide an additional support.

Mounting

! Caution

1. Verify the direction of the flow of the compressed air and the "▷" mark that indicates the inlet of the product before connecting. It cannot be used if connected in the opposite direction.
2. Make sure to install this product on horizontal piping. If it is installed diagonally, laterally or upside down, the drainage that is separated by the element will splash on the outlet side.
3. Since the drain exhaust port is a drain guide specification (Symbol -J), installation of a ball valve and piping for drain exhaust will be required.



Maintenance

! Caution

1. The replacement interval for the element is when the pressure drop reaches 0.1 MPa or after two years of operation, whichever comes first.
2. Replace the element immediately when the time for its replacement has arrived. To replace the element, please also replace the O-ring and the gasket.
3. Discharge the drainage before the drainage level reaches the center of the sight glass. If the drainage is not discharged properly, it will flow over to the outlet side.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-AME

Super mist separator

How to Order

Clean series

10 - AME 250 - 03 B

Body size

150—1/8 standard
250—1/4 standard
350—3/8 standard
450—1/2 standard
550—3/4 standard
650—1 standard
850—1 1/2 standard



Port size

01—1/8
02—1/4
03—3/8
04—1/2
06—3/4
10—1
14—1 1/2
20—2

Option

Nil—None
B—Bracket

Model

Model	10-AME150	10-AME250	10-AME350	10-AME450	10-AME550	10-AME650	10-AME850
Air flow rate ℓ/min (ANR)	200	500	1000	2000	3500	6000	12000
Pressure drop MPa *	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Port size	Rc1/8, 1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/8, 1/2, 3/4	Rc1/2, 3/4, 1	Rc3/4, 1	Rc1, 1 1/2	Rc1 1/2, 2

* Inlet pressure: 0.7 MPa

Specifications

Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Fluid	Air
Cleaning level at outlet side	Less than 3.5 particles 0.3 μm or larger per liter of air (100 particles or less per cubic foot)
Ambient and fluid temperature	5 to 60°C
Element life	Element color indicator (· When the element surface changes to red. · 2 years or when the pressure drop reaches 0.1 MPa)
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 1

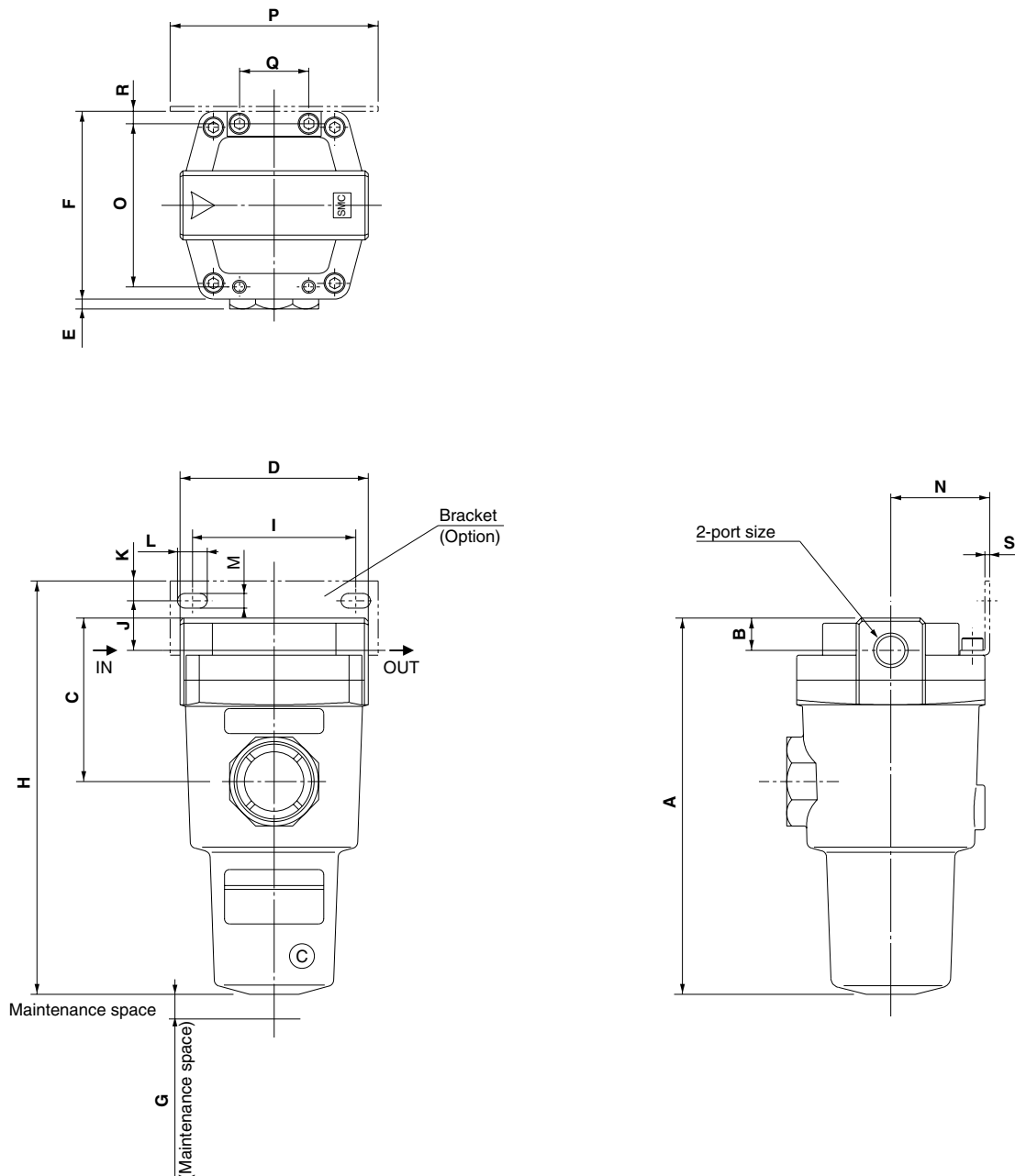
Replacement parts

Description	Material	Model						
		10-AME150	10-AME250	10-AME350	10-AME450	10-AME550	10-AME650	10-AME850
Element assembly	Glass fiber NBR	10-AME-EL150	10-AME-EL250	10-AME-EL350	10-AME-EL450	10-AME-EL550	10-AME-EL650	10-AME-EL850

* With gasket and O-ring

Dimensions

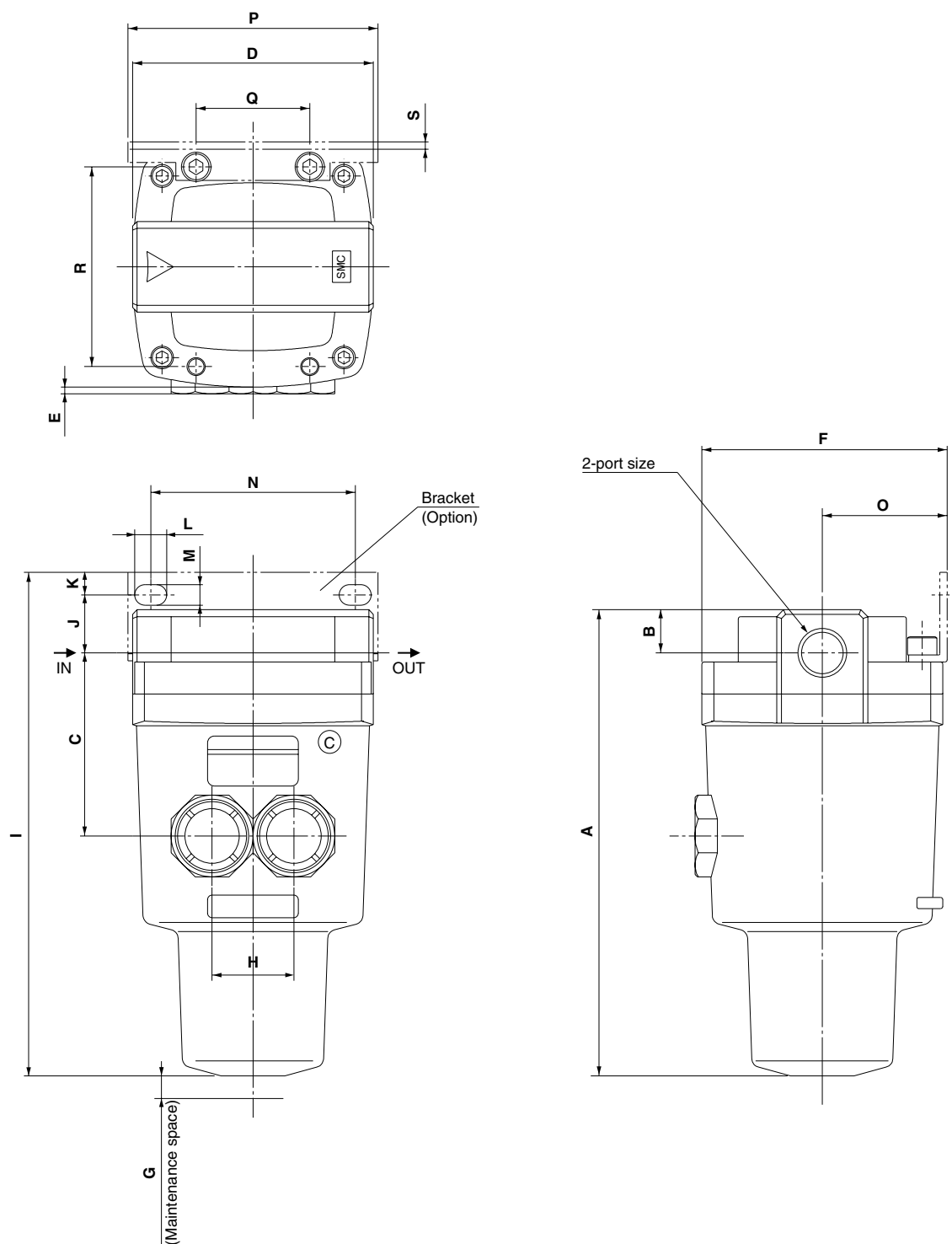
10-AME150 to 350



Model	Port size Rc	A	B	C	D	E	F	G	Dimensions with mounting bracket											
									H	I	J	K	L	M	N	O	P	Q	R	S
10-AME150	1/8, 1/4, 3/8	139	13	55	63	7.5	63	10	146	56	15	5	9	5.5	35	54	70	26	4.5	1.6
10-AME250	1/4, 3/8	152	13	66	76	4	76	10	167	66	20	8	12	6	40	66	84	28	5	2.0
	1/2	158	16	72	76	4	76	10	167	66	17	8	12	6	40	66	84	28	5	2.0
10-AME350	3/8, 1/2	184	16	92	90	5	90	10	198	80	22	8	14	7	50	80	100	34	5	2.3
	3/4	190	19	98	90	5	90	10	198	80	19	8	14	7	50	80	100	34	5	2.3

Dimensions

10-AME450 to 850



Model	Port size Rc	A	B	C	D	E	F	G	H	Dimensions with mounting brackets										
										I	J	K	L	M	N	O	P	Q	R	S
10-AME450	1½, ¾	205	19	100	106	3	106	10	36	221	25	10	14	9	90	55	110	50	88	3.2
	1	212	22	107	106	3	106	10	36	221	21	10	14	9	90	55	110	50	88	3.2
10-AME550	¾, 1	239	22	128	122	3	122	10	44	257	30	10	16	9	100	65	130	60	102	4.5
10-AME650	1, 1½	291	32	167	160	—	160	10	66	314	40	15	20	11	150	85	180	76	136	4.5
10-AME850	1½, 2	403	42	235	220	—	220	10	96	406	30	15	24	13	180	120	220	110	184	6



Specific Product Precautions

Be sure to read before handling.

Caution on Design

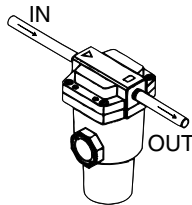
! Caution

1. Do not use this product in a line which is subject to frequent pressure pulsation cycle.
When it is unavoidable to use in such line, please contact SMC beforehand.
2. This product is exclusively designed to be used with dry air. If it is used with air containing moisture, drainage may interfere with the color change function of the indicator.
3. Be sure to install a mist separator (10-AM Series), micro mist separator (10-AMD Series), or micro mist separator with prefilter on the inlet side.
4. The bracket that is provided with the product is for supporting the product itself. If piping or other items that are connected need to be supported, provide an additional support.

Mounting

! Caution

1. Verify the direction of the flow of the compressed air and the "▷" mark that indicates the inlet of the product before connecting. It cannot be used if connected in the opposite direction.
2. Make sure to install this product on horizontal piping. If it is installed diagonally, laterally or upside down, the indicator etc. won't function normally.



Maintenance

! Caution

1. Red spots appearing on the surface of the element indicate the time for replacement. When red spots appear, immediately replace the element. At the same time, also replace the O-ring and gasket.
The element can be seen through the sight glass on the front of the body. Be sure to check the element at least once a day, particularly paying attention to the replacement time. Installation of a check filter is recommended to avoid careless oversight of red spots on the element surface. (Example: Add a single AME and install them in series.)
2. The element is needed to be replaced even if no red spot is observed on the surface, when the pressure drop reaches 0.1 MPa or after two years of operation.
3. If the element continues to be used passing the replacement time, it could be damaged.
If the element is damaged, the red-dyed oil mist and filtering media (active graphite fiber, glass-fiber paper filter, etc.) will splash over to the outlet side, leading to unexpected accidents.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-AMF

Odor removal filter

How to Order



Clean series

Body size

150—1/8 standard
250—1/4 standard
350—3/8 standard
450—1/2 standard
550—3/4 standard
650—1 standard
850—1 1/2 standard

10 - AMF 250 - 03 B

Port size

01—1/8
02—1/4
03—3/8
04—1/2
06—3/4
10—1
14—1 1/2
20—2

Option

Nit—None
B—Bracket

Model

Model	10-AMF150	10-AMF250	10-AMF350	10-AMF450	10-AMF550	10-AMF650	10-AMF850
Air flow rate ℓ/min (ANR)	200	500	1000	2000	3500	6000	12000
Pressure drop MPa *	0.008	0.01	0.01	0.014	0.01	0.01	0.01
Port size	Rc1/8, 1/4, 3/8	Rc1/4, 3/8, 1/2	Rc3/8, 1/2, 3/4	Rc1/2, 3/4, 1	Rc3/4, 1	Rc1, 1 1/2	Rc1 1/2, 2

* Inlet pressure: 0.7 MPa

Specifications

Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Fluid	Air
Oil mist concentration at outlet side	Less than 3.5 particles 0.3 μm or larger per liter of air (10-AME is needed on the inlet side.)
Ambient and fluid temperature	5 to 60°C
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 1

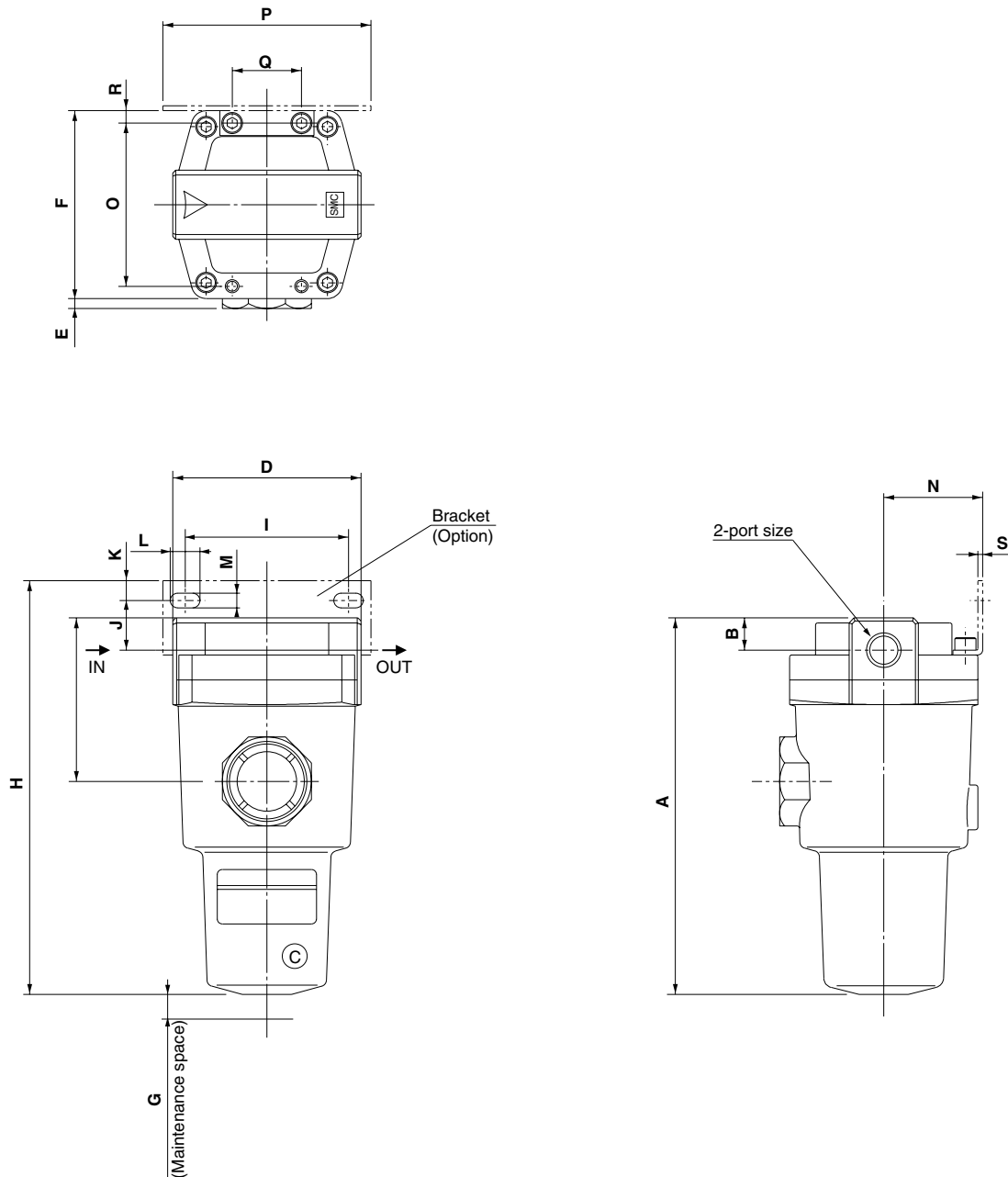
Replacement parts

Description	Material	Model						
		10-AMF150	10-AMF250	10-AMF350	10-AMF450	10-AMF550	10-AMF650	10-AMF850
Element assembly	Glass fiber NBR	10-AMF-EL150	10-AMF-EL250	10-AMF-EL350	10-AMF-EL450	10-AMF-EL550	10-AMF-EL650	10-AMF-EL850

* With gasket and O-ring

Dimensions

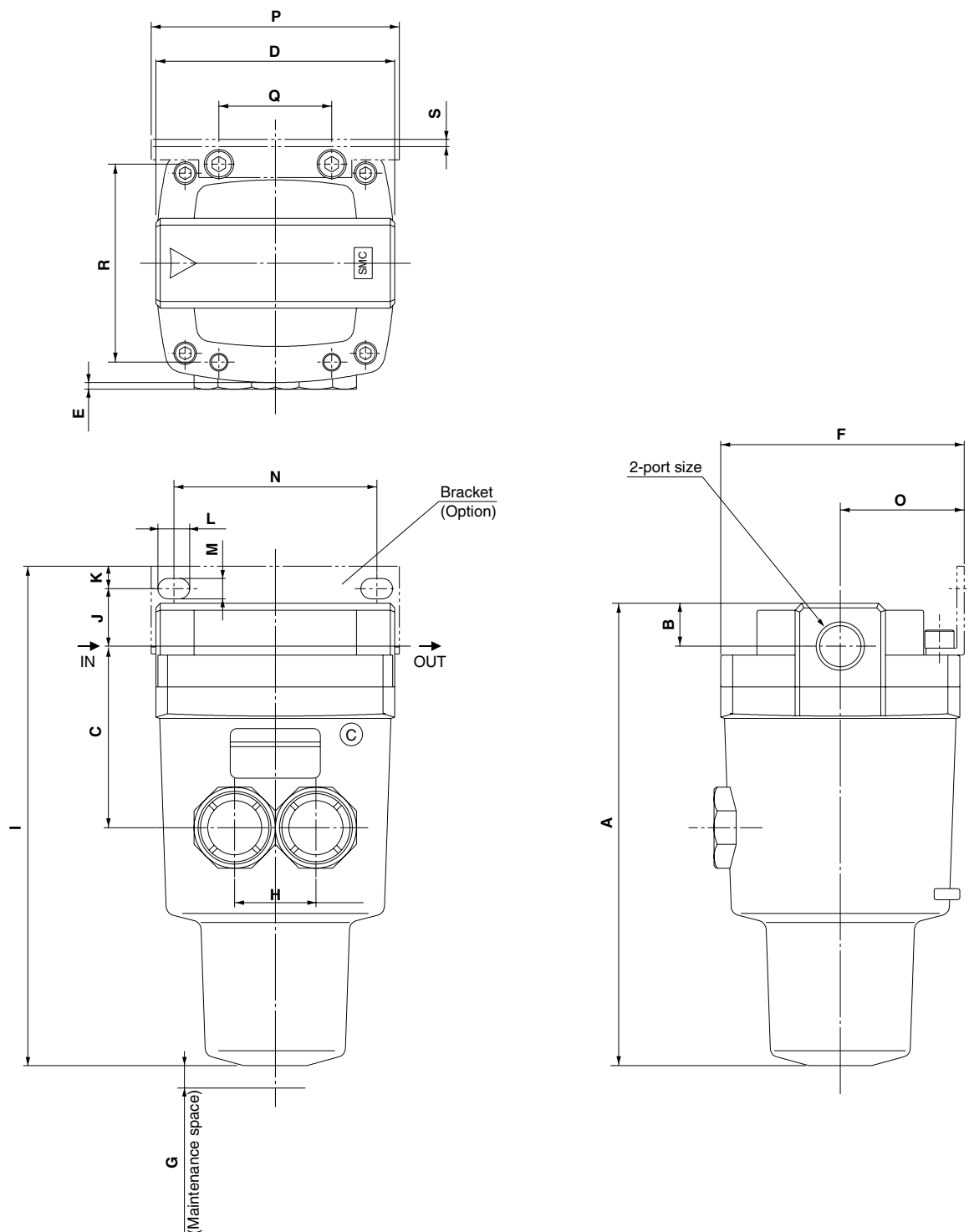
10-AMF150 to 350



Model	Port size Rc	A	B	C	D	E	F	G	Dimensions with mounting brackets											
									H	I	J	K	L	M	N	O	P	Q	R	S
10-AMF150	1/8, 1/4, 3/8	139	13	55	63	7.5	63	10	146	56	15	5	9	5.5	35	54	70	26	4.5	1.6
10-AMF250	1/4, 3/8	152	13	66	76	4	76	10	167	66	20	8	12	6	40	66	84	28	5	2.0
	1/2	158	16	72	76	4	76	10	167	66	17	8	12	6	40	66	84	28	5	2.0
10-AMF350	3/8, 1/2	184	16	92	90	5	90	10	198	80	22	8	14	7	50	80	100	34	5	2.3
	3/4	190	19	98	90	5	90	10	198	80	19	8	14	7	50	80	100	34	5	2.3

Dimensions

10-AMF450 to 850



Model	Port size Rc	A	B	C	D	E	F	G	H	Dimensions with mounting brackets										
										I	J	K	L	M	N	O	P	Q	R	S
10-AMF450	1/2, 3/4	205	19	100	106	3	106	10	36	221	25	10	14	9	90	55	110	50	88	3.2
	1	212	22	107	106	3	106	10	36	221	21	10	14	9	90	55	110	50	88	3.2
10-AMF550	3/4, 1	239	22	128	122	3	122	10	44	257	30	10	16	9	100	65	130	60	102	4.5
10-AMF650	1, 1 1/2	291	32	167	160	—	160	10	66	314	40	15	20	11	150	85	180	76	136	4.5
10-AMF850	1 1/2, 2	403	42	235	220	—	220	10	96	406	30	15	24	13	180	120	220	110	184	6



Specific Product Precautions

Be sure to read before handling.

Caution on Design

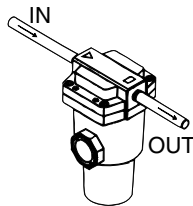
Caution

1. Design the layout so that the product is installed in an area that is less susceptible to pulsations. The element could be damaged if the difference in the inlet and outlet pressures exceeds 0.1 MPa.
2. The product is exclusively designed to be used with dry air.
3. Be sure to install a micro mist separator (10-AMD Series), micro mist separator with prefilter (10-AMH Series), or super mist separator (10-AME Series) on the inlet side.
4. The bracket that is provided with the product is for supporting the product itself. If piping or other items that are connected need to be supported, provide an additional support.

Mounting

Caution

1. Verify the direction of the flow of the compressed air and the ">" mark that indicates the inlet of the product before connecting. It cannot be used if connected in the opposite direction.



2. Make sure to install this product on horizontal piping.

Maintenance

Caution

1. The replacement time of element cannot be indicated explicitly because it depends on the odor concentration in compressed air. Confirm the effective period of deodorization and replace the element periodically thereafter.
2. When using the odor removal filter for the first time, confirm the effective deodorization period according to the following procedure:
 - 1) Record the date on which the odor removal filter was put into use.
 - 2) Calculate the total length of time that has elapsed from the time it was put into use until it has started to emit oil odor.
 - 3) Use the time obtained in 2) above as the guideline of deodorization performance effective period. If there is any change in the operating conditions, reconfirm the deodorization performance effective period.
3. The element must be replaced, even if the deterioration in the deodorization performance cannot be recognized, when the pressure drop reaches 0.1 MPa or after two years of operation.
4. When the element needs to be replaced, immediately replace it. At the same time, also replace the O-ring and gasket.

Series 10-IDG Membrane air dryer

How to Order

Single unit (Standard dew point -20°C specifications)

10-IDG 10 03 B R

Clean series

Size

3
5
10
20
30
50
60
75
100

Thread type

Nil	Rc
N	NPT
F	G

Option

Nil	None (standard)
R	Flow direction: Right → Left

Accessory

Nil	None (standard)
B	With bracket

Note) When symbol B is indicated, a bracket assembly with a part number shown in the table below is supplied as an accessory.

Port size

Symbol	Bore	Body size								
		3	5	10	20	30	50	60	75	100
01	1/8	●	●	—	—	—	—	—	—	—
02	1/4	●	●	—	●	●	●	—	—	—
03	3/8	—	—	●	●	●	●	●	—	—
04	1/2	—	—	—	—	—	—	●	●	●

Bracket assembly (accessory) part number

Part number	Applicable model
10-BM59	10-IDG3, 10-IDG5
10-BM61	10-IDG10
10-BM63	10-IDG20
10-BM64	10-IDG30, 10-IDG50
10-BM65	10-IDG60, 10-IDG75, 10-IDG100

* With cap bolts and spring washers



Standard dew point and air flow rate

Standard dew point °C	Flow rate by size				Outlet air flow rate		l/min(ANR)			
	3	5	10	20	Purge air flow rate	30	50	60	75	100
-20	25/6	50/12	100/25	200/50	300/75	500/125	600/125	750/150	1000/190	

Standard specifications / Single unit (Standard dew point -20°C)

Model		Standard dew point −20°C								
		10-IDG3	10-IDG5	10-IDG10	10-IDG20	10-IDG30	10-IDG50	10-IDG60	10-IDG75	10-IDG100
Standard performance conditions Range of operating conditions Standard parameters	Fluid	Compressed air								
	Inlet air pressure (MPa)	0.3 to 0.85				0.3 to 1.0				
	Inlet air temperature °C	−5 to 55 ^{Note 1)}				−5 to 50 ^{Note 1)}				
	Ambient temperature °C	−5 to 55				−5 to 50				
	Outlet air atmospheric pressure dew point °C	−20								
	Inlet air flow rate ℓ/min (ANR) ^{Note 2)}	31	62	125	250	375	625	725	900	1190
	Outlet air flow rate ℓ/min (ANR)	25	50	100	200	300	500	600	750	1000
	Purge air flow rate ℓ/min (ANR) ^{Note 3)}	6	12	25	50	75	125	125	150	190
	Inlet air pressure Mpa	0.7								
	Inlet air temperature °C	25								
	Inlet air saturation temperature °C	25								
	Ambient temperature °C	25								
Dew point indicator purge air flow rate		1 ℓ/min. (ANR) (inlet air pressure 0.7 MPa)								
Port size (nominal size B)		1/8, 1/4	1/4, 3/8				3/8, 1/2		1/2	
Weight (kg) (with bracket)		0.25(0.31)	0.43(0.51)	0.66(0.76)	0.74(0.87)	0.77(0.90)	1.50(1.65)	1.50(1.65)	1.55(1.70)	
Particle generation grade (Please refer to front matters 13 to 22 for details.)		Grade 1								

Note 1) No freezing.

Note 2) ANR indicates the flow rate converted to the value at 20°C under the atmospheric pressure.

Note 3) Includes 1 l/min (ANR) of purge air flow (at 0.7 MPa inlet air pressure) for the dew point indicator (except 10-IDG1, 3 and 5).

How to Order

Single unit (Standard dew point –15°C specifications)

10-IDG 10 H — 03 B — R

Clean series ●

Size ●

3
5
10
20
30
50
60
75
100

Thread type ●

Nil	Rc
N	NPT
F	G

Option

Nil	None (standard)
R	Flow direction: Right → Left

Accessory

Nil	None (standard)
B	With bracket

Note) When symbol B is indicated, a bracket assembly with a part number shown in the table below is supplied as an accessory.

Port size

Symbol	Bore	Body size								
		3	5	10	20	30	50	60	75	100
01	1/8	●	●	—	—	—	—	—	—	—
02	1/4	●	●	—	●	●	—	—	—	—
03	3/8	—	—	●	●	●	●	—	—	—
04	1/2	—	—	—	—	—	—	●	●	●

Bracket assembly (accessory) part number

Part number	Applicable model
10-BM59	10-IDG3H, 10-IDG5H
10-BM61	10-IDG10H
10-BM63	10-IDG20H
10-BM64	10-IDG30H, 10-IDG50H
10-BM65	10-IDG60H, 10-IDG75H, 10-IDG100H

* With cap bolts and spring washers

Standard dew point temperature and air flow rate ●

Symbol	Standard dew point °C	Flow rate by size				Outlet air flow rate		d/min(ANR)		
		3	5	10	20	Purge air flow rate				
H	–15	25/3	50/6	100/11	200/22	300/35	500/60	600/65	750/80	1000/110

Standard specifications / Single unit (Standard dew point –15°C)

Model		Standard dew point −15°C								
		10-IDG3H	10-IDG5H	10-IDG10H	10-IDG20H	10-IDG30H	10-IDG50H	10-IDG60H	10-IDG75H	10-IDG100H
Basic performance conditions (General)	Fluid	Compressed air								
	Inlet air pressure (MPa)	0.3 to 0.85					0.3 to 1.0			
	Inlet air temperature °C	−5 to 55 Note 1)					−5 to 55 Note 1)			
	Ambient temperature °C	−5 to 55					−5 to 50			
	Outlet air atmospheric pressure dew point °C	−15								
	Inlet air flow rate ℓ/min (ANR) Note 2)	28	56	111	222	335	560	665	830	1110
	Outlet air flow rate ℓ/min (ANR)	25	50	100	200	300	500	600	750	1000
	Purge air flow rate ℓ/min (ANR) Note 3)	3	6	11	22	35	60	65	80	110
	Inlet air pressure (MPa)	0.7								
	Inlet air temperature °C	25								
	Inlet air saturation temperature °C	25								
	Ambient temperature °C	25								
Dew point indicator purge air flow rate		1 ℓ/min. (ANR) (inlet air pressure 0.7 MPa)								
Port size (nominal size B)		1/8, 1/4	1/4, 3/8				3/8, 1/2	1/2		
Weight (kg) (with bracket)		0.25(0.31)	0.43(0.51)	0.66(0.76)	0.74(0.87)	0.77(0.90)	0.50(1.65)	1.50(1.65)	1.55(1.70)	
Particle generation grade (Please refer to front matters 13 to 22 for details.)		Grade 1								

Note 1) No freezing.

Note 2) ANR indicates the flow rate converted to the value at 20°C under the atmospheric pressure.

Note 3) Includes 1 d/min (ANR) of purge air flow (at 0.7 MPa inlet air pressure) for the dew point indicator (except 10-IDG3H and 5H).

How to Order

Single unit (Standard dew point -40°C specifications)

10-IDG 50 L

03 B R

● **Option**

Nil	None (standard)
R	Flow direction: Right → Left

● **Accessory**

Nil	None (standard)
B	With bracket

Note) When symbol B is indicated, a bracket assembly with a part number shown in the table below is supplied as an accessory.

● **Port size**

Symbol	Bore	Body size				
		30	50	60	75	100
02	1/4	●	●	—	—	—
03	3/8	●	●	●	●	●
04	1/2	—	—	●	●	●

Bracket assembly (accessory) part number

Part number	Applicable model
10-BM64	10-IDG30, 10-IDG30H, 10-IDG30L
	10-IDG50, 10-IDG50H, 10-IDG50L
10-BM65	10-IDG60, 10-IDG60H, 10-IDG60L
	10-IDG75, 10-IDG75H, 10-IDG75L
	10-IDG100, 10-IDG100H, 10-IDG100L

* With cap bolts and spring washers

● **Clean series**

● **Size**

30
50
60
75
100



● **Thread type**

Nil	Rc
N	NPT
F	G

● **Standard dew point and air flow rate**

Symbol	Standard dew point $^{\circ}\text{C}$	Flow rate by size		Outlet air flow rate		$\ell/\text{min}(\text{ANR})$
		30	50	Purge air flow rate		
L	-40	75/25	110/40	170/57	240/80	300/100

Standard specifications / Single unit (Standard dew point -40°C)

Model		Standard dew point -40°C				
		10-IDG30L	10-IDG50L	10-IDG60L	10-IDG75L	10-IDG100L
Standard range of operating conditions	Fluid	Compressed air				
	Inlet air pressure (MPa)	0.3 to 1.0				
	Inlet air temperature $^{\circ}\text{C}$	-5 to 50 ^{Note 1)}				
	Ambient temperature $^{\circ}\text{C}$	-5 to 50				
	Outlet air atmospheric pressure dew point $^{\circ}\text{C}$	-40				
	Inlet air flow rate ℓ/min (ANR) ^{Note 2)}	100	150	227	320	400
	Outlet air flow rate ℓ/min (ANR)	75	110	170	240	300
	Purge air flow rate ℓ/min (ANR) ^{Note 3)}	25	40	57	80	100
	Inlet air pressure (MPa)	0.7				
	Inlet air temperature $^{\circ}\text{C}$	25				
Basic performance conditions	Inlet air saturation temperature $^{\circ}\text{C}$	25				
	Ambient temperature $^{\circ}\text{C}$	25				
	Dew point indicator purge air flow rate	1 ℓ/min . (ANR) (inlet air pressure 0.7 MPa)				
	Port size (nominal size B)	1/4, 3/8		3/8, 1/2		
	Weight (kg) (with bracket)	0.74(0.87)	0.77(0.90)	0.50(1.65)	1.65(1.80)	1.80(1.95)
	Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 1				

Note 1) No freezing.

Note 2) ANR indicates the flow rate converted to the value at 20°C under the atmospheric pressure.

Note 3) Includes 1 ℓ/min (ANR) of purge air flow (at 0.7 MPa inlet air pressure) for the dew point indicator.

How to Order

Single unit (Standard dew point -60°C specifications)

10-IDG 60 S — 03 B R

Clean series

Size

60
75
100



Thread type

Nil	Rc
N	NPT
F	G

Options

Nil	None (standard)
R	Flow direction: Right → Left

Accessory

Nil	None (standard)
B	With bracket

Note) When symbol B is indicated, a bracket assembly with a part number shown in the table below is supplied as an accessory.

Port size

Symbol	Bore	Body size		
		60	75	100
03	3/8	●	●	●
04	1/2	●	●	●

Bracket assembly (accessory) part number

Part number	Applicable model
10-BM65	10-IDG60S, 10-IDG75S, 10-IDG100S

* With cap bolts and spring washers

Standard dew point temperature and air flow rate

Symbol	Standard dew point °C	Flow rate by size	Outlet air flow rate Purge air flow rate	ℓ/min(ANR)
		60	75	100
S	-60	50/27	100/54	150/85

Standard specifications / Single unit (Standard dew point -60°C)

Model		Standard dew point -60°C		
		10-IDG60S	10-IDG75S	10-IDG100S
Standard operating conditions	Fluid	Compressed air		
	Inlet air pressure (MPa)	0.3 to 1.0		
	Inlet air temperature °C	-5 to 50 ^{Note 1)}		
	Ambient temperature °C	-5 to 50		
Standard performance conditions	Outlet air atmospheric pressure dew point °C	-60		
	Inlet air flow rate ℓ/min (ANR) ^{Note 2)}	77	154	235
	Outlet air flow rate ℓ/min (ANR)	50	100	150
	Purge air flow rate ℓ/min (ANR) ^{Note 3)}	27	54	85
	Inlet air pressure (MPa)	0.7		
	Inlet air temperature °C	25		
	Inlet air saturation temperature °C	25		
	Ambient temperature °C	25		
	Dew point indicator purge air flow rate	1 ℓ/min. (ANR) (inlet air pressure 0.7 MPa)		
	Port size (nominal size B)	3/8, 1/2		
Weight (kg) (with bracket)		1.50(1.65)	1.65 (1.80)	1.80(1.95)
Particle generation grade (Please refer to front matters 13 to 22 for details.)		Grade 1		

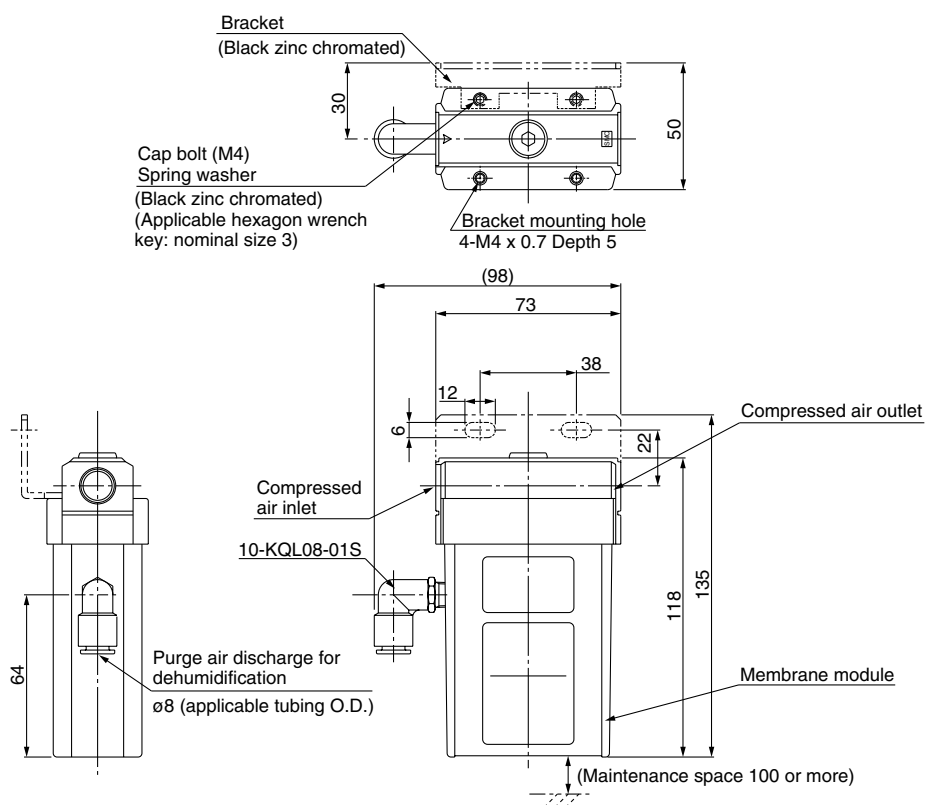
Note 1) No freezing.

Note 2) ANR indicates the flow rate converted to the value at 20°C under the atmospheric pressure.

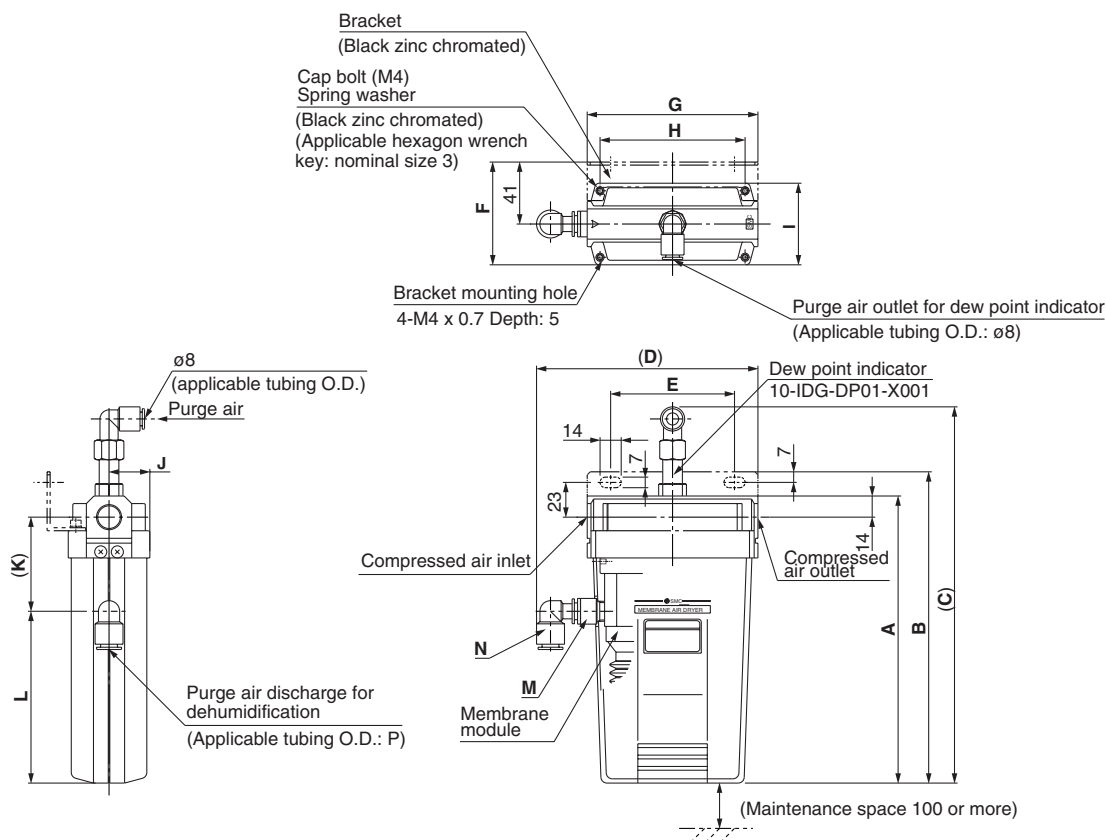
Note 3) Includes 1 ℓ/min (ANR) of purge air flow (at 0.7 MPa inlet air pressure) for the dew point indicator.

Dimensions

10-IDG3, 5
10-IDG3H, 5H



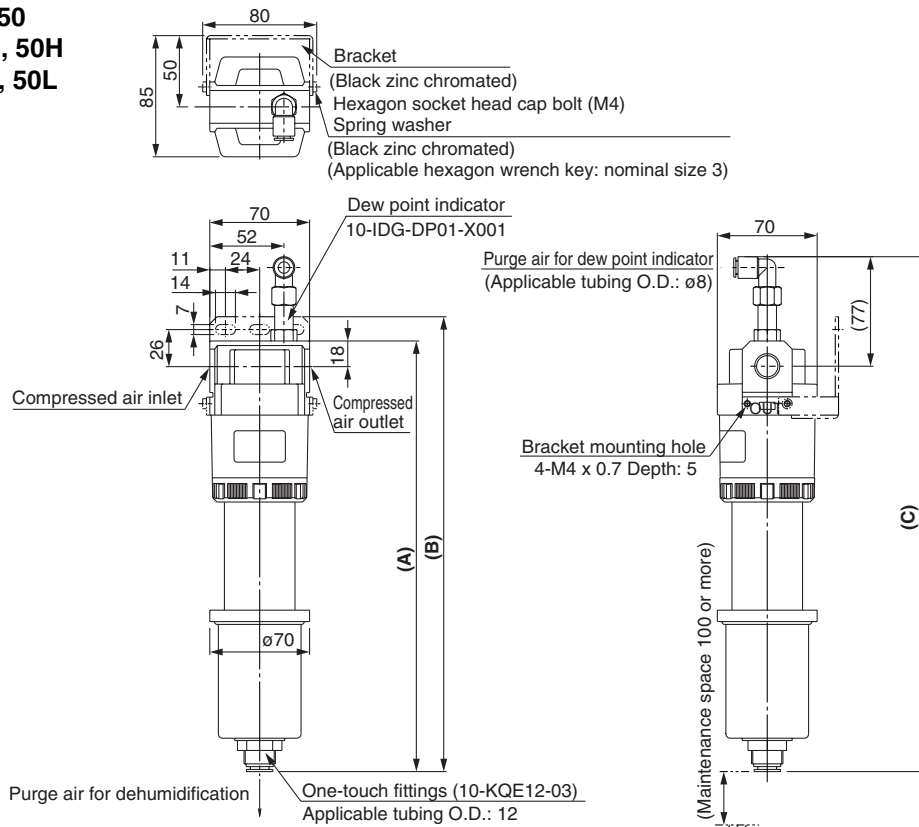
10-IDG10, 20
10-IDG10H, 20H



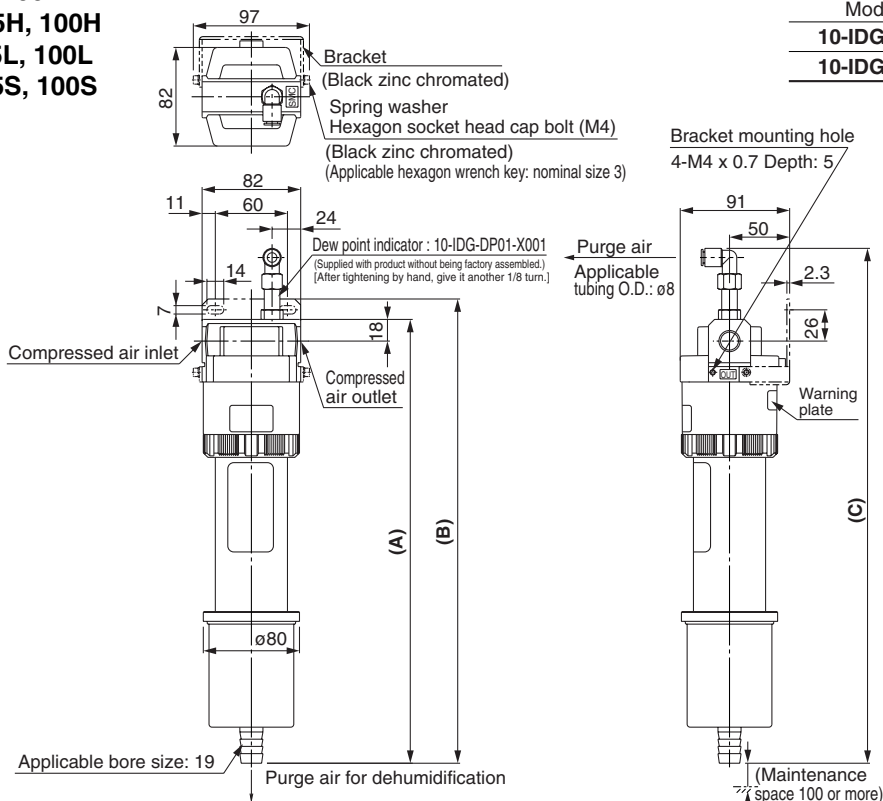
Model	Port size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
10-IDG10□	1/4, 3/8	165	181	224	119	62	68	83	65	53	27	53	98	10-KQS08-01S	10-KQL08-99	ø8
10-IDG20□		190	206	249	147	82	68	113	96	54	27	62	114	10-KQS10-02S	10-KQL10-99	ø10

Dimensions

10-IDG30, 50
10-IDG30H, 50H
10-IDG30L, 50L



10-IDG60, 75, 100
10-IDG60H, 75H, 100H
10-IDG60L, 75L, 100L
10-IDG60S, 75S, 100S



Model	Port size	A	B	C
10-IDG30 	1/4, 3/8	302	319	361
10-IDG50 		346	363	405

Model	Port size	A	B	C
10-IDG60,60H	$\frac{3}{8}, \frac{1}{2}$			
10-IDG75,75H,100,100H	$\frac{1}{2}$	369	386	428
10-IDG60L,60S		409	426	468
10-IDG75L,75S	$\frac{3}{8}, \frac{1}{2}$	489	506	548
10-IDG100L,100S		559	576	618



Specific Product Precautions

Be sure to read before handling.

Caution on Design

Warning

1. Depending on the model and operating conditions, the oxygen ratio of the outlet air may drop below the prescribed standard.

Do not use a standard dew point -40°C (symbol L) type, standard dew point -60°C (symbol S) type and 10-IDG30, 50, 30H, 50H for dehumidifying breathing air. Do not use outlet air (dried air) only in a closed room.

Caution

1. Devise a layout which considers the position of purge air discharge ports.

Purge air is humid air. Devise a layout in which purge air will not cause trouble such as corrosion or malfunction of peripheral equipment.

2. When very clean air is required

(Supply to air bearings, blowing of semiconductor parts, etc.)

Install a micro mist separator or super mist separator on the outlet side (end terminal) of the membrane air dryer (unit).

3. Time to reach the rated dew point

A certain amount of time is required to achieve the rated dew point after the air starts flowing into the membrane air dryer. Using the times below as a guide, start operating outlet side equipment after the rated dew point is achieved.

Standard dew point -20°C , -15°C : about 10 min.

Standard dew point -40°C : about 30 min. *

Standard dew point -60°C : about 120 min. *

* This time can be shortened as described below.

- 1) Provide a valve on the outlet side of the membrane air dryer.
- 2) Supply air with the valve closed. Only purge air flows into the membrane air dryer.
- 3) After 15 minutes or more, open the valve and flow air to the outlet side equipment.

4. Dehumidity performance when temperature at inlet side is changed.

Drying performance shows the case at an inlet air temperature of 25°C . In other cases, please refer to "How to Select a Model" (Best Pneumatics catalog) for proper selection.

Selection

Caution

1. Consider the purge air flow rate.

Read the purge air flow rate from the graph and calculate the "required outlet air flow rate + purge air flow rate". If the air supply capacity is over the calculated flow rate, the required outlet air flow rate cannot be obtained.

2. Selection for a compressed air line to which a mist separator or micro mist separator is already installed

Verify the operating air flow rate and air pressure, and select a membrane air dryer in accordance with the model selection method (Best Pneumatics catalog). If a membrane air dryer is selected based on the bore size of the equipment that is already installed, it could result in the selection of a model that is too small and has an insufficient dehumidification capacity.

3. Selection of unit style auto-drain

When the power of compressor in use is 2.2 kW {300 ℓ/min (ANR)} or less, use an N.C. auto drain (symbol: C). If an N.O. auto drain (symbol: D) is used for 2.2 kW or less, pressure inside the mist separator may not increase and remain in the blowing off state. Differential pressure type auto drain can be used for 2.2 kW or less.

Mounting

Caution

1. Do not obstruct the purge air discharge ports.

If purge air back pressure becomes too high or purge air stops flowing, dehumidification performance will decrease or may become impossible.

2. Be sure to install a mist separator and micro mist separator or a micro mist separator with prefilter on the inlet side of the membrane air dryer.

If the inlet air contains oil or water drops, etc., performance will be reduced.

3. Install a regulator on the outlet side of the membrane air dryer.

If it is installed on the inlet side, dehumidification performance will be reduced.

4. Take sufficient care in handling.

There is a danger of damage if dropped.



Specific Product Precautions

Be sure to read before handling.

Piping

⚠ Warning

1. Confirm tightening of the holder.

(for 10-IDG30 to 10-IDG100, 10-IDG30H to 10-IDG100H, 10-IDG30L to 10-IDG100L and 10-IDG60S to 10-IDG100S)

Before starting the flow of compressed air, turn the membrane air dryer's holder in its tightening direction, confirming that it is completely tightened and that the case will not come off.

2. Piping of purge air outlet for dehumidification

The piping of purge air for dehumidification and for the dew point indicator can be combined, but do not merge these with compressed air lines or drain piping, etc., as this can cause damage.

⚠ Caution

1. Use of tools

Hold the upper portion of the body (die-cast aluminum section) with a spanner or adjustable angle wrench. Do not turn it while holding the case section.

2. Piping materials for low dew point air

If air of a low dew point (−40°C or less) is required, do not use a nylon tube piping or resin fitting (except fluoropolymer) for the outlet side piping of the membrane air dryer. Due to the nature of the nylon tube, it could be affected by the ambient air, and it might not be possible to achieve the prescribed low dew point at the end of the tube. Therefore, for low dew point air, use a stainless steel or fluoropolymer piping.

3. Length of the tube connected to the purge air outlet for dehumidification

The dehumidification capacity decreases as the length of the tube for purge air outlet become long. Use a tube of the specified size and keep its length within 5 m. For the outlet air atmospheric pressure dew point in relation to the length of the tube for purge air outlet, refer to the table "Outlet Air at the Atmospheric Pressure Dew Point in Compliance with the Tube Length for Discharging the Purged Air" of Best Pneumatics catalog.

4. Connection of tube for purge air outlet

(for 10-IDG60 to 10-IDG100, 10-IDG60H to 10-IDG100H, 10-IDG60L to 10-IDG100L and 10-IDG60S to 10-IDG100S)

When a tube is connected to the purge air outlet for dehumidification, connect a tube of specified size and fix it with a tube band.

Air supply

⚠ Caution

1. Compressed air supply capacity

An air source that has a supply capacity that is larger than the "necessary outlet air flow rate (dry air flow rate) + purge air flow rate" is required. Verify the purge air flow rate in the Purge Air Flow Characteristics graph. (Best Pneumatics catalog).

Operating Environment

⚠ Caution

1. Do not use at temperatures (fluid or ambient temperatures) higher than the prescribed operating conditions.

Resin is used for the membrane module, which can be damaged by the operation at high temperatures. Especially when installed immediately after a reciprocating type air compressor, confirm that the fluid temperature does not exceed the range of operating conditions during use.

2. Keep the inlet air temperature lower than the ambient temperature.

If the membrane air dryer's body is cooled by the surrounding air, water drops may accumulate inside and reduce its dehumidification capacity.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Specific Product Precautions

Be sure to read before handling.

Maintenance

Warning

1. Do not remove the orifice (plug) when in a pressurized state.

Never remove the orifice (plug) while under pressure, as it can fly out, causing a hazard.

Caution

1. Confirming the dehumidification function with the dew point indicator

Observe the color of the dew point indicator to confirm whether the membrane air dryer is functioning normally.
[When dew point indicator color is blue: Functioning normally]

[When the color of the dew point indicator is pink: Dew point temperature is high. (Outlet air is humid.) Note: Atmospheric pressure dew point approximately -10°C minimum.]

Even if humid air flows in and it turns the indicator color pink, when dry air enters after that, the color turns blue. It takes about 1 hour from the start of air flow to indicator color change.

2. Dew point indicator replacement period

The absorbent is used in the dew point indicator. It absorbs the gasified oil in the compressed air and/or the gaseous elements other than the air, and then may turn brown. When it turned brown, replace the dew point indicator.

A periodic replacement interval is two years as a guideline.

(For the part number of the dew point indicator, refer to dimensions.)

3. Membrane module replacement period

Replace the membrane module when the color of the dew point indicator turns white or pink.

As a guideline, unit should be replaced after approximately 10 years of use (10 hours/day operation). Replace it when the color of the dew point indicator turns white or pink, even if it is within the period.

4. Tightening torque for installing the membrane module and the case (for 10-IDG5/10/20/5H/10H/20H)

Use caution not to tighten excessively.

It may result in a breakdown of membrane module, case and mounting screws or insufficient sealing.

(Verify the tightening torque range in the instruction manual.)

Maintenance

Caution

5. Installing a pressure gauge

A pressure gauge should be installed on the inlet and outlet sides of the membrane air dryer (unit) for the maintenance and inspection purposes.

Series **AMP** Exhaust cleaner for clean room

How to Order

AMP **2** **2** **0** — **03** —

Body size

2	1/4 standard
3	3/8 standard
4	1/2 standard

Element structure

2	2 stage
---	---------

Thread type

Nil	Rc
N	NPT
F	G

Option

Nil	None
R	Flow direction: Right → Bottom
T	With element service indicator

Accessory (Option)

Nil	None
B	With bracket

Note) Bracket is not installed.

Port size

Symbol	Piping port size	Body size		
		2	3	4
02	1/4	●	—	—
03	3/8	●	●	—
04	1/2	—	●	●
06	3/4	—	—	●



Model

Model	AMP220	AMP320	AMP420
Maximum flow rate ℓ/min (ANR)	200	500	1000
Port size Rc	1/4, 3/8	3/8, 1/2	1/2, 3/4
Weight (kg)	0.43	0.68	1.15

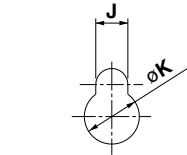
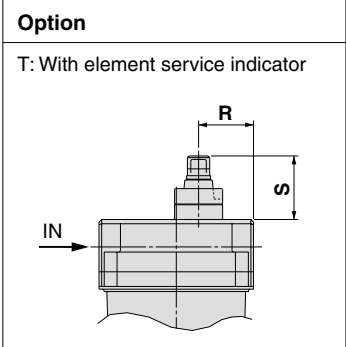
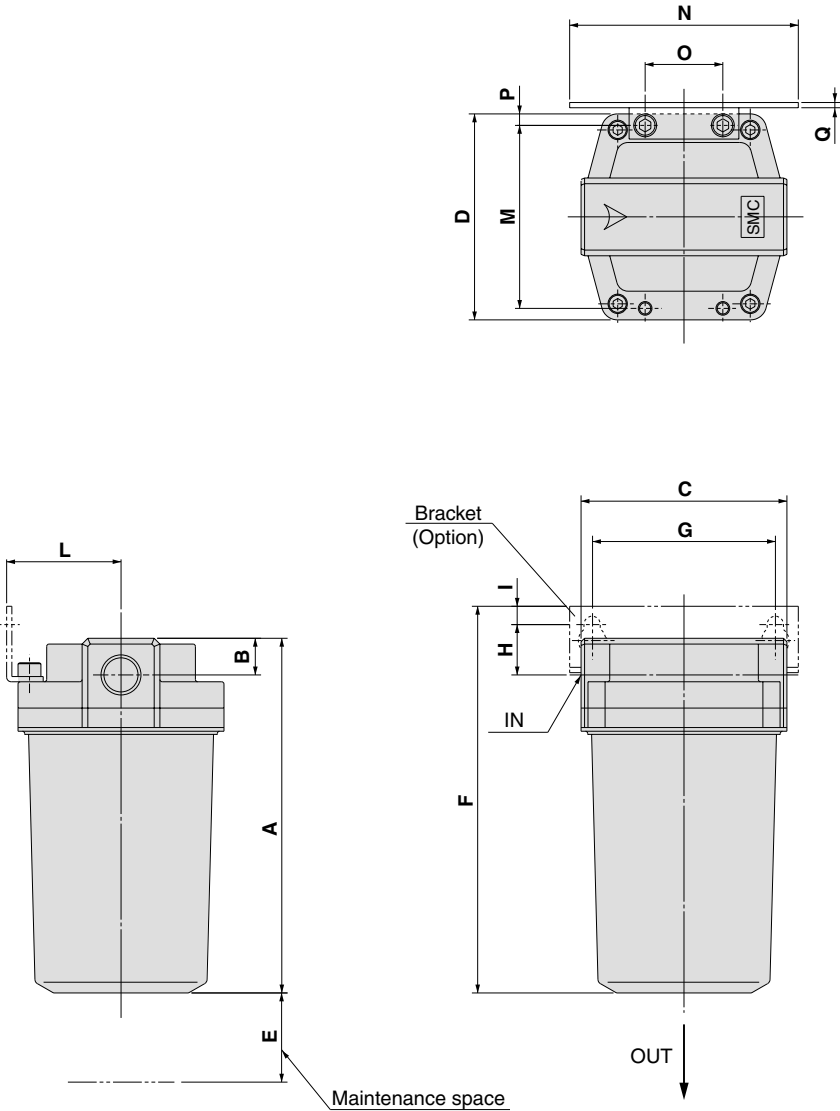
Specifications

Fluid	Compressed air
Element inlet side pressure	0.1 MPa or less
Ambient and fluid temperature	5 to 50°C
Nominal filtration rating	0.01 μm (95% particle size collection)
Oil mist removal rate	Less than 3.5 particles 0.3 μm or larger per liter of air (100 particles or less per cubic foot)
Element life	One year after the first use (or when the inlet pressure reaches 0.2 MPa even within 1 year from the first use).
Element life indication (At saturation of element oil)	Element color indication (Replace if red spots appear on the element surface, even within 1 year from the first use.)
Element construction	2 stage element
Noise reduction	40 dB (A) or more
Particle generation grade (Please refer to front matters 13 to 22 for details.)	Grade 3

Accessory (Option)

Applicable model	AMP220	AMP320	AMP420
Bracket assembly (With cap bolt With spring washer)	BM66	BM67	BM68

Dimensions



Bracket mounting hole

Model	Applicable bolt
AMP220	M5 hexagon socket head cap bolt
AMP320	M6 hexagon socket head cap bolt
AMP420	M8 hexagon socket head cap bolt

(mm)

Model	Piping port size (nominal size B)	A	B	C	D	E	Dimensions with mounting bracket													Element service indicator dimensions	
							F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
AMP220	1/4, 3/8	108	13	76	76	80	123	66	20	8	6	10	40	66	84	28	5	2	26	37	
AMP320	3/8, 1/2	155	16	90	90	120	169	80	22	8	7	12	50	80	100	34	5	2.3	32	37	
AMP420	1/2, 3/4	221	19	106	106	180	237	90	25	10	10	15	55	88	110	50	9	3.2	37	37	



Series AMP Model selection

Selection

⚠ Caution

1. The selection method for an exhaust cleaner may differ between exhaust air from driving system such as actuator and that from the ejector. Please refer to the procedures described below.

(Exhaust flow rate which exceeds the specification of the model selected may cause a decline in exhaust air cleanliness, performance degradation of actuator or ejector, or damage to the element.)

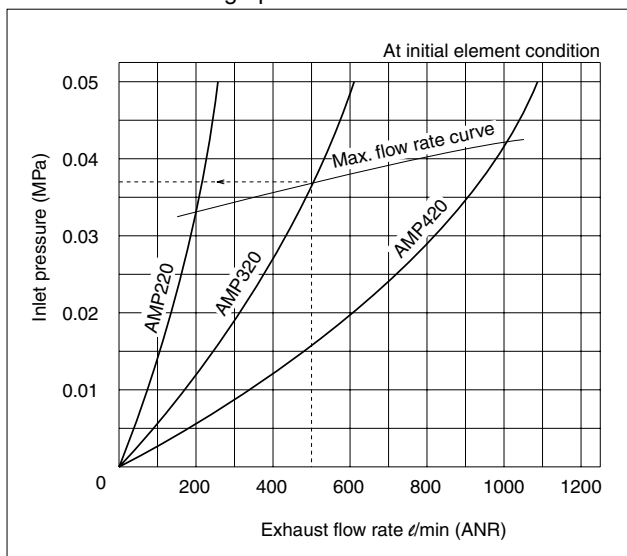
2. Exhaust from actuator

- 1) Obtain the air consumption of the actuator to be used. However, if an exhaust cleaner of the centralized piping system will be used, sum up the air consumption of the actuators that operate simultaneously.
- 2) Select a model that provides a maximum processing flow volume that does not exceed the maximum flow curve of the exhaust cleaner.

3. Exhaust from ejector

- 1) If the performance of the equipment is influenced by back pressure applied to the exhaust air, as in case of an ejector, please confirm the range of back pressure that will not have effect on the equipment.
- 2) In the case of ejectors, the exhaust flow rate is the total of the maximum suction flow rate and air consumption. Since the exhaust flow rate calculation method differs among equipment, check the catalog or instruction manual of the equipment to be used.
- 3) In the case of centralized piping system, sum up the air consumption of the equipment that operate simultaneously to obtain a maximum exhaust flow rate.
- 4) Calculate the inlet pressure based on the flow characteristic graph using the maximum exhaust flow rate obtained in 3) as the exhaust flow rate.

Flow characteristics graph



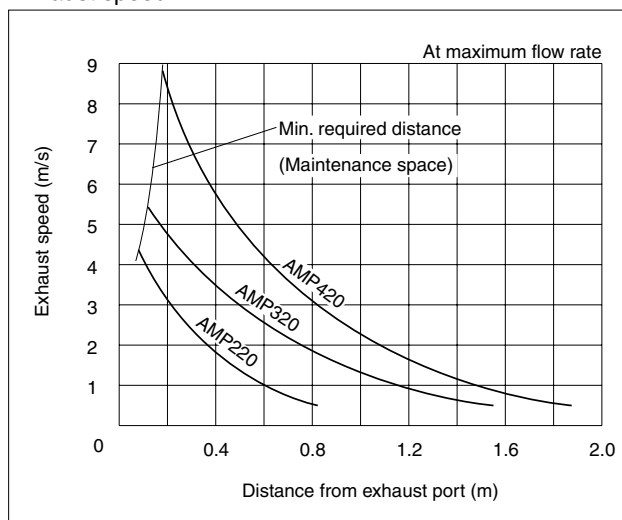
Example) When AMP320 is used at a flow rate of 500 l/min, the inlet pressure is 0.037 MPa.

⚠ Caution

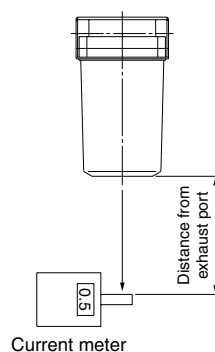
4. Exhaust speed characteristics are shown in the graph below.

- 1) When using the cleaner, consider the effects of dust, etc., that has accumulated on the floor or other areas.
- 2) If there is a concern about dusty atmosphere, install the cleaner in a place that is not subject to dust.

Exhaust speed



<Measuring method>





Specific Product Precautions

Be sure to read before handling.

Mounting

⚠ Caution

1. Air piping must be thoroughly flushed or cleaned before mounting.
2. When screwing in the pipes or fittings, be sure to prevent cutting chips or sealing material on the threaded portion of the pipe from entering the piping.
When a seal tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.
3. Mount the unit vertically. Holding the resin case while screwing in the piping will damage the case. Instead, hold the die cast aluminum body with a wrench (or some other tool) to screw in the piping.
4. In the case of centralized piping, a reverse flow may occur due to switching of a solenoid valve, etc. In this situation, install a check valve on the inlet side.
5. Provide sufficient space required for maintenance and inspection. (Confirm the dimensions on the drawing.)

Environment

⚠ Warning

1. Do not use in an atmosphere or place which can damage the case or element service indicator (Option : T).
2. Because the case material is nylon, avoid use of chemicals such as alcohol, thinner, carbon tetrachloride, chloroform, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, water soluble cutting lubricant (Alkaline) or avoid use in an atmosphere where any of these chemicals exists.
Use a neutral detergent to clean the case.
3. Do not use in an environment where static electric charge may cause a problem.
4. Block off the heat source in proximity.
If a heat source is located in proximity, the temperature of the product may rise and exceed the operating temperature range due to heat radiation. Block off the heat source with a cover, etc.

Supply air

⚠ Caution

1. The product cannot be used with air containing moisture.
2. Install a mist separator (Series 10-AM), micro mist separator (Series 10-AMD) or micro mist separator with pre-filter (Series 10-AMH) on the air supply side.
3. When using an ejector, prevent the product from sucking liquid such as water and oil with air

Maintenance

⚠ Caution

1. Replace the element after one year of use, or before the inlet pressure ^(Note) reaches 0.1 MPa even if one year has not elapsed.
If operation is continued without replacing the element, the cleanliness of the exhaust air will decline. When replacing the element, also replace the O-ring. (Element's clogging life can easily be managed by using an option (T: with an element service indicator).)
2. Red spots appear on the surface of the first element when it is saturated with oil. Check the element once a day and immediately replace it when red spots appear.
If operation is continued after red spots have appeared, the second element will also be saturated with oil, and oil mist imbued with red dye will be mixed with the exhaust air, contaminating the surrounding air.

Note) The inlet pressure here refers to the pressure on the inlet side of the element when air of a certain flow rate flows through the exhaust cleaner. The relation between the inlet pressure and the air flow rate can be confirmed in the flow characteristics graph on the previous page.

Operation in a clean room

⚠ Caution

1. Open the inside bag of a double sealed package in a clean room or clean atmosphere.
2. Mount the product in a down flow area with its exhaust port facing downward.
3. Avoid mounting in locations where exhaust air will blow directly to the work pieces.
4. Confirm the exhaust speed and consider the effect of dust, etc., in a clean room.



Air Preparation Equipment Common Precautions 1

Be sure to read before handling. Refer to the main text for precautions for each series.

Design

Adopt a safety design to prevent occurrence of unexpected accidents as listed below.

⚠ Caution

1. **Design a layout which will prevent occurrence of reverse pressure and reverse flow.**

Reverse pressure or reverse flow will cause malfunction or damage to equipment. Implement safety measures including those for handling procedures.

Selection

⚠ Warning

1. **To select the equipment, thoroughly verify the purpose, specification requirements and the operating conditions (Such as pressure, flow rate, temperature, environment and power supply) and make your selection based on the latest catalog. Be sure not to exceed specification ranges. If there is anything that is not clear, contact SMC before making a selection.**

2. **Do not use this product for breathing, medical use, for medicine that is injected by humans, or for blowing air on food products.**

The air preparation equipment is designed exclusively for industrial compressed air, and it should not be used for any other purpose. Due to unavoidable circumstances, if it must be used for other purposes, be sure to take safety measures and contact SMC beforehand.

⚠ Caution

1. **Do not introduce a flow larger than the rated flow rate.**

If the rated flow rate is exceeded even momentarily, it could cause drainage or oil to splash to the secondary side, leading to equipment damage.

2. **Do not use with low air pressure (Blower).**

Air preparation equipment, which operates at a specific minimum operating pressure in accordance with the equipment to be used, is designed to be used exclusively with compressed air. Using it below the minimum operating pressure could lower its performance or cause a malfunction.

If it must be used under such conditions due to unavoidable circumstances, contact SMC beforehand.

Mounting

⚠ Caution

1. **Confirm the mounting orientation.**

Because the mounting orientation differs with the model, confirm it in this catalog or in the instruction manual. If the equipment is installed slanted, it could lead to improper drainage, causing the auto drain to malfunction, or damage the equipment.

2. **Maintenance space**

Install and mount the equipment while providing sufficient space for maintenance and inspection. Refer to the instruction manual of the respective equipment for details on the maintenance space.

Piping

⚠ Caution

1. **Preparation before connecting the piping**

Use an air blower to thoroughly flush the piping or wash the piping to remove any cutting chips, cutting oil, or debris from inside the piping before connecting them.

2. **Wrapping the seal tape**

When screwing in the pipes or fittings, be sure to prevent cutting chips or sealing material on the threaded portion of the pipe from entering the piping.

If sealing tape is to be used, leave about 1.5 to 2 crests of the threads uncovered.

3. **Take measures to prevent drainage from accumulating in the piping.**

Design the piping so that a drain relief is provided at the bottom of a rise pipe, or a slight taper is provided along the flow to prevent the drainage from accumulating.

4. **Confirmation of IN and OUT**

When connecting the piping, be sure to avoid mistakes in connecting the water and air sides as well as the IN and the OUT sides.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Air Preparation Equipment Common Precautions 2

Be sure to read before handling. Refer to the main text for precautions for each series.

Air Supply

Warning

1. **Do not operate with anything other than compressed air.**

The air preparation equipment is designed to be used exclusively with compressed air. To use fluids instead of compressed air, contact SMC beforehand.

2. **Do not use compressed air that contains chemicals, organic solvents, salt or corrosive gases.**

Do not use compressed air that contains chemicals, organic solvents, salt or corrosive gases because they could damage the equipment or cause it malfunction.

3. **Operating pressure range**

The fluid temperature and the ambient temperature are established according to the equipment. Using the equipment out of the specified range could cause it to be damaged, malfunction.

Environment

Warning

1. **Do not operate in the conditions listed below due to a risk of malfunction.**

In an environment that is exposed to corrosive gases, organic solvents, and chemical solutions. or in a location in where these elements are likely to adhere to the equipment.

2. **Observe the specified fluid temperature and ambient temperature ranges.**

The fluid temperature and the ambient temperature are established according to the equipment. Using the equipment out of the specified range could cause it to be damaged, malfunction.

Maintenance

Warning

1. **Set the pressure of the compressed air at zero before an inspection.**

Before disassembling the equipment on the compressed air side to inspect the auto drain or to replace the filter element, make sure that the pressure is set at zero.

Caution

1. **Do not place a heavy object on top or use the equipment as a step stool.**

Failure to observe this precaution could cause the equipment to become deformed or damaged, or loss of balance could cause a fall or injury.

2. **Discharge the drainage on a regular basis.**

If drainage remains accumulated in the equipment or in the piping, it could cause the equipment to malfunction, or the drainage could splash over to the outlet side, leading to unexpected accidents. Therefore, be sure to check the drainage volume and the operation of the auto drain on a daily basis.

For Clean Room Pressure Switch

Description	Series	Page
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High Precision Digital Pressure Switch for General Fluids	10-ZSE/ISE50	P.934
High Precision Digital Pressure Switch for General Fluids	10-ZSE/ISE60	P.939
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Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Series 10-ZSE30/ISE30

High Precision 2-color Display
Digital Pressure Switch

How to Order

• **Clean series**

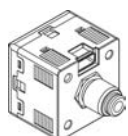
For positive pressure **10** — **ISE30** — **01** — **25** — **M** ☐ ☐

For vacuum/low pressure **10** — **ZSE30** — **01** — **25** — **M** ☐ ☐

• **Option 1**

Nil	Without lead wire
L	Lead wire with connector (lead wire length: 2 m)

• **Piping specifications**

01	R1/8 (with M5 female thread)	
T1	NPT1/8 (with M5 female thread)	
C4H	One-touch fitting for ø4 One-touch fitting for ø5/32"	
C6H	One-touch fitting for ø6	
N7H	One-touch fitting for ø1/4"	
C4L	One-touch fitting for ø4 One-touch fitting for ø5/32"	
C6L	One-touch fitting for ø6	
N7L	One-touch fitting for ø1/4"	

• **Output specifications**

25	NPN Output
65	PNP Output
26	1-5 V output
28	4 to 20 mA output

• **Option 2**

Nil	None
A	Brackets
B	Panel mount
D	Panel mount adapter + front protective cover

• **Unit specifications**

Nil	With unit switching function ^{Note 1)}
M	Fixed SI unit ^{Note 2)}

Optional Part No.

When only optional parts are required, order with the part numbers listed below.

Options	Part no.	Note
Lead wire with connector	10-ZS-27-A	Lead wire length: 2 m
Brackets	10-ZS-27-B	With mounting screws (M3 x 5L: 2 pcs)
Panel mount adapter	10-ZS-27-C	With mounting screws (M3 x 8L: 2 pcs)
Panel mount adapter + front protective cover	10-ZS-27-D	With mounting screws (M3 x 8L: 2 pcs)

Note 1) A new scale and measurement act does not allow use of a product with unit display switching function in Japan.

Note 2) Fixed units For vacuum pressure or compound pressure: kPa
For positive pressure: MPa

⚠ Caution

This product is 10-ZSE30/ISE30 series blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Specifications

	10-ZSE30 (for vacuum/low pressure)	10-ISE30 (positive pressure)
Rated pressure range	−100.0 to 100.0 kPa	0.000 to 1.000 MPa
Regulating pressure range	−101.0 to 101.0 kPa	−0.100 to 1.000 MPa
Proof pressure	500 kPa	1.5 MPa
Minimum setting unit	0.2 kPa	0.001 MPa
Applicable fluids	Air, non-corrosive gas, and nonflammable gas	
Power supply voltage	12 to 24 V DC, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption	45mA or less (at no load)	
Switch output ^{Note 1)}	NPN or PNP open collector output: 1 output	
	Max. load pressure	80mA
	Max. applied voltage	30V (with NPN output)
	Residual voltage	1 V or less (with load current of 80 mA)
	Response time	2.5 ms or less (Response time selections with anti-chattering function: 20 ms, 160ms, 640ms, 1280 ms)
	Short circuit protection	With short circuit protection
Repeatability	±0.2% F.S. ±2 digits or less	±0.2% F.S. ±1 digit or less
Analog output	Voltage output ^{Note 2)}	Output voltage: 1 to 5 V ±2.5% F.S. or less (with rated pressure range) Linearity: ±1%F.S. or less, Output impedance: Approx. 1kΩ
	Current output ^{Note 3)}	Output current: 4 to 20 mA ±2.5% F.S. or less (with rated pressure range) Linearity: ±1%F.S. or less Maximum load impedance: 300 Ω with power supply voltage of 12 V; 600 Ω with power supply voltage of 24 V Minimum load impedance: 50 Ω
Hysteresis	Hysteresis mode	Variable (can be set from 0)
	Window comparator mode	
Display	3 1/2-digit, 7-segment indicator, 2-color display (red and green) Sampling cycle: 5 times/s	
Display accuracy	±2% F.S. ±2 digit (at operating temperature of 25°C)	±2% F.S. ±1 digit (at operating temperature of 25°C)
Indicator light	ON when power supply is ON (green)	
Temperature characteristics		
Environmental resistance	Enclosure	IP40
	Operating temperature range	Operating: 0 to 50°C, Stored: 10 to 60°C (with no condensation or freezing)
	Operating humidity range	Operating and stored: 35 to 85% RH (with no condensation)
	Withstand voltage	1000 V AC for 1 min between lead wires and body
	Insulation resistance	50 MΩ or more between live parts and enclosure (at 500 V DC)
	Vibration resistance	10 to 150 Hz, 1.5 mm or 20 m/s ² amplitude in X, Y, Z directions for 2 hrs. each
	Shock resistance	100 m/s ² in X, Y, Z directions, 3 times each
Standard	CE marking and UL (CSA) compatible	
Particle generation grade	Grade 2	
(Refer to pages 13 to 22 of of Front Matter for details.)		

Note 1) When switch output is selected, analog output is not available.

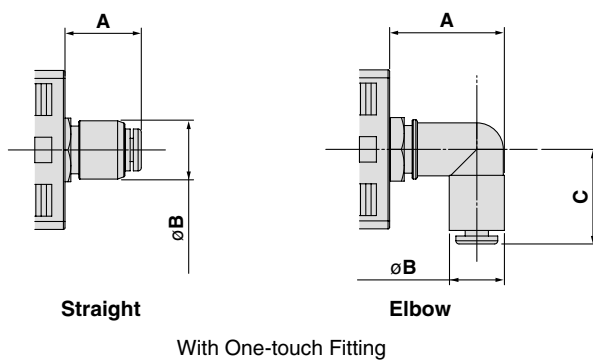
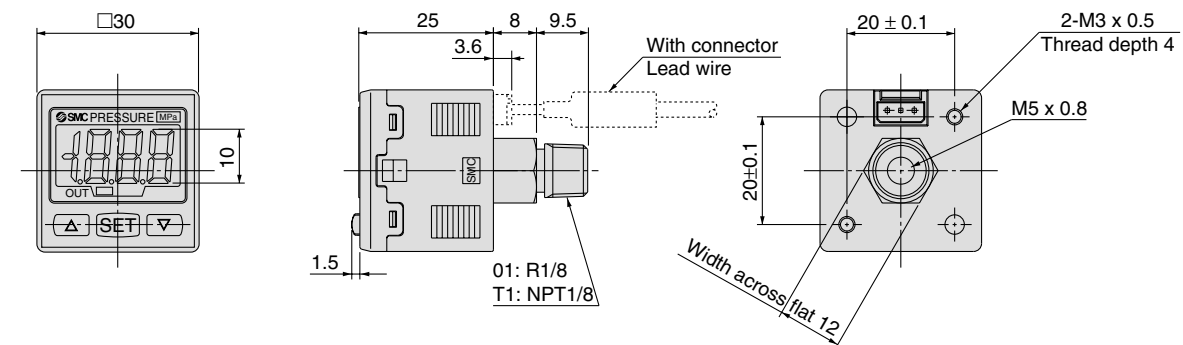
Note 2) When voltage output is selected, a simultaneous selection of switch output and current output is not available.

Note 3) When current output is selected, a simultaneous selection of switch output and voltage output is not available.

Piping specifications

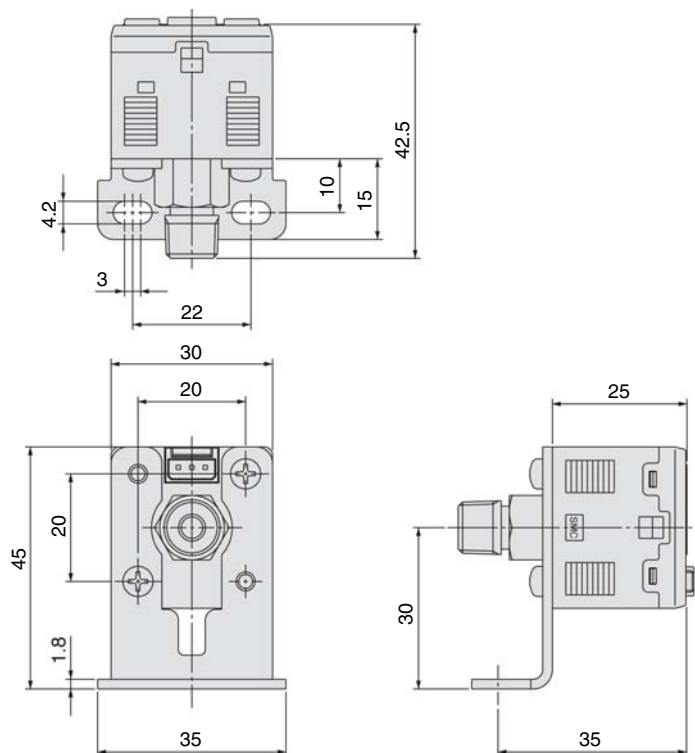
Part no.	01	T1	C4H	C6H	N7H	C4L	C6L	N7L
Port size	R1/8 M5 x 0.8	NPT1/8 M5 x 0.8	—	—	—	—	—	—
	One-touch Fittings Straight type	—	—	ø4mm ø5/32inch	ø6mm	ø1/4inch	—	—
	One-touch fitting Elbow Type	—	—	—	—	—	ø4mm ø5/32inch	ø6mm ø1/4inch
Wetted part material			Sensor pressure: Silicon, piping port: C3602 (electroless nickel plated), O-ring: FKM					
			O-ring: FKM			O-ring: FKM, fitting: PBT		
Weight	With lead wire with connector (2 m)	81g	76g			78g		
	Without lead wire with connector	43g	38g			40g		

Dimensions



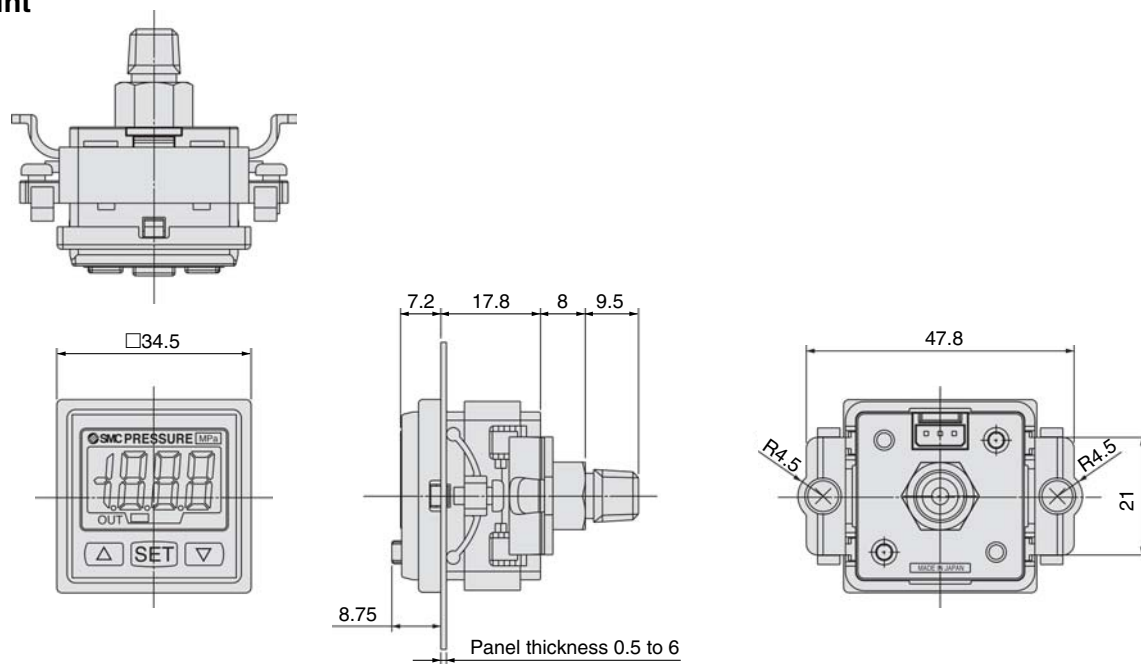
One-touch Fittings Size	Straight		Elbow		
	A	B	A	B	C
ø4, ø5/32"	14.4	11.2	20	10.4	18
ø6			22.4	12.8	20
ø1/4"			22.8	13.2	20.5

With bracket

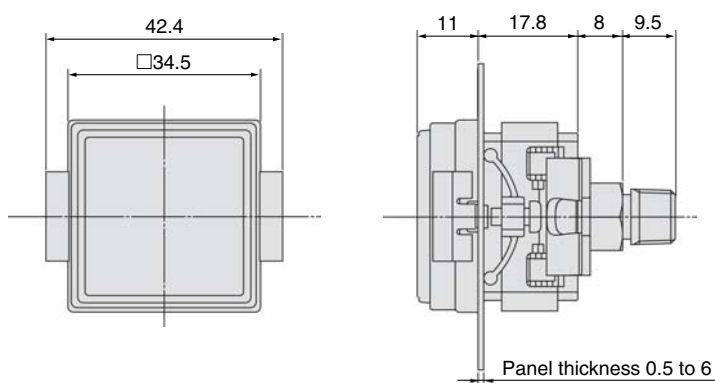


Dimensions

Panel mount



Panel mount adapter + front protective cover



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

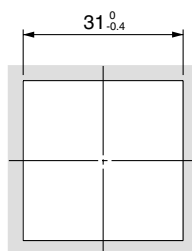
Pressure switch

Clean gas filter

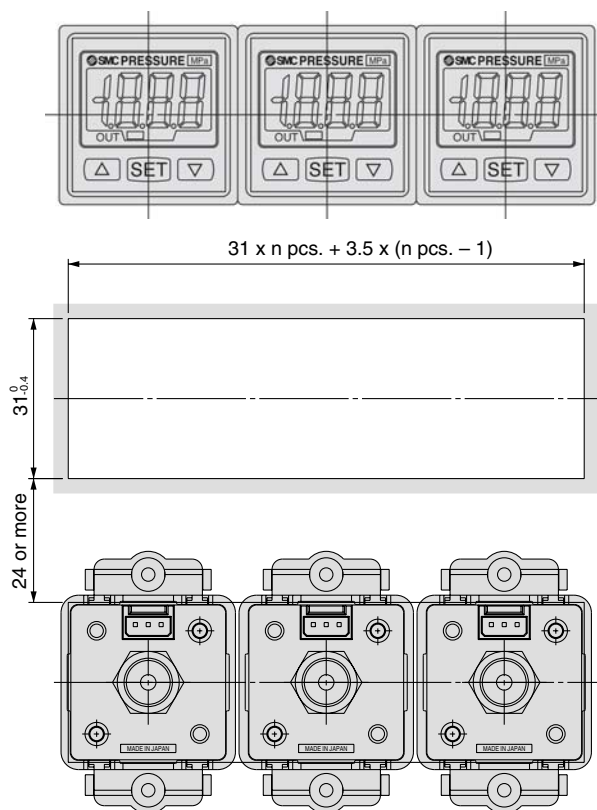
Dimensions

Panel fitting dimension

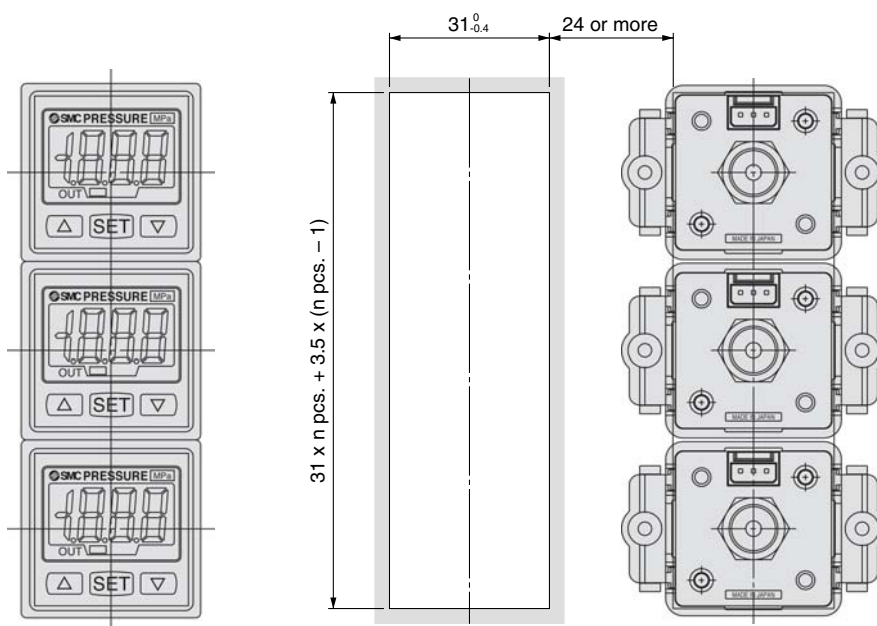
1 pc. mounting



Multiple (2 pcs. or more) horizontal mounting



Multiple (2 pcs. or more) vertical mounting





Specific Product Precautions

Be sure to read before handling.

Handling

⚠ Warning

1. Do not drop, bump or apply excessive impacts (980m/s^2) while handling. Although the body of the sensor may not be damaged, the internal parts of the sensor could be damaged and lead to a malfunction.
2. The tensile strength of the cord is 35 N. Applying a greater pulling force on it can cause a malfunction. When handling, hold the body of the sensor.
3. Do not exceed the screw-in torque of 7 to 9 N·m when installing piping. Exceeding this value may cause malfunctioning of the sensor.
4. Do not use pressure sensors with corrosive and/or flammable gases or liquids.
5. Allow a sufficient margin of tube length in piping in order to prevent application of torsional, tensile or moment load to the tube and fittings.
6. When a brand of tubing other than SMC is used, make sure that the tolerance of the tube's O.D. satisfies the following specifications.
 - 1) Nylon tubing : ± 0.1 mm or less
 - 2) Soft nylon tubing : ± 0.1 mm or less
 - 3) Polyurethane tubing : ± 0.15 mm or less, -0.2 mm or less
7. The applicable fluid is air. Please consult with SMC if the switch is to be used with other types of fluids.

Connection

⚠ Warning

1. Incorrect wiring can damage the switch and cause a malfunction or erroneous switch output. Connections should be done while the power is turned off.
2. Do not attempt to insert or pull the pressure sensor or its connector when the power is on. A switch output malfunction may occur.
3. Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Malfunctions may occur due to noise from these other lines.
4. If a commercial switching regulator is used, make sure that the F.G.terminal is grounded.

Operating environment

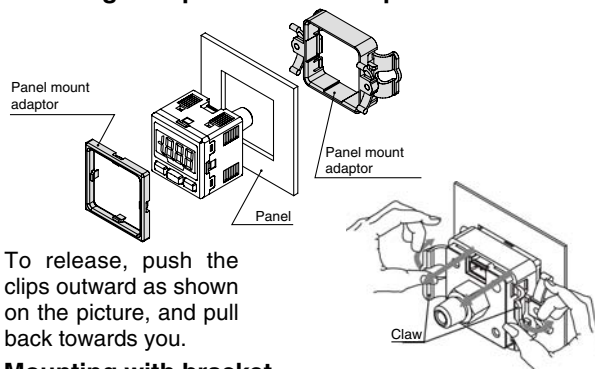
⚠ Warning

1. Our pressure switches are CE marked; however, they are not equipped with surge protection against lightning. Lightning surge countermeasures should be applied directly to system components as necessary.
2. Our pressure switches do not have an explosion proof rating. Never use in the presence of a flammable gas or an explosive gas as this may cause a serious explosion.
3. Do not use in an environment where static electricity can cause problems, otherwise system failure or malfunction may result.

Mounting

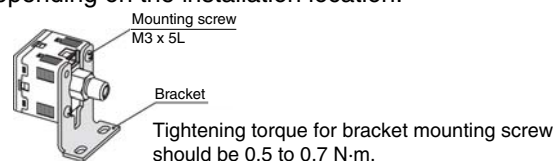
⚠ Caution

1. Mounting with panel mount adaptor



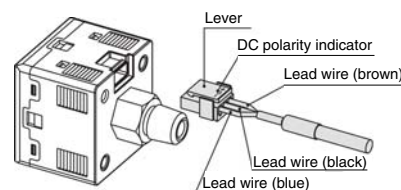
2. Mounting with bracket

Mount a bracket to the body using two M3 x 5L mounting screws and install on piping with hexagon socket head cap screws. The switch can be installed horizontally depending on the installation location.



Connection / Removal of connector

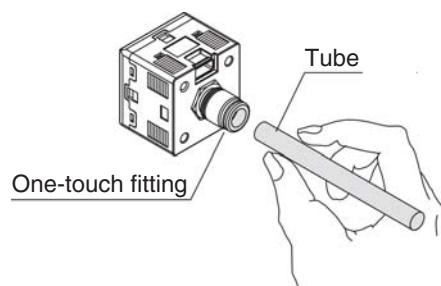
- To connect the connector, insert it straight while pinching the lever, and then push the lever into the jack of the housing and lock it.
- To remove the connector, pull it straight out while applying pressure with your thumb to the lever and unhooking it from the jack.



- Do not attempt to insert or pull the pressure sensor or its connector when the power is on. A switch output malfunction may occur.

Piping

- Cut the tube perpendicularly.
- Hold the tube and insert it into the One-touch fitting carefully and securely all the way to the bottom.





Precautions

Be sure to read before handling.

Regulating Pressure Range & Rated Pressure Range

⚠ Caution

Set the pressure within the rated pressure range.

The regulating pressure range is the range of pressure that is possible in setting.

The rated pressure range is the range of pressure that satisfies the specifications (accuracy, linearity, etc.) on the sensor.

Although it is possible to set a value outside the rated pressure range, the specifications will not be guaranteed even if the value stays within the regulating pressure range.

Switch		Pressure range				
		-100kPa	0	100kPa	500kPa	1MPa
For vacuum/ low pressure	10-ZSE30	-100kPa	100kPa			
		-101kPa	101kPa			
For positive pressure	10-ISE30		0	1MPa		
		-100kPa (-0.1MPa)	1MPa			

 Rated pressure range of switch
 Regulating pressure range of switch

Series 10-ZSE40/ISE40 High-precision Digital Pressure Switch

How to Order

Regulating pressure range

Nil	-0.100 to 1.000 MPa	For positive pressure
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For positive pressure 10 — ISE40 — 01 — 22 — M —

For vacuum/compound pressure 10 — ZSE40 — 01 — 22 — M —

Clean series

Regulating pressure range

Nil	10.0 to -101.3 kPa	For vacuum
F	-100.0 to 100.0 kPa	For compound pressure

Piping specification

01: R1/8 (With M5 female thread)
T1: NPT1/8 (With M5 female thread)

R1/8, NPT1/8
M5 x 0.8 female threads

C4*: One-touch fitting for ø4
C6*: One-touch fitting for ø6

Wall mount

ø4, ø6
One-touch fitting

W1: Rc1/8
WF1*: G1/8

Piping in 2 directions

Rc1/8, G1/8
Rc1/8, G1/8

M5*: M5 x 0.8 (female thread)

Wall mount

M5 x 0.8

* Option

Piping specifications / Combination of options available

Description	Symbol	Piping specification							
		01	T1	W1	WF1	C4	C6	M5	
Bracket A	A	○	○	○	○	×	×	×	
Bracket B	B	×	×	○	○	×	×	×	
Bracket D	D	○	○	○	○	×	×	×	
Panel mount	E	○	○	○	○	○	○	○	
Panel mount + Front protective cover	F	○	○	○	○	○	○	○	

○: Combination available ×: Combination not available

Input / Output specifications

22	NPN open collector 2 outputs + analog output
30	NPN open collector 2 outputs + auto shift input
62*	PNP open collector 2 outputs + analog output
70*	PNP open collector 2 outputs + auto shift input

* Option

Note
With auto shift function, allowable setting range is as follows:

Set pressure range	Regulating pressure range
-100.0 to 100.0kPa	-100.0 to 100.0 kPa
10.0 to -101.3 kPa	-101.3 to 101.3 kPa
-0.1 to 1.000 MPa	-1.000 to 1.000 MPa

Options

Nil	None
A	Bracket A (10-ZS-24-A)
B	Bracket B (10-ZS-24-B)
D	Bracket D (10-ZS-24-D) Please confirm the dimensions.
E	Panel mount (10-ZS-22-A)
F	Panel mount + Front protective cover (10-ZS-24-C)

* When optional parts are required, please place an order with the part number in parentheses.

Unit specification

Nil	With unit switching function Note 1)
M	Fixed SI unit Note 2)

Note 1) The new Weight and Measure Act does not allow use of a product with the unit display switching function in Japan.

Note 2) Fixed units For vacuum and compound pressure: kPa
For positive pressure: MPa

Lead wire length

Nil	0.6m
L	3m

⚠ Caution

This product is Series 10-ZSE40/ISE40 blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Specifications

		10-ZSE40F (Compound pressure)	10-ZSE40 (Vacuum pressure)	10-ISE40 (Positive pressure)
Rated pressure range		−100.0 to 100.0kPa	0.0 to −101.3kPa	0.000 to 1.000MPa
Set pressure range		−100.0 to 100.0kPa	10.0 to −101.3kPa	−0.100 to 1.000MPa
Proof pressure		500kPa		1.5MPa
Set pressure resolution	kPa	0.1		—
	MPa	—		0.001
Applicable fluid		Air, Non-corrosive / Non-flammable gas		
Power supply voltage		12 to 24 VDC, Ripple (p-p) 10% or less (with reverse connection protection)		
Current consumption		55 mA or less		
Switch output		NPN or PNP open collector output: 2 outputs		
	Maximum load current	80mA		
	Maximum applied voltage	30V (with NPN output)		
	Residual voltage	1 V or less (with 80 mA load current)		
	Response time	2.5 ms or less (with anti-chattering function: 24 ms, 192 ms and 768 ms selections)		
	Short circuit protection	With short circuit protection		
Repeatability		±0.2% F.S. ±1digit or less		
Hysteresis	Hysteresis mode	Variable (can be set from 0)		
	Window comparator mode	Fixed (3 digits)		
Display		3 1/2- digit, 7-segment indicator (Sampling cycle: 5 times/s)		
Display accuracy		±2% F.S. ±1 digit or less (at operating temperature of 25°C)		
Indicator light		OUT1: Lights up when ON (Green), OUT2: Lights when ON (Red)		
Analog output ^{Note 1)}		Output voltage: 1 to 5 V ±5% F.S. or less (with rated pressure range) Linearity: ±1%F.S. or less Output impedance: Approx. 1kΩ	Output voltage: 1 to 5 V ±2.5% F.S. or less (in rated pressure range) Linearity: ±1%F.S. or less Output impedance: Approx. 1 kΩ	
Auto shift input ^{Note 2)}		No-voltage input (reed or solid state), input 5 ms or more		
Environmental resistance	Enclosure	IP65		
	Ambient temperature	Operating: 0 to 50°C, Stored: -10 to 60°C (no condensation or freezing)		
	Ambient humidity	Operating/Stored: 35 to 85%RH (no condensation)		
	Withstand voltage	1000 VAC for 1 min between lead wires and body		
	Insulation resistance	50 MΩ or more (measured by 500 VDC mega meter) between lead wires and body		
	Vibration resistance	10 to 500 Hz at the smaller of amplitude 1.5 mm or acceleration 98 m/s ² in X, Y, Z directions for 2 hours each (de-energized)		
Impact resistance		980 m/s ² in X, Y, Z directions 3 times each (de-energized)		
Temperature characteristics		±2% F.S. or less (based at 25°C)		
Port size		O1: R1/8,M5 x 0.8 T1: NPT1/8,M5 x 0.8 W1: Rc1/8 C4: with ø4 one-touch fitting C6: with ø6 one-touch fitting M5: M5 female thread		
Lead wire		5-wire oil resistant vinyl cabtire cable (0.15 mm ²)		
Weight		O1/T1 types: Approx. 60 g, W1 type: Approx. 80 g, C4/C6/M5 types: Approx. 92 g (each including 0.6 m lead wires)		
Particle generation grade (Please refer to front matters 13 to 22 for details.)		Grade 2		

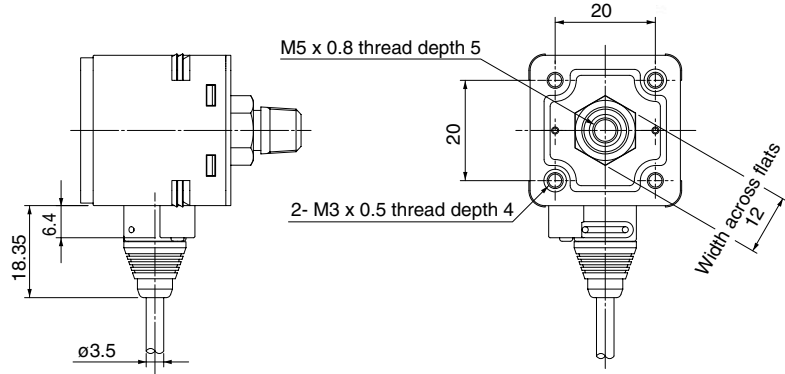
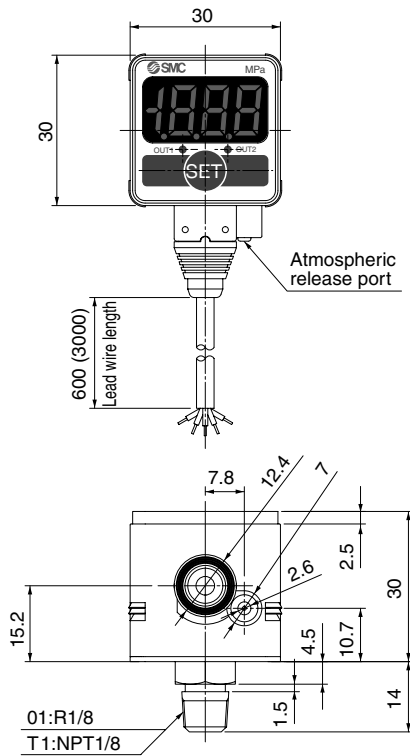
Note 1) For 10-ZSE40F/ZSE40/ISE40-□-²²/₆₂
Note 2) For 10-ZSE40F/ZSE40/ISE40-□-³⁰/₇₀

Note
When equipped with auto shift function, the following ranges can be set.

Model	Set pressure range
10-ZSE40F-□- ³⁰ / ₇₀	−100.0 to 100.0kPa
10-ZSE40-□- ³⁰ / ₇₀	−101.3 to 101.3kPa
10-ISE40-□- ³⁰ / ₇₀	−1.000 to 1.000MPa

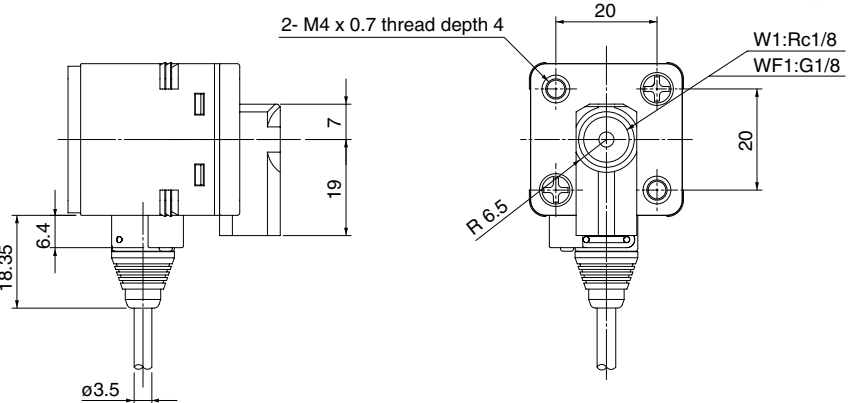
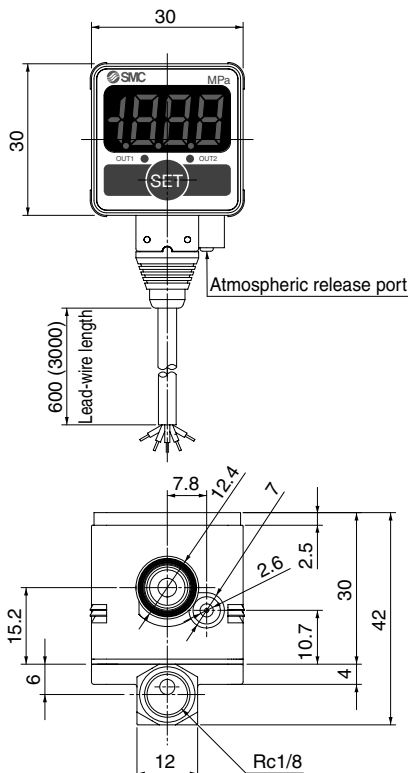
Dimensions

10-ZSE40(F)/ISE40-⁰¹_{T1}



* In waterproof (IP65) operation, insert the air tube into the atmospheric release port.
(For details, refer to Specific Product Precautions 4)

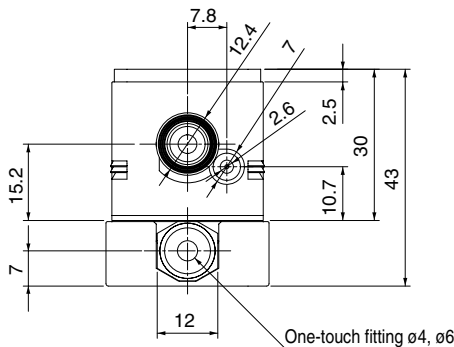
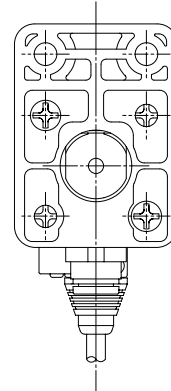
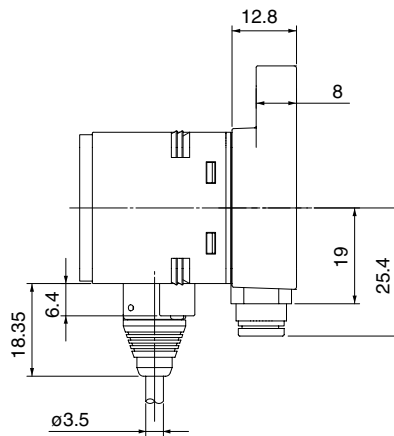
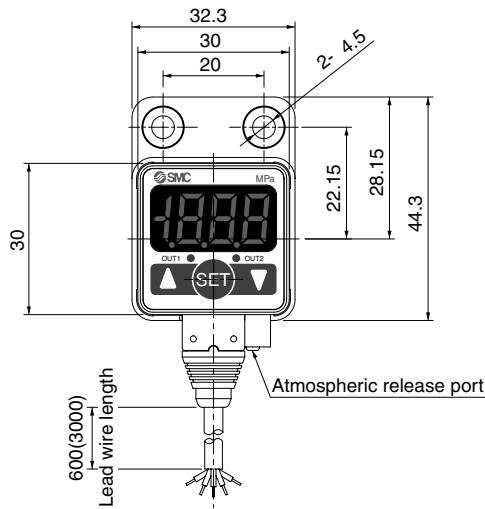
10-ZSE40(F)/ISE40-^{W1}_{WF1}



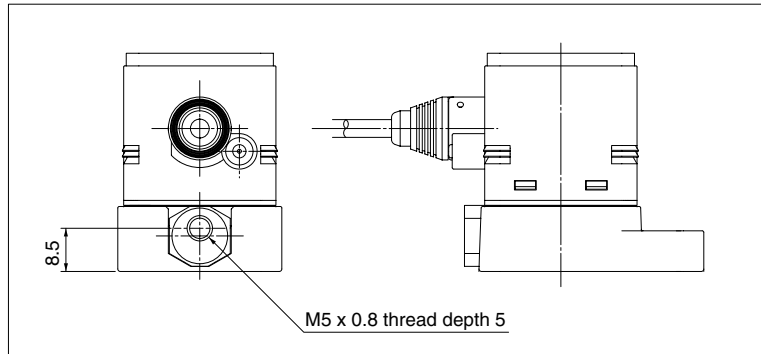
* In waterproof (IP65) operation, insert the air tube into the atmospheric release port.
(For details, refer to Specific Product Precautions 4)

Dimensions

10-ZSE40(F)/ISE40- C4
C6
M5



-With M5

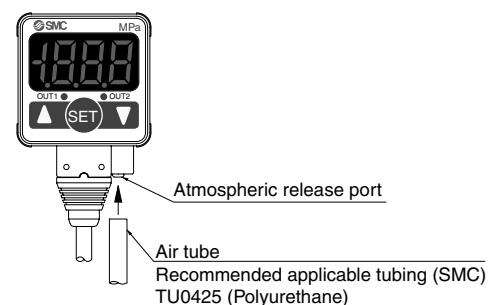


* In waterproof (IP65) operation, insert the air tube into the atmospheric release port.
(Refer to Specific Product Precautions 4, for more information)

⚠ Specific Product Precautions

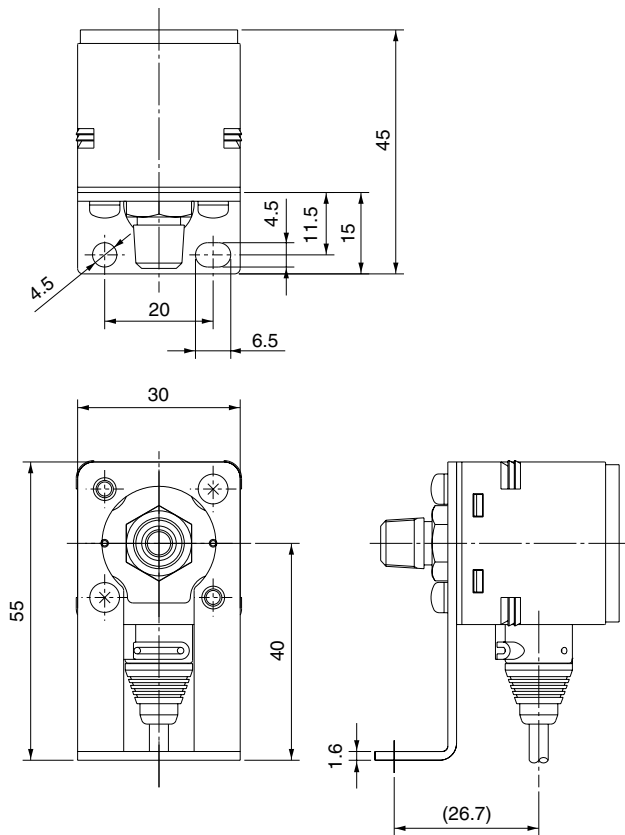
⚠ Caution

1. A drift of approx. $\pm 0.5\%$ F.S. immediately follows the initial power supply. When operating with a subtle or small pressure, take 20 to 30 minutes for a warm-up.
2. Do not use in an environment where liquid containing oil or solvents splashes onto the equipment.
3. When using a switching regulator purchased on the market, be sure to ground the FG terminal.
4. In an environment where the switch is exposed to water or dust, prevent water or dust invasion through the atmospheric release port. Insert a tube (of $\phi 2.5$ I.D.) into the atmospheric release port and connect the other end of the tube in a safe location with no water splashes or dust turbulence. To ensure accuracy in pressure measurement, do not fold or plug the tube.
5. This product is equivalent to Series ZSE40(F)/ISE40 but is blown with air and double packed in a Class 100 clean room.

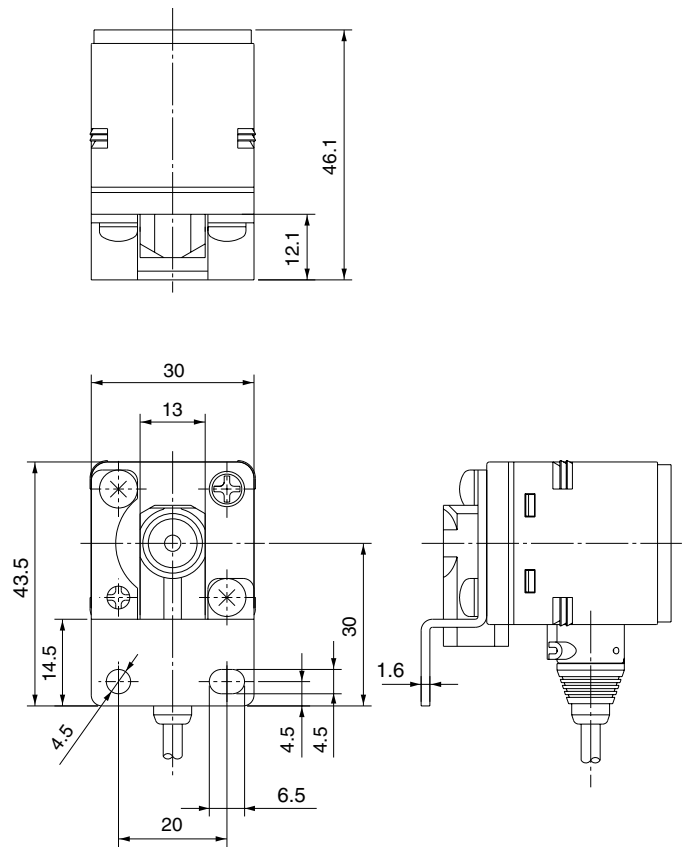


Dimensions

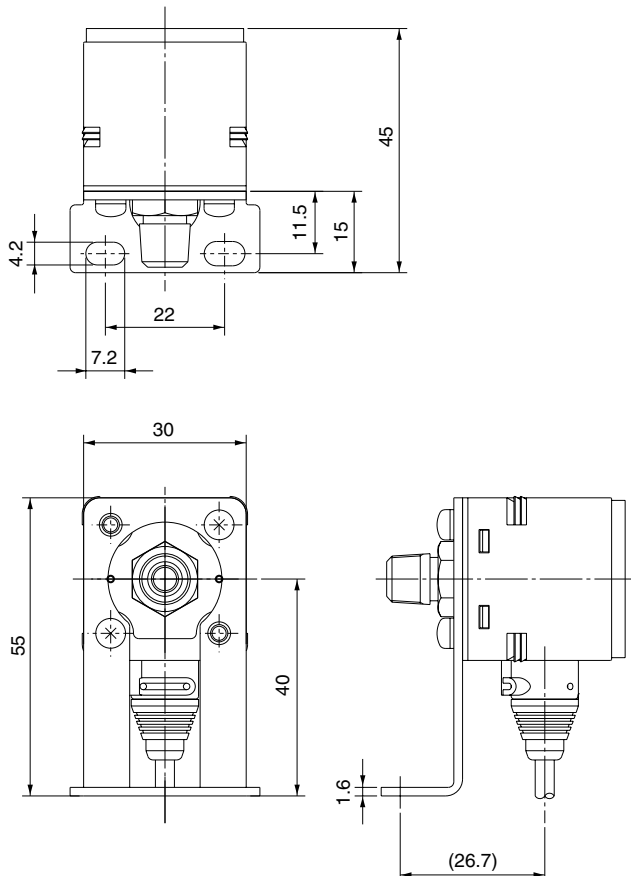
With Bracket A (10-ZS-24-A)



With Bracket B (10-ZS-24-B)



With Bracket D (10-ZS-24-D)



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

Series 10-ZSE50F/ISE50 High precision digital pressure switch for general fluids

How to Order



For positive pressure **10** — **ISE50** — **02** — **22** **L** — **M**

For compound pressure **10** — **ZSE50 F** — **02** — **22** **L** — **M**

• Clean series

Piping specifications

02	R1/4 (With M5 female screw), Piping in backward direction
T2	NPT1/4 (With M5 female screw), Piping in backward direction
G2 *	G1/4 (With M5 female screw), Piping in backward direction

* Option

Input/output specifications

22	NPN open collector 2 outputs + analog output
30	NPN open collector 2 outputs + auto shift input
62 *	PNP open collector 2 outputs + analog output
70 *	PNP open collector 2 outputs + auto shift input

* Option

Note) Auto shift input is used for the auto shift function.
For details, please refer to "Auto shift function".

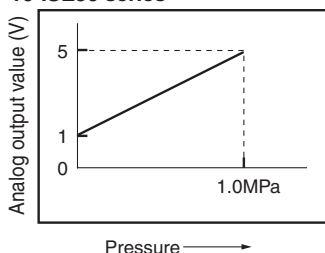
Lead wire length

L	3m
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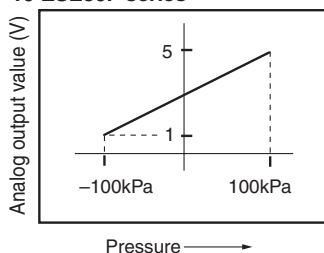
Analog output

Applicable model number: **10-ZSE50F/ISE50-□-22/62(L)-(M)**

10-ISE50 series



10-ZSE50F series



Option

When option parts are required separately, use the following part numbers to place an order.

Option	Part No.	Quantity	Note
Bracket A	10-ZS-24-A	1	With 2 pcs. of mounting screws
Bracket D	10-ZS-24-D	1	With 2 pcs. of mounting screws
Panel mount	10-ZS-24-E	1	
Panel mount + Front protection cover	10-ZS-24-F	1	

Option

Nil	None
A	Bracket A
D	Bracket D Refer to the dimensions for the difference between brackets A and D.
E	Panel mount
F	Panel mount + Front protective cover

Unit specifications

Nil	With unit conversion function Note 1)
M	SI unit only Note 2)

Note 1) This will no longer be sold for use in Japan after the new Weight and Measure Act is implemented.

Note 2) Fixed units
For compound pressure: KPa
For positive pressure: MPa

⚠ Caution

This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Specifications

		10-ZSE50F (compound pressure)	10-ISE50 (positive pressure)
Rated pressure range		−100.0 to 100.0kPa	0.000 to 1.000MPa
Set pressure range		−100.0 to 100.0kPa	−0.100 to 1.000MPa
Proof pressure		500kPa	1.5MPa
Set pressure resolution	kPa	0.1	—
	MPa	—	0.001
Fluid		Fluid that will not corrode stainless steel SUS630 and stainless steel SUS304	
Power supply voltage		12 to 24VDC, Ripple (p-p) 10% or less (with reverse connection protection)	
Current consumption		55mA or less	
		NPN or PNP open collector output: 2 output	
Switch output	Maximum load current	80mA	
	Maximum applied voltage	30V (with NPN output)	
	Residual voltage	1V or less (with load current of 80mA)	
	Response time	2.5ms or less (With anti-chattering function: Choose from 24ms, 192ms or 768ms)	
	Short circuit protection	With short circuit protection	
Repeatability		±0.2%F.S. ±1digit or less	±0.3%F.S.±1digit or less
Hysteresis	Hysteresis mode	Variable (can be set from 0)	
	Window comparator mode	Fixed (3 digits)	
Display		3 1/2-digit, 7-segment indicator (Sampling cycle: 5 times/s)	
Display accuracy		±2% F.S. ±1 digit or less (at ambient temperature of 25°C)	
Indicator light		OUT1: Lights up when ON (green)., OUT2: Lights up when ON (red).	
Analog output ^{Note 1)}		Output voltage: 1 to 5V ±5% F.S. or less (with rated pressure range) Linearity: ±1%F.S. or less Output impedance: Approx. 1kΩ	Output voltage: 1 to 5V ±2.5% F.S. or less (with rated pressure range) Linearity: ±1%F.S. or less Output impedance: Approx. 1kΩ
Auto shift input ^{Note 2)}		No-voltage input (solid state switch or reed switch), input 5ms or more	
Environmental resistance	Enclosure	IP65	
	Operating temperature range	Operating: 0 to 50°C, Stored: −10 to 60°C (no condensation or freezing)	
	Operating humidity range	Operating/Stored: 35 to 85%RH (no condensation)	
	Withstand voltage	1000 VAC for 1 min. between lead wires and body	
	Insulation resistance	2MΩ or more (measured by 500 VDC mega meter) between lead wires and body	
	Vibration resistance	10 to 500Hz with 1.5mm amplitude or 98m/s ² , whichever is smaller in X, Y, Z directions for 2 hours	
		980m/s ² in X, Y, Z directions, 3 times each (de-energized)	
Temperature characteristics		±3%F.S. or less (based at 25°C)	
Port size		O2: R1/4, M5 x 0.8 T2: NPT1/4, M5 x 0.8	
Wetted parts material		Pressure receiving area: Stainless steel SUS630, Fittings: Stainless steel SUS304	
Lead wire		5-wire oil proof vinyl cabtire cable (0.15mm ²)	
Weight		Approx. 120g (each including 3m lead wire)	
Particle generation grade (Please refer to front matters 13 to 22 for details.)		Grade 2	

Note 1) For 10-ZSE50(F)/ISE50-□²²₆₂

Note 2) For 10-ZSE50(F)/ISE50-□³⁰₇₀

Note

The possible set ranges for types with auto shift function are as follows.

Model	Set pressure range
10-ZSE50F-□ ³⁰ ₇₀	−100.0 to 100.0kPa
10-ISE50-□ ³⁰ ₇₀	−1.0000 to 1.000MPa

Function

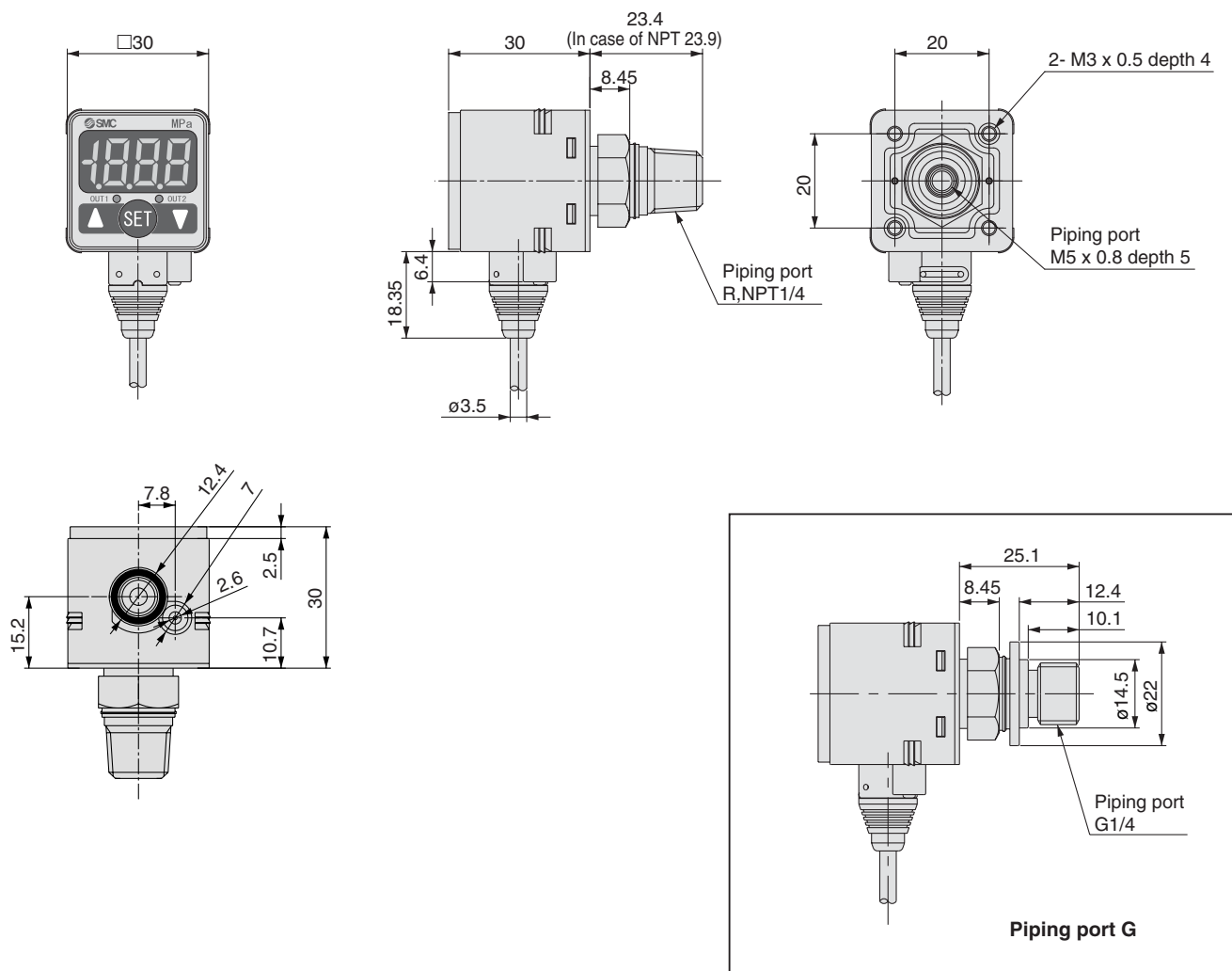
Various additional functions are available for easy measurement, switch operation and check of measured values suitable for the conditions of the measured fluid.

Auto shift function ^{Note 1)}	Can correct the pressure set point value of switch output according to fluctuations in the primary pressure.
Anti-chattering function	Prevents malfunction due to sudden fluctuations in the primary pressure by adjusting the response time.
Key lock function	The key board operation can be locked to prevent incorrect operation on the operation switch.
Peak hold function	Can retain the maximum pressure value displayed during measurement.
Bottom hold function	Can retain the minimum pressure value displayed during measurement.
Zero out function	The pressure display can be set at zero when the pressure is open to the atmosphere.
Unit conversion (for overseas use) ^{Note 1)}	Can convert the display value (for overseas use only).

Note 1) Select and order by specifying the types and models.

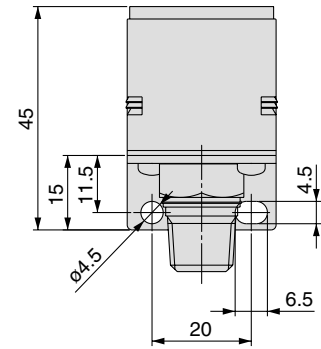
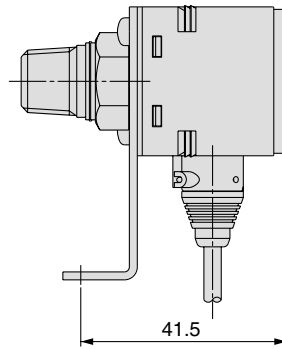
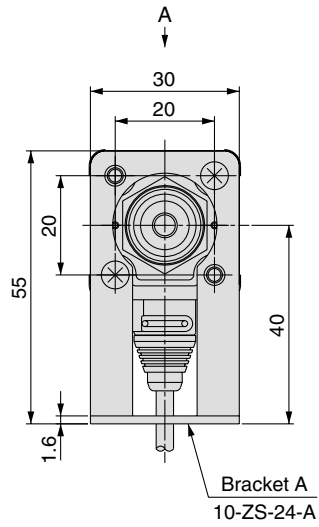
Dimensions

10-ZSE50F/ISE50-
02
T2
G2



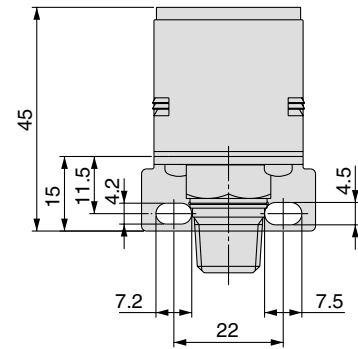
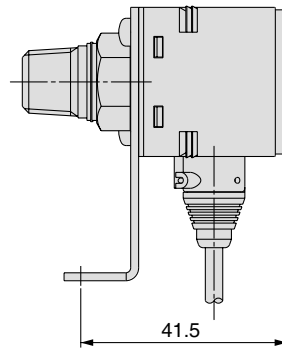
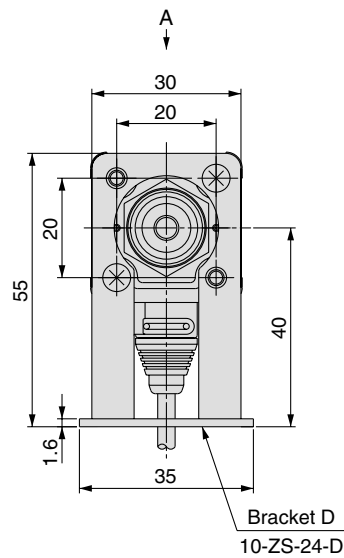
Dimensions

Bracket A



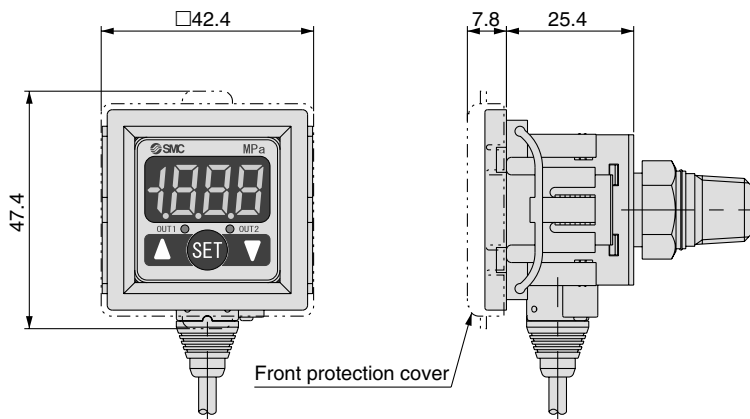
View A

Bracket D

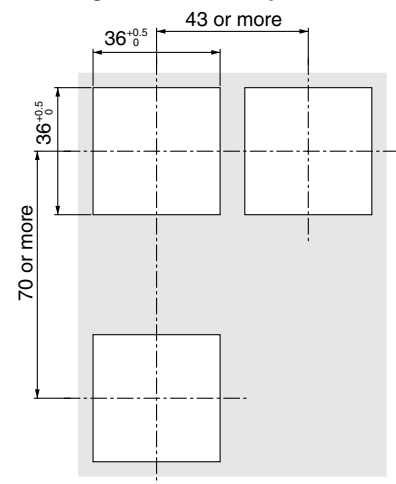


View A

Panel mount



Cutting dimensions for panel mounting



Panel thickness is 1 to 3.2 mm



Specific Product Precautions

Be sure to read before handling.

Handling

⚠ Warning

1. Do not drop, bump, or apply excessive impacts (980m/s²) while handling. Although the body of the sensor may not be damaged, the internal parts of the sensor could be damaged and lead to a malfunction.
2. The tensile strength of the cord is 49 N. Applying a greater pulling force on it can cause a malfunction. When handling, hold the body of the sensor.
3. Do not exceed the screw-in torque of 13.6 N·m when installing piping. Exceeding this value may cause malfunctioning of the sensor.
4. Do not use pressure sensors with corrosive and/or flammable gases or liquids.

Connection

⚠ Warning

1. Incorrect wiring can damage the switch and cause a malfunction or erroneous switch output.
2. Turn off the power before connecting the wires.
3. Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Malfunctions may occur due to noise from these other lines.
4. If a commercial switching regulator is used, make sure that the FG terminal is grounded.

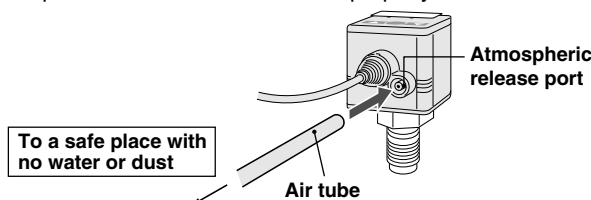
Operating environment

⚠ Warning

1. Our pressure switches are CE marked; however, they are not equipped with surge protection against lightning. Lightning surge countermeasures should be applied directly to system components as necessary.
2. Our pressure switches do not have an explosion proof rating. Never use it in the presence of an explosive gas as this may cause a serious explosion.

⚠ Caution

1. Do not use in an environment with spattering liquid of oil or solvent.
2. In an environment where the body of the switch is exposed to water or dust, there is possibility of water or dust invasion of the switch through the atmospheric release port. Insert a $\phi 4$ tube (with inside diameter of $\phi 2.5$) into the atmospheric release port and pipe the other end to a place with no spattering water or other liquid. Do not fold or clog the tube or the pressure cannot be measured properly.



Operating environment

Confirm that the air tube is inserted to the bottom of the atmospheric release port.

* Use SMC TU0425 (Material: Polyurethane, O.D. $\phi 4$, I.D., $\phi 2.5$) as the air tube.

Pressure source

⚠ Warning

1. Use of toxic, corrosive or flammable gas

The materials of the pressure sensor and fittings on the switch are stainless steel SUS630 and stainless steel SUS 304. Do not use toxic or corrosive gas.

The switch is not protected against explosion. Do not use it with **flammable gas**, either.

2. Fluid compatibility

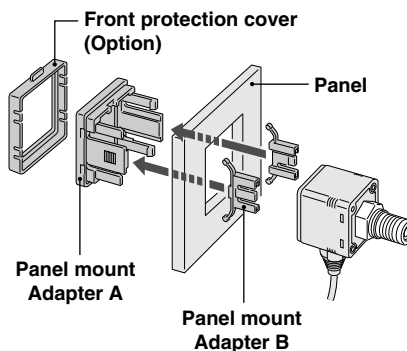
The wetted areas are stainless steel SUS630 (pressure sensor) and stainless steel SUS304 (fittings). Use fluid that will not corrode these materials.

For corrosiveness of fluid, consult with the manufacturer of the fluid.

Mounting method

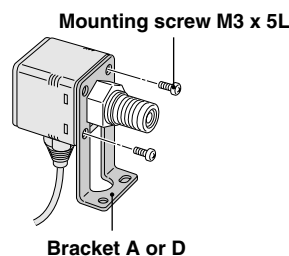
⚠ Caution

1. Mounting with panel mount adapter



2. Mounting with brackets

Mount a bracket to the body using two M3 x 5L mounting screws and install on piping with a hexagon socket head cap screw. The switch can be installed horizontally depending on the installation location.



The tightening torque for bracket mounting screw should be 0.98 N·m or less.

Series 10-ZSE60F/ISE60

High precision digital pressure switch for general fluids

How to Order



For positive pressure 10 — ISE60 — A2 — 22 — L — M

For compound pressure 10 — ZSE60 F — A2 — 22 — L — M

• Clean series

Piping specifications

A2	URJ 1/4 ^{Note)} , Piping in the backward direction
B2	TSJ1/4 ^{Note)} , Piping in the backward direction

Note) URJ1/4 and TSJ1/4 are special fittings for semiconductor manufacturing equipment.

Input/output specifications

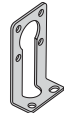
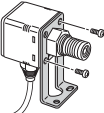
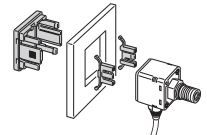
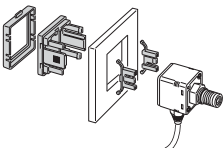
22	NPN open collector 2 outputs + analog output
30	NPN open collector 2 outputs + auto shift input
62 *	PNP open collector 2 outputs + analog output
70 *	PNP open collector 2 outputs + auto shift input

* Option
Note) Auto shift input is used for the auto shift function.
For details, please refer to "Auto shift function".

Lead wire length

L	3m
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Option

Nil	None
A	Bracket A 
D	Bracket D Refer to the dimensions for the difference between brackets A and D. 
E	Panel mount 
F	Panel mount + Front protection cover 

Unit specifications

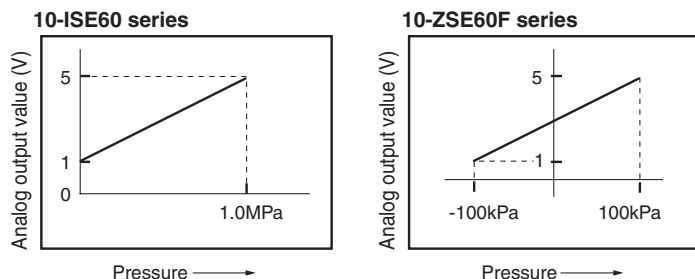
Nil	With unit switching function ^{Note 1)}
M	SI unit only ^{Note 2)}

Note 1) This will no longer be sold for use in Japan after the new Weight and Measure Act is implemented.

Note 2) Fixed unit
For compound pressure: kPa
For positive pressure: MPa

Analog output

Applicable model number: 10-ZSE60F/ISE60-□-22/62(L)-(M)



Option

When option parts are required separately, user the following part numbers to place an order.

Option	Part No.	Quantity	Note
Bracket A	10-ZS-24-A	1	With 2 pcs. of mounting screws
Bracket D	10-ZS-24-D	1	With 2 pcs. of mounting screws
Panel mount	10-ZS-24-E	1	
Panel mount + Front protection cover	10-ZS-24-F	1	

⚠ Caution

This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Specifications

		10-ZSE60F (compound pressure)	10-ISE60 (positive pressure)
Rated pressure range		−100.0 to 100.0kPa	0.000 to 1.000MPa
Set pressure range		−100.0 to 100.0kPa	−0.100 to 1.000MPa
Proof pressure		500kPa	1.5MPa
Set pressure resolution	kPa	0.1	—
	MPa	—	0.001
Fluid		Fluid that will not corrode stainless steel SUS630 and stainless steel SUS304	
Power supply voltage		12 to 24 VDC, Ripple (p-p) 10% or less (with reverse connection protection)	
Current consumption		55mA or less	
Switch output	NPN or PNP open collector output: 2 output		
	Maximum load current	80mA	
	Maximum applied voltage	30V (NPN output)	
	Residual voltage	1V or less (with load current of 80 mA)	
	Response time	2.5ms or less (With anti-chattering function: Choose from 24ms, 192ms or 768ms)	
	Short circuit protection	With short circuit protection	
Repeatability		±0.2% F.S. ±1 digit or less	±0.3% F.S. ±1 digit or less
Hysteresis	Hysteresis mode	Variable (can be set from 0)	
	Window comparator mode	Fixed (3 digits)	
Display		3 1/2-digit, 7-segment indicator (Sampling cycle: 5 times/s)	
Display accuracy		±2% F.S. ±1 digit or less (at ambient temperature of 25°C)	
Indicator light		OUT1: Lights up when ON (green). OUT2: Lights up when ON (red).	
Analog output ^{Note 1)}		Output voltage: 1 to 5V ±5% F.S. or less (with rated pressure range) Linearity: ±1%F.S. or less Output impedance: Approx. 1kΩ	Output voltage: 1 to 5V ±2.5% F.S. or less (with rated pressure range) Linearity: ±1%F.S. or less Output impedance: Approx. 1kΩ
Auto shift input ^{Note 2)}		No-voltage input (Solid state switch or reed switch), Input 5ms or more	
Environment resistance	Enclosure	IP65	
	Ambient temperature range	Operating: 0 to 50°C, Stored: −10 to 60°C (no condensation or freezing)	
	Ambient humidity range	Operating/Stored: 35 to 85%RH (no condensation)	
	Withstand voltage	1000 VAC for 1 min. between lead wires and body	
	Insulation resistance	2MΩ or more (measured by 500 VDC mega meter) between lead wires and body	
	Vibration resistance	10 to 500Hz with 1.5mm amplitude or 98m/s², whichever is smaller, in X, Y, Z directions for 2 hours	
	Shock resistance	980m/s² in X, Y, Z directions, 3 times each (de-energized)	
Temperature characteristics		±3%F.S. or less (at 25°C)	
Port size		A2: URJ1/4 B2: TSJ1/4	
Wetted parts material		Pressure receiving area : stainless steel SUS630, Fittings : stainless steel SUS304	
Lead wire		5-wire oil proof vinyl cabtire cable (0.15mm²)	
Weight		Approx. 120g (Each including 3m lead wire)	
Particle generation grade		Grade 2	
(Please refer to front matters 13 to 22 for details.)			

Note 1) In case of 10-ZSE60(F)/ISE60-□-²²/₆₂

Note 2) In case of 10-ZSE60(F)/ISE60-□-³⁰/₇₀

Note

The possible set ranges for types with auto shift function are as follows.

Model	Set pressure range
10-ZSE60F-□- ³⁰ / ₇₀	−100.0 to 100.0kPa
10-ISE60-□- ³⁰ / ₇₀	−1.000 to 1.000MPa

Function

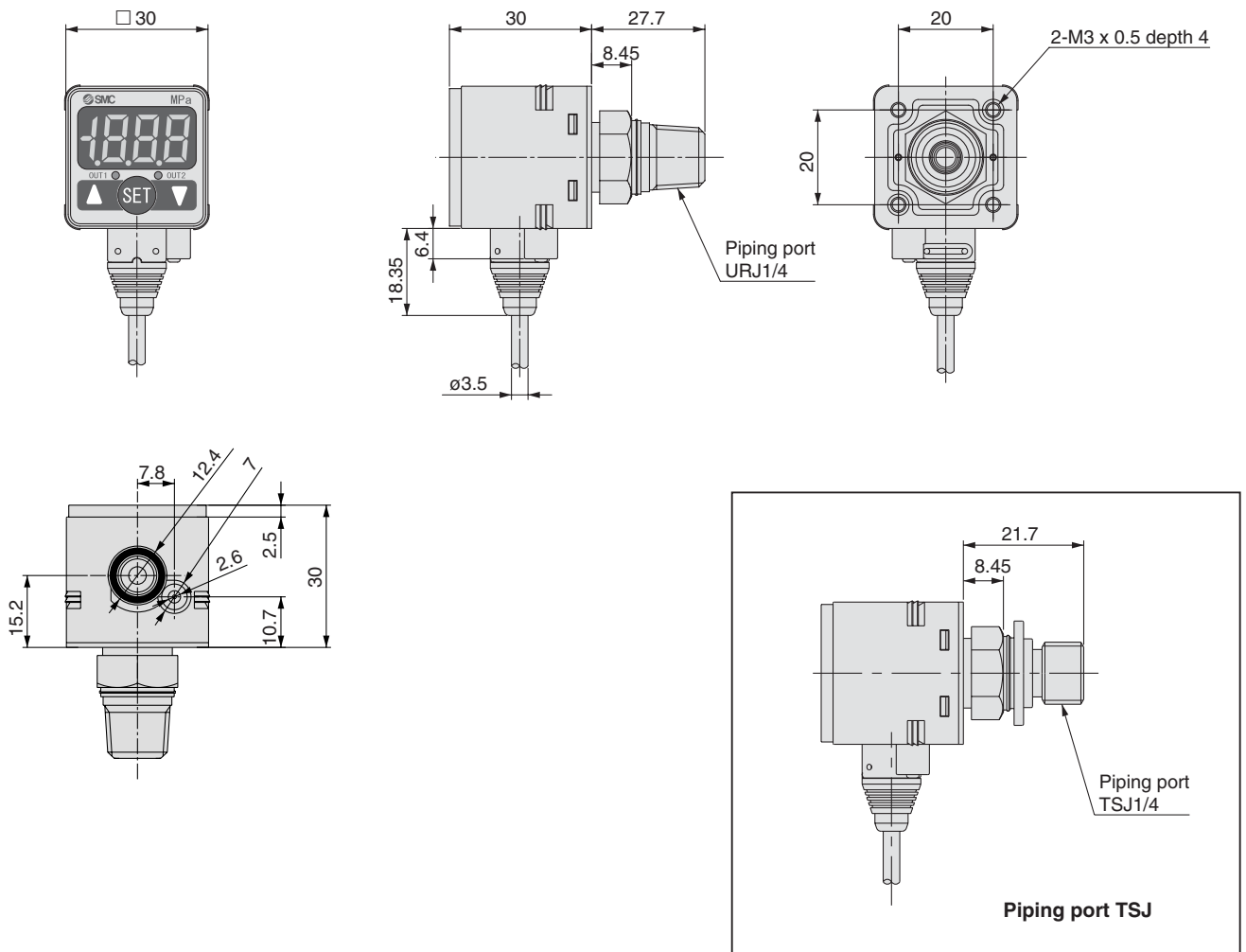
Various additional functions are available for easy measurement, switch operation and check of measured values suitable for the conditions of the measured fluid.

Auto shift function ^{Note 1)}	Can correct the pressure set point value of switch output according to fluctuation in the primary pressure.
Anti-chattering function	Prevents malfunction due to sudden fluctuations in the primary pressure by adjusting the response time.
Key lock function	The key board operation can be locked to prevent incorrect operation on the operation switch.
Peak hold function	Can retain the maximum pressure value displayed during measurement.
Bottom hold function	Can retain the minimum pressure value displayed during measurement.
Zero out function	The pressure display can be set to zero when the pressure is open to the atmosphere.
Unit conversion function (for overseas use) ^{Note 1)}	Can convert the display unit (for overseas use only).

Note 1) Select and order by specifying the types and models.

Dimensions

10-ZSE60F/ISE60-A₂ B₂



The following items are identical with those of Series 10-ZSE50F/ISE50.

- Item

Output type

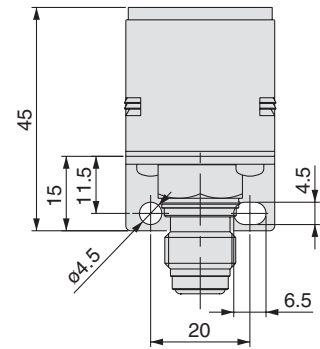
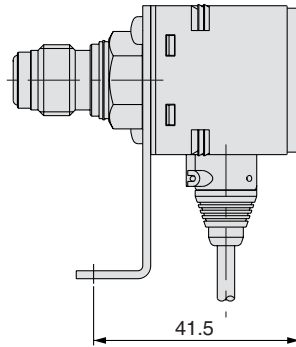
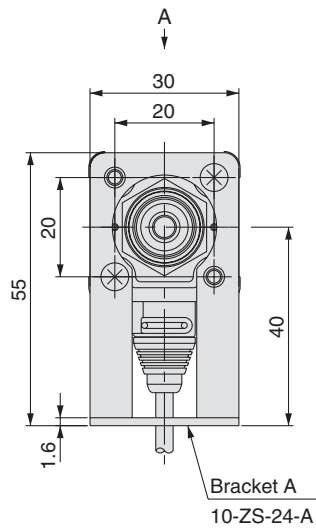
Example of internal circuit and wiring

Auto shift function, Anti-chattering function

Measures to be taken when error occurs

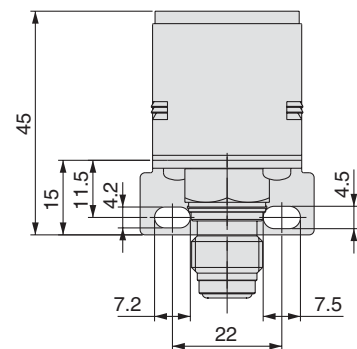
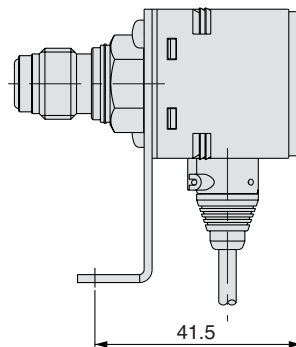
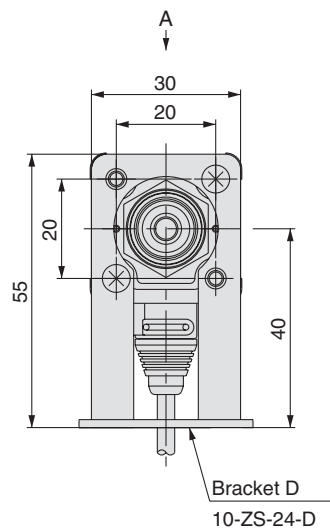
Dimensions

Bracket A



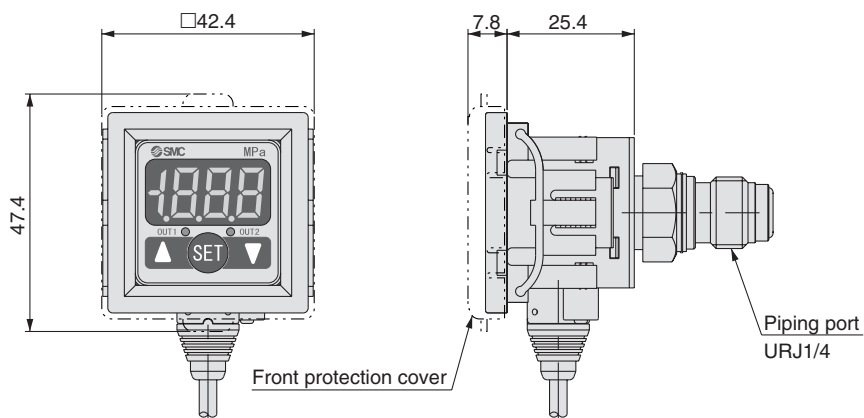
View A

Bracket D

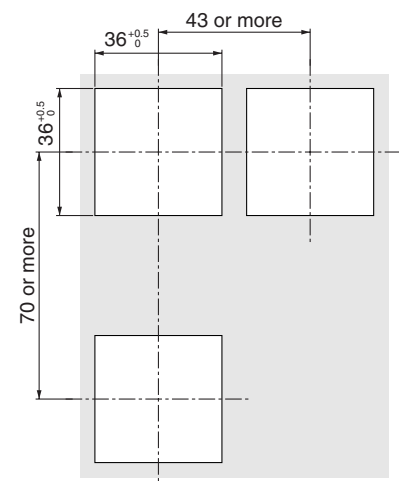


View A

Panel mount



Cutting dimensions for panel mounting



Panel thickness is 1 to 3.2mm



Specific product precautions

Be sure to read before handling.

Handling

Warning

1. Do not drop, bump or apply excessive impacts (980 m/s²) while handling. Although the body of the sensor may not be damaged, the internal parts could be damaged and lead to a malfunction.
2. The tensile strength of the cord is 49N. Applying a greater pulling force on it can cause a malfunction. When handling, hold the body of the sensor.
3. Do not exceed the screw-in torque of 13.6 N·m when installing piping. Exceeding this value may cause malfunctioning of the sensor.
4. Do not use pressure sensors with corrosive and/or flammable gases or liquids.

Connection

Warning

1. Incorrect wiring can damage the switch and cause a malfunction or erroneous switch output.
2. Turn off the power before connecting the wires.
3. Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Malfunctions may occur due to noise from these lines.
4. If a commercial switching regulator is used, make sure that the F.G. terminal is grounded.

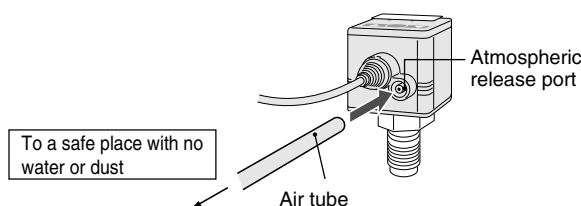
Operating environment

Warning

1. Our pressure switches are CE marked; however, they are not equipped with surge protection against lightning. Lightning surge countermeasures should be applied directly to system components as necessary.
2. Our pressure switches do not have an explosion proof rating. Never use it in the presence of an explosive gas as this may cause a serious explosion.

Caution

1. Do not use in an environment with spattering liquid of oil or solvent.
2. In an environment where the body of the switch is exposed to water or dust, there is possibility of water or dust invasion of the switch through the atmospheric release port. Insert a $\phi 4$ tube (with inside diameter of $\phi 2.5$) into the atmospheric release port and pipe the other end to a place with no spattering water or other liquid. Do not fold or clog the tube or the pressure cannot be measured properly.



Confirm that the air tube is inserted to the bottom of the atmospheric release port.
Use SMC TU0425 (Material: Polyurethane; O.D. $\phi 4$, I.D.: $\phi 2.5$) as the air tube.

Pressure source

Warning

1. **Use of toxic, corrosive or flammable gases**
The materials of the pressure sensor and fittings on the switch are stainless steel SUS630 and stainless steel SUS304. Do not use **toxic or corrosive gas**.
The switch is not protected against explosions. Do not use it with **flammable gas**, either.
2. **Fluid compatibility**
The fluid contact areas are made of stainless steel SUS630 (pressure sensor) and stainless steel SUS304 (fittings). Use fluid that will not corrode these materials.
(For corrosiveness of fluid, consult with the manufacturer of the fluid.)

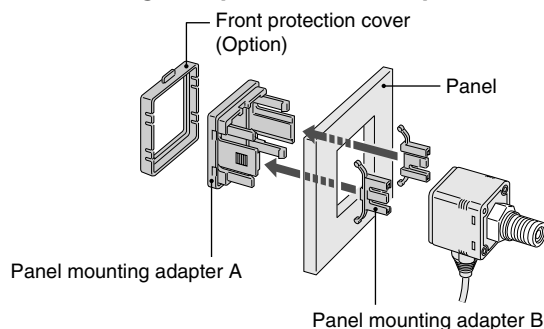
Helium leakage test

Helium leakage test is conducted on the welding parts. Use a ferrule (Swagelok®) by Crawford Fitting Co., for TSJ fitting and seal, ground, etc. by CAJON COMPANY (VCR® fittings) for URJ fitting. If a ferrule, seal or ground supplied by other manufactures are to be used, conduct helium leakage test before using those products.

Mounting method

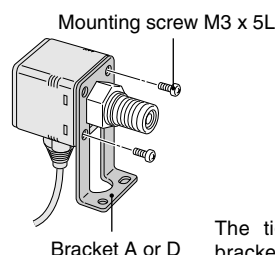
Caution

1. Mounting with panel mount adapter



2. Mounting with brackets

Mount a bracket to the body using two M3 x 5L mounting screws and install on piping with a hexagon socket cap screw. The switch can be installed horizontally depending on the installation location.



The tightening torque for bracket mounting screw should be 0.98 N·m or less.

Series 10-ZSE5B/ISE5B

With backlight digital pressure switch

How to Order

Clean series

Piping specifications
02 — Body ported R 1/4
T2 — Body ported NPTF 1/4
 (Note) M5 x 0.8 female threads are cut inside the piping.

Vacuum 10 - ZSE5B - **T2** - **27** **L** - **M**

Positive pressure 10 - ISE5B - **02** - **26** **L** - **M**

Output specifications
26 — Analog output (1 to 5 V)
27 — NPN open collector (2 outputs)
67 — PNP open collector (2 outputs)

Unit specifications
Nil — With unit conversion function ^{Note 1)}
M — Fixed SI unit ^{Note 2)}
 Note 1) Under the New Measurement Law, sales of switches with the unit conversion function have not been allowed for use in Japan.
 Note 2) Fixed unit: For vacuum & compound pressure: kPa
 For positive pressure: MPa

Lead wire length
L — 3 m

Panel mounting adapter part no.
 (Panel adapter A + Panel adapter B + Mounting bracket)
10-ZS-22-E
 Panel mounting adapter A: 10-ZS-22-03
 Panel mounting adapter B: 10-ZS-22-02
 Mounting bracket: 10-ZS-22-04

10-ZS-22-D
 with M3 tapping screw (4 pcs.)
 Option (Bracket)

Model

Model	Output type	Output specifications
Vacuum	ZSE5B-□-26L	Analog output
	ZSE5B-□-27L	2 outputs
	ZSE5B-□-67L	2 outputs
Positive pressure	ISE5B-□-26L	Analog output
	ISE5B-□-27L	2 outputs
	ISE5B-□-67L	2 outputs

Specifications

Model	Vacuum 10-ZSE5B	Positive pressure 10-ISE5B
Pressure set range	-100 to 100 kPa	-0.1 to 1 MPa
Max. operating pressure	200kPa	1.5MPa
Leakage	1 x 10 ⁻⁵ Pa·m ³ /s	
Min. display unit	kPa	2
	MPa	—
	mmHg	10
	kgf/cm ²	0.02
	PSI	0.2
	bar	0.02
Indicator light	Lights when ON (OUT1: Green, OUT2: Red)	
Response frequency	200 Hz (5 ms)	
^{Note 1)} Hysteresis	Hysteresis mode	Variable (2 digits or more)
	Window comparator mode	Fixed (2 digits)

Note 1) Hysteresis mode
 ZSE: When the values of P1 and P2 are the same or when P1>P2 within 2 digits, the hysteresis will be automatically 2 digits for the set value of P1.
 ISE: When the values of P1 and P2 are the same or when P1>P2 within 3 digits, the hysteresis will be automatically 3 digits for the set value of P1.
Window comparator mode
 ZSE: The hysteresis is 2 digits, so separate P1 from P2 by 5 digits or more and set them.
 ISE: The hysteresis is 3 digits, so separate P1 from P2 by 7 digits or more and set them.
 * 1 digit is the minimum pressure display unit (See the table above).

Fluid	Fluid that will not corrode stainless steel 304 and 630
Temperature characteristics	±3% F.S. or less
Repeatability	±1% F.S. or less
Operating voltage	12 to 24 VDC (Ripple 10% or less)
Current consumption	45 mA or less
Error display	Indicator light: Red light blinks, displays the error code on LCD
Pressure indication	3 1/2 digits LED (10 mm-size numerals)
Self-diagnostic function	(Overcurrent ^{Note2)} , Overpressure, Data error, Pressure during 0 clear
Operating temperature range	0 to 50°C (No condensation)
Noise resistance	500 Vp-p, Pulse width 1 μs, Rise time 1 nS
Withstand voltage	Between external terminals and housing 250 VAC, 50/60 Hz for 1 minute
Insulation resistance	Between external terminals and case 2 MΩ (measured by 50VDC megameter)
Vibration resistance	10 to 500 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z directions for 2 hours each
Impact resistance	980 m/s ² in X, Y, Z directions, 3 times each
Weight	126 g (including 3 m lead wire)
Port size	02: R 1/4, M5 x 0.8, T2: NPTF 1/4, M5 x 0.8
Enclosure	IP40
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 2

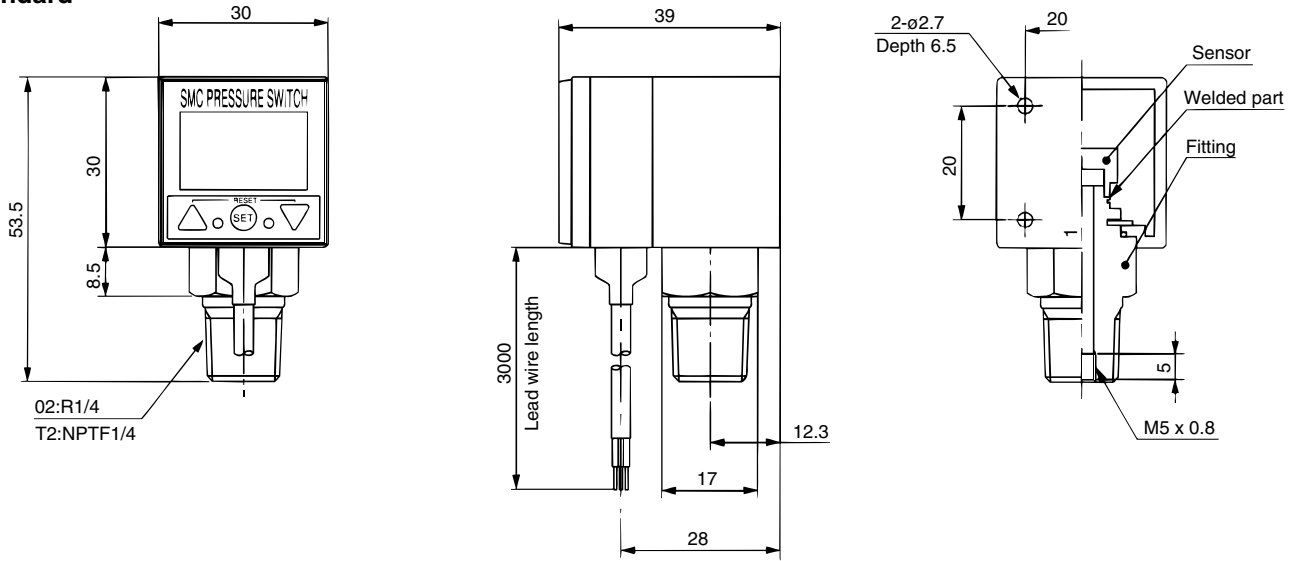
Note 2) This is not available for analog output types.

Caution

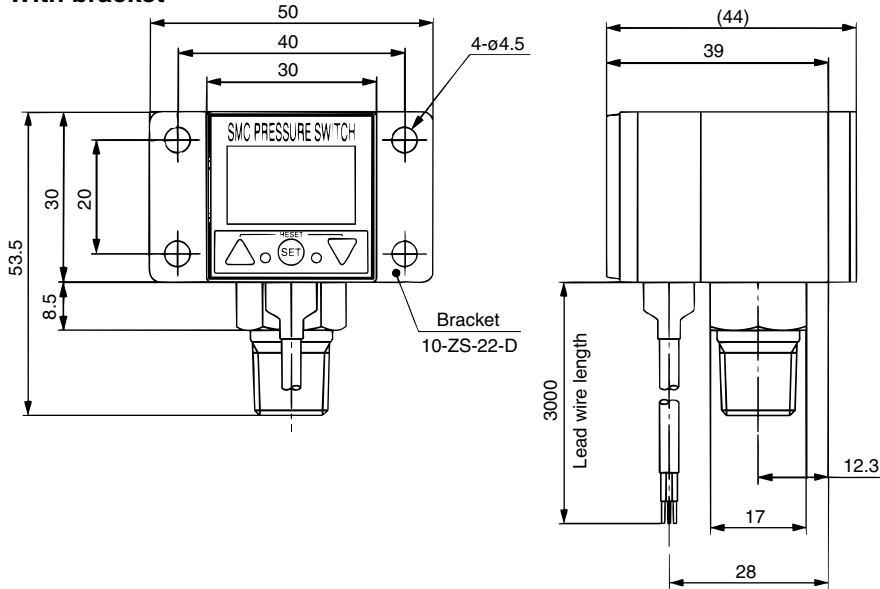
This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Dimensions

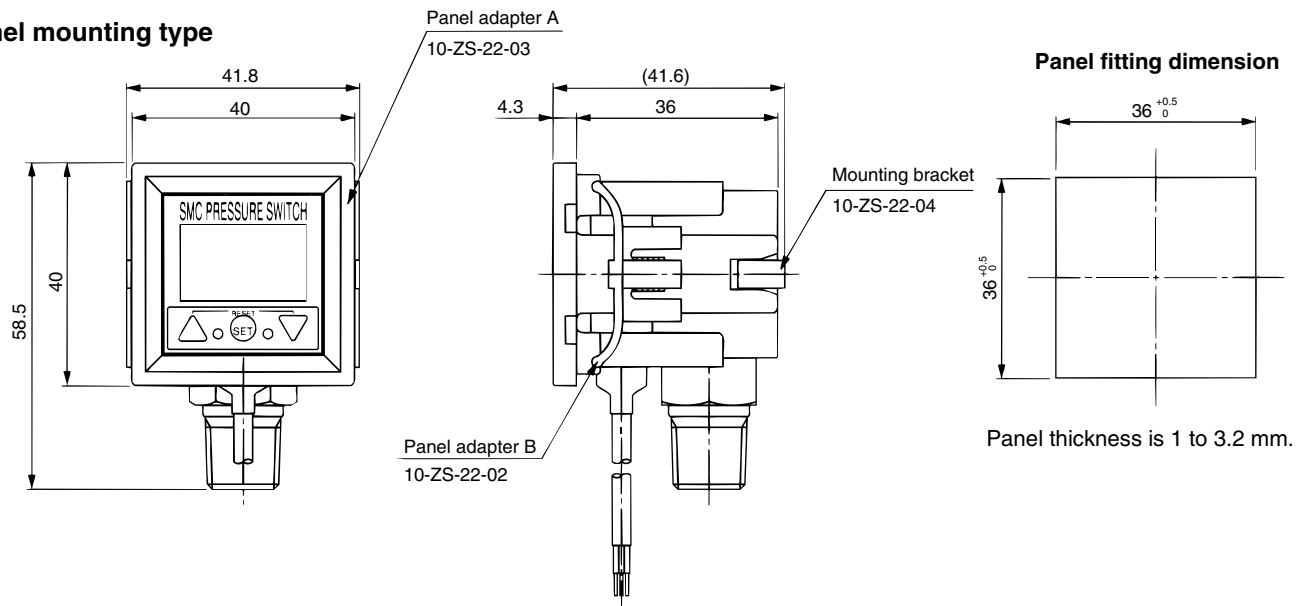
Standard



With bracket



Panel mounting type





Specific product precautions

Be sure to read before handling.

Wiring

Warning

1. Voltage resistance

Voltage resistance between the metal fitting and the lead wire of the switch is 250 V. Do not apply a voltage potential in excess of 250 V.

Caution

1. Ground the piping when it is expected that induction noise will be generated from the piping.

Pressure source

Warning

1. Fluid

The fluid contact portions are made of stainless steel SUS630 (pressure sensor) and stainless steel SUS304 (fittings). Use fluid that will not corrode these materials. The anti-corrosive performances of stainless steel SUS630 and stainless steel SUS304 are approximately the same. For reference, fluid and gases that will not corrode stainless steel SUS304 are shown below.

Dry air	○
Air containing drainage	○
Hydraulic fluid (JIS-K2213)	○
Silicon oil (JIS-K2213)	○
Lubricating oil (JIS-K6301)	○
Fluorocarbon	○
Carbon dioxide	○
Ammonia	○
Argon	○
Nitrogen gas	○

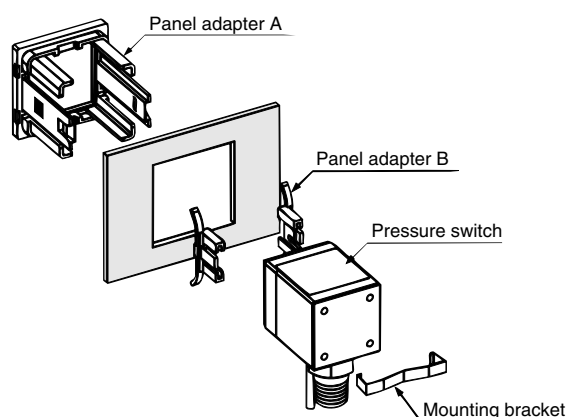
Others

Caution

1. This is Series 10-ZSE5B/ISE5B which is blown with air and double packed in a Class 100 clean room.

2. Mounting the panel

- 1) Insert panel adapter A into the front of the panel.
↓
- 2) Fix panel adapter A firmly with panel adapter B at the back of the panel.
↓
- 3) Insert the pressure switch into panel adapter A from the rear side of the panel.
↓
- 4) Secure the pressure switch with the mounting bracket.



Series 10-ZSE6B/ISE6B

Digital pressure switch
for general fluid

How to Order

Clean series

Piping specifications
A2 — URJ 1/4
B2 — TSJ 1/4 *
 * URJ 1/4 is equivalent to VCR®.
 TSJ 1/4 is equivalent to Swagelok®.
 Be sure that VCR® and Swagelok® are special fittings for semiconductor equipment.

Vacuum 10 - ZSE6B - **A2** - **27** **L** - **M**

Positive pressure 10 - ISE6B - **B2** - **67** **L** - **M**

Output specifications
26 — Analog output (1 to 5 V)
27 — NPN open collector (2 outputs)
67 — PNP open collector (2 outputs)

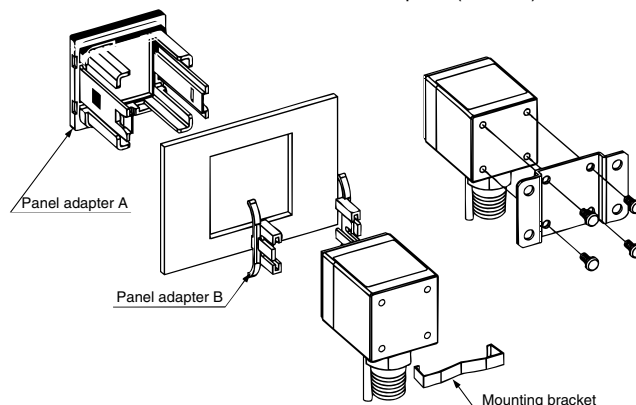
Unit specifications
Nil — With unit conversion function ^{Note 1)}
M — Fixed SI unit ^{Note 2)}
 Note 1) Under the New Measurement Law, sales of switches with the unit conversion function have not been allowed for use in Japan.
 Note 2) Fixed unit: For vacuum & compound pressure: kPa
 For positive pressure: MPa

Lead wire length
L — 3 m



Panel mounting adapter part no.
 (Panel adapter A + Panel adapter B + Mounting bracket)
10-ZS-22-E
 Panel adapter A...10-ZS-22-03
 Panel adapter B...10-ZS-22-02
 Mounting bracket...10-ZS-22-04

10-ZS-22-D
 with M3 tapping screw (4 pcs.)
 Option (Bracket)



Model

Model	Output type	Output specifications
Vacuum 10-ZSE6B-□-26L	Analog output	1 to 5 V (5% F.S.)
10-ZSE6B-□-27L	2 outputs	NPN open collector, 30 V, 80 mA
10-ZSE6B-□-67L		PNP open collector, 80 mA
Positive pressure 10-ISE6B-□-26L	Analog output	1 to 5 V (5% F.S.)
10-ISE6B-□-27L	2 outputs	NPN open collector, 30 V, 80 mA
10-ISE6B-□-67L		PNP open collector, 80 mA

Specifications

Model	Vacuum 10-ZSE6B	Positive pressure 10-ISE6B
Rated pressure range	-100 to 100kPa	-0.1 to 1MPa
Max. operating pressure	200kPa	1.5MPa
Leakage	1 x 10 ⁻¹⁰ Pa·m ³ /s	
Min. display unit	kPa	2
	MPa	—
	mmHg	10
	kgf/cm ²	0.02
	PSI	0.2
	bar	0.02
Indicator light	Lights when ON (OUT1: Green, OUT2: Red)	
Response frequency	200 Hz (5 ms)	
Hysteresis ^{Note 1)}	Variable (2 digits or more)	Variable (3 digits or more)
	Window comparator mode	Fixed (2 digits)

Note 1) Hysteresis mode
 10-ZSE: When the values of P1 and P2 are the same or when P1>P2 within 2 digits, the hysteresis will be automatically 2 digits for the set value of P1.
 10-ISE: When the values of P1 and P2 are the same or when P1>P2 within 3 digits, the hysteresis will be automatically 3 digits for the set value of P1.
Window comparator mode
 10-ZSE: The hysteresis is 2 digits, so separate P1 from P2 by 5 digits or more and set them.
 10-ISE: The hysteresis is 3 digits, so separate P1 from P2 by 7 digits or more and set them.
 * 1 digit is the minimum pressure display unit (See the table above).

Fluid	Fluid that will not corrode stainless steel 304 and 630
Temperature characteristics	±3% F.S. or less
Repeatability	±1% F.S. or less
Operating voltage	12 to 24 VDC (Ripple 10% or less)
Current consumption	45 mA or less
Error display	Indicator light: Red light blinks, displays the error code on LCD
Pressure indication	3 1/2 digits LED (10 mm-size numerals)
Self-diagnosis function	(Overcurrent ^{Note 2)}), Overpressure, Data error, Pressure during 0 clear
Operating temperature range	0 to 50°C (No condensation)
Noise resistance	500 Vp-p, Pulse width 1 μs, Rise time 1 ns
Withstand voltage	Between external terminals and case 250 VAC, 50/60 Hz for 1 minute
Insulation resistance	Between external terminals and case 2 MΩ (measured by 50VDC megameter)
Vibration resistance	10 to 500 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z directions for 2 hours each
Impact resistance	980 m/s ² in X, Y, Z directions, 3 times each
Weight	126 g (including 3 m lead wire)
Port size	A2:URJ1/4, B2:TSJ1/4
Enclosure	IP40
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 2

Note 2) This is not available for analog output types.

Caution

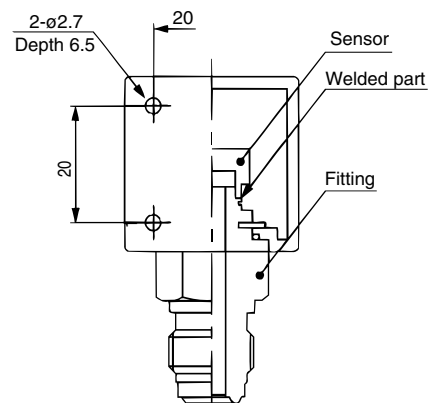
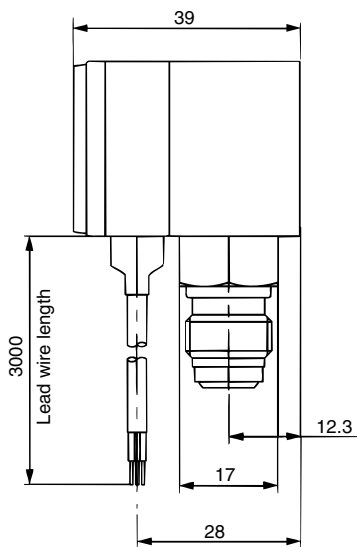
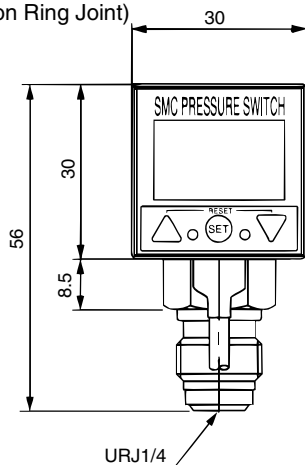
This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.



Dimensions

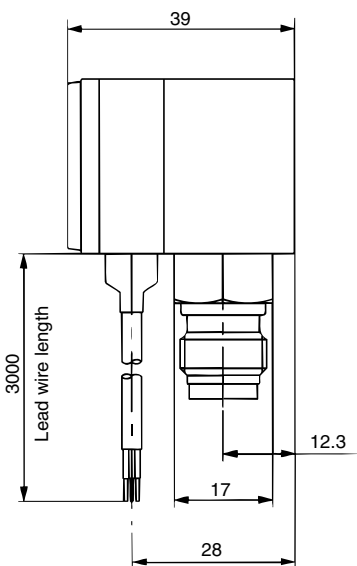
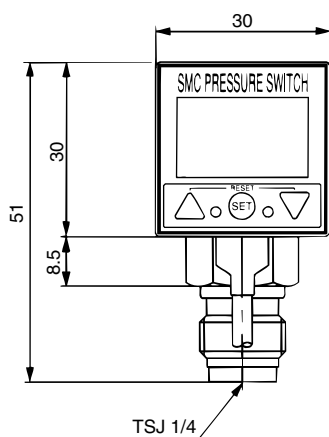
URJ 1/4

(Union Ring Joint)

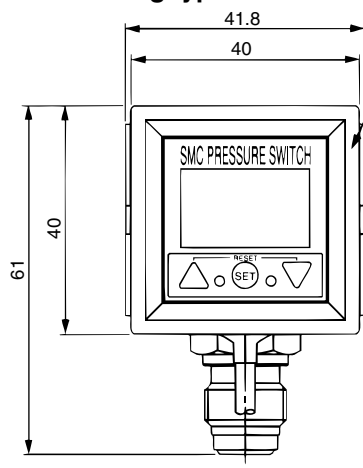


TSJ 1/4

(Tube Swage Joint)

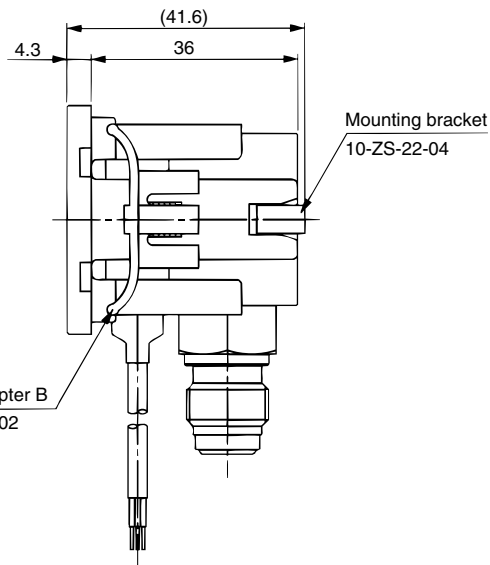


Panel mounting type

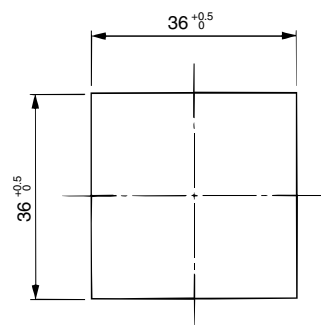


Panel adapter A
10-ZS-22-03

Panel adapter B
10-ZS-22-02



Panel fitting dimension



Panel thickness is 1 to 3.2 mm



Specific product precautions

Be sure to read before handling.

Wiring

Warning

1. Voltage resistance

Voltage resistance between the metal fitting and the lead wire of the switch is 250 V. Do not apply a voltage potential in excess of 250 V.

Caution

1. Ground the piping when it is expected that induction noise will be generated from the piping.

Pressure source

Warning

1. Use of toxic, corrosive or flammable gases

The pressure sensor and fittings of the switch are made of stainless steel SUS630 and stainless steel SUS304. Do not use **toxic** or **corrosive gases** with the switch. Also, since the switch is not protected against explosions, do not use **combustion gas**.

2. Fluid

The fluid contact portions are made of stainless steel SUS630 (pressure sensor) and stainless steel SUS304 (fittings). Use fluid that will not corrode these materials. The anti-corrosive performances of stainless steel SUS630 and stainless steel SUS304 are approximately the same. For reference, fluid and gases that will not corrode stainless steel SUS304 are shown below.

Dry air	○
Air containing drainage	○
Hydraulic fluid (JIS-K2213)	○
Silicon oil (JIS-K2213)	○
Lubricating oil (JIS-K6301)	○
Fluorocarbon	○
Carbon dioxide	○
Ammonia	○
Argon	○
Nitrogen gas	○

3. Helium leakage test

A helium leakage test is conducted on the welded parts. Use ferrules by Crawford Fittings (Swagelok® fittings) as TSJ fittings, and seals and glands by Cajon (VCR® fittings) as URJ fittings. If ferrules, seals, or glands of other brands are to be used, be sure to conduct a helium leakage test for the welded parts before use.

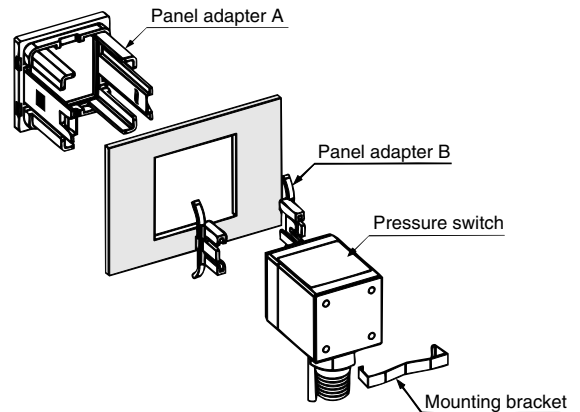
Others

Caution

1. This product is equivalent to Series 10-ZSE6B/ISE6B but is blown with air and double packed in a Class 100 clean room.

2. Mounting the panel

- 1) Insert panel adapter A into the front of the panel.
- 2) Fix panel adapter A firmly with panel adapter B at the back of the panel.
- 3) Insert the pressure switch into panel adapter A from the rear side of the panel.
- 4) Secure the pressure switch with the mounting bracket.



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

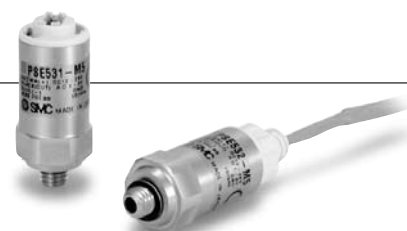
Pressure switch

Clean gas filter

Series 10-PSE530

Remote type pressure sensor

How to Order



Clean series

10-PSE530-M5

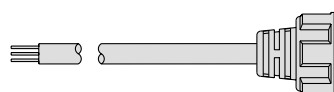
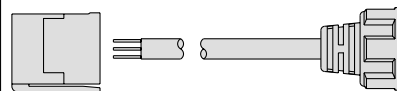
Pressure sensing range

0	High pressure [0 to 1 MPa]
1	Vacuum [0 to -101 kPa]
2	Low pressure [0 to 101 kPa]
3	Compound pressure [-101 to 101 kPa]

Port size

M5	M5 x 0.8
R06	ø6 reducer
R07	1/4-inch reducer

Option

Nil	Without cable
	Sensor cable (3 m)
L	
C2L	Connector for pressure sensor controller connection (1pc.) + Cable for sensor (3m)
	

Note) At the factory, the connector is not connected to the cable, but packed together with it for shipment.

Option

When only optional parts are required, order using the part numbers listed below.

Description	Part no.	Note
Connector	10-ZS-28-C	1 pc. per set
Sensor cable	10-ZS-26-F	Cable length: 3 m
Connector for pressure sensor controller connection + Sensor cable	10-ZS-26-J	Cable length: 3 m The connector is not connected to the cable at the time of shipment.

Specifications

Model		10-PSE530	10-PSE531	10-PSE532	10-PSE533
Rated pressure range		0 to 1 MPa	0 to -101 kPa	0 to 101 kPa	-101 to 101 kPa
Proof pressure		1.5 MPa	500 kPa		
Fluid		Air, Non-corrosive gas, Non-flammable gas			
Power supply voltage		12 to 24 VDC, Ripple (p-p) 10% or less (with power supply polarity protection)			
Current consumption		15 mA or less (at no load)			
Output specification		Analog output (1 to 5 V, Output impedance: Approx. 1 kΩ)			
Accuracy (Ambient temperature of 25°C)		±2% F.S. or less			
Linearity		±1% F.S. or less			
Repeatability		±1% F.S. or less			
Power supply voltage effect		±1% F.S. or less based on the analog output at 18 V ranging from 12 to 24 VDC			
Environmental resistance	Enclosure	IP40			
	Operating temperature range	Operating: 0 to 50°C; Stored: -10 to 70°C (No freezing or condensation)			
	Withstand voltage	1000 VAC, 50/60 Hz for 1 minute between live parts and case			
	Insulation resistance	5 MΩ between live parts and case (measured by 500VDC megameter)			
	Vibration resistance	10 to 500 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z directions, for 2 hours each (De-energized)			
	Impact resistance	980 m/s ² in X, Y, Z directions, 3 times each (De-energized)			
Temperature characteristics		±2% F.S. or less (based on 25°C)			
Sensor cable / Option		Halogen-free heavy-duty cord, ø2.7, 0.15 mm ² , 3 cores, 3 m			
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		Grade 2			

Caution

This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

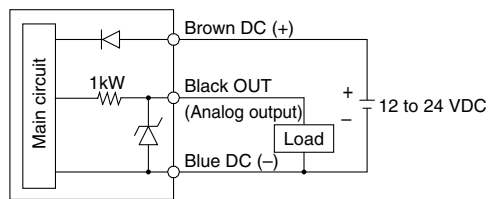
Piping specifications

Model	M5	R06	R07
Port size	M5 x 0.8 male	ø6 reducer type	1/4-inch reducer type
Wetted parts material	Pressure sensor: Silicon, O-ring: FKM		
	Body: Stainless steel 304	Body: PBT	
Weight	With sensor cable (3 m)	41 g	38 g
	Without sensor cable	7 g	3.8 g

Internal circuit

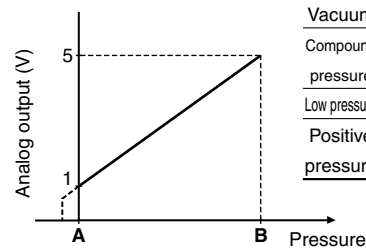
10-PSE53□

Voltage output style
1 to 5V
Output impedance
Approx. 1 kΩ



Analog output

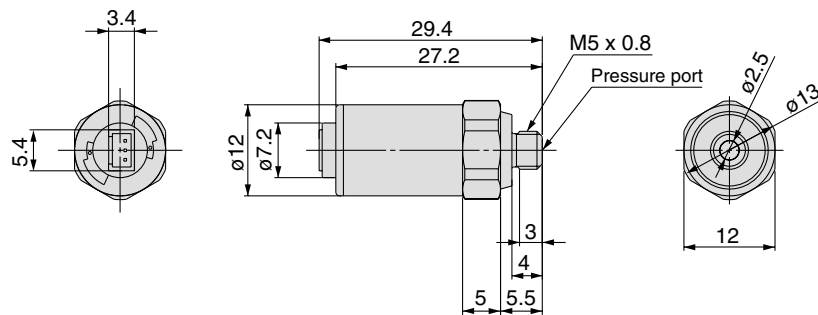
1 to 5 VDC



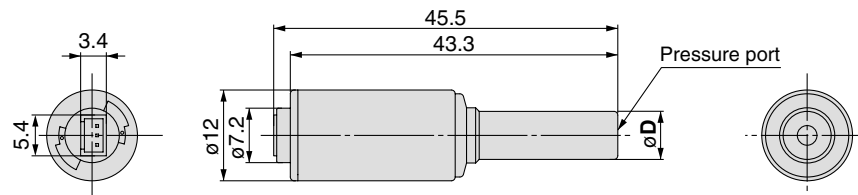
Range	Rated pressure range	A	B
Vacuum	0 to -101kPa	0	-101kPa
Compound pressure	-101 kPa to 101kPa	-101kPa	101kPa
Low pressure	0 to 101kPa	0	101kPa
Positive pressure	0 to 1MPa	0	1MPa
	0 to 500kPa	0	500kPa

Dimensions

10-PSE53□-M5

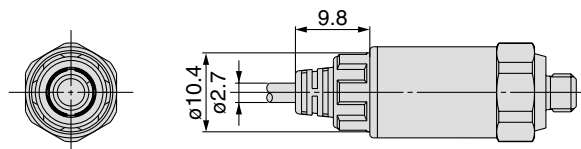


10-PSE53□-R06 R07



Model	Applicable fitting size (D)
10-PSE53□-R06	6
10-PSE53□-R07	1/4"

With sensor cable

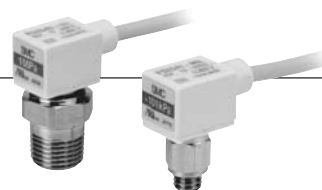


Series 10-PSE540

Remote type pressure sensor

How to Order

Pressure sensing range		Accuracy	
0	Positive pressure [0 to 1 MPa]	Nil	±2% F.S.
1	Vacuum [0 to -101 kPa]	A	±1% F.S.
3	Compound pressure [-100 to 100 kPa]		



10-PSE54 1 M3

• Clean series

• Option (connector)

Port size		
M3	M3 x 0.5	
M5	M5 x 0.8	
01	R 1/8 (with M5 female thread)	
N01	NPT 1/8 (with M5 female thread)	
R04	ø4 reducer	
R06	ø6 reducer	

IM5	M5 female thread, through type	
IM5H	M5 female thread, through type (with mounting hole)	

Nil	C2
Without connector	Connector for pressure sensor controller 1 pc.

Note) At the factory, the connector is not connected to the cable, but packed together with it for shipment.

Option/Part No.

Description	Part no.	Note
Connector for pressure sensor controller	10-ZS-28-C	1 pc.

Specifications

Conforms to CE marking and UL (CSA) standards.

Model		10-PSE540	10-PSE541	10-PSE543
Rated pressure range		0 to 1MPa	0 to −101kPa	−100 to 100kPa
Proof pressure		1.5MPa	500kPa	
Fluid		Air, Non-corrosive gas, Non-flammable gas		
Power supply voltage		12 to 24 VDC, Ripple (p-p) 10% or less (With power supply polarity protection)		
Current consumption		15mA or less (at no load)		
Output specification		Analog output 1 to 5 V, Output impedance: Approx. 1kΩ		
Accuracy (Ambient temperature of 25°C)		10-PSE54□: ±2% F.S. or less 10-PSE54□A: ±1% F.S. or less		
Linearity		±0.7% F.S. or less	±0.4% F.S. or less	
Repeatability		±0.2% F.S. or less		
Power supply voltage effect		±0.8% F.S. or less		
Environmental resistance	Enclosure	IP40		
	Operating temperature range	Operating: 0 to 50°C, Stored: −20 to 70°C (No freezing and condensation)		
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)		
	Withstand voltage	1000 VAC, 50/60Hz for 1 minute between live parts and case		
	Insulation resistance	50MΩ between live parts and case (measured by 500VDC megameter)		
	Vibration resistance	10 to 500Hz at whichever is smaller of 1.5mm amplitude or 98m/s ² acceleration, in X, Y, Z directions, for 2 hours each (De-energized)		
	Impact resistance	980m/s ² in X, Y, Z directions, 3 times each (De-energized)		
Temperature characteristics		±2% F.S. or less (based on 25°C)		
Particle generation grade (Refer to front matter pages 13 to 22 for details.)		Grade 2		

Piping specifications

Model		M3	M5	1	N01	R04	R06	IM5	IM5H
Port size		M3 x 0.5	M5 x 0.8	R 1/8 M5 x 0.8	NPT 1/8 M5 x 0.8	ø4 plug-in reducer	ø6 plug-in reducer	M5 female thread, through type	M5 female thread, through type with mounting hole
Material	Case	Resin case: PBT Fitting: Stainless steel 303		Resin case: PBT Fitting: C3604BD		PBT		Resin case: PBT Fitting: A6063S-T5	
	Pressure sensing section	Pressure sensor: Silicon, O-ring: FKM							
Sensor cable		3-wire oval cable (0.15mm²)							
Weight	With sensor cable	42.4g	42.7g	49.3g		41.4g	41.6g	43.3g	44.1g
	Without sensor cable	2.9g	3.2g	9.8g		1.9g	2.1g	3.8g	4.6g

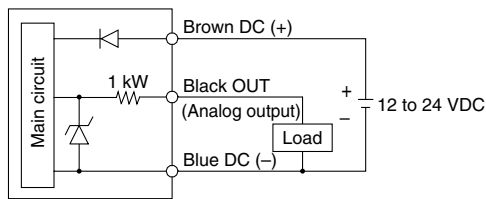
Caution

This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Internal circuit

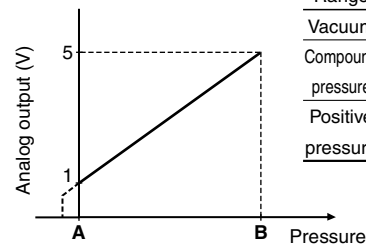
10-PSE54□

Voltage output style
1 to 5V
Output impedance
Approx. 1k Ω



Analog output

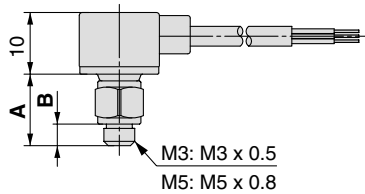
1 to 5 VDC



Range	Rated pressure range	A	B
Vacuum	0 to -101kPa	0	-101kPa
Compound pressure	-100kPa to 100kPa	-100kPa	100kPa
Positive pressure	0 to 1MPa	0	1MPa

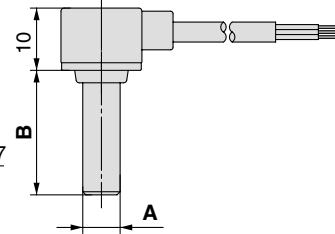
Dimensions

10-PSE54□-M3 M5



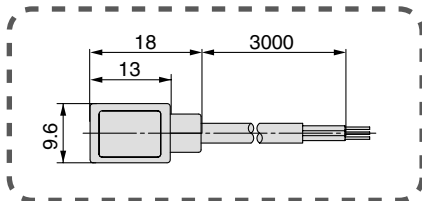
	10-PSE54□-M3	10-PSE54□-M5
A	10.8	11.5
B	3	3.5

10-PSE54□-R04 R06

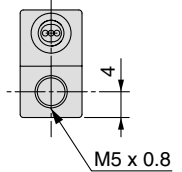
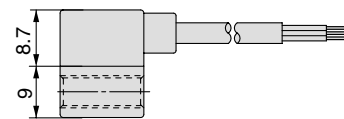


	10-PSE54□-R04	10-PSE54□-R06
A	ø4	ø6
B	18	20

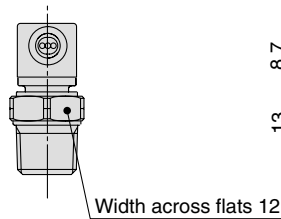
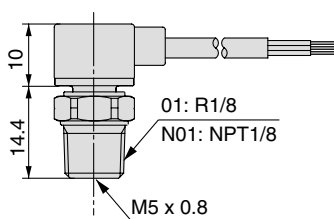
Common dimensions



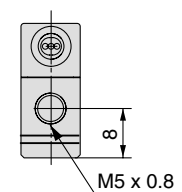
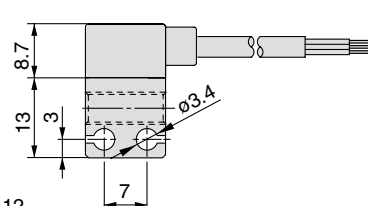
10-PSE54□-IM5



10-PSE54□-01 N01



10-PSE54□-IM5H



Series 10-PSE550

Low differential pressure sensor

How to Order



10—PSE550—

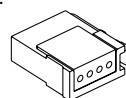
• Clean series

Output specifications

Nil	1 to 5V voltage output type
28	4 to 20mA current output type

Option 2 (Connector)

Nil	Without connector
C2	Connector for PSE300, pressure sensor monitor: 1 pc.

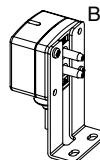


Note 1) The current output type cannot be connected to series PSE300.

Note 2) Connector is packed together without being connected to the cable.

Option 1 (Bracket)

Nil	Without bracket
A	Bracket



Note) Brackets are packed together without being assembled.

Option/Part no.

Description	Part no.	Note
Bracket	10-ZS-30-A	With M3 x 5L (2 pcs.)
Connector for PSE300 pressure sensor monitor	10-ZS-28-C	1 pc.

Specifications

Model		10-PSE550	10-PSE550-28
Rated differential pressure range		0 to 2kPa	
Operating pressure range		-50 to 50 kPa ^{Note)}	
Proof pressure		65kPa	
Fluid		Air, non-corrosive gas, non-flammable gas	
Power supply voltage		12 to 24VDC, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption		15 mA or less	—
Output specification		Analog output 1 to 5VDC (Within the rated differential pressure range) Output impedance: Approx. 1kΩ	Analog output 4 to 20 mADC (Within the rated differential pressure range) Allowable load impedance: 500Ω or less (at 24VDC) 100Ω or less (at 12VDC)
Accuracy (Operating temperature 25°C)		±1%F.S. or less	
Linearity		±0.5%F.S. or less	
Repeatability		±0.3%F.S. or less	
Indicator light		Orange (ON when energized)	
Environmental resistance	Enclosure	IP40	
	Operating temperature range	Operating: 0 to 50°C, Stored: -20 to 70°C (with no condensation or freezing)	
	Operating humidity range	Operating and stored: 35 to 85% RH (with no condensation)	
	Withstand voltage	1000VAC, 50/60Hz, for 1 min, between live parts and case	
	Insulation resistance	50 MW or more(measured by 500VDC mega meter) between live parts and case	
	Vibration resistance	10 to 150Hz, at whichever smaller of 1.5mm amplitude or 100m/s ² acceleration, in X, Y and Z directions, for 2 hours each (de-energized)	
Impact resistance		300m/s ² , 3 times each for X, Y and Z directions (de-energized)	
Temperature characteristics		±3%F.S. or less (based on 25°C)	
Port size		ø4.8 (ø4.4 in the end) resin piping (Applicable to ø4 air tubing)	
Wetted part material		Resin pipe: Nylon, Pressure sensor: Silicon	
Sensor cable		3-wire oval cable (0.15mm ²)	2-wire oval cable (0.15mm ²)
Weight	With sensor cable	75g	
	Without sensor cable	35g	
Particle generation grade (Refer to front matters 13 to 22 for details.)		Grade 2	

Note) The differential pressure of 0 to 2kPa can be detected within the range of -50 to 50kPa.

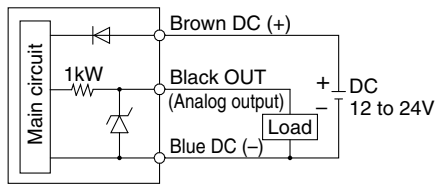
⚠ Caution

This product is blown with air and double packed in a Class M3.5 (ISO Class 5) cleanroom.

Internal circuit

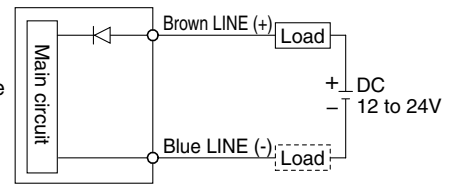
10-PSE550

Voltage output type
1 to 5V
Output impedance
Approx. 1k Ω



10-PSE550-28

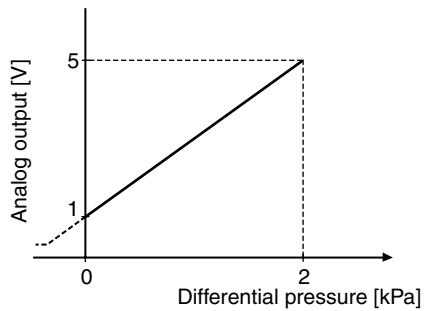
Current output type
4 to 20mA
Allowable load impedance
500 Ω or less (at 24VDC)
100 Ω or less (at 12VDC)



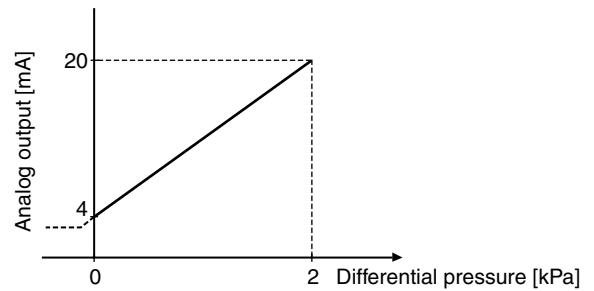
Install the load either on the LINE (+) or LINE (-) side.

Analog output

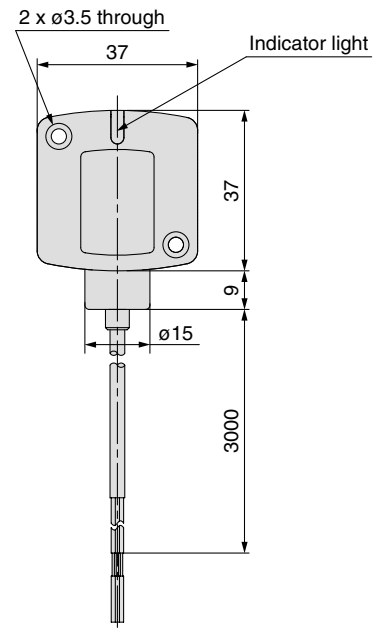
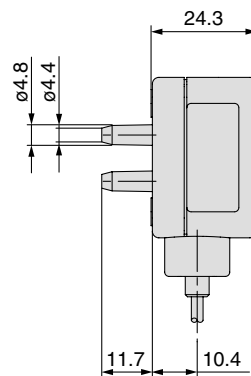
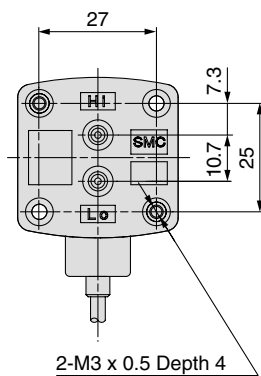
1 to 5 VDC



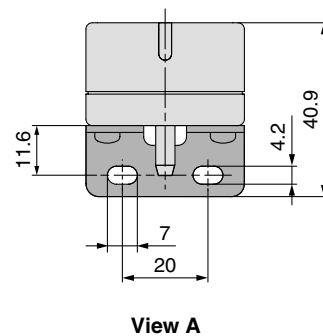
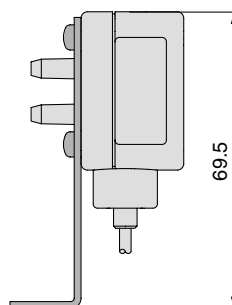
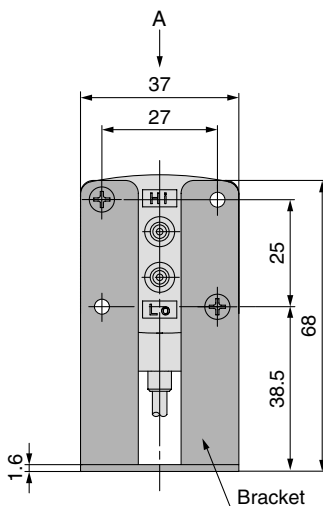
4 to 20 mA DC



Dimensions



With bracket



Series 10-PSE560

Remote type pressure sensor

How to Order

• Clean series

10-PSE56 **0** **01** **□** **□**

Sensor range

0	For positive pressure (0 to 1MPa)
1	For vacuum pressure (0 to -101kPa)
3	For compound pressure (-100 to 100kPa)
4	For positive pressure (0 to 500kPa)

Port size

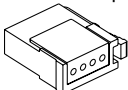
01	R1/8 (with M5 female thread)
02	R1/4 (with M5 female thread)
C01	Rc1/8
N01	NPT1/8 (with M5 female thread)
N02	NPT1/4 (with M5 female thread)
A2	URJ1/4
B2	TSJ1/4

Output specifications

Nil	1 to 5V voltage output type
28	4 to 20mA current output type

Option (Connector)

Nil	C2
Without connector	Connector for pressure sensor monitor 1 pc.



Note 1) Current output type cannot be connected to PSE20□ and PSE30□.
Note 2) At the factory, the connector is not connected to the cable, but packed together with it for shipment.

Option/Part no.

Description	Part no.	Note
Connector for pressure sensor monitor	10-ZS-28-C	1 pc.

Specifications

Conforms to CE marking and UL(CSA) standards.				
Model	10-PSE560	10-PSE561	10-PSE563	10-PSE564
Rated pressure range	0 to 1MPa	0 to -101kPa	-100 to 100kPa	0 to 500kPa
Proof pressure	1.5MPa	500kPa	500kPa	750kPa

Model	10-PSE56□-□	10-PSE56□-□-28
Fluid	Fluid or gas that will not corrode stainless steel SUS 316L.	
Power supply voltage	12 to 24VDC, Ripple (p-p) 10% or less (with power supply polarity protection)	
Current consumption	10mA or less	
Output specifications	Analog output 1 to 5 V (Within rated pressure range) Output impedance: Approx. 1kΩ	Analog output 4 to 20mA Allowable load impedance: 500Ω or less (at 24VDC) 100Ω or less (at 12VDC)
Accuracy (Ambient temperature 25°C)	±1%F.S. or less	
Linearity	±0.5%F.S. or less	
Repeatability	±0.2%F.S. or less	
Power supply voltage effect	±0.3%F.S. or less	
Environment resistance	Enclosure	IP65
	Operating temperature range	Operating: -10 to 60°C, Stored: -20 to 70°C (with no condensation or freezing)
	Operating humidity range	Operating and stored: 35 to 85% RH (with no condensation)
	Withstand voltage	250 VAC for 1 min. between live parts and case
	Insulation resistance	50MΩ or more (measured by 50VDC mega meter) between live parts and case.
	Vibration resistance	10 to 150Hz, at whichever is smaller of 1.5mm amplitude or 20m/s ² acceleration, in X, Y and Z directions, for 2 hours each (de-energized)
Impact resistance		500m/s ² , in X, Y and Z directions, 3 times each (de-energized)
Temperature characteristics		±2%F.S. or less (0 to 50°C : based on 25°C) ±3%F.S. or less (-10 to 60°C: based on 25°C)
Particle generation grade (Refer to front matters 13 to 22 for details.)		Grade 2

Piping specifications

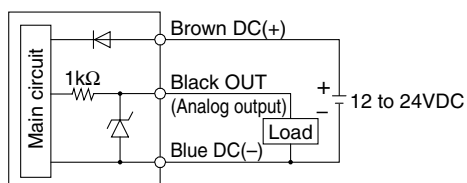
Part no.	01	02	N01	N02	C01	A2	B2
Port size	R1/8 M5 x 0.8	R1/4 M5 x 0.8	NPT1/8 M5 x 0.8	NPT1/4 M5 x 0.8	Rc1/8	URJ1/4	TSJ1/4
Material	Case: C3604 + Nickel-plated, Piping port and pressure sensor: stainless steel SUS 316L						
Sensor cable	10-PSE56□-□: Oil proof 3-wire vinyl cabtire cable with air tube (0.2mm ²) 10-PSE56□-□-28: Oil proof 2-wire vinyl cabtire cable with air tube (0.2mm ²)						
Weight	Sensor cable included	193g	200g	194g	201g	187g	203g
	Sensor cable not included	101g	108g	102g	109g	95g	101g

Caution This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Internal circuit

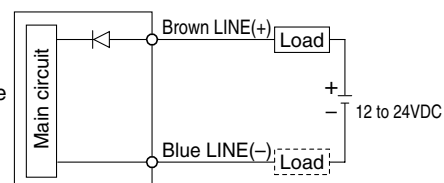
10-PSE56□-□

Voltage output type
1 to 5V
Output impedance
Approx. 1kΩ



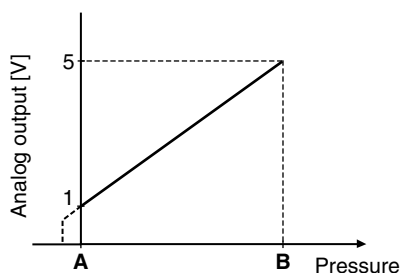
10-PSE56□-□-28

Current output type
4 to 20mA
Allowable load impedance
500Ω or less (at 24VDC)
100Ω or less (at 12VDC)

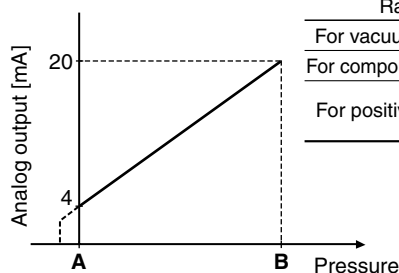


* Install the load either on the LINE (+) or LINE (-) side.

1 to 5 VDC



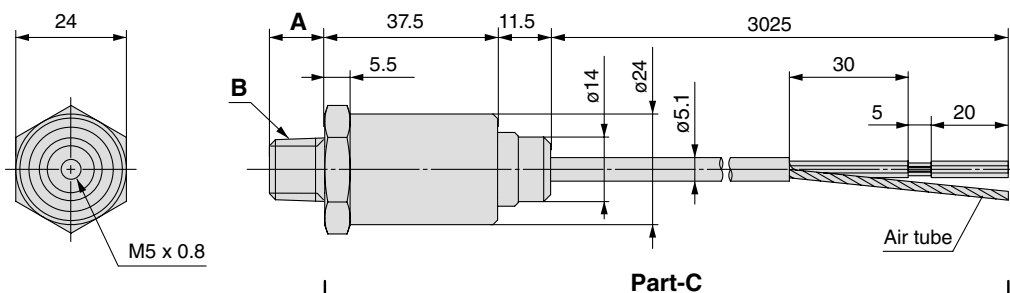
4 to 20 mA DC



Range	Rated pressure range	A	B
For vacuum pressure	0 to -101kPa	0	-101kPa
For compound pressure	-100kPa to 100kPa	-100kPa	100kPa
For positive pressure	0 to 1MPa	0	1MPa
	0 to 500kPa	0	500kPa

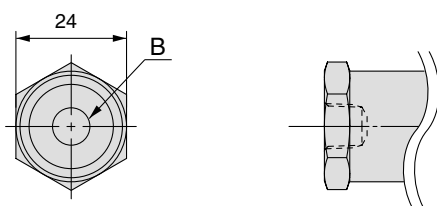
Dimensions

10-PSE56□-01 / 10-PSE56□-N01 02 / 10-PSE56□-N02

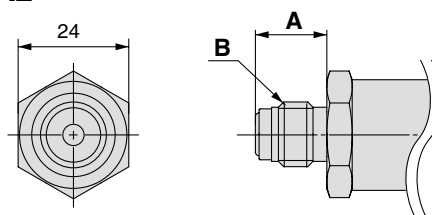


* Dimensions and size of part C are all common.

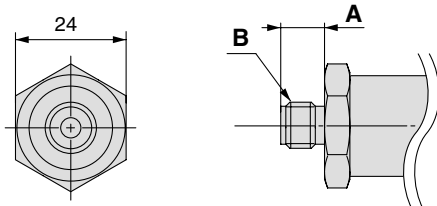
10-PSE56□-C01



10-PSE56□-A2



10-PSE56□-B2



Part no.	A	B
10-PSE56□-01	8.2	R1/8
10-PSE56□-02	12	R1/4
10-PSE56□-N01	9.2	NPT1/8
10-PSE56□-N02	12.2	NPT1/4
10-PSE56□-C01	—	Rc1/8
10-PSE56□-A2	15.5	URJ1/4
10-PSE56□-B2	9.5	TSJ1/4

Series 10-PSE200

Multi-channel controller

How to Order



• Clean series

10-PSE20 0-M

Input/Output specifications

0	NPN 5 outputs + Auto shift input
1	PNP 5 outputs + Auto shift input

Unit specifications

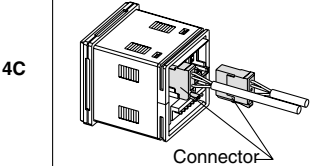
Nil	With unit conversion function ^{Note 1)}
M	Fixed SI unit ^{Note 2)}

Note 1) The new Weight and Measure Act does not allow use of a product with a unit display conversion function in Japan.

Note 2) Fixed unit:
For vacuum/low pressure /compound pressure: kPa
For positive pressure: MPa

Option 2

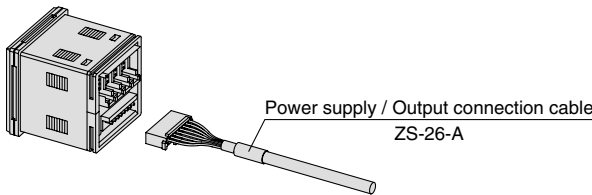
Nil	Without connector
4C	Sensor connectors (4 pcs.)



Option 1

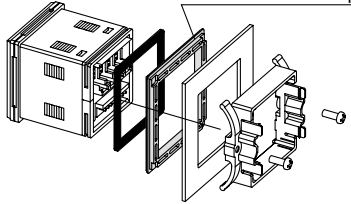
Nil	Without panel mount/protective cover
A	Panel mount adapter
B	Front protective cover + Panel mount adapter

Accessory: Power supply/Output connection cable (2m)
Attached to the controller.



Option

When only optional parts are required, order with the part numbers listed below.

Description	Part no	Note
Panel mount adapter	10-ZS-26-B	With waterproof seal and mounting screw
Front protective cover + Panel mount adapter	10-ZS-26-C	With waterproof seal and mounting screw
□48 conversion adapter This adapter is used to mount PSE200 on the panel fitting of PSE100. 	10-ZS-26-D	Order panel mount adapter separately.
Sensor connector	10-ZS-28-C (1 pc. per set)	

Specifications

Model		10-PSE200	10-PSE201	
Power-supply voltage		12 to 24VDC, Ripple(p-p) 10% or less (with power supply polarity protection)		
Current consumption		55mA or less (Current consumption for sensor is not included.)		
Power supply voltage for sensor		[Power supply voltage] –1.5V		
Power supply current for sensor ^{Note 1)}		40mA maximum (100mA maximum for the total power supply current when 4 sensors are input)		
		1 to 5 VDC (Input impedance: Approx. 800kΩ)		
Sensor input	No. of inputs	4 inputs		
	Input protection	With excess voltage protection (up to 26.4V)		
Switch output		NPN open collector: 5 outputs (Sensor input CH: 2 outputs, CH2 to 4: 1 output)	PNP open collector: 5 outputs (CH: 2 outputs, CH2 to 4: 1 output)	
	Maximum load current	80mA		
	Maximum applied voltage	30V	—	
	Residual voltage	1V or less (with load current of 80mA)		
	Response time	5ms or less (With anti-chattering function, Response time selection: 20ms, 160ms, 640ms)		
	Short-circuit protection	With short-circuit protection		
Repeatability		±0.1%F.S.±1digit or less		
Hysteresis	Hysteresis mode	Adjustable (can be set from 0)		
	Window comparator mode	Fixed (3 digits)		
Display		For measured value display: 4-digit, 7-segment indicator, Display color: Orange (Sampling interval: 4 times/1s) For channel display: 1-digit, 7-segment indicator, Display color: Red		
Display accuracy (at operating temperature 25°C)		±0.5%F.S.±1digit or less		
Indicator light		Red (Lights up when output is ON.)		
Auto shift input		Non-voltage input (reed or solid state), Input 10ms or more, Independently controllable auto shift function ON/OFF		
Auto identification function		With auto identification function ^{Note 2)}		
Environment resistance	Enclosure	Front face: IP65 (with panel mount), Other: IP40		
	Ambient temperature range	Operating: 0 to 50°C, Stored: –10 to 60°C (with no condensation or freezing)		
	Ambient humidity range	Operating/Stored: 35 to 85% RH (with no condensation)		
	Vibration resistance	10 to 500Hz, at whichever is smaller of 1.5mm amplitude or 98m/s ² acceleration, in X, Y, Z directions for 2 hours each (de-energized)		
	Impact resistance	980m/s ² in X, Y, Z directions, 3 times each (de-energized)		
Temperature characteristics		±0.5% F.S. or less (based on 25°C)		
Connection		Power supply/Output connection: 8P connector, Sensor connection: e-con		
Material		Case: PBT; Display: Transparent nylon; Back rubber cover: CR		
Weight		Approx. 60g (Power supply/Output connection cable not included)		
Particle generation grade (Refer to front matters 13 to 22 for details.)		Grade 1		

Pressure range	For compound pressure	For vacuum pressure	For low pressure	For positive pressure
Applicable pressure sensor	10-PSE533	10-PSE531	10-PSE532	10-PSE530
	10-PSE543	10-PSE541		10-PSE560
	10-PSE563	10-PSE561		
Set pressure range	–101 to 101kPa	10 to –101kPa	–10 to 101kPa	–0.1 to 1MPa
Set pressure resolution	0.1kPa	0.1kPa	0.1kPa	0.001MPa

Note 1) If the Vcc and 0 V side of the sensor input connector are short circuited, the inside of the monitor is damaged.

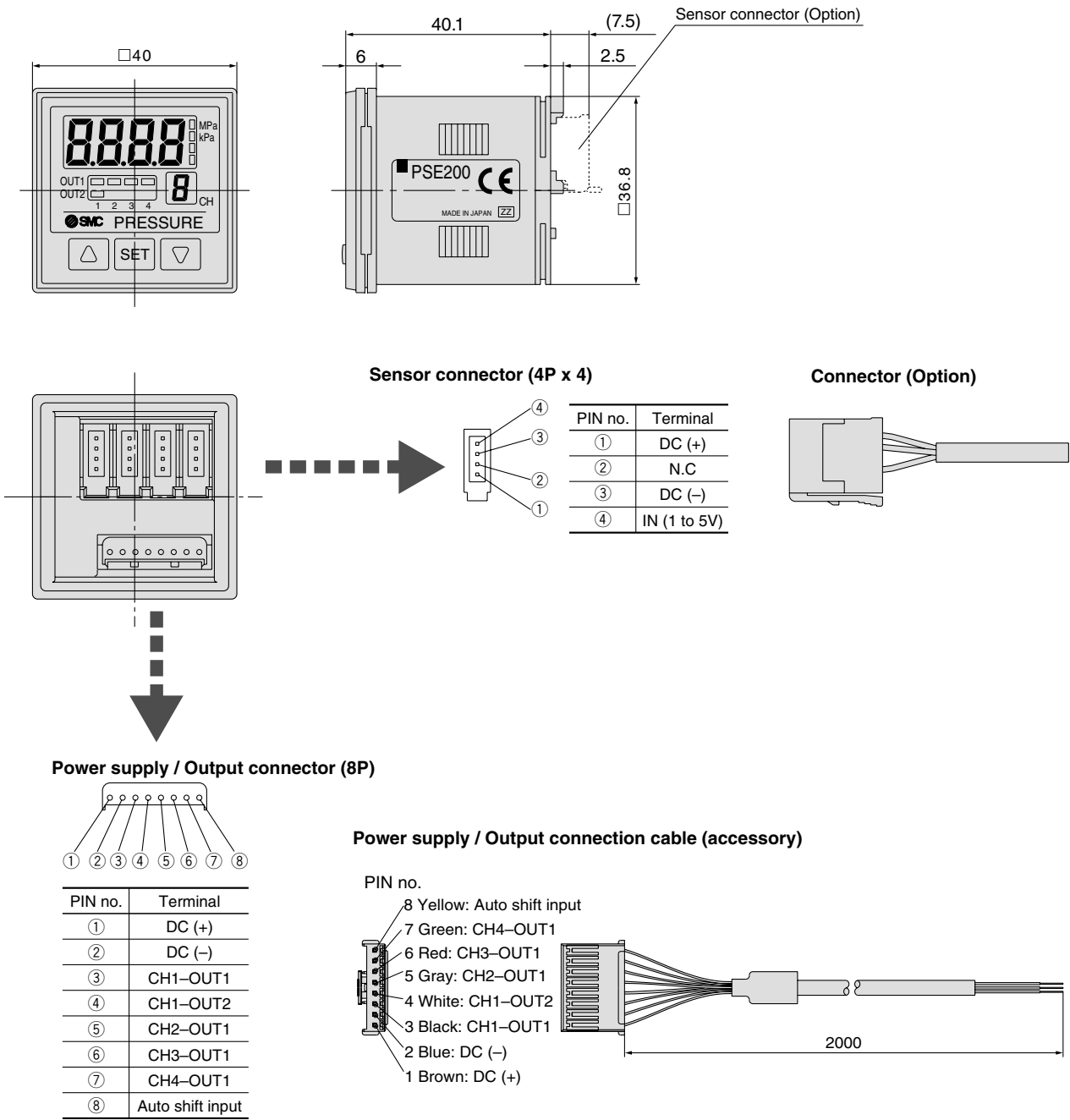
Note 2) Auto identification function comes with "Series PSE53□" pressure sensor only. Other SMC series (PSE510, PSE520, PSE540 and PSE560) are not equipped with this function.

⚠ Caution

This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

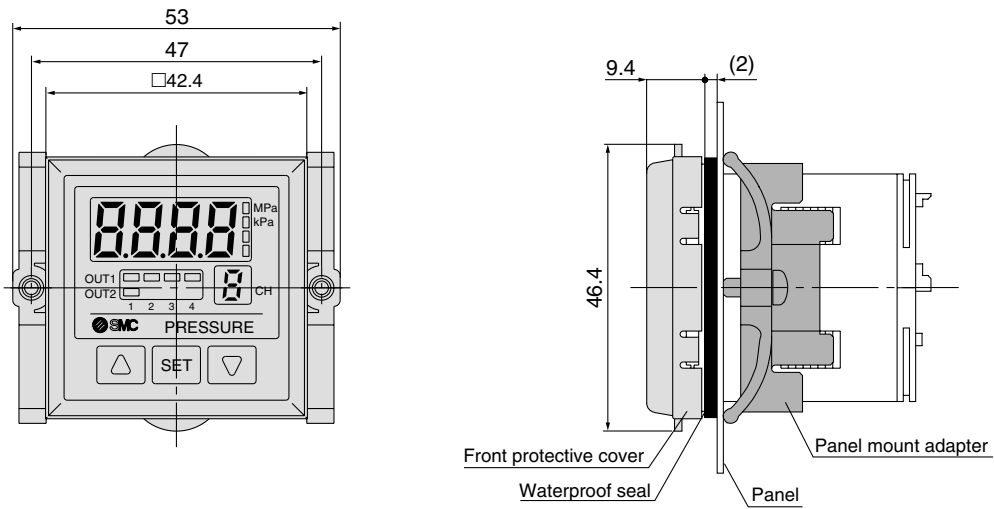
Dimensions

10-PSE200/201

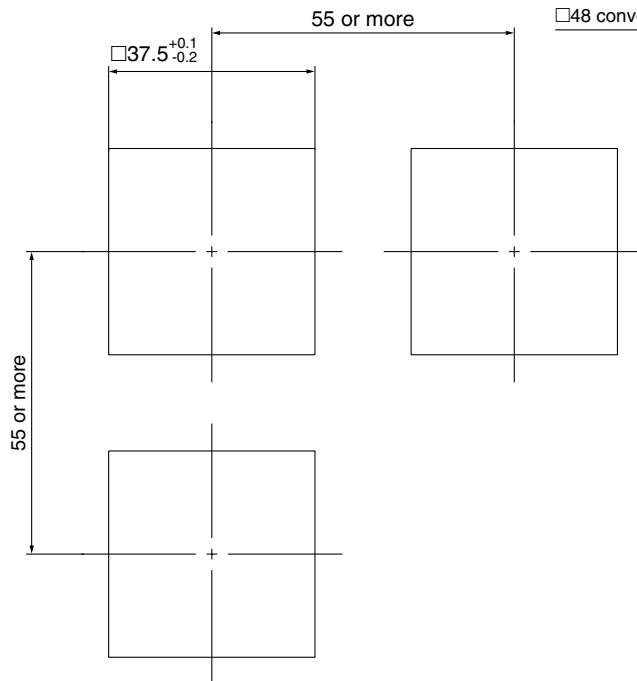
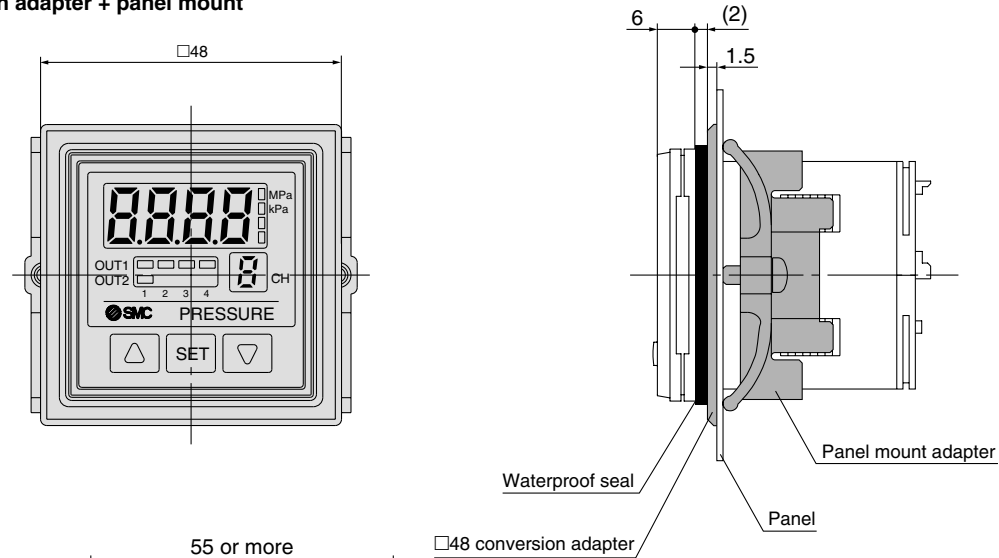


Dimensions

Front protective cover + Panel mount



□48 conversion adapter + panel mount



Panel fitting dimension

Applicable panel thickness: 0.5 to 8mm

Descriptions

4-digit display

Displays the measured pressure value, content for each setting, and error code.

Switch output display

Displays the output status of OUT1 (CH1 to CH4) and OUT2 (CH1 only). Lights up when it is ON.

UP button

Use this button to change the mode or set value.

SET button

Use this button to set the mode or set value.

Unit display

The selected unit lights up. Use unit labels for units other than MPa and kPa.

Unit labels

kgf/cm² bar PSI inHg mmHg

Channel display

Displays the selected channel.

DOWN button

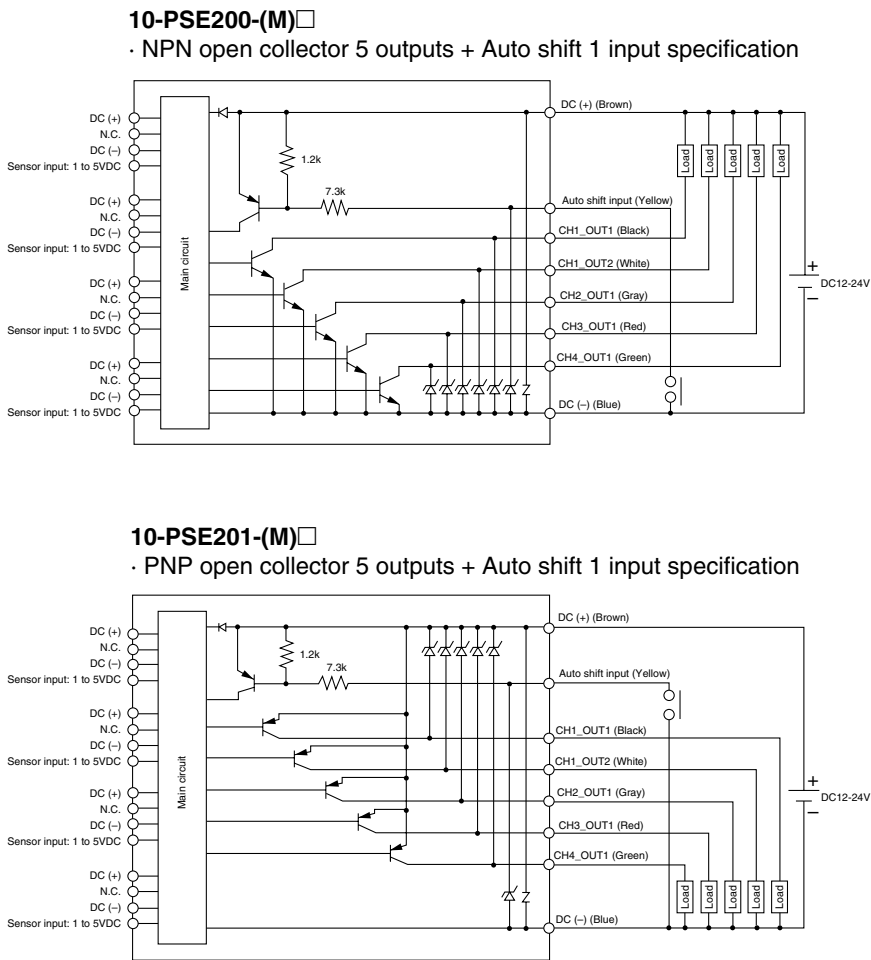
Use this button to change the mode or set value.

Error code & solution

Error description	LED display	Contents	Solution
Excess current error	Er 1	Excess current is flowing into the switch output of OUT1.	Shut off the power supply. After eliminating the output factor that caused the excess current, turn the power supply back on.
	Er 2	Excess current is flowing into the switch output of OUT2.	
Residual pressure error	Er 3	Zero point adjustment Pressure is applied to a pressure sensor during the reset operation as follows: When compound pressure is used: ±2.5% F.S. or more. When pressure other than compound pressure is used: ±5% F.S. or more. * After displaying for 2 seconds, it will return to the measuring mode.	Bring the pressure back to atmospheric pressure and use the reset function (zero point adjustment) again.
Applied pressure error	---	The DC (-) line of the sensor is not connected or supply pressure exceeds the set pressure range.	Confirm the connection and the wiring for the sensor, and set the pressure within the set pressure range.
	----	The sensor is not set or connected incorrectly, or the pressure applied is below the set pressure range.	
System error	Er 5	Internal data error	Shut off the power supply and turn it on again.
	Er 6	Internal data error	
	Er 7	Internal data error	
	Er 8	Internal data error.	

* Contact SMC for further investigation if it cannot be recovered after above measures have been taken.

Internal circuits and connections



Series 10-PSE300 Controller

How to Order



Input/Output specifications

0	NPN2 output + 1 to 5V output
1	NPN2 output + 4 to 20mA output
2	NPN2 output + Auto shift input
3	PNP2 output + 1 to 5V output
4	PNP2 output + 4 to 20mA output
5	PNP2 output + Auto shift input

Unit specifications

Nil	With unit conversion function ^{Note 1)}
M	Fixed SI unit ^{Note 2)}

Note 1) The new Weight and Measure Act does not allow use of a product with the unit display conversion function in Japan.

Note 2) Fixed unit

For vacuum/low pressure/low differential pressure/compound pressure: kPa
For positive pressure: MPa (for 1MPa)
kPa (for 500 kPa)

10—PSE30 0—M

Clean series

Option 1

Nil	Without cable
	Power supply / Output connection cable
L	Power supply/Output connection cable 10-ZS-28-A

Note) At the factory, the cable is packed together without being connected.

Option 3

Nil	Without connector
	With sensor connector
C	Sensor connector (e-con connector)

Note) At the factory, the connector is packed together without being connected.

Option 2

Nil	None
	Bracket
A	M3 x 5L Bracket
	Panel mount adapter
B	Panel Panel mount adapter Mounting screw (M3 x 8L)
	Panel mount adapter + Front protective cover
D	Panel Front protective cover Panel mount adapter Mounting screw (M3 x 8L)

Note) These options are unassembled in the factory, but are included with the shipment.

Option / Part no.

Description	Part no.	Note
Power supply / Output connection cable (2m)	10-ZS-28-A	
Bracket	10-ZS-28-B	With M3 x 5L (2 pcs.)
Sensor connector	10-ZS-28-C	1 pc.
Panel mount adapter	10-ZS-27-C	With M3 x 8L (2 pcs.)
Panel mount adapter + Front protective cover	10-ZS-27-D	With M3 x 8L (2 pcs.)

Specifications

Model		10-PSE30□					
Set (differential) pressure range		−101 to 101kPa	10 to −101kPa	−10 to 100kPa	−0.1 to 1MPa	−50 to 500kPa	−0.2 to 2kPa
Pressure range Note 1)		For compound pressure	For vacuum pressure	For low pressure	For positive pressure		For low differential pressure
Rated (differential) pressure range		−100 to 100kPa	0 to −101kPa	0 to 100kPa	0 to 1MPa	0 to 500kPa	0 to 2kPa
Power supply voltage		12 to 24VDC, Ripple (p-p) 10% or less (with power supply polarity protection)					
Current consumption		50mA or less (Current consumption for sensor is not included.)					
		1 to 5VDC (Input impedance: Approx. 1MΩ)					
Sensor input	No. of inputs	1 input					
	Input protection	With excess voltage protection (up to 26.4V)					
Hysteresis		Hysteresis mode: Variable, Window comparator mode: Variable					
		NPN or PNP open collector output: 2 outputs					
Switch output	Maximum load current	80mA					
	Maximum load voltage	30VDC (at NPN output)					
	Residual voltage	1V or less (with load current of 80mA)					
	Output protection	With short-circuit protection					
Response time		1ms or less					
Anti-chattering function		Response time selections with anti-chattering function: 20ms, 160ms, 640ms, 1280ms					
Repeatability		±0.1%F.S. or less					
Analog output	Voltage output Note 2)	Output voltage: 1 to 5V (within rated (differential) pressure range); Output impedance: Approx. 1kΩ Linearity: ±0.2% F.S. or less (not including sensor accuracy); Response time: 150ms or less					
	Accuracy (to display value) (25°C)	±0.6%F.S. or less				±1.0%F.S. or less	±1.5%F.S. or less
	Current output Note 2)	Output current: 4 to 20mA (within rated (differential) pressure range) Maximum load impedance: 300Ω (12VDC), 600Ω(24VDC), Minimum load impedance: 50Ω Linearity: ±0.2% F.S. or less (not including sensor accuracy), Response time: 150 ms or less					
	Accuracy (to display value) (25°C)	±1.0%F.S. or less				±1.5%F.S. or less	±2.0%F.S. or less
Display accuracy (ambient temperature 25°C)		±0.5%F.S. ±2 digits or less	±0.5%F.S. ±1digit or less				
Display		3+1/2 digit, 7 segment indicator, 2 color display (red/green), Sampling cycle: 5 times/sec					
Indicator light		OUT1: Lights up when ON (green), OUT2: Lights up when ON (red)					
Auto shift input Note 2)		No-voltage input (reed or solid state), Low level input: 5ms or more, Low level: 0.4V or less					
Environment resistance	Enclosure	IP40					
	Operating temperature range	Operating: 0 to 50°C; Stored: -10 to 60°C (with no freezing or condensation)					
	Operating humidity range	Operating and stored: 35 to 85% RH (with no condensation)					
	Withstand voltage	1000VAC for 1min. between live parts and case					
	Insulation resistance	50MΩ or more (measured by 500VDC mega meter) between live parts and case					
	Vibration resistance	10 to 150Hz, at whichever is smaller of 1.5mm amplitude or 98m/s ² acceleration, in X, Y, Z directions, for 2 hours each (de-energized)					
	Impact resistance	100m/s ² , in X, Y, Z directions 3 times each (de-energized)					
Temperature characteristics		±0.5% F.S. or less (based on 25°C)					
Connection		Power supply/Output connection: 5P connector, Sensor connection: 4P connector					
Material		Front case: PBT; Rear case: PBT					
Weight	With power supply and output connection cable	85g					
	Without power supply and output connection cable	30g					
Particle generation grade (Refer to front matters 13 to 22 for details.)		Grade 1					

Note 1) Pressure range can be selected during initial setting.

Note 2) Auto shift function can not be selected when analog output option is selected.

Also, analog output option can not be selected when auto shift function is selected.

Note 3) The following units can be selected with unit conversion function:

For vacuum/compound pressure: KPa·kgf/cm²·bar·psi·mmHg·inHg

For positive/low pressure: MPa·kPa·kgf/cm²·bar·psi

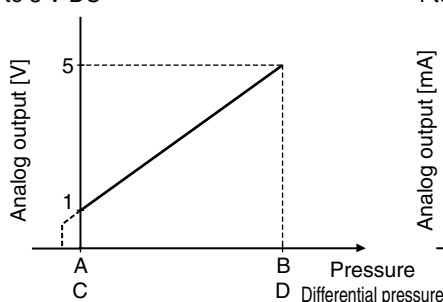
For low differential pressure: KPa·mmH₂O

Caution

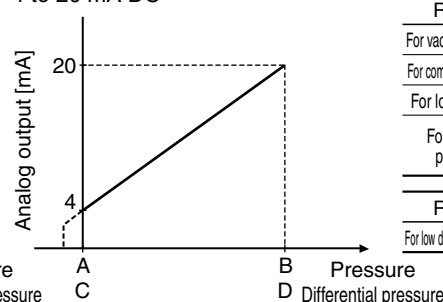
This product is blown with air and double packed in a Class M3.5 (ISO Class 5) clean room.

Analog output

1 to 5 V DC



4 to 20 mA DC

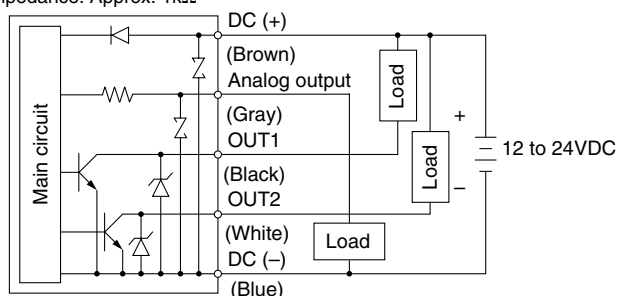


Range	Rated pressure range	A	B
For vacuum pressure	0 to −101kPa	0	−101kPa
For compound pressure	−100kPa to 100kPa	−100kPa	100kPa
For low pressure	0 to 100kPa	0	100kPa
For positive pressure	0 to 1MPa	0	1 MPa
	0 to 500kPa	0	500kPa
Range	Rated differential pressure range	C	D
For low differential pressure	0 to 2kPa	0	2kPa

Internal circuit

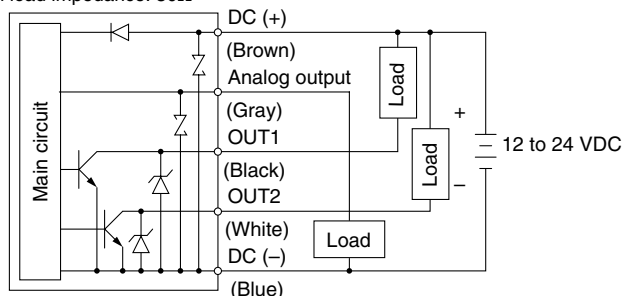
10-PSE300

NPN open collector output: 2 outputs,
Maximum 30V, 80mA, Residual voltage: 1V or less
Analog output: 1 to 5V
Output impedance: Approx. 1k Ω



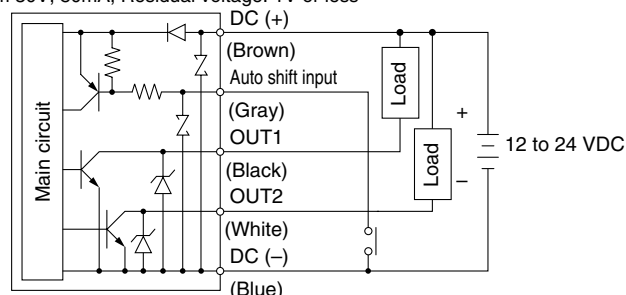
10-PSE301

NPN open collector output: 2 outputs,
Maximum 30V, 80mA, Residual voltage: 1V or less
Analog output: 4 to 20mA
Maximum load impedance: 300 Ω (12VDC) 600 Ω (24VDC)
Minimum load impedance: 50 Ω



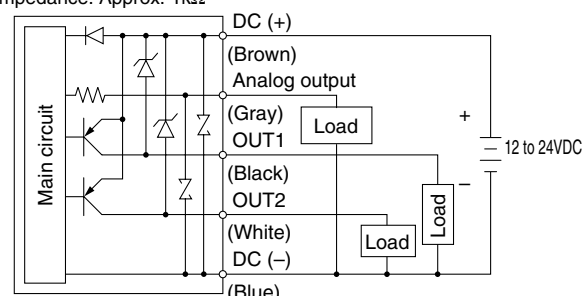
10-PSE302

NPN open collector output with auto shift input: 2 outputs,
Maximum 30V, 80mA, Residual voltage: 1V or less



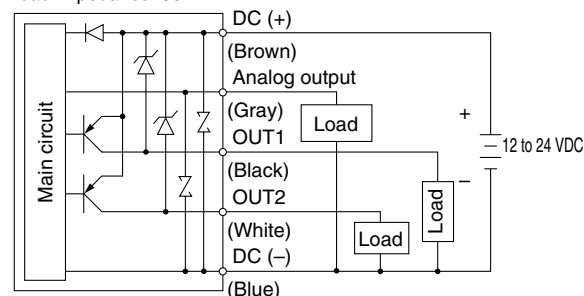
10-PSE303

PNP open collector output: 2 outputs,
Maximum 80mA, Residual voltage: 1V or less
Analog output: 1 to 5V
Output impedance: Approx. 1k Ω



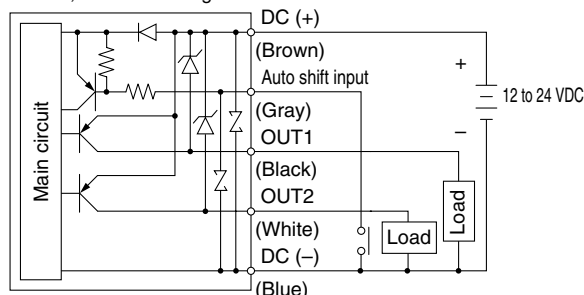
10-PSE304

PNP open collector output: 2 outputs,
Maximum 80mA, Residual voltage: 1V or less
Analog output: 4 to 20mA
Maximum load impedance: 300 Ω (12VDC) 600 Ω (24VDC)
Minimum load impedance: 50 Ω



10-PSE305

PNP open collector output with auto shift input: 2 outputs,
Maximum 80mA, Residual voltage: 1V or less



Descriptions

LCD display

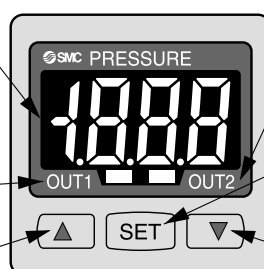
Displays the current pressure, set mode, selected display unit, and error code.
Four different display settings are available. Always use red or green display; or switch between green and red according to the output.

Output (OUT1) display (Green)

Lights up when OUT1 is ON.

△ button

Use this button to select the mode or increase the ON/OFF set value. It is also used for switching to the peak display mode.



Output (OUT2) display (Red)

Lights up when OUT2 is ON.

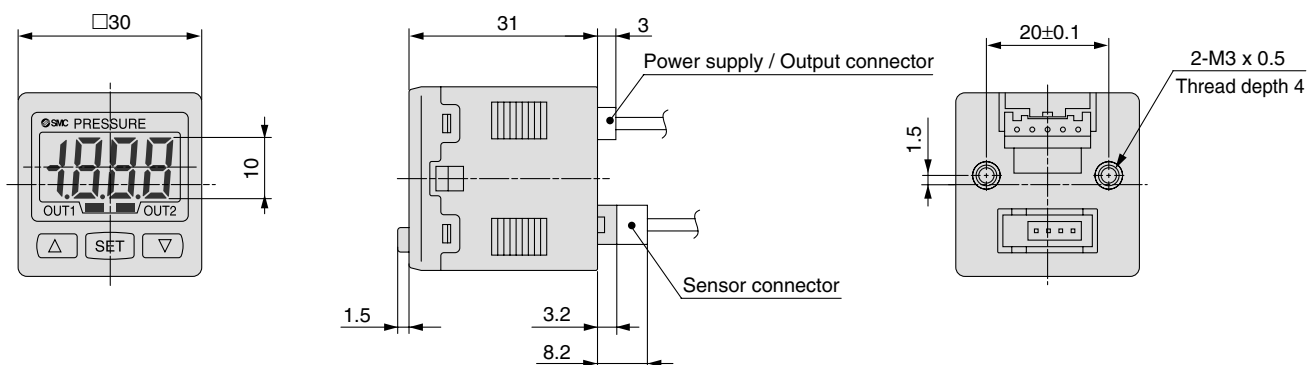
SET button

Use this button to change the mode and confirm the set value.

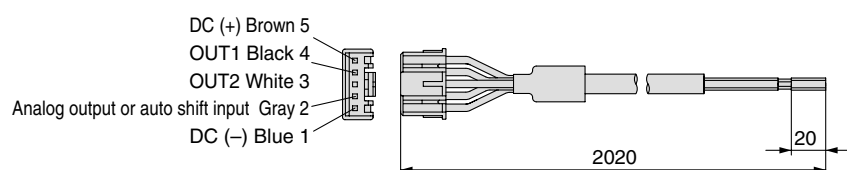
▽ button

Use this button to select the mode or decrease the ON/OFF set value. It is also used for switching to the bottom display mode.

Dimensions

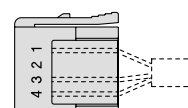


Power supply / Output connection cable (10-ZS-28-A)

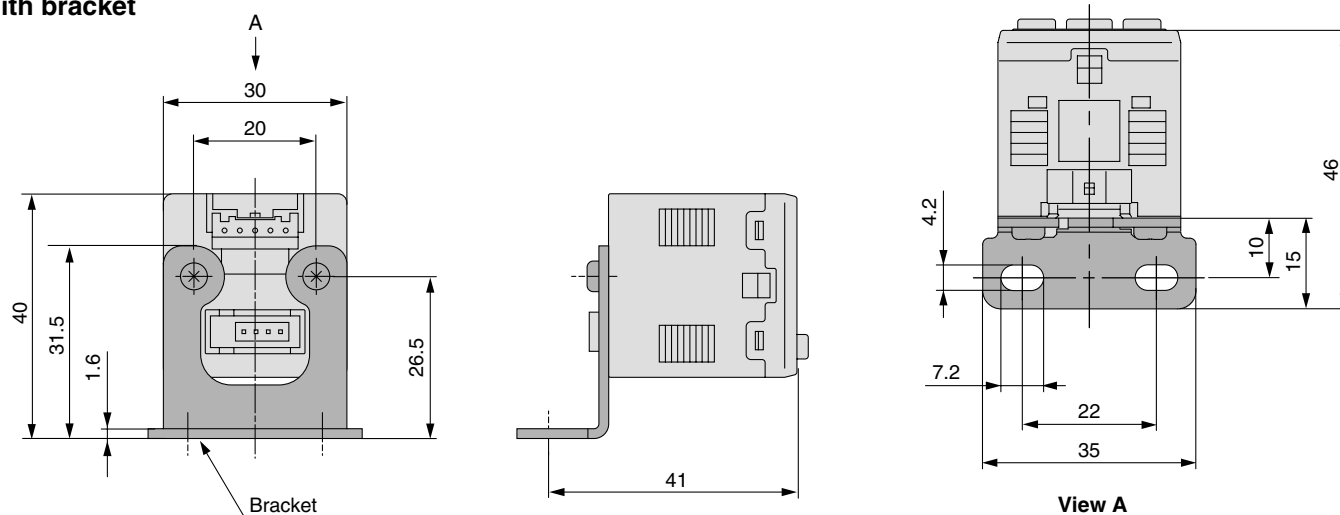


Sensor connector

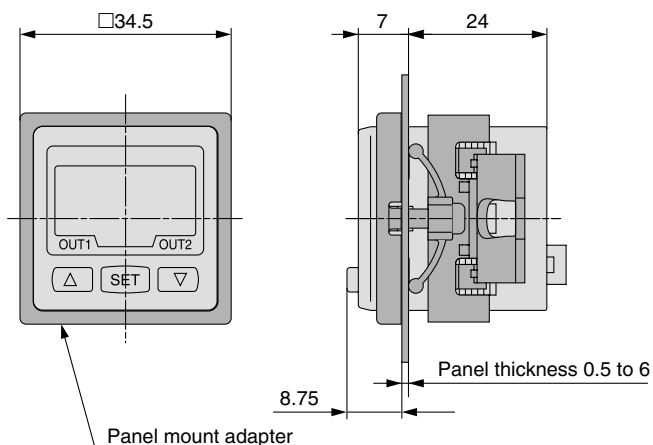
PIN no.	Terminal
1	DC (+)
2	N.C.
3	DC (-)
4	IN (1 to 5V)



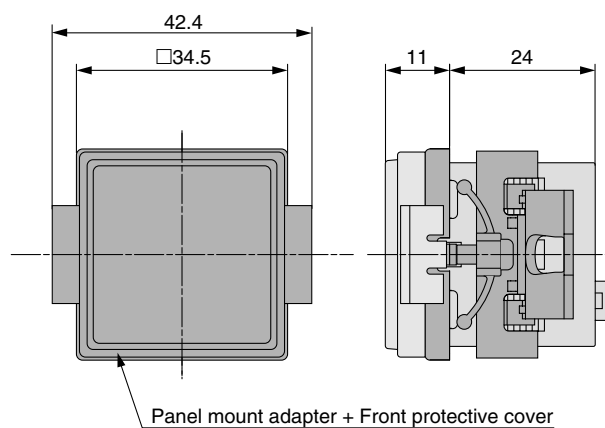
With bracket



With panel mount adapter



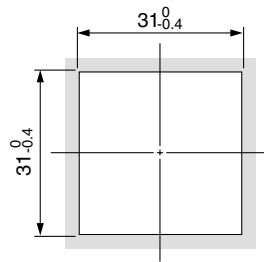
With panel mount adapter + Front protective cover



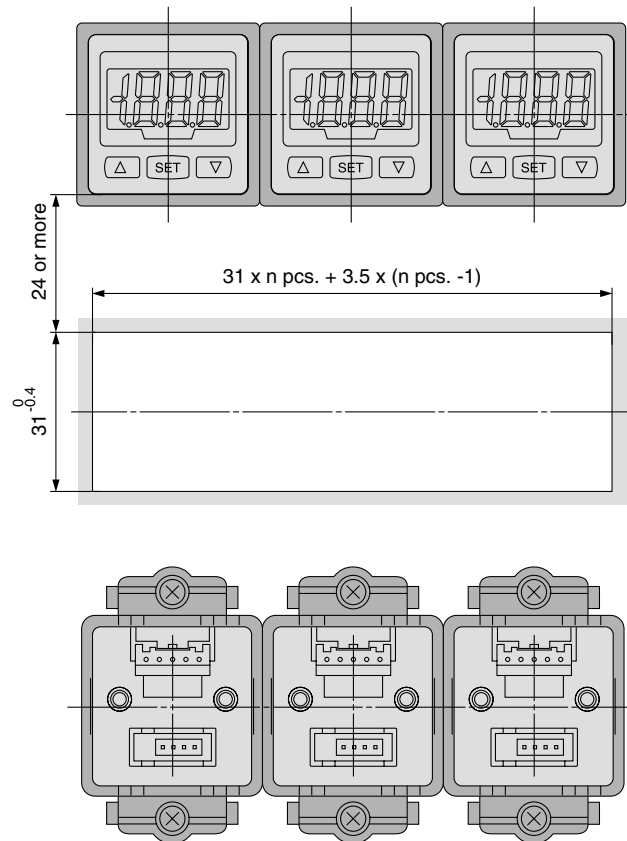
Dimensions

Panel fitting dimensions

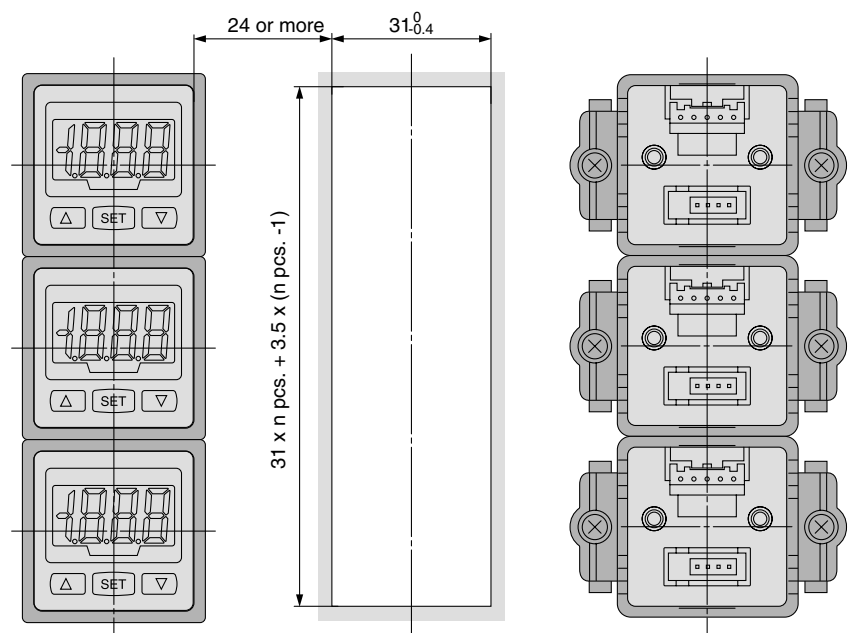
1 pc. mounting



Stacking mount of multiple units (n pcs.) (horizontal)



Stacking mounting of multiple units (n pcs.) (vertical)



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter

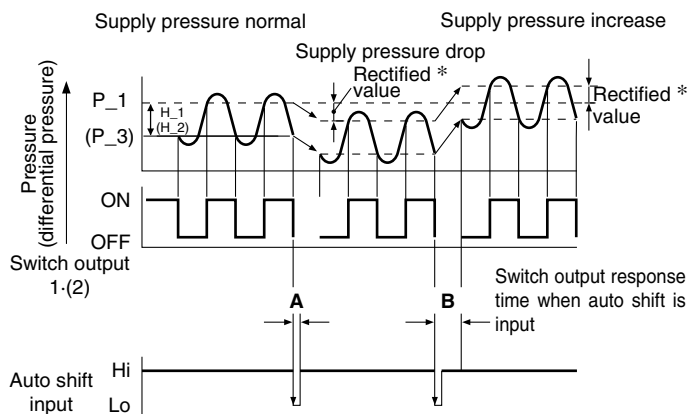
Functions

A Auto shift function

When there are large fluctuations in the supply pressure, the switch may fail to operate correctly.

The auto shift function rectifies such supply pressure fluctuations. It measures the differential pressure at the time of auto shift signal input and uses it as the reference (differential) pressure to correct the set value on the switch.

Set value correction by auto shift function



	A	B
10-PSE200	10 ms or more	15 ms or less
10-PSE300	5 ms or more	10 ms or less

* Rectified value

When the auto shift is input, "ooo" will be displayed for approx. 1 second, and the pressure value at that point will be saved as a rectified value "C_5" (CH1 for 10-PSE200 and 10-PSE300) or "C_3" (CH2 to CH4 for 10-PSE200). Based on the saved rectified values, the set value Note "P_1" to "P_4" (10-PSE200) or "P_1", "H_1", "P_3", and "H_2" (10-PSE300) will be rectified.

Note) Upon reverse output, "n_1" to "n_4" (10-PSE200) or "n_1", "H_1", "n_3", and "H_2" (10-PSE300) are rectified.

Possible set range for auto shift input

10-PSE200	Set (differential) pressure range	Possible set range
Compound pressure	-101.0 to 101.0kPa	-101.0 to 101.0kPa
Vacuum pressure	10.0 to -101.0kPa	-101.0 to 101.0kPa
Low pressure	-10.0 to 101.0kPa	-100.0 to 101.0kPa
Positive pressure	-0.1 to 1.000MPa	-1.000 to 1.000MPa
	-	-
Low differential pressure	-	-

10-PSE300	Set (differential) pressure range	Possible set range
Compound pressure	-101.0 to 101.0kPa	-101.0 to 101.0kPa
Vacuum pressure	10.0 to -101.0kPa	-101.0 to 101.0kPa
Low pressure	-10 to 100.0kPa	-100.0 to 100.0kPa
Positive pressure	-0.1 to 1.000MPa	-1.000 to 1.000MPa
	-50 to 500kPa	-500 to 500kPa
Low differential pressure	-0.2 to 2.00kPa	-2.00 to 2.00kPa

Auto shift zero (10-PSE300 only)

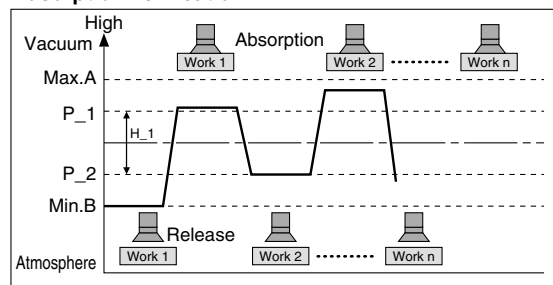
Basic function of auto shift zero is the same as the auto shift function. The only difference is that assuming the pressure value when an auto shift is input to be "0", display value is also rectified.

B Auto preset function

When auto preset function is selected in the initial setting, it calculates and stores the set value from the measured (differential) pressure.

The optimum set value is determined automatically by repeating vacuum and release with the target workpiece several times.

Adsorption verification

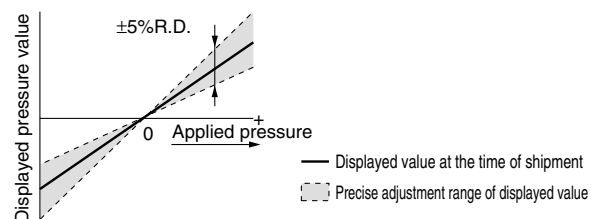


Formula for calculating the set value

	P ₁ or P ₃	P ₂ (H ₁) or P ₄ (H ₂)
10-PSE200	P ₁ (P ₃)=A-(A-B)/4	P ₂ (P ₄) = B + (A-B)/4
10-PSE300		H ₁ (H ₂) = (A-B)/2

C Display calibration function

This function eliminates slight differences in the output values and allows uniformity in the numbers displayed. Displayed values of the pressure sensors can be adjusted to within ±5%.



Note) When the precision indicator setting function is used, the set (differential) pressure value may change ±1 digit.

D Peak/Bottom hold display function

This function constantly detects and updates the maximum and minimum values and allows to hold the display value.

Series 10-PSE300 allows the hold value to be reset by pressing ↑ and ↓ at the same time for one second or more while holding the display value.

E Key lock function

This function prevents incorrect operations such as accidentally changing the set value.

F Reset function

This function clears and resets the zero value on the display of measured (differential) pressure.

It is possible to rectify within ±7% F.S. from the factory-set value.

Functions

G Error indication function

Error name	Error indication function		Description
	10-PSE200	10-PSE300	
Overcurrent error	Er 1	Er 1	Current exceeding 80 mA is applied to switch output (OUT1).
	Er 2	Er 2	Current exceeding 80 mA is applied to switch output OUT2.
Residual pressure error	Er 3	Er 3	Pressure exceeding $\pm 7\%$ F.S. is applied during the zero reset operation. * After displaying the error code for 3 seconds, the switch automatically returns to the measuring mode. Due to individual product differences, the setting range varies ± 4 digits.
Applied pressure error	---	HHH	Supply pressure exceeds the maximum set (differential) pressure or upper limit of the display pressure.
	---	LLL	A sensor may not be unconnected or miswired. Or, supply pressure is below the minimum set (differential) pressure or lower limit of the display pressure.
Auto shift error		or	The value measured at the time of auto shift input is outside the set (differential) pressure range. * After displaying the error code for approx. 1 second, the switch returns to the measuring mode.
System error	Er 5	Er 4	Displayed when internal data error has occurred.
	Er 6	Er 6	Displayed when internal data error has occurred.
	Er 7	Er 7	Displayed when internal data error has occurred.
	Er 8	Er 8	Displayed when internal data error has occurred.

H Copy function (10-PSE200 only)

Information that can be copied includes the following: (1)Pressure set values (2)Range settings (3)Display units (4)Output modes (5)Response times.

- When CH1 is copied to CH2, CH3, and CH4, information of OUT1 in CH1 will be copied.
- When CH2, CH3, or CH4 is copied to CH1, information of OUT1 in CH2, CH3, or CH4 will be copied only to OUT1 in CH1.

Note 1) When the copy function is used, the regulating pressure value of the copied channel may change ± 1 digit.

I Auto identification function (10-PSE200 only)

This function automatically identifies the pressure range of the pressure sensor that is connected to the multi-channel pressure sensor monitor, thus eliminating the need of having to reset the range again after replacing the sensor.

This function will be activated either when "Aon" is set in the auto identification mode or when the power is turned back on in that condition. However, this function only works in conjunction with specific pressure sensors (SMC: Series PSE53□).

When other pressure sensors are used, this function will not work. When using other types of pressure sensors, first set the auto identification mode to "AoF" and then proceed to the range setting.

Turning the power back on while in the "Aon" setting can cause a malfunction.

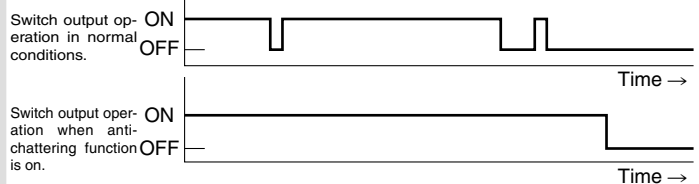
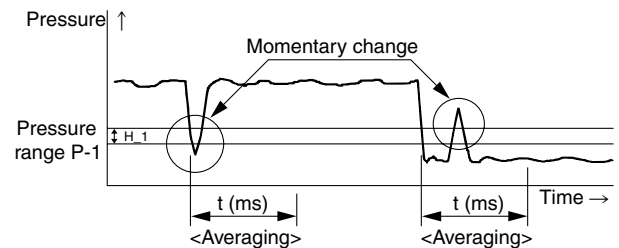
J Anti-chattering function

Devices such as large bore cylinders and high-flow vacuum ejectors consume a large volume of air when they operate, and this may cause a momentary drop in the supply pressure. This function prevents such momentary drops from being detected as abnormal pressures by changing the response time setting.

	Possible response time settings
10-PSE200	20ms, 160ms, 640ms
10-PSE300	20ms, 160ms, 640ms, 1280ms

<Principle>

The pressure values measured within the response time that are selected by the user are averaged. By comparing this average pressure value with the set pressure value, switch output (ON/OFF) is determined.



K Channel selection function (10-PSE200 only)

This function displays the measured pressure of any channel.

L Channel scan function (10-PSE200 only)

This function displays measured pressure for each channel in order at approx. 2-second intervals.

Functions

M Unit conversion function

Display units can be switched with this function.

Units that can be set vary depending on the range of the pressure sensors connected to the controller.

10-PSE200

Pressure range		For compound pressure	For vacuum pressure	For low pressure	For positive pressure
Applicable pressure sensor		10-PSE533	10-PSE531		10-PSE530
		10-PSE543	10-PSE541	10-PSE532	10-PSE540
		10-PSE563	10-PSE561		10-PSE560
Set (differential) pressure range		-101 to 101kPa	10 to -101kPa	-10 to 100kPa	-0.1 to 1MPa
PA	kPa	0.1	0.1	0.1	—
	MPa	—	—	—	0.001
GF	kgf/cm ²	0.001	0.001	0.001	0.01
bar	bar	0.001	0.001	0.001	0.01
PSI	psi	0.02	0.01	0.01	0.1
inHg	inHg	0.1	0.1	—	—
mmHg	mmHg	1	1	—	—

10-PSE300

Pressure range		For compound pressure	For vacuum pressure	For low pressure	For positive pressure		For low differential pressure
Applicable pressure sensor		10-PSE533	10-PSE531		10-PSE530		
		10-PSE543	10-PSE541	10-PSE532	10-PSE540	10-PSE564	10-PSE550
		10-PSE563	10-PSE561		10-PSE560		
Set (differential) pressure range		-101 to 101kPa	10 to -101kPa	-10 to 100kPa	-0.1 to 1MPa	-50 to 500kPa	-0.2 to 2.00kPa
PA	kPa	0.2	0.1	0.1	—	1	0.01
	MPa	—	—	—	0.001	—	—
GF	kgf/cm ²	0.002	0.001	0.001	0.01	0.01	—
bar	bar	0.002	0.001	0.001	0.01	0.01	—
PSI	psi	0.05	0.02	0.02	0.2	0.1	—
inHg	inHg	0.1	0.1	—	—	—	—
mmHg	mmHg	2	1	—	—	—	1mmH ₂ O



Specific Product Precautions 1

Be sure to read before handling.

Pressure sensor

Handling

Warning

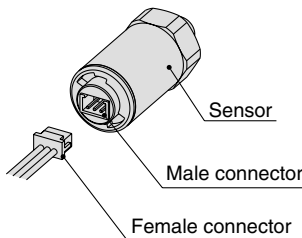
1. Do not drop, bump or apply excessive impacts (10-PSE530 and 540: 980m/s², 10-PSE560: 500m/s², PSE550: 300m/s²) while handling. Although the body of the sensor may not be damaged, the inside of the sensor could be damaged and lead to a malfunction.
2. The tensile strength of the cord is 23N for 10-PSE530 and not more than 50N for 10-PSE540, 550, and 560. If the applied force exceeds this specification, the sensor will be damaged.
3. Do not use pressure sensors with corrosive and/or inflammable gases or liquids.

(10-PSE530)

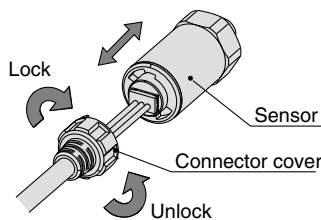
1. Do not exceed the screw-in torque of 3.5 N·m when installing piping. Exceeding this value may cause malfunction of the sensor.

2. Connecting the sensor cable (optional)

Hold the female connector of the sensor cable with your fingers and carefully insert it into the connector.



A connector cover is provided as part of the cable assembly. It is designed to keep the female connector from slipping out of the sensor. To lock the connector cover in place, first make sure it is facing in the right direction as you slip it over the female connector, then lock it to the sensor body by turning it clockwise. To remove the cover, first unlock it by turning it counterclockwise, then pull back on it. To remove the female connector, grab it with your fingers and pull back on it. Do not pull on the cable.



(10-PSE540/550)

1. Care should be taken when stripping the outer cable covering as the insulator may be accidentally torn or damaged if incorrectly stripped.

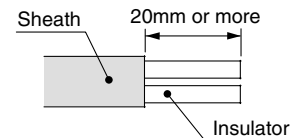


Wiring

Caution

1. Connecting sensor cable and connector

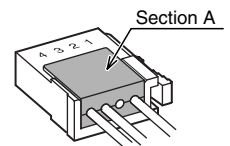
- Cut the sensor cable as illustrated to the right.
- Referring to the table below, insert each lead wire of the cable at the position marked with a number corresponding to the color of the lead wire.



- Confirm that the numbers on the connector match the colors of the wires and that the wires are inserted to the bottom. Press Part A by hand for temporary fixing.

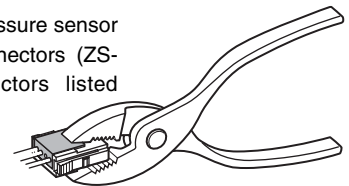
Connector no.	Wire core color
1	Brown (DC (+))
2	Unconnected
3	Blue (DC (-))
4	Black (OUT: 1 to 5V)

- Press in the central part of Part A vertically with a tool such as pliers.



- A sensor connector cannot be taken apart for reuse once it is crimped. If the wire arrangement is incorrect or if the wire insertion fails, use a new sensor connector.

- For connection to SMC pressure sensor monitors, use sensor connectors (ZS-28-C□) or e-con connectors listed below.



Sensor series	Sumitomo 3M	Tyco Electronics AMP K.K.	Omron Corporation
10-PSE53□	37104-3101-000FL	3-1473562-4	XN2A-1430
10-PSE54□	37104-3101-000FL	1-1473562-4	XN2A-1430
10-PSE55□	37104-3101-000FL	1-1473562-4	XN2A-1430
10-PSE56□	37104-3101-000FL	1473562-4	XN2A-1430

- For detailed information about e-con connectors, please consult the manufacturers of the respective connectors.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Specific Product Precautions

Be sure to read before handling.

Pressure source

Warning

(10-PSE560)

1. Use of toxic, corrosive or flammable gases

Do not use **toxic or corrosive gases** with the sensors.

2. Fluid

The fluid contact (wetted) areas are SUS316L (pressure sensor, fittings). Use fluid that will not corrode the materials.

(For corrosiveness of fluid, consult with the manufacturer of the fluid.)

(10-PSE56□-A₂-B₂ only)

Helium leakage test

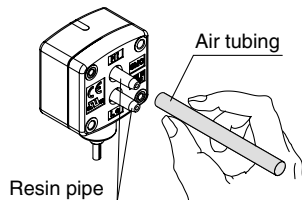
Helium leakage test is conducted on the welding parts. Use a ferrule (Swagelok®) by Crawford Fitting Co. as the TSJ fittings, and packing, ground, etc. (VCR® fittings) by Cajon as the URJ fittings. If a ferrule, packing or ground by other manufacturers are to be used, conduct helium leakage test before using them.

Piping connection

Caution

(10-PSE550)

- Cut the air tubing vertically.
- Carefully hold the air tubing and slowly push it into the resin pipe, ensuring that it is inserted by more than 8mm. For your information, the pull strength is approx. 25 N when inserted by more than 8mm.
- Insert the low pressure tubing into “Lo” pipe, and the high pressure tubing into “Hi” pipe.
- When the air tubing of the brand other than SMC is to be used, its ID accuracy is required to be $\phi 4 \pm 0.3\text{mm}$.
- Air tubing should be inserted surely into the pipe so that it will not come off. (Pull strength is about 25N in 8mm insertion.)





Specific Product Precautions 1

Be sure to read before handling.

Controller

Handling

Warning

1. Do not drop, bump or apply excessive impacts (10-PSE200: 980m/s², 10-PSE300: 100m/s²) while handling. Although the body of the monitor may not be damaged, the inside of the monitor could be damaged and lead to a malfunction.
2. The tensile strength of the cord is 50N for power cable or connection cable, and 25N for connector lead for pressure sensor. If the applied force exceeds this specification, the monitor will be damaged.

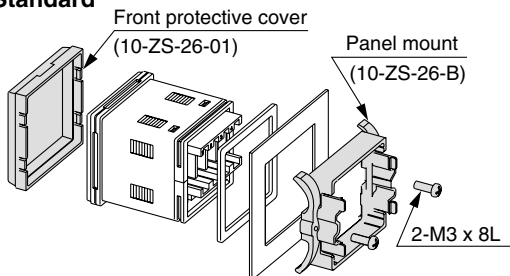
Mounting

Caution

(10-PSE200)

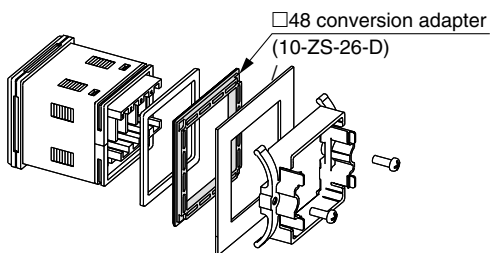
The front face of the panel mount conforms to IP65 (IP40 when using the □48 conversion adapter); however, there is a possibility of liquid penetration if the panel mount adapter is not installed securely and properly. Securely fix the adaptor with screws as shown below.

Standard



Tighten screws 1/4 to 1/2 turn after the heads are touched with the panel.

When using □48 conversion adapter



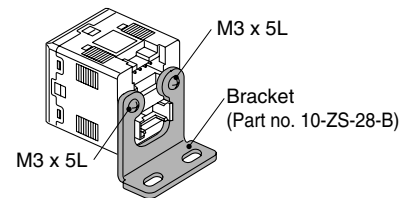
Mounting

Caution

(10-PSE300)

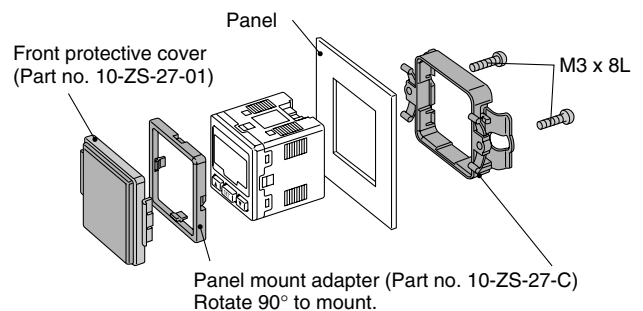
1. Mounting with bracket

Mount the bracket on the body with two M3 x 5L mounting screws. Tighten the bracket mounting screws at a tightening torque of 0.5 to 0.7 N·m.



2. Mounting with panel mount adapter

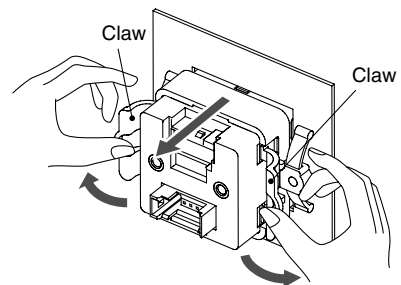
Secure the panel mount adapter with two M3 x 8L mounting screws.



3. Panel mount adapter removal

To remove the controller with panel mount adapter from the equipment, remove the two mounting screws, and pull out the monitor while pushing the claws outward.

Failure to follow this procedure can cause damage to the monitor and panel mount adapter.



Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Specific Product Precautions 2

Be sure to read before handling.

Connection

Warning

1. Incorrect wiring can damage the switch and cause a malfunction or erroneous switch output. Connections should be done while the power is turned off.
2. Do not attempt to insert or pull out the pressure sensor or its connector when the power is on. Switch output may malfunction.
3. Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Malfunctions may occur due to noise from these other lines.
4. If a commercial switching regulator is used, make sure that the F.G. terminal is grounded.

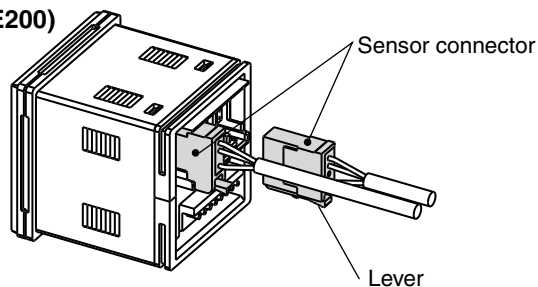
Wiring

Caution

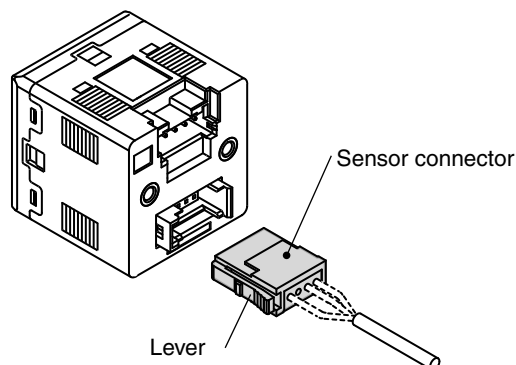
1. Connection and removal of sensor connector

- Hold the lever and connector body with two fingers and insert the connector straight into the pin until it is locked with a click sound.
- To remove the connector, pull it out straight while pressing the lever with a finger.

(10-PSE200)



(10-PSE300)



2. Connecting power supply/output connection cable

- To connect the power supply/output connection cable to the monitor, insert the cable until the cable connector is locked with a click sound.

Operating environment

Warning

1. Our pressure sensor monitors are CE marked; however, they are not equipped with surge protection against lightning. Lightning surge countermeasures should be applied directly to system components as necessary.

(10-PSE200)

- Enclosure "IP65" applies only to the front face of the panel when mounting. Do not use in an environment where oil splashing or spraying are anticipated.



Pressure Switch / Common Precautions 1

Be sure to read before handling.

Refer to the main text for precautions for each series.

Design and selection

⚠ Warning

1. Operate a switch only within the specified voltage

Use of a switch outside the range of the specified voltage can cause not only malfunction and damage of a switch, but also electric shocks and fire.

2. Do not exceed the maximum allowable load specification.

A load exceeding the max. load specification can cause damage to the switch or shorten its operating life span.

3. Do not use a load that generates surge voltage.

Although surge protection is installed in the circuit at the output side of the switch, damage may still occur if a surge is applied repeatedly.

When a surge generating load such as a relay or solenoid is directly driven, use a type of switch with a built-in surge absorbing element.

4. Since the type of applicable fluid varies depending on the product, make sure to verify the specifications.

Switch is not of an explosion proof construction. To prevent a possible fire hazard, do not use with flammable gases or fluids. It may cause fire.

5. Operate a switch within the regulating pressure range and maximum operating pressure.

Using beyond the specified range may result in a malfunction.

Use of a switch beyond the maximum operating pressure may result in a breakdown of switch.

Mounting

⚠ Warning

1. If the equipment is not operating properly, do not continue to use it.

Connect air and power after installation, repairs, or modifications, and verify if installed properly or not by conducting a performance and leakage test properly.

2. When installing a switch, please follow the listed torque specifications.

If the torque is exceeded, damage to the mounting screw, mounting bracket or the switch itself may occur.

If the screws are not tightened enough, the switch may come loose during operation.

Connecting thread: M5, Rc, NPT, NPTF

Thread	Appropriate tightening torque N·m
M5	1/6 turn after tightening by hand
1/8	7 to 9
1/4	12 to 14
3/8	22 to 24

3. Apply a wrench only to the metal part of the main housing when installing a pressure switch in the system piping.

Never apply a wrench to the resin part of the main housing of the switch. It may cause the switch to be damaged.

Wiring

⚠ Warning

1. Verify the color and terminal number when wiring.

Incorrect wiring can cause the switch to be damaged or malfunction. Verify the colors and terminal numbers in the instruction manual when wiring.

2. Do not apply bending stress or tensile force to the lead wire repeatedly.

Disconnection may result from wiring that applies bending stress or tensile strength repeatedly to the lead wire. Replace the product itself (grommet type which is impossible to replace the lead wire) if the lead wire is damaged and can possibly cause malfunction.

3. Confirm proper insulation of wiring.

Make sure that there is no faulty wiring insulation (contact with other circuits, ground fault, improper insulation between terminals, etc.). Damage may occur due to excess current flow into a switch.

Operating environment

⚠ Warning

1. Never use in such an environment, where explosive gases are used.

Switch is not an explosion-proof construction. If it were used in an environment, where explosive gases are used, it may result in an explosive disaster. Do not use it in such an environment.

Maintenance

⚠ Warning

1. Perform periodic inspections to ensure proper operation of the switch.

Without regular inspections, safety cannot be assured in the event of unexpected malfunction or misoperation.

2. Take precautions when using a switch for an interlock circuitry.

When a pressure switch is used for an interlock circuit, devise a multiple interlock system to prevent trouble or malfunction. Verify the operation of the switch and interlock function on a regular basis.



Digital pressure switch / Common Precautions 1

Be sure to read before handling.

Refer to the main text for precautions for each series.

Selection

⚠ Warning

1. Monitor the internal voltage drop of a switch.

When operating below the specified voltage, it is possible that a load may be ineffective, even though the pressure switch functions normally. Therefore, the formula below should be satisfied after confirming the voltage of operating load.

Power voltage – Internal voltage drop of switch > Voltage of operation load

⚠ Caution

1. Data on the digital pressure switch will be stored even after the power is turned off.

Input data (set pressure, etc.) will be stored on the EEPROM and will not disappear even after the digital pressure switch is turned off (100,000 hours after the power is off).

Mounting

⚠ Warning

1. Do not drop or bump.

Do not drop, bump or apply excessive force (more than 1000m/s²) when handling a switch. The internal parts of a switch are damaged, and may result in a malfunction, even though a switch case itself is not damaged.

2. When handling a switch, hold it by the switch body.

The tensile strength of the power source cord is 49N. If pulling with more strength, switch may be damaged. When handling a switch, hold it by the switch body.

3. Key button operation

Refer to the instruction manual for operating by the button for the digital pressure switch.

4. Do not touch the LCD readout.

Do not touch the LCD indicator face of the pressure switch during operation. Static electricity can change the readout.

5. Pressure port

Do not introduce any wire or similar object to a pressure port as this may damage the pressure sensor and cause a malfunction.

Wiring

⚠ Warning

1. Do not wire in conjunction with power lines or high voltage lines.

Wire separately from power lines and high voltage lines, avoiding wiring in the same conduit with these lines. Control circuits including switches may malfunction due to noise from these other lines.

2. Do not short-circuit a load.

The digital pressure switches display an error code if the load is short-circuited, but it is impossible to protect the switch from all wiring errors.

As for other pressure switches, the switches will be instantly damaged if loads are short-circuited. Use caution to avoid reverse wiring between the power supply line (brown) and the output line (black) for 3-wire type particularly.

Piping

⚠ Caution

1. Piping such as air hose, etc.

When a switch is used in a panel-mount application, excessive stress applied to the switch body by that body by that piping materials such as air hoses, etc. will cause damage to the piping area of the switch. Ensure that such excessive forces are not applied by piping materials.

Pressure source

⚠ Warning

1. Use a switch within the specified fluid and ambient temperature range.

Fluid temperature and ambient temperature is as follows: Digital pressure switches: 0 to 50°C, other pressure switches: 0 to 60°C. Take measures to prevent moisture from freezing in circuits when below 5°C, since this may cause damage to the O-ring and lead to a malfunction. The installation of an air dryer is recommended for eliminating condensate and moisture. Never use the switch in an environment where there are drastic temperature changes even when these temperatures are operated within the specified temperature range.

2. Vacuum switch

An instant pressure pulse of around 0.5 MPa will not affect the performance of the switch (at the time of vacuum release). However, care should be taken so that a pressure of 0.2 MPa or more will not be applied constantly.

Operating Environment

⚠ Warning

1. Do not use in an area, where surges or static electricity are generated.

Installation of a switch in an area around equipment that generates a high voltage surges (electromagnetic lifters, high frequency induction furnaces, motors, equipment that generates static electricity, etc.) could cause the deterioration of the internal circuitry element of the switch or result in damage. Implement countermeasures against surges from the generating source, and do not allow the lines to contact each other.

2. Operating environment

In general, the digital pressure switches featured here are open type. Avoid using in an environment where the likelihood of splashing or spraying of liquids (water, oil, etc.) exists. If used in such an environment, use a dust tight or drip proof type.

Maintenance

⚠ Caution

1. Cleaning of switch body

Wipe off dirt with soft cloth. If dirt does not come off easily, use a neutral detergent diluted with water to dampen a soft cloth. Wipe the switch only after squeezing the excess water out of the dampened cloth. Then finish off by wiping with a dry cloth afterward.

For Clean Room Clean Gas Filter

Description	Series	Page
Clean Gas Filter Cartridge Type / Disc element	SFA100/200/300	P.979
Clean Gas Filter Cartridge Type / Straight element	SFB100/200	P.981
Clean Gas Filter Disposable Type / Straight element	SFB300	P.984
Clean Gas Filter Disposable Type / Multiple disc element	SFC100	P.986

Air cylinder

Rotary actuator

Air gripper

Directional control
valve

Flow control
equipment

Filter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Model Selection

Determine the model by using the following procedures involving the inlet pressure and the maximum flow rate.

Example) Inlet pressure: 0.6 (MPa)

Maximum flow rate: 200 ℓ /min (ANR)

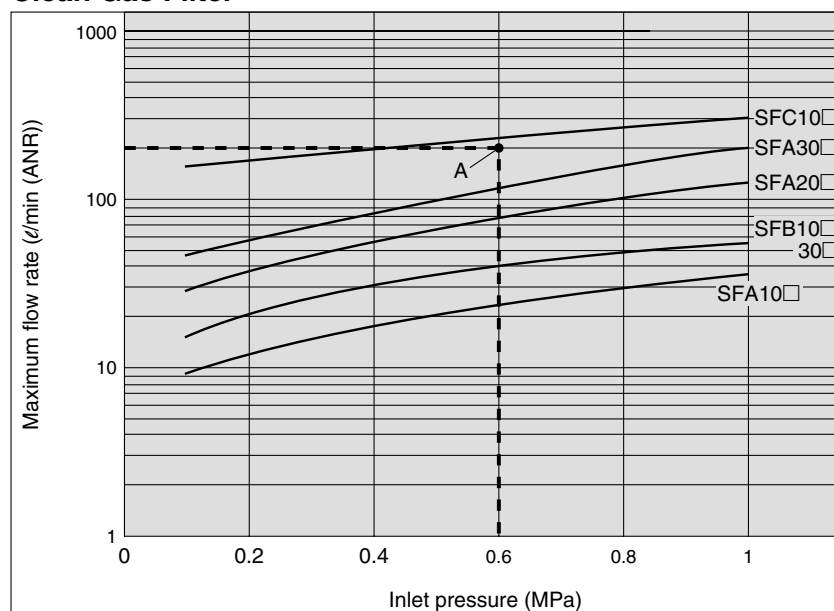
1. Determine intersection A for the inlet pressure and the maximum flow rate by using the maximum flow rate graph.

2. If the obtained intersection A is above the maximum flow rate line, select SFC10□.

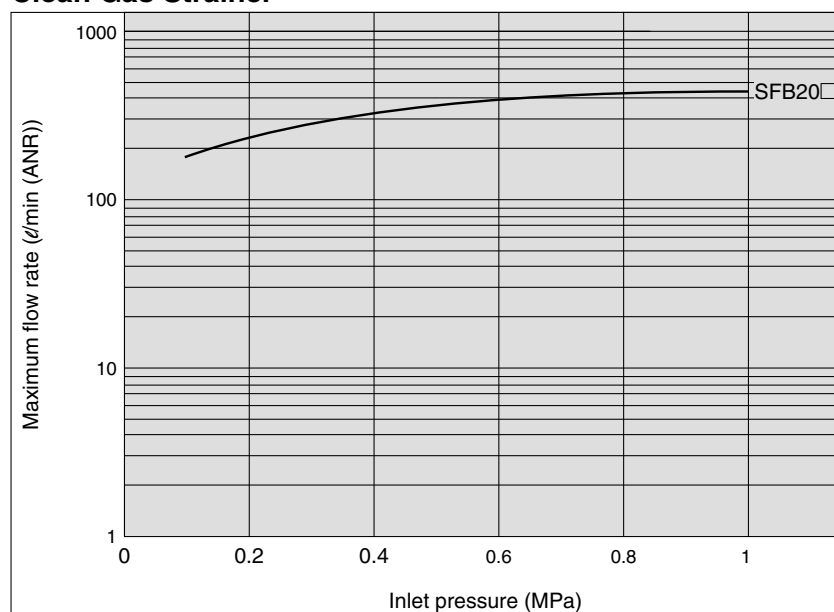
Note) Please be sure to select a model with a maximum flow rate line that is above the obtained intersection A. If the obtained intersection A is below the maximum flow rate line, overflow will occur. This will cause a nonconformance in which the specification will not be satisfied.

Maximum Flow Rate Lines

Clean Gas Filter



Clean Gas Strainer



Series SFA100/200/300

Clean Gas Filter
Cartridge type / Disc element

Precision filtration for general gases used in the electronics industry, etc.
Compressed air, Nitrogen, etc.

Cartridge type: PTFE membrane element

Made into a cartridge using a polyester holder and a fluorine rubber (FKM) gasket.

All products are tested at the time of shipment.

0.1μm cleanliness inspection
Airtightness test

Replaceable filter element



Specifications

Operating fluid		Air, Nitrogen
Operating pressure ^{Note)}		Max. 1.0MPa, Vacuum 1.3 x 10 ⁻⁶ kPa
Operating temperature		5 to 80°C
Element proof differential pressure		Max. 0.1MPa
Element reverse differential pressure		Max. 0.05MPa
Filtration accuracy		0.01μm
Cleaning level at outlet		0 piece/6L of 0.1μm or larger particles
Principle materials	Housing	Stainless steel SUS316 (Inner and outer surfaces: Electrolytic polished)
	Filter element	PTFE membrane
	Seal	Fluoro rubber (FKM)
Packaging		Antistatic sealed double package

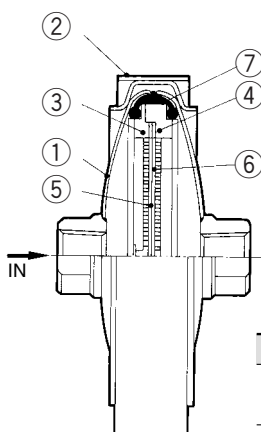
Note) The maximum operating pressure for nitrogen is 0.97MPa.

Model

Model	Rated flow rate (d/min (ANR)) ^{Note)}	Connection	Filtration area (cm ²)	Element part no.	Weight (kg)
SFA100-02	26	Rc 1/4 (Female thread)	13.85	ED001S-X10V	0.34
SFA101-02		NPT 1/4 (Female thread)			
SFA200-02	70	Rc 1/4 (Female thread)	33.18	ED101S-X10V	0.44
SFA201-02		NPT 1/4 (Female thread)			
SFA300-02	140	Rc 1/4 (Female thread)	56.75	ED201S-X10V	0.66
SFA301-02		NPT 1/4 (Female thread)			
SFA102-02	26	TSJ1/4 Tube, Swage Joint	13.85	ED001S-X10V	0.38
SFA202-02	70		33.18	ED101S-X10V	0.49
SFA302-02	140		56.75	ED201S-X10V	0.70
SFA103-02	26	UOJ1/4 Union O Ring, Joint	13.85	ED001S-X10V	0.42
SFA203-02	70		33.18	ED101S-X10V	0.53
SFA303-02	140		56.75	ED201S-X10V	0.75

Note) Maximum flow rate at inlet pressure of 0.7MPa

Construction



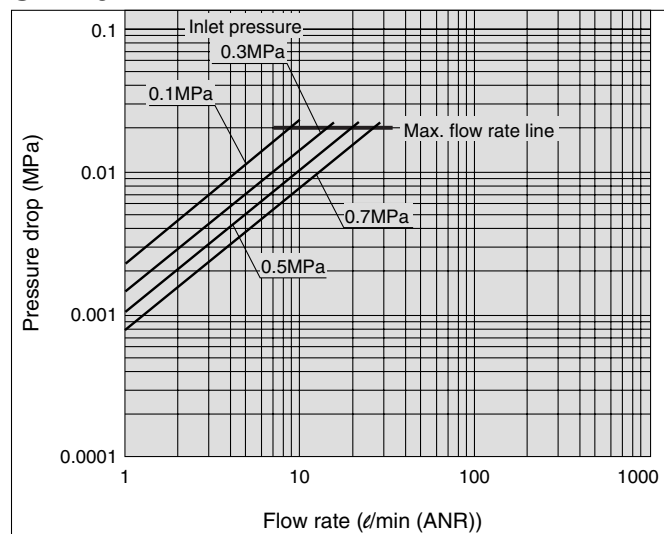
No.	Description	Material	Note
1	Housing	Stainless steel 316	Electrolytic polished (Inner & outer surfaces)
2	V-clamp	Stainless steel 304	—
3	Holder 1	Polyester	Cartridge element
4	Holder 2		
5	Filter element	PTFE	
6	Seal	FKM	
7	V-seal		

Clean Gas Filter **SFA100/200/300**

Flow Characteristics

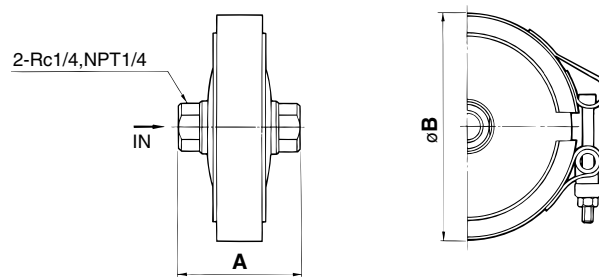
Fluid: Compressed air Inlet temperature: 20°C

SFA10□



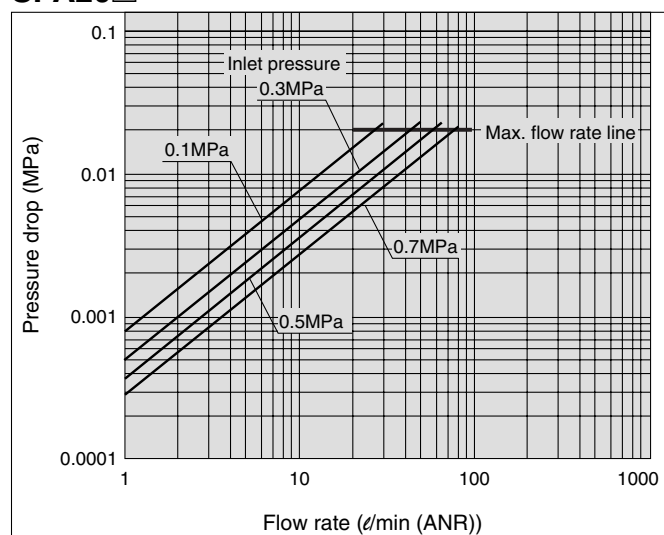
Dimensions

SFA100, 101, SFA200, 201, SFA300, 301

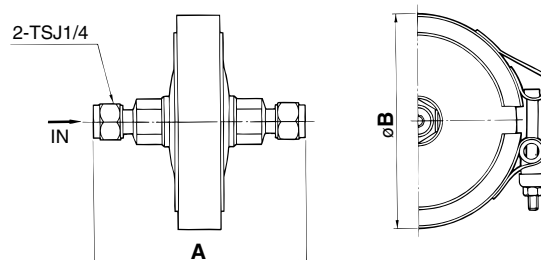


Model	Connection	A	øB
SFA100-02	Rc1/4	46	76
SFA101-02	NPT1/4		
SFA200-02	Rc1/4	51	96
SFA201-02	NPT1/4		
SFA300-02	Rc1/4	59	120
SFA301-02	NPT1/4		

SFA20□

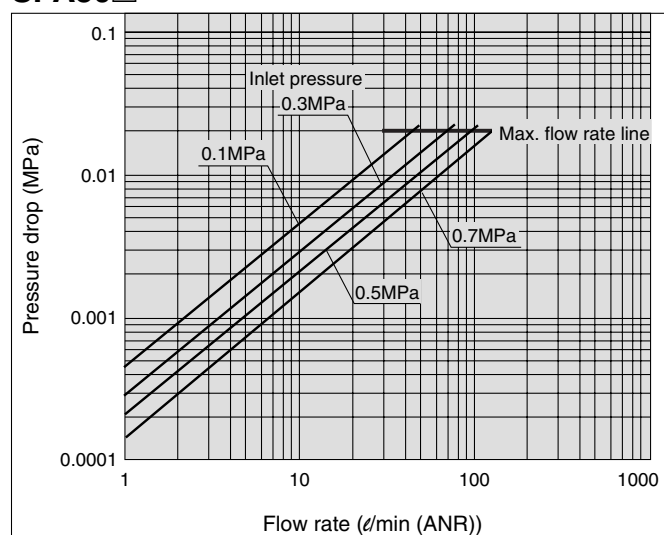


SFA102, SFA202, SFA302

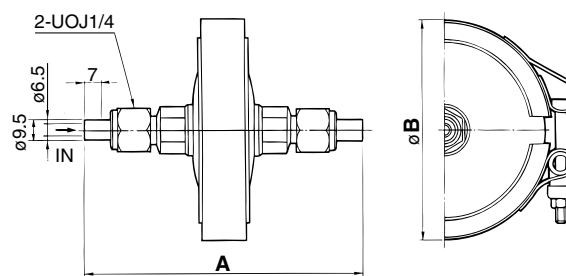


Model	Connection	A	øB
SFA102-02	TSJ1/4 (Tube Swage Joint)	89	76
SFA202-02		93	96
SFA302-02		101	120

SFA30□



SFA103, SFA203, SFA303



Model	Connection	A	øB
SFA103-02	UQJ1/4 (Union O Ring Joint)	117	76
SFA203-02		122	96
SFA303-02		130	120

Series SFB100/200

Clean Gas Filter
Cartridge type / Straight element

Clean gas filter / Series SFB100

Precision filtration for general gases used in the electronics industry, etc.
Compressed air, Nitrogen, etc.

Cartridge type: PTFE membrane element
Made into a cartridge using a polyester holder and a fluorine rubber (FKM) gasket.

All products are tested at the time of shipment.
0.1μm cleanliness inspection
Airtightness test

Replaceable filter element

A bracket is included as standard.



Specifications

Operating fluid		Air, Nitrogen
Operating pressure (Note)		Max. 1.0MPa, Vacuum 1.3 x 10 ⁻⁶ kPa
Operating temperature		5 to 80°C
Element proof differential pressure		Max. 0.5MPa
Element reverse differential pressure		Max. 0.07MPa
Filtration accuracy		0.01μm
Cleaning level at outlet		0 piece/6L of 0.1μm or larger particles
Principle materials	Housing, Cover	Stainless steel 316 (Inner and outer surfaces: Electrolytic polished)
	Filter element	PTFE membrane
	Seal	Fluoro rubber (FKM)
Packaging		Antistatic sealed double package

Note) The maximum operating pressure for nitrogen is 0.97MPa.

Model

Model	Rated flow rate (l/min (ANR)) (Note)	Connection	Filtration area (cm ²)	Element part no.	Weight (kg)
SFB100-02	26	Rc 1/4 (Female thread)	10	ED301S-X10V	0.15
SFB101-02		NPT 1/4 (Female thread)			
SFB102-02		TSJ 1/4			0.16
SFB103-02		UOJ 1/4			0.19
SFB104-M5		M5 (Female thread)			0.16

Note) Maximum flow rate at inlet pressure of 0.7MPa

Clean gas strainer / Series SFB200

Clean gas strainers that use an element (120 μm, stainless steel 316 sintered metal) to protect regulators, vacuum regulators, etc. are also available.

Specifications

Operating fluid		Air, Nitrogen
Operating pressure (Note)		Max. 1.0MPa, Vacuum 1.3 x 10 ⁻⁶ kPa
Operating temperature		5 to 80°C
Element proof differential pressure		Max. 1.0MPa
Element reverse differential pressure		Max. 1.0MPa
Filtration accuracy		120μm
Principle materials	Housing, Cover	Stainless steel 316 (Inner & outer surfaces: Electrolytic polished)
	Seal	Fluoro rubber (FKM)
	Filter element	Stainless steel 316 sintered metal
Packaging		Antistatic sealed double package

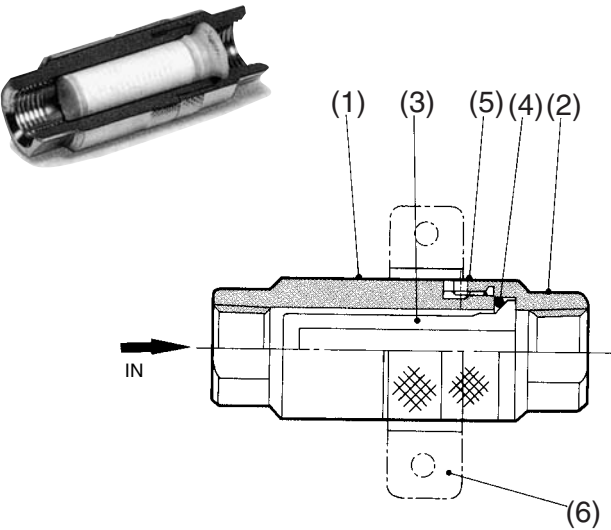
Note) The maximum operating pressure for nitrogen is 0.97MPa.

Model

Model	Rated flow rate (l/min (ANR)) (Note)	Connection	Filtration area (cm ²)	Element part no.	Weight (kg)
SFB200-02	400	Rc 1/4 (Female thread)	10	ES001S-120V	0.16
SFB201-02		NPT 1/4 (Female thread)			
SFB202-02		TSJ 1/4			0.17
SFB203-02		UOJ 1/4			0.20

Note) Maximum flow rate at inlet pressure of 0.7 MPa

Construction

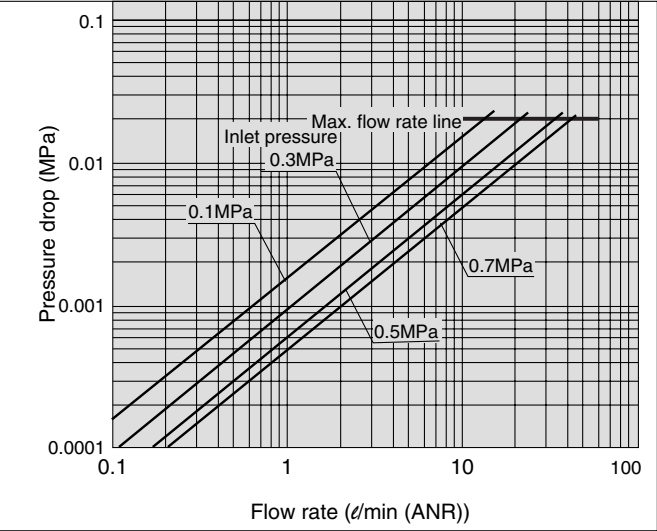


No.	Description		Material	Note
1	Housing		Stainless steel 316	Electrolytic polished (Inner & outer surfaces)
2	Cover			
3	Element	Clean gas filter	PTFE membrane	SFB10□
		Clean gas strainer	Stainless steel 316 sintered metal	SFB20□
4	O-ring		FKM	—
5	Hexagon socket head screw		Stainless steel	M3
6	Bracket		304	—

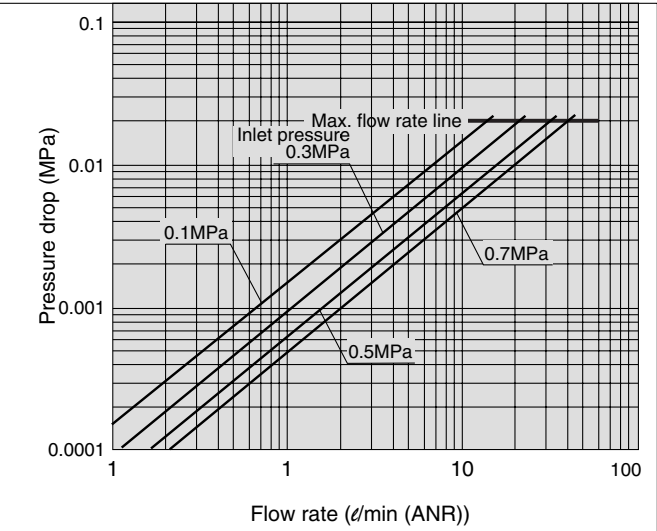
Flow Characteristics

Fluid: Compressed air Inlet temperature: 20°C

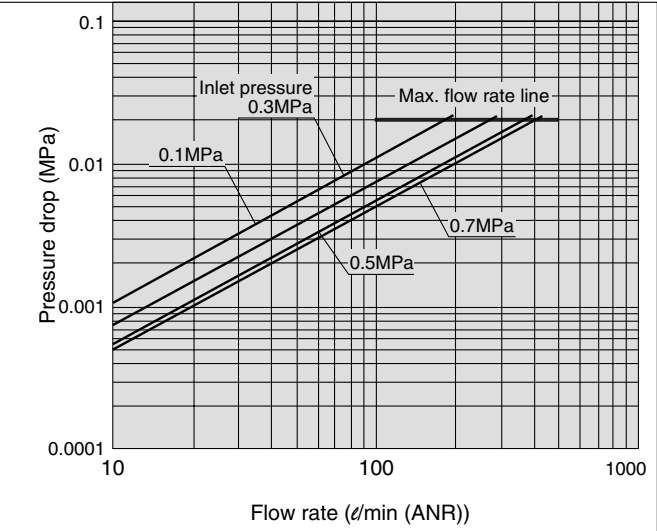
SFB104-M5



SFB10□-02

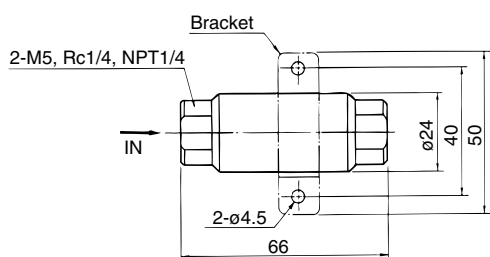


SFB20□-02



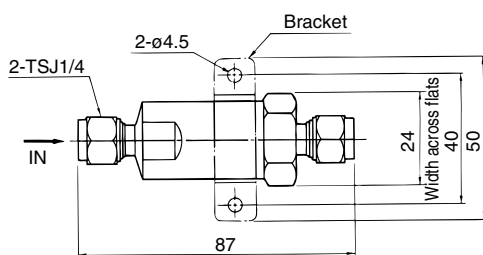
Dimensions

SFB100, 200: Rc1/4
SFB101, 201: NPT1/4
SFB104: M5

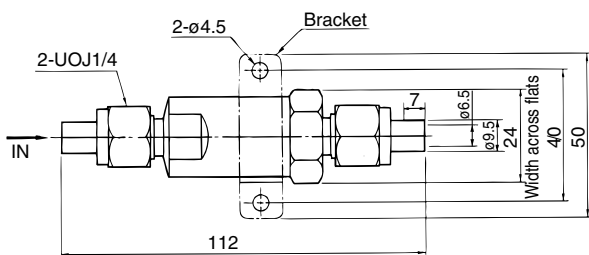


Model	Connection
SFB100-02, 200-02	Rc1/4
SFB101-02, 201-02	NPT1/4
SFB104-M5	M5

SFB102-02, SFB202-02: TSJ1/4 (Tube Swage Joint)



SFB103-02, SFB203-02: UOJ1/4 (Union O Ring Joint)



Air cylinder

Rotary actuator

Air gripper

Directional control
valveFlow control
equipmentFilter, Pressure
control equipment

Fittings & Tubing

Air preparation
equipment

Pressure switch

Clean gas filter

Series SFB300

Clean Gas Filter
Disposable type / Straight element

Precision filtration for semiconductor process gasses

Compressed air, nitrogen, etc.

PTFE membrane with high reliability

Filtration accuracy: 0.01μm

All products are tested at the time of shipment.

0.1μm cleanliness inspection

Helium leakage test

Pressure holding test

A bracket is included as standard.



Specifications

Operating fluid		Air, Nitrogen
Operating pressure ^{Note)}		Max. 1.0 MPa, Vacuum 1.3 x 10 ⁻⁶ kPa
Operating temperature		5 to 120°C
Element proof differential pressure		Max. 0.5MPa
Element reverse differential pressure		Max. 0.07MPa
Filtration accuracy		0.01μm
Cleaning level at outlet		0 piece/6ℓ of 0.1μm or larger particles
Helium leakage		4.0 x 10 ⁻⁹ Pa·m ³ /sec or less
Principle materials	Housing, Cover	Stainless steel 316 (Inner and outer surfaces: Electrolytic polished)
	Filter element	PTFE membrane
	Bracket	Stainless steel 304

Note) This product was designed for a pressure of 15MPa. All products are proof-pressure tested at the time of shipment. However, the maximum operating pressure is 1.0MPa because the products do not conform to the high-pressure gas safety law in Japan.

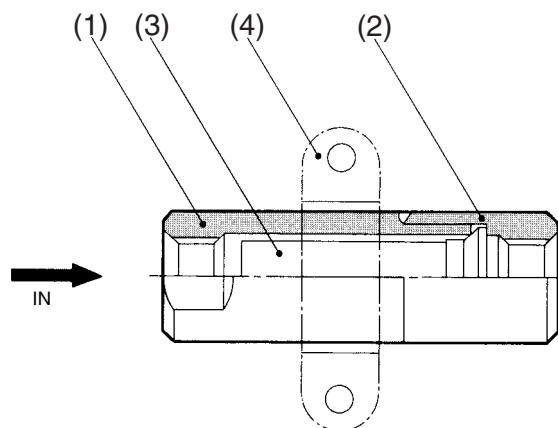
Also, the maximum pressure for nitrogen is 0.97MPa.

Model

Model	Rated flow rate (ℓ/min (ANR)) ^{Note)}	Connection	Filtration area (cm ²)	Weight (kg)
SFB300-02	26	Rc 1/4 (Female thread)	10	0.14
SFB302-02		TSJ 1/4		0.15
SFB305-02		URJ 1/4		0.14
SFB315-02		URJ 1/4		0.15

Note) Maximum flow rate at inlet pressure of 0.7MPa

Construction

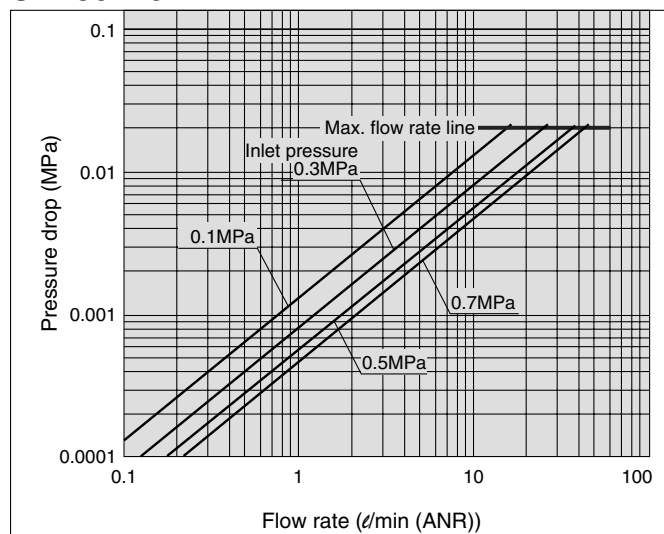
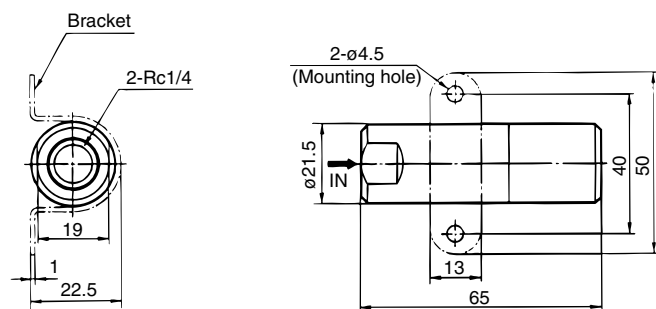
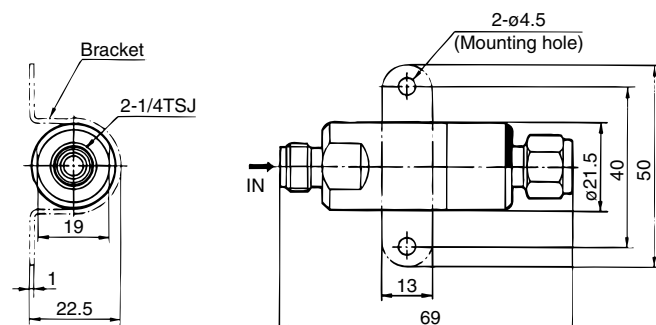
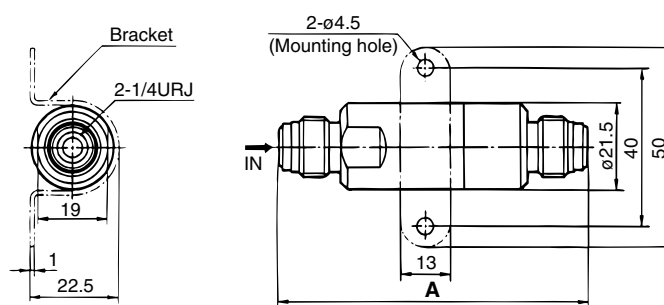


No.	Description	Material	Note
1	Housing	Stainless steel 316	Electrolytic polished (Inner & outer surfaces)
2	Cover		
3	Element	PTFE membrane	
4	Bracket	Stainless steel 316 sintered meal	

Flow Characteristics

Fluid: Compressed air

Inlet temperature: 20°C

SFB30□-02**Dimensions****SFB300-02: Rc1/4****SFB302-02: TSJ1/4 (Tube Swage Joint)****SFB305-02, SFB315-02: URJ1/4 (Union Ring Joint)**

Model	A
SFB305-02	79
SFB315-02	84

Series SFC100

Clean Gas Filter
Disposable type / Multiple disc element

Precision filtration for semiconductor process gases

Compressed air, nitrogen, etc.

PTFE membrane with high reliability

Nominal filtration rating: 0.01μm

All products are tested at the time of shipment.

0.1μm cleanliness inspection

Helium leakage test

Pressure holding test



Specifications

Operating fluid		Air, Nitrogen
Operating pressure ^{Note)}		Max. 1.0 MPa, Vacuum 1.3 x 10 ⁻⁶ kPa
Operating temperature		5 to 120°C
Element proof differential pressure		Max. 0.42MPa
Element reverse differential pressure		Max. 0.07MPa
Nominal filtration rating		0.01μm
Removal rate		0 piece/6ℓ of 0.1μm or larger particles
Helium leakage		4.0 x 10 ⁻⁹ Pa·m ³ /sec or less
Principle materials	Housing	Stainless steel 316 (Inner and outer surfaces: Electrolytic polished)
	Filter element	PTFE membrane
	O-ring	PTFE

Note) This product was designed for a pressure of 1.8MPa. All products are proof-pressure tested at the time of shipment. However, the maximum operating pressure is 1.0MPa because the products do not conform to the high-pressure gas safety law in Japan.

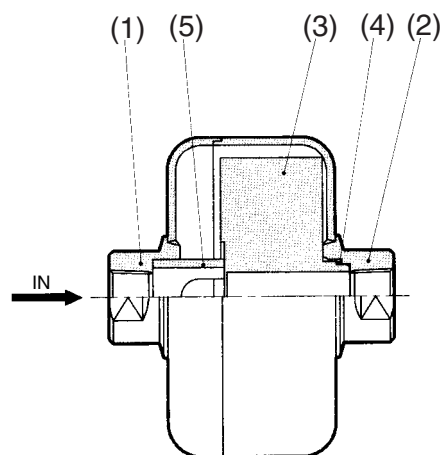
Also, the maximum pressure for nitrogen is 0.97MPa.

Model

Model	Rated flow rate (ℓ/min (ANR)) ^{Note)}	Connection	Filtration area (cm ²)	Weight (kg)
SFC100-02	300	Rc 1/4 (Female thread)	300	0.36
SFC100-03		Rc 1/4 (Female thread)		0.35
SFC102-02		TSJ 1/4		0.40
SFC102-03		TSJ 3/8		0.41
SFC105-02		URJ 1/4		0.44
SFC105-03		URJ 3/8		0.49

Note) Maximum flow rate at inlet pressure of 0.7MPa

Construction

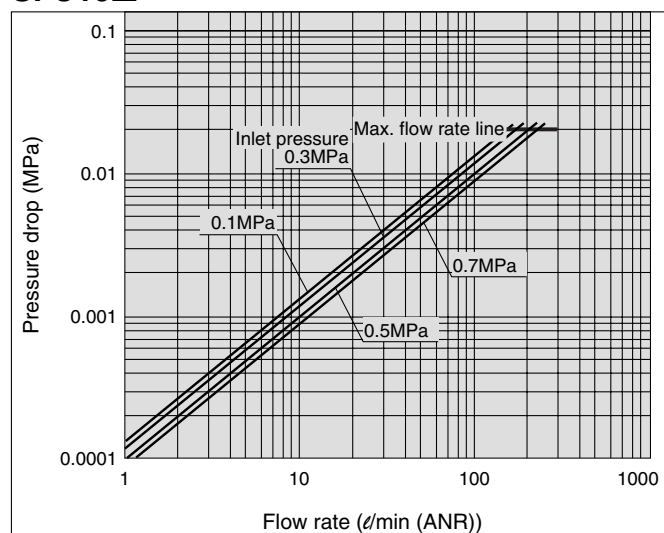
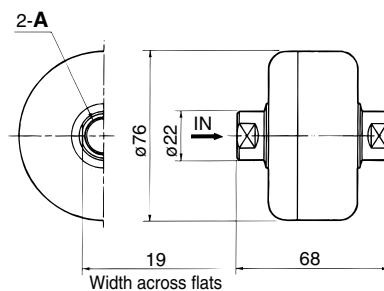


No.	Description	Material	Note
1	Housing 1	Stainless steel 316	Electrolytic polished (Inner & outer surfaces)
2	Housing 2		
3	Element	PTFE, PVDF	
4	O-ring	PTFE	
5	Spacer	PVDF	

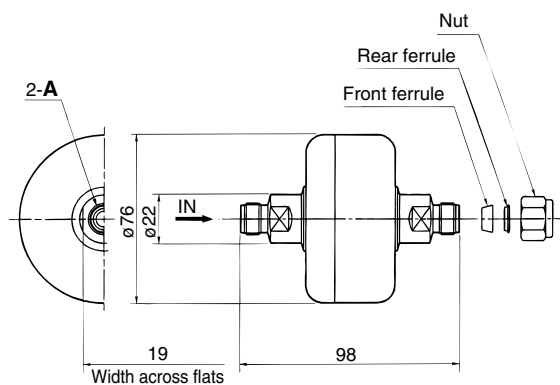
Flow Characteristics

Fluid: Compressed air

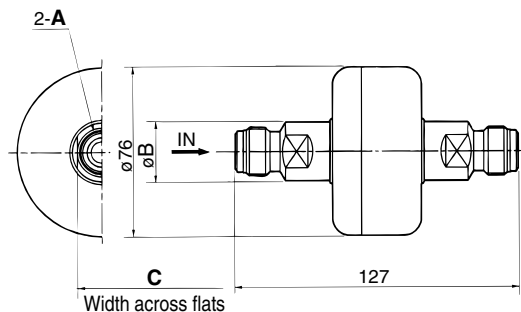
Inlet temperature: 20°C

SFC10□**Dimensions****SFC100-02: Rc1/4****SFC100-03: Rc3/8**

Model	A
SFC100-02	Rc1/4
SFC100-03	Rc3/8

SFC102-02: TSJ1/4 (Tube Swage Joint)**SFC102-03: TSJ3/8 (Tube Swage Joint)**

Model	A
SFC102-02	TSJ1/4
SFC102-03	TSJ3/8

SFC105-02: URJ1/4 (Union Ring Joint)**SFC105-03: URJ3/8 (Union Ring Joint)**

Model	A	B	C
SFC105-02	URJ1/4	22	19
SFC105-03	URJ3/8	26.5	22

Series SF

Made to Order Specifications

Please contact with SMC for detailed dimensions, specifications and delivery.



Housing, Cover Material: Aluminum Alloy

**Strainer with other filtration ratings
(1, 2, 5, 10, 20, 40, 70, 100μm)**

Clean Gas Strainers with filtration ratings other than the standard of 120μm

Part no.: SFB100-02X8

Specifications

Operating fluid	Air	
Operating pressure	Max. 1.0 MPa	
Max. operating temperature	80°C	
Element proof differential pressure	Max. 0.5MPa	
Element reverse differential pressure	Max. 0.07MPa	
Filtration accuracy	0.01μm	
Connection	Rc 1/4	
Filtration area	10cm ²	
Element part no.	ED301S-X10V	
Weight	0.06kg	
Principle materials	Housing, Cover	A2017 (White anodized)
	Seal	Fluoro rubber (FKM)
	Filter element	PTFE membrane

The dimensions are the same as those of the standard type. For details, refer to page 983.

Part no.: SFB200-02-S **002** **VX3**

Filtration accuracy

Symbol	Nominal filtration rating (μm)
001	1
002	2
005	5
010	10
020	20
040	40
070	70
100	100

The specifications and dimensions are the same as those of the standard type. For details, refer to page 983.



Series SF□:

Specific Product Precautions 1

Be sure to read before handling.

Selection

⚠ Warning

1. Confirm the specifications.

This product is designed to be used only with common gases such as compressed air or nitrogen.

Do not use this product with special gases or at pressures or temperatures beyond the specifications, as this could cause damage to the product.

(Refer to the specifications.)

Mounting

⚠ Warning

1. Instruction manual

Mount the product only after reading and understanding the instruction manual. Keep the manual in a location where it can easily be found.

2. Provide enough space for maintenance.

Provide space for maintenance because the IN/OUT pipes have to be removed when the elements are replaced.

3. Follow the piping instructions on pages 990 and 991 for tightening a screw.

Operating Environment

⚠ Warning

1. Do not use the product in a place where corrosive gases, chemicals, brine, water and/or water steam are present or can splash on it.

2. Insulate the product if it is used under direct sunlight.

3. Avoid using the product in a place where vibrations or impacts can occur.

4. Do not use the product in the vicinity of a heat source or under radiant heat.

Maintenance

⚠ Warning

1. Follow the maintenance procedures in the instruction manual. If handled incorrectly equipment or devices can become damaged or malfunction.

2. Maintenance

Product specifications must be observed, because the mishandling of compressed air and/or nitrogen can cause a dangerous situation. Maintenance such as replacement of the elements must be performed by an experienced and knowledgeable person.

3. Premaintenance inspection

When removing the product, turn off the electrical power and be sure to shut off the supply pressure and exhaust the compressed air in the system. Proceed only after confirming that all pressure has been released.

Maintenance

⚠ Warning

4. Inspection after maintenance

After installation or repair or replacement, perform an appropriate function and leakage test.

5. Disassemble or modification are prohibited.

Do not disassemble or modify the product.

Caution on Design

⚠ Caution

1. A pressure difference (pressure drop) between the inlet and the outlet exceeding 0.1 MPa may cause damage to the product.

2. Do not install the product in a place where it may be affected by a pulsation of over 0.1 MPa.

3. Use caution regarding the particles that may be emitted from the pneumatic equipment at the outlet side.

Installation of pneumatic equipment on the outlet side of the SF□ series can deteriorate the cleanliness because particles will be generated from the equipment.

The mounting position of the pneumatic equipment needs to be considered depending on the required degree of cleanliness of the operating fluid.

4. Design the system to prevent back pressure and backflow.

Back pressure and backflow can damage the element.

5. Design the system so that the piping load will not be applied to the product body.

Mount a bracket for the piping and the other connecting equipment so that the piping load is not applied to the product body.

6. Generally, the following pollutant particles are contained in compressed air, although the degree of cleanliness of the compressed air will be different depending on the compressor type and specifications.

[Pollutant particle substances contained in compressed air]

- Moisture (drainage)
- Dust and particles which are in the surrounding air
- Deteriorated oil that is discharged from the compressor
- Solid foreign matter such as rust and/or oil in the piping

1) The SF□ series is not compatible with compressed air that contains fluids such as water and/or oil.

2) Install a dryer (IDF, IDG, ID series), mist separator (AM series), micro mist separator (AMD series), super mist separator (AME series), or odor removal filter (AMF series), etc., for the air supply to the SF□ series.

Air cylinder

Rotary actuator

Air gripper

Directional control valve

Flow control equipment

Filter, Pressure control equipment

Fittings & Tubing

Air preparation equipment

Pressure switch

Clean gas filter



Series SF□:

Specific Product Precautions 2

Be sure to read before handling.

Selection

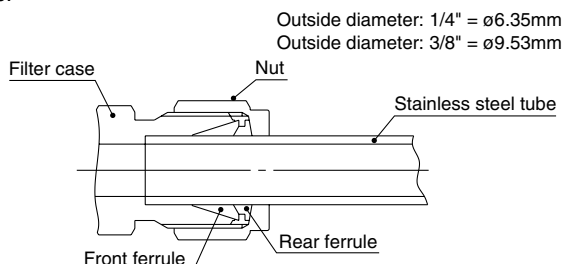
⚠ Warning

1. Thoroughly and carefully confirm the purpose of use, required specifications and operating conditions (fluid, pressure, flow rate and environment), then select a model that fits these requirements.
2. Contact us beforehand if the product will be used in applications such as a caisson shield or in breathing assistance machines and/or medical treatment that affects the human body directly or indirectly.
3. Determine the product you will need by the maximum consumption flow rate.
When using compressed air for an air blow application, calculate the maximum volume of air that will be consumed before selecting the SF□ series product size. (Using a product which exceeds the maximum air flow and running excessive compressed air can cause the cleanliness of the compressed air to deteriorate and/or its element to be damaged.)
4. Set the air flow capacity to an initial pressure drop of 0.02 MPa or less. If the initial pressure drop is set too high, its service life will be shortened due to clogging.

Piping

⚠ Caution

1. Unpacking the sealed package
Since the filter is sealed in an antistatic double bag, the inner package should be unpacked in a clean atmosphere (such as a clean room).
2. Confirm that there is enough space for maintenance before installing and piping this product.
3. When piping, apply a wrench to the 2 flat chamfered sections on the IN side or the OUT side to prevent the housing from rotating.
4. Note the IN and the OUT ports before piping. The product should not be used with the wrong connection.
5. Wrapping of pipe tape
When screwing together pipes and fittings, etc., confirm that chips from the pipe threads and sealing material do not enter the piping. Also, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.
6. Connection
 - 1) Rc and NPT connection
Confirm that chips from the pipe threads and sealing material do not enter the piping. Also, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.
 - 2) TSJ connection
The TSJ fitting is a self-aligning fitting. Set it as shown in the figure.



Piping

⚠ Caution

For the TSJ fittings, after tightening the nut by hand, add another 1 1/4 to 1 1/2 turns with a wrench to seal the fitting. In case the fitting is re-installed after filter replacement, first tighten the nut by hand and add another 1/4 to 1/2 turns for sealing. Use the following parts as piping and fittings.

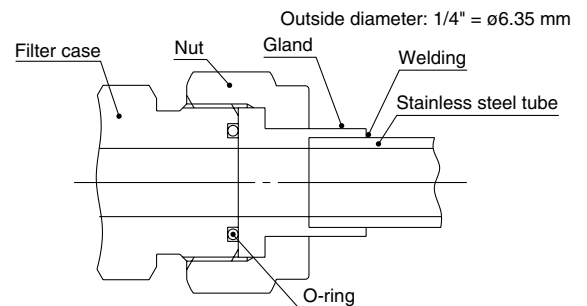
- Piping Outside diameter: 1/4" = ø6.35mm
Stainless steel tube
or
Outside diameter: 3/8" = ø9.53mm
Stainless steel tube
 - Nut
 - Front ferrule
 - Rear ferrule
- } Attached to product (2 pcs. each)

If the body must be replaced, a space (20 mm or longer) for extending the stainless steel tubes from the IN and OUT side will be required.

When using similar fittings from other companies, be sure to conduct a helium leakage test to confirm that there is no leakage before using.

3) UOJ fittings

The UOJ fitting is a union type fitting using an O-ring seal. Install it as illustrated below.



Weld the gland and piping together when the fitting is used. At the time of welding, supply an inert gas such as nitrogen to the piping to prevent the formation of an oxide film. Also, remove the oxide film on the external surface through electrolytic polishing or acid cleaning.

After tightening the nut by hand, add another 1/8 turn with a wrench to seal the fitting. Use the following parts for piping and fittings.

- Piping Outside diameter: 1/4" = ø6.35 mm
Stainless steel tube
 - Nut
 - Gland
 - O-ring
- } Attached to product (2 pcs. each)



Series SF□:

Specific Product Precautions 3

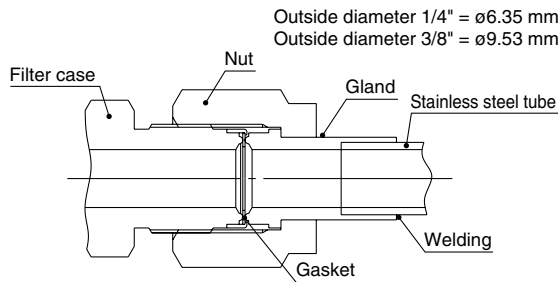
Be sure to read before handling.

Piping

⚠ Caution

4) URJ fittings

The URJ fitting is a union type fitting using a metal gasket. Install it as illustrated below.



Weld the gland and piping together when the fitting is used. At the time of welding, supply an inert gas such as nitrogen to the piping to prevent the formation of an oxide film. Also, remove the oxide film on the external surface through electrolytic polishing or acid cleaning.

After tightening the nut by hand, add another 1/8 turn with a wrench to seal the fitting.

Use the following parts for piping and fittings.

<1/4">

- Nut: VCR female nut for VCR® fittings by CAJON COMPANY (SS-4-VCR-1)
- Gland: VCR gland for VCR® fittings by CAJON COMPANY (SS-4-VCR-3)
- Gasket: VCR gasket retainer assembly for VCR® fittings by CAJON COMPANY (SS-4-VCR-2-GR)

<3/8">

- Piping: O.D. 3/8" = $\phi 9.53$ mm
Stainless steel pipe
- Nut: VCR female nut for VCR® fittings by CAJON COMPANY (SS-8-VCR-1)
- Gland: VCR gland for VCR® fittings by CAJON COMPANY (SS-8-VCR-3)
- Gasket: VCR gasket retainer assembly for VCR® fittings by CAJON COMPANY (SS-8-VCR-2-GR)

Be sure to conduct a helium leakage test before using similar fittings (equivalent to one made by CAJON COMPANY) from other companies.

Piping

⚠ Caution

7. Line flushing

Flush the piping line when the filter is used for the first time or has been replaced. When you are connecting something such as piping, flush (air blow) the connection when using this product for the first time after connection or after replacing the elements in order to reduce the effect of the dust generated from the connection, etc.

Flushing the line is also required to eliminate contamination resulting from the piping line installation. Therefore, be sure to flush the line before actually running the system.

When common gases (excluding toxic, corrosive and flammable gases) are used after mounting the filter, sufficiently flush the line with a dry inert gas such as nitrogen gas. This should be followed by a helium leakage test on the fittings before actually running the product.

8. Filter replacement (or element replacement)

Release the gas from the piping to reduce the internal pressure to 0.

Also, when nitrogen gas is used, replace it with dry nitrogen gas by purging it in advance. Replace the filter (or cartridge element) when a differential pressure of 0.1 MPa (pressure drop) between IN and OUT is reached or when 1 year has elapsed, whichever comes first.

9. Filter replacement should be performed according to the instruction manual to maintain the filter performance and safety.

The instruction manual is contained in the replacement element. However, if the manual is lost, another one can be requested by inquiring with SMC.

Operating Fluid

⚠ Warning

1. Do not use the clean gas filter with fluids other than compressed air and nitrogen gas.

Using this product with fluids other than compressed air and nitrogen gas can cause damage and leaks in the seals and O-rings, depending on the operating fluid. Confirm the seal material in the specifications and the compatibility with the operating fluid.

Model Series SFA
 Series SFB10, 20

Model Series SFB30
 Series SFC



Series SF□:

Specific Product Precautions 4

Be sure to read before handling.

Operating Environment

Caution

1. When the product is used for blowing, use caution to prevent the work from being damaged by entrained air from the surrounding area.

When the compressed air is used for air blow, the exhausted air from the blow nozzle may take in airborne foreign matter (such as solid particles or fluid particles) from the surrounding air. The foreign matter will be sprayed on the work, and the airborne foreign matter may adhere to it. Therefore, be cautiously aware of the surrounding environment.

Maintenance

1. When the time for element replacement comes, immediately replace it with a new filter or replacement element (cartridge type).

2. Service life of element

The service life of the element ends when either of the following two conditions occur.

- 1) After 1 year of usage has elapsed.
- 2) When the pressure drop reaches 0.1 MPa, even if the operating period has been less than 1 year.

3. Unpacking the sealed package

Since the filter, as well as the cartridge element (cartridge type) are sealed in an antistatic double bag, the inner package should be unpacked in a clean atmosphere (such as a clean room).

Particle Generation Grade

Clean Gas Filter

Description		Model	Particle generation grade
			Standard
	Clean Gas Filter Cartridge Type	SFA100/200/300	1
	Clean Gas Filter Cartridge Type	SFB100	1
	Clean Gas Strainer Cartridge Type	SFB200	1
	Clean Gas Filter Disposable Type	SFB300	1
	Clean Gas Filter Disposable Type	SFC100	1

Values in  show grades.



Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC), Japan Industrial Standards (JIS)*¹⁾ and other safety regulations*²⁾.

* 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.

ISO 4413: Hydraulic fluid power – General rules relating to systems.

IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)

ISO 10218-1992: Manipulating industrial robots -Safety.

JIS B 8370: General rules for pneumatic equipment.

JIS B 8361: General rules for hydraulic equipment.

JIS B 9960-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)

JIS B 8433-1993: Manipulating industrial robots - Safety.

etc.

* 2) Labor Safety and Sanitation Law, etc.

 **Caution:** Operator error could result in injury or equipment damage.

 **Warning:** Operator error could result in serious injury or loss of life.

 **Danger :** In extreme conditions, there is a possibility of serious injury or loss of life.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.



Safety Instructions

Caution

The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.

If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

Limited Warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited Warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited Warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*3)

Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.

This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

* 3) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

When the product is exported, strictly follow the laws required by the Ministry of Economy, Trade and Industry (Foreign Exchange and Foreign Trade Control Law).



Clean series: Common Precautions 1

Be sure to read before handling.

Refer to the main text for detailed precautions on every series.

Air Supply

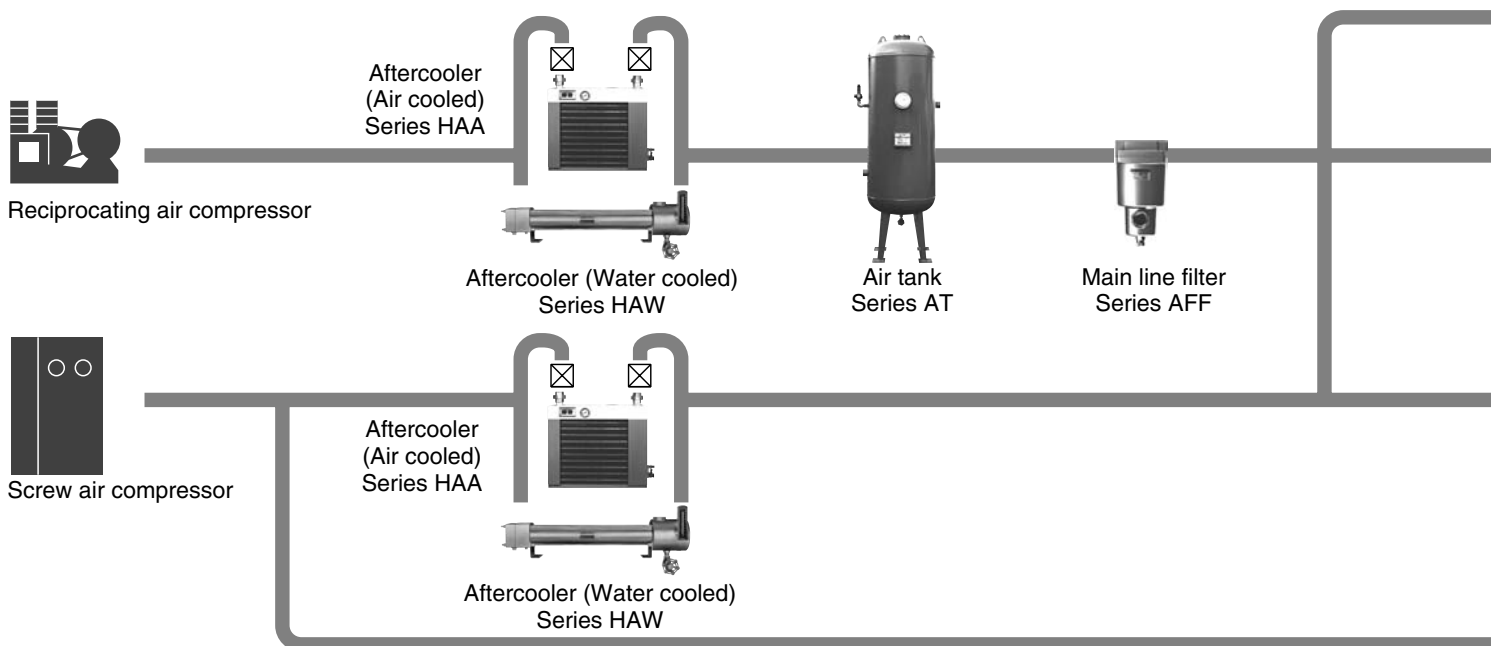
⚠ Caution

System Configuration

Refer to the "Air Preparation System" below for the quality of compressed air before configuring the system.

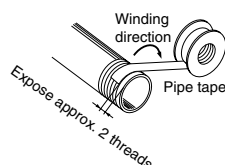
Main line

Sub-line



Piping

1. Provide an inclination of 1cm per meter in the direction of the air flow to the main piping.
2. If there is a line branching from the main piping, provide an outlet of compressed air on top using a tee so that drainage accumulated in the piping will not flow out.
3. Provide a drainage mechanism at every recessed point or dead end to prevent drain accumulation.
4. For future piping extensions, plug the end of the piping with a tee.
5. Before piping
Before piping, the piping should be thoroughly blown out with air (flushed) or washed to remove chips, cutting oil and other debris from inside the pipe.
6. Wrapping of pipe tape
When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not get inside the valve. Also, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



7. If air with a low dew point (-40°C or less) is required, do not use nylon tube or resin fitting (except for fluorine resin) for the outlet side of the membrane air dryer or heatless air dryer. Nylon tubing could be affected by the ambient air and it thus might not be possible to achieve the prescribed low dew point at the end of the tube. Therefore, for low dew point air, use stainless steel or fluorine tube.

Maintenance

1. If the heatless air dryer Series ID is left unused for a long period, the absorbent may be moistened. Prior to use, close the valve on the outlet side of the dryer for regeneration and drying.

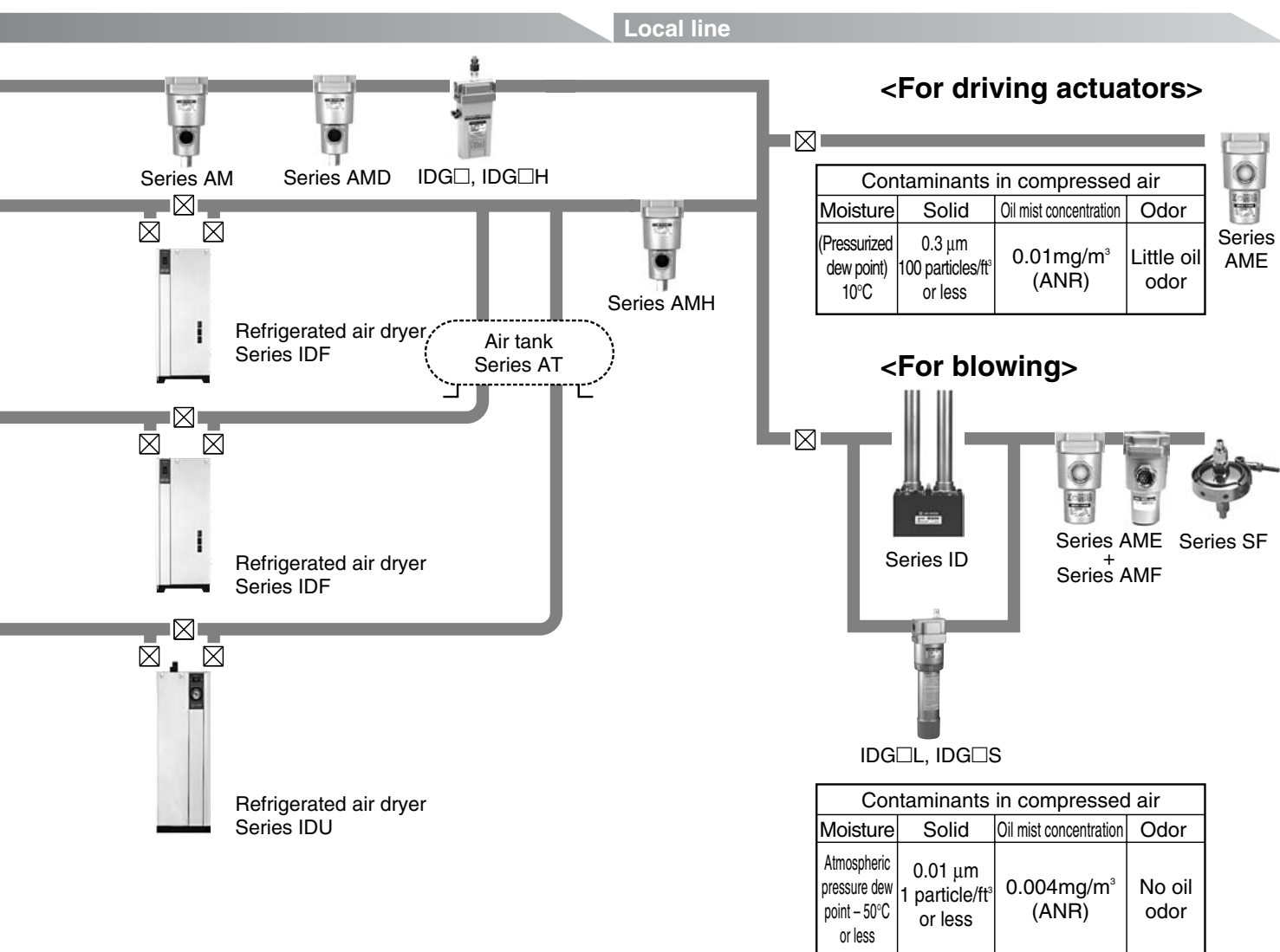
Caution on Design

Employ a safe design, so that the following unexpected conditions will not occur.

⚠ Warning

1. **Provide a design that prevents high-temperature compressed air from flowing into the outlet side of the cooling equipment.**
If the flow of the coolant water in a water-cooled aftercooler is stopped or if the fan motor of an air cooled aftercooler is stopped, the high-temperature compressed air will flow to the outlet side of the cooling equipment, causing the equipment on the outlet side (such as the AFF, AM, AD, or IDF series) to be damaged or to malfunction.
2. **Provide a design in which interruptions in the supply of compressed air are taken into consideration.**

Air Supply



There are cases in which compressed air cannot flow due to the freezing of the refrigerated air dryer or a malfunction (heatless dryer) in the switching valve.

⚠ Caution

3. Design a layout in which the leakage of the coolant water and the dripping of condensation are taken into consideration.

A water-cooled aftercooler that uses coolant water could lead to water leakage due to freezing. Depending on the operating conditions, the refrigerated air dryer and its downstream pipes could create a dripping of water droplets due to condensation formed by supercooling.

4. Provide a design that prevents back pressure and backflow.

The generation of back pressure and backflow could lead to

equipment damage.

Take appropriate safety measures, including the proper installation methods.

5. Depending on the model and operating conditions, the life span of air cylinders may be shortened when they are used in an environment of super dry air (atmospheric pressure dew point: -50°C) or high-purity nitrogen gas or when such super dry air or high-purity nitrogen gas is used as the fluid.

Please contact with SMC for further details on applicable series, models, operating conditions and life spans.

6. Blowing system

Even a small amount of dust can be a problem for blowing systems.

Install Clean Gas Filter Series SF to the end of the blowing line.



Clean series: Common Precautions 2

Be sure to read before handling.

Refer to the main text for detailed precautions on every series.

Piping: Inside of Clean Room

⚠ Caution

1. Do not make the piping for the air cylinder relief port and regulator breathing vent piping common with solenoid valve exhaust piping.

This can cause malfunctions in the air cylinder or regulator pressure change.

2. Arrange the piping so that the exhaust air of the solenoid valves is exhausted outside of the clean room.

3. Air filter drain piping

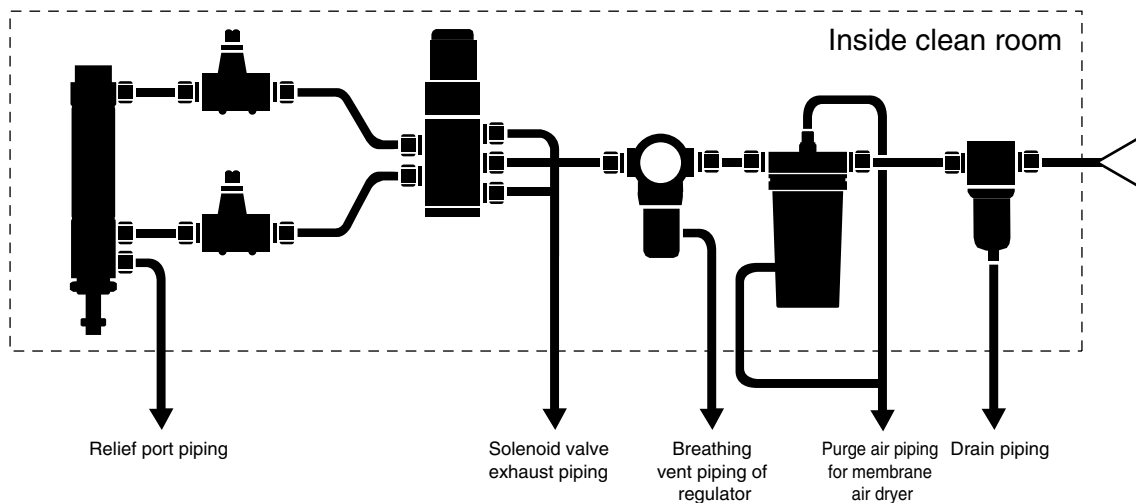
Exhaust drainage outside the clean room through piping from the drain guide of the air filter.

4. Arrange the membrane dryer air purge piping using a standard size tubing so that air is exhausted outside the clean room.

5. Take precautions so that the threaded portion of the piping connection or the tubing connection will not be loosened.

Take sufficient precautions against the piping shaking along with the vibration of the equipment.

6. Use polyurethane tubing containing no plasticizer.



Handling

⚠ Caution

1. The inner bag of a double-packed clean series package should be opened in a clean room or clean environment.
2. When standard pneumatic equipment is brought into a clean room, spray high-purity air upon it and remove dust thoroughly by wiping the external surfaces of the cylinder tube, solenoid valves and air line equipment with alcohol.
3. To replace parts or disassemble the product in a clean room, first exhaust the compressed air inside the piping to the outside of the clean room before the work.
4. Do not use rotation type mounting brackets such as clevises, trunnions, etc.. They will generate a considerable amount of particulate matter due to the sliding friction between the metal parts.

Lubrication / In the Case of Actuator

⚠ Warning

Be sure to wash your hands after handling fluororesin grease.

The grease itself is not hazardous but it can produce a hazardous gas at temperatures exceeding 260°C.

⚠ Caution

1. Do not use any greases but those specified by SMC.
Use of greases not specified will cause malfunctions or particle generation.
2. Do not lubricate the products since they are of a nonlubricant type.
As the clean series actuators are lubricated at the factory with fluororesin grease, the product specifications may not be satisfied if turbine oil or other such lubricants are applied.

Piston speed

⚠ Caution

The cylinder speed upper limit that retains the particle generation grade is 400 mm/s.



Clean series: Common Precautions 3

Be sure to read before handling.

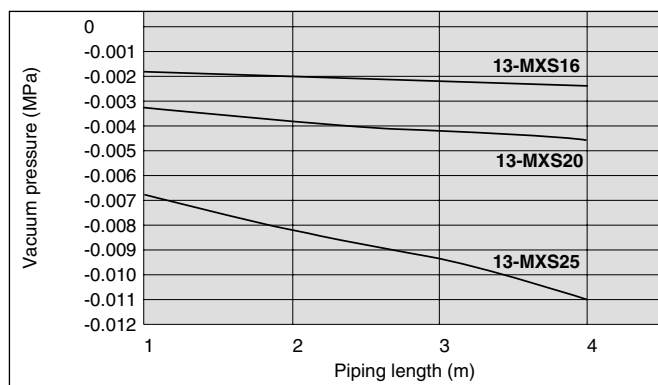
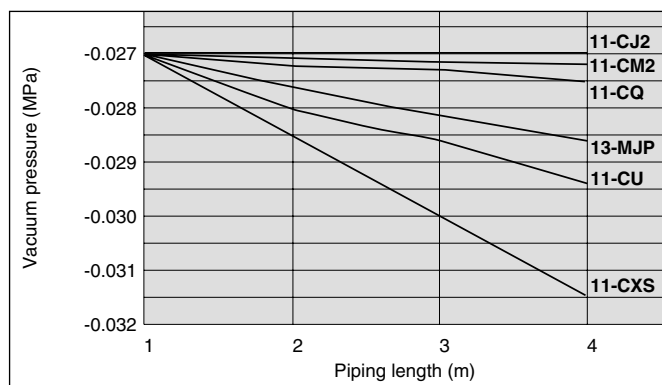
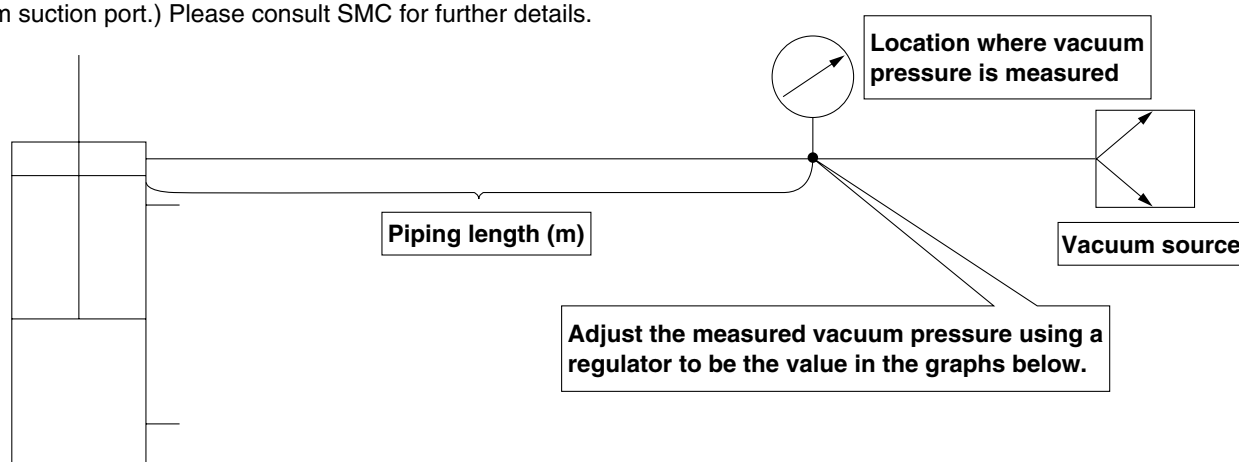
Refer to the main text for detailed precautions for every series.

Suction flow rate of vacuum suction types

⚠ Caution

For the vacuum suction types (Series 11-/13-/22-), perform vacuum suction at the vacuum port to retain the particle generation grade.

The optimum suction flow rate varies depending on series and sizes. Refer to "Suction flow rate of vacuum suction type (Reference values)" for each series. (The vacuum pressure will be approximately -27 kPa at around 1 m from the vacuum suction port.) Please consult SMC for further details.



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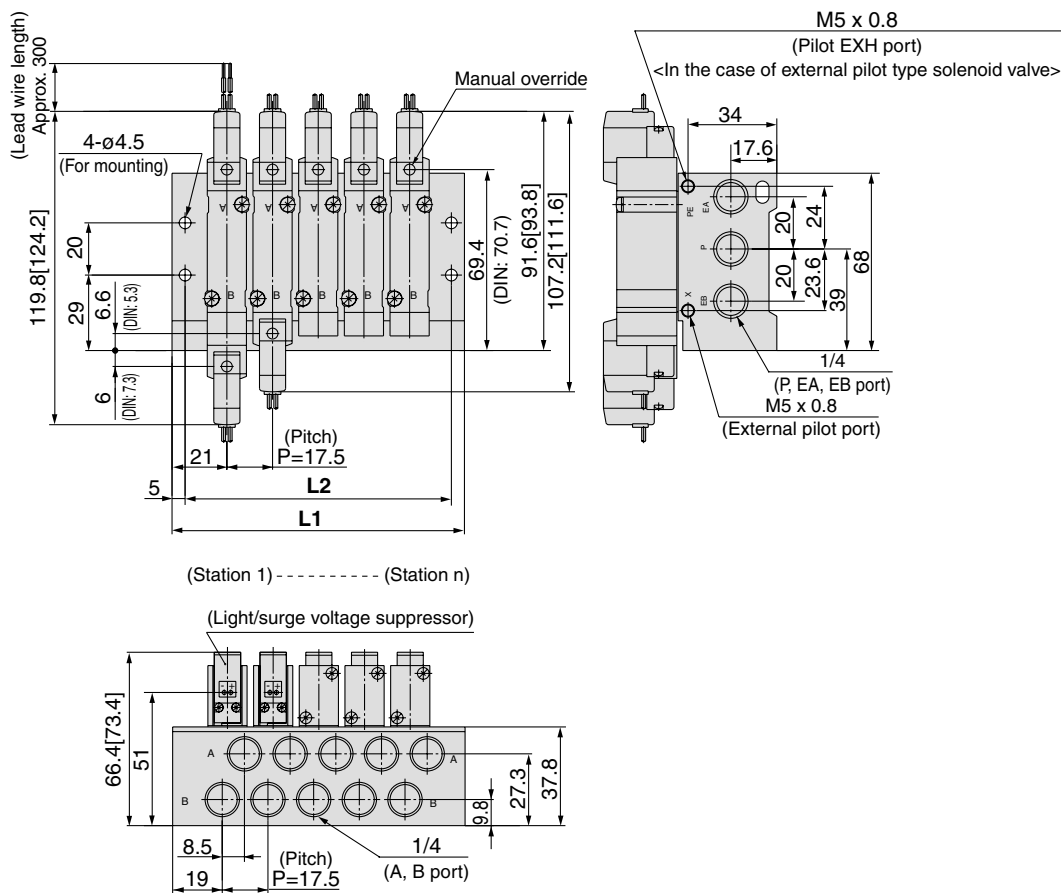
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10-SY5000: 10-SS5Y5-42- Stations -02

Note) [] : AC

Grommet (G)

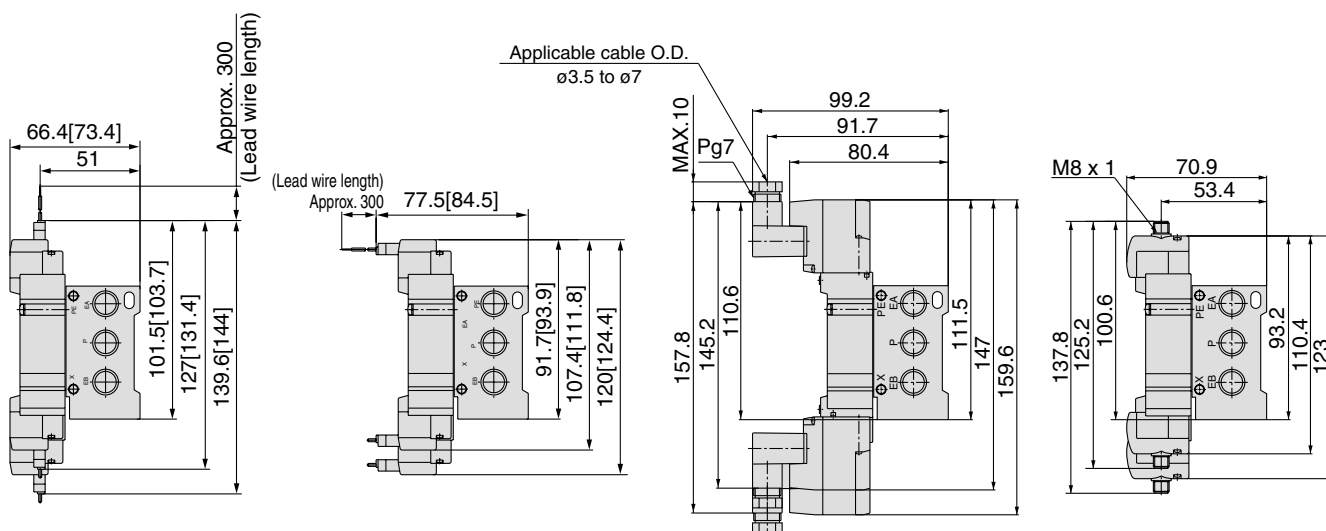


L plug connector (L)

M plug connector (M)

DIN terminal (D)

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Note) Refer to page 490 for dimensions of connector types.

Stations n	2 stations	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 stations
L1	59.5	77	94.5	112	129.5	147	164.5	182	199.5	217	234.5	252	269.5	287	304.5	322	339.5	357	374.5
L2	49.5	67	84.5	102	119.5	137	154.5	172	189.5	207	224.5	242	259.5	277	294.5	312	329.5	347	364.5



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