

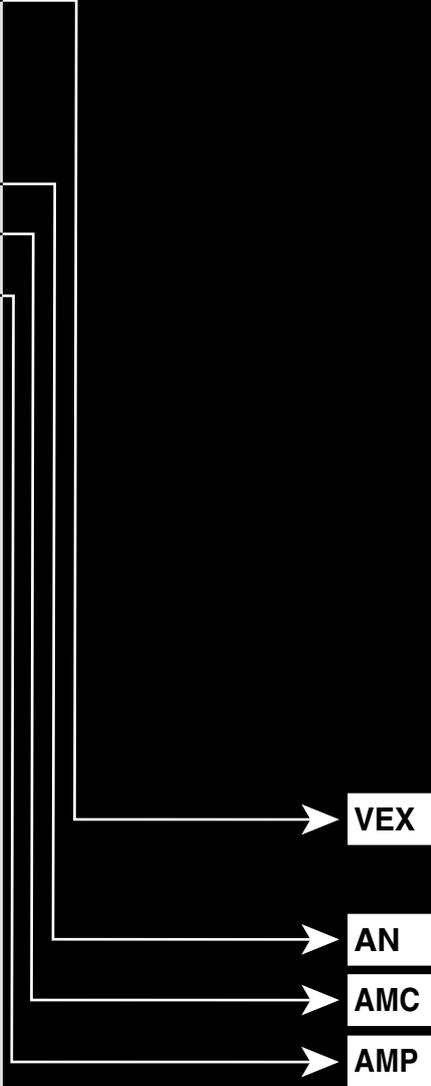
Power Valve



- Regulator Valve: **VEX1**.....P.5.1-1
- 3 Position Valve: **VEX3**.....P.5.1-10
- Economy Valve: **VEX5**.....P.5.1-21

Silencer

- Silencer: **AN**.....P.5.2-1
- High Noise Reduction Silencer:
AN□1.....P.5.2-5
- Exhaust Cleaner: **AMC**.....P.5.3-1
- Exhaust Cleaner for
Clean Rooms: **AMP**.....P.5.4-1



Power Valve Regulator Valve

Series VEX1

Large Capacity Relief Regulator

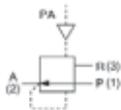
3 port large capacity pop-pet exhausting regulator equipped with a relief port the same size as the connection port.



Air operated

Symbol

Air operated



Specifications

Model	VEX110□-01 02	VEX120□-01 02	VEX130□-02 03 04	VEX150□-04 06 10	VEX170□-10 12	VEX190□-14 20										
Operating style	Air operated															
Fluid	Air, Inert gas															
Proof pressure	1.5MPa															
Max. operating pressure	1.0MPa															
Set press. range	Air operated 0.05 to 0.9MPa															
Ambient and fluid temperature	0 to 50°C(Air operated: 0 to 60°C)															
Hysteresis	0.03MPa															
Repeatability	0.01MPa															
Sensitivity	0.01MPa															
Mounting	Free															
Lubrication	Not required (Use turbine oil No.1 ISO VG32, if lubricated)															
Port size	Port	01	02	01	02	02	03	04	04	06	10	10	12	14	20	
	P											1	1	1 1/4	1 1/2	2
	A	1/8	1/4	1/8	1/4	1/4	3/8	1/2	1/2	3/4	1	1	1 1/4	1 1/4	2	2
Effective area	R											1 1/4				
	mm ²	16	25	16	25	36	60	70	130	160	180	300	330	590	670	
	Nl/min	883	1374	883	1374	1963	3238	3827	7066	8735	9815	16685	17667	32389	36315	
Weight (kg)	Air operated	0.1		0.2		0.4		1.3		1.9		3.9				

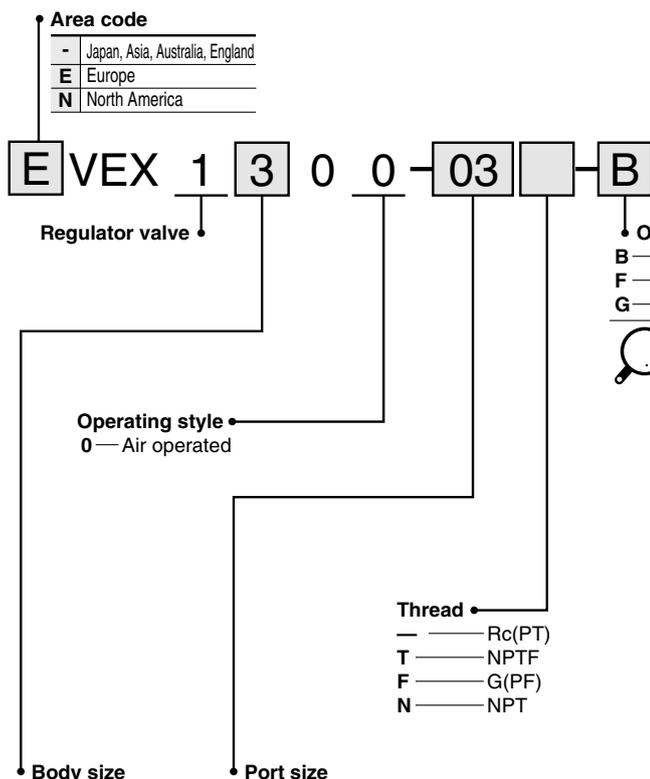
Options

Parts name		Part No.					
		VEX110□-01 02	VEX120□-01 02	VEX130□-02 03 04	VEX150□-04 06 10	VEX170□-10 12	VEX190□-14 20
Bracket (with bolt and washer)	B	VEX1-18-1A	—	VEX3-32A	VEX5-32A	VEX7-32A	VEX9-32A
	F	VEX1-18-2A	—	—	—	—	—
Pressure gauge ⁽¹⁾	G	G27-10-01		G36-10-01	G46-10-01		



Note 1) When requiring the gauge except mentioned above, specify the model number. Option is packed with it.
(Refer to Best Pneumatics 4.)
Example: VEX1300-03
G36-4-01

How to Order



Body size	Port size			
	Port	P, A port	R port	
Body ported	1	01	1/8	1/8
		02	1/4	1/4
	3	02	1/4	1/4
		03	3/8	3/8
	5	04	1/2	1/2
		06	3/4	3/4
	7	10	1	1
		12	1 1/4	1 1/4
	9	14	1 1/2	2
		20	2	2
Base mounted	2	Without subplate		
		01	1/8	1/8
		02	1/4	1/4

Model

Model	Air operated	Port size	
		P,A port	R port
Regulator valve	VEX1100	1/8, 1/4	1/8, 1/4
	VEX1200	1/8, 1/4	1/8, 1/4
	VEX1300	1/4, 3/8, 1/2	1/4, 3/8, 1/2
	VEX1500	1/2, 3/4, 1	1/2, 3/4, 1
	VEX1700	1, 1 1/4	1 1/4
	VEX1900	1, 1 1/2	2

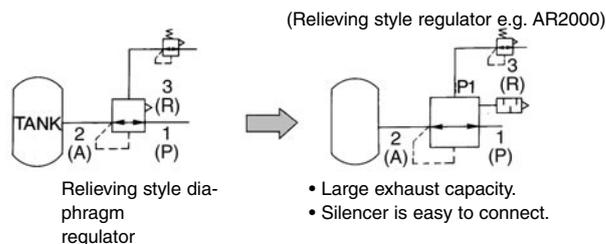
Caution

Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

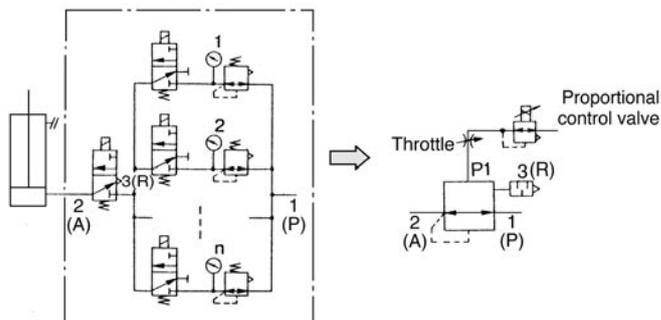
Applications

① Relief regulator

(Rapid tank internal pressure setting)



② Multiple step pressure control (Toward stepless control)



- The main driving system is simple consisting of one VEX only.
- Remotely controlled by compact pilot system.
- Steplessly and remotely controlled by electric signals.
- Flexibility for pressure control for welders.

VEX

AN

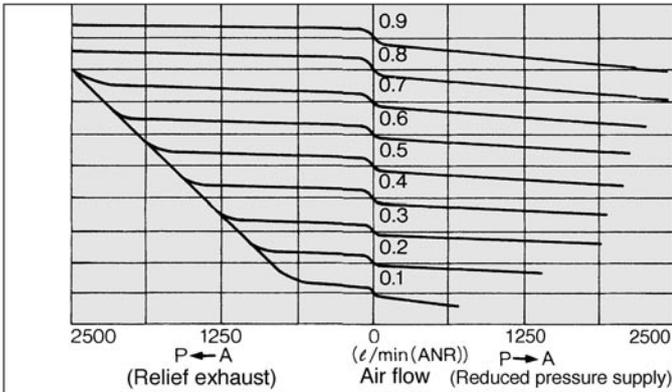
AMC

AMP

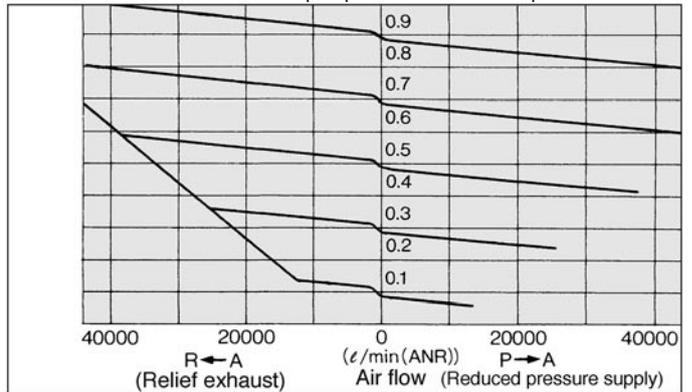
VEX1

Flow Characteristics

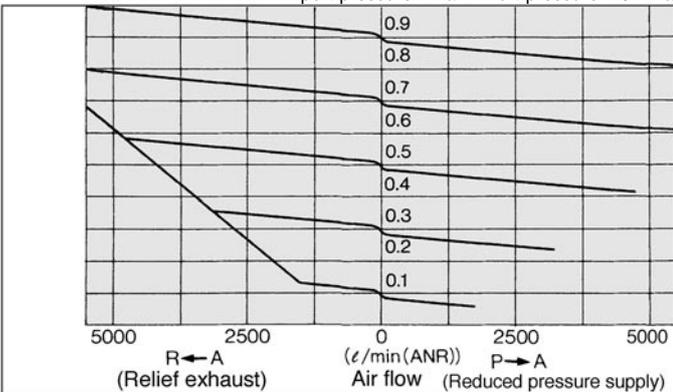
VEX110□, 120□ A port pressure MPa P Port pressure 1.0 MPa



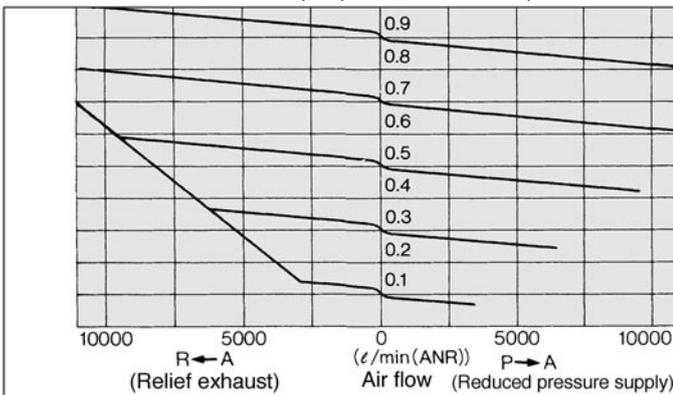
VEX190□ A port pressure MPa P Port pressure 1.0 MPa



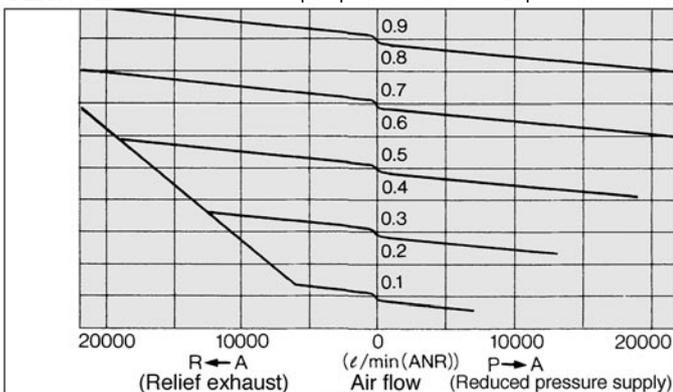
VEX130□ A port pressure MPa P Port pressure 1.0 MPa



VEX150□ A port pressure MPa P Port pressure 1.0 MPa

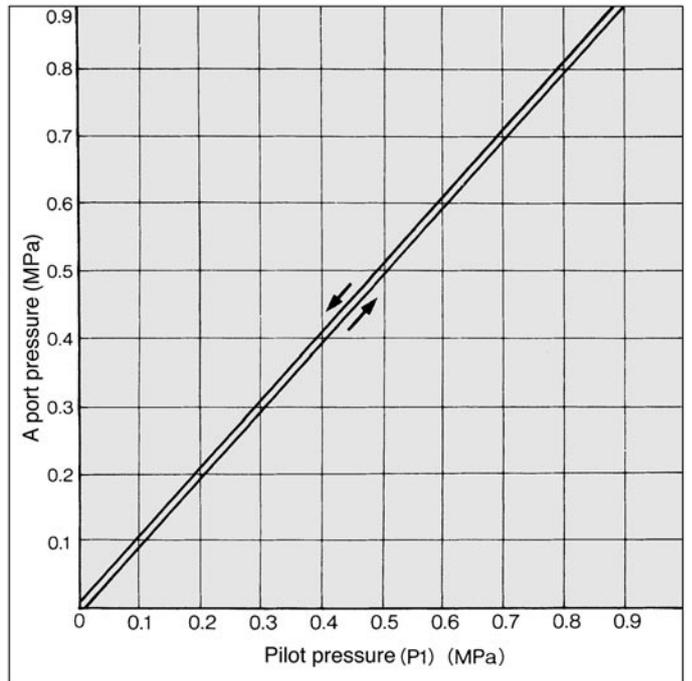


VEX170□ A port pressure MPa P Port pressure 1.0 MPa

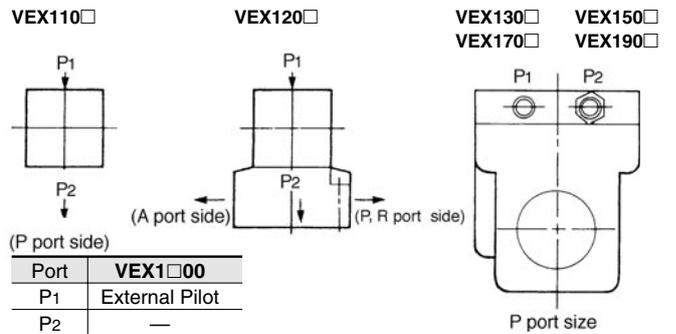


Setting Pressure Characteristics

A port pressure is set in accordance with pilot pressure



External Pilot Piping

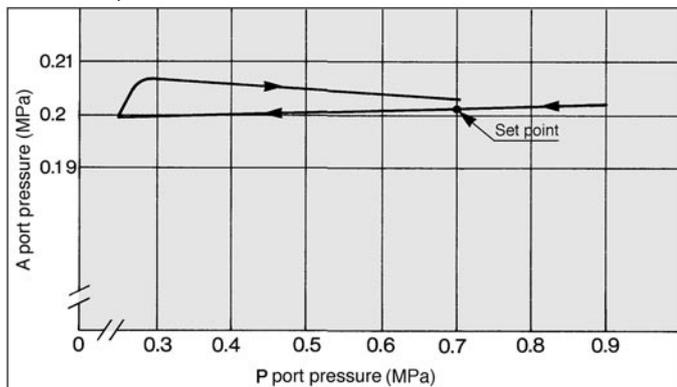


Pressure Characteristics

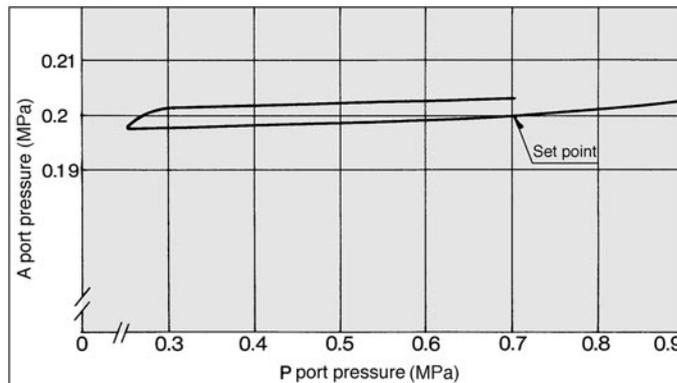
Shown the change of secondary pressure (A port) to the change of supply pressure (P port).

As per JIS B8372 (Pneumatic regulator)

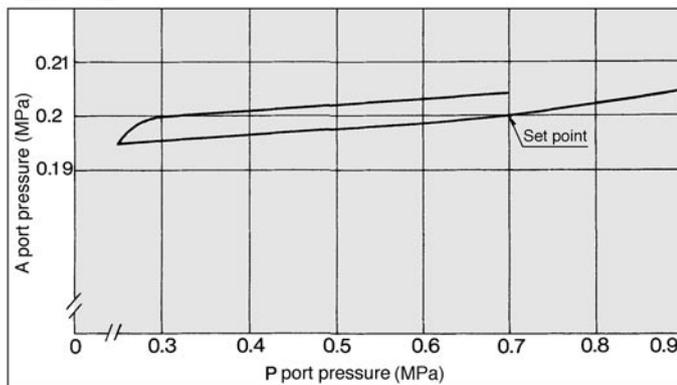
VEX110□, 120□



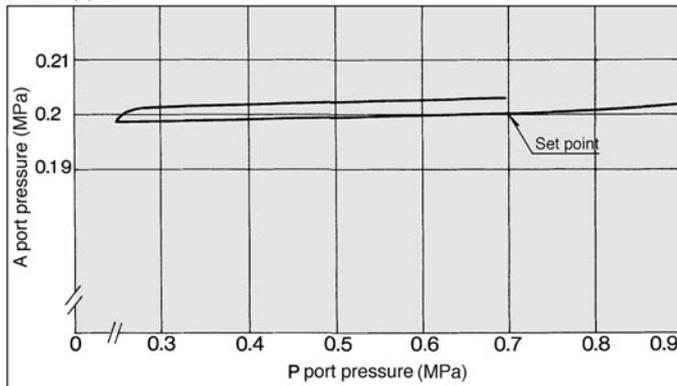
VEX190□



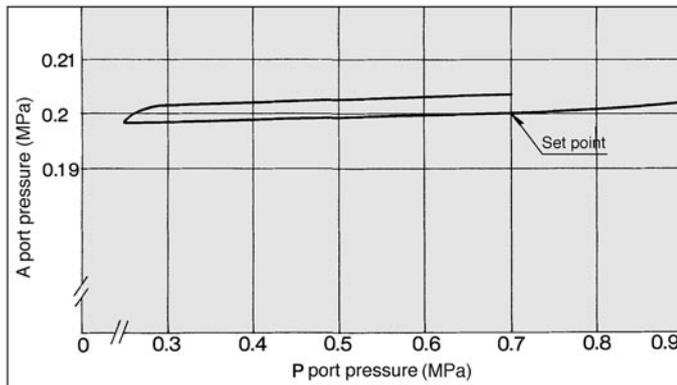
VEX130□



VEX150□

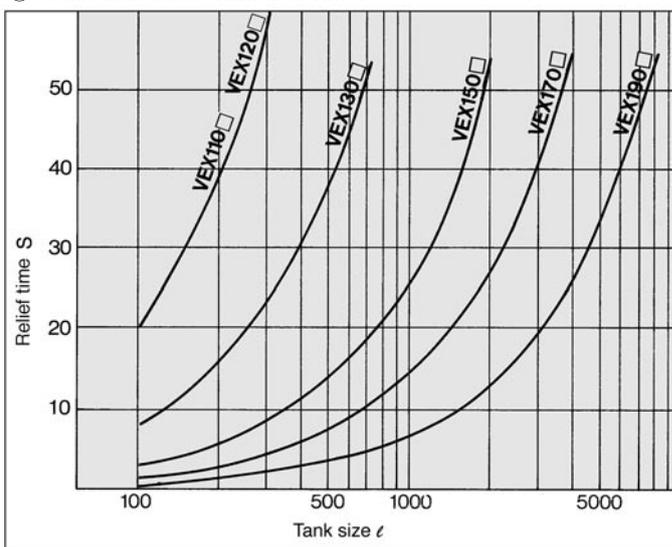


VEX170□

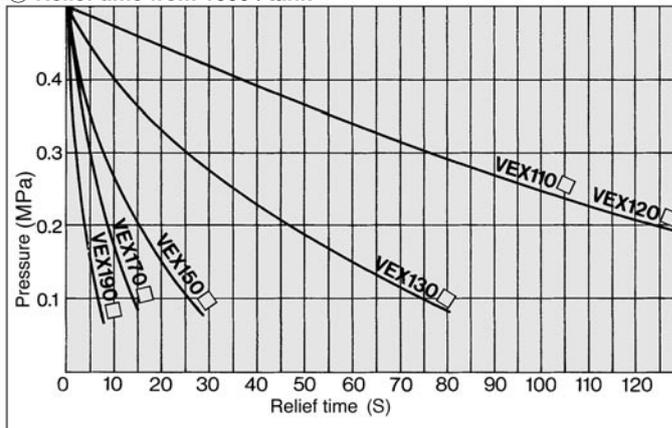


Relief Time

① Relief time from 0.5MPa to 1MPa

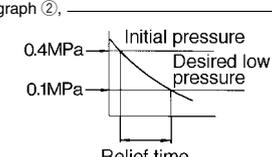


② Relief time from 1000 l tank



③ Relief time from an arbitrary pressure

[Example] VEX 1500 lowers 2000l tank from 0.4MPa to 0.1MPa:

- a) In graph ②,  b) Then, the relief time for the 2000l tank is found by conversion as shown below.
- $$t = \frac{\text{Tank capacity}}{1000} \times \left[\text{Relief time that is read} \right]$$
- $$= \frac{2000}{1000} \times 23$$
- $$= 46$$
- From the above, the relief time is 26-3=23S
- The result is 46S.

VEX

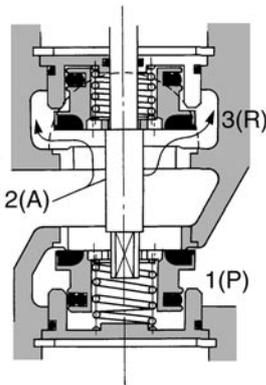
AN

AMC

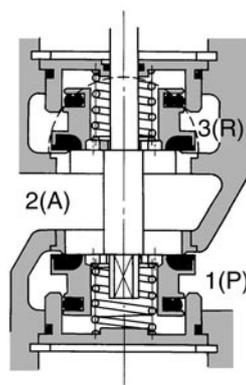
AMP

Construction/Operation Principles/Component Parts

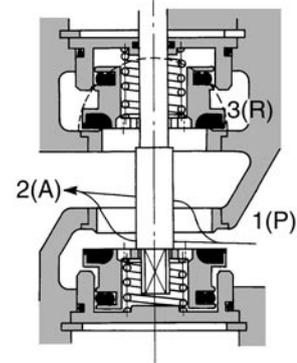
[1] When A port pressure is high.



[2] Setting pressure condition

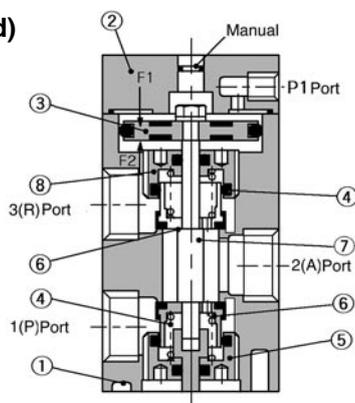


[3] When A port pressure is low.
Pressure reducing supply.

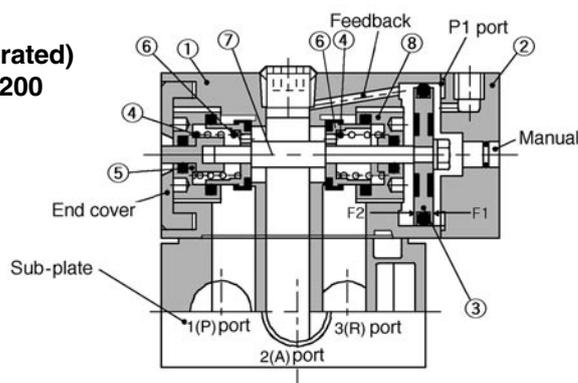


- The balance between the acting force F_1 of the pilot pressure(P1 port)over the upper surface of the pressure regulating piston ③ and the acting force F_2 of the pressure at A port leading to a space under the piston through the feed back flow root closes a couple of poppet valves ⑥ and sets A port pressure that corresponds to P1 port pressure. The poppet valves are backed up by spring ④- in the pressure balance structure by means of A port pressure.(DRW(2))
- When A port pressure exceeds P1 port pressure, F_2 becomes larger than F_1 ,and the pressure regulating piston moves upward, opening the upper poppet valves. Thus air is released from A port to R port. (DRW(1)) When A port pressure lowers enough to restore the balance, the regulator valve returns again to the DRA (2) condition.
- When A port pressure is lower than P1 port pressure, F_1 becomes larger than F_2 , and the pressure regulating piston moves downwards,opening the lower poppet valves.Thus air is supplied from P port to A port.(DRW(3)) When A port pressure rises enough to restore the balance, the regulator valve returns again to the DRW(2) condition.

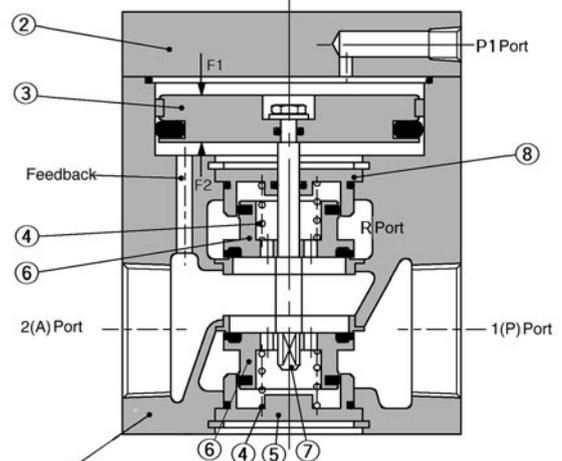
(Air operated)
VEX1100



(Air operated)
VEX1200



(Air operated)
VEX1300/1500/1700/1900

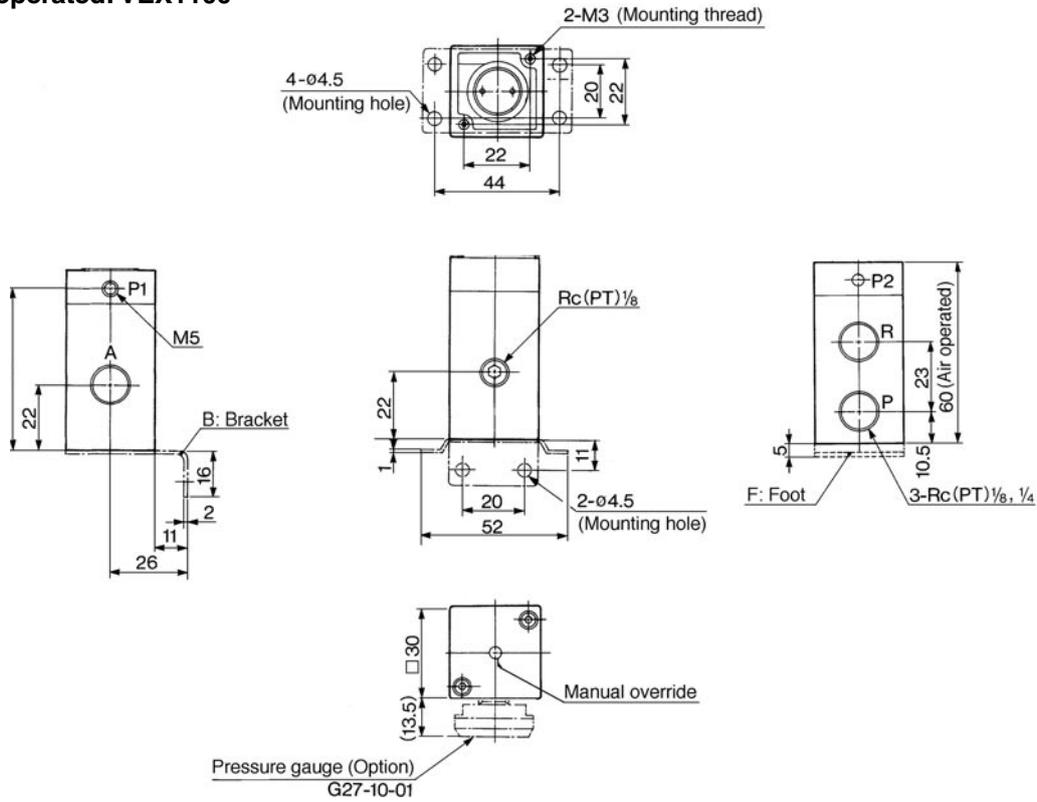


Component Parts

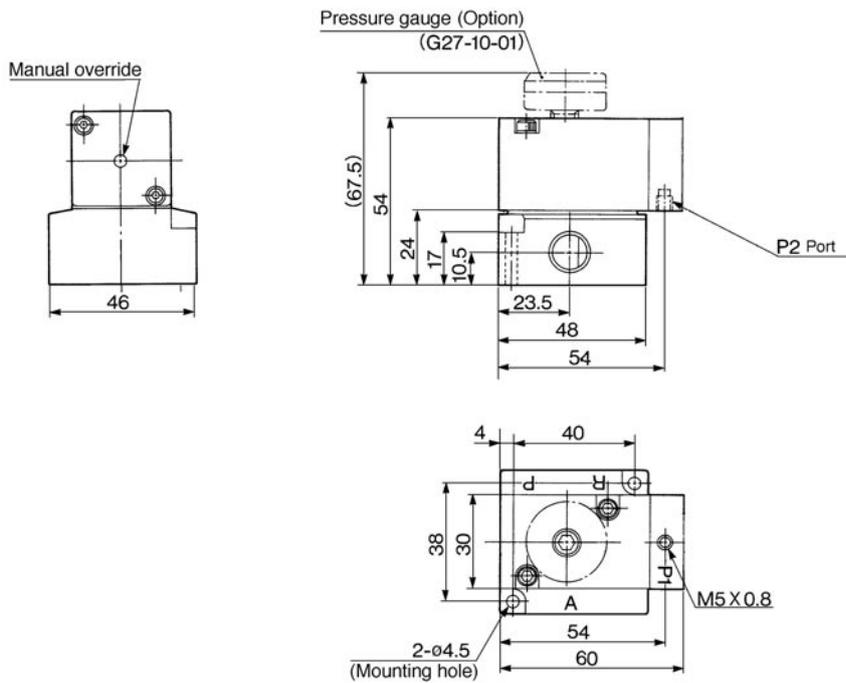
No.	Description	Material
①	Body	Aluminium alloy die cast
②	Cover	Aluminium alloy die cast
③	Piston	Aluminium alloy
④	Spring	Stainless steel
⑤	Valve guide	Aluminium alloy
⑥	Poppet valve	Aluminium alloy, NBR
⑦	Shaft	Stainless steel
⑧	Valve guide	Aluminium alloy

Dimensions

Air operated: VEX1100



Air operated: VEX1200



VEX

AN

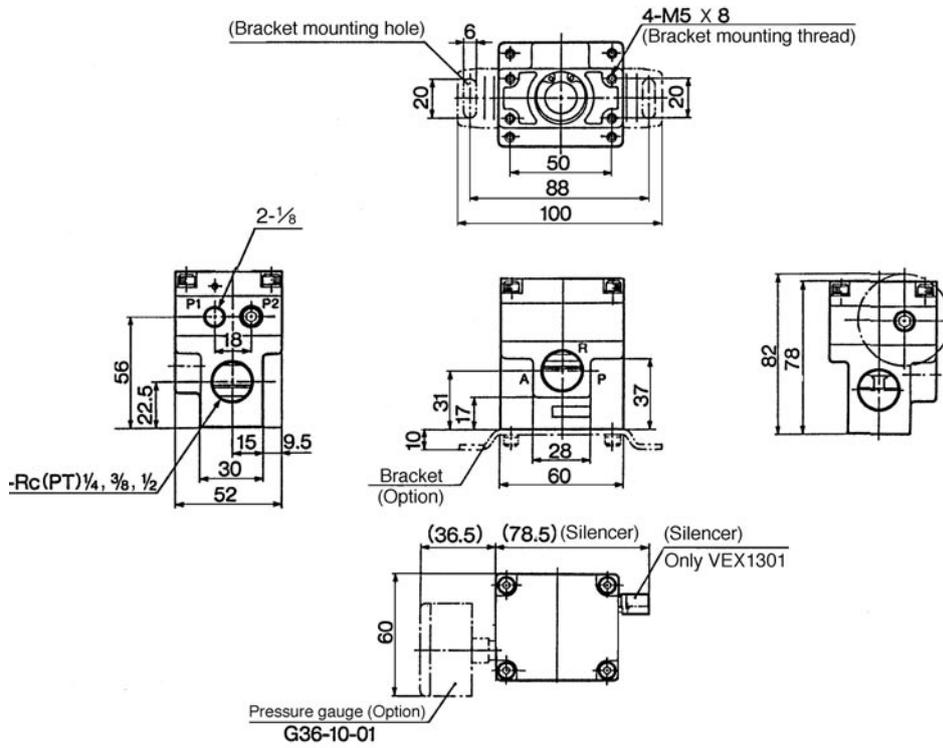
AMC

AMP

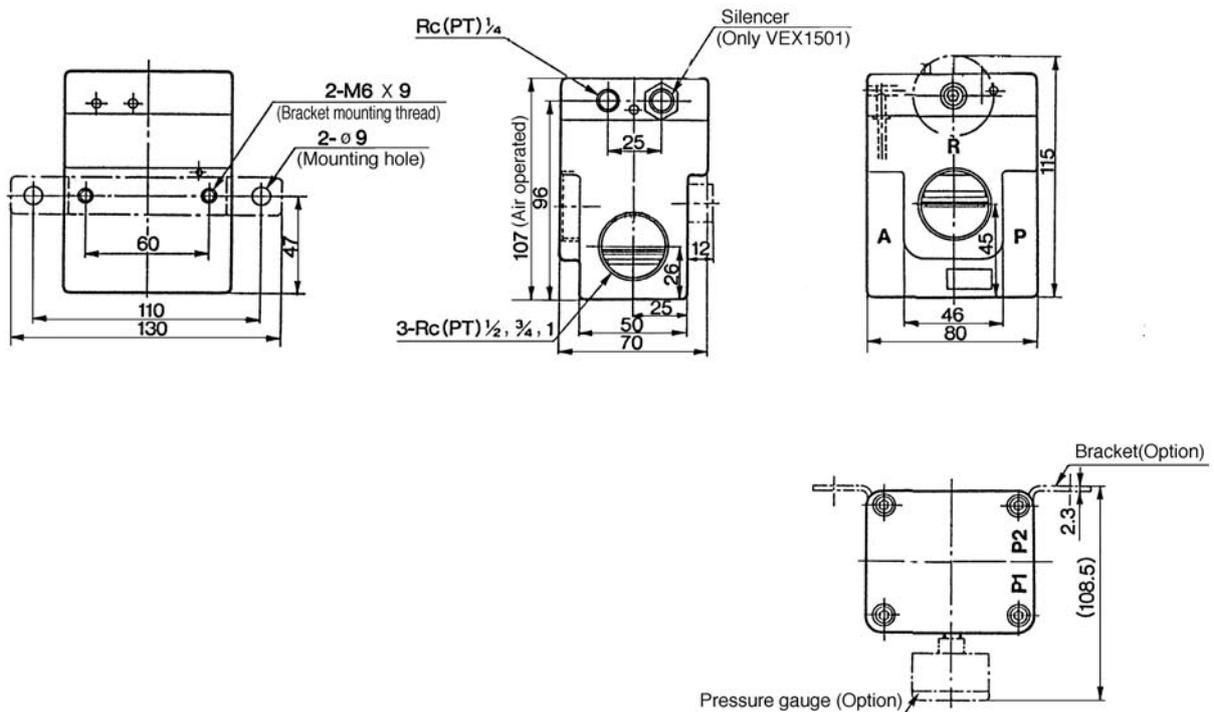
VEX1

Dimensions

Air operated: VEX1300

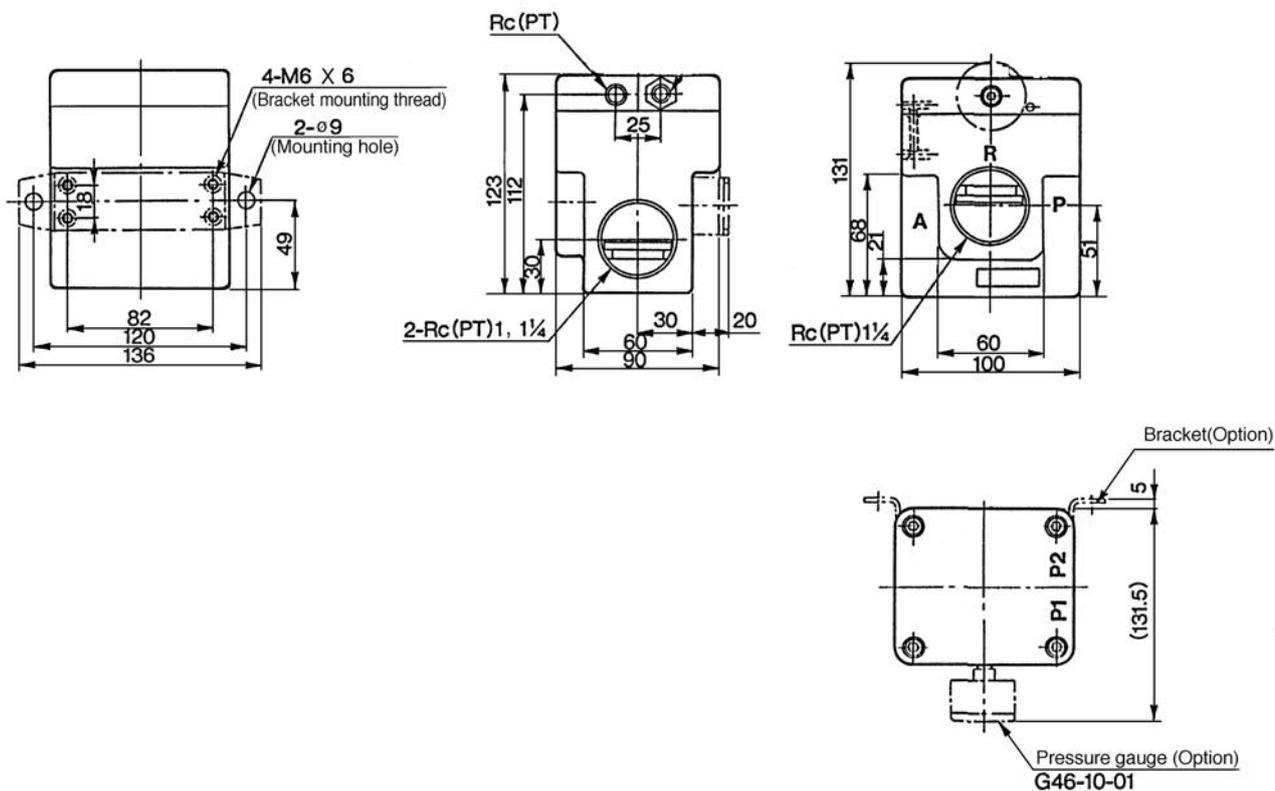


Air operated: VEX1500

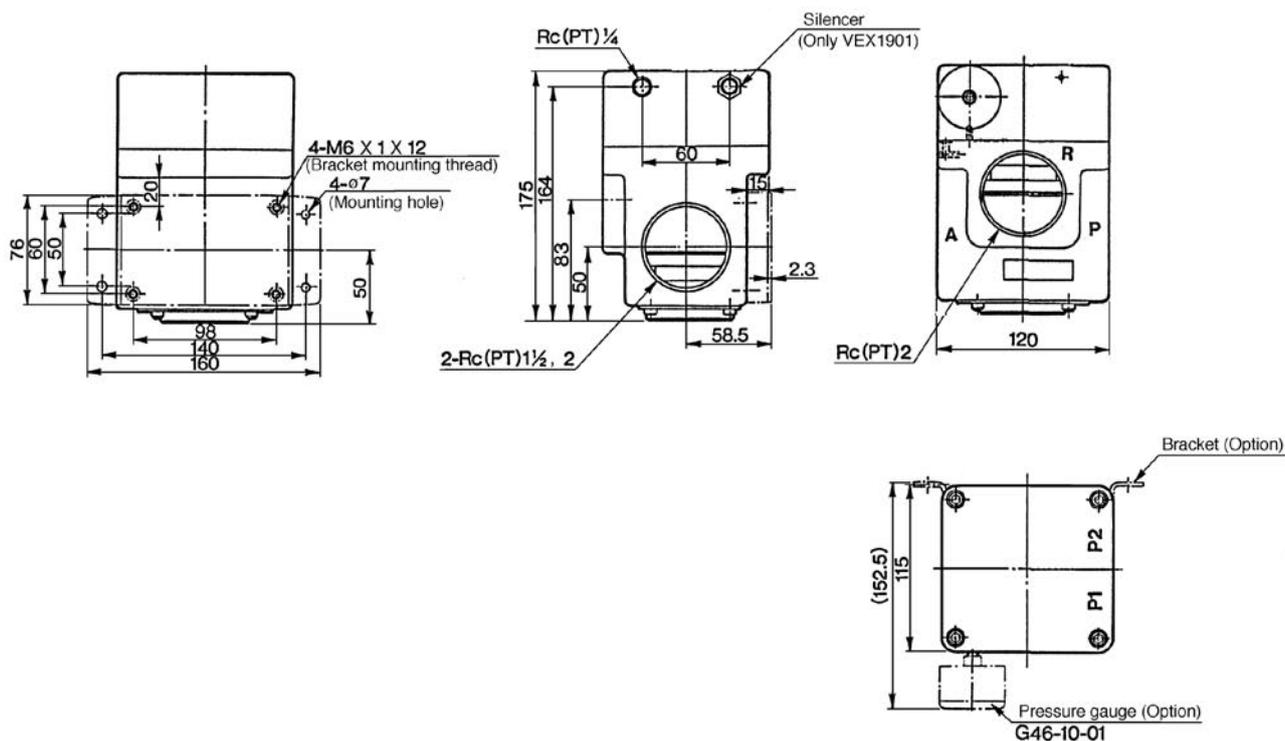


Dimensions

Air operated: VEX1700



Air operated: VEX1900



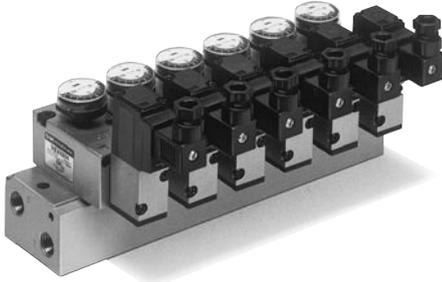
VEX

AN

AMC

AMP

Series VEX1 Manifold



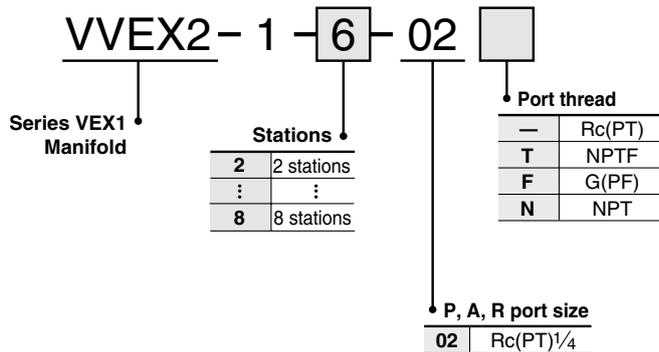
Specifications

Valve stations	2 to 8 ⁽¹⁾
Passage specifications	Common SUP,EXH
Port size P, A, R port	Rc(PT), NPTF,G(PF),NPT 1/4
Applicable valve	VEX1200, VEX1201 ⁽²⁾
Applicable blank plate	VEX1-17 (With gasket,bolt)

Note 1) When there are 5 stations or more, pressurize from P ports on both sides and exhaust from R ports on both sides.

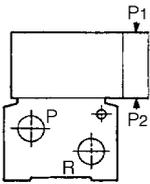
Note 2) Manifold base P1 (pilot port) is not used for VEX1200 (air operated) and VEX1201 (external pilot solenoid operated) because both are of an individual external pilot.

How to Order



External Pilot Piping

Valve port	Style	Air operated
Valve		VEX1200
P1		External pilot
P2		—



How to Order Manifold

Please order the appropriate regulator valve and/or blank plate with manifold base.

(Ex.) VVEX2-1-5-02N.....1 5 stations manifold base, port thread NPT

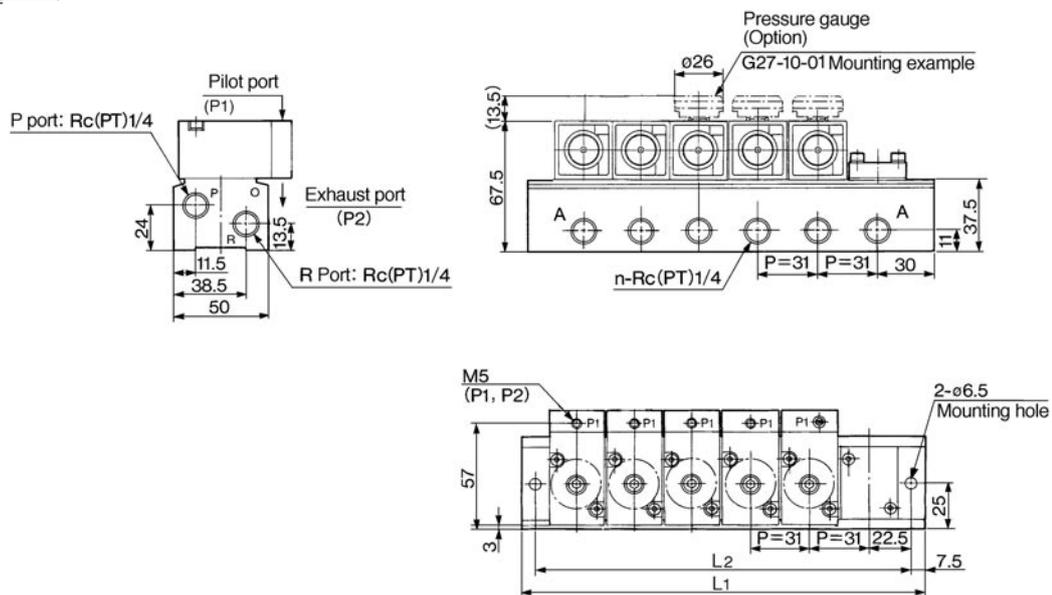
* VEX1201-5DOZ-G...4 Regulator valve, External pilot solenoid valve, 24V DC, DIN connector (without connector), with indicator light and surge voltage suppressor, Option...With pressure gauge ⁽¹⁾

* VEX1-17.....1 Blank plate

Note 1) In case of manifold, pressure gauge: Only G27-10-01(O.D.ø26)

Dimensions

VVEX2-1-1- Station -02

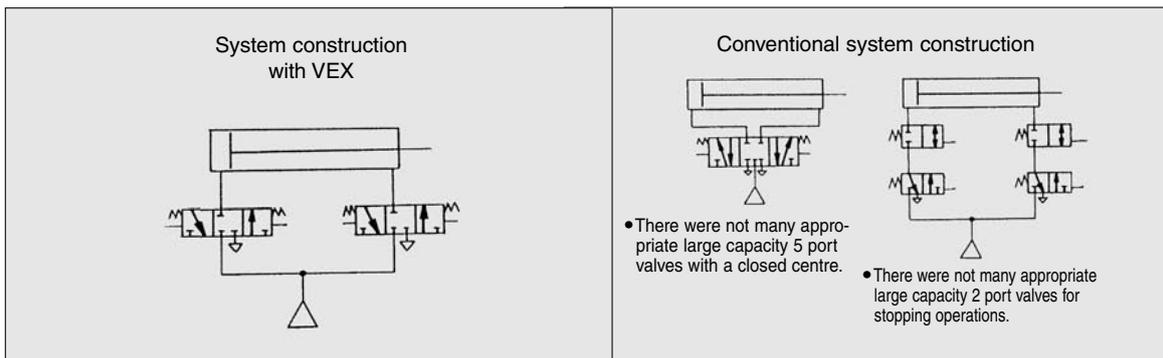


		n: Station							
L	n	2	3	4	5	6	7	8	Calculation
L1		91	122	153	184	215	246	277	L1=31Xn+29
L2		76	107	138	169	200	231	262	L2=31Xn+14

Power Valve

3 Position Valve

A variety of circuits in simple construction ■ Intermediate and emergency stops with a large size cylinder



Cylinder Speed

This table should be used as a guide only, because the cylinder speed is subject to the equipment in the piping. For details, refer to the cylinder working capacity and maximum working speed data on p.5.1-13.

Condition: Pressure 0.5MPa, Load 50%, Piping length 5m

	Effective area mm ² (N/min)	Port size	Cylinder speed (mm/s)	Bore size (mm)													
				ø40	ø50	ø63	ø80	ø100	ø125	ø140	ø160	ø180	ø200	ø250	ø300		
Body ported	VEX312□ -01, 02	25(1374) 02 (1/4)	250	■	■	■	■	■	■	■	■	■	■	■	■	■	■
			500	■	■	■	■	■	■	■	■	■	■	■	■	■	■
			750	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	VEX332□ -02, 03, 04	60(3238) 03 (3/8)	250	■	■	■	■	■	■	■	■	■	■	■	■	■	■
			500	■	■	■	■	■	■	■	■	■	■	■	■	■	■
			750	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	VEX350□ -04, 06, 10	160(8735) 06 (3/4)	250	■	■	■	■	■	■	■	■	■	■	■	■	■	■
			500	■	■	■	■	■	■	■	■	■	■	■	■	■	■
			750	■	■	■	■	■	■	■	■	■	■	■	■	■	■
VEX370□ -10, 12	300(16685) 10(1)	500	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		750	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		1000	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
VEX390□ -14, 20	590(32389) 14(1 1/2)	500	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		750	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		1000	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Base mounted	VEX322□ -01, 02	25(1374) 02 (1/4)	250	■	■	■	■	■	■	■	■	■	■	■	■	■	
			500	■	■	■	■	■	■	■	■	■	■	■	■	■	
			750	■	■	■	■	■	■	■	■	■	■	■	■	■	
	VEX342□ -02, 03, 04	70(3827) 04(1/2)	250	■	■	■	■	■	■	■	■	■	■	■	■	■	
			500	■	■	■	■	■	■	■	■	■	■	■	■	■	
750	■	■	■	■	■	■	■	■	■	■	■	■	■	■			

VEX

AN

AMC

AMP

VEX3

How to Order



Body size	Port size		
	Port	P, A port	R port
12	01	1/8	
	02	1/4	
32	02	1/4	
	03	3/8	
50	04	1/2	
	04	1/2	
	06	3/4	
70	10	1	1 1/4
	12	1 1/4	
90	14	1 1/4	2
	20	2	

Body ported

VEX3 12 0 01 □ B

Base mounted

VEX3 22 0 01 □ B

Operation
0 — Air operated

- Option
- B** — Bracket (Except VEX332□)
- F** — Foot (Only VEX312□, VEX332□)
- N** — Silencer for pilot exhaust (P₂) port (Only solenoids)



Body size	Port size		
	Port	P, A port	R port
22	—	Without subplate	
	01	1/8	
	02	1/4	
42	—	Without subplate	
	02	1/4	
	03	3/8	
	04	1/2	

- Thread
- Rc(PT)
- T NPTF
- F G(PF)
- N NPT

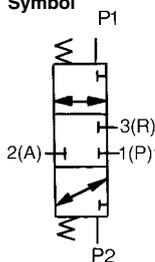
⚠ Caution

Refer to p.0-33 to 0-36 for Safety Instructions and common precautions



Air operated

Symbol



Air operated

Specifications

Model	Body ported	VEX312□- ⁰¹ / ₀₂	VEX332□- ⁰² / ₀₃ ⁰⁴	VEX350□- ⁰⁴ / ₀₆ ¹⁰	VEX370□- ¹⁰ / ₁₂	VEX390□- ¹⁴ / ₂₀							
	Base mounted	VEX322□- ⁰¹ / ₀₂	VEX342□- ⁰² / ₀₃ ⁰⁴	—	—	—							
Operation	Air operated												
Fluid	Air												
Proof pressure	1.5MPa												
Set pressure range	Air operated	Low vacuum to 1.0MPa											
		External pilot pressure 0.2 to 1.0MPa											
Ambient and fluid temperature	Max. 50°C (Air operated: 60°C)												
Response time	40ms or less (Pilot pressure 0.5MPa)	60ms or less (Pilot pressure 0.5MPa)											
Max. operating frequency	3 cycles/s												
Mounting	Free												
Lubrication	Not required (Use turbine oil No. 1, ISO VG32, if lubricated)												
Port size	Port	01	02	02	03	04	04	06	10	10	12	14	20
	P									1			
	A	1/8	1/4	1/4	3/8	1/2	1/2	3/4	1	1	1 1/4	1 1/2	2
	R									1 1/4		2	
Effective area	mm ²	16	25	36	60	70	130	160	180	300	330	590	670
	Nl/min	883.35	1374.10	1963	3238	3827	7066	8735	9815	16685	17667	32389	36315

Option

Parts name		Part No.						
		VEX312□- ⁰¹ / ₀₂	VEX322□- ⁰¹ / ₀₂	VEX332□- ⁰² / ₀₃ ⁰⁴	VEX342□- ⁰² / ₀₃ ⁰⁴	VEX350□- ⁰⁴ / ₀₆ ¹⁰	VEX370□- ¹⁰ / ₁₂	VEX390□- ¹⁴ / ₂₀
Bracket (With bolt and washer)	B	VEX1-18-1A	—	—	—	VEX5-32A	VEX7-32A	VEX9-32A
Foot (With bolt and washer)	F	VEX1-18-2A	—	VEX3-32-2A	—	—	—	—
Pilot exhaust (P2) port silencer	N	AN120-M5		AN103-01		AN210-02		

Weight (kg)

Model	VEX312□- ⁰¹ / ₀₂	VEX322□- ⁰¹ / ₀₂	VEX332□- ⁰² / ₀₃ ⁰⁴	VEX342□- ⁰² / ₀₃ ⁰⁴	VEX350□- ⁰⁴ / ₀₆ ¹⁰	VEX370□- ¹⁰ / ₁₂	VEX390□- ¹⁴ / ₂₀
Air operated	0.1	0.2	0.3	0.6	1.4	2.1	3.3

VEX

AN

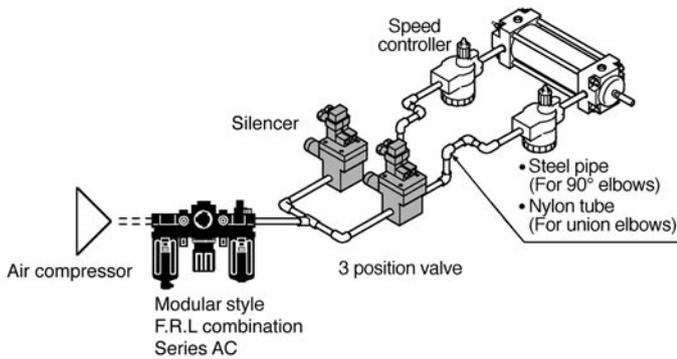
AMC

AMP

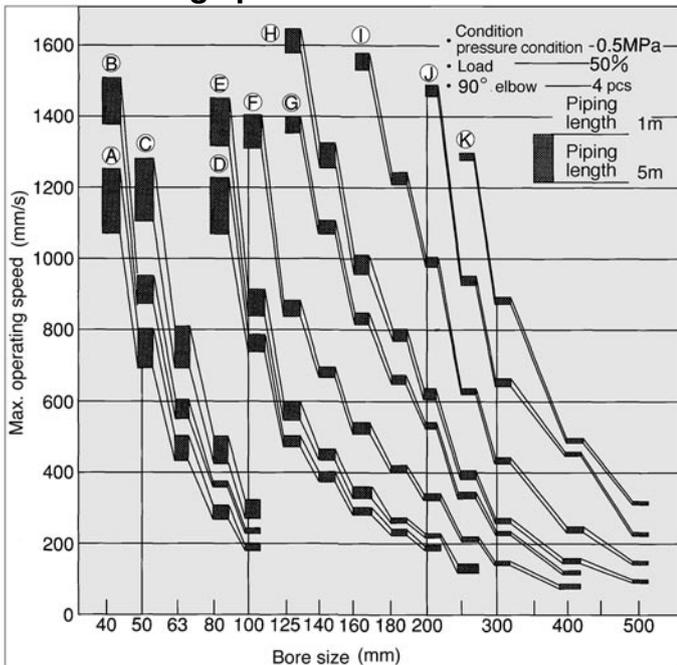
VEX3

Cylinder Speed

System



Max. Working speed



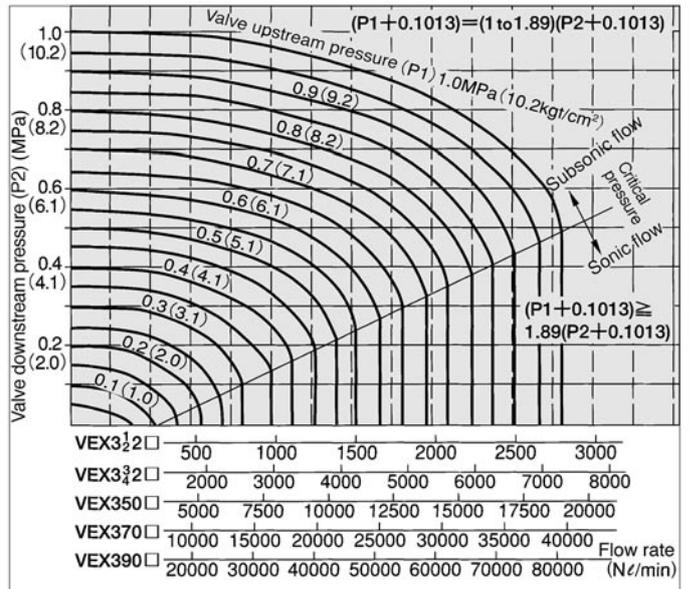
System	Solenoid valve	Speed controller	Silencer	Port size	Fitting (One side) 4 pcs
A	VEX3 1/2 □	AS4000	AN200	T1075* (ø10)	DL10-02
B				T1209* (ø12)	DL12-02
C	VEX3 3/4 □	AS420	AN300	T1209* (ø12)	DL12-03
D				SGP 1/2 B	90° elbow
E	VEX350 □	AS420	AN400	SGP 1/2 B	90° elbow
F		AS500	AN500	SGP 3/4 B	90° elbow
G		AS600	AN600	SGP1B	90° elbow
H	VEX370 □	AS600	AN600	SGP1B	90° elbow
I		AS700	AN700	SGP1 1/4 B	90° elbow
J	VEX390 □	AS800	AN800	SGP1 1/2 B	90° elbow
K		AS900	AN900	SGP2B	90° elbow

* Nylon tube No.

Caution

- The cushion incorporated in the cylinder has a limit to the relationship between maximum working speed and load. Please check it with the cylinder catalog.
- When the load factor is 0% (no load), the maximum working speed will be 1.2 times, and when the load factor is 75%, it will be 0.7 times.

Flow Characteristics



When air is used, the flow characteristics are subject to P_1 (Mpa), P_2 (Mpa) ΔP (Mpa), and the distinction between sonic and subsonic flow.

① Equation in the domain of subsonic flow.

Calculation by effective area

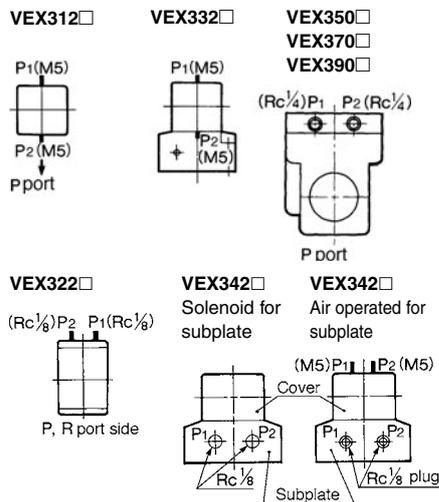
$$Q = 226S \sqrt{\frac{\Delta P(P_2 + 0.1013)}{G}} \cdot \sqrt{\frac{273}{273 + \theta}} \dots \text{ l/min(ANR)}$$

② Equation in the domain of sonic flow.

$$Q = 113S(P_1 + 0.1013) \cdot \frac{1}{\sqrt{G}} \cdot \sqrt{\frac{273}{273 + \theta}} \dots \text{ l/min(ANR)}$$

- Q: Flow rate (l/min)
- ΔP : Pressure differential ($P_1 - P_2$)
- P_1 : Upstream pressure (MPa)
- P_2 : Downstream pressure (MPa)
- G: Specific gravity (Air = 1)
- θ : Temperature ($^{\circ}\text{C}$)
- S: Effective area (mm^2)

External Pilot Piping

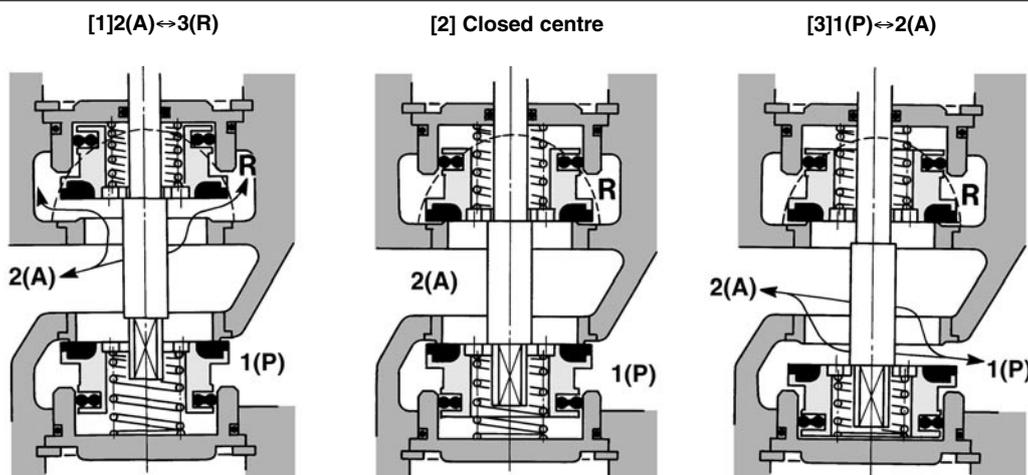


Port	VEX3 □ □ 0
P1	External pilot
P2	External pilot

Caution

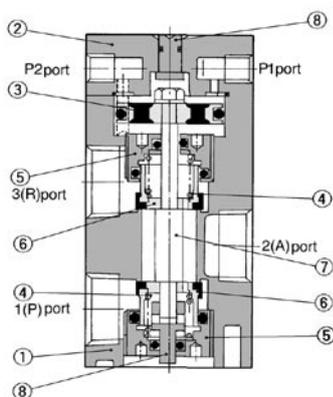
When the VEX3420 air operated power valve is delivered from our factory, the M5 threaded pilot ports P1 and P2 in the cover are open and the Rc1/8 pilot port in the subplate is plugged. Before connecting pipes to P1 and P2 ports in the subplate, remove the 1/8 plug from the subplate and put M5 plugs into P1 and P2 ports in the cover. M5 plug - M-5P

Construction/Operation Principles

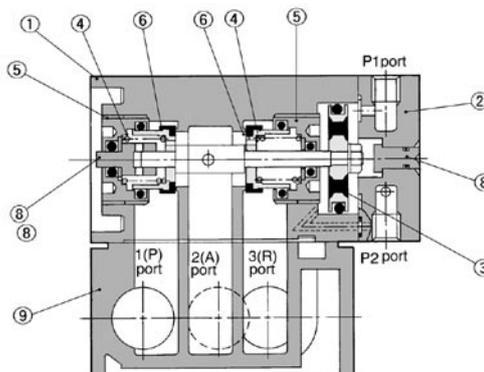


- This is a 3 port switch valve in which the shaft (7) extending from the driving piston (3) opens/closes a pair of poppet valves (6). The poppet valve has a pressure balancing mechanism in which A port pressure is constantly applied from the back and the centre spring (4) is acting as a backup.
- When neither the pilot solenoid valve "a" nor "b" are energized (or when air is exhausted both from the P1 and P2 ports of the air-operated style), no force will act on the working piston, and the spring closes the poppet valve, thus the valve assuming the closed centre position. ([2])
- When the pilot solenoid valve "a" is energised (or when pressurised air enters through the P1 port of the air operated style), pilot air that enters the space above the working piston pushes down the piston and opens the lower poppet valve, thus connecting the P port and A port. ([3]) The upper poppet valve continues to close the R port by means of pressure balance and the spring.
- When the pilot solenoid valve "b" is energised (or when pressurised air enters through the P2 port of the air-operated style), the pilot air that enters the space under the working piston pushes the piston upward and opens the upper poppet valve, thus connecting the A port and R port. ([1]) The lower poppet valve continues to close the P port by means of pressure balance and the spring.

VEX3120(Air operated)



VEX3220(Air operated)



VEX

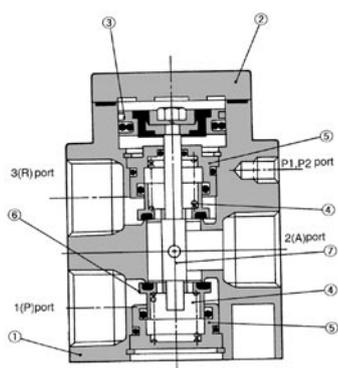
AN

AMC

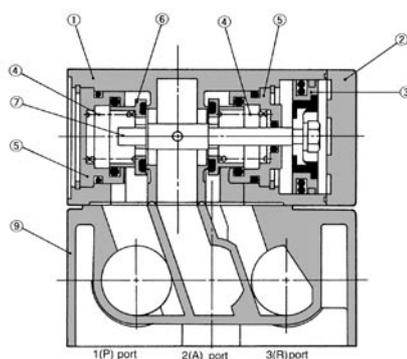
AMP

Construction (Component Parts)

VEX3320 (Air operated)



VEX3420 (Air operated)



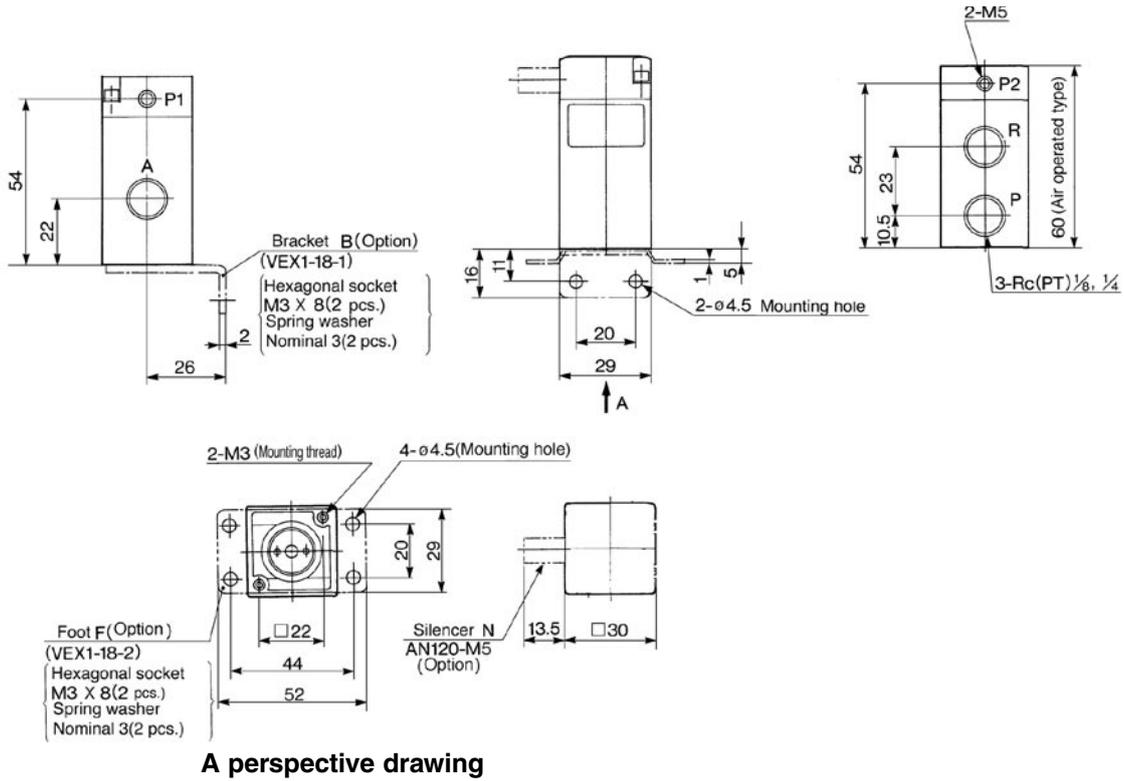
Component Parts

No.	Description	Material
①	Body	Aluminium alloy
②	Cover	Aluminium alloy
③	Working piston	Aluminium alloy
④	Center spring	Stainless steel
⑤	Valve guide	Aluminium alloy
⑥	Poppet valve	Aluminium alloy, NBR
⑦	Shaft	Stainless steel
⑧	Manual override	P.O.M
⑨	Sub-plate	Aluminium alloy

VEX3

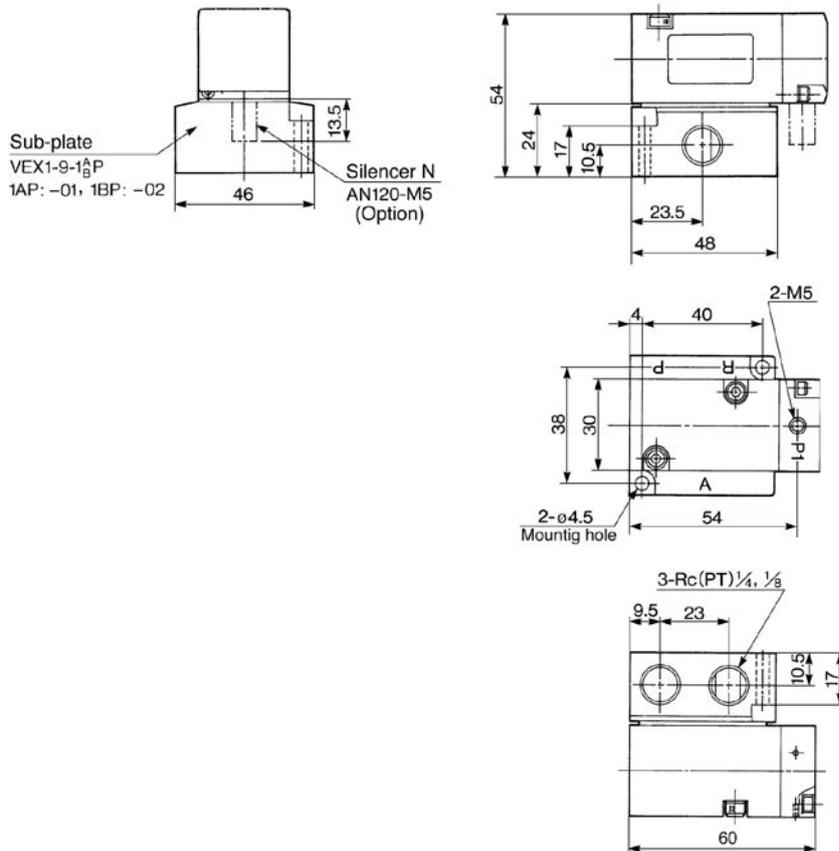
Body Ported/VEX312

Air operated: VEX3120



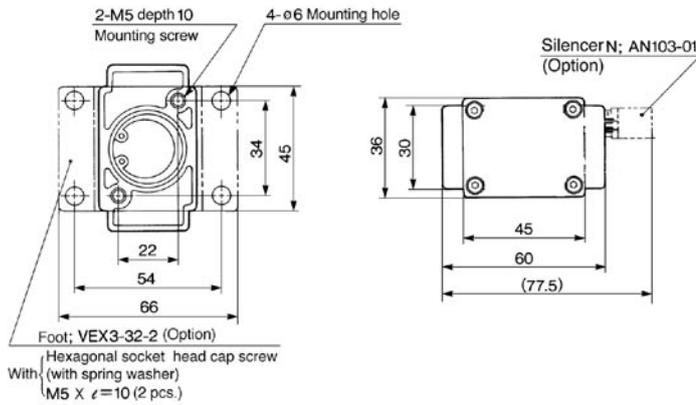
Base mounted/VEX322

Air operated: VEX3220

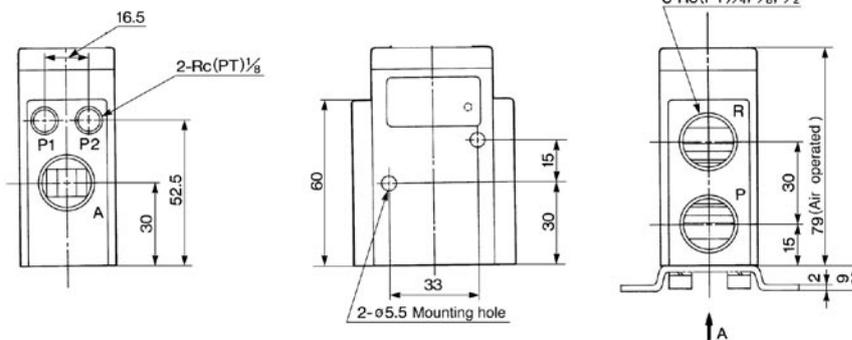


Body ported: VEX332□

Air operated: VEX3320

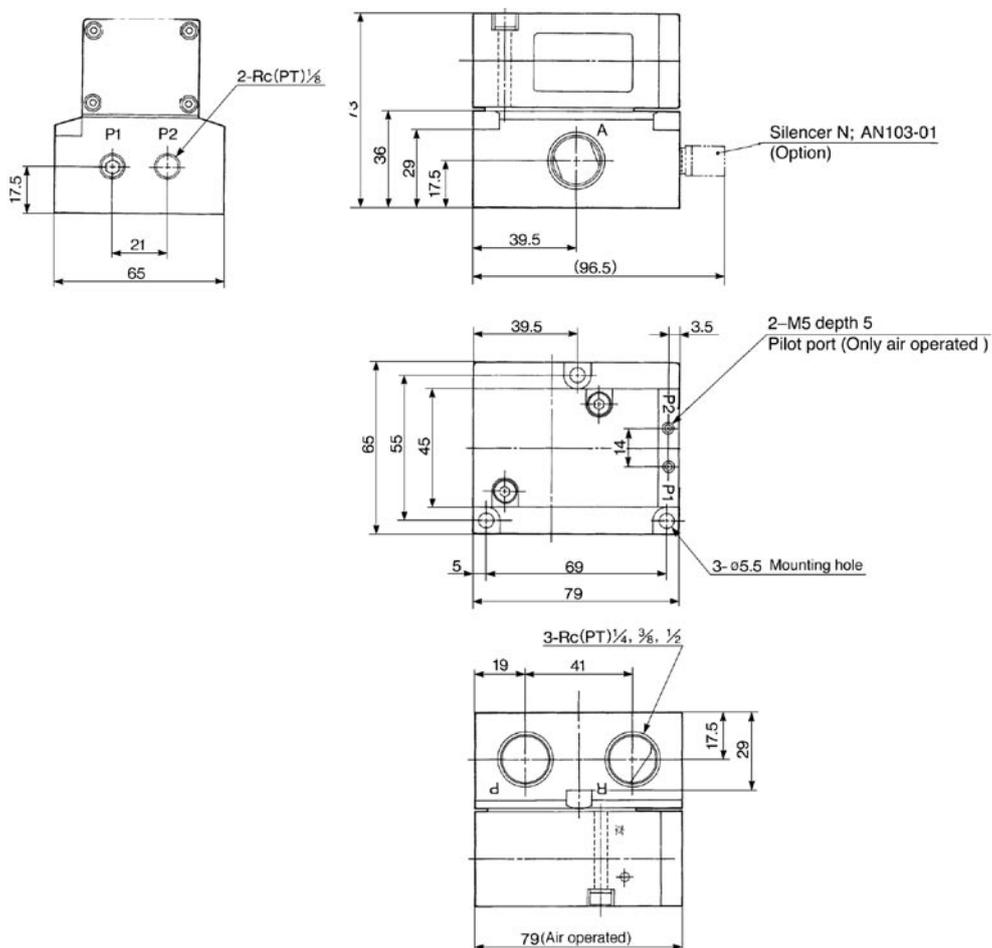


A perspective drawing



Base mounted: VEX342□

Air operated: VEX3420



VEX

AN

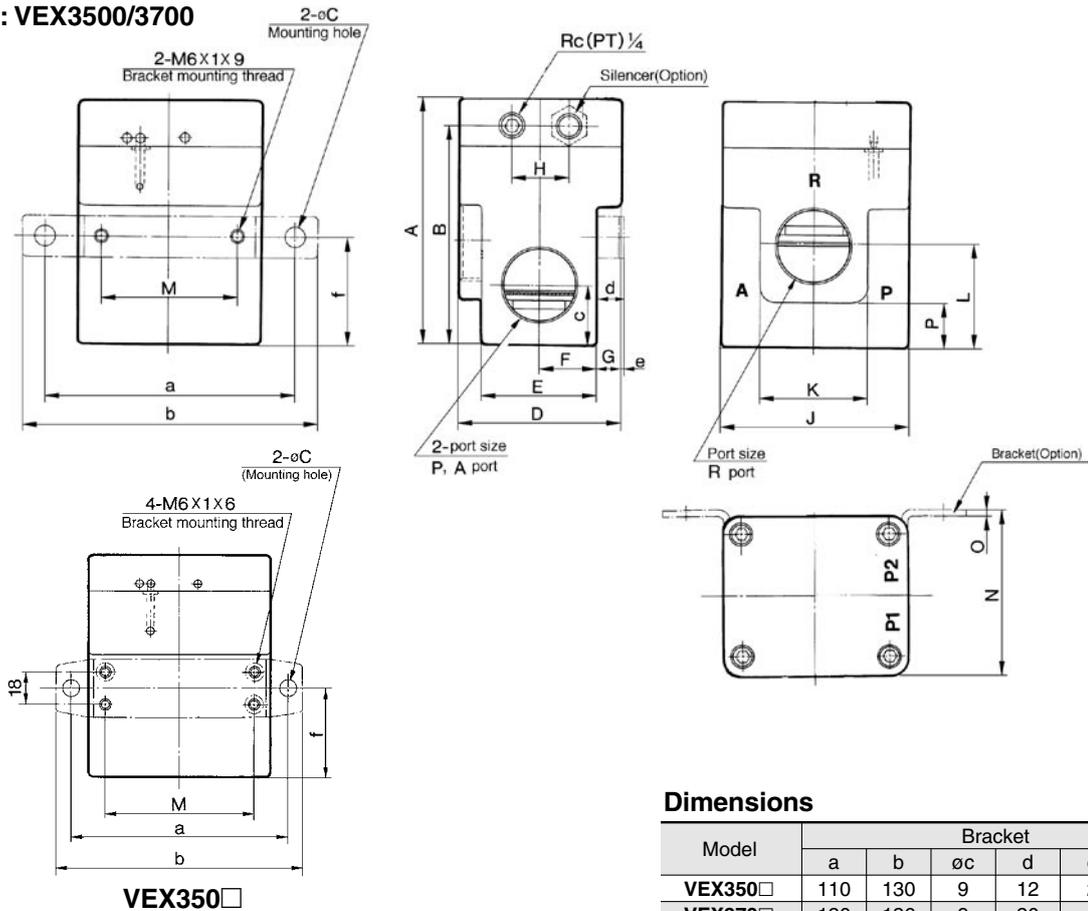
AMC

AMP

VEX3

Body ported/VEX350□/370□

Air operated: VEX3500/3700



Dimensions

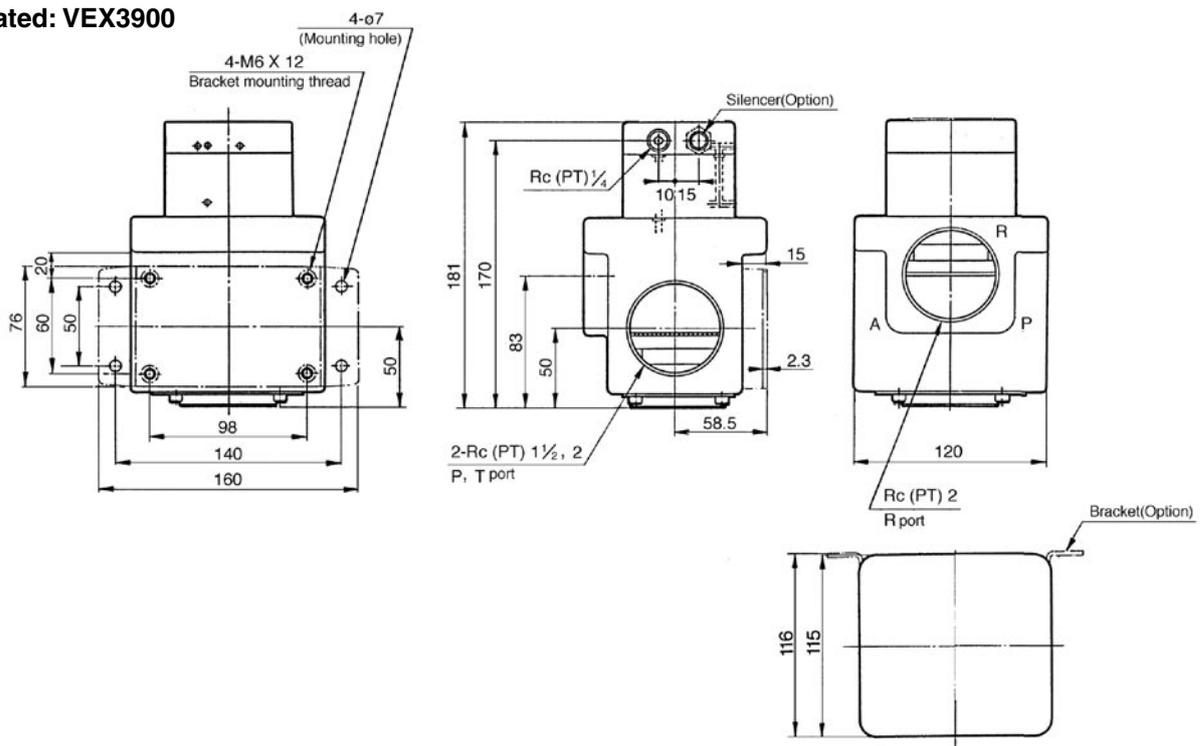
Model	Bracket					
	a	b	øc	d	e	f
VEX350□	110	130	9	12	2	47
VEX370□	120	136	9	20	5	49

Dimensions

Model	Port size		A	B	C	D	E	F	G	H	J	K	L	M	N	O
	P, A port	R port														
VEX350□	Rc(PT)1/2, 3/4, 1		107	96	26	70	50	25	10	25	80	46	45	60	72	2.3
VEX370□	Rc(PT)1, 1 1/4	Rc(PT)1 1/4	123	112	30	90	60	30	15	25	100	60	51	82	95	2.3

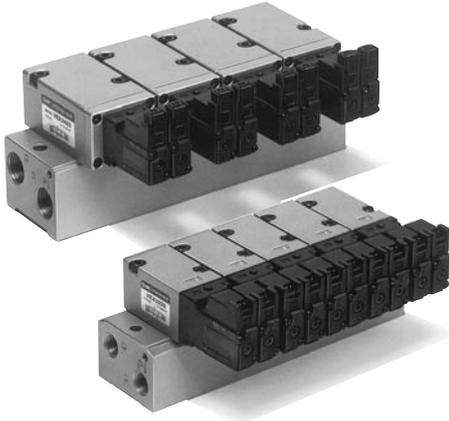
Body ported/VEX390□

Air operated: VEX3900



Series VEX3 Manifold

Manifold: Series VVEX



Specifications

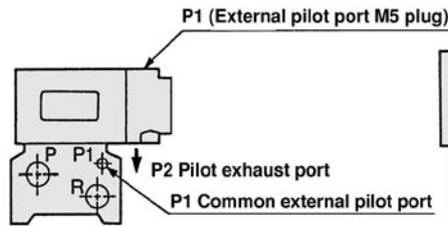
Model	VVEX2		VVEX4		
Applicable valve	VEX3220, VEX3222		VEX3420, VEX3422		
Valve stations (1)	2 to 8		2 to 6		
Port specifications	Common SUP, EXH				
Pilot	Internal pilot, Common external pilot				
Common external pilot port size	M5 X 0.8 Length of thread 5				
Port size	P	1/4	3/8	3/8	1/2
	R		1/4	3/8	3/8
	A				
Blank plate	VEX1-17 (With gasket, mounting bolt)		VEX4-5 (With gasket, mounting blot)		



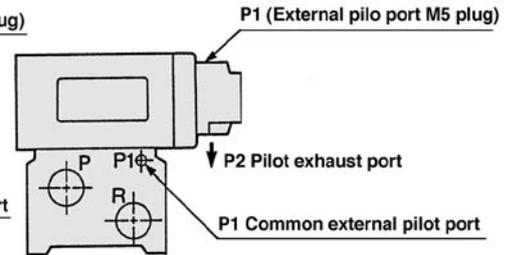
Note 1) When series VVEX2 is used with more than 5 stations, Series VVEX4 is used with more than 4 stations, apply pressure to the P port on both sides and exhaust from the R port on both sides.

External Pilot Piping

VVEX2-2

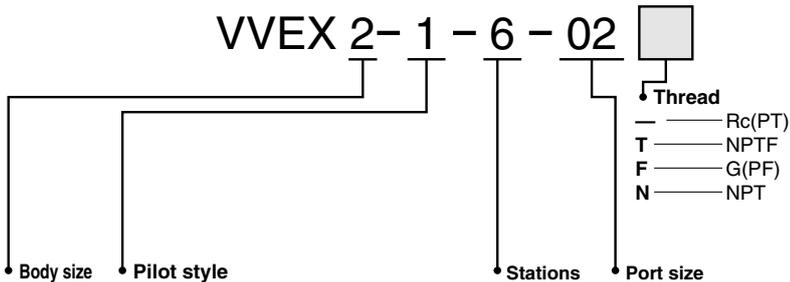


VVEX4-2



How to Order Manifold Base

VVEX 2-1-6-02



Body size	Pilot style		Applicable Valve	Valve stations	Port size			
					Port	P	R	A
2	1	Internal pilot	Air operated: VEX3220 (1)	2 2 stations	02	1/4		
		Common external pilot		6 6 stations				
	2 2 stations							
4	1	Internal pilot	Air operated: VEX3420 (1)	2 2 stations	A	3/8	1/4	
		Common external pilot		6 6 stations	B	3/8		
	2 2 stations	C		1/2	3/8			

Note) Air operated

VEX 3220 and VEX3420 (air operated) are used. Distinction between the pilots (internal or external pilot) of the manifold base does not matter. Either may be used.

Example of ordering a manifold base:

The valve and blank plate for manifold arrangement should be specified in order from the left side of the manifold base (With the A port on your side).

(Example) **VVEX4-2-6-A**

* VEX3420 — 5 pcs. } Air operated
* VEX4-5 — 1 pc. }

VEX

AN

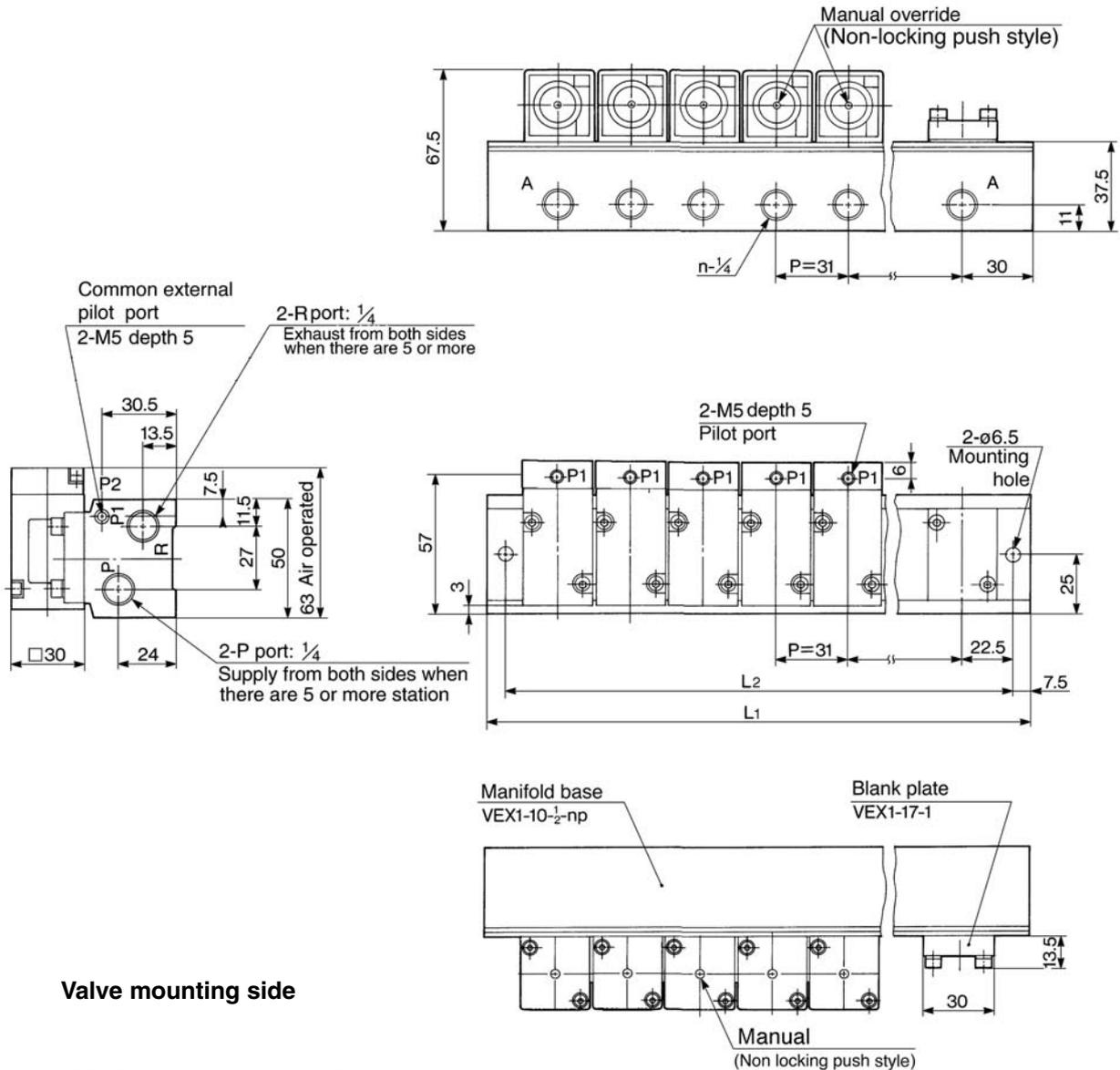
AMC

AMP

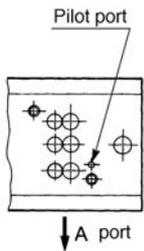
VEX3

Manifold/VVEX2□

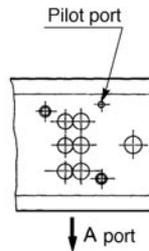
VVEX2- $\frac{1}{2}$ Applicable valve: VEX3220



Valve mounting side



Internal pilot



Common external pilot

L: Dimensions

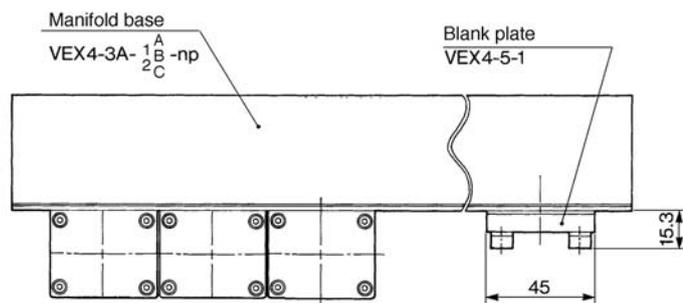
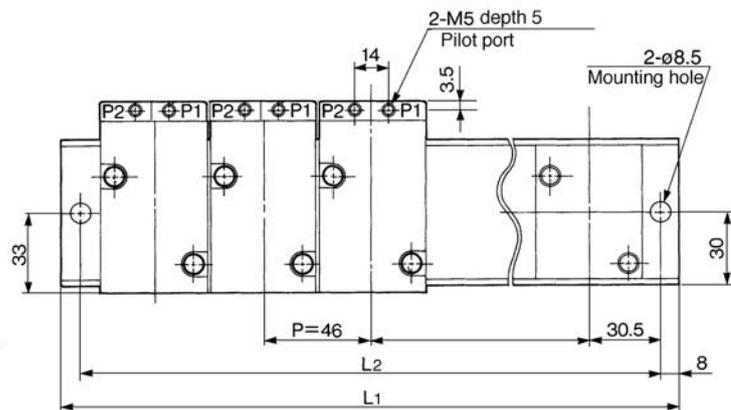
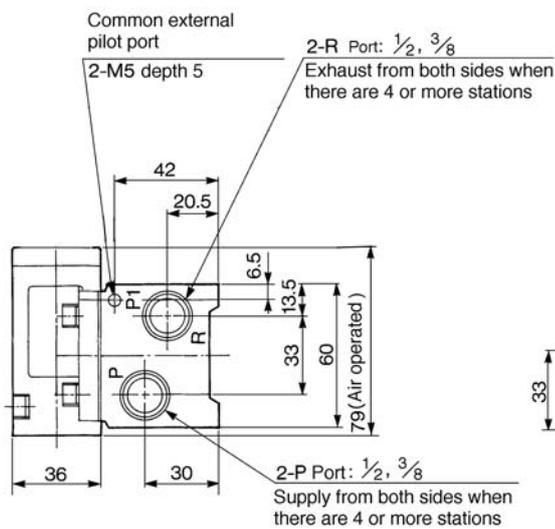
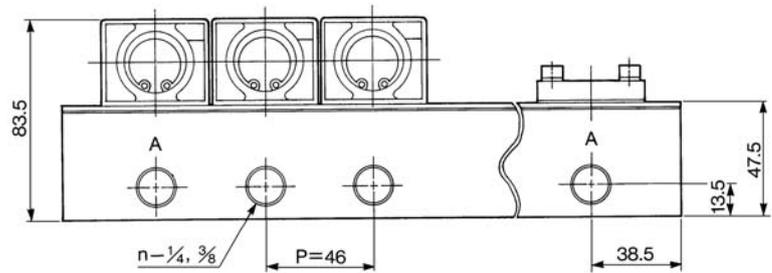
Equation $L_1=31n+29$, $L_2=31n+14$ n: Station

n	2	3	4	5	6	7	8
L1	91	122	153	184	215	246	277
L2	76	107	138	169	200	231	262

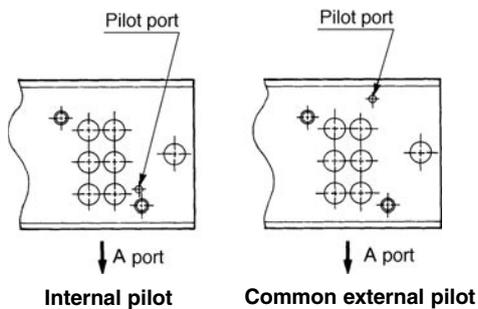
Manifold/VVEX4-1 □

VVEX4-1 Applicable valve: VEX3420

VVEX4-2 Applicable valve: VEX3420



Valve mounting side



L: Dimensions

L	n	L ₁ =46n+31, L ₂ +46n+15 n: Station				
		2	3	4	5	6
L ₁		123	169	215	261	307
L ₂		107	153	199	245	291

VEX

AN

AMC

AMP

Power Valve Economy Valve Series VEX5

The conventional valve combination circuit has been condensed into a single valve.

Three functions (pressure regulator, switching valve, and speed controller) are provided by a single valve.

A large capacity and economical system.

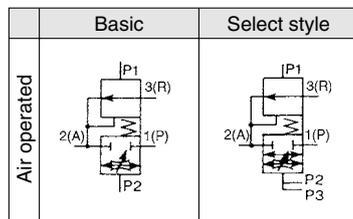
This valve provides twice the system capacity of the conventional circuit. Therefore, it is possible to downsize 1 or 2 sizes (for example, a conventional 32A circuit can be changed to a 25A or a 20A). It is economical, as its performance cost (system price/effective area) is one half of the conventional style. (Comparison based on SMC data.)



Basic



Select style



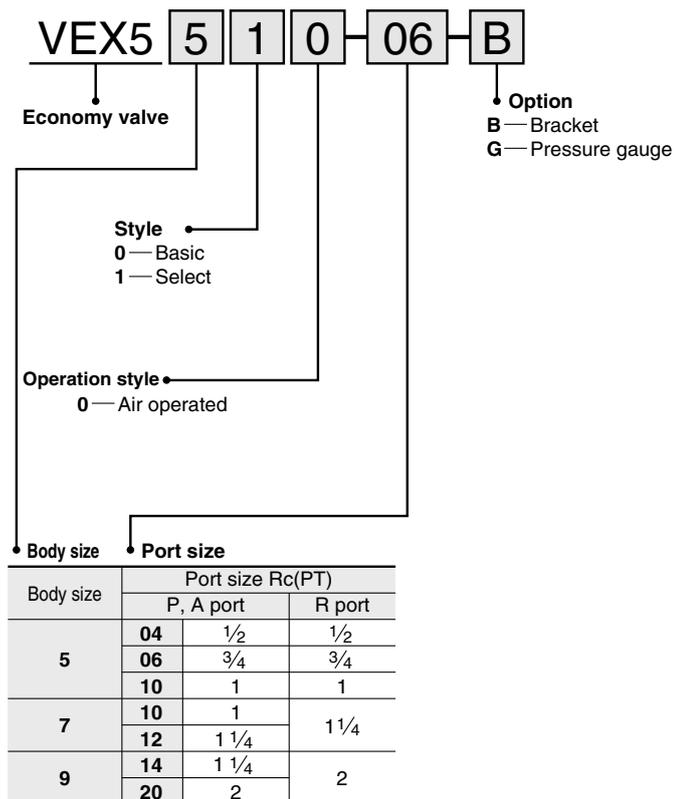
Standard Specifications

Model	VEX55□□ ⁰⁴ ₀₆ ₁₀	VEX57□□ ¹⁰ ₁₂	VEX59□□ ¹⁴ ₂₀					
Style	Air operated							
Fluid	Air							
Proof pressure	1.5MPa							
Pressure range	0 to 1.0MPa							
Set pressure range	0.05 to 0.9MPa							
Ambient and fluid temp.	Max. 50°C (Air operated 60°C)							
Pilot pressure	P1: 0.05 to 0.9MPa P2, P3: 0.2 to 0.9MPa P2≤P3							
Repeatability	0.01MPa							
Sensitivity	0.01MPa							
Response time	60ms or less							
Max. operating frequency	3 cycles/sec.							
No. of needle rotations	6 turns	8 turns						
Mounting	Free							
Lubrication	Not required (use turbine oil No. 1 ISO VG32, if lubricated)							
Port size Rc(PT)	Port	04	06	10	10	12	14	20
	P				1		1 1/4	
	A	1/2	3/4	1		1 1/4		2
	R				1 1/4		2	
Effective area	mm ²	130	160	180	300	330	590	670
	Cv	7066	8735	9815	16685	17667	32389	36315
Weight (kg)	Basic	2.0		3.2		4.7		
	Select	2.3		3.5		5.0		

Accessories/Part No.

Description	Model	Part No.		
		VEX55□□ ⁰⁴ ₀₆ ₁₀	VEX57□□ ¹⁰ ₁₂	VEX59□□ ¹⁴ ₂₀
Bracket (With bolt and washer)		VEX5-32A	VEX7-32A	VEX9-32A
Pressure gauge		G46-10-01		

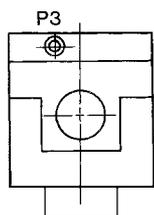
How to Order



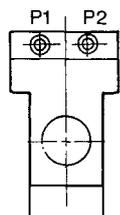
Model

Model	Basic	Select	Port size Rc(PT)	
	Air operated	Air operated	P, A port	R port
Economy valve	VEX5500	VEX5510	1/2, 3/4, 1	1/2, 3/4, 1
	VEX5700	VEX5710	1, 1 1/4	1 1/4
	VEX5900	VEX5910	1 1/2, 2	2

External Pilot Piping



R port size



P port size

⚠ Caution

Refer to p.0-33 to 0-36 for Safety Instructions and common precautions

Model	P1	P2	P3
VEX5□00	External pilot	External pilot	Plug
VEX5□10	External pilot	External pilot	External pilot

VEX

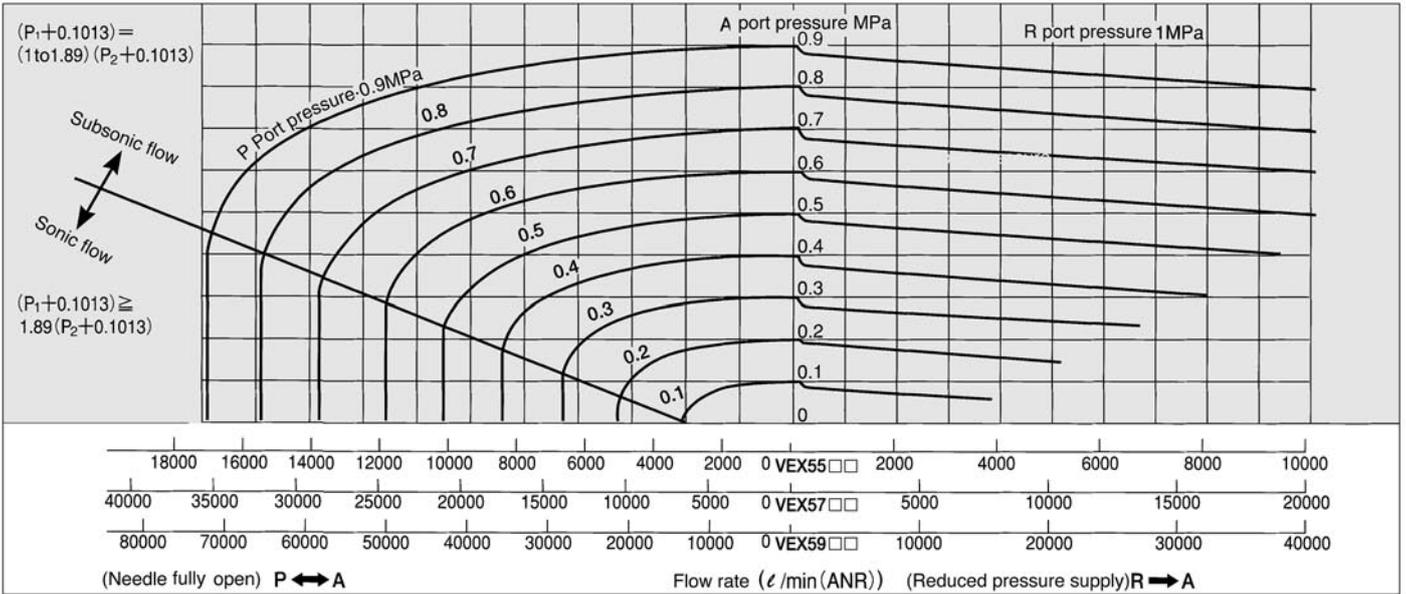
AN

AMC

AMP

VEX5

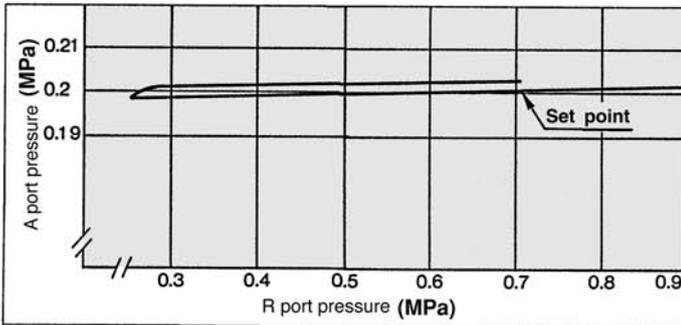
Flow Characteristics



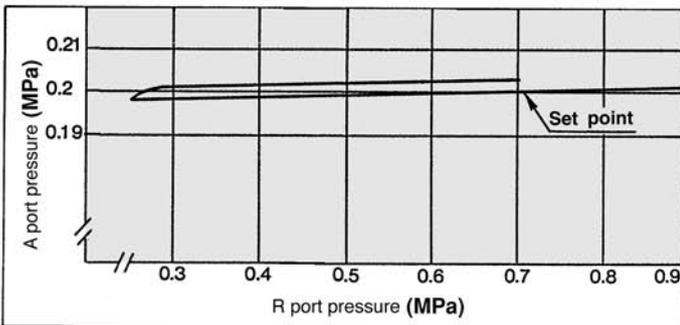
Pressure Characteristics

Shows secondary pressure (A port) change against primary pressure (R port) change. They conform to JISB8372(Air pressure regulator)

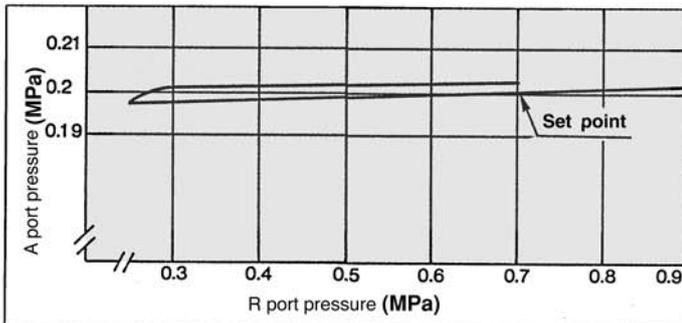
VEX55 □ □



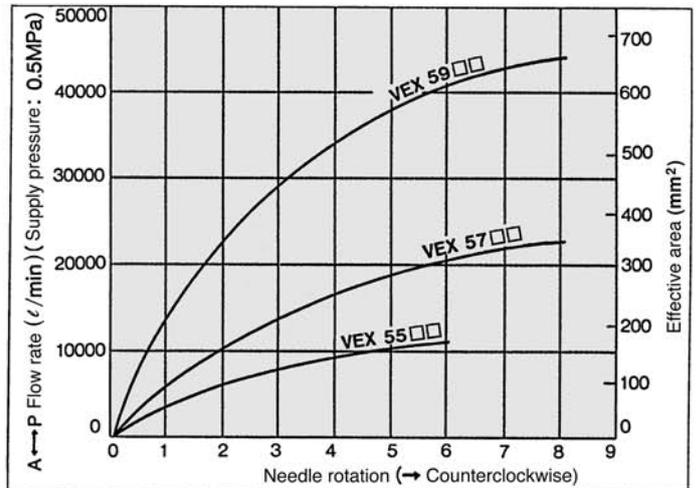
VEX57 □ □



VEX59 □ □

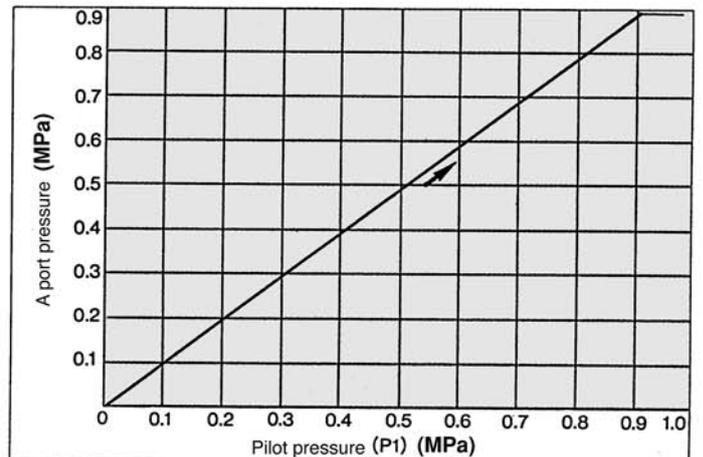


Needle Characteristics A ↔ P



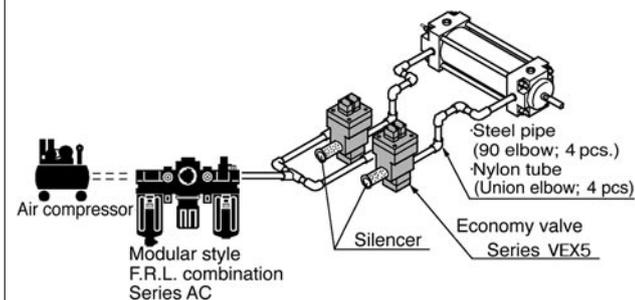
Setting Pressure Characteristics

A port pressure is set according to pilot pressure (R → A: Non-relief regulator)

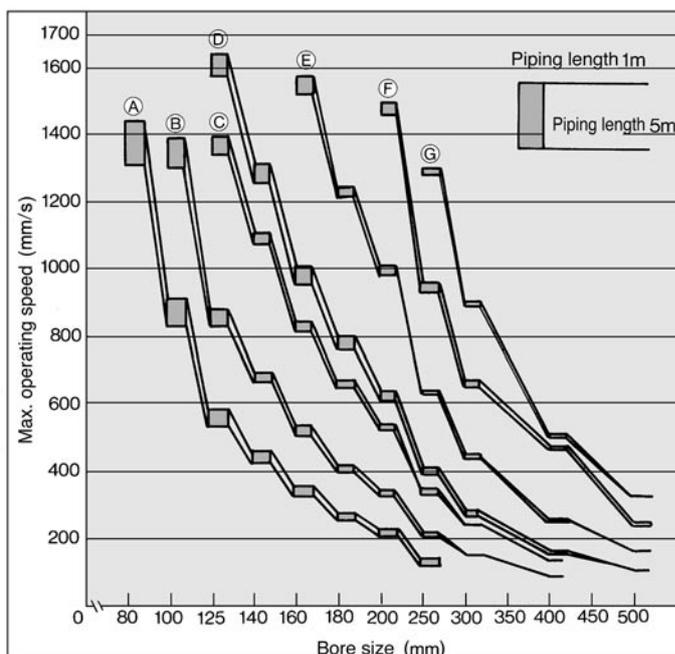


Cylinder Speed

System diagram



System	Solenoid valve	Silencer	Port size	Fitting (One side) 4 pcs
A	VEX55□□	AN400	SGP 1/2 B	90° Elbow
B	VEX55□□	AN500	3/4 B	90° Elbow
C	VEX55□□	AN600	1B	90° Elbow
D	VEX57□□	AN600	1B	90° Elbow
E	VEX57□□	AN700	1 1/4 B	90° Elbow
F	VEX59□□	AN800	1 1/2 B	90° Elbow
G	VEX59□□	AN900	2B	90° Elbow



Energy Saving Lifter

• Simple

Two economy valves and a tank move the double-acting cylinder to raise and lower heavy objects.

• Energy saving

The balancing air reciprocates between the lower cylinder chamber and the tank, thus not being consumed. Low pressure air alone is exhausted from the upper chamber in every cycle, so the air consumption is reduced to 20 to 30% of the air consumption by the double acting cylinder with an ordinary change over valve.

• Excellent operation control

The economy valve sets pressure and permits high speed and low speed operation as well as suspension of operation. While the piston moves up and down, the valve controls speed change in the middle of strokes, terminal deceleration, inching, and emergency stops.

• Supply air pressure

Set pressure is 0.5MPa both on rod and head side.

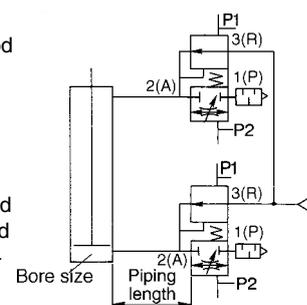
• Needle fully open

• Load 50%

• 90° elbow 4 pcs.

There is a limit to the relation between maximum operational speed and load in the cushion incorporated in the cylinder. Check it with the cylinder catalogue.

Maximum working speed is 1.2 times when load factor is 0% and is 0.7 times when load factor is 75%.



⚠ Caution

* A lifter circuit can be composed of air operated valves. Contact SMC for details.

Others

Exhaust Cleaner (Series AMC)

- Provides a silencing capability and an oil mist recovery function.
- Can also be used in a centralized piping system.



Model	Connection R(PT)	Effective area (mm ²)	Max. air flow (l/min)
AMC310	3/8	16	300
AMC510	3/4	55	1,000
AMC610	1	165	3,000
AMC810	1 1/2	330	6,000
AMC910	2	550	10,000

- 99.9% of oil mist removal.
- Over 35dB noise reduction.



• Refer to p.5.3-1 for details.

Silencer (Series AN)

- Over 30dB noise reduction
- Sufficient effective area



Model	Connection R(PT)	Effective area (mm ²)
AN110	1/8	35
AN200	1/4	35
AN300	3/8	60
AN400	1/2	90
AN500	3/4	160
AN600	1	270
AN700	1 1/4	440
AN800	1 1/2	590
AN900	2	960



• Refer to p.5.2-1 for details.

VEX

AN

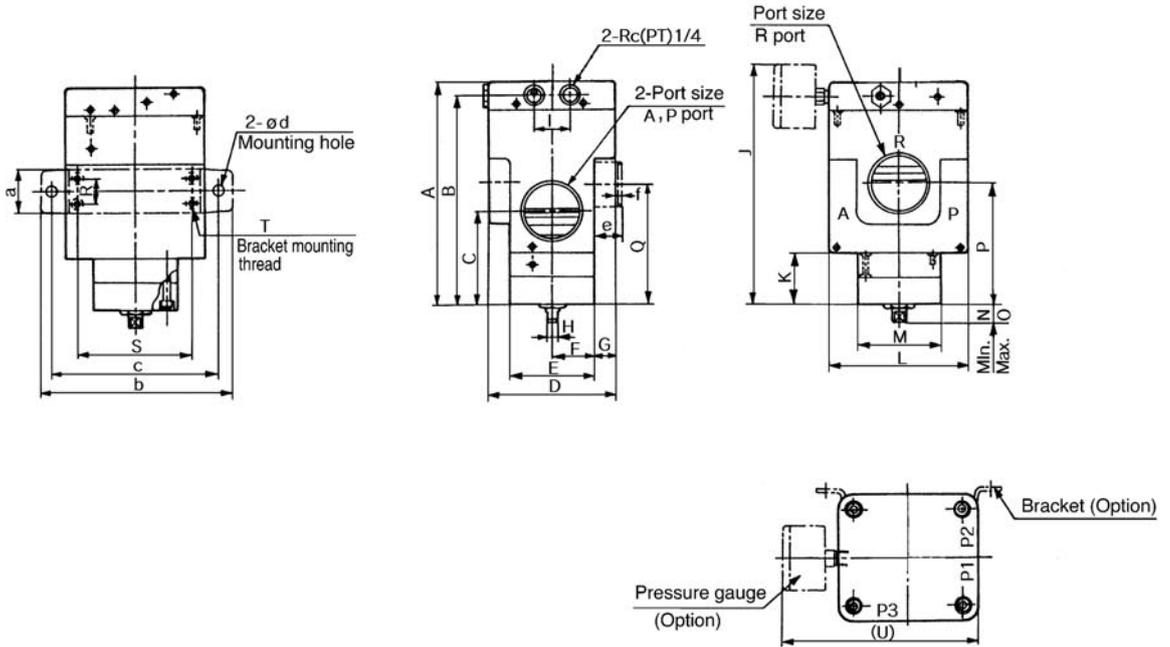
AMC

AMP

VEX5

Basic Dimensions

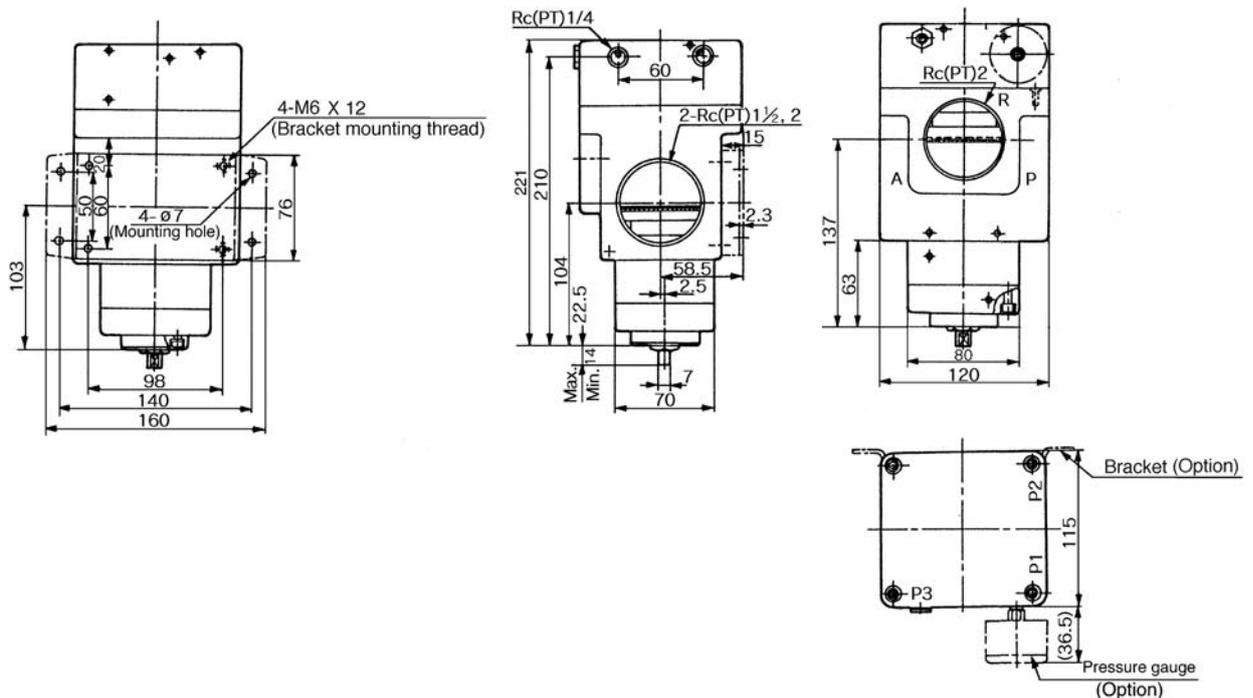
VEX5500
VEX5700



Model	Port size		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
	A, P port	R port																					
VEX5500	Rc(PT) 1/2, 3/4, 1	Rc(PT) 1/2, 3/4, 1	143.5	133.5	62.5	70	50	25	10	7	25	156.5	36.5	80	60	16.5	20	81.5	83.5	Center	60	2-M6 X Depth 9	116.5
VEX5700	Rc(PT) 1, 1 1/4	Rc(PT) 1 1/4	160.5	150.5	62.5	90	60	30	15	7	25	173.5	37.5	100	60	13	17	88.5	86.5	18	82	4-M6 X Depth 6	136.5

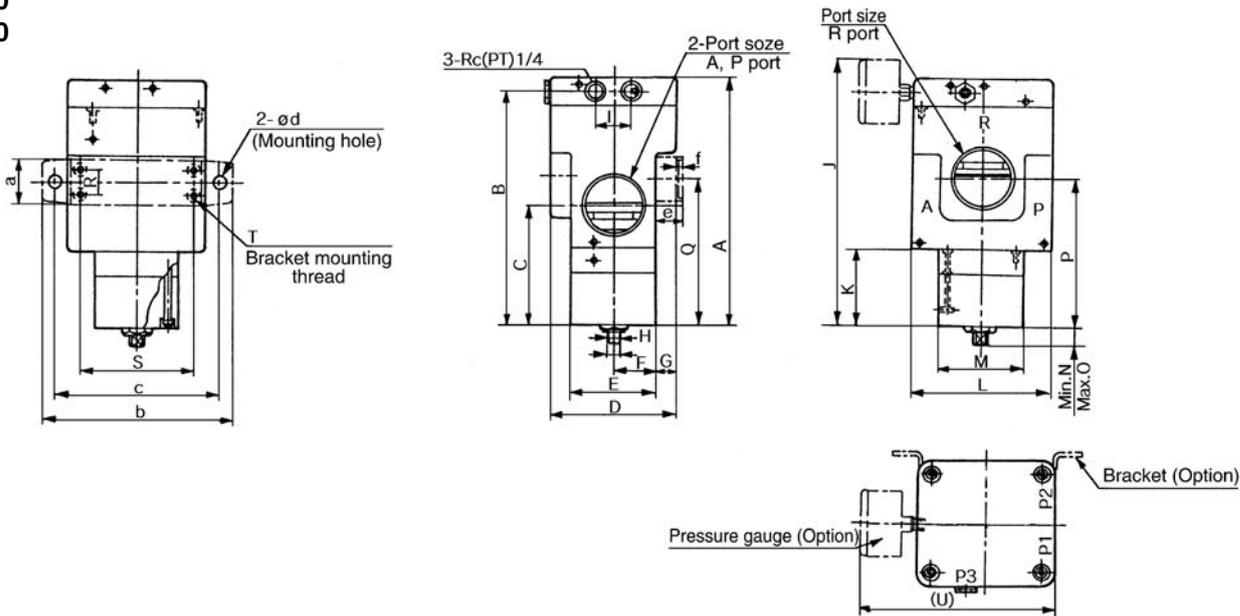
Model	Bracket mounting dimensions					
	a	b	c	ød	e	f
VEX5500	19	130	110	9	12	2.3
VEX5700	32	136	120	9	20	2.3

VEX5900



Select style Dimensions

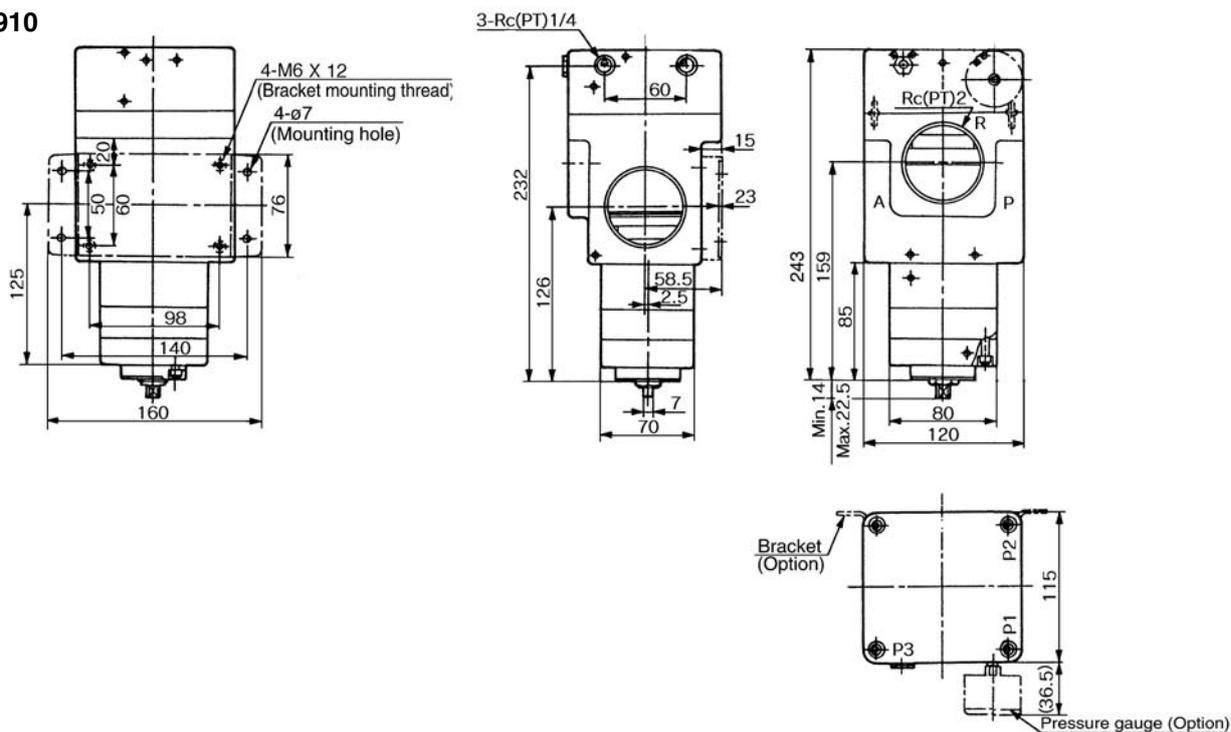
VEX5510
VEX5710



Model	Port size		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
	A,P port	R port																					
VEX5510	Rc(PT) 1/2, 3/4, 1	Rc(PT) 1/2, 3/4, 1	160	150	79	70	50	25	10	7	25	173	53	80	60	13	18	98	100	Center	60	2-M6 X depth 9	116.5
VEX5710	Rc(PT) 1, 1 1/4	Rc(PT) 1 1/4	177.5	167.5	84.5	90	60	30	15	7	25	190.5	54.5	100	60	13	17	105.5	103.5	18	82	4-M6 X depth 6	136.5

Model	Bracket mounting dimensions					
	a	b	c	ød	e	f
VEX5510	19	130	110	9	12	2.3
VEX5710	32	136	120	9	20	2.3

VEX5910



VEX

AN

AMC

AMP