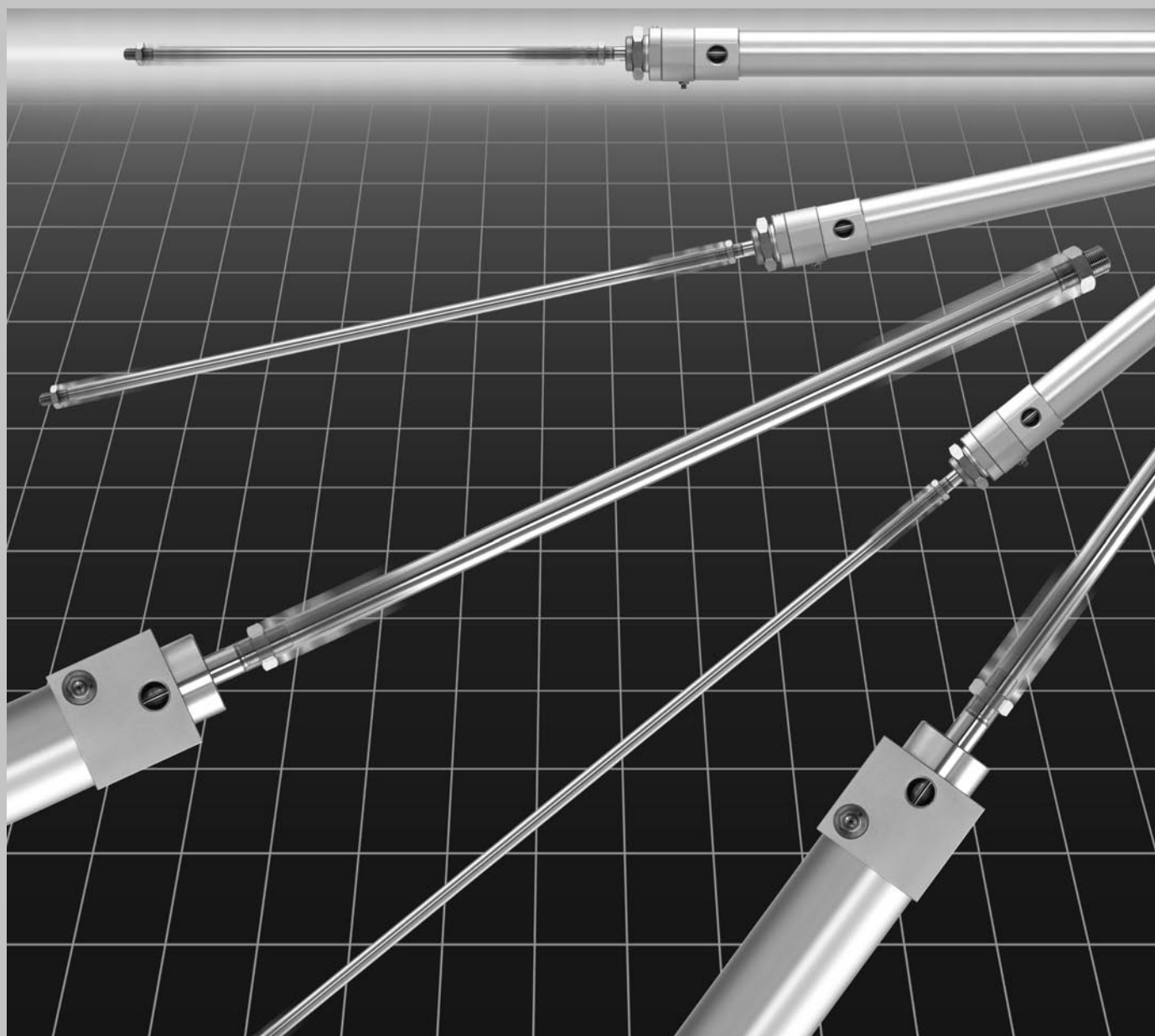




High Power Cylinder

Series *RHC*

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



MK/MK2

RS

RE

REC

C..X

MTS

C..S

MQ

RHC

CC

■ Suitable for high speed use or heavy loads at low speed.

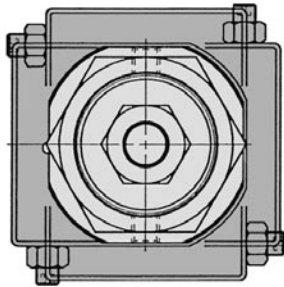
High Power Cylinder

Smooth cushioning from high speed (3000mm/s)/light

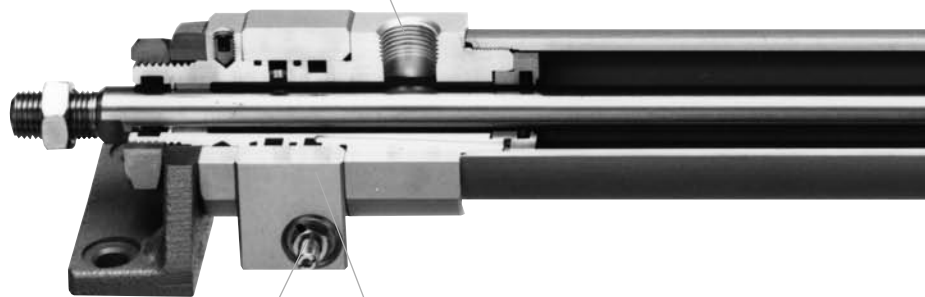
Energy absorbing capacity 10 to 20 times that of general

Supply/Exhaust port

Port orifices have been enlarged to accommodate high speed movement.



Relief valve adjustment screw



Relief valve body

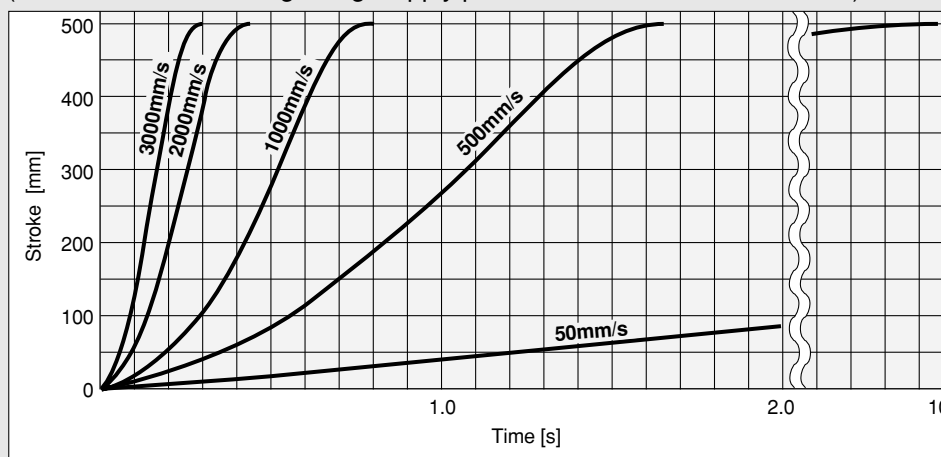
The relief valve body rotates 360° allowing relief adjustment from any direction.

Mounting and Cushion Adjustment

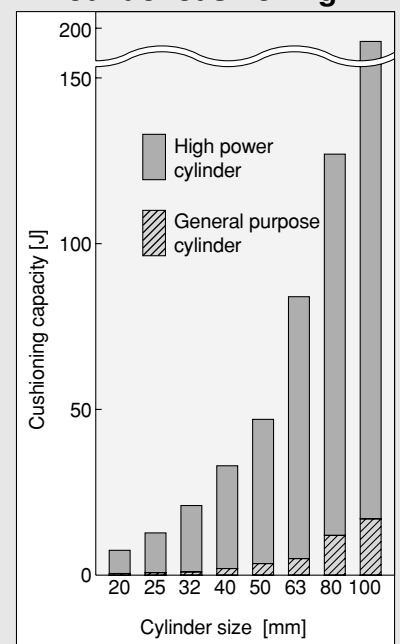
Piping and mounting labour is the same as general purpose cylinders. Cushion adjustment (relief adjustment) labour is the same as general purpose cylinder adjustment (cushion needle adjustment).

Cushioning quality

(RHCF40-500, load weight 5kg, supply pressure 0.5MPa, horizontal drive)



Amount of cushioning



Series RHC

Light load to medium low speed/heavy load
General purpose cylinders



Cushion ring

The cushion ring has been lengthened for greater energy (speed/weight) absorption.

Cushion seal

The use of heavy duty seals provides improved durability at high speeds and increased buffer capacity.



Relief valve

The use of a relief valve as the cushion valve (pressure control) provides a better cushioning effect as compared with needle adjustment on a general purpose cylinder (flow control).

MK/MK2

RS

RE

REC

C..X

MTS

C..S

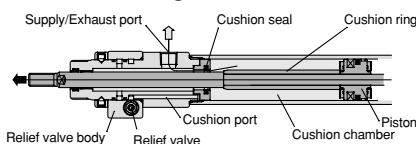
MQ

RHC

CC

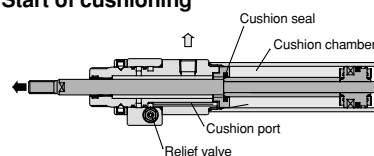
Operating Principles

1. Before cushioning starts



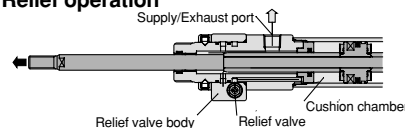
Air passes through the space between the cushion seal and piston rod to the supply/exhaust port.

2. Start of cushioning



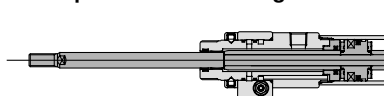
The cushion chamber is closed by the cushion seal. Air flows to the cushion port provided in the rod cover.

3. Relief operation



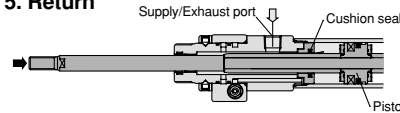
Air passes through the relief valve provided in the relief valve body, and through the inside of the rod cover to the supply/exhaust port.

4. Completion of cushioning



Shifting to the reverse stroke, the air that passed through the cushion seal, which works as a check valve, starts to push the piston.

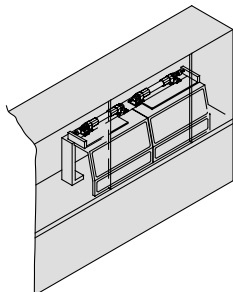
5. Return



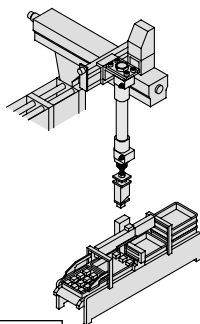
The cushion ring pulls out of the cushion seal beginning the stroke opposite to 1, and the operations in 1 to 4 above are performed.

Applications

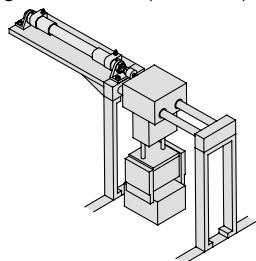
Opening and closing doors
(2000mm/s, several 10kg)



High speed Z-axis
(to 3000mm/s, several kg)



Transfer equipment
40kg, 1000mm/s (with ø32)

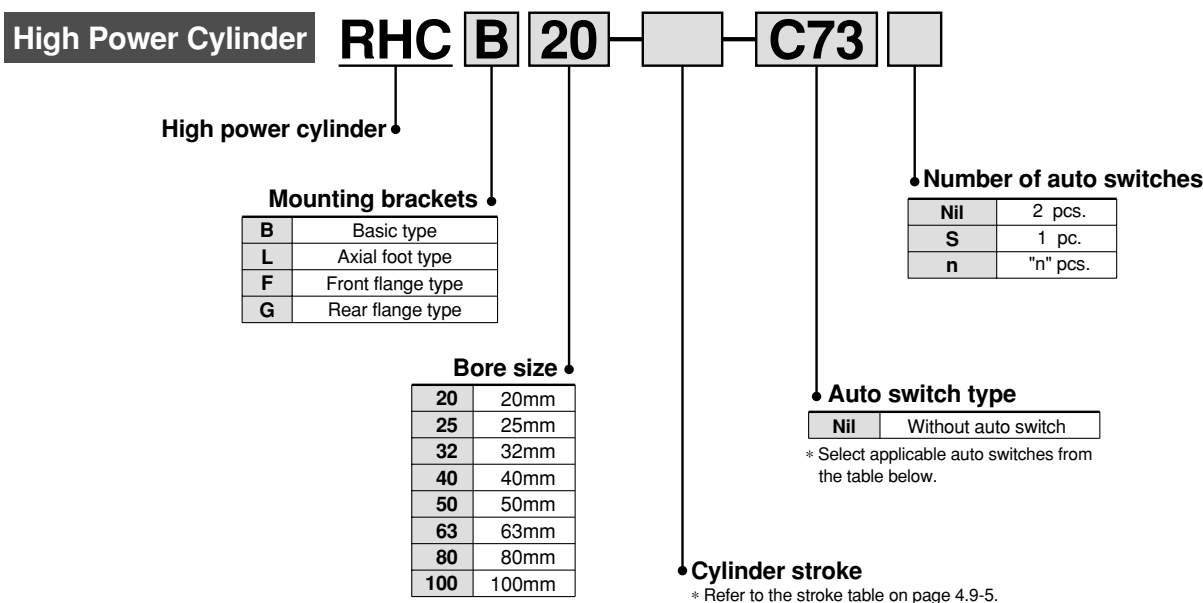


High Power Cylinder

Series *RHC*

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

How to Order



Applicable Auto Switches/Refer to pages 5.3-2 for detailed auto switch specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model	Lead wire length (m)*				Applicable loads		
					DC	AC		0.5 (Nil)	3 (L)	5 (Z)	None (N)			
Reed switch	—	Grommet	Yes	3 wire (NPN equiv.)	—	5V	—	C76	●	●	—	—	IC circuit	—
				2 wire	24V	—	—	B53	●	●	●	—	—	PLC
			12V			100V, 200V	B54	●	●	●	—	—	Relay PLC	
			200V or less			B64	●	●	—	—				
			12V			100V	C73	●	●	●	—			
			5V, 12V			100V or less	C80	●	●	—	—			IC circuit
		Connector	Yes	12V	—	C73C	●	●	●	●	—	—		
	No		5V, 12V	24V or less	C80C	●	●	●	●	IC circuit	—			
Diagnostic indication (2 colour indicator)	Grommet	Yes	—	—	B59W	●	●	—	—	—	—			
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	H7A1	●	●	○	—	IC circuit	Relay PLC
				3 wire (PNP)		H7A2		●	●	○	—			
		Connector	2 wire	12V		H7B		●	●	○	—	—		
	Diagnostic indication (2 colour indicator)		Grommet	3 wire (NPN)		5V, 12V		H7C	●	●	●	●	IC circuit	
		3 wire (PNP)		H7NW		●		●	○	—				
		2 wire		12V		H7PW		●	●	○	—			
		3 wire (NPN)		5V, 12V		H7BW		●	●	○	—	—		
		3 wire (PNP)		12V		H7BA		—	●	○	—			
		2 wire		5V, 12V		G5NT		—	●	○	—		IC circuit	
		4 wire (NPN)		—		H7NF		●	●	○	—			
		—		H7LF		●		●	○	—	—			

* Lead wire length symbols 0.5m Nil (Example) C73C 5m Z (Example) C73CZ
3m L C73CL None ... N C73CN

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

Mounting bracket part nos.

Refer to Page 4.9-5 for part numbers of air cylinder mounting brackets other than the basic type.

High Power Cylinder *Series RHC*



Specifications

Fluid	Air
Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	-10 to 60°C (with no freezing)
Piston speed	50 to 3000mm/s
Cushion	Air cushion
Lubrication	None (non-lube)
Thread tolerance	JIS class 2
Stroke length tolerance	to 1000st +1.4
Mounting brackets	Basic type, Axial foot type, Front (Rear) flange type

MK/MK2

RS

RE

REC

C..X

MTS

C..S

MQ

RHC

CC

Stroke Table

Unit: mm

Bore size (mm)	Standard ^{Note 1)} stroke	Maximum ^{Note 2)} stroke
20	to 700	1500
25	to 700	1500
32	to 1000	1500
40	to 1000	1500
50	to 1200	1500
63	to 1200	1500
80	to 1400	1500
100	to 1500	1500

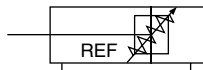
Energy Absorption/Cushion Stroke

Bore size (mm)	Max. energy absorption [J (kgfcm)]	Effective cushion stroke (mm)
20	7 (70)	80
25	12 (120)	80
32	21 (210)	80
40	33 (330)	80
50	47 (470)	80
63	84 (840)	80
80	127 (1270)	80
100	196 (1960)	80

Note 1) When the standard stroke is exceeded, it is outside the guaranteed range.

Note 2) Contact SMC if a stroke greater than the maximum stroke is desired.

Symbol



Mounting Bracket Part Numbers

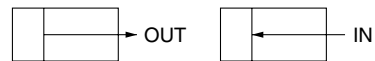
Bore size (mm)	20	25	32	40	50	63	80	100
Axial foot type*	RHC-L020	RHC-L025	RHC-L032	RHC-L040	RHC-L050	RHC-L063	RHC-L080	RHC-L100
Flange*	RHC-F020	RHC-F025	RHC-F032	RHC-F040	RHC-F050	RHC-F063	RHC-F080	RHC-F100

Auto Switch Mounting Bracket Part Numbers (Band and screw included)

Applicable auto switches		Bore size (mm)							
		20	25	32	40	50	63	80	100
Reed	D-C73, D-C76, D-C80 D-C73C, D-C80C	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063	—	—
Solid state	D-H7A1, D-H7A2, D-H7B, D-H7C D-H7NW, D-H7PW, D-H7BW D-H7LF, D-H7NF, D-H7BAL								
Reed	D-B53, D-B54, D-B64, D-B59W								
Solid state	D-G5NTL	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06	BA-08	BA-10
Reed	D-A33, D-A34, D-A4								
Solid state	D-G39, D-K39								
		—		—	BD1-04M	BD1-05M	BD1-06M	BD1-08M	BD1-10M

Series RHC

Theoretical Output Table



Unit: N

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure MPa								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	OUT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	12	OUT	804	161	241	322	402	482	563	643	724	804
		IN	691	138	207	276	346	415	484	553	622	691
40	16	OUT	1260	252	378	504	630	756	882	1010	1130	1260
		IN	1060	212	318	424	530	636	742	848	954	1060
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1964
		IN	1473	295	442	589	736	884	1031	1178	1325	1473
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2806	3117
		IN	2626	525	788	1051	1313	1576	1839	2101	2364	2626
80	25	OUT	5027	1005	1508	291	2513	3016	3519	4021	4524	5027
		IN	4320	864	1296	1728	2160	2592	3024	3456	3888	4320
100	30	OUT	7854	1570	2356	3142	3927	4712	5498	6283	7069	7854
		IN	6892	1378	2068	2757	3446	4135	4824	5514	6203	6892

1N: Approx. 0.102kgf 1MPa: Approx. 10.2kgf/cm²

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm²)

Weight Table (Based on a 500mm stroke for each bore size.)

Bore size (mm)		20	25	32	40	50	63	80	100
Basic weight	Basic type	1.20	1.62	2.04	3.20	4.90	6.08	8.93	13.60
	Axial foot type	1.44	1.88	2.44	3.72	5.95	7.32	11.04	16.67
	Flange type	1.29	1.79	2.23	3.47	5.68	6.97	10.67	15.92
Additional weight per 50mm of stroke		0.06	0.08	0.09	0.15	0.22	0.25	0.35	0.51

Calculation method Example: RHCL32-600

• Basic weight 2.44 [foot type ø32]

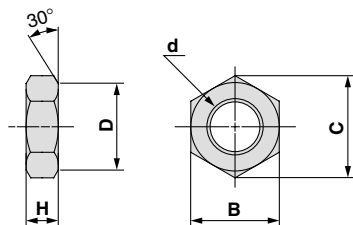
• Additional weight 0.09/50mm stroke

• Cylinder stroke 600mm stroke

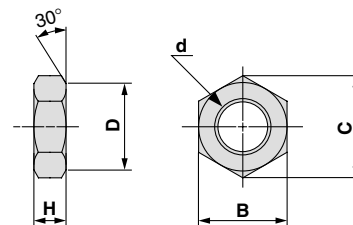
2.44 + 0.09 x 100/50 = 2.62kg

Accessories

Mounting nut



Rod end nut



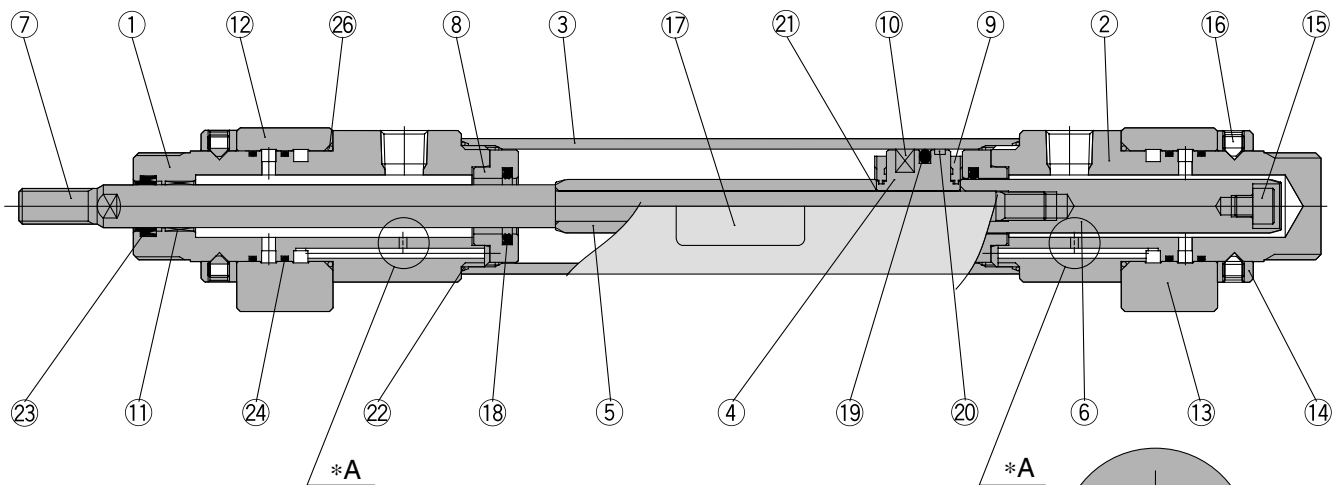
(mm) Material: Carbon steel

Part No.	Applicable bore size	B	C	D	d	H
SOR-20	20	26	30	26	M22 x 1.5	8
SOR-25	25	32	36.9	32	M24 x 1.5	8
SOR-32	32	38	43.9	38	M30 x 1.5	9
SOR-40	40	41	47.3	41	M33 x 2.0	11

(mm) Material: Carbon steel

Part No.	Applicable bore size	B	C	D	d	H
NT-02	20	13	15	12.5	M8	5
NT-03	25/32	17	19.6	16.5	M10 x 1.25	6
NT-04	40	22	25.4	21.0	M14 x 1.5	8
NT-05	50	27	31	26	M18 x 1.5	11
NT-05	63	27	31	26	M18 x 1.5	11
NT-08	80	32	37	31	M22 x 1.5	13
NT-10	100	41	47.3	39	M26 x 1.5	16

Construction (ø20 to ø40)



Section A enlarged view

Parts list

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear anodized
2	Head cover	Aluminum alloy	Clear anodized
3	Cylinder tube	Aluminum alloy	Hard anodized
4	Piston	Aluminum alloy	Chromated
5	Cushion ring A	Carbon steel	Hard chrome plated
6	Cushion ring B	Carbon steel	Hard chrome plated
7	Piston rod	Carbon steel	Hard chrome plated
8	Cushion spacer	Stainless steel	
9	Bumper	Urethane	
10	Magnet	—	
11	Bushing	Oil containing sintered metal	
12	Relief valve assembly (rod side)	—	
13	Relief valve assembly (head side)	—	
14	Relief valve body retainer	Aluminum alloy	Clear anodized
15	Hexagon socket head cap screw	Chromium molybdenum steel	ø20: M5 x 6 ø25, ø32: M6 x 6 ø40: M8 x 8 Nickel plated
16	Hexagon socket head set screw	Chromium molybdenum steel	ø20, ø25: M5 x 6 ø32, ø40: M6 x 8 Nickel plated
17	Label	—	
18	Cushion seal	Special resin	
19	Piston seal	NBR	
20	Wear ring	Resin	
21	Piston gasket	NBR	
22	Cylinder tube gasket	NBR	
23	Rod seal	NBR	
24	O-ring	NBR	
25	O-ring	NBR	

Replacement parts: Seal kits

Bore size (mm)	Seal kit no.	Contents
20	RHC20-PS	Set of nos. 19 to 25 above
25	RHC25-PS	
32	RHC32-PS	
40	RHC40-PS	

* Seal kits are sets consisting of items 19 through 25, which can be ordered using the seal kit number for each bore size.

MK/MK2

RS

RE

REC

C..X

MTS

C..S

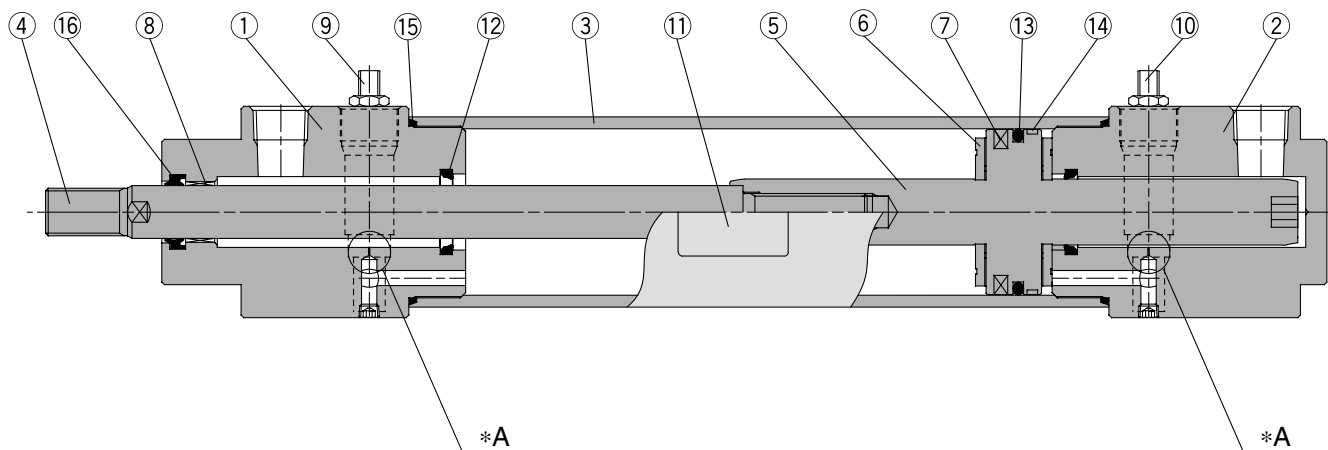
MQ

RHC

CC

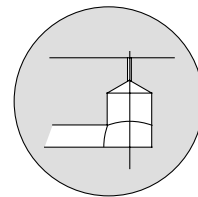
Series RHC

Construction (ø50 to ø100)



Parts list

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear anodized
2	Head cover	Aluminum alloy	Clear anodized
3	Cylinder tube	Aluminum alloy	Hard anodized
4	Piston rod	Carbon steel	Hard chrome plated
5	Piston	Aluminum alloy	Hard anodized
6	Bumper	Urethane	
7	Plastic magnet	—	
8	Bushing	—	
9	Relief valve assembly L	—	
10	Relief valve assembly R	—	
11	Label	—	
12	Cushion seal	Urethane	
13	Piston seal	NBR	
14	Wear ring	Resin	
15	Cylinder tube gasket	NBR	
16	Rod seal	NBR	



Section A enlarged view

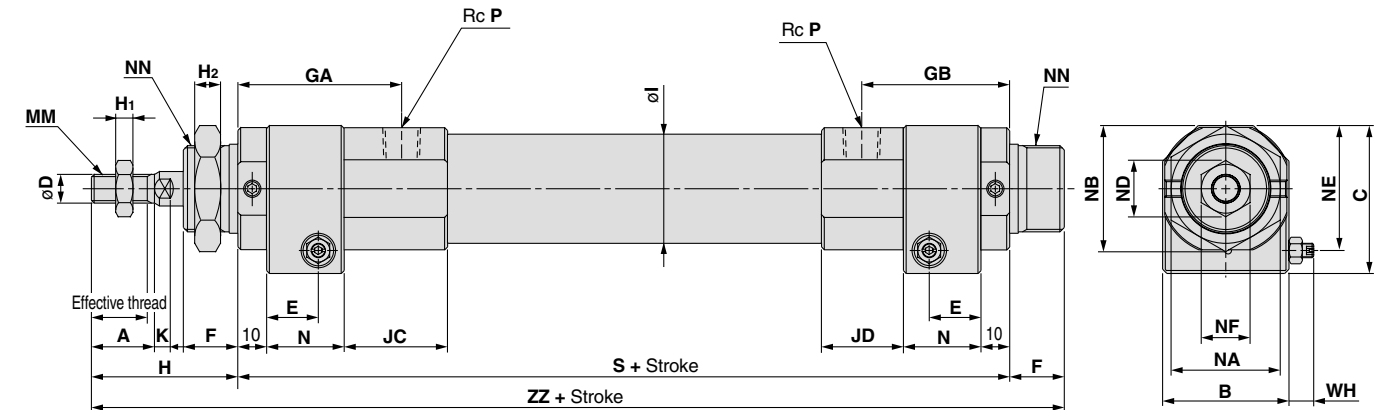
Replacement parts: Seal kits

Bore size (mm)	Seal kit no.	Contents
50	RHC50-PS	Set of nos. 12 to 16 above
63	RHC63-PS	
80	RHC80-PS	
100	RHC100-PS	

* Seal kits are sets consisting of items 12 through 16, which can be ordered using the seal kit number for each bore size.

Dimensions/Basic Type

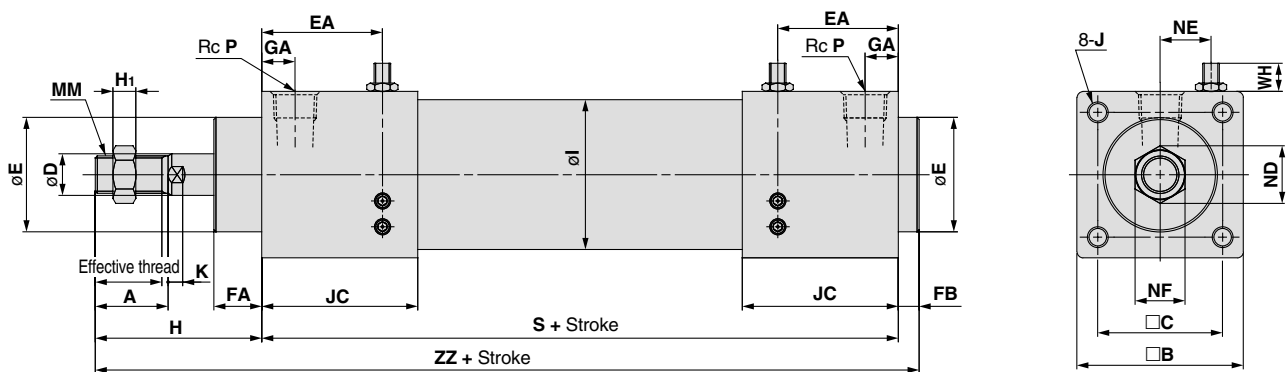
ø20 to ø40



Bore size (mm)	Stroke range (mm)	Effective thread length	A	B	C	D	E	F	GA	GB	H	H1	H2	I
20	200 to 700	15.5	18	32	40.5	10	14.5	16	53.5	47.5	44	5	8	26
25	200 to 700	19.5	22	36	45.5	12	18	16	56.5	49.5	48	6	8	31
32	200 to 1000	19.5	22	44	51.5	12	18	19	55	51.5	51	6	9	38
40	200 to 1000	21	24	53	61.5	16	20.5	21	56	51.5	54.5	8	11	47

Bore size (mm)	JC	JD	K	MM	N	NE	NA	NB	NF	ND	NN	P	S	WH	ZZ
20	43	30.5	5	M8	22	33.5	26	30	13	15.0	M22 x 1.5	1/4	192	5.8 to 8.8	252
25	39	25.5	5.5	M10 X 1.25	27	37	32	36.9	17	19.6	M24 x 1.5	1/4	193		257
32	36	28.5	5.5	M10 X 1.25	27	43.5	38	43.9	17	19.6	M30 x 1.5	3/8	195		265
40	32	23	7.5	M14 X 1.5	30	52.5	41	47.3	22	25.4	M33 x 2.0	3/8	201.5	6.8 to 11.3	277

ø50 to ø100



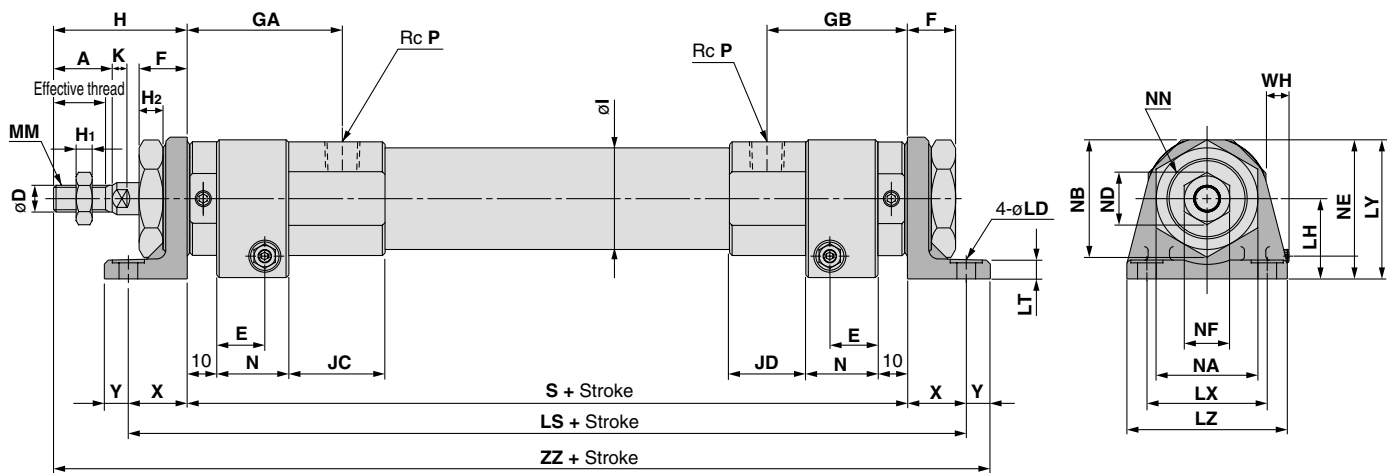
Bore size (mm)	Stroke range (mm)	Effective thread length	A	B	C	D	E	EA	FA	FB	GA	H
50	250 to 1000	32	35	70	53	20	50 ^{-0.042}	62	23	10	16	80
63	250 to 1000	32	35	80	60	20	55 ^{-0.074}	58	23	10	16	80
80	250 to 1000	37	40	95	75	25	65 ^{-0.074}	61	23	10	20	90
100	250 to 1000	37	40	116	90	30	80 ^{-0.074}	63	25	10	20	95

Bore size (mm)	H1	I	J	JC	K	MM	ND	NE	NF	P	S	WH	ZZ
50	11	58	M10 x 1.5 thread depth 20	75	7	M18 x 1.5	27.7	25	24	1/2	215	6.8 to 11.3	305
63	11	72	M10 x 1.5 thread depth 20	75	7	M18 x 1.5	27.7	24.5	24	1/2	215	8.5 to 13.5	305
80	13	89	M12 x 1.75 thread depth 25	78	10	M22 x 1.5	37	30.5	32	3/4	228		328
100	16	110	M12 x 1.75 thread depth 25	80	10	M26 x 1.5	47.3	34	41	3/4	236		341

Series RHC

Dimensions/Axial Foot Type

ø20 to ø40

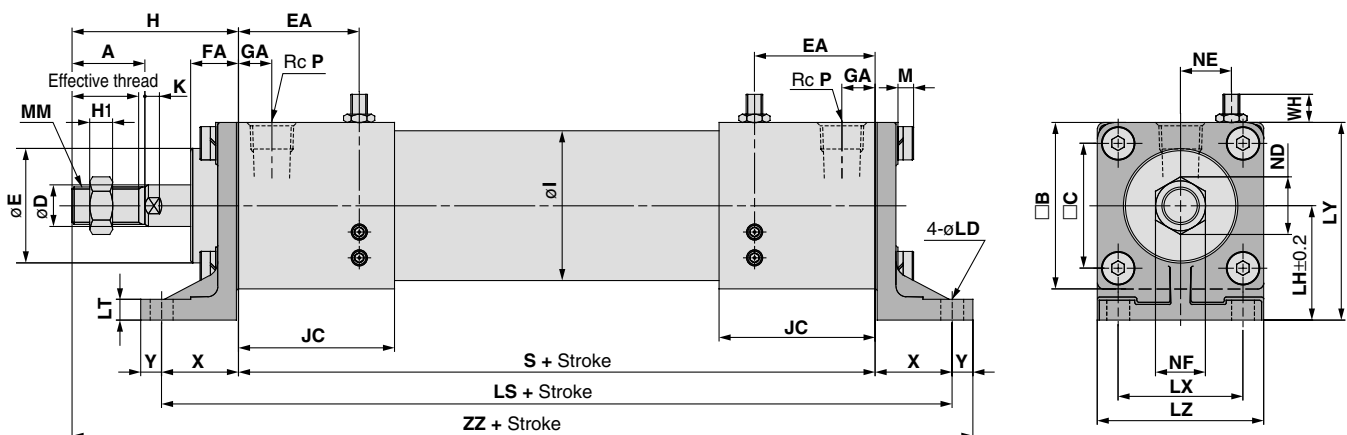


(mm)

Bore size (mm)	Stroke range (mm)	Effective thread length	A	D	E	F	GA	GB	H	I	JC	JD	K	LD	LH	H1	H2
20	200 to 700	15.5	18	10	14.5	16	53.5	47.5	44	26	43	30.5	5	7	25	5	8
25	200 to 700	19.5	22	12	18	16	56.5	49.5	48	31	39	25.5	5.5	7	28	6	8
32	200 to 1000	19.5	22	12	18	19	55	51.5	51	38	36	28.5	5.5	7	30	6	9
40	200 to 1000	21	24	16	20.5	21	56	51.5	54.5	47	32	23	7.5	9	35	8	11

Bore size (mm)	LS	LT	LX	LY	LZ	MM	N	NA	NB	NE	NF	ND	NN	P	S	WH	X	Y	ZZ
20	232	5.5	40	41	55	M8	22	26	30	33.5	13	15.0	M22 x 1.5	1/4	192	5.8 to 8.8	20	9	265
25	233	5.5	40	46.5	55	M10 X 1.25	27	32	36.9	37	17	19.6	M24 x 1.5	1/4	193		20	9	270
32	241	6	45	53	60	M10 X 1.25	27	38	43.9	43.5	17	19.6	M30 x 1.5	3/8	195		23	9	278
40	251.5	6	55	62	75	M14 X 1.5	30	41	47.3	52.5	22	25.4	M33 x 2.0	3/8	201.5	6.8 to 11.3	25	11	292

ø50 to ø100



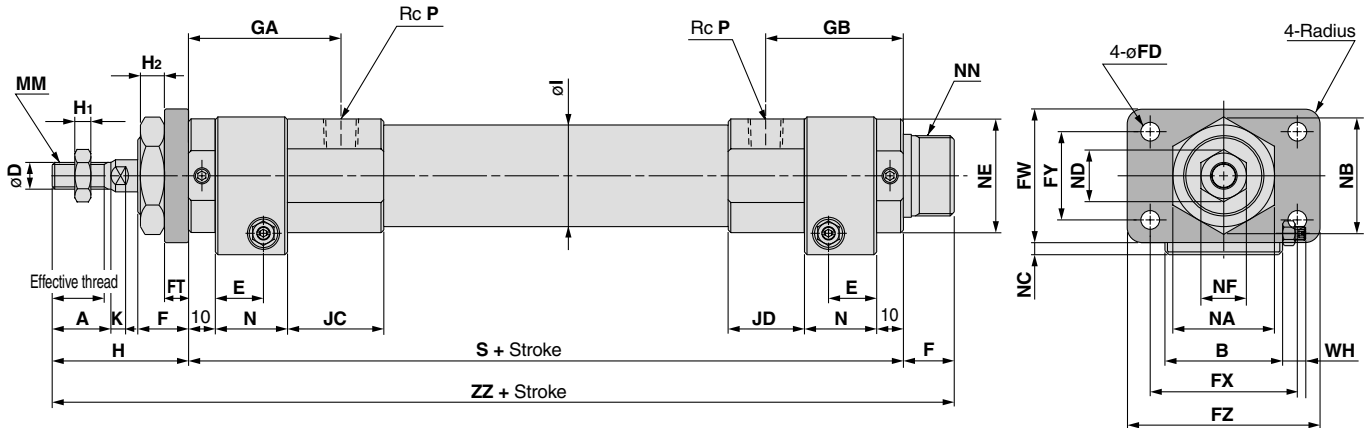
(mm)

Bore size (mm)	Stroke range (mm)	Effective thread length	A	B	C	D	E	EA	FA	GA	H	H1	I	JC	K	LD
50	250 to 1000	32	35	70	53	20	50 ⁰ _{-0.042}	62	23	16	80	11	58	75	7	11
63	250 to 1000	32	35	80	60	20	55 ⁰ _{-0.074}	58	23	16	80	11	72	75	7	11
80	250 to 1000	37	40	95	75	25	65 ⁰ _{-0.074}	61	23	20	90	13	89	78	10	13
100	250 to 1000	37	40	116	90	30	80 ⁰ _{-0.074}	63	25	20	95	16	110	80	10	13

Bore size (mm)	LH	LS	LT	LY	LX	LZ	M	MM	ND	NE	NF	P	S	WH	X	Y	ZZ
50	52	275	10	88.5	53	73	7.5	M18 x 1.5	27.7	25	24	1/2	215	6.8 to 11.3	30	10	335
63	55	289	10	95	60	80	7.5	M18 x 1.5	27.7	24.5	24	1/2	215		37	10	342
80	65	308	12	115	75	100	10	M22 x 1.5	37	30.5	32	3/4	228		40	13	371
100	80	330	14	139	90	118	10	M26 x 1.5	47.3	34	41	3/4	236		47	13	391

Dimensions/Front Flange Type

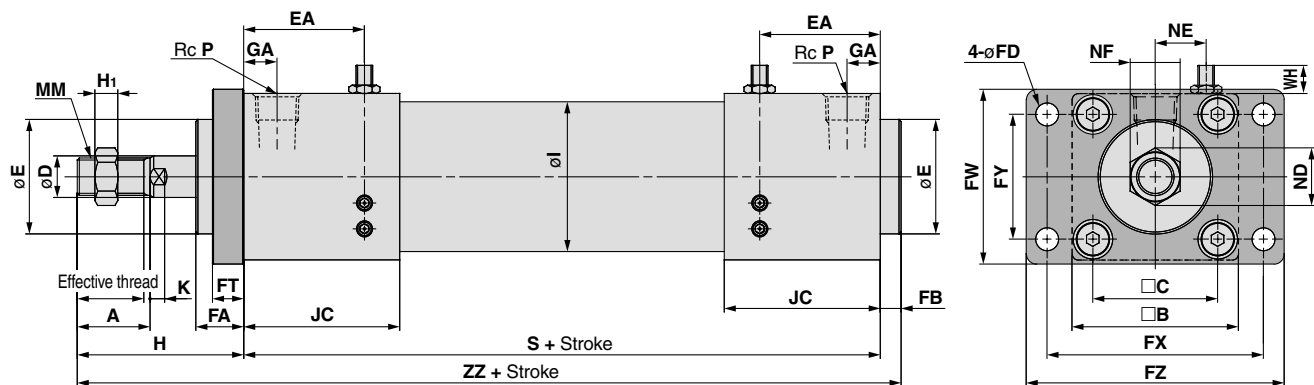
ø20 to ø40



Bore size (mm)	Stroke range (mm)	Effective thread length	A	B	D	E	F	FD	FT	FX	FY	FW	FZ	GA	GB	H1	H2
20	200 to 700	15.5	18	32	10	14.5	16	7	6	51	21	38	68	53.5	47.5	5	8
25	200 to 700	19.5	22	36	12	18	16	7	9	53	27	44	70	56.5	49.5	6	8
32	200 to 1000	19.5	22	44	12	18	19	7	9	55	33	50	72	55	51.5	6	9
40	200 to 1000	21	24	53	16	20.5	21	9	9	66	36	60	84	56	51.5	8	11

Bore size (mm)	H	I	JC	JD	K	MM	N	NA	NB	NC	NE	NF	ND	NN	P	S	WH	ZZ
20	44	26	43	30.5	5	M8	22	26	30	5.5	33.5	13	15.0	M22 x 1.5	1/4	192	5.8 to 8.8	252
25	48	31	39	25.5	5.5	M10 X 1.25	27	32	36.9	5.5	37	17	19.6	M24 x 1.5	1/4	193		257
32	51	38	36	28.5	5.5	M10 X 1.25	27	38	43.9	4.5	43.5	17	19.6	M30 x 1.5	3/8	195		265
40	54.5	47	32	23	7.5	M14 X 1.5	30	41	47.3	4.5	52.5	22	25.4	M33 x 2.0	3/8	201.5	6.8 to 11.3	277

ø50 to ø100



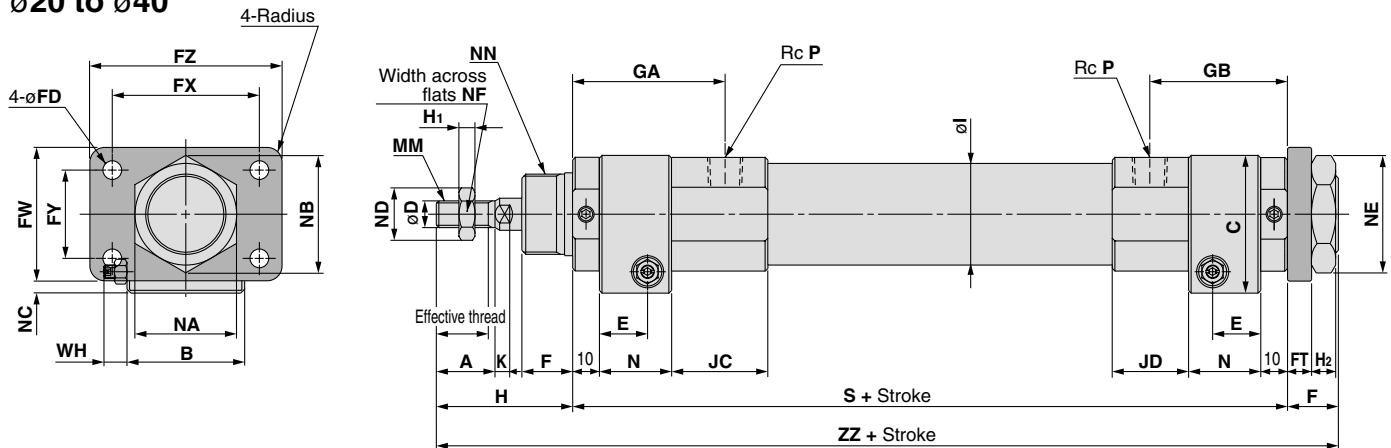
Bore size (mm)	Stroke range (mm)	Effective thread length	A	B	C	D	E	EA	FA	FB	FD	FT	FW	FX
50	250 to 1000	32	35	70	53	20	50 ⁰ _{-0.042}	62	23	10	11	15	78	96
63	250 to 1000	32	35	80	60	20	55 ⁰ _{-0.074}	58	23	10	11	15	84	104
80	250 to 1000	37	40	95	75	25	65 ⁰ _{-0.074}	61	23	10	13	18	106	130
100	250 to 1000	37	40	116	90	30	80 ⁰ _{-0.074}	63	25	10	13	20	120	145

Bore size (mm)	FY	FZ	GA	H	H1	I	JC	K	MM	ND	NE	NF	P	S	WH	ZZ
50	53	116	16	80	11	58	75	7	M18 x 1.5	27.7	25	24	1/2	215	6.8 to 11.3	305
63	60	124	16	80	11	72	75	7	M18 x 1.5	27.7	24.5	24	1/2	215		305
80	75	155	20	90	13	89	78	10	M22 x 1.5	37	30.5	32	3/4	228	8.5 to 13.5	328
100	90	172	20	95	16	110	80	10	M26 x 1.5	47.3	34	41	3/4	236		341

Series RHC

Dimensions/Rear Flange Type

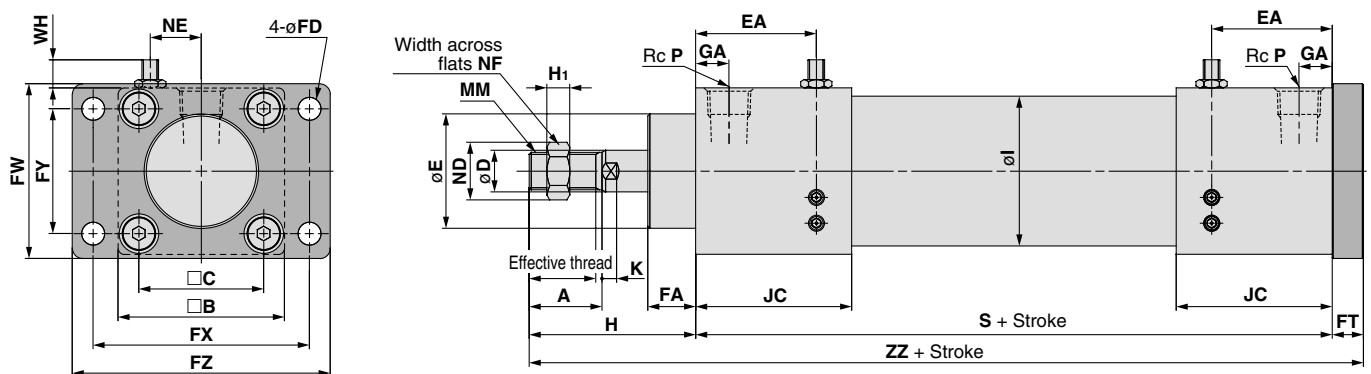
ø20 to ø40



Bore size (mm)	Stroke range (mm)	Effective thread length	A	B	C	D	E	F	FD	FT	FX	FY	FW	FZ	GA	GB	H ₁
20	200 to 700	15.5	18	32	40.5	10	14.5	16	7	6	51	21	38	68	53.5	47.5	5
25	200 to 700	19.5	22	36	45.5	12	18	16	7	9	53	27	44	70	56.5	49.5	6
32	200 to 1000	19.5	22	44	51.5	12	18	19	7	9	55	33	50	72	55	51.5	6
40	200 to 1000	21	24	53	61.5	16	20.5	21	9	9	66	36	60	84	56	51.5	8

Bore size (mm)	H	I	JC	JD	K	MM	N	NA	NB	NC	NE	NF	ND	NN	P	S	WH	ZZ
20	44	26	43	30.5	5	M8	22	26	30	5.5	33.5	13	15.0	M22 x 1.5	1/4	192	5.8 to 8.8	252
25	48	31	39	25.5	5.5	M10 X 1.25	27	32	36.9	5.5	37	17	19.6	M24 x 1.5	1/4	193		257
32	51	38	36	28.5	5.5	M10 X 1.25	27	38	43.9	4.5	43.5	17	19.6	M30 x 1.5	3/8	195		265
40	54.5	47	32	23	7.5	M14 X 1.5	30	41	47.3	4.5	52.5	22	25.4	M33 x 2.0	3/8	201.5	6.8 to 11.3	277

ø50 to ø100



Bore size (mm)	Stroke range (mm)	Effective thread length	A	B	C	D	E	EA	FA	FD	FT	FW	FX	FY
50	250 to 1000	32	35	70	53	20	50 ^{-0.042}	62	23	11	15	78	96	53
63	250 to 1000	32	35	80	60	20	55 ^{-0.074}	58	23	11	15	84	104	60
80	250 to 1000	37	40	95	75	25	65 ^{-0.074}	61	23	13	18	106	130	75
100	250 to 1000	37	40	116	90	30	80 ^{-0.074}	63	25	13	20	120	145	90

Bore size (mm)	FZ	GA	H	H ₁	I	JC	K	MM	ND	NE	NF	P	S	WH	ZZ
50	116	16	80	11	58	75	7	M18 x 1.5	27.7	25	24	1/2	215	6.8 to 11.3	310
63	124	16	80	11	72	75	7	M18 x 1.5	27.7	24.5	24	1/2	215		310
80	155	20	90	13	89	78	10	M22 x 1.5	37	30.5	32	3/4	228	8.5 to 13.5	336
100	172	20	95	16	110	80	10	M26 x 1.5	47.3	34	41	3/4	236		351

Series RHC Auto Switch Specifications

* Refer to page 5.3-2.



Applicable Auto Switches

Auto switch type	Auto switch model	Electrical entry
Reed switch	D-C7, C8	Grommet
	D-C73C, C80C	Connector
	D-B5, B6	Grommet
	D-B59W	Grommet (2 colour indicator)
Solid state switch	D-H7A, H7B	Grommet
	D-H7C	Connector
	D-H7□W	Grommet (2colour indicator)
	D-H7BAL	Grommet (water resistant/2 colour indicator)
	D-G5NT	Grommet (with timer)
	D-H7NF	Grommet (with diagnostic output /2 colour indicator)
	D-H7LF	Grommet (latch type with diagnostic output/2 colour indicator)

MK/MK2

RS

RE

REC

C..X

MTS

C..S

MQ

RHC

CC

Auto Switch Mounting Bracket Part Numbers (Band and screw included)

Applicable auto switches		Bore size (mm)							
		20	25	32	40	50	63	80	100
Reed	D-C73, D-C76, D-C80 D-C73C, D-C80C	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063	—	—
Solid state	D-H7A1, D-H7A2, D-H7B, D-H7C D-H7NW, D-H7PW, D-H7BW D-H7LF, D-H7NF, D-H7BAL								
Reed	D-B53, D-B54, D-B64, D-B59W	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06	BA-08	BA-10
Solid state	D-G5NTL								
Reed	D-A33, D-A34, D-A4	—	—	—	BD1-04M	BD1-05M	BD1-06M	BD1-08M	BD1-10M
Solid state	D-G39, D-K39								

⚠ Specific Product Precautions

Be sure to read before handling. Refer to Pages 0-39 through 0-43 for safety instructions and common precautions.

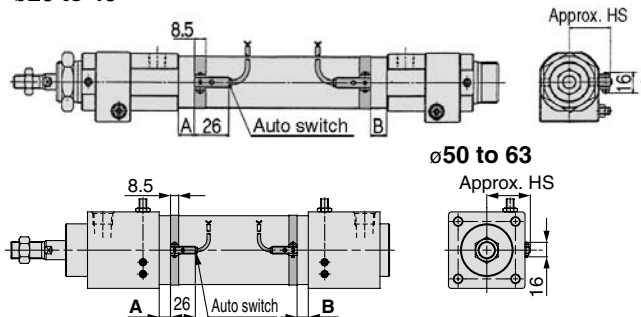
Series RHC

Auto Switch Specifications

Auto Switches/Proper Mounting Position and Mounting Height for Stroke End Detection

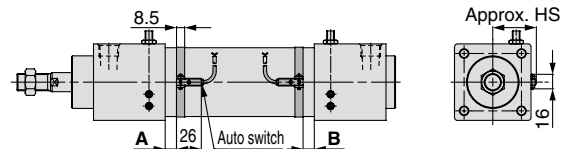
D-C7/C8 type

ø20 to 40



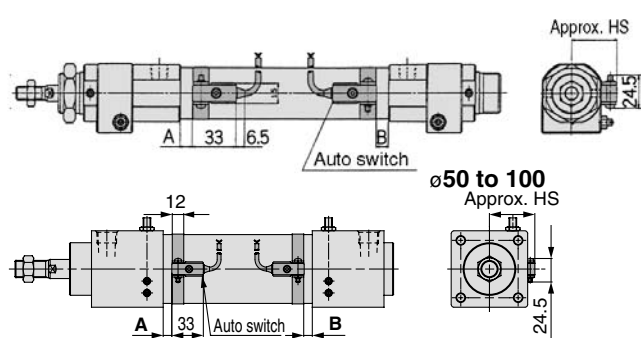
ø50 to 63

Approx. HS



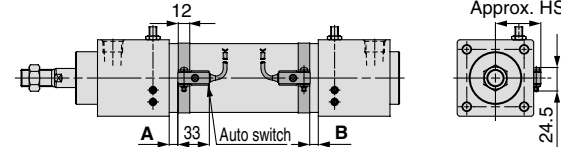
D-B5/B6/B59W type

ø20 to 40



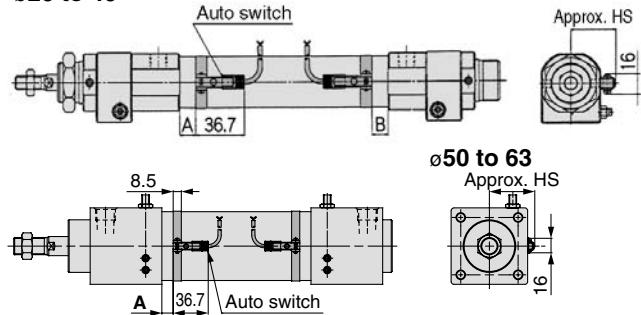
ø50 to 100

Approx. HS



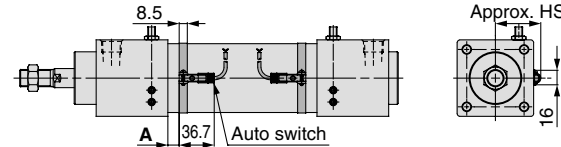
D-C73C/C80C type

ø20 to 40



ø50 to 63

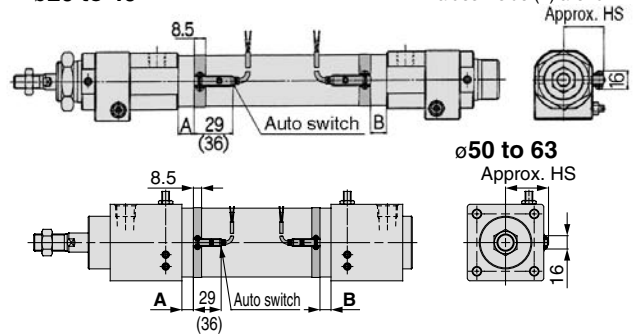
Approx. HS



D-H7□/H7□W/H7□F/H7BAL type

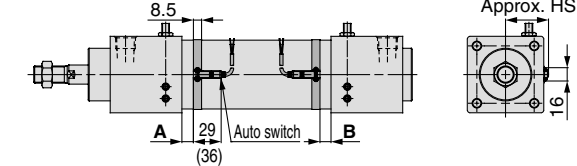
ø20 to 40

* Values inside () are for D-H7LF.



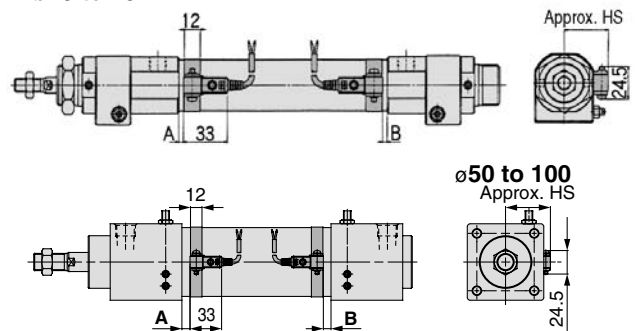
ø50 to 63

Approx. HS



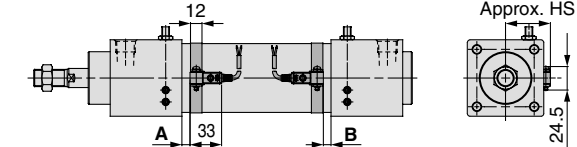
D-G5NTL type

ø20 to 40



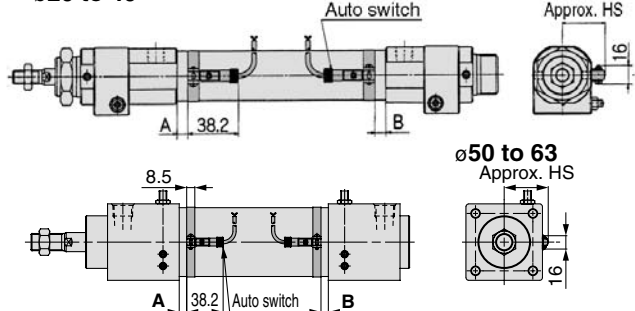
ø50 to 100

Approx. HS



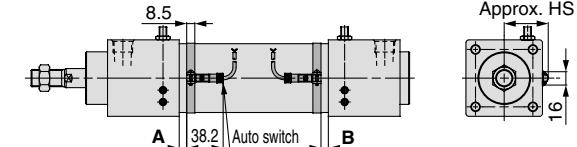
D-H7C type

ø20 to 40



ø50 to 63

Approx. HS



Proper auto switch mounting position

(mm)

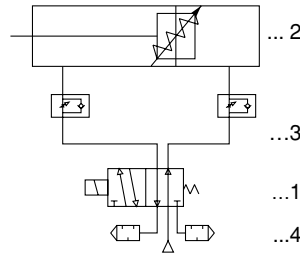
Bore size (mm)	D-C7 D-C8		D-B5 D-B6		D-H7□ D-H7C		D-G5NTL		D-H7□ W D-H7□ F D-H7BAL		D-B59W	
	A	B	A	B	A	B	A	B	A	B	A	B
20	15	20.5	9	14.5	14	19.5	10.5	16	12.5	18	12	17.5
25	15	20.5	9	14.5	14	19.5	10.5	16	12.5	18	12	17.5
32	15	22.5	9	16.5	14	21.5	10.5	18	12.5	20	12	19.5
40	20	27.5	14	21.5	19	26.5	15.5	23	17.5	25	17	24.5
50	18	28	12	22	17	27	13.5	23.5	15.5	25.5	15	28.5
63	18	28	12	22	17	27	13.5	23.5	15.5	25.5	15	28.5
80	—	—	13.5	27.5	—	—	15	29	—	—	16.5	30.5
100	—	—	15.5	29.5	—	—	17	31	—	—	18.5	32.5

Auto switch mounting height

(mm)

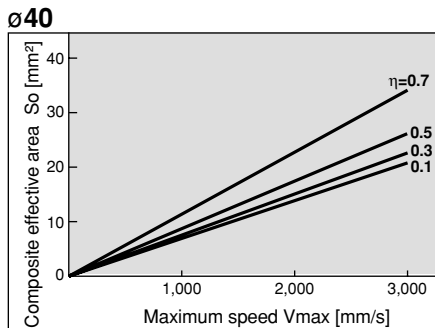
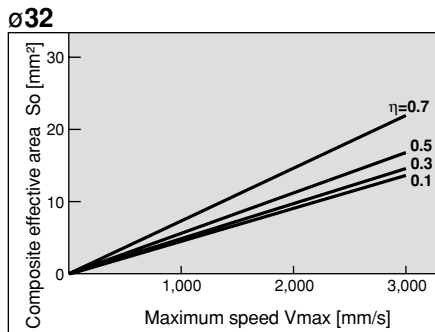
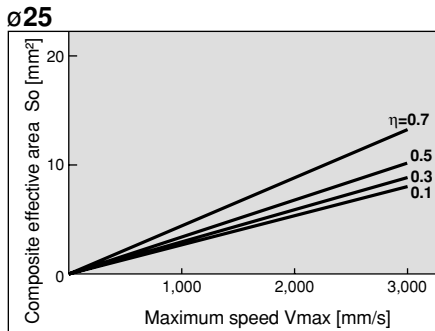
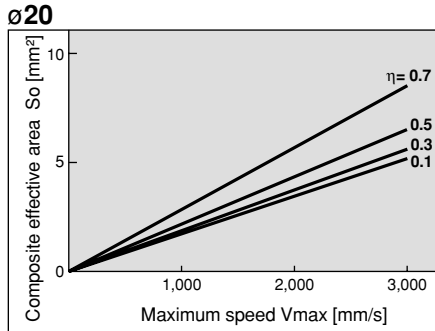
Bore size (mm)	D-C7,D-C8 D-H7□ D-H7C D-H7□ W D-H7□ F D-H7BAL	D-B5/B6 D-B59W D-G5NTL	D-C73C D-C80C
	HS	HS	HS
20	24.5	27.5	27
25	27	30	29.5
32	30.5	33.5	33
40	35	38	37.5
50	40.5	43.5	43
63	47.5	50.5	50.5
80	—	59	—
100	—	69.5	—

Series RHC High Power Cylinder System Selection



Find the effective area S_o from the graphs by assigning values for η and V_{max} .

Select solenoid valves, speed control valves and tubing sizes, etc., using the system selection table.



η : Cylinder load factor
 V_{max} : Maximum speed (Refer to Page 4.9-5)

System Selection Table

Cylinder bore size mm	Maximum cylinder speed mm/s	Composite effective area mm ²	Solenoid valves () indicates effective area mm ² □ indicates metal seal type					Speed controller		Piping tube O.D. mm Steel tube piping size
			A group 3.6 to 6.3	B group 9.0 to 14.4	C group 16.2 to 21.6	D group 36 to 45	E group 64.8 to 67	1 With One-touch fitting	1-A Elbow type	
			VQ1000 (3.6) VQ1000 (5.4) SY3000 (5.4) SYJ5000 (4.5) VQZ1000 (3.6) VQZ1000 (6.3)	VQ2000 (14.4) — SY5000 (12.6) SX5000 (12.6) SYJ7000 (12.6) VQZ2000 (12.6)	— VQ2000 (16.2) SY7000 (21.6) SX7000 (21.6) — VQZ3000 (16.2) VQZ3000 (21.6)	— VQ4000 (36.0) — — — — —	— — — — — —		1-B Universal type	
20	500	1.5						2 Standard type	2-A Metal elbow type	ø6 1/8, 1/4
									2-B In-line type	
20	1000	3								
	1500	4.5								
	2000	6								
20	2500	7.5								
	3000	9								
	500	2.5								
25	1000	5								
	1500	7.5								
	2000	10								
25	2500	12.5								
	3000	15								
32	500	4								
	1000	8								
	1500	12								
32	2000	16								
	2500	20								
	3000	24								
40	500	6								
	1000	12								
	1500	18								
40	2000	24								
	2500	30								
	3000	36								

Note) Since the cushion capacity may be exceeded in high speed, high load operation, confirm the maximum energy absorption on page 4.9-5.

MK/MK2

RS

RE

REC

C..X

MTS

C..S

MQ

RHC

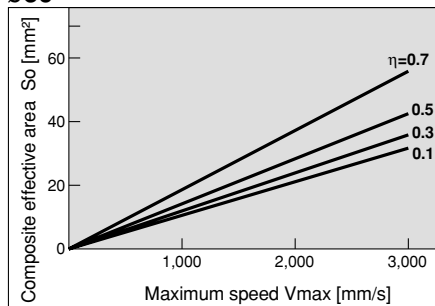
CC

Series *RHC* High Power Cylinder

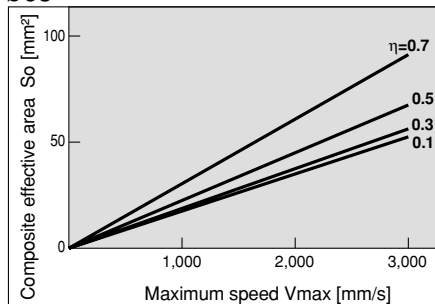
Find the effective area S_o from the graphs by assigning values for η and V_{max} .

Select solenoid valves, speed control valves and tubing sizes, etc., using the system selection table.

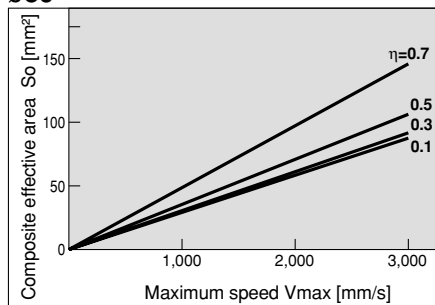
ø50



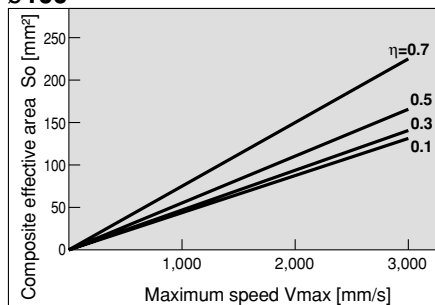
ø63



ø80



ø100



η : Cylinder load factor

V_{max} : Maximum speed (Refer to page 4.9-18)

System Selection Table

Cylinder bore size mm	Maximum cylinder speed mm/s	Composite effective area mm²	Solenoid valve () indicates effective area mm² □ indicates metal seal type.					Speed controller		Piping tube O.D. mm Steel tube piping size	
			C group	D group	E group	F group	G group	1 With One-touch fitting	1-A Elbow type		
			16.2 to 21.6	36 to 45	64.8 to 67	102.6 to 120	180 to 300		1-B Universal type		
			—	VQ4000 (36.0)	—	—	—		1-C In-line type		
			VQ2000 (16.2)	VQ4000 (39.6)	—	—	—		2 Standard type		2-A Metal elbow type
			SY7000 (21.6)	—	—	—	—				2-B In-line type
			SX7000 (21.6)	—	—	—	—				
			—	—	—	—	—				
			VQZ3000 (16.2)	—	—	—	—				
			VQZ3000 (21.6)	—	—	—	—				
50	500	9.5						1-A AS42□1F (24)	ø8, ø10 1/4		
								2-B AS43□1F (24)			
								1-C AS4001F (16)			
								2-A AS4200 (26)			
								2-B AS420 (102)			
	1000	19						1-A AS42□1F (26)	ø12, ø16 1/4, 3/8		
								2-B AS43□1F (24)			
								2-A AS4200 (26)			
								2-B AS420 (102)			
								2-B AS420 (102)			
1500	28.5						2-B AS420 (102)	3/8, ø16			
							2-B AS420 (102)	3/8, ø16			
							2-B AS420 (102)	3/8, ø16			
							2-B AS420 (102)	3/8, ø16			
							2-B AS420 (102)	1/2, ø16			
63	500	15						1-A AS42□1F (24)	ø10, ø12, ø16 1/4, 3/8		
								2-B AS43□1F (24)			
								1-C AS4001F (16)			
								2-A AS4200 (26)			
								2-B AS420 (102)			
	1000	30						2-B AS420 (102)	3/8, ø16		
								2-B AS420 (102)	1/2, ø16		
								2-B AS420 (102)	1/2, ø16		
								2-B AS600 (258)	3/4, ø16		
								2-B AS500 (123)	3/4, ø16		
80	500	24.5						2-A AS4200 (26)	ø16 3/8, 1/2		
								2-B AS420 (102)			
								2-B AS500 (123)			
								2-B AS600 (258)			
								2-B AS600 (258)			
	1000	48.5						2-B AS600 (258)	3/4		
								2-B AS600 (258)	3/4		
								2-B AS600 (258)	3/4		
								2-B AS600 (258)	3/4		
								2-B AS600 (258)	3/4		
100	500	38						2-B AS420 (102)	1/2, ø16		
								2-B AS600 (258)			
								2-B AS600 (258)			
								2-B AS600 (258)			
								2-B AS800 (586)			
	1000	75.5						2-B AS500 (123)	3/4		

Note) Since the cushion capacity may be exceeded in high speed, high load operation, confirm the maximum energy absorption on page 4.9-5.



Series RHC Specific Product Precautions

Be sure to read before handling.

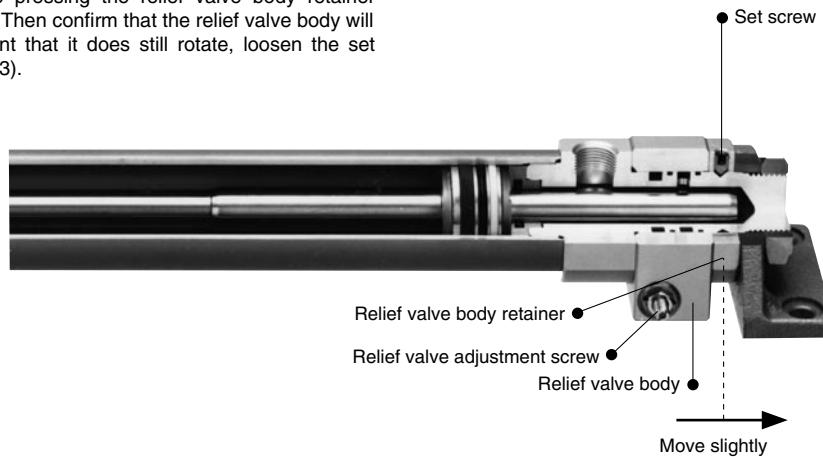
Rotation of the Relief Valve Body (ø20, 25, 32, 40)

⚠ Caution

The relief valve adjustment screw can be set in the desired direction by rotating the relief valve body according to the following procedure.

Procedure

1. After confirming that there is no residual pressure inside the cylinder, loosen the mounting brackets (foot, flange, etc.).
2. Loosen the set screw attached to the relief valve body retainer, and rotate the relief valve body.
3. Secure the set screw while pressing the relief valve body retainer against the relief valve body. Then confirm that the relief valve body will no longer rotate. In the event that it does still rotate, loosen the set screw again and repeat step 3).



MK/MK2

RS

RE

REC

C..X

MTS

C..S

MQ

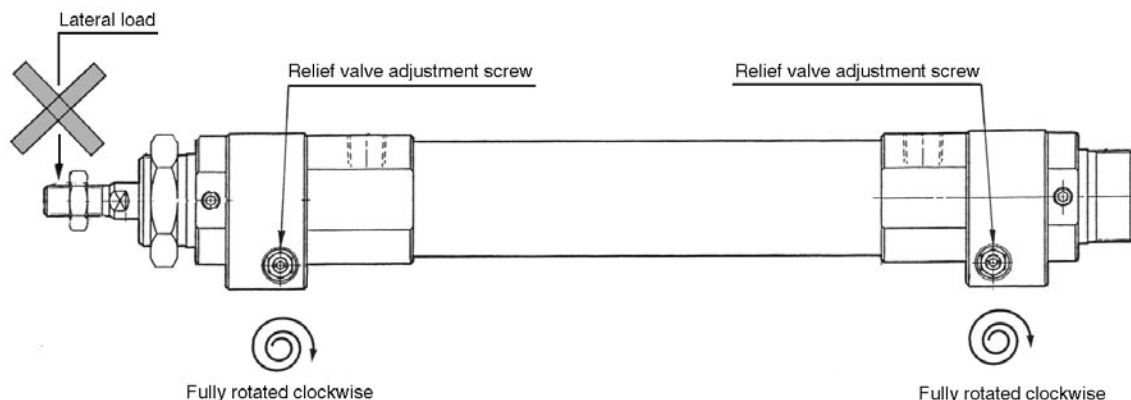
RHC

CC

Handling

⚠ Caution

1. Confirm that the relief valve body does not rotate when the cylinder is mounted. If there is play in the axial direction of the relief valve body, the cushion may become ineffective. When attaching brackets (foot, flange), do so after loosening the relief valve body set screw. Retighten the relief valve body set screw after the brackets have been attached. (ø20, 25, 32, 40)
2. The cylinder stroke end cushion adjustment screw is adjusted starting from the position where it is rotated fully clockwise (fully closed as when shipped from the factory). Furthermore, it should never be rotated more than six turns (more than 10 turns for ø63, 80 and 100) from the position where it is rotated fully counter-clockwise (fully opened). This can damage the spring inside the relief valve.
3. The cylinder ports are designed so that a maximum speed of 3000mm/s can be obtained. However, it may not be possible to attain the desired speed in the case of short cylinder strokes. It may also be impossible to attain the desired speed due to restriction by component equipment (valves, speed control valves, piping, fittings, etc.). Make every effort to ensure sufficient effective area in the component equipment.
4. Avoid applications in which lateral loads are applied to the cylinder piston rod. Especially in the case of long strokes, implement measures such as providing a guide for the load.



Series RHC Model Selection

High Power Cylinder Model Selection Examples

Selection example 1

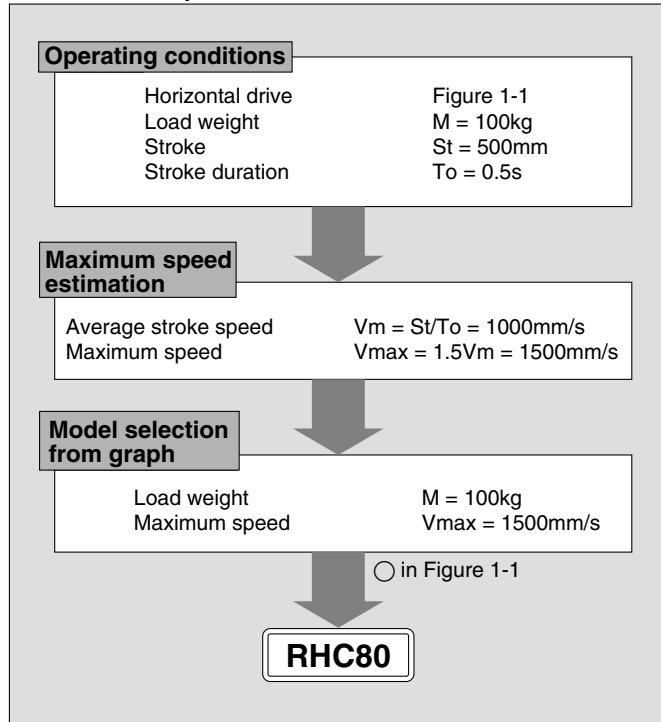
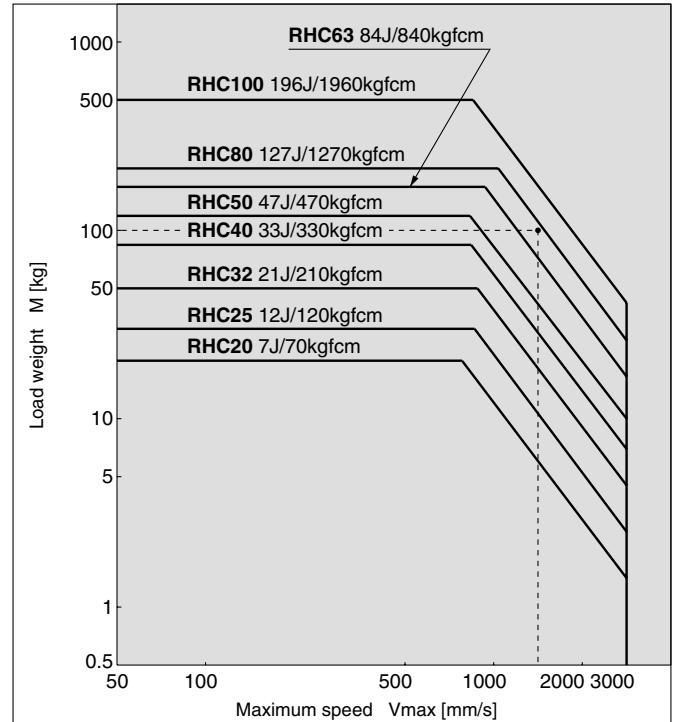


Figure 1-1 Horizontal drive Supply pressure 0.5MPa



Selection example 2

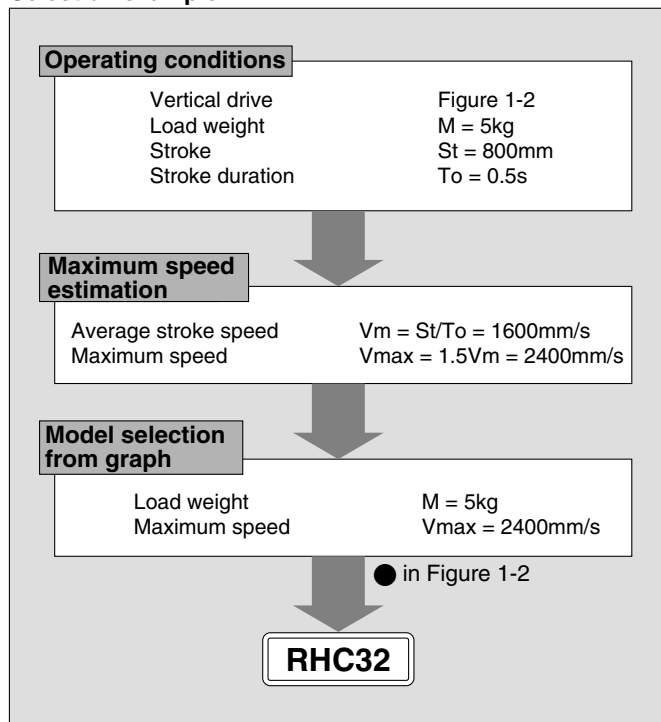
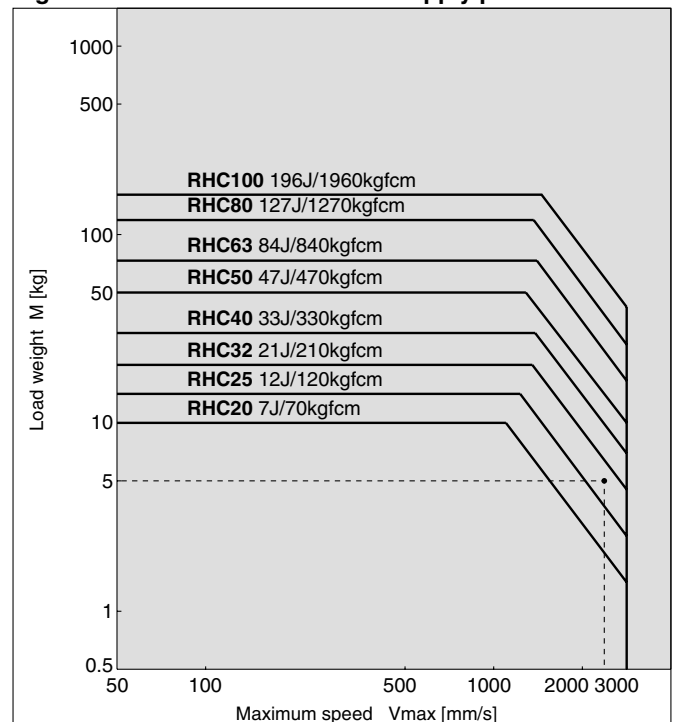


Figure 1-2 Vertical drive Supply pressure 0.5MPa



Maximum energy absorption

Bore size (mm)	20	25	32	40	50	63	80	100
Maximum energy absorption [J (kgfcm)]	7 (70)	12 (120)	21 (210)	33 (330)	47 (470)	84 (840)	127 (1270)	196 (1960)