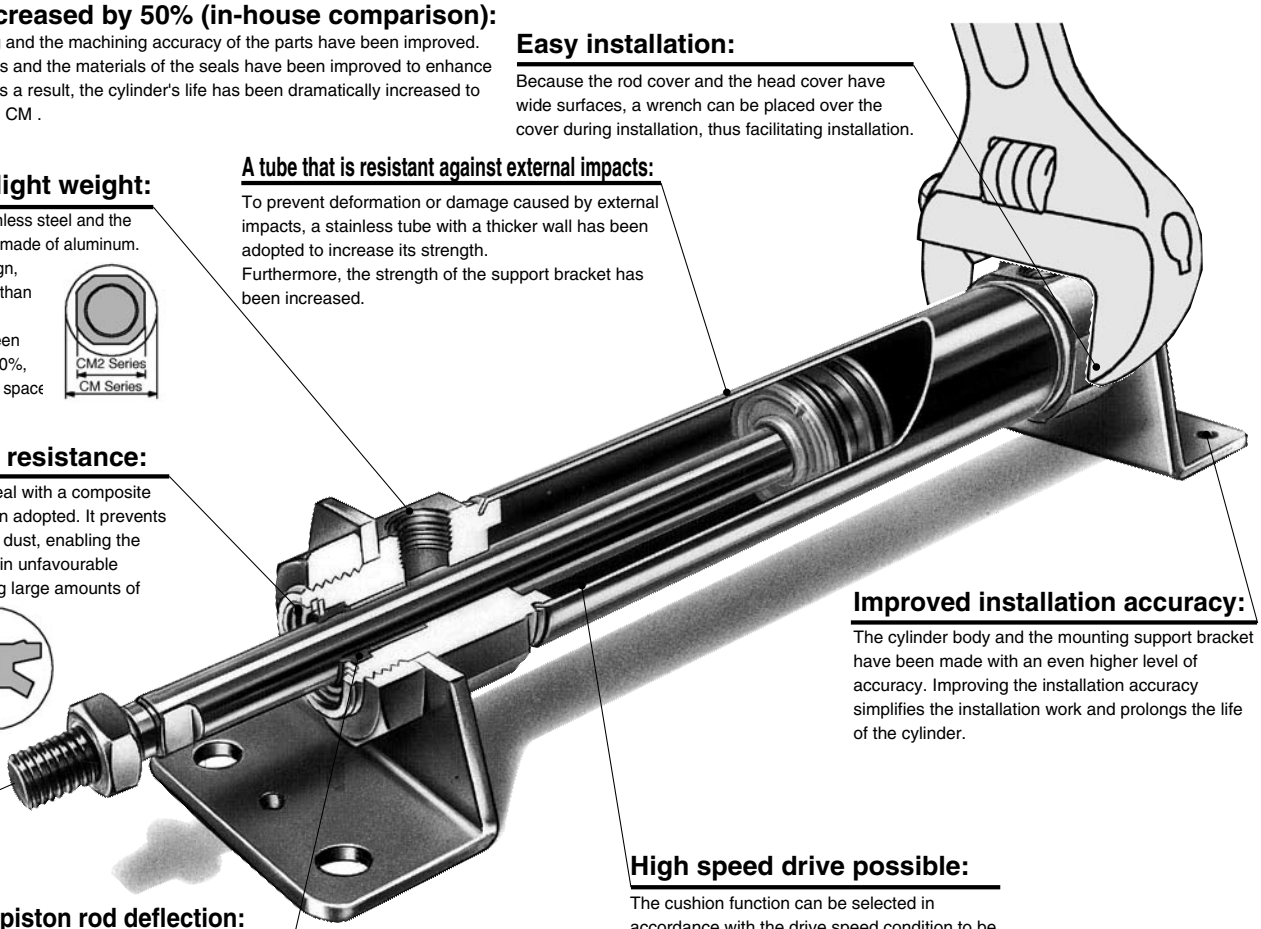
Air Cylinder
Series CM2
ø20, ø25, ø32, ø40

Longer life, increased by 50% (in-house comparison):
The cylinder's mounting and the machining accuracy of the parts have been improved. Furthermore, the shapes and the materials of the seals have been improved to enhance their wear resistance. As a result, the cylinder's life has been dramatically increased to 1.5 times that of Series CM .

Easy installation:
Because the rod cover and the head cover have wide surfaces, a wrench can be placed over the cover during installation, thus facilitating installation.

Compact and light weight:
The tube is made of stainless steel and the cover and the piston are made of aluminum. Through a compact design, it weighs 30 to 40% less than Series CM . The lateral width of the cover has been reduced approximately 10%, requiring less installation space

A tube that is resistant against external impacts:
To prevent deformation or damage caused by external impacts, a stainless tube with a thicker wall has been adopted to increase its strength.
Furthermore, the strength of the support bracket has been increased.



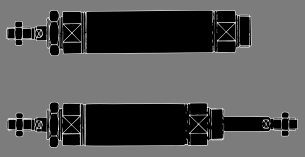
Excellent dust resistance:
A special shaped rod seal with a composite formed dust lip has been adopted. It prevents the intrusion of external dust, enabling the cylinder to be operated in unfavourable environments containing large amounts of cutting chips.

Improved installation accuracy:
The cylinder body and the mounting support bracket have been made with an even higher level of accuracy. Improving the installation accuracy simplifies the installation work and prolongs the life of the cylinder.

High speed drive possible:
The cushion function can be selected in accordance with the drive speed condition to be used. Therefore, it can support a high-speed drive.
- Rubber bumper ····· 50 to 750mm/s (Standard equipment)

Reduced piston rod deflection:
The clearance between the bushing and the piston rod, and between the tube and the wear ring have been decreased to achieve higher accuracy. Thus, the deflection of the piston rod has been decreased to 1/2 of Series CM .

Replaceable rod seal:
The rod seal, which is the first to wear out in a cylinder, can be replaced. This extends the life of the cylinder, and is economical. The seal can be replaced with the cylinder mounting, thus requiring less manpower.



Air Cylinder
Series CM2
ø20, ø25, ø32, ø40

Variations

Series	Action	Rod	Cushion	Basic	Variation: With One-touch fitting	Variation: Rod boot	Variation: Air hydro	Variation: Clean series	Variation: Copper free	Bore size (mm)	Page
Standard Series CM2 	Double acting	Single rod	Rubber	●	●	●	●	●	●	20, 25, 32, 40	1.4-3
			Air	●	●	●	●	●	●		
		Double rod	Rubber	●	●	●	●		●		1.4-22
			Air	●					●		
	Single acting	Single rod (Spring return/ Spring extend)	Rubber	●	●				●		1.4-33
Non-rotating rod Series CM2K 	Double acting	Single rod	Rubber	●		●			●		1.4-50
			Air	●		●			●		
		Double rod	Rubber	●					●		1.4-56
			Air	●					●		
	Single acting	Single rod (Spring return/ Spring extend)	Rubber	●					●		1.4-61
Direct mount style Series CM2R 	Double acting	Single rod	Rubber	●			●	●	●		1.4-66
			Air	●					●		
Direct mount/Non-rotating rod Series CM2RK 	Double acting	Single rod	Rubber	●					●		1.4-73
Low friction Series CM2Q 	Double acting	Single rod	Rubber	●							1.4-78
Centralized piping Series CM2□□P 	Double acting	Single rod	Rubber	●		●			●		1.4-83

Applicable auto switch

Auto switch model	Band mounting
Reed switch	D-C7/C8, D-C73C/C80C, D-B5/B6 D-B59W, D-A3□A, D-A44A
Solid state switch	D-H7□, D-H7□W, D-H7□F D-H7BAL, D-G5NTL, D-G39A/K39A

Made to Order

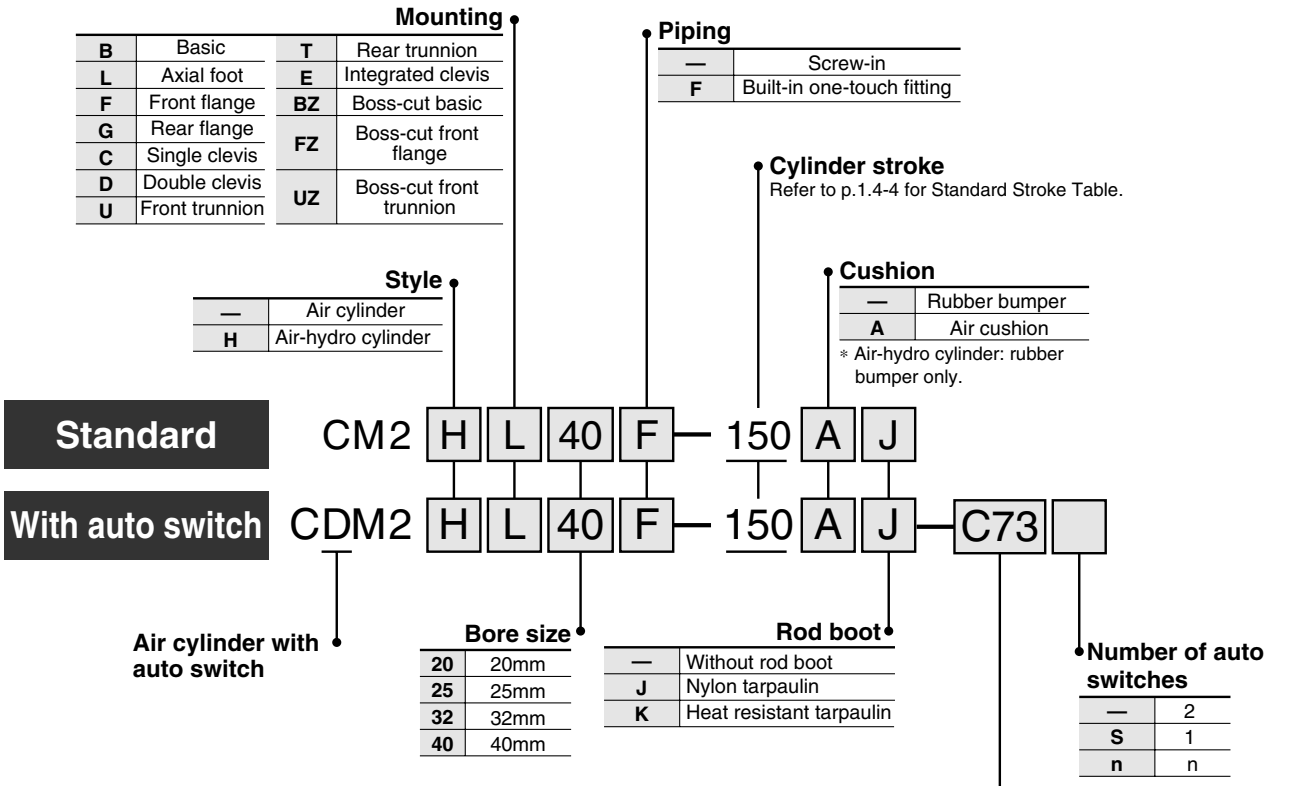
Refer to p.5.4-1 for made to order specifications for series CM2.

Standard: Double Acting Single Rod

Series CM2

ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	5V	—	C76	●	●	—	—	IC	—
				2 wire	12V	100V	C73	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	C80	●	●	—	—	IC	Relay PLC
			Yes		12V	—	B53	●	●	●	—	—	PLC
					12V	100V, 200V	B54	●	●	●	—	—	Relay PLC
			No		12V	200V or less	B64	●	●	—	—		
		Connector	Yes		12V	—	C73C	●	●	●	●		
			No		5V, 12V	24V or less	C80C	●	●	●	●	IC	
		Terminal conduit	Yes		12V	—	A33A	—	—	—	●	—	PLC
					12V	100V, 200V	A34A	—	—	—	●		Relay PLC
		DIN connector					A44A	—	—	—	●		
	Diagnostic indicator (2 colour)	Grommet			—	—	B59W	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	5V, 12V	—	H7A1	●	●	○	—	IC	Relay PLC
				3 wire(PNP)			H7A2	●	●	○	—		
				2 wire	12V		H7B	●	●	○	—	—	
		Connector					H7C	●	●	●	●		
		Terminal conduit		3 wire(NPN)	5V, 12V		G39A	—	—	—	●	IC	
				2 wire	12V		K39A	—	—	—	●	—	
	Diagnostic indicator (2 colour)	Grommet		3 wire(NPN)	5V, 12V		H7NW	●	●	○	—	IC	
				3 wire(PNP)			H7PW	●	●	○	—		
				2 wire	12V		H7BW	●	●	○	—	—	
	Water resistant (2 colour)						H7BA	—	●	○	—		
	With timer			3 wire(NPN)	5V, 12V		G5NT	—	●	○	—	IC	
	Diagnostic output (2 colour)			4 wire (NPN)			H7NF	●	●	○	—		
	Latch with diagnostic output (2 colour)				—		H7LF	●	●	○	—	—	

∗ Lead wire length
0.5m : —
3m : L
5m : Z
None: N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.

∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" .

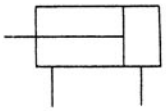
Integrated clevis style

Specifications

Bore size (mm)	20	25	32	40
Style	Air cylinder			
Action	Double acting/Single rod			
Fluid	Air			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.05MPa			
Ambient and fluid temperature	Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Piston speed	50 to 750mm/s			
Cushion	Rubber bumper			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

JIS symbol

Double acting/Single rod



Made to Order

Refer to p.5.4-1 for made to order specifications for series CM2.

Standard Stroke

Bore size (mm)	Standard stroke(mm) (1)	Long stroke (2) (mm)	Max. stroke (mm)
20	25, 50, 75, 100, 125, 150 200, 250, 300	400	1000
25		450	1500
32		450	2000
40		500	2000

Note 1) Other intermediate strokes can be manufactured upon receipt of order.
Note 2) Long stroke applies to the axial foot style and the front flange style. If other mounting brackets are used or the length exceeds the long stroke limit, the stroke should be selected based on the stroke selection table. (Refer to Data on p.0-21.)

Minimum Strokes for Auto Switches Mounting

(mm)

Auto switch model	Number of switches				
	2		n		1
	On different surfaces	On the same surface	On different surfaces	On the same surface	
D-C7 **D-C8**	15	50	15+45 ($\frac{n-2}{2}$) (n=2, 4, 6···)	50+45(n–2)	10
D-H7□ **D-H7□W** **D-H7BAL** **D-H7NF**	15	60		60+45(n–2)	10
D-C73C **D-C80C** **D-H7C**	15	65	15+50 ($\frac{n-2}{2}$) (n=2, 4, 6···)	65+50(n–2)	10
D-H7LF	20	65	20+50 ($\frac{n-2}{2}$) (n=2, 4, 6···)		10
D-B5 **D-B6**	15	75	15+50 ($\frac{n-2}{2}$) (n=2, 4, 6···)	75+55(n–2)	10
D-B59W	20	75	20+50 ($\frac{n-2}{2}$) (n=2, 4, 6···)		15
D-A3□A **D-G39A** **D-K39A** **D-A44A**	35	100	35+30 (n–2)	100+100(n–2)	10

Boss-cut Style

Boss for the head cover bracket is eliminated and the total length of cylinder is shortened.

Comparison of total cylinder length with standard style (mm)

ø20	ø25	ø32	ø40
▲13	▲13	▲13	▲16

Mounting

■Boss-cut basic (BZ) ■Boss-cut flange (FZ)
■Boss-cut trunnion (UZ)

Rod Boot Materials

Symbol	Material	Max. ambient temp.
J	Nylon tarpaulin	70°C
K	Neoprene cloth	110°C*

* Maximum ambient temperature for the rod boot only.

Mounting Bracket Part No.

Bore size mm	20	25	32	40
Axial foot*	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Single clevis	CM-C020B	CM-C032B		CM-C040B
Double clevis (with pins)**	CM-D020B	CM-D032B		CM-D040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

* Two foot brackets and a mounting nut are attached.
** Clevis pins and snap rings (cotter pins for bore size 40) are attached.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA3: D-B5/B6/G5
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached

⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions.

Precautions on Handling

⚠ Warning

① **Do not rotate the cover.**
· When installing the 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 with the snap ring that could fly out.**
· When replacing the rod seal, be careful with the removal of the snap ring, as the snap ring could fly out.

② **Do not touch the cylinder during operation.**
· If the cylinder is operating at a high frequency, be aware that the cylinder tube surface could become very hot, creating the risk of burns.

Mounting Accessories

Mounting \ Accessories	Standard			Option			
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint (3)	Pivot bracket	Rod boot
Basic	● (1 pc.)	●	—	●	●	—	●
Axial foot	● (2)	●	—	●	●	—	●
Front flange	● (1)	●	—	●	●	—	●
Rear flange	● (1)	●	—	●	●	—	●
Integrated clevis	—(1)	●	—	●	●	●	●
Single clevis	—(1)	●	—	●	●	—	●
Double clevis (3)	—(1)	●	●	●	●	—	●
Front trunnion	● (1) (2)	●	—	●	●	—	●
Rear trunnion	● (1) (2)	●	—	●	●	—	●
Boss-cut basic	● (1)	●	—	●	●	—	●
Boss-cut flange	● (1)	●	—	●	●	—	●
Boss-cut trunnion	● (1)	●	—	●	●	—	●
Note					With pins	With pins	

Note 1) Mounting nuts are not attached for the integrated clevis, the single clevis, and the double clevis styles.
Note 2) Trunnion nuts are attached for the front trunnion and the rear trunnion styles.
Note 3) Pins and snap rings (cotter pins for bore size 40) are attached for double clevis and the double knuckle joint.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Basic	0.14	0.21	0.28	0.56
	Axial foot	0.29	0.37	0.44	0.83
	Flange	0.20	0.30	0.37	0.68
	Integrated clevis	0.12	0.19	0.27	0.52
	Single clevis	0.18	0.25	0.32	0.65
	Double clevis	0.19	0.27	0.33	0.69
	Trunnion	0.18	0.28	0.34	0.66
	Boss-cut basic	0.13	0.19	0.26	0.53
	Boss-cut flange	0.19	0.28	0.35	0.65
	Boss-cut trunnion	0.17	0.26	0.32	0.63
Additional weight by each 50 stroke		0.04	0.06	0.08	0.13
Accessory	Pivot bracket (with pins)	0.07	0.07	0.14	0.14
	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

Calculation example: CM2L32-100
- ●Basic weight:····· 0.44 (Foot, ø32)
- ●Additional weight:··· 0.08/50 stroke
- ●Cylinder stroke:····· 100 stroke

0.44+0.08 X 100/50=0.60kg

Water Resistant

CM2 | **Mounting** | **Bore size** | **R** | **Stroke** | **-XC6**

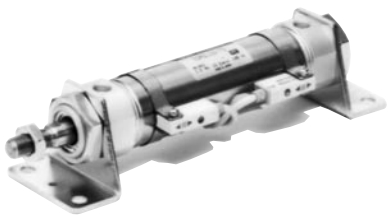
Material of piston rod and rod end nut

—	Carbon steel
-XC6	Stainless steel

Water resistant

R	Seal: NBR (Nitrile rubber)
V	Seal: FKM (Fluorine rubber)

Ideal for use in a machine tool environment exposed to coolant mist. Also suited for use in areas in which water splashes, such as food processing equipment or car washers.

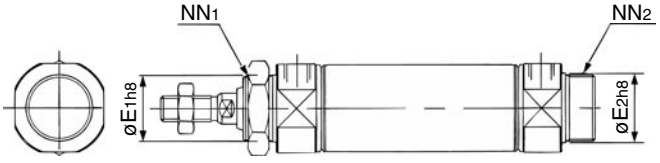


Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper
Piping	Screw-in
Piston speed	50 to 750mm/s

∗ Auto switch can be mounted.

Dimensions



Bore size (mm)	E1	E2 *	NN1	NN2*
20	$22^{0}_{-0.033}$	$20^{0}_{-0.033}$	M22 X 1.5	M20 X 1.5

∗ These dimensions and other dimensions are the same as standard style. Contact SMC for part numbers of the foot, the flange and the mounting nut for ø20.

Air-hydro

CM2H | **Mounting** | **Bore size** — **Stroke** | **Rod boot**

Air-hydro style

A low hydraulic pressure cylinder used at a pressure of 1.0MPa or below.
Through the concurrent use of a CC series air-hydro unit, it is possible to operate at a constant or low speeds or to effect an intermediate stop, just like a hydraulic unit, while using pneumatic equipment such as a valve.

Specifications

Style	Air-hydro
Fluid	Turbine oil
Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.18MPa
Piston speed	15 to 300mm/s
Ambient and fluid temperature	+5 to +60°C
Thread tolerance	JIS class 2
Stroke tolerance	+1.4 0
Cushion	Rubber bumper (Standard equipment)
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut

∗ Auto switch can be mounted.
∗ Dimensions are the same as the standard model.

• Construction: Refer to p.1.4-9
• Dimensions: Refer to p.1.4-10 to 1.4-18

With Air Cushion

CM2 | **Mounting** | **Bore size** — **Stroke** | **A** | **Rod boot**

With air cushion

A cushion mechanism is provided on the cover at both ends to absorb the impact that is created during high speed operations. Thus, it does not transmit vibrations to the surroundings and prolongs the life of the cylinder.

Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Air cushion
Piston speed	50 to 1000mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut

∗Auto switches can be mounted.

Allowable Kinetic Energy

Bore size (mm)	Effective cushion length (mm)	Kinetic energy absorption
20	11.0	0.54J
25	11.0	0.78J
32	11.0	1.27J
40	11.8	2.35J

• Construction: Refer to p.1.4-9
• Dimensions: Refer to p.1.4-10 to 1.4-18
• Refer to p.1.4-4 for other specifications.

Built-in One-touch Fitting

CM2 | **Mounting** | **Bore size** | **F** — **Stroke**

Built-in One-touch fitting

A style in which One-touch fittings are built in the cylinder. It dramatically reduces the piping labour and installation space.

• Construction: Refer to p.1.4-9
• Dimensions: Refer to p.1.4-10 to 1.4-18
• Refer to p1.4-4 for other specifications.

Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper
Piping	Built-in One-touch fitting
Piston speed	50 to 750mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut

∗ Auto switches can be mounted.

Applicable Tube O.D./I.D.

Bore size (mm)	ø20	ø25	ø32	ø40
Applicable tube (mm)	ø6/4	ø6/4	ø6/4	ø8/6
Applicable tube material	Nylon, Soft nylon, Polyurethane			

⚠ Caution

The One-touch fitting cannot be replaced.
• The One-touch fitting is press-fit into the cover and cannot be replaced.

Clean Series

10-CM2 | Mounting | Bore size | Stroke

● Clean series

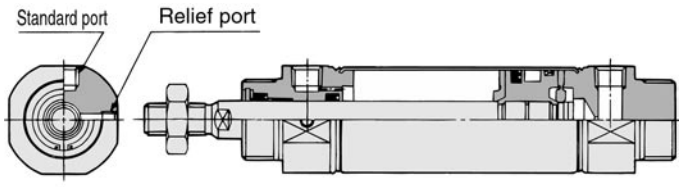
The rod portion of the actuator has a double seal construction, and a relief port is provided to discharge the exhaust air directly outside of the clean room. Thus, it can be used in a Class 100 clean room.

Specifications

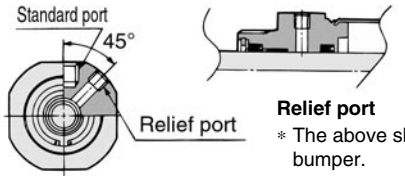
Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper/Air cushion
Relief port size	M5
Piston speed	30 to 400mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Boss-cut

∗ Auto switches can be mounted.

Construction



ø20, ø25



Relief port

∗ The above shows the case of rubber bumper.

ø32, ø40

Copper Free

20-CM2 | Mounting | Bore size | Stroke

● Copper free

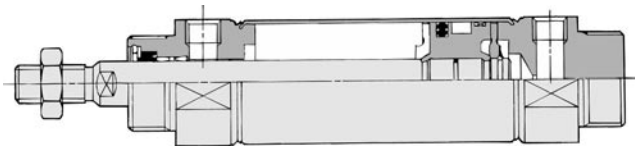
This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

Specifications

Action	Double acting/Single rod	
Bore size	ø20, ø25, ø32, ø40	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.05MPa	
Cushion	Rubber bumper	Air cushion
Piston speed	50 to 750mm/s	50 to1000mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion , Integrated clevis, Boss-cut	

∗ Auto switches can be mounted.

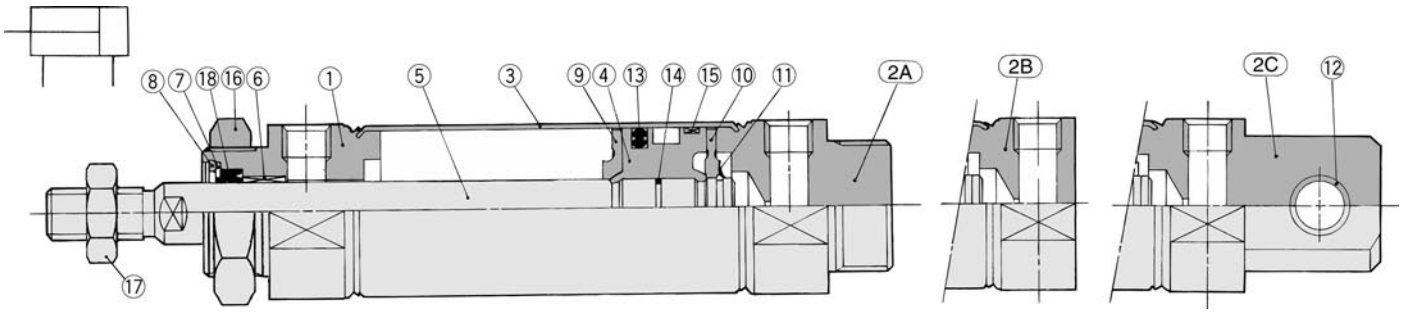
Construction



CJ1
CJP
CJ2
CM2
C85
C76
CG1
MB
MB1
CP95
C95
C92
CA1
CS1

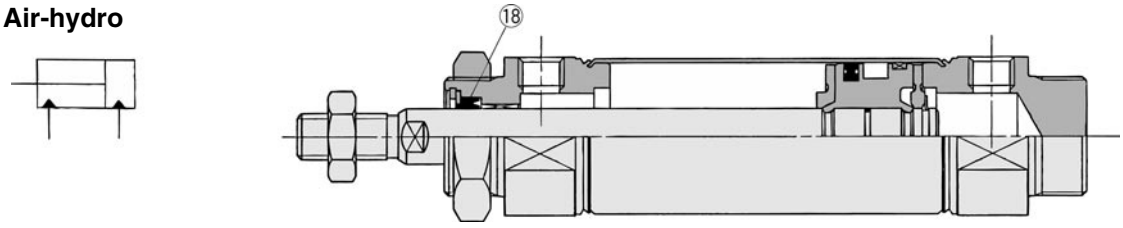
Construction

Rubber bumper

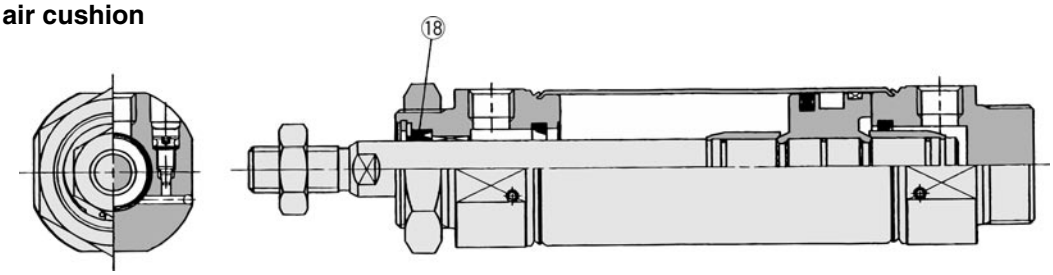


Boss-cut style Integrated clevis style

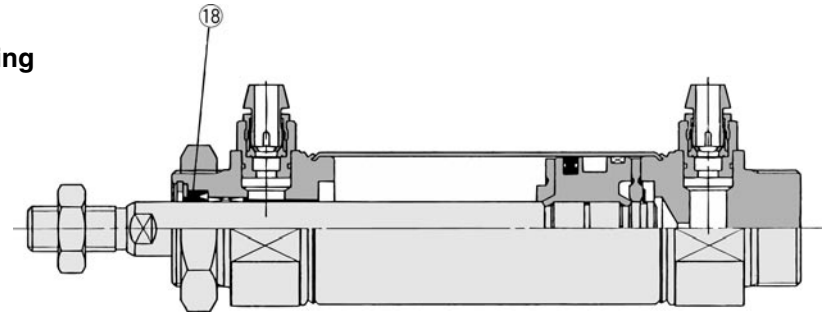
Air-hydro



With air cushion



Built-in One-touch fitting



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
2A	Head cover A	Aluminum alloy	White anodized (Standard style)
2B	Head cover B	Aluminum alloy	White anodized (boss-cut style)
2C	Head cover C	Aluminum alloy	White anodized (Integrated clevis style)
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Bushing	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Bumper A	Urethane	
⑩	Bumper B	Urethane	
⑪	Snap ring	Stainless	

No.	Description	Material	Note
⑫	Bushing for clevis	Oil impregnated sintered alloy	
⑬	Piston seal	NBR	
⑭	Piston gasket	NBR	
⑮	Wearing	Resin	
⑯	Mounting nut	Carbon steel	Nickel plated
⑰	Rod end nut	Carbon steel	Nickel plated

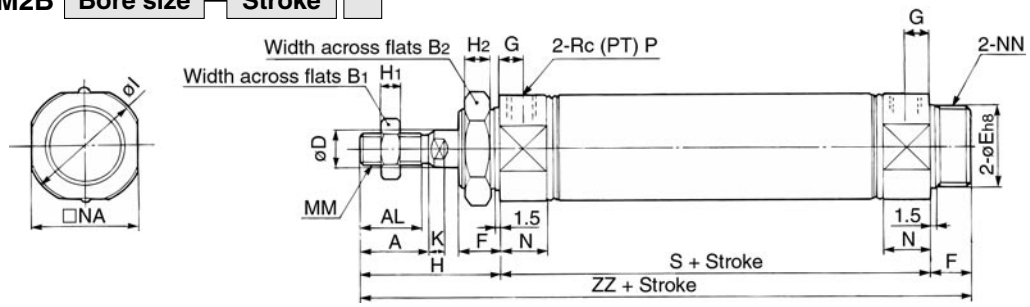
Replacement Parts

●With rubber bumper/With air cushion/Built-in One-touch fitting

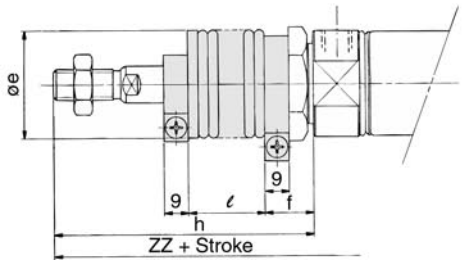
No.	Description	Material	Bore size (mm)/Part No.			
			20	**25**	**32**	**40**
⑱	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ
●Air-hydro style						
⑱	Rod seal	NBR	HDU-8	HDU-10	HDU-12L	HDU-14

Basic (B)

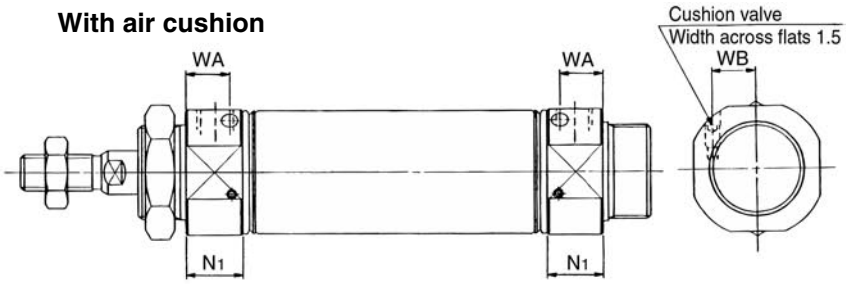
CM2B Bore size — Stroke



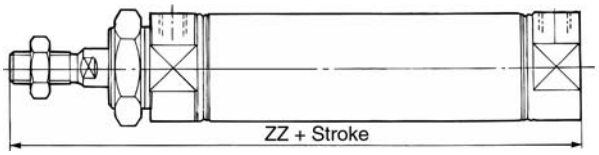
With rod boot



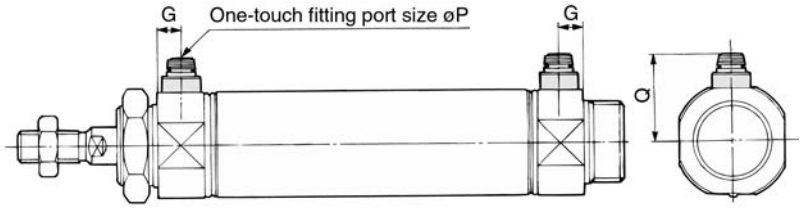
With air cushion



Boss-cut



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B1	B2	D	E	F	G	H	H1	H2	I	K	MM	N	NA	NN	P	S	ZZ
20	1 to 300	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	1 to 300	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	1 to 300	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	1 to 300	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 rod boot

(mm)

Bore \ Symbol / Stroke	e	f	h					ℓ					ZZ				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101to150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	36	17	68	81	93	106	131	12.5	25	37.5	50	75	143	156	168	181	206
25	36	17	72	85	97	110	135	12.5	25	37.5	50	75	147	160	172	185	210
32	36	17	72	85	97	110	135	12.5	25	37.5	50	75	149	162	174	187	212
40	46	19	77	90	102	115	140	12.5	25	37.5	50	75	181	194	206	219	244

Boss-cut

(mm)

Bore	ZZ					
	Without gaiter	With gaiter				
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	103	130	143	155	168	193
25	107	134	147	159	172	197
32	109	136	149	161	174	199
40	138	165	178	190	203	228

With air cushion

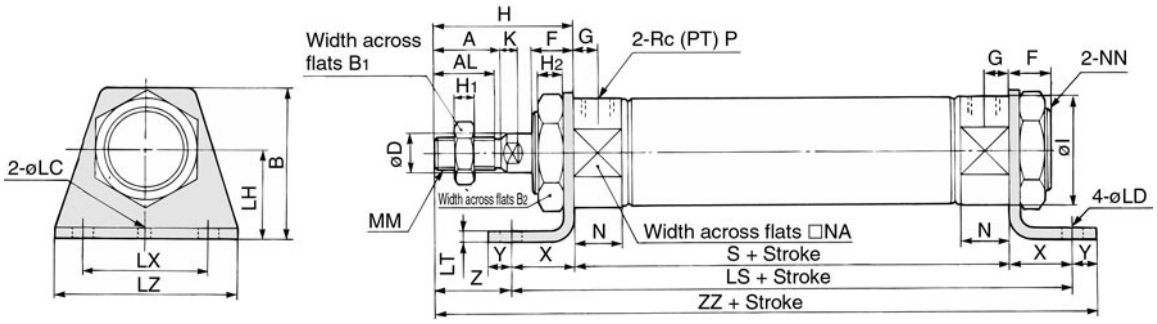
Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

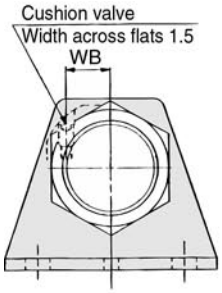
Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

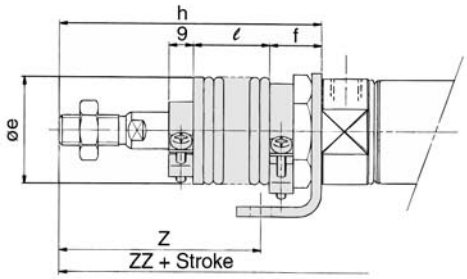
Axial Foot (L)

CM2L Bore size — Stroke

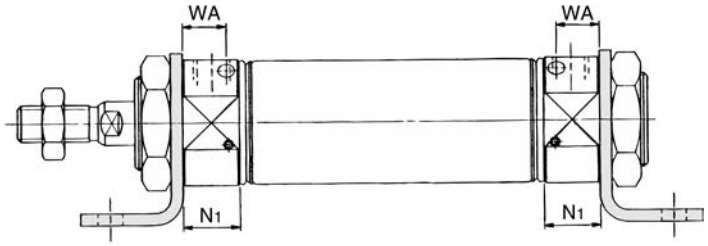




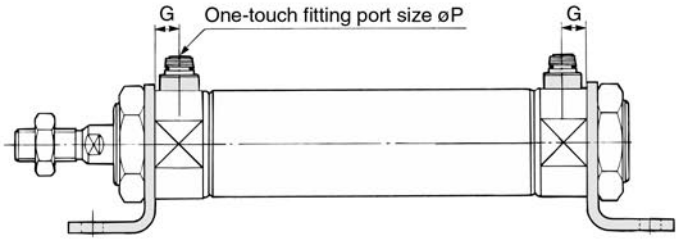
With rod boot

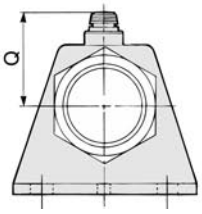


With air cushion



Built-in One-touch fitting





(mm)

Bore	Stroke range	A	AL	B	B1	B2	D	F	G	H	H1	H2	I	K	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	S	X	Y	Z	ZZ
20	1to400	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	1to450	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	1to450	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	1to500	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 rod boot

(mm)

Bore \ Symbol / Stroke	e	f	h							ℓ							Z						
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	36	18.2	68	81	93	106	131	156	—	12.5	25	37.5	50	75	100	—	48	61	73	86	111	136	—
25	36	18.2	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	52	65	77	90	115	140	165
32	36	18.2	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	52	65	77	90	115	140	165
40	46	20.2	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	54	67	79	92	117	142	167

With rod boot

(mm)

Bore \ Symbol / Stroke	ZZ						
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	158	171	183	196	221	246	—
25	162	175	187	200	225	250	275
32	164	177	189	202	227	252	277
40	198	211	223	236	261	286	311

With air cushion

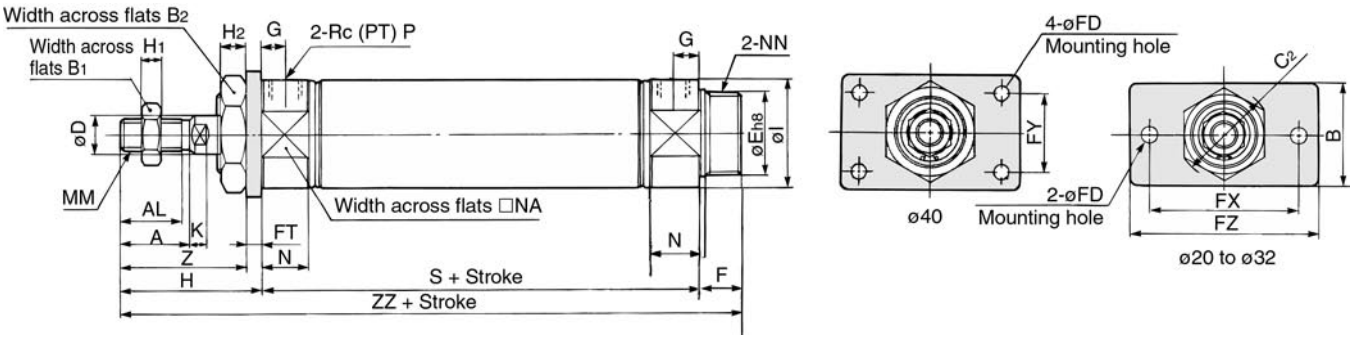
Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

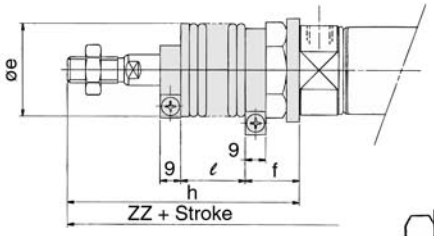
Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

Front Flange (F)

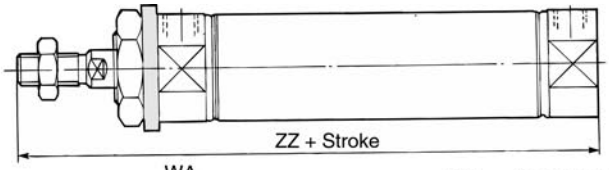
CM2F Bore size — Stroke



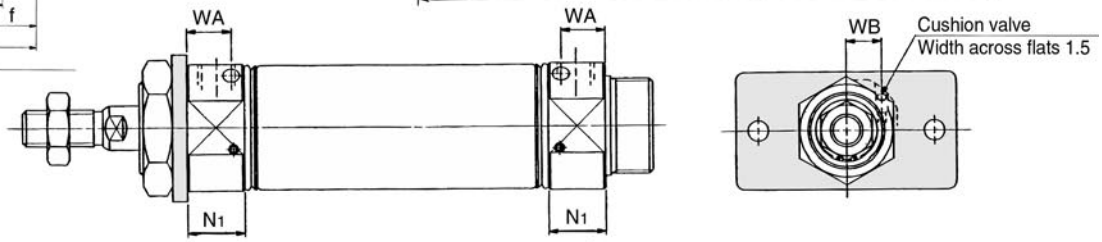
With rod boot



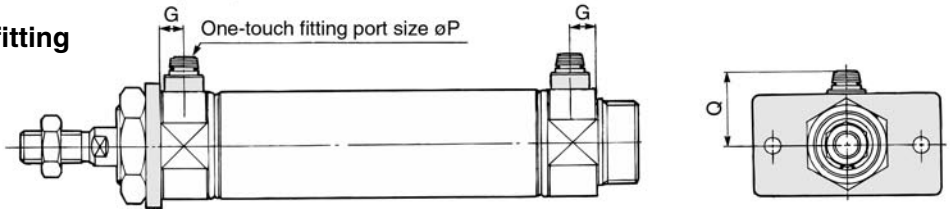
Boss-cut



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B	B1	B2	C2	D	E	F	FD	FT	FX	FY	FZ	G	H	H1	H2	I	K	MM	N	NA	NN	P	S	Z	ZZ
20	1to400	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	116
25	1to450	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	120
32	1to450	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	122
40	1to500	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	154

With rod boot

(mm)

Bore \ Symbol / Stroke	e	f	h							ℓ							ZZ						
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	36	19	68	81	93	106	131	156	—	12.5	25	37.5	50	75	100	—	143	156	168	181	206	231	—
25	36	19	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	147	160	172	185	210	235	260
32	36	19	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125	149	162	174	187	212	237	262
40	46	22	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125	181	194	206	219	244	269	294

Boss-cut

Bore	ZZ							
	Without gaiter	With gaiter						
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 t o500
20	103	130	143	155	168	193	218	—
25	107	134	147	159	172	197	222	247
32	109	136	149	161	174	199	224	249
40	138	165	178	190	203	228	253	278

With air cushion

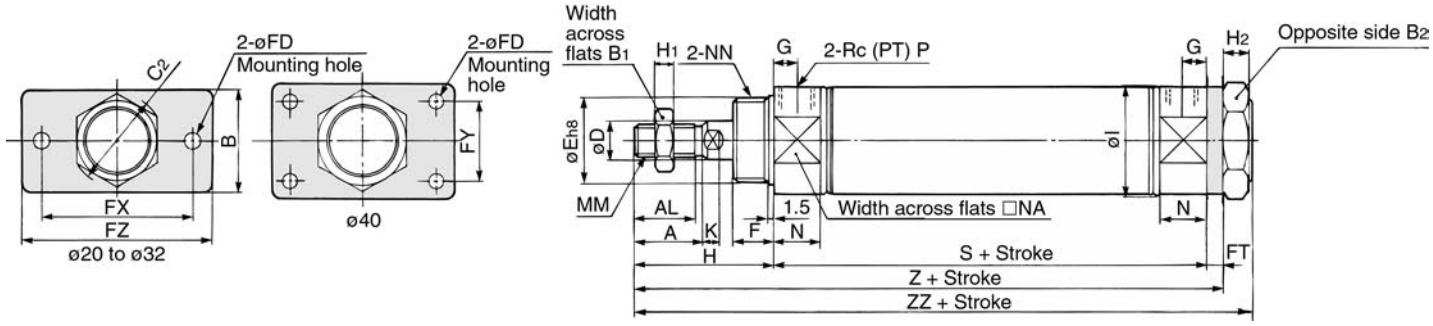
Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

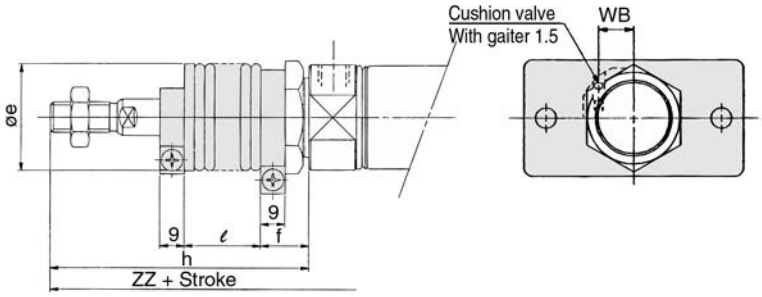
Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

Rear Flange (G)

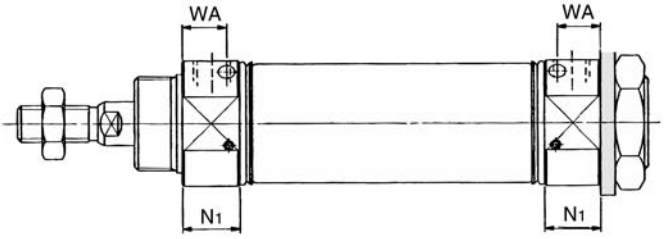
CM2G [Bore size] — [Stroke] [ ]



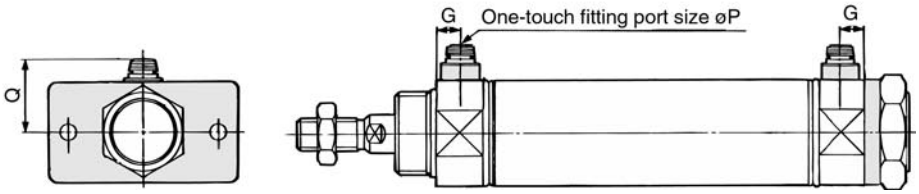
With rod boot



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B	B1	B2	C2	D	E	F	FD	FT	FX	FY	FZ	G	H	H1	H2	I
20	1 to 300	18	15.5	34	13	26	30	8	$20^{0}_{-0.033}$	13	7	4	60	—	75	8	41	5	8	28
25	1 to 300	22	19.5	40	17	32	37	10	$26^{0}_{-0.033}$	13	7	4	60	—	75	8	45	6	8	33.5
32	1 to 300	22	19.5	40	17	32	37	12	$26^{0}_{-0.033}$	13	7	4	60	—	75	8	45	6	8	37.5
40	1 to 300	24	21	52	22	41	47.3	14	$32^{0}_{-0.039}$	16	7	5	66	36	82	11	50	8	10	46.5

(mm)

Bore	K	MM	N	NA	NN	P	S	Z	ZZ
20	5	M8 X 1.25	15	24	M20 X 1.5	1/8	62	107	116
25	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8	62	111	120
32	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8	64	113	122
40	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4	88	143	154

With air cushion

Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

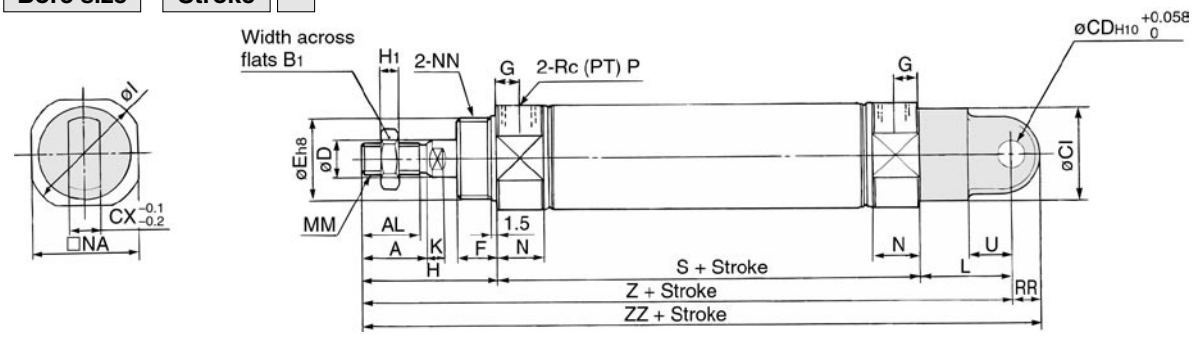
With rod boot

(mm)

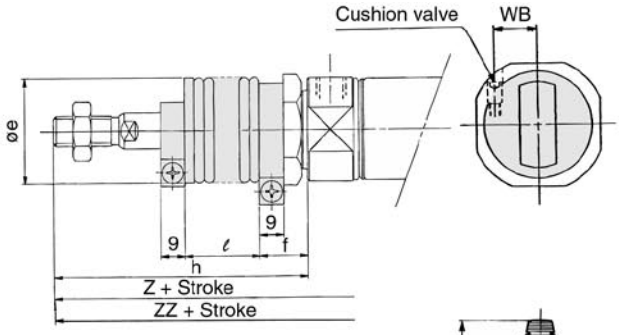
Symbol / Stroke / Bore	e	f	h					ℓ					ZZ				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	35	17	68	81	93	106	131	12.5	25	37.5	50	75	143	156	168	181	206
25	35	17	72	85	97	110	135	12.5	25	37.5	50	75	147	160	172	185	210
32	35	17	72	85	97	110	135	12.5	25	37.5	50	75	149	162	174	187	212
40	46	19	77	90	102	115	140	12.5	25	37.5	50	75	181	194	206	219	244

Single Clevis (C)

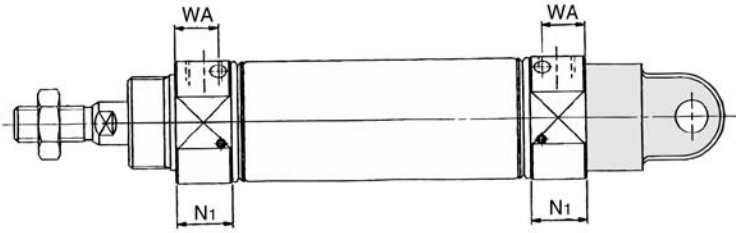
CM2C Bore size — Stroke



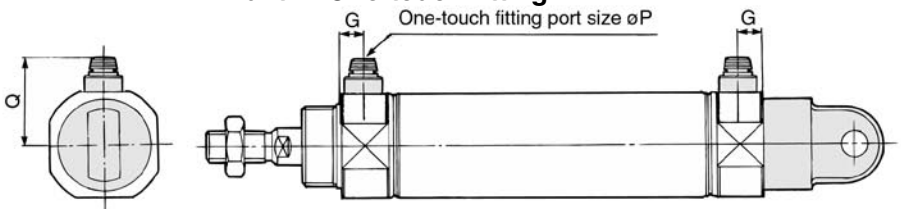
With rod boot



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B1	CI	CD	CX	D	E	F	G	H	H1	I	K	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ
20	1 to 300	18	15.5	13	24	9	10	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	30	M8 X 1.25	15	24	M20 X 1.5	1/8	9	62	14	133	142
25	1 to 300	22	19.5	17	30	9	10	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	30	M10 X 1.25	15	30	M26 X 1.5	1/8	9	62	14	137	146
32	1 to 300	22	19.5	17	30	9	10	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	30	M10 X 1.25	15	34.5	M26 X 1.5	1/8	9	64	14	139	148
40	1 to 300	24	21	22	38	10	15	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	39	M14 X 1.5	21.5	42.5	M32 X 2	1/4	11	88	18	177	188

With rod boot

(mm)

Symbol / Stroke / Bore	e	f	h					ℓ					Z				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	36	17	68	81	93	106	131	12.5	25	37.5	50	75	160	173	185	198	223
25	36	17	72	85	97	110	135	12.5	25	37.5	50	75	164	177	189	202	227
32	36	17	72	85	97	110	135	12.5	25	37.5	50	75	166	179	191	204	229
40	46	19	77	90	102	115	140	12.5	25	37.5	50	75	204	217	229	242	267

(mm)

Symbol / Stroke / Bore	ZZ				
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	169	182	194	207	232
25	173	186	198	211	236
32	175	188	200	213	238
40	215	228	240	253	278

With air cushion

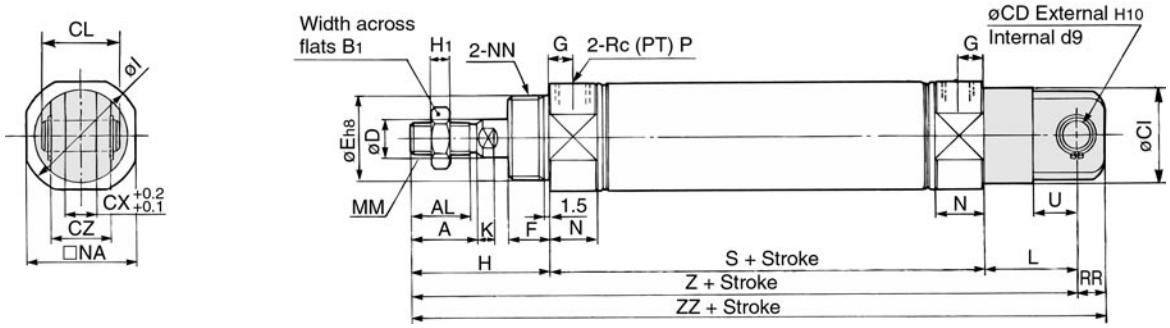
Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

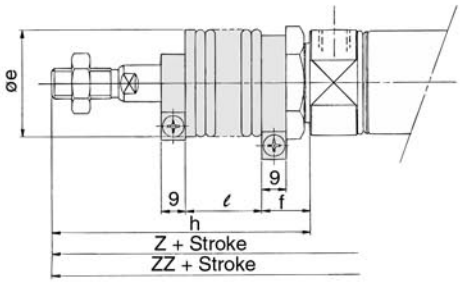
Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

Double Clevis (D)

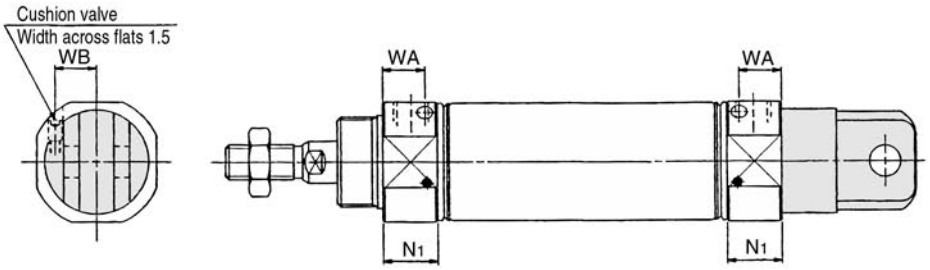
CM2D | Bore size | — | Stroke | |



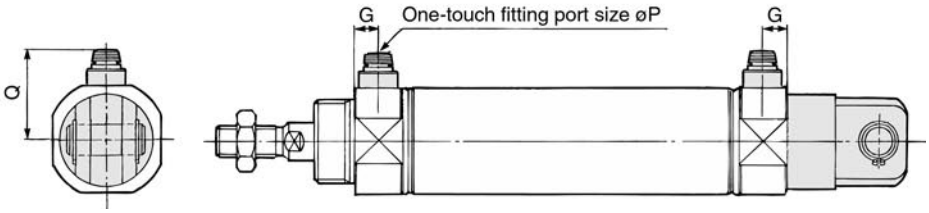
With rod boot



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B1	CD	CI	CL	CX	CZ	D	E	F	G	H	H1	I	K	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ
20	1 to 300	18	15.5	13	9	24	25	10	19	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	30	M8 X 1.25	15	24	M20 X 1.5	1/8	9	62	14	133	142
25	1 to 300	22	19.5	17	9	30	25	10	19	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	30	M10 X 1.25	15	30	M26 X 1.5	1/8	9	62	14	137	146
32	1 to 300	22	19.5	17	9	30	25	10	19	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	30	M10 X 1.25	15	34.5	M26 X 1.5	1/8	9	64	14	139	148
40	1 to 300	24	21	22	10	38	41.2	15	30	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	39	M14 X 1.5	21.5	42.5	M32 X 2	1/4	11	88	18	177	188

∗ Clevis pins and snap rings (cotter pins for ø40) are attached.

With rod boot

(mm)

Bore \ Symbol / Stroke	e	f	h					ℓ					Z				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	36	17	68	81	93	106	131	12.5	25	37.5	50	75	160	173	185	198	223
25	36	17	72	85	97	110	135	12.5	25	37.5	50	75	164	177	189	202	227
32	36	17	72	85	97	110	135	12.5	25	37.5	50	75	166	179	191	204	229
40	46	19	77	90	102	115	140	12.5	25	37.5	50	75	204	217	229	242	267

With rod boot

(mm)

Bore \ Symbol / Stroke	ZZ				
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	169	182	194	207	232
25	173	186	198	211	236
32	175	188	200	213	238
40	215	228	240	253	278

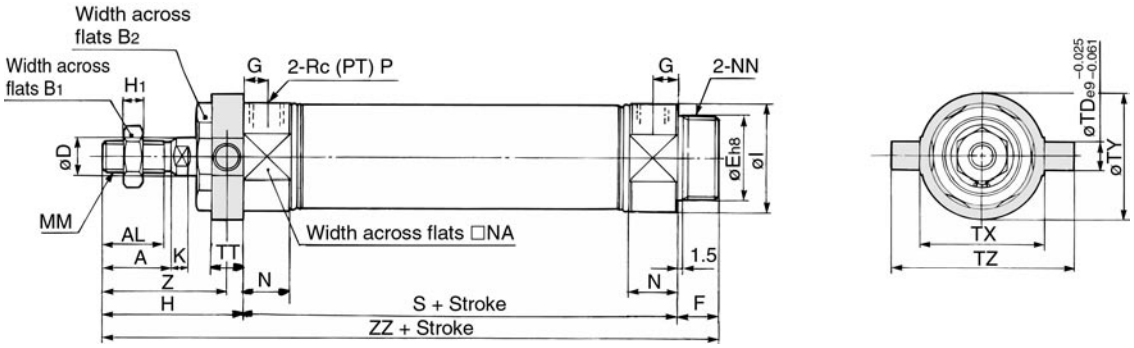
With air cushion

Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

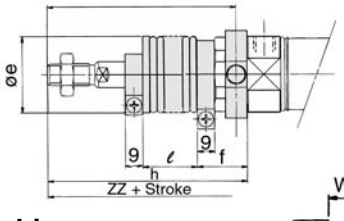
Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

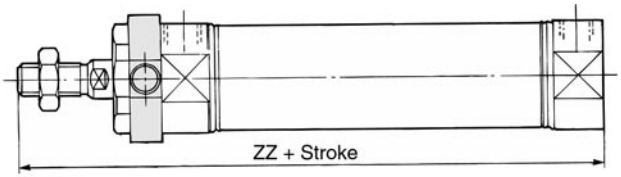
CM2U Bore size — Stroke



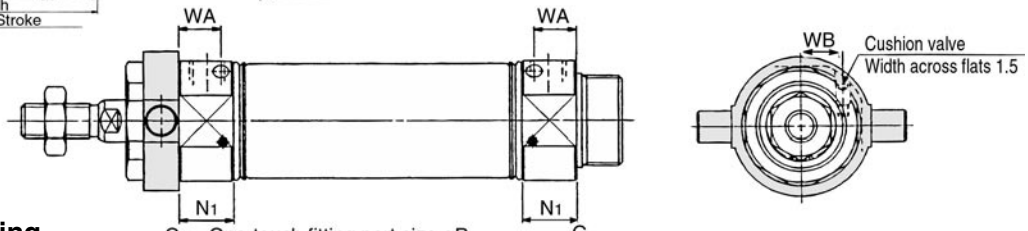
With rod boot



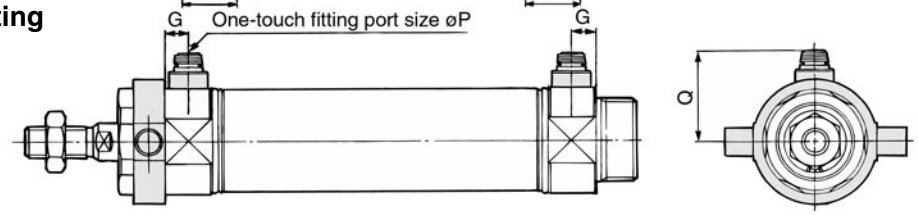
Boss-cut



With air cushion



Built-in One-touch fitting



(mm)

Bore size	Stroke range	A	AL	B1	B2	D	E	F	G	H	H1	I	K	MM	N	NA	NN	P
20	1 to 300	18	15.5	13	26	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8
25	1 to 300	22	19.5	17	32	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8
32	1 to 300	22	19.5	17	32	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8
40	1 to 300	24	21	22	41	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4

Bore	S	TD	TT	TX	TY	TZ	Z	ZZ
20	62	8	10	32	32	52	36	116
25	62	9	10	40	40	60	40	120
32	64	9	10	40	40	60	40	122
40	88	10	11	53	53	77	44.5	154

With rod boot

Bore \ Symbol / Stroke	e	f	h						
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	36	24	68	81	93	106	131	156	—
25	36	24	72	85	97	110	135	160	185
32	36	24	72	85	97	110	135	160	185
40	46	25	77	90	102	115	140	165	190

With rod boot

(mm)

Bore \ Symbol / Stroke	ℓ					Z					ZZ				
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	12.5	25	37.5	50	75	63	76	88	101	126	143	156	168	181	206
25	12.5	25	37.5	50	75	67	80	92	105	130	147	160	172	185	210
32	12.5	25	37.5	50	75	67	80	92	105	130	149	162	174	187	212
40	12.5	25	37.5	50	75	71.5	84.5	96.5	109.5	134.5	181	194	206	219	244

Boss-cut style

(mm)

Bore	ZZ					
	Without gaiter	With gaiter				
		1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	103	130	143	155	168	193
25	107	134	147	159	172	197
32	109	136	149	161	174	199
40	138	165	178	190	203	228

With air cushion

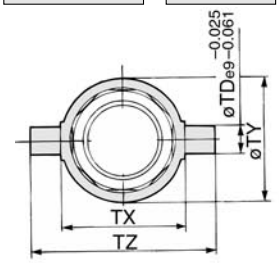
Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

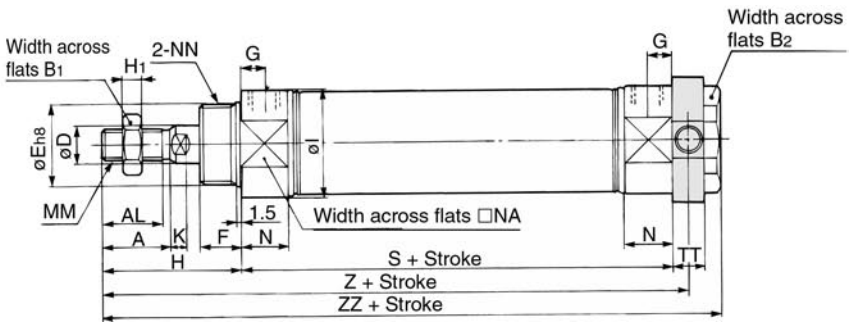
Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

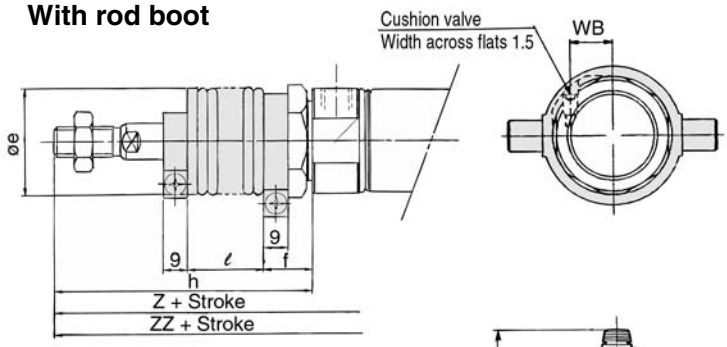
Rear Trunnion (T)

CM2T [Bore size] — [Stroke] [ ]

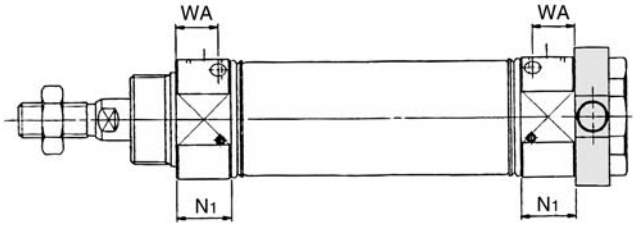




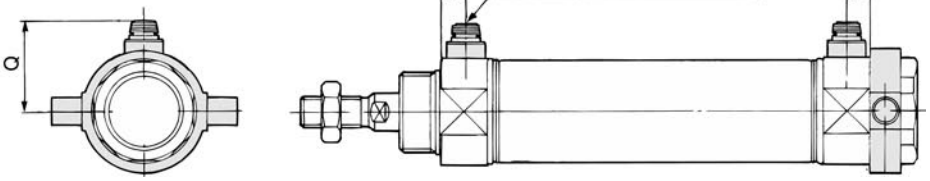
With rod boot



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B1	B2	D	E	F	G	H	H1	I	K	MM	N	NA	NN	P
20	1 to 300	18	15.5	13	26	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8
25	1 to 300	22	19.5	17	32	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8
32	1 to 300	22	19.5	17	32	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8
40	1 to 300	24	21	22	41	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4

Bore	S	TD	TT	TX	TY	TZ	Z	ZZ
20	62	8	10	32	32	52	108	118
25	62	9	10	40	40	60	112	122
32	64	9	10	40	40	60	114	124
40	88	10	11	53	53	77	143.5	154

With rod boot

Symbol / Bore	e	f	h						
Stroke			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	36	17	68	81	93	106	131	156	—
25	36	17	72	85	97	110	135	160	185
32	36	17	72	85	97	110	135	160	185
40	46	19	77	90	102	115	140	165	190

With rod boot

(mm)

Symbol / Bore	ℓ					Z					ZZ				
Stroke	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	12.5	25	37.5	50	75	135	148	160	173	198	145	158	170	183	208
25	12.5	25	37.5	50	75	139	152	164	177	202	149	162	174	187	212
32	12.5	25	37.5	50	75	141	154	166	179	204	151	164	176	189	214
40	12.5	25	37.5	50	75	170.5	183.5	195.5	208.5	233.5	181	194	206	219	244

With air cushion

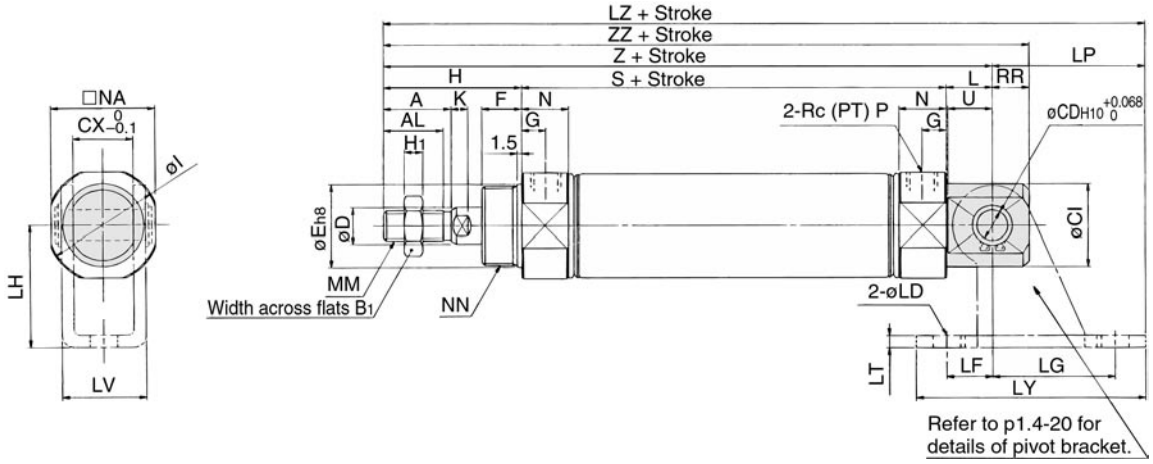
Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

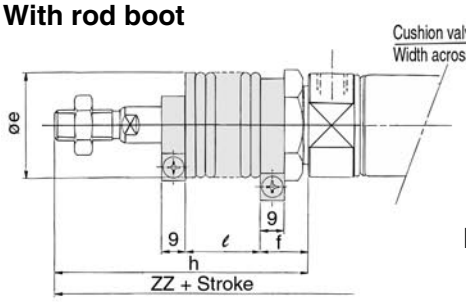
Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

Integrated Clevis (E)

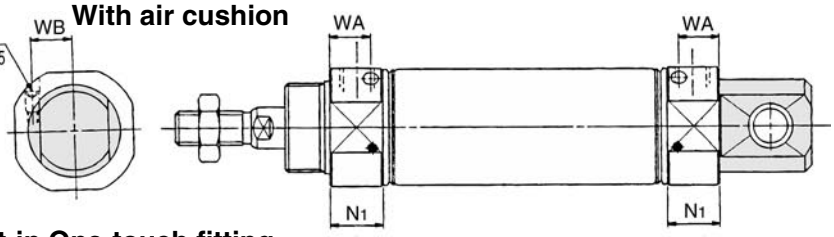
CM2E Bore size — Stroke



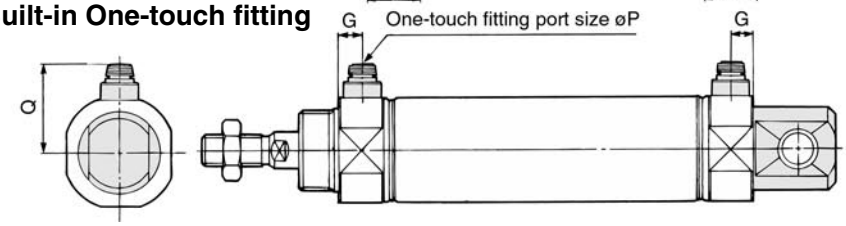
With rod boot



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B1	CD	CI	CX	D	E	F	G	H	H1	I	K	L	MM	N	NA	NN
20	1 to 300	18	15.5	13	8	20	12	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	12	M8 X 1.25	15	24	M20 X 1.5
25	1 to 300	22	19.5	17	8	22	12	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	12	M10 X 1.25	15	30	M26 X 1.5
32	1 to 300	22	19.5	17	10	27	20	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	15	M10 X 1.25	15	34.5	M26 X 1.5
40	1 to 300	24	21	22	10	33	20	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	15	M14 X 1.5	21.5	42.5	M32 X 2

Bore	P	RR	S	U	Z	ZZ
20	1/8	9	62	11.5	115	124
25	1/8	9	62	11.5	119	128
32	1/8	12	64	14.5	124	136
40	1/4	12	88	14.5	153	165

With rod boot

Bore \ Symbol / Stroke	e	f	h				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	36	17	68	81	93	106	131
25	36	17	72	85	97	110	135
32	36	17	72	85	97	110	135
40	46	19	77	90	102	115	140

With rod boot

(mm)

Bore \ Symbol / Stroke	ℓ					Z					ZZ				
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	12.5	25	37.5	50	75	142	155	167	180	205	151	164	176	189	214
25	12.5	25	37.5	50	75	146	159	171	184	209	155	168	180	193	218
32	12.5	25	37.5	50	75	151	164	176	189	214	163	176	188	201	226
40	12.5	25	37.5	50	75	180	193	205	218	243	192	205	217	230	255

With air cushion

Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

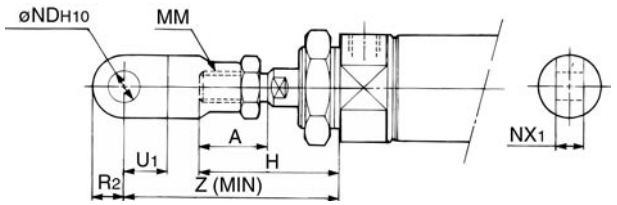
Pivot bracket

(mm)

Bore	LD	LF	LG	LH	LP	LT	LV	LY	LZ
20	6.8	15	30	30	37	3.2	18.4	59	152
25	6.8	15	30	30	37	3.2	18.4	59	156
32	9	15	40	40	50	4	28	75	174
40	9	15	40	40	50	4	28	75	203

Accessory Dimensions

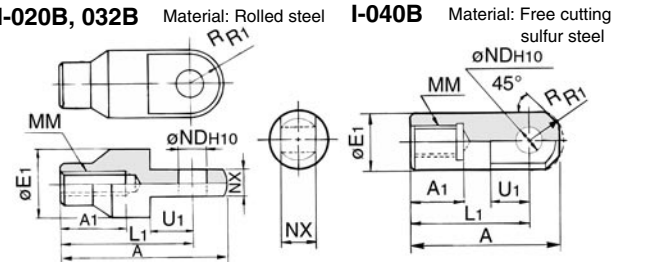
Single Knuckle Joint (mm)



Bore size	A	H	MM	NDH10	NX1	U1	R2	Z
20	18	41	M8 X 1.25	9 $^{+0.058}_{0}$	9 $^{-0.1}_{-0.2}$	14	10	66
25/32	22	45	M10 X 1.25	9 $^{+0.058}_{0}$	9 $^{-0.1}_{-0.2}$	14	10	69
40	24	50	M14 X 1.5	12 $^{+0.070}_{0}$	16 $^{-0.1}_{-0.3}$	20	14	92

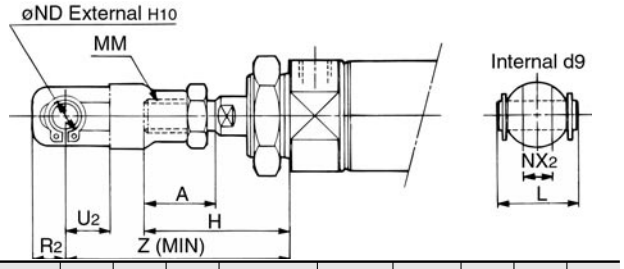
Single Knuckle Joint (mm)

I-020B, 032B Material: Rolled steel **I-040B** Material: Free cutting sulfur steel



Part No.	Applicable bore size	A	A1	E1	L1	MM	NDH10	NX	R1	U1
I-020B	**20**	46	16	20	36	M8 X 1.25	9 $^{+0.058}_{0}$	9 $^{-0.1}_{-0.2}$	10	14
I-032B	**25/32**	48	18	20	38	M10 X 1.25	9 $^{+0.058}_{0}$	9 $^{-0.1}_{-0.2}$	10	14
I-040B	**40**	69	22	24	55	M14 X 1.5	12 $^{+0.070}_{0}$	16 $^{-0.1}_{-0.3}$	15.5	20

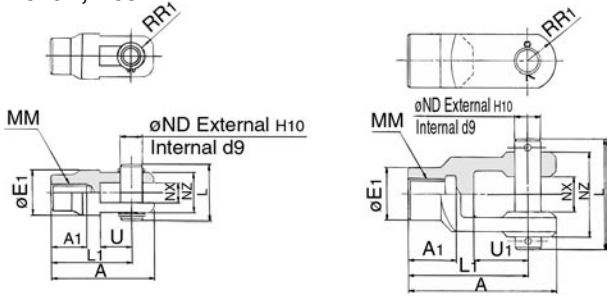
Double Knuckle Joint (mm)



Bore size	A	H	L	MM	ND	NX2	R2	U2	Z
20	18	41	25	M8 X 1.25	9	9 $^{+0.2}_{+0.1}$	10	14	66
25/32	22	45	25	M10 X 1.25	9	9 $^{+0.2}_{+0.1}$	10	14	69
40	24	50	49.7	M14 X 1.5	12	16 $^{+0.3}_{+0.1}$	13	25	92

Double Knuckle Joint (mm)

Y-020B,Y-032B Material: Rolled steel **Y-040B** Material: Cast iron

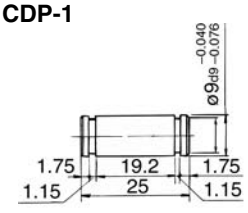


Part No.	Applicable bore size	A	A1	E1	L	L1	MM	ND	NX	NZ	R1	U1	Applicable pin part No.	Snap ring/ Cotter pin size
Y-020B	20	46	16	20	25	36	M8 X 1.25	9	9 $^{+0.2}_{+0.1}$	18	5	14	CDP-1	C9 type for pivot
Y-032B	25,32	48	18	20	25	38	M10 X 1.25	9	9 $^{+0.2}_{+0.1}$	18	5	14	CDP-1	C9 type for pivot
Y-040B	40	68	22	24	49.7	55	M14 X 1.5	12	16 $^{+0.3}_{+0.1}$	38	13	25	CDP-3	ø3 X 18ℓ

∗Clevis pins and snap rings (cotter pins for bore size 40) are attached.

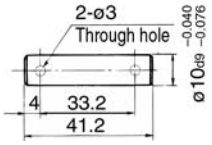
Double Clevis Pin/Material: Carbon steel (mm)

Bore size:ø20, ø25, ø32
CDP-1



Snap ring: C9 type for pivot

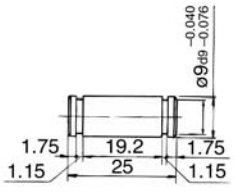
Bore size: ø40
CDP-2



Cotter pin:ø3 X 18ℓ

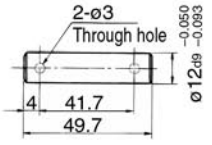
Double Knuckle Pin/Material: Carbon steel (mm)

Bore size:ø20, ø25, ø32
CDP-1



Snap ring: C9 type for pivot

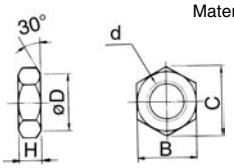
Bore size: ø40
CDP-3



Cotter pin:ø3 X 18ℓ

Rod End Nut (mm)

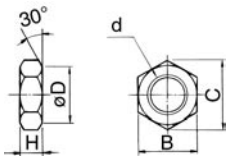
Material: Carbon steel



Part No.	Applicable bore size	B	C	D	d	H
NT-02	**20**	13	15.0	12.5	M8 X 1.25	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

Mounting Nut (mm)

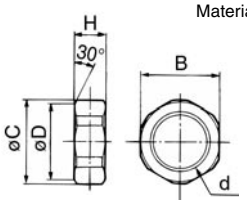
Material: Carbon steel



Part No.	Applicable bore size	B	C	D	d	H
SN-020B	**20**	26	30	25.5	M20 X 1.5	8
SN-032B	**25/32**	32	37	31.5	M26 X 1.5	8
SN-040B	**40**	41	47.3	40.5	M32 X 2.0	10

Trunnion Nut (mm)

Material: Carbon steel

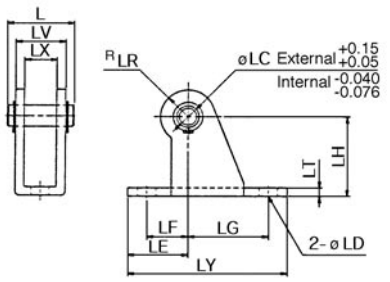


Part No.	Applicable bore size	B	C	D	d	H
TN-020B	**20**	26	28	25.5	M20 X 1.5	10
TN-032B	**25/32**	32	34	31.5	M26 X 1.5	10
TN-040B	**40**	41	45	40.5	M32 X 2	10

Pivot bracket for integrated clevis style CM2E: Please order it separately.

Pivot Bracket (mm)

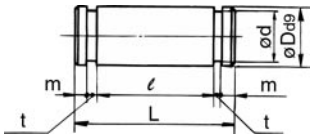
Material: Rolled steel



Part No.	Applicable bore size	L	LC	LD	LE	LF	LG	LH	LR	LT	LX	LY	LV	Applicable pin part No.
CM-E020B	**20/25**	24.5	8	6.8	22	15	30	30	10	3.2	12	59	18.4	CD-S02
CM-E032B	**32/40**	34	10	9	25	15	40	40	13	4	20	75	28	CD-S03

Clevis Pin (mm)

Material: Carbon steel

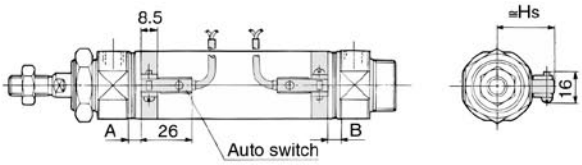


Part No.	Applicable bore size	D_{d9}	d	L	ℓ	m	t	Applicable snap ring part No.
CD-S02	**20/25**	$8^{-0.040}_{-0.076}$	7.6	24.5	19.5	1.6	0.9	C8 type for pivot
CD-S03	**32/40**	$10^{-0.040}_{-0.076}$	9.6	34	29	1.35	1.15	C10 type for pivot

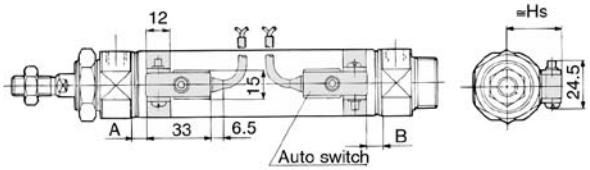
Auto Switch Mounting Position and Mounting Height

Reed Switch

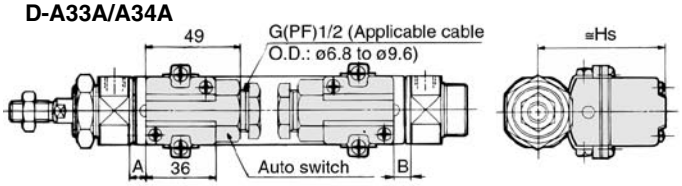
D-C7/C8



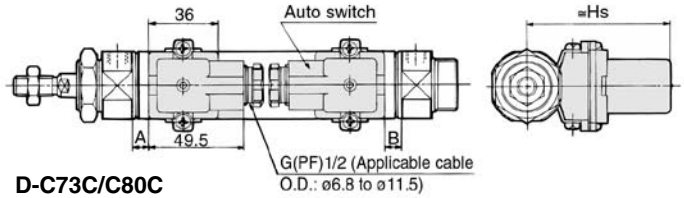
D-B5/B6/B59W



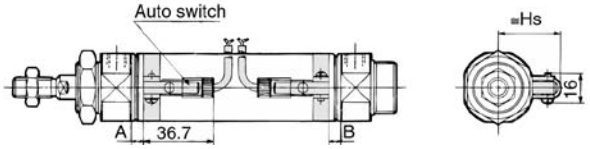
D-A33A/A34A



D-A44A

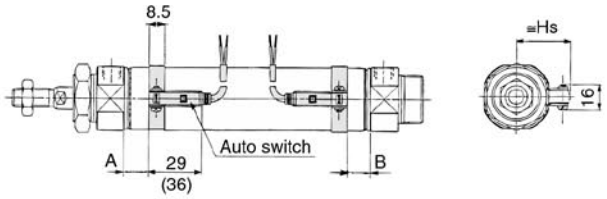


D-C73C/C80C



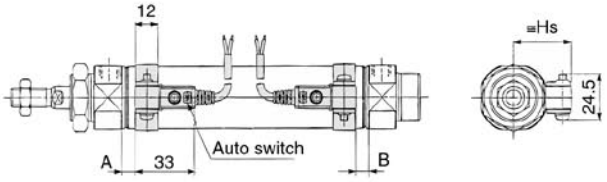
Solid State Switch

D-H7□/H7□W/H7□F/H7BAL

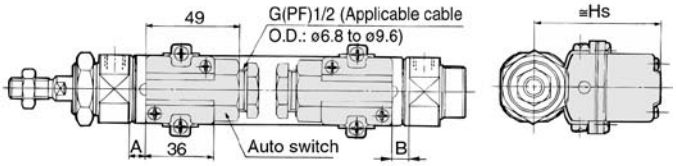


∗( ): D-H7LF

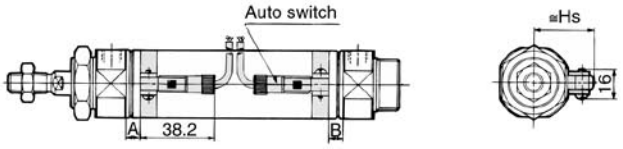
D-G5NTL



D-G39A/K39A



D-H7C



Auto Switch Mounting Position

(mm)

Auto switch model / Bore	D-B5 D-B6		D-C7 D-C8 D-C73C D-C80C		D-B59W		D-A3□A D-G39A D-K39A D-A44A		D-H7□ D-H7C		D-H7□W D-H7BAL D-H7□F		D-G5NTL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
ø20	1(0)	0(0)	7(5)	6(4)	4(2)	3(1)	0.5(0)	0(0)	6(4)	5(3)	4.5(2.5)	3.5(1.5)	2.5(0.5)	1.5(0)
ø25	1(0)	0(0)	7(5)	6(4)	4(2)	3(1)	0.5(0)	0(0)	6(4)	5(3)	4.5(2.5)	3.5(1.5)	2.5(0.5)	1.5(0)
ø32	2(0)	1(0)	8(6)	7(5)	5(3)	4(2)	1.5(0)	0.5(0)	7(5)	6(4)	5.5(3.5)	4.5(2.5)	3.5(1.5)	2.5(0.5)
ø40	7	6	13	12	10	9	6.5	5.5	12	11	10.5	9.5	8.5	7.5

∗( ): With air cushion

Mounting Height

(mm)

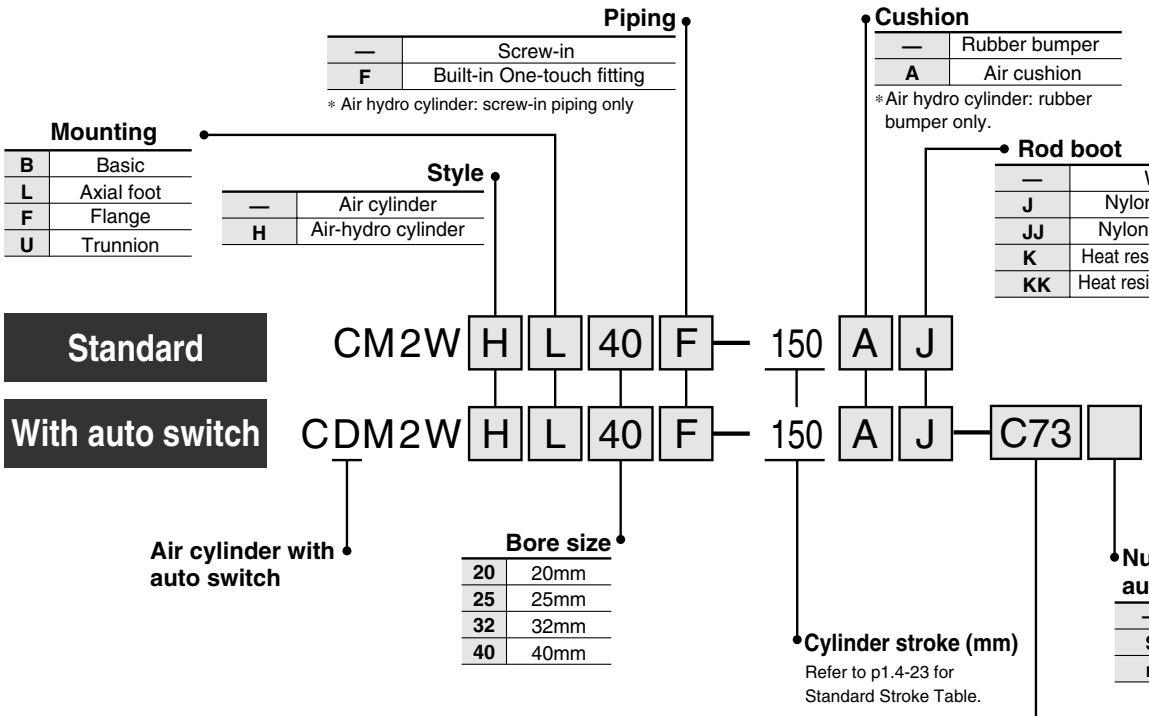
D-B5 D-B6 D-B59W D-G5NTL D-H7C	D-C7 D-C8 D-H7□ D-H7□W D-H7BAL D-H7□F	D-C73C D-C80C	D-A3□A D-G39A D-K39A	D-A44A
Hs	Hs	Hs	Hs	Hs
25.5	22.5	25	60	69.5
28	25	27.5	62.5	72
31.5	28.5	31	66	75.5
35.5	32.5	35	70	79.5

Standard: Double Acting Double Rod

Series CM2W

ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	5V	—	C76	●	●	—	—	IC	—
				2 wire	12V	100V	C73	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	C80	●	●	—	—	IC	
			Yes		12V	—	B53	●	●	●	—	—	PLC
					12V	100V, 200V	B54	●	●	●	—	—	Relay PLC
			No		12V	200V or less	B64	●	●	—	—		
		Connector	Yes		12V	—	C73C	●	●	●	●		
			No		5V, 12V	24V or less	C80C	●	●	●	●	IC	
		Terminal conduit	Yes		12V	—	A33A	—	—	—	●	—	PLC
					12V	100V, 200V	A34A	—	—	—	●		Relay PLC
		DIN connector					A44A	—	—	—	●		
	Diagnostic indicator (2 colour)	Grommet			—	—	B59W	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	5V, 12V	—	H7A1	●	●	○	—	IC	—
				3 wire(PNP)			H7A2	●	●	○	—		
				2 wire	12V		H7B	●	●	○	—	—	
		Connector					H7C	●	●	●	●		
		Terminal conduit		3 wire(NPN)	5V, 12V		G39A	—	—	—	●	IC	
				2 wire	12V		K39A	—	—	—	●	—	
	Diagnostic indicator (2 colour)	Grommet		3 wire(NPN)	5V, 12V	—	H7NW	●	●	○	—	IC	Relay PLC
				3 wire(PNP)			H7PW	●	●	○	—		
				2 wire	12V		H7BW	●	●	○	—	—	
	Water resistant (2 colour)						H7BA	—	●	○	—		
	With timer			3 wire(NPN)	5V, 12V		G5NT	—	●	○	—	IC	
	Diagnostic output (2 colour)			4 wire (NPN)			H7NF	●	●	○	—		
	Latch with diagnostic output (2 colour)				—		H7LF	●	●	○	—	—	

∗ Lead wire length
0.5m : —
3m : L
5m : Z
None : N
e.g.) C80CZ, C80CN

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

∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

Specifications

Bore size (mm)	20	25	32	40
Action	Double acting/Double rod			
Fluid	Air			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.08MPa			
Ambient and fluid temperature	Without auto switch: –10°C to +70°C (No freezing) With auto switch: –10°C to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Piston speed (mm/s)	50 to 750			
Cushion	Rubber bumper			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

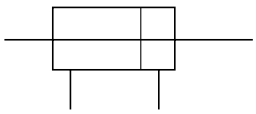
Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)	Long stroke (2) (mm)	Max. stroke (mm)
20	25, 50, 75, 100, 125, 150 200, 250, 300	400	500
25		450	
32		450	
40		500	

Note 1) Other intermediate strokes can be manufactured upon receipt of order.
Note 2) Long stroke applies to the axial foot style and the front flange style. If other mounting brackets are used or the length exceeds the long stroke limit, the stroke should be selected based on the stroke selection table. (Refer to Data on p.0-21 .)

JIS symbol

Double acting/Double rod



Made to Order

Refer to p.5.4-1 for made to order specifications of series CM2W.

Accessories

Refer to p.1.4-19 and 1.4-20

Rod boot Materials

Symbol		Material	Max. ambient temperature
One side	Both sides		
J	JJ	Nylon tarpaulin	70°C
K	KK	Heat resistant tarpaulin	110°C *

* Maximum ambient temperature for the rod boot only.

Mounting Bracket Part No.

Bore size mm	20	25	32	40
Axial foot *	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

* Two foot brackets and a mounting nut are attached.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size mm			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A D-A44A D-G39A D-K39A	BM3-020	BM3-025	BM3-032	BM3-040

Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA3: D-B5/B6/G5
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached

Mounting Accessories

Mounting \ Accessories	Standard		Option		
	Mounting nut	Rod end nut	Single knuckle joint	Double[(2)] knuckle joint	Rod boot
Basic	● (1pc.)	● (2)	●	●	●
Foot	● (2)	● (2)	●	●	●
Flange	● (1)	● (2)	●	●	●
Trunnion	● (1) [(1)]	● (2)	●	●	●
Note				With pins	One/Both side

Note 1) Trunnion nuts are attached.
Note 2) Pins and snap rings (cotter pins for bore size 40) are attached for double knuckle joint.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Basic	0.16	0.25	0.32	0.65
	Foot	0.31	0.41	0.48	0.92
	Flange	0.22	0.34	0.41	0.77
	Trunnion	0.20	0.32	0.38	0.75
Additional weight by each 50 of stroke		0.06	0.09	0.13	0.19
Accessory	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (With pins)	0.07	0.07	0.07	0.20

Calculation example: CM2WL32-100
- ●Basic weight·····0.48 (Foot, ø32)
- ●Additional weight···0.13/50 stroke
- ●Cylinder stroke·····100 stroke

0.48+0.13 X 100/50=0.74kg

Minimum Strokes for Auto Switch Mounting

(mm)

Auto switch model	Number of switches				
	2		n		1
	On different surfaces	On the same surface	On different surfaces	On the same surface	
D-C7 D-C8	15	50	$15+45(\frac{n-2}{2})$ (n=2, 4, 6···)	50+45(n–2)	10
D-H7□ D-H7□W D-H7BAL D-H7NF	15	60		60+45(n–2)	10
D-C73C D-C80C D-H7C	15	65	$15+50(\frac{n-2}{2})$ (n=2, 4, 6···)	65+50(n–2)	10
D-H7LF	20	65	$20+50(\frac{n-2}{2})$ (n=2, 4, 6···)		10
D-B5 D-B6	15	75	$15+50(\frac{n-2}{2})$ (n=2, 4, 6···)	75+55(n–2)	10
D-B59W	20	75	$20+50(\frac{n-2}{2})$ (n=2, 4, 6···)		15
D-A3□A D-G39A D-K39A D-A44A	35	100	35+30(n–2)	100+100(n–2)	10

⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions.

Handling

⚠ Warning

① **Do not rotate the cover.**
· When installing the 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 with the snap ring that could fly out.**
· When replacing the rod seal, be careful with the removal of the snap ring, as the snap ring could fly out.

② **Do not touch the cylinder during operation.**
· If the cylinder is operating at a high frequency, be aware that the cylinder tube surface could become very hot, creating the risk of burns.

③ **The One-Touch fitting cannot be replaced.**
· The One-Touch fitting is pressed into the cover and cannot be replaced.

Air-hydro

CM2WH | Mounting | Bore size | Stroke | Rod boot

Air-hydro style

A low hydraulic pressure cylinder used at a pressure of 1.0MPa or below.
Through the concurrent use of a CC series air-hydro unit, it is possible to operate at a constant or low speed or to effect an intermediate stop, just like a hydraulic unit, while using pneumatic equipment such as a valve.

Specifications

Style	Air-hydro style
Fluid	Turbine oil
Action	Double acting/Double rod
Bore size	ø20, ø25, ø32, ø40
Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.18MPa
Piston speed	15 to 300mm/s
Ambient and fluid temperature	+5 to +60°C
Thread tolerance	JIS class 2
Stroke tolerance	+1.4 0
Cushion	Rubber bumper (Standard equipment)
Mounting	Basic, Axial foot, Flange, Trunnion

∗ Auto switch can be mounted.

• Construction: Refer to p.1.4-27.
• Dimensions: Refer to p.1.4-28 to 1.4-31.

With Air Cushion

CM2W | Mounting | Bore size | Stroke | **A** | Rod boot

With air cushion

A cushion mechanism is provided on the cover at both ends to absorb the impact that is created during high speed operations. Thus, it does not transmit vibrations to the surroundings and prolongs the life of the cylinder.

Specifications

Action	Double acting/Double rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.08MPa
Cushion	Air cushion
Piston speed	50 to 1000mm/s
Mounting	Basic, Axial foot, Flange, Trunnion

∗ Auto switches can be mounted.

Allowable Kinetic Energy

Bore size (mm)	Effective cushion length (mm)	Kinetic energy absorption
20	11.0	0.54J
25	11.0	0.78J
32	11.0	1.27J
40	11.8	2.35J

• Construction: Refer to p.1.4-27.
• Dimensions: Refer to p.1.4-28 to 1.4-31.
• Refer to p.1.4-23 for other specifications.

Built-in One-touch Fitting

CM2W | Mounting | Bore size | **F** | Stroke

Built-in One-touch fitting

A style in which One-touch fittings are built in the cylinder. It dramatically reduces the piping labour and installation space.

• Construction: Refer to p.1.4-27.
• Dimensions: Refer to p.1.4-28 to 1.4-31.
• Refer to p.1.4-23 for other specifications.

Specifications

Action	Double acting/Double rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.08MPa
Cushion	Rubber bumper
Piping	Built-in One-touch fitting
Piston speed	50 to 750mm/s
Mounting	Basic, Axial foot, Flange, Trunnion

Auto switches can be mounted.

Applicable Tube O.D./I.D.

Bore size (mm)	ø20	ø25	ø32	ø40
Applicable tube (mm)	ø6/4	ø6/4	ø6/4	ø8/6
Applicable tube material	Nylon, Soft nylon, Polyurethane			

⚠ Caution

The One-touch fitting cannot be replaced.
• The One-touch fitting is press-fit into the cover and cannot be replaced.

Clean Series

10-CM2W | **Mounting** | **Bore size** — **Stroke**

10: Clean series

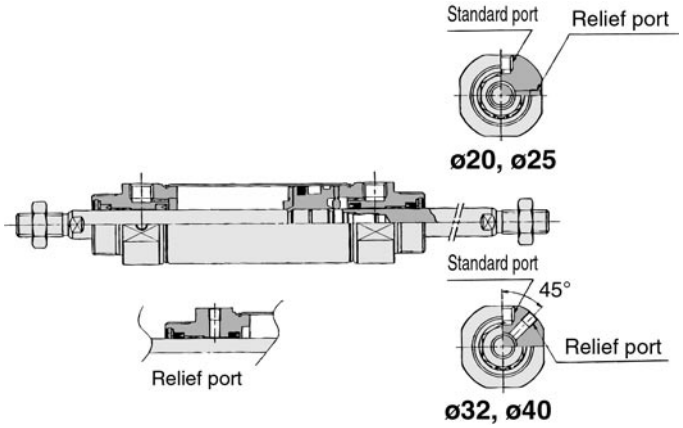
The rod portion of the actuator has a double seal construction, and a relief port is provided to discharge the exhaust air directly outside of the clean room. Thus, it can be used in a Class 100 clean room.

Specifications

Action	Double acting/Double rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.08MPa
Cushion	Rubber bumper
Relief port size	M5
Piston speed	30 to 400mm/s
Mounting	Basic, Axial foot, Flange

∗ Auto switches can be mounted.

Construction



Copper Free

20-CM2W | **Mounting** | **Bore size** — **Stroke**

20: Max. operating pressure

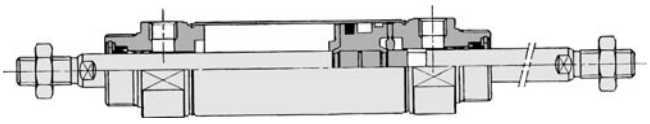
This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

Specifications

Action	Double acting/Double rod	
Bore size	ø20, ø25, ø32, ø40	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.08MPa	
Cushion	Rubber bumper	Air cushion
Piston speed	50 to 750mm/s	50 to1000mm/s
Mounting	Basic, Axial foot, Flange, Trunnion	

∗ Auto switches can be mounted.

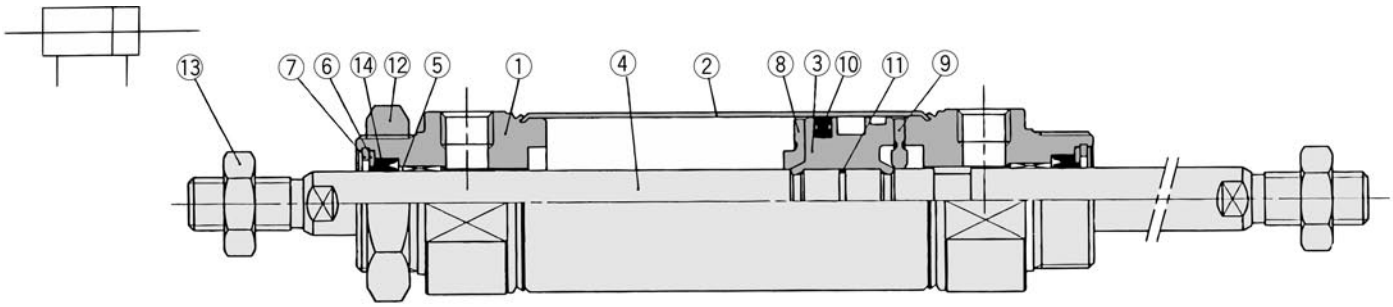
Construction



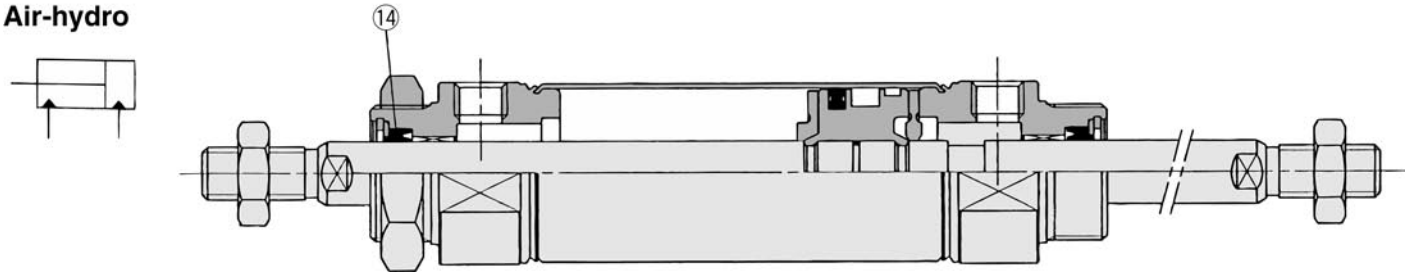
The above shows the case of rubber bumper.

Construction

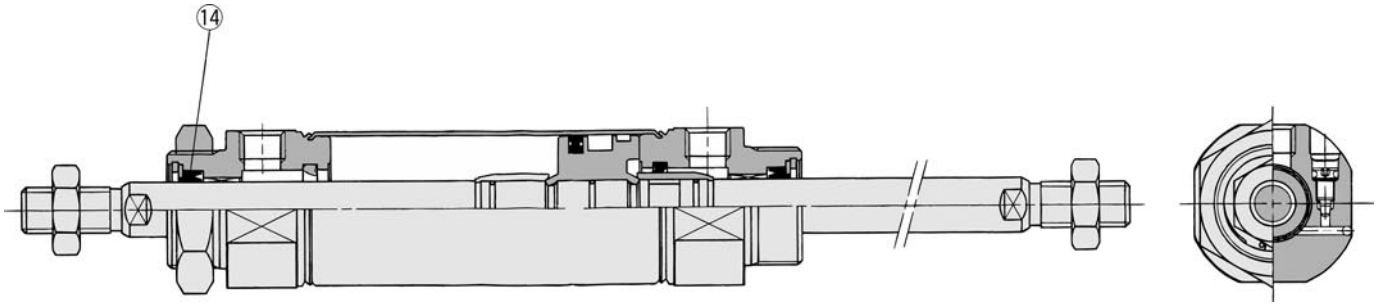
Rubber bumper



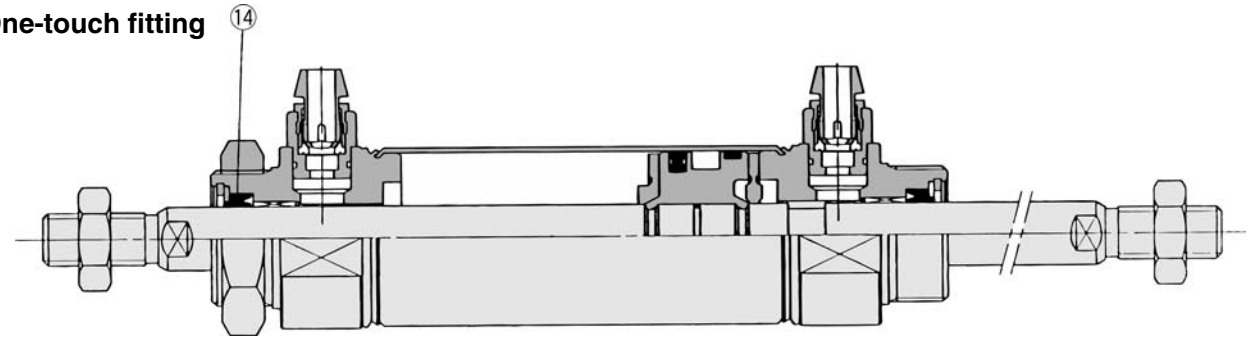
Air-hydro



With air cushion



Built-in One-touch fitting



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②	Cylinder tube	Stainless steel	
③	Piston	Aluminum alloy	Chromated
④	Piston rod	Carbon steel	Hard chrome plated
⑤	Bushing	Oil impregnated sintered alloy	
⑥	Seal retainer	Rolled steel	Nickel plated
⑦	Snap ring	Carbon steel	Nickel plated
⑧	Bumper A	Urethane	
⑨	Bumper B	Urethane	
⑩	Piston seal	NBR	
⑪	Piston gasket	NBR	
⑫	Mounting nut	Carbon steel	Nickel plated
⑬	Rod end nut	Carbon steel	Nickel plated

Replacement Parts

●With rubber bumper/With air cushion/Built-in One-touch fitting

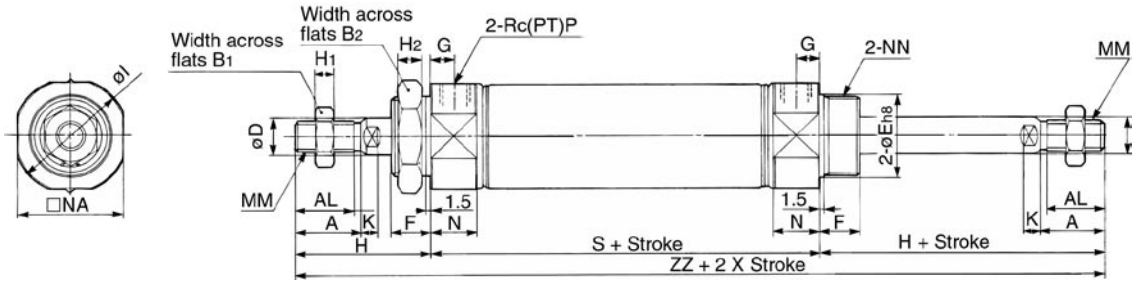
No.	Description	Material	Bore size (mm)/Part No.			
			20	25	32	40
⑭	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ

●Air-hydro

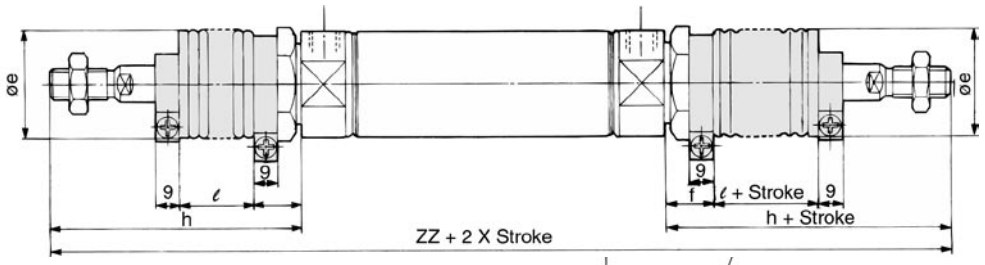
No.	Description	Material	Bore size (mm)/Part No.			
			20	25	32	40
⑭	Rod seal	NBR	HDU-8	HDU-10	HDU-12L	HDU-14

Basic (B)

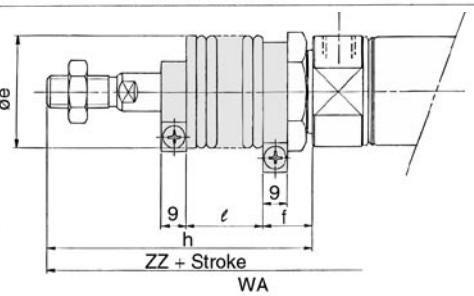
CM2WB **Bore size** — **Stroke** □



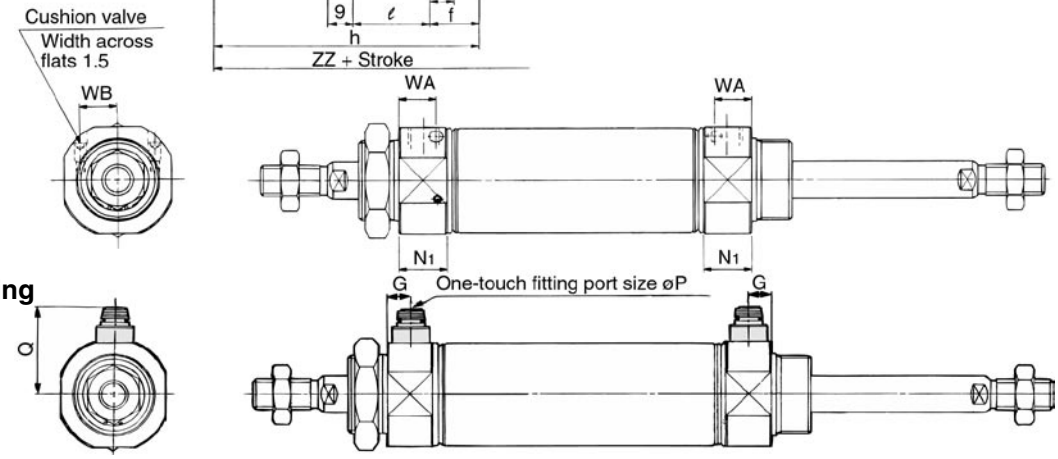
With rod boot (Both sides)



With rod boot (One side)



With air cushion



Built-in One-touch fitting

∗ 301mm or longer stroke range is regarded as long stroke. (mm)

Bore	Stroke range	A	AL	B1	B2	D	E	F	G	H	H1	H2	I	K	MM	N	NA	NN	P	S	ZZ
20	1 to 300	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	144
25	1 to 300	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	152
32	1 to 300	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	154
40	1 to 300	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	188

With rod boot

(mm)

Bore	e	f	h					ℓ					ZZ (Both sides)				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	36	17	68	81	93	106	131	12.5	25	37.5	50	75	198	224	248	274	324
25	36	17	72	85	97	110	135	12.5	25	37.5	50	75	206	232	256	282	332
32	36	17	72	85	97	110	135	12.5	25	37.5	50	75	208	234	258	284	334
40	46	19	77	90	102	115	140	12.5	25	37.5	50	75	242	268	292	318	368

Bore	ZZ (One side)				
	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	171	184	196	209	234
25	179	192	204	217	242
32	181	194	206	219	244
40	215	228	240	253	278

With air cushion

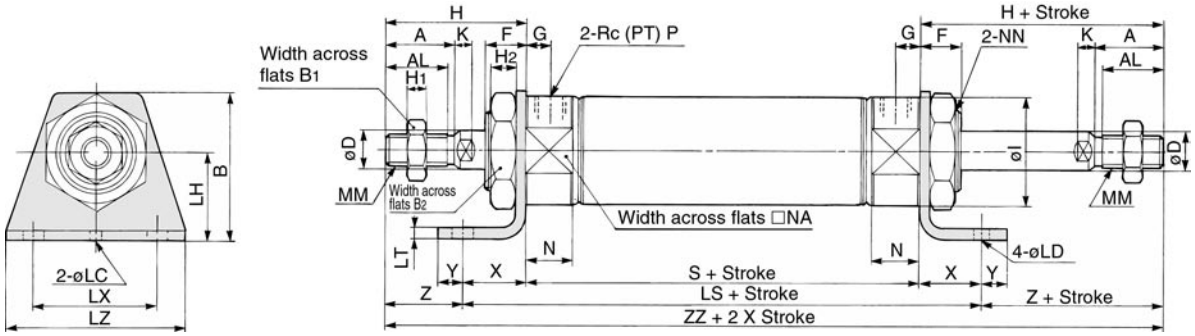
Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

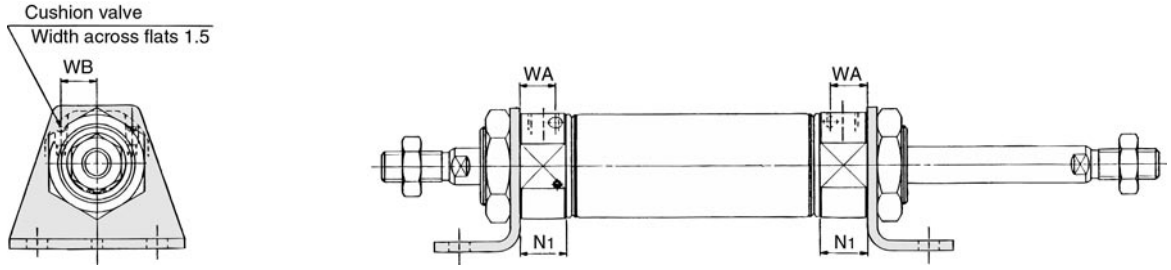
Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

Axial Foot (L)

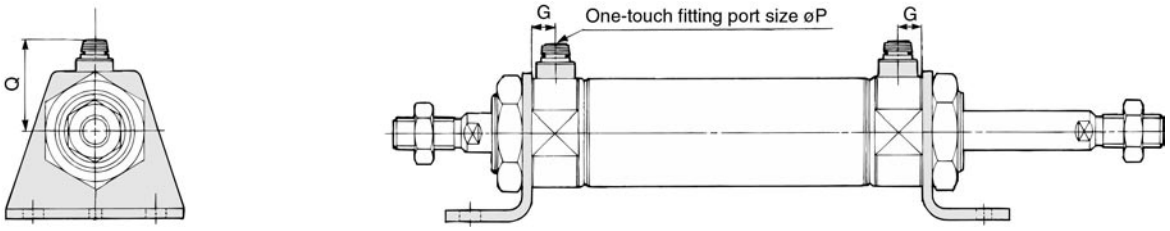
CM2WL Bore size — Stroke



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B	B1	B2	D	F	G	H	H1	H2	I	K	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	S	X	Y	Z	ZZ
20	1 to 400	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	1 to 450	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	1 to 450	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	1 to 500	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

With air cushion

Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

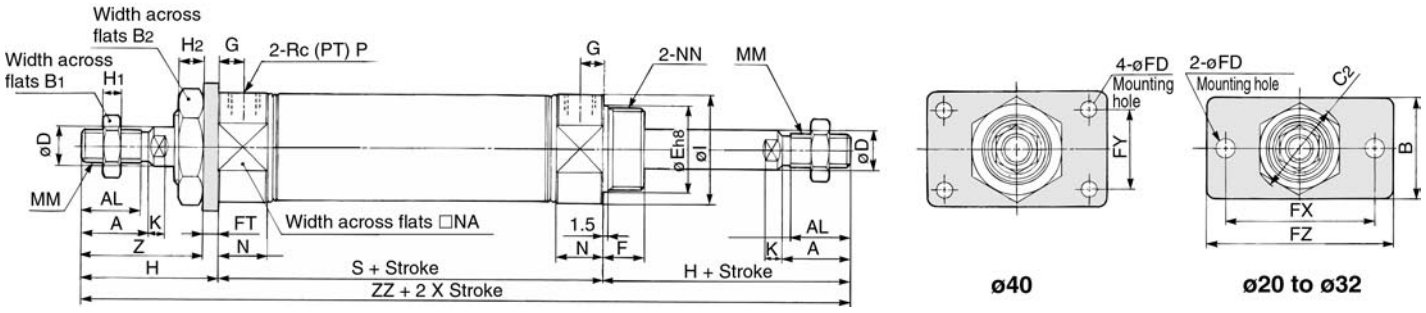
Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

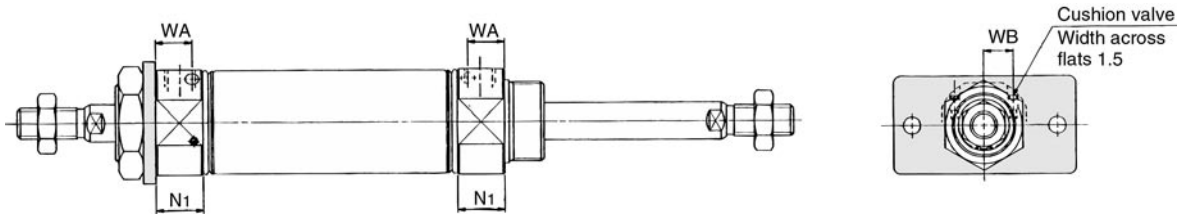
∗ In case of a gaiter, refer to p.1.4-28 (basic) and p.1.4-11.

Flange (F)

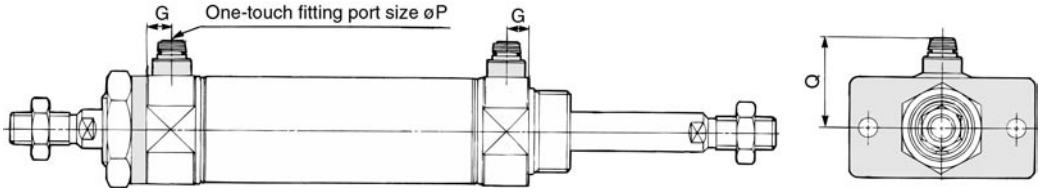
CM2WF [Bore size] — [Stroke] [ ]



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B	B1	B2	C2	D	E	F	FD	FT	FX	FY	FZ	G	H	H1	H2	I	K	MM
20	1 to 300	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
25	1 to 300	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
32	1 to 300	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
40	1 to 300	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

(mm)

Bore	N	NA	NN	P	S	Z	ZZ
20	15	24	M20 X 1.5	1/8	62	37	144
25	15	30	M26 X 1.5	1/8	62	41	152
32	15	34.5	M26 X 1.5	1/8	64	41	154
40	21.5	42.5	M32 X 2	1/4	88	45	188

With air cushion

Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

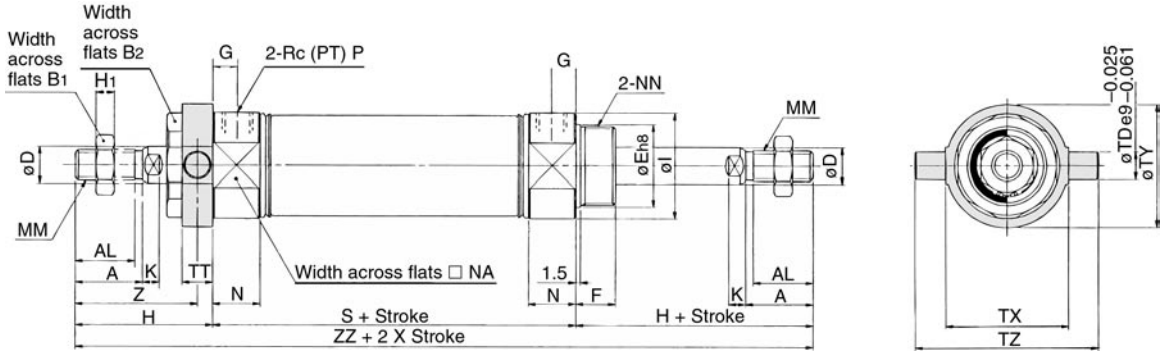
Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

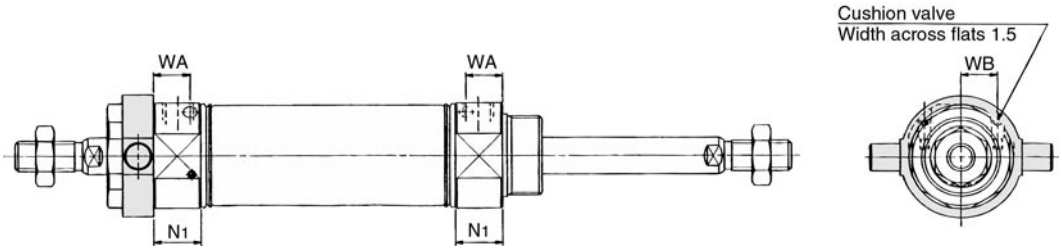
∗ In case of a gaiter, refer to p.1.4-28 (basic) and p.1.4-13.

Trunnion (U)

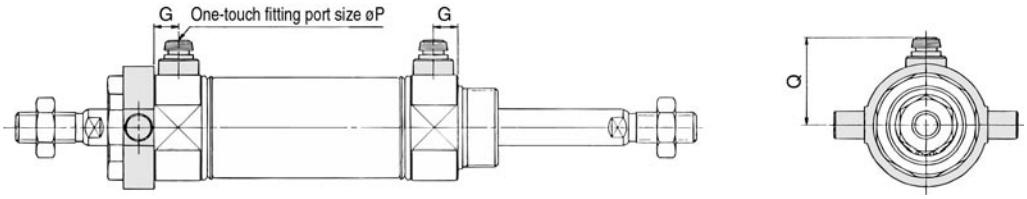
CM2WU Bore size — Stroke



With air cushion



Built-in One-touch fitting



(mm)

Bore	Stroke range	A	AL	B1	B2	D	E	F	G	H	H1	I	K	MM	N	NA	NN	P	S
20	1 to 300	18	15.5	13	26	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8	62
25	1 to 300	22	19.5	17	32	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8	62
32	1 to 300	22	19.5	17	32	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8	64
40	1 to 300	24	21	22	41	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4	88

(mm)

Bore	TD	TT	TX	TY	TZ	Z	ZZ
20	8	10	32	32	52	36	144
25	9	10	40	40	60	40	152
32	9	10	40	40	60	40	154
40	10	11	53	53	77	44.5	188

With air cushion

Bore	N1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Built-in One-touch fitting

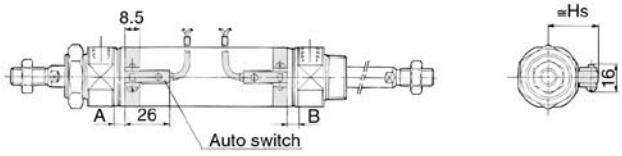
Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

∗ In case of a gaiter, refer to p.1.4-28 (basic) and p.1.4-16.

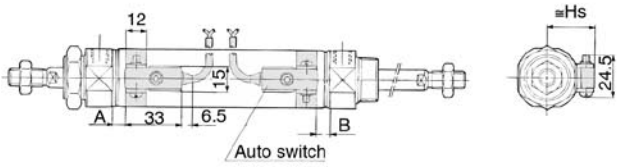
Auto Switch Mounting Position and Mounting Height

Reed Switch

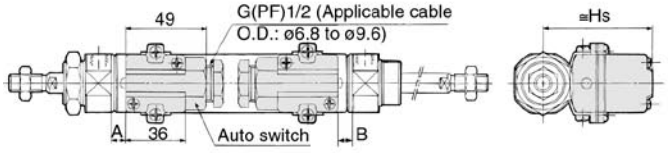
D-C7/C8



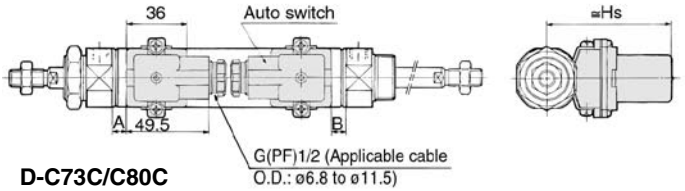
D-B5/B6/B59W



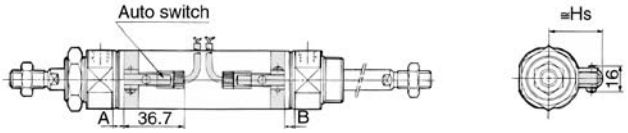
D-A33A/A34A



D-A44A

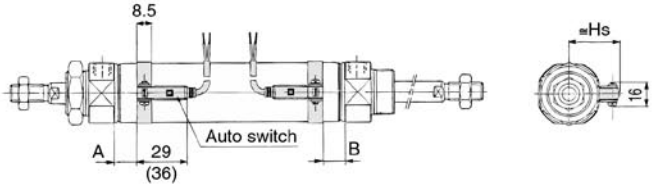


D-C73C/C80C



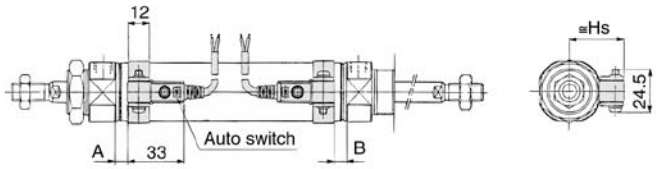
Solid State Switch

D-H7□/H7□W/H7□F/H7BAL

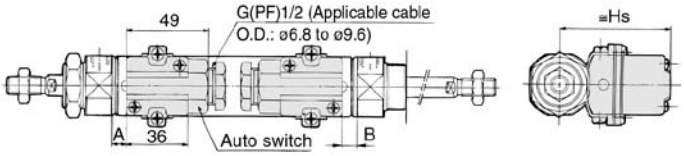


∗( ): D-H7LF

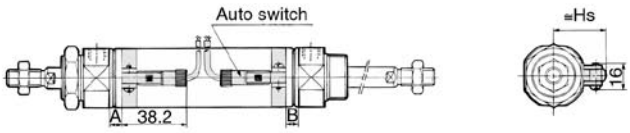
D-G5NTL



D-G39A/K39A



D-H7C



CJ1
CJP
CJ2
CM2
C85
C76
CG1
MB
MB1
CP95
C95
C92
CA1
CS1

Auto Switch Mounting Position

(mm)

Auto switch model / Bore	D-B5 D-B6		D-C7 D-C8 D-C73C D-C80C		D-B59W		D-A3□A D-G39A D-K39A D-A44A		D-H7□ D-H7C		D-H7□W D-H7BAL D-H7□F		D-G5NTL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
ø20	1(0)	0(0)	7(5)	6(4)	4(2)	3(1)	0.5(0)	0(0)	6(4)	5(3)	4.5(2.5)	3.5(1.5)	2.5(0.5)	1.5(0)
ø25	1(0)	0(0)	7(5)	6(4)	4(2)	3(1)	0.5(0)	0(0)	6(4)	5(3)	4.5(2.5)	3.5(1.5)	2.5(0.5)	1.5(0)
ø32	2(0)	1(0)	8(6)	7(5)	5(3)	4(2)	1.5(0)	0.5(0)	7(5)	6(4)	5.5(3.5)	4.5(2.5)	3.5(1.5)	2.5(0.5)
ø40	7	6	13	12	10	9	6.5	5.5	12	11	10.5	9.5	8.5	7.5

∗( ): With air cushion

Mounting Height

(mm)

D-B5 D-B6 D-B59W D-G5NTL D-H7C	D-C7 D-C8 D-H7 D-H7□W D-H7BAL D-H7□F	D-C73C D-C80C	D-A3□A D-G39A D-K39A	D-A44A
Hs	Hs	Hs	Hs	Hs
25.5	22.5	25	60	69.5
28	25	27.5	62.5	72
31.5	28.5	31	66	75.5
35.5	32.5	35	70	79.5

Standard: Single Acting Spring Return/Extend

Series CM2

ø20, ø25, ø32, ø40

How to Order

Mounting

B	Basic	**T**	Rear trunnion
L	Axial foot	**E**	Integrated clevis
F	Front flange	**BZ**	Boss-cut basic
G	Rear flange	**FZ**	Boss-cut front flange
C	Single clevis	**UZ**	Boss-cut front trunnion
D	Double clevis		
U	Front trunnion		

Piping

—	Screw-in
F	Built-in One-touch fitting

Cylinder stroke (mm)

Refer to p.1.4-34 for Standard Stroke Table.

Standard CM2 L 32 F — 150 S

With auto switch CDM2 L 32 F — 150 S — C73 ☐

Air cylinder with auto switch

Bore size

20	20mm
25	25mm
32	32mm
40	40mm

Action

S	Single acting/ Spring return
T	Single acting/ Spring extend

Number of auto switches

—	2
S	1
n	n

Auto switch

—	Without auto switch (Built-in magnet)

∗ Refer to the table below for selecting applicable auto switches.

Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire (m)∗ 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	5V	—	**C76**	●	●	—	—	IC	—
				2 wire	12V	100V	**C73**	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	**C80**	●	●	—	—	IC	
			Yes		12V	—	**B53**	●	●	●	—	—	PLC
					12V	100V, 200V	**B54**	●	●	●	—	—	Relay PLC
			No		12V	200V or less	**B64**	●	●	—	—		
		Connector	Yes		12V	—	**C73C**	●	●	●	●		
			No		5V, 12V	24V or less	**C80C**	●	●	●	●	IC	
		Terminal conduit	Yes		12V	—	**A33A**	—	—	—	●	—	PLC
					12V	100V, 200V	**A34A**	—	—	—	●	—	Relay PLC
		DIN connector					**A44A**	—	—	—	●		
	Diagnostic indicator (2colour)	Grommet			—	—	**B59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	5V, 12V	—	**H7A1**	●	●	○	—	IC	Relay PLC
				3 wire(PNP)			**H7A2**	●	●	○	—		
				2 wire	12V		**H7B**	●	●	○	—	—	
		Connector					**H7C**	●	●	●	●		
		Terminal conduit		3 wire(NPN)	5V, 12V		**G39A**	—	—	—	●	IC	
				2 wire	12V		**K39A**	—	—	—	●	—	
	Diagnostic indicator (2colour)	Grommet		3 wire(NPN)	5V, 12V		**H7NW**	●	●	○	—	IC	
				3 wire(PNP)			**H7PW**	●	●	○	—		
				2 wire	12V		**H7BW**	●	●	○	—	—	
	Water resistant (2colour)						**H7BA**	—	●	○	—		
	With timer			3 wire(NPN)	5V, 12V		**G5NT**	—	●	○	—	IC	
	Diagnostic output (2colour)			4 wire (NPN)			**H7NF**	●	●	○	—		
	Latch with diagnostic output (2colour)				—		**H7LF**	●	●	○	—	—	

∗ Lead wire length
0.5m : —
3m : L
5m : Z
None: N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.
∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

Spring return

Spring extend

Specifications

Action	Single acting/Spring return	Single acting/Spring extend
Style	Air cylinder	
Cushion	Rubber bumper	
Fluid	Air	
Proof pressure	1.5MPa	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.18MPa	0.23MPa
Ambient and fluid temperature	Without auto switch: –10°C to +70°C (No freezing) With auto switch: –10 to°C +60°C (No freezing)	
Lubrication	Non-lube	
Thread tolerance	JIS class 2	
Stroke tolerance	$^{+1.4}_{0}$	
Piston speed	50 to 750mm/s	

Allowable Kinetic Energy

Bore size (mm)	20	25	32	40
Allowable kinetic energy	0.27	0.4	0.65	1.2

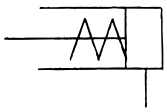
Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)
20	25, 50, 75, 100, 125, 150
25	25, 50, 75, 100, 125, 150
32	25, 50, 75, 100, 125, 150, 200
40	25, 50, 75, 100, 125, 150, 200, 250

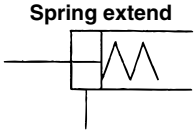
Note 1) Other intermediate strokes can be manufactured upon receipt of order.
Contact SMC for longer strokes.

JIS symbol

Single acting/ Spring return



Spring extend



Made to Order

Refer to p.5.4-1 for made to order specifications of series CM2R.

Minimum Strokes for Auto Switch Mounting

(mm)

Auto switch model	Number of switches				
	2		n		1
	On different surfaces	On the same surface	On different surfaces	On the same surface	
D-C7 D-C8	15	50	$15+45(\frac{n-2}{2})$ (n=2, 4, 6···)	50+45(n–2)	10
D-H7□ D-H7□W D-H7BAL D-H7NF	15	60		60+45(n–2)	10
D-C73C D-C80C D-H7C	15	65	$15+50(\frac{n-2}{2})$ (n=2, 4, 6···)	65+50(n–2)	10
D-H7LF	20	65	$20+50(\frac{n-2}{2})$ (n=2, 4, 6···)		10
D-B5 D-B6	15	75	$15+50(\frac{n-2}{2})$ (n=2, 4, 6···)	75+55(n–2)	10
D-B59W	20	75	$20+50(\frac{n-2}{2})$ (n=2, 4, 6···)		15
D-A3□A D-G39A D-K39A D-A44A	35	100	35+30(n–2)	100+100(n–2)	10

Mounting Bracket

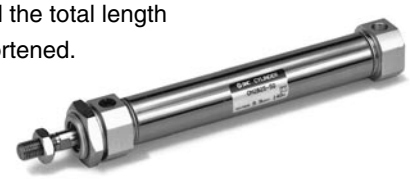
Refer to p.1.4-35 for part numbers of the mounting brackets.

Auto Switch Mounting Band

Refer to p.1.4-35 for part numbers of the mounting bands.

Boss-cut Style

Boss for the head cover bracket is eliminated and the total length of cylinder is shortened.



Comparison of total cylinder length with standard style (mm)

ø20	ø25	ø32	ø40
▲13	▲13	▲13	▲16

Mounting

■Boss-cut basic (BZ) ■Boss-cut flange (FZ)
■Boss-cut trunnion (UZ)

Mounting Accessories

Accessories / Mounting	Standard			Option		
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint (3)	Pivot bracket
Basic	● (1 pc.)	●	—	●	●	—
Axial foot	● (2)	●	—	●	●	—
Front flange	● (1)	●	—	●	●	—
Rear flange	● (1)	●	—	●	●	—
Integrated clevis	—(1)	●	—	●	●	●
Single clevis	—(1)	●	—	●	●	—
Double clevis (3)	—(1)	●	●	●	●	—
Front trunnion	● (1) (2)	●	—	●	●	—
Rear trunnion	● (1) (2)	●	—	●	●	—
Boss-cut basic	● (1)	●	—	●	●	—
Boss-cut flange	● (1)	●	—	●	●	—
Boss-cut trunnion	● (1)	●	—	●	●	—
Note					With pins	With pins

Note 1) Mounting nuts are not attached for the integrated clevis, the single clevis, and the double clevis styles.
Note 2) Trunnion nuts are attached for the front trunnion and the rear trunnion styles.
Note 3) Pins and snap rings (cotter pins for bore size 40) are attached for double clevis and the double knuckle joint.

Rod End Accessories

Refer to p.1.4-19 and 1.4-20 for mounting brackets.

Mounting Bracket Part No.

Bore size mm	20	25	32	40
Axial foot*	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Single clevis	CM-C020B	CM-C032B		CM-C040B
Double clevis** (with pins)	CM-D020B	CM-D032B		CM-D040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

* Two foot brackets and a mounting nut are attached.
** Clevis pins and snap rings (cotter pins for bore size 40) are attached.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA3: D-B5/B6/G5
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached.

Weight

Spring Return

(kg)

Bore size (mm)		20	25	32	40
Basic weight	25stroke	0.20	0.30	0.42	0.77
	50stroke	0.22	0.33	0.46	0.84
	75stroke	0.27	0.42	0.58	1.03
	100stroke	0.29	0.45	0.63	1.09
	125stroke	0.35	0.54	0.76	1.29
	150stroke	0.37	0.57	0.80	1.36
	200stroke	—	—	0.97	1.61
	250stroke	—	—	—	1.87
Mounting bracket weight	Axial foot	0.15	0.16	0.16	0.27
	Flange	0.06	0.09	0.09	0.12
	Single clevis	0.04	0.04	0.04	0.09
	Double clevis	0.05	0.06	0.06	0.13
	Trunnion	0.04	0.07	0.07	0.10
	Integrated clevis	–0.02	–0.02	–0.01	–0.04
	Boss-cut basic	–0.01	–0.02	–0.02	–0.03
	Boss-cut flange	0.05	0.07	0.07	0.09
	Boss-cut trunnion	0.03	0.05	0.05	0.07
	Pivot bracket (with pins)	0.07	0.07	0.14	0.14
Accessory	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

Calculation Example: CM2L32-100S (Bore size ø32, Foot, 100 stroke)
0.63 (Basic weight) +0.16 (Mounting bracket weight)=0.79kg

Spring Extend

(kg)

Bore size (mm)		20	25	32	40
Basic weight	25stroke	0.19	0.29	0.40	0.74
	50stroke	0.21	0.32	0.44	0.81
	75stroke	0.25	0.39	0.54	0.97
	100stroke	0.27	0.42	0.58	1.03
	125stroke	0.32	0.49	0.69	1.20
	150stroke	0.34	0.52	0.73	1.27
	200stroke	—	—	0.88	1.49
	250stroke	—	—	—	1.72
Mounting bracket weight	Axial foot	0.15	0.16	0.16	0.27
	Flange	0.06	0.09	0.09	0.12
	Single clevis	0.04	0.04	0.04	0.09
	Double clevis	0.05	0.06	0.06	0.13
	Trunnion	0.04	0.07	0.07	0.10
	Integrated clevis	–0.02	–0.02	–0.01	–0.04
	Boss-cut basic	–0.01	–0.02	–0.02	–0.03
	Boss-cut flange	0.05	0.07	0.07	0.09
	Boss-cut trunnion	0.03	0.05	0.05	0.07
	Pivot bracket (with pins)	0.07	0.07	0.14	0.14
Accessory	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

Built-in One-touch Fitting

CM2 | **Mounting** | **Bore size** | **F** | **Stroke** | **Action**

F: Built-in One-touch fitting

A style in which One-touch fittings are built in the cylinder. It dramatically reduces the piping labour and installation space.

• **Construction: Refer to p.1.4-38.**
• **Dimensions: Refer to p.1.4-39 to1.4-47.**
• **Refer to p.1.4-34 for other specifications.**

Specifications

Action	Single acting/Spring return	Single acting/Spring extend
Bore size	ø20, ø25, ø32, ø40	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.18MPa	0.23MPa
Cushion	Rubber bumper	
Piping	Built-in One-touch fitting	
Piston speed	50 to 750mm/s	
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion , Integrated clevis, Boss-cut	

∗ Auto switches can be mounted.

Applicable Tube O.D./I.D.

Bore size (mm)	ø20	ø25	ø32	ø40
Applicable tube (mm)	ø6/4	ø6/4	ø6/4	ø8/6
Applicable tube material	Nylon, Soft nylon, Polyurethane			

⚠ Caution

The One-touch fitting cannot be replaced.
The One-touch fitting is press-fit into the cover and cannot be replaced.

Copper Free

20-CM2 | Mounting | Bore size | Stroke | Action

Copper free

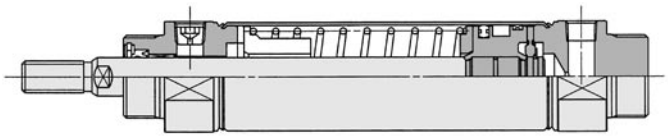
This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

Specifications

Action	Single acting/Spring return	Single acting/Spring extend
Bore size	ø20, ø25, ø32, ø40	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.18MPa	0.23MPa
Cushion	Rubber bumper	
Relief port size	M5	
Piston speed	50 to 750mm/s	
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunning, Integrated clevis, Boss-cut.	

∗ Auto switches can be mounted.

Construction



∗ The above shows the case of single acting/spring return style.

⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions.

Handling

⚠ Warning

①**Do not rotate the cover.**
- When installing the cylinder or screwing a pipe fitting into the port, the coupling portion of the cover could break if the cover is rotated.

⚠ Caution

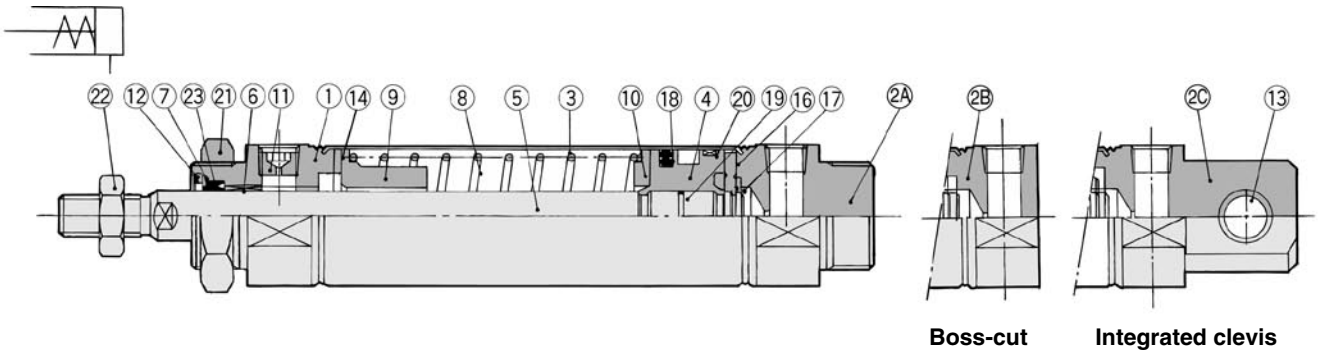
①**Be careful with the snap ring that could fly out.**
- When replacing the rod seal, be careful with the removal of the snap ring, as the snap ring could fly out.

②**Do not touch the cylinder during operation.**
- If the cylinder is operating at a high frequency, be aware that the cylinder tube surface could become very hot, creating the risk of burns.
- If the cylinder is operating at a high frequency, be aware that the cylinder tube surface could become very hot, creating the risk of burns.

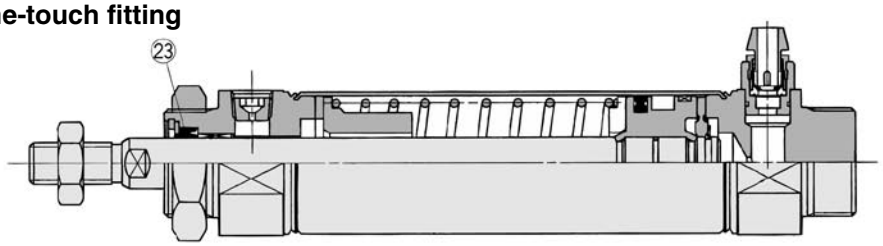
③**The One-Touch fitting cannot be replaced.**
- The One-Touch fitting is press-fit into the cover and cannot be replaced.

Construction

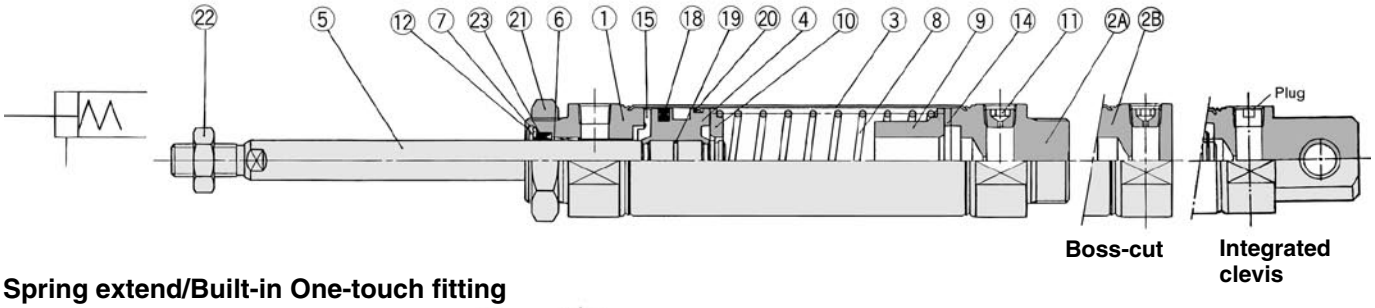
Spring return



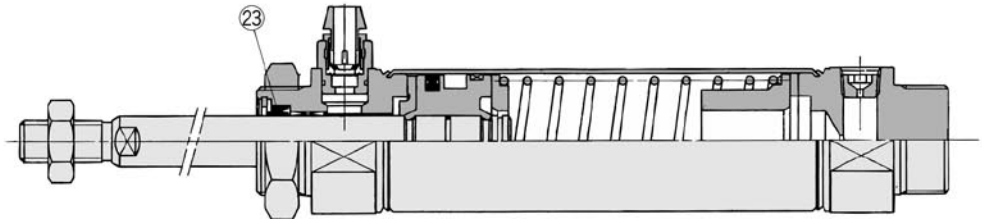
Spring return/Built-in One-touch fitting



Spring extend



Spring extend/Built-in One-touch fitting



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②A	Head cover A	Aluminum alloy	White anodized(Standard style)
②B	Head cover B	Aluminum alloy	White anodized(Boss-cut style)
②C	Head cover C	Aluminum alloy	White anodized(Integrated clevis style)
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Bushing	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Return spring	Steel wire	Zinc chromated
⑨	Spring guide	Aluminum alloy	Chromated
⑩	Spring sead	Aluminum alloy	Chromated
⑪	Plug with needle	Alloy steel	Black zinc chromated
⑫	Snap ring	Carbon steel	Nickel plated

No.	Description	Material	Note
⑬	Bush for clevis	Oil impregnated sintered alloy	
⑭	Bumper	Urethane	
⑮	Bumper A	Urethane	
⑯	Bumper B	Urethane	
⑰	Snap ring	Stainless steel	
⑱	Piston seal	NBR	
⑲	Piston gasket	NBR	
⑳	Wearing	Resin	
㉑	Mounting nut	Carbon steel	Nickel plated
㉒	Rod end nut	Carbon steel	Nickel plated

Replacement Parts

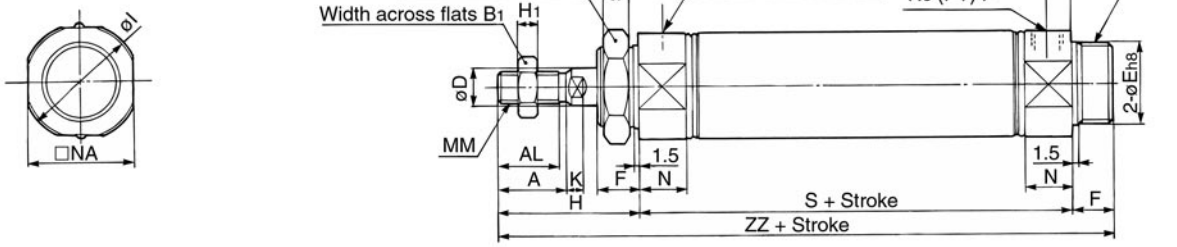
• With rubber bumper/Built-in One-touch fitting

No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
㉓	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ

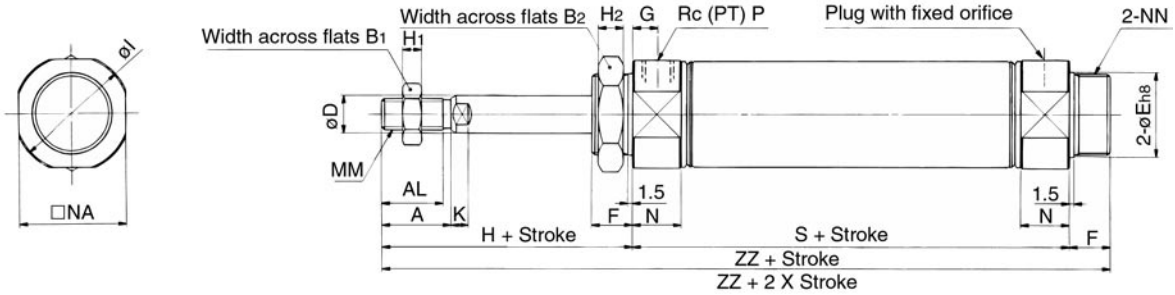
Basic (B)

CM2B Bore size — Stroke S T

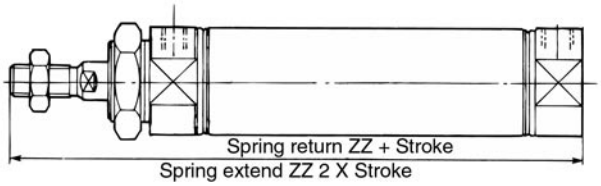
Spring return



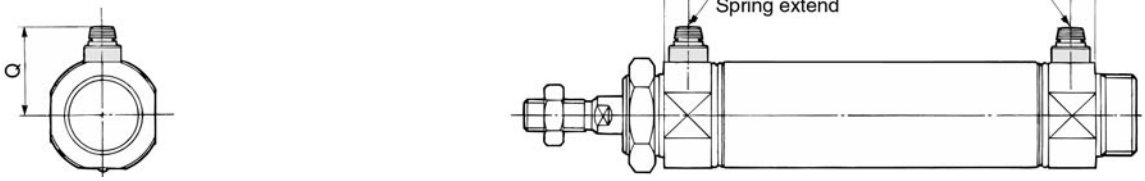
Spring extend



Boss-cut style



Built-in One-touch fitting



(mm)

Bore	A	AL	B1	B2	D	E	F	G	H	H1	H2	I	K	MM	N	NA	NN	P
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
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
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
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

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50		51 to 100		101 to 150		151 to 200		201 to 250	
	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	87	141	112	166	137	191	—	—	—	—
25	87	145	112	170	137	195	—	—	—	—
32	89	147	114	172	139	197	164	222	—	—
40	113	179	138	204	163	229	188	254	213	279

Boss-cut style

(mm)

Bore \ Stroke / Symbol	1 to 50	51 to 100	101 to 150	151 to 200	201 to 250
	ZZ	ZZ	ZZ	ZZ	ZZ
20	128	153	178	—	—
25	132	157	182	—	—
32	134	159	184	209	—
40	163	188	213	238	263

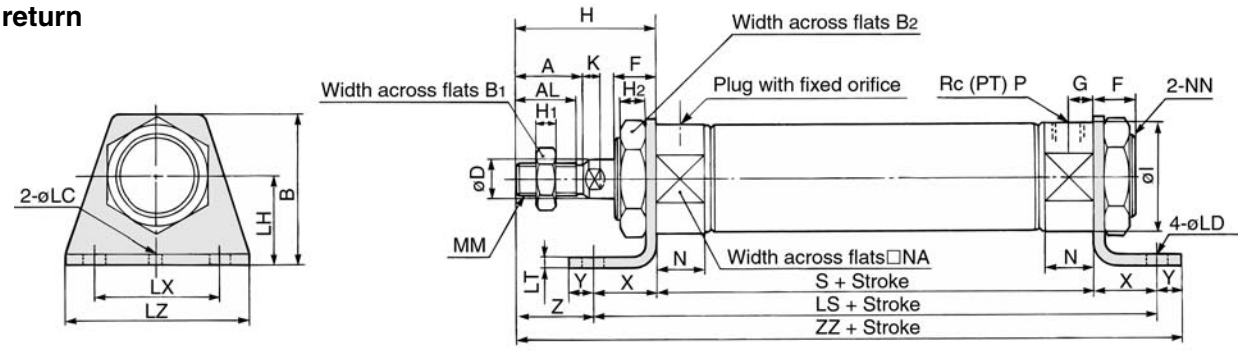
Built-in One-touch fitting

Bore	G	P	Q
20	8	6	23
25	8	6	26
32	8	6	28.5
40	11	8	32.5

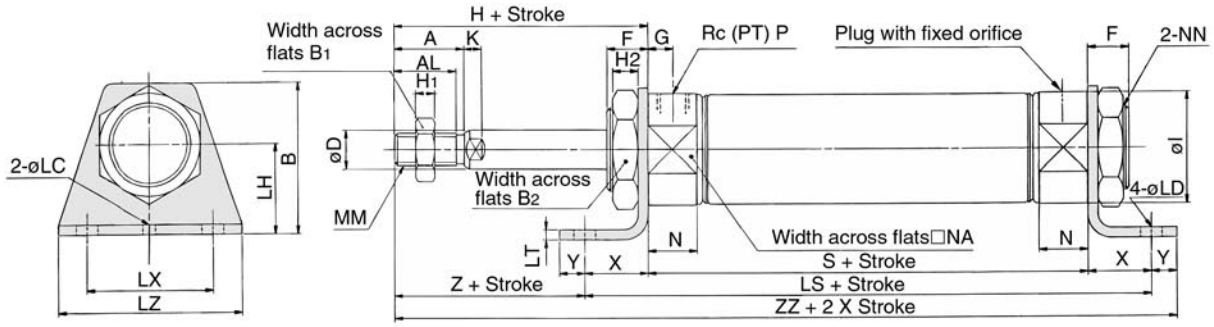
Axial Foot (L)

CM2L Bore size — Stroke S T

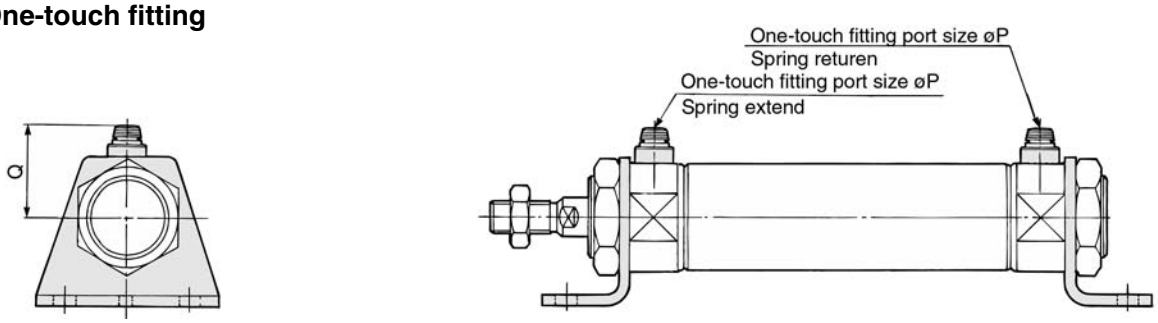
Spring return



Spring extend



Built-in One-touch fitting



(mm)

Bore	A	AL	B	B_1	B_2	D	F	G	H	H_1	H_2	I	K	LC	LD	LH	LT	LX	LZ	MM	N	NA	NN	P	X	Y	Z
20	18	15.5	40	13	26	8	13	8	41	5	8	28	5	4	6.8	25	3.2	40	55	M8 X 1.25	15	24	M20 X 1.5	1/8	20	8	21
25	22	19.5	47	17	32	10	13	8	45	6	8	33.5	5.5	4	6.8	28	3.2	40	55	M10 X 1.25	15	30	M26 X 1.5	1/8	20	8	25
32	22	19.5	47	17	32	12	13	8	45	6	8	37.5	5.5	4	6.8	28	3.2	40	55	M10 X 1.25	15	34.5	M26 X 1.5	1/8	20	8	25
40	24	21	54	22	41	14	16	11	50	8	10	46.5	7	4	7	30	3.2	55	75	M14 X 1.5	21.5	42.5	M32 X 2	1/4	23	10	27

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	LS	S	ZZ	LS	S	ZZ	LS	S	ZZ	LS	S	ZZ	LS	S	ZZ
20	127	87	156	152	112	181	177	137	206	—	—	—	—	—	—
25	127	87	160	152	112	185	177	137	210	—	—	—	—	—	—
32	129	89	162	154	114	187	179	139	212	204	164	237	—	—	—
40	159	113	196	184	138	221	209	163	246	234	188	271	259	213	296

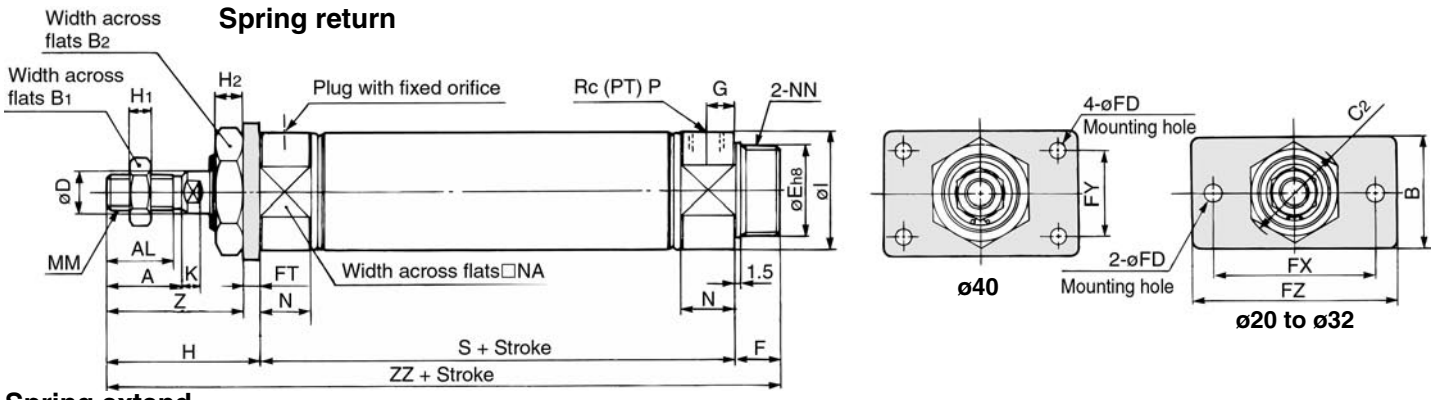
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

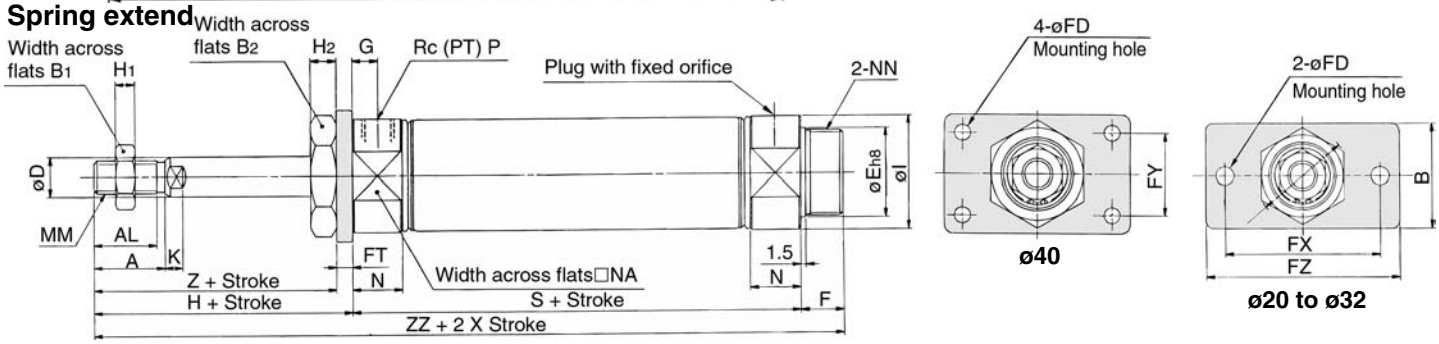
Front Flange (F)

CM2F Bore size — Stroke S T

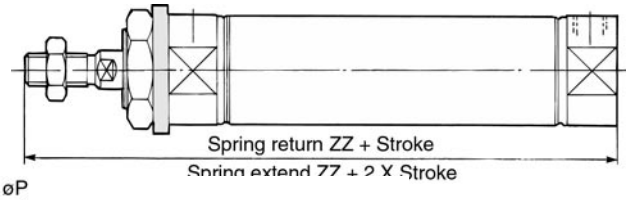
Spring return



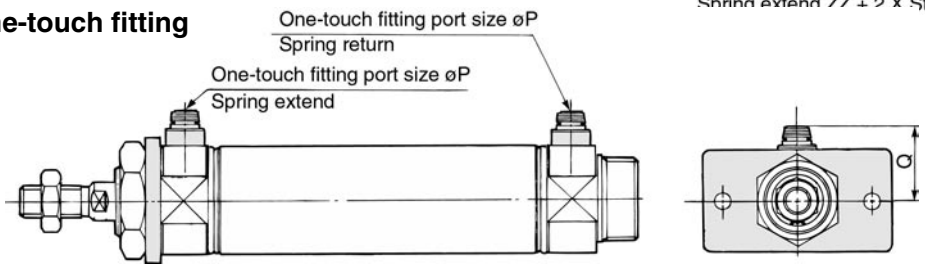
Spring extend



Boss-cut



Built-in One-touch fitting



(mm)

Bore	A	AL	B	B1	B2	C2	D	E	F	FD	FT	FX	FY	FZ	G	H	H1	H2	I	K	MM	N	NA	NN	P	Z
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	37
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	41
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	41
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	45

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50		51 to 100		101 to 150		151 to 200		201 to 250	
	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	87	141	112	166	137	191	—	—	—	—
25	87	145	112	170	137	195	—	—	—	—
32	89	147	114	172	139	197	164	222	—	—
40	113	179	138	204	163	229	188	254	213	279

Boss-cut

(mm)

Bore \ Stroke / Symbol	1 to 50	51 to 100	101 to 150	151 to 200	201 to 250
	ZZ	ZZ	ZZ	ZZ	ZZ
20	128	153	178	—	—
25	132	157	182	—	—
32	134	159	184	209	—
40	163	188	213	238	263

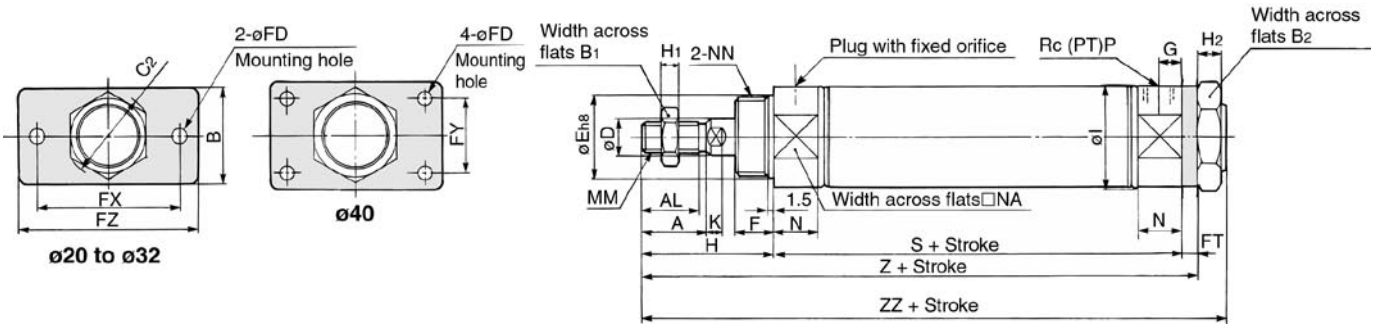
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

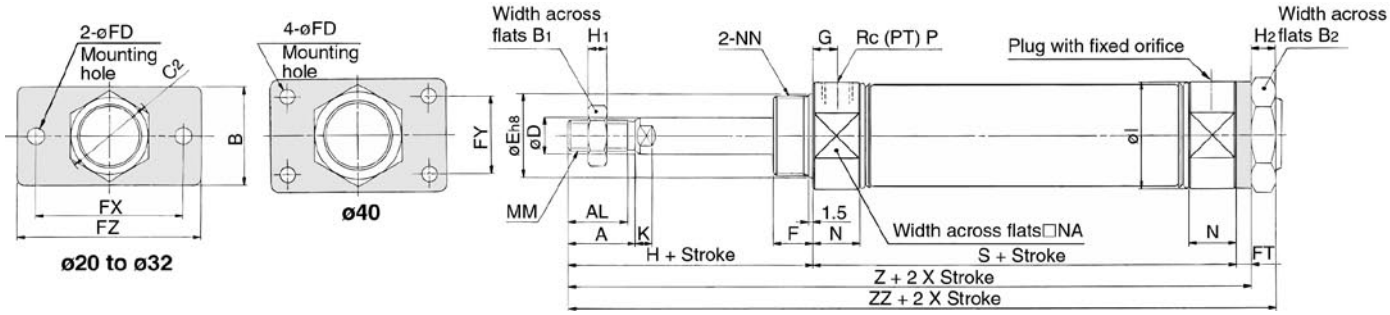
Rear Flange (G)

CM2G [Bore size] — [Stroke] [S / T]

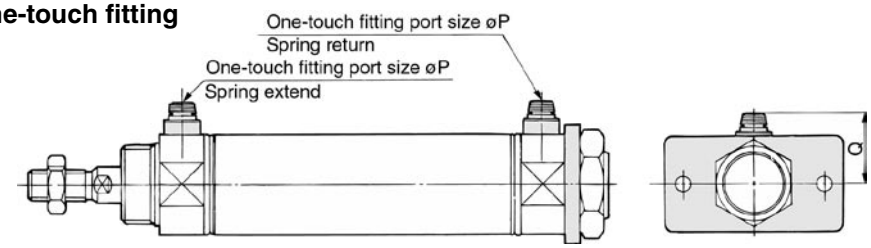
Spring return



Spring extend



Built-in One-touch fitting



(mm)

Bore	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
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
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
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
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

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	132	141	112	157	166	137	182	191	—	—	—	—	—	—
25	87	136	145	112	161	170	137	186	195	—	—	—	—	—	—
32	89	138	147	114	163	172	139	188	197	164	213	222	—	—	—
40	113	168	179	138	193	204	163	218	229	188	243	254	213	268	279

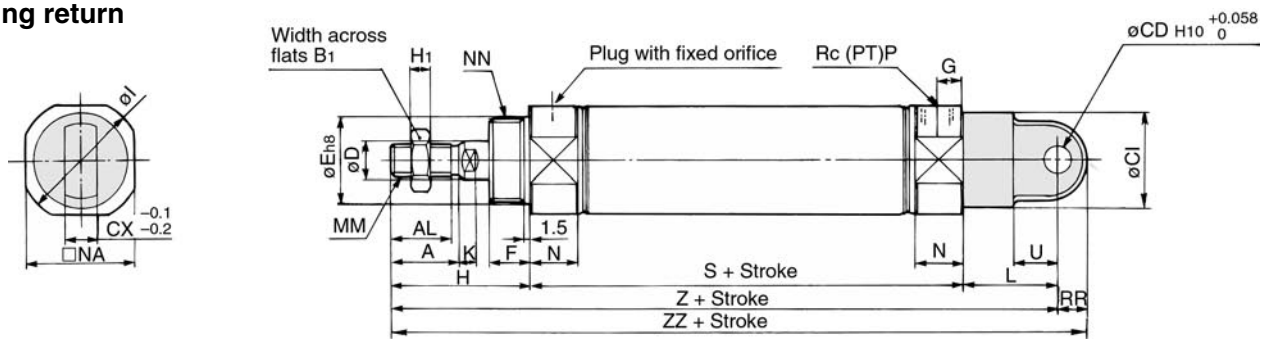
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

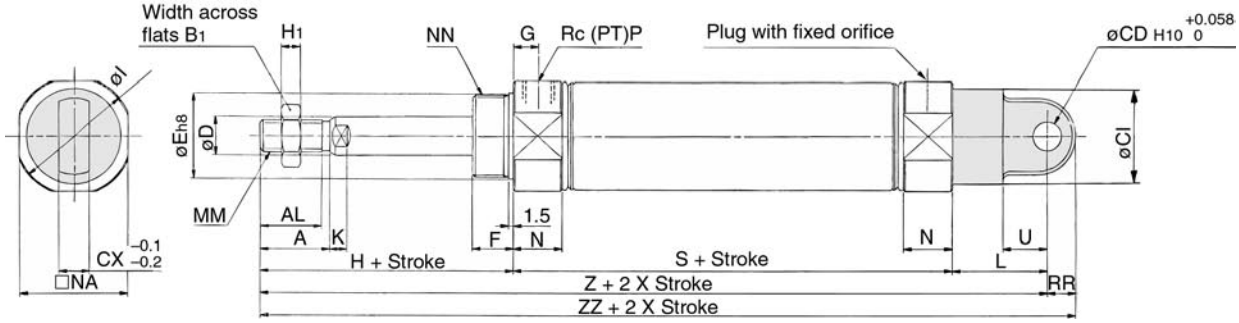
Single Clevis (C)

CM2C Bore size — Stroke S T

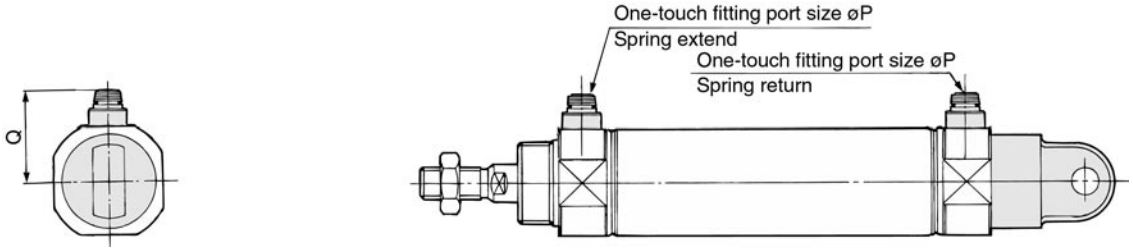
Spring return



Spring extend



Built-in One-touch fitting



(mm)

Bore	A	AL	B1	CD	CI	CX	D	E	F	G	H	H1	I	K	L	MM	N	NA	NN	P	RR	U
20	18	15.5	13	9	24	10	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	30	M8 X 1.25	15	24	M20 X 1.5	1/8	9	14
25	22	19.5	17	9	30	10	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	30	M10 X 1.25	15	30	M26 X 1.5	1/8	9	14
32	22	19.5	17	9	30	10	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	30	M10 X 1.25	15	34.5	M26 X 1.5	1/8	9	14
40	24	21	22	10	38	15	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	39	M14 X 1.5	21.5	42.5	M32 X 2	1/4	11	18

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	158	167	112	183	192	137	208	217	—	—	—	—	—	—
25	87	162	171	112	187	196	137	212	221	—	—	—	—	—	—
32	89	164	173	114	189	198	139	214	223	164	239	248	—	—	—
40	113	202	213	138	227	238	163	252	263	188	277	288	213	302	313

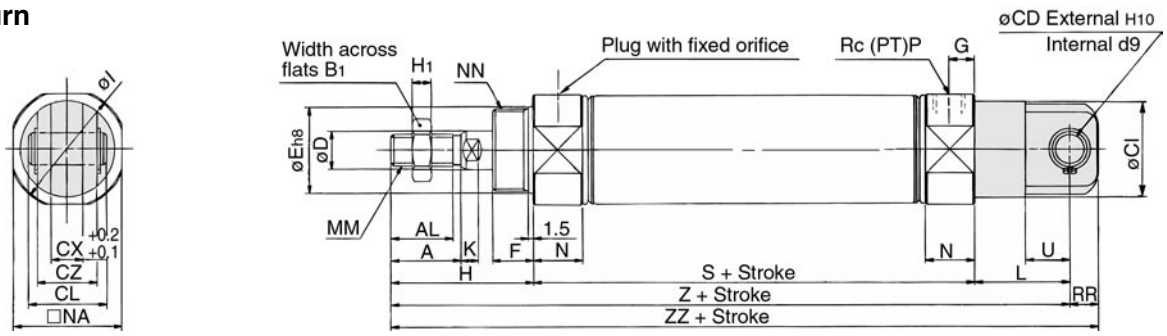
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

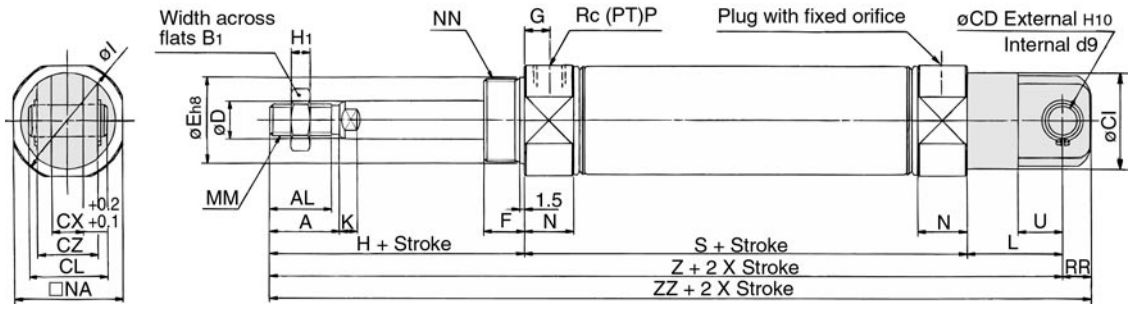
Double Clevis (D)

CM2D Bore size — Stroke **S T**

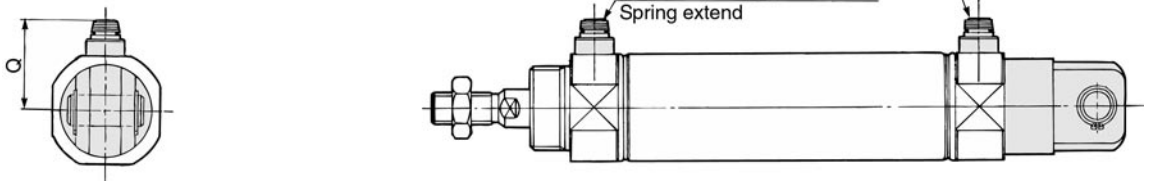
Spring return



Spring extend



Built-in One-touch fitting



(mm)

Bore	A	AL	B1	CD	CI	CL	CX	CZ	D	E	F	G	H	H1	I	K	L	MM	N	NA	NN	P	RR	U
20	18	15.5	13	9	24	25	10	19	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	30	M8 X 1.25	15	24	M20 X 1.5	1/8	9	14
25	22	19.5	17	9	30	25	10	19	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	30	M10 X 1.25	15	30	M26 X 1.5	1/8	9	14
32	22	19.5	17	9	30	25	10	19	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	30	M10 X 1.25	15	34.5	M26 X 1.5	1/8	9	14
40	24	21	22	10	38	41.2	15	30	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	39	M14 X 1.5	21.5	42.5	M32 X 2	1/4	11	18

Dimensions by stroke

∗ Clevis pins and snap rings (cotter pins for bore size 40) are attached. (mm)

Bore \ Stroke / Symbol	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	158	167	112	183	192	137	208	217	—	—	—	—	—	—
25	87	162	171	112	187	196	137	212	221	—	—	—	—	—	—
32	89	164	173	114	189	198	139	214	223	164	239	248	—	—	—
40	113	202	213	138	227	238	163	252	263	188	277	288	213	302	313

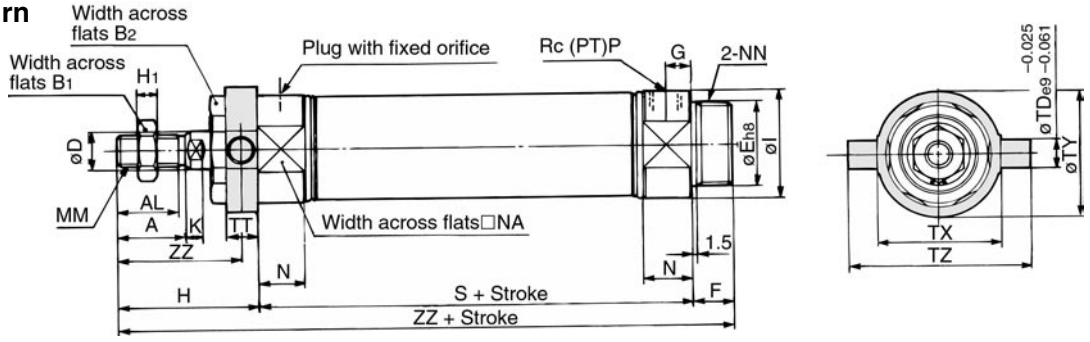
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

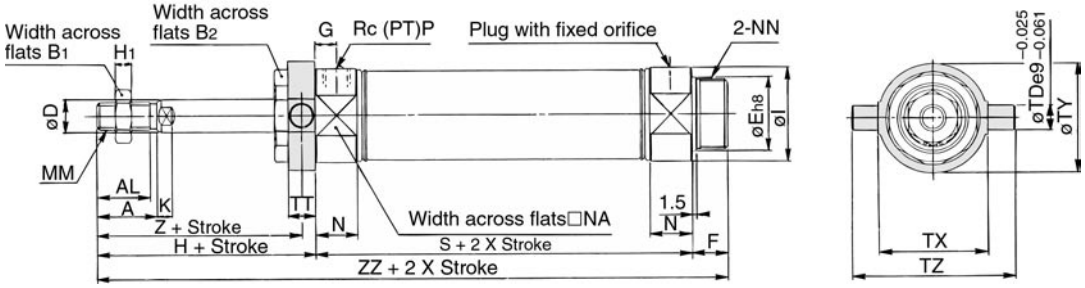
Front Trunnion (U)

CM2U Bore size — Stroke S T

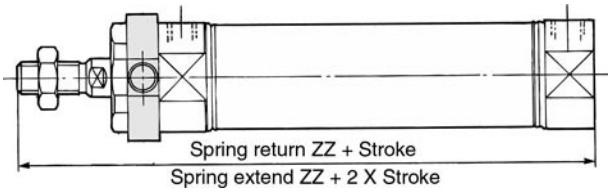
Spring return



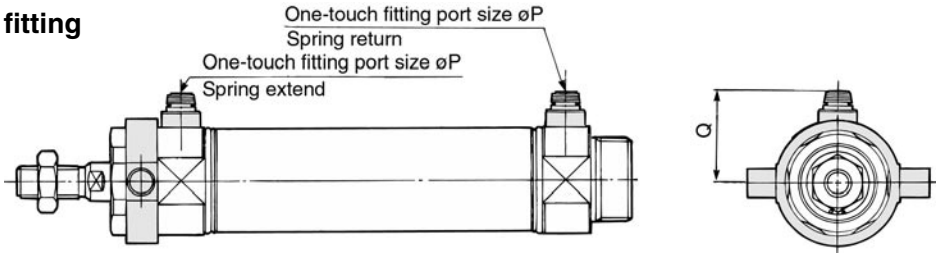
Spring extend



Boss-cut style



Built-in One-touch fitting



(mm)

Bore	A	AL	B1	B2	D	E	F	G	H	H1	I	K	MM	N	NA	NN	P	TD	TT	TX	TY	TZ	Z
20	18	15.5	13	26	8	$20^{0}_{-0.033}$	13	8	41	5	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8	8	10	32	32	52	36
25	22	19.5	17	32	10	$26^{0}_{-0.033}$	13	8	45	6	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8	9	10	40	40	60	40
32	22	19.5	17	32	12	$26^{0}_{-0.033}$	13	8	45	6	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8	9	10	40	40	60	40
40	24	21	22	41	14	$32^{0}_{-0.039}$	16	11	50	8	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4	10	11	53	53	77	44.5

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50		51 to 100		101 to 150		151 to 200		201 to 250	
	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	87	141	112	166	137	191	—	—	—	—
25	87	145	112	170	137	195	—	—	—	—
32	89	147	114	172	139	197	164	222	—	—
40	113	179	138	204	163	229	188	254	213	279

Boss-cut

(mm)

Bore \ Stroke / Symbol	1 to 50	51 to 100	101 to 150	151 to 200	201 to 250
	ZZ	ZZ	ZZ	ZZ	ZZ
20	128	153	178	—	—
25	132	157	182	—	—
32	134	159	184	209	—
40	163	188	213	238	263

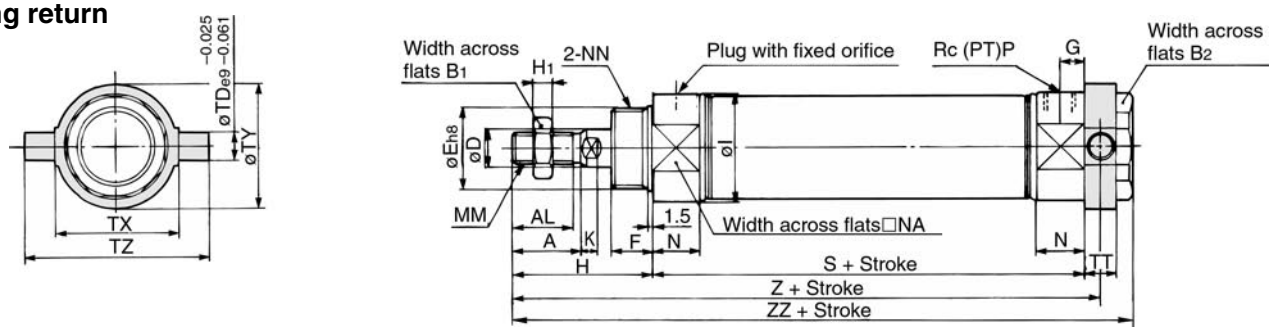
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

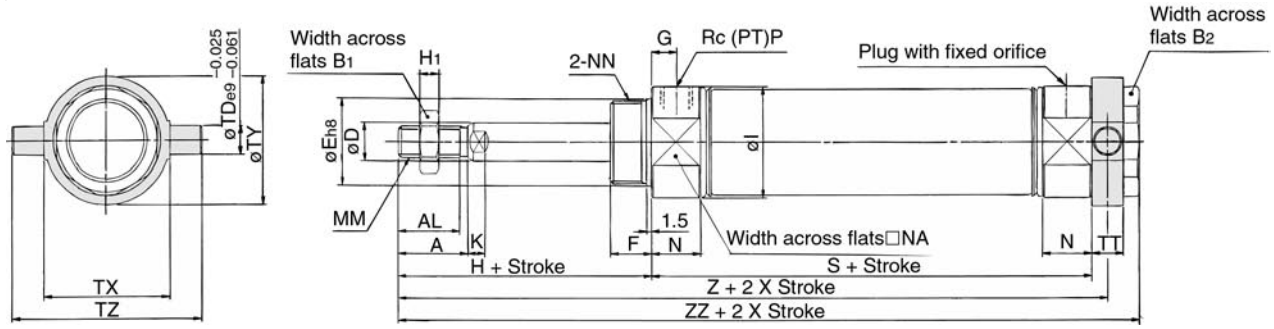
Rear Trunnion (T)

CM2T | **Bore size** | — | **Stroke** | S / T

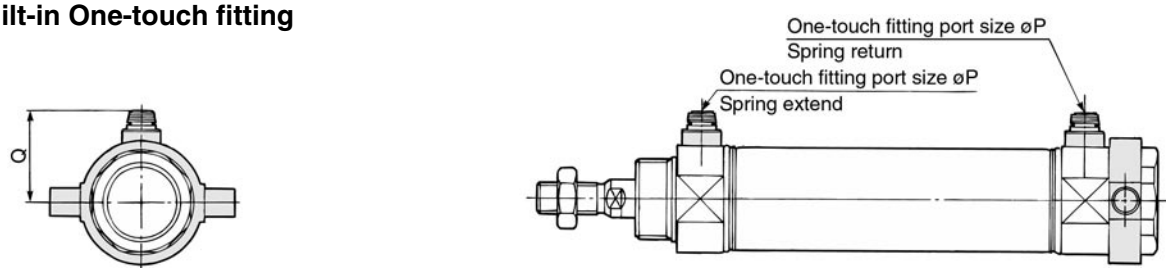
Spring return



Spring extend



Built-in One-touch fitting



(mm)

Bore	A	AL	B1	B2	D	E	F	G	H	H1	I	K	MM	N	NA	NN	P	TD	TT	TX	TY	TZ
20	18	15.5	13	26	8	$20^{\ 0}_{-0.033}$	13	8	41	5	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8	8	10	32	32	52
25	22	19.5	17	32	10	$26^{\ 0}_{-0.033}$	13	8	45	6	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8	9	10	40	40	60
32	22	19.5	17	32	12	$26^{\ 0}_{-0.033}$	13	8	45	6	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8	9	10	40	40	60
40	24	21	22	41	14	$32^{\ 0}_{-0.039}$	16	11	50	8	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4	10	11	53	53	77

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	133	143	112	158	168	137	183	193	—	—	—	—	—	—
25	87	137	147	112	162	172	137	187	197	—	—	—	—	—	—
32	89	139	149	114	164	174	139	189	199	164	214	224	—	—	—
40	113	168.5	179	138	193.5	204	163	218.5	229	188	243.5	254	213	268.5	279

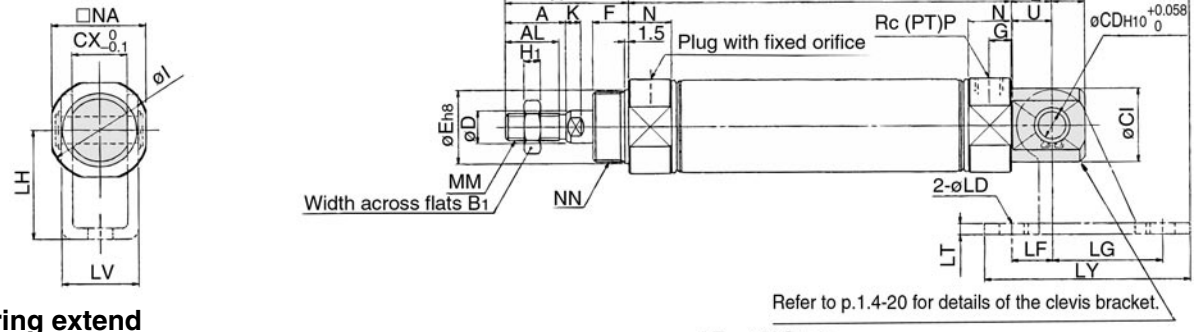
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

Integrated Clevis (E)

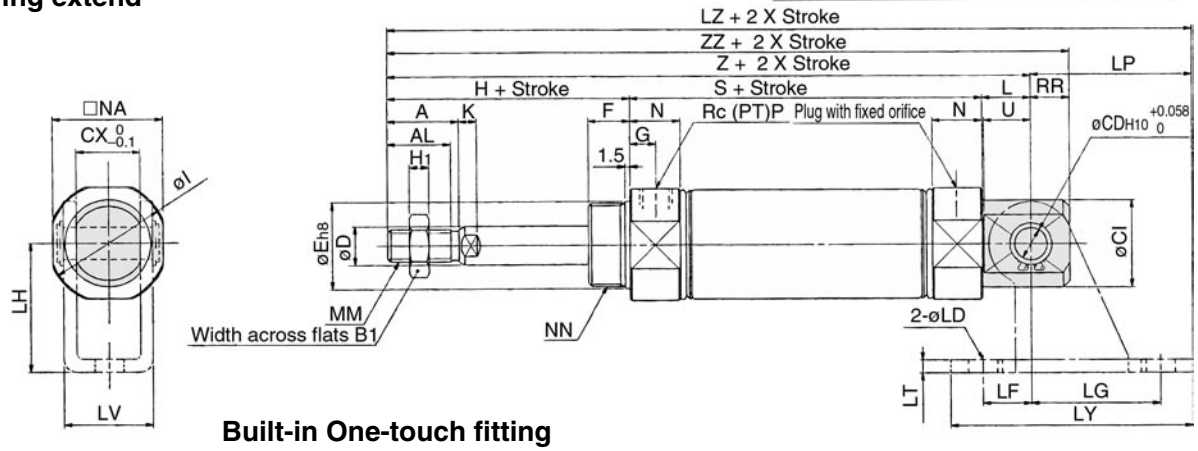
CM2E | **Bore size** | **Stroke** | S T

Spring return

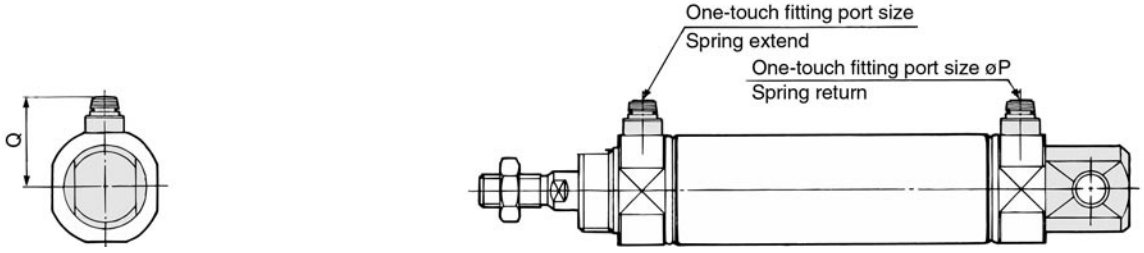


Refer to p.1.4-20 for details of the clevis bracket.

Spring extend



Built-in One-touch fitting



(mm)

Bore	A	AL	B1	CD	CI	CX	D	E	F	G	H	H1	I	K	L	MM	N	NA	NN	P	PR	U
20	18	15.5	13	8	20	12	8	20 $^{0}_{-0.033}$	13	8	41	5	28	5	12	M8 X 1.25	15	24	M20 X 1.5	1/8	9	11.5
25	22	19.5	17	8	22	12	10	26 $^{0}_{-0.033}$	13	8	45	6	33.5	5.5	12	M10 X 1.25	15	30	M26 X 1.5	1/8	9	11.5
32	22	19.5	17	10	27	20	12	26 $^{0}_{-0.033}$	13	8	45	6	37.5	5.5	15	M10 X 1.25	15	34.5	M26 X 1.5	1/8	12	14.5
40	24	21	22	10	33	20	14	32 $^{0}_{-0.039}$	16	11	50	8	46.5	7	15	M14 X 1.5	21.5	42.5	M32 X 2	1/4	12	14.5

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	140	149	112	165	174	137	190	199	—	—	—	—	—	—
25	87	144	153	112	169	178	137	194	203	—	—	—	—	—	—
32	89	149	161	114	174	186	139	199	211	164	224	236	—	—	—
40	113	178	190	138	203	215	163	228	240	188	253	265	213	278	290

Pivot bracket

(mm)

Bore	LD	LF	LG	LH	LP	LT	LV	LY	1 to 50	51 to 100	101 to 150	151 to 200	201 to 250
									LZ	LZ	LZ	LZ	LZ
20	6.8	15	30	30	37	3.2	18.4	59	177	202	227	—	—
25	6.8	15	30	30	37	3.2	18.4	59	181	206	231	—	—
32	9	15	40	40	50	4	28	75	199	224	249	274	—
40	9	15	40	40	50	4	28	75	228	253	278	303	328

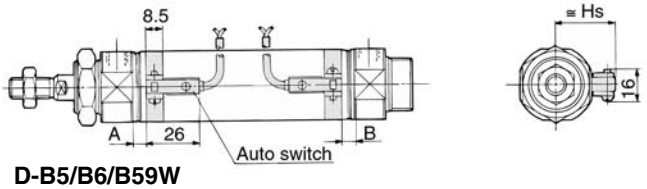
Built-in One-touch fitting

Bore	P	Q
20	6	23
25	6	26
32	6	28.5
40	8	32.5

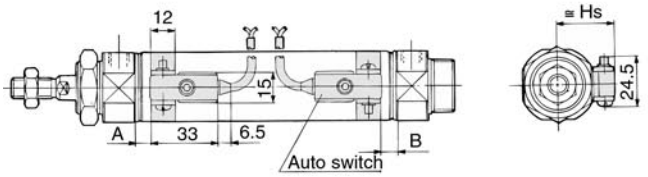
Auto Switch Mounting Position and Mounting Height: Spring Return (S)

Reed Switch

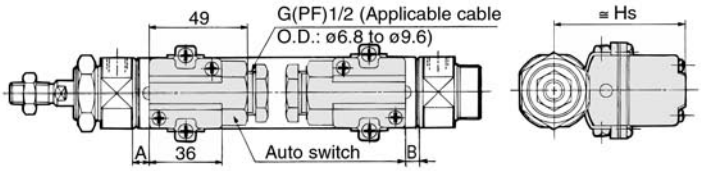
D-C7/C8



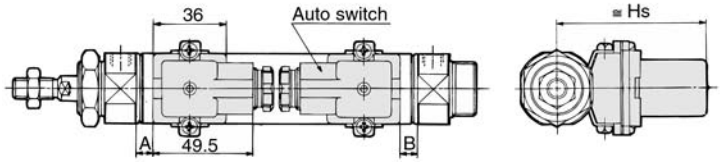
D-B5/B6/B59W



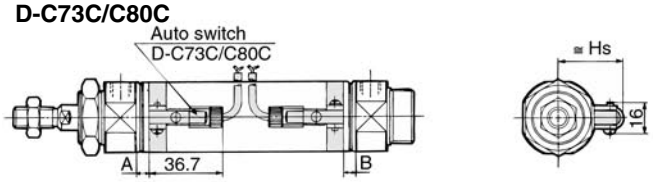
D-A33A/A34A



D-A44A

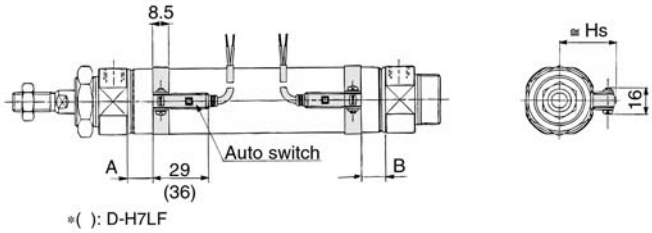


D-C73C/C80C

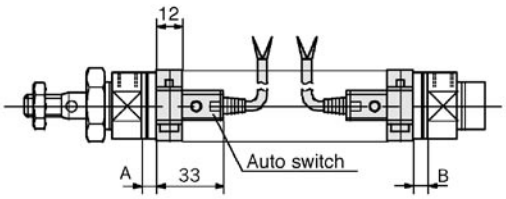


Solid State Switch

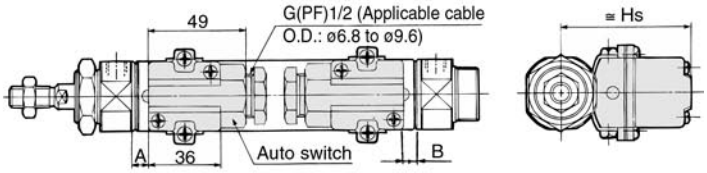
D-H7□/H7□W
D-H7□F/H7BAL



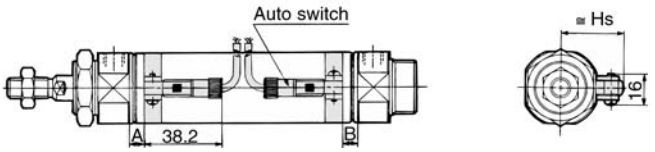
D-G5NTL



D-G39A
D-K39A



D-H7C



Auto Switch Position: Spring Return (S)

(mm)

Auto switch model	Bore size	A dimensions					B
		to 50	51 to 100	101 to 150	151 to 200	200 to 250	
D-B5 D-B6	20	26	51	76	—	—	0
	25	26	51	76	—	—	0
	32	27	52	77	102	—	1
	40	32	57	82	107	132	6
D-C7 D-C8 D-C73C D-C80C	20	32	57	82	—	—	6
	25	32	57	82	—	—	6
	32	33	58	83	108	—	7
	40	38	63	88	113	138	12
D-B59W	20	29	54	79	—	—	3
	25	29	54	79	—	—	3
	32	30	55	80	105	—	4
	40	35	60	85	110	135	9
D-A3□A D-G39A D-K39A D-A44A	20	25.5	50.5	75.5	—	—	0
	25	25.5	50.5	75.5	—	—	0
	32	26.5	51.5	76.5	101.5	—	0.5
	40	31.5	56.5	81.5	106.5	131.5	5.5
D-H7□ D-H7C	20	31	56	81	—	—	5
	25	31	56	81	—	—	5
	32	32	57	82	107	—	6
	40	37	62	87	112	137	11
D-H7□W D-H7BAL D-H7□F	20	29.5	54.5	79.5	—	—	3.5
	25	29.5	54.5	79.5	—	—	3.5
	32	30.5	55.5	80.5	105.5	—	4.5
	40	35.5	60.5	85.5	110.5	135.5	9.5
D-G5NTL	20	27.5	52.5	77.5	—	—	1.5
	25	27.5	52.5	77.5	—	—	1.5
	32	28.5	53.5	78.5	103.5	—	2.5
	40	33.5	58.5	83.5	108.5	133.5	7.5

Mounting Height

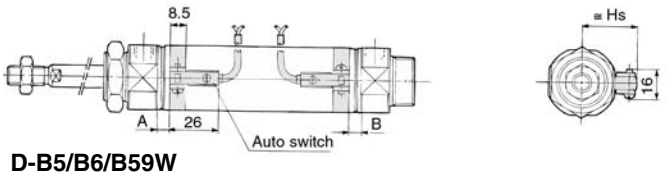
(mm)

Auto switch model	Bore size	Hs
D-B5 D-B6 D-B59W D-G5NTL	20	25.5
	25	28
	32	31.5
	40	35.5
D-C7/C8 D-H7□ D-H7□W D-H7BAL D-H7□F	20	22.5
	25	25
	32	28.5
	40	32.5
D-C73C D-C80C D-H7C	20	25
	25	27.5
	32	31
	40	35
D-A3□A D-G39A D-K39A	20	60
	25	62.5
	32	66
	40	70
D-A44A	20	69.5
	25	72
	32	75.5
	40	79.5

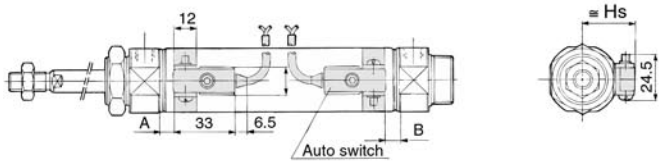
Auto Switch Mounting Position and Mounting Height: Spring Extend (T)

Reed Switch

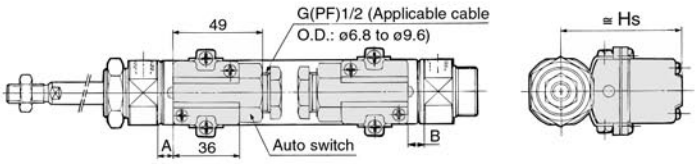
D-C7/C8



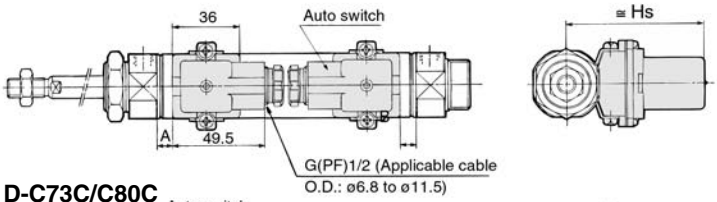
D-B5/B6/B59W



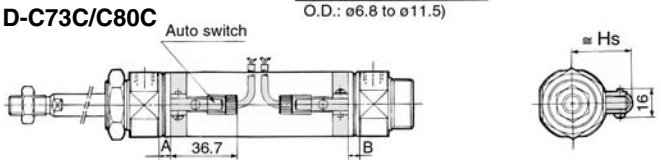
D-A33A/A34A



D-A44A

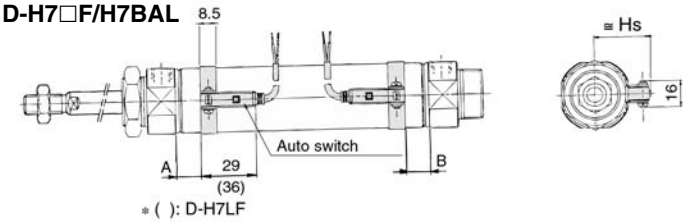


D-C73C/C80C

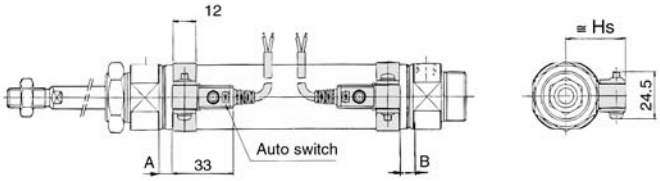


Solid State Switch

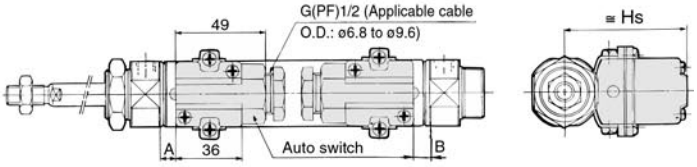
D-H7□/H7□W
D-H7□F/H7BAL



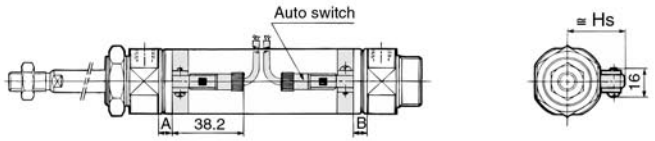
D-G5NTL



D-G39A
D-K39A



D-H7C



Auto Switch Position: Spring Extend (T)

(mm)

Auto switch model	Bore size (mm)	A	B dimensions				
			to 50	51 to 100	101 to 150	151 to 200	200 to 250
D-B5 D-B6	20	1	25	50	75	—	—
	25	1	25	50	75	—	—
	32	2	26	51	76	101	—
	40	7	31	56	81	106	131
D-C7 D-C8 D-C73C D-C80C	20	7	31	56	81	—	—
	25	7	31	56	81	—	—
	32	8	32	57	82	107	—
	40	13	37	62	87	112	137
D-B59W	20	4	28	53	78	—	—
	25	4	28	53	78	—	—
	32	5	29	54	79	104	—
	40	10	34	59	84	109	134
D-A3□A D-G39A D-K39A D-A44A	20	0.5	24.5	49.5	74.5	—	—
	25	0.5	24.5	49.5	74.5	—	—
	32	1.5	25.5	50.5	75.5	100.5	—
	40	6.5	30.5	55.5	80.5	105.5	130.5
D-H7□ D-H7C	20	6	30	55	80	—	—
	25	6	30	55	80	—	—
	32	7	31	56	81	106	—
	40	12	36	61	86	111	136
D-H7□W D-H7BAL D-H7□F	20	4.5	28.5	53.5	78.5	—	—
	25	4.5	28.5	53.5	78.5	—	—
	32	5.5	29.5	54.5	79.5	104.5	—
	40	10.5	34.5	59.5	83.5	109.5	134.5
D-G5NTL	20	2.5	26.5	51.5	76.5	—	—
	25	2.5	26.5	51.5	76.5	—	—
	32	3.5	27.5	52.5	77.5	102.5	—
	40	8.5	32.5	57.5	81.5	107.5	132.5

Mounting Height

(mm)

Auto switch model	Bore size (mm)	≅ Hs
D-B5 D-B6 D-B59W D-G5NTL	20	25.5
	25	28
	32	31.5
	40	35.5
D-C7/C8 D-H7□ D-H7□W D-H7BAL D-H7□F	20	22.5
	25	25
	32	28.5
	40	32.5
D-C73C D-C80C D-H7C	20	25
	25	27.5
	32	31
	40	35
D-A3□A D-G39A D-K39A	20	60
	25	62.5
	32	66
	40	70
D-A44A	20	69.5
	25	72
	32	75.5
	40	79.5

Non-rotating Rod: Double Acting Single Rod

Series CM2K

ø20, ø25, ø32, ø40

How to Order

Mounting

B	Basic	**T**	Rear trunnion
L	Axial foot	**E**	Integrated clevis
F	Front flange	**BZ**	Boss-cut basic
G	Rear flange	**FZ**	Boss-cut front flange
C	Single clevis	**UZ**	Boss-cut front trunnion
D	Double clevis		
U	Front trunnion		

Cylinder stroke(mm)
Refer to p.1.4-51 for Standard Stroke Table.

Cushion

—	Rubber bumper
A	Air cushion

Standard CM2K [L] [40] — [150] [A] [J]

With auto switch CDM2K [L] [40] — [150] [A] [J] — [C73] [ ]

Air cylinder with auto switch

Bore size

20	20mm
25	25mm
32	32mm
40	40mm

Rod boot

—	Without rod boot
J	Nylon tarpaulin
K	Heat resistant tarpaulin

Number of auto switches

—	2
S	1
n	n

Auto switch

—	Without auto switch (Built-in magnet)

∗ Refer to the table below for selecting applicable auto switches.

Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	5V	—	**C76**	●	●	—	—	IC	—
				2 wire	12V	100V	**C73**	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	**C80**	●	●	—	—	IC	
			Yes		12V	—	**B53**	●	●	●	—	—	PLC
					12V	100V, 200V	**B54**	●	●	●	—	—	Relay PLC
			No		12V	200V or less	**B64**	●	●	—	—		
		Connector	Yes		12V	—	**C73C**	●	●	●	●		
			No		5V, 12V	24V or less	**C80C**	●	●	●	●	IC	
		Terminal conduit	Yes		12V	—	**A33A**	—	—	—	●	—	PLC
					12V	100V, 200V	**A34A**	—	—	—	●		Relay PLC
		DIN connector					**A44A**	—	—	—	●		
	Diagnostic indicator (2colour)	Grommet				—	**B59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	5V, 12V	—	**H7A1**	●	●	○	—	IC	Relay PLC
				3 wire(PNP)			**H7A2**	●	●	○	—		
				2 wire	12V		**H7B**	●	●	○	—	—	
		Connector					**H7C**	●	●	●	●		
		Terminal conduit		3 wire(NPN)	5V, 12V		**G39A**	—	—	—	●	IC	
				2 wire	12V		**K39A**	—	—	—	●	—	
	Diagnostic indicator (2colour)	Grommet		3 wire(NPN)	5V, 12V		**H7NW**	●	●	○	—	IC	
				3 wire(PNP)			**H7PW**	●	●	○	—		
				2 wire	12V		**H7BW**	●	●	○	—	—	
	Water resistant (2colour)						**H7BA**	—	●	○	—		
	With timer			3 wire(NPN)	5V,12V		**G5NT**	—	●	○	—	IC	
	Diagnostic output (2colour)			4 wire (NPN)			**H7NF**	●	●	○	—		
	Latch with diagnostic output (2colour)				—		**H7LF**	●	●	○	—	—	

∗ Lead wire length
0.5m : —
3m : L
5m : Z
None: N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.

∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

A cylinder in which the rod does not rotate because of its hexagonal shape.

Non-rotating accuracy
ø20, ø25—±0.7°
ø32, ø40—±0.5°

Can operate without lubrication.

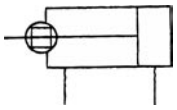
The same installation dimensions as the standard cylinder.

Auto switches can also be mounted.

It can be installed with auto switches to detect the stroke position of the cylinder.

JIS symbol

Double acting/Single rod



Made to Order

Refer to p.5.4-1 for made to order specifications of series CM2K.

Specifications

Bore size (mm)	ø20	ø25	ø32	ø40
Rod non-rotating accuracy	±0.7°		±0.5°	
Style	Air cylinder			
Action	Double acting/Single rod			
Fluid	Air			
Cushion	Rubber bumper			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.05MPa			
Ambient and fluid temperature	Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Piston speed (mm/s)	50 to 500			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)
20	25, 50, 75, 100, 125, 150 200, 250, 300
25	
32	
40	

Note 1) Other intermediate strokes can be manufactured upon receipt of order. Contact SMC for longer strokes.

Minimum Strokes for Auto Switch Mounting

Auto switches can be mounted. Refer to p.1.4-4 for minimum stroke table.

Rod Boot Materials

Symbol	Material	Max. ambient temp.
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*

* Maximum ambient temperature for the gaiter only.

Mounting Bracket Part No.

Bore size (mm)	20	25	32	40
Axial foot*	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Single clevis	CM-C020B	CM-C032B		CM-C040B
Double clevis** (with pins)	CM-D020B	CM-D032B		CM-D040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

* Two foot brackets and a mounting nut are attached.
** Clevis pins and snap rings (cotter pins for bore size 40) are attached.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA3: D-B5/B6/G5
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached.

Boss-cut Style

Boss for the head cover bracket is eliminated and the total length of cylinder is shortened.

Comparison of total cylinder length with standard style (mm)

ø20	ø25	ø32	ø40
▲13	▲13	▲13	▲16

Mounting

■Boss-cut basic (BZ) ■Boss-cut flange (FZ)
■Boss-cut trunnion (UZ)

Mounting Accessories

Mounting \ Accessories	Standard			Option			
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint (3)	Pivot bracket	Rod boot
Basic	●(1 pc.)	●	—	●	●	—	●
Axial foot	● (2)	●	—	●	●	—	●
Front flange	● (1)	●	—	●	●	—	●
Rear flange	● (1)	●	—	●	●	—	●
Integrated clevis	—(1)	●	—	●	●	●	●
Single clevis	—(1)	●	—	●	●	—	●
Double clevis (3)	—(1)	●	●	●	●	—	●
Front trunnion	● (1) (2)	●	—	●	●	—	●
Rear trunnion	● (1) (2)	●	—	●	●	—	●
Boss-cut basic	● (1)	●	—	●	●	—	●
Boss-cut flange	● (1)	●	—	●	●	—	●
Boss-cut trunnion	● (1)	●	—	●	●	—	●
Note					With pins	With pins	

Note 1) Mounting nuts are not attached for the integrated clevis, the single clevis, and the double clevis styles.
Note 2) Trunnion nuts are attached for the front trunnion and the rear trunnion style.
Note 3) Pins and snap rings (cotter pins for bore size 40) are attached for double clevis and the double knuckle joint.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Basic	0.14	0.21	0.28	0.57
	Axial foot	0.29	0.37	0.44	0.84
	Flange	0.20	0.30	0.37	0.69
	Integrated clevis	0.12	0.19	0.27	0.53
	Single clevis	0.18	0.25	0.32	0.66
	Double clevis	0.19	0.27	0.33	0.70
	Trunnion	0.18	0.28	0.34	0.67
	Boss-cut basic	0.13	0.19	0.26	0.53
	Boss-cut flange	0.19	0.28	0.35	0.66
	Boss-cut trunnion	0.17	0.26	0.32	0.63
Additional weight by each 50 stroke		0.04	0.07	0.09	0.14
Accessory	Pivot bracket (with pins)	0.07	0.07	0.14	0.14
	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instruction and common precautions and refer to p.1.4-5 for those on CM2 series.

Handling

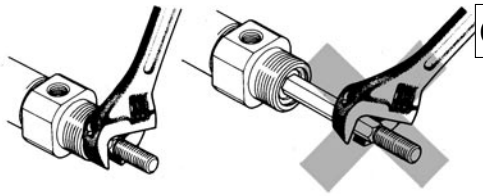
⚠ Cautions

①**Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.**

· If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy.
Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque (Nm)	ø20	ø25	ø32	ø40
	0.2	0.25	0.25	0.44

· To screw a bracket or a nut onto the threaded portion at the tip of the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes. To tighten, take precautions to prevent the tightening torque from being applied to the non-rotating guide.



②**To replace a rod seal, contact SMC.**
A rod seal could lead to an air leak, depending on the position in which it is fitted. Therefore, make sure to contact SMC if a rod seal must be replaced.

Calculation example: CM2KL32-100
●Basic weight: 0.44 (Foot, ø32)
●Additional weight: 0.09/50 stroke
●Cylinder stroke: 100 stroke
0.44 + 0.09 X 100/50 = 0.62kg

Copper Free

20-CM2K | **Mounting** | **Bore size** — **Stroke**

20: Copper free

This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper
Piston speed	50 to 500mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut

With Air Cushion

CM2K | **Mounting** | **Bore size** — **Stroke** | **A**

A: With air cushion

A cushion mechanism is provided on the cover at both ends to absorb the impact that is created during high speed operations. Thus, it does not transmit vibrations to the surroundings and prolongs the life of the cylinder.

Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Air cushion
Piston speed	50 to 500mm/s
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut

∗Auto switches can be mounted.

Allowable Kinetic Energy

Bore size (mm)	Effective cushion length (mm)	Allowable kinetic energy
20	11.0	0.54J
25	11.0	0.78J
32	11.0	1.27J
40	11.8	2.35J

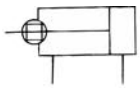
• Construction: Refer to p.1.4-54.
• Dimensions: Refer to p.1.4-55.
• Refer to p.1.4-51 for other specifications.

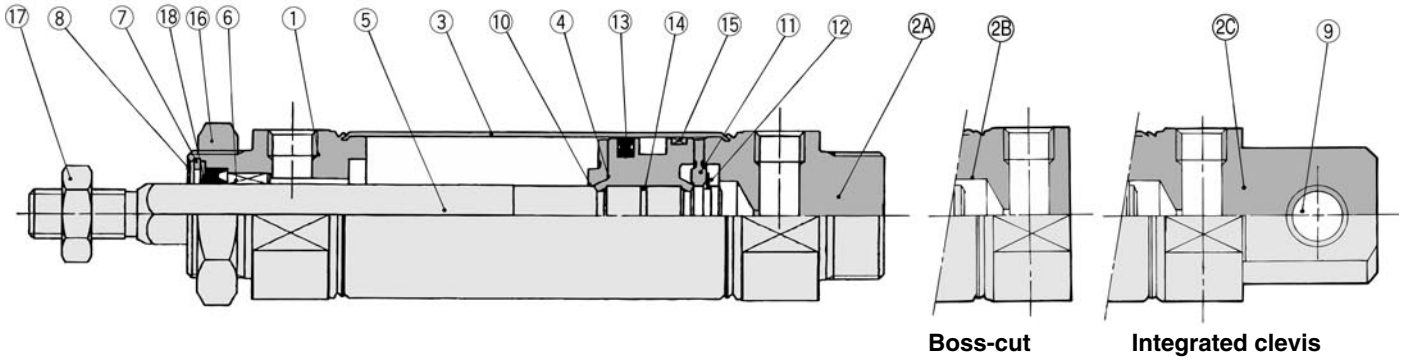
Auto switch mounting position

Refer to the standard type (double acting/single rod) on p.1.4-21.

Construction

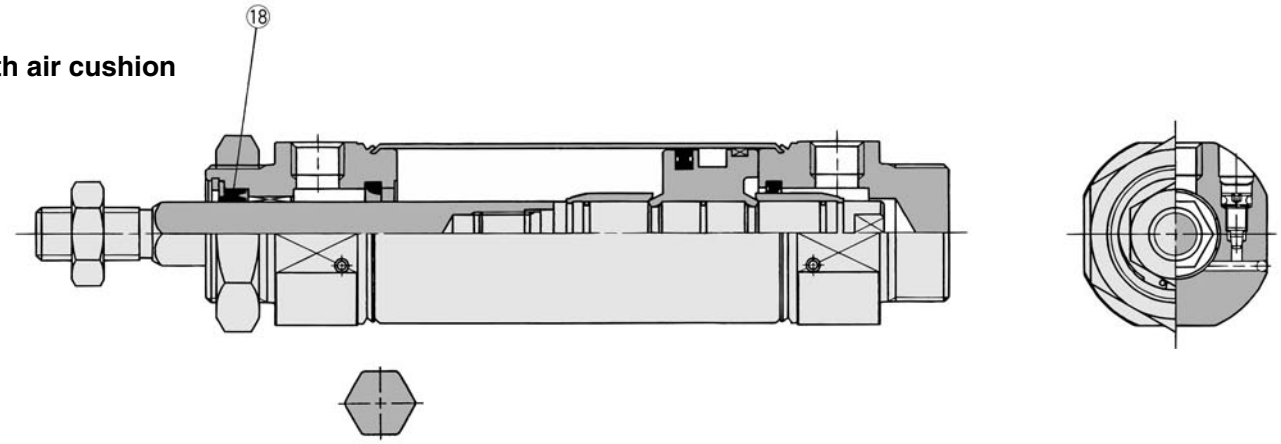
Rubber bumper





Rod section

With air cushion



Rod section

Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②A	Head cover A	Aluminum alloy	White anodized(Standard style)
②B	Head cover B	Aluminum alloy	White anodized(Boss-cut style)
②C	Head cover C	Aluminum alloy	White anodized(Integrated clevis style)
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Stainless steel	
⑥	Non-rotating guide	Oil impregnated sintered metal	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Bushing for clevis	Oil impregnated sintered metal	
⑩	Bumper A	Urethane	
⑪	Bumper B	Urethane	

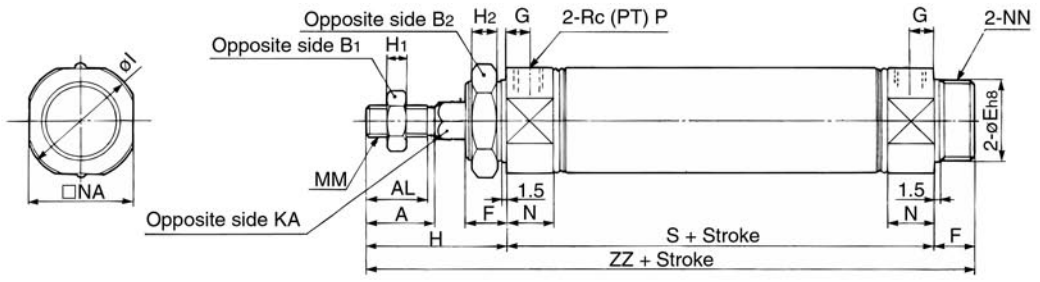
No.	Description	Material	Note
⑫	Snap ring	Stainless steel	
⑬	Piston seal	NBR	
⑭	Piston gasket	NBR	
⑮	Wearing	Resin	
⑯	Mounting nut	Carbon steel	Nickel plated
⑰	Rod end nut	Carbon steel	Nickel plated

Replacement Parts

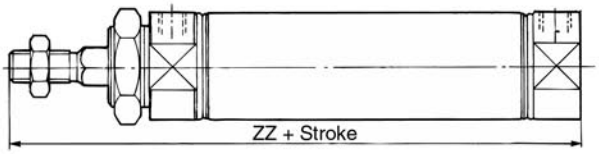
No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
⑱	Rod seal	NBR	PDR-8W	PDR-10W	PDR-12W	PDR-14W

Basic (B)

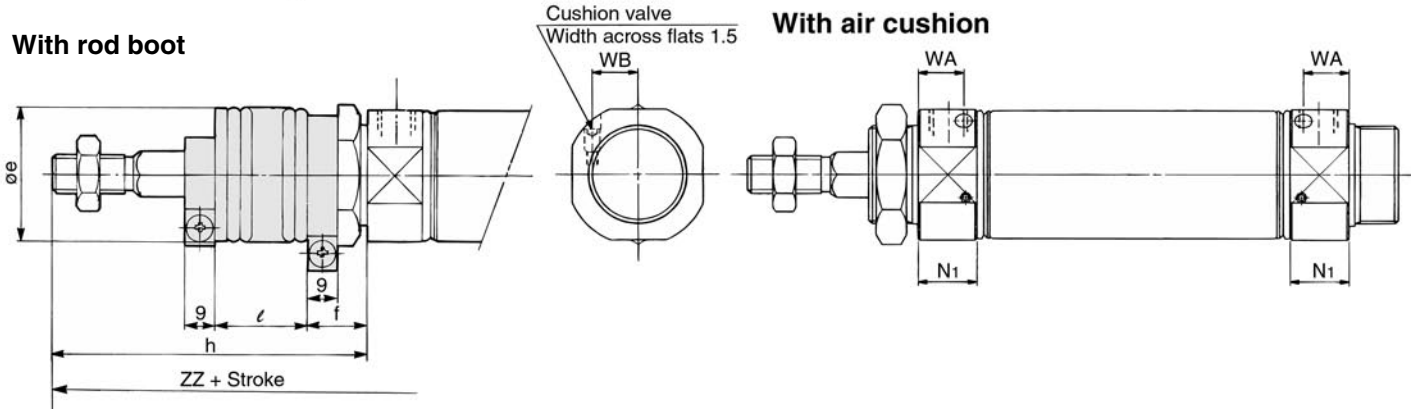
CM2KB Bore size — Stroke



Boss-cut



With rod boot



(mm)

Bore	A	AL	B_1	B_2	E	F	G	H	H_1	H_2	I	KA	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	$20^{0}_{-0.033}$	13	8	41	5	8	28	8.2	M8 X 1.25	15	24	M20 X 1.5	1/8	62	116
25	22	19.5	17	32	$26^{0}_{-0.033}$	13	8	45	6	8	33.5	10.2	M10 X 1.25	15	30	M26 X 1.5	1/8	62	120
32	22	19.5	17	32	$26^{0}_{-0.033}$	13	8	45	6	8	37.5	12.2	M10 X 1.25	15	34.5	M26 X 1.5	1/8	64	122
40	24	21	22	41	$32^{0}_{-0.039}$	16	11	50	8	10	46.5	14.2	M14 X 1.5	21.5	42.5	M32 X 2	1/4	88	154

With rod boot

(mm)

Bore \ Symbol / Stroke	e	f	h							ℓ					ZZ				
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300
20	36	17	68	81	93	106	131	156	—	12.5	25	37.5	50	75	143	156	168	181	206
25	36	17	72	85	97	110	135	160	185	12.5	25	37.5	50	75	147	160	172	185	210
32	36	17	72	85	97	110	135	160	185	12.5	25	37.5	50	75	149	162	174	187	212
40	46	19	77	90	102	115	140	165	190	12.5	25	37.5	50	75	181	194	206	219	244

Boss-cut

Bore	ZZ					
	Without gaiter	With gaiter				
		1to50	51to100	101to150	151to200	201to300
20	103	130	143	155	168	193
25	107	134	147	159	172	197
32	109	136	149	161	174	199
40	138	165	178	190	203	228

With air cushion

Bore	N_1	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Dimensions for Other Mounting Brackets

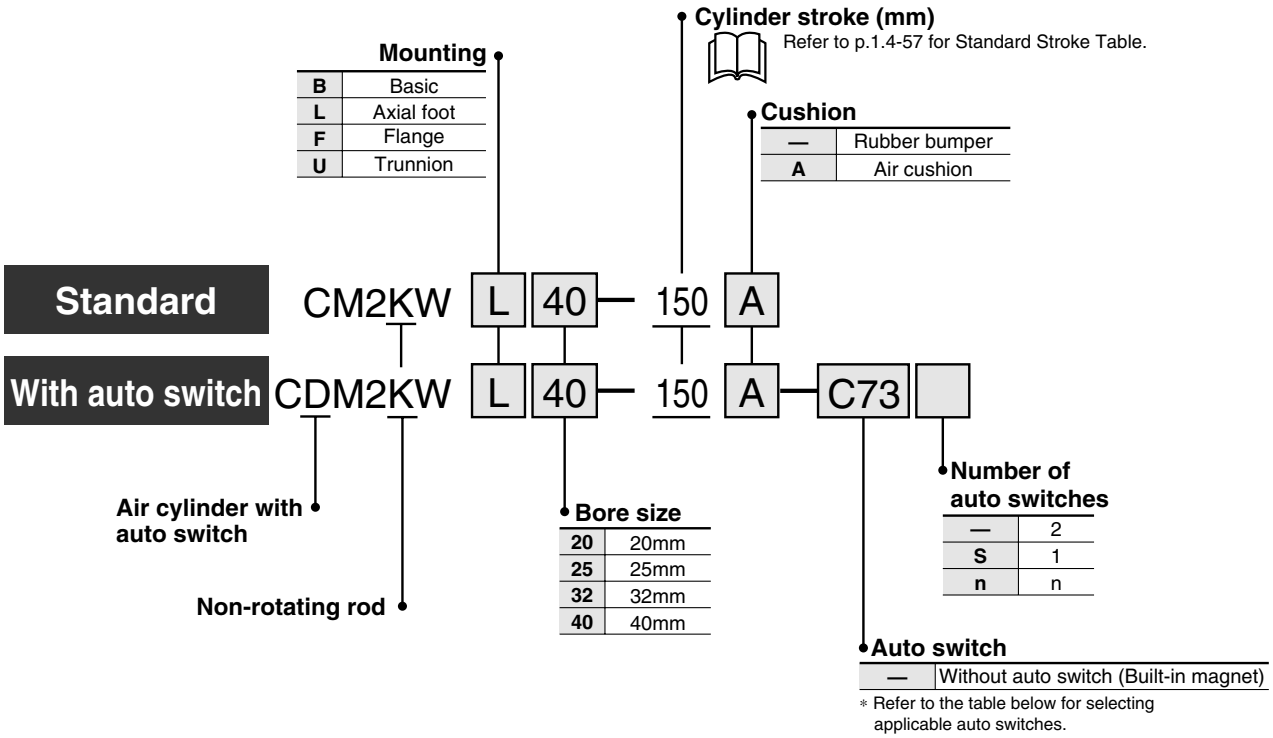
The dimensions are the same as standard style (double acting/single rod), except for the configuration of the piston rod.
Refer to p.1.4-10 to 1.4-18. Specifications for the auto switch equipped style are the same as CDM2 series standard style.

Non-rotating Rod: Double Acting Double Rod

Series CM2KW

ø20, ø25, ø32, ø40

How to Order



∗ Refer to the table below for selecting applicable auto switches.

Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	5V	—	C76	●	●	—	—	IC	—
				2 wire	12V	100V	C73	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	C80	●	●	—	—	IC	
			Yes		12V	—	B53	●	●	●	—	—	PLC
					12V	100V, 200V	B54	●	●	●	—	—	Relay PLC
			No		12V	200V or less	B64	●	●	—	—		
		Connector	Yes		12V	—	C73C	●	●	●	●	—	
			No		5V, 12V	24V or less	C80C	●	●	●	●	IC	
		Terminal conduit	Yes		12V	—	A33A	—	—	—	●	—	PLC
					12V	100V, 200V	A34A	—	—	—	●	—	Relay PLC
		DIN connector					A44A	—	—	—	●		
	Diagnostic indicator (2 colour)	Grommet			—	—	B59W	●	●	—	—	—	
Solid state switch	—	Grommet	Yes	3 wire(NPN)	5V, 12V	—	H7A1	●	●	○	—	IC	Relay PLC
				3 wire(PNP)			H7A2	●	●	○	—		
				2 wire	12V		H7B	●	●	○	—	—	
		Connector					H7C	●	●	●	●		
		Terminal conduit		3 wire(NPN)	5V, 12V		G39A	—	—	—	●	IC	
				2 wire	12V		K39A	—	—	—	●	—	
	Diagnostic indicator (2 colour)	Grommet		3 wire(NPN)	5V, 12V		H7NW	●	●	○	—	IC	
				3 wire(PNP)			H7PW	●	●	○	—		
				2 wire	12V		H7BW	●	●	○	—	—	
	Water resistant (2 colour)						H7BA	—	●	○	—		
	With timer			3 wire(NPN)	5V, 12V		G5NT	—	●	○	—	IC	
	Diagnostic output (2 colour)			4 wire (NPN)			H7NF	●	●	○	—		
	Latch with diagnostic output (2 colour)				—		H7LF	●	●	○	—	—	

∗ Lead wire length
0.5m : –
3m : L
5m : Z
None: N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.

∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

Series CM2KW

A cylinder in which the rod does not rotate because of its hexagonal shape.

Non-rotating accuracy
ø20, ø25—±0.7°
ø32, ø40—±0.5°

Can operate without lubrication.

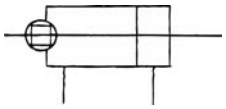
The same installation dimensions as the stand ard cylinder.

Auto switches can also be mounted.

It can be installed with auto switches to detect the stroke position of the cylinder.

JIS symbol

Double acting/Double rod



Rod End Accessories

Refer to p.1.4-19 and 1.4-20 for mounting brackets.

Specifications

Bore size (mm)	ø20	ø25	ø32	ø40
Rod non-rotating accuracy	±0.7°		±0.5°	
Style	Air cylinder			
Cushion	Rubber bumper			
Action	Double acting/Double rod			
Fluid	Air			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.08MPa			
Ambient and fluid temperature	Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Piston speed (mm/s)	50 to 500			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

Standard Stroke

Bore size (mm)	Standard stroke (mm)(1)
20	25, 50, 75, 100, 125, 150 200, 250, 300
25	
32	
40	

Note 1) Other intermediate strokes can be manufactured upon receipt of order.
Contact SMC for longer strokes.

Minimum Strokes for Auto Switch Mounting

(mm)

Auto switch model	Number of switches				
	2		n		1
	On different surfaces	On the same surface	On different surfaces	On the same surface	
D-C7 D-C8	15	50	$15+45(\frac{n-2}{2})$ (n=2, 4, 6···)	50+45(n–2)	10
D-H7□ D-H7□W D-H7BAL D-H7NF	15	60		60+45(n–2)	10
D-C73C D-C80C D-H7C	15	65	$15+50(\frac{n-2}{2})$ (n=2, 4, 6···)	65+50(n–2)	10
D-H7LF	20	65	$20+50(\frac{n-2}{2})$ (n=2, 4, 6···)		10
D-B5 D-B6	15	75	$15+50(\frac{n-2}{2})$ (n=2, 4, 6···)	75+55(n–2)	10
D-B59W	20	75	$20+50(\frac{n-2}{2})$ (n=2, 4, 6···)		15
D-A3□A D-G39A D-K39A D-A44A	35	100	35+30(n–2)	100+100(n–2)	10

Mounting and Accessories

Accessories / Mounting	Standard		Option	
	Mounting nut	Rod end nut	Single knuckle joint	Double knuckle joint (1)
Basic	● (1 pc.)	● (2 pcs.)	●	●
Axial foot	● (2 pcs.)	● (2 pcs.)	●	●
Flange	● (1 pc.)	● (2 pcs.)	●	●
Trunnion	● (1 pc.)(1)	● (2 pcs.)	●	●
Note				With pins

Note 1) Trunnion nuts are attached.

Note 2) Pins and snap rings (cotter pins for ø40) are attached for double knuckle joint.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Basic style	0.16	0.25	0.32	0.66
	Axial foot style	0.31	0.41	0.48	0.93
	Flange style	0.22	0.34	0.41	0.78
	Trunnion style	0.20	0.32	0.38	0.76
Additional weight by each 50 stroke		0.06	0.1	0.14	0.20
Accessory	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

Calculation example: CM2KWL32-100
- Basic weight: 0.48 (Foot, ø32)
- Additional weight: 0.14/50 stroke
- Cylinder stroke: 100 stroke

0.48+0.14 X 100/50=0.76kg

Mounting Bracket Part No.

Bore size mm	20	25	32	40
Axial foot *	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

* Two foot brackets and a mounting nut are attached.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 **D-H7□**	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 **D-G5NTL**	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A **D-G3/K3**	BM3-020	BM3-025	BM3-032	BM3-040

Note) A set of following stainless steel mounting screws is attached.
(A switch mounting band is not attached.
Please order the band separately.)
BBA3: D-B5/B6/G5
BBA4: D-C7/C8/H7

· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached

⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions and refer to p.1.4-5 for those on CM2 series.

Handling

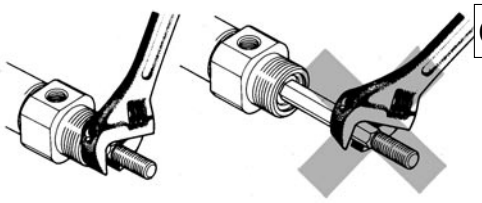
⚠ Cautions

①**Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.**

· If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy.
Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque (Nm)	ø20	ø25	ø32	ø40
	0.2	0.25	0.25	0.44

· To screw a bracket or a nut onto the threaded portion at the tip of the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes. To tighten, take precautions to prevent the tightening torque from being applied to the non-rotating guide.



②**To replace a rod seal, contact SMC.**
A rod seal could lead to an air leak, depending on the position in which it is fitted. Therefore, make sure to contact SMC if a rod seal must be replaced.

With Air Cushion

CM2KW Mounting | Bore size | Stroke | **A** | Gaiter

A: With air cushion

A cushion mechanism is provided on the cover at both ends to absorb the impact that is created during high speed operations. Thus, it does not transmit vibrations to the surroundings and prolongs the life of the cylinder.

Refer to p.1.4-7 for specifications and allowable kinetic energy.

Copper Free

20-CM2KW Mounting | Bore size | Stroke

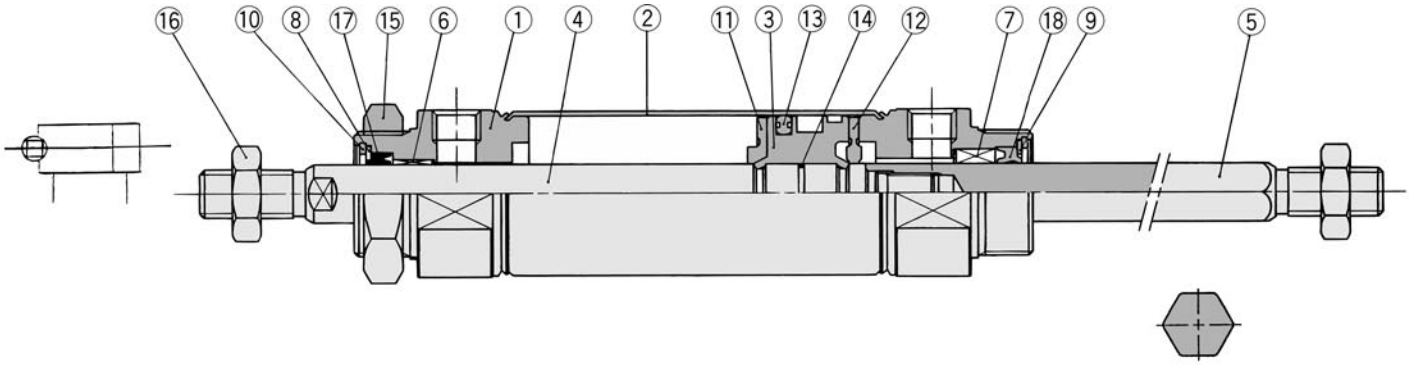
20: Copper free

This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

Refer to p.1.4-8 for specifications.

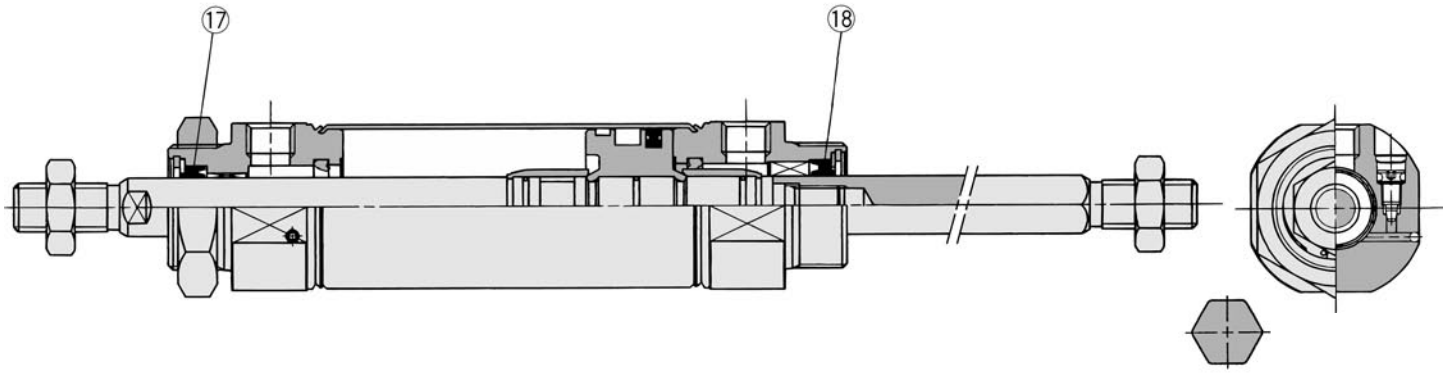
Construction

Rubber bumper



Rod section

With air cushion



Rod section

Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②	Cylinder tube	Stainless steel	
③	Piston	Aluminum alloy	Chromated
④	Piston rod A	Carbon steel	Hard chrome plated
⑤	Piston rod B	Stainless steel	
⑥	Bushing	Oil impregnated sintered alloy	
⑦	Non-rotating guide	Oil impregnated sintered alloy	
⑧	Seal retainer A	Rolled steel	Nickel plated
⑨	Seal retainer B	Rolled steel	Nickel plated
⑩	Snap ring	Carbon steel	Nickel plated
⑪	Bumper A	Urethane	
⑫	Bumper B	Urethane	
⑬	Piston seal	NBR	
⑭	Piston gasket	NBR	
⑮	Mounting nut	Carbon steel	Nickel plated
⑯	Rod end nut	Carbon steel	Nickel plated

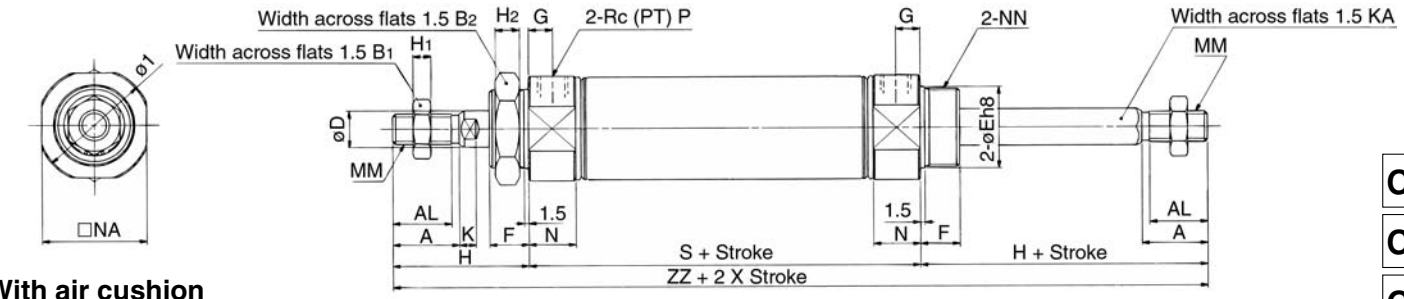
Replacement Parts

●With rubber bumper/With air cushion/Built-in One-touch fitting

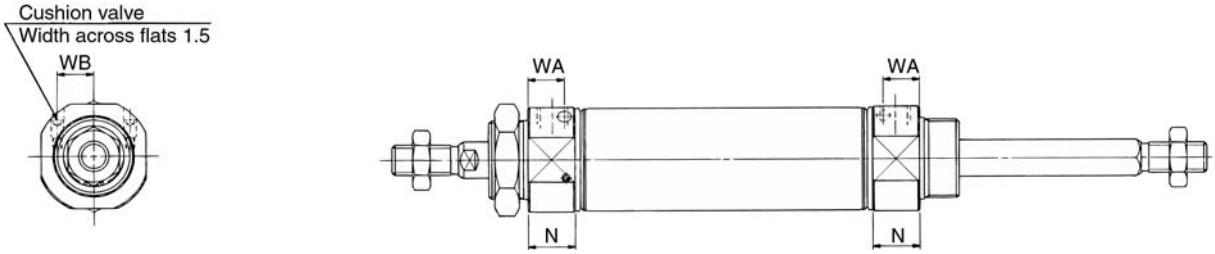
No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
⑰	Rod seal A	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ
⑱	Rod seal B	NBR	PDR-8W	PDR-10W	PDR-12W	PDR-14W

Basic (B)

CM2KWB **Bore size** — **Stroke** ☐



With air cushion



∗ 301mm or longer stroke range is regarded as long stroke.

(mm)

Bore	Stroke range	A	AL	B_1	B_2	D	E	F	G	H	H_1	H_2	II	K	KA	MM	N	NA	NN	P	S	ZZ
20	1 to 300	18	15.5	13	26	8	$20^{0}_{-0.033}$	13	8	41	5	8	28	5	8.2	M8 X 1.25	15	24	M20 X 1.5	1/8	62	144
25	1 to 300	22	19.5	17	32	10	$26^{0}_{-0.033}$	13	8	45	6	8	33.5	5.5	10.2	M10 X 1.25	15	30	M26 X 1.5	1/8	62	152
32	1 to 300	22	19.5	17	32	12	$26^{0}_{-0.033}$	13	8	45	6	8	37.5	5.5	12.2	M10 X 1.25	15	34.5	M26 X 1.5	1/8	64	154
40	1 to 300	24	21	22	41	14	$32^{0}_{-0.033}$	16	11	50	8	10	46.5	7	14.2	M14 X 1.5	21.5	42.5	M32 X 2	1/4	88	188

With air cushion

Bore	N	WA	WB
20	17.5	13	8.5
25	17.5	13	10.5
32	17.5	13	11.5
40	21.5	16	15

Dimensions for Other Mounting Brackets

The dimensions are the same as the standard style (double acting/double rod), except for K/A dimensions. Refer to p.1.4-19 and 1.4-20.

Auto Switch Mounting Position

The auto switch mounting position (at stroke end) is the same as the standard style (double acting/double rod). Refer to p.1.4-32.

Non-rotating Rod: Single Acting Spring Return/Extend

Series CM2K

ø20, ø25, ø32, ø40

How to Order

Mounting

B	Basic	**T**	Rear trunnion
L	Axial foot	**E**	Integrated clevis
F	Front flange	**BZ**	Boss-cut basic
G	Rear flange	**FZ**	Boss-cut front flange
C	Single clevis	**UZ**	Boss-cut front trunnion
D	Double clevis		
U	Front trunnion		

Cylinder stroke (mm)

Refer to p.1.4-62 for Standard Stroke Table.

Action

S	Single acting/Spring return
T	Single acting/Spring extend

Standard CM2K [L] [32] — 150 [S]

With auto switch CDM2K [L] [32] — 150 [S] — [C73] [ ]

Air cylinder with auto switch

Bore size

20	20mm
25	25mm
32	32mm
40	40mm

Number of auto switches

—	2
S	1
n	n

Auto switch

—	Without auto switch (Built-in magnet)

∗ Refer to the table below for selecting applicable auto switches.

Applicable Auto Switches/ Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	—	5V	—	**C76**	●	●	—	—	IC	—
				2 wire	24V	12V	100V	**C73**	●	●	●	—	—	Relay PLC
			No			5V, 12V	100V or less	**C80**	●	●	—	—	IC	Relay PLC
			Yes			12V	—	**B53**	●	●	●	—	—	PLC
						12V	100V, 200V	**B54**	●	●	●	—	—	Relay PLC
			No			12V	200V or less	**B64**	●	●	—	—		
		Connector	Yes			12V	—	**C73C**	●	●	●	●		
			No			5V, 12V	24V or less	**C80C**	●	●	●	●	IC	
		Terminal conduit	Yes			12V	—	**A33A**	—	—	—	●	—	PLC
						12V	100V, 200V	**A34A**	—	—	—	●		Relay PLC
		DIN connector						**A44A**	—	—	—	●		
	Diagnostic indicator (2 colour)	Grommet				—	—	**B59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	24V	5V, 12V	—	**H7A1**	●	●	○	—	IC	Relay PLC
				3 wire(PNP)				**H7A2**	●	●	○	—		
				2 wire		12V		**H7B**	●	●	○	—	—	
		Connector						**H7C**	●	●	●	●		
		Terminal conduit		3 wire(NPN)		5V, 12V		**G39A**	—	—	—	●	IC	
				2 wire		12V		**K39A**	—	—	—	●	—	
	Diagnostic indicator (2 colour)	Grommet		3 wire(NPN)		5V, 12V		**H7NW**	●	●	○	—	IC	
				3 wire(PNP)				**H7PW**	●	●	○	—		
				2 wire		12V		**H7BW**	●	●	○	—	—	
	Water resistant (2 colour)							**H7BA**	—	●	○	—		
	With timer			3 wire(NPN)		5V, 12V		**G5NT**	—	●	○	—	IC	
	Diagnostic output (2 colour)							**H7NF**	●	●	○	—		
	Latch with diagnostic output (2 colour)			4 wire (NPN)		—		**H7LF**	●	●	○	—	—	

∗ Lead wire length

0.5m: —
3m : L
5m : Z
None: N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.

∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

A cylinder in which the rod does not rotate because of its hexagonal shape.

Non-rotating accuracy
ø20, ø25—±0.7°
ø32, ø40—±0.5°

Can operate without lubrication.

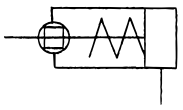
The same installation dimensions as the standard cylinder.

Auto switches can also be mounted.

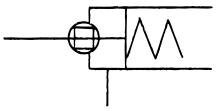
It can be installed with auto switches to simplify the detection of the stroke position of the cylinder.

JIS symbol

Single acting/
Spring return



Spring extend



Made to Order

Refer to p.5.4-1 for made to order specifications of series CM2K.

⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions and refer to p.1.4-52 for those on CM2K series.

Specifications

Bore size (mm)		ø20	ø25	ø32	ø40
Action		Single acting/Spring return, Spring extend			
Fluid		Air			
Cushion		Rubber bumper			
Proof pressure		1.5MPa			
Max. operating pressure		1.0MPa			
Min. operating pressure	Spring return	0.18MPa			
	Spring extend	0.23MPa			
Ambient and fluid temperature		Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Lubrication		Non-lube			
Thread tolerance		JIS class 2			
Stroke tolerance		+1.4 0			
Piston speed (mm/s)		50 to 500			
Rod non-rotating accuracy		±0.7°		±0.5°	
Allowable kinetic energy		0.27J	0.4J	0.65J	1.2J

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)
20	25, 50, 75, 100, 125, 150
25	25, 50, 75, 100, 125, 150
32	25, 50, 75, 100, 125, 150, 200
40	25, 50, 75, 100, 125, 150, 200, 250

Note 1) Other intermediate strokes can be manufactured upon receipt of order. Contact SMC for longer strokes.

Minimum Strokes for Auto Switch Mounting

Refer to p.1.4-4 for minimum stroke table.

Mounting Bracket Part No.

Bore size (mm)	20	25	32	40
Axial foot*	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Single clevis	CM-C020B	CM-C032B		CM-C040B
Double clevis** (with pins)	CM-D020B	CM-D032B		CM-D040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

* Two foot brackets and a mounting nut are attached.
** Clevis pins and snap rings (cotter pins for bore size 40) are attached.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA4: D-C7/C8/H7
- "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached

Mounting and Accessories

Mounting \ Accessories	Standard			Option		
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint (3)	Pivot bracket
Basic	● (1 pc.)	●	—	●	●	—
Axial foot	● (2)	●	—	●	●	—
Front flange	● (1)	●	—	●	●	—
Rear flange	● (1)	●	—	●	●	—
Integrated clevis	— (1)	●	—	●	●	●
Single clevis	— (1)	●	—	●	●	—
Double clevis (3)	— (1)	●	●	●	●	—
Front trunnion	● (1) (2)	●	—	●	●	—
Rear trunnion	● (1) (2)	●	—	●	●	—
Boss-cut basic	● (1)	●	—	●	●	—
Boss-cut flange	● (1)	●	—	●	●	—
Boss-cut trunnion	● (1)	●	—	●	●	—
Note					With pins	With pins

Note 1) Mounting nuts are not attached for the integrated clevis type, the single clevis type, and the double clevis type.
Note 2) Trunnion nuts are attached for the front trunnion styles and the rear trunnion styles.
Note 3) Pins and snap rings (cotter pins for bore size 40) are attached for double clevis and the double knuckle joint.

Weight

Spring Return/( ): Spring Extend

(kg)

Bore size (mm)		20	25	32	40
Basic weight	25stroke	0.20(0.19)	0.31(0.30)	0.43(0.41)	0.78(0.75)
	50stroke	0.23(0.21)	0.34(0.33)	0.48(0.45)	0.86(0.83)
	75stroke	0.29(0.25)	0.43(0.41)	0.61(0.56)	1.08(0.99)
	100stroke	0.31(0.27)	0.47(0.44)	0.66(0.60)	1.14(1.06)
	125stroke	0.37(0.32)	0.56(0.52)	0.81(0.72)	1.34(1.23)
	150stroke	0.39(0.34)	0.59(0.55)	0.85(0.76)	1.39(1.31)
	200stroke	—(—)	—(—)	1.04(0.92)	1.71(1.54)
	250stroke	—(—)	—(—)	—(—)	2.00(1.78)
Mounting bracket weight	Axial foot style	0.15(0.15)	0.16(0.16)	0.16(0.16)	0.27(0.27)
	Flange style	0.06(0.06)	0.09(0.09)	0.09(0.09)	0.12(0.12)
	Single clevis style	0.04(0.04)	0.04(0.04)	0.04(0.04)	0.09(0.09)
	Double clevis style	0.05(0.05)	0.06(0.06)	0.06(0.06)	0.13(0.13)
	Trunnion style	0.04(0.04)	0.07(0.07)	0.07(0.07)	0.10(0.10)
	Integrated clevis style	–0.02(–0.02)	–0.02(–0.02)	–0.01(–0.01)	–0.04(–0.04)
	Boss-cut basic style	–0.01(–0.01)	–0.02(–0.02)	–0.02(–0.02)	–0.03(–0.03)
	Boss-cut flange style	0.05(0.05)	0.07(0.07)	0.07(0.07)	0.09(0.09)
	Boss-cut trunnion style	0.03(0.03)	0.05(0.05)	0.05(0.05)	0.07(0.07)
	Clevis bracket (with pins)	0.07(0.07)	0.07(0.07)	0.14(0.14)	0.14(0.14)
Accesssory	Single knuckle joint	0.06(0.06)	0.06(0.06)	0.06(0.06)	0.23(0.23)
	Double knuckle joint (with pins)	0.07(0.07)	0.07(0.07)	0.07(0.07)	0.20(0.20)

Calculation example:
CM2KL32-100S (ø32, Foot, 100 stroke)
0.66 (Basic weight) + 0.16 (Mounting bracket weight)=0.82kg

Boss-cut Style

Boss for the head cover bracket is eliminated and the total length of cylinder is shortened.

Comparison of total cylinder length with standard style (mm)

ø20	ø25	ø32	ø40
▲13	▲13	▲13	▲16

Mounting

■Boss-cut basic (BZ)
■Boss-cut flange (FZ)
■Boss-cut trunnion (UZ)

Auto Switch Mounting Position

The auto switch mounting position (at stroke end is the same as standard style (single acting/spring return, extend). Refer to p.1.4-48 and 1.4-49.

Copper Free

20-CM2K | **Mounting** | **Bore size** | **Stroke** | **Action**

Copper free

This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

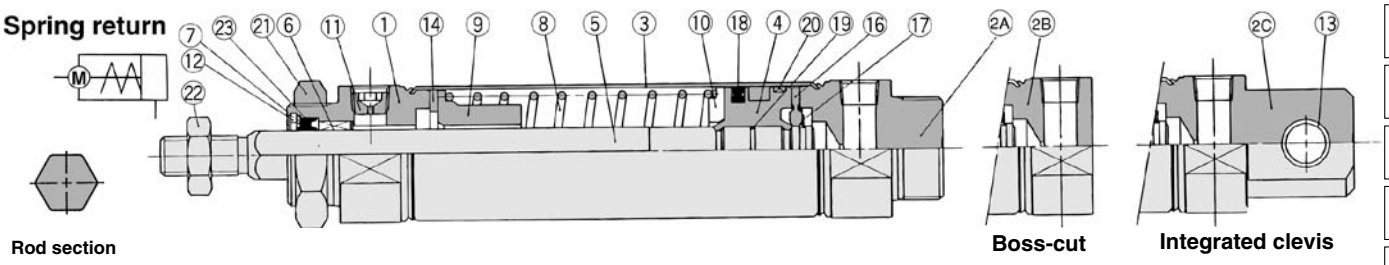
Specifications

Action	Single acting/Spring return	Single acting/Spring extend
Bore size	ø20, ø25, ø32, ø40	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.18MPa	0.23MPa
Cushion	Rubber bumper	
Piston speed	50 to 500mm/s	
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Front trunnion, Rear trunnion, Integrated clevis, Boss-cut	

∗ Auto switches can be mounted.

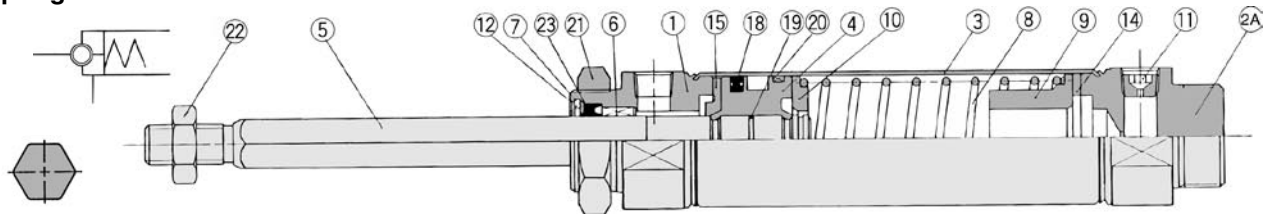
Construction

Spring return



Rod section **Boss-cut** **Integrated clevis**

Spring extend



Rod section

Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②A	Head cover A	Aluminum alloy	White anodized (Standard style)
②B	Head cover B	Aluminum alloy	White anodized (Boss-cut style)
②C	Head cover C	Aluminum alloy	White anodized (Integrated clevis style)
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Stainless steel	
⑥	Non-rotating guide	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Return spring	Steel wire	Zinc chromated
⑨	Spring guide	Aluminum alloy	Chromated
⑩	Spring seat	Aluminum alloy	Chromated
⑪	Plug with fixed orifice	Alloy steel	Black zinc chromated

No.	Description	Material	Note
⑫	Snap ring	Carbon steel	Nickel plated
⑬	Bushing for clevis	Oil impregnated sintered alloy	
⑭	Bumper	Urethane	
⑮	Bumper A	Urethane	
⑯	Bumper B	Urethane	
⑰	Snap ring	Stainless steel	
⑱	Piston seal	NBR	
⑲	Piston gasket	NBR	
⑳	Wearing	Resin	Nickel plated
㉑	Mounting nut	Carbon steel	Nickel plated
㉒	Rod end nut	Carbon steel	

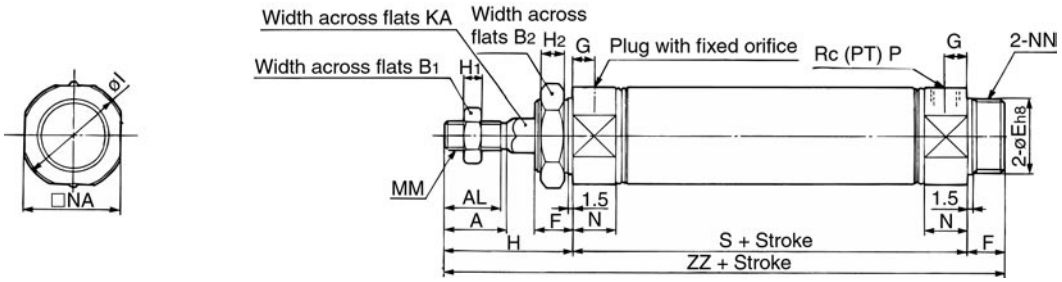
Replacement Parts

No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
㉓	Rod seal	NBR	PDR-8W	PDR-10W	PDR-12W	PDR-14W

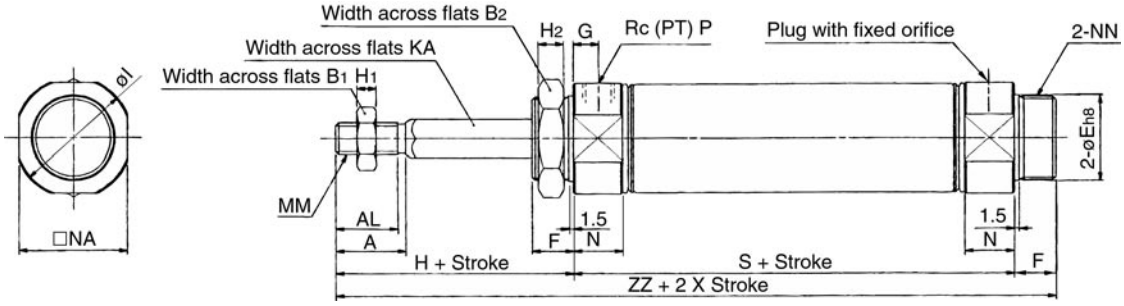
Basic (B)

CM2KB Bore size — Stroke S T

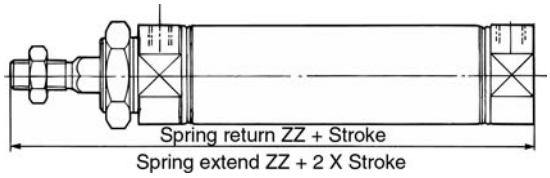
Spring return



Spring extend



Boss-cut



(mm)

Bore	A	AL	B1	B2	E	F	G	H	H1	H2	I	KA	MM	N	NA	NN	P
20	18	15.5	13	26	$20^{0}_{-0.033}$	13	8	41	5	8	28	8.2	M8 X 1.25	15	24	M20 X 1.5	1/8
25	22	19.5	17	32	$26^{0}_{-0.033}$	13	8	45	6	8	33.5	10.2	M10 X 1.25	15	30	M26 X 1.5	1/8
32	22	19.5	17	32	$26^{0}_{-0.033}$	13	8	45	6	8	37.5	12.2	M10 X 1.25	15	34.5	M26 X 1.5	1/8
40	24	21	22	41	$32^{0}_{-0.039}$	16	11	50	8	10	46.5	14.2	M14 X 1.5	21.5	42.5	M32 X 2	1/4

Dimensions by stroke

(mm)

Bore \ Stroke / Symbol	1 to 50		51 to 100		101 to 150		151 to 200		201 to 250	
	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	87	141	112	166	137	191	—	—	—	—
25	87	145	112	170	137	195	—	—	—	—
32	89	147	114	172	139	197	164	222	—	—
40	113	179	138	204	163	229	188	254	213	279

Boss-cut

(mm)

Bore \ Stroke / Symbol	1 to 50	51 to 100	101 to 150	151 to 200	201 to 250
	ZZ	ZZ	ZZ	ZZ	ZZ
20	128	153	178	—	—
25	132	157	182	—	—
32	134	159	184	209	—
40	163	188	213	238	263

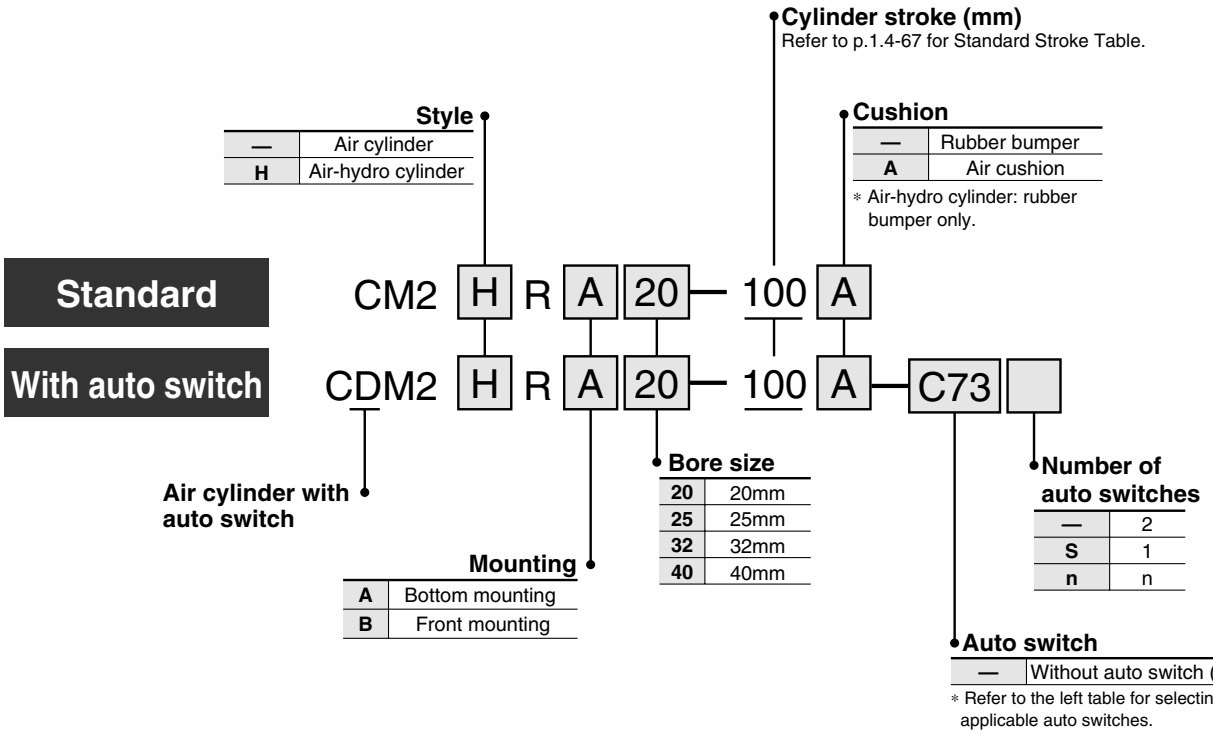
The dimensions are the same as standard style (single acting/spring return, extend), except for the configuration of the piston rod. Refer to p.1.4-39 to 1.4-47. Specifications of the auto switch equipped style are the same as standard style (CDM2-□S/T).

Direct Mount: Double Acting Single Rod

Series CM2R

ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	—	5V	—	C76	●	●	—	—	IC	—
				2 wire	24V	12V	100V	C73	●	●	●	—	—	Relay PLC
			No			5V, 12V	100V or less	C80	●	●	—	—	IC	Relay PLC
			Yes			12V	—	B53	●	●	●	—	—	PLC
						12V	100V, 200V	B54	●	●	●	—	—	Relay PLC
			No			12V	200V or less	B64	●	●	—	—		
		Connector	Yes			12V	—	C73C	●	●	●	●		
			No			5V, 12V	24V or less	C80C	●	●	●	●	IC	
		Terminal conduit	Yes			12V	—	A33A	—	—	—	●	—	PLC
						12V	100V, 200V	A34A	—	—	—	●		Relay PLC
		DIN connector						A44A	—	—	—	●		
	Diagnostic indicator (2 colour)	Grommet					—	B59W	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	24V	5V, 12V	—	H7A1	●	●	○	—	IC	Relay PLC
				3 wire(PNP)				H7A2	●	●	○	—		
				2 wire		12V		H7B	●	●	○	—	—	
		Connector						H7C	●	●	●	●		
		Terminal conduit		3 wire(NPN)		5V, 12V		G39A	—	—	—	●	IC	
				2 wire		12V		K39A	—	—	—	●	—	
	Diagnostic indicator (2 colour)	Grommet		3 wire(NPN)		5V, 12V		H7NW	●	●	○	—	IC	
				3 wire(PNP)				H7PW	●	●	○	—		
				2 wire		12V		H7BW	●	●	○	—	—	
	Water resistant (2 colour)							H7BA	—	●	○	—		
	With timer			3 wire(NPN)		5V, 12V		G5NT	—	●	○	—	IC	
	Diagnostic output (2 colour)			4 wire (NPN)				H7NF	●	●	○	—		
	Latch with diagnostic output (2 colour)					—		H7LF	●	●	○	—	—	

∗ Lead wire length
0.5m : —
3m : L
5m : Z
None : N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.
∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

The CM2R Series direct mounting cylinder can be installed directly through the use of a square rod cover.

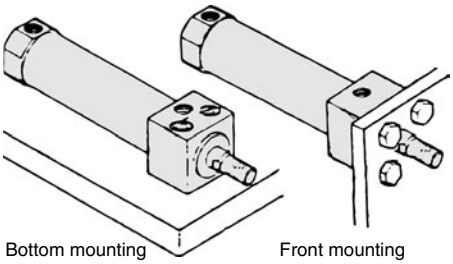
Space saving configuration.

Because it is a directly mounted style without using brackets, its overall length is shorter, and its installation pitch can be made smaller. Thus, the space that is required for installation has been dramatically reduced.

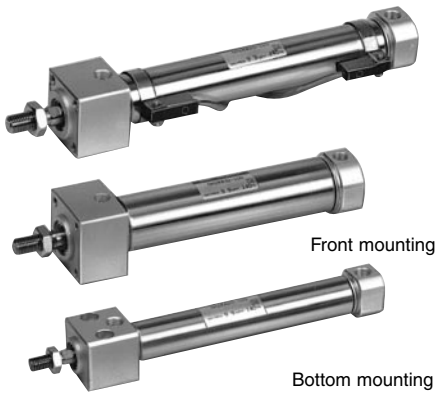
Improved installation accuracy and strength

Two styles of installation

Two styles of installations are available and can be selected according to the purpose: the front mounting style or the bottom mounting style.



Bottom mounting Front mounting

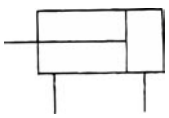


Front mounting

Bottom mounting

JIS symbol

Double acting



Made to Order

Refer to p.5.4-1 for made to order specifications of series CM2R.

Specifications

Bore size (mm)	20	25	32	40
Action	Double acting/Single rod			
Fluid	Air			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.05MPa			
Ambient and fluid temperature	Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Piston speed (mm/s)	50 to 750			
Cushion	Rubber bumper			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)
20	25, 50, 75, 100, 125, 150
25	25, 50, 75, 100, 125, 150, 200
32	25, 50, 75, 100, 125, 150, 200
40	25, 50, 75, 100, 125, 150, 200, 250, 300

Note 1) Other intermediate strokes can be manufactured upon receipt of order. Contact SMC for longer strokes.

Minimum Strokes for Auto Switches Mounting

Refer to p.1.4-4 for minimum stroke table.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	**25**	**32**	**40**
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached

Accessories

Mounting \ Accessories	Standard	Option	
	Rod end nut	Single knuckle joint	Double knuckle joint (with pins) *
Bottom mounting	●	●	●
Front mounting	●	●	●

* Knuckle pins and snap rings (cotter pins for ø40) are attached.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Bottom mounting	0.14	0.23	0.32	0.62
	Front mounting	0.14	0.22	0.32	0.61
Additional weight by each 50 stroke		0.04	0.06	0.08	0.13

Calculation example: CM2RA32-100
(ø32, 100 stroke, Bottom mounting)
- Basic weight: 0.32kg
- Additional weight: 0.08kg
- Cylinder stroke: 100mm
  0.32+0.08 X 100/50=0.48kg

Air-hydro

CM2HR | **Mounting** | **Bore size** | **Stroke**

- Air-hydro type

A low hydraulic pressure cylinder used at a pressures of 1.0MPa or below.
Through the concurrent use of a CC series air-hydro unit, it is possible to operate at a constant or low speed or to effect an intermediate stop, just like a hydraulic unit, while using pneumatic equipment such as a valve.

Specifications

Style	Air-hydro
Fluid	Turbine oil
Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.18MPa
Piston speed	15 to 300mm/s
Cushion	Rubber bumper
Ambient and fluid temperature	+5 to +60°C
Thread tolerance	JIS class 2
Stroke tolerance	+1.4 0
Mounting	Bottom mounting, Front mounting

* Auto switches can be mounted.
Dimensions are the same as standard style.

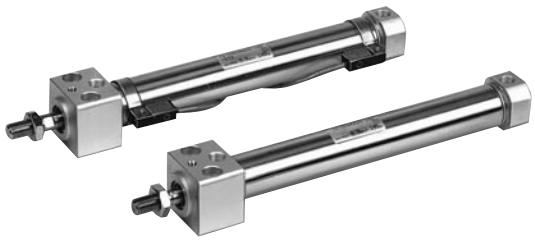
- Construction: Refer to p.1.4-70.
- Dimensions: Refer to p.1.4-71 and 1.4-72.

Clean Series

10-CM2R | **Mounting** | **Bore size** | **Stroke**

- Clean series (with relief port)

The rod portion of the actuator has a double seal construction, and a relief port is provided to discharge the exhaust air directly outside of the clean room. Thus, it can be used in a Class 100 clean room.

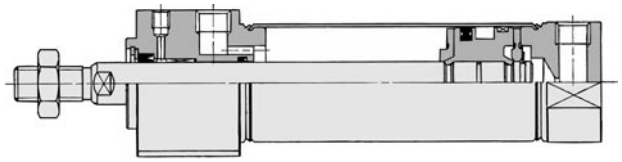


Specifications

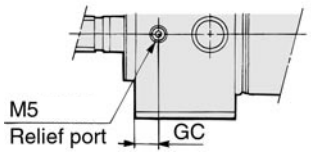
Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper (standard equipment)
Relief port size	M5
Piston speed	30 to 400mm/s
Mounting	Bottom mounting, Front mounting

* Auto switches can be mounted.

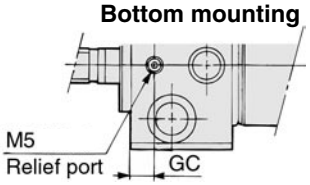
Construction



Front mounting



Bottom mounting



(mm)

Bore size	GC
20	6
25	6
32	7
40	9

With Air Cushion

CM2R | **Mounting** | **Bore size** | **Stroke** | **A**

A: With air cushion

A cushion mechanism is provided on the cover at both ends to absorb the impact that is created during high speed operations. Thus, it does not transmit vibrations to the surroundings and prolongs the life of the cylinder.

Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Piping	Screw-in
Piston speed	50 to 1000mm/s
Mounting	Bottom mounting, Front mounting

∗ Auto switches can be mounted.

Bore size (mm)	Effective cushion length (mm)	Kinetic energy absorption
20	11.0	0.54J
25	11.0	0.78J
32	11.0	1.27J
40	11.8	2.35J

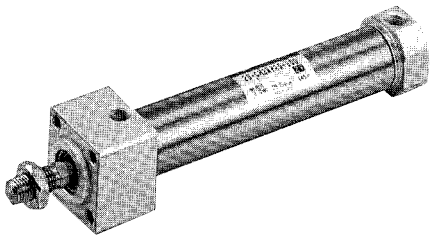
• Construction: Refer to p.1.4-70.
• Dimensions: Refer to p.1.4-71 and 1.4-72.
• Refer to p.1.4-67 for other specifications.

Copper Free

20-CM2R | **Mounting** | **Bore size** | **Stroke**

20: Copper free

This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.



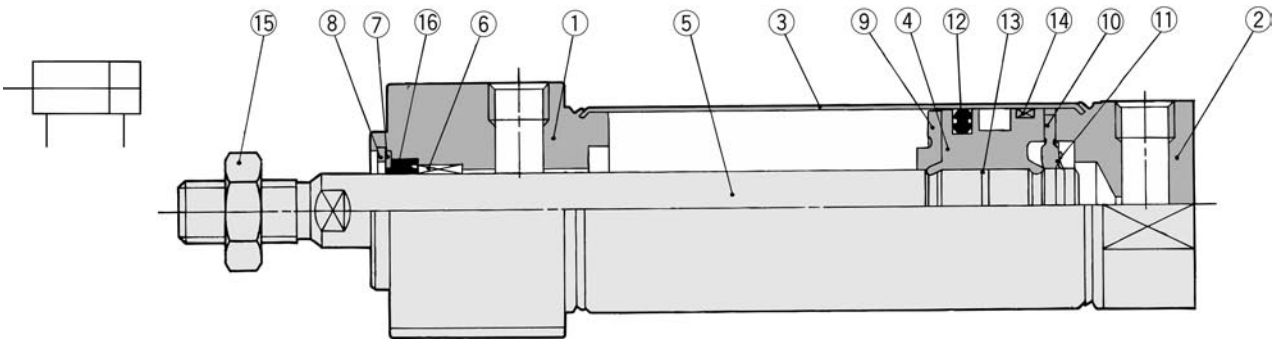
Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper
Piston speed	50 to 750mm/s
Mounting	Bottom mounting, Front mounting

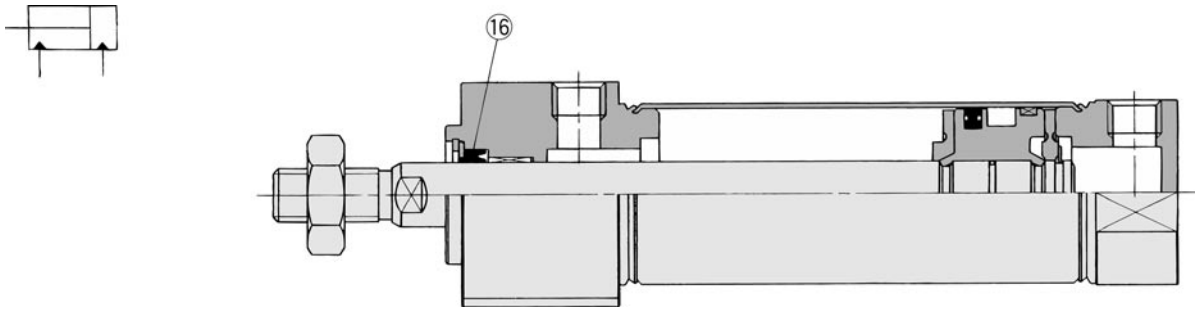
∗ Auto switches can be mounted.

Construction

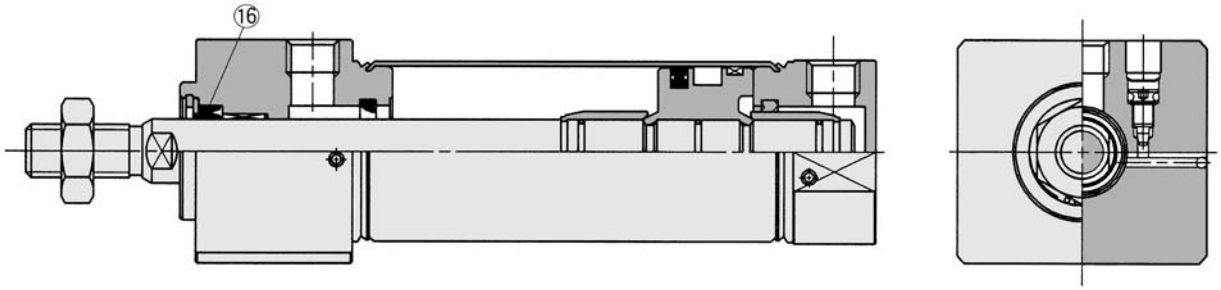
Rubber bumper



Air-hydro



With air cushion



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②	Head cover	Aluminum alloy	White anodized
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Bushing	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Bumper A	Urethane	
⑩	Bumper B	Urethane	
⑪	Snap ring	Stainless steel	
⑫	Piston seal	NBR	
⑬	Piston gasket	NBR	
⑭	Wearing	Resin	
⑮	Rod end nut	Carbon steel	Nickel plated

Replacement Parts: With rubber bumper/With air cushion

No.	Description	Material	Bore size(mm)/Part No.			
			20	**25**	**32**	**40**
⑯	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ

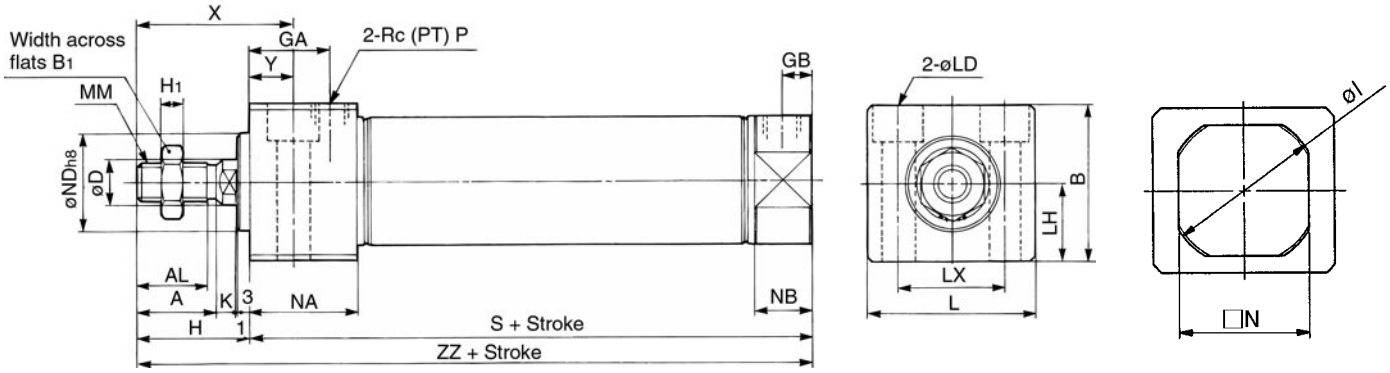
Air-hydro style

No.	Description	Material	Bore size(mm)/Part No.			
			20	**25**	**32**	**40**
⑯	Rod seal	NBR	HDU-8	HDU-10	HDU-12L	HDU-14

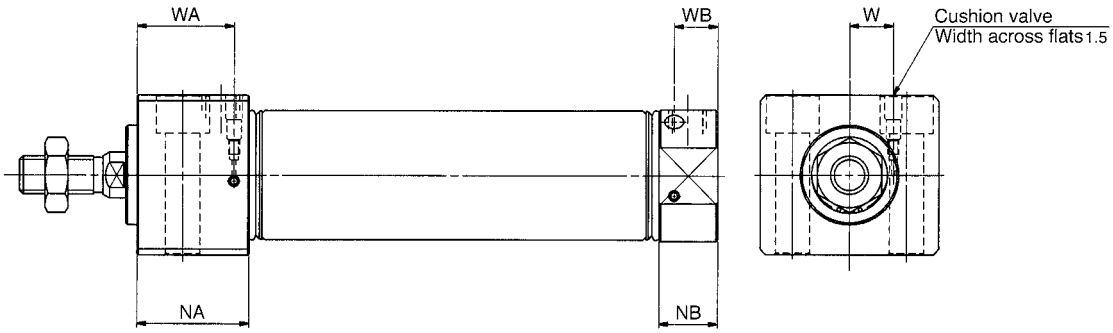
Refer to the auto switch setting position (at stroke end) for standard style (double acting/single rod) on p.1.4-21.

Bottom Mounting

CM2RA **Bore size** — **Stroke**



With air cushion



(mm)

Bore size	Stroke range
20	Up to 150
25	Up to 200
32	Up to 200
40	Up to 300

(mm)

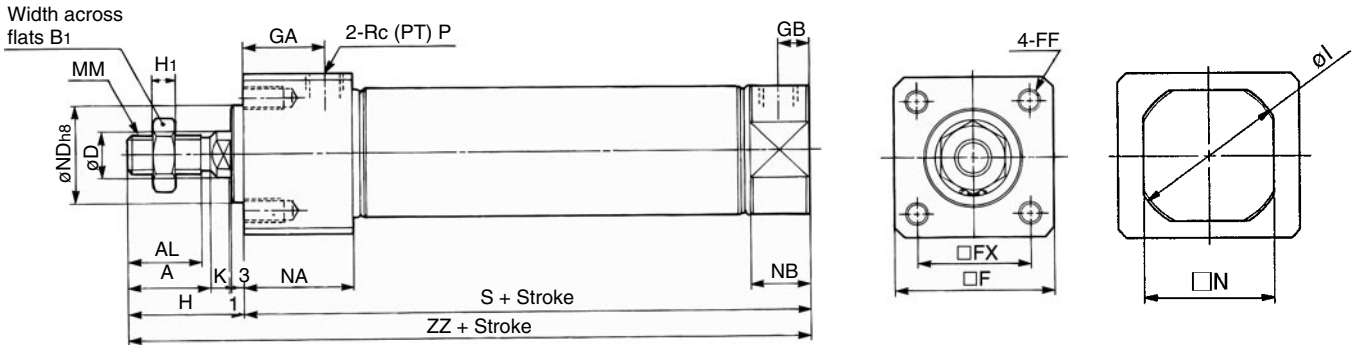
Bore	A	AL	B	B1	D	GA	GB	H	H1	I	K	L	LD	LH	LX	MM	N	NA	NB	ND	P	S	X	Y	ZZ
20	18	15.5	30.3	13	8	22	8	27	5	28	5	33.5	ø5.5, ø9.5 Depth of counter bore 6.5	15	21	M8 X 1.25	24	29	15	$20^{0}_{-0.033}$	1/8	76	39	12	103
25	22	19.5	36.3	17	10	22	8	31	6	33.5	5.5	39	ø6.6, ø11 Depth of counter bore 7.5	18	25	M10 X 1.25	30	29	15	$26^{0}_{-0.033}$	1/8	76	43	12	107
32	22	19.5	42.3	17	12	22	8	31	6	37.5	5.5	47	ø9, ø14 Depth of counter bore 10	21	30	M10 X 1.25	34.5	29	15	$26^{0}_{-0.033}$	1/8	78	43	12	109
40	24	21	52.3	22	14	27	11	34	8	46.5	7	58.5	ø11, ø17.5 Depth of counter bore 12.5	26	38	M14 X 1.5	42.5	37.5	21.5	$32^{0}_{-0.039}$	1/4	104	49	15	138

With air cushion

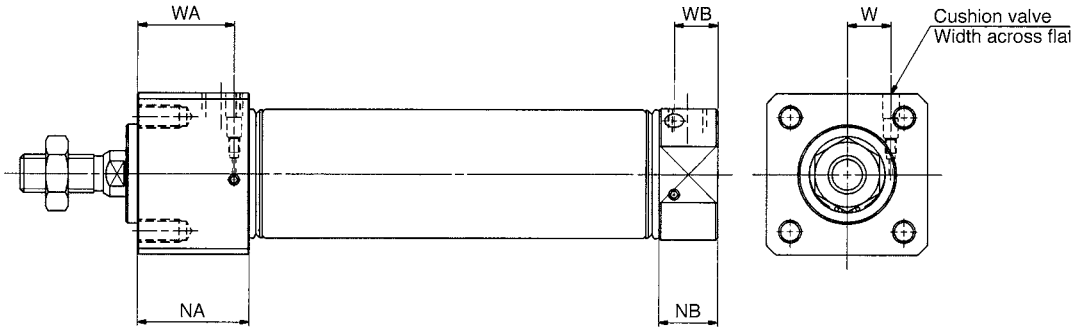
Bore	NA	NB	WA	WB	W
20	31.5	17.5	27	13	8.5
25	31.5	17.5	27	13	10.5
32	31.5	17.5	27	13	11.5
40	37.5	21.5	33.5	16	15

Front Mounting

CM2RB **Bore size** — **Stroke**



With air cushion



(mm)

Bore size	Stroke range
20	Up to 150
25	Up to 200
32	Up to 200
40	Up to 300

(mm)

Bore	A	AL	B1	D	F	FF	FX	GA	GB	H	H1	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	27	5	28	5	M8 X 1.25	24	29	15	$20^{0}_{-0.033}$	1/8	76	103
25	22	19.5	17	10	36.4	M6 X 1 Depth 11	26	22	8	31	6	33.5	5.5	M10 X 1.25	30	29	15	$26^{0}_{-0.033}$	1/8	76	107
32	22	19.5	17	12	42.4	M6 X 1 Depth 11	30	22	8	31	6	37.5	5.5	M10 X 1.25	34.5	29	15	$26^{0}_{-0.033}$	1/8	78	109
40	24	21	22	14	52.4	M8 X 1.25 Depth 14	36	27	11	34	8	46.5	7	M14 X 1.5	42.5	37.5	21.5	$32^{0}_{-0.039}$	1/4	104	138

With air cushion

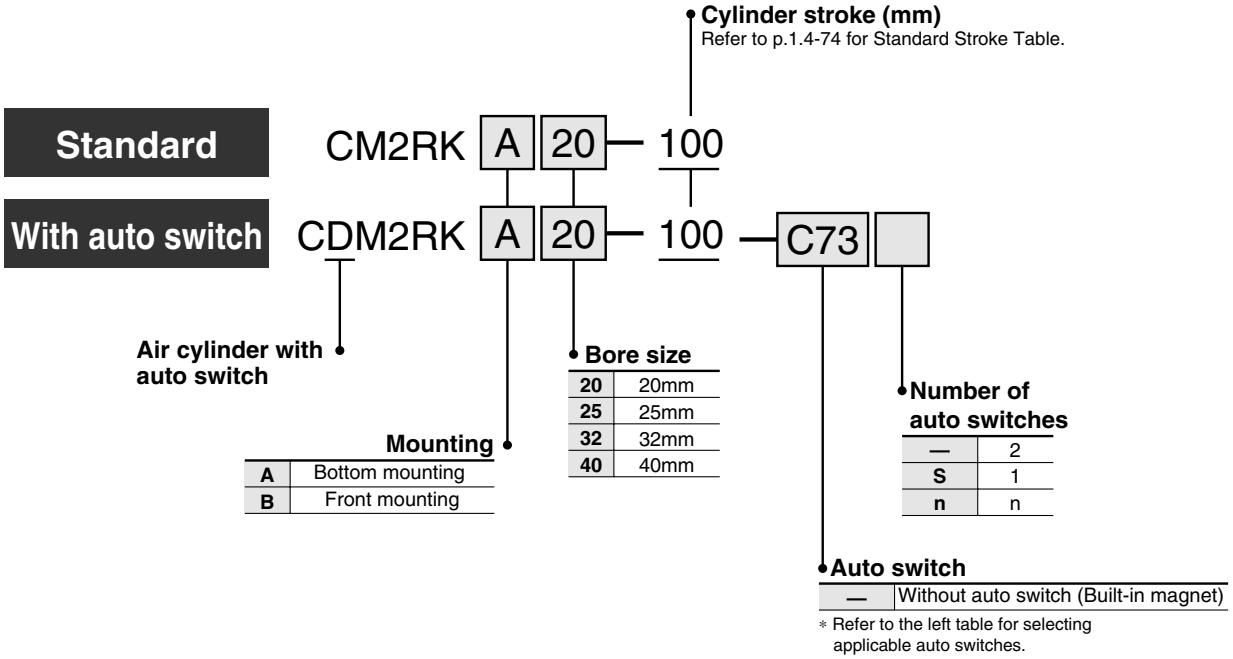
Bore	NA	NB	WA	WB	W
20	31.5	17.5	27	13	8.5
25	31.5	17.5	27	13	10.5
32	31.5	17.5	27	13	11.5
40	37.5	21.5	33.5	16	15

Direct Mount Non-rotating Rod: Double Acting Single Rod

Series CM2RK

ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	5V	—	C76	●	●	—	—	IC	—
				2 wire	12V	100V	C73	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	C80	●	●	—	—	IC	
			Yes		12V	—	B53	●	●	●	—	—	PLC
					12V	100V, 200V	B54	●	●	●	—	—	Relay PLC
			No		12V	200V or less	B64	●	●	—	—		
		Connector	Yes		12V	—	C73C	●	●	●	●		
			No		5V, 12V	24V or less	C80C	●	●	●	●	IC	
		Terminal conduit	Yes		12V	—	A33A	—	—	—	●	—	PLC
					12V	100V, 200V	A34A	—	—	—	●		Relay PLC
		DIN connector					A44A	—	—	—	●		
	Diagnostic indicator (2 colour)	Grommet			—	—	B59W	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	24V	5V, 12V	—	H7A1	●	●	○	—	IC	Relay PLC
				3 wire(PNP)				H7A2	●	●	○	—	
				2 wire		12V		H7B	●	●	○	—	—
		Connector						H7C	●	●	●	●	
		Terminal conduit		3 wire(NPN)		5V, 12V		G39A	—	—	—	●	IC
				2 wire		12V		K39A	—	—	—	●	—
	Diagnostic indicator (2 colour)	Grommet		3 wire(NPN)		5V, 12V		H7NW	●	●	○	—	IC
				3 wire(PNP)				H7PW	●	●	○	—	
				2 wire		12V		H7BW	●	●	○	—	—
	Water resistant (2 colour)							H7BA	—	●	○	—	
	With timer			3 wire(NPN)		5V, 12V		G5NT	—	●	○	—	IC
	Diagnostic output (2 colour)			4 wire (NPN)		—		H7NF	●	●	○	—	
	Latch with diagnostic output (2 colour)							H7LF	●	●	○	—	—

∗ Lead wire length
0.5m : —
3m : L
5m : Z
None: N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.
∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

The CM2R Series direct mounting cylinder can be installed directly through the use of a square rod cover.

High non-rotating accuracy

A type of cylinder in which the rod does not rotate because of its hexagonal shape.

ø20, ø25—±0.7°
ø32, ø40—±0.5°

Space saving configuration

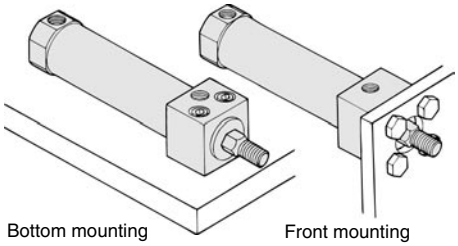
Because it is a directly mounted style without using brackets, its overall length is shorter, and its installation pitch can be made smaller. Thus, the space that is required for installation has been dramatically reduced.

Improved installation accuracy and strength

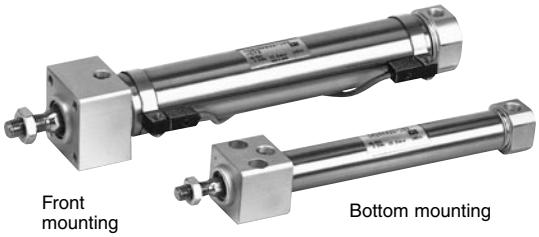
A centring boss has been provided to improve the installation accuracy. Also, because it is the directly mounted style, the strength has been increased.

Two styles of installation

Two styles of installations are available and can be selected according to the purpose: the front mounting style or the bottom mounting style.



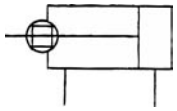
Bottom mounting　　Front mounting



Front mounting　　Bottom mounting

JIS symbol

Double acting



Specifications

Bore size (mm)	20	25	32	40
Action	Double acting/Single rod			
Fluid	Air			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.05MPa			
Ambient and fluid temperature	Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Piping (Screw-in)	ø20 to ø32: Rc(PT)) 1/8 , ø40: Rc(PT))1/4			
Non-rotating rod accuracy	ø20, ø25: ±0.7°, ø32, ø40: ±0.5°			
Piston speed (mm/s)	50 to 500			
Mounting	Bottom mounting, Front mounting			
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)
20	25, 50, 75, 100, 125, 150
25	25, 50, 75, 100, 125, 150, 200
32	25, 50, 75, 100, 125, 150, 200
40	25, 50, 75, 100, 125, 150, 200, 250, 300

Note 1) Other intermediate strokes can be manufactured upon receipt of order.
Contact SMC for longer strokes.

Minimum Strokes for Auto Switch Mounting

Refer top.1.4-4 for minimum stroke table.

Auto Switch Mounting Position

The auto switch position (at stroke end) is the same as the standard style.
Refer to p.1.4-21.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	**25**	**32**	**40**
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

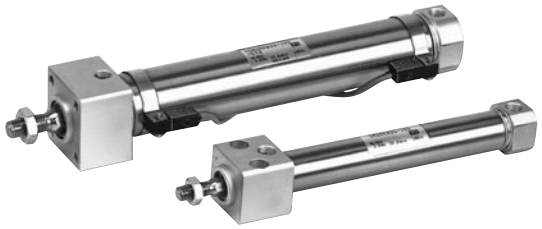
Note) A set of following stainless steel mounting screws is attached.
(A switch mounting band is not attached. Please order the band separately.)
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached.

Copper Free

20-CM2RK | Mounting | Bore size | Stroke

Coper free

This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materals have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.



Specifications

Action	Double acting/Single rod
Bore size	ø20, ø25, ø32, ø40
Max. operating pressure	1.0MPa
Min. operating pressure	0.05MPa
Cushion	Rubber bumper
Piston speed	50 to 500mm/s
Mounting	Bottom mounting, Front mounting

∗ Auto switches can be mounted.

Accessories

Accessories / Mounting	Standard	Option	
	Rod end nut	Single knuckle joint	Double knuckle joint (with pins)∗
Bottom mounting	●	●	●
Front mounting	●	●	●

∗ Knuckle pins and snap rings (cotter pins for ø40) are attached.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Bottom mounting	0.14	0.23	0.32	0.63
	Front mounting	0.14	0.22	0.32	0.62
Additional weight by each 50 stroke		0.04	0.07	0.09	0.14

Calculation Example: CM2RA32-100 (ø32, 100 stroke, Bottom mounting)

- Basic weight : 0.32kg
- Additional weight: 0.09kg
- Cylinder stroke : 100mm

0.32+0.09 X 100/50=0.50kg

⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions and refer to p.1.4-5 for those on CM2 series.

Handling

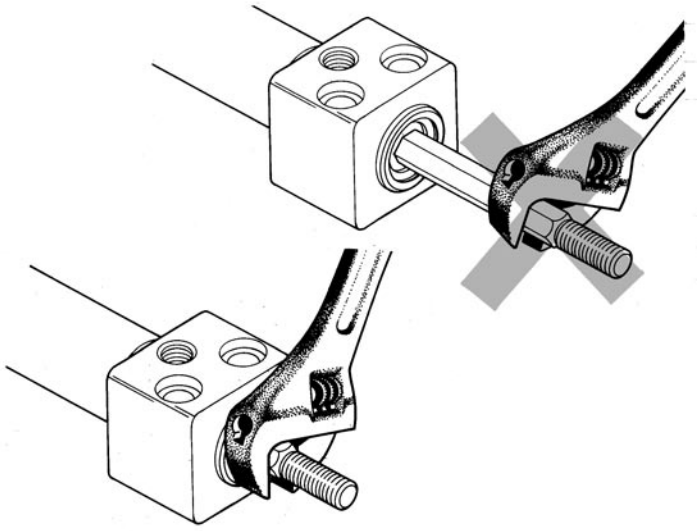
⚠ Cautions

①**Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.**

· If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy. Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque Nm	ø20	ø25	ø32	ø40
	0.2	0.25	0.25	0.44

· To screw a bracket or a nut onto the threaded portion at the tip of the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes. To tighten, take precautions to prevent the tightening torque from being applied to the non-rotating guide.

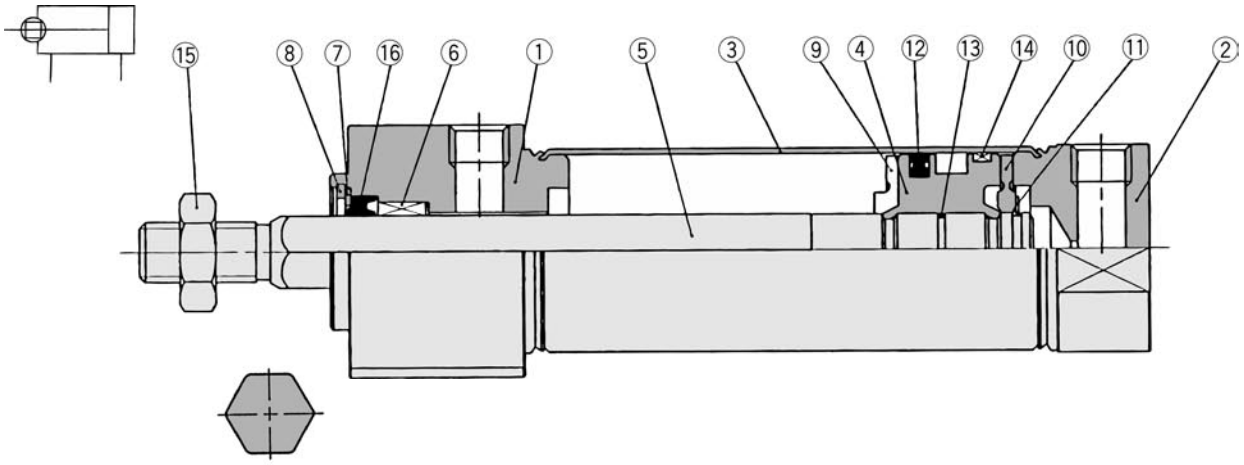


②**To replace a rod seal, contact SMC.**

A rod seal could lead to an air leak, depending on the position in which it is fitted.

Therefore, make sure to contact SMC if a rod seal must be replaced.

Construction



Rod section

Component Parts

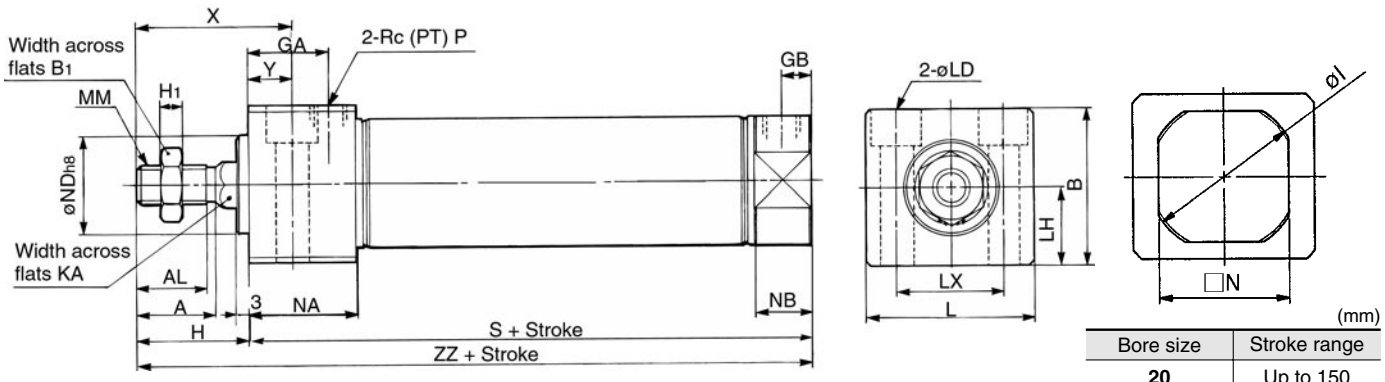
No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②	Head cover	Aluminum alloy	White anodized
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	
⑥	Non-rotating guide	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Bumper A	Urethane	
⑩	Bumper B	Urethane	
⑪	Snap ring	Stainless steel	
⑫	Piston seal	NBR	
⑬	Piston gasket	NBR	
⑭	Wearing	Resin	
⑮	Rod end nut	Carbon steel	Nickel plated

Replacement Parts

No.	Description	Material	Bore size(mm)/Part No.			
			20	**25**	**32**	**40**
⑯	Rod seal	NBR	PDR-8W	PDR-10W	PDR-12W	PDR-14W

Bottom Mounting

CM2RKA **Bore size** — **Stroke**



(mm)

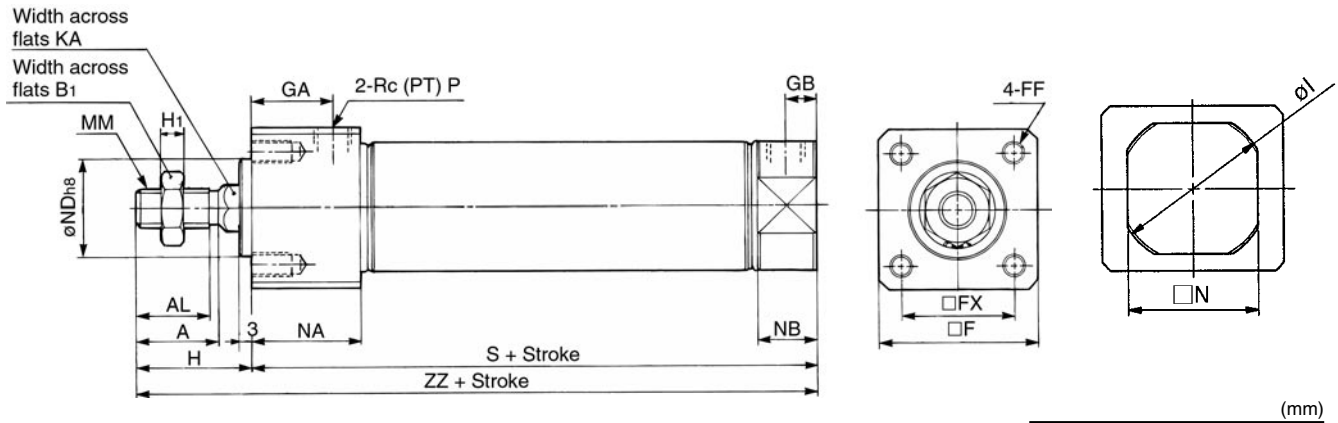
Bore size	Stroke range
20	Up to 150
25	Up to 200
32	Up to 200
40	Up to 300

(mm)

Bore	A	AL	B	B1	GA	GB	H	H1	I	KA	L	LD	LH	LX	MM	N	NA	NB	ND	P	S	X	Y	ZZ
20	18	15.5	30.3	13	22	8	27	5	28	8.2	33.5	ø5.5, ø9.5 Depth of counter bore 6.5	15	21	M8 X 1.25	24	29	15	$20^{\ 0}_{-0.033}$	1/8	76	39	12	103
25	22	19.5	36.3	17	22	8	31	6	33.5	10.2	39	ø6.6, ø11 Depth of counter bore 7.5	18	25	M10 X 1.25	30	29	15	$26^{\ 0}_{-0.033}$	1/8	76	43	12	107
32	22	19.5	42.3	17	22	8	31	6	37.5	12.2	47	ø9, ø14 Depth of counter bore 10	21	30	M10 X 1.25	34.5	29	15	$26^{\ 0}_{-0.033}$	1/8	78	43	12	109
40	24	21	52.3	22	27	11	34	8	46.5	14.2	58.5	ø11, ø17.5 Depth of counter bore 12.5	26	38	M14 X 1.5	42.5	37.5	21.5	$32^{\ 0}_{-0.039}$	1/4	104	49	15	138

Front Mounting

CM2RKB **Bore size** — **Stroke**



(mm)

Bore size	Stroke range
20	Up to 150
25	Up to 200
32	Up to 200
40	Up to 300

(mm)

Bore	A	AL	B1	F	FF	FX	GA	GB	H	H1	I	KA	MM	N	NA	NB	ND	P	S	ZZ
20	18	15.5	13	30.4	M5 X 0.8 Depth 9	22	22	8	27	5	28	8.2	M8 X 1.25	24	29	15	$20^{\ 0}_{-0.033}$	1/8	76	103
25	22	19.5	17	36.4	M6 X 1 Depth 11	26	22	8	31	6	33.5	10.2	M10 X 1.25	30	29	15	$26^{\ 0}_{-0.033}$	1/8	76	107
32	22	19.5	17	42.4	M6 X 1 Depth 11	30	22	8	31	6	37.5	12.2	M10 X 1.25	34.5	29	15	$26^{\ 0}_{-0.033}$	1/8	78	109
40	24	21	22	52.4	M8 X 1.25 Depth 14	36	27	11	34	8	46.5	14.2	M14 X 1.5	42.5	37.5	21.5	$32^{\ 0}_{-0.039}$	1/4	104	138

Low Friction: Double Acting Single Rod

Series CM2Q

ø20, ø25, ø32, ø40

How to Order

Mounting

B	Basic	**T**	Rear trunnion
L	Axial foot	**E**	Integrated clevis
F	Front flange	**BZ**	Boss-cut basic
G	Rear flange	**FZ**	Boss-cut front flange
C	Single clevis	**UZ**	Boss-cut front trunnion
D	Double clevis		
U	Front trunnion		

Cylinder stroke (mm)
Refer to p.1.4-79 for Standard Stroke Table.

Low friction direction

F	Side at pressure When pressurized on head side
B	Side at pressure When pressurized on rod side

Standard

CM2Q **L** **40** — **150** **F**

With auto switch

CDM2Q **L** **40** — **150** **F** — **C73** **□**

Air cylinder with auto switch

Bore size

20	20mm
25	25mm
32	32mm
40	40mm

Number of auto switches

—	2
S	1
n	n

Auto switch

—	Without auto switch (Built-in magnet)

∗ Refer to the left table for selecting applicable auto switches.

Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	5V	—	**C76**	●	●	—	—	IC	—
				2 wire	12V	100V	**C73**	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	**C80**	●	●	—	—	IC	
			Yes		12V	—	**B53**	●	●	●	—	—	PLC
					12V	100V, 200V	**B54**	●	●	●	—	—	Relay PLC
			No		12V	200V or less	**B64**	●	●	—	—		
		Connector	Yes		12V	—	**C73C**	●	●	●	●		
			No		5V, 12V	24V or less	**C80C**	●	●	●	●	IC	
		Terminal conduit	Yes		12V	—	**A33A**	—	—	—	●	—	PLC
					12V	100V, 200V	**A34A**	—	—	—	●		Relay PLC
		DIN connector					**A44A**	—	—	—	●		
	Diagnostic indicator (2 colour)	Grommet			—	—	**B59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire(NPN)	5V, 12V	—	**H7A1**	●	●	○	—	IC	Relay PLC
				3 wire(PNP)			**H7A2**	●	●	○	—		
				2 wire	12V		**H7B**	●	●	○	—	—	
		Connector					**H7C**	●	●	●	●		
		Terminal conduit		3 wire(NPN)	5V, 12V		**G39A**	—	—	—	●	IC	
				2 wire	12V		**K39A**	—	—	—	●	—	
	Diagnostic indicator (2colour)	Grommet		3 wire(NPN)	5V, 12V		**H7NW**	●	●	○	—	IC	
				3 wire(PNP)			**H7PW**	●	●	○	—		
				2 wire	12V		**H7BW**	●	●	○	—	—	
	Water resistant (2 colour)						**H7BA**	—	●	○	—		
	With timer			3 wire(NPN)	5V, 12V		**G5NT**	—	●	○	—	IC	
	Diagnostic output (2 colour)			4 wire (NPN)			**H7NF**	●	●	○	—		
	Latch with diagnostic output (2 colour)				—		**H7LF**	●	●	○	—	—	

∗ Lead wire length
0.5m : –
3m : L
5m : Z
None : N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.
∗ Do not indicate symbol "N" for no lead wire on "D-A3□A", "A44A", "G39A" and "K39A" models.

Designed with a low sliding resistance of the piston, this air cylinder is ideal for applications such as contact pressure control, which requires smooth movements at low pressures.

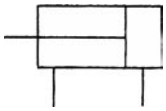
Low sliding resistance
Minimum operating pressure: 0.025MPa
Stable sliding resistance

The sliding resistance remains stable even when the operating pressure changes.

Integrated clevis style

JIS symbol

Double acting/Single rod

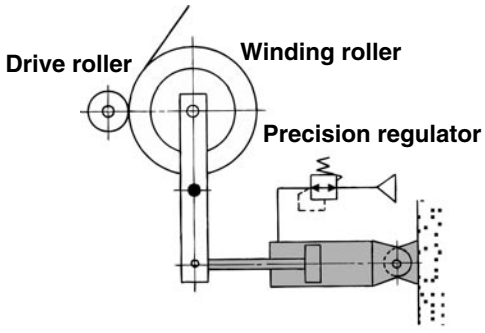


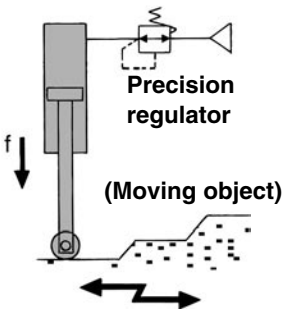
Application Example

A low friction cylinder is used in combination with a precision regulator (Series IR, etc.).

①Even if the external diameter of the winding roller changes, the changes in the pressing force against the drive roller are kept low.

②Even if there is any change in the shape of the moving object, the changes in the f value of the cylinder's pressing force are kept low, resulting in a stable pressing force.





Specifications

Bore size (mm)	20	25	32	40
Action	Double acting/Single rod			
Low friction direction	One direction			
Fluid	Air			
Proof pressure	1.05MPa			
Max. operating pressure	0.7MPa			
Min. operating pressure	0.025MPa			
Ambient and fluid temperature	Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Allowable leakage	0.5 ℓ/min (ANR) or less			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Cushion	Rubber bumper			
Piping (Screw-in)	Rc(PT) 1/8			Rc(PT) 1/4

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Long stroke (2) (mm)
20	25, 50, 75, 100, 125, 150 200, 250, 300	400
25		450
32		450
40		500

Note 1) Any intermediate stroke that is not indicated above will be produced on order.
Note 2) The long stroke style is applicable to the axial foot style and the rod side flange style. If other mounting brackets are used or the application exceeds the long stroke limit, the maximum stroke that can be used is determined based on the stroke selection table in technical data.
Note 3) The longer the stroke, the greater the sliding resistance could become, due to the deflection of the piston rod. Therefore, consider installing a guide for such operation.
Note 4) Contact SMC for applications that exceed the stroke ranges shown above. (The maximum manufacturable stroke is 1000mm.)

Minimum Strokes for Auto Switch Mounting

Refer to p.1.4-4 for minimum stroke table.

Mounting Accessories

Mounting \ Accessories	Standard			Option		
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint	Pivot bracket
Basic	● (1 pc.)	●	—	●	●	—
Axial foot	● (2)	●	—	●	●	—
Front flange	● (1)	●	—	●	●	—
Rear flange	● (1)	●	—	●	●	—
Integrated clevis	— (1)	●	—	●	●	●
Single clevis	— (1)	●	—	●	●	—
Double clevis	— (1)	●	●	●	●	—
Front trunnion	● (1) (2)	●	—	●	●	—
Rear trunnion	● (1) (2)	●	—	●	●	—
Boss-cut basic	● (1)	●	—	●	●	—
Boss-cut flange	● (1)	●	—	●	●	—
Boss-cut trunnion	● (1)	●	—	●	●	—
Note					With pins	With pins

Note 1) Mounting nuts are not attached for the integrated clevis, the single clevis, and the double clevis styles.
Note 2) Trunnion nuts are attached for the front and rear trunnion styles.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Basic style	0.14	0.21	0.28	0.56
	Axial foot style	0.29	0.37	0.44	0.83
	Flange style	0.20	0.30	0.37	0.68
	Integrated clevis style	0.12	0.19	0.27	0.52
	Single clevis style	0.18	0.25	0.32	0.65
	Double clevis style	0.19	0.27	0.33	0.69
	Trunnion style	0.18	0.28	0.34	0.66
	Boss-cut basic style	0.13	0.19	0.26	0.53
	Boss-cut flange style	0.19	0.28	0.35	0.65
	Boss-cut trunnion style	0.17	0.26	0.32	0.63
Additional weight by each 50 stroke		0.04	0.06	0.08	0.13
Accessory	Pivot bracket (with pins)	0.07	0.07	0.14	0.14
	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

Calculation Example: CM2L32-100
- Basic weight: ····· 0.44 (Foot, ø32)
- Additional weight: ··· 0.08/50 stroke
- Cylinder stroke: ····· 100 stroke

0.44 + 0.08 X 100/50 = 0.60kg

Mounting Bracket Part No.

Bore size(mm)	20	25	32	40
Axial foot*	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Single clevis	CM-C020B	CM-C032B		CM-C040B
Double clevis (with pins)**	CM-D020B	CM-D032B		CM-D040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

* Two foot brackets and a mounting nut are attached.
** Clevis pins and snap rings (cotter pins for bore size 40) are attached.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

A set of following stainless steel mounting screws is attached.
(A switch mounting band is not attached. Please order the band separately.)
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached

Boss-cut Style

Boss for the head cover bracket is eliminated and the total length of cylinder is shortened.

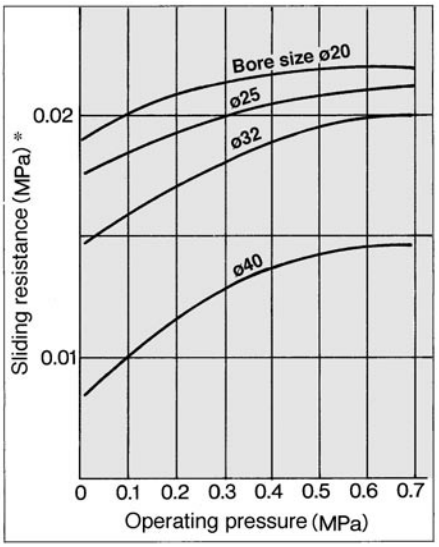
Comparison of total cylinder length with standard style (mm)

ø20	ø25	ø32	ø40
▲13	▲13	▲13	▲16

Mounting

■Boss-cut basic (BZ) ■Boss-cut flange (FZ)
■Boss-cut trunnion (UZ)

Sliding Resistance of The Low Friction Side



* **Conversion into the cylinder operating pressure:**

Selecting The Low Friction Direction

To use the air cylinder as a balancer, pressurize it only from one of the ports as shown in the application example, and keep the other port open to the atmosphere.

To operate by applying pressure from the rod cover port:
Low friction direction B <Application example ①>
To operate by applying pressure from the head cover port:
Low friction direction F <Application example ②>

In either case, if the piston rod is moved by an external force, it will effect low friction operation both in the extending and retracting directions.

⚠ Precautions

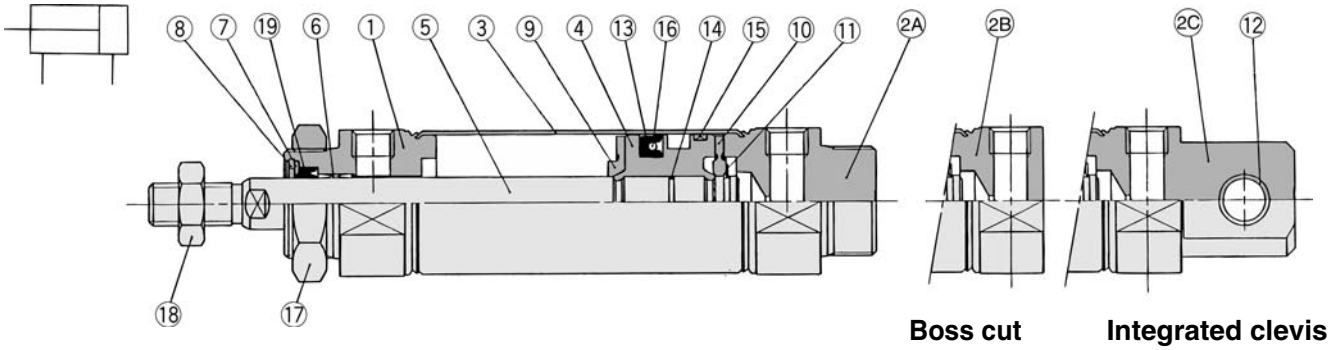
Be sure to read before handling. Refer to p.0-39 to p.0-43 for Safety Instructions and common precautions and refer to p.1.4-5 for those on CM2 series.

Handling

⚠ Warning

① In the direction of low friction operation, speed control must be effected through the meter-in system. With meter-out control, the exhaust pressure will increase and create a greater sliding resistance.

Construction



Boss cut **Integrated clevis**

Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②A	Head cover A	Aluminum alloy	White anodized (Standard style)
②B	Head cover B	Aluminum alloy	White anodized (Boss-cut style)
②C	Head cover C	Aluminum alloy	White anodized (Integrated clevis style)
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Bushing	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Bumper A	Urethane	
⑩	Bumper B	Urethane	

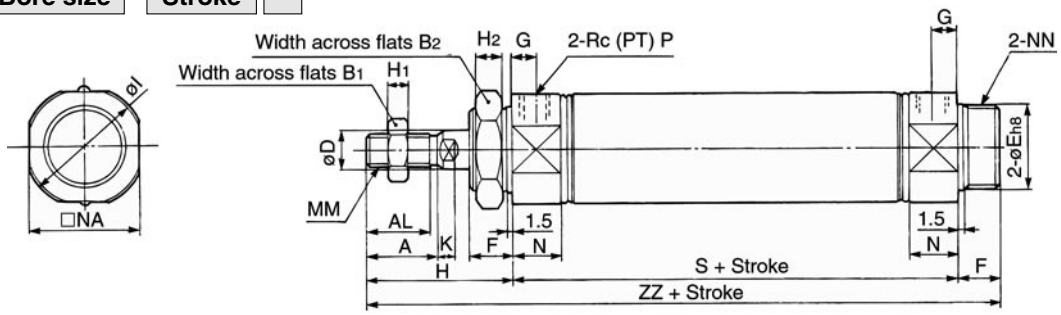
No.	Description	Material	Note
⑪	Snap ring	Stainless steel	
⑫	Bushing for clevis	Oil impregnated sintered alloy	
⑬	Piston seal	NBR	
⑭	Piston gasket	NBR	
⑮	Wearing	Resin	
⑯	Back up O ring	NBR	
⑰	Mounting nut	Carbon steel	Nickel plated
⑱	Rod end nut	Carbon steel	Nickel plated

Replacement Parts

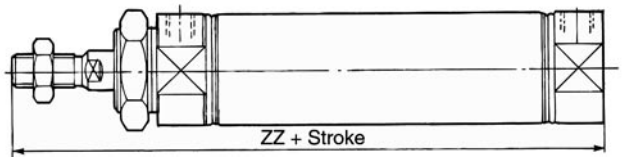
No.	Description	Material	Bore size(mm)/Part No.			
			20	**25**	**32**	**40**
⑲	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ

Basic (B)

CM2QB **Bore size** — **Stroke** ☐



Boss cut



(mm)

Bore	Stroke range	A	AL	B1	B2	D	E	F	G	H	H1	H2	I	K	MM	N	NA	NN	P	S	ZZ
20	1 to 300	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	65	119
25	1 to 300	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	65	123
32	1 to 300	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	67	125
40	1 to 300	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	91	157

Boss-cut

Bore	ZZ
20	106
25	110
32	112
40	141

Dimensions for Other Mounting Brackets

Add 3mm to each “ZZ” dimension of the standard style (double acting/single rod) on p.1.4-10 to 1.4-18.

Auto Switch Position

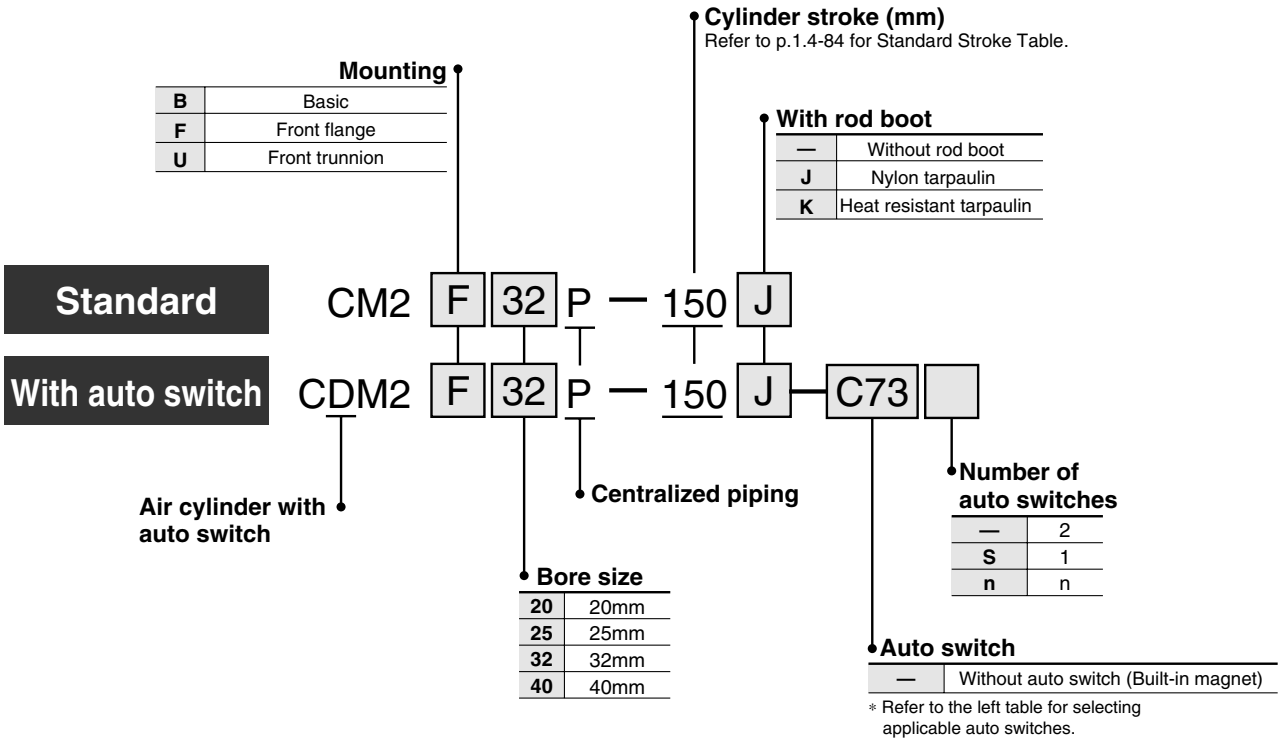
Add 3mm to each “A” dimension of the standard style (double acting/single rod) on p.1.4-21.

Centralized Piping: Double Acting Single Rod

Series CM2□P

ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model	Lead wire∗ (m) 0.5 (—)	3 (L)	5 (Z)	None (N)	Applicable load	
Reed switch	—	Grommet	Yes	3 wire (NPN)	— 5V	—	C76	●	●	—	—	IC	—
				2 wire	24V 12V	100V	C73	●	●	●	—	—	Relay PLC
			No		5V, 12V	100V or less	C80	●	●	—	—	IC	Relay PLC
			Yes		12V	—	B53	●	●	●	—	—	PLC
					12V	100V, 200V	B54	●	●	●	—	—	Relay PLC
			No		12V	200V or less	B64	●	●	—	—		
		Connector	Yes		12V	—	C73C	●	●	●	●		
			No		5V, 12V	24V or less	C80C	●	●	●	●	IC	
	Diagnostic indicator(2 colour)	Grommet	Yes		—	—	B59W	●	●	—	—	—	Relay PLC
Solid state switch	—	Grommet	Yes	3 wire(NPN)	24V 5V, 12V	—	H7A1	●	●	○	—	IC	Relay PLC
				3 wire(PNP)			H7A2	●	●	○	—		
				2 wire	12V		H7B	●	●	○	—	—	
		Connector					H7C	●	●	●	●		
	Diagnostic indicator (2 colour)	Grommet		3 wire(NPN)	5V, 12V		H7NW	●	●	○	—	IC	
				3 wire(PNP)			H7PW	●	●	○	—		
				2 wire	12V		H7BW	●	●	○	—	—	
	Water resistant(2 colour)						H7BA	—	●	○	—		
	With timer			3 wire(NPN)	5V, 12V		G5NT	—	●	○	—	IC	
	With diagnostic output(2 colour)			4 wire (NPN)			H7NF	●	●	○	—		
	Latch with diagnostic output (2 colour)						H7LF	●	●	○	—	—	

∗ Lead wire length
0.5m : —
3m : L
5m : Z
None : N
e.g.) C80CZ, C80CN

∗ Solid state switches marked with "○" are manufactured upon receipt of order.

A cylinder in which two piping ports are provided in the head cover, enabling pipes to be connected only in the axial direction.

Specifications

Bore size (mm)	20	25	32	40
Action	Double acting/Single rod			
Fluid	Air			
Proof pressure	1.5MPa			
Max. operating pressure	1.0MPa			
Min. operating pressure	0.05MPa			
Ambient and fluid temperature	Without auto switch: –10 to +70°C (No freezing) With auto switch: –10 to +60°C (No freezing)			
Lubrication	Non-lube			
Thread tolerance	JIS class 2			
Stroke tolerance	$^{+1.4}_{0}$			
Piston speed	Rubber bumper			
Cushion	50 to 700 mm/s	50 to 650 mm/s	50 to 590 mm/s	50 to 240 mm/s
Allowable kinetic energy	0.27J	0.4J	0.65J	1.2J

Standard Stroke

Bore size (mm)	Standard stroke (mm)(1)	Long stroke(2) (mm)
20	25, 50, 75, 100, 125, 150 200, 250, 300	400
25		450
32		450
40		500

Note 1) Other intermediate strokes can be manufactured upon receipt of order.
Note 2) Long stroke applies to the front flange style. If other mounting brackets are used or the application exceeds the long stroke limit, the maximum stroke is determined based on the stroke selection table in technical data.

Mounting Accessories

Mounting \ Accessories	Standard		Option		
	Mounting nut	Rod end nut	Single knuckle joint	Double knuckle joint (with pins) *	Rod boot
Basic	● (1pc.)	●	●	●	●
Front flange	● (1pc.)	●	●	●	●
Front trunnion	● (1pc.)	●	●	●	●

* Pins and snap rings (cotter pins for ø40) are attached.

Mounting Bracket Part No.

Bore size (mm)	20	25	32	40
Flange	CM-F020B	CM-F032B		CM-F040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B

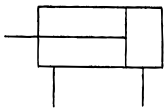
Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7/C8 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5/B6 D-G5NTL	BA2-020	BA2-025	BA2-032	BA2-040

Note) A set of following stainless steel mounting screws is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA4: D-C7/C8/H7
· "D-H7BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA4" screws are attached.

JIS symbol

Double acting/Single rod



⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions and refer to p.1.4-5 for those on CM2 series.

Rod Boot Materials

Symbol	Material	Max. ambient temperature
J	Nylon tarpaulin	70°C
K	Neoprene cloth	110°C*

* Maximum ambient temperature for the gaiter only.

Weight

(kg)

Bore size (mm)		**20**	**25**	**32**	**40**
Basic weight	Basic	0.14	0.21	0.27	0.58
	Front flange	0.20	0.30	0.36	0.70
	Front trunnion	0.18	0.28	0.33	0.68
Additional weight by each 50 stroke		0.05	0.08	0.10	0.17
Accessory	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (with pins)	0.07	0.07	0.07	0.20

Calculation example: CM2F32P-100
- Basic weight : 0.36
- Additional weight: 0.10
- Cylinder stroke : 100 stroke

0.36+0.10 X 100/50=0.56kg

Copper Free

20-CM2 | **Mounting** | **Bore size** | **P** | **Stroke**

Copper free

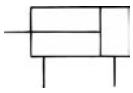
This cylinder eliminates any influences of copper ions or fluororesins on colour CRTs. Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

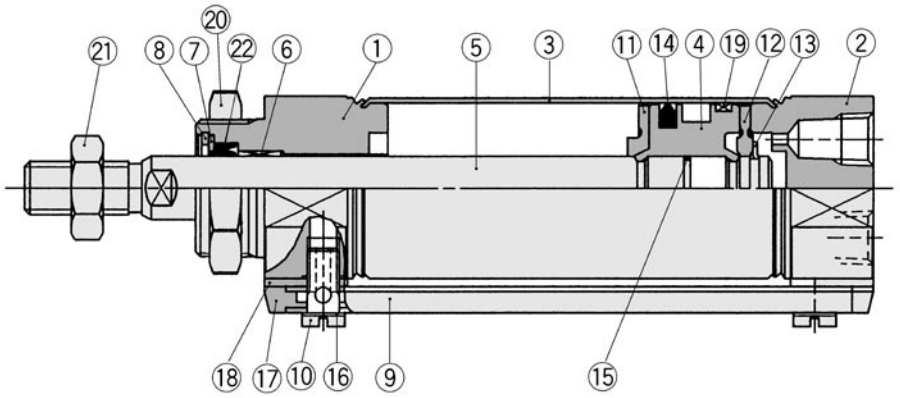
Specifications

Action		Double acting/Single rod
Bore size		ø20, ø25, ø32, ø40
Max. operating pressure		1.0MPa
Min. operating pressure		0.05MPa
Piston speed	**ø20**	50 to 700mm/s
	ø25	50 to 650mm/s
	ø32	50 to 590mm/s
	ø40	50 to 420mm/s
Mounting		Basic, Front flange, Front trunnion

* Auto switches can be mounted.

Construction





Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	White anodized
②	Head cover	Aluminum alloy	White anodized
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Bushing	Oil impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Snap ring	Carbon steel	Nickel plated
⑨	Pipe	Aluminum alloy	White alumite
⑩	Stud	Brass	Electroless nickel plated
⑪	Bumper A	Urethane	
⑫	Bumper B	Urethane	

No.	Description	Material	Note
⑬	Snap ring	Stainless steel	
⑭	Piston seal	NBR	
⑮	Piston gasket	NBR	
⑯	Gasket	Resin	
⑰	Pipe gasket	Urethane rubber	
⑱	Spacer gasket	Resin	Except for ø25
⑲	Wearing	Resin	
⑳	Mounting nut	Carbon steel	Nickel plated
㉑	Rod end nut	Carbon steel	Nickel plated

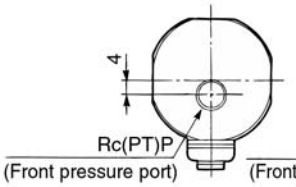
Replacement Parts

No.	Description	Material	Bore size(mm)/Part No.			
			20	25	32	40
㉒	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14Z

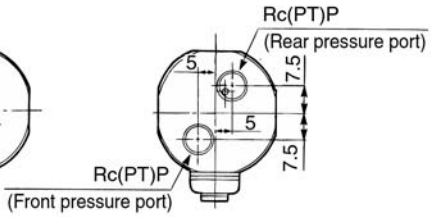
Basic (B)

CM2B **Bore size** **P** — **Stroke**

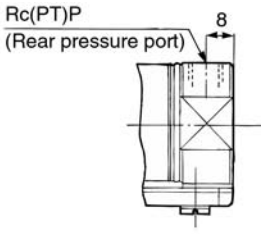
ø20



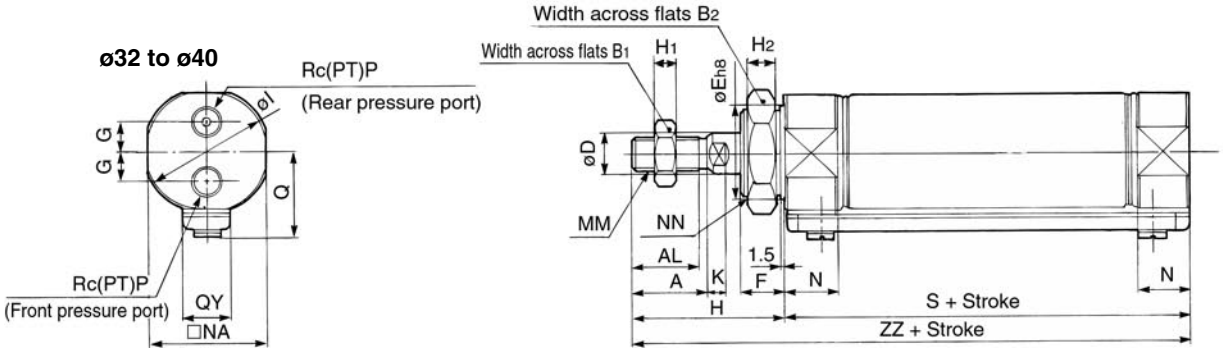
ø25



ø20



ø32 to ø40



(mm)

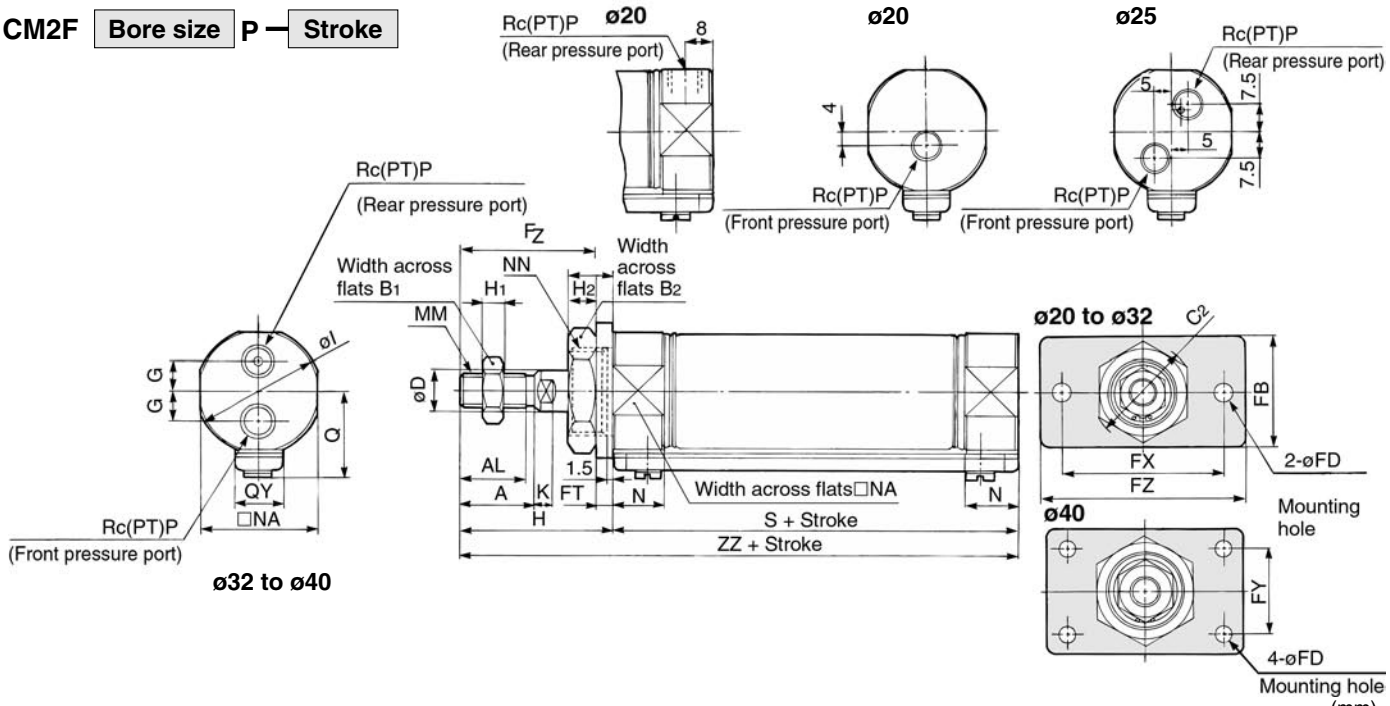
Bore size	A	AL	B1	B2	D	E	F	G	H	H1	H2	I	K	MM	N	NA	NN	P	Q	QY	S	ZZ
20	18	15.5	13	26	8	$20^{0}_{-0.033}$	13	—	41	5	8	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8	19.8	14	62	103
25	22	19.5	17	32	10	$26^{0}_{-0.033}$	13	—	45	6	8	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8	22	14	62	107
32	22	19.5	17	32	12	$26^{0}_{-0.033}$	13	9	45	6	8	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8	25.8	16	64	109
40	24	21	22	41	14	$32^{0}_{-0.039}$	16	10.5	50	8	10	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4	29.8	16	88	138

Auto Switch Position

Refer to the auto switch position (at stroke end) for standard style (double acting/single rod) on p.1.4-21.

Front Flange (F)

CM2F **Bore size** **P** — **Stroke**

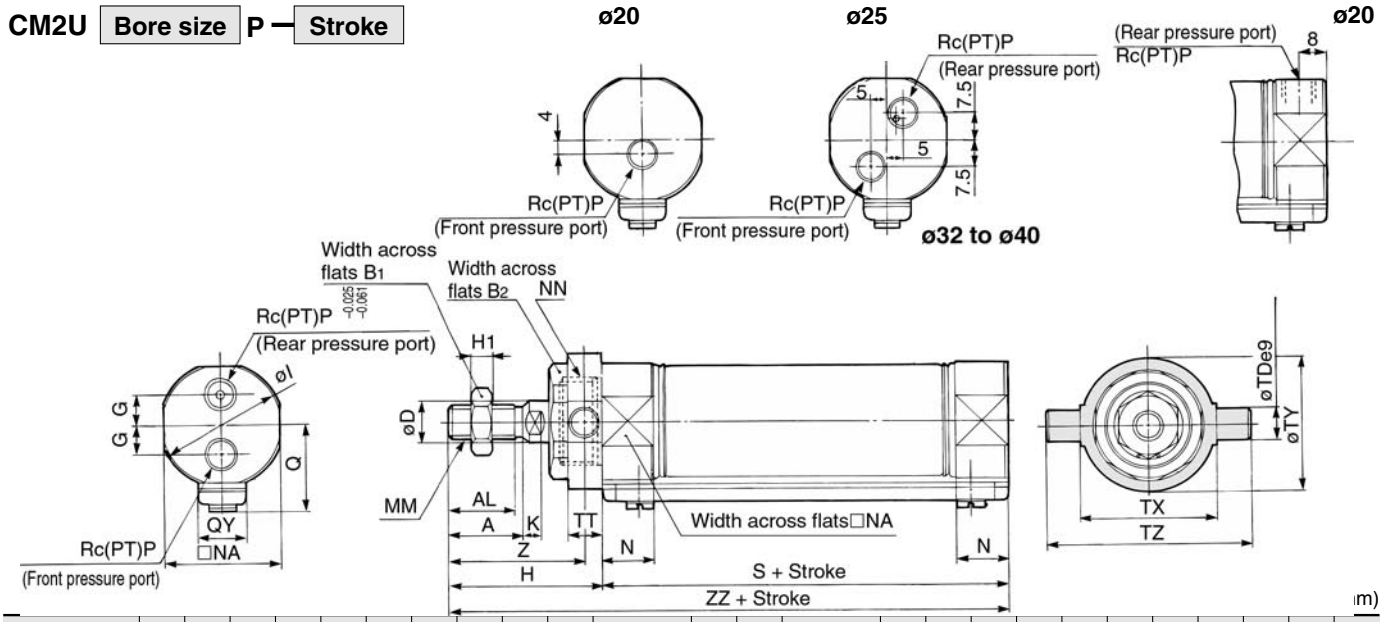


(mm)

Bore	A	AL	B1	B2	C2	D	F	FB	FD	FT	FX	FY	FZ	G	H	H1	H2	I	K	MM	N	NA	NN	P	Q	QY	S	Z	ZZ
20	18	15.5	13	26	30	8	13	34	7	4	60	—	75	—	41	5	8	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8	19.8	14	62	37	103
25	22	19.5	17	32	37	10	13	40	7	4	60	—	75	—	45	6	8	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8	22	14	62	41	107
32	22	19.5	17	32	37	12	13	40	7	4	60	—	75	9	45	6	8	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8	25.8	16	64	41	109
40	24	21	22	41	47.3	14	16	52	7	5	66	36	82	10.5	50	8	10	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4	29.8	16	88	45	138

Front Trunnion (U)

CM2U **Bore size** **P** — **Stroke**



(mm)

Bore	A	AL	B1	B2	D	G	H	H1	I	K	MM	N	NA	NN	P	Q	QY	S	TD	TT	TX	TY	TZ	Z	ZZ
20	18	15.5	13	26	8	—	41	5	28	5	M8 X 1.25	15	24	M20 X 1.5	1/8	19.8	14	62	8	10	32	32	52	36	103
25	22	19.5	17	32	10	—	45	6	33.5	5.5	M10 X 1.25	15	30	M26 X 1.5	1/8	22	14	62	9	10	40	40	60	40	107
32	22	19.5	17	32	12	9	45	6	37.5	5.5	M10 X 1.25	15	34.5	M26 X 1.5	1/8	25.8	16	64	9	10	40	40	60	40	109
40	24	21	22	41	14	10.5	50	8	46.5	7	M14 X 1.5	21.5	42.5	M32 X 2	1/4	29.8	16	88	10	11	53	53	77	44.5	138