

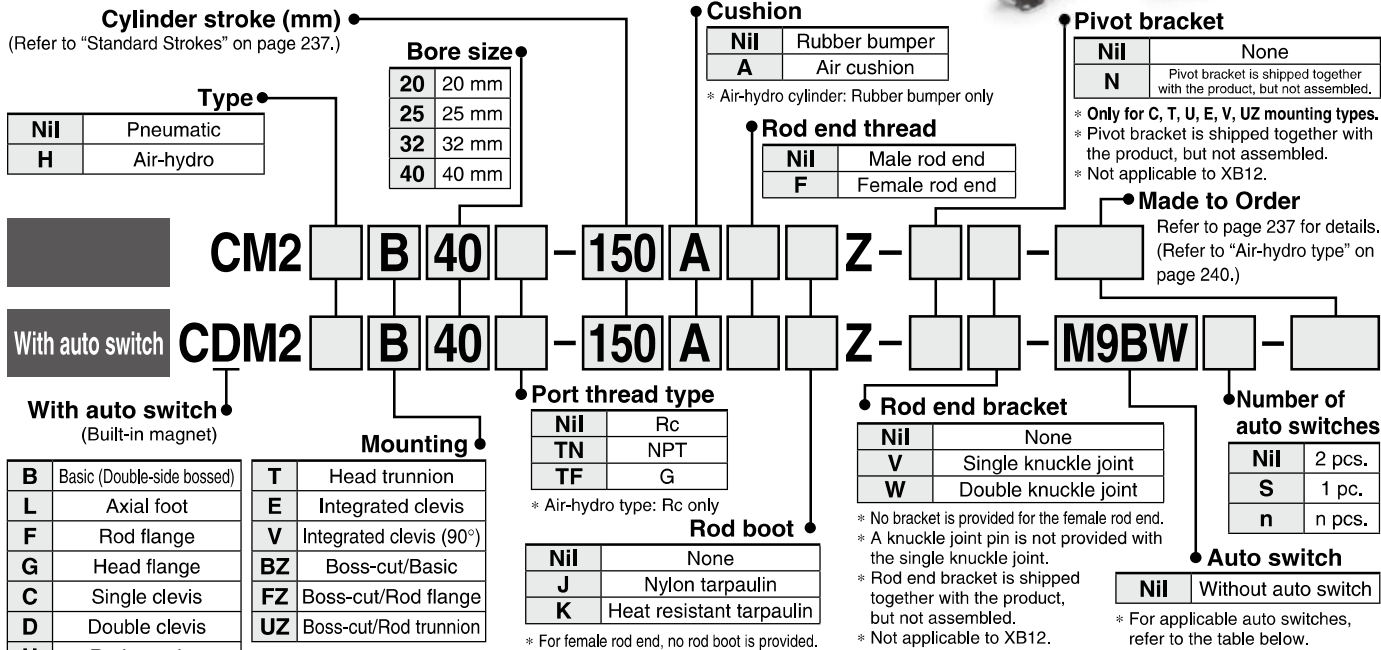
Air Cylinder: Standard Type Double Acting, Single Rod

CM2 Series

∅20, ∅25, ∅32, ∅40



How to Order



* Refer to "Ordering Example of Cylinder Assembly" on page 237.

Applicable Auto Switches/Refer to pages 1271 to 1365 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load																	
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)																			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit																
				3-wire (PNP)				M9PV	M9P	●	●	●	○	—	○																	
		2-wire		M9BV				M9B	●	●	●	○	—	○	—																	
		3-wire (NPN)		—				H7C	●	—	●	●	—	—																		
	Diagnostic indication (2-color indicator)	Terminal conduit	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	—	G39A	—	—	—	—	●	—	IC circuit																
				2-wire				—	K39A	—	—	—	—	●	—	—																
	Water resistant (2-color indicator)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NWV	M9NW	●	●	●	○	—	○	IC circuit																
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	—	○																	
				2-wire				M9BWV	M9BW	●	●	●	○	—	○		—															
				3-wire (NPN)				M9NAV*1	M9NA*1	○	○	●	○	—	○																	
With diagnostic output (2-color indicator)	Grommet	Yes	3-wire (PNP)	24 V	5 V, 12 V	—	M9PAV*1	M9PA*1	○	○	●	○	—	○	IC circuit																	
			2-wire				M9BAV*1	M9BA*1	○	○	●	○	—	○																		
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	12 V	—	A96V	A96	●	—	●	—	—	—	IC circuit																
				2-wire				100 V	A93V*2	A93	●	●	●	—	—	—	—															
								100 V or less	A90V	A90	●	—	●	—	—	—		IC circuit														
								100 V, 200 V	—	B54	●	—	●	—	—	—																
								200 V or less	—	B64	●	—	●	—	—	—																
		Terminal conduit		No				No	Yes	2-wire	24 V	12 V	—	—	C73C	●	—	●	●	—	—											
														No	No	Yes	24 V or less	—	C80C	●		—	●	●	—	IC circuit						
																	No	No	Yes	—		—	A33A	—	—		—	●	—			
																				No		No	Yes	—	—		A34A	—		—	—	●
																								No	No		Yes	—		—	A44A	—
DIN terminal	Yes	Yes	Yes	2-wire	24 V	12 V	—	—	A44A	—	—	—	—	●	—																	
Diagnostic indication (2-color indicator)	Grommet	Yes	Yes	4-wire (NPN)	24 V	5 V, 12 V	—	—	H7NF	●	—	●	○	—	○	IC circuit																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	A93V*2	A93	●	●	●	—	—	—	—																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	A90V	A90	●	—	●	—	—	—	IC circuit																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	B54	●	—	●	—	—	—	—																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	B64	●	—	●	—	—	—	—																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	C73C	●	—	●	●	—	—	—																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	C80C	●	—	●	●	—	—	IC circuit																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	A33A	—	—	—	—	●	—	—																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	A34A	—	—	—	—	●	—	—																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	A44A	—	—	—	—	●	—	—																
—	Grommet	No	No	3-wire (NPN equivalent)	24 V	5 V	—	—	B59W	●	—	●	—	—	—	—																

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
A water-resistant type cylinder is recommended for use in an environment which requires water resistance.

*2 1 m type lead wire is only applicable to D-A93.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWZ
None N (Example) H7CN

* Solid state auto switches marked with "○" are produced upon receipt of order.
* Do not indicate suffix "N" for no lead wire on the D-A3□□/A44A/G39A/K39A models.

* Since there are other applicable auto switches than listed above, refer to page 331 for details.
* For details about auto switches with pre-wired connector, refer to pages 1340 and 1341.
* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)



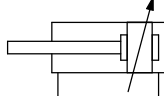
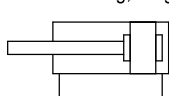
Specifications



Symbol

Double acting, Single rod

Air cushion



Refer to pages 327 to 331 for cylinders with auto switches

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.



Made to Order: Individual Specifications
(For details, refer to page 332.)

Symbol	Specifications
-X446	PTFE grease

Made to Order

[Click here for details](#)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (-10 to 150°C)
-XB7	Cold resistant cylinder (-40 to 70°C)*1
-XB9	Low speed cylinder (10 to 50 mm/s)*1
-XB12	External stainless steel cylinder*2
-XC3	Special port location
-XC4	With heavy duty scraper
-XC5	Heat resistant cylinder (-10 to 110°C)
-XC6	Made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type*1
-XC11	Dual stroke cylinder/Single rod type
-XC12	Tandem cylinder*1
-XC13	Auto switch rail mounting
-XC20	Head cover axial port
-XC22	Fluororubber seal
-XC25	No fixed throttle of connection port*1
-XC27	Double clevis and double knuckle pins made of stainless steel
-XC29	Double knuckle joint with spring pin
-XC35	With coil scraper*1
-XC52	Mounting nut with set screw
-XC85	Grease for food processing equipment

*1 Rubber bumper only.

*2 The shape is the same as the current product.

Bore size (mm)		20	25	32	40	
Type	Pneumatic					
Action	Double acting, Single rod					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.05 MPa					
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Stroke length tolerance	+1.4 0 mm					
Piston speed	Rubber bumper: 50 to 750 mm/s, Air cushion: 50 to 1000 mm/s					
Cushion	Rubber bumper, Air cushion					
Allowable kinetic energy	Rubber bumper	Male thread	0.27 J	0.4 J	0.65 J	1.2 J
		Female thread	0.11 J	0.18 J	0.29 J	0.52 J
	Air cushion (Effective cushion length (mm))	Male thread	0.54 J (11.0)	0.78 J (11.0)	1.27 J (11.0)	2.35 J (11.8)
		Female thread	0.11 J	0.18 J	0.29 J	0.52 J

* Operate the cylinder with in the allowable kinetic energy.

Standard Strokes

Bore size (mm)	Standard stroke (mm) Note 1)	Maximum manufacturable stroke (mm)
20	25, 50, 75, 100, 125, 150, 200, 250, 300	1000
25		1500
32		2000
40		

Note 1) Intermediate strokes not listed above are produced upon receipt of order.

Manufacture of intermediate strokes in 1 mm increments is possible. (Spacers are not used.)

Note 2) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on pages 8 to 19. In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Rod Boot Material

Symbol	Rod boot material	Maximum ambient temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*1

*1 Maximum ambient temperature for the rod boot itself.

Option: Ordering Example of Cylinder Assembly

Cylinder model: CDM2C20-50Z-NV-M9BW

Mounting C: Single clevis
Pivot bracket N: Yes
Rod end bracket V: Single knuckle joint
Auto switch D-M9BW: 2 pcs.

* Pivot bracket, single knuckle joint and auto switch are shipped together with the product, but not assembled.

* Pivot bracket is available only for C, T, U, E, V, UZ mounting types.

* No bracket is provided for the female rod end.

CM2 Series

Mounting and Accessories

Accessories	Body	Standard (mounted to the body)					Standard (packaged together, but not assembled)								Option			
		Mounting nut	Rod end nut (Male thread)	Single clevis	Double clevis	Liner	Mounting nut	Foot	Flange	Pivot bracket	Pivot bracket pin	Double clevis pin	Trunnion	Mounting nut (For trunnion)	Clevis pivot bracket (CM2E/CM2V)	Clevis pivot bracket pin (CM2E/CM2V)	Single knuckle joint (Male thread only)	Double knuckle joint (Male thread only)
B Basic (Double-side bossed)	●(1 pc.)	●(1 pc.)	●(1 pc.)	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●
L Axial foot	●(1 pc.)	●(1 pc.) ^{Note 2)}	●(1 pc.)	—	—	—	●(1 pc.) ^{Note 2)}	●(2 pcs.)	—	—	—	—	—	—	—	—	●	●
F Rod flange	●(1 pc.)	●(1 pc.)	●(1 pc.)	—	—	—	—	—	●(1 pc.)	—	—	—	—	—	—	—	●	●
G Head flange	●(1 pc.)	●(1 pc.)	●(1 pc.)	—	—	—	—	—	●(1 pc.)	—	—	—	—	—	—	—	●	●
C Single clevis	●(1 pc.)	— ^{Note 3)}	●(1 pc.)	●(1 pc.)	—	●(Max. 3 pcs.)	— ^{Note 3)}	—	—	—	—	—	—	—	—	—	●	●
D Double clevis	●(1 pc.)	— ^{Note 3)}	●(1 pc.)	—	●(1 pc.)	●(Max. 3 pcs.)	— ^{Note 3)}	—	—	—	●(1 pc.)	—	—	—	—	—	●	●
U Rod trunnion	●(1 pc.)	— ^{Note 4)}	●(1 pc.)	—	—	—	—	—	—	—	—	●(1 pc.)	●(1 pc.)	—	—	—	●	●
T Head trunnion	●(1 pc.)	— ^{Note 4)}	●(1 pc.)	—	—	—	—	—	—	—	—	●(1 pc.)	●(1 pc.)	—	—	—	●	●
E Integrated clevis	●(1 pc.)	— ^{Note 3)}	●(1 pc.)	—	—	—	— ^{Note 3)}	—	—	—	—	—	—	—	—	—	●	●
V Integrated clevis (90°)	●(1 pc.)	— ^{Note 3)}	●(1 pc.)	—	—	—	— ^{Note 3)}	—	—	—	—	—	—	—	—	—	●	●
BZ Boss-cut/Basic	●(1 pc.)	●(1 pc.)	●(1 pc.)	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●
FZ Boss-cut/Rod flange	●(1 pc.)	●(1 pc.)	●(1 pc.)	—	—	—	—	—	●(1 pc.)	—	—	—	—	—	—	—	●	●
UZ Boss-cut/Rod trunnion	●(1 pc.)	— ^{Note 4)}	●(1 pc.)	—	—	—	—	—	—	—	—	●(1 pc.)	●(1 pc.)	—	—	—	●	●

	Standard (mounted to the body)					Option												
Mounting: C Pivot bracket symbol: N Single clevis + Pivot bracket + Pin	●(1 pc.)	— ^{Note 3)}	●(1 pc.)	●(1 pc.)	—	●(Max. 3 pcs.)	— ^{Note 3)}	—	—	●(2 pcs.)	●(1 pc.)	—	—	—	—	—	●	●
Mounting: T, U, UZ Pivot bracket symbol: N Trunnion + Pivot bracket	●(1 pc.)	— ^{Note 4)}	●(1 pc.)	—	—	—	— ^{Note 3)}	—	—	●(2 pcs.)	—	—	●(1 pc.)	●(1 pc.)	—	—	●	●
Mounting: E Pivot bracket symbol: N Integrated clevis + Pivot bracket + Pin	●(1 pc.)	— ^{Note 3)}	●(1 pc.)	—	—	—	— ^{Note 3)}	—	—	—	—	—	—	●(1 pc.)	●(1 pc.)	—	●	●
Mounting: V Pivot bracket symbol: N Integrated clevis (90°) + Pivot bracket + Pin	●(1 pc.)	— ^{Note 3)}	●(1 pc.)	—	—	—	— ^{Note 3)}	—	—	—	—	—	—	●(1 pc.)	●(1 pc.)	—	●	●

Note 1) Rod end nut is not provided for the female rod end.
 Note 2) Two mounting nuts are packaged together.
 Note 3) Mounting nut is not packaged for the clevis.
 Note 4) Trunnion nut is packaged for U, T, UZ.
 Note 5) Retaining rings are included.

Note 6) A pin and retaining rings (split pins for ø40) are included.
 Note 7) This is the part(s) used to adjust the clevis angle. Mounting quantity can vary.
 * Stainless steel mounting brackets and accessories are also available.
 Refer to page 254 for details.

Mounting Brackets/Part No.

Mounting bracket	Min. order qty	Bore size (mm)				Contents (for minimum order quantity)
		20	25	32	40	
Foot*	2	CM-L020B	CM-L032B	CM-L040B	2 feet, 1 mounting nut	
Flange	1	CM-F020B	CM-F032B	CM-F040B	1 flange	
Single clevis**	1	CM-C020B	CM-C032B	CM-C040B	1 single clevis, 3 liners	
Double clevis (with pin)**	1	CM-D020B	CM-D032B	CM-D040B	1 double clevis, 3 liners, 1 clevis pin, 2 retaining rings	
Double clevis pin	1	CDP-1		CDP-2	1 clevis pin, 2 retaining rings (split pins)	
Trunnion (with nut)	1	CM-T020B	CM-T032B	CM-T040B	1 trunnion, 1 trunnion nut	
Rod end nut	1	NT-02	NT-03	NT-04	1 rod end nut	
Mounting nut	1	SN-020B	SN-032B	SN-040B	1 mounting nut	
Trunnion nut	1	TN-020B	TN-032B	TN-040B	1 trunnion nut	
Single knuckle joint	1	I-020B	I-032B	I-040B	1 single knuckle joint	
Double knuckle joint	1	Y-020B	Y-032B	Y-040B	1 double knuckle joint, 1 knuckle pin, 2 retaining rings	
Double knuckle joint pin	1	CDP-1		CDP-3	1 knuckle pin, 2 retaining rings (split pins)	
Clevis pivot bracket pin (For CM2E/CM2V)	1	CD-S02		CD-S03	1 clevis pin, 2 retaining rings	
Clevis pivot bracket (For CM2E/CM2V)	1	CM-E020B		CM-E032B	1 clevis pivot bracket, 1 clevis pin, 2 retaining rings	
Pivot bracket (For CM2C)	1	CM-B032		CM-B040	2 pivot brackets (1 of each type)	
Pivot bracket pin (For CM2C)	1	CDP-1		CD-S03	1 pin, 2 retaining rings	
Pivot bracket (For CM2T/CM2U)	1	CM-B020	CM-B032	CM-B040	2 pivot brackets (1 of each type)	

* Order 2 feet per cylinder.

** 3 liners are included with a clevis bracket for adjusting the mounting angle.

*** A clevis pin and retaining rings (split pins for ø40) are included.

For dimensions of accessories (options), refer to pages 253 and 254.