

# Air Cylinder: Standard Type Double Acting, Single Rod

## CM2 Series

ø20, ø25, ø32, ø40

RoHS

### How to Order



**Cylinder stroke (mm)**  
(Refer to "Standard Strokes" on page 173.)

**Type**

Nil	Pneumatic
H	Air-hydro

**Bore size**

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

**Cushion**

Nil	Rubber bumper
A	Air cushion

\* Air-hydro cylinder: Rubber bumper only

**Rod end thread**

Nil	Male rod end
F	Female rod end

**Pivot bracket**

Nil	None
N	Pivot bracket is shipped together with the product, but not assembled.

\* Only for C, T, U, E, V, UZ mounting types.  
\* Pivot bracket is shipped together with the product, but not assembled.  
\* Not applicable to XB12.

**Made to Order**  
Refer to page 173 for details.  
(Refer to "Air-hydro type" on page 176.)

**With auto switch** **CM2** **B** **40** **-150** **A** **Z** **-** **M9BW**

**With auto switch**  
(Built-in magnet)

**Mounting**

<b>L</b> Basic (Double-side bossed)	<b>T</b> Head trunnion
<b>B</b> Axial foot	<b>E</b> Integrated clevis
<b>F</b> Rod flange	<b>V</b> Integrated clevis (90°)
<b>G</b> Head flange	<b>BZ</b> Boss-cut/Basic
<b>C</b> Single clevis	<b>FBZ</b> Boss-cut/Rod flange
<b>D</b> Double clevis	<b>UZ</b> Boss-cut/Rod trunnion
<b>U</b> Rod trunnion	

**Port thread type**

Nil	Rc
TN	NPT
TF	G

\* Air-hydro type: Rc only

**Rod boot**

Nil	None
J	Nylon tarpaulin
K	Heat resistant tarpaulin

\* For female rod end, no rod boot is provided.

**Rod end bracket**

Nil	None
V	Single knuckle joint
W	Double knuckle joint

\* No bracket is provided for the female rod end.  
\* A knuckle joint pin is not provided with the single knuckle joint.  
\* Rod end bracket is shipped together with the product, but not assembled.  
\* Not applicable to XB12.

**Number of auto switches**

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

**Auto switch**

Nil	Without auto switch
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\* For applicable auto switches, refer to the table below.

\* Refer to "Ordering Example of Cylinder Assembly" on page 173.

### Applicable Auto Switches/Refer to pages 1575 to 1701 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	Relay, PLC			
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○					
				2-wire				M9BV	M9B	●	●	●	○	○					
		Connector		3-wire (NPN)				5 V, 12 V	—	G39A	—	—	—	●	—		—	IC circuit	
				2-wire				12 V	—	K39A	—	—	—	—	●		—	—	
				3-wire (PNP)				5 V, 12 V	—	M9NWV	M9NW	●	●	●	○		○	IC circuit	
	Diagnostic indication (2-color indicator)	Grommet		3-wire (NPN)	24 V	5 V, 12 V	—	M9PWV	M9PW	●	●	●	○	○	IC circuit				
				3-wire (PNP)				M9BWV	M9BW	●	●	●	○	○			—		
				2-wire				M9NAV <sup>*1</sup>	M9NA <sup>*1</sup>	○	○	○	○	○			IC circuit		
				3-wire (NPN)				5 V, 12 V	M9PAV <sup>*1</sup>	M9PA <sup>*1</sup>	○	○	○	○	○			—	
				3-wire (PNP)				12 V	M9BAV <sup>*1</sup>	M9BA <sup>*1</sup>	○	○	●	○	○			—	
				2-wire				12 V	—	H7NF	●	—	●	○	○		IC circuit		
With diagnostic output (2-color indicator)	4-wire (NPN)	5 V, 12 V	—	—	—	—	—	—	—	—	—	○	IC circuit						
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	Relay, PLC			
				—				100 V	A93V <sup>*2</sup>	A93	●	●	●	—			—		
				—				100 V or less	A90V	A90	●	—	●	—			—	IC circuit	
				Connector				2-wire	12 V	100 V, 200 V	—	B54	●	—	●		—	—	—
								—		200 V or less	—	B64	●	—	●		—	—	
								—		—	—	C73C	●	—	●		—	—	
		Terminal conduit			24 V or less	—	C80C	●		—	●	●	●	—	IC circuit				
					—	—	A33A	—		—	—	—	●	—			—		
					100 V, 200 V	—	A34A	—		—	—	—	●	—					
				DIN terminal	Yes	—	—	—	—	A44A	—	—	—	—	●			—	Relay, PLC
						—		—	—	—	—	—	—	—	—				
						—		—	—	—	—	—	—	—	—		—		
Grommet	—	—	—			—		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) M9NLW  
5 m ..... Z (Example) M9NZW  
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-A93□A/A44A/G39A/K39A models.

\* Since there are other applicable auto switches than listed above, refer to page 266 for details.

\* For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.

\* The D-A93□□/M9□□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

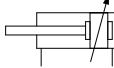
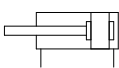
## Specifications



### Symbol

Double acting, Single rod

Air cushion



Refer to pages 262 to 266 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 267.)

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
-XB13	Low speed cylinder (5 to 50 mm/s)*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			50 to 750 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) <sup>Note 1)</sup>	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 front matter pages. In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## 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.

CJ1

CJP

CJ2

JCM

CM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

D-□

-X□

Technical Data

