

Air Cylinder: Standard Type

Double Acting, Single Rod

CA2 Series

ø40, ø50, ø63, ø80, ø100

RoHS

How to Order

CA2 B **50** **100** **Z** **M9BW**

With auto switch **CDA2 B** **50** **100** **Z** **M9BW**

With auto switch
(Built-in magnet)

Mounting

B	Basic
L	Axial foot
F	Rod flange
G	Head flange
C	Single clevis
D	Double clevis
T	Center trunnion

* Mounting brackets other than center trunnion are shipped together.

Bore size

40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Tube material

Nil	Aluminum tube
F*	Steel tube

* Not available with auto switch.

Cylinder stroke (mm)
For details, refer to the next page.

Bracket 1

Nil	Without bracket
N	Pivot bracket

* Only for D and T mounting types.
* Pivot bracket is shipped together with the product, but not assembled.

Suffix (Cushion)

Nil	Air cushion
N	Rubber bumper

Suffix (Rod boot)

Nil	None
J	Nylon tarpaulin
K	Heat resistant tarpaulin

Auto switch

Nil	Without auto switch
V	Single knuckle joint
W	Double knuckle joint

* For applicable auto switches, refer to the table below.

Bracket 2

Nil	Without bracket
V	Single knuckle joint
W	Double knuckle joint

* A knuckle joint pin is not provided with the single knuckle joint.
* Rod end bracket is shipped together with the product, but not assembled.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Made to Order
For details, refer to the next page.

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	Tie-rod mounting	Band mounting	0.5 (Nil)	1 (M)	3 (L)	5 (Z)											
Solid state auto switch	—	Grommet		3-wire (NPN)	24 V	5 V, 12 V	—	M9N	●	●	●	○	○	IC circuit									
				3-wire (PNP)				M9P	●	●	●	○	○										
		Terminal conduit		2-wire	12 V	12 V	M9B	●	●	●	○	○	—										
				3-wire (NPN)			G39C	●	●	●	○	○											
	Diagnostic indication (2-color indicator)	Grommet	Yes	2-wire	24 V	5 V, 12 V	—	K39C	●	●	●	○	○	IC circuit	Relay, PLC								
				3-wire (NPN)				M9NW	●	●	●	○	○										
				3-wire (PNP)				G59W	●	●	●	○	○										
				2-wire				M9PW	●	●	●	○	○										
	Water resistant (2-color indicator)	Grommet	Yes	2-wire	24 V	12 V	—	M9BW	●	●	●	○	○	—									
				3-wire (NPN)				K59W	●	●	●	○	○										
				3-wire (PNP)				M9NA ^{*1}	—	○	○	○	○			○							
				2-wire				M9PA ^{*1}	—	○	○	○	○			○							
	With diagnostic output (2-color indicator)	Terminal conduit	Yes	4-wire (NPN)	24 V	5 V, 12 V	—	M9BA ^{*1}	—	○	○	○	○	○	IC circuit								
				2-wire (Non-polar)				F59F	●	●	●	○	○										
				Magnetic field resistant (2-color indicator)				Grommet	Yes	2-wire (Non-polar)	24 V	5 V, 12 V	—	P3DWA			●	—	—	—	—	—	
										2-wire (Non-polar)				P4DW			—	—	—	—	—		
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	12 V	—	A96	●	—	●	—	—	IC circuit	Relay, PLC								
			No	—				A93	—	●	●	●	—	—									
			Yes	—				A90	—	●	—	●	—	—									
		No	—	A54				B54	●	—	●	●	—	—									
		Terminal conduit	Yes	2-wire				A64	B64	●	—	●	—	—		—							
				2-wire				A33C	A33	—	—	—	—	—		—							
	Diagnostic indication (2-color indicator)			DIN terminal	Yes	2-wire	24 V	12 V	—	A34C	A34	—	—	—	—	—							
		2-wire	A44C			A44				—	—	—	—	—	—								
		2-wire	A59W			B59W				●	—	●	—	—	—	—							
		Grommet	No	2-wire	24 V	12 V				—	A90	—	●	●	●	—	—						
				2-wire							A54	—	●	●	●	—	—						
				2-wire							A33C	A33	—	—	—	—	—	—					

*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.

* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW * Solid state auto switches marked with "C" are produced upon receipt of order.

1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWW

* Since there are other applicable auto switches than listed above, refer to page 523 for details.

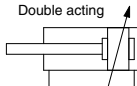
* For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.

* The D-A9□/M9□□/P3DWA□ auto switches are shipped together, (but not assembled). (However, auto switch mounting brackets are assembled for the D-A9□/M9□□ before shipment.)



Symbol

Double acting



Air cushion



Made to Order: Individual Specifications
(For details, refer to page 524.)

Symbol	Specifications
-X1184	Cylinder with heat resistant reed auto switch (−10 to 120°C)

Made to Order

[Click here for details](#)

Symbol	Specifications
-XA□	Change of rod end shape
-XB5	Oversized rod cylinder*
-XB6	Heat resistant cylinder (−10 to 150°C)
-XC3	Special port location*
-XC4	With heavy duty scraper
-XC5	Heat resistant cylinder (−10 to 110°C)
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. 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
-XC11	Dual stroke cylinder/Single rod type
-XC12	Tandem cylinder
-XC14	Change of trunnion bracket mounting position
-XC15	Change of tie-rod length
-XC22	Fluororubber seal
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC28	Compact flange made of SS400
-XC29	Double knuckle joint with spring pin
-XC30	Rod trunnion
-XC35	With coil scraper
-XC65	Made of stainless steel (Combination of XC7 and XC68)
-XC68	Made of stainless steel (with hard chrome plated piston rod)
-XC85	Grease for food processing equipment
-XC88	Spatter resistant coil scraper, Lube-retainer, Grease for welding (Piston rod: Stainless steel 304)
-XC89	Spatter resistant coil scraper, Lube-retainer, Grease for welding (Piston rod: S45C)
-XC91	Spatter resistant coil scraper, Grease for welding (Piston rod: S45C)

For special port location (−XC3), the mounting bracket and port location can be determined using the standard product corresponding to the operating conditions.

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

For made of stainless steel (−XC6), use made of stainless steel (with hard chrome plated piston rod) (−XC68) that the surface treatment is performed on the piston rod with the same specifications.

Refer to pages 517 to 523 for cylinders with auto switches.

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

Specifications

Bore size (mm)			40	50	63	80	100
Fluid			Air				
Action			Double acting				
Proof pressure			1.5 MPa				
Maximum operating pressure			1.0 MPa				
Ambient and fluid temperature			Without auto switch: -10 to 70°C*1 With auto switch: -10 to 60°C*1				
Minimum operating pressure			0.05 MPa				
Piston speed			50 to 500 mm/s				
Cushion			Air cushion or Rubber bumper				
Stroke length tolerance			Up to 250 st: ^{+1.0} ₀ 251 to 1000 st: ^{+1.8} ₀ 1001 to 1500 st: ^{+1.8} ₀ 1501 to 1800 st: ^{+2.2} ₀				
Lubrication			Not required (Non-lube)				
Mounting			Basic, Foot, Rod flange, Head flange Single clevis, Double clevis, Center trunnion				
Allowable kinetic energy (J) ^{1/2}	Air cushion	When activated	2.8	4.6	7.8	16	29
		When not activated	0.33	0.56	0.91	1.5	2.68
	Rubber bumper		1.8	3.6	6.0	12.0	12.0

*1 No freezing

*2 Activate the air cushion when operating the cylinder. If this is not done, the piston rod assembly or the tie-rod will be damaged when the allowable kinetic energy exceeds the values shown in the above table.

Standard Strokes

			(mm)
Bore size	Standard stroke ^{Note 1)}		Max. manufacturable stroke
	Stroke range ①	Stroke range ②	
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	Up to 1800	Up to 2700
50, 63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600		
80, 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700		

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

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 stroke range ① might not be able to fulfill the specifications due to the deflection etc.

Note 3) Please consult with SMC for manufacturability and the part numbers when exceeding the stroke range ②.

Note 4) The stroke range with rod boot is 20 to 1800 mm. Please consult with SMC when exceeding 1800 mm strokes.

Minimum Stroke for Auto Switch Mounting

Caution

The minimum stroke for mounting varies with the auto switch type and cylinder mounting type. In particular, the center trunnion type needs careful attention. (For details, refer to pages 521 and 522.)

Rod Boot Material

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

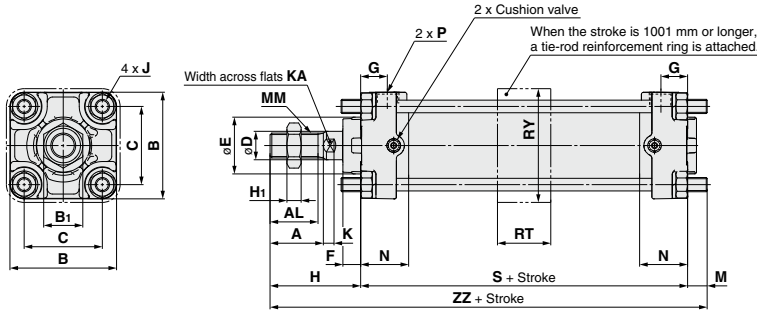
* Maximum ambient temperature for the rod boot

Accessories

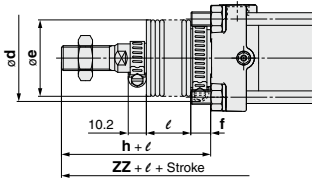
Mounting	Basic	Axial foot	Rod flange	Head flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●
	Clevis pin	—	—	—	—	●	—
	Single knuckle joint	●	●	●	●	●	●
Option	Double knuckle joint (with pin)	●	●	●	●	●	●
	With rod boot	●	●	●	●	●	●

* Refer to page 485 for part numbers and dimensions.

Basic: CA2B



With rod boot



Bore size (mm)	A	AL	B	B ₁	C	D	E	F	G	H ₁	J	K	KA	M		MM
														Without reinforcement ring	With reinforcement ring	
40	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	11	11	M14 x 1.5
50	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	11	12	M18 x 1.5
63	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	14	15	M18 x 1.5
80	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	17	19	M22 x 1.5
100	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	17	19	M26 x 1.5

Bore size (mm)	N	P	RT	RY	S	Without rod boot				With rod boot					
						H	ZZ		d	e	f	h	ℓ	ZZ	
							Without reinforcement ring	With reinforcement ring						Without reinforcement ring	With reinforcement ring
40	27	1/4	30	64	84	51	146	146	56	43	11.2	59	1/4 stroke	154	154
50	30	3/8	30	76	90	58	159	160	64	52	11.2	66	1/4 stroke	167	168
63	31	3/8	40	92	98	58	170	171	64	52	11.2	66	1/4 stroke	178	179
80	37	1/2	45	112	116	71	204	206	76	65	12.5	80	1/4 stroke	213	215
100	40	1/2	50	136	126	72	215	217	76	65	14	81	1/4 stroke	224	226

Note 1) When a flange bracket is mounted on the head cover side of the basic type with bore size of ø50 to ø100 and stroke of 1001 mm or more, it is necessary to loosen the tie-rod to adjust the M dimension. When head flange type is ordered, adjustment is not necessary.

Note 2) For models with bore size of ø50 to ø100 and stroke of 1001 mm or more, do not mount a flange bracket on the rod cover side of the basic type since H dimension is different from those shown above. When rod flange type is used, order with the part number with bracket.

CJ1
CJP
CJ2
JCM
CM2
CM3
CG1
CG3
JMB
MB
MB1
CA2
CS1
CS2

D-□
-X□
Technical Data