

Smooth Cylinder/Low Speed Cylinder

Series C□Y/C□X

Series Variations

Smooth Cylinder CQSY/CQ2Y/CM2Y/CG1Y/CA2YP. 1047

Series	Action	Bore size (mm)	Minimum operating pressure (MPa)	Page
CQSY	Double acting	12, 16	0.03	P. 1048
		20, 25	0.02	
CQ2Y		32, 40	0.02	
		50, 63, 80, 100	0.01	
CM2Y		20, 25, 32, 40	0.02	
		20, 25, 32, 40	0.02	
CG1Y		50, 63, 80, 100	0.01	
		40	0.02	
CA2Y		50, 63, 80, 100	0.01	P. 1094

Low Speed Cylinder CJ2X/CUX/CQSX/CQ2X/CM2XP. 1111

Series	Action	Bore size (mm)	Minimum operating speed (mm/s)	Page
CJ2X	Double acting	10, 16	1	P. 1114
		10, 16	1	
CUX		20, 25, 32	0.5	
		12, 16	1	
CQSX		20, 25	0.5	
		32, 40, 50, 63, 80, 100	0.5	
CQ2X		32, 40, 50, 63, 80, 100	0.5	
		20, 25, 32, 40	0.5	
CM2X		20, 25, 32, 40	0.5	P. 1148

REA

REB

REC

C□Y

C□X

MQ

RHC

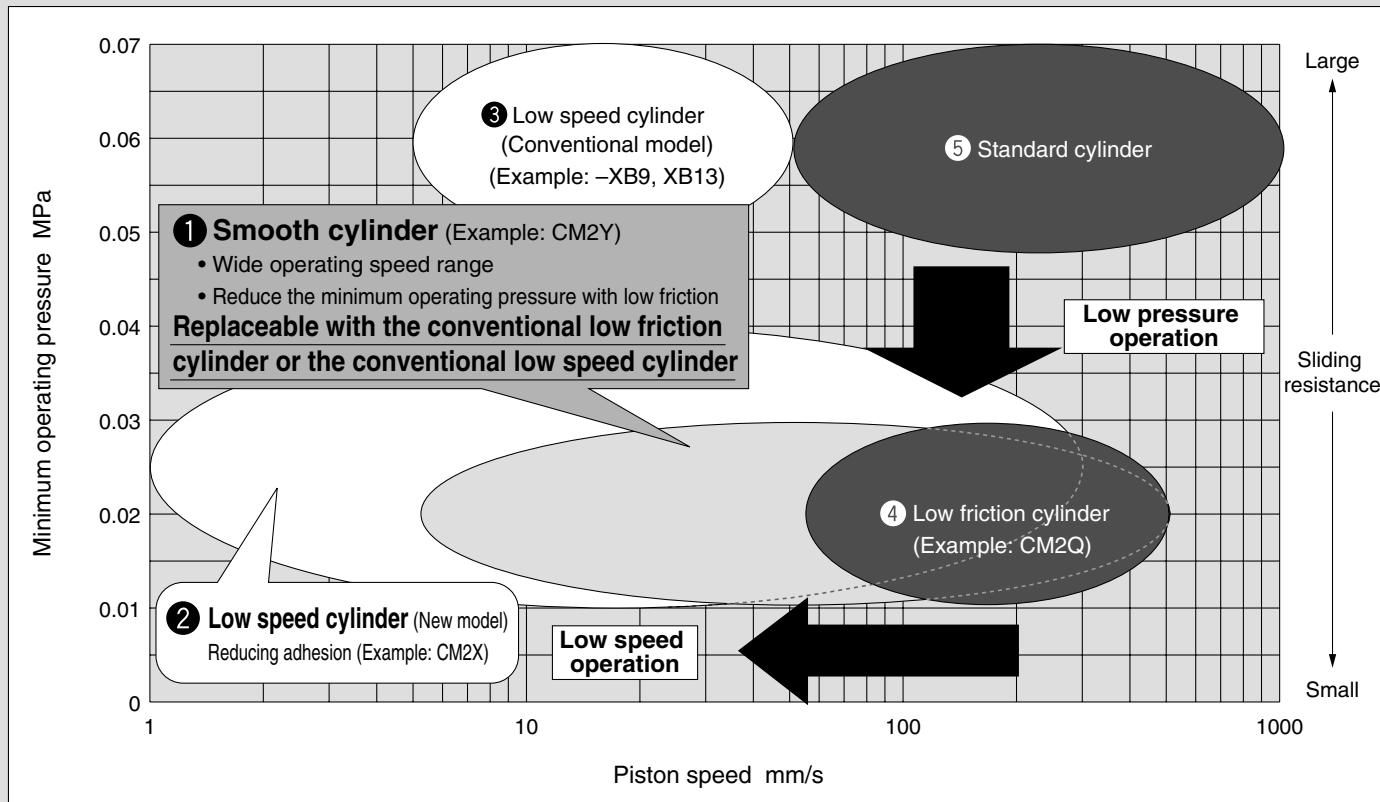
RZQ

D-□

-X□

Individual
-X□

Smooth Cylinder/Low Speed Cylinder



1 Smooth cylinder

- Low speed operation (from 5 mm/s)
- Low pressure operation
- Pressure on both sides
 - Pressing force control
 - Balance control of winders, etc.
 - General low-speed operating applications
 - Tension control

2 Low speed cylinder (New model)

- Low speed operation (from 1 mm/s)
- Low pressure operation
- Pressure on both sides
- Reducing adhesion
 - Load transfer without a lateral load (Lightweight trays, etc.)
 - Transfer with less adhesion (Wafers, etc.)
 - Higher-accuracy pressing force control

3 Low speed cylinder (Conventional model)

- Low speed operation

4 Low friction cylinder

- Low pressure operation
- Pressure on a single side

5 Standard non-lube cylinder

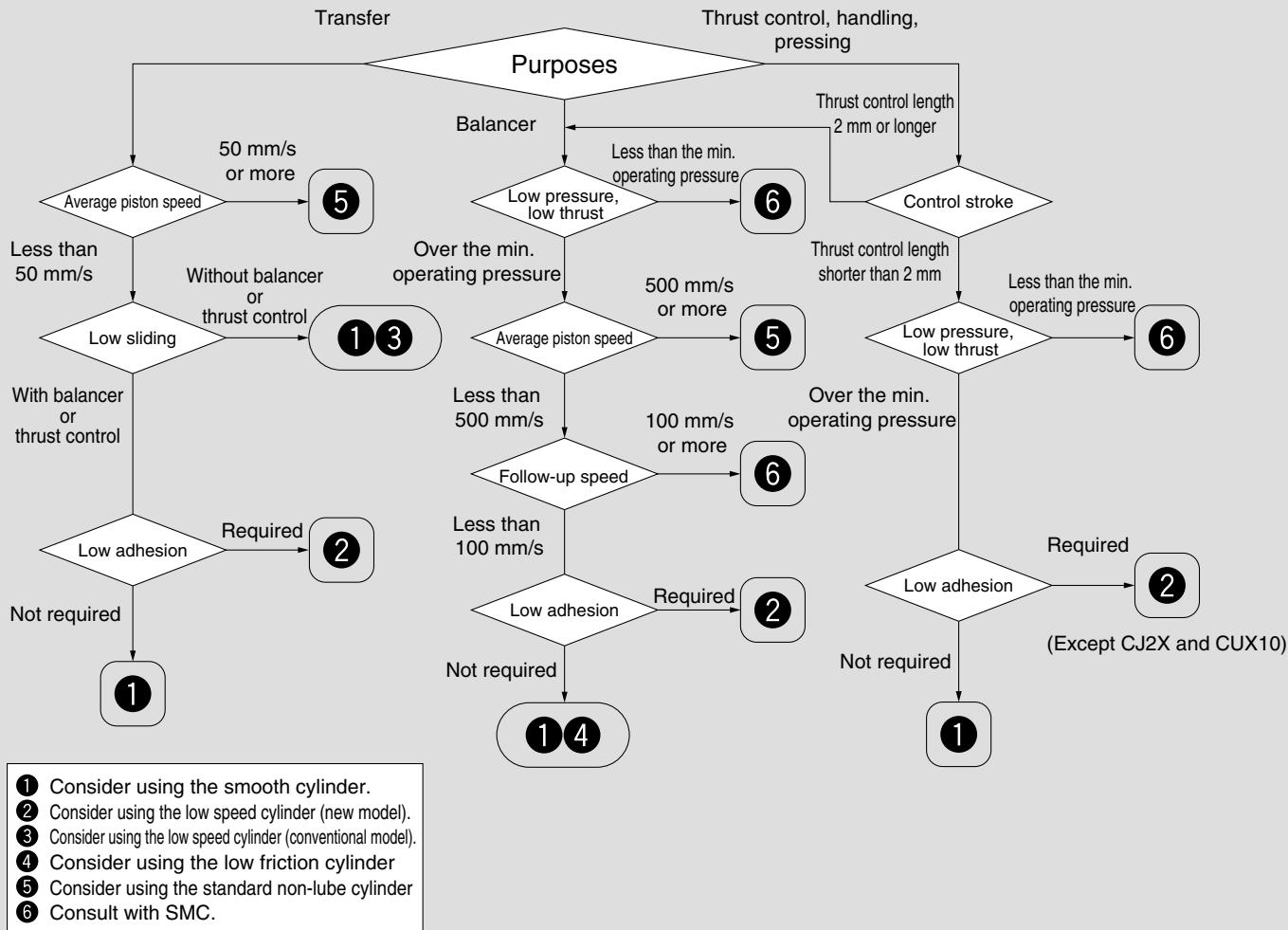
- General applications

Superiority in low speed/low friction

Function	① Smooth cylinder	② Low speed cylinder (New model)	③ Low speed cylinder (Conventional model)	④ Low friction cylinder	⑤ Standard non-lube cylinder
① Low pressure operation	◎	CJ2X, CUX10 : x Others : ◎	△	◎	△
② Low speed operation	○	○	○	△	△
③ Reducing adhesion	○	○	○	△	△
④ Reducing protrusion	○	○	○	△	△
⑤ Pressing force control	◎	CJ2X, CUX10 : x Others : ◎	○	△	△
⑥ Low sliding	○	○	○	○	△

◎: Excellent ○: Good △: Usable x: Handle with caution

Selection Procedures



Glossary explanation

Average piston speed	Cylinder full stroke (length) divided by air pressure operating time.
Adhesive phenomenon	Protrusion or delay occurs when cylinders are not operated for long hours.
Thrust control	Control the pressing force by controlling air pressure in the cylinder.
Balancer	Cylinders move along with the moving workpiece.
Balancer follow-up speed	The speed of an air cylinder moving along with the workpiece at a small stroke.
Calculating thrust controlled.	Calculate the cylinder thrust multiplying piston area by pressure. Piston area varies depending on models and bore sizes.

Applicable Model/Size

Type	① Smooth cylinder	② Low speed cylinder (New model)	③ Low speed cylinder (Conventional model)	④ Low friction cylinder	Representative model
Compact	●	●	●		CQS
	●	●	●		CQ2
Round	●	●	●	*	CM2
	●		●	*	CG1
Tie-rod	●		●	●	MB
				●	CA2
Small		●	●	●	CS1
Free mount		●	●	●	CJ2

● : Standard

* : ① Change this to a smooth cylinder.

Bore size (mm)	① Smooth cylinder			② Low speed cylinder (New model)						
	Compact	Round	Tie-rod	Compact	Round	Small	Free mount			
ø10							● ●			
ø12	●					●				
ø16	●				●		● ●			
ø20	●		● ●		●	●	● ●			
ø25	●		● ●	●		●	● ●			
ø32	●	●	● ●			●	●			
ø40	●	●	● ●	●		●	●			
ø50	●		● ●		●					
ø63	●		● ●		●					
ø80	●		● ●		●					
ø100	●		● ●		●					
Model	CQSY	CQ2Y	CM2Y	CG1Y	CA2Y	CQSX	CQ2X	CM2X	CJ2X	CUX
	P.1048	P.1056	P.1069	P.1083	P.1094	P.1129	P.1136	P.1148	P.1114	P.1124

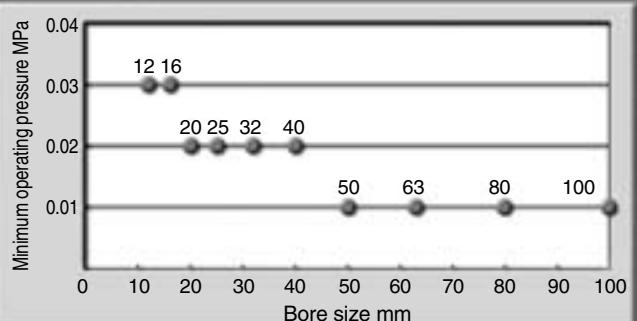
REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ
D-□
-X□
Individual
-X□

Smooth Cylinder

Series CQSY/CQ2Y/CM2Y/CG1Y/CA2Y
 Ø12 to Ø25 Ø32 to Ø100 Ø20 to Ø40 Ø20 to Ø100 Ø40 to Ø100



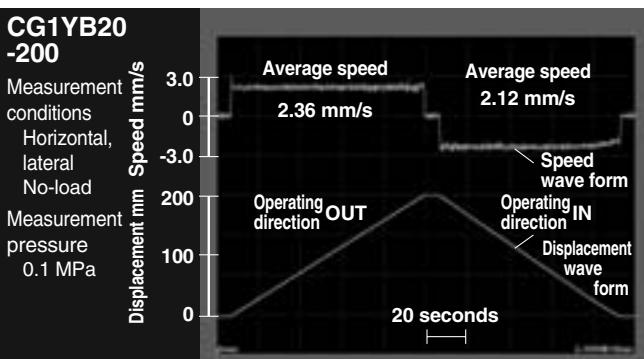
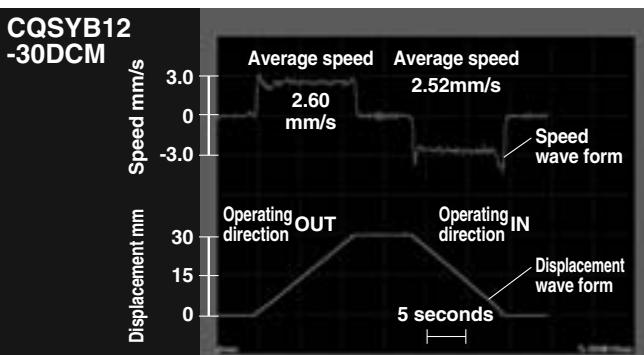
Minimum operating pressure 0.01 to 0.03 MPa



(Measurement based on JIS B8377)

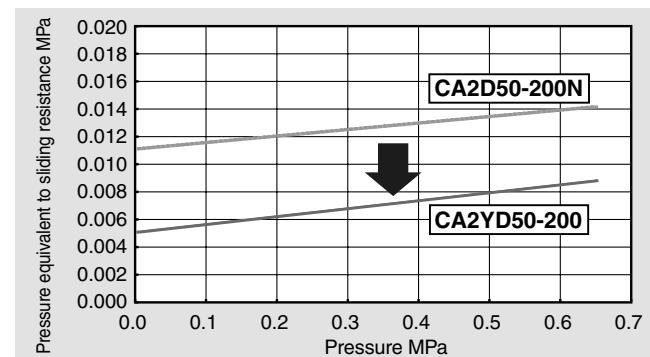
Stable operation possible even at a low speed of 5 mm/s (Measurement based on JIS B 8377)

Smooth operation with less sticking and slipping



Sliding resistance

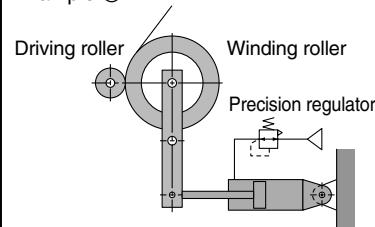
Bi-directional low-friction operation possible.
Pressure can be controlled regardless of its direction.



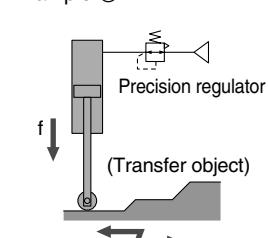
Application Example

Smooth cylinder combined with precision regulator (e.g. Series IR)

Example ①



Example ②



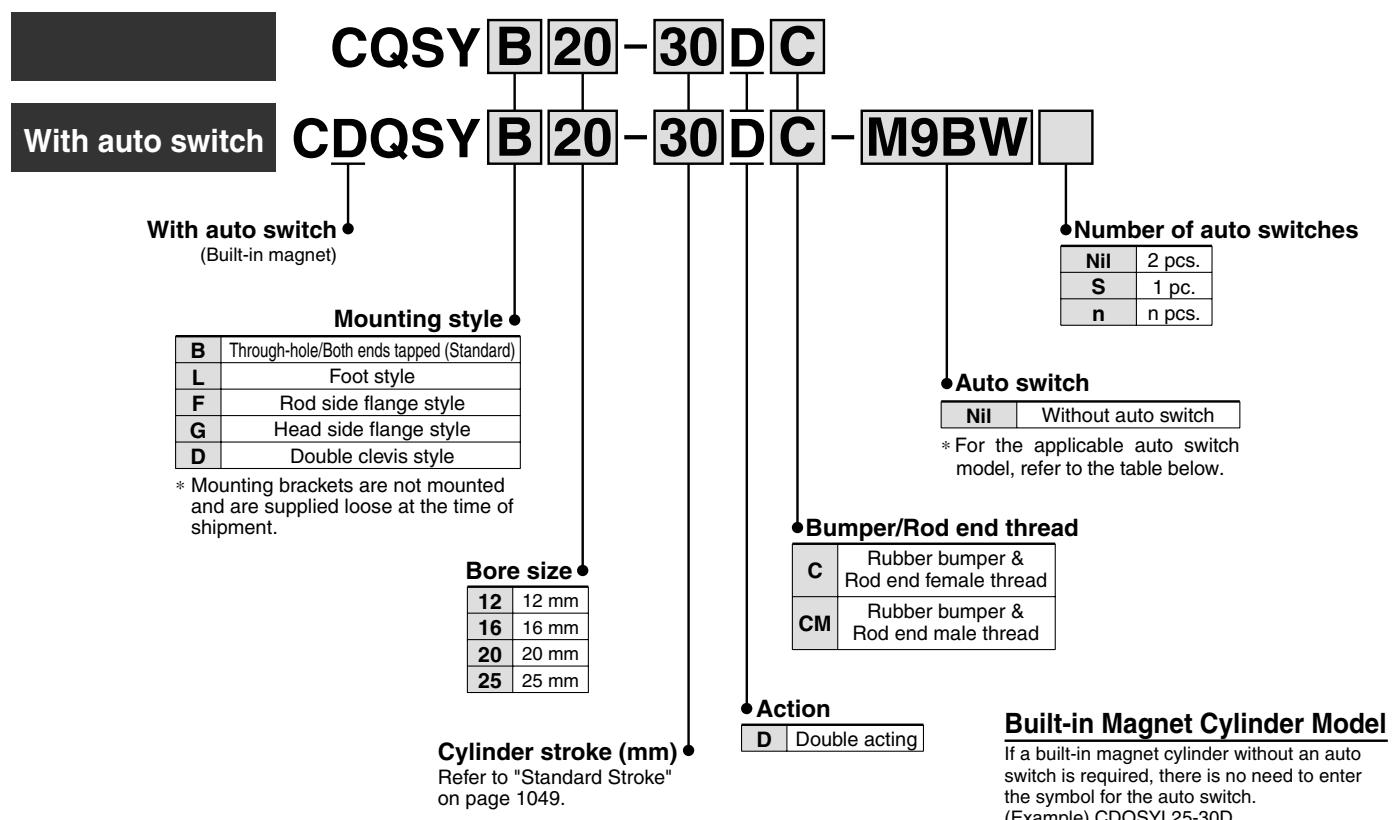
REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ
D-□
-X□
Individual
-X□

Smooth Cylinder

Series CQSY

ø12, ø16, ø20, ø25

How to Order



Applicable Auto Switch

Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire (m)				Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)					
Solid state 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	●	●	●	○	○			
	Diagnostic indication (2-color)			3-wire (NPN)	5 V, 12 V	12 V	—	M9NWV	M9NW	●	●	●	○	○	Relay, PLC		
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○			
				2-wire				M9BWV	M9BW	●	●	●	○	○			
Reed switch	—		Yes	3-wire (Equiv. NPN)	24 V	5 V	—	A96V	A96	●	—	●	—	—	IC circuit		
				2-wire				A93V	A93	●	—	●	—	—			
				—				A90V	A90	●	—	●	—	—			
* Lead wire length symbols: 0.5 m Nil (Example) M9NW 1 m M (Example) M9NWM 3 m L (Example) M9NWL 5 m Z (Example) M9NZW					* ○: Manufactured upon receipt of order.												

- * In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1055.
- * Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.
- * Auto switches are not mounted and are supplied loose at the time of shipment.
- Note) Please also confirm whether the selected auto switch can be mounted at the desired position. Auto switches of models A9□V, M9□V and M9□WV may not be mounted on the side with ports due to the cylinder stroke or the size of the fittings.

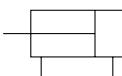


Specifications

Bore size (mm)	12	16	20	25
Type	Pneumatic (Non-lube)			
Action	Double acting, Single rod			
Fluid	Air			
Proof pressure	1.05 MPa			
Maximum operating pressure	0.7 MPa			
Ambient and fluid temperature	Without auto switch -10 to 70°C (with no freezing) With auto switch -10 to 60°C (with no freezing)			
Cushion	Rubber bumper			
Rod end thread	Female thread			
Stroke length tolerance	+1.0 mm Note 0			
Mounting	Through-hole/Both ends tapped common			
Operating piston speed	5 to 500 mm/s			
Allowable leakage rate	0.5 l/min (ANR) or less			

Note) Stroke length tolerance does not include the amount of bumper change.

JIS Symbol



Minimum Operating Pressure

Bore size (mm)	12	16	20	25	Unit: MPa
Minimum operating pressure	0.03		0.02		

Standard Stroke

Bore size (mm)	Standard stroke (mm)
12, 16	5, 10, 15, 20, 25, 30
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
12	CQSY12-PS	Piston seal 1 pc.
16	CQSY16-PS	Rod seal 1 pc.
20	CQSY20-PS	Tube gasket 1 pc.
25	CQSY25-PS	Grease pack (10 g) 1 pc.

When only grease for maintenance is necessary, please order by the following part numbers.

Grease pack part no.: GR-L-005 (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

Theoretical Output

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm²)	Operating pressure (MPa)			Unit: N
				0.3	0.5	0.7	
12	6	IN	84.8	25	42	59	
		OUT	113	34	57	79	
16	8	IN	151	45	75	106	
		OUT	201	60	101	141	
20	10	IN	236	71	118	165	
		OUT	314	94	157	220	
25	12	IN	378	113	189	264	
		OUT	491	147	245	344	

Intermediate Stroke

Method	Installation of spacer on standard stroke body.			
Model no.	Refer to page 1048 for standard model no.			
Standard stroke	Method	Intermediate strokes at 1 mm intervals are available by using spacers with standard stroke cylinders.		
		Bore size (mm)	Stroke range (mm)	
Stroke range		12, 16	1 to 29	
		20, 25	1 to 49	
Example		Part no.: CQSYB25-47DC CQSYB25-50DC with 3 mm width spacer inside. B dimension is 77.5 mm. Calculation: Ø25, B dimension 27.5 mm (without switch) $27.5 (\text{B dimension}) + 50 (\text{st}) = 77.5 (\text{mm})$		

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

-X

Individual

-X

Series CQSY

Mass/Without Auto Switch

Bore size (mm)	Cylinder stroke (mm)										(g)
	5	10	15	20	25	30	35	40	45	50	
12	37	43	50	57	63	70	—	—	—	—	
16	49	57	66	74	83	92	—	—	—	—	
20	75	88	101	114	127	140	153	165	178	191	
25	109	125	140	156	172	188	204	220	236	252	

Mass/With Auto Switch (Built-in magnet)

Bore size (mm)	Cylinder stroke (mm)										(g)
	5	10	15	20	25	30	35	40	45	50	
12	45	51	58	65	71	78	—	—	—	—	
16	59	67	76	85	94	103	—	—	—	—	
20	106	119	132	145	157	170	183	195	208	221	
25	151	167	183	199	215	231	246	262	278	294	

Additional Mass

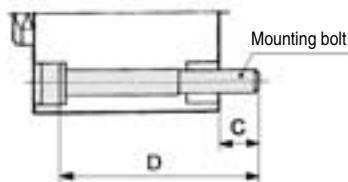
Bore size (mm)	12	16	20	25	(g)
Rod end male thread	Male thread	1.5	3	6	12
	Nut	1	2	4	8
Foot style (Including mounting bolt)	55	65	159	181	
Rod side flange style (Including mounting bolt)	58	70	143	180	
Head side flange style (Including mounting bolt)	56	66	137	171	
Double clevis style (Including pin, snap ring, bolt)	34	40	92	127	

Mounting Bolt for CQSYB without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQSYB is available as an option.

Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 30 L 4 pcs.



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

Cylinder model	C	D	Mounting bolt size
CQSYB12-5DC	6.5	30	M3 x 30L
		35	x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L
CQSYB16-5DC	6.5	30	M3 x 30L
		35	x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L
CQSYB20-5DC	6.5	30	M5 x 30L
		35	x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L

Cylinder model	C	D	Mounting bolt size
CQSYB20-25DC	6.5	50	M5 x 50L
		55	x 55L
		60	x 60L
		65	x 65L
		70	x 70L
		75	x 75L
CQSYB25-5DC	8.5	35	M5 x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L
		60	x 60L
CQSYB25-20DC	8.5	65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
		85	x 85L
		90	x 90L

Material: Chromium molybdenum steel

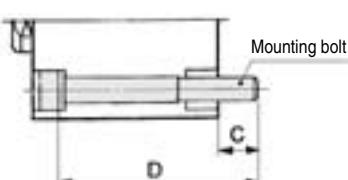
Surface material: Nickel plated

Mounting Bolt for CDQSYB with Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQSYB is available as an option.

Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 35 L 4 pcs.



Note) When mounting a cylinder with through-hole, be sure to use the attached plain washer.

Cylinder model	C	D	Mounting bolt size
CDQSYB12-5DC	6.5	35	M3 x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L
		60	x 60L
CDQSYB16-5DC	6.5	35	M3 x 35L
		40	x 40L
		45	x 45L
		50	x 50L
		55	x 55L
		60	x 60L
CDQSYB20-5DC	6.5	40	M5 x 40L
		45	x 45L
		50	x 50L
		55	x 55L
		60	x 60L
		65	x 65L
CDQSYB20-25DC	6.5	60	M5 x 60L
		65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
		85	x 85L
CDQSYB25-5DC	8.5	45	M5 x 45L
		50	x 50L
		55	x 55L
		60	x 60L
		65	x 65L
		70	x 70L
CDQSYB25-20DC	8.5	75	x 75L
		80	x 80L
		85	x 85L
		90	x 90L
		95	x 95L
		100	x 100L

Cylinder model	C	D	Mounting bolt size
CDQSYB20-25DC	6.5	60	M5 x 60L
		65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
		85	x 85L
CDQSYB25-5DC	8.5	45	M5 x 45L
		50	x 50L
		55	x 55L
		60	x 60L
		65	x 65L
		70	x 70L
CDQSYB25-20DC	8.5	75	x 75L
		80	x 80L
		85	x 85L
		90	x 90L
		95	x 95L
		100	x 100L

Material: Chromium molybdenum steel

Surface material: Nickel plated

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

**Individual
-X□**

Series CQSY

Dimensions/ø12 to ø25

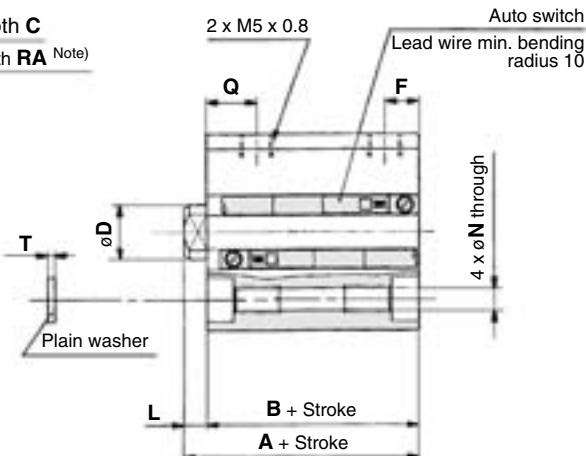
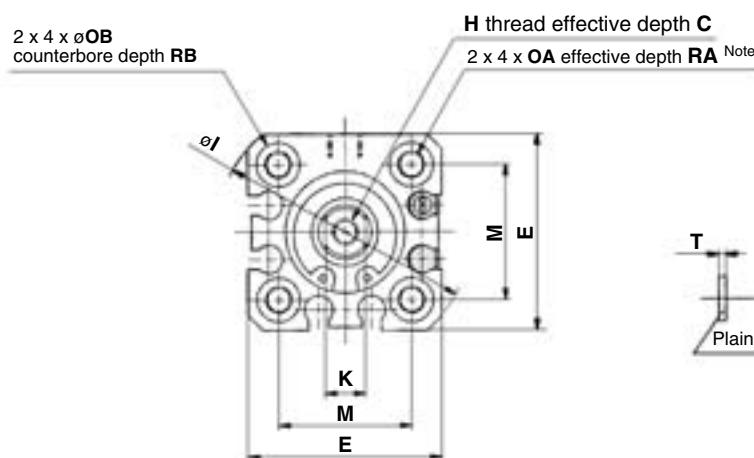
Basic style

(Through-hole/Both ends tapped):
CQSYB/CDQSYB

ø12

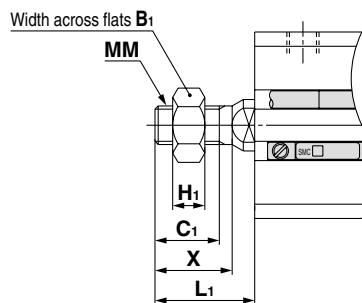
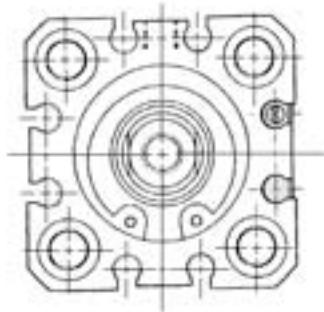


ø16



ø20, ø25

Rod end male thread



Rod End Male Thread

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

Basic Style

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	I	K	L	M	N	OA	OB	Q	RA	RB	T
		A	B	A	B																
12	5 to 30	25.5	22	30.5	27	6	6	25	5	M3 x 0.5	32	5	3.5	15.5	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
16	5 to 30	25.5	22	30.5	27	8	8	29	5	M4 x 0.7	38	6	3.5	20	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
20	5 to 50	29	24.5	39	34.5	7	10	36	5.5	M5 x 0.8	47	8	4.5	25.5	5.4	M6 x 1.0	9	9	10	7	1
25	5 to 50	32.5	27.5	42.5	37.5	12	12	40	5.5	M6 x 1.0	52	10	5	28	5.4	M6 x 1.0	9	11	10	7	1

Note) Threaded through hole is used for the standard of ø20 with 5 to 10 mm strokes and ø25 with a 5 mm stroke.

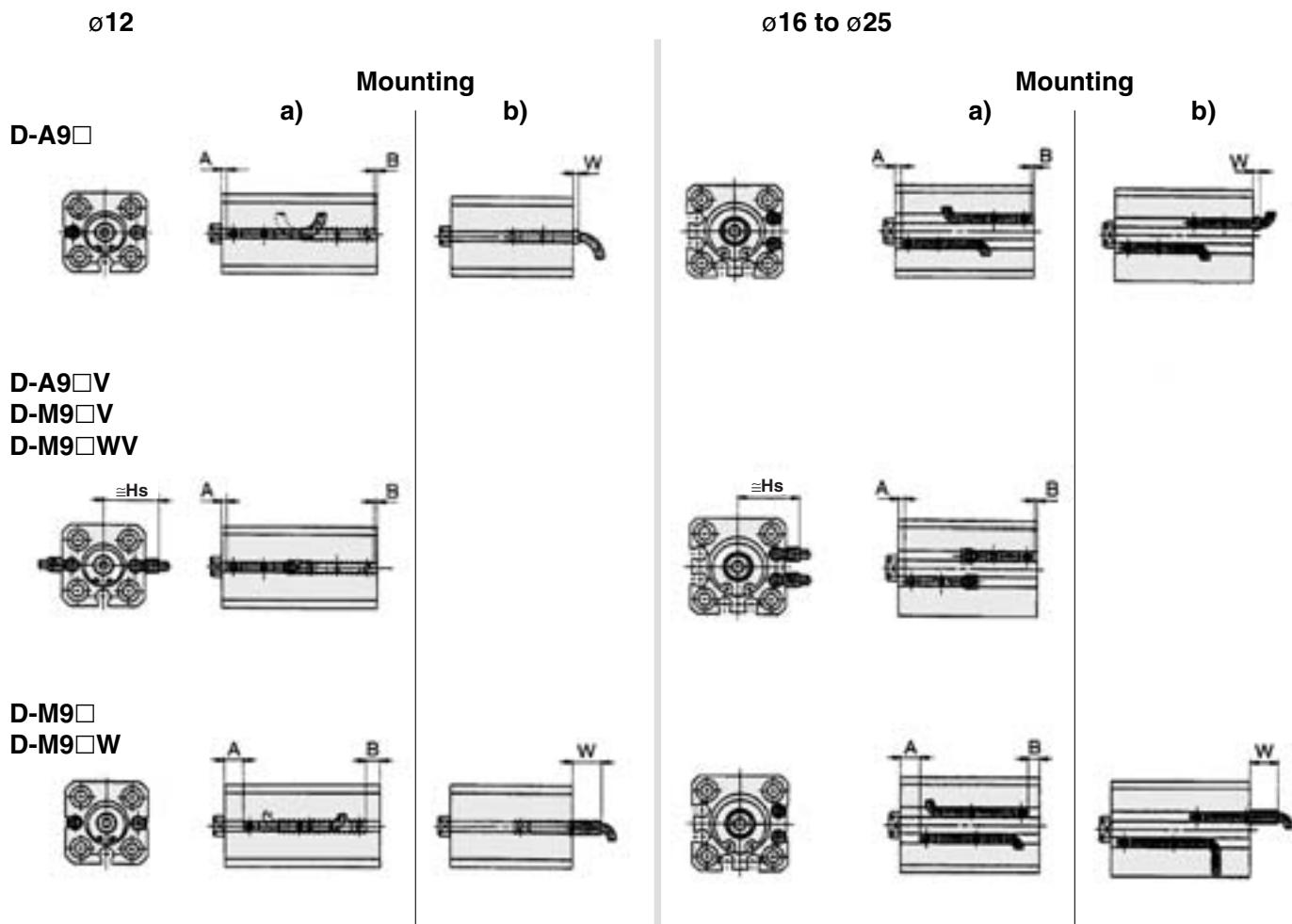
Series CQSY

Minimum Auto Switch Mounting Stroke

Number of auto switches	D-M9□V	D-A9□V	D-A9□ D-M9□WV	D-M9□ D-M9□W	(mm)
1 pc.	5	5	10 Note)	15 Note)	
2 pcs.	5	10	10	15 Note)	

Note) Consult with SMC for shorter stroke length other than indicated in the table.

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height



Auto Switch Proper Mounting Position

Auto switch model Bore size	D-A9□			D-A9□V			D-M9□/M9□W			D-M9□V/M9□WV		
	A	B	W	A	B	Hs	A	B	W	A	B	Hs
12	1.5	0	1.5 [4] [5]	1.5	0	17	5.5	3.5	5.5	5.5	3.5	19.5
16	2	0	2 [4.5]	2	0	19	6	4	6	6	4	21.5
20	6	3.5	-1.5 [1]	6	3.5	22.5	10	7.5	2.5	10	7.5	25
25	7	5.5	-3.5 [-1]	7	5.5	24.5	11	9.5	0.5	11	9.5	27

Note 1) []: Denotes the values of D-A93.

Note 2) Adjust the auto switch after confirming the operating conditions in the actual setting.

Note 3) The product is shipped out of the factory in installation state "a". To change the electrical entry direction of the switch on the head, refer to installation state "b".

Note 4) Negative figures for W indicate an auto switch is mounted inward from the edge of the cylinder body.

Operating Range

Auto switch model	(mm)			
	Bore size (mm)	12	16	20
D-A9□/A9□V	6	7.5	10	10
D-M9□/M9□V	3	3.5	5.5	4.5
D-M9□W/M9□WV				

* Since this is a guideline including hysteresis, not meant to be guaranteed.

(assuming approximately $\pm 30\%$ dispersion.)

There may be the case it will vary substantially depending on an ambient environment.

Besides the models listed in How to Order, the following auto switches are applicable.

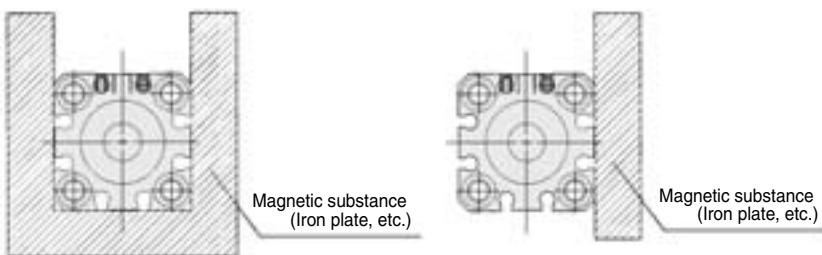
* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.

* Normally closed (NC = b contact), solid state auto switch (D-F9G/F9H type) are also available. For details, refer to page 1746.

⚠ Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

- If the cylinder is used in an application in which a magnetic material is placed in close contact around the cylinder as shown in the graph on the right (including cases in which even one of the sides is in close contact) the operation of auto switches could become unstable. Therefore, please check with SMC for this type of application.



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

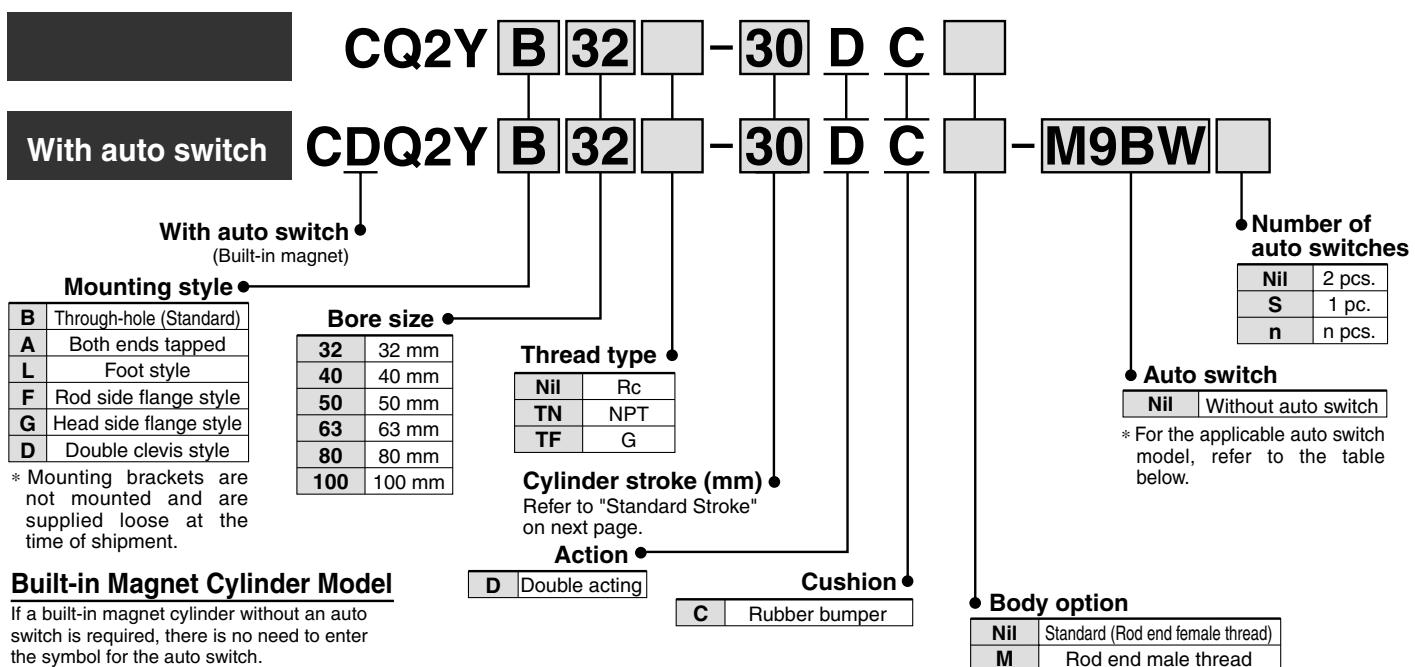
-X□

Smooth Cylinder

Series CQ2Y

ø32, ø40, ø50, ø63, ø80, ø100

How to Order



Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDQ2YL40-50D

Applicable Auto Switch

Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire (m)					Pre-wired connector	Applicable load		
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)				
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit	
				3-wire (PNP)		12 V		M9PV	M9P	●	●	●	○	—	○		
	Diagnostic indication (2-color)	Grommet		2-wire		12 V		M9BV	M9B	●	●	●	○	—	○	Relay, PLC	
				3-wire (NPN)		5 V, 12 V		J79C	—	●	—	●	●	●	—		
	With diagnostic output (2-color)	Grommet		3-wire (PNP)		12 V		M9NWV	M9NW	●	●	●	○	—	○	IC circuit	
				2-wire		12 V		M9PWV	M9PW	●	●	●	○	—	○		
	Magnetic field resistant (2-color)	Grommet		4-wire		5 V, 12 V		M9BWV	M9BW	●	●	●	○	—	○	IC circuit	
				2-wire (Non-polar)		—		F79F	F79F	●	—	●	○	—	○		
	Diagnostic indication (2-color)	Grommet		3-wire (Equiv. NPN)		—		P4DW	P4DW	—	—	●	●	—	○	—	
				No		—		A96V	A96	●	—	●	—	—	—		
Reed switch	—	Grommet		3-wire (Equiv. NPN)		5 V		A72	A72H	●	—	●	—	—	—	Relay, PLC	
				No		—		A93V	A93	●	—	●	—	—	—		
				Yes		12 V		A90V	A90	●	—	●	—	—	—	IC circuit	
				No		5 V, 12 V		A73C	—	●	—	●	●	●	—		
	Diagnostic indication (2-color)	Grommet		2-wire	24 V	100 V or less		A80C	—	●	—	●	●	●	—	IC circuit	
				5 V, 12 V		24 V or less		A79W	—	●	—	●	●	●	—		

* Lead wire length symbols: 0.5 m Nil (Example) M9NW

* ○: Manufactured upon receipt of order.

1 m M (Example) M9NWM

* D-P4DWL is available for ø40 to ø100.

3 m L (Example) M9NWL

* Only D-P4DW is assembled at the time of shipment.

5 m Z (Example) M9NZW

None N (Example) J79CN

* In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1068.

* Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.

* When D-A9□(V)/M9□(V)/M9□W(V) types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 1067 for details.

* Auto switches are not mounted and are supplied loose at the time of shipment.

Specifications

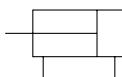


Bore size (mm)	32	40	50	63	80	100
Type	Pneumatic (Non-lube)					
Fluid	Air					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Ambient and fluid temperature	Without auto switch -10 to 70°C (with no freezing) With auto switch -10 to 60°C (with no freezing)					
Cushion	Rubber bumper (Standard)					
Rod end thread	Female thread					
Stroke length tolerance	^{+1.0 mm Note} ₀					
Mounting	Through-hole					
Operating piston speed range	5 to 500 mm/s					
Allowable leakage rate	0.5 ℓ/min (ANR) or less					

Note) Stroke length tolerance does not include the amount of bumper change.

Minimum Operating Pressure

JIS Symbol



Unit: MPa

Bore size (mm)	32	40	50	63	80	100
Minimum operating pressure	0.02				0.01	

Standard Stroke

Bore size (mm)	Standard stroke (mm)
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
32	CQ2Y32-PS	
40	CQ2Y40-PS	Piston seal 1 pc.
50	CQ2Y50-PS	Rod seal 1 pc.
63	CQ2Y63-PS	Gasket 1 pc.
80	CQ2Y80-PS	Grease pack (10 g) 1 pc.
100	CQ2Y100-PS	

When only grease for maintenance is necessary, please order by the following part numbers.

Grease pack part no.: GR-L-005 (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

Theoretical Output

Bore size (mm)	Operating direction	Operating pressure (MPa)			Unit: N
		0.3	0.5	0.7	
32	IN	181	302	422	
	OUT	241	402	563	
40	IN	317	528	739	
	OUT	377	628	880	
50	IN	495	825	1155	
	OUT	589	982	1374	
63	IN	841	1402	1962	
	OUT	935	1559	2182	
80	IN	1361	2268	3175	
	OUT	1508	2513	3519	
100	IN	2144	3574	5003	
	OUT	2356	3927	5498	

Intermediate Stroke

Method	Installation of spacer on standard stroke body.		
Model no.	Refer to page 1056 for standard model no.		
Standard stroke	Method	Intermediate strokes at 1 mm intervals are available by using spacers with standard stroke cylinders.	
		Bore size (mm)	Stroke range (mm)
Example	Stroke range	32 to 100	1 to 99
		Part no.: CQ2YB50-57DC CQ2YB50-75DC with 18 mm width spacer inside. B dimension is 125.5 mm. Calculation: ø50, B dimension 50.5 mm (without switch) 50.5 (B dimension) + 75 (st) = 125.5 (mm)	

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

-X

Individual

-X

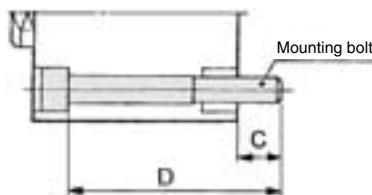
Series CQ2Y

Mounting Bolt

Mounting method: Mounting bolt for through-hole mounting style of CQ2YB is available as an option.

Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 25L 2 pcs.



Mounting Bolt for CQ2YB without Auto Switch

Cylinder model	C	D	Mounting bolt size
CQ2YB32- 5DC	9	40	M5 x 40L
		45	x 45L
		50	x 50L
		55	x 55L
		60	x 60L
		65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
		85	x 85L
CQ2YB40- 5DC	7.5	120	x 120L
		125	x 125L
		130	x 130L
		135	x 135L
		140	x 140L
		145	x 145L
		150	x 150L
		155	x 155L
		160	x 160L
		165	x 165L
CQ2YB50- 10DC	12.5	55	M6 x 55L
		60	x 60L
		65	x 65L
		70	x 70L
		75	x 75L
		80	x 80L
		85	x 85L
		90	x 90L
		95	x 95L
		100	x 100L
CQ2YB63- 10DC	14.5	105	x 105L
		110	x 110L
		115	x 115L
		120	x 120L
		125	x 125L
		130	x 130L
		135	x 135L
		140	x 140L
		145	x 145L
		150	x 150L
CQ2YB80- 10DC	15	155	x 155L
		160	x 160L
		165	x 165L
		170	x 170L
		175	x 175L
		180	x 180L
		185	x 185L
		190	x 190L
		195	x 195L
		200	x 200L
CQ2YB100- 10DC	15.5	205	x 205L
		210	x 210L
		215	x 215L
		220	x 220L
		225	x 225L
		230	x 230L
		235	x 235L
		240	x 240L
		245	x 245L
		250	x 250L

Material: Chromium molybdenum steel
Surface material: Nickel plated

Mounting Bolt for CDQ2YB with Auto Switch (Built-in Magnet)

Cylinder model	C	D	Mounting bolt size
CDQ2YB32- 5	9	50	M5 x 50L
- 10		55	x 55L
- 15		60	x 60L
- 20		65	x 65L
- 25		70	x 70L
- 30		75	x 75L
- 35		80	x 80L
- 40		85	x 85L
- 45		90	x 90L
- 50		95	x 95L
- 75		120	x 120L
-100		145	x 145L
CDQ2YB40- 5	7.5	55	M5 x 55L
- 10		60	x 60L
- 15		65	x 65L
- 20		70	x 70L
- 25		75	x 75L
- 30		80	x 80L
- 35		85	x 85L
- 40		90	x 90L
- 45		95	x 95L
- 50		100	x 100L
- 75		125	x 125L
-100		150	x 150L
CDQ2YB50- 10	12.5	65	M6 x 65L
- 15		70	x 70L
- 20		75	x 75L
- 25		80	x 80L
- 30		85	x 85L
- 35		90	x 90L
- 40		95	x 95L
- 45		100	x 100L
- 50		105	x 105L
- 75		130	x 130L
-100		155	x 155L

Cylinder model	C	D	Mounting bolt size
CDQ2YB63- 10	14.5	70	M8 x 70L
- 15		75	x 75L
- 20		80	x 80L
- 25		85	x 85L
- 30		90	x 90L
- 35		95	x 95L
- 40		100	x 100L
- 45		105	x 105L
- 50		110	x 110L
- 75		135	x 135L
-100		160	x 160L
CDQ2YB80- 10		75	M10 x 75L
- 15	15	80	x 80L
- 20		85	x 85L
- 25		90	x 90L
- 30		95	x 95L
- 35		100	x 100L
- 40		105	x 105L
- 45		110	x 110L
- 50		115	x 115L
- 75		140	x 140L
-100		165	x 165L
CDQ2YB100- 10	15.5	85	M10 x 85L
- 15		90	x 90L
- 20		95	x 95L
- 25		100	x 100L
- 30		105	x 105L
- 35		110	x 110L
- 40		115	x 115L
- 45		120	x 120L
- 50		125	x 125L
- 75		150	x 150L
-100		175	x 175L

Material: Chromium molybdenum steel
Surface material: Nickel plated

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CQ2Y

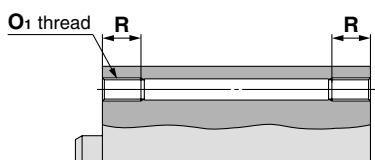
$\varnothing 32$ to $\varnothing 50$

(Types with auto switch and without auto switch only differ in the A and B dimensions. Please refer to the table below.)

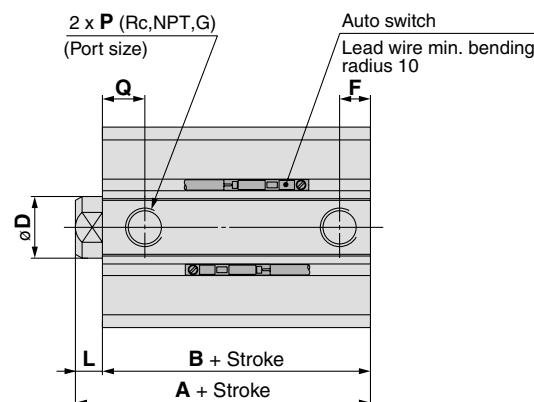
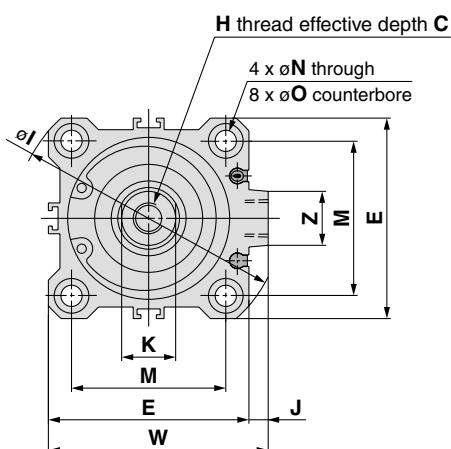
Through-hole: CQ2YB/CDQ2YB

Both ends tapped style: CQ2YA/CDQ2YA

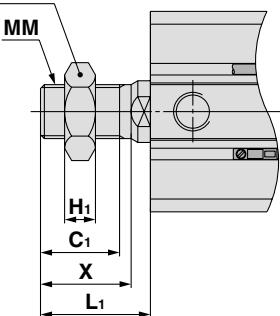
CDQ2YA



Both Ends Tapped (mm)		
Bore size (mm)	O1	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14



Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B1	C1	H1	L1	MM	X
32	22	20.5	8	28.5	M14 x 1.5	23.5
40	22	20.5	8	28.5	M14 x 1.5	23.5
50	27	26	11	33.5	M18 x 1.5	28.5

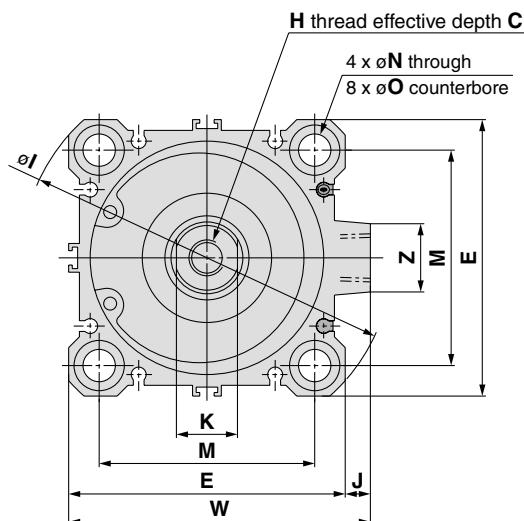
Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	W	Z
		A	B	A	B																
		5 to 50	40	33																	
32	75, 100	50	43	50	43	13	16	45	7.5	M8 x 1.25	60	4.5	14	7	34	5.5	9 depth 7	1/8	10.5	49.5	14
	5 to 50	46.5	39.5	56.5	49.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5					
40	75, 100	56.5	49.5	56.5	49.5	13	16	52	8	M8 x 1.25	69	5	14	7	40	5.5	9 depth 7	1/8	11	57	14
	10 to 50	48.5	40.5	58.5	50.5	15	20	64	10.5	M10 x 1.5	86	7	17	8	50	6.6					
50	75, 100	58.5	50.5	58.5	50.5	15	20	64	10.5	M10 x 1.5	86	7	17	8	50	6.6	$\frac{11}{8}$ depth 8	1/4	10.5	71	19
	5 to 50	48.5	40.5	58.5	50.5	15	20	64	10.5	M10 x 1.5	86	7	17	8	50	6.6					

Series CQ2Y

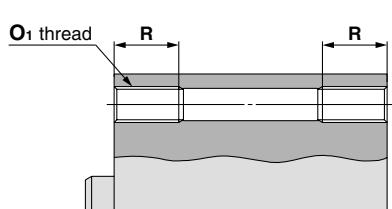
$\varnothing 63$ to $\varnothing 100$

(Types with auto switch and without auto switch only differ in the A and B dimensions. Please refer to the table below.)

Through-hole: CQ2YB/CDQ2YB

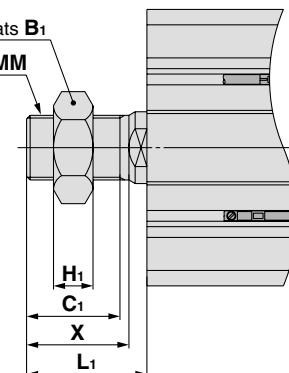


Both ends tapped style: CQ2YA/CDQ2YA



Both Ends Tapped (mm)		
Bore size (mm)	O ₁	R
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22

Rod end male thread



Rod End Male Thread (mm)

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
63	27	26	11	33.5	M18 x 1.5	28.5
80	32	32.5	13	43.5	M22 x 1.5	35.5
100	41	32.5	16	43.5	M26 x 1.5	35.5

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	W	Z
		A	B	A	B																
63	10 to 50	54	46	64	56	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14 depth 10.5	1/4	15	84	19
	75, 100	64	56																		
80	10 to 50	63.5	53.5	73.5	63.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5 depth 13.5	3/8	16	104	26
	75, 100	73.5	63.5																		
100	10 to 50	75	63	85	73	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	123.5	26
	75, 100	85	73																		

Series CQ2Y

Mass/Without Auto Switch

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
32	142	163	184	204	225	246	267	287	308	329	482	587
40	224	247	270	293	316	339	362	386	409	432	616	736
50	—	400	436	472	508	545	581	617	653	690	982	1170
63	—	589	630	671	712	753	794	835	876	916	1264	1475
80	—	1079	1147	1215	1282	1350	1418	1486	1554	1622	2194	2528
100	—	1863	1953	2044	2135	2226	2316	2407	2498	2589	3393	3853

Standard stroke

Calculation: (Example) **CQ2YD32-20DCM**

- Basic mass: CQ2YB32-20DC 204 g
- Additional mass: Both ends tapped style..... 6 g
Rod end male thread..... 43 g
Double clevis style 151 g

404 g

Mass/With Auto Switch (Built-in magnet)

(g)

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
32	201	222	243	263	284	305	326	346	367	388	493	598
40	300	323	347	370	393	416	439	462	485	508	628	748
50	—	518	554	590	626	663	699	735	771	808	996	1184
63	—	748	788	829	870	911	952	993	1034	1075	1286	1497
80	—	1340	1408	1476	1543	1611	1679	1747	1815	1883	2217	2552
100	—	2242	2333	2424	2514	2605	2696	2787	2877	2968	3428	3888

Additional Mass

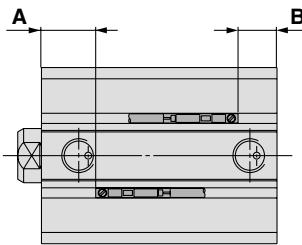
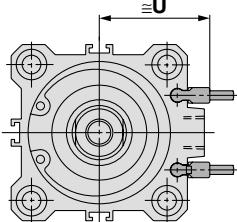
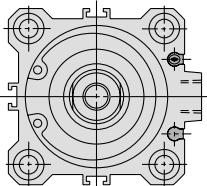
(g)

Bore size (mm)		32	40	50	63	80	100
Both ends tapped style		6	6	6	19	45	45
Rod end male thread	Male thread	26	27	53	53	120	175
	Nut	17	17	32	32	49	116
Foot style (Including mounting bolt)		143	155	243	324	696	1062
Rod side flange style (Including mounting bolt)		180	214	373	559	1056	1365
Head side flange style (Including mounting bolt)		165	198	348	534	1017	1309
Double clevis style (Including pin, retaining ring, bolt)		151	196	393	554	1109	1887

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height **$\phi 32$ to $\phi 100$**

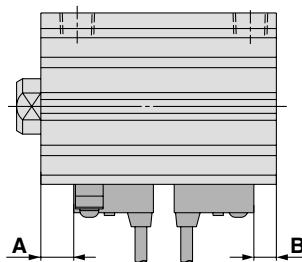
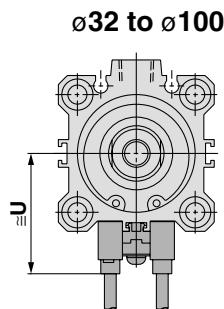
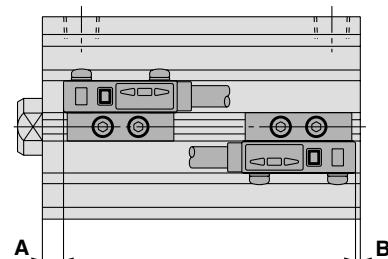
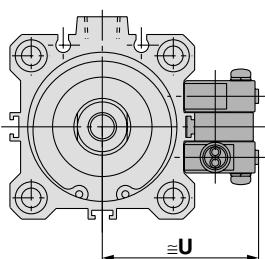
D-A9□
D-M9□
D-M9□W

D-A9□V
D-M9□V
D-M9□WV



D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-J79W
D-F79F

D-F7NTL
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-J7□V

**D-P4DWL** **$\phi 40$ to $\phi 100$** **Auto Switch Proper Mounting Position**

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV		D-F7NTL		D-A79W		D-P4DWL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	14	9	18	13	15	10	15.5	10.5	20.5	15.5	12.5	7.5	—	—
40	17.5	12	21.5	16	18.5	13	19	13.5	24	18.5	16	10.5	14.5	9
50	15	15.5	19	19.5	16	16.5	16.5	17	21.5	22	13.5	14	12	12.5
63	17.5	18.5	21.5	22.5	18.5	19.5	19	20	24	25	16	17	14.5	15.5
80	20.5	23	24.5	27	21.5	24	22	24.5	27	29.5	19	21.5	17.5	20
100	23.5	29.5	27.5	33.5	24.5	30.5	25	31	30	36	22	28	20.5	26.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

Auto switch model	D-A9□V		D-M9□V D-M9□WV		D-A7□ D-A80		D-A7□H D-A80H D-F7□ D-J79		D-F7□W D-J79W D-F79F D-F7NTL		D-A73C D-A80C		D-F7□V D-F7□WV		D-J79C		D-A79W		D-P4DWL	
	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
32	27	29	31.5	32.5	38.5	35	38	34	—	—	—	—	—	—	—	—	—	—	—	
40	30.5	32.5	35	36	42	38.5	41.5	37.5	44	—	—	—	—	—	—	—	—	—	—	
50	36.5	38.5	41	42	48	44.5	47.5	43.5	50	—	—	—	—	—	—	—	—	—	—	
63	40	42	47.5	48.5	54.5	51	54	50	56.5	—	—	—	—	—	—	—	—	—	—	
80	50	52	57.5	58.5	64.5	61	64	60	66.5	—	—	—	—	—	—	—	—	—	—	
100	60	62	67.5	68.5	74.5	71	74	70	76.5	—	—	—	—	—	—	—	—	—	—	

Series CQ2Y

Minimum Auto Switch Mounting Stroke

(mm)								
Number of auto switches	D-M9□V D-F7□V D-J79C	D-A9□V D-A7□ D-A80 D-A73C D-A80C	D-A9□	D-M9□WV D-F7□WV	D-M9□ D-M9□W D-A7□H D-A80H D-F7□ D-J79	D-A79W	D-F7□W D-J79W D-F79F D-F7NTL	D-P4DWL
1 pc.	5	5	10	10	15	15	20	15
2 pcs.	5	10	10	15	15	20	20	15

Operating Range

Auto switch model	Bore size (mm)					
	32	40	50	63	80	100
D-A9□(V)	9.5	9.5	9.5	11.5	9	11.5
D-M9□(V) D-M9□W(V)	6	5.5	6.5	7.5	7.5	8.5
D-A7□(H)(C) D-A80□(H)(C)	12	11	10	12	12	13
D-A79W	13	14	14	16	15	17
D-F7□(V) D-J79(C) D-F7□W(V) D-F7NTL D-F79F	6	6	6	6.5	6.5	7
D-P4DW	—	5	5	5	5	5.5

* Since this is a guideline including hysteresis, not meant to be guaranteed.

(assuming approximately ±30% dispersion.)

There may be the case it will vary substantially depending on an ambient environment.

* Auto switch mounting brackets BQ2-012 are not used for sizes over ø32 of D-A9□(V)/M9□(V)/M9□W(V) types. The above values indicate the operating range when mounted with the conventional auto switch installation groove.

Auto Switch Mounting Bracket/Part No.

Auto switch mounting surface	Bore size (mm)	
	32, 40, 50	63, 80, 100
Auto switch model	Port side	Port side
D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV	No auto switch mounting bracket necessary.	<p>①BQ-2 ②BQ2-012 Two types of auto switch mounting bracket are used as a set.</p>
Auto switch mounting surface	Auto switch mounting surface	Auto switch mounting surface
Port side	A, B, C	Port, A, B, C side

Note 1) For CDQ2Y□32 to 50, when mounting compact auto switches on one of the three sides other than the port side (above A, B, C side) in the figure above, a separate auto switch mounting bracket is necessary as shown in the table above, so please order one separately from the cylinder.

(The same is true when mounting compact auto switches with the auto switch mounting rail, not using the compact auto switch mounting groove, for CDQ2Y□63 to 100.)

Example

CDQ2YB32-100DM-M9BW.....1 unit

BQ-2.....2 pcs.

BQ2-012.....2 pcs.

Note 2) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment.

Auto switch model	Bore size (mm)	
	32	40 to 100
D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F79F/F7NTL	BQ-2	
D-P4DWL	—	BQP1-050

Note) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment. However, ø40 to ø100 D-P4DWL are assembled at the time of shipment.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□**Auto Switch Mounting Bracket Mass**

Mounting bracket part no.	Applicable cylinder bore size	Mass (g)
BQ-2	ø32 to ø100	1.5
BQP1-050	ø40 to ø100	16

Series CQ2Y

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.
For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features	Applicable bore size
Reed	D-A73	Grommet (Perpendicular)	—	ø32 to ø100
	D-A80		Without indicator light	
	D-A73H, A76H	Grommet (In-line)	—	
	D-A80H		Without indicator light	
Solid state	D-F7NV, F7PV, F7BV	Grommet (Perpendicular)	—	ø32 to ø100
	D-F7NWV, F7BWV		Diagnostic indication (2-color indication)	
	D-F79, F7P, J79	Grommet (In-line)	—	
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)	
	D-F7NTL		With timer	ø40 to ø100
	D-P5DWL		Magnetic field resistant (2-color indication)	

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 and 1785.

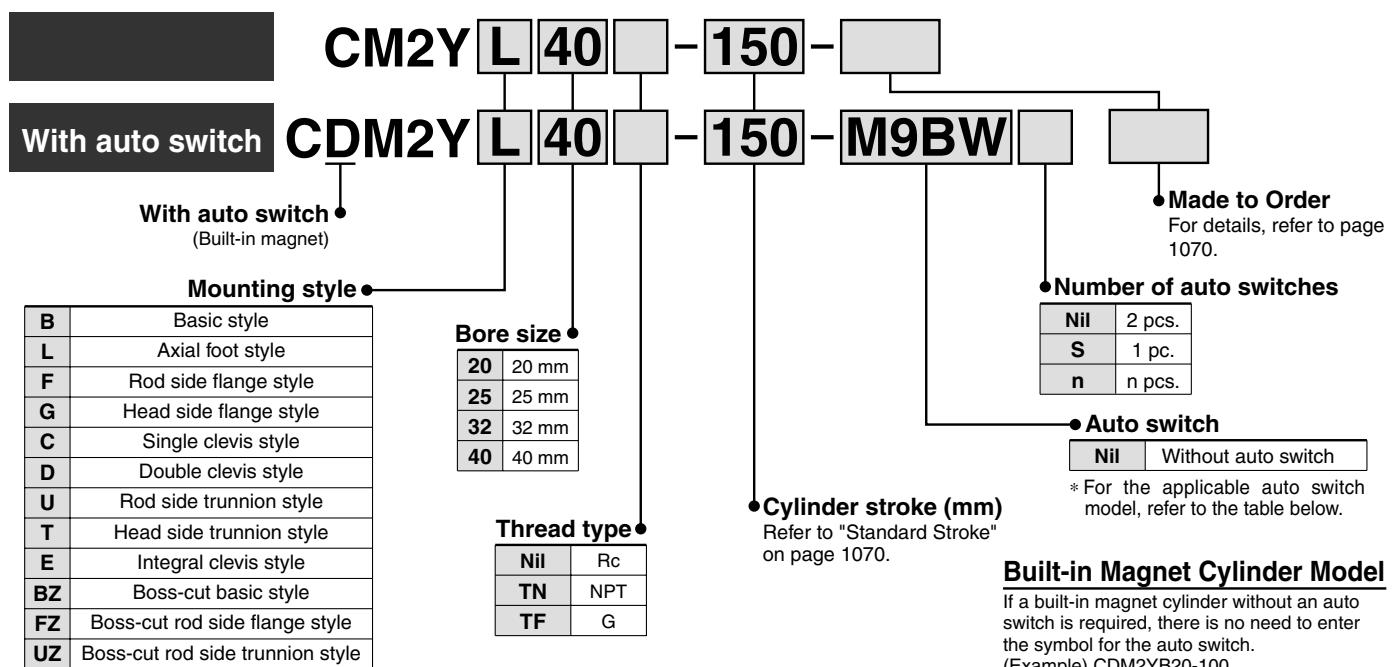
* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1746.

Smooth Cylinder

Series CM2Y

ø20, ø25, ø32, ø40

How to Order



Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDM2YB20-100

Applicable Auto Switch

Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire (m)					Pre-wired connector	Applicable load				
					DC	AC		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	●	●	●	○	○	○	IC circuit				
				3-wire (PNP)				●	●	●	○	—	○	—				
				2-wire				●	●	●	○	—	○	—				
	Connector	Terminal conduit		3-wire (NPN)	24 V	12 V		—	—	—	—	●	—	—				
				2-wire				—	—	—	—	●	—	—				
				3-wire (PNP)				—	—	—	—	○	—	IC circuit				
	Diagnostic indication (2-color)	Grommet		2-wire				●	●	●	○	—	○	—				
				3-wire (NPN)				—	—	—	—	○	—	IC circuit				
				3-wire (PNP)				●	●	●	○	—	○	—				
	With diagnostic output (2-color)			2-wire				—	—	—	—	○	—	—				
				4-wire (NPN)				—	—	—	—	○	—	IC circuit				
Reed switch	—	Grommet	Yes	3-wire (Equiv. NPN)	24 V	5 V	—	●	—	●	—	—	—	IC circuit				
				100 V				●	—	●	—	—	—	—				
				100 V or less				●	—	●	—	—	—	IC circuit				
				100 V, 200 V				●	—	●	●	—	—	Relay, PLC				
		Connector		200 V or less				●	—	●	—	—	—	—				
				—				●	—	●	●	●	—	IC circuit				
		Terminal conduit		24 V or less				●	—	●	●	●	—	PLC				
				—				●	—	—	—	●	—	—				
		DIN terminal		A33A				—	—	—	—	●	—	Relay, PLC				
				A34A				—	—	—	—	●	—	—				
				100 V, 200 V				●	—	—	—	●	—	—				
				—				●	—	—	—	●	—	—				
				B59W				●	—	●	—	—	—	—				

* Lead wire length symbols: 0.5 m Nil (Example) M9NW * ○: Manufactured upon receipt of order.

1 m M (Example) M9NWM * D-A9□V□/M9□V□/M9□WV□/M9□A(V)L types cannot be mounted.

3 m L (Example) M9NWL * Do not add the suffix (N) indicating "no lead wire" to the part numbers of models D-A3□A, A44A, G39A and K39A.

5 m Z (Example) M9NWL

None N (Example) H7CN

* In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1082.

* Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.

* D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)

* D-C7□□/C80□/H7□□ auto switches are assembled at the time of shipment.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

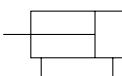
Individual

-X□

Series CM2Y



JIS Symbol
Double acting: Single rod



Integral clevis



Made to Order

(For details, refer to pages 1836, 1851 to 1954.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC3	Special port location
—XC6	Made of stainless steel
—XC9	Adjustable stroke cylinder/adjustable retraction type
—XC13	Auto switch rail mounting style
—XC20	Head cover axial port

Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Handling Precautions

⚠ Warning

1. Do not rotate the cover

- When installing a cylinder or screwing a fitting into the port, the coupling portion of the cover may be damaged if the cover rotates.

⚠ Caution

1. Be careful of the retaining ring to pop out.

- When replacing the rod seal, be careful of the retaining ring not to pop out while removing it.

Replacement Part: Rod Seal

Bore size (mm)	Part no.
20	PDU-8Z
25	PDU-10Z
32	PDU-12LZ
40	PDU-14LZ

Grease Pack for Maintenance

When only grease for maintenance is necessary, please order by the following part numbers.

Grease pack part no.: GR-L-005 (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

Specifications

Bore size (mm)	20	25	32	40
Action	Double acting, Single rod			
Piston speed	5 to 500 mm/s			
Fluid	Air			
Proof pressure	1.05 MPa			
Maximum operating pressure	0.7 MPa			
Ambient and fluid temperature	Without auto switch -10 to 70°C (with no freezing) With auto switch -10 to 60°C (with no freezing)			
Lubrication	Non-lube			
Stroke length tolerance	^{+1.4} ₀ mm			
Cushion	Rubber bumper			
Allowable leakage rate	0.5 l/min (ANR) or less			

Minimum Operating Pressure

Unit: MPa

Bore size (mm)	20	25	32	40
Minimum operating pressure			0.02	

Mounting Bracket Part No.

Mounting bracket	Minimum order	Bore size (mm)				Description (when ordering a minimum number)
		20	25	32	40	
Axial foot*	2	CM-L020B	CM-L032B	CM-L040B		Foot 2 pcs., Mounting nut 1 pc.
Flange	1	CM-F020B	CM-F032B	CM-F040B		Flange 1 pc., Mounting nut 1 pc.
Single clevis**	1	CM-C020B	CM-C032B	CM-C040B		Single clevis 1 pc., Liner 3 pcs.
Double clevis (with pin) **, ***	1	CM-D020B	CM-D032B	CM-D040B		Double clevis 1 pc., Liner 3 pcs., Clevis pin 1 pc., Retaining ring 2 pcs.
Trunnion (with nut)	1	CM-T020B	CM-T032B	CM-T040B		Trunnion 1 pc., Trunnion nut 1 pc.

* When ordering foot brackets, order 2 pieces per cylinder unit.

** Three liners are included in the clevis bracket for adjusting an angle when mounting it.

*** Clevis pins and retaining rings (cotter pins for ø40) are included.

Mounting Bracket and Accessory

Accessory	Standard			Option	
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Note 3) Double knuckle joint
Basic style	● (1 pc.)	●	—	●	●
Axial foot style	● (2)	●	—	●	●
Rod side flange style	● (1)	●	—	●	●
Head side flange style	● (1)	●	—	●	●
Integral clevis style	— Note 1)	●	—	●	●
Single clevis style	— Note 1)	●	—	●	●
Double clevis style Note 3)	— Note 1)	●	● Note 5)	●	●
Rod side trunnion style	● (1) Note 2)	●	—	●	●
Head side trunnion style	● (1) Note 2)	●	—	●	●
Boss-cut basic style	● (1)	●	—	●	●
Boss-cut flange style	● (1)	●	—	●	●
Boss-cut trunnion style	● (1)	●	—	●	●



Note 1) Mounting nuts are not attached to the integral clevis, single clevis and double clevis types.

Note 2) Trunnion nuts are mounted on the rod side trunnion style and head side trunnion style.

Note 3) Pins and retaining rings (cotter pins in case of ø40) are packed with the double clevis and double knuckle joint styles.

Note 4) Pins and retaining rings are packed with clevis brackets.

Note 5) Retaining rings (cotter pins for ø40) are included in clevis pins.

Standard Stroke

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



Note 1) Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Note 2) As the stroke increases, more sliding resistance may result due to the deflection of the piston rod and other factors. Take measures such as the installation of a guide.



Mass

Bore size (mm)		20	25	32	40	(kg)
Basic mass	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	
	Clevis integrated 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 mass per each 50 mm of stroke		0.04	0.06	0.08	0.13	
Option bracket	Clevis bracket (With pin)	0.07	0.07	0.14	0.14	
	Single knuckle joint	0.06	0.06	0.06	0.23	
	Double knuckle joint (With pin)	0.07	0.07	0.07	0.20	

Calculation: (Example) CM2YL32-100

- Basic mass.....0.44 (Foot style, ø32)
- Additional mass.....0.08/50 stroke
- Cylinder stroke.....100 stroke
 $0.44 + 0.08 \times 100/50 = 0.60 \text{ kg}$

Low Friction Cylinder MountingCM2Y **Mounting style** - **Bore size** - **Stroke** - X1854

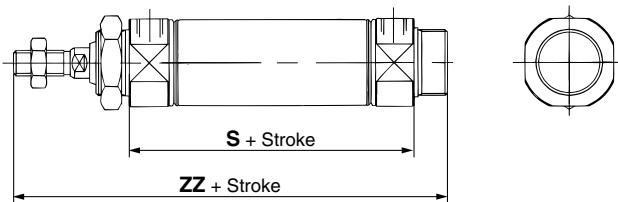
• Same mounting specification as CM2Q

In order to adjust the mounting dimensions of the low friction cylinder (CM2Q), extend the longitudinal dimension (S, ZZ) by 3 mm.

Specifications

Cylinder bore size (mm)	20	25	32	40
Action	Double acting, Single rod			
Direction of low friction	Dual directions			
Fluid	Air			
Proof pressure	1.05 MPa			
Maximum operating pressure	0.7 MPa			

* Low friction operates in dual directions.

Dimensions

Bore size (mm)	S	ZZ
20	65	119
25	65	123
32	67	125
40	91	157

* Add 3 mm to S and ZZ dimensions of the double acting, single rod type on pages 1072 to 1076 for the dimensions for each mounting bracket other than the basic style.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

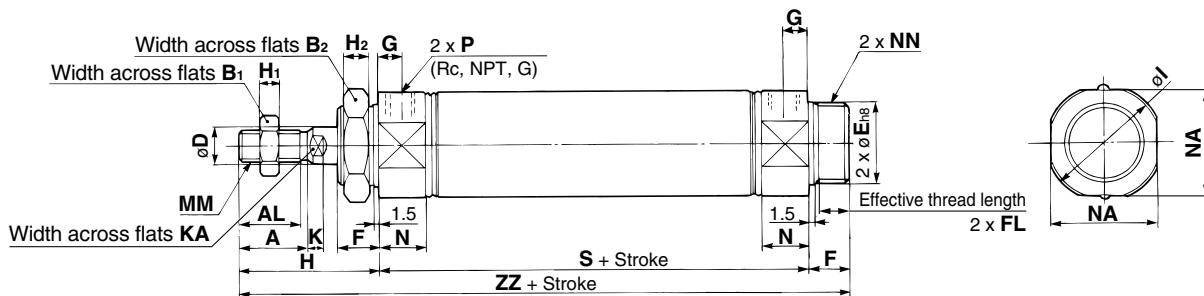
Individual

-X□

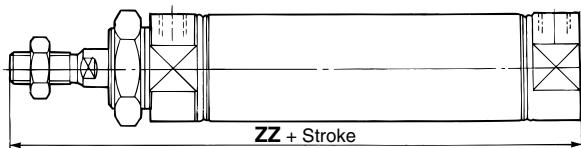
Series CM2Y

Basic Style (B)

CM2YB **Bore size** — **Stroke**



Boss-cut



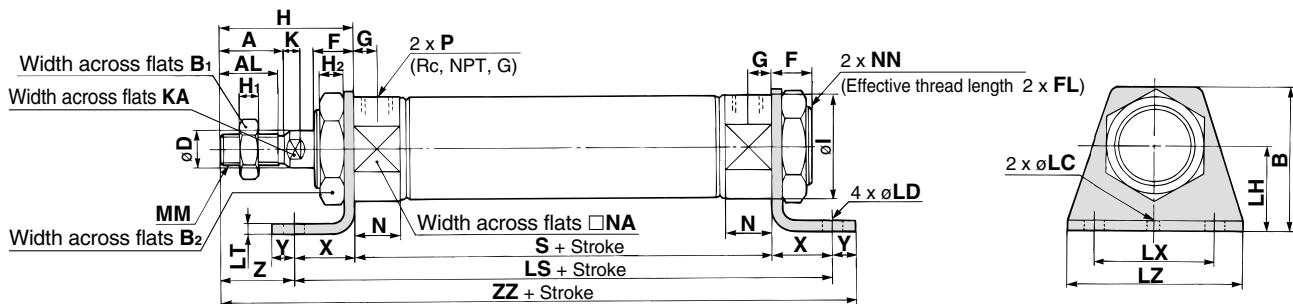
Bore size (mm)	A	AL	B₁	B₂	D	E	F	FL	G	H	H₁	H₂	I	K	KA	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	8	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	62	116
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	8	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	62	120
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	8	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	122
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	10	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	154

Boss-cut (mm)

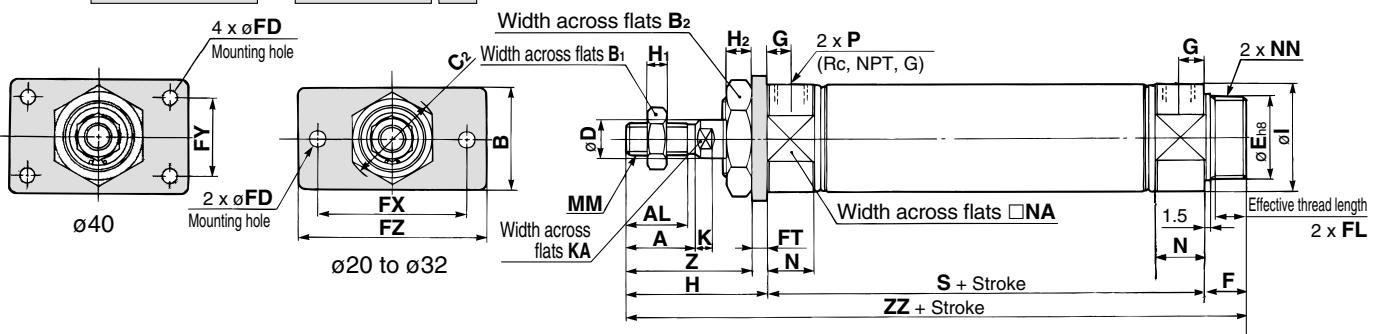
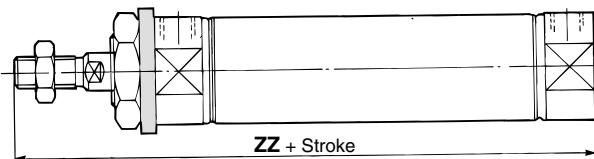
Bore size (mm)	ZZ
20	103
25	107
32	109
40	138

Axial Foot Style (L)

CM2YL **Bore size** — **Stroke**



Bore size (mm)	A	AL	B	B₁	B₂	D	F	FL	G	H	H₁	H₂	I	K	KA	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	S	X	Y	Z	ZZ
20	18	15.5	40	13	26	8	13	10.5	8	41	5	8	28	5	6	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	22	19.5	47	17	32	10	13	10.5	8	45	6	8	33.5	5.5	8	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	22	19.5	47	17	32	12	13	10.5	8	45	6	8	37.5	5.5	10	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	24	21	54	22	41	14	16	13.5	11	50	8	10	46.5	7	12	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

Rod Side Flange Style (F)CM2YF **Bore size** — **Stroke****Boss-cut style**

Bore size (mm)	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FL	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I	K	KA	MM	N	NA	NN	P	S	Z	ZZ	(mm)
20	18	15.5	34	13	26	30	8	20 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	41	5	8	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	62	37	116	
25	22	19.5	40	17	32	37	10	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	62	41	120	
32	22	19.5	40	17	32	37	12	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	41	122	
40	24	21	52	22	41	47.3	14	32 ⁰ _{-0.039}	16	13.5	7	5	66	36	82	11	50	8	10	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	45	154	

Boss-cut Style (mm)

Bore size (mm)	ZZ
20	103
25	107
32	109
40	138

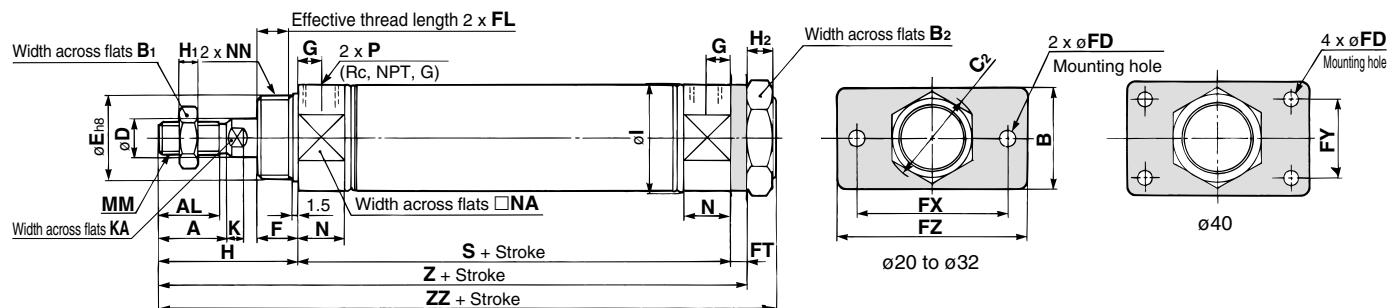
REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□
Individual
-X□

Series CM2Y

Head Side Flange Style (G)

CM2YG Bore size — Stroke

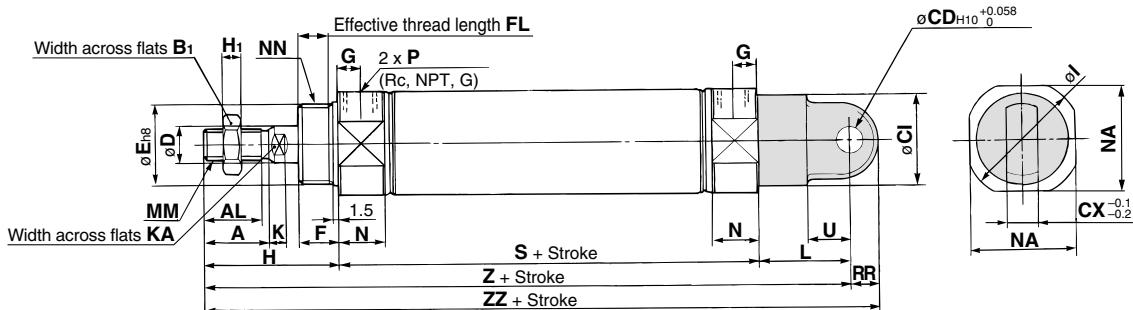


Bore size (mm)	A	AL	B	B₁	B₂	C₂	D	E	F	FL	FD	FT	FX	FZ	G	H	H₁	H₂	I	
20	18	15.5	34	13	26	30	8	$20^{\frac{0}{-0.033}}$	13	10.5	7	4	60	—	75	8	41	5	8	28
25	22	19.5	40	17	32	37	10	$26^{\frac{0}{-0.033}}$	13	10.5	7	4	60	—	75	8	45	6	8	33.5
32	22	19.5	40	17	32	37	12	$26^{\frac{0}{-0.033}}$	13	10.5	7	4	60	—	75	8	45	6	8	37.5
40	24	21	52	22	41	47.3	14	$32^{\frac{0}{-0.039}}$	16	13.5	7	5	66	36	82	11	50	8	10	46.5

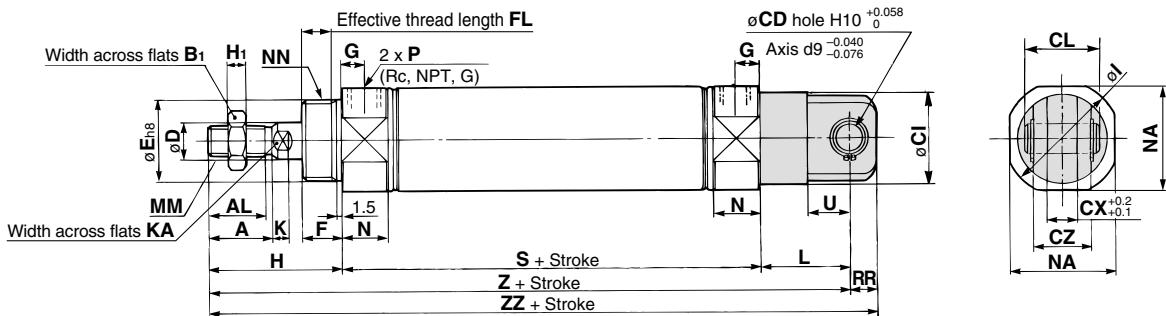
Bore size (mm)	K	KA	MM	N	NA	NN	P	S	Z	ZZ	(mm)
20	5	6	M8 x 1.25	15	24	M20 x 1.5	$\frac{1}{8}$	62	107	116	
25	5.5	8	M10 x 1.25	15	30	M26 x 1.5	$\frac{1}{8}$	62	111	120	
32	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	$\frac{1}{8}$	64	113	122	
40	7	12	M14 x 1.5	21.5	42.5	M32 x 2	$\frac{1}{4}$	88	143	154	

Single Clevis Style (C)

CM2YC Bore size — Stroke

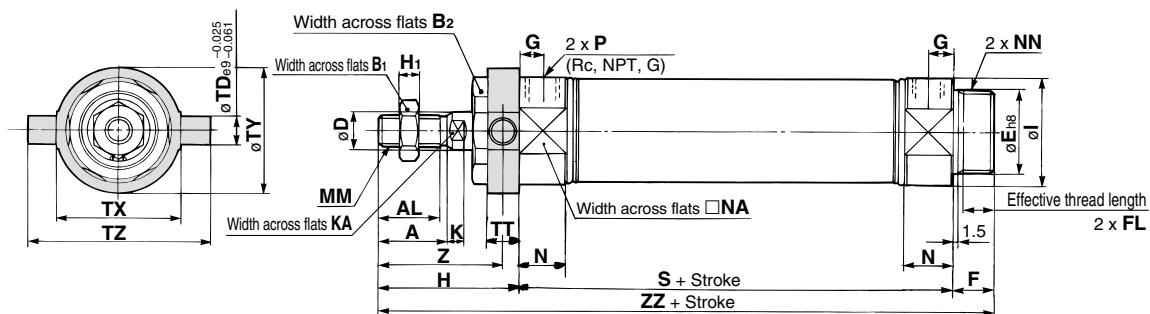
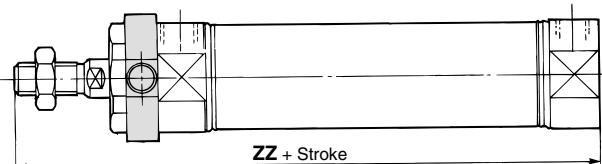


Bore size (mm)	A	AL	B₁	CI	CD	CX	D	E	F	FL	G	H	H₁	I	K	KA	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ
20	18	15.5	13	24	9	10	8	$20^{\frac{0}{-0.033}}$	13	10.5	8	41	5	28	5	6	30	M8 x 1.25	15	24	M20 x 1.5	$\frac{1}{8}$	9	62	14	133	142
25	22	19.5	17	30	9	10	10	$26^{\frac{0}{-0.033}}$	13	10.5	8	45	6	33.5	5.5	8	30	M10 x 1.25	15	30	M26 x 1.5	$\frac{1}{8}$	9	62	14	137	146
32	22	19.5	17	30	9	10	12	$26^{\frac{0}{-0.033}}$	13	10.5	8	45	6	37.5	5.5	10	30	M10 x 1.25	15	34.5	M26 x 1.5	$\frac{1}{8}$	9	64	14	139	148
40	24	21	22	38	10	15	14	$32^{\frac{0}{-0.039}}$	16	13.5	11	50	8	46.5	7	12	39	M14 x 1.5	21.5	42.5	M32 x 2	$\frac{1}{4}$	11	88	18	177	188

Double Clevis Style (D)CM2YD **Bore size** — **Stroke**

Bore size (mm)	A	AL	B ₁	CD	CI	CL	CX	CZ	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ	(mm)
20	18	15.5	13	9	24	25	10	19	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	30	M8 x 1.25	15	24	M20 x 1.5	1/8	9	62	14	133	142	
25	22	19.5	17	9	30	25	10	19	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	30	M10 x 1.25	15	30	M26 x 1.5	1/8	9	62	14	137	146	
32	22	19.5	17	9	30	25	10	19	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	30	M10 x 1.25	15	34.5	M26 x 1.5	1/8	9	64	14	139	148	
40	24	21	22	10	38	41.2	15	30	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	39	M14 x 1.5	21.5	42.5	M32 x 2	1/4	11	88	18	177	188	

* Clevis pin and snap ring (cotter pin for bore size ø40) are shipped together.

Rod Side Trunnion Style (U)CM2YU **Bore size** — **Stroke****Boss-cut style**

Bore size (mm)	A	AL	B ₁	B ₂	D	E	F	FL	G	H	H ₁	I	K	KA	MM	N	NA	NN	P	(mm)
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	

(mm)

Boss-cut Style (mm)								
Bore size (mm)	ZZ							
20	103							
25	107							
32	109							
40	138							

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

-X

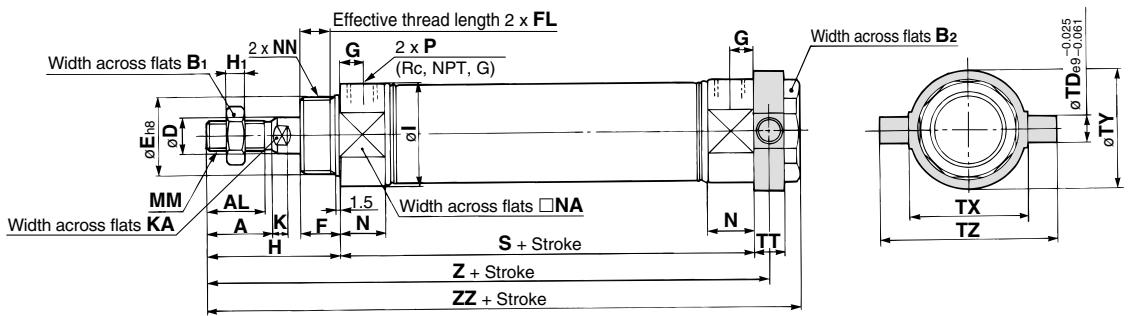
Individual

-X

Series CM2Y

Head Side Trunnion Style (T)

CM2YT Bore size — Stroke



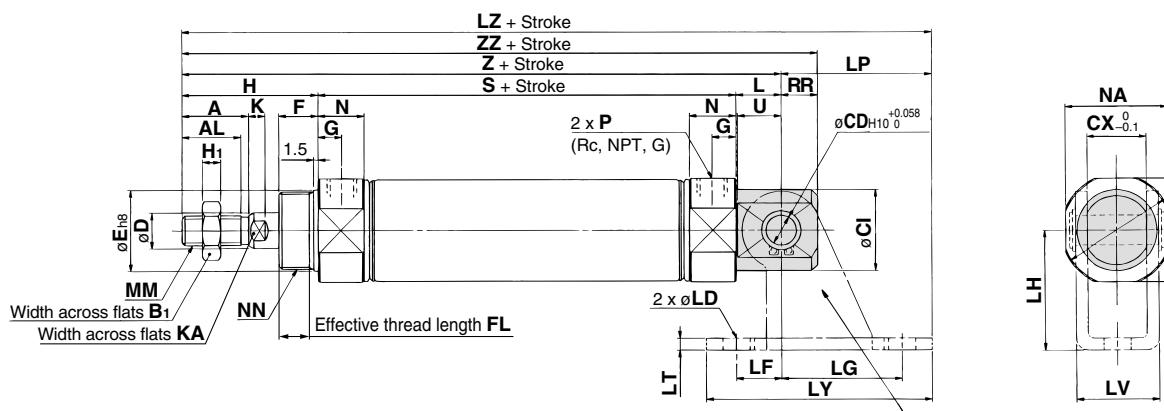
Dimensions:

- Effective thread length $2 \times FL$
- Width across flats B_1 , H_1
- Width across flats $2 \times NN$
- Width across flats G , $2 \times P$ (Rc, NPT, G)
- Width across flats B_2
- Width across flats NA
- Width across flats $S + Stroke$
- Width across flats $Z + Stroke$
- Width across flats $ZZ + Stroke$
- Width across flats KA
- Width across flats MM
- Width AL , A , K , H , F , N
- Length 1.5
- Length $S + Stroke$
- Length $Z + Stroke$
- Length $ZZ + Stroke$
- Length TX , TZ
- Length $TD_{69-0.051}$
- Length TY
- Length LP
- Length $CD_{H10-0.058}$
- Length CL
- Length LT , LF , LG , LY
- Length RR
- Length U
- Length L
- Length NA
- Length $CX-0.1$
- Length LH
- Length LV

Bore size (mm)	A	AL	B ₁	B ₂	D	E	F	FL	G	H	H ₁	I	K	KA	MM	N	NA	NN	P
20	18	15.5	13	26	8	$20^{0-0.033}$	13	10.5	8	41	5	28	5	6	M8 x 1.25	15	24	M20 x 1.5	$\frac{1}{8}$
25	22	19.5	17	32	10	$26^{0-0.033}$	13	10.5	8	45	6	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	$\frac{1}{8}$
32	22	19.5	17	32	12	$26^{0-0.033}$	13	10.5	8	45	6	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	$\frac{1}{8}$
40	24	21	22	41	14	$32^{0-0.039}$	16	13.5	11	50	8	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	$\frac{1}{4}$

Clevis Integrated Style (E)

CM2YE Bore size — Stroke

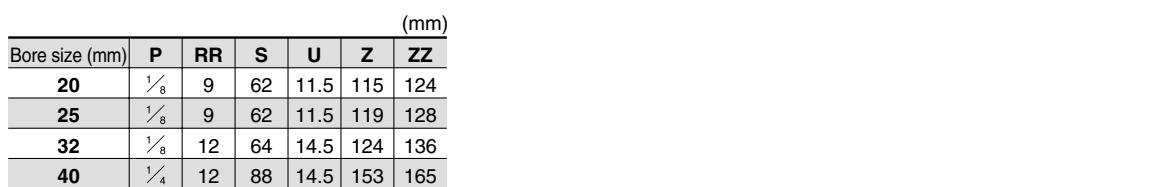


Dimensions:

- Effective thread length FL
- Width across flats B_1 , KA
- Width across flats NN
- Width across flats MM
- Length AL , A , K , F , N , G , H , H_1
- Length 1.5
- Length $S + Stroke$
- Length $ZZ + Stroke$
- Length $LZ + Stroke$
- Length LP
- Length $CD_{H10-0.058}$
- Length CL
- Length LT , LF , LG , LY
- Length RR
- Length U
- Length NA
- Length $CX-0.1$
- Length LH
- Length LV

Refer to page 1078 for details of clevis pivot bracket.

Bore size (mm)	A	AL	B ₁	CD	CI	CX	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN
20	18	15.5	13	8	20	12	8	$20^{0-0.033}$	13	10.5	8	41	5	28	5	6	12	M8 x 1.25	15	24	M20 x 1.5
25	22	19.5	17	8	22	12	10	$26^{0-0.033}$	13	10.5	8	45	6	33.5	5.5	8	12	M10 x 1.25	15	30	M26 x 1.5
32	22	19.5	17	10	27	20	12	$26^{0-0.033}$	13	10.5	8	45	6	37.5	5.5	10	15	M10 x 1.25	15	34.5	M26 x 1.5
40	24	21	22	10	33	20	14	$32^{0-0.039}$	16	13.5	11	50	8	46.5	7	12	15	M14 x 1.5	21.5	42.5	M32 x 2



Dimensions:

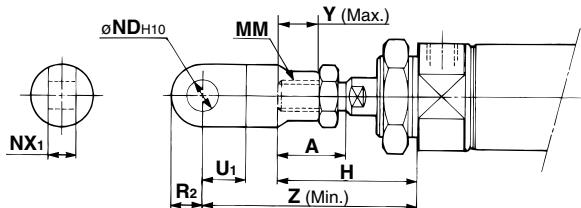
Bore size (mm)	P	RR	S	U	Z	ZZ
20	$\frac{1}{8}$	9	62	11.5	115	124
25	$\frac{1}{8}$	9	62	11.5	119	128
32	$\frac{1}{8}$	12	64	14.5	124	136
40	$\frac{1}{4}$	12	88	14.5	153	165

Series CM2Y

Accessory Bracket Dimensions

Single Knuckle Joint

(mm)

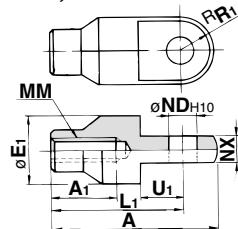


Bore size	A	H	MM	ND _{H10}	NX ₁	U ₁	R ₂	Y	Z
20	18	41	M8 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	14	10	11	66
25, 32	22	45	M10 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	14	10	14	69
40	24	50	M14 x 1.5	12 ^{+0.070} ₀	16 ^{-0.1} _{-0.3}	20	14	13	92

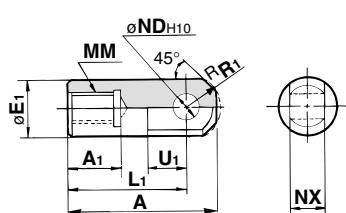
Single Knuckle Joint

(mm)

I-020B, 032B Material: Rolled steel



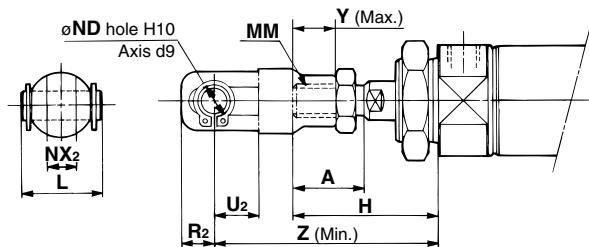
I-040B Material: Free cutting sulfur steel



Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	ND _{H10}	NX	R ₁	U ₁
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)



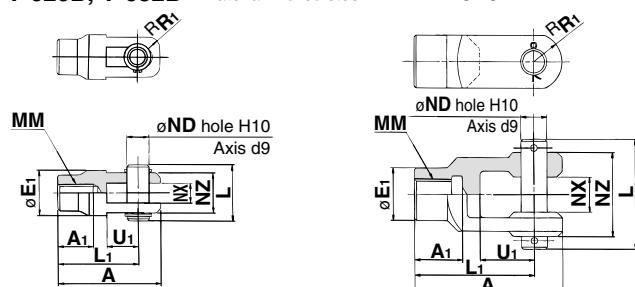
Bore size	A	H	L	MM	ND	NX ₂	R ₂	U ₂	Y	Z
20	18	41	25	M8 x 1.25	9	9 ^{+0.2} _{+0.1}	10	14	11	66
25, 32	22	45	25	M10 x 1.25	9	9 ^{+0.2} _{+0.1}	10	14	14	69
40	24	50	49.7	M14 x 1.5	12	16 ^{+0.3} _{+0.1}	13	25	13	92

Double Knuckle Joint

(mm)

Y-020B, Y-032B Material: Rolled steel

Y-040B Material: Cast iron



Part no.	Applicable bore size	A	A ₁	E ₁	L	L ₁	MM	ND	NX	NZ	R ₁	U ₁	Applicable pin part number	Retaining 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	Type C 9 for axis
Y-032B	25, 32	48	18	20	25	38	M10 x 1.25	9	9 ^{+0.2} _{+0.1}	18	5	14	CDP-1	Type C 9 for axis
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

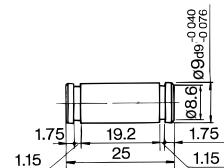
* Clevis pin and retaining ring (cotter pin for Ø40) are attached.

Double Clevis Pin/Material: Carbon steel

(mm)

Bore size: Ø20, Ø25, Ø32

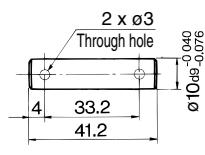
CDP-1



Retaining ring: Type C9 for axis

Bore size: Ø40

CDP-2

Cotter pin
Ø3 x 18ℓ

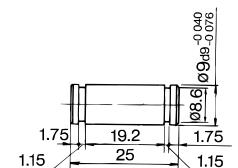
* Retaining rings (cotter pins for Ø40) are included.

Double Knuckle Pin/Material: Carbon steel

(mm)

Bore size: Ø20, Ø25, Ø32

CDP-1

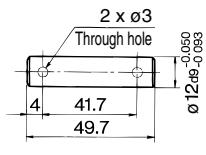


Retaining ring: Type C9 for axis

* Retaining rings (cotter pins for Ø40) are included.

Bore size: Ø40

CDP-3

Cotter pin
Ø3 x 18ℓ

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

-X

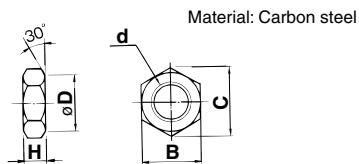
Individual

-X

Series CM2Y

Rod End Nut

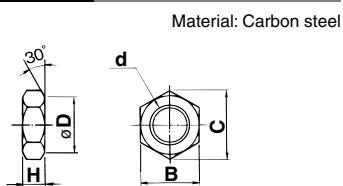
(mm)



Part no.	Applicable bore size (mm)	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

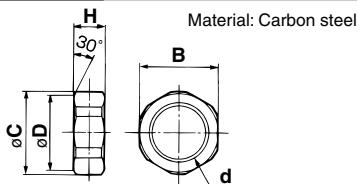
(mm)



Part no.	Applicable bore size (mm)	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)

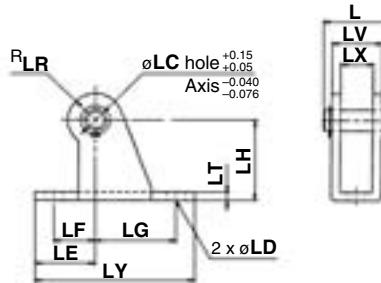


Part no.	Applicable bore size (mm)	B	C	D	d	H
TN-020B	20	26	28	25.5	M20 x 1.5	10
TN-032B	25, 32	32	34	31.5	M26 x 1.5	10
TN-040B	40	41	45	40.5	M32 x 2	10

Clevis Pivot Bracket (For CM2E)

(mm)

Material: Rolled steel plate



Part no.	Applicable bore size (mm)	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

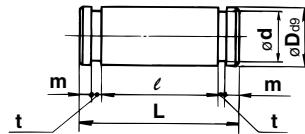
Note 1) Clevis bracket pins and retaining rings are included.

Note 2) It cannot be used for single clevis style (CM2C) and double clevis style (CM2D).

Clevis Pin (For CM2E)

(mm)

Material: Carbon steel



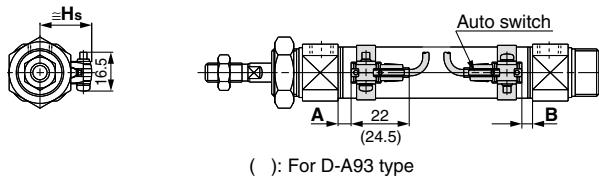
Part no.	Applicable bore size (mm)	D _{d9}	d	L	ε	m	t	Applicable retaining ring part no.
CD-S02	20, 25	8 ^{-0.040} _{-0.076}	7.6	24.5	19.5	1.6	0.9	Type C 8 for axis
CD-S03	32, 40	10 ^{-0.040} _{-0.076}	9.6	34	29	1.35	1.15	Type C 10 for axis

Note) Retaining rings are included.

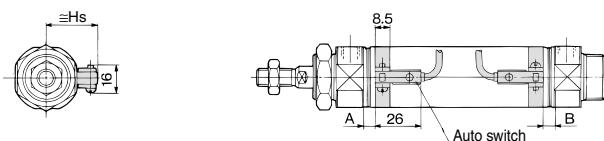
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Reed auto switch

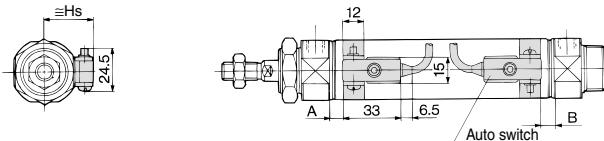
D-A9□



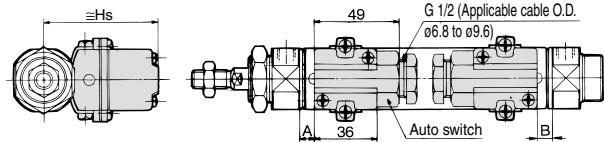
D-C7/C8



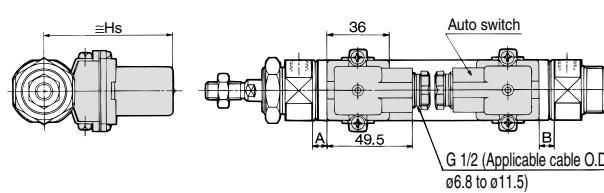
D-B5/B6/B59W



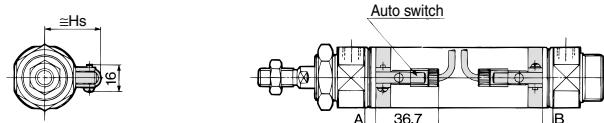
D-A33A/A34A



D-A44A



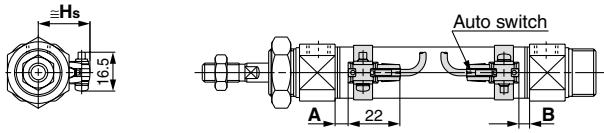
D-C73C/C80C



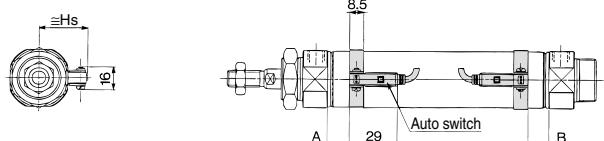
Solid state auto switch

D-M9□

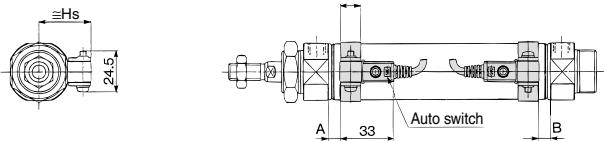
D-M9□W



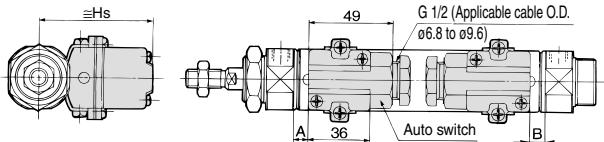
D-H7□/H7□W/H7NF



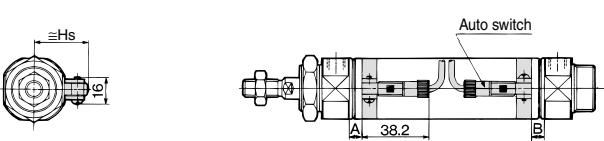
D-G5NTL



D-G39A/K39A



D-H7C



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

-X□

Series CM2Y

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Auto Switch Proper Mounting Position

Auto switch model Bore size (mm)	D-A9□		D-M9□ D-M9□W		D-B5□ D-B64		D-C7□ D-C80 D-C73C D-C80C		D-B59W		D-A3□A D-G39A D-K39A D-A44A		D-H7□ D-H7C D-H7□W D-H7NF		D-G5NTL	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	6.5	5.5	10.5	9.5	1	0	7	6	4	3	0.5	0	6	5	2.5	1.5
25	6.5	5.5	10.5	9.5	1	0	7	6	4	3	0.5	0	6	5	2.5	1.5
32	7.5	6.5	11.5	10.5	2	1	8	7	5	4	1.5	0.5	7	6	3.5	2.5
40	13.5	11.5	17.5	15.5	7	6	13	12	10	9	6.5	5.5	12	11	8.5	7.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

Auto switch model Bore size (mm)	(mm)					
	D-A9□ D-M9□ D-M9□W	D-B5□ D-B64 D-B59W D-G5NTL D-H7C	D-C7□ D-C80 D-H7□ D-H7□W D-H7NF	D-C73C D-C80C	D-A3□A D-G39A D-K39A	D-A44A
Hs	Hs	Hs	Hs	Hs	Hs	Hs
20	22	25.5	22.5	25	60	69.5
25	24.5	28	25	27.5	62.5	72
32	28	31.5	28.5	31	66	75.5
40	32	35.5	32.5	35	70	79.5

Minimum Auto Switch Mounting Stroke

n: No. of auto switch (mm)

Auto switch model	No. of auto switch mounted				
	1 pc.	2 pcs.		n pcs.	
		Different surfaces	Same surface	Different surfaces	Same surface
D-A9□ D-M9□ D-M9□W	10	15 ^{Note)}	45 ^{Note)}	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	45 + 45 (n-2)
D-C7□ D-C80	10	15	50	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	50 + 45 (n-2)
D-H7□ D-H7□W D-H7NF	10	15	60	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	60 + 45 (n-2)
D-C73C D-C80C D-H7C	10	15	65	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	65 + 50 (n-2)
D-B5□/B64 D-G5NTL	10	15	75	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	75 + 55 (n-2)
D-B59W	15	20	75	$20 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	75 + 55(n-2)
D-A3□A/G39A D-K39A/A44A	10	35	100	35 + 30(n-2)	100 + 100 (n-2)

Note) When 2 D-A93/M9□/M9□W auto switches are included.

Auto switch model	With 2 auto switches		
	Different surfaces		Same surface
	The proper auto switch mounting position is 6 mm inward from the switch holder edge.		The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.
D-A93	—		Less than 50 strokes
D-M9□ D-M9□W	Less than 20 strokes		Less than 55 strokes

Operating Range

Auto switch model	(mm)			
	20	25	32	40
D-A9□	6	6	6	6
D-M9□ D-M9□W	3.5	3	3.5	3
D-C7□/C80 D-C73C/C80C	7	8	8	8
D-B5□/B64 D-A3□A/A44A	8	8	9	9
D-B59W	12	12	13	13
D-H7□/H7□W D-G5NTL/H7NF	4	4	4.5	5
D-H7C	7	8.5	9	10
D-G39A/K39A	8	9	9	9

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately $\pm 30\%$ dispersion)
There may be the case it will vary substantially depending on an ambient environment.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

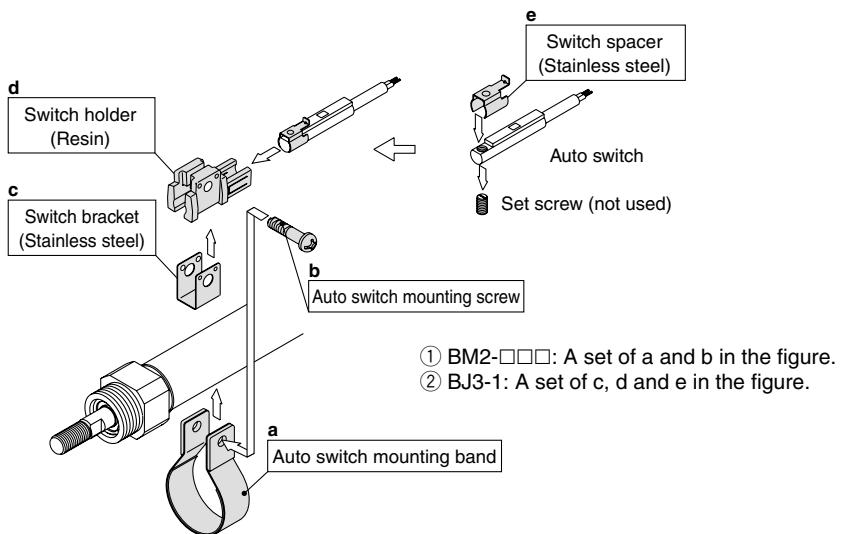
Individual-X□

Series CM2Y

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-A9□ D-M9□ D-M9□W	Note) ①BM2-020 ②BJ3-1	Note) ①BM2-025 ②BJ3-1	Note) ①BM2-032 ②BJ3-1	Note) ①BM2-040 ②BJ3-1
D-C7□/C80 D-C73C/C80C D-H7□ D-H7□W D-H7NF	BM2-020	BM2-025	BM2-032	BM2-040
D-B5□/B64 D-B59W 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) Two kinds of auto switch mounting brackets are used as a set.



- ① BM2-□□□: A set of a and b in the figure.
- ② BJ3-1: A set of c, d and e in the figure.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.
For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features
Reed	D-B53, C73, C76	Grommet (In-line)	—
	D-C80		Without indicator light
Solid state	D-H7A1, H7A2, H7B	Grommet (In-line)	—
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indication)
	D-G5NTL		With timer

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 and 1785.

* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1746.

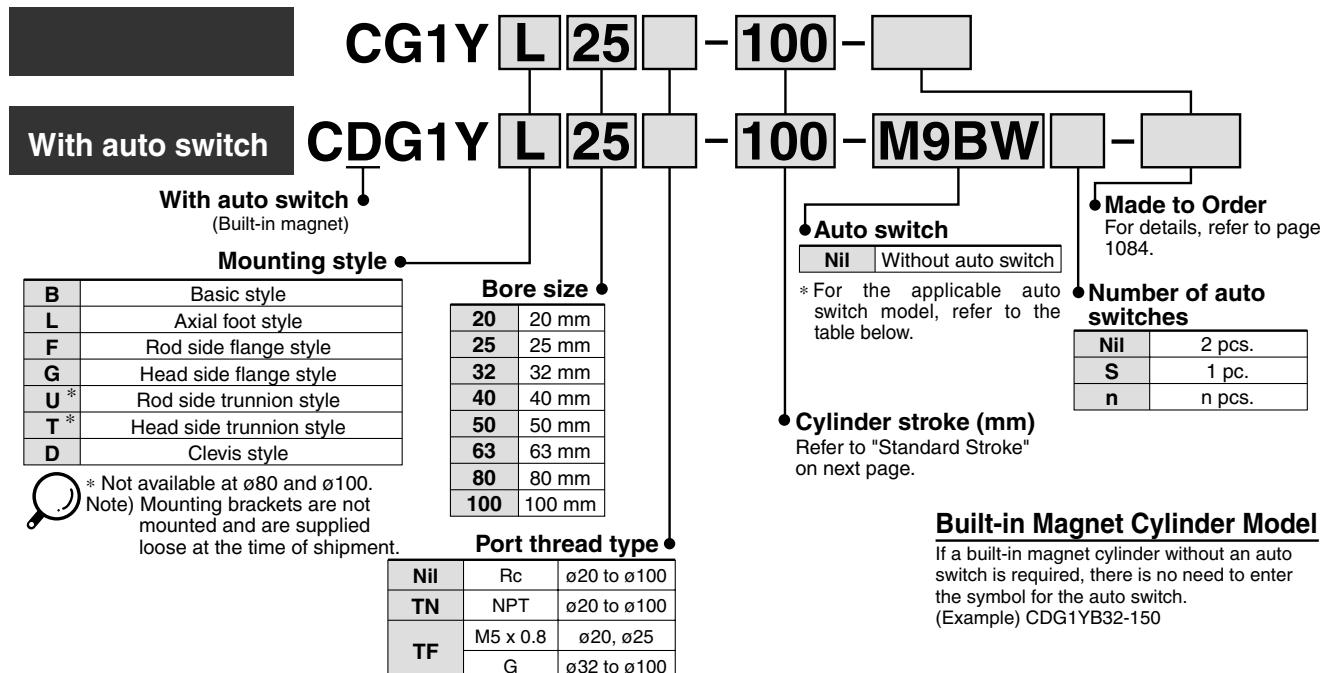
* Wide range detection type, solid state auto switches (D-G5NBL type) are also available. Refer to page 1776 for details.

Smooth Cylinder

Series CG1Y

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

How to Order



Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDG1YB32-150

Applicable Auto Switch / Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire (m)					Pre-wired connector	Applicable load					
					DC	AC		Applicable bore size ø20 to ø63 ø80, ø100	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
Solid state switch	—	Grommet	3-wire (NPN)	5 V, 12 V	24 V	—	M9N	—	●	●	●	○	—	IC circuit					
							G59	—	●	—	●	○	—						
			3-wire (PNP)				M9P	—	●	●	●	○	—						
							G5P	—	●	—	●	○	—						
	Diagnostic indication (2-color)	Connector	2-wire	12 V			M9B	—	●	●	●	○	—	—					
							K59	—	●	—	●	○	—						
	Water resistant (2-color) With diagnostic output (2-color)	Grommet	3-wire (NPN)	5 V, 12 V			H7C	—	●	—	●	●	●	—					
							M9NW	—	●	●	●	○	—	IC circuit					
			3-wire (PNP)				G59W	—	●	—	●	○	—						
							M9PW	—	●	—	●	●	○						
			2-wire	12 V			M9BW	—	●	●	●	○	—						
							K59W	—	●	—	●	○	—						
Reed switch	—	Grommet	3-wire (Equiv. NPN)	—	24 V	—	H7BA	G5BA	—	—	●	○	—	IC circuit					
							H7NF	G59F	●	—	●	○	—						
			2-wire	5 V			A96	—	●	—	●	—	—	—					
							A93	—	●	—	●	—	—						
							A90	—	●	—	●	—	—						
	Diagnostic indication (2-color)	Connector	100 V	100 V or less			B54	—	●	—	●	●	—	IC circuit					
							B64	—	●	—	●	—	—						
			100 V, 200 V				C73C	—	●	—	●	●	●						
							C80C	—	●	—	●	●	●						
			200 V or less	24 V or less			B59W	—	●	—	●	—	—						
							—	●	—	●	●	●	—						

* 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

* ○: Manufactured upon receipt of order.
* D-A9□V/M9□V/M9□WV/M9□A(V)L types cannot be mounted.

* In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1093.
* Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.
* D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ
D-□
-X□
Individual
-X□

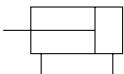
Series CG1Y



Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Action	Double acting, Single rod							
Type	Non-lube							
Fluid	Air							
Proof pressure	1.05 MPa							
Maximum operating pressure	0.7 MPa							
Ambient and fluid temperature	Without auto switch -10 to 70°C (with no freezing) With auto switch -10 to 60°C (with no freezing)							
Operating piston speed	5 to 500 mm/s							
Stroke length tolerance	Up to 300 ^{st + 1.4} ₀ mm							
Cushion	Rubber bumper							
Mounting	Basic, Axial foot, Rod side flange, Head side flange, Rod side trunnion, Head side trunnion, Clevis (in case of 90° change in port location)							
Allowable leakage rate	0.5 ℥/min (ANR) or less							

JIS Symbol



Made to Order

(For details, refer to pages 1836, 1882 and 1917.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC6	Made of stainless steel
—XC20	Head cover axial port



* Rod side trunnion and head side trunnion styles are not available at ø80 and ø100.

Minimum Operating Pressure

Unit: MPa

Bore size (mm)	20	25	32	40	50	63	80	100
Minimum operating pressure	0.02						0.01	

Standard Stroke

Bore size (mm)	Standard stroke (mm) Note 1)
20	25, 50, 75, 100, 125, 150, 200
25, 32, 40, 50, 63, 80, 100	25, 50, 75, 100, 125, 150, 200, 250, 300



Note 1) Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Note 2) Please consult with SMC for strokes outside the above ranges.

Note 3) As the stroke increases, more sliding resistance may result due to the deflection of the piston rod and other factors. Take measures such as the installation of a guide.

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
20	CG1Y20-PS	Piston seal 1 pc.
25	CG1Y25-PS	Rod seal 1 pc.
32	CG1Y32-PS	Tube gasket 2 pcs.
40	CG1Y40-PS	Grease pack (10 g) 1 pc.

When only grease for maintenance is necessary, please order by the following part numbers.

Grease pack part no.: GR-L-005 (5 g)

GR-L-010 (10 g)

GR-L-150 (150 g)

Mounting Bracket Part No.

Mounting bracket	Min. order	Bore size (mm)								Description
		20	25	32	40	50	63	80	100	
Foot	2 ^{Note})	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	CG-L080	CG-L100	Foot x 2, Bracket mounting bolt x 8
Flange	1	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	CG-F080	CG-F100	Flange x 1, Bracket mounting bolt x 4
Trunnion pin	1	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	—	—	Trunnion pin x 2, Trunnion pivot bracket x 2, Flat washer x 2
Clevis	1	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063	CG-D080	CG-D100	Clevis x 1, Bracket mounting bolt x 4, Clevis pin x 1, Retaining ring x 2
Pivot bracket	1	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A	CG-080-24A	CG-100-24A	Pivot bracket x 1

Note) Order two foot brackets per cylinder.

Mass

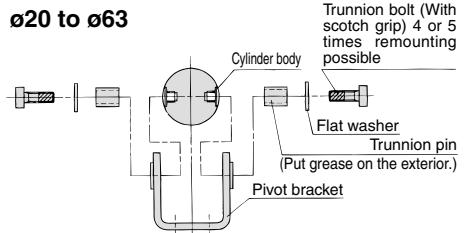
Basic mass	Bore size (mm)	20	25	32	40	50	63	80	100	(mm)
		Basic style	Axial foot style	Flange style	Trunnion style	Clevis style	—	—	—	—
	Basic style	0.11	0.18	0.28	0.44	0.83	1.17	2.23	3.43	
	Axial foot style	0.22	0.31	0.44	0.66	1.31	1.89	3.19	5.18	
	Flange style	0.19	0.28	0.42	0.64	1.17	1.67	2.94	4.78	
	Trunnion style	0.12	0.20	0.31	0.49	0.97	1.31	—	—	
	Clevis style	0.16	0.26	0.43	0.67	1.23	1.85	2.94	4.71	
	Pivot bracket	0.08	0.09	0.17	0.25	0.44	0.80	0.98	1.75	
	Single knuckle joint	0.05	0.09	0.09	0.10	0.22	0.22	0.39	0.57	
	Double knuckle joint (With pin)	0.05	0.09	0.09	0.13	0.26	0.26	0.64	1.31	
	Additional mass per each 50 mm of stroke	0.05	0.07	0.09	0.15	0.22	0.26	0.35	0.49	

Calculation: (Example) CG1YL20-100
(Foot style, ø20, 100 st)

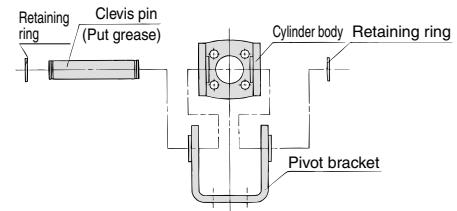
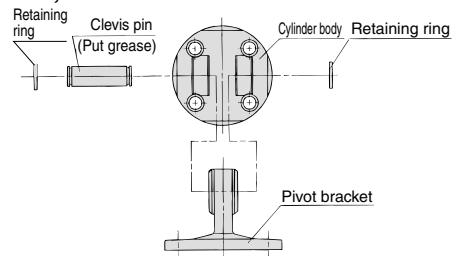
- Basic mass..... 0.22 (Foot, ø20)
- Additional mass..... 0.05/50 stroke
- Cylinder stroke..... 100 stroke
- $0.22 + 0.05 \times 100/50 = 0.32 \text{ kg}$

Mounting Procedure**Mounting procedure for trunnion**

Follow the procedures below when mounting a pivot bracket on the trunnion.

ø20 to ø63**Mounting procedure for clevis**

Follow the procedures below when mounting a pivot bracket on the clevis style.

ø20 to ø63**ø80, ø100****Precautions**

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Operating Precautions**Warning****1. Operate within the specified cylinder speed.**

Otherwise, cylinder and seal damage may occur.

2. When operating a cylinder as a single side fixed (Basic/flange style), a bending moment generated at the stroke end due to vibration will be applied to the cylinder, which may damage it. In such cases, install a bracket to prevent vibration or lower the piston speed until the cylinder does not vibrate at the stroke end.**Caution****1. Tighten clevis bracket mounting bolts with the proper tightening torque shown listed below.**

ø20: 1.5 N·m, ø25 to 32: 2.9 N·m, ø40: 4.9 N·m,

ø50: 11.8 N·m, ø63 to 80: 24.5 N·m, ø100: 42.2 N·m

Disassembly/Replacement**Caution****1. Do not replace the bushings.**

The bushings are press-fit. To replace them, they must be replaced together with the cover assembly.

2. To replace a seal, apply grease to the new seal before installing it.

If the cylinder is put into operation without applying grease to the seal, it could cause the seal to wear significantly, leading to premature air leakage.

3. Those with a bore of ø50 or more cannot be disassembled.

When disassembling cylinders with bore sizes of ø20 through ø40, grip the double flat part of either the head cover or the rod cover with a vise and loosen the other side with a wrench or a monkey wrench, etc., and then remove the cover. When re-tightening, tighten approximately 2 degrees more than the original position. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. Please contact SMC when disassembly is required.)

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

-X

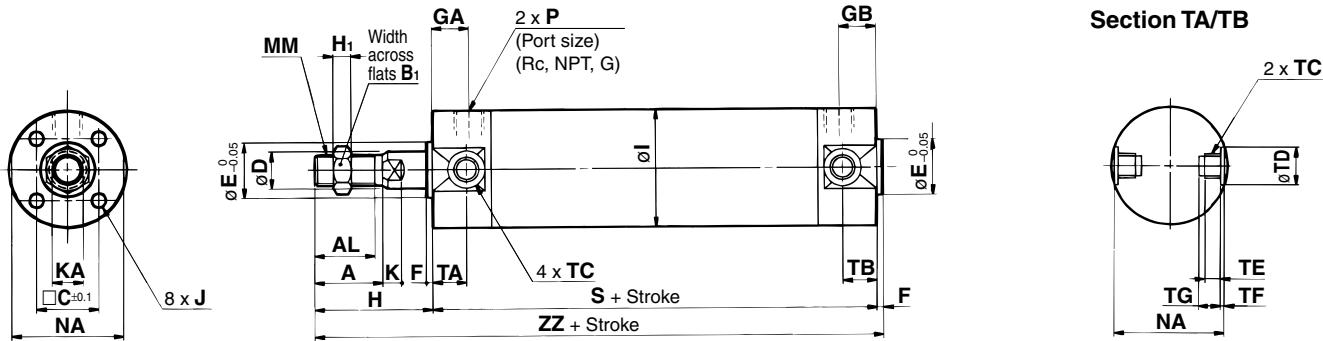
Individual

-X

Series CG1Y

Dimensions: $\varnothing 20$ to $\varnothing 100$

Basic style: CG1YB



Section TA/TB

(mm)

Bore size (mm)	TC*	TDH9	TE	TF	TG
20	M5 x 0.8	8 ^{+0.08} ₀	4	0.5	5.5
25	M6 x 0.75	10 ^{+0.08} ₀	5	1	6.5
32	M8 x 1.0	12 ^{+0.08} ₀	5.5	1	7.5
40	M10 x 1.25	14 ^{+0.08} ₀	6	1.25	8.5
50	M12 x 1.25	16 ^{+0.08} ₀	7.5	2	10
63	M14 x 1.5	18 ^{+0.08} ₀	11.5	3	14.5

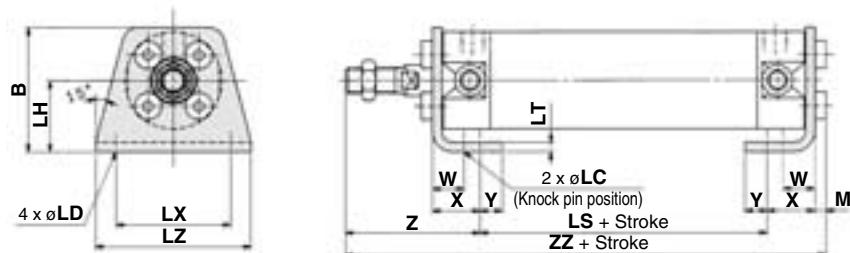
* Trunnion mounting taps for the width across flats NA are not attached to $\varnothing 80$ and $\varnothing 100$ types.

Bore size (mm)	Stroke range (mm)	A	AL	B1	C	D	E	F	H	H1	I	J	K	KA	MM	NA
20	Up to 200	18	15.5	13	14	8	12	2	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24
25	Up to 300	22	19.5	17	16.5	10	14	2	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29
32	Up to 300	22	19.5	17	20	12	18	2	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5
40	Up to 300	30	27	19	26	16	25	2	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44
50	Up to 300	35	32	27	32	20	30	2	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55
63	Up to 300	35	32	27	38	20	32	2	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69
80	Up to 300	40	37	32	50	25	40	3	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80
100	Up to 300	40	37	41	60	30	50	3	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100

Bore size (mm)	Stroke range (mm)	S	TA	TB	ZZ	Rc, NPT port			G port		
						GA	GB	P	GA	GB	P
20	Up to 200	77	11	11	114	12	12	1/8	12	12	M5 x 0.8
25	Up to 300	77	11	11	119	12	12	1/8	12	12	M5 x 0.8
32	Up to 300	79	11	11	121	12	12	1/8	10	10	1/8
40	Up to 300	87	12	12	139	13	13	1/8	10	10	1/8
50	Up to 300	102	13	13	162	14	14	1/4	12	12	1/4
63	Up to 300	102	13	13	162	14	14	1/4	12	12	1/4
80	Up to 300	122	—	—	196	20	20	3/8	17	17	3/8
100	Up to 300	122	—	—	196	20	20	1/2	17	17	1/2

With Mounting Bracket

Axial foot style: CG1YL

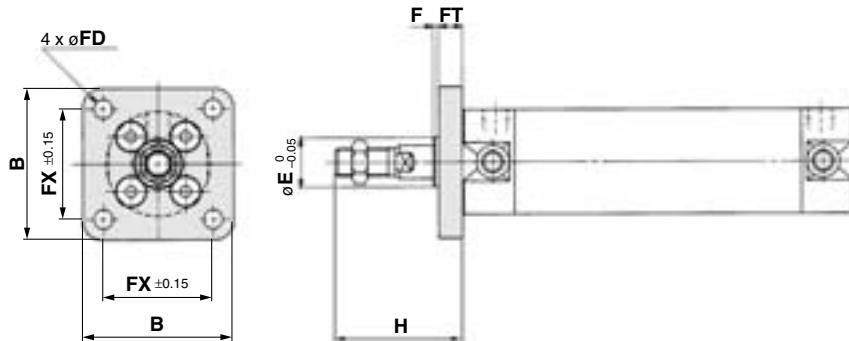


Axial Foot Style

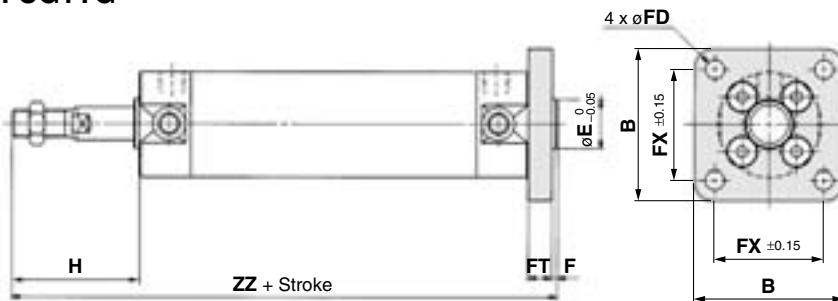
Bore size (mm)	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ	(mm)
20	34	4	6	20	53	3	32	44	3	10	15	7	47	118	
25	38.5	4	6	22	53	3	36	49	3.5	10	15	7	52	123.5	
32	45	4	7	25	53	3	44	58	3.5	10	16	8	53	125.5	
40	54.5	4	7	30	60	3	54	71	4	10	16.5	8.5	63.5	144	
50	70.5	5	10	40	67	4.5	66	86	5	17.5	22	11	75.5	169.5	
63	82.5	5	12	45	67	4.5	82	106	5	17.5	22	13	75.5	169.5	
80	101	6	11	55	74	4.5	100	125	5	20	28.5	14	95	202.5	
100	121	6	14	65	74	6	120	150	7	20	30	16	95	206	

* Other dimensions are the same as basic style.

Rod side flange style: CG1YF



Head side flange style: CG1YG



Flange Style

Bore size (mm)	B	E	F	FX	FD	FT	H	Head side flange ZZ
20	40	12	2	28	5.5	6	35	120
25	44	14	2	32	5.5	7	40	126
32	53	18	2	38	6.6	7	40	128
40	61	25	2	46	6.6	8	50	147
50	76	30	2	58	9	9	58	171
63	92	32	2	70	11	9	58	171
80	104	40	3	82	11	11	71	207
100	128	50	3	100	14	14	71	210

Note) End boss is machined on the flange for øE.

* Other dimensions are the same as basic style.

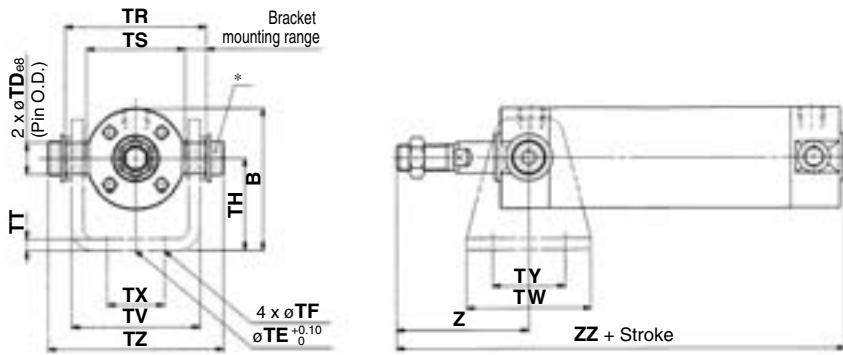
REA
REB
REC
C-Y
C-X
MQ
RHC
RZQ

D-□
-X□
Individual
-X□

Series CG1Y

With Mounting Bracket

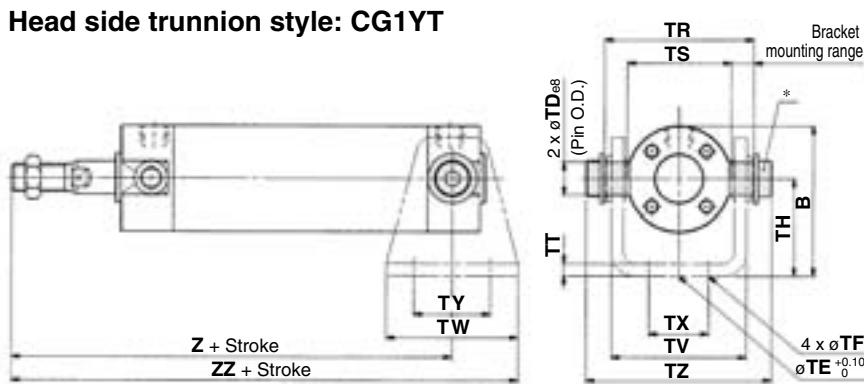
Rod side trunnion style: CG1YU



Trunnion Style

Bore size (mm)	B	TD _{ø8}	TE	TF	TH	TR	TS	TT	TV	(mm)
20	38	8 ^{-0.025} _{-0.047}	10	5.5	25	39	28	3.2	(35.8)	
25	45.5	10 ^{-0.025} _{-0.047}	10	5.5	30	43	33	3.2	(39.8)	
32	54	12 ^{-0.032} _{-0.059}	10	6.6	35	54.5	40	4.5	(49.4)	
40	63.5	14 ^{-0.032} _{-0.059}	10	6.6	40	65.5	49	4.5	(58.4)	
50	79	16 ^{-0.032} _{-0.059}	20	9	50	80	60	6	(72.4)	
63	96	18 ^{-0.032} _{-0.059}	20	11	60	9	74	8	(90.4)	

Head side trunnion style: CG1YT



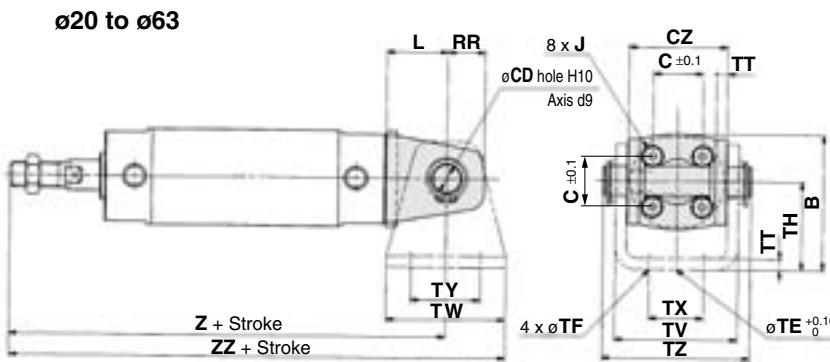
Bore size (mm)	Rod side				Head side		
	TW	TX	TY	TZ	Z	Z	ZZ
20	42	16	28	47.6	46	101	122
25	42	20	28	53	51	106	127
32	48	22	28	67.7	51	108	132
40	56	30	30	78.7	62	125	153
50	64	36	36	98.6	71	147	179
63	74	46	46	119.2	71	147	184

* Consists of pin, flat washer and hexagon socket head cap bolt.

Note) Refer to page 1089 for pivot bracket.

* Other dimensions are the same as basic style.

Clevis style: CG1YD



Clevis Style

Bore size (mm)	B	CD	CX	CZ	L	RR	V	TE	TF	TH	(mm)
20	38	8	—	29	14	11	—	10	5.5	25	
25	45.5	10	—	33	16	13	—	10	5.5	30	
32	54	12	—	40	20	15	—	10	6.6	35	
40	63.5	14	—	49	22	18	—	10	6.6	40	
50	79	16	—	60	25	20	—	20	9	50	
63	96	18	—	74	30	22	—	20	11	60	
80	99.5	18	28	56	35	18	26	—	11	55	
100	120	22	32	64	43	22	32	—	13.5	65	

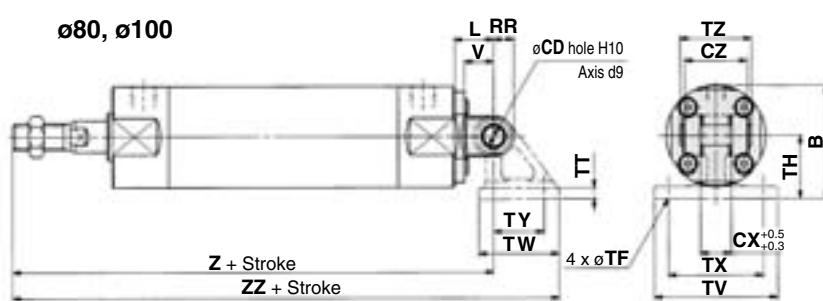
Bore size (mm)	TT	TV	TW	TX	TY	TZ	Z	ZZ	Applicable pin part no.
20	3.2	(35.8)	42	16	28	43.4	126	147	CD-G02
25	3.2	(39.8)	42	20	28	48	133	154	CD-G25
32	4.5	(49.4)	48	22	28	59.4	139	163	CD-G03
40	4.5	(58.4)	56	30	30	71.4	159	187	CD-G04
50	6	(72.4)	64	36	36	86	185	217	CD-G05
63	8	(90.4)	74	46	46	105.4	190	227	CD-G06
80	11	110	72	85	45	64	228	286.5	IY-G08
100	12	130	93	100	60	72	236	312.5	IY-G10

Note) Refer to page 1089 for pivot bracket.

* Other dimensions are the same as basic style.

(The above shows the case port location is changed by 90°.)

ø80, ø100



* Clevis pin and retaining ring are attached for the clevis style.

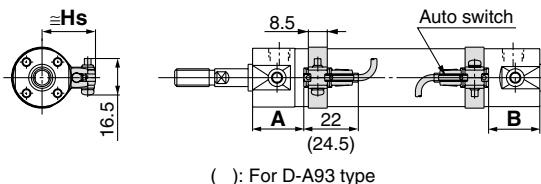
Series CG1Y

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Reed auto switch

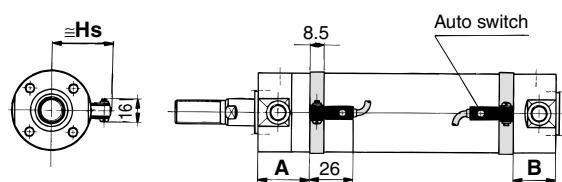
D-A9□

ø20 to ø63



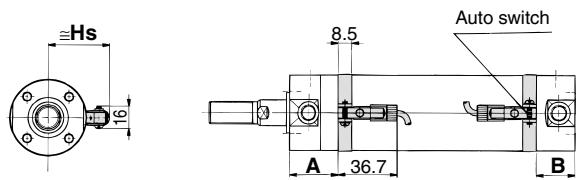
D-C7, C8

ø20 to ø63



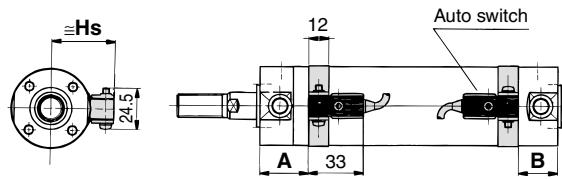
D-C73C, C80C

ø20 to ø63



D-B5, B6, B59W

ø20 to ø100

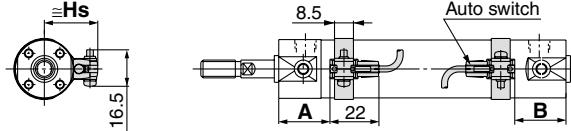


Solid state auto switch

D-M9□

D-M9□W

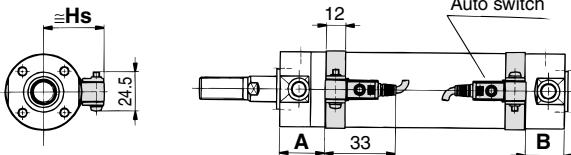
ø20 to ø63



D-G5, K5, G5□W

D-K59W, D-G59F, D-G5NTL

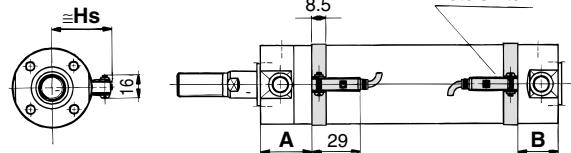
ø20 to ø100



D-H7□, H7□W

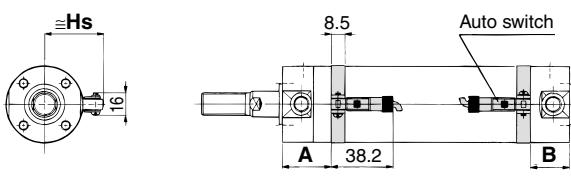
D-H7NF

ø20 to ø63



D-H7C

ø20 to ø63



Auto Switch Proper Mounting Position

Auto switch model	D-A9□		D-M9□		D-C7/C8		D-B5		D-B59W		D-H7□		D-H7C		D-H7□W		D-H7NF		D-G5□W		D-K59W		D-G59F		D-G5		D-K5		D-G5NTL	
	Bore size (mm)	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
20	29	28	33	32	29.5	28.5	23.5	22.5	26.5	25.5	28.5	27.5	25	24																
25	29	28	33	32	29.5	28.5	23.5	22.5	26.5	25.5	28.5	27.5	25	24																
32	30	29	34	33	30.5	29.5	24.5	23.5	27.5	26.5	29.5	28.5	26	25																
40	35	32	39	36	35.5	32.5	29.5	26.5	32	29.5	34.5	31.5	31	28																
50	42	40	46	44	42.5	40.5	36.5	34.5	39.5	37.5	41.5	39.5	38	36																
63	42	40	46	44	42.5	40.5	36.5	34.5	39.5	37.5	41.5	39.5	38	36																
80	—	—	—	—	—	—	46.5	44.5	49.5	47.5	—	—	48	46																
100	—	—	—	—	—	—	46.5	44.5	49.5	47.5	—	—	48	46																

Auto Switch Mounting Height

Auto switch model	D-A9□		D-C7/C8		D-H7□		D-H7□W		D-H7NF		D-C73C		D-C80C		D-B5/B6		D-K59W		D-G59F		D-G5□W		D-H7C			
	Bore size (mm)	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs		
20	24	24.5	27	27.5																						
25	26.5	27	29.5	30																						
32	30	30.5	33	33.5																						
40	34.5	35	37.5	38.5																						
50	40	40.5	43	43.5																						
63	47	47.5	50	50.5																						
80	—	—	—	—																						
100	—	—	—	—																						

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Minimum Auto Switch Mounting Stroke

Auto switch model	No. of auto switch mounted					(mm)	
	1 pc.	2 pcs.		n pcs.			
		Different surfaces	Same surface	Different surfaces	Same surface		
D-A9□ D-M9□ D-M9□W	10	15 Note)	45 Note)	15 + 45 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	45 + 45 (n-2)		
D-C7□ D-C80	10	15	50	15 + 45 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	50 + 45 (n-2)		
D-H7□ D-H7□W D-H7NF	10	15	60	15 + 45 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	60 + 45 (n-2)		
D-C73C D-C80C	10	15	65	15 + 50 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	65 + 50 (n-2)		
D-B5□ D-B64 D-G5□ D-K59□	10	15	75	15 + 50 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	75 + 55(n-2)		
D-B59W	10	20	75	20 + 50 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	75 + 55(n-2)		

Note) When 2 D-A93/M9□/M9□W auto switches are included.

Auto switch model	With 2 auto switches		REA
	Different surfaces	Same surface	
	<p>The proper auto switch mounting position is 6 mm inward from the switch holder edge.</p>	<p>The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.</p>	REB
D-A93	—	Less than 50 strokes	REC
D-M9□ D-M9□W	Less than 20 strokes	Less than 55 strokes	C□Y

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CG1Y

Operating Range

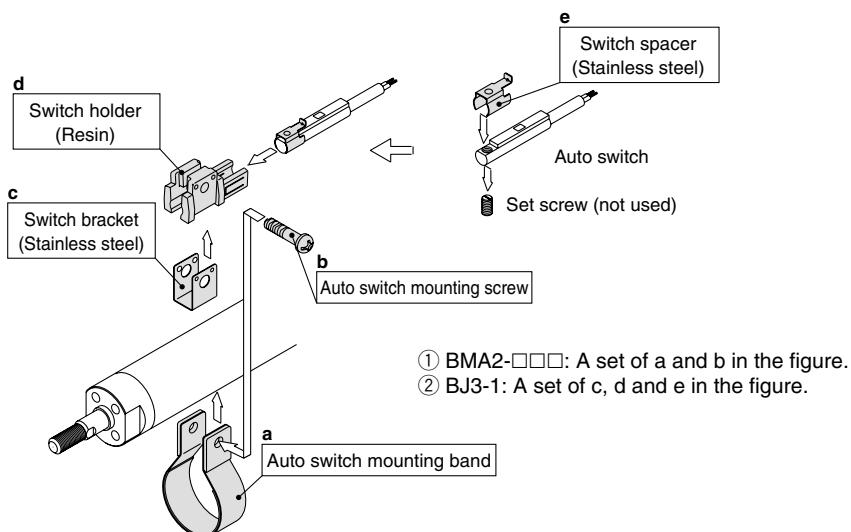
Auto switch model	(mm)							
	Bore size							
	20	25	32	40	50	63	80	100
D-A9□	7	6	8	8	8	9	—	—
D-M9□ D-M9□W	4.5	5	4.5	5.5	5	5.5	—	—
D-C7/C80 D-C73C/C80C	8	10	9	10	10	11	—	—
D-B5□/B64	8	10	9	10	10	11	11	11
D-B59W	13	13	14	14	14	17	16	18
D-H7□/H7□W D-H7NF	4	4	4.5	5	6	6.5	—	—
D-H7C	7	8.5	9	10	9.5	10.5	—	—
D-G5□/G5□W/G59F D-G5BAL/K59/K59W	4	4	4.5	5	6	6.5	6.5	7
D-G5NTL	4	4	4.5	5	6	6.5	6.5	7
D-G5NBL	35	40	40	45	45	45	45	50

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)
There may be the case it will vary substantially depending on an ambient environment.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
D-A9□ D-M9□ D-M9□W	Note) ①BMA2-020 ②BJ3-1	Note) ①BMA2-025 ②BJ3-1	Note) ①BMA2-032 ②BJ3-1	Note) ①BMA2-040 ②BJ3-1	Note) ①BMA2-050 ②BJ3-1	Note) ①BMA2-063 ②BJ3-1	—	—
D-C7□/C80 D-C73C D-C80C D-H7□ D-H7□W D-H7NF	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063	—	—
D-B5□/B64 D-B59W D-G5□/K59 D-G5□W/K59W D-G59F D-G5NTL D-G5NBL	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06	BA-08	BA-10

Note) Two kinds of auto switch mounting brackets are used as a set.



Cylinder Bracket by Stroke/Auto Switch Mounting Surface

Auto switch mounting surface varies depending on mounting brackets and cylinder strokes. Refer to the table below.

No. of auto switches	Basic style, Foot style, Flange style, Clevis style			Trunnion style		
	1 (Rod cover side)	2 (Different surfaces)	2 (Same surface)	1 (Rod cover side)	2 (Different surfaces)	2 (Same surface)
Switch mounting surface	Port surface 	Port surface 	Port surface 			
Switch type						
D-A9□	10 st or more	15 to 44st	45 st or more	10 st or more	15 to 44 st	45 st or more
D-M9□						
D-M9□W						
D-C7/C8	10 st or more	15 to 49st	50 st or more	10 st or more	15 to 49 st	50 st or more
D-H7□/H7□W	10 st or more	15 to 59st	60 st or more	10 st or more	15 to 59 st	60 st or more
D-H7NF						
D-C73C/C80C/H7C	10 st or more	15 to 64st	65 st or more	10 st or more	15 to 64 st	65 st or more
D-B5/B6/G5/K5						
D-G5□W/K59W	10 st or more	15 to 74st	75 st or more	10 st or more	15 to 74 st	75 st or more
D-G59F/G5NTL						
D-B59W	15 st or more	20 to 74st	75 st or more	15 st or more	20 to 74 st	75 st or more

* Trunnion style is not available for bore sizes ø80 and ø100.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.

For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features	Applicable bore size
Reed	D-C73, C76	Grommet (In-line)	—	ø20 to ø63
	D-C80		Without indicator light	
	D-B53		—	ø20 to ø100
Solid state	D-H7A1, H7A2, H7B		—	ø20 to ø63
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indication)	
	D-G5NTL		With timer	ø20 to ø100

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 to 1785.

* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1746.

* Wide range detection type, solid state auto switches (D-G5NBL type) are also available. Refer to page 1776 for details.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

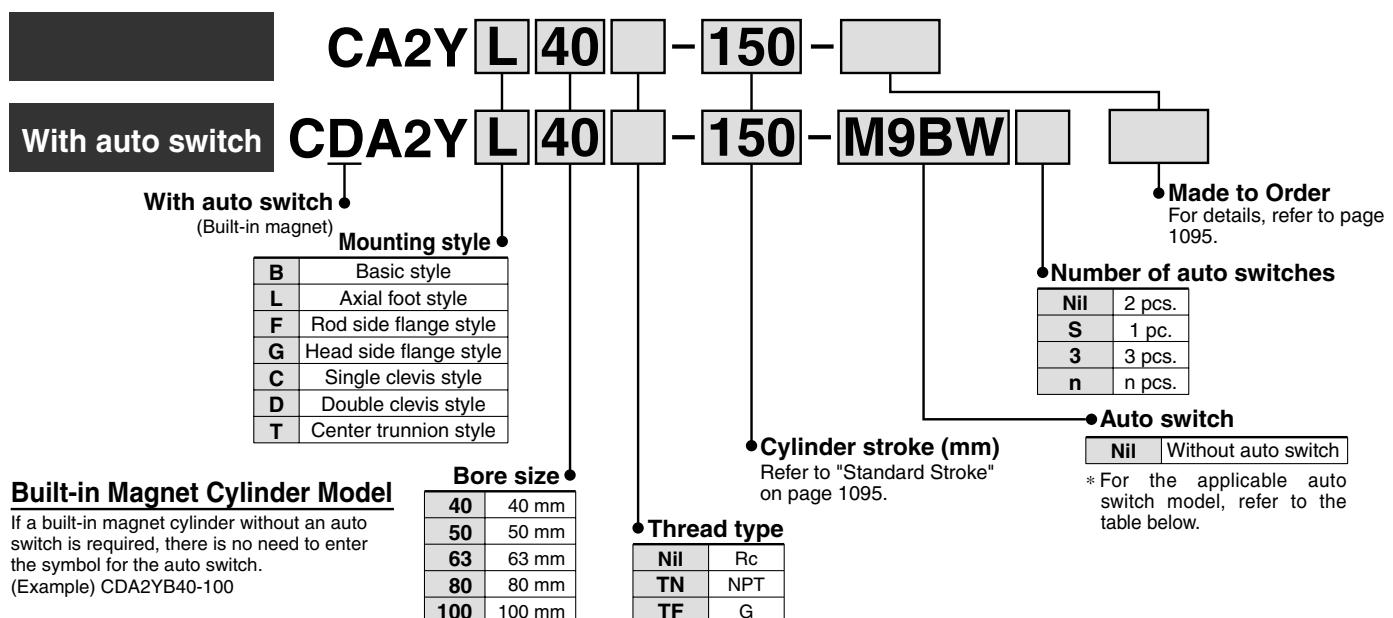
Individual
-X□

Smooth Cylinder

Series CA2Y

ø40, ø50, ø63, ø80, ø100

How to Order



Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDA2YB40-100

Applicable Auto Switch / Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire (m)				Pre-wired connector	Applicable load			
					DC	AC		Tie-rod mounting	Band mounting	0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
Solid state switch	—	Grommet	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	—	●	●	●	○	○	IC circuit		
							—	G59	●	—	●	○	○			
				3-wire (PNP)			M9P	—	●	●	●	○	○			
							—	G5P	●	—	●	○	○			
		Terminal conduit	2-wire	12 V	—	100 V, 200 V	M9B	—	●	●	●	○	○	—		
							—	K59	●	—	●	○	○			
	Diagnostic indication (2-color)	Grommet	3-wire (NPN)	24 V	12 V	—	J51	—	●	—	●	○	—	Relay, PLC		
							G39C	G39	—	—	—	—	—			
			2-wire				K39C	K39	—	—	—	—	—			
			3-wire (NPN)	5 V, 12 V	—	M9NW	—	●	●	●	○	○	IC circuit			
						—	G59W	●	—	●	○	○				
Reed switch	—	Grommet	3-wire (PNP)	24 V	12 V	—	M9PW	—	●	●	●	○	○	IC circuit		
							—	G5PW	●	—	●	○	○			
			2-wire				M9BW	—	●	●	●	○	○			
			3-wire (NPN)	5 V, 12 V	—	—	K59W	●	—	●	○	○				
						F59F	G59F	●	—	●	○	○	IC circuit			
	With diagnostic output (2-color) Magnetic field resistant (2-color)	Grommet	4-wire(NPN)	5 V, 12 V	—	—	P4DW	—	—	—	●	●	—	Relay, PLC		
							—	—	—	—	●	●	—			
			2-wire	24 V	12 V	—	A96**	—	●	—	●	—	—	IC circuit		
							100 V	A93**	—	●	—	●	—	—	Relay, PLC	
							100 V or less	A90**	—	●	—	●	—	—		
Reed switch	—	Grommet	DIN terminal	24 V	100 V, 200 V	—	A54	B54	●	—	●	●	—	IC circuit		
							200 V or less	A64	B64	●	—	●	—	—		
							—	A33C	A33	—	—	—	—	PLC		
							100 V, 200 V	A34C	A34	—	—	—	—			
			Diagnostic indication (2-color)	24 V	12 V	—	A44C	A44	—	—	—	—	—	Relay, PLC		
							—	A59W	B59W	●	—	●	—			
							—	—	—	—	—	—	—			

* Lead wire length symbols: 0.5 m Nil * ○: Manufactured upon receipt of order.

1 m M (Example) M9NWM ** D-A9□/A9□V types cannot be mounted on ø50.

3 m L (Example) M9NWL

5 m Z (Example) M9NWZ

* In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1108.

* Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.

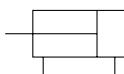
* D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)

Specifications



Bore size (mm)	40	50	63	80	100
Action	Double acting				
Operating piston speed	5 to 500 mm/s				
Fluid	Air				
Proof pressure	1.05 MPa				
Maximum operating pressure	0.7 MPa				
Ambient and fluid temperature	Without auto switch -10 to 70°C (with no freezing) With auto switch -10 to 60°C (with no freezing)				
Cushion	None				
Lubrication	Not required (Non-lube)				
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis, Center trunnion				
Allowable leakage rate	0.5 ℓ/min (ANR)				

JIS Symbol



Minimum Operating Pressure

Bore size (mm)	40	50	63	80	100	Unit: MPa
Minimum operating pressure	0.02			0.01		

Standard Stroke

Bore size (mm)	Standard stroke (mm)
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500
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 also available.
Please consult with SMC for strokes outside the above ranges.
Note 2) As the stroke increases, more sliding resistance may result due to the deflection of the piston rod and other factors. Take measures such as the installation of a guide.

Accessory

Mounting		Basic	Foot	Front flange	Rear flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●	●

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
40	CA2Y40-PS	Rod seal 1 pc.
50	CA2Y50-PS	Piston seal 1 pc.
63	CA2Y63-PS	Cylinder tube gasket 2 pcs.
80	CA2Y80-PS	Grease pack (10 g) 1 pc.
100	CA2Y100-PS	Grease pack (10 g) 1 pc.

When only grease for maintenance is necessary, please order by the following part numbers.

Grease pack part no.: GR-L-005 (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□
Individual
-X□

Series CA2Y

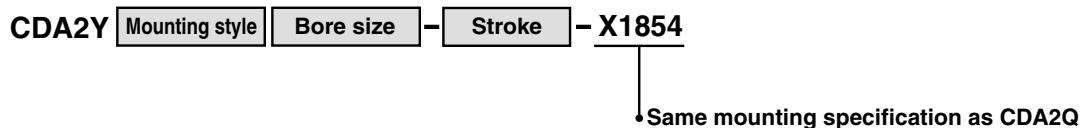
Mass

Bore size (mm)		40	50	63	80	100	(kg)
Basic mass	Basic style	0.89	1.36	2.00	3.48	4.87	
	Axial foot style	1.08	1.58	2.34	4.15	5.86	
	Flange style	1.26	1.81	2.79	4.93	6.79	
	Single clevis style	1.12	1.70	2.63	4.59	6.65	
	Double clevis style	1.16	1.79	2.79	4.88	7.17	
	Trunnion style	1.25	1.84	2.80	5.03	7.15	
Additional mass per each 50 mm of stroke		0.22	0.28	0.37	0.52	0.65	
Accessory	Single knuckle	0.23	0.26	0.26	0.60	0.83	
	Double knuckle (With pin)	0.37	0.43	0.43	0.87	1.27	

Calculation: (Example) CA2YL40-100/Axial foot

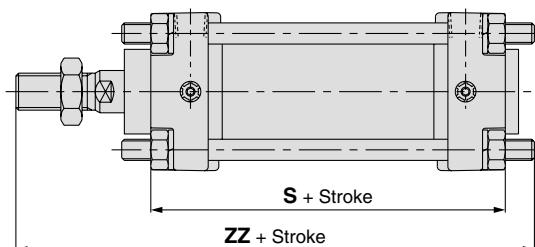
- Basic mass.....1.08 kg
- Additional mass.....0.22/50 stroke
- Cylinder stroke.....100 stroke
 $1.08 + 0.22 \times 100/50 = 1.52 \text{ kg}$

Low Friction Cylinder Mounting (Accessory)



In order to adjust the mounting dimensions of the low friction cylinder (CDA2Q), extend the longitudinal dimension (S, ZZ) by 10 mm.
 * Cylinders without a built-in magnet can be interchangeable.

Dimensions

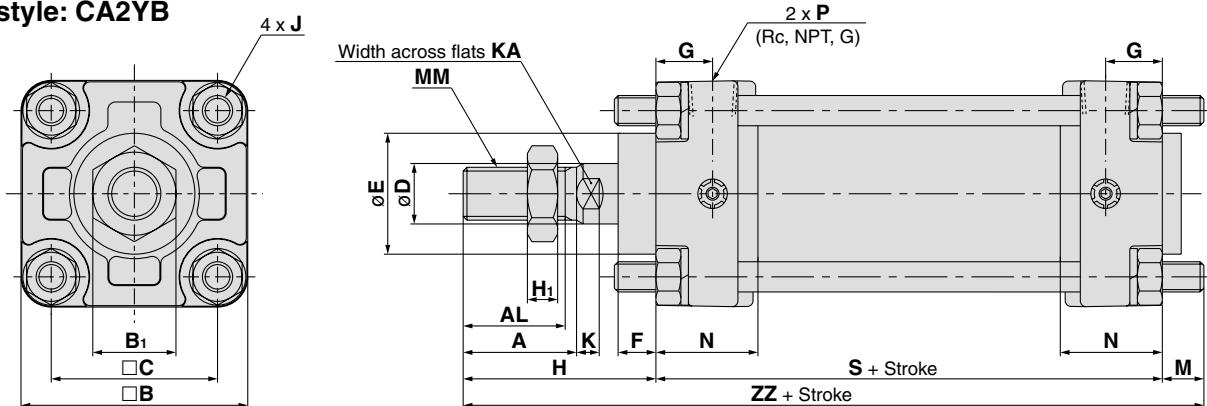


Bore size (mm)	S	ZZ
40	94	156
50	100	169
63	108	180
80	126	214
100	136	225

* Add 10 mm to S and ZZ dimensions of the double acting, single rod type on pages 1097 to 1101 for the dimensions for each mounting bracket other than the basic style.

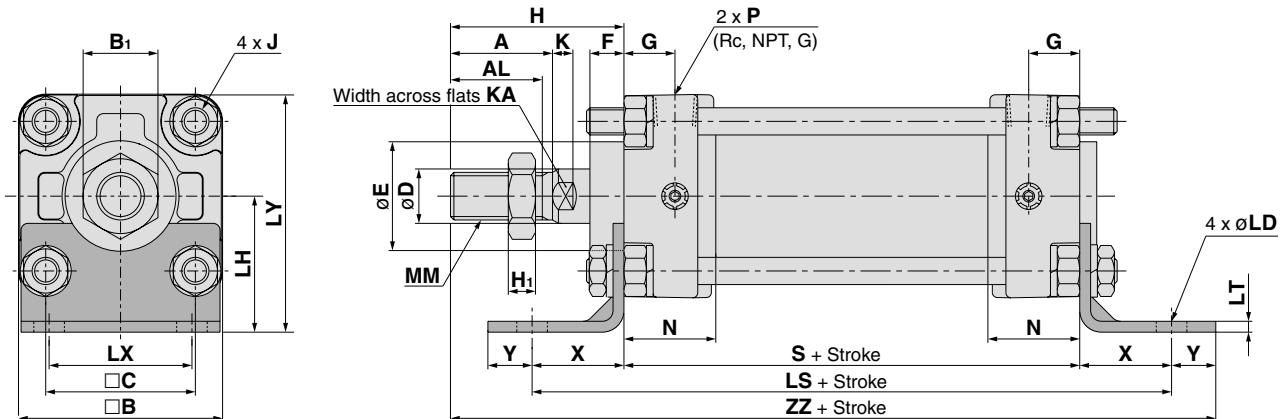
Dimensions: Ø40 to Ø100

Basic style: CA2YB



Bore size (mm)	Stroke range	A	AL	B	B1	C	D	E	F	G	H	H1	J	K	KA	M	MM	N	P	S	ZZ
40	Up to 500	30	27	60	22	44	16	32	10	15	51	8	M8 x 1.25	6	14	11	M14 x 1.5	27	1/4	84	146
50	Up to 600	35	32	70	27	52	20	40	10	17	58	11	M8 x 1.25	7	18	11	M18 x 1.5	30	3/8	90	159
63	Up to 600	35	32	85	27	64	20	40	10	17	58	11	M10 x 1.25	7	18	14	M18 x 1.5	31	3/8	98	170
80	Up to 700	40	37	102	32	78	25	52	14	21	71	13	M12 x 1.75	10	22	17	M22 x 1.5	37	1/2	116	204
100	Up to 700	40	37	116	41	92	30	52	14	21	72	16	M12 x 1.75	10	26	17	M26 x 1.5	40	1/2	126	215

Axial foot: CA2YL



Bore size (mm)	A	AL	B	B1	C	D	E	F	G	H	H1	J	K	KA	LD	LH	LS	LT	LX	LY
40	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	9.0	40	138	3.2	42	70	
50	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	9.0	45	144	3.2	50	80	
63	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	11.5	50	166	3.2	59	93	
80	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	13.5	65	204	4.5	76	116	
100	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	13.5	75	212	6.0	92	133	

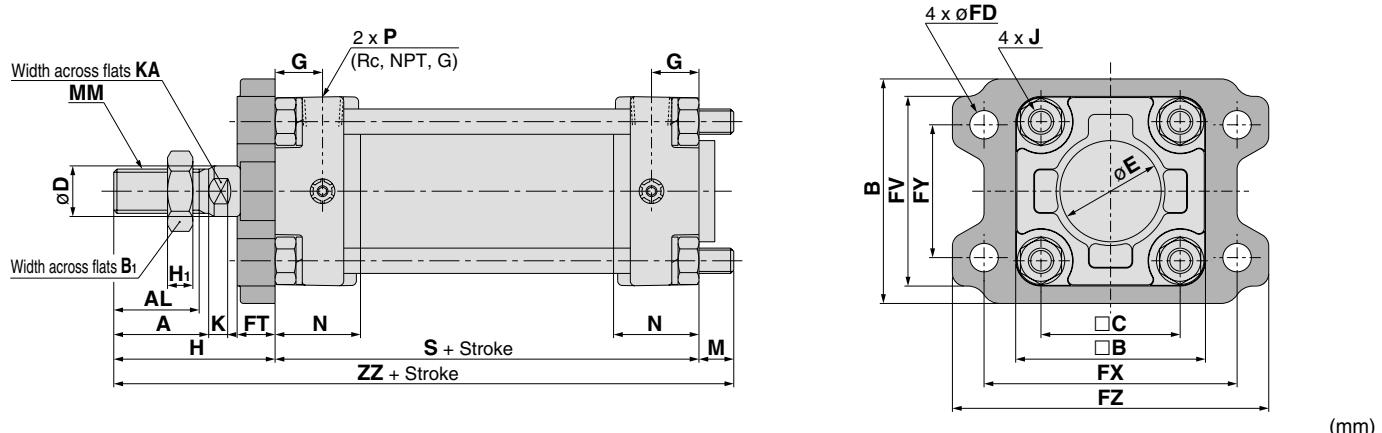
Bore size (mm)	MM	N	P	S	X	Y	H	ZZ
40	M14 x 1.5	27	1/4	84	27	13	51	175
50	M18 x 1.5	30	3/8	90	27	13	58	188
63	M18 x 1.5	31	3/8	98	34	16	58	206
80	M22 x 1.5	37	1/2	116	44	16	71	247
100	M26 x 1.5	40	1/2	126	43	17	72	258

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□
Individual
-X□

Series CA2Y

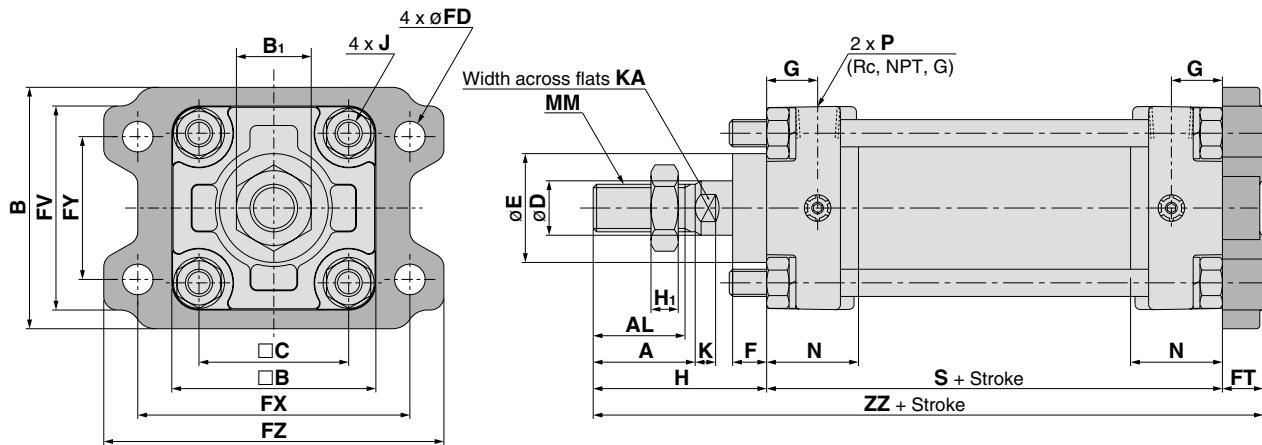
Rod Side Flange Style: CA2YF



Bore size (mm)	A	AL	FB	B	B ₁	C	D	E	FV	FD	FT	FX	FY	FZ	G	H ₁	J	K	KA	M	MM
40	30	27	71	60	22	44	16	32	60	9.0	12	80	42	100	15	8	M8 x 1.25	6	14	11	M14 x 1.5
50	35	32	81	70	27	52	20	40	70	9.0	12	90	50	110	17	11	M8 x 1.25	7	18	11	M18 x 1.5
63	35	32	101	85	27	64	20	40	86	11.5	15	105	59	130	17	11	M10 x 1.25	7	18	14	M18 x 1.5
80	40	37	119	102	32	78	25	52	102	13.5	18	130	76	160	21	13	M12 x 1.75	10	22	17	M22 x 1.5
100	40	37	133	116	41	92	30	52	116	13.5	18	150	92	180	21	16	M12 x 1.75	10	26	17	M26 x 1.5

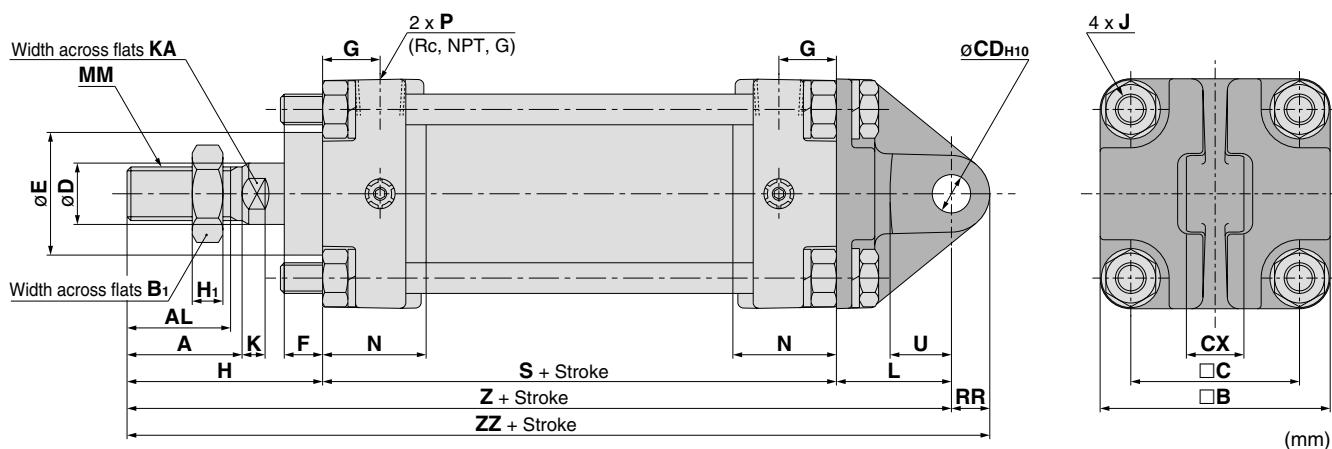
Bore size (mm)	N	P	S	H	ZZ
40	27	1/4	84	51	146
50	30	3/8	90	58	159
63	31	3/8	98	58	170
80	37	1/2	116	71	204
100	40	1/2	126	72	215

Head Side Flange Style: CA2YG



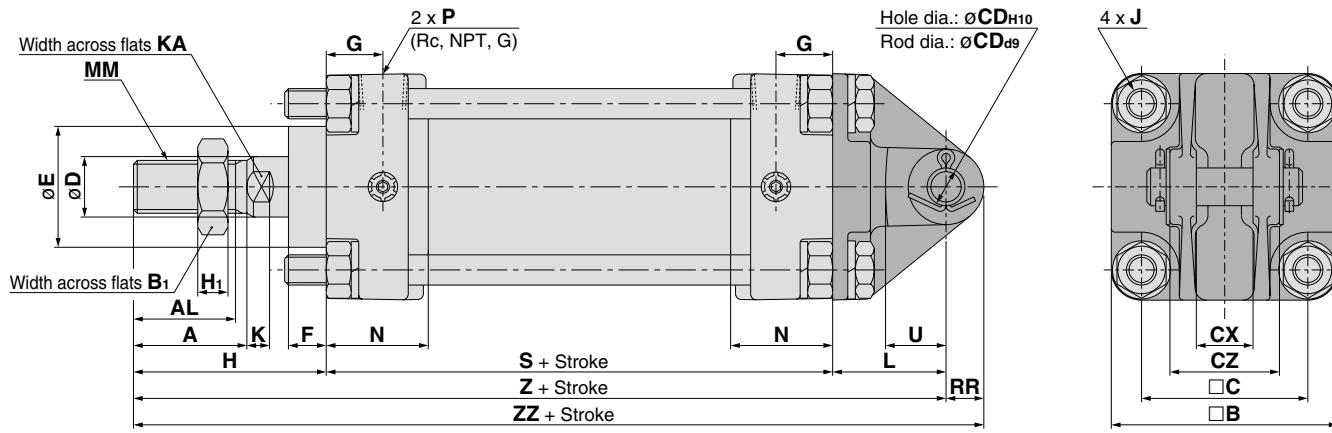
Bore size (mm)	A	AL	FB	B	B ₁	C	D	E	F	FV	FD	FT	FX	FY	FZ	G	H ₁	J	K	KA
40	30	27	71	60	22	44	16	32	10	60	9.0	12	80	42	100	15	8	M8 x 1.25	6	14
50	35	32	81	70	27	52	20	40	10	70	9.0	12	90	50	110	17	11	M8 x 1.25	7	18
63	35	32	101	85	27	64	20	40	10	86	11.5	15	105	59	130	17	11	M10 x 1.25	7	18
80	40	37	119	102	32	78	25	52	14	102	13.5	18	130	76	160	21	13	M12 x 1.75	10	22
100	40	37	133	116	41	92	30	52	14	116	13.5	18	150	92	180	21	16	M12 x 1.75	10	26

Bore size (mm)	MM	N	P	S	H	ZZ
40	M14 x 1.5	27	1/4	84	51	147
50	M18 x 1.5	30	3/8	90	58	160
63	M18 x 1.5	31	3/8	98	58	171
80	M22 x 1.5	37	1/2	116	71	205
100	M26 x 1.5	40	1/2	126	72	216

Single Clevis Style: CA2YC

Bore size (mm)	A	AL	B	B ₁	C	CD ^{H10}	CX	D	E	F	G	H ₁	J	K	KA	L	MM
40	30	27	60	22	44	10 ^{+0.058} ₀	15.0 ^{-0.1} _{-0.3}	16	32	10	15	8	M8 x 1.25	6	14	30	M14 x 1.5
50	35	32	70	27	52	12 ^{+0.070} ₀	18.0 ^{-0.1} _{-0.3}	20	40	10	17	11	M8 x 1.25	7	18	35	M18 x 1.5
63	35	32	85	27	64	16 ^{+0.070} ₀	25.0 ^{-0.1} _{-0.3}	20	40	10	17	11	M10 x 1.25	7	18	40	M18 x 1.5
80	40	37	102	32	78	20 ^{+0.084} ₀	31.5 ^{-0.1} _{-0.3}	25	52	14	21	13	M12 x 1.75	10	22	48	M22 x 1.5
100	40	37	116	41	92	25 ^{+0.084} ₀	35.5 ^{-0.1} _{-0.3}	30	52	14	21	16	M12 x 1.75	10	26	58	M26 x 1.5

Bore size (mm)	N	P	RR	S	U	H	Z	ZZ
40	27	1/4	10	84	16	51	165	175
50	30	3/8	12	90	19	58	183	195
63	31	3/8	16	98	23	58	196	212
80	37	1/2	20	116	28	71	235	255
100	40	1/2	25	126	36	72	256	281

Double Clevis Style: CA2YD

Bore size (mm)	A	AL	B	B ₁	C	CD	CX	CZ	D	E	F	G	H ₁	J	K	KA	L	MM
40	30	27	60	22	44	10 ^{+0.058} ₀	15.0 ^{-0.3} _{-0.1}	29.5	16	32	10	15	8	M8 x 1.25	6	14	30	M14 x 1.5
50	35	32	70	27	52	12 ^{+0.070} ₀	18.0 ^{-0.3} _{-0.1}	38	20	40	10	17	11	M8 x 1.25	7	18	35	M18 x 1.5
63	35	32	85	27	64	16 ^{+0.070} ₀	25.0 ^{-0.3} _{-0.1}	49	20	40	10	17	11	M10 x 1.25	7	18	40	M18 x 1.5
80	40	37	102	32	78	20 ^{+0.084} ₀	31.5 ^{-0.3} _{-0.1}	61	25	52	14	21	13	M12 x 1.75	10	22	48	M22 x 1.5
100	40	37	116	41	92	25 ^{+0.084} ₀	35.5 ^{-0.3} _{-0.1}	64	30	52	14	21	16	M12 x 1.75	10	26	58	M26 x 1.5

Bore size (mm)	N	P	RR	S	U	H	Z	ZZ
40	27	1/4	10	84	16	51	165	175
50	30	3/8	12	90	19	58	183	195
63	31	3/8	16	98	23	58	196	212
80	37	1/2	20	116	28	71	235	255
100	40	1/2	25	126	36	72	256	281

* Double clevis pins, double knuckle pins and retaining rings are shipped together.

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

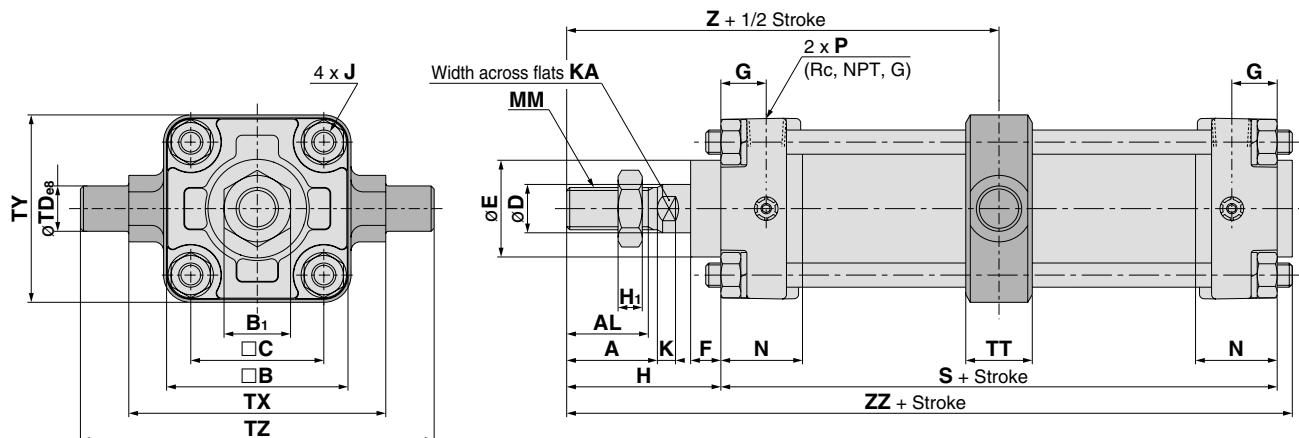
-X

Individual

-X

Series CA2Y

Center Trunnion Style: CA2YT



Bore size (mm)	A	AL	B	B ₁	C	D	E	F	G	H ₁	J	K	KA	MM	N	P	S	TDe8
40	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	M14 x 1.5	27	1/4	84	15 ^{-0.032} _{-0.059}
50	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	M18 x 1.5	30	3/8	90	15 ^{-0.032} _{-0.059}
63	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	M18 x 1.5	31	3/8	98	18 ^{-0.032} _{-0.059}
80	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	M22 x 1.5	37	1/2	116	25 ^{-0.040} _{-0.073}
100	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	M26 x 1.5	40	1/2	126	25 ^{-0.040} _{-0.073}

Bore size (mm)	TT	TX	TY	TZ	H	Z	ZZ
40	22	85	62	117	51	93	140
50	22	95	74	127	58	103	154
63	28	110	90	148	58	107	162
80	34	140	110	192	71	129	194
100	40	162	130	214	72	135	206

* Do not disassemble the trunnion style. It is extremely difficult to align the axial center of the trunnion with the axial center of the cylinder. Thus, if this style of cylinder is disassembled and reassembled, it is likely that the required dimensional accuracy cannot be attained, which may cause malfunction.

Trunnion and Double Clevis Mounting Bracket

- Strength is the same as cylinder brackets.

Description	Bore size	40	50	63	80	100
Trunnion mounting bracket		CA2-S04		CA2-S06		MB-S10
Double clevis bracket		CA2-B04	CA2-B05	CA2-B06	CA2-B08	CA2-B10

Note) 1. The above brackets cannot be specified in the part number of the cylinder.

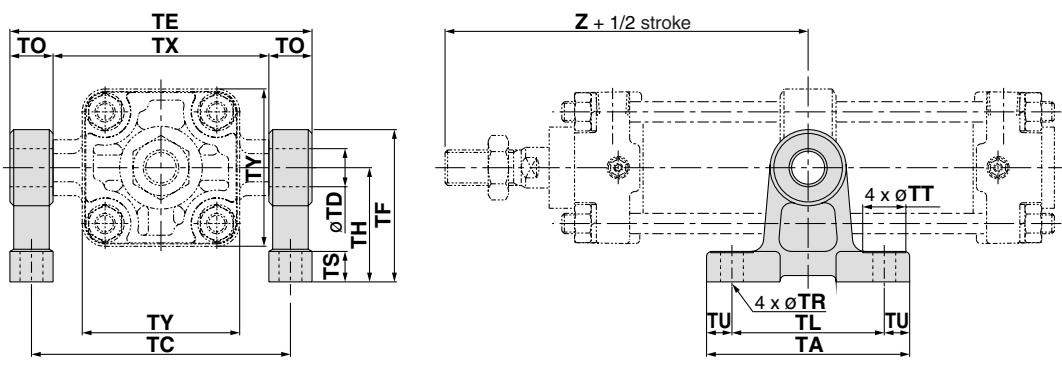
2. They must be ordered separately from the cylinder.

3. When the trunnion brackets are specified, two pieces should be ordered for each cylinder.

Trunnion bracket

Material: Cast iron

* This assembly drawing is provided as a reference.
The trunnion bracket must be ordered separately.

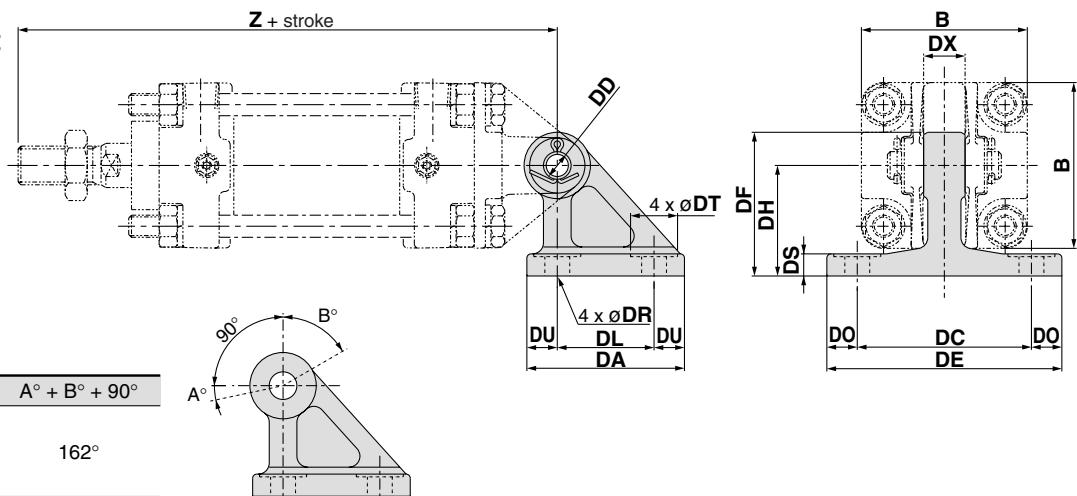


(mm)

Part no.	Bore size (mm)	TA	TL	TU	TC	TX	TE	TO	TR	TT	TS	TH	TF	TY	Z	TD-H10 (Hole)
CA2-S04	40	80	60	10	102	85	119	17	9	17	12	45	60	62	93	$15^{+0.070}_0$
	50	80	60	10	112	95	129	17	9	17	12	45	60	74	103	$15^{+0.070}_0$
CA2-S06	63	100	70	15	130	110	150	20	11	22	14	55	73	90	107	$18^{+0.070}_0$
	80	120	90	15	166	140	192	26	13.5	24	17	75	100	110	129	$25^{+0.084}_0$
MB-S10	100	120	90	15	188	162	214	26	13.5	24	17	75	100	130	135	$25^{+0.084}_0$

Double clevis bracket

Material: Cast iron



Rotation

Bore size (mm)	A°	B°	A° + B° + 90°
40 to 100	12°	60°	162°

Note) This assembly drawing is provided as a reference. The trunnion bracket must be ordered separately.

(mm)

Part no.	Bore size (mm)	DA	DL	DU	DC	DX	DE	DO	DR	DT	DS	DH	DF	B	Z	DDH10 (Hole)
CA2-B04	40	57	35	11	65	15	85	10	9	17	8	40	52	60	165	$10^{+0.058}_0$
CA2-B05	50	57	35	11	65	18	85	10	9	17	8	40	52	70	183	$12^{+0.070}_0$
CA2-B06	63	67	40	13.5	80	25	105	12.5	11	22	10	50	66	85	196	$16^{+0.070}_0$
CA2-B08	80	93	60	16.5	100	31.5	130	15	13.5	24	12	65	90	102	235	$20^{+0.084}_0$
CA2-B10	100	93	60	16.5	100	35.5	130	15	13.5	24	12	65	90	116	256	$25^{+0.084}_0$

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

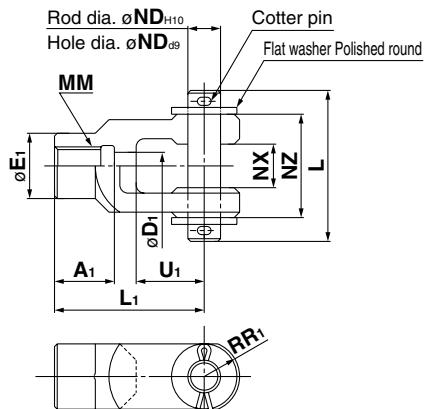
-X

Individual
-X

Series CA2Y

Accessory Dimensions

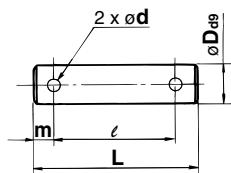
Y Type Double Knuckle Joint



Part no.	Applicable bore size (mm)	(mm)												
		A ₁	E ₁	D ₁	L ₁	MM	R _{R1}	U ₁	ND	NX	NZ	L		
Y-04D	40	22	24	10	55	M14 x 1.5	13	25	12	16 ^{+0.3} _{-0.1}	38	55.5	ø3 x 18ℓ	Polished round 12
Y-05D	50, 63	27	28	14	60	M18 x 1.5	15	27	12	16 ^{+0.3} _{-0.1}	38	55.5	ø3 x 18ℓ	Polished round 12
Y-08D	80	37	36	18	71	M22 x 1.5	19	28	18	28 ^{+0.3} _{-0.1}	55	76.5	ø4 x 25ℓ	Polished round 18
Y-10D	100	37	40	21	83	M26 x 1.5	21	38	20	30 ^{+0.3} _{-0.1}	61	83	ø4 x 30ℓ	Polished round 20

* Knuckle pin, cotter pin and flat washer are included.

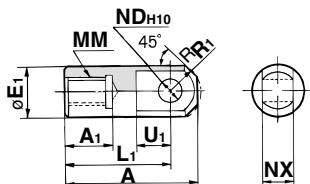
Clevis Pin/Knuckle Pin



Part no.	Applicable bore size (mm)		(mm)						
	Clevis	Knuckle	D _{d9}	L	l	m	d drill through	Applicable cotter pin	Applicable flat washer
CDP-2A	40	—	10 ^{-0.040} _{-0.076}	46	38	4	3	ø3 x 18ℓ	Polished round 10
CDP-3A	50	40, 50, 63	12 ^{-0.050} _{-0.093}	55.5	47.5	4	3	ø3 x 18ℓ	Polished round 12
CDP-4A	63	—	16 ^{-0.050} _{-0.093}	71	61	5	4	ø4 x 25ℓ	Polished round 16
CDP-5A	—	80	18 ^{-0.050} _{-0.093}	76.5	66.5	5	4	ø4 x 25ℓ	Polished round 18
CDP-6A	80	100	20 ^{-0.065} _{-0.117}	83	73	5	4	ø4 x 30ℓ	Polished round 20
CDP-7A	100	—	25 ^{-0.065} _{-0.117}	88	78	5	4	ø4 x 36ℓ	Polished round 24

* Cotter pin and flat washer are included.

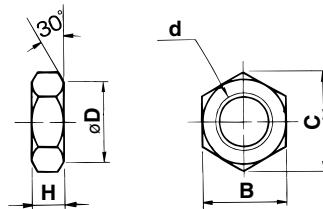
I Type Single Knuckle Joint



Material: Free cutting sulfur steel (mm)

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	R ₁	U ₁	ND ^{H10}	NX
I-04A	40	69	22	24	55	M14 x 1.5	15.5	20	12 ^{+0.070} ₀	16 ^{-0.1} _{-0.3}
I-05A	50, 63	74	27	28	60	M18 x 1.5	15.5	20	12 ^{+0.070} ₀	16 ^{-0.1} _{-0.3}
I-08A	80	91	37	36	71	M22 x 1.5	22.5	26	18 ^{+0.070} ₀	28 ^{-0.1} _{-0.3}
I-10A	100	105	37	40	83	M26 x 1.5	24.5	28	20 ^{+0.084} ₀	30 ^{-0.1} _{-0.3}

Rod End Nut (Standard option)



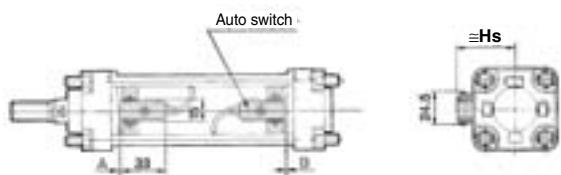
Material: Rolled steel (mm)

Part no.	Applicable bore size (mm)	d	H	B	C	D
NT-04	40	M14 x 1.5	8	22	25.4	21
NT-05	50, 63	M18 x 1.5	11	27	31.2	26
NT-08	80	M22 x 1.5	13	32	37.0	31
NT-10	100	M26 x 1.5	16	41	47.3	39

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

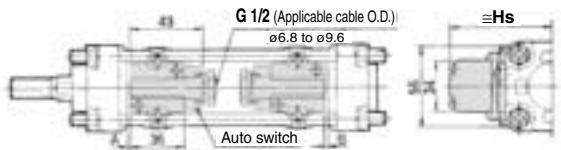
<Band mount type>

D-B5□/B64/B59W



D-A3□

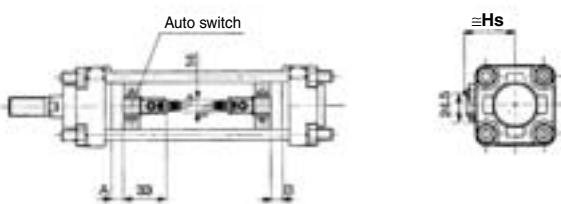
D-G39/K39



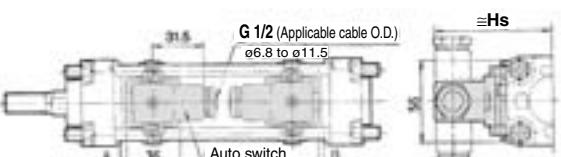
D-G5□/K59

D-G5□W/K59W

D-G59F/G5NTL



D-A44



<Tie-rod mount type>

D-A9□/A9□V

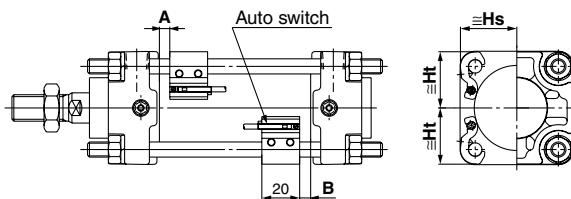
D-M9□/M9□V

D-M9□W/M9□WV

D-Z7□/Z80

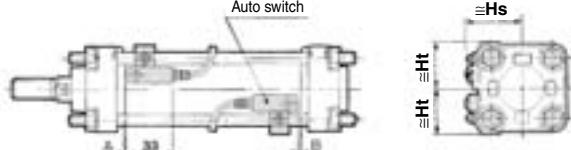
D-Y59□/Y69□/Y7P/Y7PV

D-Y7□W/Y7□WV



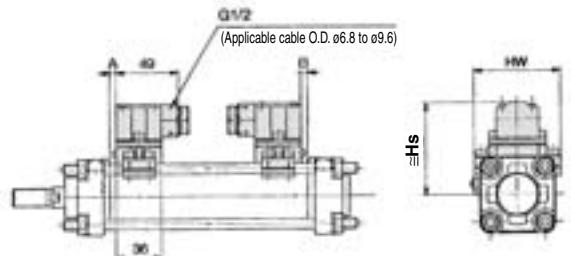
D-A5□/A6□

D-A59W



D-A3□C

D-G39C/K39C

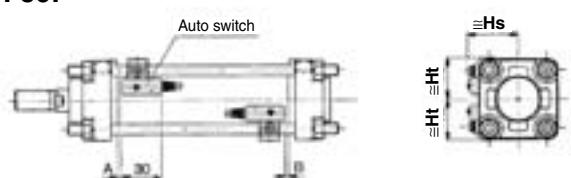


D-F5□/J5□

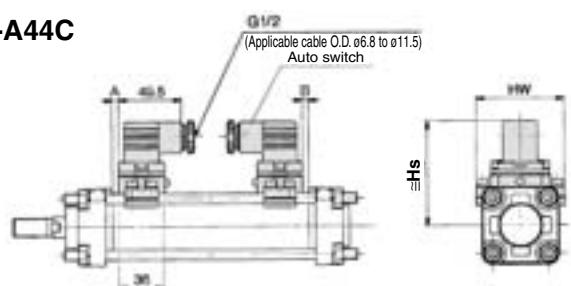
D-F5NTL

D-F5□W/J59W

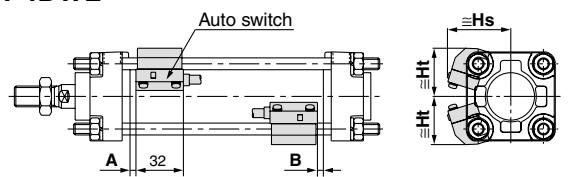
D-F59F



D-A44C



D-P4DWL



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CA2Y

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Auto Switch Proper Mounting Position

(mm)

Auto switch model	Note 2) D-A9□ D-A9□V	D-M9□ D-M9□V D-M9□W D-M9□WV	D-B59W D-Z7□ D-Z80 D-Y59□ D-Y69□ D-Y7P D-Y7PV D-Y7□W D-Y7□WV		D-P4DWL		D-A5□ D-A6□ D-A3□ D-A3□C D-A44 D-A44C D-G39 D-G39C D-K39 D-K39C		D-B5□ D-B64		D-F5□ D-J5□ D-F59F D-F5□W D-J59W		D-G5□ D-K59 D-G5NTL D-G5□W D-K59W D-G59F		D-A59W		D-F5NTL			
			A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
40	6	4	10	8	3.5	1.5	3	1	0	0	0.5	0	6.5	4.5	2	0	4	2	11.5	9.5
50	—	—	10	8	3.5	1.5	3	1	0	0	0.5	0	6.5	4.5	2	0	4	2	11.5	9.5
63	8.5	7.5	12.5	11.5	6	5	5.5	4	2.5	1.5	3	2	9	8	4.5	3.5	6.5	5.5	14	13
80	12	10	16	14	9.5	7.5	9	7	6	4	6.5	4.5	4.5	12.5	8	6	10	8	17.5	15.5
100	13.5	12.5	17.5	16.5	11	10	10.5	9	7.5	6.5	8	7	14	13	9.5	8.5	11.5	10.5	19	18

Note 1) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model	Note 2) D-A9□ D-M9□ D-M9□W	Note 2) D-A9□V	D-M9□V D-M9□WV		D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y7□W		D-Y69□ D-Y7PV D-Y7□WV		D-P4DWL		D-B5□ D-B64 D-B59W D-G5□ D-K59 D-G5NTL D-G5□W D-K59W D-G59F		D-A3□ D-G39 D-K39		D-A44		D-A5□ D-A6□ D-A59W		D-F5□ D-J59 D-F5□W D-J59W D-F59F D-F5NTL		D-A3□C D-G39C D-K39C		D-A44C	
			Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Hw	Hs	Hw		
40	30	30	31	30	34	30	30	30	30	42.5	33	37	71.5	81.5	38.5	31.5	38	31.5	73	69	81	69		
50	34	34	—	—	38	34	34	34	34	46.5	37.5	42	76.5	86.5	42	35.5	42	35.5	78.5	77	86.5	77		
63	41	41	41.5	41	44	41	41	41	41	52	43	49	83.5	93.5	46.5	43	47	43	85.5	91	93.5	91		
80	49.5	49	50	49	52.5	49	49.5	49	49.5	49	58.5	51.5	57.5	92	102	53.5	51	53.5	51	94	107	102	107	
100	56.5	56	58.5	56	61	56	56.5	55.5	57.5	55.5	66	58.5	68	102.5	112.5	61.5	57.5	61	57.5	104	121	112	121	

Note 2) D-A9□/A9□V types cannot be mounted on ø50.

Minimum Auto Switch Mounting Stroke

Auto switch model	Number of auto switch	Brackets other than center trunnion	Center trunnion (mm)				
			ø40	ø50	ø63	ø80	ø100
D-A9□	2 (Different surfaces and same surface) With 1	15	75	—	80	85	90
	n	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$75 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)		$80 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$85 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$90 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)
D-A9□V	2 (Different surfaces and same surface) With 1	10	50	—	55	60	65
	n	$10 + 30 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$50 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)		$55 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$60 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$65 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)
D-M9□ D-M9□W	2 (Different surfaces and same surface) With 1	15	80	85	90	95	
	n	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$80 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$85 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$90 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$95 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	
D-M9□V D-M9□WV	2 (Different surfaces and same surface) With 1	10	55	60	65	70	
	n	$10 + 30 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$55 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$60 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$65 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$70 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	
D-A5□/A6 D-F5□/J5 D-F5□W/J59W D-F59F	2 (Different surfaces and same surface) With 1	15	90	100	110	120	
	n (Same surface)	$15 + 55 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$90 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$100 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$110 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$120 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	
D-A59W	2 (Different surfaces and same surface)	20	90	100	110	120	
	n (Same surface)	$20 + 55 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$90 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$100 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$110 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$120 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	
	1	15	90	100	110	120	
D-F5NTL	2 (Different surfaces and same surface) With 1	25	110	120	130	140	
	n (Same surface)	$25 + 55 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$110 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$120 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$130 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$140 + 55 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	
D-B5□/B64 D-G5□/K59 D-G5□W D-K59W D-G59F D-G5NTL	With 2 Different surfaces	15	90	100	110		
	Same surface	75					
	With n Different surfaces	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8, ...)	$90 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ...)	$100 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ...)	$110 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ...)		
	Same surface	$75 + 50 (n-2)$ (n = 2, 3, 4, ...)	$90 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)	$100 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)	$110 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)		
	1	10	90	100	110		
	With 2 Different surfaces	20	90	100	110		
	Same surface	75					
D-B59W	With n Different surfaces	$20 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8, ...)	$90 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ...)	$100 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ...)	$110 + 50 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ...)		
	Same surface	$75 + 50 (n-2)$ (n = 2, 3, 4, ...)	$90 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)	$100 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)	$110 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)		
	1	15	90	100	110		
	With 2 Different surfaces	35	75	80	90		
D-A3□ D-G39 D-K39	Same surface	100	100	100	100		
	With n Different surfaces	$35 + 30 (n-2)$ (n = 2, 3, 4, ...)	$75 + 30 (n-2)$ (n = 2, 4, 6, 8, ...)	$80 + 30 (n-2)$ (n = 2, 4, 6, 8, ...)	$90 + 30 (n-2)$ (n = 2, 4, 6, 8, ...)		
	Same surface	$100 + 100 (n-2)$ (n = 2, 3, 4, ...)		$100 + 100 (n-2)$ (n = 2, 4, 6, 8, ...)			
	1	10	75	80	90		
D-A44	With 2 Different surfaces	35	75	80	90		
	Same surface	55					
	With n Different surfaces	$35 + 30 (n-2)$ (n = 2, 3, 4, ...)	$75 + 30 (n-2)$ (n = 2, 4, 6, 8, ...)	$80 + 30 (n-2)$ (n = 2, 4, 6, 8, ...)	$90 + 30 (n-2)$ (n = 2, 4, 6, 8, ...)		
	Same surface	$55 + 50 (n-2)$ (n = 2, 3, 4, ...)	$75 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)	$80 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)	$90 + 50 (n-2)$ (n = 2, 4, 6, 8, ...)		
	1	10	75	80	90		

REA

REB

REC

C-Y

C-X

MQ

RHC

RZQ

D-

-X

Individual
-X

Series CA2Y

Minimum Auto Switch Mounting Stroke

Auto switch model	Number of auto switch	Brackets other than center trunnion	Center trunnion (mm)				
			ø40	ø50	ø63	ø80	ø100
D-A3□C D-G39C D-K39C	With 2	Different surfaces	20	75	80	90	
	With n	Same surface	100	100	100	100	
		Different surfaces (n = 2, 3, 4, ...)	20 + 35 (n - 2) (n = 2, 3, 4, ...)	75 + 35 (n - 2) (n = 2, 4, 6, 8, ...)	80 + 35 (n - 2) (n = 2, 4, 6, 8, ...)	90 + 35 (n - 2) (n = 2, 4, 6, 8, ...)	
		Same surface (n = 2, 3, 4, 5...)	100 + 100 (n - 2) (n = 2, 3, 4, 5...)	100 + 100(n - 2) (n = 2, 4, 6, 8, ...)			
D-A44C	With 2	Different surfaces	20	75	80	90	
	With n	Same surface	55		80	90	
		Different surfaces (n = 2, 3, 4, ...)	20 + 35 (n - 2) (n = 2, 3, 4, ...)	75 + 35 (n - 2) (n = 2, 4, 6, 8, ...)	80 + 35 (n - 2) (n = 2, 4, 6, 8, ...)	90 + 35 (n - 2) (n = 2, 4, 6, 8, ...)	
		Same surface (n = 2, 3, 4, ...)	55 + 50 (n - 2) (n = 2, 3, 4, ...)	75 + 50 (n - 2) (n = 2, 4, 6, 8, ...)	80 + 50 (n - 2) (n = 2, 4, 6, 8, ...)	90 + 50 (n - 2) (n = 2, 4, 6, 8, ...)	
	1		10	75	80	90	
D-Z7□/Z80 D-Y59□/Y7P D-Y7□W	2 (Different surfaces and same surface) With 1	15	80	85	90	95	105
	n	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$80 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$85 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$90 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$95 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$105 + 40 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)
D-Y69□/Y7PV D-Y7□WV	2 (Different surfaces and same surface) With 1	10	65		75	80	90
	n	$10 + 30 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$65 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$75 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$80 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$90 + 30 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	
D-P4DWL	2 (Different surfaces and same surface) With 1	15	120		130	140	
	n	$15 + 65 \frac{(n-2)}{2}$ (n = 2, 4, 6, 8...)	$120 + 65 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$130 + 65 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)	$140 + 65 \frac{(n-4)}{2}$ (n = 4, 8, 12, 16...)		

Operating Range

Auto switch model	(mm)				
	40	50	63	80	100
D-A9□/A9□V	7	—	9	9	9
D-M9□/M9□V D-M9□W/M9□WV	4.5	5	5.5	5	6
D-Z7□/Z80	8.5	7.5	9.5	9.5	10.5
D-A3□/A44 D-A3□C/A44C	9	10	11	11	11
D-A5□/A6□					
D-B5□/B64					
D-A59W	13	13	14	14	15
D-B59W	14	14	17	16	18
D-Y59□/Y69□ D-Y7P/Y7□V D-Y7□W/Y7□WV	8	7	5.5	6.5	6.5

Auto switch model	(mm)				
	40	50	63	80	100
D-F5□/J5□/F5□W	4	4	4.5	4.5	4.5
D-J59W					
D-F5NTL/F59F					
D-G5□/K59/G5□W	5	6	6.5	6.5	7
D-K59W					
D-G5NTL/G59F					
D-G39/K39	9	9	10	10	11
D-G39C/K39C					
D-P4DWL	4	4	4.5	4	4.5

* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately ±30% dispersion.)

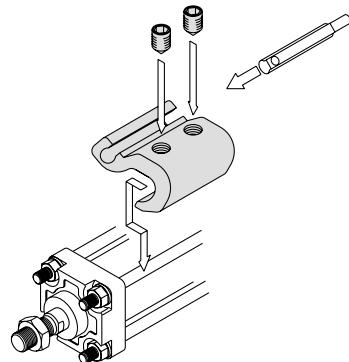
There may be the case it will vary substantially depending on an ambient environment.

Note) D-A9□/A9□V types cannot be mounted on ø50.

Auto Switch Mounting Bracket/Part No.

< Tie-rod mounting >

Auto switch model	Bore size (mm)				
	40	50	63	80	100
D-A9□/A9□V D-M9□/M9□V D-M9□W/M9□WV	BA7-040	BA7-040	BA7-063	BA7-080	BA7-080
D-A5□/A6□ D-A59W D-F5□/J5□ D-F5□W/J59W D-F59F/F5NTL	BT-04	BT-04	BT-06	BT-08	BT-08
D-A3□C/A44C D-G39C/K39C	BA3-040	BA3-050	BA3-063	BA3-080	BA3-100
D-Z7□/Z80 D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV	BA4-040	BA4-040	BA4-063	BA4-080	BA4-080
D-P4DWL	BAP2-040	BAP2-040	BAP2-063	BAP2-080	BAP2-080



• Mounting example of D-A9□(V)/M9□(V)/M9□W(V)

< Band mounting >

Auto switch model	Bore size (mm)				
	40	50	63	80	100
D-A3□/A44 D-G39/K39	BD1-04M	BD1-05M	BD1-06M	BD1-08M	BD1-10M
D-B5□/B64 D-B59W D-G5□/K59 D-G5□W/K59W D-G59F D-G5NTL	BA-04	BA-05	BA-06	BA-08	BA-10

* Auto switch mounting brackets are included in D-A3□C/A44C/G39C/K39C types. Indicate as follows depending on the cylinder size when ordering.
(Example) ø40: D-A3□C-4, ø50: D-A3□C-5, ø63: D-A3□C-6, ø80: D-A3□C-8, ø100: D-A3□C-10

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□

Series CA2Y

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.

For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features	Applicable bore size
Reed	D-A93V, A96V	Grommet (Perpendicular)	—	ø40, ø63, ø80, ø100
	D-A90V		Without indicator light	
	D-A53, A56, B53, Z73, Z76	Grommet (In-line)	—	ø40 to ø100
	D-A67, Z80		Without indicator light	
Solid state	D-M9NV, M9PV, M9BV	Grommet (Perpendicular)	—	ø40 to ø100
	D-Y69A, Y69B, Y7PV		—	
	D-M9NWV, M9PWV, M9BWV		Diagnostic indication (2-color indication)	
	D-Y7NWV, Y7PWV, Y7BWV		—	
	D-Y59A, Y59B, Y7P	Grommet (In-line)	—	ø40 to ø100
	D-F59, F5P, J59		Diagnostic indication (2-color indication)	
	D-Y7NW, Y7PW, Y7BW		With timer	
	D-F59W, F5PW, J59W		Magnetic field resistant (2-color indication)	
	D-F5NTL, G5NTL			
	D-P5DWL			

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 and 1785.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1746 and 1748 for details.

* Wide range detection type, solid state auto switches (D-G5NBL type) are also available. Refer to page 1776 for details.



Smooth Cylinder Specific Product Precautions 1

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

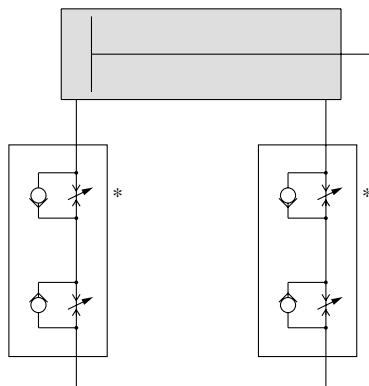
Recommended Pneumatic Circuit

Refer to the diagrams below when controlling speed with the smooth cylinder.

⚠ Warning

Horizontal operation (Speed control)

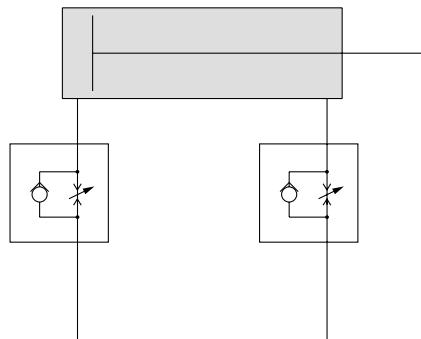
I



Dual speed controller

Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip. More stable low speed operation can be achieved than meter-in circuit alone.

II

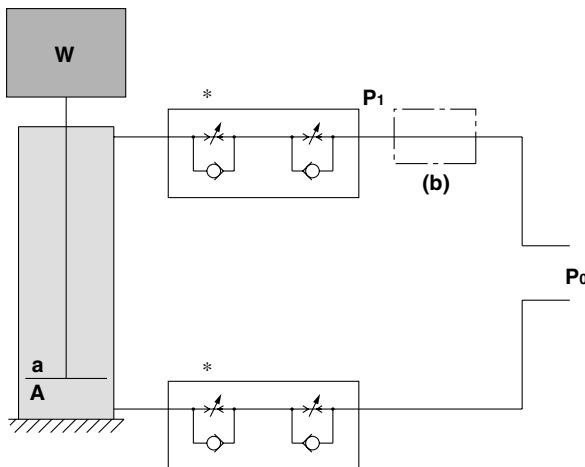


Meter-in speed controller

Meter-in speed controllers can reduce lurching while controlling the speed. The two adjustment needles facilitate adjustment.

Vertical operation (Speed control)

I



(1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*

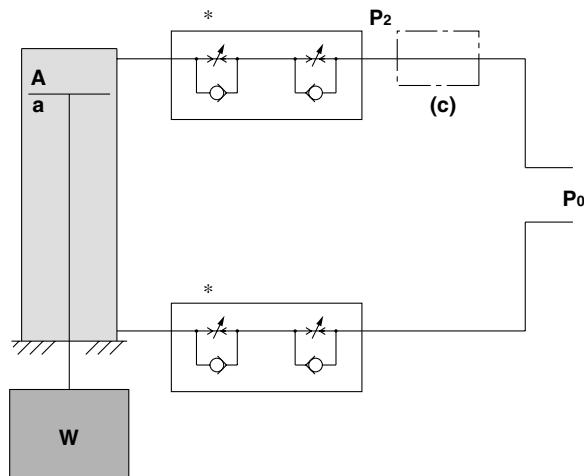
(2) Depending on the size of the load, installing a regulator with check valve at position (b) can reduce lurching during descent and operation delay during ascent.

As a guide,

when $W + Poa > PoA$,

adjust P_1 to make $W + P_1a = PoA$.

II



(1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*

(2) Installing a regulator with check valve at position (c) can reduce lurching during descent and operation delay during ascent.

As a guide,

adjust P_2 to make $W + P_2A = PoA$.

W: Load (N) **P₀:** Operating pressure (MPa) **P₁, P₂:** Reduced pressure (MPa) **a:** Rod side piston area (mm²) **A:** Head side piston area (mm²)

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

-X□



Smooth Cylinder Specific Product Precautions 2

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Lubricant

⚠ Caution

1. Operate without lubrication.

Lubrication may cause malfunction.

2. Do not use grease not specified by SMC.

Using grease other than that specified may cause malfunction.

- Order using the following part numbers when only maintenance grease is needed.

Grease

Volume	Part no.
5 g	GR-L-005
10 g	GR-L-010
150 g	GR-L-150

3. Do not wipe off grease from the sliding part of the air cylinder.

Wiping grease from the sliding part of the air cylinder forcefully may cause malfunction.

Air Source

⚠ Caution

1. Take measure to prevent pressure fluctuations.

Pressure fluctuations may cause malfunction.

Low Speed Cylinder

Series CJ2X/CUX/CQSX/CQ2X/CM2X
 Ø10, Ø16 Ø10 to Ø32 Ø12 to Ø25 Ø32 to Ø100 Ø20 to Ø40

Air Cylinder Series CJ2X



Bore size (mm)	Minimum operating pressure (MPa)	Minimum operating piston speed (mm/s)
10, 16	0.06	1

Page

1114

Free Mount Cylinder Series CUX



Bore size (mm)	Minimum operating pressure (MPa)	Minimum operating piston speed (mm/s)
10, 16	0.06	1
20, 25, 32	0.05	0.5

1124

Compact Cylinder Series CQSX



Bore size (mm)	Minimum operating pressure (MPa)	Minimum operating piston speed (mm/s)
12, 16	0.03	1
20, 25	0.025	0.5

1129

Compact Cylinder Series CQ2X



Bore size (mm)	Minimum operating pressure (MPa)	Minimum operating piston speed (mm/s)
32, 40	0.025	0.5
50, 63, 80, 100	0.01	0.5

1136

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

Air Cylinder Series CM2X



Bore size (mm)	Minimum operating pressure (MPa)	Minimum operating piston speed (mm/s)
20, 25, 32, 40	0.025	0.5

1148

Clean Series

Compact Cylinder Series 10-11-CQSX



Compact Cylinder Series 10-11-CQ2X



Air Cylinder Series 10-11-CM2X



D-□

-X□

Individual
-X□

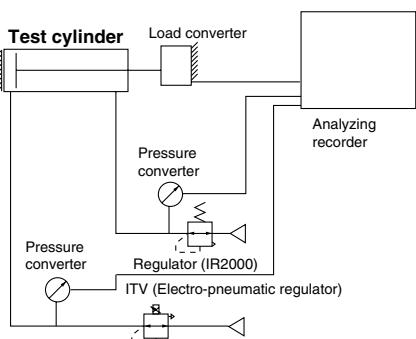
Low Speed Cylinder

Improved low friction characteristics (CM2X, CQSX, CQ2X)

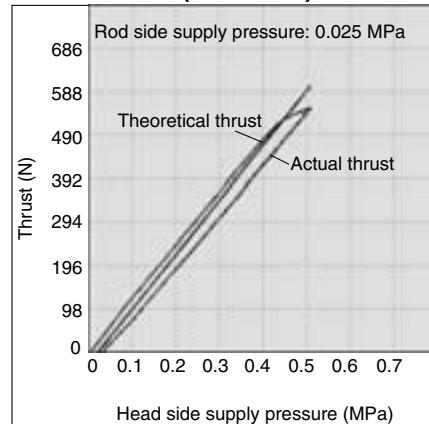
Minimum operating pressure is reduced in half (compared to previous version).

Stabilization of thrust has been realized.

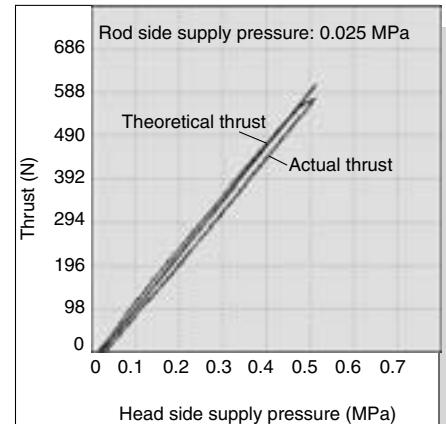
Measurement circuit of cylinder output relative to supply pressure



CQ2B40-75D (Standard)



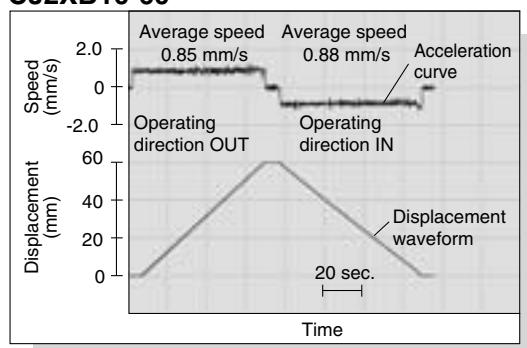
CQ2XB40-75D (Low speed cylinder)



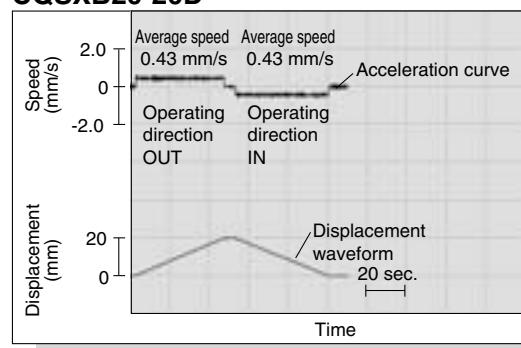
Stable low speed operation even at 0.5 mm/s (1 mm/s for ø16 or smaller) is achieved.

Operates smoothly with minimal stick-slip.

CJ2XB10-60



CQSXB20-20D



Note 1) Average speed is what the stroke is divided by piston rod's transit time.

Note 2) The OUT operating direction is considered to be positive with regard to speed.

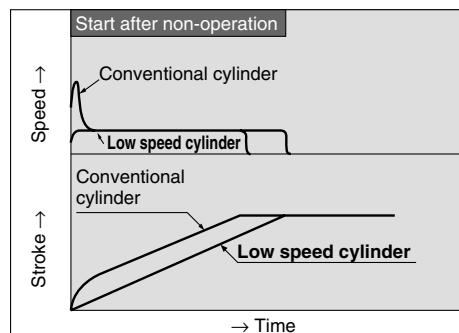
Data conditions

- Working fluid Air
- Mounting orientation Horizontal no-load
- Operating pressure 0.35 MPa
- Operating circuit Meter-in

Possible to transfer a workpiece which hates shocks at lower speeds.

Smooth start with a little ejection even after being rendered for hours.

The dimensions of all models are the same as those of standard cylinders.



Clean room specification has been added. (10-11-CQSX, CQ2X, CM2X)

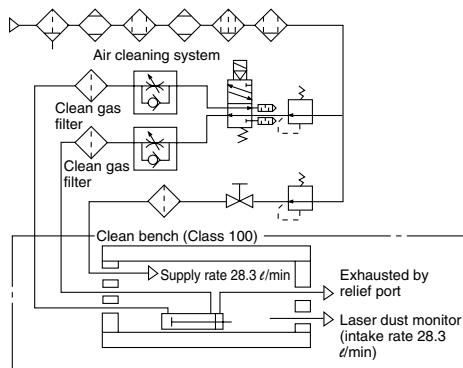
Particulate generation data for microspeed cylinder with clean room specifications are measured using the following test method.

[Example of test method]

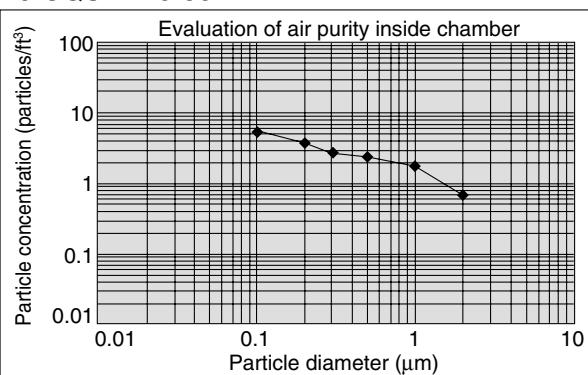
The test sample is in place in an acrylic chamber. The chamber is set up on a Class 100 clean bench. The solenoid valve is operated while supplying a volume of clean air equal to the intake volume of a laser dust monitor (28.3 l/min). The amount of particle generation is measured for a specific number of operating cycles.

Measuring Conditions

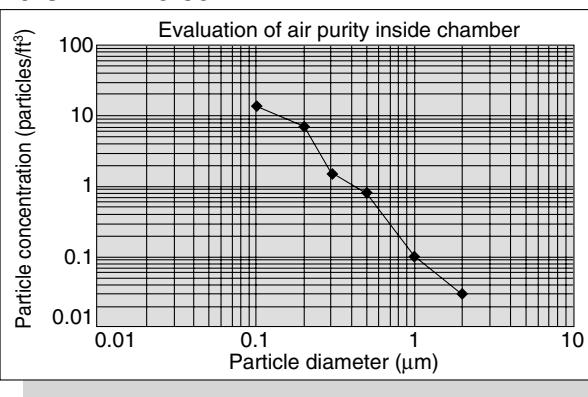
Chamber volume	15 l
Purity of air supplied to chamber	Same quality as supply air
Laser dust monitor	Hitachi Electronics Engineering Corporation TS-6200 Min. measurable particle dia.: 0.1 µm Intake rate: 28.3 l/min
Laser dust monitor setting conditions	Sampling time: 5 min Interval time: 55 min
Cylinder operating conditions	Operating frequency: 30 cpm Average piston speed: 100 mm/s Mounting: Horizontal no-load Supply pressure: 0.5 MPa



10-CQSXB20-50D



10-CM2XB20-50

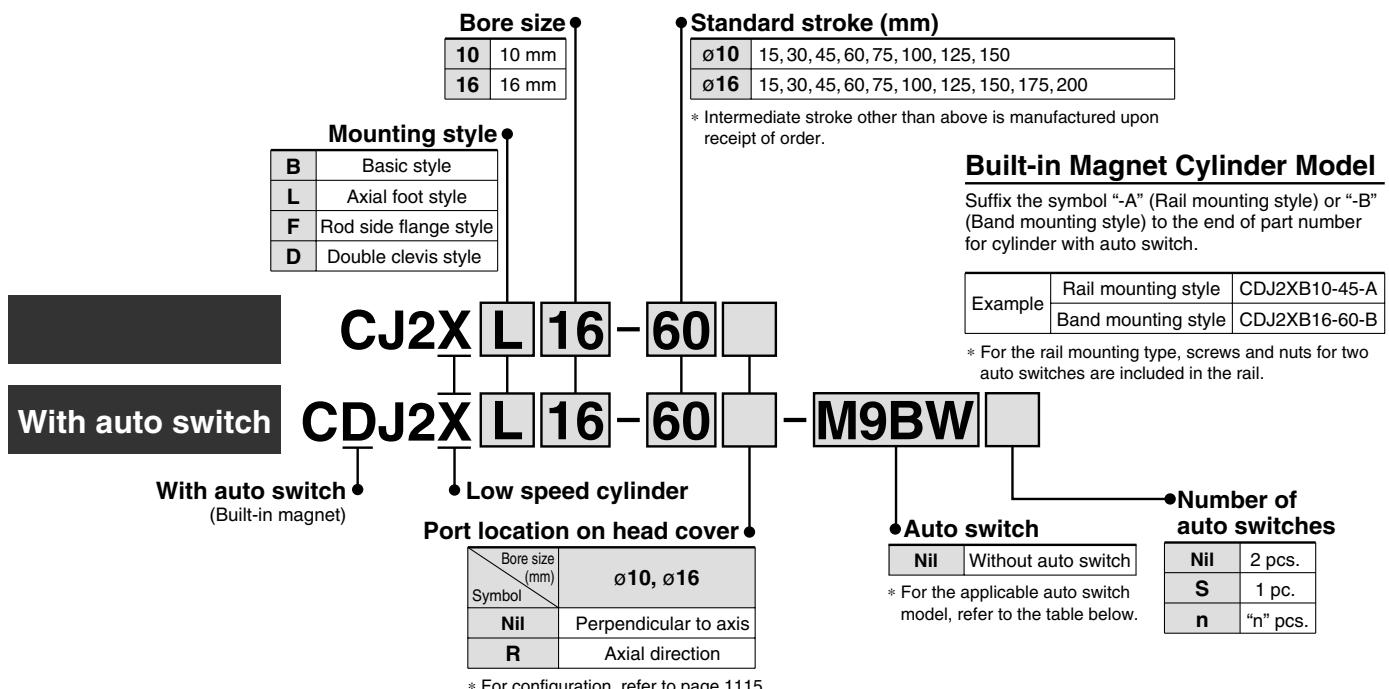


REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□
Individual
-X□

Low Speed Cylinder Double Acting, Single Rod Series CJ2X ø10, ø16

How to Order



* For configuration, refer to page 1115.

Applicable Auto Switch

Refer to pages 1719 to 1827 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	Band mounting	Rail mounting											
							Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
Solid state switch	—	Grommet	3-wire (NPN)	5 V, 12 V	—	—	M9N	—	—	●	●	●	○						
							—	F7NV	F79	●	—	●	○						
				3-wire (PNP)			M9P	—	—	●	●	●	○						
		Connector	2-wire				—	F7PV	F7P	●	—	●	○						
			24 V	12 V	—	M9B	—	—	●	●	●	○							
	Diagnostic indication (2-color indication)	Grommet				3-wire (NPN)				—	F7BV	J79	●	—	●	○			
										H7C	J79C	—	●	—	●	●			
										M9NW	—	—	●	●	●	○			
		Connector				3-wire (PNP)				—	F7NWV	F79W	●	—	●	○			
										M9PW	—	—	●	●	●	○			
Reed switch	—	Grommet	2-wire	5 V, 12 V	—	—	—	F7PW	—	●	●	○	○						
							M9BW	—	—	●	●	●	○						
				12 V			—	F7BWV	J79W	●	—	●	○						
		Connector	4-wire (NPN)				H7NF	—	F79F	●	—	●	○						
			5 V, 12 V				—	—	—	●	●	○	IC circuit						
	With diagnostic output (2-color indication)	Grommet					3-wire (NPN equivalent)				A96	—	A76H	●	—	●	—		
											—	200 V	—	A72	A72H	●	—		
											—	100 V	—	A73	A73H	●	—		
		Yes					2-wire				A93	—	—	●	—	●	—		
											100 V or less	A90	A80	A80H	●	—	●	IC circuit	
	Diagnostic indication (2-color indication)	Connector					2-wire				—	C73C	A73C	—	●	—	●	—	
											24 V or less	C80C	A80C	—	●	—	●	IC circuit	
											—	—	—	A79W	—	●	—	—	

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NZ

* Since there are other applicable auto switches than listed, refer to page 1123 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
* For the band mounting type, D-A9□/M9□/M9□W□/M9□V□/M9□VW□/M9□A(V)L types cannot be mounted.

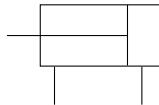
* Solid state auto switches marked with “○” are produced upon receipt of order.
* D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (When D-A9□/M9□/M9□W are specified, only auto switch mounting brackets are assembled before shipped.)
* D-C7□□/C80□/H7□□ auto switches are assembled at the time of shipment.
* Order auto switch mounting brackets separately when D-A9□(V)/M9□(V)/M9□W(V) types are mounted with a rail. Refer to page 1123 for details.

Specifications



JIS Symbol

Double acting, Single rod



Bore size (mm)	10	16
Action	Double acting, Single rod	
Fluid	Air	
Proof pressure	1.05 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.06 MPa	
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)	
Cushion	Rubber bumper (Standard equipment)	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.0 0	
Piston speed	1 to 300 mm/s	
Allowable kinetic energy	ø10 ø16	0.035 J 0.090 J

⚠ Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Mounting

⚠ Caution

- During installation, secure the rod cover and tighten by applying an appropriate tightening force to the retaining nut or to the rod cover body. If the head cover is secured or the head cover is tightened, the cover could rotate, leading to the deviation.
- Proper tightening torque for mounting thread should be within the range specified. Apply a Loctite® (no. 242 Blue) for mounting thread.

Bore size (mm)	Proper tightening torque for mounting thread (N·m) (tightening torque for mounting nut)
10	3.0 to 3.2
16	5.4 to 5.9

- To remove and install the retaining ring for the knuckle pin or the clevis pin, use an appropriate pair of pliers (tool for installing a type C retaining ring). Especially with ø10, use ultra thin pliers, such as Super Tool Corp., CSM-07A.
- For the auto switch mounting rail, do not remove the pre-equipped rail. Since the mounting thread is drilled through inside the cylinder, it will result in air leakage.

Operating Precautions

⚠ Warning

- It might not be able to control by meter-out at a low speed operation.

⚠ Caution

- For Series CJ2X, 0.1 Nℓ/min is the values at maximum in terms of its construction and there is internal leakage (ANR).

Standard Stroke

Bore size (mm)	Standard stroke (mm)
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Mounting Style and Accessory

	Mounting	Basic style	Axial foot style	Rod side flange style	Double* clevis style
Standard equipment	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint*	●	●	●	●
	T-bracket	—	—	—	●

* Pin and retaining ring are shipped together with double clevis and double knuckle joint.

Port Location on Head Cover

For basic style, the port position in a head cover is available either perpendicular to the axis or in-line with the cylinder axis.



Mounting Bracket Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot bracket	CJ-L010B	CJ-L016B
Flange bracket	CJ-F010B	CJ-F016B
T-bracket*	CJ-T010B	CJ-T016B

* T-bracket is used with double clevis (D).

REA
REB
REC
C/Y
C/X
MQ
RHC
RZQ

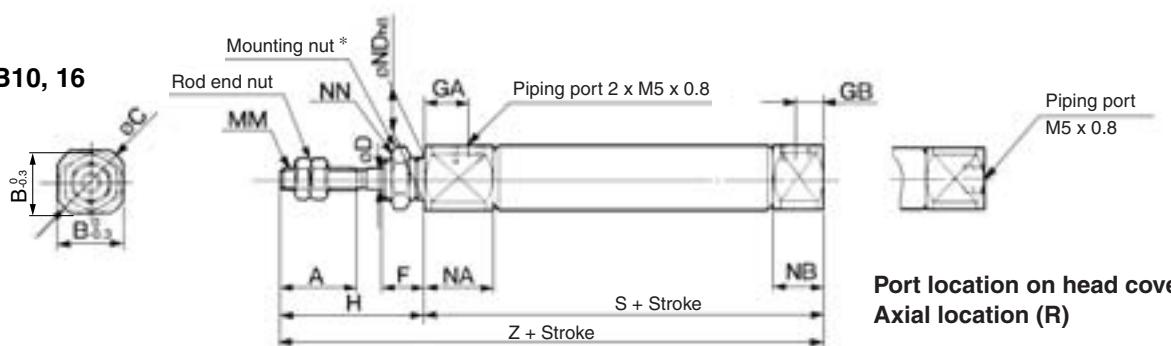
D-
-X
Individual
-X

Series CJ2X

Basic Style (B)

CJ2XB **Bore size** – **Stroke** **Port location on head cover**

CJ2XB10, 16



Port location on head cover:
Axial location (R)

* For details of the mounting nut, refer to page 1118.

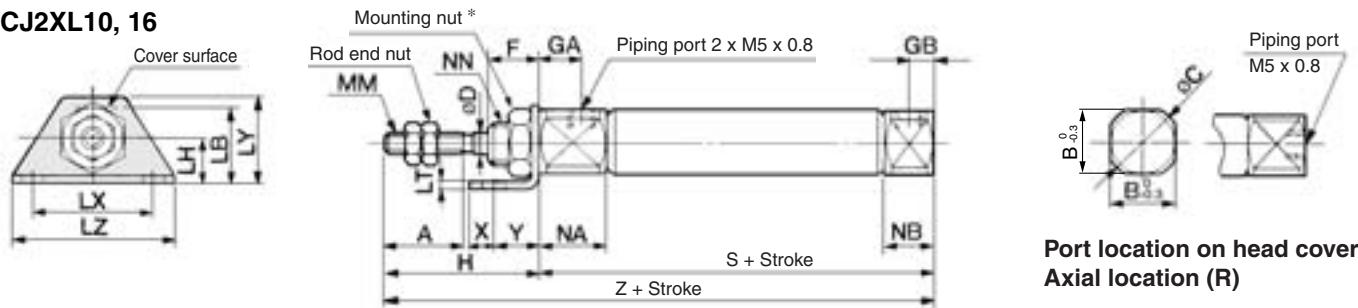
(mm)

Bore size (mm)	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	T	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 ⁰ _{-0.022}	M8 x 1.0	46	—	74
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 ⁰ _{-0.022}	M10 x 1.0	47	—	75

Axial Foot Style (L)

CJ2XL **Bore size** – **Stroke** **Port location on head cover**

CJ2XL10, 16



Port location on head cover:
Axial location (R)

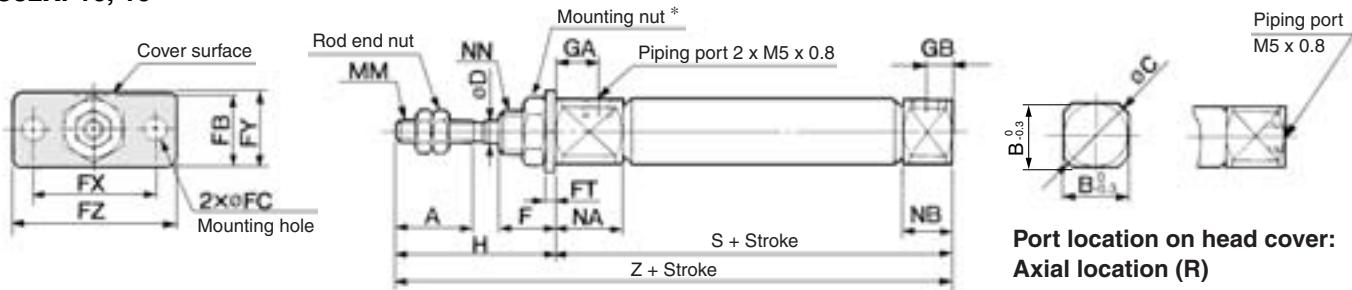
* For details of the mounting nut, refer to page 1118.

Bore size (mm)	A	B	C	D	F	GA	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	S	T	X	Y	Z
10	15	12	14	4	8	8	5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	M8 x 1.0	46	—	5	7	74
16	15	18.3	20	5	8	8	5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	9.5	M10 x 1.0	47	—	6	9	75

Rod Side Flange Style (F)

CJ2XF **Bore size** – **Stroke** **Port location on head cover**

CJ2XF10, 16

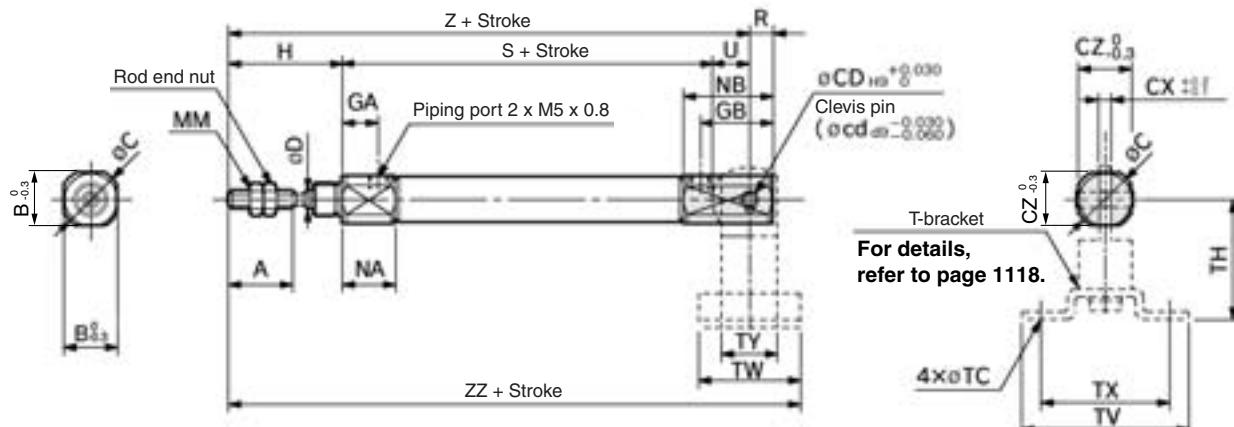


* For details of the mounting nut, refer to page 1118.

Bore size (mm)	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	T	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	M8 x 1.0	46	—	74
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	M10 x 1.0	47	—	75

Double Clevis Style (D)

CJ2XD **Bore size** – **Stroke**



* Clevis pin and retaining ring are shipped together.

Bore size (mm)	A	B	C	CD (cd)	CX	CZ	D	GA	GB	H	MM	NA	NB	R	S	U	Z	ZZ
10	15	12	14	3.3	3.2	12	4	8	18	28	M4 x 0.7	12.5	22.5	5	46	8	82	93
16	15	18.3	20	5	6.5	18.3	5	8	23	28	M5 x 0.8	12.5	27.5	8	47	10	85	99

T-bracket Dimensions

Bore size (mm)	TC	TH	TV	TW	TX	TY
10	4.5	29	40	22	32	12
16	5.5	35	48	28	38	16

REA
REB
REC
C-Y
C-X
MQ
RHC
RZQ

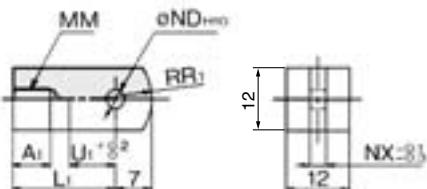
D-
-X
Individual
-X

Series CJ2X

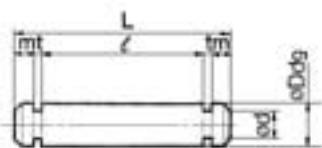
Accessory Bracket Dimensions

(mm)

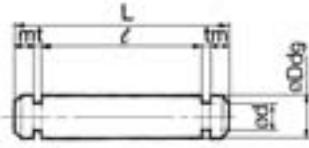
Single Knuckle Joint



Clevis Pin



Knuckle Pin



Material: Rolled steel

Part no.	Applicable bore	A ₁	L ₁	MM	ND ^{H10}	NX	R ₁	U ₁
I-J010B	10	8	21	M4 x 0.7	3.3 ^{+0.048} ₀	3.1	8	9
I-J016B	16	8	25	M5 x 0.8	5 ^{+0.048} ₀	6.4	12	14

Material: Stainless steel

Part no.	Applicable bore	Dd9	d	L	e	m	t	Applicable retaining ring
CD-J010	10	3.3 ^{-0.030} _{-0.060}	3	15.2	12.2	1.2	0.3	Type C 3.2
CD-Z015	16	5 ^{-0.030} _{-0.060}	4.8	22.7	18.3	1.5	0.7	Type C 5

* Retaining rings are packaged with clevis pins.

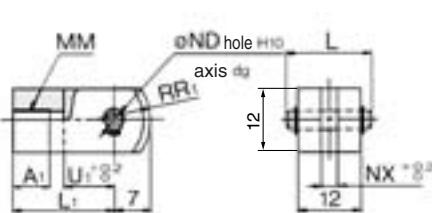
Material: Stainless steel

Part no.	Applicable bore	Dd9	d	L	e	m	t	Applicable retaining ring
CD-J010	10	3.3 ^{-0.030} _{-0.060}	3	15.2	12.2	1.2	0.3	Type C 3.2
IY-J015	16	5 ^{-0.030} _{-0.060}	4.8	16.6	12.2	1.5	0.7	Type C 5

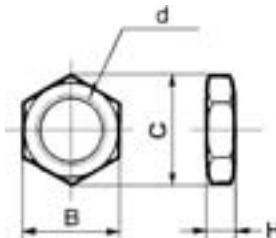
* For size ø10, clevis pin is diverted.

* Retaining rings are packaged with knuckle pins.

Double Knuckle Joint



Mounting Nut



Material: Rolled steel

Part no.	Applicable bore	A ₁	L	L ₁	MM
Y-J010B	10	8	15.2	21	M4 x 0.7
Y-J016B	16	11	16.6	21	M5 x 0.8
Part no.	ND _{d9}	ND _{H10}	NX	R ₁	U ₁
Y-J010B	3.3 ^{-0.030} _{-0.060}	3.3 ^{+0.048} ₀	3.2	8	10
Y-J016B	5 ^{-0.030} _{-0.060}	5 ^{+0.048} ₀	6.5	12	10

* Knuckle pin and retaining ring are shipped together.

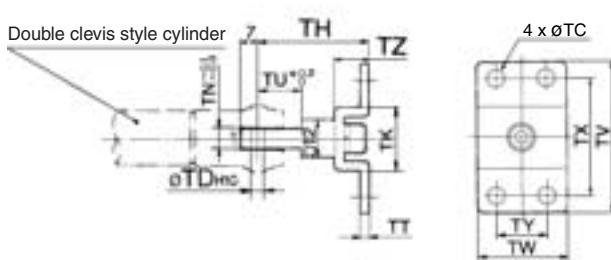
Material: Brass

Part no.	Applicable bore	B	C	d	H
SNJ-010B	10	11	12.7	M8 x 1.0	4
SNJ-016B	16	14	16.2	M10 x 1.0	4

Material: Iron

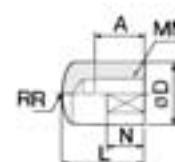
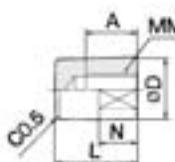
Part no.	Applicable bore	B	C	d	H
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

T-bracket



Rod End Cap

Flat type/CJ-CF□□□ Round type/CJ-CR□□□



Material: Polyacetal

Part no.	Applicable bore	TC	TD _{H10}	TH	TK	TN	TT	TU	TV	TW	TX	TY	TZ
CJ-T010B	10	4.5	3.3 ^{+0.048} ₀	29	18	3.1	2	9	40	22	32	12	8
CJ-T016B	16	5.5	5 ^{+0.048} ₀	35	20	6.4	2.3	14	48	28	38	16	10

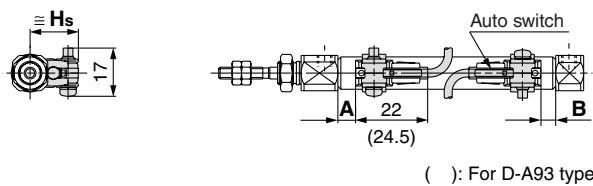
* T-bracket includes a T-bracket base, single knuckle joint, hexagon socket head cap screw and spring washer.

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

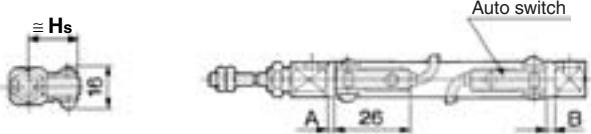
Reed auto switch

<Band mounting style>

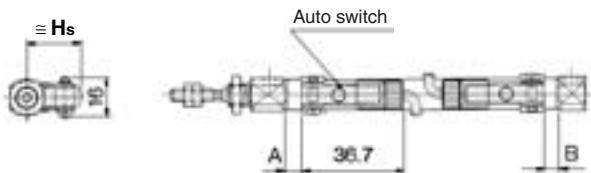
D-A9□



D-C7□/C80



D-C73C□/C80C

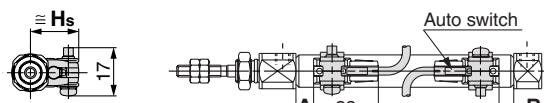


Solid state auto switch

<Band mounting style>

D-M9□

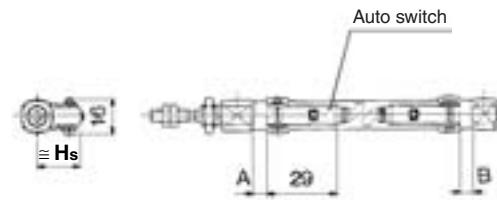
D-M9□W



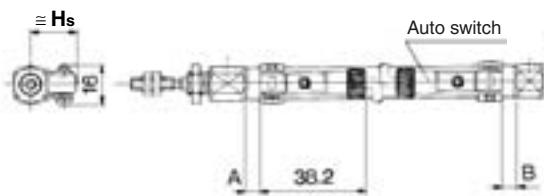
D-H7□

D-H7□W

D-H7NF



D-H7C



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

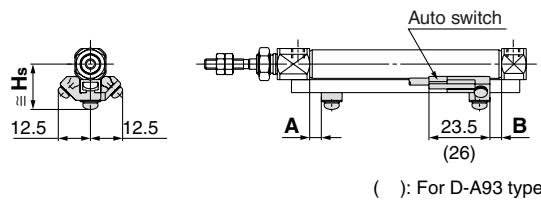
Individual
-X□

Series CJ2X

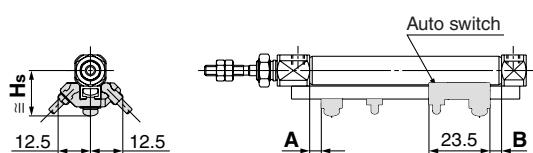
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Reed auto switch
<Band mounting style>

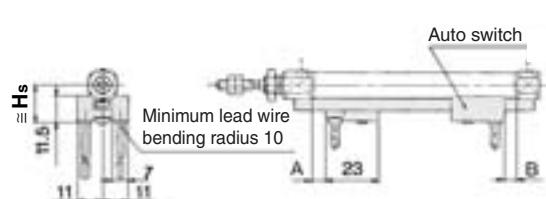
D-A9□



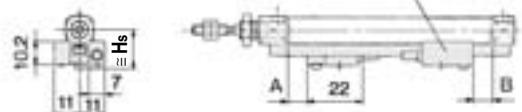
D-A9□V



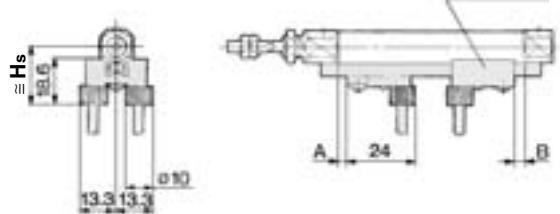
D-A7□/A80



D-A7□H/A80H



D-A73C/A80C

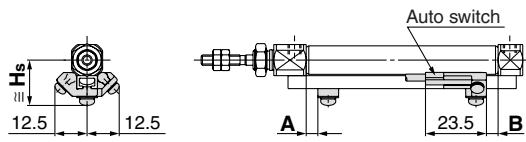


D-A79W

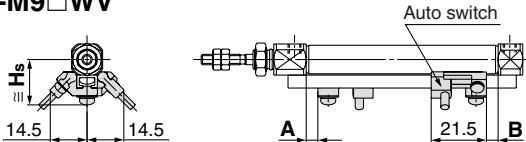


Solid state auto switch
<Band mounting style>

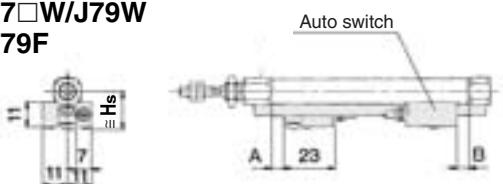
D-M9□
D-M9□W



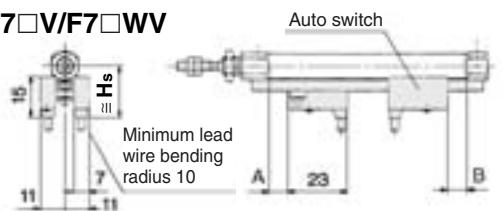
D-M9□V
D-M9□WV



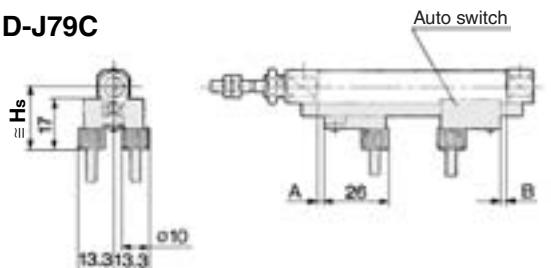
D-F7□/J79
D-F7□W/J79W
D-F79F



D-F7□V/F7□WV



D-J79C



Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Auto Switch Proper Mounting Position

Auto switch model	Band mounting								Rail mounting								(mm)			
	D-A9□		D-M9□ D-M9□W		D-C7□ D-C80 D-C73C D-C80C		D-H7□ D-H7C D-H7NF D-H7□W		D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV		D-A7□ D-A80		D-A7□H/A80H D-A73C/A80C D-F7□/J79 D-F7□W/J79W D-F7□V/F7□WV D-F79F D-J79C		D-F7NTL		D-A79W	
Bore size (mm)	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
10	2	2	6	6	2.5	2.5	1.5	1.5	0.5	0.5	4.5	4.5	3	3	3.5	3.5	8.5	8.5	0.5	0.5
16	2.5	2.5	6.5	6.5	3	3	2	2	1	1	5	5	3.5	3.5	4	4	9	9	1	1

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

Auto switch model	Band mounting						Rail mounting						(mm)								
	D-A9□ D-M9□ D-M9□W		D-C7□ D-C80 D-H7□ D-H7□W D-H7NF		D-C73C D-C80C		D-H7C		D-A7□ D-A80		D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV		D-A7□H/A80H D-F7□/J79 D-F7□W/J79W D-F79F D-F7NTL		D-A73C D-A80C		D-F7□V D-F7□WV		D-J79C		D-A79W
Bore size (mm)	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs	Hs
10	16.5	17	19.5	20	16.5	17.5							17.5	23.5	20	23	19				
16	20	20.5	23	23.5	19.5	21							20.5	26.5	23	26	22				

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

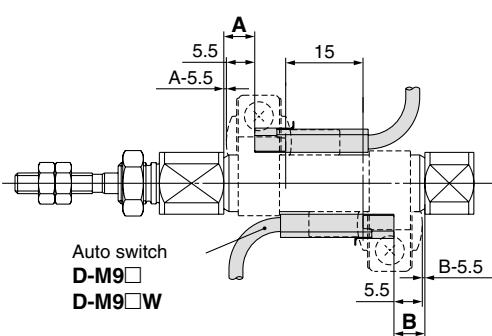
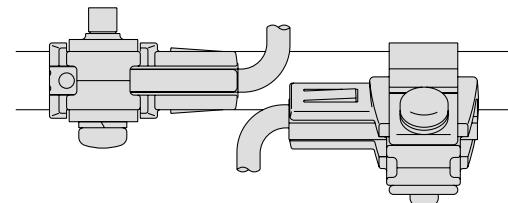
Individual
-X□

Series CJ2X

Minimum Auto Switch Mounting Stroke

Auto switch mounting	Auto switch model	No. of auto switch mounted					(mm)
		1 pc.	2 pcs.		n pcs. (n: No. of auto switch)		(mm)
			Different surfaces	Same surface	Different surfaces	Same surface	
Band mounting	D-A9□ D-M9□ D-M9□W	10	15 Note)	45 Note)	15 + 35 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	45 + 15 (n-2)	45 + 15 (n-2)
	D-C7□ D-C80	10	15	50	15 + 40 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	50 + 20 (n-2)	50 + 20 (n-2)
	D-H7□/H7□W D-H7NF	10	15	60	15 + 45 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	60 + 22.5 (n-2)	60 + 22.5 (n-2)
	D-C73C D-C80C D-H7C	10	15	65	15 + 50 $\frac{(n-2)}{2}$ (n = 2, 4, 6...)	50 + 27.5 (n-2)	50 + 27.5 (n-2)
Rail mounting	D-M9□V	5	—	5	—	10 + 10 (n-2) (n = 4, 6...)	10 + 10 (n-2)
	D-A9□V	5	—	10	—	10 + 15 (n-2) (n = 4, 6...)	10 + 15 (n-2)
	D-M9□ D-A9□	10	—	10	—	15 + 15 (n-2) (n = 4, 6...)	15 + 15 (n-2)
	D-M9□WV	10	—	15	—	15 + 15 (n-2) (n = 4, 6...)	15 + 15 (n-2)
	D-M9□W	15	—	15	—	20 + 15 (n-2) (n = 4, 6...)	20 + 15 (n-2)
	D-A7□/A80 D-A7□H/A80H D-A73C/A80C	5	—	10	—	15 + 10 (n-2) (n = 4, 6...)	15 + 10 (n-2)
	D-A7□H D-A80H	5	—	10	—	15 + 15 (n-2) (n = 4, 6...)	15 + 15 (n-2)
	D-A79W	10	—	15	—	10 + 15 (n-2) (n = 4, 6...)	10 + 15 (n-2)
	D-F7□ D-J79	5	—	5	—	15 + 15 (n-2) (n = 4, 6...)	15 + 15 (n-2)
	D-F7□V D-J79C	5	—	5	—	10 + 10 (n-2) (n = 4, 6...)	10 + 10 (n-2)
	D-F7□W/J79W D-F79F D-F7NTL	10	—	15	—	15 + 20 (n-2) (n = 4, 6...)	15 + 20 (n-2)
	D-F7□WV	10	—	15	—	10 + 15 (n-2) (n = 4, 6...)	10 + 15 (n-2)

Note) When 2 D-A93/M9□/M9□W auto switches are included.

Auto switch model	With 2 auto switches		The proper auto switch mounting position is 5.5 mm inward from the switch holder edge.
	Different surfaces	Same surface	
	 <p>Auto switch D-M9□ D-M9□W</p>		The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.
D-A93	—	Less than 50 strokes	
D-M9□ D-M9□W	Less than 20 strokes	Less than 55 strokes	

Operating Range

		(mm)	
Auto switch model		Bore size (mm)	
		10	16
Band mounting	D-A9□	6	7
	D-M9□	2.5	3
	D-M9□W		
	D-C7□/C80/C73C/C80C	7	7
	D-H7□/H7□W	4	4
	D-H7NF		
Rail mounting	D-H7C	8	9
	D-A9□/A9□V	6	6.5
	D-M9□/M9□V	3	3.5
	D-M9□W/M9□WV		
	D-A7□/A80/A7H/A80H	8	9
	D-A73C/A80C		
	D-A79W	11	13
	D-F7□/J79/F7□W/J79W		
	D-F7□V/F7□WV/F79F	5	5
	D-J79C		
	D-F7NTL		

* Since this is a guideline including hysteresis, not meant to be guaranteed.

(Assuming approximately ±30% dispersion.)

There may be the case it will vary substantially depending on an ambient environment.

Auto Switch Mounting Bracket/Part No.

Auto switch mounting	Auto switch model	Bore size	
		ø10	ø16
Band mounting	D-A9□	①BJ2-010 ②BJ3-1	①BJ2-016 ②BJ3-1
	D-M9□		
	D-M9□W		
	D-C7□/C80/C73C/C80C		
	D-H7□/H7□W		
	D-H7NF		
Rail mounting	D-A9□		
	D-A9□V		
	D-M9□		
	D-M9□V		
	D-M9□W		
	D-M9□WV		
		BJ2-010	BJ2-016
		Note 3) BQ2-012	Note 3) BQ2-012

Note 1) Two kinds of auto switch mounting brackets are used as a set.

Note 2) Auto switch mounting brackets are shipped together with cylinders.

Note 3) When mounting a compact auto switch on the ø10 or ø16 rail mounting type, order auto switch mounting bracket shown in the table above. Order it separately from the cylinder.

Example

CDJ2BX10-60-A 1 unit

D-M9BWV 2 pcs.

BQ2-012 2 pcs.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to pages 1719 to 1827.

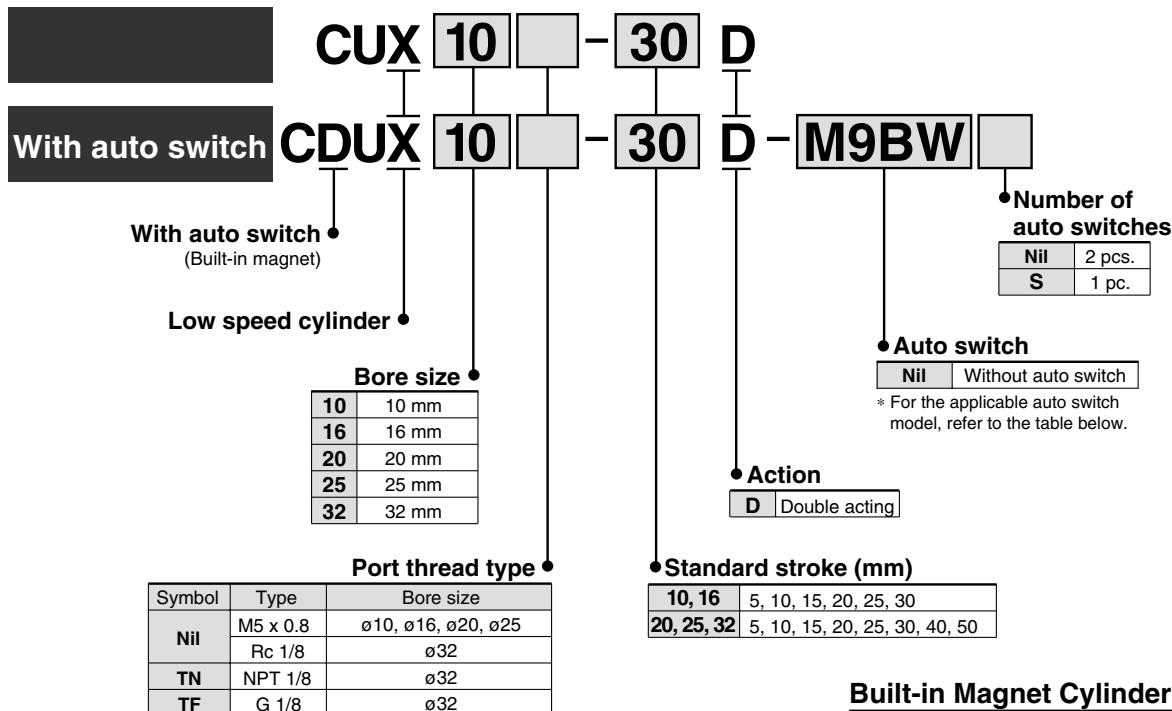
Auto switch type	Model	Electrical entry (Direction)	Features
Reed	D-C73, C76	Grommet (in-line)	—
	D-C80		Without indicator light
Solid state	D-H7A1, H7A2, H7B		—
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indication)

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 to 1785.

* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page

Low Speed Cylinder Double Acting, Single Rod **Series CU_X** ø10, ø16, ø20, ø25, ø32

How to Order



Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDUX20-25D

Applicable Auto Switch

Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicate light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)	Pre-wired connector	Applicable load				
					DC	AC								
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	M9NV	M9N	● ● ○ ○ ○ ○	IC circuit	Relay, PLC			
				3-wire (PNP)					● ● ○ ○ ○ ○					
				2-wire					○ ○ ○ ○ ○ ○					
	Diagnostic indication (2-color indication)			3-wire (NPN)	5 V, 12 V	12 V	M9PV	M9P	● ● ○ ○ ○ ○	—				
				3-wire (PNP)					● ● ○ ○ ○ ○					
				2-wire					○ ○ ○ ○ ○ ○					
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	A96V	A96	● — ● — —	IC circuit	—			
				2-wire	24 V	12 V	A93V	A93	● — ● — —	—	Relay, PLC			
				100 V or less					○ ○ ○ ○ ○ ○					

* 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

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

* Since there are other applicable auto switches than listed, refer to page 1128 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
* Auto switches are shipped together (not assembled).

Specifications

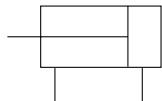


Bore size (mm)	10	16	20	25	32
Fluid			Air		
Proof pressure			1.05 MPa		
Maximum operating pressure			0.7 MPa		
Ambient and fluid temperature			Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)		
Lubrication			Not required (Non-lube)		
Piston speed			ø10, ø16: 1 to 300 mm/s ø20 to ø32: 0.5 to 300 mm/s		
Cushion			Rubber bumper on both ends		
Rod end thread			Male thread		
Stroke length tolerance			+1.0 Note) 0		
Mounting			Basic style		

Note) Tolerance $^{+1.0}_0$

JIS Symbol

Double acting, Single rod



Minimum Operating Pressure

Bore size (mm)	10	16	20	25	32
Min. operating pressure (MPa)	0.06	0.06	0.05	0.05	0.05

Standard Stroke

Bore size (mm)	Standard stroke (mm)
10, 16	5, 10, 15, 20, 25, 30
20, 25, 32	5, 10, 15, 20, 25, 30, 40, 50

⚠ Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Mounting

⚠ Caution

1. Tightening the cylinder beyond the range of the indicated torque (shown in the table below) may affect operation. Apply Loctite® (no. 242, Blue) to the mounting threads.

Bore size (mm)	Hexagon socket head (mm)	Proper tightening torque (N·m) (Cylinder body)
10	M3	0.54 ±10%
16	M4	1.23 ±10%
20, 25	M5	2.55 ±10%
32	M6	4.02 ±10%

Maintenance

⚠ Caution

1. Replacement parts/Seal kit Order it in accordance with the bore size.

Bore size (mm)	Kit no.	Contents
16	CUX16-PS	Piston seal: 1 pc.
20	CUX20-PS	Rod seal: 1 pc.
25	CUX25-PS	Gasket: 1 pc.
32	CUX32-PS	Grease pack (10 g): 1 pc.

* It is impossible to replace seals in bore size 10 mm.

2. Grease pack

When maintenance requires only grease, use the following part numbers to order.

Grease pack part no.:

GR-L-005 (5 g)

GR-L-010 (10 g)

GR-L-150 (150 g)

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

Operating Precautions

⚠ Warning

1. It might not be able to control CUX10 by meter-out at a low speed operation.

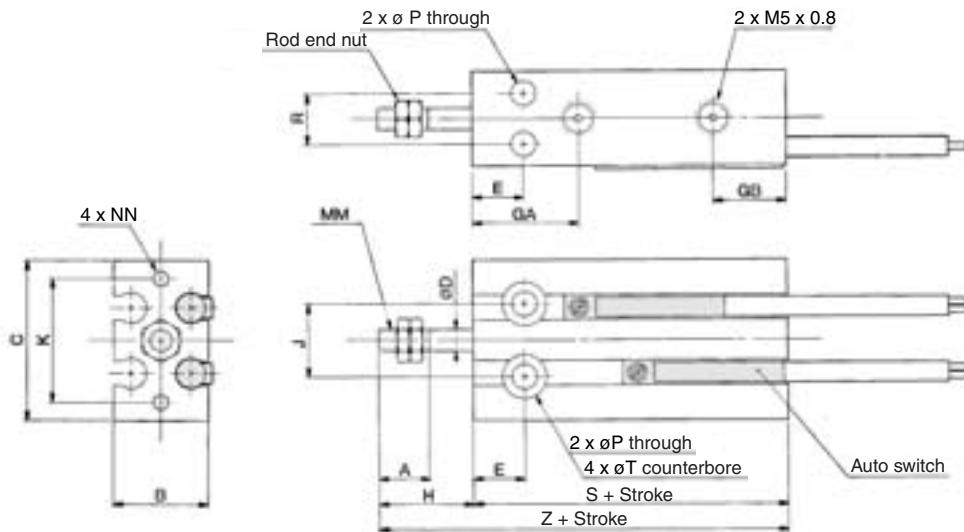
⚠ Caution

1. For CUX10, up to 0.1 N/min (ANR) of internal leakage is anticipated due to cylinder structure.

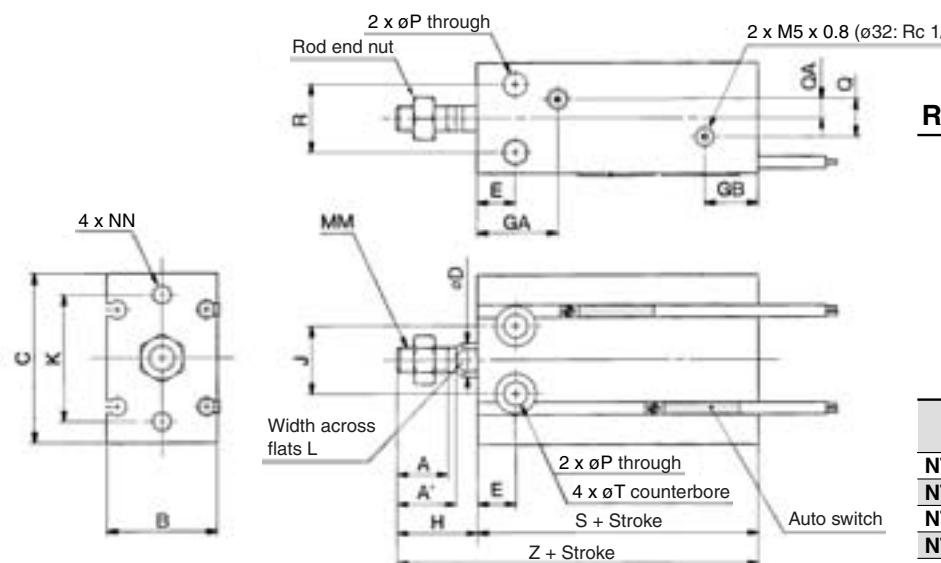
Series CUX

Dimensions: Double Acting, Single Rod

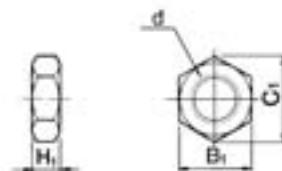
ø10



ø16 to ø32



Rod End Nut/Accessory



Part no.	Applicable bore (mm)	d	H ₁	B ₁	C ₁
NTP-010	10	M4 x 0.7	2.4	7	8.1
NTJ-015A	16	M5 x 0.8	4	8	9.2
NT-015A	20	M6 x 1.0	5	10	11.5
NT-02	25	M8 x 1.25	5	13	15.0
NT-03	32	M10 x 1.25	6	17	19.6

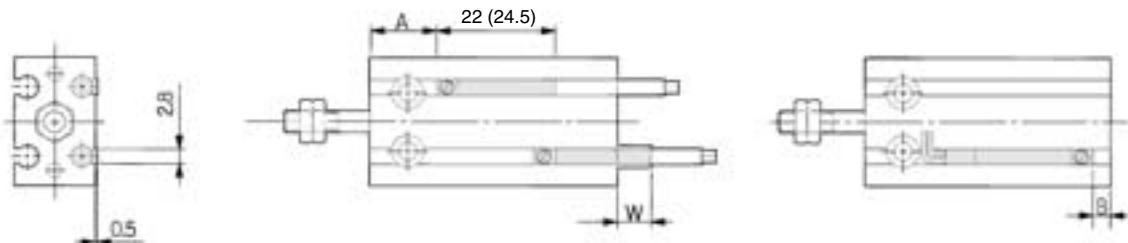
Bore size (mm)	A	A'	B	C	D	E	GA	GB	H	J	K	L	MM	NN	P	Q	QA
10	10	—	15	24	4	7	16.5	10	16	11	18	—	M4 x 0.7	M3 x 0.5 depth 5	3.2	—	—
16	11	12.5	20	32	6	7	16.5 ^{Note}	11.5	16	14	25	5	M5 x 0.8	M4 x 0.7 depth 6	4.5	4	2
20	12	14	26	40	8	9	19	12.5	19	16	30	6	M6 x 1.0	M5 x 0.8 depth 8	5.5	9	4.5
25	15.5	18	32	50	10	10	21.5	13	23	20	38	8	M8 x 1.25	M5 x 0.8 depth 8	5.5	9	4.5
32	19.5	22	40	62	12	11	23	12.5	27	24	48	10	M10 x 1.25	M6 x 1.0 depth 9	6.6	13.5	4.5

Bore size (mm)	R	T	Without auto switch		With auto switch	
			S	Z	S	Z
10	9	6 depth 5	36	52	36	52
16	12	7.6 depth 6.5	30	46	40	56
20	16	9.3 depth 8	36	55	46	65
25	20	9.3 depth 9	40	63	50	73
32	24	11 depth 11.5	42	69	52	79

Note) 5 stroke (CUX16-5D): 14.5 mm

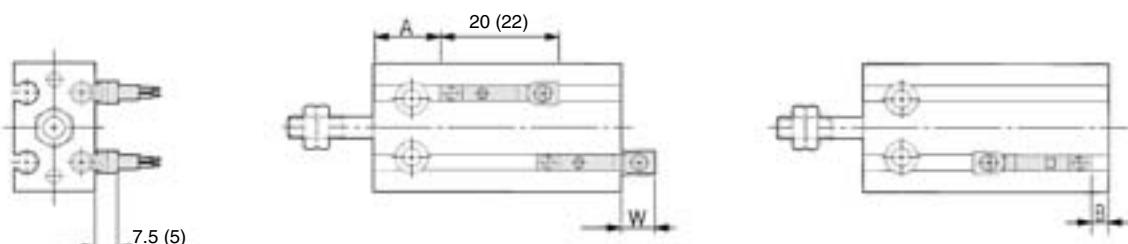
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

D-A9□
D-M9□
D-M9□W



(): Denotes the values of D-A93.

D-A9□ V
D-M9□ V
D-M9□ WV



(): Denotes the values of D-A9□ V.

CDU Double Acting, Single Rod

Bore size (mm)	D-A9□, D-A9□V			D-M9□, D-M9□W			D-M9□V, D-M9□WV		
	A	B	W	A	B	W	A	B	W
10	12.5	3.5	-1.5 (1)	16.5	7.5	2.5	16.5	7.5	0.5
16	16	4	-2 (0.5)	20	8	1.5	20	8	-0.5
20	20	6	-4 (-1.5)	24	10	0	24	10	-2
25	22.5	7	-5.5 (-3)	26.5	11	-1.5	26.5	11	-3.5
32	23.5	8.5	-6.5 (-4)	27.5	12.5	-2.5	27.5	12.5	-4.5



Note 1) Figures in the table above are used as a reference when mounting the auto switches for stroke end detection.

In the case of actually setting the auto switches, adjust them after confirming their operation.

Note 2) Negative figures in the table W indicate an auto switch is mounted inward from the edge of the cylinder body.

Note 3) In the case of the 5 stroke or the 10 stroke, there are times in which the switch will not turn OFF or 2 switches will turn ON simultaneously due to their movement range. Therefore, set the position approximately 1 to 4 mm outward from the values given in the table above. Then, perform an operation inspection to make sure that the switches operate normally (if 1 switch is used, make sure that it turns ON and OFF properly; if 2 switches are used, make sure that both switches turn ON).

Note 4) () in column W is the dimensions of D-A93.

Operating Range

Auto switch model	Bore size (mm)				
	10	16	20	25	32
D-A9□, A9□V	6	9	11	12.5	14
D-M9□, M9□V D-M9□W, M9□WV	4	5.5	7	7	7.5

* Since this is a guideline including hysteresis, not meant to be guaranteed.

(assuming approximately $\pm 30\%$ dispersion.)

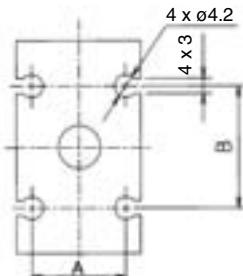
There may be the case it will vary substantially depending on an ambient environment.

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X□
Individual
-X□

Series CUX

Auto Switch Groove



Bore size (mm)	A (mm)	B (mm)
10	10.3	13
16	15	18
20	21	23
25	27	25
32	35	27

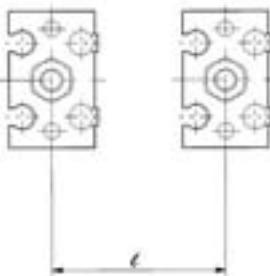
Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.

* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1746.

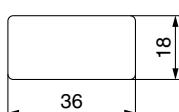
Caution on Proximity Installation

When free mounting cylinders equipped with auto switches are used, the auto switches could activate unintentionally if the installed distance is less than the dimensions shown in the table. Therefore, make sure to provide a greater clearance. Due to unavoidable circumstances, if they must be used with less distance than the dimensions given in the table, the cylinders must be shielded. Therefore, affix a steel plate or a magnetic shielding plate (MU-S025) to the area on the cylinder that corresponds to the adjacent auto switch. (Please contact SMC for details.) Auto switches may malfunction if a shield plate is not used.

Dimensions of shielding plate (MU-S025) that is sold separately are indicated as reference.



Bore size (mm)	Mounting pitch l (mm)
10	30
16	33
20	40
25	46
32	56



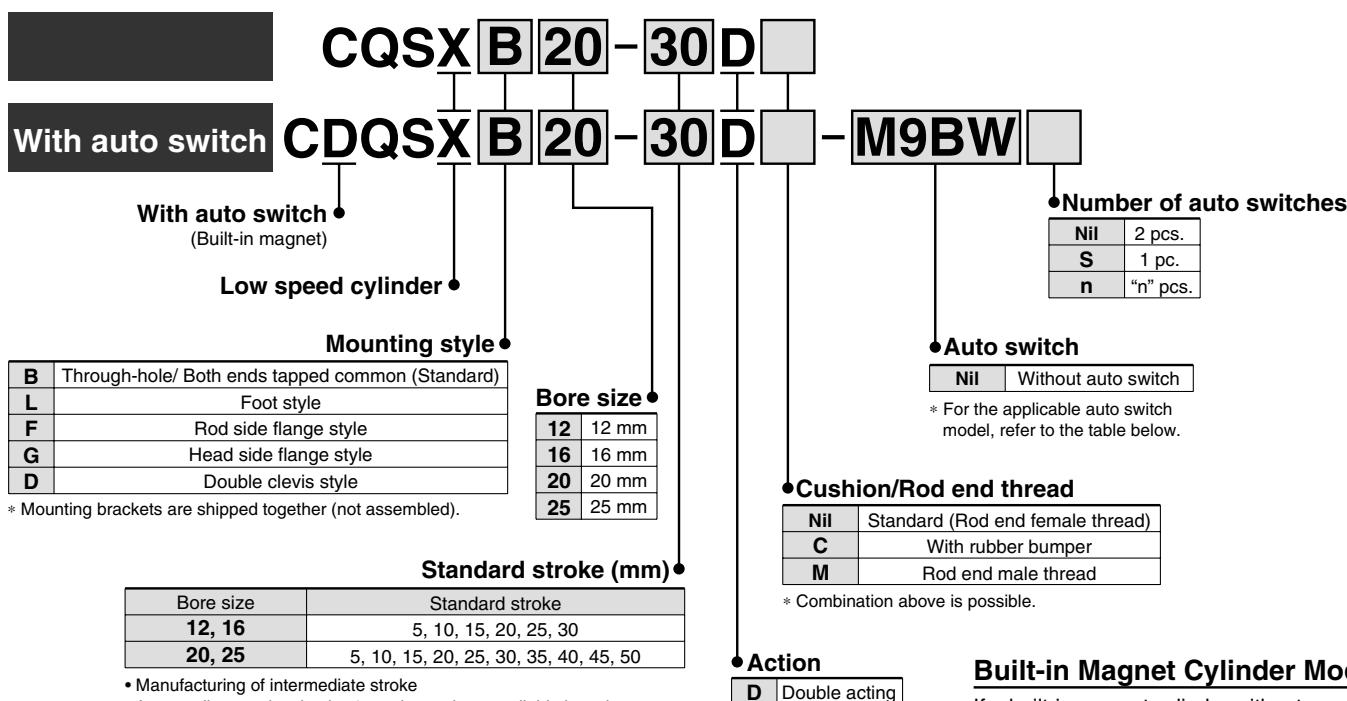
Material: Ferrite stainless steel, Thickness: 0.3 mm

Since the back side is treated with adhesive, it is possible to attach to the cylinder.

Low Speed Cylinder Double Acting, Single Rod Series CQSX

ø12, ø16, ø20, ø25

How to Order



Applicable Auto Switch/Refer to pages 1719 to 1827 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)		
Solid state 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)	12 V	5 V, 12 V	—	M9NWV	M9NW	●	●	●	○	○	IC circuit
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○	
				2-wire				M9BWV	M9BW	●	●	●	○	○	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit
				2-wire				A93V	A93	●	—	●	—	—	
			No	24 V	12 V	100 V	—	A90V	A90	●	—	●	—	—	Relay, PLC
100 V or less															

* 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

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

* Since there are other applicable auto switches than listed, refer to page 1135 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.

* Auto switches are shipped together (not assembled).
Note) D-A9□V/M9□V/M9□WV auto switches may not be mounted depending on the cylinder stroke or fitting size for piping. Consult with SMC separately.

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

D-□
-X-□
Individual
-X-□

Series CQSX



Specifications

Bore size (mm)	12	16	20	25
Type	Pneumatic (Non-lube)			
Action	Double acting, Single rod			
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)			
Rubber bumper	None			
Rod end thread	Female thread			
Stroke length tolerance	+1.0 Note 0			
Mounting	Through-hole/Both ends tapped common			
Piston speed	ø12, ø16: 1 to 300 mm/s ø20, ø25: 0.5 to 300 mm/s			

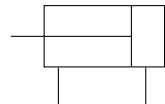
Note) Stroke length tolerance does not include the amount of bumper change.

Minimum Operating Pressure

Bore size (mm)	12	16	20	25
Min. operating pressure (MPa)	0.03	0.03	0.025	0.025

JIS Symbol

Double acting, Single rod



Body Option

Description	Application
Rod end male thread	Available for all standard models
Rubber bumper	of double acting, single rod.

⚠ Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Retaining Ring Installation/Removal

⚠ Caution

1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
2. Even if a proper plier (tool for installing type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Maintenance

⚠ Caution

1. **Replacement parts/Seal kit**
Order it in accordance with the bore size.
- | Bore size (mm) | Kit no. | Contents |
|----------------|-----------|---------------------------|
| 12 | CQSX12-PS | Piston seal: 1 pc. |
| 16 | CQSX16-PS | Rod seal: 1 pc. |
| 20 | CQSX20-PS | Tube gasket: 1 pc. |
| 25 | CQSX25-PS | Grease pack (10 g): 1 pc. |
2. **Grease pack**
When maintenance requires only grease, use the following part numbers to order.

Grease pack part no.:

- GR-L-005** (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

Mounting Bracket Part No.

Bore size (mm)	Foot (1)	Flange	Double clevis
12	CQS-L012	CQS-F012	CQS-D012
16	CQS-L016	CQS-F016	CQS-D016
20	CQS-L020	CQS-F020	CQS-D020
25	CQS-L025	CQS-F025	CQS-D025

Note 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows.

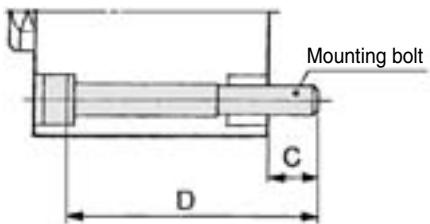
Foot or Flange: Body mounting bolts
Double clevis: Clevis pin, Type C retaining ring for shaft,
Body mounting bolts

Mounting Bolt for CQSX/Without Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CQSXB is available as an option.

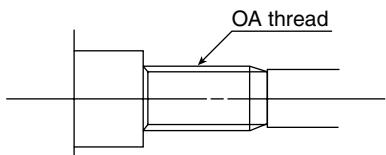
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 25 L 4 pcs.



Note 1) The appropriate plain washer must be used for through-hole mounting.

Note 2) Please contact SMC for details concerning the mounting bolts to be used with Ø12 and Ø16 that exceed 30 mm strokes, or Ø20 and Ø25 that exceed 50 mm strokes.



Cylinder model	C	D	Mounting bolt
CQSXB12-5D	6.5	25	M3 x 25 L
10D		30	x 30 L
15D		35	x 35 L
20D		40	x 40 L
25D		45	x 45 L
30D		50	x 50 L
CQSXB16-5D	6.5	25	M3 x 25 L
10D		30	x 30 L
15D		35	x 35 L
20D		40	x 40 L
25D		45	x 45 L
30D		50	x 50 L
CQSXB20-5D	6.5	25	M5 x 25 L
10D		30	x 30 L
15D		35	x 35 L
20D		40	x 40 L
25D		45	x 45 L
30D		50	x 50 L

Cylinder model	C	D	Mounting bolt
CQSXB20-30D	6.5	50	M5 x 50 L
35D		55	x 55 L
40D		60	x 60 L
45D		65	x 65 L
50D		70	x 70 L
CQSXB25-5D		30	M5 x 30 L
10D	8.5	35	x 35 L
15D		40	x 40 L
20D		45	x 45 L
25D		50	x 50 L
30D		55	x 55 L
35D		60	x 60 L
40D	8.5	65	x 65 L
45D		70	x 70 L
50D		75	x 75 L

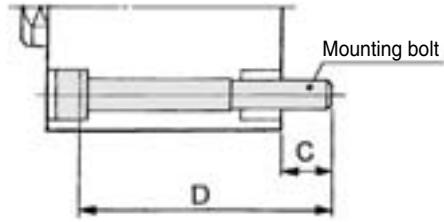
Material: Chromium molybdenum steel
Surface material: Nickel plated

Mounting Bolt for CDQSX/With Auto Switch

Mounting method: Mounting bolt for through-hole mounting style of CDQSXB is available as an option.

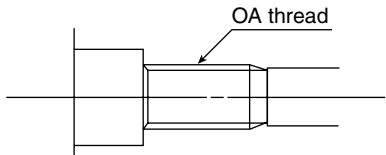
Ordering: Add the word "Bolt" in front of the bolts to be used.

Example) Bolt M3 x 30 L 4 pcs.



Note 1) The appropriate plain washer must be used for through-hole mounting.

Note 2) Please contact SMC for details concerning the mounting bolts to be used with Ø12 and Ø16 that exceed 30 mm strokes, or Ø20 and Ø25 that exceed 50 mm strokes.



Cylinder model	C	D	Mounting bolt
CDQSXB12-5D	6.5	30	M3 x 30 L
10D		35	x 35 L
15D		40	x 40 L
20D		45	x 45 L
25D		50	x 50 L
30D		55	x 55 L
CDQSXB16-5D	6.5	30	M3 x 30 L
10D		35	x 35 L
15D		40	x 40 L
20D		45	x 45 L
25D		50	x 50 L
30D		55	x 55 L
CDQSXB20-5D	6.5	35	M5 x 35 L
10D		40	x 40 L
15D		45	x 45 L
20D		50	x 50 L
25D		55	x 55 L
30D		60	x 60 L
35D	8.5	65	x 65 L
40D		70	x 70 L
45D		75	x 75 L
50D		80	x 80 L

Cylinder model	C	D	Mounting bolt
CDQSXB20-30D	6.5	60	M5 x 60 L
35D		65	x 65 L
40D		70	x 70 L
45D		75	x 75 L
50D		80	x 80 L
CDQSXB25-5D		40	M5 x 40 L
10D	8.5	45	x 45 L
15D		50	x 50 L
20D		55	x 55 L
25D		60	x 60 L
30D		65	x 65 L
35D		70	x 70 L
40D	8.5	75	x 75 L
45D		80	x 80 L
50D		85	x 85 L

Material: Chromium molybdenum steel
Surface material: Nickel plated

Accessory

For accessory bracket for Series CQS, refer to page 1142, since it is commonly used with Series CQ2.

- Single knuckle joint
- Pin for knuckle
- Double knuckle joint
- Rod end nut

REA
REB
REC
C_Y
C_X
MQ
RHC
RZQ

D-□
-X_□
Individual
-X_□

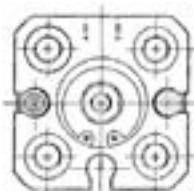
Series CQSX

Dimensions: ø12 to ø25

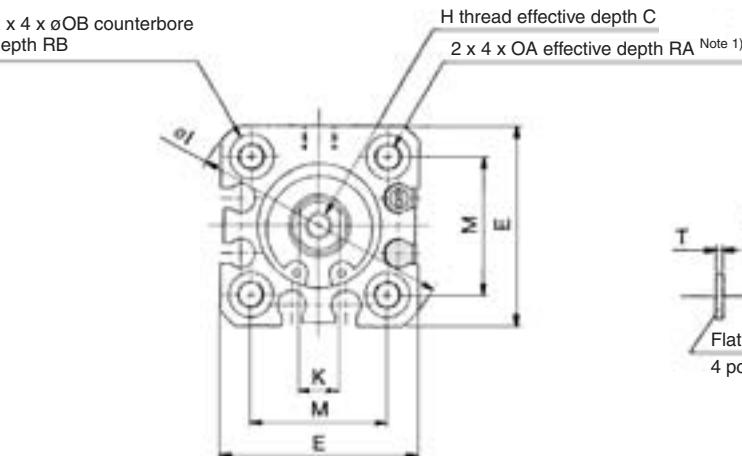
* For the auto switch mounting position and its mounting height, refer to page 1134.

Basic style (Through-hole/Both ends tapped common): CQSXB/CDQSXB

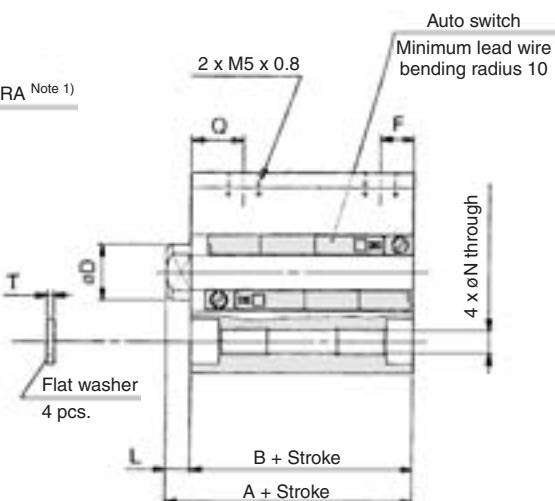
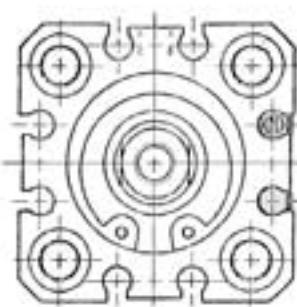
ø12



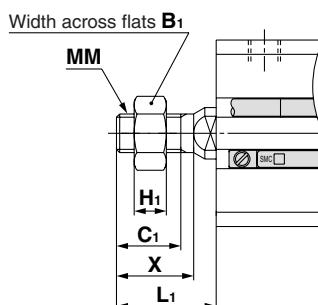
ø16 2 x 4 x øOB counterbore depth RB



ø20, ø25



Rod end male thread



Rod End Male Thread

Bore size (mm)	B1	C1	H1	L1	MM	X
12	8	9	4	14	M5 x 0.8	10.5
16	10	10	5	15.5	M6 x 1.0	12
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5

- Length with intermediate stroke
Spacer ... The dimensions will be identical to those of the nearest long stroke.

Basic Style

Bore size (mm)	Without auto switch				With auto switch				C	D	E	H	I	K	M	N	OA	OB	Q	RA	RB	T	
	A	B	F	L	A	B	F	L															
12	5 to 30	20.5	17	5	3.5	25.5	22	5	3.5	6	6	25	M3 x 0.5	32	5	15.5	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
16	5 to 30	20.5	17	5	3.5	25.5	22	5	3.5	8	8	29	M4 x 0.7	38	6	20	3.5	M4 x 0.7	6.5	7.5	7	4	0.5
20	5 to 50	24	19.5	5.5	4.5	34	29.5	5.5	4.5	7	10	36	M5 x 0.8	47	8	25.5	5.4	M6 x 1.0	9	9	10	7	1
25	5 to 50	27.5	22.5	5.5	5	37.5	32.5	5.5	5	12	12	40	M6 x 1.0	52	10	28	5.4	M6 x 1.0	9	11	10	7	1

Note 1) For the following bore/stroke sizes through-hole is threaded over the entire length: Basic style ø12 and ø16; 5 stroke, ø20; 5 to 15 stroke, ø25; 5 to 10 stroke, ø20 with auto switch built-in magnet; 5 stroke.

Note 2) Rubber bumper type has the same dimensions as those indicated above.

* For details about the rod end nut and accessory brackets, refer to page 1142.

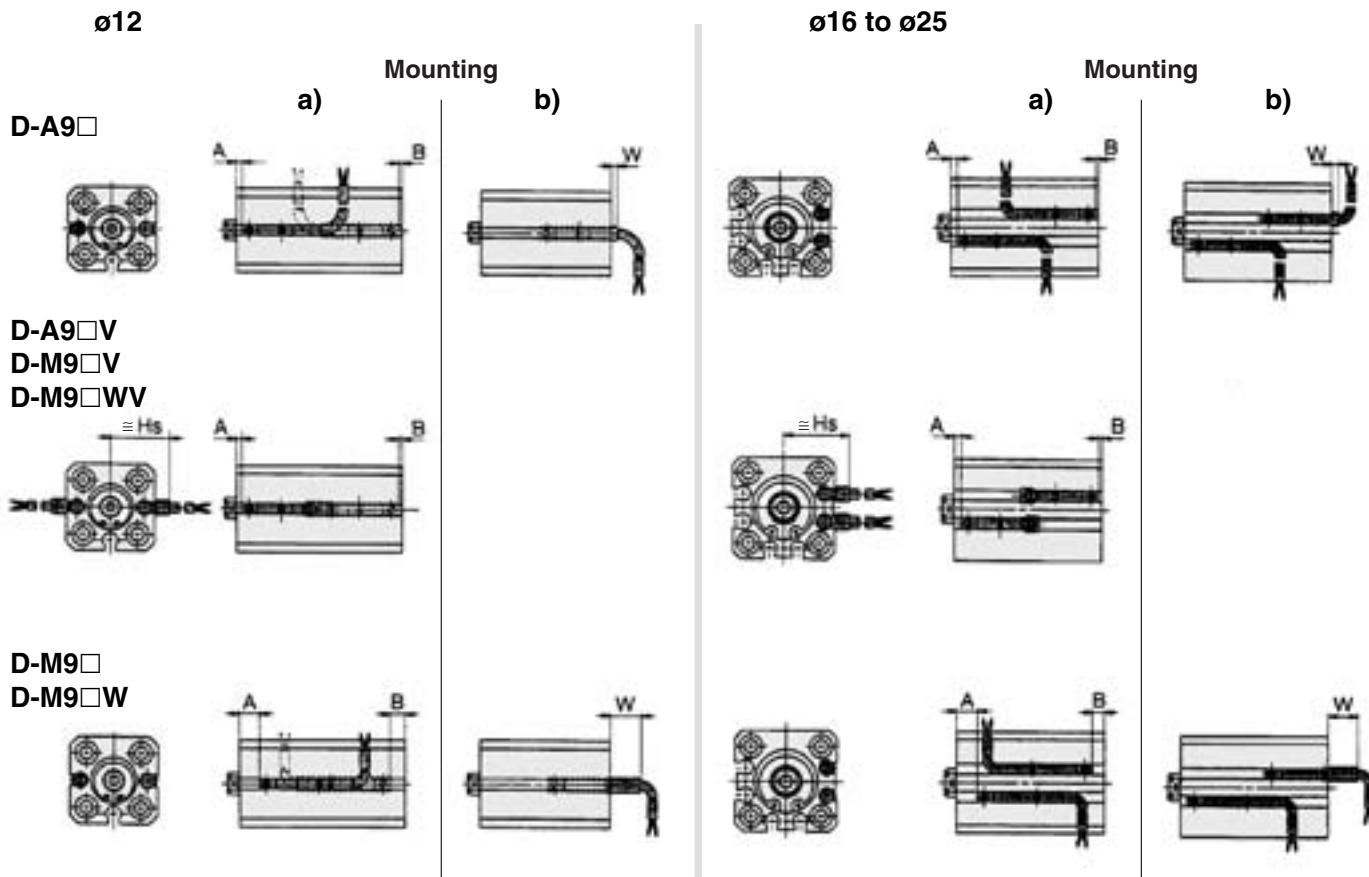
Series CQSX

Minimum Auto Switch Mounting Stroke

Qty. of auto switches mounted	D-M9□V	D-A9□V	D-A9□ D-M9□WV	D-M9□ D-M9□W	(mm)
1 pc.	5	5	10 ⁽¹⁾	15 ⁽¹⁾	
2 pcs.	5	10	10	15 ⁽¹⁾	

Note 1) Consult with SMC for shorter stroke length other than indicated in the table.

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height



Auto Switch Proper Mounting Position

Bore size Auto switch model	D-A9□			D-A9□V			D-M9□/M9□W			D-M9□V/M9□WV		
	A	B	W	A	B	Hs	A	B	W	A	B	Hs
12	1.5	0	1.5 (4) (5)	1.5	0	17	5.5	3.5	5.5	5.5	4.5	19.5
16	2	0	2 (4.5)	2	0	19	6	4	6	6	4	21.5
20	6	3.5	-1.5 (1)	6	3.5	22.5	10	7.5	2.5	10	7.5	25
25	7	5.5	-3.5 (-1)	7	5.5	24.5	11	9.5	0.5	11	9.5	27

(): Denotes the values of D-A93.

Note 1) Adjust the auto switch after confirming the operating conditions in the actual setting.

Note 2) The product is shipped out of the factory in installation state "a)". To change the electrical entry direction of the switch on the head, refer to installation state "b)".

Note 3) Negative figures for W indicate an auto switch is mounted inward from the edge of the cylinder body.

Operating Range

Auto switch model	(mm)			
	Bore size			
	12	16	20	25
D-A9□/A9□V	6	7.5	10	10
D-M9□/M9□V D-M9□W/M9□WV	3	4	5.5	4.5

* Since this is a guideline including hysteresis, not meant to be guaranteed.

(assuming approximately ±30% dispersion.)

There may be the case it will vary substantially depending on an ambient environment.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 to 1785.

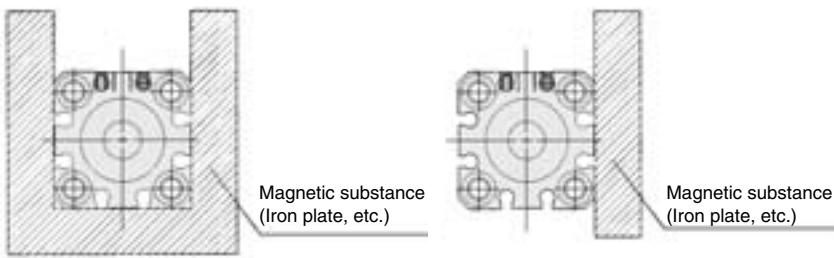
* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1746.

⚠ Precautions

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

- If the cylinder is used in an application in which a magnetic material is placed in close contact around the cylinder as shown in the graph on the right (including cases in which even one of the sides is in close contact) the operation of auto switches could become unstable. Therefore, please check with SMC for this type of application.



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

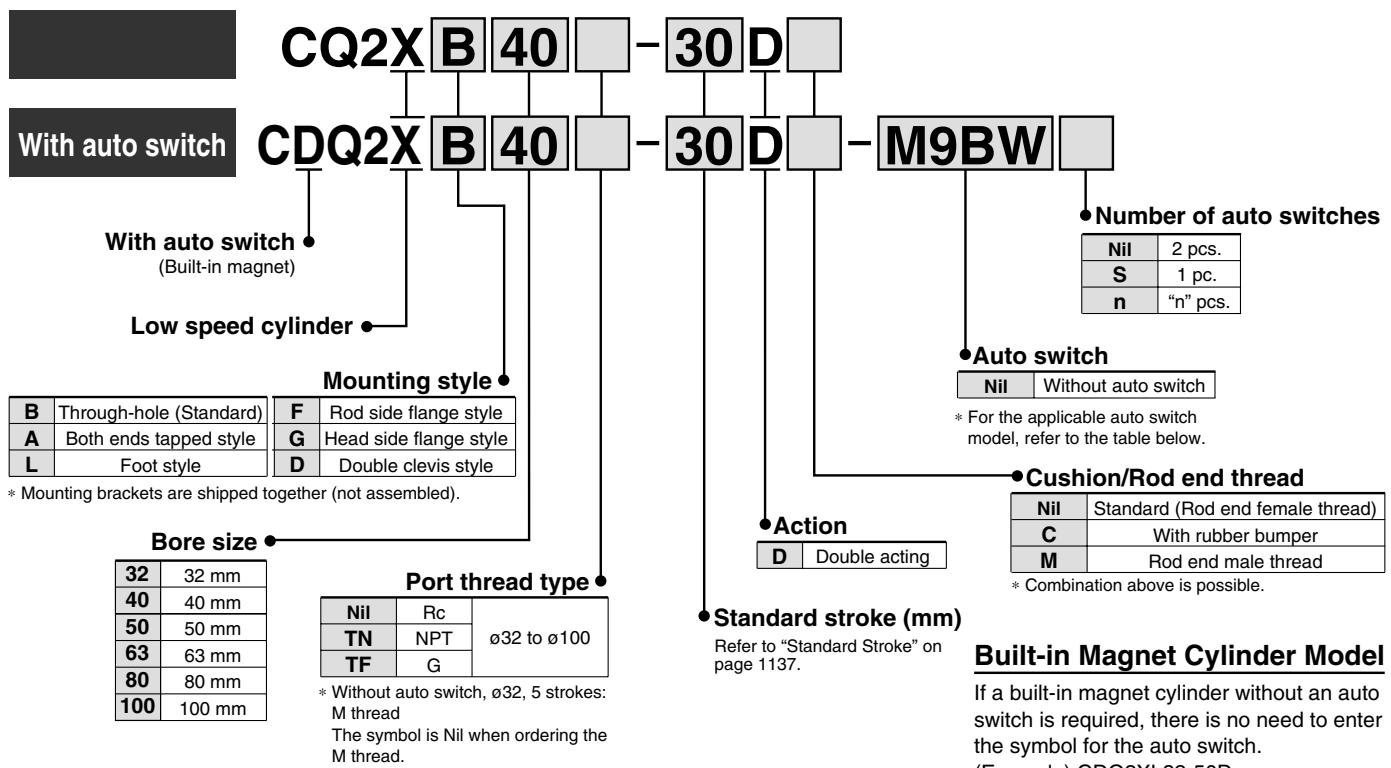
-X□

Low Speed Cylinder: Standard Type Double Acting, Single Rod

Series CQ2X

ø32, ø40, ø50, ø63, ø80, ø100

How to Order



Applicable Auto Switch/Refer to pages 1719 to 1827 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)		
Solid state switch	—	Grommet	3-wire (NPN)	5 V, 12 V	24 V	—	M9NV	M9N	●	●	●	○	—	○	IC circuit
			3-wire (PNP)	—			M9PV	M9P	●	●	●	○	—	○	
			2-wire	12V			M9BV	M9B	●	●	●	○	—	○	
		Connector	3-wire (NPN)	5 V, 12 V			J79C	—	●	—	●	●	●	—	—
			3-wire (PNP)	—			M9NWV	M9NW	●	●	●	○	—	○	IC circuit
	Diagnostic indication (2-color indication)	Grommet	2-wire	12 V			M9PWV	M9PW	●	●	●	○	—	○	
			4-wire	5 V, 12 V			M9BWV	M9BW	●	●	●	○	—	○	
			2-wire (Non-polar)	—			F79F	F79F	●	—	●	○	—	○	IC circuit
			3-wire (NPN equivalent)	—			P4DW	P4DW	—	—	●	●	—	○	
			3-wire (PNP)	—			—	—	—	—	—	—	—	—	
Reed switch	—	Grommet	5 V	—	24 V	—	A96V	A96	●	—	●	—	—	—	IC circuit
			—	200 V			A72	A72H	●	—	●	—	—	—	
			12 V	100 V			A93V	A93	●	—	●	—	—	—	
			5 V, 12 V	100 V or less			A90V	A90	●	—	●	—	—	—	IC circuit
		Connector	12 V	—			A73C	—	●	—	●	●	●	—	
			5 V, 12 V	24 V or less			A80C	A80C	—	●	—	●	●	—	IC circuit
		Grommet	—	—			A79W	A79W	—	●	—	●	—	—	
		Yes	—	—			—	—	—	—	—	—	—	—	Relay, PLC
Diagnostic indication (2-color indication)			—	—			—	—	—	—	—	—	—	—	

* 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) J79CN

* Solid state auto switches marked with "○" are produced upon receipt of order.
* D-P4DWL is compatible with ø40 to ø100.

* Only D-P4DW is assembled at the time of shipment.

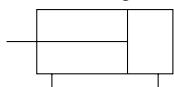
* Since there are other applicable auto switches than listed, refer to page 1147 for details.
* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
* When D-A9□(V)/M9□(V)/M9W(V) types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 1146 for details.
* Auto switches are shipped together (not assembled).

Low Speed Cylinder: Standard Type Double Acting, Single Rod Series CQ2X



JIS Symbol

Double acting, Single rod



Specifications

Bore size (mm)	32	40	50	63	80	100
Type	Pneumatic (Non-lube)					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)					
Rubber bumper	None					
Rod end thread	Female thread					
Stroke length tolerance	$\pm 1.0 \text{ mm}$ Note 0					
Mounting	Through-hole					
Piston speed	0.5 to 300 mm/s					

Note) Stroke length tolerance does not include the amount of bumper change.

Minimum Operating Pressure

Bore size (mm)	32	40	50	63	80	100
Min. operating pressure (MPa)		0.025			0.01	

Standard Stroke

Bore size (mm)	Standard stroke (mm)
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50, 63	10, 15, 20, 25, 30, 35,
80, 100	40, 45, 50, 75, 100

- Manufacturing of Intermediate stroke
Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders. But, as for Ø40 to Ø100 with damper, please consult with SMC separately.
Example) 18 mm width spacer is installed in the standard cylinder CQ2XB40-75D to make CQ2XB40-57D.

⚠ Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Retaining Ring Installation/Removal

⚠ Caution

1. For installation and removal, use an appropriate pair of pliers (tool for installing a type C retaining ring).
2. Even if a proper plier (tool for installing type C retaining ring) is used, it is likely to inflict damage to a human body or peripheral equipment, as a retaining ring may be flown out of the tip of a plier (tool for installing a type C retaining ring). Be much careful with the popping of a retaining ring. Besides, be certain that a retaining ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

Maintenance

⚠ Caution

1. Replacement parts/Seal kit

Order it in accordance with the bore size.

Bore size (mm)	Kit no.	Contents
32	CQ2X32-PS	Piston seal: 1 pc.
40	CQ2X40-PS	Rod seal: 1 pc.
50	CQ2X50-PS	Gasket: 1 pc.
63	CQ2X63-PS	Grease pack (10 g): 1 pc.
80	CQ2X80-PS	
100	CQ2X100-PS	

2. Grease pack

When maintenance requires only grease, use the following part numbers to order.

Grease pack part no.:

GR-L-005 (5 g)

GR-L-010 (10 g)

GR-L-150 (150 g)

Mounting Bracket Part No.

Bore size (mm)	Foot ⁽¹⁾	Flange	Double clevis ⁽³⁾
32	CQ-L032	CQ-F032	CQ-D032
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L063	CQ-F063	CQ-D063
80	CQ-L080	CQ-F080	CQ-D080
100	CQ-L100	CQ-F100	CQ-D100

Note 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Parts belonging to each bracket are as follows.

Foot or Flange: Body mounting bolts
Double clevis: Clevis pin, Type C retaining ring for shaft, Body mounting bolts

Note 3) For double clevis style, clevis pin and retaining ring are shipped together.

Pneumatic Circuit

1. Pressure supplied to cylinder should be set affordably. When the operating pressure is low, low speed operation may not be stable depending on a load condition. Besides, the maximum speed may be restricted depending on a pneumatic circuit, or operating pressure.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

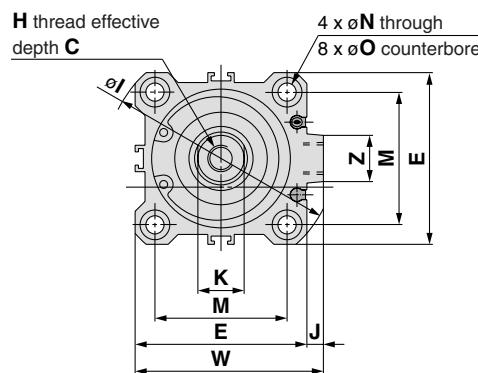
-X□

Series CQ2X

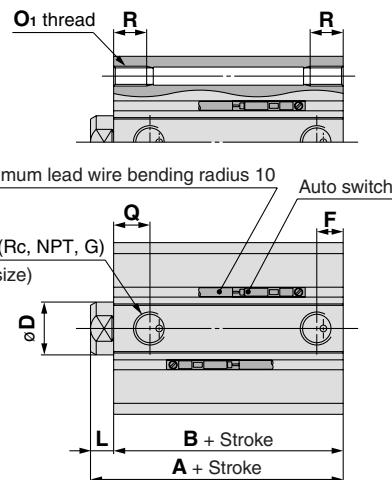
Bore size

ø32 to ø50

**Basic style (Through hole type):
CQ2XB/CDQ2XB**



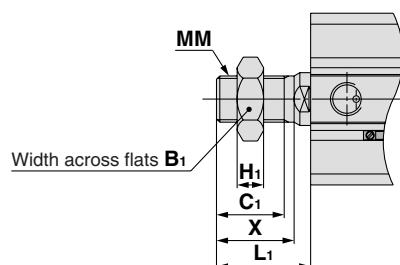
Both ends tapped style: CQ2XA/CDQ2XA



Both ends tapped

Bore size (mm)	O ₁	R
32	M6 x 1.0	10
40	M6 x 1.0	10
50	M8 x 1.25	14

Rod end male thread



Rod End Male Thread

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
32	22	20.5	8	28.5	M14 x 1.5	23.5
40	22	20.5	8	28.5	M14 x 1.5	23.5
50	27	26	11	33.5	M18 x 1.5	28.5

Basic Style For the auto switch mounting position and its mounting height, refer to page 1144. (mm)

Bore size (mm)	Stroke range (mm)	Without auto switch					With auto switch					C	D	E	H	I	J	K	L	M
		A	B	F	P	Q	A	B	F	P	Q									
32	5	30	23	5.5	M5 x 0.8	11.5	40	33	7.5	1/8	10.5	13	16	45	M8 x 1.25	60	4.5	14	7	34
	10 to 50	40	33	7.5	1/8	10.5														
	75, 100																			
40	5 to 50	36.5	29.5	8	1/8	11	46.5	39.5	8	1/8	11	13	16	52	M8 x 1.25	69	5	14	7	40
	75, 100	46.5	39.5																	
50	10 to 50	38.5	30.5	10.5	1/4	10.5	48.5	40.5	10.5	1/4	10.5	15	20	64	M10 x 1.5	86	7	17	8	50
	75, 100	48.5	40.5																	

Bore size (mm)	N	O	S	U	W	Z
32	5.5	9 depth 7	58.5	31.5	49.5	14
40	5.5	9 depth 7	66	35	57	14
50	6.6	11 depth 8	80	41	71	19



Note 1) Dimensions for rubber bumper are same as the standard style above.

* For details about the rod end nut and accessory brackets, refer to page 1142.

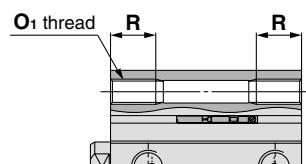
Note 2) Refer to page 1137 for calculation of the longitudinal dimension of the intermediate strokes since there is the spacer-installed type.

Series CQ2X

Bore size

ø63 to ø100

Both ends tapped style: CQ2XA/CDQ2XA

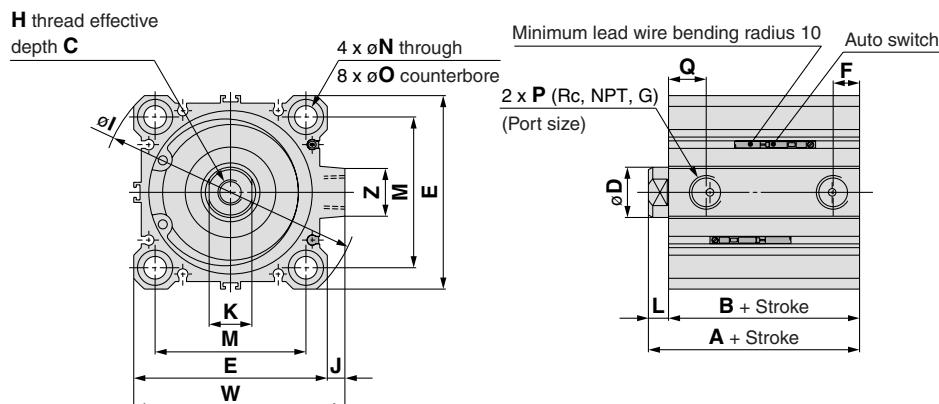


Both ends tapped

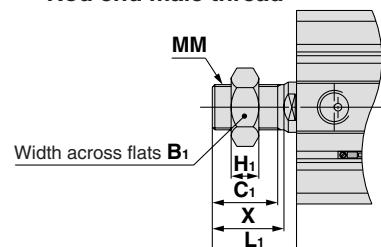
(mm)

Bore size (mm)	O ₁	R
63	M10 x 1.5	18
80	M12 x 1.75	22
100	M12 x 1.75	22

Basic style (Through hole type):



Rod end male thread



Both ends tapped

(mm)

Bore size (mm)	B ₁	C ₁	H ₁	L ₁	MM	X
63	27	26	11	33.5	M18 x 1.5	28.5
80	32	32.5	13	43.5	M22 x 1.5	35.5
100	41	32.5	16	43.5	M26 x 1.5	35.5

Basic Style

For the auto switch mounting position and its mounting height, refer to page 1144.

Bore size (mm)	Stroke range (mm)	Without auto switch		With auto switch		C	D	E	F	H	I	J	K	L	M	N	O	P	Q	S
		A	B	A	B															
63	10 to 50	44	36	54	46	15	20	77	10.5	M10 x 1.5	103	7	17	8	60	9	14 depth 10.5	1/4	15	93
	75, 100	54	46																	
80	10 to 50	53.5	43.5	63.5	53.5	21	25	98	12.5	M16 x 2.0	132	6	22	10	77	11	17.5 depth 13.5	3/8	16	112.5
	75, 100	63.5	53.5																	
100	10 to 50	65	53	75	63	27	30	117	13	M20 x 2.5	156	6.5	27	12	94	11	17.5 depth 13.5	3/8	23	132.5
	75, 100	75	63																	

Bore size (mm)	U	W	Z
63	47.5	84	19
80	57.5	104	26
100	67.5	123.5	26



Note 1) Dimensions for rubber bumper are same as the standard style above.

* For details about the rod end nut and accessory brackets, refer to page 1142.

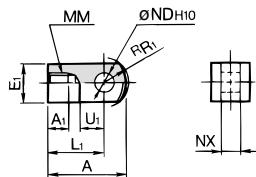
Note 2) Refer to the Stroke Table on page 1137 for calculation of the longitudinal dimension of the intermediate strokes.

Series CQ2X

Accessory Bracket

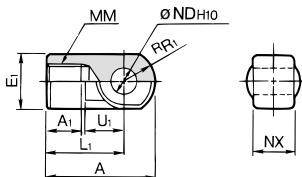
Single Knuckle Joint

For I-G012, I-Z015A
I-G02, I-G03



Material: Carbon steel
Surface material: Nickel plated (mm)

For I-G04, I-G05
I-G08, I-G10

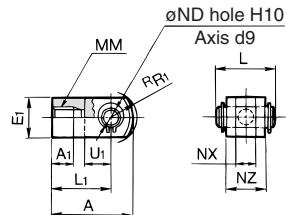


Material: Cast iron
Surface material: Nickel plated (mm)

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	R _{R1}	U ₁	ND _{H10}	NX
I-G04	32, 40	42	14	ø22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{-0.3} _{-0.5}
I-G05	50, 63	56	18	ø28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{-0.3} _{-0.5}
I-G08	80	71	21	ø38	50	M22 x 1.5	21	27	18 ^{+0.070} ₀	28 ^{-0.3} _{-0.5}
I-G10	100	79	21	ø44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{-0.3} _{-0.5}

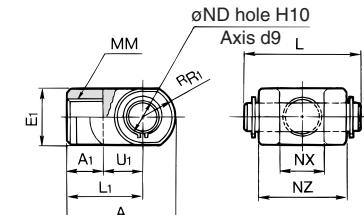
Double Knuckle Joint

For Y-G012, Y-Z015A
Y-G02, Y-G03



Material: Carbon steel
Surface material: Nickel plated (mm)

For Y-G04, Y-G05
Y-G08, Y-G10

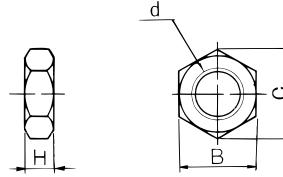
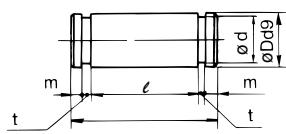


Material: Cast iron
Surface material: Nickel plated (mm)

Part no.	Applicable bore size (mm)	A	A ₁	E ₁	L ₁	MM	R _{R1}	U ₁	ND _{H10}	NX	NZ	L	Applicable pin part no.
Y-G04	32, 40	42	16	ø22	30	M14 x 1.5	12	14	10 ^{+0.058} ₀	18 ^{+0.5} _{-0.3}	36	41.6	IY-G04
Y-G05	50, 63	56	20	ø28	40	M18 x 1.5	16	20	14 ^{+0.070} ₀	22 ^{+0.5} _{-0.3}	44	50.6	IY-G05
Y-G08	80	71	23	ø38	50	M22 x 1.5	21	27	18 ^{+0.070} ₀	28 ^{-0.3} _{-0.5}	56	64	IY-G08
Y-G10	100	79	24	ø44	55	M26 x 1.5	24	31	22 ^{+0.084} ₀	32 ^{-0.3} _{-0.5}	64	72	IY-G10

* Knuckle pin and retaining ring are included.

Rod End Nut



Knuckle Pin (Common with double clevis pin)

Material: Carbon steel (mm)

Part no.	Applicable bore size (mm)	Dd9	L	d	ℓ	m	t	Applicable retaining ring
YI-G04	32, 40	10 ^{-0.040} _{-0.076}	41.6	9.6	36.2	1.55	1.15	Type C 10 for axis
YI-G05	50, 63	14 ^{-0.050} _{-0.093}	50.6	13.4	44.2	2.05	1.15	Type C 14 for axis
YI-G08	80	18 ^{-0.050} _{-0.093}	64	17	56.2	2.55	1.35	Type C 18 for axis
YI-G10	100	22 ^{-0.065} _{-0.117}	72	21	64.2	2.55	1.35	Type C 22 for axis

* Type C retaining rings for axis are included.

Material: Carbon steel
Surface material: Nickel plated (mm)

Part no.	Applicable bore size (mm)	d	H	B	C
NT-04	32, 40	M14 x 1.5	8	22	25.4
NT-05	50, 63	M18 x 1.5	11	27	31.2
NT-08	80	M22 x 1.5	13	32	37.0
NT-10	100	M26 x 1.5	16	41	47.3

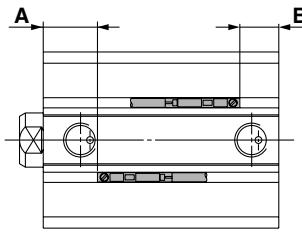
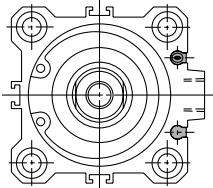
Series CQ2X

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

$\phi 32$ to $\phi 100$

D-A9□
D-M9□
D-M9□W

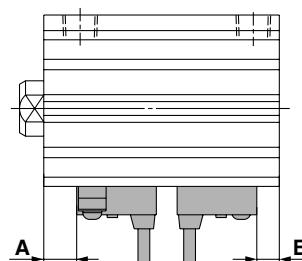
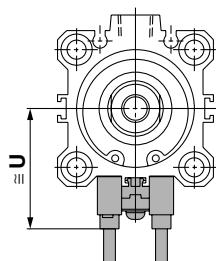
D-A9□V
D-M9□V
D-M9□WV



D-A7□
D-A80
D-A7□H
D-A80H
D-F7□
D-J79
D-F7□W
D-J79W
D-F79F

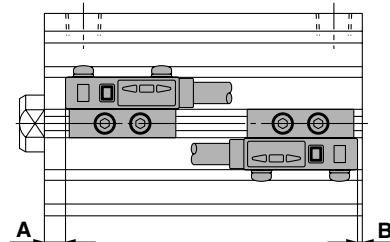
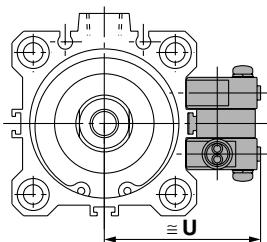
D-F7NTL
D-A73C
D-A80C
D-J79C
D-A79W
D-F7□WV
D-J7V

$\phi 32$ to $\phi 100$



D-P4DWL

$\phi 40$ to $\phi 100$



Auto Switch Proper Mounting Position

(mm)

Auto switch model	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C/F7□ D-F79F/J79/F7□V D-J79C/F7□W D-J79W/F7□WV		D-F7NTL		D-A79W		D-P4DWL	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B	A	B
32	8	5	12	9	9	6	9.5	6.5	14.5	11.5	6.5	3.5	—	—
40	12	7.5	16	11.5	13	8.5	13.5	9	18.5	14	10.5	6	14.5	9
50	10	10.5	14	14.5	11	11.5	11.5	12	16.5	17	8.5	9	12	12.5
63	12.5	13.5	16.5	17.5	13.5	14.5	14	15	19	20	11	12	14.5	15.5
80	16.5	17	20.5	21	17.5	18	18	18.5	23	23.5	15	15.5	17.5	20
100	20	23	24	27	21	24	21.5	24.5	26.5	29.5	18.5	21.5	20.5	26.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model	D-A9□V	D-M9□V D-M9□WV	D-A7□ D-A80	D-A7□H D-A80H D-F7□ D-J79 D-F7□W D-J79W D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV	D-J79C	D-A79W	D-P4DWL
Bore size	U	U	U	U	U	U	U	U	U
32	27	29	31.5	32.5	38.5	35	38	34	—
40	30.5	32.5	35	36	42	38.5	41.5	37.5	44
50	36.5	38.5	41	42	48	44.5	47.5	43.5	50
63	40	42	47.5	48.5	54.5	51	54	50	56.5
80	50	52	57.5	58.5	64.5	61	64	60	66.5
100	60	62	67.5	68.5	74.5	71	74	70	76.5

Minimum Auto Switch Mounting Stroke

(mm)								
No. of auto switches mounted	D-M9□V D-F7□V D-J79C	D-A9□V D-A7□ D-A80 D-A73C D-A80C	D-A9□	D-M9□WV D-F7□WV	D-M9□ D-M9□W D-A7□H D-A80H D-F7□ D-J79	D-A79W	D-F7□W D-J79W D-F79F D-F7NTL	D-P4PW
1 pc.	5	5	10	10	15	15	20	15
2 pcs.	5	10	10	15	15	20	20	15

Operating Range

Auto switch model	Bore size					
	32	40	50	63	80	100
D-A9□ (V)	9.5	9.5	9.5	11.5	9	11.5
D-M9□ (V) D-M9□W (V)	6	5.5	6.5	7.5	7.5	8.5
D-A7□ (H) (C) D-A80□ (H) (C)	12	11	10	12	12	13
D-A79W	13	14	14	16	15	17
D-F7□ (V) D-J79 (C) D-F7□W (V) D-F7NTL D-F79F	6	6	6	6.5	6.5	7
D-P4DW	—	5	5	5	5	5.5

* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately $\pm 30\%$ dispersion.)

There may be the case it will vary substantially depending on an ambient environment.

* Auto switch mounting brackets BQ2-012 are not used for sizes over Ø32 of D-A9□(V)/M9□(V)/M9□W(V) types. The above values indicate the operating range when mounted with the conventional auto switch installation groove.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

-X□

Series CQ2X

Auto Switch Mounting Bracket/Part No.

Auto switch mounting surface	Bore size (mm)	
	ø32, ø40, ø50	ø63, ø80, ø100
Auto switch model	Port side	Port side
	A, B, C side	Port, A, B, C side

D-A9□
D-A9□V
D-M9□
D-M9□V
D-M9□W
D-M9□WV

No auto switch mounting bracket necessary.

①BQ-2
②BQ2-012
Two types of auto switch mounting bracket are used as a set.

Set screw (not used)

No auto switch mounting bracket necessary.

Note 1) For CDQ2□32 to 50, when a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of bore sizes ø32 to ø50, the auto switch mounting brackets above are required. Order them separately from cylinders. (It is the same as when mounting compact cylinders with an auto switch mounting rail, but not with a compact auto switch installation groove for CDQ2□63 to 100.)

Example

CDQ2XB32-100DM-M9BW.....1 unit

BQ-2.....2 pcs.

BQ2-012.....2 pcs.

Note 2) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment.

Auto switch model	Bore size (mm)	
	ø32	ø40 to ø100
D-A7□/A80		
D-A73C/A80C		
D-A7□H/A80H		
D-A79W		
D-F7□/J79		BQ-2
D-F7□V		
D-J79C		
D-F7□W/J79W		
D-F7□WV		
D-F79F/F7NTL		
D-P4DW	—	BQP1-050

Note) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment. However, ø40 to ø100 D-P4DWL are assembled at the time of shipment.

Auto Switch Mounting Bracket Mass

Auto switch mounting bracket part no.	Applicable cylinder bore size	Mass (g)
BQ-2	ø32 to ø100	1.5
BQP1-050	ø40 to ø100	16

**Low Speed Cylinder
Standard: Double Acting, Single Rod Series CQ2X**

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.
For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features	Applicable bore size
Reed	D-A73	Grommet (Perpendicular)	—	ø32 to ø100
	D-A80		Without indicator light	
	D-A73H, A76H	Grommet (in-line)	—	
	D-A80H		Without indicator light	
Solid state	D-F7NV, F7PV, F7BV	Grommet (Perpendicular)	—	ø32 to ø100
	D-F7NWV, F7BWV		Diagnostic indication (2-color indication)	
	D-F79, F7P, J79		—	
	D-F79W, F7PW, J79W	Grommet (in-line)	Diagnostic indication (2-color indication)	ø40 to ø100
	D-F7NTL		With timer	
	D-P5DWL		Magnetic field resistant (2-color indication)	

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 to 1785.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1746 and 1748 for details.

REA
REB
REC
C□Y
C□X
MQ
RHC
RZQ

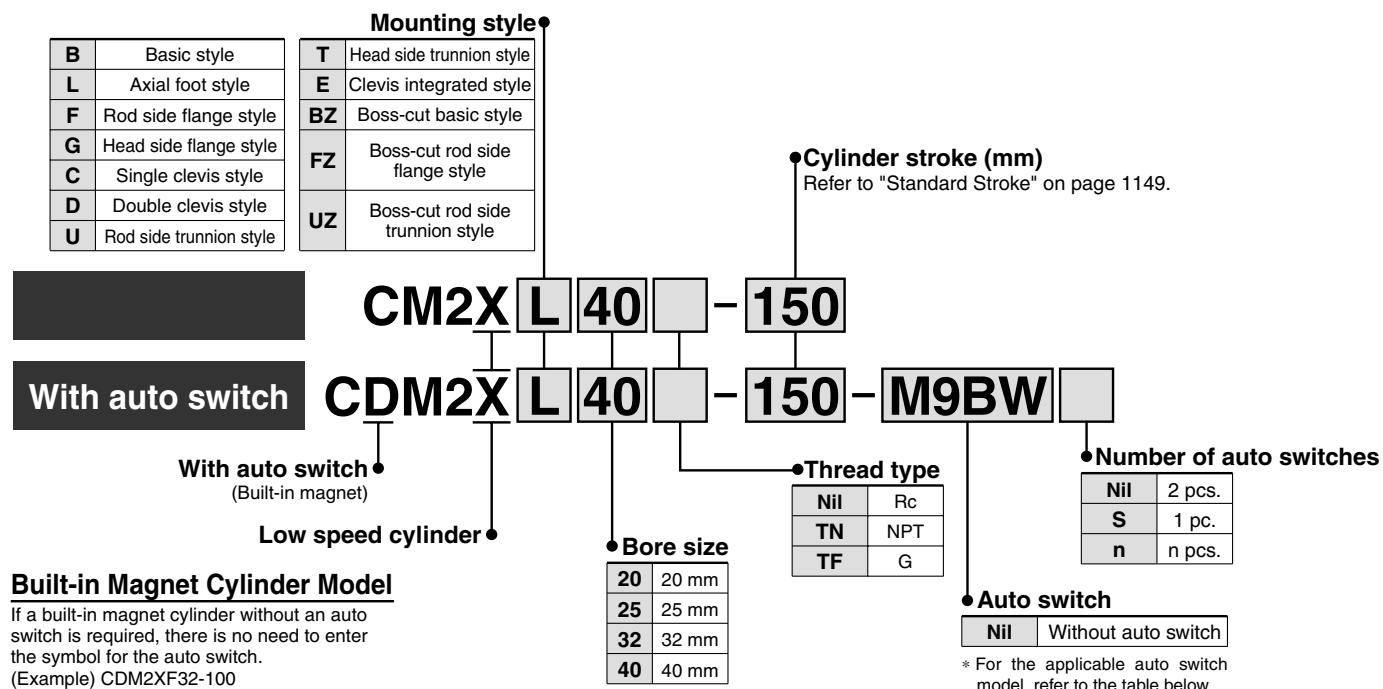
D-□
-X□
Individual
-X□

Low Speed Cylinder Double Acting, Single Rod

Series CM2X

ø20, ø25, ø32, ø40

How to Order



Applicable Auto Switch Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire (m)					Pre-wired connector	Applicable load	
					DC	AC		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)			
Solid state switch	—	Grommet	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	●	●	●	○	—	○	IC circuit	
			3-wire (PNP)				M9P	●	●	●	○	—	○		
			2-wire				M9B	●	●	●	○	—	○		
	Connector	Terminal conduit	3-wire (NPN)		12 V	—	H7C	●	—	●	●	●	—		
			2-wire		5 V, 12 V		G39A	—	—	—	—	●	—	IC circuit	
	Diagnostic indication (2-color)	Grommet	3-wire (NPN)		12 V		K39A	—	—	—	—	●	—		
			3-wire (PNP)		5 V, 12 V		M9NW	●	●	●	○	—	○		
			2-wire		12 V		M9PW	●	●	●	○	—	○		
			3-wire (NPN)		5 V, 12 V		M9BW	●	●	●	○	—	○		
			4-wire (NPN)		5 V, 12 V		H7NF	●	—	●	○	—	○		
Reed switch	—	Grommet	3-wire (Equiv. NPN)	24 V	—	5 V	—	A96	●	—	●	—	—	IC circuit	—
			—		100 V	—	A93	●	—	●	—	—	—	Relay, PLC	
			100 V or less		100 V or less	—	A90	●	—	●	—	—	—		
			100 V, 200 V		100 V, 200 V	—	B54	●	—	●	●	—	—		
			200 V or less		200 V or less	—	B64	●	—	●	—	—	—		
			—		—	—	C73C	●	—	●	●	●	—		
	Connector	Grommet	24 V or less		24 V or less	—	C80C	●	—	●	●	●	—	IC circuit	
			—		—	—	A33A	—	—	—	●	—	—		
			100 V, 200 V		100 V, 200 V	—	A34A	—	—	—	●	—	—		
		Terminal conduit	—		—	—	A44A	—	—	—	●	—	—	PLC	
			—		—	—	B59W	●	—	●	—	—	—	Relay, PLC	
			Diagnostic indication (2-color)	Grommet	—	—	—	—	—	—	—	—	—		

* 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

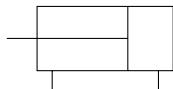
* Solid state auto switches marked with "○" are produced upon receipt of order.
* D-A9□V□/M9□V□/M9□WV□/M9□A(V)L types cannot be mounted.
* Do not add the suffix (N) indicating "no lead wire" to the part numbers of models D-A3□A, A44A, G39A and K39A.

* In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1161.
* Refer to pages 1784 and 1785 for details of auto switches with a pre-wired connector.
* D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)



JIS Symbol

Double acting
Single rod



Standard Stroke

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

* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Precautions

- Be sure to read before handling.
- Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Operating Precautions

Warning

1. Do not rotate the cover.

- When installing a cylinder or screwing a pipe fitting into the port, the coupling portion of the cover could break if the cover rotated.

Caution

1. Be careful of the retaining ring to pop out.

- When replacing the rod seal, take care that the retaining ring does not spring out while you are removing it.

Maintenance

Caution

1. Replacement parts/Seal kit

Order it in accordance with the bore size.

Bore size (mm)	Kit no.	Contents
20	CM2X20-PS	Rod seal: 1 pc.
25	CM2X25-PS	
32	CM2X32-PS	Grease pack (10 g): 1 pc.
40	CM2X40-PS	

2. Grease pack

When maintenance requires only grease, use the following part numbers to order.

Grease pack part no.:

GR-L-005 (5 g)

GR-L-010 (10 g)

GR-L-150 (150 g)

Specifications

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	0.025 MPa			
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)			
Cushion	Rubber bumper			
Lubrication	Not required (Non-lube)			
Stroke length tolerance	+1.4 mm 0			

Piston Speed

Bore size (mm)	20	25	32	40
Piston speed (mm/s)	0.5 to 300			
Allowable kinetic energy (J)	0.27	0.4	0.65	1.2

Mounting Bracket Part No.

Mounting bracket	Minimum order	Bore size (mm)				Description (when ordering a minimum number)
		20	25	32	40	
Axial foot*	2	CM-L020B	CM-L032B	CM-L040B		Foot 2 pcs., Mounting nut 1 pc.
Flange	1	CM-F020B	CM-F032B	CM-F040B		Flange 1 pc., Mounting nut 1 pc.
Single clevis**	1	CM-C020B	CM-C032B	CM-C040B		Single clevis 1 pc., Liner 3 pcs.
Double clevis (with pin) ***	1	CM-D020B	CM-D032B	CM-D040B		Double clevis 1 pc., Liner 3 pcs., Clevis pin 1 pc., Retaining ring 2 pcs.
Trunnion (with nut)	1	CM-T020B	CM-T032B	CM-T040B		Trunnion 1 pc., Trunnion nut 1 pc.

* When ordering foot brackets, order 2 pieces per cylinder unit.

** Three liners are included in the clevis bracket for adjusting an angle when mounting it.

*** Clevis pin and retaining ring (cotter pin for ø40) are shipped together.

Mounting Style and Accessory

Mounting	Accessory	Standard equipment			Option		
		Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double (3) knuckle joint	Clevis (4) bracket
Basic style	● (1 pc.)	●	—	●	●	—	—
Axial foot style	● (2)	●	—	●	●	—	—
Rod side flange style	● (1)	●	—	●	●	—	—
Head side flange style	● (1)	●	—	●	●	—	—
Clevis integrated style	— Note 1)	●	—	●	●	●	●
Single clevis style	— Note 1)	●	—	●	●	—	—
Double clevis style (3)	— Note 1)	●	● Note 5)	●	●	—	—
Rod side trunnion style	● (1) Note 2)	●	—	●	●	—	—
Head side trunnion style	● (1) Note 2)	●	—	●	●	—	—
Boss-cut basic style	● (1)	●	—	●	●	—	—
Boss-cut flange style	● (1)	●	—	●	●	—	—
Boss-cut trunnion style	● (1)	●	—	●	●	—	—

Note 1) Mounting nut is not equipped with clevis integrated style, single clevis style and double clevis style.

Note 2) Trunnion nuts are attached for rod side trunnion and head side trunnion styles.

Note 3) Pin and retaining ring are shipped together with double clevis and double knuckle joint. (ø40 is cotter pin.)

Note 4) Pins and retaining rings are packed with clevis brackets.

Note 5) Retaining rings (cotter pins for ø40) are included in the clevis pins.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

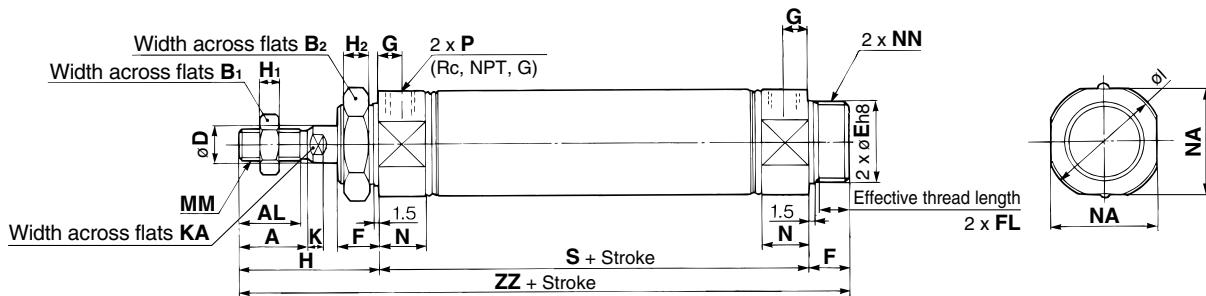
Individual

-X□

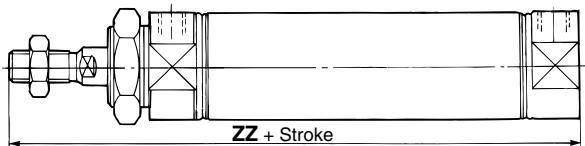
Series CM2X

Basic Style (B)

CM2XB Bore size — Stroke



Boss-cut style



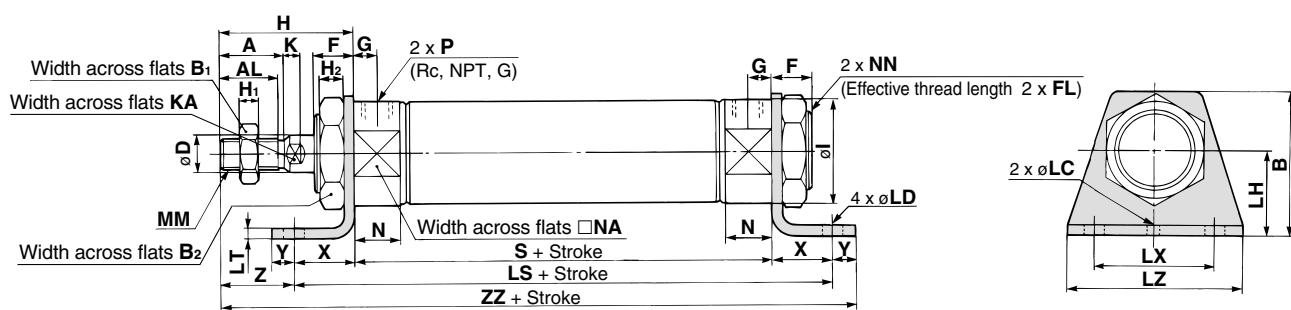
Bore size (mm)	A	AL	B₁	B₂	D	E	F	FL	G	H	H₁	H₂	I	K	KA	MM	N	NA	NN	P	S	ZZ
20	18	15.5	13	26	8	$20^0_{-0.033}$	13	10.5	8	41	5	8	28	5	6	M8 x 1.25	15	24	M20 x 1.5	$\frac{1}{8}$	62	116
25	22	19.5	17	32	10	$26^0_{-0.033}$	13	10.5	8	45	6	8	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	$\frac{1}{8}$	62	120
32	22	19.5	17	32	12	$26^0_{-0.033}$	13	10.5	8	45	6	8	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	$\frac{1}{8}$	64	122
40	24	21	22	41	14	$32^0_{-0.039}$	16	13.5	11	50	8	10	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	$\frac{1}{4}$	88	154

Boss-cut Style (mm)

Bore size (mm)	ZZ
20	103
25	107
32	109
40	138

Axial Foot Style (L)

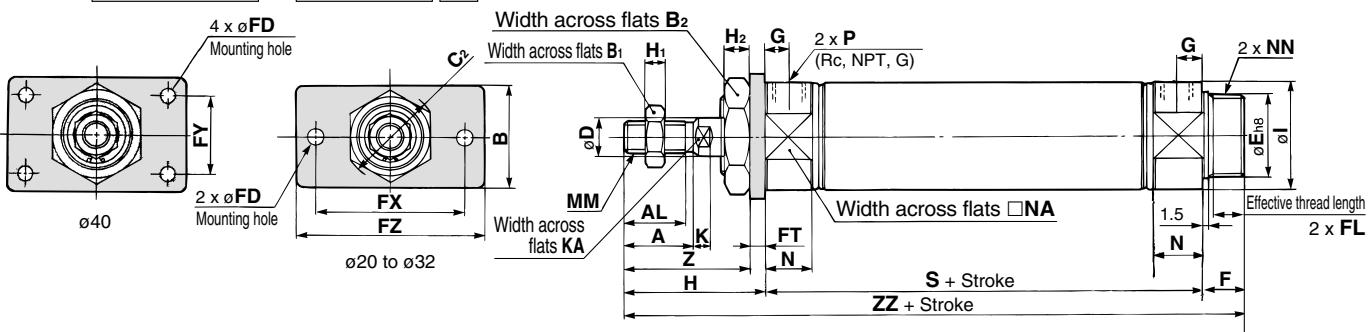
CM2XL Bore size — Stroke



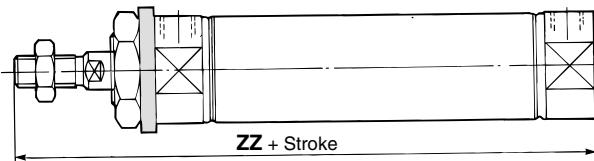
Bore size (mm)	A	AL	B	B₁	B₂	D	F	FL	G	H	H₁	H₂	I	K	KA	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	S	X	Y	Z	ZZ
20	18	15.5	40	13	26	8	13	10.5	8	41	5	8	28	5	6	4	6.8	25	102	3.2	40	55	M8 x 1.25	15	24	M20 x 1.5	$\frac{1}{8}$	62	20	8	21	131
25	22	19.5	47	17	32	10	13	10.5	8	45	6	8	33.5	5.5	8	4	6.8	28	102	3.2	40	55	M10 x 1.25	15	30	M26 x 1.5	$\frac{1}{8}$	62	20	8	25	135
32	22	19.5	47	17	32	12	13	10.5	8	45	6	8	37.5	5.5	10	4	6.8	28	104	3.2	40	55	M10 x 1.25	15	34.5	M26 x 1.5	$\frac{1}{8}$	64	20	8	25	137
40	24	21	54	22	41	14	16	13.5	11	50	8	10	46.5	7	12	4	7	30	134	3.2	55	75	M14 x 1.5	21.5	42.5	M32 x 2	$\frac{1}{4}$	88	23	10	27	171

Rod Side Flange Style (F)

CM2XF Bore size — Stroke



Boss-cut style



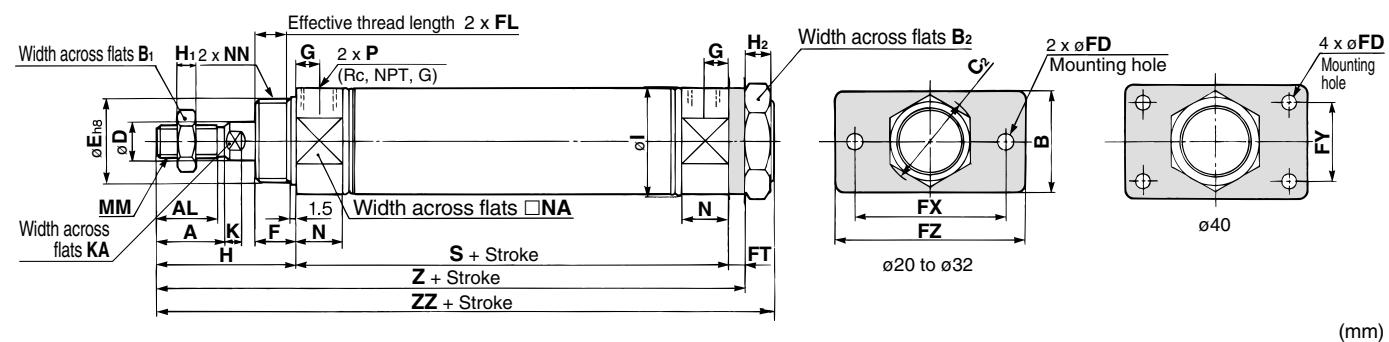
Bore size (mm)	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FL	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I	K	KA	MM	N	NA	NN	P	S	Z	ZZ
20	18	15.5	34	13	26	30	8	20 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	41	5	8	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	62	37	116
25	22	19.5	40	17	32	37	10	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	62	41	120
32	22	19.5	40	17	32	37	12	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	41	122
40	24	21	52	22	41	47.3	14	32 ⁰ _{-0.039}	16	13.5	7	5	66	36	82	11	50	8	10	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	45	154

Boss-cut Style (mm)

Bore size (mm)	ZZ
20	103
25	107
32	109
40	138

Head Side Flange Style (G)

CM2XG Bore size — Stroke



Bore size (mm)	A	AL	B	B ₁	B ₂	C ₂	D	E	F	FL	FD	FT	FX	FY	FZ	G	H	H ₁	H ₂	I
20	18	15.5	34	13	26	30	8	20 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	41	5	8	28
25	22	19.5	40	17	32	37	10	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	33.5
32	22	19.5	40	17	32	37	12	26 ⁰ _{-0.033}	13	10.5	7	4	60	—	75	8	45	6	8	37.5
40	24	21	52	22	41	47.3	14	32 ⁰ _{-0.039}	16	13.5	7	5	66	36	82	11	50	8	10	46.5

Bore size (mm)	K	KA	MM	N	NA	NN	P	S	Z	ZZ
20	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8	62	107	116
25	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8	62	111	120
32	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8	64	113	122
40	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4	88	143	154

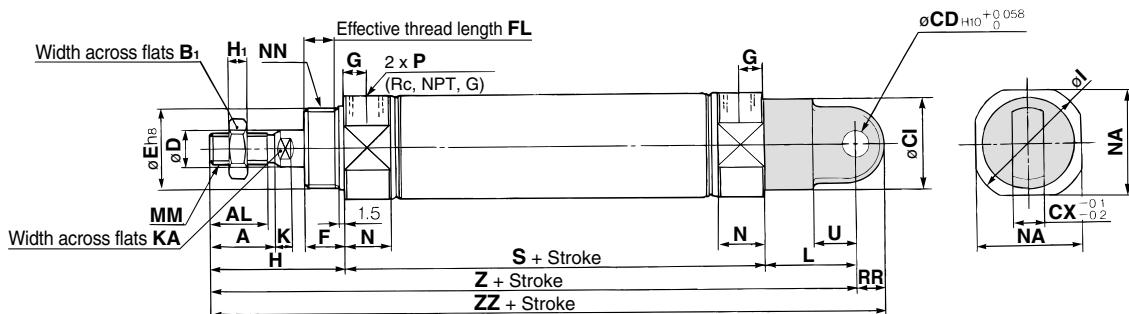
REA
REB
REC
C_□Y
C_□X
MQ
RHC
RZQ

D-□
-X_□
Individual
-X_□

Series CM2X

Single Clevis Style (C)

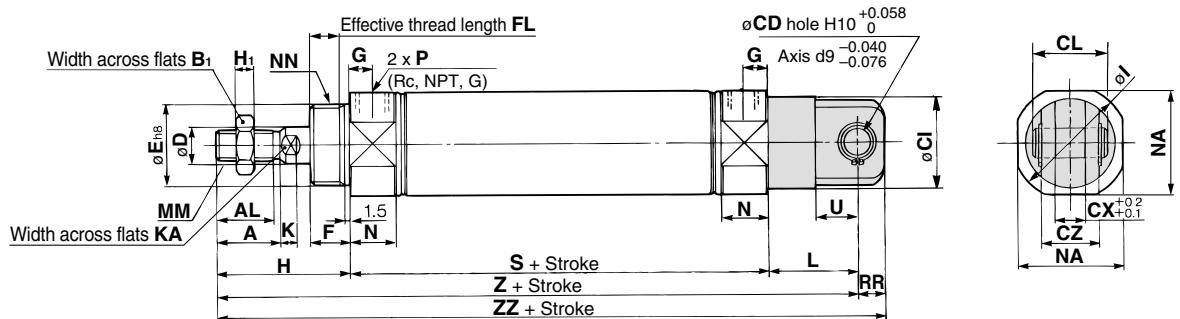
CM2XC **Bore size** — **Stroke**



Bore size (mm)	A	AL	B ₁	CI	CD	CX	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ	(mm)
20	18	15.5	13	24	9	10	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	30	M8 x 1.25	15	24	M20 x 1.5	1/8	9	62	14	133	142	
25	22	19.5	17	30	9	10	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	30	M10 x 1.25	15	30	M26 x 1.5	1/8	9	62	14	137	146	
32	22	19.5	17	30	9	10	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	30	M10 x 1.25	15	34.5	M26 x 1.5	1/8	9	64	14	139	148	
40	24	21	22	38	10	15	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	39	M14 x 1.5	21.5	42.5	M32 x 2	1/4	11	88	18	177	188	

Double Clevis Style (D)

CM2XD **Bore size** — **Stroke**

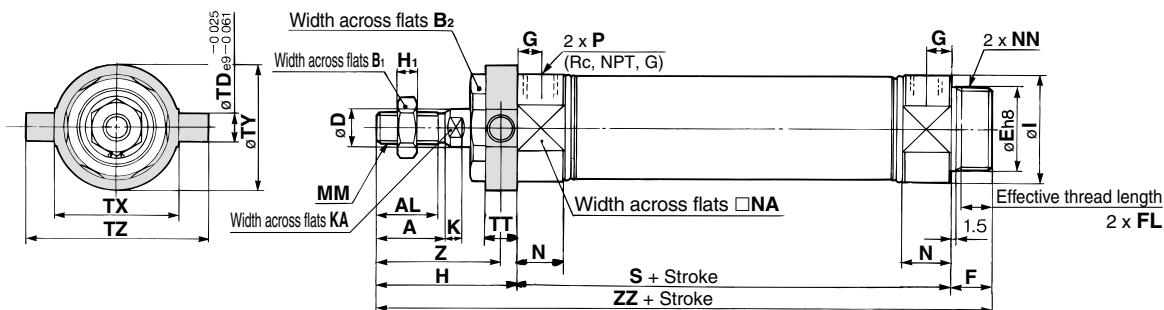


Bore size (mm)	A	AL	B ₁	CD	CI	CL	CX	CZ	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN	P	RR	S	U	Z	ZZ	(mm)
20	18	15.5	13	9	24	25	10	19	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	30	M8 x 1.25	15	24	M20 x 1.5	1/8	9	62	14	133	142	
25	22	19.5	17	9	30	25	10	19	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	30	M10 x 1.25	15	30	M26 x 1.5	1/8	9	62	14	137	146	
32	22	19.5	17	9	30	25	10	19	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	30	M10 x 1.25	15	34.5	M26 x 1.5	1/8	9	64	14	139	148	
40	24	21	22	10	38	41.2	15	30	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	39	M14 x 1.5	21.5	42.5	M32 x 2	1/4	11	88	18	177	188	

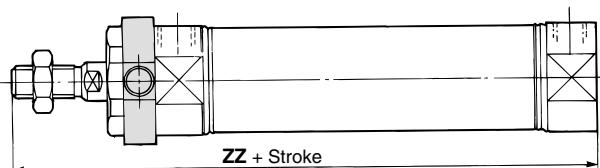
* Clevis pin and retaining ring (cotter pin for bore size ø40) are shipped together.

Rod Side Trunnion Style (U)

CM2XU **Bore size** — **Stroke**



Boss-cut style



Bore size (mm)	A	AL	B ₁	B ₂	D	E	F	FL	G	H	H ₁	I	K	KA	MM	N	NA	NN	P
20	18	15.5	13	26	8	$20_{-0.033}^0$	13	10.5	8	41	5	28	5	6	M8 x 1.25	15	24	M20 x 1.5	$1/8$
25	22	19.5	17	32	10	$26_{-0.033}^0$	13	10.5	8	45	6	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	$1/8$
32	22	19.5	17	32	12	$26_{-0.033}^0$	13	10.5	8	45	6	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	$1/8$
40	24	21	22	41	14	$32_{-0.039}^0$	16	13.5	11	50	8	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	$1/4$

(mm)

Bore size (mm)	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

(mm)

Boss-cut Style (mm)

Bore size (mm)	ZZ
20	103
25	107
32	109
40	138

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

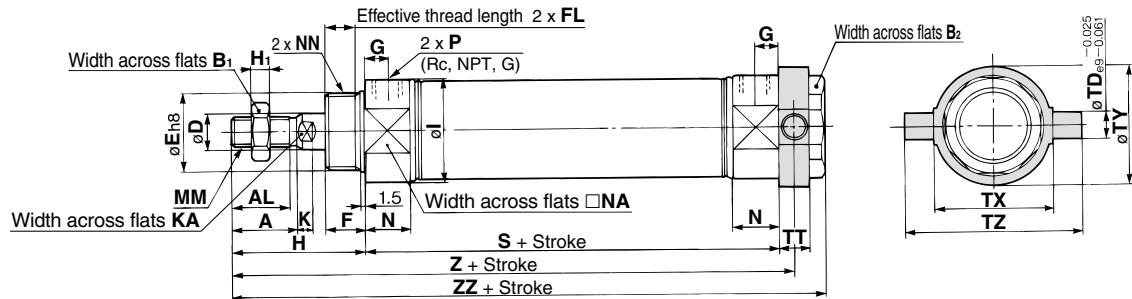
-X□

Individual
-X□

Series CM2X

Head Side Trunnion Style (T)

CM2XT **Bore size** — **Stroke**

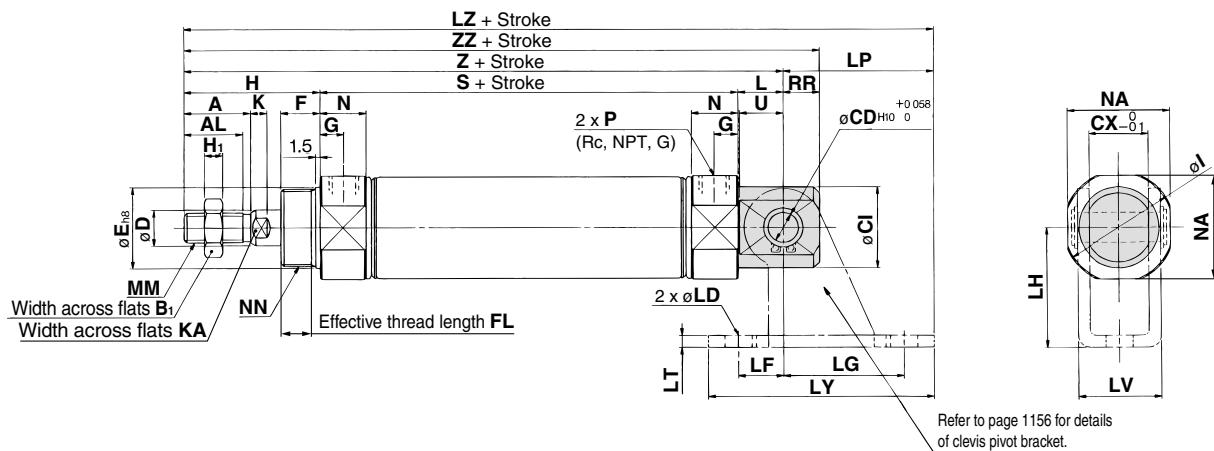


Bore size (mm)	A	AL	B₁	B₂	D	E	F	FL	G	H	H₁	I	K	KA	MM	N	NA	NN	P
20	18	15.5	13	26	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	M8 x 1.25	15	24	M20 x 1.5	1/8
25	22	19.5	17	32	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	M10 x 1.25	15	30	M26 x 1.5	1/8
32	22	19.5	17	32	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	M10 x 1.25	15	34.5	M26 x 1.5	1/8
40	24	21	22	41	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	M14 x 1.5	21.5	42.5	M32 x 2	1/4

(mm)									
Bore size (mm)	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	

Clevis Integrated Style (E)

CM2XE **Bore size** — **Stroke**



Bore size (mm)	A	AL	B ₁	CD	CI	CX	D	E	F	FL	G	H	H ₁	I	K	KA	L	MM	N	NA	NN
20	18	15.5	13	8	20	12	8	20 ⁰ _{-0.033}	13	10.5	8	41	5	28	5	6	12	M8 x 1.25	15	24	M20 x 1.5
25	22	19.5	17	8	22	12	10	26 ⁰ _{-0.033}	13	10.5	8	45	6	33.5	5.5	8	12	M10 x 1.25	15	30	M26 x 1.5
32	22	19.5	17	10	27	20	12	26 ⁰ _{-0.033}	13	10.5	8	45	6	37.5	5.5	10	15	M10 x 1.25	15	34.5	M26 x 1.5
40	24	21	22	10	33	20	14	32 ⁰ _{-0.039}	16	13.5	11	50	8	46.5	7	12	15	M14 x 1.5	21.5	42.5	M32 x 2

(mm)						
Bore size (mm)	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

RE
REB
REC
C□Y
C□X
MQ
RHC
RZQ

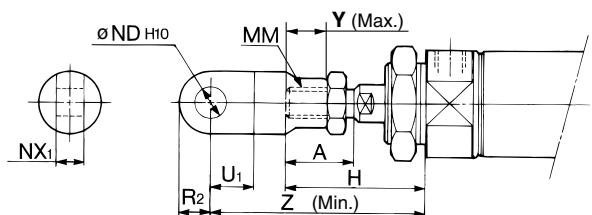
D-□
-X□
Individual
-X□

Series CM2X

Accessory Bracket Dimensions

Single Knuckle Joint

(mm)

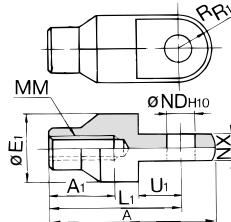


Bore size (mm)	A	H	MM	\varnothing ND H10	NX1	U1	R2	Y	Z
20	18	41	M8 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	14	10	11	66
25, 32	22	45	M10 x 1.25	9 ^{+0.058} ₀	9 ^{-0.1} _{-0.2}	14	10	14	69
40	24	50	M14 x 1.5	12 ^{+0.070} ₀	16 ^{-0.1} _{-0.3}	20	14	13	92

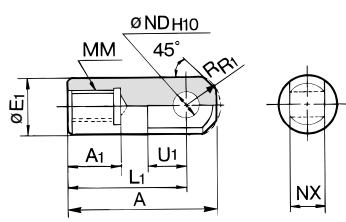
Single Knuckle Joint

(mm)

I-020B, 032B Material: Rolled steel

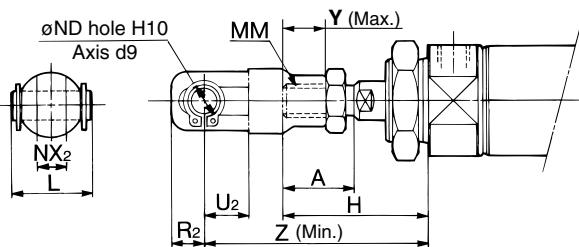


I-040B Material: Free cutting sulfur steel



Double Knuckle Joint

(mm)

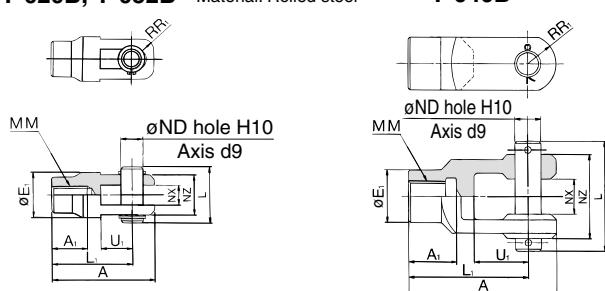


Double Knuckle Joint

(mm)

Y-020B, Y-032B Material: Rolled steel

Y-040B Material: Cast iron



Part no.	Applicable bore size (mm)	A	A1	E1	L	L1	MM	ND	NX	NZ	R1	U1	Applicable pin part number	Retaining 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	Type C 9 for axis
Y-032B	25, 32	48	18	20	25	38	M10 x 1.25	9	9 ^{+0.2} _{0.1}	18	5	14	CDP-1	Type C 9 for axis
Y-040B	40	68	22	24	49.7	55	M14 x 1.5	12	16 ^{+0.3} _{0.1}	38	13	25	CDP-3	\varnothing 3 x 18ℓ

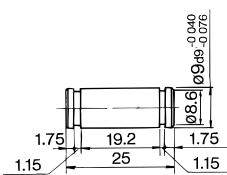
* Clevis pin and retaining ring (cotter pin for Ø40) are attached.

Double Clevis Pin

(mm)

Material: Carbon steel

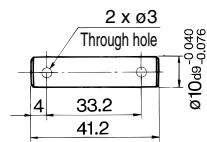
CDP-1



Retaining ring: Type C9 for axis

Material: Carbon steel

CDP-2

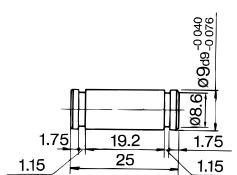
Cotter pin
 \varnothing 3 x 18ℓ

Double Knuckle Pin

(mm)

Material: Carbon steel

CDP-1

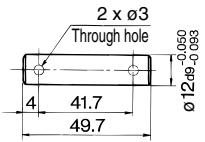


Retaining ring: Type C9 for axis

* Retaining rings (copper pins for Ø40) are included.

Material: Carbon steel

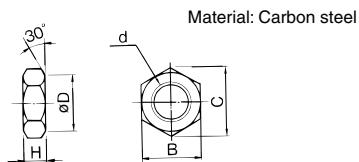
CDP-3

Cotter pin
 \varnothing 3 x 18ℓ

Low Speed Cylinder Double Acting, Single Rod Series CM2X

Rod End Nut

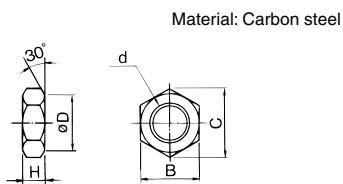
(mm)



Part no.	Applicable bore size (mm)	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

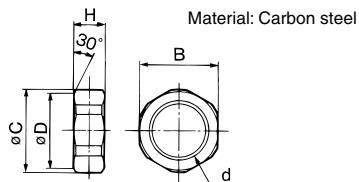
(mm)



Part no.	Applicable bore size (mm)	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)

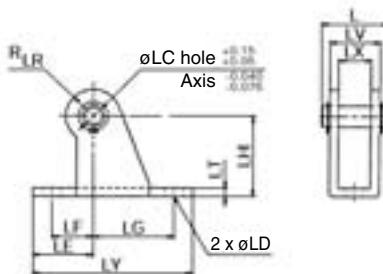


Part no.	Applicable bore size (mm)	B	C	D	d	H
TN-020B	20	26	28	25.5	M20 x 1.5	10
TN-032B	25, 32	32	34	31.5	M26 x 1.5	10
TN-040B	40	41	45	40.5	M32 x 2	10

Clevis Pivot Bracket (For CM2XE)

(mm)

Material: Rolled steel plate



Part no.	Applicable bore size (mm)	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

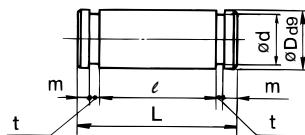
Note 1) Clevis bracket pins and retaining rings are included.

Note 2) It cannot be used for single clevis style (CM2C) and double clevis style (CM2D).

Clevis Pin (For CM2XE)

(mm)

Material: Carbon steel



Part no.	Applicable bore size (mm)	Dd9	d	L	e	m	t	Applicable retaining ring part no.
CD-S02	20, 25	8 ^{-0.040} _{-0.076}	7.6	24.5	19.5	1.6	0.9	Type C 8 for axis
CD-S03	32, 40	10 ^{-0.040} _{-0.076}	9.6	34	29	1.35	1.15	Type C 10 for axis

Note) Retaining rings are included.

REA

REB

REC

C□YC□X

MQ

RHC

RZQ

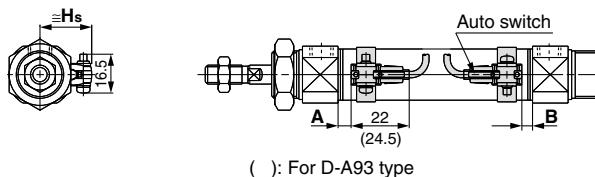
Regarding mounting bracket, accessory made of stainless steel (Some are not available.), refer to page 1864 for -XB12, External stainless steel cylinder.

Series CM2X

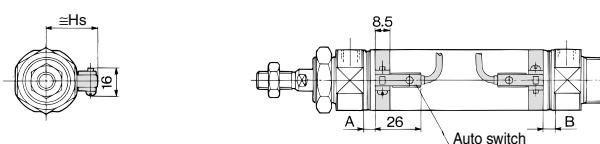
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Reed auto switch

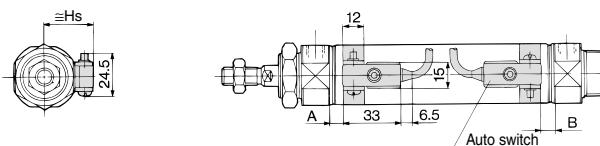
D-A9□



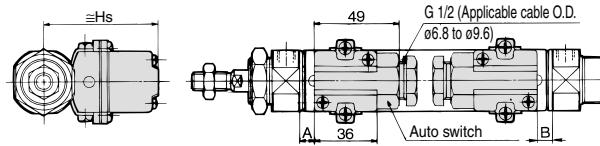
D-C7/C8



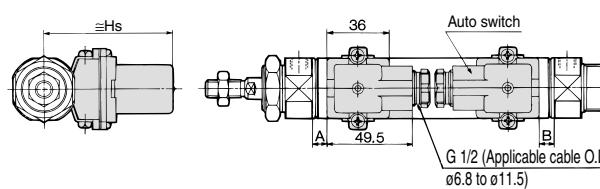
D-B5/B6/B59W



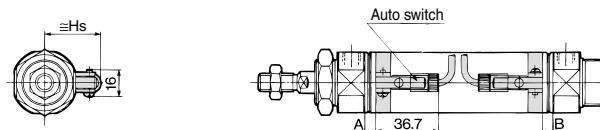
D-A33A/A34A



D-A44A



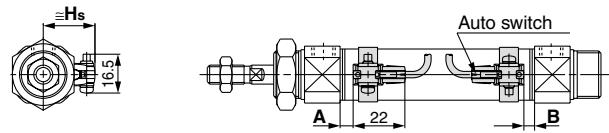
D-C73C/C80C



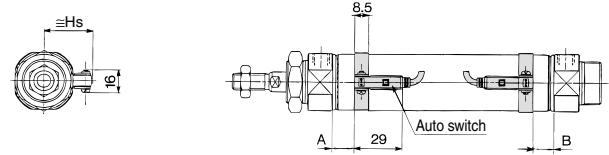
Solid state auto switch

D-M9□

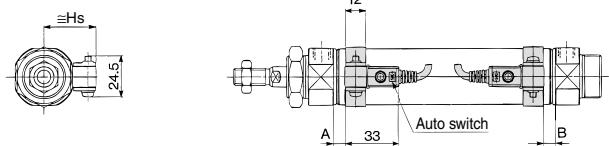
D-M9□W



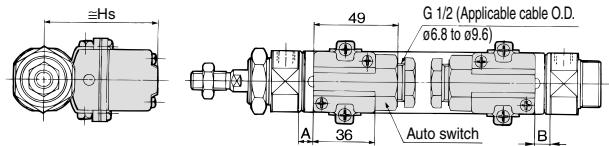
D-H7□/H7□W/H7NF



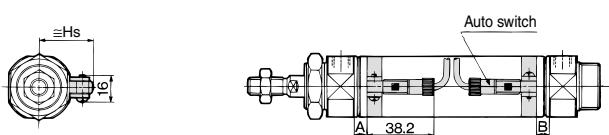
D-G5NTL



D-G39A/K39A



D-H7C



Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Auto Switch Proper Mounting Position

Auto switch model	D-A9□		D-M9□ D-M9□W		D-B5□ D-B64		D-C7□ D-C80 D-C73C D-C80C		D-B59W		D-A3□A D-G39A D-K39A D-A44A		D-H7□ D-H7C D-H7□W D-H7NF		D-G5NTL	
	Bore size (mm)	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
20	6.5	5.5	10.5	9.5	1	0	7	6	4	3	0.5	0	6	5	2.5	1.5
25	6.5	5.5	10.5	9.5	1	0	7	6	4	3	0.5	0	6	5	2.5	1.5
32	7.5	6.5	11.5	10.5	2	1	8	7	5	4	1.5	0.5	7	6	3.5	2.5
40	13.5	11.5	17.5	15.5	7	6	13	12	10	9	6.5	5.5	12	11	8.5	7.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

Auto switch model	D-A9□ D-M9□ D-M9□W	D-B5□ D-B64 D-B59W D-G5NTL D-H7C	D-C7□ D-C80 D-H7□ D-H7□W D-H7NF	D-C73C D-C80C	D-A3□A D-G39A D-K39A	D-A44A	(mm)	
							Hs	Hs
20	22	25.5	22.5	25	60	69.5		
25	24.5	28	25	27.5	62.5	72		
32	28	31.5	28.5	31	66	75.5		
40	32	35.5	32.5	35	70	79.5		

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

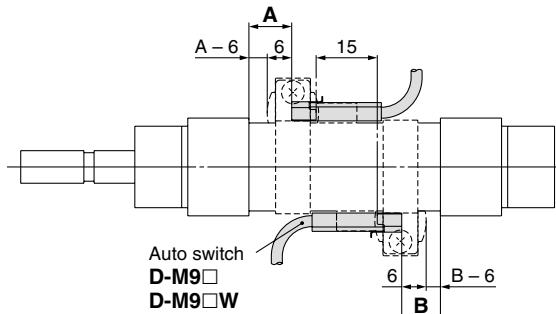
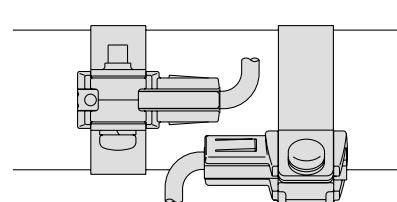
Individual
-X□

Series CM2X

Minimum Auto Switch Mounting Stroke

Auto switch model	No. of auto switch mounted					n: No. of auto switch (mm)	
	1 pc.	2 pcs.		n pcs.			
		Different surfaces	Same surface	Different surfaces	Same surface		
D-A9□ D-M9□ D-M9□W	10	15 <small>Note)</small>	45 <small>Note)</small>	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	45 + 45 (n-2)		
D-C7□ D-C80	10	15	50	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	50 + 45 (n-2)		
D-H7□ D-H7□W D-H7NF	10	15	60	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	60 + 45 (n-2)		
D-C73C D-C80C D-H7C	10	15	65	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	65 + 50 (n-2)		
D-B5□/B64 D-G5NTL	10	15	75	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	75 + 55 (n-2)		
D-B59W	15	20	75	$20 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...)	75 + 55(n-2)		
D-A3□A/G39A D-K39A/A44A	10	35	100	35 + 30(n-2)	100 + 100 (n-2)		

Note) When 2 D-A93/M9□/M9□W auto switches are included.

Auto switch model	With 2 auto switches		The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.
	Different surfaces	Same surface	
			
D-A93	—		Less than 50 strokes
D-M9□ D-M9□W	Less than 20 strokes		Less than 55 strokes

Operating Range

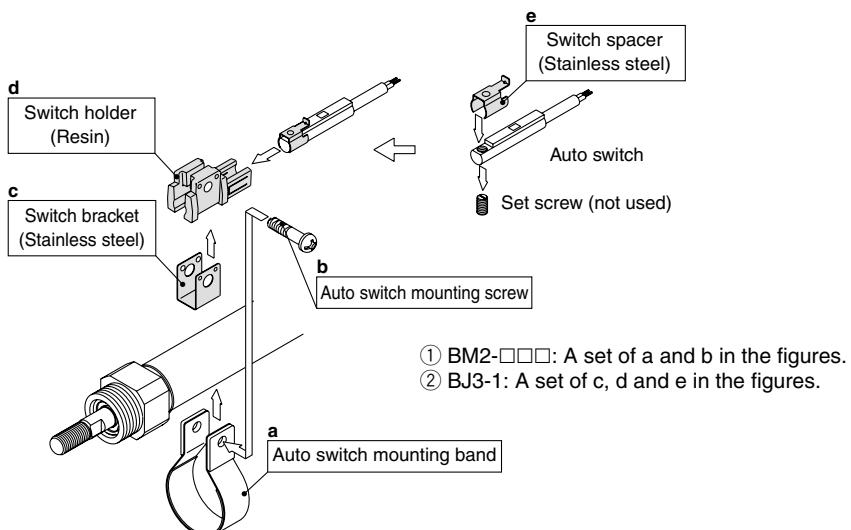
Auto switch model	(mm)			
	20	25	32	40
D-A9□	6	6	6	6
D-M9□ D-M9□W	3.5	3	3.5	3
D-C7□/C80 D-C73C/C80C	7	8	8	8
D-B5□/B64 D-A3□A/A44A	8	8	9	9
D-B59W	12	12	13	13
D-H7□/H7□W D-G5NTL/H7NF	4	4	4.5	5
D-H7C	7	8.5	9	10
D-G39A/K39A	8	9	9	9

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)
There may be the case it will vary substantially depending on an ambient environment.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	ø20	ø25	ø32	ø40
D-A9□ D-M9□ D-M9□W	Note) ①BM2-020 ②BJ3-1	Note) ①BM2-025 ②BJ3-1	Note) ①BM2-032 ②BJ3-1	Note) ①BM2-040 ②BJ3-1
D-C7□/C80 D-C73C/C80C D-H7□ D-H7□W D-H7NF	BM2-020	BM2-025	BM2-032	BM2-040
D-B5□/B64 D-B59W D-G5NTL D-G5NBL	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

Note) Two kinds of auto switch mounting brackets are used as a set.



- ① BM2-□□□: A set of a and b in the figures.
- ② BJ3-1: A set of c, d and e in the figures.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.
For detailed specifications, refer to pages 1719 to 1827.

Auto switch type	Model	Electrical entry (Direction)	Features
Reed	D-B53, C73, C76	Grommet (In-line)	—
	D-C80		Without indicator light
Solid state	D-H7A1, H7A2, H7B	Grommet (In-line)	—
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indication)
	D-G5NTL		With timer

* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1784 to 1785.

* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1746.

* Wide range detection type, solid state auto switches (D-G5NBL type) are also available. Refer to page 1776 for details.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual

-X□

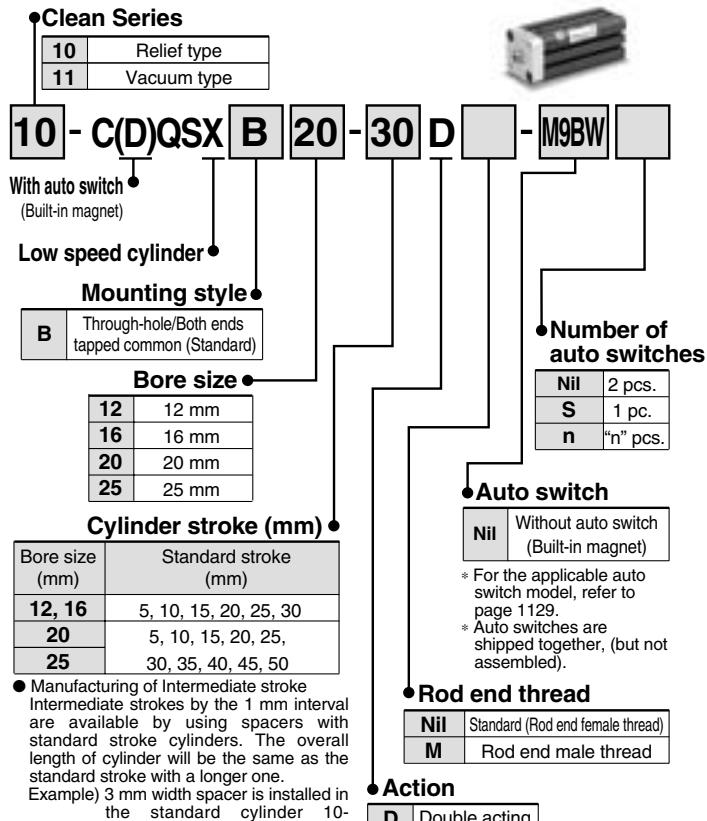
Series 10-, 11-CQSX, CQ2X

Clean Series Low Speed Cylinder Series 10-, 11-

The type which is applicable for using inside the clean room graded Class 100 by making an actuator's rod section a double seal construction and discharging by relief port directly to the outside of clean room. Since the external dimensions and applicable auto switches are the same as standard type, refer to the separate catalog of "Pneumatic Clean Series".

Series 10-, 11-CQSX

How to Order



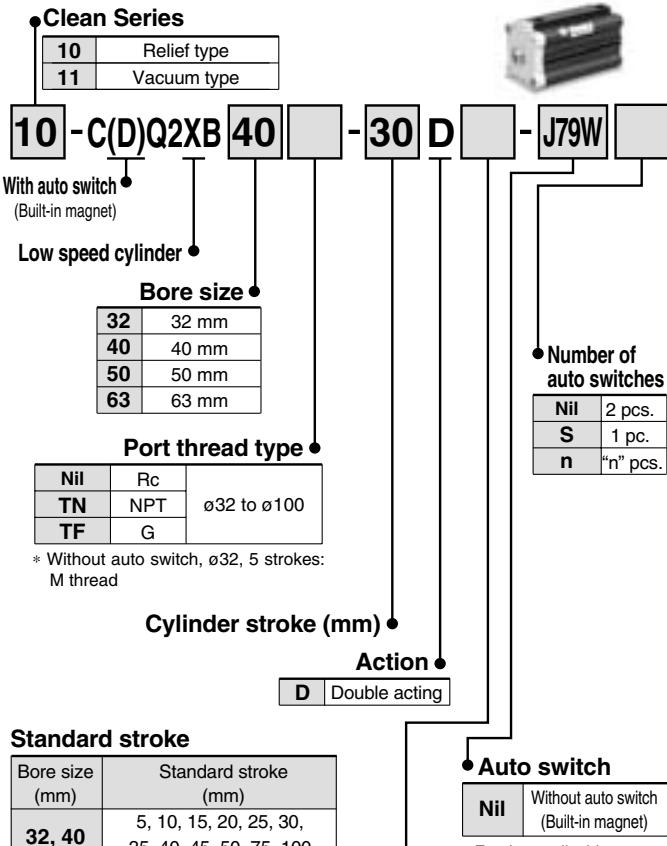
Specifications

Bore size (mm)	10- (Relief type)			
	12	16	20	25
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Minimum operating pressure	0.04 MPa	0.035 MPa		
Ambient and fluid temperature	Without auto switch: -10 to 70°C With auto switch: -10 to 60°C			
Piston speed	1 to 200 mm/s			
Piston rod size	ø6 ø8 ø10 ø12			
Rod end thread	Female thread M3 x 0.5 Male thread M5 x 0.8	M4 x 0.7 M6 x 1.0	M5 x 0.8 M8 x 1.25	M6 x 1.0 M10 x 1.25
Stroke tolerance	+1.0 mm			
Port size	M5 x 0.8			
Vacuum port, Relief port	M5 x 0.8			

Bore size (mm)	11- (Vacuum type)			
	12	16	20	25
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Minimum operating pressure	0.03 MPa	0.025 MPa		
Ambient and fluid temperature	Without auto switch: -10 to 70°C With auto switch: -10 to 60°C			
Piston speed	1 to 200 mm/s	0.5 to 200 mm/s		
Piston rod size	ø6 ø8 ø10 ø12			
Rod end thread	Female thread M3 x 0.5 Male thread M5 x 0.8	M4 x 0.7 M6 x 1.0	M5 x 0.8 M8 x 1.25	M6 x 1.0 M10 x 1.25
Stroke tolerance	+1.0 mm			
Port size	M5 x 0.8			
Vacuum port, Relief port	M5 x 0.8			

Series 10-, 11-CQ2X

How to Order



Standard stroke

Bore size (mm)	Standard stroke (mm)
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50, 63	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

● Manufacturing of Intermediate stroke
Intermediate strokes by the 1 mm interval are available by using spacers with standard stroke cylinders. But, as for ø40 with damper, please consult SMC separately.
Example) 18 mm width spacer is installed in the standard cylinder 10-CQ2XB40-75D to make 10-CQ2XB40-57D.

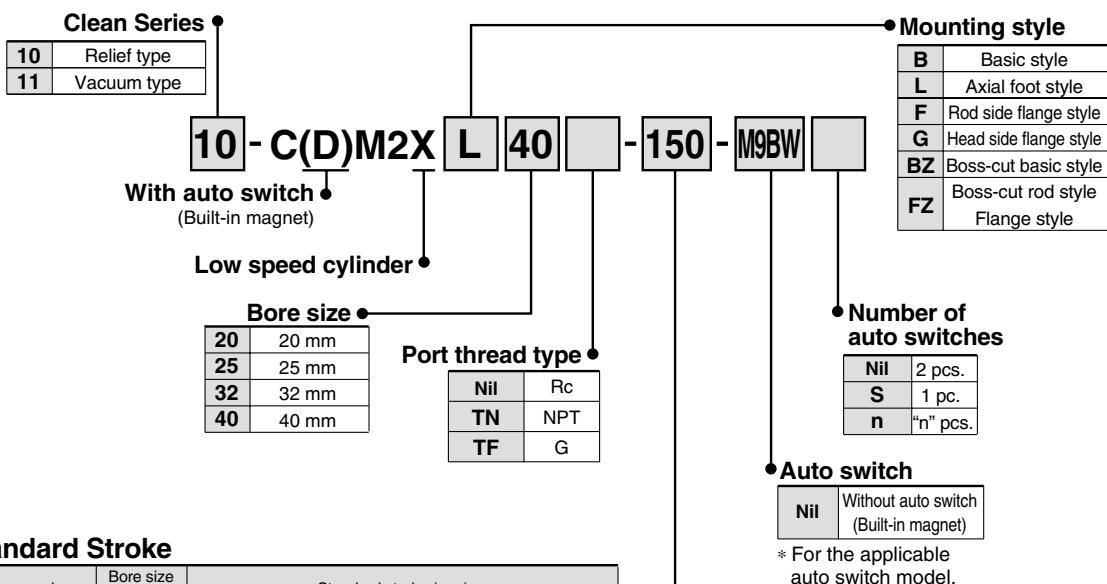
Specifications

Bore size (mm)	10- (Relief type)				11- (Vacuum type)			
	32	40	50	63	32	40	50	63
Fluid	Air							
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.035 MPa	0.03 MPa	0.025 MPa	0.02 MPa				
Ambient and fluid temperature	Without auto switch: -10 to 70°C With auto switch: -10 to 60°C							
Piston speed	1 to 200 mm/s	0.5 to 200 mm/s						
Piston rod size	ø16 ø20				ø16 ø20			
Rod end thread	Female thread M8 x 1.25 Male thread M14 x 1.5	M10 x 1.5 M18 x 1.5	M8 x 1.25 M14 x 1.5	M10 x 1.5 M18 x 1.5				
Stroke tolerance	+1.0 mm							
Port size	M5 x 0.8, 1/8 Note 1)	1/4	M5 x 0.8, 1/8 Note 1)	1/4				
Vacuum port, Relief port					M5 x 0.8			

Note 1) Only 5 stroke comes with M5 x 0.8 in the case of no auto switch on ø32.

10-,11- CM2X Series

How to Order



* For the applicable auto switch model, refer to page 1148.

Standard Stroke

Clean series	Bore size (mm)	Standard stroke (mm)
10- (Relief type)	20	25, 50, 75, 100, 125, 150, 175, 200, 250, 300
	25	
	32	
	40	
11- (Vacuum type)	20	
	25	
	32	
	40	

* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Specifications

Bore size (mm)	10- (Relief type)				11- (Vacuum type)			
	20	25	32	40	20	25	32	40
Fluid					Air			
Proof pressure					1.5 MPa			
Maximum operating pressure					1.0 MPa			
Minimum operating pressure					0.035 MPa			0.025 MPa
Ambient and fluid temperature					Without auto switch: -10 to 70°C With auto switch: -10 to 60°C			
Cushion					Rubber bumper			
Piston speed			1 to 200 mm/s			0.5 to 200 mm/s		
Piston rod size	ø8	ø10	ø12	ø14	ø8	ø10	ø12	ø14
Rod end thread	M8 x 1.25	M10 x 1.25	M14 x 1.5	M8 x 1.25	M10 x 1.25	M10 x 1.25	M14 x 1.5	
Stroke tolerance				+1.4 mm				
Port size	1/8		1/4		1/8		1/4	
Vacuum port, Refief port				M5 x 0.8				

Precautions

- I Be sure to read before handling.
- I Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.
- I Refer to the Clean Series catalog separately for the precautions in clean environments.

Operating Precautions

⚠ Warning

1. Do not rotate the cover.

- When installing a cylinder or screwing a pipe fitting into the port, the coupling portion of the cover could break if the cover rotated.

⚠ Caution

1. Be careful of the snap ring to pop out.

- When replacing the rod seal, take care that the snap ring does not spring out while you are removing it.

Maintenance

⚠ Caution

1. Grease pack

When maintenance requires only grease, use the following part number to order.

Grease pack part no.: GR-X-005 (5 g)

REA

REB

REC

C[□]Y

C[□]X

MQ

RHC

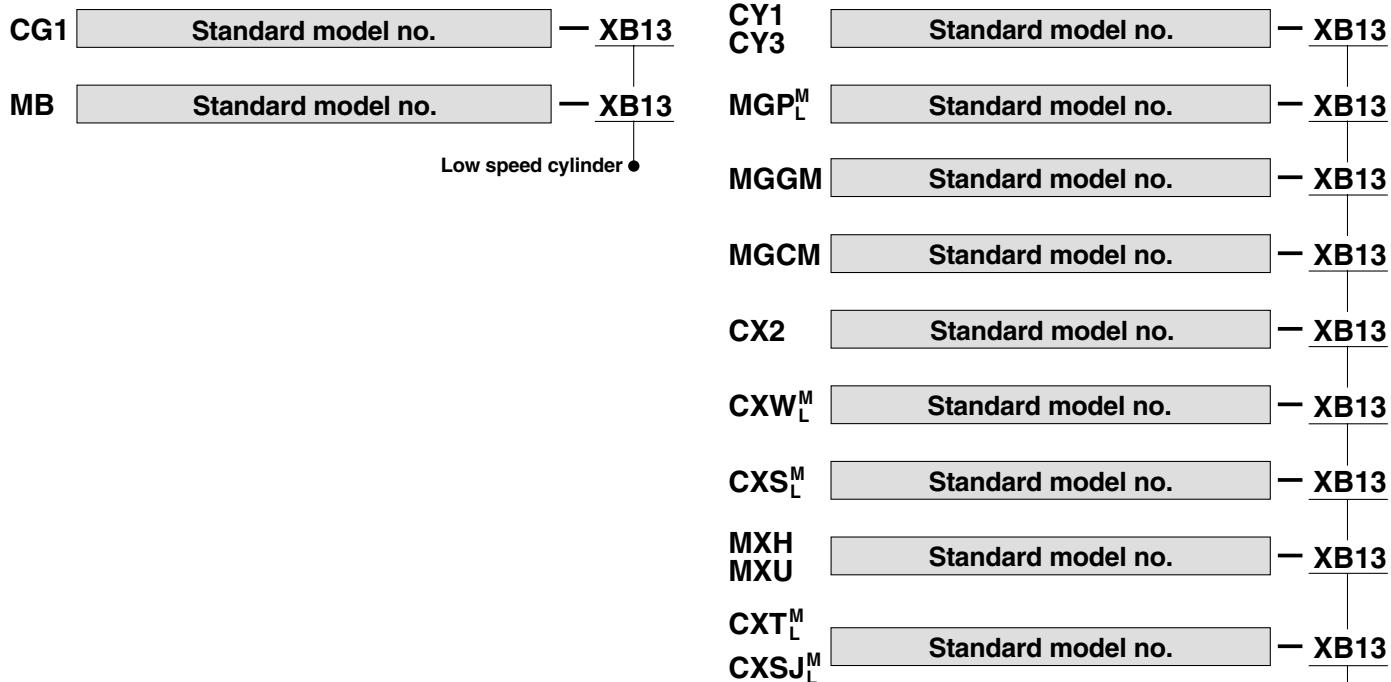
RZQ

Related Products: Made to Order Specifications: **-XB13: Low Speed Cylinder** 5 to 50 mm/s (CY1/CY3: 7 to 50 mm/s)



Symbol

Low Speed Cylinder	-XB13
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Note) Operate without lubrication from a pneumatic system lubricator.

Specifications

Applicable cylinder	Air cylinder Standard		Magnetically coupled rodless cylinder	Compact guide cylinder	Guide cylinder		Slide unit		Dual rod cylinder		Compact slide		Platform cylinder																	
					Slide bearing																									
Series	CG1	MB	CY ¹ ₃	MGPM ^M _L	MGGM	MGCM	CX2	CXW ^M _L	CXSJ ^M _L	CXSL ^M	MXH	MXU	CXT ^M _L																	
Action	Double acting, Single rod		Double acting																											
Bore size (mm)	20, 25, 32 40, 50, 63 80, 100	32, 40 50, 63 80, 100	CY3B: 6, 10, 15, 20, 25, 32 40, 50, 63 CY1S: 6 to 40	12, 16, 20 25, 32, 40 50, 63, 80 100	20, 25, 32 40, 50, 63 80, 100	20, 25 32, 40 50	10, 15 25	10, 16 20, 25 32	6, 10 15, 20 25, 32	6, 10 15, 20 25, 32	6, 10 16, 20	6, 10 16	12, 16 20, 25 32, 40																	
Piston speed	5 to 50 mm/s		7 to 50 mm/s	5 to 50 mm/s	5 to 50 mm/s																									
Cushion	Rubber bumper	Air cushion on both ends	Rubber bumper		Rubber bumper (Basic cylinder)		Shock absorber (CX2: Option)		Rubber bumper																					
Auto switch	Mountable																													
Mounting	Basic Foot Flange Trunnion Clevis	Basic Foot Flange Clevis Trunnion	Basic Slider	Basic	Basic Front mounting Flange		Basic																							
Dimensions	Dimensions and specifications are the same as standard products of double acting.																													
Additional specifications																														

* No shock absorber is available for the Series MGGM.

Related Products:

Speed Controller for Low Speed Operation

The effective area of controlled flow is approximately 1/10 of the standard type.
These controllers are suitable for controlling the speed of microspeed cylinders.
The dual type speed controller is especially suitable for cylinders with a small bore size.

Elbow/Universal Type



Air Flow/Effective Area

Model		AS12□1FM-M5 AS13□1FM-M5	AS22□1FM-□01 AS23□1FM-□01		AS22□1FM-□02 AS23□1FM-□02		
Tubing O.D.	Metric size	ø3.2, ø4, ø6	ø3.2, ø4	ø6, ø8	ø4	ø6	ø8, ø10
	Inch size	ø1/8", ø5/32", ø3/16" ø1/4"	ø1/8", ø5/32"	ø3/16", ø1/4" ø5/16"	ø5/32"	ø3/16"	ø1/4", ø5/16" ø3/8"
Controlled flow	Air flow (l/min (ANR))	7	12		38		
	Effective area (mm ²)	0.1	0.2		0.6		
Free flow	Flow rate (l/min (ANR))	100	180	230	260	390	460
	Effective area (mm ²)	1.5	2.7	3.5	4	6	7

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

In-line Type



Air Flow/Effective Area

Model		AS1001FM	AS2001FM		AS2051FM	
Tubing O.D.	Metric size	ø3.2, ø4, ø6	ø4	ø6	ø6	ø8
	Inch size	ø1/8", ø5/32", ø3/16" ø1/4"	ø5/32"	ø3/16", ø1/4"	ø3/16"	ø1/4", ø5/16"
Controlled flow	Air flow (l/min (ANR))	7	12		38	
	Effective area (mm ²)	0.1	0.2		0.6	
Free flow	Flow rate (l/min (ANR))	100	130	230	290	460
	Effective area (mm ²)	1.5	2	3.5	4.5	7

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

Elbow Type (Metal body)



Air Flow/Effective Area

Model		AS12□0M		AS22□0M-□01		AS22□0M-□02	
Port size	Cylinder side	M5 x 0.8	10-32 UNF	R 1/8	NPT 1/8	R 1/4	NPT 1/4
	Tube side	Rc 1/8		Rc 1/4		Rc 1/4	
Controlled flow	Air flow (l/min (ANR))	7		12		38	
	Effective area (mm ²)	0.1		0.2		0.6	
Free flow	Flow rate (l/min (ANR))	105		280		420	
	Effective area (mm ²)	1.6		4.3		6.5	

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

Dual Type



Air Flow/Effective Area

Model		ASD230FM-M5	ASD330FM-□01	ASD430FM-□02	
Tubing O.D.	Metric size	ø4, ø6	ø6, ø8	ø6	ø8, ø10
	Inch size	ø1/8", ø5/32" ø3/16", ø1/4"	ø3/16", ø1/4"	—	ø1/4", ø5/16" ø3/8"
Controlled flow (Free flow)	Air flow (l/min (ANR))	7		12	
	Effective area (mm ²)	0.1		0.2	

Note) Supply pressure: 0.5 MPa, Temperature: 20°C

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual
-X□



Low Speed Cylinder Specific Product Precautions

Be sure to read before handling.

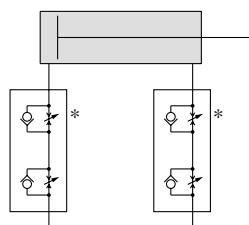
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Recommended Pneumatic Circuit

⚠ Warning

Horizontal Operation

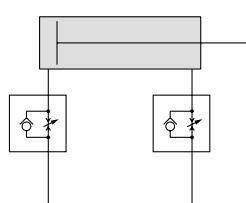
I



Dual speed controller

Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip. More stable low speed operation can be achieved than meter-in circuit alone.

II

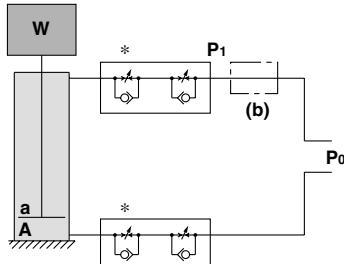


Meter-in speed controller

Meter-in speed controllers can reduce lurching while controlling the speed. The two adjustment needles facilitate adjustment.

Vertical Operation

I



(1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*

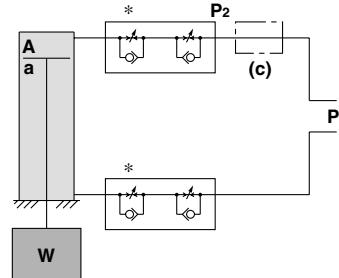
(2) Depending on the size of the load, installing a regulator with check valve at position (b) can deduce lurching during descent and operation delay during ascent.

As a guide,

when $W + Poa > PoA$,

adjust P_1 to make $W + P_1a = PoA$.

II



(1) Speed is controlled by meter-out circuit. Using concurrently the meter-in circuit can alleviate the stick-slip.*

(2) Installing a regulator with check valve at position (c) can reduce lurching during descent and operation delay during ascent.

As a guide,

adjust P_2 to make $W + P_2a = PoA$.

W: Load (N) **P₀:** Operating pressure (MPa) **P₁, P₂:** Reduced pressure (MPa) **a:** Rod side piston area (mm²) **A:** Head side piston area (mm²)

⚠ Warning

Since C□J2X, C□UX10 are subject to internal leakage due to their construction, the speed may not be fully controlled with the meter-out controller (*) during low speed operation.

Selection

⚠ Caution

1. Operate within the standard strokes.

Operating with the stroke exceeding the standard stroke may cause malfunction.

2. Provide a construction that does not apply a lateral load to the cylinder.

Applying a lateral load to the cylinder may cause malfunction.

3. Do not use the product at a high frequency.

Use it at 30 cpm or less as a guideline.

4. Do not wipe out the grease in the sliding part of the air cylinder.

Doing so forcefully may cause malfunction.

Pneumatic Circuit

⚠ Caution

1. The piping length between the speed controller and the cylinder port must be kept as short as possible.

If the speed controller and the cylinder port are far apart,

speed adjustment may be unstable.

2. Use a low speed controller to easily adjust for low speed operation or a dual speed controller (Series ASD) to prevent cylinders from popping out.

(When the low speed controller is used, the maximum speed may be limited.)