

Compact Cylinder: Guide Rod Type

Series CQM

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

CQM B 20 - 10

With auto switch CDQM B 20 - 10 - M9BW

With auto switch
(Built-in magnet)

Mounting bracket

B	Through-hole (Standard)
A	Both ends tapped (ø32 to ø100)

Note 1) Cylinder bodies of ø12 to ø25 are common for both B (through hole) and A (both ends tapped) types. Symbol to order is unified to "B" for those sizes.
Note 2) Cylinder mounting bolts are not included. Order them separately referring to Mounting Bolts for CQM on pages 796 and 797.
Note 3) Contact SMC for the other mounting types.

Bore size

12	12 mm	40	40 mm
16	16 mm	50	50 mm
20	20 mm	63	63 mm
25	25 mm	80	80 mm
32	32 mm	100	100 mm

Thread type

Nil	M thread	ø12 to ø25
TN	NPT	ø32 to ø100
TF	G	

Note) M thread to be used for without auto switch type of ø32, 5 stroke exceptionally. There is no need to enter the symbol when ordering.

Auto switch type

Nil	Without auto switch
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* Refer to the table below for the applicable auto switch model.

Number of auto switches

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

Cylinder stroke (mm)
Refer to the next page for standard and intermediate strokes.

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) CDQMB32-10

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Preload Rate Switch (Refer to pages 166 to 167 for further information on data 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 ø12 to ø25 ø32 to ø100		In-line ø12 to ø25 ø32 to ø100		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	Relay, PLC			
		M9PV		M9P				●	●	●	○	—	○									
		M9BV		M9B				●	●	●	○	—	○									
		— J79C		—				●	—	●	●	●	—	—								
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				24 V	5 V, 12 V	—	M9NWV		M9NW		●	●	●	○		—	○	IC circuit
				M9PWV							M9PW		●	●	●	○	—	○				
				M9BWV							M9BW		●	●	●	○	—	○				
				M9NAV							M9NA		○	○	●	○	—	○				
	Water resistance (2-color indication)	Grommet		3-wire (NPN)				24 V	5 V, 12 V	—	M9PAV		M9PA		○	○	●	○		—	○	IC circuit
				M9BAV							M9BA		○	○	●	○	—	○				
				—							F79F		●	—	●	○	—	○				
				—							P4DW**		—	—	●	●	—	○				
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	24 V	5 V —	—	A96V		A96		●	—	●	—	—	—	IC circuit	Relay, PLC			
		—		A72				—	—	—	—	—	—									
		A93V		A93				●	—	●	—	—	—									
		A90V		A90				●	—	●	—	—	—									
	—	Connector		2-wire				24 V	5 V, 12 V 12 V 5 V, 12 V	100 V or less — 24 V or less	A73C		—		●	—	●	●		●	—	IC circuit
				A80C							—		●	—	●	●	●	—				
				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) M9NWZ
None..... N (Example) J79CN

* Solid state auto switches marked with a "○" are produced upon receipt of order.
** D-P4DWL type is compatible with bore sizes ø40 to ø100.
* Only D-P4DW type is assembled when shipped.

* Besides the models in the above catalog, there are some other auto switches that are applicable. For more information, refer to page 803.

* Refer to pages 1328 and 1329 for the details of auto switches with a pre-wired connector.

* When mounting D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types on a side other than the port side with ø32 to ø50 cylinders, order auto switch mounting brackets separately. Refer to page 803 for details.

Compact Cylinder: Guide Rod Type *Series CQM*



⚠ Caution

- ① Do not use the product as a stopper.
- ② Do not disassemble and modify the product.

Specifications

Bore size (mm)	12	16	20	25	32	40	50	63	80	100
Model	Pneumatic (non-lube) type									
Action	Double acting, Single rod									
Fluid	Air									
Proof pressure	1.5 MPa									
Maximum operating pressure	1.0 MPa									
Minimum operating pressure	0.12 MPa		0.1 MPa							
Ambient and fluid temperature	Without auto switch: -10°C to 70°C (No freezing) With auto switch: -10°C to 60°C (No freezing)									
Cushion	Rubber bumper on both ends									
Stroke length tolerance	+1.0 mm* 0									
Mounting	Through-holes									
Piston speed	50 to 500 mm/s						50 to 300 mm/s			

* Stroke length tolerance does not include the amount of dumper change.

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
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

Manufacture of Intermediate Stroke

Description		Intermediate stroke range	
Spacers are installed in a cylinder with standard stroke.		Bore size (mm)	Intermediate stroke range (mm)
Bore size (mm)	Description	12, 16	1 to 29
12 to 32	Available in 1 mm stroke increments	20, 25	1 to 49
40 to 100	Available in 5 mm stroke increments	32	1 to 99
		40 to 100	5 to 95

Example) Part number: CQMB32-57

Constructed by installing an 18 mm spacer in the standard stroke cylinder CQMB32-75. B dimension: 108 mm.

Theoretical Output

Unit: N

Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
12	IN	25	42	59
	OUT	34	57	79
16	IN	45	75	106
	OUT	60	101	141
20	IN	71	118	165
	OUT	94	157	220
25	IN	113	189	264
	OUT	147	245	344
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1150
	OUT	589	982	1370
63	IN	840	1400	1960
	OUT	936	1560	2184
80	IN	1362	2270	3178
	OUT	1509	2515	3521
100	IN	2145	3575	5005
	OUT	2355	3925	5495

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

Mass

Without Auto Switch

Unit: g

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	44	52	60	69	77	86	—	—	—	—	—	—
16	56	67	77	87	97	108	—	—	—	—	—	—
20	92	107	122	137	152	167	183	198	213	227	—	—
25	125	143	162	180	198	216	234	252	270	288	—	—
32	182	205	228	250	274	297	320	343	366	389	553	669
40	269	295	320	345	370	396	421	446	471	497	692	823
50	—	500	540	580	620	661	701	740	780	821	1133	1341
63	—	745	795	845	894	944	993	1043	1093	1143	1535	1791
80	—	1400	1479	1559	1639	1719	1800	1880	1959	2039	2671	3067
100	—	2365	2468	2571	2674	2776	2880	2983	3086	3188	4053	4574

With Auto Switch (Built-in magnet)

Unit: g

Bore size (mm)	Cylinder stroke (mm)											
	5	10	15	20	25	30	35	40	45	50	75	100
12	52	59	68	77	84	93	—	—	—	—	—	—
16	66	77	87	97	107	118	—	—	—	—	—	—
20	122	138	153	168	182	197	213	227	242	257	—	—
25	168	186	205	223	240	258	277	295	313	331	—	—
32	241	264	287	309	333	356	379	401	425	448	564	680
40	345	371	396	421	447	473	498	523	548	574	705	836
50	—	618	658	698	738	779	819	858	898	939	1147	1355
63	—	903	953	1003	1052	1102	1152	1201	1251	1301	1557	1813
80	—	1661	1740	1820	1900	1980	2061	2141	2220	2300	2695	3090
100	—	2745	2848	2950	3053	3156	3260	3362	3465	3568	4088	4609

Add each mass of auto switches and mounting brackets.

Refer to pages 1263 to 1371 for auto switch mass.



CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

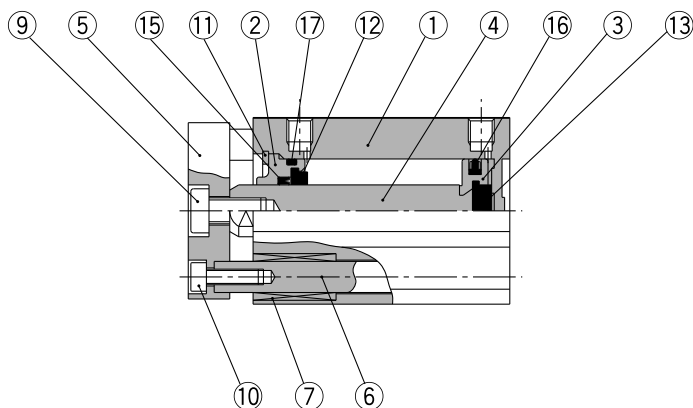
-X□

Individual
-X□

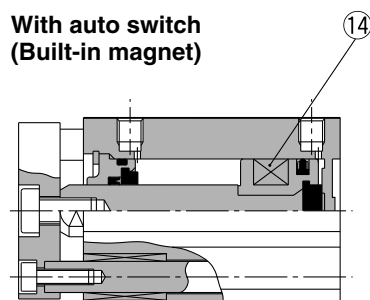
Technical
data

Construction

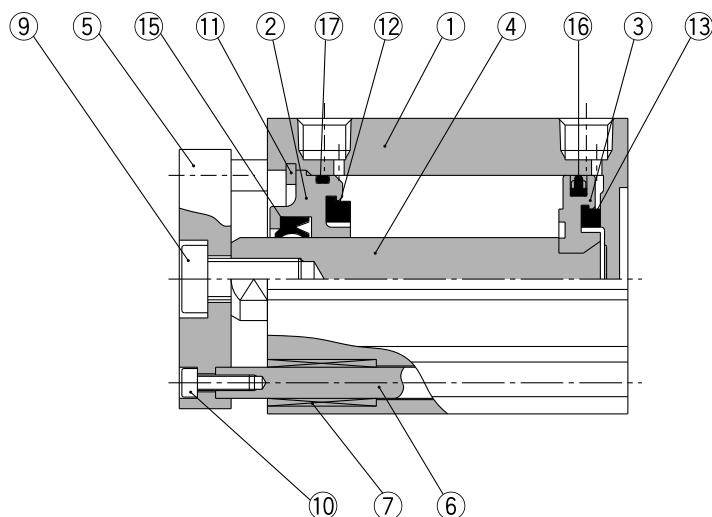
ø12 to ø25



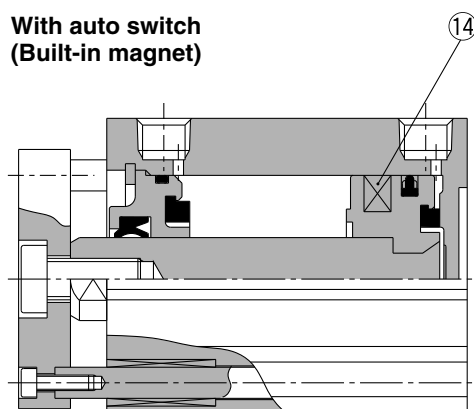
With auto switch
(Built-in magnet)



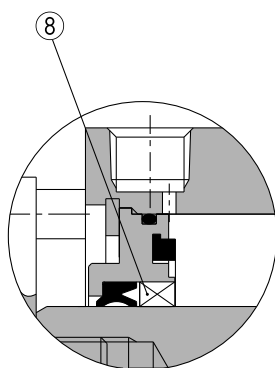
ø32 to ø100



With auto switch
(Built-in magnet)



ø50 to ø100



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Collar	Aluminum alloy	ø12 to ø40 Anodized
		Aluminum alloy casted	ø50 to ø100 Chromated, Coated
3	Piston	Aluminum alloy	Chromated
4	Piston rod	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100 Hard chrome plated
5	Plate	Aluminum alloy	Anodized
6	Guide rod	Stainless steel	Hard chrome plated
7	Bushing	Oil-impregnated sintered alloy	
8	Bushing	Bearing alloy	ø50 to ø100
9	Hexagon socket head cap screw	Carbon steel	Nickel plated
10	Hexagon socket head cap screw	Carbon steel	Nickel plated
11	Retaining ring	Carbon tool steel	Phosphate coated
12	Bumper A	Urethan	
13	Bumper B	Urethan	
14	Magnet	—	
15	Rod seal	NBR	
16	Piston seal	NBR	
17	Gasket	NBR	

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical data