

Air Cylinder: Standard Type Double Acting, Single Rod

CG1 Series

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

RoHS

How to Order

CG1 B N 20 - 100 Z - - -

With auto switch **CDG1 B N 20 - 100 Z - - - M9BW - - -**

Mounting

B	Basic
Z*	Basic (without trunnion mounting female thread)
L	Axial foot
F	Rod flange
G	Head flange
U*	Rod trunnion
T*	Head trunnion
D	Clevis

* Not available for ø80 and ø100.
* Mounting bracket is shipped together with the product, but not assembled.
* The cylinder for F, G, L, D mounting types is Z: Basic (without trunnion mounting female thread).

Bore size

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

Type

N	Rubber bumper
A	Air cushion

Pivot bracket

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

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

Rod end bracket

Nil	None
V	Single knuckle joint
W	Double knuckle joint

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

Made to Order
For details, refer to page 293.

Number of auto switches

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

Auto switch

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

Suffix for cylinder (Rod boot)

Nil	Without rod boot
J	Nylon tarpaulin
K	Heat resistant tarpaulin

* In the case of w/rod boot, and a foot bracket or rod flange as a bracket, those parts are to be assembled at the time of shipment.
* For female rod end, no rod boot is provided.

Rod end thread

Nil	Male rod end
F	Female rod end

Cylinder stroke (mm)
Refer to "Standard Strokes" on page 293.

Rubber bumper

Nil	Rc	ø20 to ø100
TN	NPT	ø20 to ø100
TF	M5 x 0.8	ø20, ø25
	G	ø32 to ø100

Air cushion

M5 x 0.8	ø20, ø25
Rc	ø32 to ø100
NPT*	ø32 to ø100
G*	ø32 to ø100

* Not available for ø20 and ø25.

Port thread type

* Refer to "Ordering Example of Cylinder Assembly" on page 294.

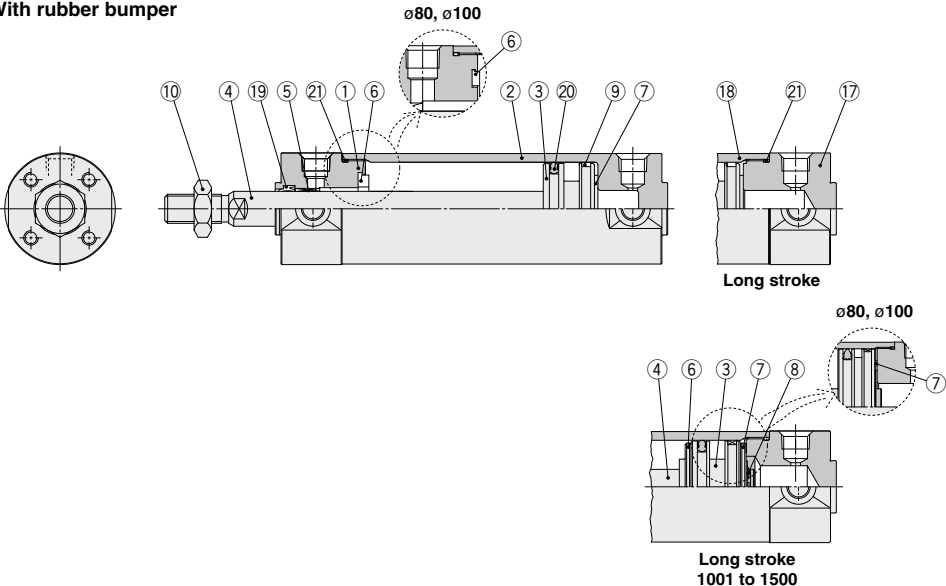
Applicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model Applicable bore size			Lead wire length (m)					Pre-wired connector	Applicable load	
					DC	AC	ø20 to ø63	ø80, ø100	ø125	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)			
Solid state auto switch	Diagnostic indication (2-color indicator)	Grommet	No	3-wire (NPN)	5 V, 12 V	—	Perpendicular	In-line	In-line	—	●	●	●	●	○	IC circuit	Relay, PLC
				3-wire (PNP)			M9NV	M9N	—	—	●	●	●	●	○		
		Connector	Yes	2-wire	12 V	—	—	M9PV	M9P	—	●	●	●	●	○	—	—
				3-wire (NPN)	24 V	5 V, 12 V	—	M9BV	M9B	—	●	●	●	●	○		
		Grommet	Yes	3-wire (PNP)			—	—	H7C	—	●	●	●	●	○	IC circuit	Relay, PLC
				3-wire (PNP)			M9NVV	M9NV	—	—	●	●	●	●	○		
	Water resistant (2-color indicator)	Grommet	No	2-wire	12 V	—	—	M9PVV	M9PW	—	●	●	●	●	○	—	—
				3-wire (NPN)	5 V, 12 V	—	—	M9BVV	M9BV	—	●	●	●	●	○	—	—
		Connector	Yes	3-wire (PNP)	24 V	5 V, 12 V	—	—	H7C	—	●	●	●	●	○	IC circuit	Relay, PLC
				4-wire (NPN)			M9NAV ^{*1}	M9NA ^{*1}	—	—	○	○	○	○	○		
		Grommet	No	2-wire	12 V	—	—	M9PAV ^{*1}	M9PA ^{*1}	—	○	○	○	○	○	—	—
				3-wire (PNP)			M9BAV ^{*1}	M9BA ^{*1}	—	—	○	○	○	○	○		
Reed auto switch	Diagnostic indication (2-color indicator)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	—	—	H7NF	G59F	●	●	●	●	○	IC circuit	—
				3-wire (PNP)			—	—	—	—	●	●	●	●	○		
		Connector	Yes	2-wire	24 V	12 V	—	—	—	—	●	●	●	●	○	—	—
				3-wire (NPN)			A96V	A96	—	—	●	●	●	●	○	IC circuit	—
		Grommet	No	2-wire	12 V	—	A93V ^{*2}	A93	—	—	●	●	●	●	○	—	—
				3-wire (PNP)			A90V	A90	—	—	●	●	●	●	○		
	Water resistant (2-color indicator)	Grommet	Yes	2-wire	24 V	12 V	—	—	—	—	●	●	●	●	○	—	—
				3-wire (NPN)			—	—	—	—	●	●	●	●	○	—	—
		Connector	Yes	2-wire			—	—	—	—	●	●	●	●	○	—	—
				3-wire (PNP)			—	—	—	—	●	●	●	●	○	—	—
		Grommet	No	2-wire			—	—	—	—	●	●	●	●	○	—	—
				3-wire (NPN)			—	—	—	—	●	●	●	●	○		

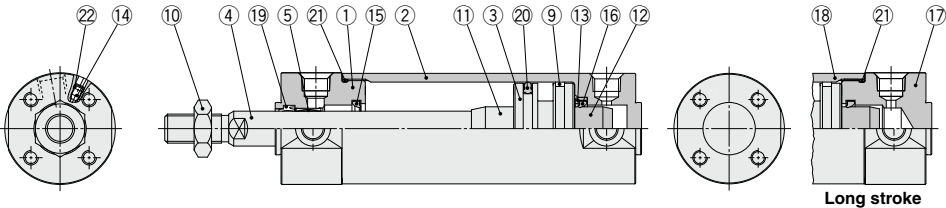
*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
A water-resistant type cylinder is recommended for use in an environment which requires water resistance. However, please contact SMC for water-resistant cylinder of ø20 and ø25.
*2 1 m type lead wire is only applicable to D-A93.
* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW 1 m..... M (Example) M9NV 3 m..... L (Example) M9NV
5 m..... Z (Example) M9NVZ None..... N (Example) H7CN
* Solid state auto switches marked with "○" are produced upon receipt of order.
* Since there are other applicable auto switches than listed above, refer to page 361 for details.
* For details about auto switches with pre-wired connector, refer to pages 1648 and 1649.
* The D-A93□/M9□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

Construction

With rubber bumper



With air cushion



Component Parts

No.	Description		Material	Note
1	Rod cover		Aluminum alloy	Hard anodized
2	Tube cover		Aluminum alloy	Hard anodized
3	Piston		Aluminum alloy	
4	Piston rod		Stainless steel	For ø20 or ø25 with built-in magnet
5	Bushing		Carbon steel*	Hard chrome plating*
			Bearing alloy	
6	Bumper		Resin	ø32 or larger is common.
7	Bumper		Resin	
8	Retaining ring		Stainless steel	Except ø80 and ø100
9	Wear ring		Resin	
10	Rod end nut		Carbon steel	Zinc chromated
11	Cushion ring A		Aluminum alloy	
12	Cushion ring B		Aluminum alloy	
13	Seal retainer		Rolled steel	Zinc chromated
14	Cushion valve	ø40 or smaller	Carbon steel	Electroless nickel plating
		ø50 or larger	Steel wire	Zinc chromated

Note) For cylinders with auto switches, the magnet is installed in the piston.

* The material for ø20, ø25 cylinders with auto switches is made of stainless steel.

No.	Description	Material	Note
15	Cushion seal A	Urethane	ø32 or larger is common.
16	Cushion seal B	Urethane	
17	Head cover	Aluminum alloy	Hard anodized
18	Cylinder tube	Aluminum alloy	Hard anodized
19	Rod seal	NBR	
20	Piston seal	NBR	
21	Tube gasket	NBR	
22	Valve seal	NBR	

Replacement Parts: Seal Kit

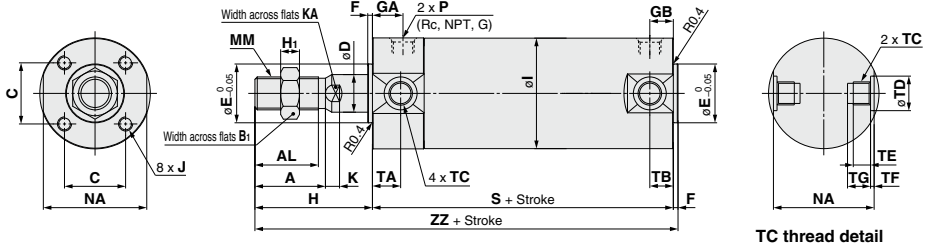
Bore size (mm)	Kit no.	Contents
20	CG1N20Z-PS	Set of the nos. 19, 20, 21
25	CG1N25Z-PS	
32	CG1N32Z-PS	
40	CG1N40Z-PS	

Note) As sizes ø50 and larger cannot be disassembled, the seal cannot be replaced.

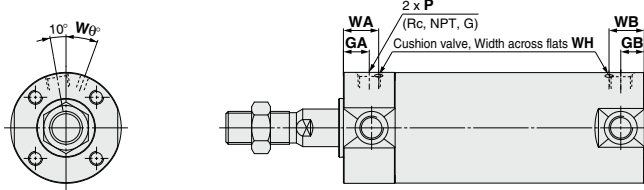
Note) Refer to the Specific Product Precautions on page 362-1 for Disassembly/Replacement. Order with the kit number according to the bore size.

* The seal kit includes a grease pack (10 g).
Order with the following part number when only the grease pack is needed. Grease pack part number: GR-S-010 (10 g)

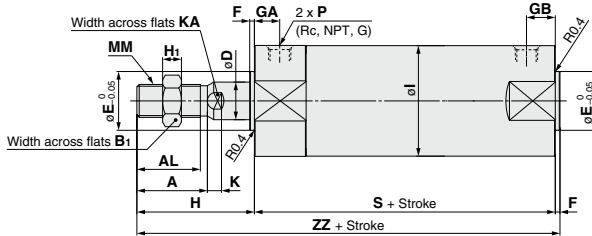
Basic: CG1BN



With air cushion



Basic (Without trunnion mounting female thread): CG1ZN



(mm)																						
Bore size	Stroke range	Rc, NPT port			G port			A	AL	B ₁	C	D	E	F	H	H _i	I	J	K	KA	MM	
		GA	GB	P	GA	GB	P															
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	13	14	8	12	2	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	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
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	17	20	12	18	2	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	19	26	16	25	2	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	32	20	30	2	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	38	20	32	2	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5
80	Up to 300	301 to 1500	20	16 (20)	3/8	17.5	16 (17.5)	3/8	40	37	32	50	25	40	3	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5
100	Up to 300	301 to 1500	20	16 (20)	1/2	17.5	16 (17.5)	1/2	40	37	41	60	30	50	3	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5

(mm)						With Air Cushion										(mm)										TC Thread						(mm)					
Bore size	NA	S	TA	TB	ZZ	Bore size	Rc, NPT port			WA	WB	Wθ	WH	Bore size	TC	TD	TE	TF	TG																		
							GA	GB	P																												
20	24	69 (77)	11	11	106 (114)	20	12	10 (12)	M5 x 0.8	16	15	(16)	25°	1.5	20	M5 x 0.8	8 ^{0.08} ₀	4	0.5	5.5																	
25	29	69 (77)	11	11	111 (119)	25	12.5	10 (12.5)	M5 x 0.8	16	14.5	(16)	25°	1.5	25	M6 x 0.75	10 ^{0.08} ₀	5	1	6.5																	
32	35.5	71 (79)	11	10 (11)	113 (121)	32	12	10 (12)	1/8	16	14	(16)	25°	1.5	32	M8 x 1.0	12 ^{0.08} ₀	5.5	1	7.5																	
40	44	78 (87)	12	10 (12)	130 (139)	40	13	10 (13)	1/8	17	15	(17)	20°	1.5	40	M10 x 1.25	14 ^{0.08} ₀	6	1.25	8.5																	
50	55	90 (102)	13	12 (13)	150 (162)	50	14	12 (14)	1/4	18	16	(18)	20°	3	50	M12 x 1.25	16 ^{0.08} ₀	7.5	2	10																	
63	69	90 (102)	13	12 (13)	150 (162)	63	14	12 (14)	1/4	18	17	(18)	20°	3	63	M14 x 1.5	18 ^{0.08} ₀	11.5	3	14.5																	
80	86	108 (122)	—	—	182 (196)	80	20	16 (20)	3/8	24	20	(24)	20°	4	80	—	—	—	—	—																	
100	106	108 (122)	—	—	182 (196)	100	20	16 (20)	1/2	24	20	(24)	20°	4	100	—	—	—	—	—																	

Note () : Denotes the dimensions for long stroke.

* Cylinder sizes ø80 and ø100 do not have trunnion mounting female thread on the width across flats NA.

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

D-□
-X□
Technical Data