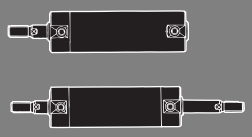


Air Cylinder

Series CG1

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

Series Variations

Series	Action	Rod	Cushion	Basic	Standard variations: Built-in One-touch fittings	Standard variations: With rod boot	Standard variations: Air-hydro	Standard variations: Clean series	Standard variations: Copper-free	Bore size (mm)	Page
Standard *Series CG1*	Double acting	Single rod	Rubber	●	●	●	●	●	●	20 to 100	6-5-2
			Air	●		●			●		
		Double rod	Rubber	●	●	●	●	●	●		6-5-16
			Air	●		●			●		
Standard *Series CG1*	Single acting	Single rod (Spring return/ Spring extend)	Rubber	●						20 to 40	6-5-22
Non-rotating Rod *Series CG1K*	Double acting	Single rod	Rubber	●	●	●	●	●	●	20 to 63	6-5-30
			Air	●						40 to 63	
		Double rod	Rubber	●	●	●	●	●	●	20 to 63	6-5-35
Direct Mount *Series CG1R*	Double acting	Single rod	Rubber	●	●	●	●	●	●	20 to 63	6-5-40
			Air	●					●		
Direct Mount, Non-rotating Rod *Series CG1KR*	Double acting	Single rod	Rubber	●	●	●	●	●	●	20 to 63	6-5-46
Low Friction *Series CG1□Q*	Double acting	Single rod	Without (ø20 to ø32) Rubber (ø40 to ø100)	●	●	●	●	●	●	20 to 100	6-5-49
With End Lock *Series CBG1*	Double acting	Single rod		●	●	●	●	●	●	20 to 100	6-5-55

Air Cylinder: Standard Type
Double Acting, Single Rod
Series CG1
ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch CG1 L N 25 100

With auto switch CDG1 L N 25 100 H7BW

Built-in magnet

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
U*	Rod side trunnion style
T*	Head side trunnion style
D	Clevis style

* Not available for ø80 or ø100.

Note) Mounting brackets are shipped together, (but not assembled).

Type

N	Non-lube/Rubber bumper
A	Non-lube/Air cushion

Bore size

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

Cylinder stroke (mm)

Refer to "Standard Stroke" on page 6-5-3.

Suffix for cylinder (Rod boot (at one end))

Nil	Without rod boot
J	Nylon tarpaulin
K	Heat resistant tarpaulin

* In the case of w/ rod boot, and a foot bracket or rod side flange as a bracket, those parts are to be assembled at the time of shipment.

Number of auto switches

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

Auto switch

Nil	Without auto switch (Built-in magnet)

* For the applicable auto switch model, refer to the table below.

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Applicable bore size (mm) 20 to 63	Auto switch model: Applicable bore size (mm) 80, 100	Lead wire length (m)* 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	C76	—	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	B54		●	●	●	—	—		
							100 V	C73	—	●	●	●	—	—		
		Connector					—	C73C	—	●	●	●	●	—	—	Relay, PLC
	Diagnostic indication (2-color indication)	Grommet				—		B59W		●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	H7A1	G59	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				H7A2	G5P	●	●	○	—	○		
				2-wire		12 V		H7B	K59	●	●	○	—	○	—	
		Connector						H7C	—	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		H7NW	G59W	●	●	○	—	○	IC circuit	
				3-wire (PNP)				H7PW	G5PW	●	●	○	—	○		
				2-wire		12 V		H7BW	K59W	●	●	○	—	○	—	
	Water resistant (2-color indication)							H7BA	G5BA		●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		H7NF	G59F	●	●	○	—	○	IC circuit	

* Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

• Since there are other applicable auto switches than listed, refer to page 6-5-14 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Substantially shorter length:

ø20 to ø40··· –15 to –30 mm
(in comparison with Series CM2)
ø40 to ø63··· –17 to –28 mm
(in comparison with Series CA1)
ø80, ø100··· –9 to –33 mm
(in comparison with Series CA1)

High speed operation:

1000 mm/s

(ø80 and ø100 operate at 700 mm/s)

Air cushion standardized

Two cushions are available:
an air cushion and rubber bumper

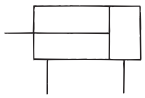
Weight reduction of 10 to 50%

(50 mm stroke, in-house comparison)

Highly accurate mounting brackets

(Axial foot style, Rod side frange style)

JIS Symbol
Double acting



Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Action	Double acting, Single rod							
Type	Non-lube							
Fluid	Air							
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.05 MPa							
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)							
Piston speed	50 to 1000 mm/s							50 to 700 mm/s
Stroke length tolerance	Up to 1000 $^{st\ +1.4}_{0}$ mm, Up to 1200 $^{st\ +1.8}_{0}$ mm							Up to 1000 $^{st\ +1.4}_{0}$ mm Up to 1500 $^{st\ +1.8}_{0}$ mm
Thread tolerance	JIS Class 2							
Cushion	Rubber bumper, Air cushion							
Mounting *	Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style, Clevis style (Used for changing the port location by 90°.)							

Rod/Head side trunnion styles are not available for bore sizes ø80 and ø100.

Accessory

Mounting		Basic style	Axial foot style	Rod side flange style	Head side flange style	Rod side trunnion style	Head side trunnion style	Clevis style
Standard equipment	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (With pin)	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●*	●*	●
	Rod boot	●	●	●	●	●	●	●

* Trunnion bracket is not available for ø80 and ø100.
** Pin and snap ring are shipped together with double knuckle joint.

Made to Order Specifications (For details, refer to page 6-17-1.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (150°C)
-XB7	Cold resistant cylinder
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC4	With heavy duty scraper
-XC6	Piston rod and rod end nut made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type
-XC12	Tandem type cylinder
-XC13	Auto switch rail mounting style
-XC18	NPT finish piping port
-XC20	Head cover axial port
-XC22	Fluoro rubber seals
-XC29	Double knuckle joint with spring pin
-XC35	With coil scraper
-XC37	Larger throttle diameter of connecting port
-XC42	Built-in rear shock absorber

Standard Stroke

Bore size (mm)	Standard stroke(1) (mm)	Long stroke (mm)	Maximum manufacturable stroke (mm)
20	25, 50, 75, 100, 125, 150, 200	201 to 350	1500
25	25, 50, 75, 100, 125, 150, 200, 250, 300	301 to 400	
32		301 to 450	
40		301 to 800	
50, **63**		301 to 1200	
80		301 to 1400	
100		301 to 1500	

Note 1) Other intermediate strokes can be manufactured upon receipt of an order. Spaces are not used for the intermediate strokes.
Note 2) Long stroke applies to the axial foot style and the rod side flange style. If other length exceeds the stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

Rod Boot Material

Symbol	Rod boot material	Maximum operating temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C *

* Maximum ambient temperature for the rod boot itself.

Minimum Stroke for Auto Switch Mounting

Model	No. of auto switches mounted	
	2	1
D-C7/C8 **D-B5/B6** **D-H7** **D-G5/K5**	15 mm	10 mm
D-B59W	20 mm	15 mm

Model	Bore size (mm)	No. of auto switches mounted	
		2	1
D-G5NBL	**20**	50 mm	30 mm
	25	55 mm	35 mm
	32		
	40	65 mm	
	50		
	63		
	80		
	100	70 mm	40 mm

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)							
	20	25	32	40	50	63	80	100
Axial foot (1)	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	CG-L080	CG-L100
Flange	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	CG-F080	CG-F100
Trunnion pin	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	—	—
Cleveis (2)	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063	CG-D080	CG-D100
Pivot bracket	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A	CG-080-24A	CG-100-24A

Note 1) Order two foot brackets per cylinder.
Note 2) Clevis pin, snap ring and mounting bolt are shipped together with clevis style.
Note 3) Mounting bolts are shipped together for foot style and flange style.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
D-C7/C8	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063	—	—
D-H7								
D-B5/B6	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06	BA-08	BA-10
D-G5/K5								

∗ Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(A switch mounting band is not included, so please order it separately.)
BBA3: For D-B5/B6/G5/K5
BBA4: For D-C7/C8/H7

- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped. When a switch only is shipped, BBA3 or BBA4 screws are attached.

Weight

(kg)

Bore size (mm)		20	25	32	40	50	63	80	100
Basic weight	Basic style	0.10	0.17	0.26	0.41	0.77	1.07	2.04	3.17
	Axial foot style	0.21	0.30	0.42	0.63	1.25	1.79	3.00	4.92
	Flange style	0.18	0.27	0.40	0.61	1.11	1.57	2.75	4.52
	Trunnion style	0.11	0.19	0.29	0.46	0.91	1.21	—	—
	Clevis style	0.15	0.25	0.41	0.64	1.17	1.75	2.75	4.45
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 weight per each 50 mm of stroke		0.05	0.07	0.09	0.15	0.22	0.26	0.35	0.49
Additional weight with air cushion		0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03
Additional weight for long stroke		0.01	0.01	0.02	0.03	0.06	0.10	0.19	0.26

Calculation: (Example) CG1LA20-100 (Foot style, ø20, 100 st)

- Basic weight·····0.21 (Foot, ø20)
- Additional weight·····0.05/50 stroke
- Cylinder stroke·····100 stroke
- Additional weight by air cushion·····0.01 kg

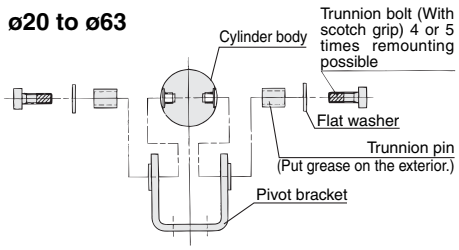
0.21 + 0.05 x 100/50 + 0.01 = 0.32 kg

Mounting Procedure

Mounting procedure for trunnion

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

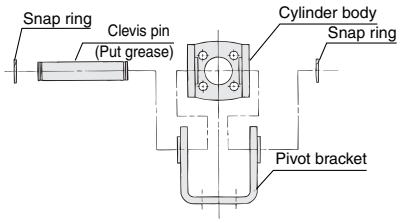
ø20 to ø63



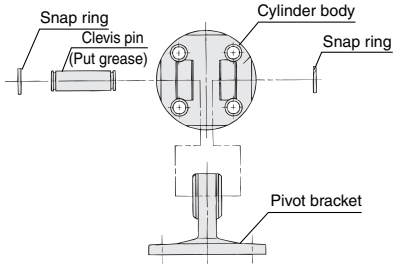
Mounting procedure for clevis

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

ø20 to ø63



ø80, ø100



Built-in One-touch Fittings

CG1 Mounting style N Bore size F – Stroke

F: Built-in One-touch fittings

This type has the One-touch fitting integrated in a cylinder, which enables to reduce the piping labor and installing space dramatically.

Specifications

Bore size (mm)	20, 25, 32, 40, 50, 63
Action	Double acting
Fluid	Air
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.05 MPa
Piston speed	50 to 750 mm/s
Cushion	Rubber bumper
Mounting	Basic style, Axial foot style, Rod side flange style Head side flange style, Rod side trunnion style Head side trunnion style, Clevis style (Used for changing the port location by 90°.)

∗ Auto switch can be mounted.

Applicable Tubing O.D./I.D.

Bore size (mm)	20	25	32	40	50	63
Applicable tubing O.D. (mm)	6/4	6/4	6/4	8/6	10/7.5	10/7.5
Applicable tubing material	Can be used for either nylon, soft nylon or polyurethane tubing.					

∗ For other specifications, refer to page 6-5-3.

Clean Series

10-CG1 Mounting style N Bore size – Stroke

Clean series (With relief port)

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.

Specifications

Bore size (mm)	20, 25, 32, 40, 50, 63, 80, 100
Action	Double acting
Fluid	Air
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.05 MPa
Cushion	Rubber bumper
Piston speed	50 to 400 mm/s
Relief port size	M5 x 0.8
Mounting	Basic style, Axial foot style, Rod side flange style Head side flange style

∗ Auto switch can be mounted.

For details, refer to the separate catalog, "Pneumatic Clean Series".

Air-hydro

CG1 Mounting style H Bore size – Stroke

H: Air-hydro

Low pressure hydraulic cylinder of 1.0 MPa or less
When used together with a Series CC air-hydro unit, constant and low speed actuation and intermediate stopping similar to hydraulic units are possible with the use of valves and other pneumatic equipment.

Specifications

Type	Air-hydro
Bore size (mm)	20, 25, 32, 40, 50, 63
Action	Double acting
Fluid	Turbine oil
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.18 MPa
Piston speed	15 to 300 mm/s
Cushion	None
Ambient and fluid temperature	5 to 60°C
Thread tolerance	JIS Class 2
Stroke length tolerance	Up to 1000 $^{st\ +1.4}_{0}$ mm, Up to 1200 $^{st\ +1.8}_{0}$ mm
Mounting	Basic style, Axial foot style, Rod side flange style Head side flange style, Rod side trunnion style Head side trunnion style, Clevis style (Used for changing the port location by 90°.)

∗ Auto switch can be mounted.

Copper-free

20-CG1 Mounting style Type Bore size – Stroke

Copper-free

The type which prevents copper based ions from generating by changing the copper based materials into electroless nickel plated treatment or non-copper materials in order to eliminate the effects by copper based ions or fluororesins over the color cathode ray tube.

Specifications

Bore size (mm)		20, 25, 32, 40, 50, 63, 80, 100
Action		Double acting
Fluid		Air
Maximum operating pressure		1.0 MPa
Minimum operating pressure		0.05 MPa
Cushion	Type N	Rubber bumper
	Type A	With air cushion
Piston speed	ø20 to 63	50 to 1000 mm/s
	ø80/100	50 to 700 mm/s
Mounting ∗		Basic style, Axial foot style, Rod side flange style Head side flange style, Rod side trunnion style Head side trunnion style, Clevis style (Used for changing the port location by 90°.)

∗ Rod/Head side trunnion styles are not available for bore sizes ø80 and ø100.
Dimensions are the same as double acting single rod, standard type.
∗ Auto switch can be mounted.

Water Resistant

CDG1 | Mounting style | Style | Bore size | R | Stroke | G5BAL | -XC6

With auto switch
(Built-in magnet)

Water resistant cylinder

R	NBR seals (Nitrile rubber)
V	FKM seals (Fluoro rubber)

Made to order specifications

Water resistant 2-color indication, Solid state switch

Failure to do so will damage the cylinder and the seals.
Applicable for use in an environment with water splashing such as food processing and car wash equipment, etc.

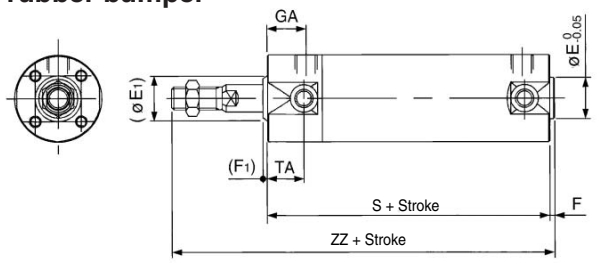
Specifications

Action	Double acting, Single rod
Bore size (mm)	32, 40, 50, 63, 80, 100
Cushion	Rubber bumper/Air cushion
Auto switch mounting	Band mounting style
Made to order	Piston rod/Rod end nut material: Stainless steel (-XC6)

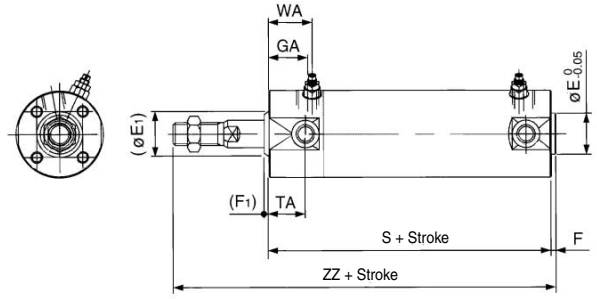
∗ Specifications other than above are the same as standard, basic style.

Dimensions

With rubber bumper



With air cushion



Bore size (mm)	(E1)	E ∗	(F1)	F ∗	GA	S	TA	WA	ZZ
32	17	18	2	2	18	77(85)	17	22	119(127)
40	21	25	2	2	19	84(93)	18	22	136(145)
50	26	30	2	2	21	97(109)	20	25	157(169)
63	26	32	2	2	21	97(109)	20	25	157(169)
80	32	40	3	3	28	116(130)	—	30	190(204)
100	37	50	3	3	29	117(131)	—	31	191(205)

∗ These dimensions and other dimensions not indicated here are the same as standard.
∗ ( ): Denotes the dimensions for long stroke.

For detailed specifications, refer to the separate catalog (CAT. E244C).

⚠ Precautions

Be sure to read before handling. Refer to pages 6-20-3 to 6-20-6 for Safety Instructions and Actuator Precautions.

Operating Precautions

⚠ Warning

1. Do not operate the cushion valve in the fully closed or fully opened state.
Using it in the fully closed state will cause the cushion seal to be damaged. Using it in the fully opened state will cause the piston rod assembly or the cover to be damaged.

2. Operate within the specified cylinder speed.
Otherwise, cylinder and seal damage may occur.

⚠ Caution

1. Do not use the air cylinder as an air-hydro cylinder. This will cause an oil leak.

2. Install a rod boot without twisting.
If the cylinder is installed with its bellows twisted, it could damage the bellows.

Disassembly/Replacement

⚠ Caution

1. Do not replace the bushings or the cushion seals.
The bushings and the cushion seals are press-fit. To replace them, they must be replaced together with the cover assembly.

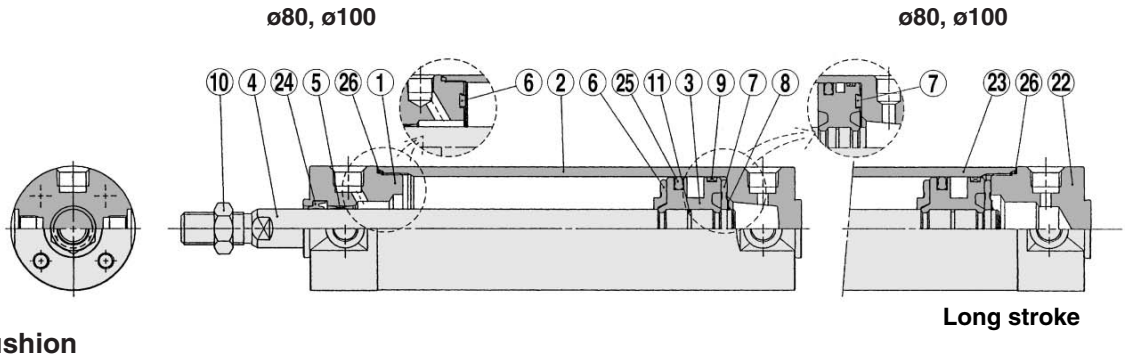
2. To replace a seal, apply grease to the new seal before installing it.
If the cylinder is put into operation without applying grease to the seal, it could cause the seal to wear significantly, leading to premature air leakage.

3. Do not replace One-touch fittings.
Because pipe fittings are press-fit, they must be replaced together with the cover assembly.

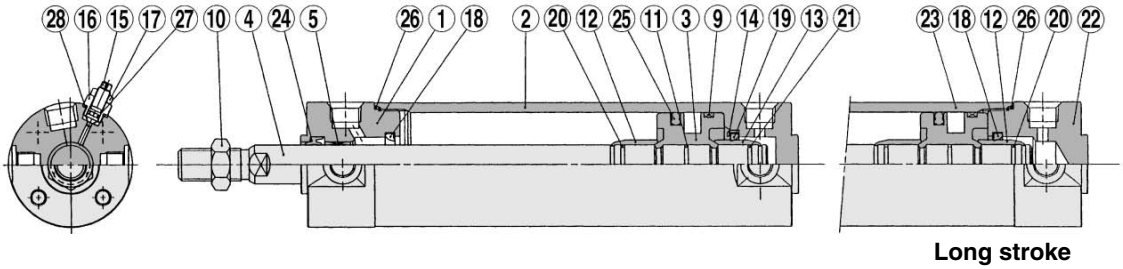
4. Those with a bore of ø50 or more cannot be disassembled.
When disassembling cylinders with bore sizes of ø20 through ø40, grip the double flat part of either the head cover or the rod cover with a vise and loosen the other side with a wrench or a monkey wrench, etc., and then remove the cover. When 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.)

Construction

With rubber bumper



With air cushion



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Tube cover	Aluminum alloy	Clear hard anodized
③	Piston	Aluminum alloy	Chromated
④	Piston rod	Carbon steel*	Hard chrome plated
⑤	Bushing	Oil-impregnated sintered alloy	ø40 and larger are lead-bronze casted
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	ø40 or larger: The same as bumper A
⑧	Snap ring	Stainless steel	Except ø80 and ø100
⑨	Wear ring	Resin	
⑩	Rod end nut	Rolled steel	Nickel plated
⑪	Piston gasket	NBR	
⑫	Cushion ring A	Brass	
⑬	Cushion ring B	Brass	ø32 or larger: The same as A
⑭	Seal retainer	Rolled steel	Nickel plated/Except long stroke
⑮	Cushion valve	Rolled steel	Electroless nickel plated
⑯	Valve retainer	Rolled steel	Electroless nickel plated
⑰	Lock nut	Rolled steel	Nickel plated
⑱	Cushion seal A	Urethane	
⑲	Cushion seal B	Urethane	ø32 or larger: The same as A *
⑳	Cushion ring gasket A	NBR	
㉑	Cushion ring gasket B	NBR	ø32 or larger: The same as A
㉒	Head cover	Aluminum alloy	Clear hard anodized
㉓	Cylinder tube	Aluminum alloy	Hard anodized
㉔	Rod seal	NBR	
㉕	Piston seal	NBR	
㉖	Tube gasket	NBR	
㉗	Valve seal	NBR	
㉘	Valve retaining gasket	NBR	

Note) In the case of cylinders with auto switches, magnets are installed in the piston.
* The material is stainless steel on auto switch equipped styles ø20 and ø25.

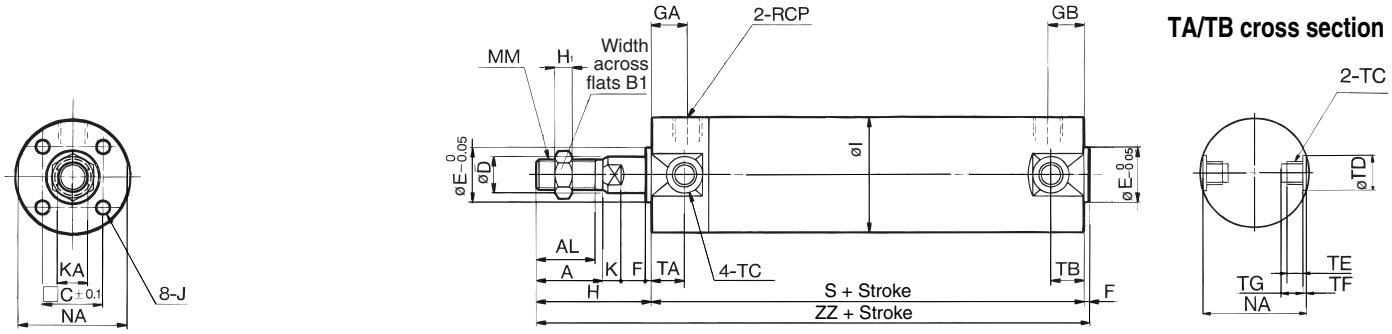
Replacement Parts: Seal Kit for Rubber Bumper

Bore size (mm)	Kit no.	Contents
20	CG1N20-PS	Set of the nos. ㉔, ㉕, ㉖
25	CG1N25-PS	
32	CG1N32-PS	
40	CG1N40-PS	
50	CG1N50-PS	
63	CG1N63-PS	
80	CG1N80-PS	
100	CG1N100-PS	

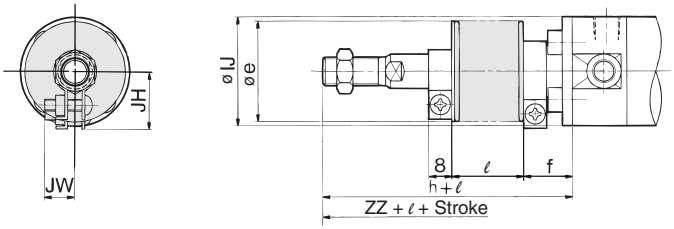
Replacement Parts: Seal Kit for Air Cushion

Bore size (mm)	Kit no.	Contents
20	CG1A20-PS	Set of the nos. ㉔, ㉕, ㉖, ㉗, ㉘
25	CG1A25-PS	
32	CG1A32-PS	
40	CG1A40-PS	
50	CG1A50-PS	
63	CG1A63-PS	
80	CG1A80-PS	
100	CG1A100-PS	

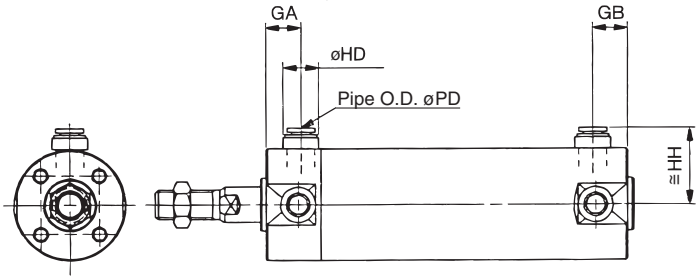
Basic Style with Rubber Bumper: CG1BN



Basic style with rod boot

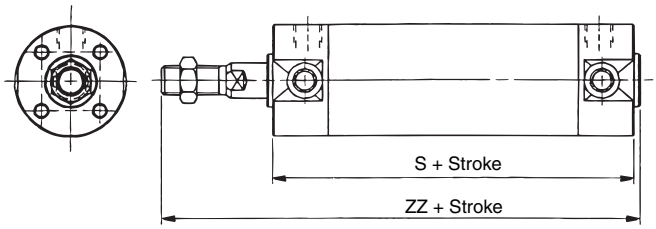


Built-in One-touch fittings



Other dimensions are the same as standard.

Air-hydro



Other dimensions are the same as the long stroke standard.

Bore size (mm)	Standard stroke range (mm)	Long stroke range (mm)	A	AL	B1	C	D	E	F	GA	GB	H	H1	I	J	K	KA	MM	NA	P	S	TA	TB	ZZ
20	Up to 200	201 to 350	18	15.5	13	14	8	12	2	12	10(12)	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8	69(77)	11	11	106(114)
25	Up to 300	301 to 400	22	19.5	17	16.5	10	14	2	12	10(12)	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8	69(77)	11	11	111(119)
32	Up to 300	301 to 450	22	19.5	17	20	12	18	2	12	10(12)	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	71(79)	11	10(11)	113(121)
40	Up to 300	301 to 800	30	27	19	26	16	25	2	13	10(13)	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	78(87)	12	10(12)	130(139)
50	Up to 300	301 to 1200	35	32	27	32	20	30	2	14	12(14)	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	90(102)	13	12(13)	150(162)
63	Up to 300	301 to 1200	35	32	27	38	20	32	2	14	12(14)	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	90(102)	13	12(13)	150(162)
80	Up to 300	301 to 1400	40	37	32	50	25	40	3	20	16(20)	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80	3/8	108(122)	—	—	182(196)
100	Up to 300	301 to 1500	40	37	41	60	30	50	3	20	16(20)	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100	1/2	108(122)	—	—	182(196)

Note) ( ): Denotes the dimensions for long stroke. ∗ Trunnion mounting taps with width across flats NA are not attached for bore size ø80 and ø100.

TA/TB Sectional View

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
80	—	—	—	—	—
100	—	—	—	—	—

With Rod Boot

Bore size (mm)	e	f	h	IJ	JH	JW	ℓ	ZZ
20	30	16	55	27	(14.5)	(11.5)	0.25 stroke	126(134)
25	30	17	62	32	(17.5)	(11.5)		133(141)
32	35	17	62	38	(19.5)	(11.5)		135(143)
40	35	17	70	48	(22.5)	(13)		150(159)
50	40	17	78	59	(25)	(13)		170(182)
63	40	18	78	72	(25)	(13)		170(182)
80	52	10	80	59	—	—		191(205)
100	62	7	80	71	—	—		191(205)

∗ The minimum stroke with rod boot is 20 mm.

Built-in One-touch Fittings

Bore size (mm)	GA	GB	HD	HH	PD
20	12	12	13	24.2	6
25	12	10(12)	13	26.7	6
32	12	10(12)	13	30.2	6
40	12	10(12)	16	34.6	8
50	13	13	20	40.6	10
63	13	13	20	47.1	10

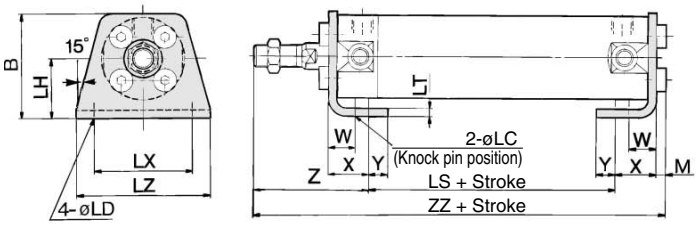
Note) ( ): Denotes the dimensions for long stroke.

Air-hydro

Bore size (mm)	S	ZZ
20	77	114
25	77	119
32	79	121
40	87	139
50	102	162
63	102	162

With Mounting Bracket

Axial foot style: CG1LN

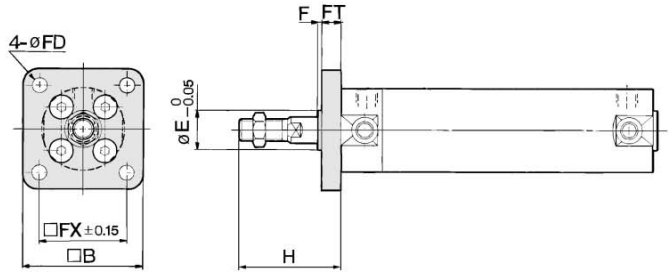


Axial Foot Style

Bore size (mm)	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z		ZZ	
													Without rod boot	With rod boot	Without rod boot	With rod boot
20	34	4	6	20	45(53)	3	32	44	3	10	15	7	47	67 + ℓ	110(118)	130 (138) + ℓ
25	38.5	4	6	22	45(53)	3	36	49	3.5	10	15	7	52	74 + ℓ	115.5(123.5)	137.5(145.5) + ℓ
32	45	4	7	25	45(53)	3	44	58	3.5	10	16	8	53	75 + ℓ	117.5(125.5)	139.5(147.5) + ℓ
40	54.5	4	7	30	51(60)	3	54	71	4	10	16.5	8.5	63.5	83.5 + ℓ	135(144)	155(164) + ℓ
50	70.5	5	10	40	55(67)	4.5	66	86	5	17.5	22	11	75.5	95.5 + ℓ	157.5(169.5)	177.5(189.5) + ℓ
63	82.5	5	12	45	55(67)	4.5	82	106	5	17.5	22	13	75.5	95.5 + ℓ	157.5(169.5)	177.5(189.5) + ℓ
80	101	6	11	55	60(74)	4.5	100	125	5	20	28.5	14	95	104 + ℓ	188.5(202.5)	197.5(211.5) + ℓ
100	121	6	14	65	60(74)	6	120	150	7	20	30	16	95	104 + ℓ	192(206)	201(215) + ℓ

Note) ( ): Denotes the dimensions for long stroke.
∗ Other dimensions are the same as basic style.

Rod side frange style: CG1FN

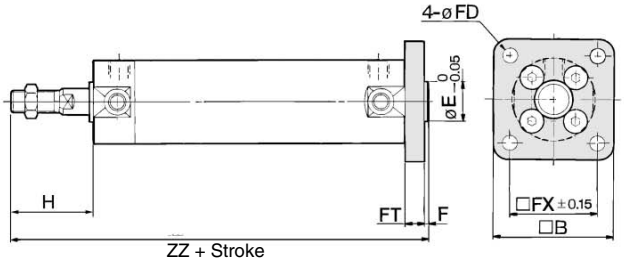


Flange Style

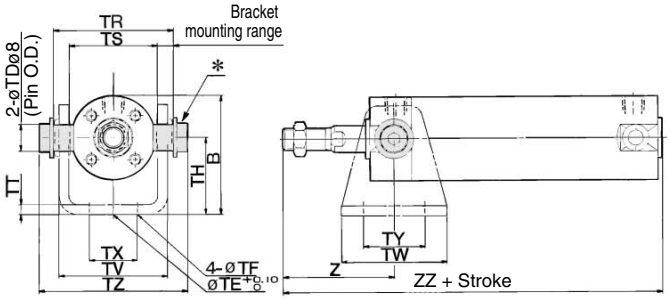
Bore size (mm)	Stroke range		B	E	F	FX	FD	FT	H	Head side flange ZZ	
	Rod side	Head side								Without rod boot	With rod boot
20	Up to 350	Up to 200	40	12	2	28	5.5	6	35	112	132 + ℓ
25	Up to 400	Up to 300	44	14	2	32	5.5	7	40	118	140 + ℓ
32	Up to 450	Up to 300	53	18	2	38	6.6	7	40	120	142 + ℓ
40	Up to 800	Up to 500	61	25	2	46	6.6	8	50	138(147)	158(167) + ℓ
50	Up to 1200	Up to 600	76	30	2	58	9	9	58	159(171)	179(191) + ℓ
63	Up to 1200	Up to 600	92	32	2	70	11	9	58	159(171)	179(191) + ℓ
80	Up to 1400	Up to 750	104	40	3	82	11	11	71	193(207)	202(216) + ℓ
100	Up to 1500	Up to 750	128	50	3	100	14	14	71	196(210)	202(219) + ℓ

Note) ( ): Denotes the dimensions for long stroke.
End boss is machined on the flange for øE.
∗ Other dimensions are the same as basic style.

Head side frange style: CG1GN



Rod side trunnion style: CG1UN



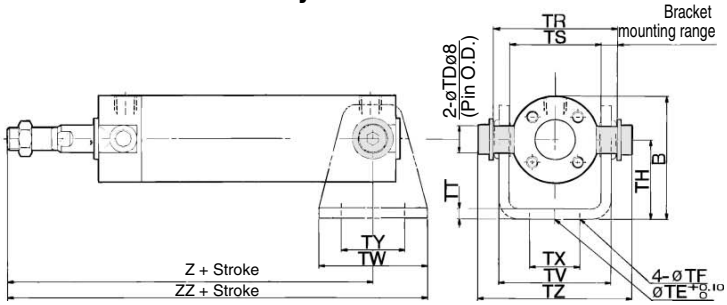
Trunnion Style

Bore size (mm)	Stroke range		B	TDe8	TE	TF	TH	TR	TS	TT	TV
	Rod side	Head side									
20	Up to 200	Up to 200	38	8 −0.025 −0.047	10	5.5	25	39	28	3.2	(35.8)
25	Up to 300	Up to 300	45.5	10 −0.025 −0.047	10	5.5	30	43	33	3.2	(39.8)
32	Up to 300	Up to 300	54	12 −0.032 −0.059	10	6.6	35	54.5	40	4.5	(49.4)
40	Up to 500	Up to 500	63.5	14 −0.032 −0.059	10	6.6	40	65.5	49	4.5	(58.4)
50	Up to 600	Up to 600	79	16 −0.032 −0.059	20	9	50	80	60	6	(72.4)
63	Up to 600	Up to 600	96	18 −0.032 −0.059	20	11	60	98	74	8	(90.4)

Bore size (mm)	TW	TX	TY	TZ	Rod side Z		Head side Z		Head side ZZ	
					Without rod boot	Without rod boot	Without rod boot	With rod boot	Without rod boot	With rod boot
20	42	16	28	47.6	46	66 + ℓ	93	113 + ℓ	114	134 + ℓ
25	42	20	28	53	51	73 + ℓ	98	120 + ℓ	119	141 + ℓ
32	48	22	28	67.7	51	73 + ℓ	101	123 + ℓ	125	147 + ℓ
40	56	30	30	78.7	62	82 + ℓ	118(125)	138(145) + ℓ	146(153)	166(173) + ℓ
50	64	36	36	98.6	71	91 + ℓ	136(147)	156(167) + ℓ	168(179)	188(199) + ℓ
63	74	46	46	119.2	71	91 + ℓ	136(147)	156(167) + ℓ	173(184)	193(204) + ℓ

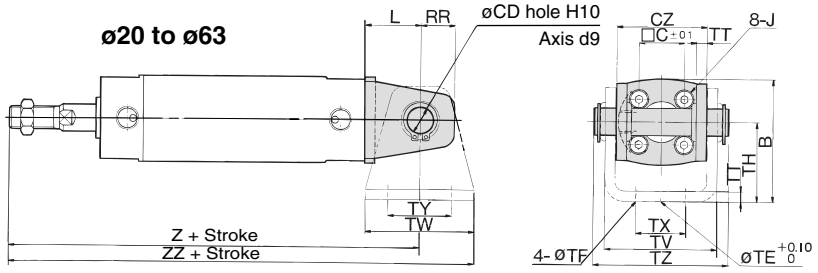
∗ Consists of pin, flat washer and hexagon socket head cap bolt.
Note) ( ): Denotes the dimensions for long stroke. Refer to page 6-5-12 for pivot bracket.
∗ Other dimensions are the same as basic style.

Head side trunnion style: CG1TN

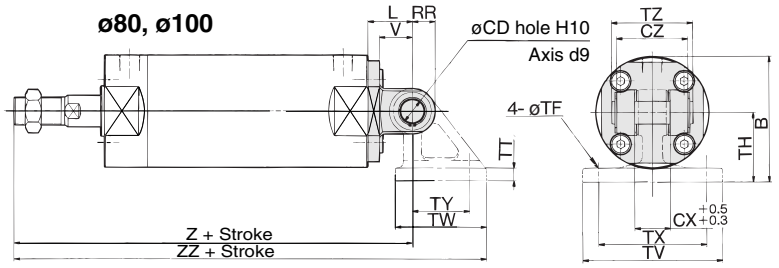


With Mounting Bracket

Clevis style: CG1DN



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



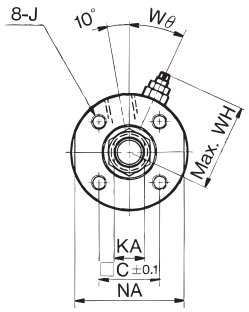
∗ Clevis pin and snap ring are attached for the clevis style.

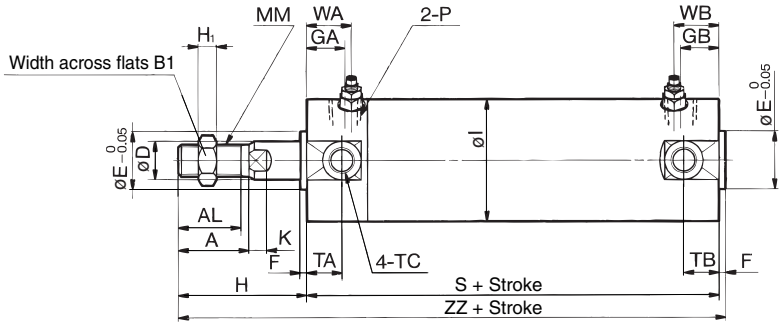
Clevis Style

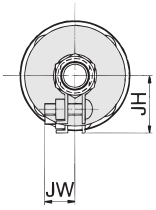
Bore size (mm)	Stroke range (mm)	B	CD	CX	CZ	L	RR	V	TE	TF	TH	TT	TV	TW	TX	TY	TZ	Z	ZZ	With rod boot Z	With rod boot ZZ	Applicable pin part no.
20	Up to 200	38	8	—	29	14	11	—	10	5.5	25	3.2	35.8	42	16	28	43.4	118	139	138 + ℓ	159 + ℓ	CD-G02
25	Up to 300	45.5	10	—	33	16	13	—	10	5.5	30	3.2	39.8	42	20	28	48	125	146	147 + ℓ	168 + ℓ	CD-G25
32	Up to 300	54	12	—	40	20	15	—	10	6.6	35	4.5	49.4	48	22	28	59.4	131	155	153 + ℓ	177 + ℓ	CD-G03
40	Up to 500	63.5	14	—	49	22	18	—	10	6.6	40	4.5	58.4	56	30	30	71.4	150 (159)	178 (187)	170 + ℓ (179 + ℓ)	198 + ℓ (207 + ℓ)	CD-G04
50	Up to 600	79	16	—	60	25	20	—	20	9	50	6	72.4	64	36	36	86	173 (185)	205 (217)	193 + ℓ (205 + ℓ)	225 + ℓ (237 + ℓ)	CD-G05
63	Up to 600	96	18	—	74	30	22	—	20	11	60	8	90.4	74	46	46	105.4	178 (190)	215 (227)	198 + ℓ (210 + ℓ)	235 + ℓ (247 + ℓ)	CD-G06
80	Up to 750	99.5	18	28	56	35	18	26	—	11	55	11	110	72	85	45	64	214 (228)	272.5 (286.5)	223 + ℓ (237 + ℓ)	281.5 + ℓ (295.5 + ℓ)	IY-G08
100	Up to 750	120	22	32	64	43	22	32	—	13.5	65	12	130	93	100	60	72	222 (236)	298.5 (312.5)	231 + ℓ (245 + ℓ)	307.5 + ℓ (321.5 + ℓ)	IY-G10

Note) ( ): Denotes the dimensions for long stroke.
* Refer to page 6-5-12 for pivot bracket.
* Other dimensions are the same as basic style.

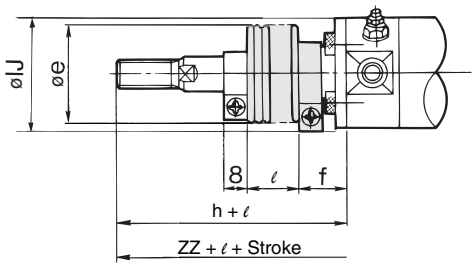
Basic Style with Air Cushion: CG1BA







With rod boot



With Rod Boot

Bore size (mm)	e	f	h	IJ	JH	JW	ℓ	ZZ
20	30	16	55	27	(14.5)	(11.5)	0.25 stroke	126(134)
25	30	17	62	32	(17.5)	(11.5)		133(141)
32	35	17	62	38	(19.5)	(11.5)		135(143)
40	35	17	70	48	(22.5)	(13)		150(159)
50	40	17	78	59	(25)	(13)		170(182)
63	40	18	78	72	(25)	(13)		170(182)
80	52	10	80	59	—	—		191(205)
100	62	7	80	71	—	—		191(205)

∗ The minimum stroke with rod boot is 20 mm.

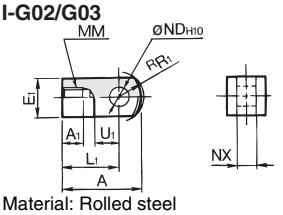
Bore size (mm)	Standard stroke range (mm)	Long stroke range (mm)	A	AL	B_1	C	D	E	F	GA	GB	H	H_1	I	J	K	KA	MM	NA	P	S	TA	TB	TC∗	ZZ	WA	WB	WH	Wθ
20	Up to 200	201 to 350	18	15.5	13	14	8	12	2	12	10(12)	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	M5 x 0.8	69(77)	11	11	M5 x 0.8	106(114)	16	15(16)	23	30°
25	Up to 300	301 to 400	22	19.5	17	16.5	10	14	2	12	10(12)	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	M5 x 0.8	69(77)	11	11	M6 x 0.75	111(119)	16	15(16)	25	30°
32	Up to 300	301 to 450	22	19.5	17	20	12	18	2	12	10(12)	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	Rc 1/8	71(79)	11	10(11)	M8 x 1.0	113(121)	16	15(16)	28.5	25°
40	Up to 300	301 to 800	30	27	19	26	16	25	2	13	10(13)	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	Rc 1/8	78(87)	12	10(12)	M10 x 1.25	130(139)	16	15(16)	33	20°
50	Up to 300	301 to 1200	35	32	27	32	20	30	2	14	12(14)	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	Rc 1/4	90(102)	13	12(13)	M12 x 1.25	150(162)	18	17(18)	40.5	20°
63	Up to 300	301 to 1200	35	32	27	38	20	32	2	14	12(14)	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	Rc 1/4	90(102)	13	12(13)	M14 x 1.5	150(162)	18	17(18)	47.5	20°
80	Up to 300	301 to 1400	40	37	32	50	25	40	3	20	16(20)	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80	Rc 3/8	108(122)	—	—	—	182(196)	22	22	60.5	20°
100	Up to 300	301 to 1500	40	37	41	60	30	50	3	20	16(20)	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100	Rc 1/2	108(122)	—	—	—	182(196)	22	22	71	20°

Note) ( ): Denotes the dimensions for long stroke.
∗ Trunnion mounting taps with width across flats NA are not attached for bore size ø80 and ø100.
∗ For mounting brackets, refer to page 6-5-12.

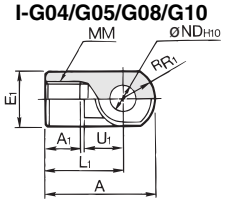
Series CG1
Accessory Bracket Dimensions

Single Knuckle Joint

I-G02/G03



I-G04/G05/G08/G10

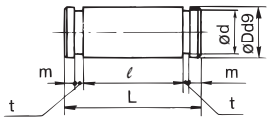


Material: Cast iron

Material: Rolled steel

Part no.	Applicable bore (mm)	A	A1	E1	L1	MM	R1	U1	NDH10	NX
I-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	$8^{+0.058}_{0}$	$8^{-0.2}_{-0.4}$
I-G03	25, 32	41	10.5	□20	30	M10 x 1.25	12.8	14	$10^{+0.058}_{0}$	$10^{-0.2}_{-0.4}$
I-G04	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	$22^{+0.084}_{0}$	$32^{-0.3}_{-0.5}$

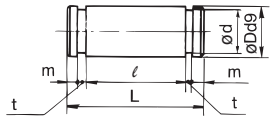
Knuckle Pin



Material: Carbon steel

Part no.	Applicable bore (mm)	Dd9	L	d	ℓ	m	t	Applicable snap ring
IY-G02	20	$8^{-0.040}_{-0.076}$	21	7.6	16.2	1.5	0.9	Type C 8 for axis
IY-G03	25, 32	$10^{-0.040}_{-0.076}$	25.6	9.6	20.2	1.55	1.15	Type C 10 for axis
IY-G04	40	$10^{-0.040}_{-0.076}$	41.6	9.6	36.2	1.55	1.15	Type C 10 for axis
IY-G05	50, 63	$14^{-0.050}_{-0.093}$	50.6	13.4	44.2	2.05	1.15	Type C 14 for axis
IY-G08	80	$18^{-0.050}_{-0.093}$	64	17	56.2	2.55	1.35	Type C 18 for axis
IY-G10	100	$22^{-0.065}_{-0.117}$	72	21	64.2	2.55	1.35	Type C 22 for axis

Clevis Pin



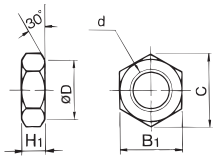
Material: Carbon steel

Part no.	Applicable bore (mm)	Dd9	L	d	ℓ	m	t	Applicable snap ring
CD-G02	20	$8^{-0.040}_{-0.076}$	43.4	7.6	38.6	1.5	0.9	Type C 8 for axis
CD-G25	25	$10^{-0.040}_{-0.076}$	48	9.6	42.6	1.55	1.15	Type C 10 for axis
CD-G03	32	$12^{-0.050}_{-0.093}$	59.4	11.5	54	1.55	1.15	Type C 12 for axis
CD-G04	40	$14^{-0.050}_{-0.093}$	71.4	13.4	65	2.05	1.15	Type C 14 for axis
CD-G05	50	$16^{-0.050}_{-0.093}$	86	15.2	79.6	2.05	1.15	Type C 16 for axis
CD-G06	63	$18^{-0.050}_{-0.093}$	105.4	17	97.8	2.45	1.35	Type C 18 for axis

∗ Clevis pin and knuckle pin are common for bore size ø80 and ø100.

Rod End Nut

Material: Rolled steel

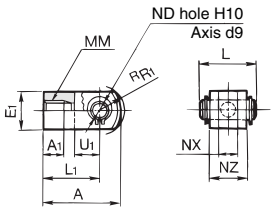


Part no.	Applicable bore (mm)	d	H1	B1	C	D
NT-02	20	M8 x 1.25	5	13	(15.0)	12.5
NT-03	25, 32	M10 x 1.25	6	17	(19.6)	16.5
NT-G04	40	M14 x 1.5	8	19	(21.9)	18
NT-05	50, 63	M18 x 1.5	11	27	(31.2)	26
NT-08	80	M22 x 1.5	13	32	(37.0)	31
NT-10	100	M26 x 1.5	16	41	(47.3)	39

Double Knuckle Joint

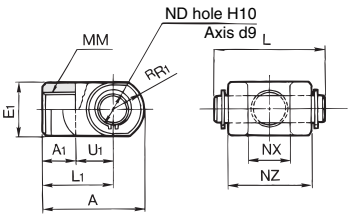
Y-G02/G03

Material: Rolled steel



Y-G04/G05/G08/G10

Material: Cast iron



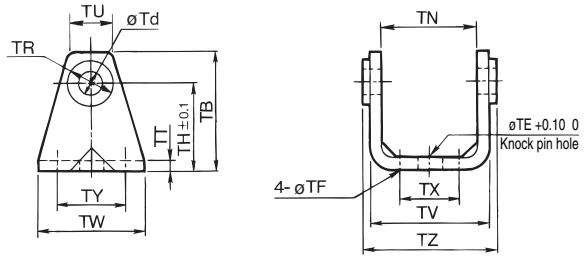
Part no.	Applicable bore (mm)	A	A1	E1	L1	MM	R1	U1	ND	NX	NZ	L	Applicable pin part no.
Y-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8	$8^{+0.4}_{+0.2}$	16	21	IY-G02
Y-G03	25, 32	41	10.5	□20	30	M10 x 1.25	12.8	14	10	$10^{+0.4}_{+0.2}$	20	25.6	IY-G03
Y-G04	40	42	16	ø22	30	M14 x 1.5	12	14	10	$18^{+0.5}_{+0.3}$	36	41.6	IY-G04
Y-G05	50, 63	56	20	ø28	40	M18 x 1.5	16	20	14	$22^{+0.5}_{+0.3}$	44	50.6	IY-G05
Y-G08	80	71	23	ø38	50	M22 x 1.5	21	27	18	$28^{+0.5}_{+0.3}$	56	64	IY-G08
Y-G10	100	79	24	ø44	55	M26 x 1.5	24	31	22	$32^{+0.5}_{+0.3}$	64	72	IY-G10

∗ Knuckle pin and set ring are shipped together.

Pivot Bracket (Order separately)

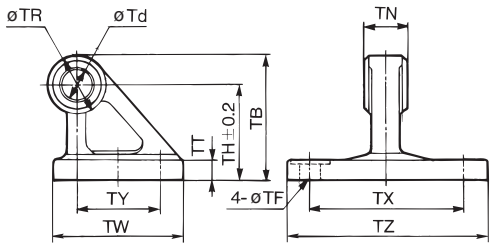
ø20 to ø63

Material: Rolled steel



ø80, ø100

Material: Cast iron

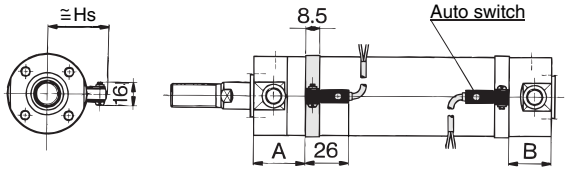


Part no.	Applicable bore (mm)	TB	Td	TE	TF	TH	TN	TR	TT
CG-020-24A	20	36	8	10	5.5	25	(29.3)	13	3.2
CG-025-24A	25	43	10	10	5.5	30	(33.1)	15	3.2
CG-032-24A	32	50	12	10	6.6	35	(40.4)	17	4.5
CG-040-24A	40	58	14	10	6.6	40	(49.2)	21	4.5
CG-050-24A	50	70	16	20	9	50	(60.4)	24	6
CG-063-24A	63	82	18	20	11	60	(74.6)	26	8
CG-080-24A	80	73	18	—	11	55	28^{-01}_{-03}	36	11
CG-100-24A	100	90	22	—	13.5	65	32^{-01}_{-03}	50	12

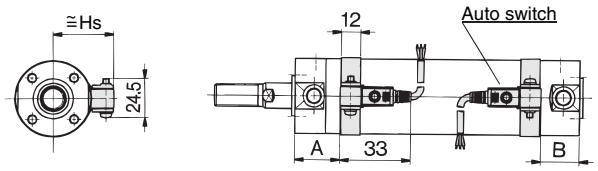
Part no.	Applicable bore (mm)	TU	TV	TW	TX	TY	TZ	Applicable pin O.D.
CG-020-24A	20	(18.1)	(35.8)	42	16	28	38.3	$8d_9^{-0.040}_{-0.076}$
CG-025-24A	25	(20.7)	(39.8)	42	20	28	42.1	$10d_9^{-0.040}_{-0.076}$
CG-032-24A	32	(23.6)	(49.4)	48	22	28	53.8	$12d_9^{-0.050}_{-0.093}$
CG-040-24A	40	(27.3)	(58.4)	56	30	30	64.6	$14d_9^{-0.050}_{-0.093}$
CG-050-24A	50	(29.7)	(72.4)	64	36	36	79.2	$16d_9^{-0.050}_{-0.093}$
CG-063-24A	63	(34.3)	(90.4)	74	46	46	97.2	$18d_9^{-0.050}_{-0.093}$
CG-080-24A	80	—	—	72	85	45	110	$18d_9^{-0.050}_{-0.093}$
CG-100-24A	100	—	—	93	100	60	130	$22d_9^{-0.065}_{-0.117}$

Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

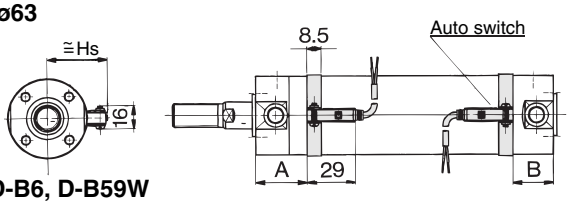
D-C7, D-C8
ø20 to ø63



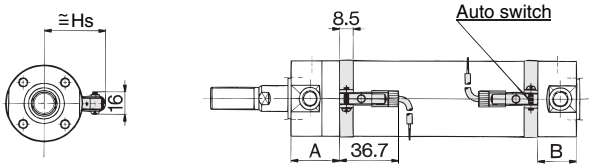
D-G5, D-K5, D-G5□W, D-G5BAL
D-K59W, D-G59F, D-G5NTL



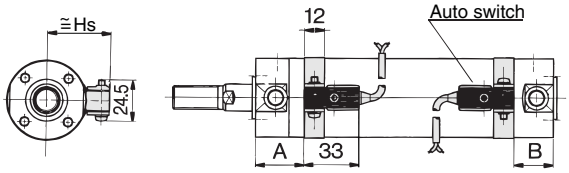
D-H7□, D-H7□W
D-H7NF, D-H7BAL
ø20 to ø63



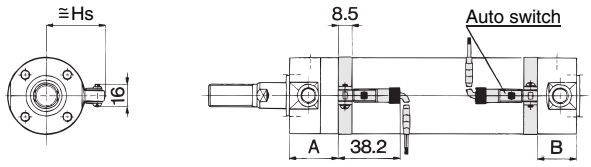
D-C73C, D-C80C
ø20 to ø63



D-B5, D-B6, D-B59W
ø20 to ø100



D-H7C
ø20 to ø63



Proper Auto Switch Mounting Position

Auto switch model / Bore size (mm)	D-C7/C8 D-C73C D-C80C		D-B5/B6		D-B59W		D-H7□ D-H7C D-H7□W D-H7BAL D-H7NF		D-G5□W D-K59W D-G59F D-G5 D-K5 D-G5NTL D-G5BAL	
	A	B	A	B	A	B	A	B	A	B
20	30	20.5 (28.5)	24	15.5 (22.5)	27	17.5 (25.5)	29	19.5 (27.5)	25.5	16 (24)
25	30	20.5 (28.5)	24	15.5 (22.5)	27	17.5 (25.5)	29	19.5 (27.5)	25.5	16 (24)
32	31	21.5 (29.5)	25	15.5 (23.5)	28	18.5 (26.5)	30	20.5 (28.5)	26.5	17 (25)
40	35.5	23.5 (32.5)	29.5	19 (26.5)	32.5	20.5 (29.5)	34.5	22.5 (31.5)	31	19 (28)
50	43	28.5 (40.5)	37	22.5 (34.5)	40	25.5 (37.5)	42	27.5 (39.5)	38.5	24 (36)
63	43	28.5 (40.5)	37	22.5 (34.5)	40	25.5 (37.5)	42	27.5 (39.5)	38.5	24 (36)
80	—	—	46.5	30.5 (44.5)	49.5	33.5 (47.5)	—	—	48	32 (46)
100	—	—	46.5	30.5 (44.5)	49.5	33.5 (47.5)	—	—	48	32 (46)

( ): Denotes the dimensions for long stroke, bore size ø20 to ø100, double rod.

Auto Switch Mounting Height

D-C7/C8 D-H7□ D-H7□W D-H7□F D-H7BAL	D-C73C D-C80C	D-B5/B6 D-B59W D-G5/K5 D-G5□W D-K59W D-G5NTL D-G59F D-H7C D-G5BAL
HS	**HS**	**HS**
24.5	27	27.5
27	29.5	30
30.5	33	33.5
35	37.5	38
40.5	43	43.5
47.5	50	50.5
—	—	59
—	—	69.5

Operating Range

Auto switch model	Bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
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/H7BAL	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	—	—	—	—	—	—	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, Mounting by Stroke

st: Stroke (mm)

Mounting bracket	Basic style, Foot style, Flange style, Clevis style			Trunnion style *		
No. of auto switches	1 (Rod cover side)	2 (Different sides)	2 (Mounted on the same side)	1	2 (Different sides)	2 (Mounted on the same side)
Switch mounting surface / Switch type	Port surface 	Port surface 	Port surface 			
D-C7/C8	10 st or more	15 to 49 st	50 st or more	10 st or more	15 to 49 st	50 st or more
D-H7□/H7□W D-H7BAL/H7NF	10 st or more	15 to 59 st	60 st or more	10 st or more	15 to 59 st	60 st or more
D-C73C/C80C/H7C	10 st or more	15 to 64 st	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/G5BAL D-G59F/G5NTL	10 st or more	15 to 74 st	75 st or more	10 st or more	15 to 74 st	75 st or more
D-B59W	15 st or more	20 to 74 st	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 page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 63
	D-C80C	Connector		
	D-B53	Grommet	—	20 to 100
	D-B64	Grommet	Without indicator light	

* Timer equipped type, solid state auto switch (D-G5NTL) is also available.
* Wide range detection type, solid state auto switch (D-G5NBL) is also available.
* With pre-wire connector is available for D-G5NTL and D-G5NBL.

Air Cylinder: Standard Type
Double Acting, Double Rod
Series CG1W
ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch CG1W L N 25 — 100 ☐

With auto switch CDG1W L N 25 — 100 ☐ — H7BW ☐

Built-in magnet

Double acting, double rod type

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
U*	Rod side trunnion style

* Not available for bore size ø80 and ø100.

Note) Mounting brackets are shipped together, (but not assembled).

Type

N	Non-lube/Rubber bumper
A	Non-lube/Air cushion

Bore size

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

Cylinder stroke (mm)

Refer to "Standard Stroke" on page 6-5-17.

Suffix for cylinder (Rod boot)

Nil		Without rod boot
One end	J	Nylon tarpaulin
	K	Heat resistant tarpaulin
Both ends	JJ	Nylon tarpaulin
	KK	Heat resistant tarpaulin

* In the case of w/ rod boot, and a foot bracket or rod side flange as a bracket, those parts are to be assembled at the time of shipment.

Auto switch

Nil	Without auto switch (Built-in magnet)

* For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Applicable bore size (mm) 20 to 63	Auto switch model: Applicable bore size (mm) 80, 100	Lead wire length (m)* 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**C76**	—	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	**B54**		●	●	●	—	—		Relay, PLC
							100 V	**C73**	—	●	●	●	—	—		
		Connector					—	**C73C**	—	●	●	●	●	—	—	
	Diagnostic indication (2-color indication)	Grommet				—		**B59W**		●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5 V, 12 V	—	**H7A1**	**G59**	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				**H7A2**	**G5P**	●	●	○	—	○		
				2-wire		12 V		**H7B**	**K59**	●	●	○	—	○	—	
		Connector						**H7C**	—	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		**H7NW**	**G59W**	●	●	○	—	○	IC circuit	
				3-wire (PNP)				**H7PW**	**G5PW**	●	●	○	—	○		
				2-wire		12 V		**H7BW**	**K59W**	●	●	○	—	○	—	
	Water resistant (2-color indication)							**H7BA**	**G5BA**	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		**H7NF**	**G59F**	●	●	○	—	○	IC circuit	

* Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

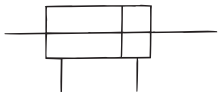
• Since there are other applicable auto switches than listed, refer to page 6-5-17 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Action	Double acting, Double rod							
Type	Non-lube							
Fluid	Air							
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.8 MPa							
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)							
Piston speed	50 to 1000 mm/s						50 to 700 mm/s	
Stroke length tolerance	Up to 1000 $^{st\ +1.4}_{0}$ mm Up to 1200 $^{st\ +1.8}_{0}$ mm						Up to 1000 $^{st\ +1.4}_{0}$ mm Up to 1500 $^{st\ +1.8}_{0}$ mm	
Thread tolerance	JIS Class 2							
Cushion	Rubber bumper, Air cushion							
Mounting *	Basic style, Axial foot style, Rod side flange style, Rod side trunnion style							

* Rod side trunnion style is not available for bore sizes ø80 and ø100.

JIS Symbol



Accessory

Mounting		Basic style	Axial foot style	Rod side flange style	Rod side trunnion style
Standard equipment	Rod end nut	●	●	●	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint ** (With pin)	●	●	●	●
	Pivot bracket *	—	—	—	●*
	Rod boot	●	●	●	●

* Not available for bore size ø80 and ø100.
** Pin and snap ring are shipped together with double knuckle joint.

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)	Long stroke (mm)	Maximum manufacturable stroke
20	25, 50, 75, 100, 125, 150, 200	201 to 350	1500
25	25, 50, 75, 100, 125, 150, 200 250, 300	301 to 400	
32		301 to 450	
40		301 to 800	
50, **63**		301 to 1200	
80		301 to 1400	
100		301 to 1500	

Note 1) Other intermediate strokes can be manufactured upon receipt of order. Spacers are not used for the intermediate strokes.
Note 2) Long stroke applies to the axial foot style and the rod side flange style. If other mounting brackets are used, or the length exceeds the long stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

Made to Order Specifications (For details, refer to page 6-17-1.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (150°C)
-XB7	Cold resistant cylinder
-XC6	Piston rod and rod end nut made of stainless steel
-XC13	Auto switch rail mounting style
-XC18	NPT finish piping port
-XC22	Fluoro rubber seals
-XC37	Large throttle diameter of connecting port

With Auto Switch

Double acting: Auto switch can be mounted for double rod. For detailed specifications, refer to pages 6-5-13 to 6-5-14.

Rod Boot Material

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

* Maximum ambient temperature for the rod boot itself.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 40
	D-C80C	Connector		
	D-B53	Grommet	—	20 to 100
	D-B64		Without indicator light	

* Timer equipped type, solid state auto switch (D-G5NTL) is also available.
* Wide range detection type, solid state auto switch (D-G5NBL) is also available.
* With pre-wire connector is available for D-G5NTL and D-G5NBL.

Weight

(kg)

Bore size (mm)		20	25	32	40	50	63	80	100
Basic weight	Basic style	0.13	0.22	0.33	0.55	1.02	1.37	2.64	4.09
	Axial foot style	0.24	0.35	0.49	0.77	1.50	2.09	3.60	5.84
	Flange style	0.21	0.32	0.47	0.75	1.36	1.87	3.35	5.44
	Trunnion style	0.14	0.24	0.36	0.60	1.16	1.51	—	—
Pivot bracket		0.08	0.09	0.17	0.25	0.44	0.80	—	—
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 weight per each 50 mm of stroke		0.07	0.10	0.13	0.23	0.34	0.38	0.54	0.77
Additional weight with air cushion		0.01	0.01	0.02	0.02	0.03	0.03	0.09	0.10

Calculation: (Example) CG1WLN32-100 (Foot style, ø32, 100 st)
- Basic weight·····0.49 (Foot, ø32)
- Additional weight·····0.13/50 st
- Cylinder stroke·····100 st

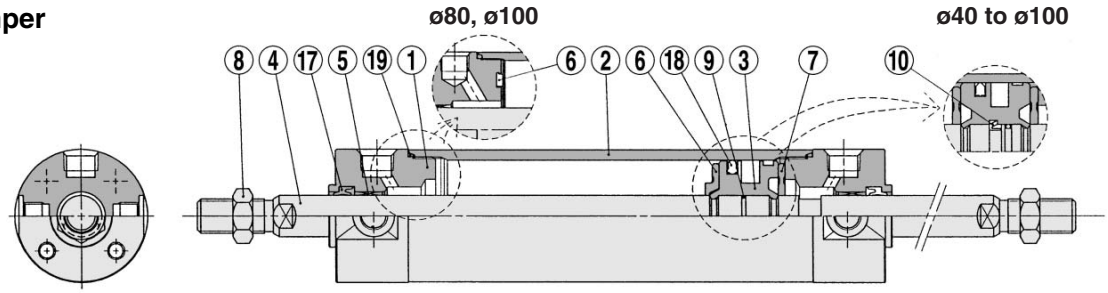
0.49 + 0.13 x 100/50 = 0.75 kg

⚠ Precautions

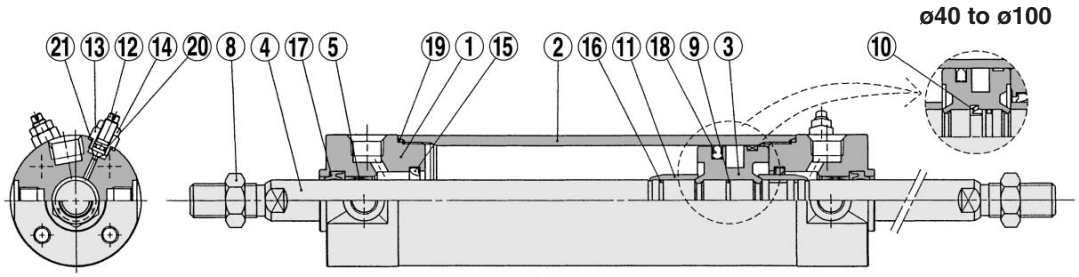
Be sure to read before handling. Refer to pages 6-20-3 to 6-20-6 for Safety Instructions and Actuator Precautions.

Construction

With rubber bumper



With air cushion



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Cylinder tube	Aluminum alloy	Hard anodized
③	Piston	Aluminum alloy	Chromated
④	Piston rod	Carbon steel *	Hard chrome plated
⑤	Bushing	Oil-impregnated sintered alloy	ø40 and larger are lead-bronze casted
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	ø40 or larger: The same as bumper A
⑧	Rod end nut	Rolled steel	Nickel plated
⑨	Piston gasket	NBR	
⑩	Piston holder	Urethane	ø40 or more *
⑪	Cushion ring	Brass	
⑫	Cushion valve	Rolled steel	Electroless nickel plated
⑬	Valve retainer	Rolled steel	Electroless nickel plated
⑭	Lock nut	Carbon steel	Nickel plated
⑮	Cushion seal	Urethane	
⑯	Cushion ring	NBR	
⑰	Cushion valve	NBR	
⑱	Piston seal	NBR	
⑲	Tube gasket	NBR	
⑳	Valve seal	NBR	
㉑	Valve retaining gasket	NBR	

Note) In the case of cylinders with auto switches, magnets are installed in the piston.
* The material is stainless steel on auto switch equipped styles ø20 and ø25.

Replacement Parts/Seal kits are the same as standard type, double acting, single rod. Refer to page 6-5-7.

Air-hydro

CG1W | **Mounting style** | **H** | **Bore size** | **Stroke**

Air-hydro

Low pressure hydraulic cylinder of 1.0 MPa or less. When used together with a Series CC air-hydro unit, constant and low speed actuation and intermediate stopping similar to hydraulic units are possible with the use of valves and other pneumatic equipment.

Specifications

Type	Air-hydro
Bore size (mm)	20, 25, 32, 40, 50, 63
Action	Double acting
Fluid	Turbine oil
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Min. operating pressure	0.18 MPa
Piston speed	15 to 300 mm/s
Cushion	None
Ambient and fluid temperature	5 to 60°C
Thread tolerance	JIS Class 2
Stroke length tolerance	Up to 1000 $^{st\ +1.4}_{\ 0}$ mm, Up to 1200 $^{st\ +1.8}_{\ 0}$ mm
Mounting	Basic style, Axial foot style Rod side flange style, Rod side trunnion style

∗ Auto switch can be mounted.

Bore size (mm)	20	25	32	40	50	63
S	77	77	79	87	102	102
ZZ	147	157	159	187	218	218

Other dimensions are the same as double rod standard type (page 6-5-20).

Copper-free

20-CG1W | **Mounting style** | **Type** | **Bore size** | **Stroke**

Copper-free

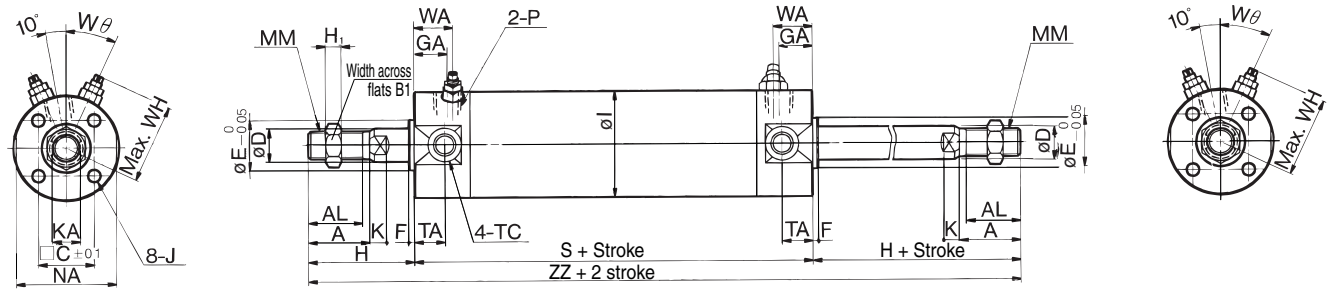
The type which prevents copper based ions from generating by changing the copper based materials into electroless nickel plated treatment or non-copper materials in order to eliminate the effects by copper based ions or fluororesins over the color cathode ray tube.

Specifications

Bore size (mm)		20, 25, 32, 40, 50, 63, 80, 100
Action		Double acting
Fluid		Air
Max. operating pressure		1.0 MPa
Min. operating pressure		0.08 MPa
Cushion	Type N	With rubber bumper
	Type A	With air cushion
Piston speed	ø20 to 63	50 to 1000 mm/s
	ø80, ø100	50 to 700 mm/s
Mounting ∗		Basic style, Axial foot style Rod side flange style, Rod side trunnion style

∗ Rod side trunnion style is not available for bore size ø80 and ø100. Other dimensions are the same as double rod standard type (page 6-5-20).
∗ Auto switch capable

Basic Style with Air Cushion: CG1WBA



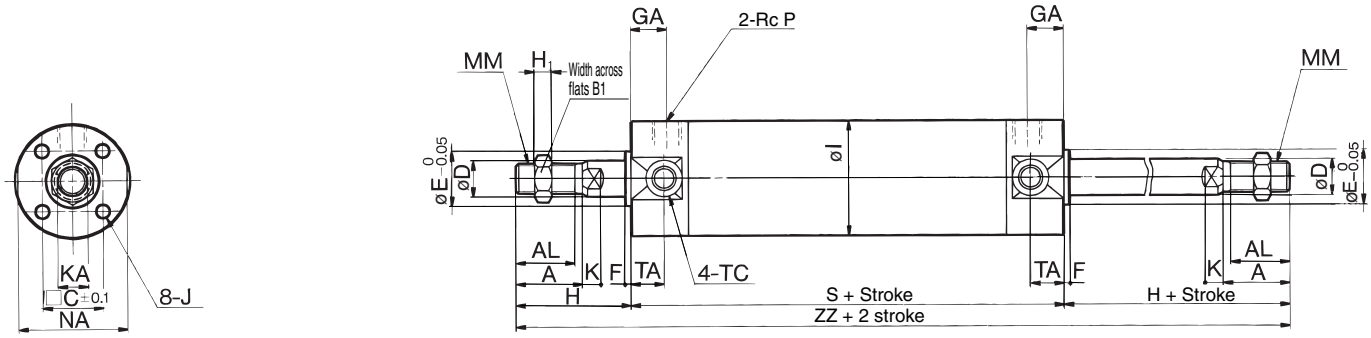
∗ For the one with rod boot, refer to w/ rubber bumper.

Bore size (mm)	Standard stroke range (mm)	Long stroke range (mm)	A	AL	B_1	C	D	E	F	GA	H	H_1	I	J	K	KA
20	Up to 200	201 to 350	18	15.5	13	14	8	12	2	12	35	5	26	M4 x 0.7 depth 7	5	6
25	Up to 300	301 to 400	22	19.5	17	16.5	10	14	2	12	40	6	31	M5 x 0.8 depth 7.5	5.5	8
32	Up to 300	301 to 450	22	19.5	17	20	12	18	2	12	40	6	38	M5 x 0.8 depth 8	5.5	10
40	Up to 300	301 to 800	30	27	19	26	16	25	2	13	50	8	47	M6 x 1 depth 12	6	14
50	Up to 300	301 to 1200	35	32	27	32	20	30	2	14	58	11	58	M8 x 1.25 depth 16	7	18
63	Up to 300	301 to 1200	35	32	27	38	20	32	2	14	58	11	72	M10 x 1.5 depth 16	7	18
80	Up to 300	301 to 1400	40	37	32	50	25	40	3	20	71	13	89	M10 x 1.5 depth 22	10	22
100	Up to 300	301 to 1500	40	37	41	60	30	50	3	20	71	16	110	M12 x 1.75 depth 22	10	26

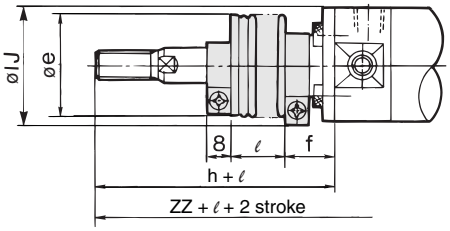
Bore size (mm)	MM	NA	P	S	TA	TC ∗∗	ZZ	WA	WH	Wθ
20	M8 x 1.25	24	M5 x 0.8	77	11	M5 x 0.8	147	16	23	30°
25	M10 x 1.25	29	M5 x 0.8	77	11	M6 x 0.75	157	16	25	30°
32	M10 x 1.25	35.5	Rc 1/8	79	11	M8 x 1.0	159	16	28.5	25°
40	M14 x 1.5	44	Rc 1/8	87	12	M10 x 1.25	187	16	33	20°
50	M18 x 1.5	55	Rc 1/4	102	13	M12 x 1.25	218	18	40.5	20°
63	M18 x 1.5	69	Rc 1/4	102	13	M14 x 1.5	218	18	47.5	20°
80	M22 x 1.5	80	Rc 3/8	122	—	—	264	22	60.5	20°
100	M26 x 1.5	100	Rc 1/2	122	—	—	264	22	71	20°

∗ For mounting brackets, refer to page 6-5-21.
∗∗ Trunnion mounting taps with width across flats NA are not attached for bore sizes ø80 and ø100.

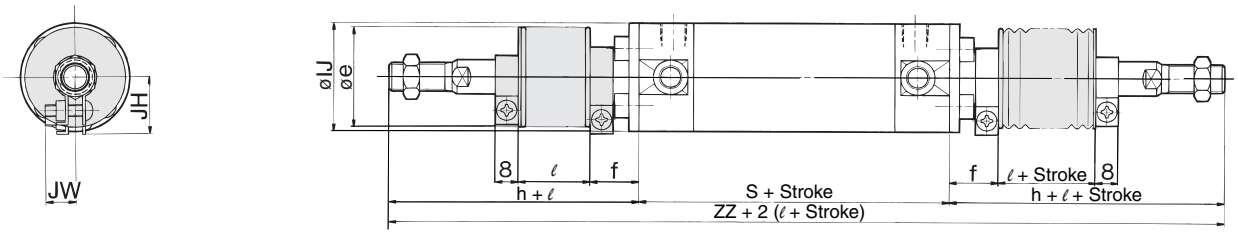
Basic Style with Rubber Bumper: CG1WBN



With rod boot at one end



With rod boot at both ends



Bore size (mm)	Stroke range (mm)	A	AL	B_1	C	D	E	F	GA	H_1	I	J	K	KA	MM	NA	P	S
20	Up to 350	18	15.5	13	14	8	12	2	12	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8	77
25	Up to 400	22	19.5	17	16.5	10	14	2	12	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8	77
32	Up to 450	22	19.5	17	20	12	18	2	12	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	79
40	Up to 800	30	27	19	26	16	25	2	13	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	87
50	Up to 1200	35	32	27	32	20	30	2	14	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	102
63	Up to 1200	35	32	27	38	20	32	2	14	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	102
80	Up to 1400	40	37	32	50	25	40	3	20	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80	3/8	122
100	Up to 1500	40	37	41	60	30	50	3	20	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100	1/2	122

Bore size (mm)	TA	TC**	Without rod boot		With rod boot on one side *								With rod boot on both sides *
			H	ZZ	e	f	h	IJ	JH	JW	ℓ	ZZ	ZZ
20	11	M5 x 0.8	35	147	30	16	55	27	(14.5)	(11.5)	0.25 stroke	167	187
25	11	M6 x 0.75	40	157	30	17	62	32	(17.5)	(11.5)		179	201
32	11	M8 x 1.0	40	159	35	17	62	38	(19.5)	(11.5)		181	203
40	12	M10 x 1.25	50	187	35	17	70	48	(22.5)	(13)		207	227
50	13	M12 x 1.25	58	218	40	17	78	59	(25)	(13)		238	258
63	13	M14 x 1.5	58	218	40	18	78	72	(25)	(13)		238	258
80	—	—	71	264	52	10	80	59	—	—		273	282
100	—	—	71	264	62	7	80	71	—	—		273	282

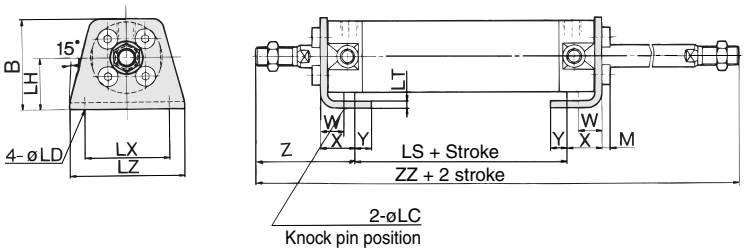
Air-hydro

Bore size (mm)	S	ZZ
20	77	147
25	77	157
32	79	159
40	87	187
50	102	218
63	102	218

* The minimum stroke with rod boot is 20 mm.
** Trunnion mounting taps with width across flats NA are not attached for bore sizes ø80 and ø100.

With Mounting Bracket

Axial foot style: CG1WLN

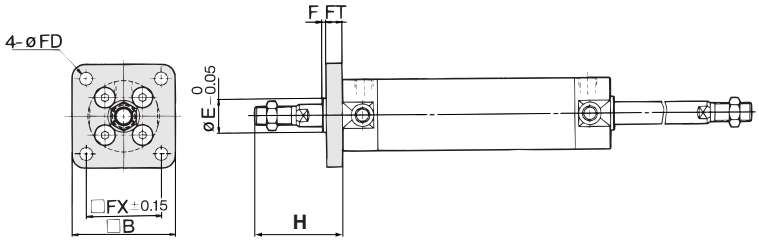


Foot Style

Bore size (mm)	Stroke range (mm)	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z
20	Up to 350	34	4	6	20	53	3	32	44	3	10	15	7	47
25	Up to 400	38.5	4	6	22	53	3	36	49	3.5	10	15	7	52
32	Up to 450	45	4	7	25	53	3	44	58	3.5	10	16	8	53
40	Up to 800	54.5	4	7	30	60	3	54	71	4	10	16.5	8.5	63.5
50	Up to 1200	70.5	5	10	40	67	4.5	66	86	5	17.5	22	11	75.5
63	Up to 1200	82.5	5	12	45	67	4.5	82	106	5	17.5	22	13	75.5
80	Up to 1400	101	6	11	55	74	4.5	100	125	5	20	28.5	14	95
100	Up to 1500	121	6	14	65	74	6	120	150	7	20	30	16	95

∗ Other dimensions are the same as basic style.

Rod side flange style: CG1WFN

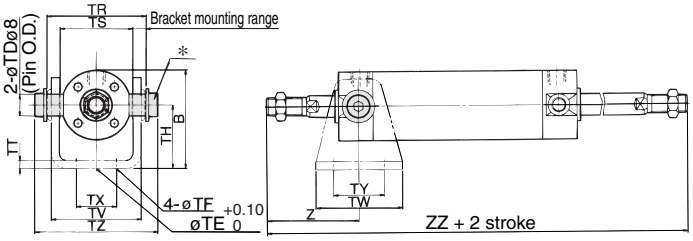


Rod Side Flange Style

Bore size (mm)	Stroke range (mm)	B	E	F	FX	FD	FT	H
20	Up to 350	40	12	2	28	5.5	6	35
25	Up to 400	44	14	2	32	5.5	7	40
32	Up to 450	53	18	2	38	6.6	7	40
40	Up to 800	61	25	2	46	6.6	8	50
50	Up to 1200	76	30	2	58	9	9	58
63	Up to 1200	92	32	2	70	11	9	58
80	Up to 1400	104	40	3	82	11	11	71
100	Up to 1500	128	50	3	100	14	14	71

∗ End boss is machined on the flange for øE.
∗ Other dimensions are the same as basic style.

Rod side trunnion style: CG1WUN



Rod Side Trunnion Style

Bore size (mm)	Stroke range (mm)	B	TDe8	TE	TF	TH	TR	TS
20	Up to 200	38	$8^{-0.025}_{-0.047}$	10	5.5	25	39	28
25	Up to 300	45.5	$10^{-0.025}_{-0.047}$	10	5.5	30	43	33
32	Up to 300	54	$12^{-0.032}_{-0.059}$	10	6.6	35	54.5	40
40	Up to 500	63.5	$14^{-0.032}_{-0.059}$	10	6.6	40	65.5	49
50	Up to 600	79	$16^{-0.032}_{-0.059}$	20	9	50	80	60
63	Up to 600	96	$18^{-0.032}_{-0.059}$	20	11	60	98	74

Bore size (mm)	TT	TV	TW	TX	TY	TZ	Z	
							Without rod boot	With rod boot
20	3.2	(35.8)	42	16	28	47.6	46	66 + ℓ
25	3.2	(39.8)	42	20	28	53	51	73 + ℓ
32	4.5	(49.4)	48	22	28	67.7	51	73 + ℓ
40	4.5	(58.4)	56	30	30	78.7	62	82 + ℓ
50	6	(72.4)	64	36	36	98.6	71	91 + ℓ
63	8	(90.4)	74	46	46	119.2	71	91 + ℓ

∗ Consists of pin, flat washer and hexagon socket head cap bolt.
∗ Other dimensions are the same as basic style.

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
Axial foot ∗	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	CG-L080	CG-L100
Flange	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	CG-F080	CG-F100
Trunnion pin	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	—	—
Pivot bracket	CG-020 -24A	CG-025 -24A	CG-032 -24A	CG-040 -24A	CG-050 -24A	CG-063 -24A	—	—

∗ Order two foot brackets per cylinder.
∗∗ Mounting bolts are shipped together for foot style and flange style.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-C7/C8	BMA2 -020	BMA2 -025	BMA2 -032	BMA2 -040	BMA2 -050	BMA2 -063	—	—
D-H7								
D-B5/B6	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06	BA-08	BA-10
D-G5/K5								

∗ Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(A switch mounting band is not included, so please order it separately.)
BBA3: For D-B5/B6/G5/K5
BBA4: For D-C7/C8/H7

- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.
When only a switch is shipped independently, BBA3 or BBA4 screws are attached.

Air Cylinder: Standard Type
Single Acting, Single Rod, Spring Return/Extend
Series CG1
ø20, ø25, ø32, ø40

How to Order

Without auto switch CG1 L N 25 100 S

With auto switch CDG1 L N 25 100 S H7BW

Built-in magnet

Mounting style

B	Basic style	U	Rod side trunnion style
L	Axial foot style	T	Head side trunnion style
F	Rod side flange style	D	Clevis style
G	Head side flange style		

Note) Mounting brackets are shipped together, (but not assembled).

Type

N	Non-lube/Rubber bumper

Bore size

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

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 6-5-23.

Action

S	Single acting, Spring return
T	Single acting, Spring extend

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Applicable bore size (mm) 20 to 40	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	C76	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	B54	●	●	●	—	—	—	Relay, PLC
							100 V	C73	●	●	●	—	—		
		Connector					—	C73C	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet				—		B59W	●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	H7A1	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				H7A2	●	●	○	—	○		
				2-wire		12 V		H7B	●	●	○	—	○	—	
		Connector						H7C	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		H7NW	●	●	○	—	○	IC circuit	
				3-wire (PNP)				H7PW	●	●	○	—	○		
				2-wire		12 V		H7BW	●	●	○	—	○	—	
	Water resistant (2-color indication)							H7BA	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		H7NF	●	●	○	—	○	IC circuit	

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

• Since there are other applicable auto switches than listed, refer to page 6-5-29 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Spring return

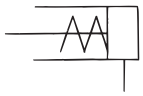
Spring extend

Specifications

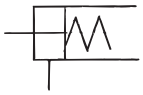
Action	Single acting, Spring return	Single acting, Spring extend
Bore size (mm)	20, 25, 32, 40	
Type	Non-lube	
Fluid	Air	
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	0.18 MPa	0.23 MPa
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)	
Piston speed	50 to 1000 mm/s	
Stroke length tolerance	Up to 200 $^{st\,+1.4}_{0}$ mm	
Thread tolerance	JIS Class 2	
Cushion	Rubber bumper	
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style, Clevis style (Used for changing the port location by 90°.)	

JIS Symbol

Spring return



Spring extend



Accessory

Mounting		Basic style	Axial foot style	Rod side flange style	Head side flange style	Rod side trunnion style	Head side trunnion style	Clevis style
Standard equipment	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint* (With pin)	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●	●	●

∗ Pin and snap ring are shipped together with double knuckle joint.

Made to Order Specifications (For details, refer to page 6-17-1.)

Symbol	Specifications
-XC6	Piston rod and rod end nut made of stainless steel
-XC18	NPT finish piping port
-XC20	Head cover axial port

Standard Stroke

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

Note) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)			
	20	**25**	**32**	**40**
Axial foot *	CG-L020	CG-L025	CG-L032	CG-L040
Flange	CG-F020	CG-F025	CG-F032	CG-F040
Trunnion pin	CG-T020	CG-T025	CG-T032	CG-T040
Clevis *	CG-D020	CG-D025	CG-D032	CG-D040
Pivot bracket	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A

∗ Order two foot brackets per cylinder.
∗∗ Mounting bolt is shipped together with foot style and flange style, and clevis pin, snap ring and mounting bolt with clevis style.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	**25**	**32**	**40**
D-C7/C8	BMA2-020	BMA2-025	BMA2-032	BMA2-040
D-H7				
D-B5/B6	BA-01	BA-02	BA-32	BA-04
D-G5				

∗ Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(A switch mounting band is not included, so please order it separately.)
BBA3: For D-B5/B6/G5
BBA4: For D-C7/C8/H7

- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.
When only a switch is shipped independently, BBA3 or BBA4 screws are attached.

Weight

(kg)

Spring return					
Bore size (mm)		20	25	32	40
Basic weight	25 stroke	0.17	0.27	0.40	0.63
	50 stroke	0.19	0.30	0.45	0.71
	75 stroke	0.26	0.40	0.58	0.91
	100 stroke	0.28	0.43	0.62	0.99
	125 stroke	0.35	0.53	0.76	1.20
	150 stroke	—	0.56	0.81	1.28
	200 stroke	—	0.69	0.98	1.56
Mounting bracket weight	Axial foot style	0.11	0.13	0.16	0.22
	Flange style	0.08	0.10	0.14	0.20
	Trunnion style	0.01	0.02	0.03	0.05
	Clevis style	0.05	0.08	0.15	0.23
Accessory bracket	Pivot bracket	0.08	0.09	0.17	0.25
	Single knuckle joint	0.05	0.09	0.09	0.10
	Double knuckle (With pin)	0.05	0.09	0.09	0.13

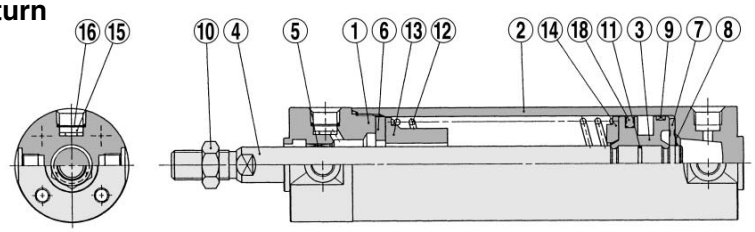
Calculation: (Example) CG1LN20-100S (Foot style, ø20, 100 st)
• Basic weight·····0.28 kg (ø20) • Mounting bracket weight·····0.11 kg (Foot)
0.28 + 0.11 = 0.39 kg

Spring extend					
Bore size (mm)		20	25	32	40
Basic weight	25 stroke	0.16	0.25	0.38	0.59
	50 stroke	0.18	0.28	0.43	0.67
	75 stroke	0.24	0.37	0.54	0.83
	100 stroke	0.26	0.40	0.58	0.91
	125 stroke	0.32	0.48	0.69	1.08
	150 stroke	—	0.50	0.72	1.12
	200 stroke	—	0.63	0.89	1.40
Mounting bracket weight	Axial foot style	0.11	0.13	0.16	0.22
	Flange style	0.08	0.10	0.14	0.20
	Trunnion style	0.01	0.02	0.03	0.05
	Clevis style	0.05	0.08	0.15	0.23
Accessory bracket	Pivot bracket	0.08	0.09	0.17	0.25
	Single knuckle joint	0.05	0.09	0.09	0.10
	Double knuckle (With pin)	0.05	0.09	0.09	0.13

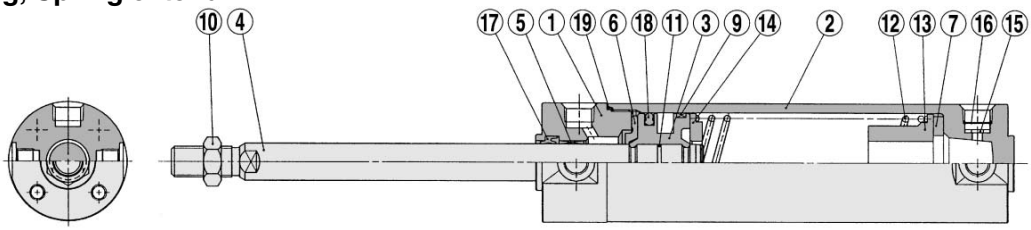
Calculation: (Example) CG1LN20-100T (Foot style, ø20, 100 st)
• Basic weight·····0.26 kg (ø20) • Mounting bracket weight····0.11 kg (Foot)
0.26 + 0.11 = 0.37 kg

Construction

Single acting, Spring return



Single acting, Spring extend



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Tube cover	Aluminum alloy	Clear hard anodized
③	Piston	Aluminum alloy	Chromated
④	Piston rod	Carbon steel *	Hard chrome plated
⑤	Bushing	Oil-impregnated sintered alloy	ø40 is lead-bronze casted
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	
⑧	Snap ring	Stainless steel	
⑨	Wear ring	Resin	
⑩	Rod end nut	Rolled steel	Nickel plated
⑪	Piston gasket	NBR	
⑫	Return spring	Steel wire	Zinc chromated
⑬	Spring guide	Aluminum alloy	Chromated
⑭	Spring seat	Aluminum alloy	Chromated
⑮	Element	Sintered metallic BC	
⑯	Snap ring	Copper wire	
⑰	Rod seal	NBR	
⑱	Piston seal	NBR	
⑲	Tube gasket	NBR	

Note) In the case of cylinders with auto switches, rubber magnets are installed in the piston.
* The material is stainless steel on auto switch equipped styles ø20 and ø25.

Replacement Parts: For Single Acting, Spring Return

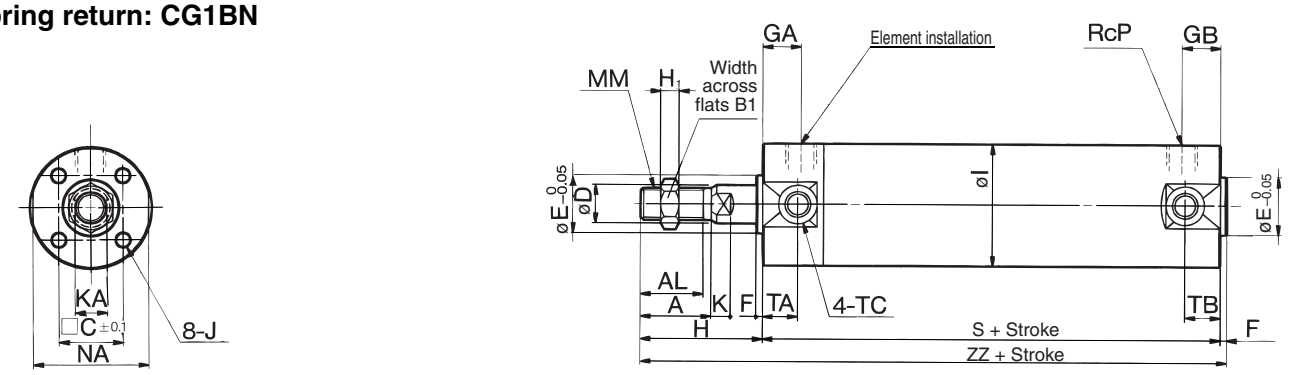
No.	Description	Material	Part no.			
			20	25	32	40
⑱	Piston seal	NBR	PPD-20	PPD-25-19	PPD-32	PPD-40

Replacement Parts: For Single Acting, Spring Extend

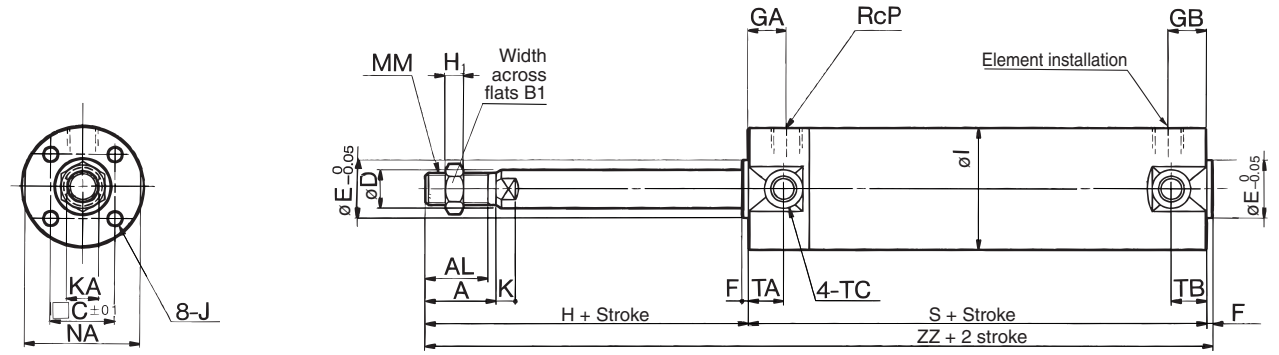
Replacement parts/Seal kits are the same as standard type, double acting, single rod (with rubber bumper). Refer to page 6-5-7.

Basic Style

Spring return: CG1BN



Spring extend: CG1BN



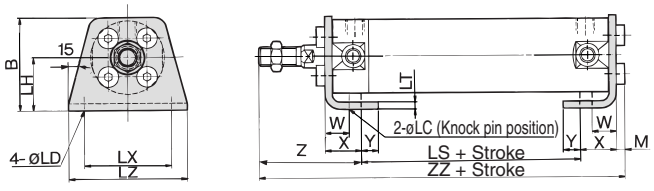
Bore size (mm)	Stroke range (mm)	A	AL	B1	C	D	E	F	GA	GB	H	H1	I	J	K	KA	MM	NA	P
20	Up to 125	18	15.5	13	14	8	12	2	12	10	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8
25	Up to 200	22	19.5	17	16.5	10	14	2	12	10	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8
32	Up to 200	22	19.5	17	20	12	18	2	12	10	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8
40	Up to 200	30	27	19	26	16	25	2	13	10	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8

Bore size (mm)	TA	TB	TC	1 to 50 st		51 to 100 st		101 to 125 st		126 to 200 st	
				S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	11	11	M5 x 0.8	94	131	119	156	144	181	—	—
25	11	11	M6 x 0.75	94	136	119	161	144	186	169	211
32	11	10	M8 x 1.0	96	138	121	163	146	188	171	213
40	12	10	M10 x 1.25	103	155	128	180	153	205	178	230

With Mounting Bracket

Note) The drawing below shows the single acting/spring return style. The rod is in retracted state for spring extend type.

Axial foot style: CG1LN



Axial Foot Style

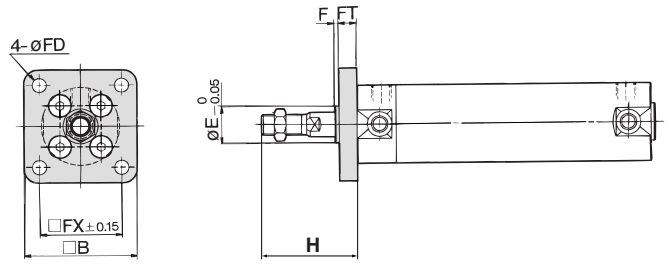
Bore size (mm)	Stroke range (mm)	B	M	LC	LD	LH	LT	LX	LZ	W	X	Y	Z
20	Up to 125	34	3	4	6	20	3	32	44	10	15	7	47
25	Up to 200	38.5	3.5	4	6	22	3	36	49	10	15	7	52
32	Up to 200	45	3.5	4	7	25	3	44	58	10	16	8	53
40	Up to 200	54.5	4	4	7	30	3	54	71	10	16.5	8.5	63.5

Bore size (mm)	1 to 50 st		51 to 100 st		101 to 125 st		126 to 200 st	
	LS	ZZ	LS	ZZ	LS	ZZ	LS	ZZ
20	70	135	95	160	120	185	—	—
25	70	140.5	95	165.5	120	190.5	145	215.5
32	70	142.5	95	167.5	120	192.5	145	217.5
40	76	160	101	185	126	210	151	235

∗ Other dimensions are the same as basic style.

With Mounting Bracket

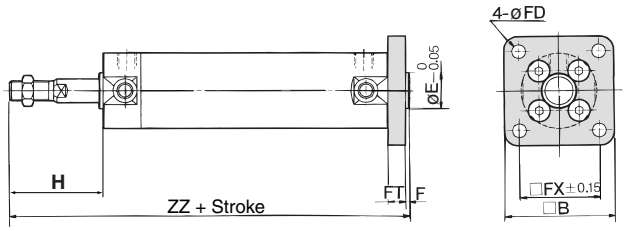
Rod side flange style: CG1FN



Bore size (mm)	Stroke range (mm)	B	E	F	FX	FD	FT	H
20	Up to 125	40	12	2	28	5.5	6	35
25	Up to 200	44	14	2	32	5.5	7	40
32	Up to 200	53	18	2	38	6.6	7	40
40	Up to 200	61	25	2	46	6.6	8	50

∗ End boss is machined on the flange for øE.
∗ Other dimensions are the same as basic style.

Head side flange style: CG1GN



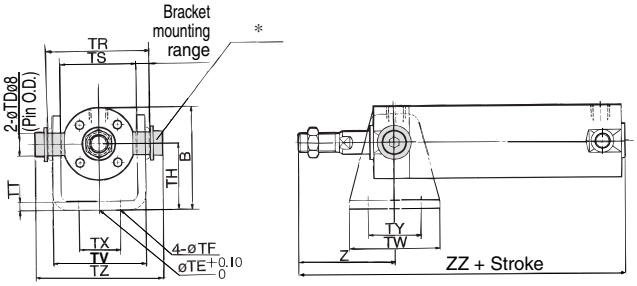
Rod Side Flange Style

Bore size (mm)	ZZ			
	1 to 50 st	51 to 100 st	101 to 125 st	126 to 200 st
20	131	156	181	—
25	136	161	186	211
32	138	163	188	213
40	155	180	205	230

Head Side Flange Style

Bore size (mm)	ZZ			
	1 to 50 st	51 to 100 st	101 to 125 st	126 to 200 st
20	137	162	187	—
25	143	168	193	218
32	145	170	195	220
40	163	188	213	238

Rod side trunnion style: CG1UN



Bore size (mm)	Stroke range (mm)	B	TDe8	TE	TF	TH	TR	TS	TT	TV	TW	TX	TY	TZ
20	Up to 125	38	8 $^{-0.025}_{-0.047}$	10	5.5	25	39	28	3.2	(35.8)	42	16	28	47.6
25	Up to 200	45.5	10 $^{-0.025}_{-0.047}$	10	5.5	30	43	33	3.2	(39.8)	42	20	28	53
32	Up to 200	54	12 $^{-0.032}_{-0.059}$	10	6.6	35	54.5	40	4.5	(49.4)	48	22	28	67.7
40	Up to 200	63.5	14 $^{-0.032}_{-0.059}$	10	6.6	40	65.5	49	4.5	(58.4)	56	30	30	78.7

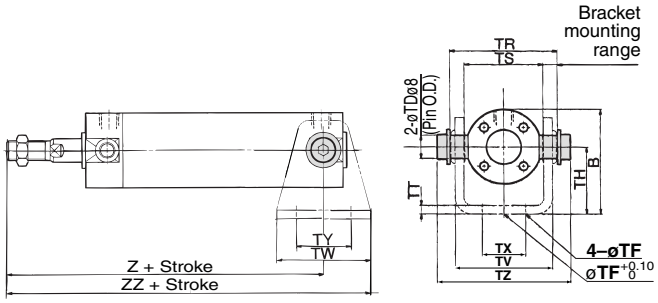
∗ Consists of pin, flat washer and hexagon socket head cap bolt.
∗ Other dimensions are the same as basic style.

∗ Clevis pin and snap ring are shipped together.

Rod Side Trunnion Style

Bore size (mm)	Z	ZZ			
		1 to 50 st	51 to 100 st	101 to 125 st	126 to 200 st
20	46	131	156	181	—
25	51	136	161	186	211
32	51	138	163	188	213
40	62	155	180	205	230

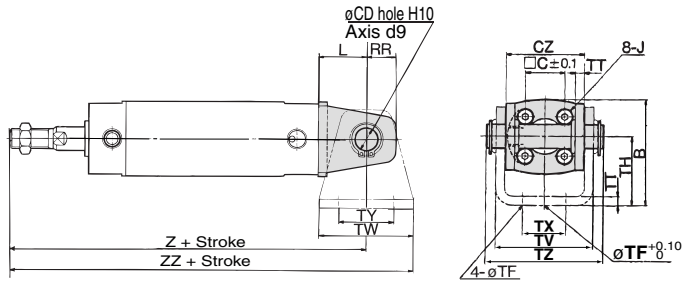
Head side trunnion style: CG1TN



Head Side Trunnion Style

Bore size (mm)	1 to 50 st		51 to 100 st		101 to 125 st		126 to 200 st	
	Z	ZZ	Z	ZZ	Z	ZZ	Z	ZZ
20	118	139	143	164	168	189	—	—
25	123	144	148	169	173	194	198	219
32	126	150	151	175	176	200	201	225
40	143	171	168	196	193	221	218	246

Clevis style: CG1DN



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

Clevis Style

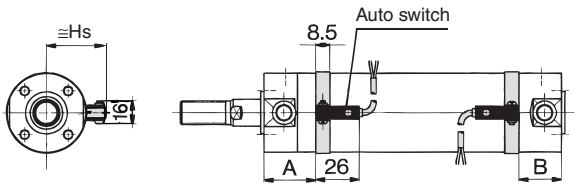
Bore size (mm)	Stroke range (mm)	B	CD	CZ	L	RR	TE	TF	H	TT	TV
20	Up to 125	38	8	29	14	11	10	5.5	25	3.2	(35.8)
25	Up to 200	45.5	10	33	16	13	10	5.5	30	3.2	(39.8)
32	Up to 200	54	12	40	20	15	10	6.6	35	4.5	(49.4)
40	Up to 200	63.5	14	49	22	18	10	6.6	40	4.5	(58.4)

Bore size (mm)	TW	TX	TY	TZ	1 to 50 st		51 to 100 st		101 to 125 st		126 to 200 st	
					Z	ZZ	Z	ZZ	Z	ZZ	Z	ZZ
20	42	16	28	43.4	143	164	168	189	193	214	—	—
25	42	20	28	48	150	171	175	196	200	221	225	246
32	48	22	28	59.4	156	180	181	205	206	230	231	255
40	56	30	30	71.4	175	200	200	228	225	253	250	278

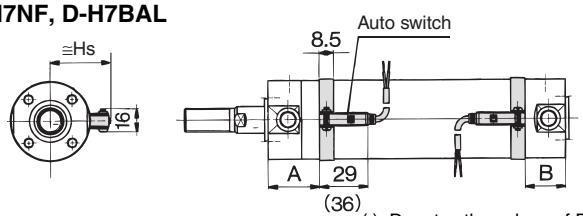
∗ For dimensions of pivot bracket, refer to page 6-5-12.
∗ Other dimensions are the same as basic style.

Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

D-C7, D-C8

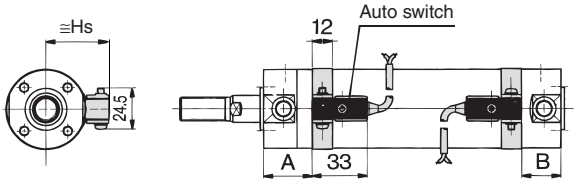


D-H7□, D-H7□W
D-H7NF, D-H7BAL

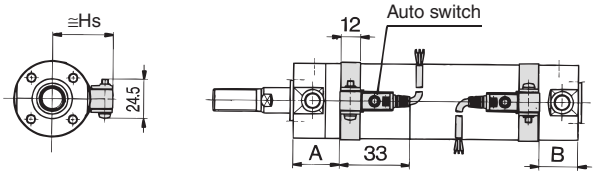


( ): Denotes the values of D-H7LF.

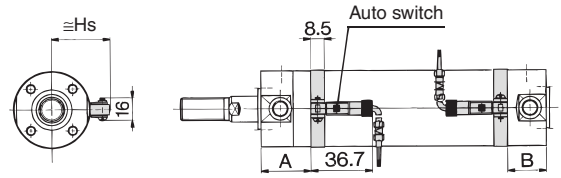
D-B5, D-B6, D-B59W



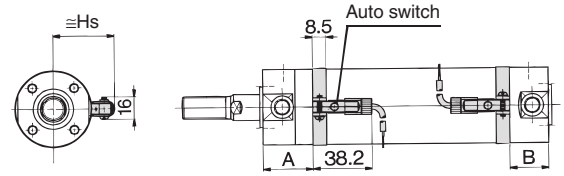
D-G5NTL



D-C73C, D-C80C



D-H7C



Single Acting, Spring Return

Auto switch model	Bore size (mm)	A							B	Hs
		25	50	75	100	125	150	200	All stroke	
D-C7 D-C8 D-C73C D-C80C	**20**	55	55	80	80	105	—	—	20.5	24.5(27)
	25	55	55	80	80	105	130	130	20.5	27(29.5)
	32	56	56	81	81	106	131	131	21.5	30.5(33)
	40	60.5	60.5	85.5	85.5	110.5	135.5	135.5	23.5	35(37.5)
D-H7□W D-H7□ D-H7C D-H7BAL D-H7NF	**20**	54	54	79	79	104	—	—	19.5	24.5(27.5)
	25	54	54	79	79	104	129	129	19.5	27(30)
	32	55	55	80	80	105	130	130	20.5	30.5(33.5)
	40	59.5	59.5	84.5	84.5	109.5	134.5	134.5	22.5	35(38)
D-B5 D-B6	**20**	49	49	74	74	99	—	—	15.5	27.5
	25	49	49	74	74	99	124	124	15.5	30
	32	50	50	75	75	100	125	125	15.5	33.5
	40	54.5	54.5	79.5	79.5	104.5	129.5	129.5	19	38
D-G5NTL D-G59F	**20**	50.5	50.5	75.5	75.5	100.5	—	—	16	27.5
	25	50.5	50.5	75.5	75.5	100.5	125.5	125.5	16	30
	32	51.5	51.5	76.5	76.5	101.5	126.5	126.5	17	33.5
	40	56	56	81	81	106	131	131	19	38
D-B59W	**20**	52	52	77	77	102	—	—	17.5	27.5
	25	52	52	77	77	102	127	127	17.5	30
	32	53	53	78	78	103	128	128	18.5	33.5
	40	57.5	57.5	82.5	82.5	107.5	132.5	132.5	20.5	38

( ): Denotes the dimensions with connector.

Single Acting, Spring Extend

Auto switch model	Bore size (mm)	A	B							Hs
		All stroke	25	50	75	100	125	150	200	
D-C7 D-C8 D-C73C D-C80C	**20**	30	45.5	45.5	70.5	70.5	95.5	—	—	24.5(27)
	25	30	45.5	45.5	70.5	70.5	95.5	120.5	120.5	27(29.5)
	32	31	46.5	46.5	71.5	71.5	96.5	121.5	121.5	30.5(33)
	40	35.5	48.5	48.5	73.5	73.5	98.5	123.5	123.5	35(37.5)
D-H7□W D-H7□ D-H7C D-H7BAL D-H7NF	**20**	29	44.5	44.5	69.5	69.5	94.5	—	—	24.5(27.5)
	25	29	44.5	44.5	69.5	69.5	94.5	119.5	119.5	27(30)
	32	30	45.5	45.5	70.5	70.5	95.5	120.5	120.5	30.5(33.5)
	40	34.5	47.5	47.5	72.5	72.5	97.5	122.5	122.5	35(38)
D-B5 D-B6	**20**	24	39.5	39.5	64.5	64.5	89.5	—	—	27.5
	25	24	39.5	39.5	64.5	64.5	89.5	114.5	114.5	30
	32	25	40.5	40.5	65.5	65.5	90.5	115.5	115.5	33.5
	40	29.5	42.5	42.5	67.5	67.5	92.5	117.5	117.5	38
D-G5NTL D-G59F	**20**	25.5	41	41	66	66	91	—	—	27.5
	25	25.5	41	41	66	66	91	116	116	30
	32	26.5	42	42	67	67	92	117	117	33.5
	40	31	44	44	69	69	94	119	119	38
D-B59W	**20**	27	42.5	42.5	67.5	67.5	92.5	—	—	27.5
	25	27	42.5	42.5	67.5	67.5	92.5	117.5	117.5	30
	32	28	43.5	43.5	68.5	68.5	93.5	118.5	118.5	33.5
	40	32.5	45.5	45.5	70.5	70.5	95.5	120.	120.5	38

( ): Denotes the dimensions with connector.

Operating Range

Auto switch model	Bore size (mm)			
	20	**25**	**32**	**40**
D-C7□/C80 D-C73C/C80C D-B5□/B64	8	10	9	10
D-B59W	13	13	14	14
D-H7□/H7□W D-H7BAL	4	4	4.5	5
D-H7C	7	8.5	9	10
D-H7NF	5	5	5.5	6
D-G5NTL	4	4	4.5	5
D-G5NBL	35	40	40	45

∗ 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. For detailed specifications, refer to page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 40
	D-C80C	Connector		
	D-B53	Grommet	—	
	D-B64		Without indicator light	

∗ Timer equipped type, solid state auto switch (D-G5NTL) is also available.
∗ Wide range detection type, solid state auto switch (D-G5NBL) is also available.
∗ With pre-wire connector is available for D-G5NTL and D-G5NBL.

Air Cylinder: Non-rotating Rod Type
Double Acting, Single Rod
Series CG1K
ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Without auto switch CG1K L N 25 — 100

With auto switch CDG1K L N 25 — 100 — H7BW ☐

Built-in magnet

Double acting, non-rotating rod type

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
U	Rod side trunnion style
T	Head side trunnion style
D	Clevis style

Note) Mounting brackets are shipped together, (but not assembled).

Cushion

N	Non-lube/Rubber bumper
A	Non-lube/Air cushion (ø40 to ø63 only)

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm

Cylinder stroke (mm)

Refer to "Standard Stroke" on page 6-5-31.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model Applicable bore size (mm) 20 to 63	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	C76	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	B54	●	●	●	—	—	—	Relay, PLC
							100 V	C73	●	●	●	—	—		
		Connector					—	C73C	●	●	●	●	—	—	
	Diagnostic indication (2-color indication)	Grommet				—		B59W	●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	H7A1	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				H7A2	●	●	○	—	○		
				2-wire		12 V		H7B	●	●	○	—	○	—	
		Connector						H7C	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		H7NW	●	●	○	—	○	IC circuit	
				3-wire (PNP)				H7PW	●	●	○	—	○		
				2-wire		12 V		H7BW	●	●	○	—	○	—	
	Water resistant (2-color indication)							H7BA	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		H7NF	●	●	○	—	○	IC circuit	

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

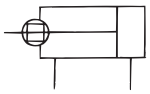
• Since there are other applicable auto switches than listed, refer to page 6-5-31 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Non-rotating accuracy
ø20, ø25·····±1°
ø32·····±0.8°
ø40 to ø63·····±0.5°

High speed operation/Long service life
Piston speed is between 50 and 500 mm/s and long service life is expected.

Can operate without lubrication.
The same installation dimensions as the standard cylinder.
Auto switches can also be mounted.
It can be installed with auto switches to simplify the detection of the stroke position of the cylinder.

JIS Symbol



Specifications

Bore size (mm)	20	25	32	40	50	63
Action	Double acting, Single rod					
Type	Non-lube					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.05 MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)					
Piston speed	50 to 500 mm/s					
Thread tolerance	JIS Class 2					
Stroke length tolerance	Up to 600 $^{st\ +1.4}_{\ 0}$ mm					
Cushion	Rubber bumper, Air cushion (ø40 to ø63 only)					
Rod non-rotating accuracy	±1°		±0.8°	±0.5°		
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style, Clevis style (Used for changing the port location by 90°.)					

Accessory

Mounting		Basic style	Axial foot style	Rod side flange style	Head side flange style	Rod side trunnion style	Head side trunnion style	Clevis style
Standard equipment	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint * (With pin)	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●	●	●

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

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)	Long stroke (mm)
20	25, 50, 75, 100, 125, 150, 200	—
25	25, 50, 75, 100, 125, 150, 200, 250, 300	—
32		—
40		301 to 500
50, **63**		301 to 600

Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.
Note 2) The maximum limit is 1500 stroke, but the products that exceed the standard or the long stroke limit are not guaranteed.

With Auto Switch

Double acting: Auto switch can be mounted for non-rotating rod.
Mounting position is the same as double acting, single rod type. Refer to page 6-5-13.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 63
	D-C80C	Connector		
	D-B53	Grommet	—	
	D-B64		Without indicator light	

* Timer equipped type, solid state auto switch (D-G5NTL) is also available.
* Wide range detection type, solid state auto switch (D-G5NBL) is also available.
* With pre-wire connector is available for D-G5NTL and D-G5NBL.

Made to Order

Made to Order Specifications (For details, refer to page 6-17-1.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type
-XC12	Tandem type cylinder
-XC13	Auto switch rail mounting style
-XC20	Head cover axial port

Weight

(kg)

Bore size (mm)		20	25	32	40	50	63
Basic weight	Basic style	0.10	0.17	0.26	0.41	0.77	1.07
	Axial foot style	0.21	0.30	0.42	0.63	1.25	1.79
	Flange style	0.18	0.27	0.40	0.61	1.11	1.57
	Trunnion style	0.11	0.19	0.29	0.46	0.91	1.21
	Clevis style	0.15	0.25	0.41	0.64	1.17	1.75
Pivot bracket		0.08	0.09	0.17	0.25	0.44	0.80
Single knuckle joint		0.05	0.09	0.09	0.10	0.22	0.22
Double knuckle joint (With pin)		0.05	0.09	0.09	0.13	0.26	0.26
Additional weight per each 50 mm of stroke		0.05	0.07	0.09	0.15	0.22	0.26
Additional weight with air cushion		—	—	—	0.02	0.03	0.03
Additional weight for long stroke		—	—	—	0.03	0.06	0.10

Calculation: (Example) CG1KLN20-100 (Foot style, ø20, 100 st)
- Basic weight·····0.21 (Foot, ø20)
- Additional weight·····0.05/50 st
- Cylinder stroke·····100 st

0.21 + 0.05 x 100/50 = 0.31 kg

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)					
	20	25	32	40	50	63
Axial foot *	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063
Flange	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063
Trunnion pin	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063
Clevis **	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063
Pivot bracket	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A

* Order two foot brackets per cylinder.
** Mounting bolt is shipped together with foot style and flange style, and clevis pin, snap ring and mounting bolt for clevis style.

Copper-free

20-CG1K | **Mounting style** | **N** | **Bore size** | **Stroke**

Copper-free

The type which prevents copper based ions from generating by changing the copper based materials into electroless nickel plated treatment or non-copper materials in order to eliminate the effects by copper based ions or fluororesins over the color cathode ray tube.

Specifications

Bore size (mm)	20, 25, 32, 40, 50, 63
Action	Double acting
Fluid	Air
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.05 MPa
Piston speed	50 to 500 mm/s
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style Clevis style (Used for changing the port location by 90°.)

Auto Switch Mounting Bracket Part No.

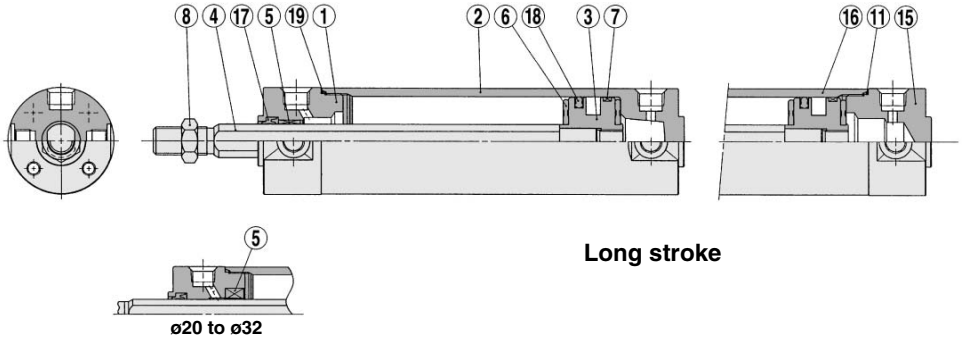
Auto switch model	Bore size (mm)					
	20	25	32	40	50	63
D-C7/C8	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063
D-H7						
D-B5/B6	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06
D-G5						

* Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(A switch mounting band is not included, so please order it separately.)
BBA3: For D-B5/B6/G5
BBA4: For D-C7/C8/H7

- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped. When a switch only is shipped, BBA3 or BBA4 screws are attached.

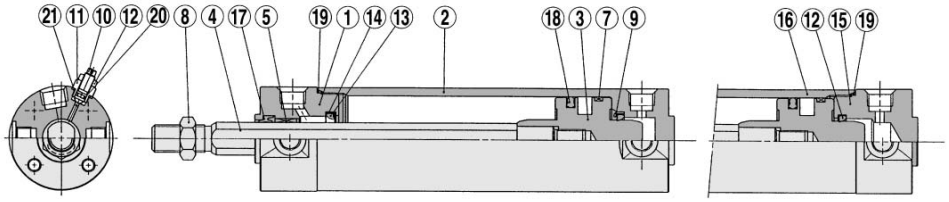
Construction

With rubber bumper



Long stroke

With air cushion



Long stroke

Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Tube cover	Aluminum alloy	Clear hard anodized
③	Piston	Aluminum alloy	Chromated. Hard anodized (In case of air cushion)
④	Piston rod	Carbon steel *	Hard chrome plated
⑤	Non-rotating guide	Oil-impregnated sintered alloy	
⑥	Bumper	Urethane	
⑦	Wear ring	Resin	
⑧	Rod end nut	Rolled steel	Nickel plated
⑨	Seal retainer	Rolled steel	Nickel plated (Except long stroke)
⑩	Cushion valve	Rolled steel	Electroless nickel plated
⑪	Valve retainer	Rolled steel	Electroless nickel plated
⑫	Lock nut	Carbon steel	Nickel plated
⑬	Cushion seal	NBR	
⑭	Cushion seal holder	Aluminum alloy	
⑮	Head cover	Aluminum alloy	Clear hard anodized
⑯	Cylinder tube	Aluminum alloy	Hard anodized
⑰	Rod seal	NBR	
⑱	Piston seal	NBR	
⑲	Tube gasket	NBR	
⑳	Valve seal	NBR	
㉑	Valve retaining gasket	NBR	

Note) In the case of cylinders with auto switches, rubber magnets are installed in the piston.
* The material is stainless steel for ø20 to ø32.

Replacement Parts: Seal Kit for Rubber Bumper

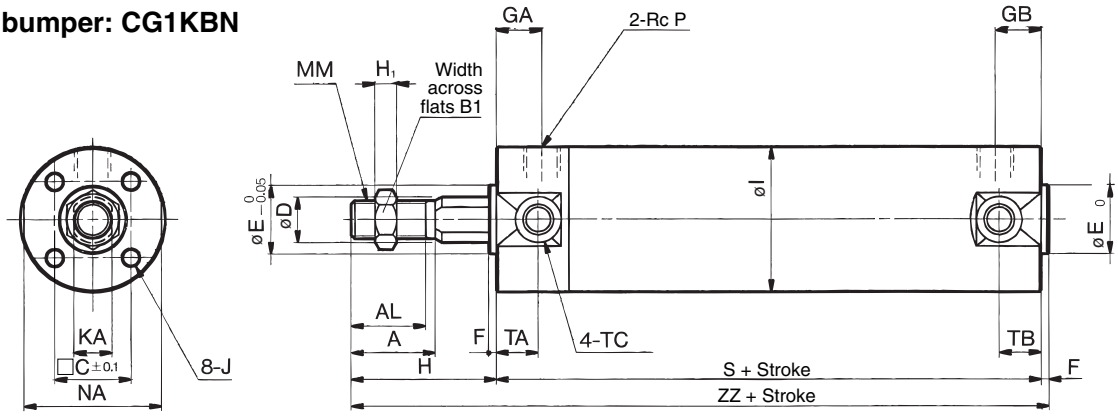
Bore size (mm)	Kit no.	Contents
20	CG1KN20-PS	Set of the nos. ⑰, ⑱, ⑲
25	CG1KN25-PS	
32	CG1KN32-PS	
40	CG1KN40-PS	
50	CG1KN50-PS	
63	CG1KN63-PS	

Replacement Parts: Seal Kit for Air Cushion

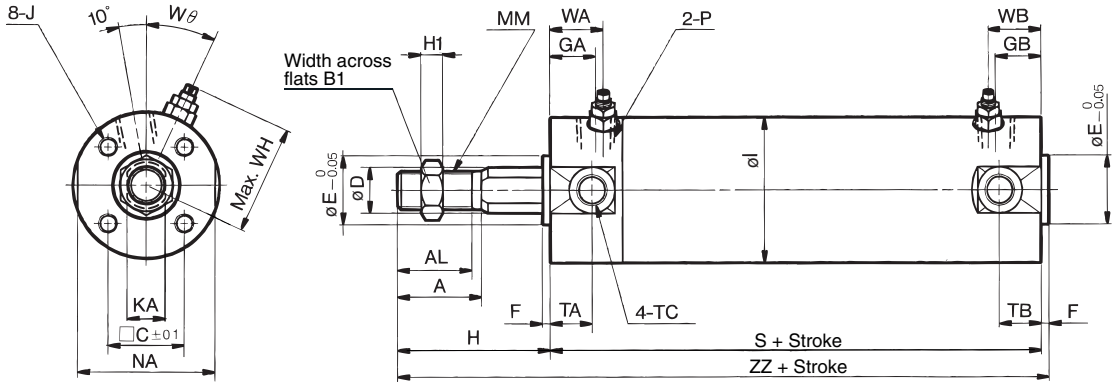
Bore size (mm)	Kit no.	Contents
40	CG1KA40-PS	Set of the nos. ⑰, ⑱, ⑲, ⑳ and ㉑
50	CG1KA50-PS	
63	CG1KA63-PS	

Basic Style

With rubber bumper: CG1KBN
ø20 to ø63



With air cushion: CG1KBA
ø40 to ø63



Bore size (mm)	Stroke range (mm)	A	AL	B1	C	D	E	F	GA	GB	H	H1	I	J	KA	MM	NA	P	S	TA	TB	TC	ZZ
20	Up to 200	18	15.5	13	14	9.2	12	2	12	10	35	5	26	M4 x 0.7 depth 7	8	M8 x 1.25	24	1/8	69	11	11	M5 x 0.8	106
25	Up to 300	22	19.5	17	16.5	11	14	2	12	10	40	6	31	M5 x 0.8 depth 7.5	10	M10 x 1.25	29	1/8	69	11	11	M6 x 0.75	111
32	Up to 300	22	19.5	17	20	12	18	2	12	10	40	6	38	M5 x 0.8 depth 8	10	M10 x 1.25	35.5	1/8	71	11	10	M8 x 1.0	113
40	Up to 300(500)	30	27	19	26	16	25	2	13	10(13)	50	8	47	M6 x 1 depth 12	14	M14 x 1.5	44	1/8	78(87)	12	10(12)	M10 x 1.25	130(139)
50	Up to 300(600)	35	32	27	32	20	30	2	14	12(14)	58	11	58	M8 x 1.25 depth 16	18	M18 x 1.5	55	1/4	90(102)	13	12(13)	M12 x 1.25	150(162)
63	Up to 300(600)	35	32	27	38	20	32	2	14	12(14)	58	11	72	M10 x 1.5 depth 16	18	M18 x 1.5	69	1/4	90(102)	13	12(13)	M14 x 1.5	150(162)

Note 1) Dimensions for each mounting bracket are the same as those for CG1 standard or long stroke model. Refer to pages 6-5-9 and 6-5-10. Also, as for the one with auto switch, it is the same as standard products of Series CDG1.

Note 2) ( ): Long stroke

With Air Cushion

Bore size (mm)	P	WA	WB	WH	Wθ
40	Rc 1/8	16	15(16)	33	20°
50	Rc 1/4	18	17(18)	40.5	20°
63	Rc 1/4	18	17(18)	47.5	20°

Note) ( ): Denotes the dimensions for long stroke.

⚠ Precautions

Be sure to read before handling. For Safety Instructions and Actuator Precautions, refer to pages 6-20-3 to 6-20-6.

Caution on Handling/Disassembly

⚠ Caution

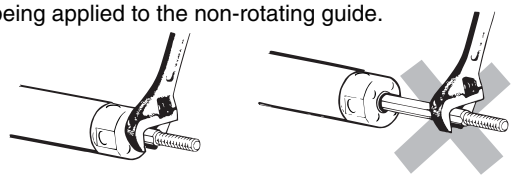
1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

- If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy.

Allowable rotational torque (N·m or less)	ø20	ø25, ø32	ø40, ø50, ø63
	0.2	0.25	0.44

- To screw a bracket or a nut onto the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes.

Tighten it by giving consideration to prevent the tightening torque from being applied to the non-rotating guide.



2. When replacing rod seals, please contact SMC.

Air leakage may be happened, depending on the position in which a rod seal is fitted. Thus, please contact SMC when replacing them.

Air Cylinder: Non-rotating Rod Type
Double Acting, Double Rod
Series CG1KW
ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Without auto switch CG1KW L N 25 — 100

With auto switch CDG1KW L N 25 — 100 — H7BW

- **Built-in magnet**
- **Non-rotating rod type**
- **Double acting, double rod type**
- **Mounting style**

B	Basic style
L	Axial foot style
F	Rod side flange style
U	Rod side trunnion style

Note) Mounting brackets are shipped together, (but not assembled).

- **Cushion**

N	Non-lube/Rubber bumper

- **Bore size**

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm

- **Cylinder stroke (mm)**
  Refer to "Standard Stroke" on page 6-5-36.
- **Auto switch**

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

- **Number of auto switches**

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

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model / Applicable bore size (mm) 20 to 63	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	C76	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	B54	●	●	●	—	—		Relay, PLC
							100 V	C73	●	●	●	—	—		
		Connector					—	C73C	●	●	●	●	—	—	
	Diagnostic indication (2-color indication)	Grommet				—		B59W	●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	H7A1	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				H7A2	●	●	○	—	○		
				2-wire		12 V		H7B	●	●	○	—	○	—	
		Connector						H7C	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		H7NW	●	●	○	—	○	IC circuit	
				3-wire (PNP)				H7PW	●	●	○	—	○		
				2-wire		12 V		H7BW	●	●	○	—	○	—	
	Water resistant (2-color indication)							H7BA	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		H7NF	●	●	○	—	○	IC circuit	

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

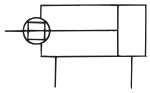
• Since there are other applicable auto switches than listed, refer to page 6-5-39 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Non-rotating accuracy
ø20, ø25····· ±1°
ø32 ····· ±0.8°
ø40 to ø63 ····· ±0.5°

High speed operation/Long service life
Piston speed is between 50 and 500 mm/s and long service life is expected.

Can operate without lubrication.
The same installation dimensions as the standard cylinder.
Auto switches can also be mounted.
It can be installed with auto switches to simplify the detection of the stroke position of the cylinder.

JIS Symbol



Specifications

Bore size (mm)	20	25	32	40	50	63
Action	Double acting, Double rod					
Type	Non-lube					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.08 MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)					
Piston speed	50 to 500 mm/s					
Thread tolerance	JIS Class 2					
Stroke length tolerance	Up to 600 $^{st+1.4}_{0}$ mm					
Cushion	Rubber bumper					
Rod non-rotating accuracy	±1°		±0.8°	±0.5°		
Mounting	Basic style, Axial foot style, Rod side flange style, Rod side trunnion style					

Accessory

Mounting		Basic style	Axial foot style	Rod side flange style	Rod side trunnion style
Standard equipment	Rod end nut	●	●	●	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint (With pin) **	●	●	●	●
	Pivot bracket	—	—	—	●*

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

Standard Stroke

Bore size (mm)	Standard stroke (mm)(1)	Long stroke (mm)
20	25, 50, 75, 100, 125, 150, 200	—
25	25, 50, 75, 100, 125, 150, 200, 250, 300	—
32		—
40		301 to 500
50, **63**		301 to 600

Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.
Note 2) The maximum limit is 1500 stroke, but the products that exceed the standard or long stroke limit are not guaranteed.

Weight

(kg)

Bore size (mm)		20	25	32	40	50	63
Basic weight	Basic style	0.13	0.22	0.33	0.55	1.02	1.37
	Axial foot style	0.24	0.35	0.49	0.77	1.50	2.09
	Flange style	0.21	0.32	0.47	0.75	1.36	1.87
	Trunnion style	0.14	0.24	0.36	0.60	1.16	1.51
Pivot bracket		0.08	0.09	0.17	0.25	0.44	0.80
Single knuckle joint		0.05	0.09	0.09	0.10	0.22	0.22
Double knuckle joint (With pin)		0.05	0.09	0.09	0.13	0.26	0.26
Additional weight per each 50 mm of stroke		0.07	0.10	0.13	0.23	0.34	0.38

Calculation: (Example) CG1KWLN32-100 (Foot style, ø32, 100 st)
• Basic weight·····0.49 (Foot, ø32) • Cylinder stroke·····100 st
• Additional weight·····0.13/50 st 0.49 + 0.13 x 100/50 = 0.75 kg

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)					
	20	25	32	40	50	63
Axial foot *	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063
Flange	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063
Trunnion pin	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063
Pivot bracket	CG-020 -24A	CG-025 -24A	CG-032 -24A	CG-040 -24A	CG-050 -24A	CG-063 -24A

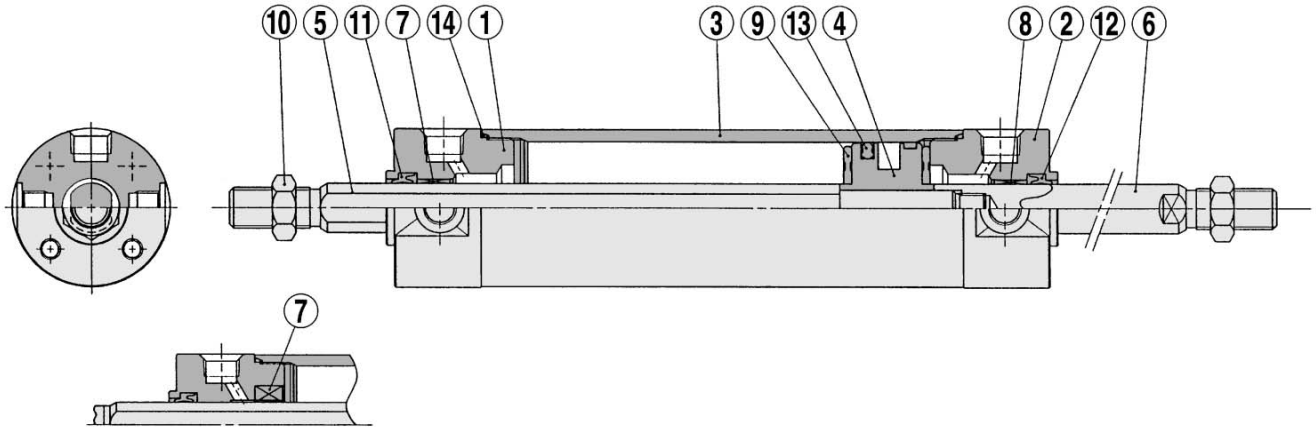
* Order two foot brackets per a cylinder.
** Mounting bolts are shipped together for foot style and flange style.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)					
	20	25	32	40	50	63
D-C7/C8	BMA2 -020	BMA2 -025	BMA2 -032	BMA2 -040	BMA2 -050	BMA2 -063
D-H7						
D-B5/B6	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06
D-G5/K5						

* Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(Please order the mounting band separately, since it is not included.)
BBA3: For D-B5/B6/G5/K5
BBA4: For D-C7/C8/H7
• D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.
When only a switch is shipped independently, BBA3 or BBA4 screws are attached.

Construction



ø20 to ø32

Component Parts

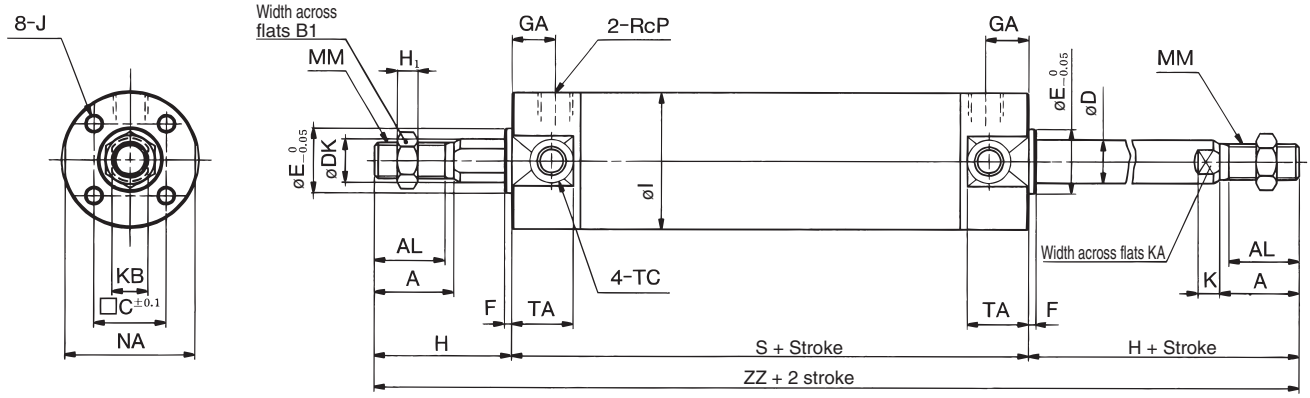
No.	Description	Material	Description
①	Rod cover A	Aluminum alloy	Clear hard anodized
②	Rod cover B	Aluminum alloy	Clear hard anodized
③	Cylinder tube	Aluminum alloy	Hard anodized
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod A	Carbon steel *	Hard chrome plated
⑥	Piston rod B	Carbon steel **	Hard chrome plated
⑦	Non-rotating guide	Oil-impregnated sintered alloy	
⑧	Bushing	Oil-impregnated sintered alloy	ø40 or larger: Lead-bronze casted *
⑨	Bumper	Urethane	
⑩	Rod end nut	Rolled steel	
⑪	Rod seal A	NBR	
⑫	Rod seal B	NBR	
⑬	Piston seal	NBR	
⑭	Tube gasket	NBR	

* The material is stainless steel for ø20 to ø32.
** The material is stainless steel on auto switch equipped style ø20 and ø25.
*** A magnet is equipped on the piston of the cylinder with auto switch.

Replacement Parts: Seal Kit for Rubber Bumper

Bore size (mm)	Kit no.	Contents
20	CG1KWN20-PS	Set of the nos. ⑪, ⑫, ⑬, ⑭
25	CG1KWN25-PS	
32	CG1KWN32-PS	
40	CG1KWN40-PS	
50	CG1KWN50-PS	
63	CG1KWN63-PS	

Basic Style with Rubber Bumper: CG1KWBN



Bore size (mm)	Stroke range (mm)	A	AL	B_1	C	D	DK	E	F	GA	H_1	I	J	K	KA	KB	MM	NA	P	S
20	Up to 200	18	15.5	13	14	8	9.2	12	2	12	5	26	M4 x 0.7 depth 7	5	6	8	M8 x 1.25	24	1/8	77
25	Up to 300	22	19.5	17	16.5	10	11	14	2	12	6	31	M5 x 0.8 depth 7.5	5.5	8	10	M10 x 1.25	29	1/8	77
32	Up to 300	22	19.5	17	20	12	12	18	2	12	6	38	M5 x 0.8 depth 8	5.5	10	10	M10 x 1.25	35.5	1/8	79
40	Up to 500	30	27	19	26	16	16	25	2	13	8	47	M6 x 1 depth 12	6	14	14	M14 x 1.5	44	1/8	87
50	Up to 600	35	32	27	32	20	20	30	2	14	11	58	M8 x 1.25 depth 16	7	18	18	M18 x 1.5	55	1/4	102
63	Up to 600	35	32	27	38	20	20	32	2	14	11	72	M10 x 1.5 depth 16	7	18	18	M18 x 1.5	69	1/4	102

Bore size (mm)	TA	TC	H	ZZ
20	11	M5 x 0.8	35	147
25	11	M6 x 0.75	40	157
32	11	M8 x 1.0	40	159
40	12	M10 x 1.25	50	187
50	13	M12 x 1.25	58	218
63	13	M14 x 1.5	58	218

Note) Dimensions are the same as CG1W standard type.
Refer to page 6-5-20.

• Old number is CG1□N□-□-XC21 as made-to-order.

⚠ Precautions

Be sure to read before handling. Refer to pages 6-20-3 to 6-20-6 for Safety Instructions and Actuator Precautions.

Caution on Handling/Disassembly

⚠ Caution

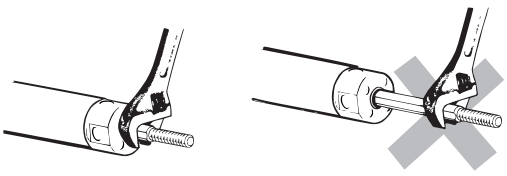
1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

• If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy. Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque (N·m or less)	ø20	ø25, ø32	ø40, ø50, ø63
	0.2	0.25	0.44

• To screw a bracket or a nut onto the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes.

Tighten it by giving consideration to prevent the tightening torque from being applied to the non-rotating guide.

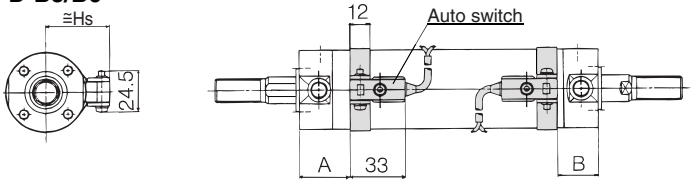


2. When replacing rod seals, please contact SMC.

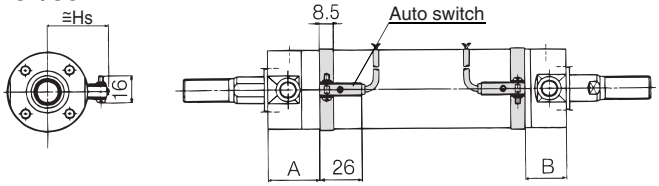
Air leakage may be happened, depending on the position in which a rod seal is fitted. Thus, please contact SMC when replacing them.

Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

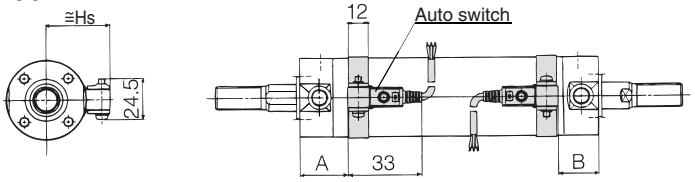
D-B5/B6



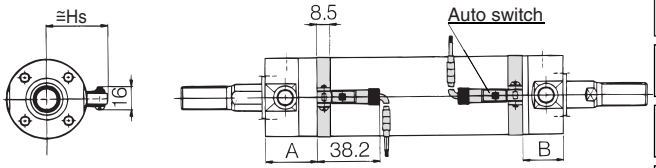
D-C7/C8



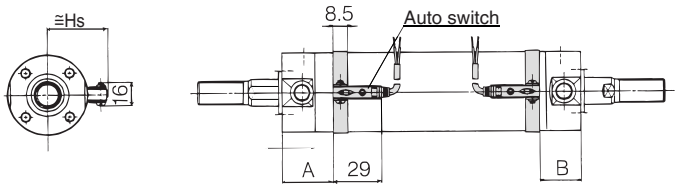
G5NTL



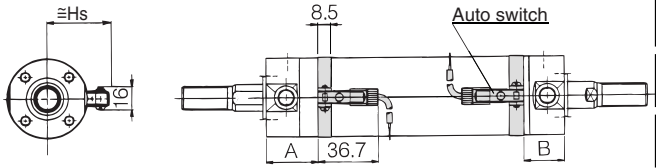
D-H7C



D-H7□/H7□W/H7NF/H7BAL



D-C73C



Bore size (mm)	D-C7, D-C8			D-C73C, D-C80C			D-B5, D-B6			D-B59W		
	A	B	Hs	A	B	Hs	A	B	Hs	A	B	Hs
20	30	28.5	24.5	30	28.5	27	24	22.5	27	27	25.5	27.5
25	30	28.5	27	30	28.5	29.5	24	22.5	30	27	25.5	30
32	31	29.5	30.5	31	29.5	33	25	23.5	33.5	28	26.5	33.5
40	35.5	32.5	35	35.5	32.5	37.5	29.5	26.5	38	32.5	29.5	38
50	43	40.5	40.5	43	40.5	43	37	34.5	43.5	40	37.5	43.5
63	43	40.5	47.5	43	40.5	50	37	34.5	50.5	40	37.5	50.5

Bore size (mm)	D-H7□ D-H7□W D-H7C D-H7BAL			D-H7NF			D-H7C		
	A	B	Hs	A	B	Hs	A	B	Hs
20	29	27.5	24.5	27.5	26	24.5	29	27.5	27.5
25	29	27.5	27	27.5	26	27	29	27.5	30
32	30	28.5	30.5	28.5	27	30.5	30	28.5	33.5
40	34.5	31.5	35	33	30	35	34.5	31.5	38
50	42	39.5	40.5	40.5	38	40.5	42	39.5	43.5
63	42	39.5	47.5	40.5	38	47.5	42	39.5	50.5

Operating Range

Auto switch model	Bore size (mm)					
	20	**25**	**32**	**40**	**50**	**63**
D-C7□/C80/C73C/C80C D-B5□/B64	8	10	9	10	10	11
D-B59W	13	13	14	14	14	17
D-H7NF, D-H7□/H7□W/H7BAL	4	4	4.5	5	6	6.5
D-H7C	7	8.5	9	10	9.5	10.5
D-G5NTL	4	4	4.5	5	6	6.5
D-G5NBL	35	40	40	45	45	45

∗ 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. For detailed specifications, refer to page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 63
	D-C80C	Connector		
	D-B53	Grommet	—	
	D-B64		Without indicator light	

∗ Timer equippede type, solid state auto switch (D-G5NTL) is also available.
∗ Wide range detection type, solid state auto switch (D-G5NBL) is also available.
∗ With pre-wide connector is available for D-G5NTL and D-G5NBL.

Air Cylinder: Direct Mount Type
Double Acting, Single Rod
Series CG1R
ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Without auto switch CG1R **N** **25** — **100**

With auto switch CDG1R **N** **25** — **100** — **H7BW** **□**

Built-in magnet

Cushion

N	Non-lube/Rubber bumper
A	Non-lube/Air cushion

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 6-16-41.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model / Applicable bore size (mm) 20 to 63	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**C76**	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	**B54**	●	●	●	—	—		Relay, PLC
							100 V	**C73**	●	●	●	—	—		
		Connector					—	**C73C**	●	●	●	●	—	—	
	Diagnostic indication (2-color indication)	Grommet				—		**B59W**	●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**H7A1**	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				**H7A2**	●	●	○	—	○		
				2-wire		12 V		**H7B**	●	●	○	—	○	—	
		Connector						**H7C**	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		**H7NW**	●	●	○	—	○	IC circuit	
				3-wire (PNP)				**H7PW**	●	●	○	—	○		
				2-wire		12V		**H7BW**	●	●	○	—	○	—	
	Water resistant (2-color indication)							**H7BA**	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		**H7NF**	●	●	○	—	○	IC circuit	

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

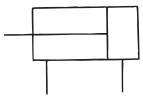
• Since there are other applicable auto switches than listed, refer to page 6-5-45 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Series CG1R direct mount cylinder can be installed directly through the use of a square rod cover.

Space-saving has been realized.

Because it is a directly mounted style without using brackets, its overall length is shorter, and its installation pitch can be made smaller. Thus, the space that is required for installation has been dramatically reduced.

JIS Symbol



Made to Order Specifications (For details, refer to page 6-17-1.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (150°C)
-XB7	Cold resistant cylinder
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC6	Piston rod and rod end nut made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC13	Auto switch rail mounting
-XC20	Head cover axial port
-XC22	Fluoro rubber seals

Specifications

Bore size (mm)	20	25	32	40	50	63
Action	Double acting, Single rod					
Type	Non-lube					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.05 MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)					
Piston speed	50 to 1000 mm/s					
Thread tolerance	JIS Class 2					
Stroke length tolerance	Up to 300 $^{st\ +1.4}_{\ 0}$ mm					
Cushion	Rubber bumper, Air cushion					

Weight

(kg)

Bore size (mm)	20	25	32	40	50	63
Basic weight	0.14	0.23	0.35	0.57	1.04	1.49
Single knuckle joint	0.05	0.09	0.09	0.10	0.22	0.22
Double knuckle joint (With pin)	0.05	0.09	0.09	0.13	0.26	0.26
Additional weight per each 50 mm of stroke	0.05	0.07	0.09	0.15	0.22	0.26
Additional weight with air cushion	0.01	0.01	0.02	0.02	0.03	0.03

Calculation: (Example) CG1RN32-100 (ø32, 100 st)

- Basic weight····· 0.35
- Additional weight····· 0.09/50 st
- Cylinder stroke·····100 st

0.35 + 0.09 x 100/50 = 0.53 kg

Accessory

Mounting		Basic style
Standard equipment	Rod end nut	●
Option	Single knuckle joint	●
	Double knuckle joint * (With pin)	●

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

Standard Stroke

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

* Other intermediate strokes can be manufactured upon receipt of order. Long strokes are not available.
Spacers are not used for intermediate strokes.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)					
	20	25	32	40	50	63
D-C7/C8	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063
D-H7						
D-B5/B6	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06
D-G5						

* Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(Please order the mounting band separately, since it is not included.)
BBA3: For D-B5/B6/G5
BBA4: For D-C7/C8/H7

- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped. When a switch only is shipped, BBA3 or BBA4 screws are attached.

Clean Series

10-CG1RN Bore size — Stroke

Clean Series (With relief port)

The rod portion of the actuator has a double seal construction, and a relief port is provided to discharge the exhaust air directly outside of the clean room.
Thus, it can be used in a Class 100 clean room.

Specifications

Bore size (mm)	20, 25, 32, 40, 50, 63
Action	Double acting
Fluid	Air
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.05 MPa
Cushion	Rubber bumper
Piston speed	50 to 400 mm/s
Relief port size	M5 x 0.8

∗ Auto switch can be mounted.

For detailes, refer to the separate catalog, "Pneumatic Clean Series".

Copper-free

20-CG1R Type — Bore size — Stroke

Copper-free

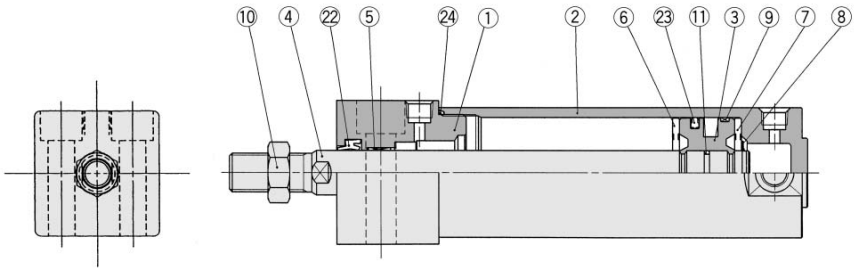
This cylinder eliminates any influences of copper ions or fluororesins on color CRTs.
Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

Specifications

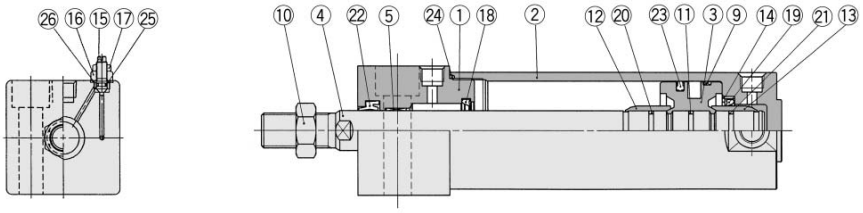
Bore size (mm)		20, 25, 32, 40, 50, 63
Action		Double acting
Fluid		Air
Maximum operating pressure		1.0 MPa
Minimum operating pressure		0.05 MPa
Cushion	Type N	With rubber bumper
	Type A	With air cushion
Relief port size		50 to 1000 mm/s

Construction

Basic style: Bottom mounting style/with rubber bumper



With air cushion



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Tube cover	Aluminum alloy	Clear hard anodized
③	Piston	Aluminum alloy	Chromated
④	Piston rod	Carbon steel *	Hard chrome plated
⑤	Bushing	Oil-impregnated sintered alloy	ø40 or larger: Lead-bronze casted
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	ø40 or larger: The same as bumper A
⑧	Snap ring	Stainless steel	
⑨	Wear ring	Resin	
⑩	Rod end nut	Rolled steel	Nickel plated
⑪	Piston gasket	NBR	
⑫	Cushion ring A	Brass	
⑬	Cushion ring B	Brass	ø32 or larger: The same as A
⑭	Seal retainer	Rolled steel	
⑮	Cushion valve	Rolled steel	Electroless nickel plated
⑯	Valve retainer	Rolled steel	Electroless nickel plated
⑰	Lock nut	Carbon steel	Nickel plated
⑱	Cushion seal A	Urethane	
⑲	Cushion seal B	Urethane	
⑳	Cushion ring gasket A	NBR	
㉑	Cushion ring gasket B	NBR	ø32 or larger: The same as A
㉒	Rod seal	NBR	
㉓	Piston seal	NBR	
㉔	Tube gasket	NBR	
㉕	Valve seal	NBR	
㉖	Valve retaining gasket	NBR	

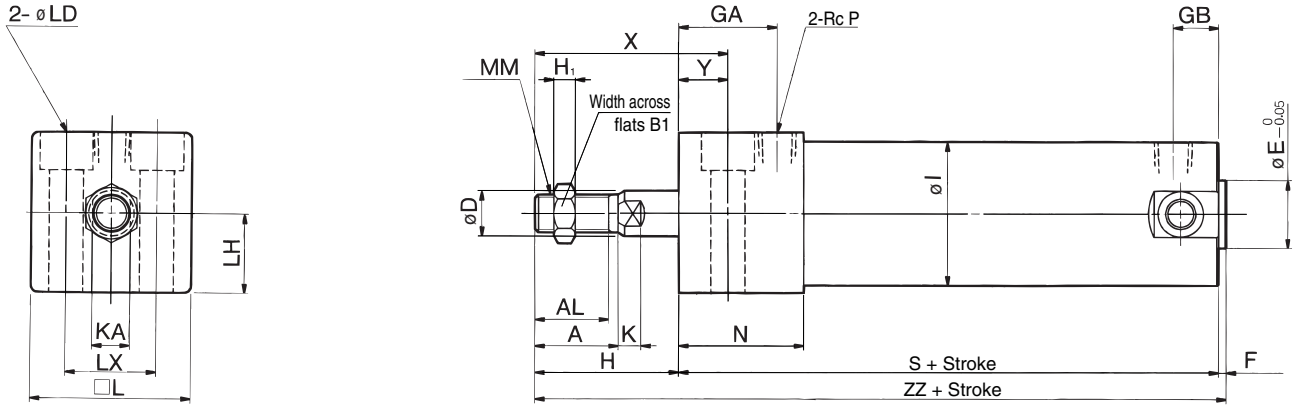
Note) In the case of cylinders with auto switches, rubber magnets are installed in the piston.

* The material is stainless steel on auto switch equipped styles ø20 and ø25.

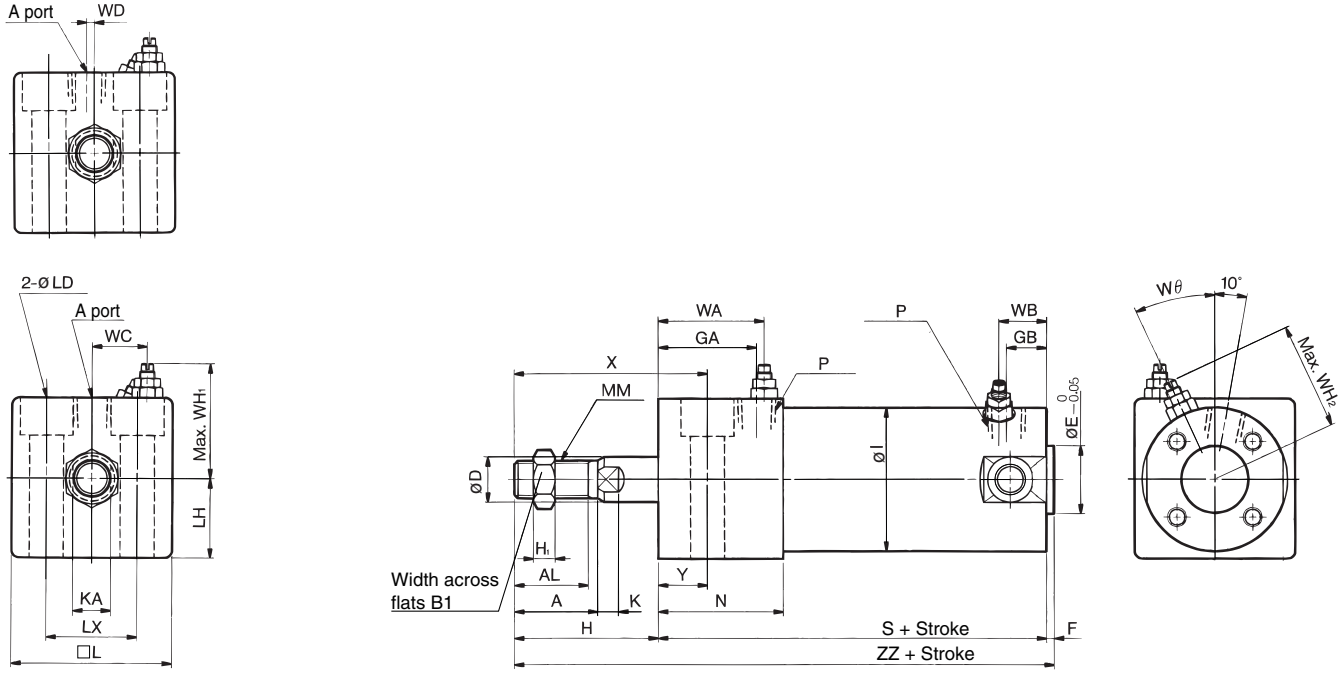
Replacement parts/Seal kit are the same as standard type, double acting, single rod. Refer to page 6-5-7.

Basic Style with Bottom Mounting

With rubber bumper: CG1RN



With air cushion: CG1RA



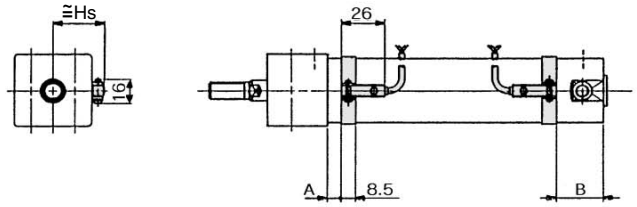
Bore size (mm)	Stroke range (mm)	A	AL	B_1	D	E	F	GA	GB	H	H_1	I	K	KA	L	LD	LH	LX	MM	N	P	S	X	Y	ZZ
20	Up to 150	18	15.5	13	8	12	2	20	10	27	5	26	5	6	30.4	ø5.5, ø9.5 counterbore depth 6	15	18	M8 x 1.25	27	1/8	75	38	11	104
25	Up to 200	22	19.5	17	10	14	2	22	10	32	6	31	5.5	8	36.4	ø6.6, ø11 counterbore depth 7	18	22	M10 x 1.25	29	1/8	77	44	12	111
32	Up to 200	22	19.5	17	12	18	2	26	10	32	6	38	5.5	10	42.4	ø9, ø14 counterbore depth 9	21	24	M10 x 1.25	33	1/8	83	45	13	117
40	Up to 300	30	27	19	16	25	2	30	10	39	8	47	6	14	52.4	ø11, ø17.5 counterbore depth 12	26	32	M14 x 1.5	37	1/8	94	55	16	135
50	Up to 300	35	32	27	20	30	2	33	12	45	11	58	7	18	64.5	ø14, ø20 counterbore depth 14	32	41	M18 x 1.5	44	1/4	108	62	17	155
63	Up to 300	35	32	27	20	32	2	39	12	45	11	72	7	18	76.6	ø18, ø26 counterbore depth 18	38	46	M18 x 1.5	50	1/4	114	64	19	161

With Air Cushion

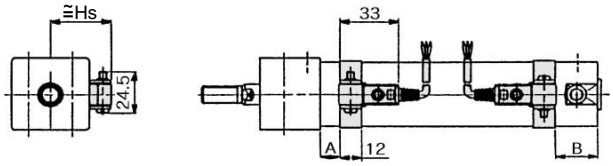
Bore size (mm)	Stroke range (mm)	P	WA	WB	WC	WD	WH	WH_2	Wθ
20	Up to 150	M5 x 0.8	22	15	8.5	2	25	23	30°
25	Up to 200	M5 x 0.8	24	15	11	2	27.5	25	30°
32	Up to 200	Rc 1/8	28	15	14.5	—	30.5	28.5	25°
40	Up to 300	Rc 1/8	32	15	18.5	—	35.5	33	20°
50	Up to 300	Rc 1/4	36	17	22	—	43.5	40.5	20°
63	Up to 300	Rc 1/4	42	17	29	—	49.5	47.5	20°

Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

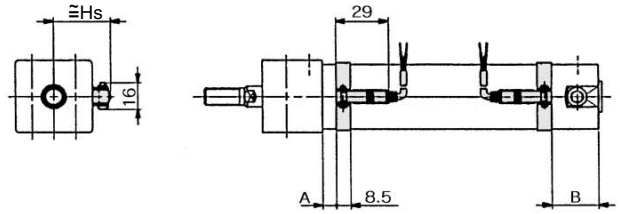
D-C7



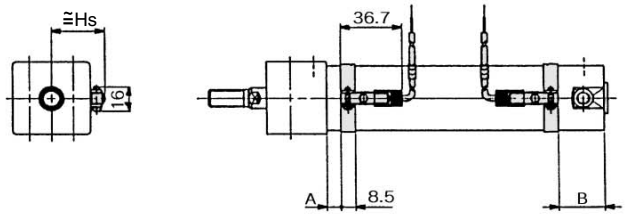
D-G5, D-K5



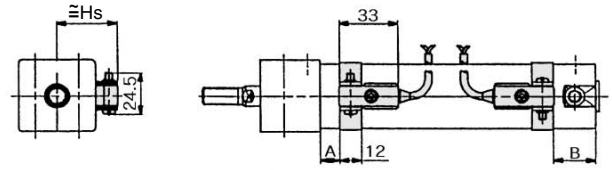
D-H7



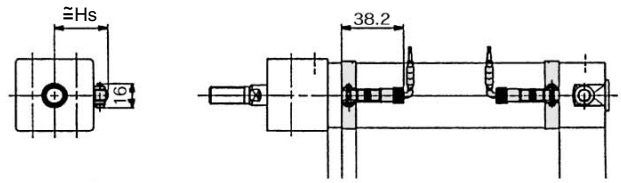
D-C73C



D-B5



D-H7C



Proper Auto Switch Mounting Position

Auto switch model / Applicable bore size (mm)	D-C7/C8 D-C73C/ C80C		D-B5/B6		D-B59W		D-H7□W D-H7NF D-H7BAL D-H7□ D-H7C		D-G5NTL	
	A	B	A	B	A	B	A	B	A	B
20	9	20.5	3	15.5	6	17.5	8	19.5	4.5	16
25	9	20.5	3	15.5	6	17.5	8	19.5	4.5	16
32	10	21.5	4	15.5	7	18.5	9	20.5	5.5	17
40	14.5	23.5	8.5	19	11.5	20.5	13.5	22.5	10	19
50	17	28.5	11	22.5	14	25.5	16	27.5	12.5	24
63	17	28.5	11	22.5	14	25.5	16	27.5	12.5	24

Auto Switch Mounting Height

D-C7/C8 D-H7□ D-H7□W D-H7□F D-H7BAL	D-C73C D-C80C	D-B5/B6 D-B59W D-G5NTL D-H7C
Hs	**Hs**	**Hs**
24.5	27	27.5
27	29.5	30
30.5	33	33.5
35	37.5	38
40.5	43	43.5
47.5	50	50.5

Operating Range

Auto switch model	Bore size (mm)					
	20	**25**	**32**	**40**	**50**	**63**
D-C7□/C80/C73C/C80C D-B5□/B64	8	10	9	10	10	11
D-B59W	13	13	14	14	14	17
D-H7NF/D-H7□/H7□W/H7BAL	4	4	4.5	5	6	6.5
D-H7C	7	8.5	9	10	9.5	10.5
D-G5NTL	4	4	4.5	5	6	6.5
D-G5NBL	35	40	40	45	45	45

∗ 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. For detailed specifications, refer to page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 63
	D-C80C	Connector		
	D-B53	Grommet	—	
	D-B64		Without indicator light	

∗ Timer equipped type, solid state auto switch (D-G5NTL) is also available.
∗ Wide range detection type, solid state auto switch (D-G5NBL) is also available.
∗ With pre-wire connector is available for D-G5NTL and D-G5NBL.

Air Cylinder: Direct Mount, Non-rotating Rod
Double Acting, Single Rod
Series CG1KR
ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Without auto switch CG1KRN 25 — 100

With auto switch CDG1KRN 25 — 100 — H7BW [ ]

Built-in magnet

Non-rotating rod type

Mounting style

N	Non-lube/Rubber bumper

Note) Air cushion type "CG1KRA" is a made-to-order product.

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 6-5-47.

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Applicable bore size (mm) 20 to 63	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	5 V	—	**C76**	●	●	—	—	—	IC circuit	—
				2-wire	12 V	100 V, 200 V	**B54**	●	●	●	—	—	—	Relay, PLC
						100 V	**C73**	●	●	●	—	—		
		Connector				—	**C73C**	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet			—		**B59W**	●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	**H7A1**	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)			**H7A2**	●	●	○	—	○		
				2-wire	12 V		**H7B**	●	●	○	—	○	—	
		Connector					**H7C**	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		**H7NW**	●	●	○	—	○	IC circuit	
				3-wire (PNP)			**H7PW**	●	●	○	—	○		
				2-wire	12 V		**H7BW**	●	●	○	—	○	—	
	Water resistant (2-color indication)						**H7BA**	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		**H7NF**	●	●	○	—	○	IC circuit	

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

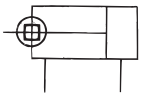
• Since there are other applicable auto switches than listed, refer to page 6-5-51 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Series CG1KR direct mount, non-rotating rod type cylinder can be installed directly through the use of a square rod cover.

Space-saving has been realized.

Because it is a directly mounted style without using brackets, its overall length is shorter, and its installation pitch can be made smaller. Thus, the space that is required for installation has been dramatically reduced.

JIS Symbol



Made to Order Specifications (For details, refer to page 6-17-1.)

Symbol	Specifications
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC20	Head cover axial port

Specifications

Bore size (mm)	20	25	32	40	50	63
Action	Double acting, Single rod					
Type	Non-lube					
Fluid	Air					
Proof pressure	1.5 MPa					
Maximum operating pressure	1.0 MPa					
Minimum operating pressure	0.05 MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)					
Piston speed	50 to 500 mm/s					
Thread tolerance	JIS Class 2					
Stroke length tolerance	Up to 300 $^{st\ +1.4}_{0}$ mm					
Cushion	Rubber bumper					
Rod non-rotating accuracy	±1°		±0.8°	±0.5°		

Weight

(kg)

Bore size (mm)	20	25	32	40	50	63
Basic weight	0.14	0.24	0.35	0.56	1.04	1.48
Single knuckle joint	0.05	0.09	0.09	0.10	0.22	0.22
Double knuckle (With pin)	0.05	0.09	0.09	0.13	0.26	0.26
Additional weight per each 50 mm of stroke	0.05	0.07	0.09	0.15	0.22	0.26

Calculation: (Example) CG1KRN32-100 (ø32, 100 st)
- Basic weight·····0.35
- Additional weight·····0.09/50 st
- Cylinder stroke·····100 st

0.35 + 0.09 x 100/50 = 0.53 kg

Standard Stroke

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

* Other intermediate strokes can be manufactured upon receipt of order. Long strokes are not available.
Spacers are not used for intermediate strokes.

Accessory

Mounting		Basic style
Standard equipment	Rod end nut	●
Option	Single knuckle joint	●
	Double knuckle joint * (With pin)	●

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

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)					
	20	**25**	**32**	**40**	**50**	**63**
D-C7/C8 **D-H7**	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063
D-B5/B6 **D-G5**	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06

* Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(Please order the mounting band separately, since it is not included.)
BBA3: For D-B5/B6/G5
BBA4: For D-C7/C8/H7
- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.
When only a switch is shipped independently, BBA3 or BBA4 screws are attached.

Caution on Handling/Disassembly

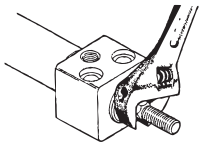
⚠ Caution

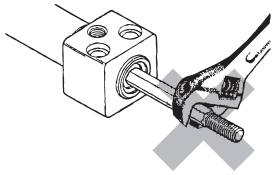
1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

- If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy. Refer to the table below for the allowable range of rotational torque.

Allowable rotational torque (N·m or less)	ø20	ø25, ø32	ø40, ø50, ø63
	0.2	0.25	0.44

- To screw a bracket or a nut onto the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes.
Tighten it by giving consideration to prevent the tightening torque from being applied to the non-rotating guide.



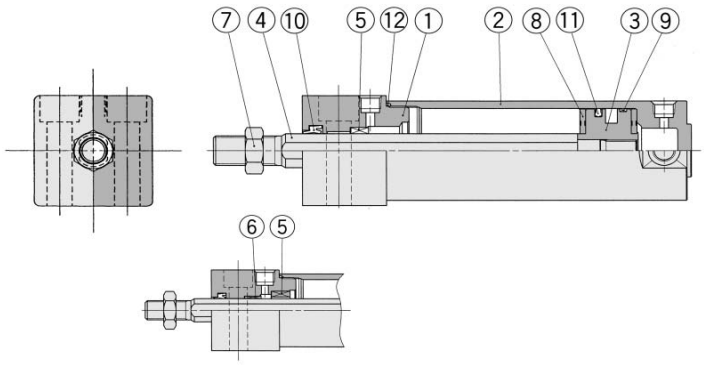


2. When replacing rod seals, please contact SMC.

Air leakage may be happened, depending on the position in which a rod seal is fitted. Thus, please contact SMC when replacing them.

Construction

Non-rotating rod type/Bottom mounting style



ø20 to ø32

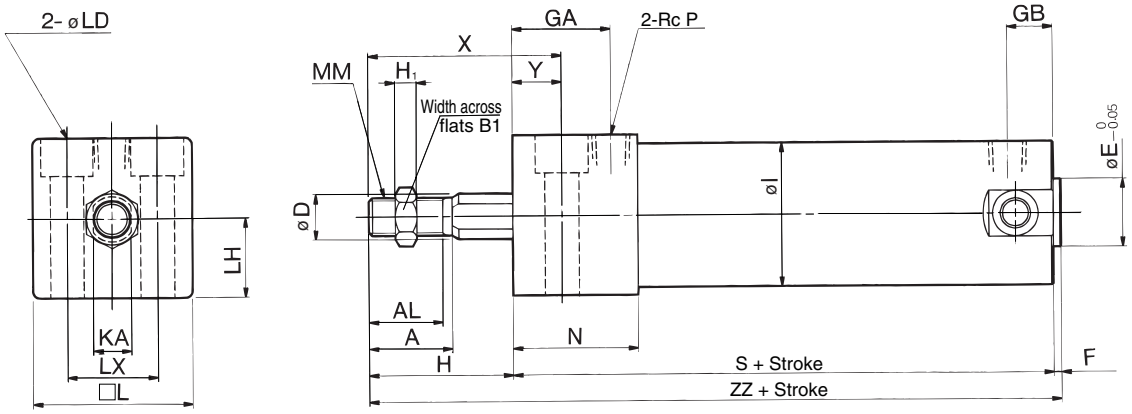
Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Tube cover	Aluminum alloy	Clear hard anodized
③	Piston	Aluminum alloy	Chromated
④	Piston rod	Carbon steel *	Hard chrome plated
⑤	Non-rotating guide	Oil-impregnated sintered alloy	
⑥	Bushing	Oil-impregnated sintered alloy	ø20 to ø32 only
⑦	Rod end nut	Rolled steel	Nickel plated
⑧	Bumper	Urethane	
⑨	Wear ring	Resin	
⑩	Rod seal	NBR	
⑪	Piston seal	NBR	
⑫	Tube gasket	NBR	

* The material is stainless steel for ø20, ø25 and ø32.

Replacement parts/Seal kits are the same as double acting, non-rotating rod type. Refer to page 6-5-33.

Basic Style with Bottom Mounting: CG1KRN



Bore size (mm)	Stroke range (mm)	A	AL	B_1	D	E	GA	GB	H	H_1	I	KA	L	LD	LH	LX	MM	N	P	S	X	Y	ZZ
20	Up to 150	18	15.5	13	9.2	12	20	10	27	5	26	8	30.4	ø5.5, ø9.5 counterbore depth 6	15	18	M8 x 1.25	27	1/8	75	38	11	104
25	Up to 200	22	19.5	17	11	14	22	10	32	6	31	10	36.4	ø6.6, ø11 counterbore depth 7	18	22	M10 x 1.25	29	1/8	77	44	12	111
32	Up to 200	22	19.5	17	12	18	26	10	32	6	38	10	42.4	ø9, ø14 counterbore depth 9	21	24	M10 x 1.25	33	1/8	83	45	13	117
40	Up to 300	30	27	19	16	25	30	10	39	8	47	14	52.4	ø11, ø17.5 counterbore depth 12	26	32	M14 x 1.5	37	1/8	94	55	16	135
50	Up to 300	35	32	27	20	30	33	12	45	11	58	18	64.5	ø14, ø20 counterbore depth 14	32	41	M18 x 1.5	44	1/4	108	62	17	155
63	Up to 300	35	32	27	20	32	39	12	45	11	72	18	76.6	ø18, ø26 counterbore depth 18	38	46	M18 x 1.5	50	1/4	114	64	19	161

Auto switch mounting position is the same as that on page 6-5-45.

Air Cylinder: Low Friction Type
Double Acting, Single Rod
Series CG1□Q
ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch CG1 **L** **Q** **25** — **100** **F**

With auto switch CDG1 **L** **Q** **25** — **100** **F** — **H7BW** **□**

Built-in magnet

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
U*	Rod side trunnion style
T*	Head side trunnion style
D	Clevis style

* Not available for ø80 and ø100.
Note) Mounting brackets are shipped together, (but not assembled).

Low friction type

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

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 6-5-50.

Auto switch

Nil	Without auto switch (Built-in magnet)

* For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Low friction direction

F	When pressurized at head end
B	When pressurized at rod end

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Applicable bore size (mm) 20 to 63	Auto switch model: Applicable bore size (mm) 80, 100	Lead wire length (m)* 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**C76**	**—**	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	**B54**	**—**	●	●	●	—	—		
							100 V	**C73**	**—**	●	●	●	—	—		
		Connector					—	**C73C**		●	●	●	●	—	—	Relay, PLC
	Diagnostic indication (2-color indication)	Grommet				—		**B59W**		●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**H7A1**	**G59**	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				**H7A2**	**G5P**	●	●	○	—	○		
				2-wire		12 V		**H7B**	**K59**	●	●	○	—	○	—	
		Connector						**H7C**	**—**	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		**H7NW**	**G59W**	●	●	○	—	○	IC circuit	
				3-wire (PNP)				**H7PW**	**G5PW**	●	●	○	—	○		
				2-wire		12 V		**H7BW**	**K59W**	●	●	○	—	○	—	
	Water resistant (2-color indication)							**H7BA**	**G5BA**	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		**H7NF**	**G59F**	●	●	○	—	○	IC circuit	

* Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

• Since there are other applicable auto switches than listed, refer to page 6-5-51 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Designed with a low sliding resistance of the piston, this air cylinder is ideal for applications such as contact pressure control, which requires smooth movements at low pressures.

Low sliding resistance

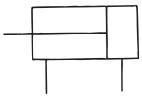
Stable sliding resistance

The sliding resistance remains stable even when the operating pressure changes.

Long strokes can be manufactured.

Auto switches can be mounted.

JIS Symbol



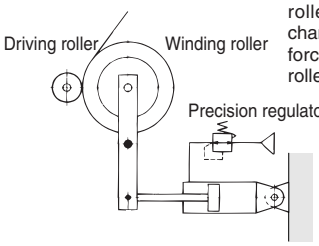
Made to Order

Made to Order Specifications (For details, refer to page 6-17-1.)

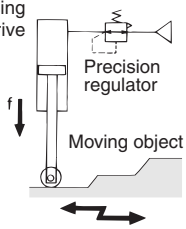
Symbol	Specifications
-XA□	Change of rod end shape
-XC6	Piston rod and rod end nut made of stainless steel

Application Example

Low friction cylinder is used in combination with precision regulator (Series IR).



1. Even if the external diameter of the winding roller changes, the changes in the pressing force against the drive roller are kept low.



2. Even if there is any change in the shape of the moving object, the changes in the f value of the cylinder's pressing force are kept low, resulting in a stable pressing force.

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							
Minimum operating pressure	0.025 MPa				0.01 MPa			
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)							
Piston speed	500 mm/s							
Stroke length tolerance	Up to 1000 $^{st\ +1.4}_{\ 0}$ mm							
Cushion	None				Rubber bumper			
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style, Clevis style (Used for changing the port location by 90°.)							
Direction of low friction	One direction (Refer to "Selection of the Direction".)							
Allowable leakage	0.5 ℓ/min (ANR) or less							

∗ Long stroke applies to the axial foot type and the rod side flange type.
Rod/Head side trunnion styles are not available for bore sizes ø80 and ø100.

Accessory

Mounting		Basic style	Axial foot style	Rod side flange style	Head side flange style	Rod side trunnion style	Head side trunnion style	Clevis style
Standard equipment	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (With pin) ∗∗	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●∗	●∗	●

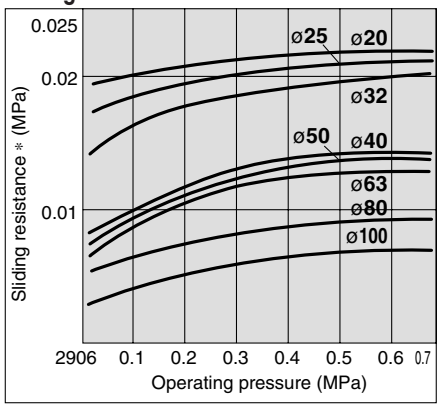
∗ Not available for bore size ø80 and ø100.
∗∗ Pin and snap ring are shipped together with double knuckle joint.

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)	Long stroke (mm)(2)
20	25, 50, 75, 100, 125, 150, 200	201 to 350
25	25, 50, 75, 100, 125, 150, 200 250, 300	301 to 400
32		301 to 450
40		301 to 500
50, **63**		301 to 1000
80		301 to 1000
100		301 to 1000

Note 1) Other intermediate strokes can be manufactured upon receipt of order.
Note 2) The longer the stroke is, the greater the sliding resistance could become, due to the deflection of the piston rod.
Therefore, consider installing a guide, etc. before using.
Note 3) Please contact SMC for applications that exceed the stroke range shown above.
(The maximum manufacturable stroke is 1500 mm.)

Sliding Resistance of the Low Friction Side



* Conversion into the cylinder operating pressure.

Selecting the Low Friction Direction

1. To use the air cylinder as a balancer, etc., pressurize it only from one of the ports as shown in the application example, and keep the other port open to the atmosphere.
   To operate by applying pressure from the rod cover port:
   Low friction direction B type (Application example (1))
   To operate by applying pressure from the head cover port:
   Low friction direction F type (Application example (2))
   In either case, if the piston rod is moved by an external force, it will operate with low friction for both in the extending and retracting directions.
2. When it is necessary to operate it as an ordinary double acting cylinder at an even lower operating speeds, use a low speed cylinder (refer to "Made to Order" on page 6-17-19).

Operating Precautions

⚠ Warning

1. **In the direction of low friction operation, speed control must be effected through the meter-in system.**
   With meter-out control, the exhaust pressure will increase and create a greater sliding resistance.

Weight

Bore size (mm)		20	25	32	40	50	63	80	100
Basic weight	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 weight per each 50 mm of stroke		0.05	0.07	0.09	0.15	0.22	0.26	0.35	0.49

Calculation (Example) CG1LQ20-100B
(Foot style, ø20, 100 st)

- Basic weight····· 0.22 (Foot, ø20)
- Additional weight····· 0.05/50 st
- Cylinder stroke·····100 st
- 0.22 + 0.05 x 100/50 = 0.32 kg

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)							
	20	25	32	40	50	63	80	100
Axial foot *	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	CG-L080	CG-L100
Flange	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	CG-F080	CG-F100
Trunnion	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	—	—
Clevis	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063	CG-D080	CG-D100
Pivot bracket **	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A	CG-080-24A	CG-100-24A

* Order two foot brackets per cylinder.
** Clevis pin, snap ring and mounting bolt are shipped for the clevis style.
*** Mounting bolts are shipped together for foot style and flange style.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)							
	20	25	32	40	50	63	80	100
D-C7/C8	BMA2-020	BMA2-025	BMA2-032	BMA2-040	BMA2-050	BMA2-063	—	—
D-H7								
D-B5/B6	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06	BA-08	BA-10
D-G5/K5								

* Mounting screws set made of stainless steel
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(Please order the mounting band separately, since it is not included.)
BBA3: For D-B5/B6/G5/K5
BBA4: For D-C7/C8/H7

- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped. When a switch only is shipped, BBA3 or BBA4 screws are attached.

* The material is stainless steel on auto switch equipped styles ø20 and ø25.

With Auto Switch

Auto switches can be mounted. Mounting position/height is the same as the double acting/single rod style.
Refer to pages 6-5-13.

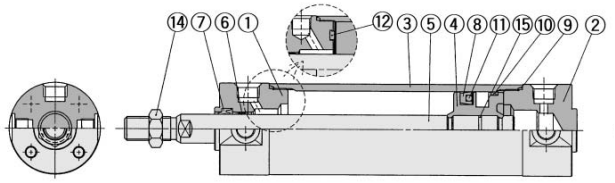
Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 63
	D-C80C	Connector		
	D-B53	Grommet	—	20 to 100
	D-B64		Without indicator light	

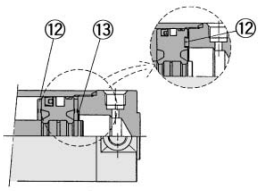
* Timer equipped type, solid state auto switch (D-G5NTL) is also available.
* Wide range detection type, solid state auto switch (D-G5NBL) is also available.
* With pre-wire connector is available for D-G5NTL and D-G5NBL.

Construction

ø80, ø100



ø80, ø100



ø40 to ø100

Component Parts

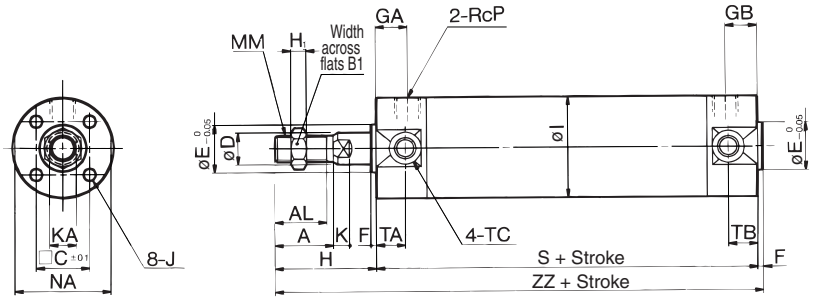
No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Head cover	Aluminum alloy	Clear hard anodized
③	Cylinder tube	Aluminum alloy	Hard anodized
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel *	Hard chrome plated
⑥	Bushing	Oil impregnated sintered alloy	ø40 and larger are lead-bronze casted
⑦	Rod seal	NBR	
⑧	Piston seal	NBR	
⑨	Tube gasket	NBR	
⑩	Wear ring	Resin	
⑪	Back up O-ring	NBR	
⑫	Bumper	Urethane	
⑬	Snap ring	Stainless steel	
⑭	Rod end nut	Rolled steel	Nickel plated
⑮	Piston gasket	NBR	

* Stainless steel is used as the material for ø20 and ø25 cylinder with auto switch.
* A magnet is equipped with the piston for cylinders with auto switch.

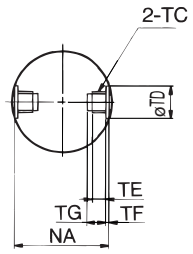
Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
20	CG1Q20-PS	Set of the nos. ⑦, ⑧, ⑨, ⑪
25	CG1Q25-PS	
32	CG1Q32-PS	
40	CG1Q40-PS	
50	CG1Q50-PS	
63	CG1Q63-PS	
80	CG1Q80-PS	
100	CG1Q100-PS	

Basic Style: CG1BQ



TA/TB cross section



TA/TB Cross Section

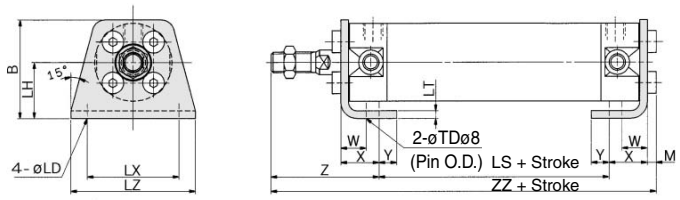
Bore size (mm)	TC *	TDH9	TE	TF	TG
20	M5 x 0.8	$8^{+0.08}_{0}$	4	0.5	5.5
25	M6 x 0.75	$10^{+0.08}_{0}$	5	1	6.5
32	M8 x 1.0	$12^{+0.08}_{0}$	5.5	1	7.5
40	M10 x 1.25	$14^{+0.08}_{0}$	6	1.25	8.5
50	M12 x 1.25	$16^{+0.08}_{0}$	7.5	2	10
63	M14 x 1.5	$18^{+0.08}_{0}$	11.5	3	14.5

* Trunnion mounting taps with width across flats NA are not attached for bore sizes ø80 and ø100.

Bore size (mm)	Stroke range (mm)	A	AL	B_1	C	D	E	F	GA	GB	H	H_1	I	J	K	KA	MM	NA	P	S	TA	TB	ZZ
20	Up to 350	18	15.5	13	14	8	12	2	12	12	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8	77	11	11	114
25	Up to 400	22	19.5	17	16.5	10	14	2	12	12	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8	77	11	11	119
32	Up to 450	22	19.5	17	20	12	18	2	12	12	40	6	38	M5 x 0.8 Depth 8	5.5	10	M10 x 1.25	35.5	1/8	79	11	11	121
40	Up to 500	30	27	19	26	16	25	2	13	13	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	87	12	12	139
50	Up to 1000	35	32	27	32	20	30	2	14	14	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5	55	1/4	102	13	13	162
63	Up to 1000	35	32	27	38	20	32	2	14	14	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5	69	1/4	102	13	13	162
80	Up to 1000	40	37	32	50	25	40	3	20	20	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5	80	3/8	122	—	—	196
100	Up to 1000	40	37	41	60	30	50	3	20	20	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5	100	1/2	122	—	—	196

With Mounting Bracket

Axial foot style: CG1LQ

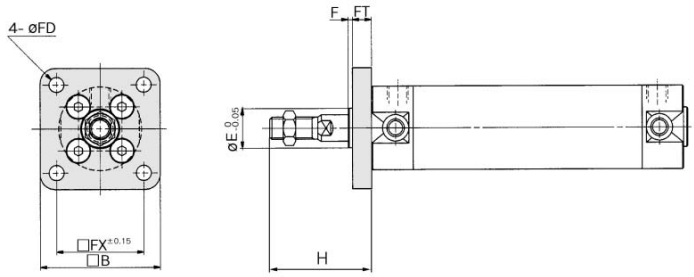


Axial Foot Style

Bore (mm)	B	LC	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
													Without rod boot	Without rod boot
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: CG1FQ

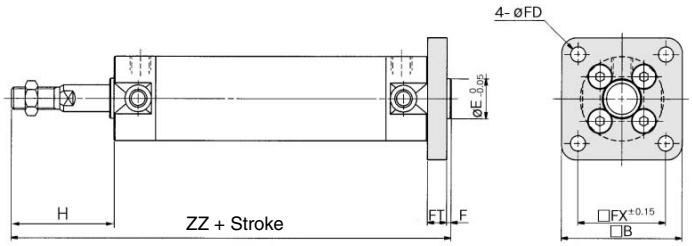


Flange Style

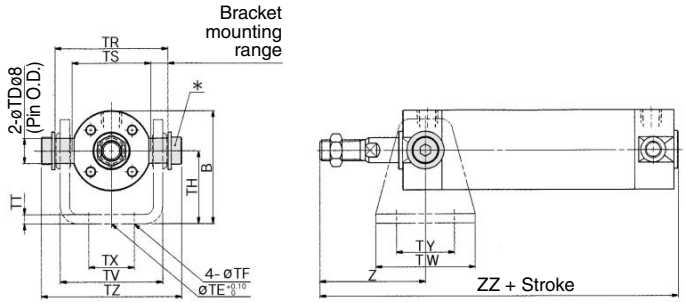
Bore (mm)	Stroke range		B	E	F	FX	FD	FT	H	Head side flange ZZ
	Rod side	Head side								Without rod boot
20	Up to 350	Up to 200	40	12	2	28	5.5	6	35	120
25	Up to 400	Up to 300	44	14	2	32	5.5	7	40	126
32	Up to 450	Up to 300	53	18	2	38	6.6	7	40	128
40	Up to 500	Up to 500	61	25	2	46	6.6	8	50	147
50	Up to 1000	Up to 600	76	30	2	58	9	9	58	171
63	Up to 1000	Up to 600	92	32	2	70	11	9	58	171
80	Up to 1000	Up to 750	104	40	3	82	11	11	71	207
100	Up to 1000	Up to 750	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.

Head side flange style: CG1GQ



Rod side trunnion style: CG1UQ



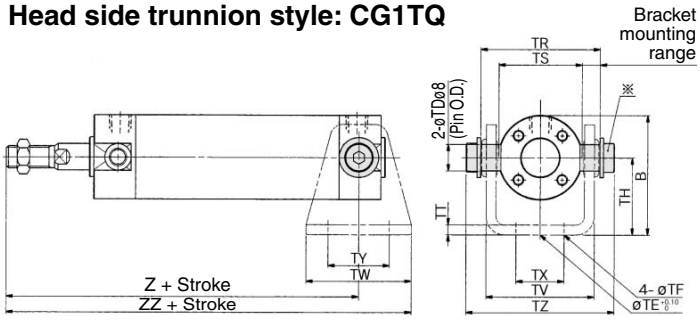
Trunnion Style

Bore (mm)	Stroke range		B	TDe8	TE	TF	TH	TR	TS	TT	TV
	Rod side	Head side									
20	Up to 200	Up to 200	38	8 $^{-0.025}_{-0.047}$	10	5.5	25	39	28	3.2	(35.8)
25	Up to 300	Up to 300	45.5	10 $^{-0.025}_{-0.047}$	10	5.5	30	43	33	3.2	(39.8)
32	Up to 300	Up to 300	54	12 $^{-0.032}_{-0.059}$	10	6.6	35	54.5	40	4.5	(49.4)
40	Up to 500	Up to 500	63.5	14 $^{-0.032}_{-0.059}$	10	6.6	40	65.5	49	4.5	(58.4)
50	Up to 600	Up to 600	79	16 $^{-0.032}_{-0.059}$	20	9	50	80	60	6	(72.4)
63	Up to 600	Up to 600	96	18 $^{-0.032}_{-0.059}$	20	11	60	98	74	8	(90.4)

Bore (mm)	TW	TX	TY	TZ	Rod side Z	Head side Z	Head side ZZ
					Without rod boot	Without rod boot	Without rod boot
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) For pivot bracket, refer to page 6-5-12.
∗ Other dimensions are the same as basic style.

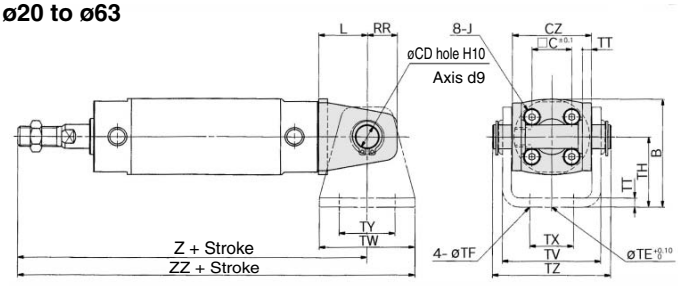
Head side trunnion style: CG1TQ



With Mounting Bracket

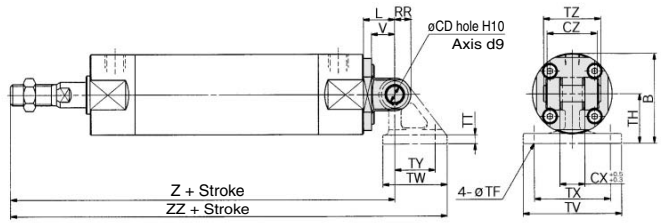
Clevis style: CG1DQ

ø20 to ø63



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

ø80, ø100



∗ Clevis pin and snap ring are shipped together with clevis type.

Clevis Style

Bore size (mm)	Stroke range (mm)	B	CD	CX	CZ	L	RR	V	TE	TF	TH
20	Up to 200	38	8	—	29	14	11	—	10	5.5	25
25	Up to 300	45.5	10	—	33	16	13	—	10	5.5	30
32	Up to 300	54	12	—	40	20	15	—	10	6.6	35
40	Up to 500	63.5	14	—	49	22	18	—	10	6.6	40
50	Up to 600	79	16	—	60	25	20	—	20	9	50
63	Up to 600	96	18	—	74	30	22	—	20	11	60
80	Up to 750	99.5	18	28	56	35	18	26	—	11	55
100	Up to 750	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) ∗ For pivot bracket, refer to page 6-5-12.
∗ Other dimensions are the same as basic style.

Air Cylinder: With End Lock

Series CBG1

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

How to Order

CBG1 **L** **N** **25** — **100** **□** — **H** **N**

CDBG1 **L** **N** **25** — **100** **□** — **H** **N** — **H7BW** **□**

Built-in magnet

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
U *	Rod side trunnion style
T *	Head side trunnion style
D	Clevis style

* Not available for bore size ø80 and ø100.
Besides, trunnion cannot be attached in the side to which an end lock is attached.

Note) Mounting brackets are shipped together, (but not assembled).

Type

N	Rubber bumper
A	Air cushion

Bore size

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

Cylinder stroke (mm)

Refer to "Standard Stroke" on page 6-5-56.

With 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 side flange as a bracket, those parts are to be assembled at the time of shipment.

Lock position

H	Head end lock
R	Rod end lock
W	Double end lock

Manual release type

N	Non-lock type
L	Lock type

Auto switch

Nil	Without auto switch (Built-in magnet)

* For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Refer to page 6-16-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Applicable bore size (mm) 20 to 63	Auto switch model: Applicable bore size (mm) 80, 100	Lead wire length (m) * 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**C76**	—	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V, 200 V	**B54**		●	●	●	—	—	—	Relay, PLC
		Connector					100 V	**C73**	—	●	●	●	—	—		
							—	**C73C**	—	●	●	●	●	—	—	
	Diagnostic indication (2-color indication)	Grommet				—		**B59W**		●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**H7A1**	**G59**	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				**H7A2**	**G5P**	●	●	○	—	○		
				2-wire		12 V		**H7B**	**K59**	●	●	○	—	○	—	
		Connector						**H7C**	—	●	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		**H7NW**	**G59W**	●	●	○	—	○	IC circuit	
				3-wire (PNP)				**H7PW**	**G5PW**	●	●	○	—	○		
								H7BW	**K59W**	●	●	○	—	○		
	Water resistant (2-color indication)			2-wire		12 V		**H7BA**	**G5BA**	—	●	○	—	○	—	
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		**H7NF**	**G59F**	●	●	○	—	○	IC circuit	

* Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
3 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

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

• Since there are other applicable auto switches than listed, refer to page 6-5-64 for details.
• For details about auto switches with pre-wire connector, refer to page 6-16-60.

Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
Action	Double acting, Single rod							
Type	Non-lube							
Fluid	Air							
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.15 MPa *							
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)							
Piston speed	50 to 1000 mm/s						50 to 700 mm/s	
Stroke length tolerance	Up to 1000 $^{st\ +1.4}_{0}$ mm, Up to 1200 $^{st\ +1.8}_{0}$ mm						Up to 1000 $^{st\ +1.4}_{0}$ mm Up to 1500 $^{st\ +1.8}_{0}$ mm	
Thread tolerance	JIS Class 2							
Cushion	Rubber bumper, Air cushion							
Mounting **	Basic style, Axial foot style, Rod side flange style Head side flange style, Rod side trunnion style Head side trunnion style, Clevis style (Used for changing the port location by 90°.)							

* 0.05 MPa except locking parts.
** Rod/Head side trunnion styles are not available for bore sizes ø80 and ø100. Trunnion is not attached for a cover on which lock mechanism is equipped.

Lock Specifications

Lock position	Head end, Rod end, Double end							
Holding force (Max.) (N)	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
	215	330	550	860	1340	2140	3450	5390
Backlash	2 mm or less							
Manual release	Non-lock type, Lock type							

Adjust the switch position so that it operates upon movement to both the stroke end and backlash (2 mm) positions.

Made to Order Specifications (For details, refer to page 6-17-1.)

Symbol	Specifications
-XA□	Change of rod end shape

Standard Stroke

Bore size (mm)	Standard stroke (mm) (1)	Long stroke (mm)	Maximum manufacturable stroke (mm)
20	25, 50, 75, 100, 125, 150, 200	201 to 350	1500
25	25, 50, 75, 100, 125, 150, 200, 250, 300	301 to 400	
32		301 to 450	
40		301 to 800	
50, **63**		301 to 1200	
80		301 to 1400	
100		301 to 1500	

Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.
Note 2) Long stroke applies to the axial foot style and the rod side flange style. If other mounting brackets are used, or the length exceeds the long stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

Minimum Stroke for Auto Switch Mounting

Model	No. of auto switches mounted	
	2	1
D-C7/C8 **D-B5/B6** **D-H7** **D-G5/K5**	15 mm	10 mm
D-B59W	20 mm	15 mm
D-H7LF	20 mm	10 mm

Rod Boot Material

Symbol	Rod boot material	Maximum operating temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C *

* Maximum ambient temperature for the rod boot itself.

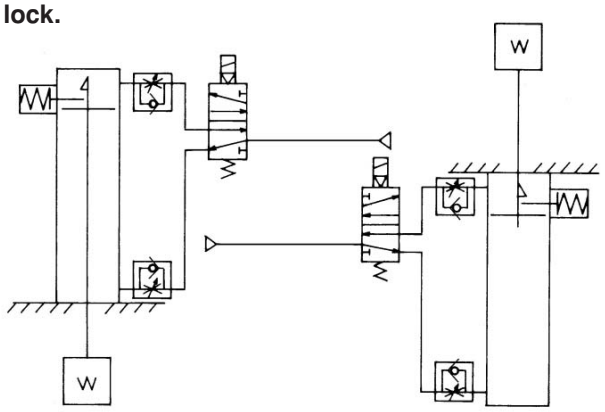
⚠ Precautions

Be sure to read before handling. For Safety Instructions and Actuator Precautions, refer to pages 6-20-3 to 6-20-6.

Use the Recommended Pneumatic Circuit

⚠ Caution

• This is necessary for proper operation and release of the lock.



Head end lock **Rod end lock**

Operating Precautions

⚠ Caution

1. Do not use 3 position solenoid valves.
Avoid use in combination with 3 position solenoid valves (especially closed center metal seal types). If pressure is trapped in the port on the lock mechanism side, the cylinder cannot be locked. Furthermore, even after being locked, the lock may be released after some time, due to air leaking from the solenoid valve and entering the cylinder.

2. Back pressure is required when releasing the lock.
Be sure air is supplied to side of cylinder without the locking mechanism, as above, prior to supplying air pressure to the side with end lock or lock may not be released. (⇨ Refer to "Releasing the Lock".)

3. Release the lock when mounting or adjusting the cylinder.
If mounting or other work is performed when the cylinder is locked, the lock unit may be damaged.

4. Operate with a load ratio of 50% or less.
If the load ratio exceeds 50%, this may cause problems such as failure of the lock to release, or damage to the lock unit.

5. Do not operate multiple cylinders in synchronization.
Avoid applications in which two or more end lock cylinders are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.

6. Use a speed controller with meter-out control.
Lock cannot be released occasionally by meter-in control.

7. Be sure to operate completely to the cylinder stroke end on the side with the lock.
If the cylinder piston does not reach the end of the stroke, locking and unlocking may not be possible.

8. Do not use an air cylinder as an air-hydro cylinder. This could result in leakage of oil.

9. Install a rod boot without twisting.
If the cylinder is installed with its bellows twisted, it could damage the bellows.

10. Adjust an auto switch position so that it operates for movement to both the stroke end and backlash (2 mm) positions.
When a 2-color indication switch is adjusted for green indication at the stroke end, it may change to red for the backlash return, but this is not abnormal.

Operating Precautions

⚠ Warning

1. Do not operate the cushion valve in the fully closed or fully opened state.
Using it in the fully closed state will cause the cushion seal to be damaged. Using it in the fully opened state will cause the piston rod assembly or the cover to be damaged.

2. Operate within the specified cylinder speed.
Otherwise, cylinder and seal damage may occur.

Operating Pressure

⚠ Caution

1. Use pressures over 0.15 MPa at port with locking mechanism.

Exhaust Speed

⚠ Caution

1. Locking will occur automatically if the pressure applied to the port on the lock mechanism side falls to 0.05 MPa or less. In cases where the piping on the lock mechanism side is long and thin, or the speed controller is separated at some distance from the cylinder port, the exhaust speed will be reduced. Take note that some time may be required for the lock to engage. In addition, clogging of a silencer mounted on the solenoid valve exhaust port can produce the same effect.

Relation to Cushion

⚠ Caution

1. When cushion valve at side with locking mechanism is fully opened or closed, piston rod may reached at stroke end. Thus lock is not established. And when locking is done at cushion valve fully closed, adjust cushion valve since lock may not be released.

Releasing the Lock

⚠ Warning

1. Before releasing the lock, be sure to supply air to the side without the lock mechanism, so that there is no load applied to the lock mechanism when it is released. (Refer to the recommended pneumatic circuits.) If the lock is released when the port on the other side is in an exhaust state, and with a load applied to the lock unit, the lock unit may be subjected to an excessive force and be damaged. Furthermore, sudden movement of the piston rod is very dangerous.

Disassembly/Replacement

⚠ Caution

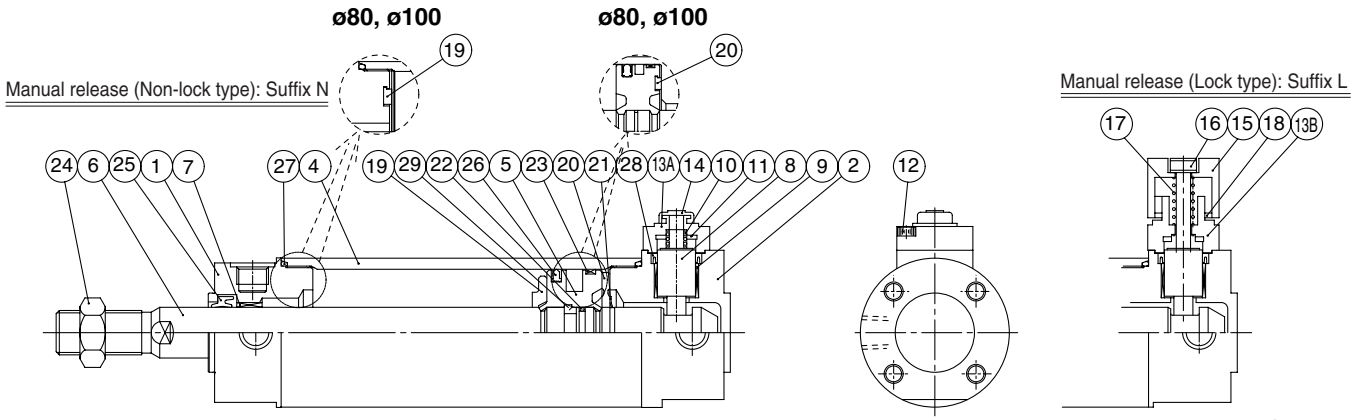
1. Do not replace the bushings or the cushion seals.
The bushings and the cushion seals are press-fit. To replace them, they must be replaced together with the cover assembly.

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.

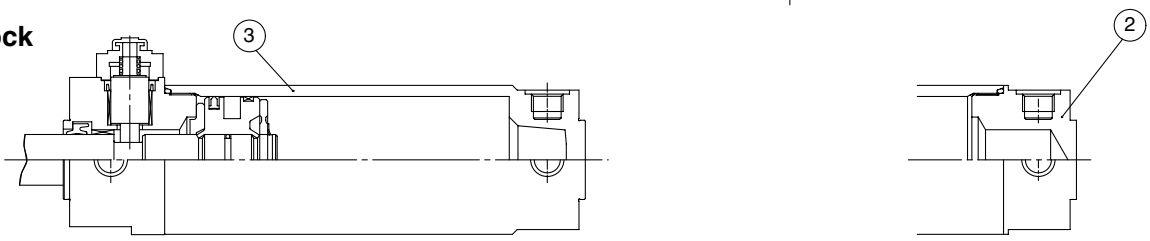
3. Those with a bore of ø50 or more cannot be disassembled.
When disassembling cylinders with bore sizes of ø20 through ø40, grip the double flat part of either the head cover or the rod cover with a vise and loosen the other side with a wrench or a monkey wrench, etc., and then remove the cover. When 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.)

Construction: With Rubber Bumper

Head end lock



Rod end lock



Long stroke

Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Head cover	Aluminum alloy	Clear hard anodized
③	Tube cover	Aluminum alloy	Clear hard anodized
④	Cylinder tube	Aluminum alloy	Hard anodized
⑤	Piston	Aluminum alloy	Chromated
⑥	Piston rod	Carbon steel *	Hard chrome plated
⑦	Bushing	Oil-impregnated sintered alloy	ø40 and larger are lead-bronze casted
⑧	Lock piston	Carbon steel	Hard chrome plated, Heat treated
⑨	Lock bushing	Copper alloy	
⑩	Lock spring	Stainless steel	
⑪	Bumper	Urethane	
⑫	Hexagon socket head cap screw	Alloy steel	Black zinc chromated
⑬A	Cap A	Aluminum die-casted	Black painted
⑬B	Cap B	Carbon steel	Oxide film treated
⑭	Rubber cap	Synthetic rubber	
⑮	M/O knob	Zinc die-casted	Black painted
⑯	M/O bolt	Alloy steel	Black zinc chromated, Red painted
⑰	M/O spring	Steel wire	Zinc chromated
⑱	Stopper ring	Carbon steel	Zinc chromated
⑲	Bumper A	Urethane	
⑳	Bumper B	Urethane	ø40 or larger: the same as bumper A

No.	Description	Material	Note
㉑	Snap ring	Stainless steel	None for ø80, ø100
㉒	Piston gasket	NBR	
㉓	Wear ring	Resin	
㉔	Rod end nut	Rolled steel	Nickel plated
㉕	Rod seal	NBR	
㉖	Piston seal	NBR	
㉗	Cylinder tube gasket	NBR	1 pc. when using tube cover
㉘	Lock piston seal	NBR	2 pcs. for with locks in both sides
㉙	Piston holder	Urethane	ø40 to ø100 only

Note) In the case of cylinders with auto switches, magnets are installed in the piston.

* The material is stainless steel on auto switch equipped styles ø20 and ø25.

Replacement Parts: Seal Kit (With lock at single end)

Series	Bore size (mm)	Kit no.	Contents
CBG1□N Rubber bumper type	20	CBG1N20-PS	Set of nos. above ㉕, ㉖, ㉗, ㉘ and grease pack
	25	CBG1N25-PS	
	32	CBG1N32-PS	
	40	CBG1N40-PS	
	50	CBG1N50-PS	
	63	CBG1N63-PS	
	80	CBG1N80-PS	
	100	CBG1N100-PS	

Order seal kit in accordance with the bore size.

Replacement Parts: Seal Kit (With lock at double end)

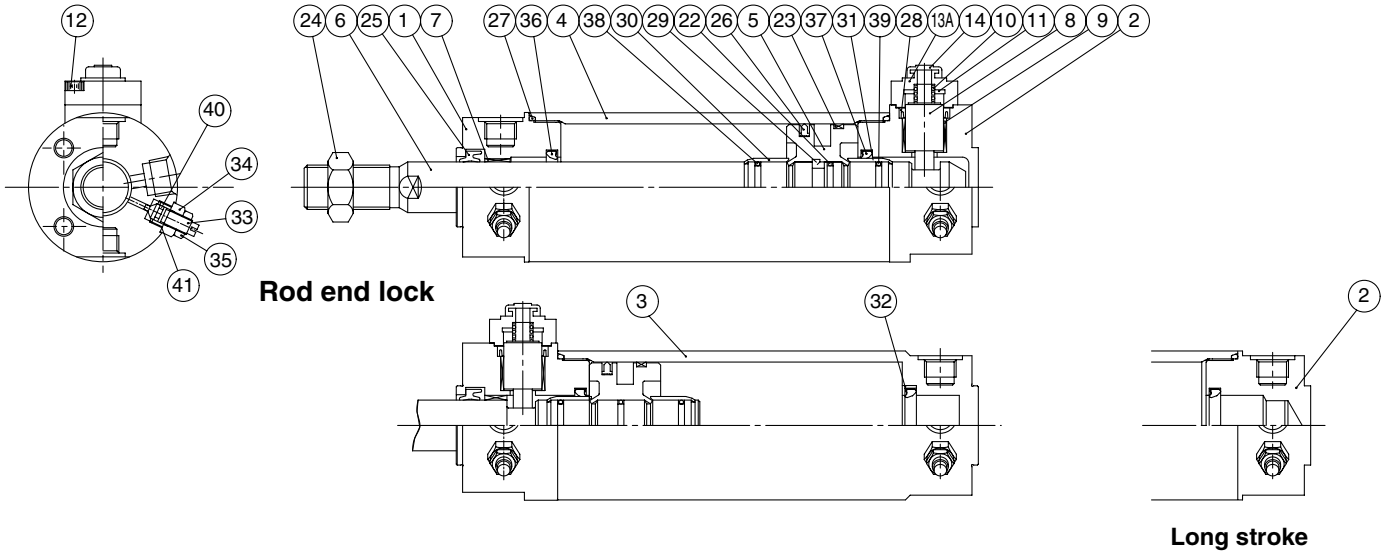
Series	Bore size (mm)	Kit no.	Contents
CBG1□N Rubber bumper type	20	CBG1N20-PS-W	Set of nos. above ㉕, ㉖, ㉗, ㉘ and grease pack
	25	CBG1N25-PS-W	
	32	CBG1N32-PS-W	
	40	CBG1N40-PS-W	
	50	CBG1N50-PS-W	
	63	CBG1N63-PS-W	
	80	CBG1N80-PS-W	
	100	CBG1N100-PS-W	

Order seal kit in accordance with the bore size.

Construction: With Air Cushion

With air cushion
Head end lock

Manual release (Non-lock type): Suffix N



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Head cover	Aluminum alloy	Clear hard anodized
③	Tube cover	Aluminum alloy	Clear hard anodized
④	Cylinder tube	Aluminum alloy	Hard anodized
⑤	Piston	Aluminum alloy	Chromated
⑥	Piston rod	Carbon steel *	Hard chrome plated
⑦	Bushing	Oil-impregnated sintered alloy	ø40 and larger are lead-bronze casted
⑧	Lock piston	Carbon steel	Hard chrome plated, Heat treated
⑨	Lock bushing	Copper alloy	
⑩	Lock spring	Stainless steel	
⑪	Bumper	Urethane	
⑫	Hexagon socket head cap screw	Alloy steel	Black zinc chromated
⑬A	Cap A	Aluminum die-casted	Black painted
⑬B	Cap B	Carbon steel	Oxide film treated
⑭	Rubber cap	Synthetic rubber	
⑮	M/O knob	Zinc die-casted	Black painted
⑯	M/O bolt	Alloy steel	Black zinc chromated, Red painted
⑰	M/O spring	Steel wire	Zinc chromated
⑱	Stopper ring	Carbon steel	Zinc chromated

No.	Description	Material	Note
㉒	Piston gasket	NBR	
㉓	Wear ring	Resin	
㉔	Rod end nut	Rolled steel	Nickel plated
㉕	Rod seal	NBR	1 pc. when using tube cover
㉖	Piston seal	NBR	2 pcs. for with locks in both sides
㉗	Cylinder tube gasket	NBR	
㉘	Lock piston seal	NBR	
㉙	Piston holder	Urethane	ø40 to ø100 only
㉚	Cushion ring A	Brass	
㉛	Cushion ring B	Brass	Only when using nickel plated, tube cover
㉜	Seal retainer	Rolled steel	
㉝	Cushion valve	Rolled steel	Electroless nickel plated
㉞	Valve retainer	Rolled steel	Electroless nickel plated
㉟	Lock nut	Rolled steel	Nickel plated
㊱	Cushion seal A	Urethane	
㊲	Cushion seal B	Urethane	ø32 or larger: The same as A
㊳	Cushion ring gasket A	NBR	
㊴	Cushion ring gasket B	NBR	ø32 or larger: The same as A
㊵	Valve seal	NBR	
㊶	Valve retaining gasket	NBR	

Note) In the case of cylinders with auto switches, magnets are installed in the piston.

* The material is stainless steel on auto switch equipped styles ø20 and ø25.

Replacement Parts: Seal Kit (With lock at single end)

Series	Bore size (mm)	Kit no.	Contents
CBG1□A Rubber bumper type	20	CBG1A20-PS	Set of nos. above ㉕, ㉖, ㉗, ㉘, ㊵ and grease pack
	25	CBG1A25-PS	
	32	CBG1A32-PS	
	40	CBG1A40-PS	
	50	CBG1A50-PS	
	63	CBG1A63-PS	
	80	CBG1A80-PS	
	100	CBG1A100-PS	

Order seal kit in accordance with the bore size.

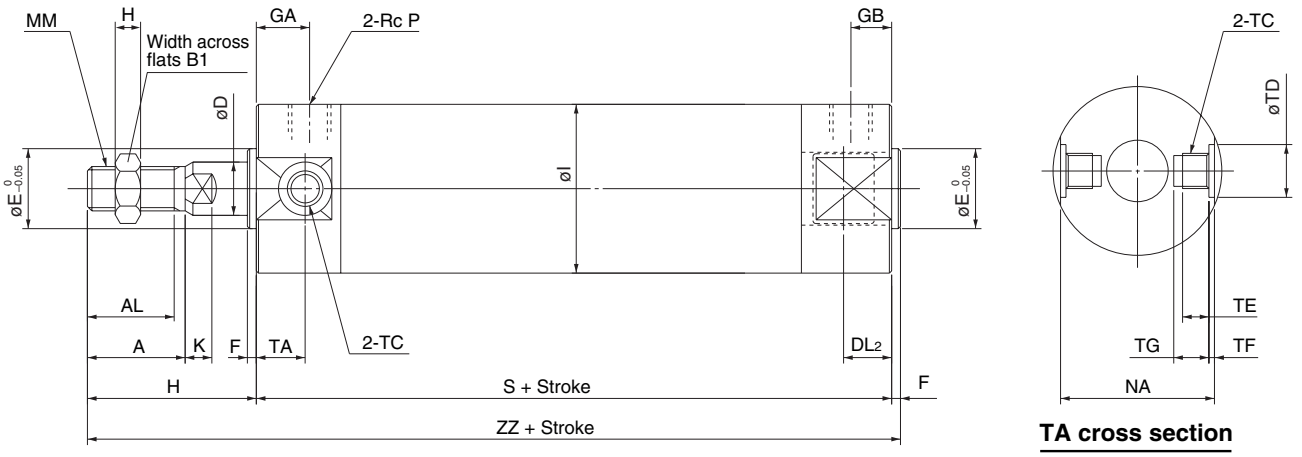
Replacement Parts: Seal Kit (With lock at double end)

Series	Bore size (mm)	Kit no.	Contents
CBG1□A Rubber bumper type	20	CBG1A20-PS-W	Set of nos. above ㉕, ㉖, ㉗, ㉘, ㊵ and grease pack
	25	CBG1A25-PS-W	
	32	CBG1A32-PS-W	
	40	CBG1A40-PS-W	
	50	CBG1A50-PS-W	
	63	CBG1A63-PS-W	
	80	CBG1A80-PS-W	
	100	CBG1A100-PS-W	

Order seal kit in accordance with the bore size.

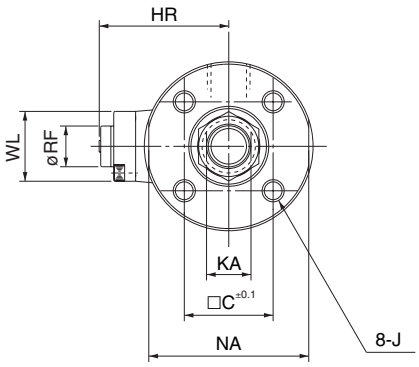
Rubber Bumper Type: CBG1BN

Head end lock: CBG1BN Bore size – Stroke – H□

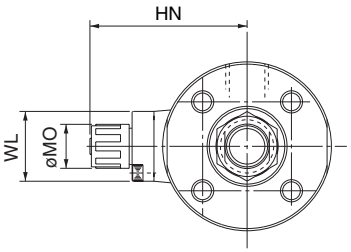


TA cross section

Manual release (Non-lock type): Suffix N



Manual release (Lock type): Suffix L

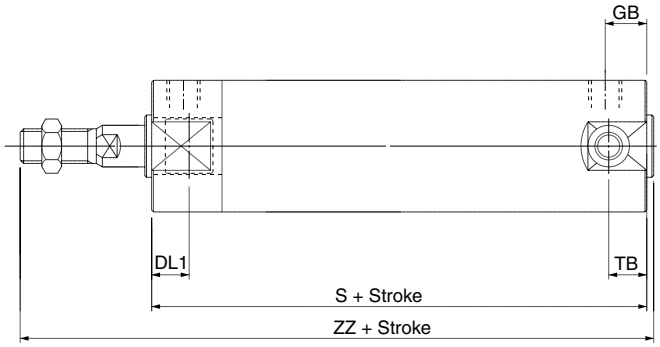


Bore size (mm)	Stroke range	A	AL	B1	C	D	DL2	E	F	GA	GB	H	H1	HR	HN (Max.)	I	J
20	Up to 350	18	15.5	13	14	8	12.5	12	2	12	12	35	5	25.3	37	26	M4 x 0.7 depth 7
25	Up to 400	22	19.5	17	16.5	10	12.5	14	2	12	12	40	6	28.3	40	31	M5 x 0.8 depth 7.5
32	Up to 450	22	19.5	17	20	12	12	18	2	12	12	40	6	31.3	43	38	M5 x 0.8 depth 8
40	Up to 800	30	27	19	26	16	15	25	2	13	13	50	8	38.3	52.5	47	M6 x 1 depth 12
50	Up to 1200	35	32	27	32	20	16.5	30	2	14	14	58	11	44.5	58.5	58	M8 x 1.25 depth 16
63	Up to 1200	35	32	27	38	20	16.5	32	2	14	14	58	11	45	59	72	M10 x 1.5 depth 16
80	Up to 1400	40	37	32	50	25	19	40	3	20	20	71	13	53.5	68	89	M10 x 1.5 depth 22
100	Up to 1500	40	37	41	60	30	20	50	3	20	20	71	16	64.5	79	110	M12 x 1.75 depth 22

Bore size (mm)	K	KA	MM	MO	NA	P	RF	S	TA	TC	TDH9	TE	TF	TG	WL	ZZ
20	5	6	M8 x 1.25	15	24	1/8	11	81	11	M5 x 0.8	$8^{+0.08}_{0}$	4	0.5	5.5	15	118
25	5.5	8	M10 x 1.25	15	29	1/8	11	81	11	M6 x 0.75	$10^{+0.08}_{0}$	5	1	6.5	15	123
32	5.5	10	M10 x 1.25	15	35.5	1/8	11	81	11	M8 x 1.0	$12^{+0.08}_{0}$	5.5	1	7.5	24	123
40	6	14	M14 x 1.5	19	44	1/8	11	92	12	M10 x 1.25	$14^{+0.08}_{0}$	6	1.25	8.5	24	144
50	7	18	M18 x 1.5	19	55	1/4	11	107	13	M12 x 1.25	$16^{+0.08}_{0}$	7.5	2	10	24	167
63	7	18	M18 x 1.5	19	69	1/4	11	107	13	M14 x 1.5	$18^{+0.08}_{0}$	11.5	3	14.5	24	167
80	10	22	M22 x 1.5	23	80	3/8	21	130	—	—	—	—	—	—	40	204
100	10	26	M26 x 1.5	23	100	1/2	21	130	—	—	—	—	—	—	40	204

Rubber Bumper Type: CBG1BN

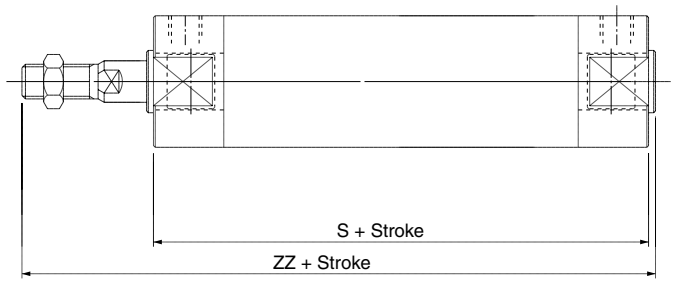
Rod end lock: CBG1BN Bore size – Stroke – R□



Bore size (mm)	DL_1	GB	S	TB	ZZ
20	19.5	10(12)	80(88)	11	117(125)
25	19.5	10(12)	80(88)	11	122(130)
32	20	10(12)	81(89)	10(11)	123(131)
40	19	10(13)	87(96)	10(12)	139(148)
50	23.5	12(14)	102(114)	12(13)	162(174)
63	23.5	12(14)	102(114)	12(13)	162(174)
80	27	16(20)	124(138)	—	198(212)
100	30	16(20)	124(138)	—	198(212)

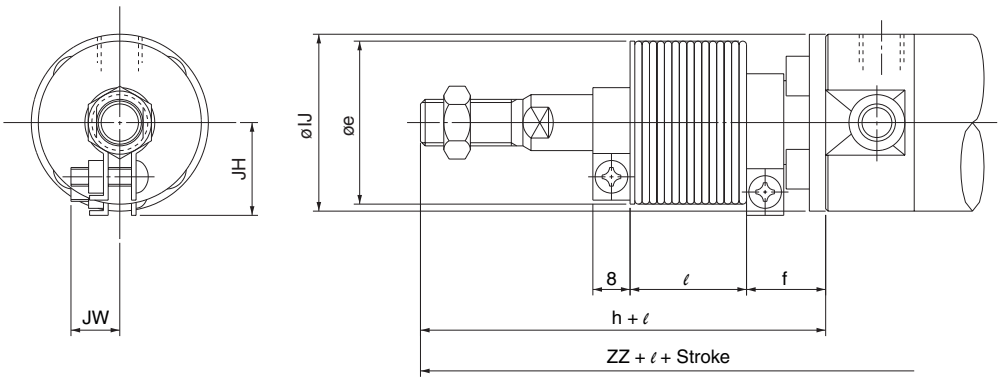
∗ ( ): Denotes the dimensions for long stroke.

Double end lock: CBG1BN Bore size – Stroke – W□



Bore size (mm)	S	ZZ
20	92	129
25	92	134
32	91	133
40	101	153
50	119	179
63	119	179
80	146	220
100	146	220

With rod boot

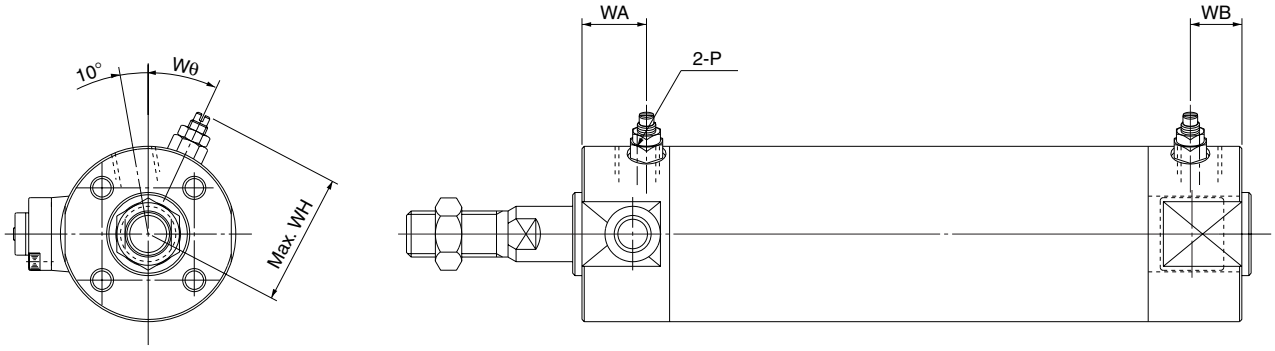


Bore size (mm)	e	f	h	IJ	JH	JW	ℓ	Head end lock (-H□) ZZ	Rod end lock (-R□) ZZ	Double end lock (-W□) ZZ
20	30	16	55	27	(14.5)	(11.5)	0.25 stroke	138	137(145)	149
25	30	17	62	32	(17.5)	(11.5)		145	144(152)	156
32	35	17	62	38	(19.5)	(11.5)		145	145(153)	155
40	35	17	70	48	(22.5)	(13)		164	159(168)	173
50	40	17	78	59	(25)	(13)		187	182(194)	199
63	40	18	78	72	(25)	(13)		187	182(194)	199
80	52	10	80	59	—	—		213	207(221)	229
100	62	7	80	71	—	—		213	207(221)	229

∗ ( ): Denotes the dimensions for long strokes.
∗∗ The minimum stroke with rod boot is 20 mm.

Air Cushion Type: CBG1BA

Head end lock: CBG1BA Bore size – Stroke – H□
Rod end lock: CBG1BA Bore size – Stroke – R□



Head End Lock: -H□

Bore size (mm)	P	WA	WB	WH	Wθ
20	M5 x 0.8	16	16	23	30°
25	M5 x 0.8	16	16	25	30°
32	Rc 1/8	16	16	28.5	25°
40	Rc 1/8	16	16	33	20°
50	Rc 1/4	18	18	40.5	20°
63	Rc 1/4	18	18	47.5	20°
80	Rc 3/8	22	22	60.5	20°
100	Rc 1/2	22	22	71	20°

∗ For dimensions other than listed above, refer to the dimensions with rubber bumper.

Rod End Lock: -R□

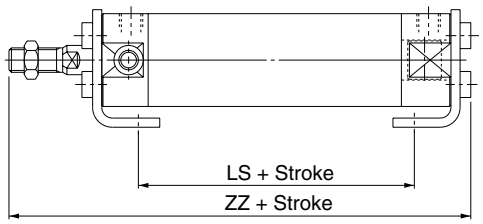
Bore size (mm)	P	WA	WB	WH	Wθ
20	M5 x 0.8	16	15(16)	23	30°
25	M5 x 0.8	16	15(16)	25	30°
32	Rc 1/8	16	15(16)	28.5	25°
40	Rc 1/8	16	15(16)	33	20°
50	Rc 1/4	18	17(18)	40.5	20°
63	Rc 1/4	18	17(18)	47.5	20°
80	Rc 3/8	22	22	60.5	20°
100	Rc 1/2	22	22	71	20°

∗ ( ): Denotes the dimensions for long strokes.
∗∗ For dimensions other than the listed above, refer to the dimensions with rubber bumper.

With Mounting Bracket

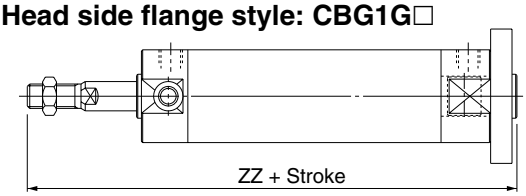
(For dimensions other than listed below, refer to pages 6-55-60 to 62, 9 and 10.)

Axial foot style: CBG1L□



Rod side flange style: CBG1F□

Head side flange style: CBG1G□



Foot Style

Bore size (mm)	Head end lock: -H□			Rod end lock: -R□			Double end lock: -W□		
	LS	ZZ		LS	ZZ		LS	ZZ	
	—	Without rod boot	With rod boot	—	Without rod boot	With rod boot	—	Without rod boot	With rod boot
20	57	122	142 + ℓ	56(64)	121(129)	141(149) + ℓ	68	133	153 + ℓ
25	57	127.5	149.5 + ℓ	56(64)	126.5(134.5)	148.5(156.5) + ℓ	68	138.5	160.5 + ℓ
32	55	127.5	149.5 + ℓ	55(63)	127.5(135.5)	149.5(157.5) + ℓ	65	137.5	159.5 + ℓ
40	65	149	169 + ℓ	60(69)	144(153)	164(173) + ℓ	74	158	178 + ℓ
50	72	174.5	194.5 + ℓ	67(79)	169.5(181.5)	189.5(201.5) + ℓ	84	186.5	206.5 + ℓ
63	72	174.5	194.5 + ℓ	67(79)	169.5(181.5)	189.5(201.5) + ℓ	84	186.5	206.5 + ℓ
80	82	210.5	219.5 + ℓ	76(90)	204.5(218.5)	213.5(227.5) + ℓ	98	226.5	235.5 + ℓ
100	82	214	223 + ℓ	76(90)	208(222)	217(231) + ℓ	98	230	239 + ℓ

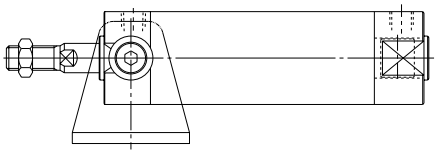
∗ ( ): Denotes the dimensions for long stroke.

Rod Side Flange Style ···· Overall length is the same as basic style.
Head Side Flange Style

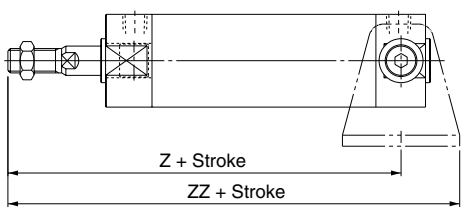
Bore size (mm)	Head end lock: -H□		Rod end lock/-R□		Double end lock/-W□	
	ZZ (Head side flange)					
	Without rod boot	With rod boot	Without rod boot	With rod boot	Without rod boot	With rod boot
20	124	144 + ℓ	123	143 + ℓ	135	155 + ℓ
25	130	152 + ℓ	129	151 + ℓ	141	163 + ℓ
32	130	152 + ℓ	130	152 + ℓ	140	162 + ℓ
40	152	172 + ℓ	147(156)	167(176) + ℓ	161	181 + ℓ
50	176	196 + ℓ	171(183)	191(203) + ℓ	188	208 + ℓ
63	176	196 + ℓ	171(183)	191(203) + ℓ	188	208 + ℓ
80	215	224 + ℓ	209(223)	218(232) + ℓ	231	240 + ℓ
100	218	227 + ℓ	212(226)	221(235) + ℓ	234	243 + ℓ

∗ ( ): Denotes the dimensions for long stroke.

Rod side trunnion style: CBG1U□ (Rod end lock-H□ only)



Head side trunnion style: CBG1T□ (Rod end lock -R□ only)



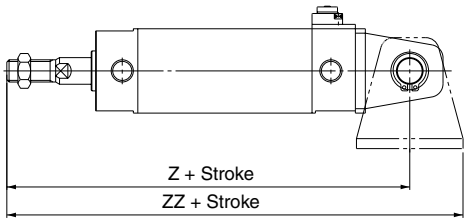
Rod Side Trunnion Style ···· Overall length is the same as basic style.
Head Side Trunnion Style

Bore size (mm)	Rod end lock/-R□			
	Z (Head side trunnion)		ZZ (Head side trunnion)	
	Without rod boot	With rod boot	Without rod boot	With rod boot
20	104	124 + ℓ	125	145 + ℓ
25	109	131 + ℓ	130	152 + ℓ
32	111	133 + ℓ	135	157 + ℓ
40	127(134)	147(154) + ℓ	155(162)	175(182) + ℓ
50	148(159)	168(179) + ℓ	180(191)	200(211) + ℓ
63	148(159)	168(179) + ℓ	185(196)	205(216) + ℓ

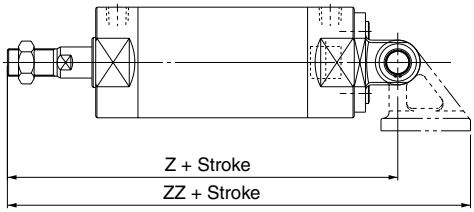
∗ ( ): Denotes the dimensions for long stroke.

With Mounting Bracket

Clevis style: CBG1D□
ø20 to ø63



Clevis style: CBG1D□
ø80 to ø100



Clevis Style

Bore size (mm)	Head end lock: -H□				Rod end lock: -R□			
	Z		ZZ		Z		ZZ	
	Without rod boot	With rod boot	Without rod boot	With rod boot	Without rod boot	With rod boot	Without rod boot	With rod boot
20	130	150 + ℓ	151	171 + ℓ	129	149 + ℓ	150	170 + ℓ
25	137	159 + ℓ	158	180 + ℓ	136	158 + ℓ	157	179 + ℓ
32	141	163 + ℓ	165	187 + ℓ	141	163 + ℓ	165	187 + ℓ
40	164	184 + ℓ	192	212 + ℓ	159(168)	179(188) + ℓ	187(196)	207(216) + ℓ
50	190	210 + ℓ	222	242 + ℓ	185(197)	205(217) + ℓ	217(229)	237(249) + ℓ
63	195	215 + ℓ	232	252 + ℓ	190(202)	210(222) + ℓ	227(239)	247(259) + ℓ
80	236	245 + ℓ	294.5	303.5 + ℓ	230(244)	239(253) + ℓ	288.5(302.5)	297.5(311.5) + ℓ
100	244	253 + ℓ	320.5	329.5 + ℓ	238(252)	247(261) + ℓ	314.5(328.5)	323.5(337.5) + ℓ

Bore size (mm)	Double end lock/-W□			
	Z		ZZ	
	Without rod boot	With rod boot	Without rod boot	With rod boot
20	141	161 + ℓ	162	182 + ℓ
25	148	170 + ℓ	169	191 + ℓ
32	151	173 + ℓ	175	197 + ℓ
40	173	193 + ℓ	201	221 + ℓ
50	202	222 + ℓ	234	254 + ℓ
63	207	227 + ℓ	244	264 + ℓ
80	252	261 + ℓ	310.5	319.5 + ℓ
100	260	269 + ℓ	336.5	345.5 + ℓ

∗ ( ): Denotes the dimensions for long stroke.

Other than the applicable auto switches listed in “How to Order”, the following auto switches can be mounted. For detailed specifications, refer to page 6-16-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 63
	D-C80C	Connector		
	D-B53	Grommet	—	20 to 100
	D-B64	Grommet	Without indicator light	
Solid state switch	D-G5NTL	Grommet	With timer	

∗ With pre-wire connector is available for D-G5NTL type, too. Refer to page 6-16-55 for details.
∗ Wide range detection type, solid state auto switch (D-G5NBL type) is also available. For details, refer to page 6-16-59.