Air Cylinder: Standard Type
Double Acting, Single Rod

CG1 Series

RoHS

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

How to Order

CG1 B N 20 □ – 100 □ □ Z – □ □ – □

With auto switch CDG1 B N 20 □ – 100 □ □ Z – □ □ – M9BW □ – □

With auto switch
(Built-in magnet)

Mounting

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

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

Bore size

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

Type

N	Rubber bumper
A	Air cushion

Port thread type

	Rubber bumper		Air cushion	
Nil	Rc	ø20 to ø100	M5 x 0.8	ø20, ø25
			Rc	ø32 to ø100
TN	NPT	ø20 to ø100	NPT*	ø32 to ø100
TF	M5 x 0.8	ø20, ø25	G*	ø32 to ø100
	G	ø32 to ø100		

* Not available for ø20 and ø25.

Cylinder stroke (mm)
Refer to "Standard Strokes" on page 379.

Rod end thread

Nil	Male rod end
F	Female rod end

Pivot bracket

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

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

Rod end bracket

Nil	None
V	Single knuckle joint
W	Double knuckle joint

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

Made to Order
For details, refer to page 379.

Number of auto switches

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

Auto switch

Nil	Without auto switch

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

Suffix for cylinder (Rod boot)

Nil	Without rod boot
J	Nylon tarpaulin
K	Heat resistant tarpaulin

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

* **Refer to "Ordering Example of Cylinder Assembly" on page 380.**

Applicable Auto Switches/Refer to pages 1271 to 1365 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 ø20 to ø63 Perpendicular	Auto switch model: Applicable bore size ø20 to ø63 In-line	Auto switch model: Applicable bore size ø80, ø100 In-line	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	**M9NV**	**M9N**	—	●	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)			—	—	**G59**	●	—	●	○	—	○		
							M9PV	**M9P**	—	●	●	●	○	—	○		
							—	—	**G5P**	●	—	●	○	—	○		
				2-wire	12 V		**M9BV**	**M9B**	—	●	●	●	○	—	○	—	
							—	—	**K59**	●	—	●	○	—	○		
		Connector					—	**H7C**	—	●	—	●	●	—			
	Diagnostic indication (2-color indicator)	Grommet		3-wire (NPN)	5 V, 12 V		**M9NWV**	**M9NW**	—	●	●	●	○	—	○	IC circuit	
				3-wire (PNP)			—	—	**G59W**	●	—	●	○	—	○		
							M9PWV	**M9PW**	—	●	●	●	○	—	○		
							—	—	**G5PW**	●	—	●	○	—	○		
				2-wire	12 V		**M9BWV**	**M9BW**	—	●	●	●	○	—	○	—	
							—	—	**K59W**	●	—	●	○	—	○		
	Water resistant (2-color indicator)			3-wire (NPN)	5 V, 12 V		**M9NAV***1	**M9NA***1	—	○	○	●	○	—	○	IC circuit	
				3-wire (PNP)			**M9PAV***1	**M9PA***1	—	○	○	●	○	—	○		
				2-wire	12 V		**M9BAV***1	**M9BA***1	—	○	○	●	○	—	○	—	
							—	—	**G5BA***1	—	—	●	○	—	○		
	With diagnostic output (2-color indicator)			4-wire (NPN)	5 V, 12 V		—	**H7NF**	**G59F**	●	—	●	○	—	○	IC circuit	
Reed auto switch	——	Grommet	Yes	3-wire (Equiv. to NPN)	5 V	—	**A96V**	**A96**	—	●	—	●	—	—	—	IC circuit	—
			No	2-wire	24 V	100 V	**A93V***2	**A93**	—	●	●	●	●	—	—	—	Relay, PLC
			Yes		12 V	100 V or less	**A90V**	**A90**	—	●	—	●	—	—	—	IC circuit	
			No			100 V, 200 V	—	**B54**		●	—	●	●	—	—	—	
			Yes			200 V or less	—	**B64**		●	—	●	—	—	—	—	
			No			—	—	**C73C**	—	●	—	●	●	●	—		
		Connector	Yes			24 V or less	—	**C80C**	—	●	—	●	●	●	—	IC circuit	
			No														
	Diagnostic indication (2-color indicator)	Grommet	Yes		—	—	—	**B59W**		●	—	●	—	—	—	—	

*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
A water-resistant type cylinder is recommended for use in an environment which requires water resistance. However, please contact SMC for water-resistant cylinder of ø20 and ø25.
*2 1 m type lead wire is only applicable to D-A93.

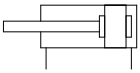
* Lead wire length symbols: 0.5 m ····· Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ
None ····· N (Example) H7CN

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

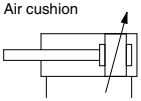
* Since there are other applicable auto switches than listed above, refer to page 446 for details.
* For details about auto switches with pre-wired connector, refer to pages 1340 and 1341.
* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

Symbol

Rubber bumper



Air cushion



Made to Order

Made to Order: Individual Specifications (For details, refer to page 447.)

Symbol	Specifications
-X446	PTFE grease

Made to Order

Click here for details

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (–10 to 150°C)*1
-XB7	Cold resistant cylinder (–40 to 70°C)*2
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC4	With heavy duty scraper
-XC6	Made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type
-XC12	Tandem cylinder
-XC13	Auto switch rail mounting
-XC20	Head cover axial port
-XC22	Fluororubber seal*1
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC29	Double knuckle joint with spring pin
-XC35	With coil scraper
-XC37	Larger throttle diameter of connection port
-XC42	Built-in shock absorber in head cover side
-XC85	Grease for food processing equipment

*1 Cylinders with rubber bumper have no bumper.
*2 Only compatible with cylinders with rubber bumper, but has no bumper.

Refer to pages 440 to 446 for cylinders with auto switches.

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

⚠ Precautions

Refer to page 448 before handling.

Specifications

Bore size (mm)			20	25	32	40	50	63	80	100
Action			Double acting, Single rod							
Lubricant			Not required (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°C to 70°C With auto switch : −10°C 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 1500 st $^{+1.8}_{0}$ mm							
Cushion			Rubber bumper, Air cushion							
Mounting**			Basic, Basic (without trunnion mounting female thread), Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis							
Allowable kinetic energy (J)	Rubber bumper	Male rod end	0.28	0.41	0.66	1.20	2.00	3.40	5.90	9.90
		Female rod end	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54
	Air cushion	Male rod end	R: 0.35 H: 0.42	R: 0.56 H: 0.65	0.91	1.80	3.40	4.90	11.80	16.70
		Female rod end	0.11	0.18	0.29	0.52	0.91	1.54	2.71	4.54

* R: Rod side, H: Head side
** Cylinder sizes ø80 and ø100 do not have basic (without trunnion mounting female thread), rod trunnion and head trunnion types. Foot, flange and clevis types of cylinder sizes from ø20 to ø63 do not have trunnion mounting female thread. Operate the cylinder within the allowable kinetic energy.

Accessories

/Refer to page 395 for part numbers and dimensions.

Mounting		Basic	Axial foot	Rod flange	Head flange	Rod trunnion	Head trunnion	Clevis
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin)*2	●	●	●	●	●	●	●
	Pivot bracket*1	—	—	—	—	●*1	●*1	●
	Rod boot	●	●	●	●	●	●	●

*1 Not available for ø80 and ø100.
*2 A double knuckle joint pin and retaining rings are shipped together.
*3 Stainless steel mounting brackets and accessories are also available. Refer to page 396 for details.

Standard Strokes

(mm)

Bore size	Standard stroke Note1)	Manufacturable stroke
20	25, 50, 75, 100, 125, 150, 200	1 to 1500
25	25, 50, 75, 100, 125, 150, 200, 250, 300	1 to 1500
32		
40		
50, 63		
80		
100		

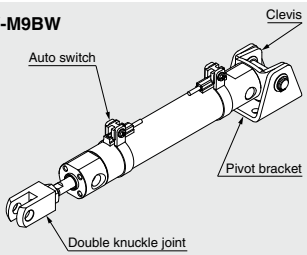
Note 1) Intermediate strokes not listed above are produced upon receipt of order. Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)
Note 2) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on pages 8 to 19. In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Ordering Example of Cylinder Assembly

Cylinder model: CDG1DN20-100Z-NW-M9BW

Mounting	**D: Clevis**
Pivot bracket	**N: Yes**
Rod end bracket	**W: Double knuckle joint**
Auto switch	**D-M9BW: 2 pcs.**

∗Pivot bracket, double knuckle joint and auto switch are shipped together with the product, but not assembled.



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.

Mounting Brackets/Part No.

Mounting bracket	Order q'ty	Bore size (mm)								Contents
		20	**25**	**32**	**40**	**50**	**63**	**80**	**100**	
Axial foot	2 Note)	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	CG-L080	CG-L100	2 foots, 8 mounting bolts
Flange	1	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	CG-F080	CG-F100	1 flange, 4 mounting bolts
Trunnion pin	1	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	—	—	2 trunnion pins, 2 trunnion bolts, 2 flat washers
Clevis	1	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063	CG-D080	CG-D100	1 clevis, 4 mounting bolts, 1 clevis pin, 2 retaining rings
Pivot bracket	1	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A	CG-080-24A	CG-100-24A	1 pivot bracket

Note) Order two foots per cylinder.

Mounting Brackets, Accessories/Material, Surface Treatment

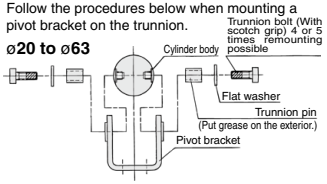
Segment	Description		Material	Surface treatment
Mounting brackets	Foot		Carbon steel	Nickel plating
	Flange		Carbon steel (ø20 to ø63)	Nickel plating
			Cast iron (ø80, ø100)	Nickel plating
	Clevis		Carbon steel (ø20 to ø63)	Nickel plating
			Cast iron (ø80, ø100)	Nickel plating
	Trunnion pin	Trunnion pin	Carbon steel	Salt-bath nitrocarburizing
		Trunnion bolt	Carbon steel	Nickel plating
		Flat washer	Carbon steel	Nickel plating
Accessories	Rod end nut		Carbon steel	Zinc chromated
	Single knuckle joint		Carbon steel (ø20 to ø32)	Nickel plating
			Cast iron (ø40 to ø100)	Zinc chromated
	Double knuckle joint		Carbon steel (ø20 to ø32)	Nickel plating
			Cast iron (ø40 to ø100)	Zinc chromated
	Knuckle pin		Carbon steel	—
	Clevis pin		Carbon steel	—
	Pivot bracket		Carbon steel (ø20 to ø63)	Nickel plating
			Cast iron (ø80, ø100)	Nickel plating
	Mounting bolt		Carbon steel	Nickel plating
	Retaining ring		Carbon tool steel	Phosphate coating

Mounting Procedure

Mounting procedure for trunnion

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

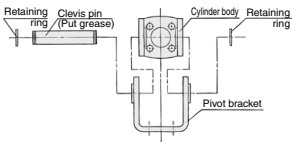
ø20 to ø63



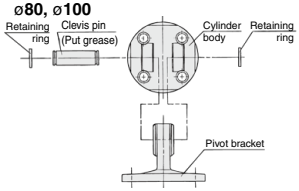
Mounting procedure for clevis

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

ø20 to ø63



ø80, ø100



Weights

(kg)

Bore size (mm)		20	25	32	40	50	63	80	100
Basic weight	Basic (B)	0.11	0.17	0.24	0.44	0.79	1.06	2.07	3.16
	Basic (Z)	0.11	0.17	0.25	0.45	0.80	1.09	—	—
	Axial foot	0.21	0.29	0.40	0.67	1.26	1.77	3.04	4.91
	Flange	0.18	0.26	0.38	0.65	1.16	1.64	2.78	4.44
	Trunnion	0.12	0.19	0.28	0.49	0.88	1.20	—	—
	Clevis	0.17	0.25	0.39	0.68	1.19	1.78	2.77	4.44
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 50 mm of stroke		0.05	0.07	0.09	0.14	0.21	0.25	0.35	0.50
Additional weight for switch magnet		0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.04
Additional weight with air cushion		0	0.01	0.04	0	0.01	0.04	0	0.04
Weight reduction for female rod end		−0.01	−0.02	−0.02	−0.05	−0.10	−0.10	−0.19	−0.27
Additional weight for long stroke		0.01	0.01	0.02	0.03	0.06	0.12	0.21	0.31

Calculation (Example) **CDG1FN20-100Z**
(Built-in magnet, Flange, ø20, 100 stroke)

- Basic weight ····· 0.18 kg (Flange, ø20)
- Additional weight for stroke ····· 0.05 kg/50 mm
- Air cylinder stroke ····· 100 mm
- Additional weight for switch magnet ····· 0.01 kg

0.18 + 0.05 x (100/50) + 0.01 = **0.29 kg**

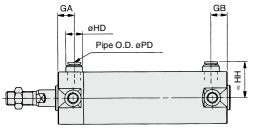
Built-in One-touch Fittings (The shape is the same as the current product.)

CG1 [Mounting type] **N** [Bore size] **F** – [Stroke]

Built-in One-touch fittings

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

Dimensions (Dimensions other than those shown below are the same as the standard type.)



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) ( ): Long stroke

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, Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis (used for changing the port location by 90°)

∗ Auto switch can be mounted.
∗ Female rod end is not available.
∗ Use the current seal kit.

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.					

Clean Series

10-CG1 [Mounting type] [Type (Cushion)] [Bore size] – [Stroke] [Rod end thread] **Z**

Clean Series (With relief port)

The type which is applicable for using inside the clean room graded ISO Class 4 by making an actuator's rod section a double seal construction and discharging by relief port directly to the outside of clean room.

For details about the clean series, refer to the **Web Catalog**.

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, Air cushion
Piston speed	30 to 400 mm/s
Relief port size	M5 x 0.8
Mounting	Basic, Axial foot, Rod flange, Head flange∗∗

∗ Auto switch can be mounted.
∗∗ The basic type is B type only. However, no trunnion mounting female thread is provided.

Air-hydro

CDG1 | Mounting type | **H** (Air-hydro) | Bore size | – | Stroke | Rod end thread | **Z** – | Pivot bracket | Rod end bracket | – | Auto switch | – | Made to Order -XA□

Nil	Without magnet
D	Built-in magnet

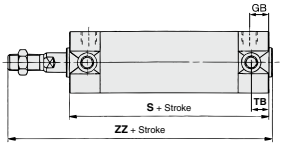
Low pressure hydraulic cylinder of 1.0 MPa or less
When using together with the CC series air-hydro unit, constant and low speed actuation and intermediate stopping similar to hydraulic units are possible with the use of valves and other pneumatic equipment.

Specifications

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	Rubber bumper (Standard equipment)
Ambient and fluid temperature	5 to 60°C
Mounting	Basic, Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis
Made to Order	Change of rod end shape

∗ Auto switch can be mounted.

Dimensions (Dimensions other than those shown below are the same as the standard type.)



Bore size (mm)	GB	TB	S	ZZ Male thread	ZZ Female thread
20	12	11	77	114	92
25	12	11	77	119	93
32	12	11	79	121	95
40	13	12	87	139	104
50	14	13	102	162	120
63	14	13	102	162	120

Water Resistant

CDG1 | Mounting type | Type | Bore size | Port thread type | **R** | – | Stroke | Rod end thread | **Z** – | Pivot bracket | Rod end bracket | – | Auto switch | – | Made to Order **XC6**

Nil	Without magnet
D	Built-in magnet

Water resistant cylinder

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

Water resistant 2-color indicator, solid state auto switch

M9□A(V)	ø32 to ø63
G5BAL	ø80, ø100

⚠ Caution

Since the scraper is press-fit into the rod cover, it cannot be replaced.

Applicable for use in an environment with water splashing such as food processing and car wash equipment, etc.

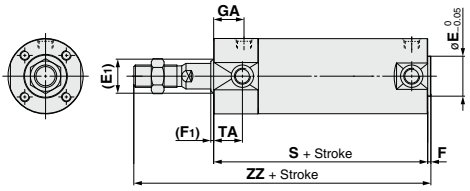
Specifications

Bore size (mm)	32, 40, 50, 63, 80, 100
Action	Double acting, Single rod
Cushion	Rubber bumper/Air cushion
Auto switch mounting	Band mounting type
Made to Order	XC6: Made of stainless steel

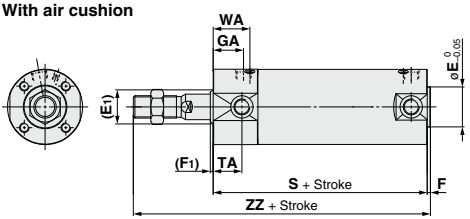
∗ Specifications other than above are the same as standard type.

Dimensions (Dimensions other than those shown below are the same as the standard type.)

With rubber bumper



With air cushion



(mm)

Bore size	E1	E∗	F1	F∗	GA Rc	GA NPT	GA G	S	TA	WA	ZZ Male thread	ZZ Female thread
32	17	18	2	2	18	16.5		77 (85)	17	22	119 (127)	93 (101)
40	21	25	2	2	19	19		84 (93)	18	23	136 (145)	101 (110)
50	26	30	2	2	21	21		97 (109)	20	25	157 (169)	115 (127)
63	26	32	2	2	21	21		97 (109)	20	25	157 (169)	115 (127)
80	32	40	3	3	28	25.5		116 (130)	—	32	190 (204)	138 (152)
100	37	50	3	3	29	26.5		117 (131)	—	33	191 (205)	142 (156)

∗ Dimensions marked with "∗" are the same as the standard type.
∗ ( ): Denotes the dimensions for long stroke.

Refer to page 1189 for details.

Cylinder with Stable Lubrication Function (Lube-retainer)

CDG1 | Mounting | **N** | Bore size | **M** – | Stroke | Rod end thread | **Z** – | Pivot bracket | Rod end bracket | – | Auto switch

- **With auto switch (Built-in magnet)**
- **Cylinder with Stable Lubrication Function (Lube-retainer)**

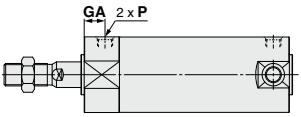
Specifications

Bore size (mm)	**20, 25, 32, 40, 50, 63, 80, 100**
Action	Double acting, Single rod
Minimum operating pressure	0.1 MPa
Cushion	Rubber bumper

∗ Specifications other than the above are the same as the standard type.

Dimensions (Dimensions other than those shown below are the same as the standard type.)

∗ No trunnion mounting female thread is provided on the rod side. (For B: Basic)



(mm)

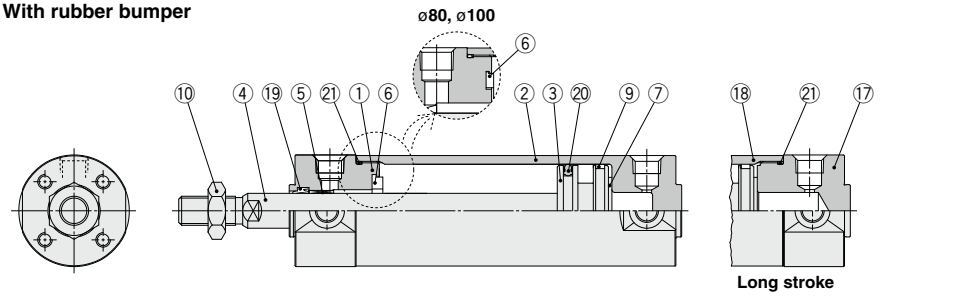
Bore size	**GA**	**P**
20	14	M5 x 0.8
25	13	M5 x 0.8
32	(12)	(Rc 1/8)
40	(13)	(Rc 1/8)
50	(14)	(Rc 1/4)
63	(14)	(Rc 1/4)
80	(20)	(Rc 3/8)
100	(20)	(Rc 1/2)

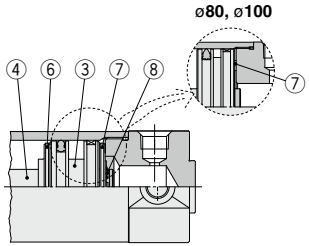
∗ When female thread is used, use a washer, etc. to prevent the contact part at the rod end from being deformed depending on the material of the workpiece.
( ): Same as the standard model.
∗ The mounting dimensions of the mounting bracket are the same as the standard type.

Refer to the **Web Catalog** for details.

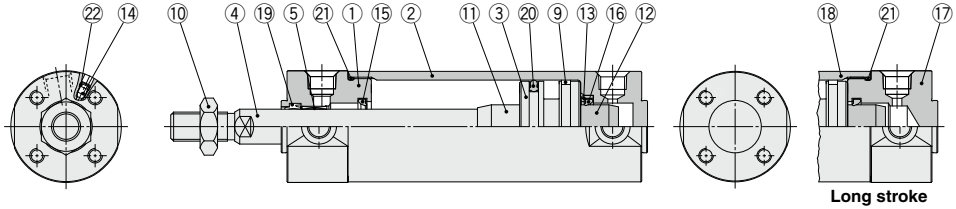
Construction

With rubber bumper





With air cushion



Component Parts

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

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

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

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

Replacement Parts: Seal Kit

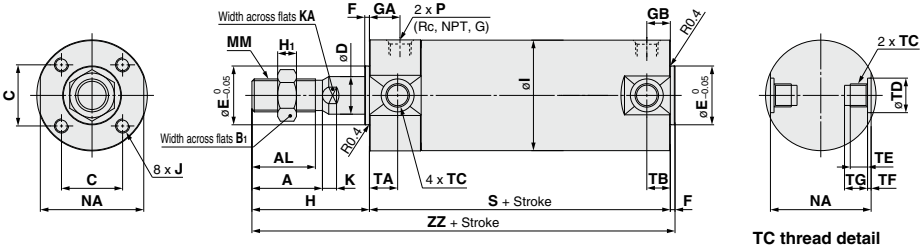
Bore size (mm)	Kit no.	Contents
20	CG1N20Z-PS	Set of the nos. ⑲, ⑳, ㉑
25	CG1N25Z-PS	
32	CG1N32Z-PS	
40	CG1N40Z-PS	

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

Note) Refer to the Specific Product Precautions on page 448 for Disassembly/Replacement.

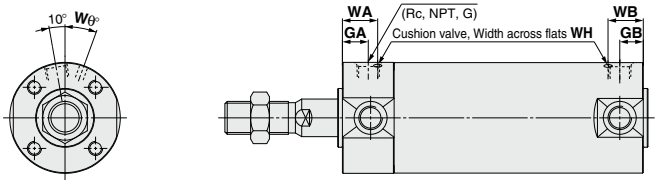
* The seal kit includes a grease pack (10 g).
Order with the following part number when only the grease pack is needed. **Grease pack part number: GR-S-010** (10 g)

Basic: CG1BN

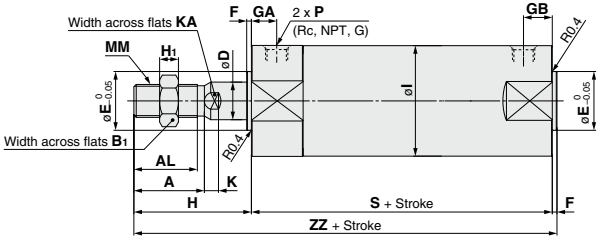


TC thread detail

With air cushion



Basic (Without trunnion mounting female thread): CG1ZN



(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B1	C	D	E	F	H	H1	I	J	K	KA	MM
	Standard	Long stroke	GA	GB	P	GA	GB	P														
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	13	14	8	12	2	35	5	26	M4 x 0.7 depth 7	5	6	M8 x 1.25
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	22	19.5	17	16.5	10	14	2	40	6	31	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	17	20	12	18	2	40	6	38	M5 x 0.8 depth 8	5.5	10	M10 x 1.25
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	19	26	16	25	2	50	8	47	M6 x 1 depth 12	6	14	M14 x 1.5
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	32	20	30	2	58	11	58	M8 x 1.25 depth 16	7	18	M18 x 1.5
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	38	20	32	2	58	11	72	M10 x 1.5 depth 16	7	18	M18 x 1.5
80	Up to 300	301 to 1500	20	16 (20)	3/8	17.5	16 (17.5)	3/8	40	37	32	50	25	40	3	71	13	89	M10 x 1.5 depth 22	10	22	M22 x 1.5
100	Up to 300	301 to 1500	20	16 (20)	1/2	17.5	16 (17.5)	1/2	40	37	41	60	30	50	3	71	16	110	M12 x 1.75 depth 22	10	26	M26 x 1.5

(mm)

Bore size	NA	S	TA	TB	ZZ
20	24	69 (77)	11	11	106 (114)
25	29	69 (77)	11	11	111 (119)
32	35.5	71 (79)	11	10 (11)	113 (121)
40	44	78 (87)	12	10 (12)	130 (139)
50	55	90 (102)	13	12 (13)	150 (162)
63	69	90 (102)	13	12 (13)	150 (162)
80	86	108 (122)	—	—	182 (196)
100	106	108 (122)	—	—	182 (196)

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

With Air Cushion

(mm)

Bore size	Rc, NPT port			WA	WB		Wθ	WH
	GA	GB	P					
20	12	10 (12)	M5 x 0.8	16	15	(16)	25°	1.5
25	12.5	10 (12.5)	M5 x 0.8	16	14.5	(16)	25°	1.5
32	12	10 (12)	1/8	16	14	(16)	25°	1.5
40	13	10 (13)	1/8	17	15	(17)	20°	1.5
50	14	12 (14)	1/4	18	16	(18)	20°	3
63	14	12 (14)	1/4	18	17	(18)	20°	3
80	20	16 (20)	3/8	24	20	(24)	20°	4
100	20	16 (20)	1/2	24	20	(24)	20°	4

TC Thread

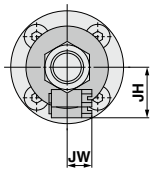
(mm)

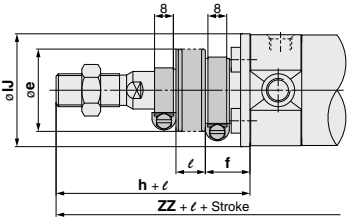
Bore size	TC	TD	TE	TF	TG
20	M5 x 0.8	$8^{+0.08}_{0}$	4	0.5	5.5
25	M6 x 0.75	$10^{+0.08}_{0}$	5	1	6.5
32	M8 x 1.0	$12^{+0.08}_{0}$	5.5	1	7.5
40	M10 x 1.25	$14^{+0.08}_{0}$	6	1.25	8.5
50	M12 x 1.25	$16^{+0.08}_{0}$	7.5	2	10
63	M14 x 1.5	$18^{+0.08}_{0}$	11.5	3	14.5
80	—	—	—	—	—
100	—	—	—	—	—

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

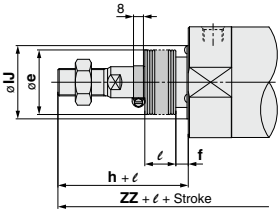
Basic: CG1BN

With rod boot





ø20 to ø63



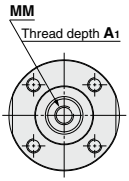
ø80, ø100

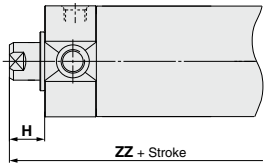
With Rod Boot (mm)

Bore size	e	f	h	IJ	JH Reference	JW Reference	ℓ	ZZ
20	30	18	55	27	15.5	10.5	1/4 stroke	126 (134)
25	30	19	62	32	16.5	10.5		133 (141)
32	35	19	62	38	18.5	10.5		135 (143)
40	35	19	70	48	21.5	10.5		150 (159)
50	40	19	78	59	24	10.5		170 (182)
63	40	20	78	72	24	10.5		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.

Female rod end



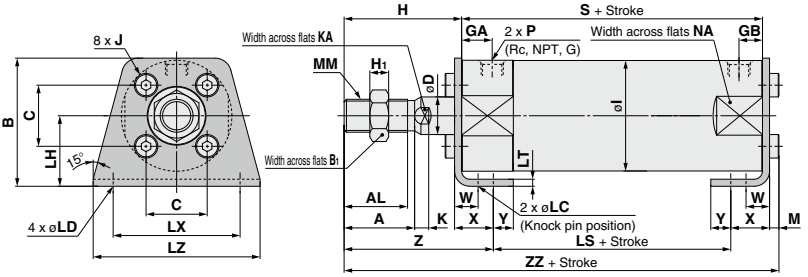


Female Rod End (mm)

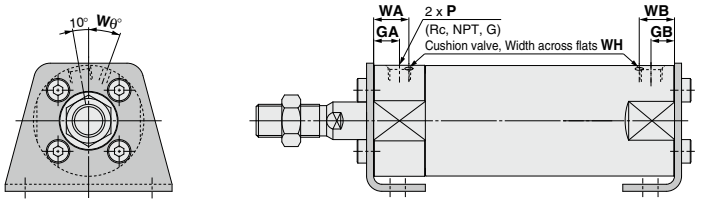
Bore size	A_1	H	MM	ZZ
20	8	13	M4 x 0.7	84 (92)
25	8	14	M5 x 0.8	85 (93)
32	12	14	M6 x 1	87 (95)
40	13	15	M8 x 1.25	95 (104)
50	18	16	M10 x 1.5	108 (120)
63	18	16	M10 x 1.5	108 (120)
80	21	19	M14 x 1.5	130 (144)
100	25	22	M16 x 1.5	133 (147)

∗ When female thread is used, use a washer etc. to prevent the contact part at the rod end from being deformed depending on the material of the workpiece.

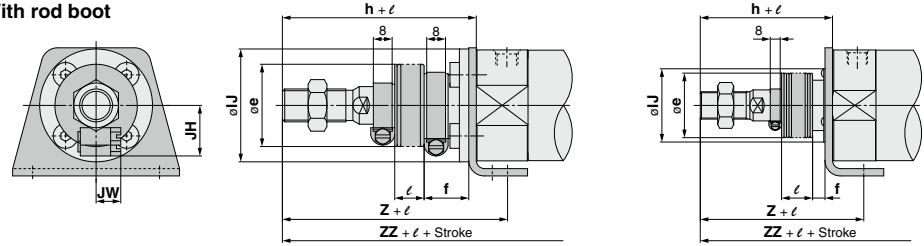
Axial Foot: CG1LN



With air cushion



With rod boot



ø80, ø100

(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B	B1	C	D	H	H1	I	J	K	KA	LC	LD	LH	LS	LT	LX	LZ	M	MM
	Standard	Long stroke	GA	GB	P	GA	GB	P																					
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	34	13	14	8	35	5	26	M4 x 0.7	5	6	4	6	20	45 (53)	3	32	44	3	M8 x 1.25
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	22	19.5	38.5	17	16.5	10	40	6	31	M5 x 0.8	5.5	8	4	6	22	45 (53)	3	36	49	3.5	M10 x 1.25
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	45	17	20	12	40	6	38	M5 x 0.8	5.5	10	4	7	25	45 (53)	3	44	58	3.5	M10 x 1.25
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	54.5	19	26	16	50	8	47	M6 x 1	6	14	4	7	30	51 (60)	3	54	71	4	M14 x 1.5
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	70.5	27	32	20	58	11	58	M8 x 1.25	7	18	5	10	40	55 (67)	4.5	66	86	5	M18 x 1.5
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	82.5	27	38	20	58	11	72	M10 x 1.5	7	18	5	12	45	55 (67)	4.5	82	106	5	M18 x 1.5
80	Up to 300	301 to 1500	20	16 (20)	3/8	17.5	16 (17.5)	3/8	40	37	101	32	50	25	71	13	89	M10 x 1.5	10	22	6	11	55	60 (74)	4.5	100	125	5	M22 x 1.5
100	Up to 300	301 to 1500	20	16 (20)	1/2	17.5	16 (17.5)	1/2	40	37	121	41	60	30	71	16	110	M12 x 1.75	10	26	6	14	65	60 (74)	6	120	150	7	M26 x 1.5

(mm)

Bore size	NA	S	W	X	Y	Z	ZZ
20	24	69 (77)	10	15	7	47	110 (118)
25	29	69 (77)	10	15	7	52	115.5 (123.5)
32	35.5	71 (79)	10	16	8	53	117.5 (125.5)
40	44	78 (87)	10	16.5	8.5	63.5	135 (144)
50	55	90 (102)	17.5	22	11	75.5	157.5 (169.5)
63	69	90 (102)	17.5	22	13	75.5	157.5 (169.5)
80	86	108 (122)	20	28.5	14	95	188.5 (202.5)
100	106	108 (122)	20	30	16	95	192 (206)

∗ For female rod end, since the wrench flap (K and KA portions) will be inside of the bracket when the piston rod is retracted at the stroke end, extend the piston rod to tighten the nut using a tool, and mount a workpiece on the rod end.
∗ Refer to the basic type for the female rod end.
Note) ( ): Denotes the dimensions for long stroke.

With Air Cushion

(mm)

Bore size	Rc, NPT port			WA	WB	Wθ	WH
	GA	GB	P				
20	12	10 (12)	M5 x 0.8	16	15 (16)	25°	1.5
25	12.5	10 (12.5)	M5 x 0.8	16	14.5 (16)	25°	1.5
32	12	10 (12)	1/8	16	14 (16)	25°	1.5
40	13	10 (13)	1/8	17	15 (17)	20°	1.5
50	14	12 (14)	1/4	18	16 (18)	20°	3
63	14	12 (14)	1/4	18	17 (18)	20°	3
80	20	16 (20)	3/8	24	20 (24)	20°	4
100	20	16 (20)	1/2	24	20 (24)	20°	4

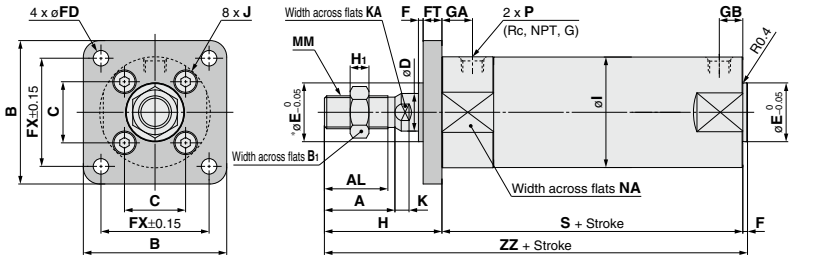
With Rod Boot

(mm)

Bore size	e	f	h	IJ	JH Reference	JW Reference	ℓ	Z	ZZ
20	30	18	55	27	15.5	10.5	1/4 stroke	67	130 (138)
25	30	19	62	32	16.5	10.5		74	137.5 (145.5)
32	35	19	62	38	18.5	10.5		75	139.5 (147.5)
40	35	19	70	48	21.5	10.5		83.5	155 (164)
50	40	19	78	59	24	10.5		95.5	177.5 (189.5)
63	40	20	78	72	24	10.5		95.5	177.5 (189.5)
80	52	10	80	59	—	—		104	197.5 (211.5)
100	62	7	80	71	—	—		104	201 (215)

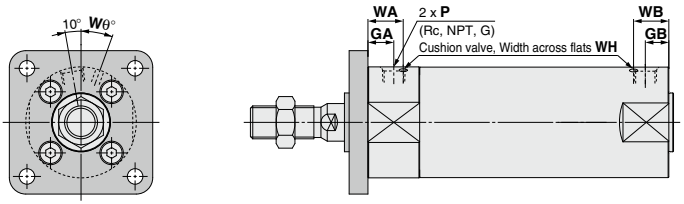
∗ The minimum stroke with rod boot is 20 mm.

Rod Flange: CG1FN

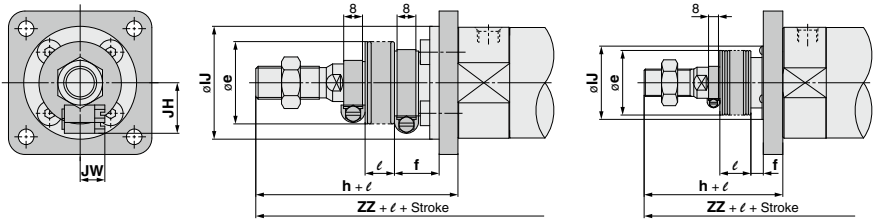


∗ End boss is machined on the flange for øE.

With air cushion



With rod boot



ø80, ø100

(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B	B_1	C	D	E	F	FD	FT	FX	H	H_1	I	J	K
	Standard	Long stroke	GA	GB	P	GA	GB	P																
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	40	13	14	8	12	2	5.5	6	28	35	5	26	M4 x 0.7	5
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	22	19.5	44	17	16.5	10	14	2	5.5	7	32	40	6	31	M5 x 0.8	5.5
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	53	17	20	12	18	2	6.6	7	38	40	6	38	M5 x 0.8	5.5
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	61	19	26	16	25	2	6.6	8	46	50	8	47	M6 x 1	6
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	76	27	32	20	30	2	9	9	58	58	11	58	M8 x 1.25	7
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	92	27	38	20	32	2	11	9	70	58	11	72	M10 x 1.5	7
80	Up to 300	301 to 1500	20	16 (20)	3/8	17.5	16 (17.5)	3/8	40	37	104	32	50	25	40	3	11	11	82	71	13	89	M10 x 1.5	10
100	Up to 300	301 to 1500	20	16 (20)	1/2	17.5	16 (17.5)	1/2	40	37	128	41	60	30	50	3	14	14	100	71	16	110	M12 x 1.75	10

(mm)

Bore size	KA	MM	NA	S	ZZ
20	6	M8 x 1.25	24	69 (77)	106 (114)
25	8	M10 x 1.25	29	69 (77)	111 (119)
32	10	M10 x 1.25	35.5	71 (79)	113 (121)
40	14	M14 x 1.5	44	78 (87)	130 (139)
50	18	M18 x 1.5	55	90 (102)	150 (162)
63	18	M18 x 1.5	69	90 (102)	150 (162)
80	22	M22 x 1.5	86	108 (122)	182 (196)
100	26	M26 x 1.5	106	108 (122)	182 (196)

With Air Cushion

(mm)

Bore size	Rc, NPT port			WA	WB		Wθ	WH
	GA	GB	P					
20	12	10 (12)	M5 x 0.8	16	15	(16)	25°	1.5
25	12.5	10 (12.5)	M5 x 0.8	16	14.5	(16)	25°	1.5
32	12	10 (12)	1/8	16	14	(16)	25°	1.5
40	13	10 (13)	1/8	17	15	(17)	20°	1.5
50	14	12 (14)	1/4	18	16	(18)	20°	3
63	14	12 (14)	1/4	18	17	(18)	20°	3
80	20	16 (20)	3/8	24	20	(24)	20°	4
100	20	16 (20)	1/2	24	20	(24)	20°	4

With Rod Boot

(mm)

Bore size	e	f	h	IJ	JH (Reference)	JW (Reference)	ℓ	ZZ
20	30	18	55	27	15.5	10.5	1/4 stroke	126 (134)
25	30	19	62	32	16.5	10.5		133 (141)
32	35	19	62	38	18.5	10.5		135 (143)
40	35	19	70	48	21.5	10.5		150 (159)
50	40	19	78	59	24	10.5		170 (182)
63	40	20	78	72	24	10.5		170 (182)
80	52	10	80	59	—	—		191 (205)
100	62	7	80	71	—	—		191 (205)

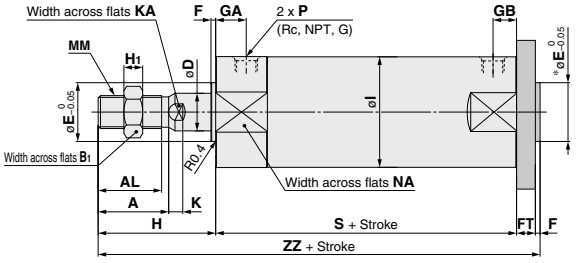
∗ For female rod end, since the wrench flap (K and KA portions) will be inside of the bracket when the piston rod is retracted at the stroke end, extend the piston rod to tighten the nut using a tool, and mount a workpiece on the rod end.

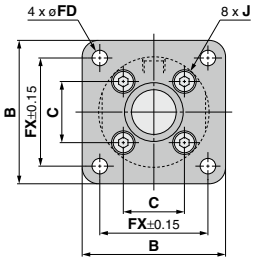
∗ Refer to the basic type for the female rod end.

∗ The minimum stroke with rod boot is 20 mm.

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

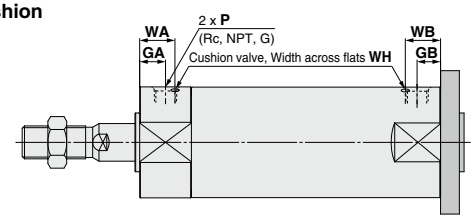
Head Flange: CG1GN

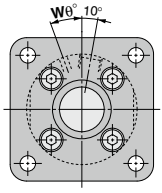




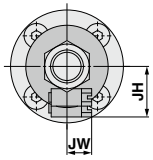
∗ End boss is machined on the flange for øE.

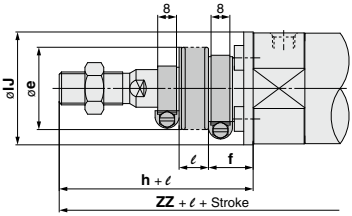
With air cushion

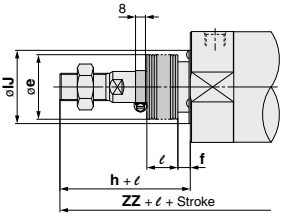




With rod boot







ø80, ø100

(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B	B1	C	D	E	F	FD	FT	FX	H	H1	I	J	K
	Standard	Long stroke	GA	GB	P	GA	GB	P																
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	40	13	14	8	12	2	5.5	6	28	35	5	26	M4 x 0.7	5
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	22	19.5	44	17	16.5	10	14	2	5.5	7	32	40	6	31	M5 x 0.8	5.5
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	53	17	20	12	18	2	6.6	7	38	40	6	38	M5 x 0.8	5.5
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	61	19	26	16	25	2	6.6	8	46	50	8	47	M6 x 1	6
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	76	27	32	20	30	2	9	9	58	58	11	58	M8 x 1.25	7
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	92	27	38	20	32	2	11	9	70	58	11	72	M10 x 1.5	7
80	Up to 300	301 to 1500	20	16 (20)	3/8	17.5	16 (17.5)	3/8	40	37	104	32	50	25	40	3	11	11	82	71	13	89	M10 x 1.5	10
100	Up to 300	301 to 1500	20	16 (20)	1/2	17.5	16 (17.5)	1/2	40	37	128	41	60	30	50	3	14	14	100	71	16	110	M12 x 1.75	10

(mm)

Bore size	KA	MM	NA	S	ZZ
20	6	M8 x 1.25	24	69 (77)	112 (120)
25	8	M10 x 1.25	29	69 (77)	118 (126)
32	10	M10 x 1.25	35.5	71 (79)	120 (128)
40	14	M14 x 1.5	44	78 (87)	138 (147)
50	18	M18 x 1.5	55	90 (102)	159 (171)
63	18	M18 x 1.5	69	90 (102)	159 (171)
80	22	M22 x 1.5	86	108 (122)	193 (207)
100	26	M26 x 1.5	106	108 (122)	196 (210)

∗ Refer to the basic type for the female rod end.
Note) ( ): Denotes the dimensions for long stroke.

With Air Cushion

(mm)

Bore size	Rc, NPT port			WA	WB	Wθ	WH
	GA	GB	P				
20	12	10 (12)	M5 x 0.8	16	15 (16)	25°	1.5
25	12.5	10 (12.5)	M5 x 0.8	16	14.5 (16)	25°	1.5
32	12	10 (12)	1/8	16	14 (16)	25°	1.5
40	13	10 (13)	1/8	17	15 (17)	20°	1.5
50	14	12 (14)	1/4	18	16 (18)	20°	3
63	14	12 (14)	1/4	18	17 (18)	20°	3
80	20	16 (20)	3/8	24	20 (24)	20°	4
100	20	16 (20)	1/2	24	20 (24)	20°	4

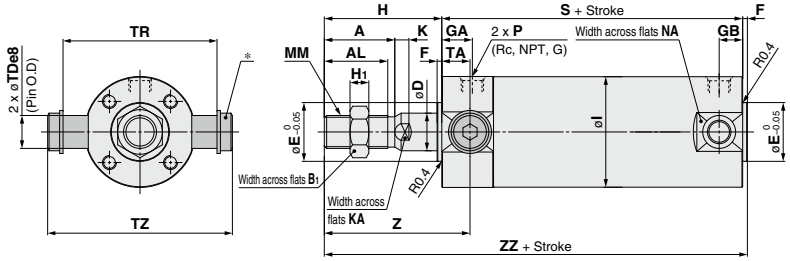
With Rod Boot

(mm)

Bore size	e	f	h	IJ	JH (Reference)	JW (Reference)	ℓ	ZZ
20	30	18	55	27	15.5	10.5	1/4 stroke	132 (140)
25	30	19	62	32	16.5	10.5		140 (148)
32	35	19	62	38	18.5	10.5		142 (150)
40	35	19	70	48	21.5	10.5		158 (167)
50	40	19	78	59	24	10.5		179 (191)
63	40	20	78	72	24	10.5		179 (191)
80	52	10	80	59	—	—		202 (216)
100	62	7	80	71	—	—		205 (219)

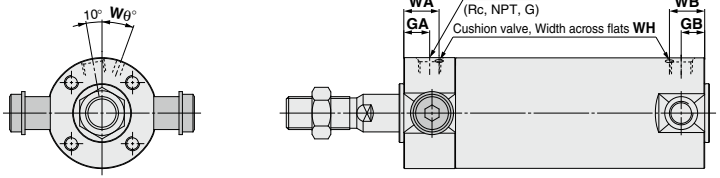
∗ The minimum stroke with rod boot is 20 mm.

Rod Trunnion: CG1UN

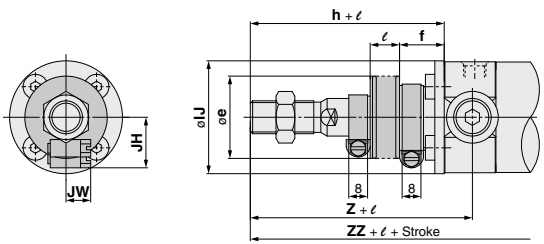


∗ Constructed of a trunnion pin, flat washer and hexagon socket head cap bolt.

With air cushion



With rod boot



(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B1	D	E	F	H	H1	I	K	KA	MM	NA	S
	Standard	Long stroke	GA	GB	P	GA	GB	P														
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	13	8	12	2	35	5	26	5	6	M8 x 1.25	24	69 (77)
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	22	19.5	17	10	14	2	40	6	31	5.5	8	M10 x 1.25	29	69 (77)
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	17	12	18	2	40	6	38	5.5	10	M10 x 1.25	35.5	71 (79)
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	19	16	25	2	50	8	47	6	14	M14 x 1.5	44	78 (87)
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	20	30	2	58	11	58	7	18	M18 x 1.5	55	90 (102)
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	20	32	2	58	11	72	7	18	M18 x 1.5	69	90 (102)

(mm)

Bore size	TA	TDe8	TR	TZ	Z	ZZ
20	11	8 -0.025 -0.047	39	47.6	46	106 (114)
25	11	10 -0.025 -0.047	43	53	51	111 (119)
32	11	12 -0.032 -0.059	54.5	67.7	51	113 (121)
40	12	14 -0.032 -0.059	65.5	78.7	62	130 (139)
50	13	16 -0.032 -0.059	80	98.6	71	150 (162)
63	13	18 -0.032 -0.059	98	119.2	71	150 (162)

∗ Refer to the basic type for the female rod end.

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

With Air Cushion (mm)

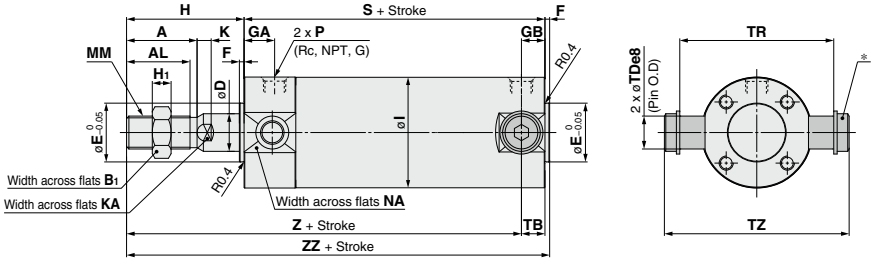
Bore size	Rc, NPT port			WA	WB		Wθ	WH
	GA	GB	P					
20	12	10 (12)	M5 x 0.8	16	15	(16)	25°	1.5
25	12.5	10 (12.5)	M5 x 0.8	16	14.5	(16)	25°	1.5
32	12	10 (12)	1/8	16	14	(16)	25°	1.5
40	13	10 (13)	1/8	17	15	(17)	20°	1.5
50	14	12 (14)	1/4	18	16	(18)	20°	3
63	14	12 (14)	1/4	18	17	(18)	20°	3

With Rod Boot (mm)

Bore size	e	f	h	IJ	JH Reference	JW Reference	ℓ	Z	ZZ
20	30	18	55	27	15.5	10.5	1/4 stroke	66	126 (134)
25	30	19	62	32	16.5	10.5		73	133 (141)
32	35	19	62	38	18.5	10.5		73	135 (143)
40	35	19	70	48	21.5	10.5		82	150 (159)
50	40	19	78	59	24	10.5		91	170 (182)
63	40	20	78	72	24	10.5		91	170 (182)

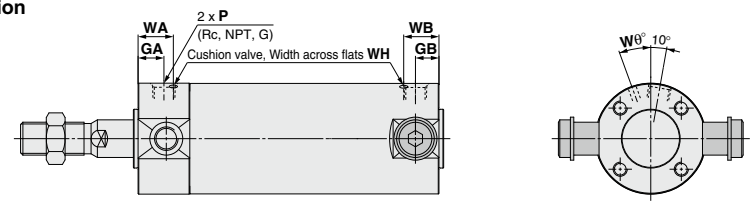
∗ The minimum stroke with rod boot is 20 mm.

Head Trunnion: CG1TN

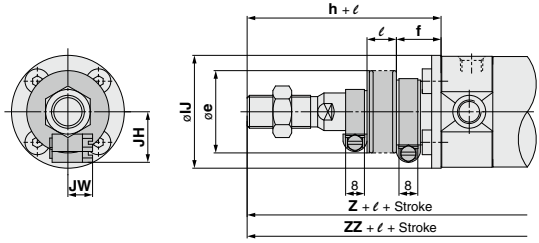


* Constructed of a trunnion pin, flat washer and hexagon socket head cap bolt.

With air cushion



With rod boot



(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B1	D	E	F	H	H1	I	K	KA	MM	NA	S
	Standard	Long stroke	GA	GB	P	GA	GB	P														
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	13	8	12	2	35	5	26	5	6	M8 x 1.25	24	69 (77)
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	22	19.5	17	10	14	2	40	6	31	5.5	8	M10 x 1.25	29	69 (77)
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	17	12	18	2	40	6	38	5.5	10	M10 x 1.25	35.5	71 (79)
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	19	16	25	2	50	8	47	6	14	M14 x 1.5	44	78 (87)
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	20	30	2	58	11	58	7	18	M18 x 1.5	55	90 (102)
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	20	32	2	58	11	72	7	18	M18 x 1.5	69	90 (102)

(mm)

Bore size	TB	TDe8	TR	TZ	Z	ZZ
20	11	$8^{-0.025}_{-0.047}$	39	47.6	93 (101)	106 (114)
25	11	$10^{-0.025}_{-0.047}$	43	53	98 (106)	111 (119)
32	10 (11)	$12^{-0.032}_{-0.059}$	54.5	67.7	101 (108)	113 (121)
40	10 (12)	$14^{-0.032}_{-0.059}$	65.5	78.7	118 (125)	130 (139)
50	12 (13)	$16^{-0.032}_{-0.059}$	80	98.6	136 (147)	150 (162)
63	12 (13)	$18^{-0.032}_{-0.059}$	98	119.2	136 (147)	150 (162)

* Refer to the basic type for the female rod end.

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

With Air Cushion

(mm)

Bore size	Rc, NPT port			WA	WB	Wθ	WH
	GA	GB	P				
20	12	10 (12)	M5 x 0.8	16	15 (16)	25°	1.5
25	12.5	10 (12.5)	M5 x 0.8	16	14.5 (16)	25°	1.5
32	12	10 (12)	1/8	16	14 (16)	25°	1.5
40	13	10 (13)	1/8	17	15 (17)	20°	1.5
50	14	12 (14)	1/4	18	16 (18)	20°	3
63	14	12 (14)	1/4	18	17 (18)	20°	3

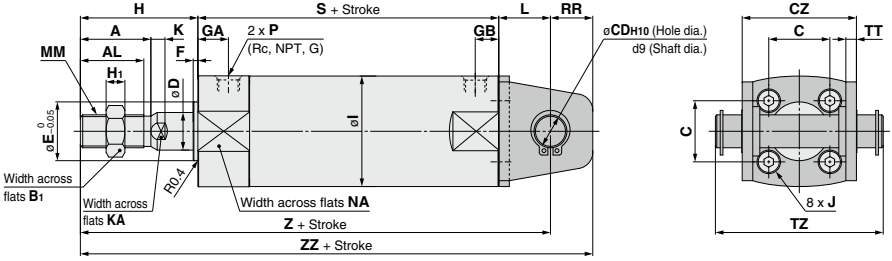
With Rod Boot

(mm)

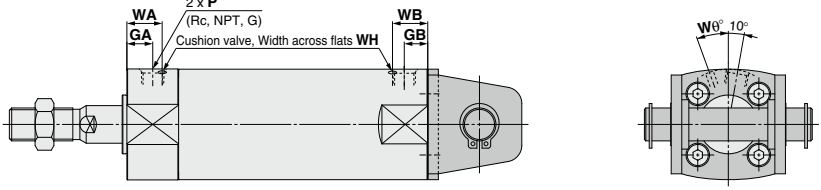
Bore size	e	f	h	IJ	JH Reference	JW Reference	ℓ	Z	ZZ
20	30	18	55	27	15.5	10.5	1/4 stroke	113 (121)	126 (134)
25	30	19	62	32	16.5	10.5		120 (128)	133 (141)
32	35	19	62	38	18.5	10.5		123 (130)	135 (143)
40	35	19	70	48	21.5	10.5		138 (145)	150 (159)
50	40	19	78	59	24	10.5		156 (167)	170 (182)
63	40	20	78	72	24	10.5		156 (167)	170 (182)

* The minimum stroke with rod boot is 20 mm.

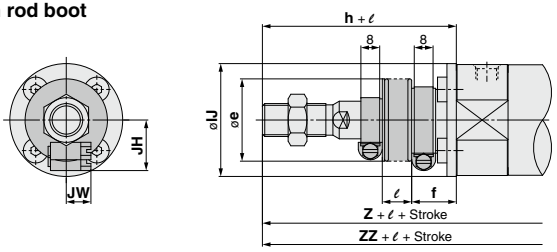
Clevis: CG1DN (ø20 to ø63)



With air cushion



With rod boot



(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B1	C	CD	CZ	D	E	F	H	H1	I	J	K	KA	L	MM	NA
	Standard	Long stroke	GA	GB	P	GA	GB	P																		
20	Up to 200	201 to 1500	12	10 (12)	1/8	12	10 (12)	M5 x 0.8	18	15.5	13	14	8	29	8	12	2	35	5	26	M4 x 0.7	5	6	14	M8 x 1.25	24
25	Up to 300	301 to 1500	12	10 (12)	1/8	12.5	10 (12.5)	M5 x 0.8	22	19.5	17	16.5	10	33	10	14	2	40	6	31	M5 x 0.8	5.5	8	16	M10 x 1.25	29
32	Up to 300	301 to 1500	12	10 (12)	1/8	10.5	10 (10.5)	1/8	22	19.5	17	20	12	40	12	18	2	40	6	38	M5 x 0.8	5.5	10	20	M10 x 1.25	35.5
40	Up to 300	301 to 1500	13	10 (13)	1/8	13	10 (10)	1/8	30	27	19	26	14	49	16	25	2	50	8	47	M6 x 1	6	14	22	M14 x 1.5	44
50	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	32	16	60	20	30	2	58	11	58	M8 x 1.25	7	18	25	M18 x 1.5	55
63	Up to 300	301 to 1500	14	12 (14)	1/4	14	12 (14)	1/4	35	32	27	38	18	74	20	32	2	58	11	72	M10 x 1.5	7	18	30	M18 x 1.5	69

(mm)

Bore size	RR	S	TT	TZ	Z	ZZ	Applicable pin part no.
20	11	69 (77)	3.2	43.4	118 (126)	129 (137)	CD-G02
25	13	69 (77)	3.2	48	125 (133)	138 (146)	CD-G25
32	15	71 (79)	4.5	59.4	131 (139)	146 (154)	CD-G03
40	18	78 (87)	4.5	71.4	150 (159)	168 (177)	CD-G04
50	20	90 (102)	6	86	173 (185)	193 (205)	CD-G05
63	22	90 (102)	8	105.4	178 (190)	200 (212)	CD-G06

∗ Refer to the basic type for the female rod end.
Note) ( ): Denotes the dimensions for long stroke.

With Air Cushion (mm)

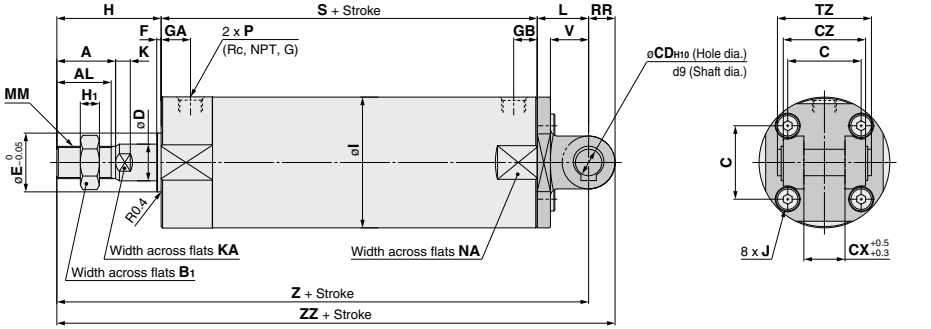
Bore size	Rc, NPT port			WA	WB	Wθ	WH
	GA	GB	P				
20	12	10 (12)	M5 x 0.8	16	15 (16)	25°	1.5
25	12.5	10 (12.5)	M5 x 0.8	16	14.5 (16)	25°	1.5
32	12	10 (12)	1/8	16	14 (16)	25°	1.5
40	13	10 (13)	1/8	17	15 (17)	20°	1.5
50	14	12 (14)	1/4	18	16 (18)	20°	3
63	14	12 (14)	1/4	18	17 (18)	20°	3

With Rod Boot (mm)

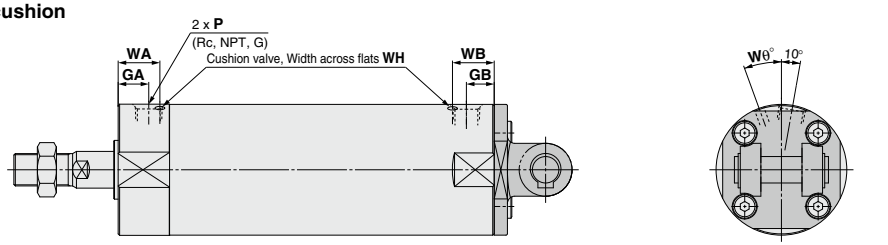
Bore size	e	f	h	IJ	JH Reference	JW Reference	ℓ	Z	ZZ
20	30	18	55	27	15.5	10.5	1/4 stroke	138 (146)	149 (157)
25	30	19	62	32	16.5	10.5		147 (155)	160 (168)
32	35	19	62	38	18.5	10.5		153 (161)	168 (176)
40	40	19	70	48	21.5	10.5		170 (179)	188 (197)
50	40	19	78	59	24	10.5		193 (205)	213 (225)
63	40	20	78	72	24	10.5		198 (210)	220 (232)

∗ The minimum stroke with rod boot is 20 mm.

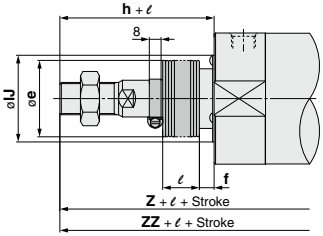
Clevis: CG1DN (ø80, ø100)



With air cushion



With rod boot



(mm)

Bore size	Stroke range		Rc, NPT port			G port			A	AL	B1	C	CD	CX	CZ	D	E	F	H	H1	I	J	K	KA	L	MM	NA
	Standard	Long stroke	GA	GB	P	GA	GB	P																			
80	Up to 300	301 to 1500	20	16 (20)	3/8	17.5	16 (17.5)	3/8	40	37	32	50	18	28	56	25	40	3	71	13	89	M10 x 1.5	10	22	35	M22 x 1.5	86
100	Up to 300	301 to 1500	20	16 (20)	1/2	17.5	16 (17.5)	1/2	40	37	41	60	22	32	64	30	50	3	71	16	110	M12 x 1.75	10	26	43	M26 x 1.5	106

(mm)

Bore size	RR	S	TZ	V	Z	ZZ	Applicable pin part no.
80	18	108 (122)	64	26	214 (228)	232 (246)	IY-G08
100	22	108 (122)	72	32	222 (236)	244 (258)	IY-G10

∗ Refer to the basic type for the female rod end.
Note) ( ): Denotes the dimensions for long stroke.

With Air Cushion (mm)

Bore size	Rc, NPT port			WA	WB	Wθ	WH
	GA	GB	P				
80	20	16 (20)	3/8	24	20 (24)	20°	4
100	20	16 (20)	1/2	24	20 (24)	20°	4

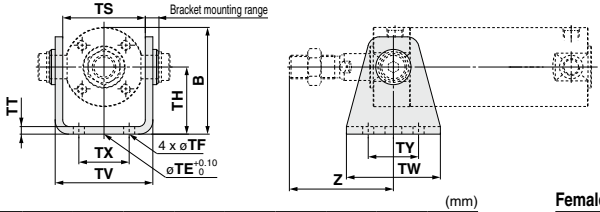
With Rod Boot (mm)

Bore size	e	f	h	IJ	ℓ	Z	ZZ
80	52	10	80	59	1/4 stroke	223 (237)	241 (255)
100	62	7	80	71		231 (245)	253 (267)

∗ The minimum stroke with rod boot is 20 mm.

With Pivot Bracket [( ): Denotes the dimensions for long stroke.]

Rod Trunnion (U) with Pivot Bracket



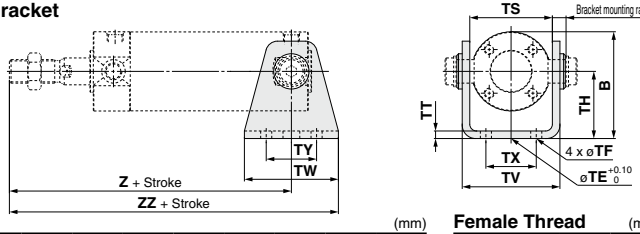
Male Thread (mm)

Bore size	B	TE	TF	TH	TS	TT	TV	TW	TX	TY	Z
20	38	10	5.5	25	28	3.2	35.8	42	16	28	46
25	45.5	10	5.5	30	33	3.2	39.8	42	20	28	51
32	54	10	6.6	35	40	4.5	49.4	48	22	28	51
40	63.5	10	6.6	40	49	4.5	58.4	56	30	30	62
50	79	20	9	50	60	6	72.4	64	36	36	71
63	96	20	11	60	74	8	90.4	74	46	46	71

Female Thread (mm)

Bore size	Z
20	24
25	25
32	25
40	27
50	29
63	29

Head Trunnion (T) with Pivot Bracket



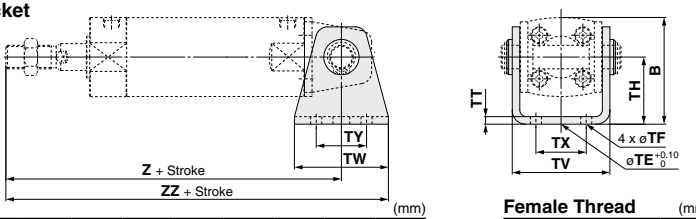
Male Thread (mm)

Bore size	B	TE	TF	TH	TS	TT	TV	TW	TX	TY	Z	ZZ
20	38	10	5.5	25	28	3.2	35.8	42	16	28	93 (101)	114 (122)
25	45.5	10	5.5	30	33	3.2	39.8	42	20	28	98 (106)	119 (127)
32	54	10	6.6	35	40	4.5	49.4	48	22	28	101 (108)	125 (132)
40	63.5	10	6.6	40	49	4.5	58.4	56	30	30	118 (125)	146 (153)
50	79	20	9	50	60	6	72.4	64	36	36	136 (147)	168 (179)
63	96	20	11	60	74	8	90.4	74	46	46	136 (147)	173 (184)

Female Thread (mm)

Bore size	Z	ZZ
20	71 (79)	92 (100)
25	72 (80)	93 (101)
32	75 (80)	99 (106)
40	83 (90)	111 (118)
50	94 (105)	126 (137)
63	94 (105)	131 (142)

Clevis (D) with Pivot Bracket ø20 to ø63



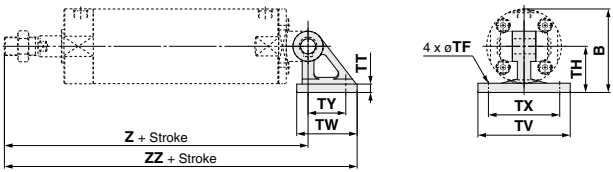
Male Thread (mm)

Bore size	B	TE	TF	TH	TT	TV	TW	TX	TY	Z	ZZ
20	38	10	5.5	25	3.2	35.8	42	16	28	118 (126)	139 (147)
25	45.5	10	5.5	30	3.2	39.8	42	20	28	125 (133)	146 (154)
32	54	10	6.6	35	4.5	49.4	48	22	28	131 (139)	155 (163)
40	63.5	10	6.6	40	4.5	58.4	56	30	30	150 (159)	178 (187)
50	79	20	9	50	6	72.4	64	36	36	173 (185)	205 (217)
63	96	20	11	60	8	90.4	74	46	46	178 (190)	215 (227)

Female Thread (mm)

Bore size	Z	ZZ
20	96 (104)	117 (125)
25	99 (107)	120 (128)
32	105 (113)	129 (137)
40	115 (124)	143 (152)
50	131 (143)	163 (175)
63	136 (148)	173 (185)

Clevis (D) with Pivot Bracket ø80, ø100



Male Thread (mm)

Bore size	B	TF	TH	TT	TV	TW	TX	TY	Z	ZZ
80	99.5	11	55	11	110	72	85	45	214 (228)	272.5 (286.5)
100	120	13.5	65	12	130	93	100	60	222 (236)	298.5 (312.5)

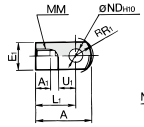
Female Thread (mm)

Bore size	Z	ZZ
80	162 (176)	220.5 (234.5)
100	173 (187)	249.5 (263.5)

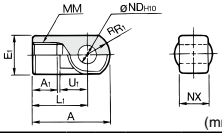
Dimensions of Accessories

Single Knuckle Joint

I-G02, G03
Material: Carbon steel



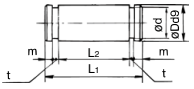
I-G04, G05, G08, G10
Material: Cast iron



(mm)

Part no.	Applicable bore size (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



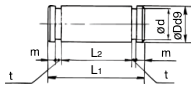
Material: Carbon steel

(mm)

Part no.	Applicable bore size (mm)	Dd9	L1	d	L2	m	t	Included retaining ring
IY-G02	20	$8^{-0.040}_{-0.076}$	21	7.6	16.2	1.5	0.9	Type C8 for axis
IY-G03	25, 32	$10^{-0.040}_{-0.076}$	25.6	9.6	20.2	1.55	1.15	Type C10 for axis
IY-G04	40	$10^{-0.040}_{-0.076}$	41.6	9.6	36.2	1.55	1.15	Type C10 for axis
IY-G05	50, 63	$14^{-0.050}_{-0.093}$	50.6	13.4	44.2	2.05	1.15	Type C14 for axis
IY-G08	80	$18^{-0.050}_{-0.093}$	64	17	56.2	2.55	1.35	Type C18 for axis
IY-G10	100	$22^{-0.065}_{-0.117}$	72	21	64.2	2.55	1.35	Type C22 for axis

∗ Retaining rings are included.

Clevis Pin



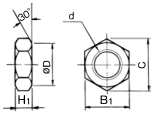
Material: Carbon steel

(mm)

Part no.	Applicable bore size (mm)	Dd9	L1	d	L2	m	t	Included retaining ring
CD-G02	20	$8^{-0.040}_{-0.076}$	43.4	7.6	38.6	1.5	0.9	Type C8 for axis
CD-G25	25	$10^{-0.040}_{-0.076}$	48	9.6	42.6	1.55	1.15	Type C10 for axis
CD-G03	32	$12^{-0.050}_{-0.093}$	59.4	11.5	54	1.55	1.15	Type C12 for axis
CD-G04	40	$14^{-0.050}_{-0.093}$	71.4	13.4	65	2.05	1.15	Type C14 for axis
CD-G05	50	$16^{-0.050}_{-0.093}$	86	15.2	79.6	2.05	1.15	Type C16 for axis
CD-G06	63	$18^{-0.050}_{-0.093}$	105.4	17	97.8	2.45	1.35	Type C18 for axis

∗ Retaining rings are included.
∗ A clevis pin and a knuckle pin are common for the bore size ø80 and ø100.

Rod End Nut



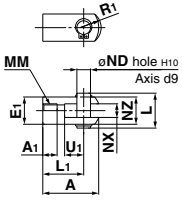
Material: Carbon steel

(mm)

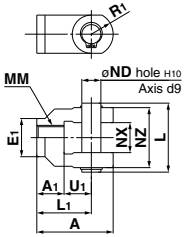
Part no.	Applicable bore size (mm)	d	H1	B1	C	D
NT-02	20	M8 x 1.25	5	13	(15)	12.5
NT-03	25, 32	M10 x 1.25	6	17	(19.6)	16.5
NT-G04	40	M14 x 1.5	8	19	(21.9)	18
NT-05	50, 63	M18 x 1.5	11	27	(31.2)	26
NT-08	80	M22 x 1.5	13	32	(37.0)	31
NT-10	100	M26 x 1.5	16	41	(47.3)	39

Double Knuckle Joint

Y-G02, G03
Material: Carbon steel



Y-G04, G05, G08, G10
Material: Cast iron



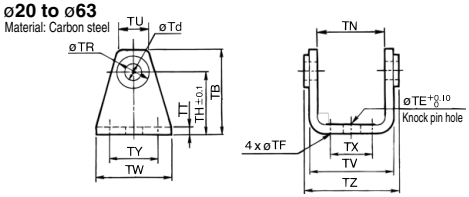
(mm)

Part no.	Applicable bore size (mm)	A	A1	E1	L1	MM	R1	U1	ND	NX	NZ	L	Included 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

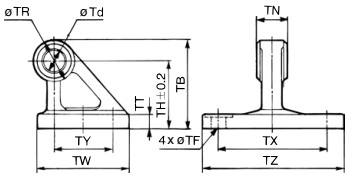
∗ A knuckle pin and retaining rings are included.

Pivot Bracket

ø20 to ø63
Material: Carbon steel



ø80, ø100
Material: Cast iron



(mm)

Part no.	Applicable bore size (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	$28^{+0.1}_{-0.3}$	36	11
CG-100-24A	100	90	22	—	13.5	65	$32^{+0.1}_{-0.3}$	50	12

Part no.	Applicable bore size (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	$22d_{9}^{-0.065}_{-0.117}$

Mounting Brackets, Rod End Brackets, and Nut Material: Stainless Steel

Part No.

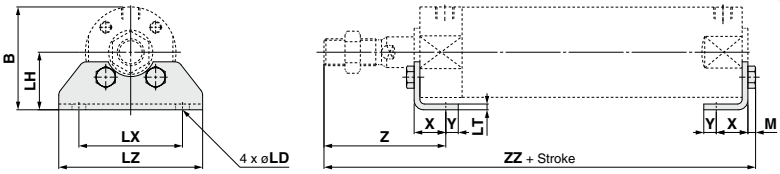
Bore size (mm)	Axial foot*1	Single knuckle joint	Double knuckle joint*1	Rod end nut
20	—	I-G02SUS	Y-G02SUS	NT-02SUS
25	—	I-G03SUS	Y-G03SUS	NT-03SUS
32	CG-L032SUS			
40	CG-L040SUS	I-G04SUS	Y-G04SUS	NT-G04SUS
50	CG-L050SUS	I-G05SUS	Y-G05SUS	NT-05SUS
63	CG-L063SUS			
80	CG-L080SUS	I-G08SUS	Y-G08SUS	NT-08SUS
100	CG-L100SUS	I-G10SUS	Y-G10SUS	NT-10SUS

*1 A knuckle pin and retaining rings are shipped together. Refer to the XC27 for details on stainless steel double clevis pins and double knuckle pins. The accessories need to be ordered separately from the cylinder.

Dimensions

The single knuckle joint, double knuckle joint, mounting nut, and rod end nut are the same as the standard type.

Axial foot



(mm)

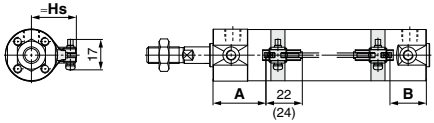
Bore size	B	LD	LH	LT	LX	LZ	M	X	Y	Z	ZZ
32	44	7.2	[25]	[3]	[44]	60	[3.5]	[16]	6	[53]	[117.5(125.5)]
40	53.5	7.2	[30]	[3]	[54]	75	[4]	[16.5]	6.5	[63.5]	[135(144)]
50	69	[10]	[40]	4	[66]	90	5.5	21.5	11.5	[75.5]	[157.5(169.5)]
63	81	[12]	[45]	4	[82]	110	7	21.5	11.5	[75.5]	159(171)
80	99.5	12	[55]	4	[100]	130	7	28	17	[95]	190(204)
100	125	[14]	[70]	[6]	[120]	160	8	[30]	15	[95]	193(207)

*1 [ ]: Same as the standard type ( ): Denotes the dimensions for long strokes
*2 Supplied with 4 mounting screws.

Auto Switch Mounting

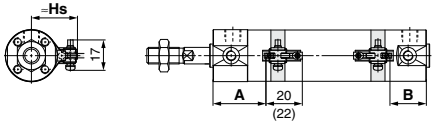
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Solid state auto switch
D-M9□/M9□W, D-M9□A
ø20 to ø63



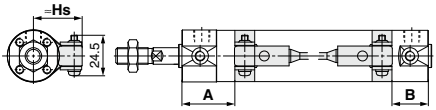
( ): Dimension of the D-M9□A
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-M9□V/M9□WV, D-M9□AV
ø20 to ø63

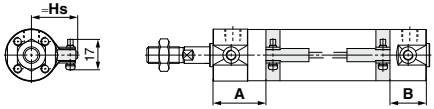


( ): Dimension of the D-M9□AV
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

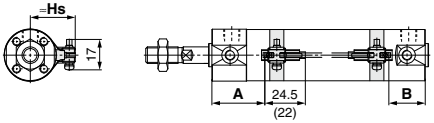
D-G5/K5/G5□W/G5BA
D-K59W, D-G59F, D-G5NT
ø20 to ø100



D-H7□/H7□W
D-H7NF/H7BA/D-H7C
ø20 to ø63

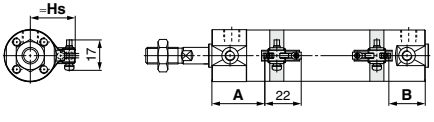


Reed auto switch
D-A9□
ø20 to ø63



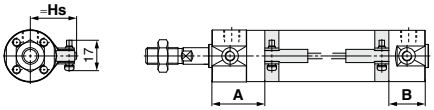
( ): Dimension of the D-A96
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-A9□V
ø20 to ø63

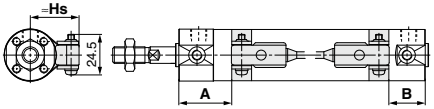


A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-C7/C8, D-C73C/C80C
ø20 to ø63



D-B5/B6/B59W
ø20 to ø100



Auto Switch Mounting Height (mm)

Auto switch model / Bore size	D-M9□(V) D-M9□W(V) D-M9□A(V) D-A9□(V) D-H7□ D-H7□W D-H7NF D-H7BA D-C7/C8	D-C73C D-C80C	D-G5/K5 D-G5□W D-K59W D-B5/B6 D-B59W D-G5NT D-G59F D-H7C D-G5BA
	Hs	Hs	Hs
20	26.5	27	27.5
25	29	29.5	30
32	32.5	33	33.5
40	37	37.5	38
50	42.5	43	43.5
63	49.5	50	50.5
80	—	—	59
100	—	—	69.5

Auto Switch Proper Mounting Position (Detection at Stroke End)

Except Single Acting, Direct Mount Type (CG1R, CG1KR) and With End Lock (CBG1)

(mm)

Auto switch model / Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-H7□W D-H7NF D-H7BA D-H7□ D-H7C		D-C7□ D-C80 D-C73C D-C80C		D-G5□/K59 D-G5□W/K59W D-G59F D-G5NT D-G5BA		D-B5□ D-B64		D-B59W	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	33	24 (32)	29	20 (28)	28.5	19.5 (27.5)	29.5	20.5 (28.5)	25	16 (24)	23.5	14.5 (22.5)	26.5	17.5 (25.5)
25	32.5	24.5 (32.5)	28.5	20.5 (28.5)	28	20 (28)	29	21 (29)	24.5	16.5 (24.5)	23	15 (23)	26	18 (26)
32	34	25 (33)	30	21 (29)	29.5	20.5 (28.5)	30.5	21.5 (29.5)	26	17 (25)	24.5	15.5 (23.5)	27.5	18.5 (26.5)
40	39	27 (36)	35	23 (32)	34.5	22.5 (31.5)	35.5	23.5 (32.5)	31	19 (28)	29.5	17.5 (26.5)	32.5	20.5 (29.5)
50	46	32 (44)	42	28 (40)	41.5	27.5 (39.5)	42.5	28.5 (40.5)	38	24 (36)	36.5	22.5 (34.5)	39.5	25.5 (37.5)
63	44.5	33.5 (45.5)	40.5	29.5 (41.5)	40	29 (41)	41	30 (42)	36.5	25.5 (37.5)	35	24 (36)	38	27 (39)
80	—	—	—	—	—	—	—	—	49.5	30.5 (44.5)	48	29 (43)	51	32 (46)
100	—	—	—	—	—	—	—	—	48.5	31.5 (45.5)	47	30 (44)	50	33 (47)

Note 1) The values in ( ) are for long stroke.
Note 2) Adjust the auto switch after confirming the operating condition in the actual setting.

Single Acting, Spring Return Type (S)

Auto switch model	Bore size	A dimensions				B
		Up to 50 st	51 to 100 st	101 to 125 st	126 to 200 st	
D-M9□(V) D-M9□W(V) D-M9□A(V)	20	58	83	108	—	24
	25	57.5	82.5	107.5	132.5	24.5
	32	59	84	109	134	25
	40	64	89	114	139	27
D-A9□(V)	20	54	79	104	—	20
	25	53.5	78.5	103.5	128.5	20.5
	32	55	80	105	130	21
	40	60	85	110	135	23
D-H7□ D-H7□W D-H7C D-H7BA D-H7NF	20	53.5	78.5	103.5	—	19.5
	25	53	78	103	128	20
	32	54.5	79.5	109.5	129.5	20.5
	40	59.5	84.5	109.5	134.5	22.5
D-C7□	20	54.5	79.5	104.5	—	20.5
D-C80	25	54	79	104	129	21
D-C73C	32	55.5	80.5	105.5	130.5	21.5
D-C80C	40	60.5	85.5	110.5	135.5	23.5
D-G5NT D-G59F	20	50	75	100	—	16
	25	49.5	74.5	99.5	124.5	16.5
	32	51	76	101	126	17
	40	56	81	106	131	19
D-B5□ D-B64	20	48.5	73.5	98.5	—	14.5
	25	48	73	98	123	15
	32	49.5	74.5	99.5	124.5	15.5
	40	54.5	79.5	104.5	129.5	17.5
D-B59W	20	51.5	76.5	101.5	—	17.5
	25	51	76	101	126	18
	32	52.5	77.5	102.5	127.5	18.5
	40	57.5	82.5	107.5	132.5	20.5

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

Auto Switch Proper Mounting Position (Detection at Stroke End)

Single Acting, Spring Extend Type (T)

(mm)

Auto switch model	Bore size	A	B dimensions			
			Up to 50 st	51 to 100 st	101 to 125 st	126 to 200 st
D-M9□(V) D-M9□W(V) D-M9□A(V)	20	33	49	74	99	—
	25	32.5	49.5	74.5	99.5	124.5
	32	34	50	75	100	125
	40	39	52	77	102	127
D-A9□(V)	20	29	45	70	95	—
	25	28.5	45.5	70.5	95.5	120.5
	32	30	46	71	96	121
	40	35	48	73	98	123
D-H7□ D-H7□W D-H7C D-H7BA D-H7NF	20	28.5	44.5	69.5	94.5	—
	25	28	45	70	95	120
	32	29.5	45.5	70.5	95.5	120.5
	40	34.5	47.5	72.5	97.5	122.5
D-C7□ D-C80 D-C73C D-C80C	20	29.5	45.5	70.5	95.5	—
	25	29	46	71	96	121
	32	30.5	46.5	71.5	96.5	121.5
	40	35.5	48.5	73.5	98.5	123.5
D-G5NT D-G59F	20	25	41	66	91	—
	25	24.5	41.5	66.5	91.5	116.5
	32	26	42	67	92	117
	40	31	44	69	94	119
D-B5□ D-B64	20	23.5	39.5	64.5	89.5	—
	25	23	40	65	90	115
	32	24.5	40.5	65.5	90.5	115.5
	40	29.5	42.5	67.5	92.5	117.5
D-B59W	20	26.5	42.5	67.5	92.5	—
	25	26	43	68	93	118
	32	27.5	43.5	68.5	93.5	118.5
	40	32.5	45.5	70.5	95.5	120.5

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

Direct Mount Type (CG1R, CG1KR)

(mm)

Auto switch model / Bore size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-H7□W D-H7NF D-H7BA D-H7□ D-H7C		D-C7□ D-C80 D-C73C D-C80C		D-G59F D-G5NT		D-B5□ D-B64		D-B59W	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	12	24	8	20	7.5	19.5	8.5	20.5	4	16	2.5	14.5	5.5	17.5
25	11.5	24.5	7.5	20.5	7	20	8	21	3.5	16.5	2	15	5	18
32	13	25	9	21	8.5	20.5	9.5	21.5	5	17	3.5	15.5	6.5	18.5
40	18	27	14	23	13.5	22.5	14.5	23.5	10	19	8.5	17.5	11.5	20.5
50	20	32	16	28	15.5	27.5	16.5	28.5	12	24	10.5	22.5	13.5	25.5
63	18.5	33.5	14.5	29.5	14	29	15	30	10.5	25.5	9	24	12	27

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

Auto Switch Proper Mounting Position (Detection at Stroke End)

With End Lock (CBG1)

(mm)

Auto switch model / Bore size	Lock position	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-H7□ D-H7C D-H7□W D-H7BA D-H7NF		D-G5□W D-K59W D-G59F D-G5 D-K5 D-G5NT D-G5BA		D-C7 D-C8 D-C73C D-C80C		D-B5 D-B6		D-B59W	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
20	Head end	33	36	29	32	28.5	31.5	25	28	29.5	32.5	23.5	26.5	26.5	29.5
	Rod end	44	24 (32)	40	20 (28)	39.5	19.5 (27.5)	36	16 (24)	40.5	20.5 (28.5)	34.5	14.5 (22.5)	37.5	17.5 (25.5)
	Double end	44	36	40	32	39.5	31.5	36	28	40.5	32.5	34.5	26.5	37.5	29.5
25	Head end	33	36	29	32	28.5	31.5	25	28	29.5	32.5	23.5	26.5	26.5	29.5
	Rod end	44	24 (32)	40	20 (28)	39.5	19.5 (27.5)	36	16 (24)	40.5	20.5 (28.5)	34.5	14.5 (22.5)	37.5	17.5 (25.5)
	Double end	44	36	40	32	39.5	31.5	36	28	40.5	32.5	34.5	26.5	37.5	29.5
32	Head end	34	35	30	31	29.5	30.5	26	27	30.5	31.5	24.5	25.5	27.5	28.5
	Rod end	44	25 (33)	40	21 (29)	39.5	20.5 (28.5)	36	17 (25)	40.5	21.5 (29.5)	34.5	15.5 (23.5)	37.5	18.5 (26.5)
	Double end	44	35	40	31	39.5	30.5	36	27	40.5	31.5	34.5	25.5	37.5	28.5
40	Head end	39	41	35	37	34.5	36.5	31	33	35.5	37.5	29.5	31.5	32	34.5
	Rod end	48	27 (36)	44	23 (32)	43.5	22.5 (31.5)	40	19 (28)	44.5	23.5 (32.5)	38.5	17.5 (26.5)	41	20.5 (29.5)
	Double end	48	41	44	37	43.5	36.5	40	33	44.5	37.5	38.5	31.5	41	34.5
50	Head end	46	49	42	45	41.5	44.5	38	41	42.5	45.5	36.5	39.5	39.5	42.5
	Rod end	58	32 (44)	54	28 (40)	53.5	27.5 (39.5)	50	24 (36)	54.5	28.5 (40.5)	48.5	22.5 (34.5)	51.5	25.5 (37.5)
	Double end	58	49	54	45	53.5	44.5	50	41	54.5	45.5	48.5	39.5	51.5	42.5
63	Head end	46	49	42	45	41.5	44.5	38	41	42.5	45.5	36.5	39.5	39.5	42.5
	Rod end	58	32 (44)	54	28 (40)	53.5	27.5 (39.5)	50	24 (36)	54.5	28.5 (40.5)	48.5	22.5 (34.5)	51.5	25.5 (37.5)
	Double end	58	49	54	45	53.5	44.5	50	41	54.5	45.5	48.5	39.5	51.5	42.5
80	Head end	—	—	—	—	—	—	48	54	—	—	46.5	52.5	49.5	55.5
	Rod end							64	32 (46)			62.5	30.5 (44.5)	65.5	33.5 (47.5)
	Double end							64	54			62.5	52.5	65.5	55.5
100	Head end	—	—	—	—	—	—	48	54	—	—	46.5	52.5	49.5	55.5
	Rod end							64	32 (46)			62.5	30.5 (44.5)	65.5	33.5 (47.5)
	Double end							64	54			62.5	52.5	65.5	55.5

Note 1) The values in ( ) are for long stroke.
Note 2) Adjust the auto switch after confirming the operating condition in the actual setting.

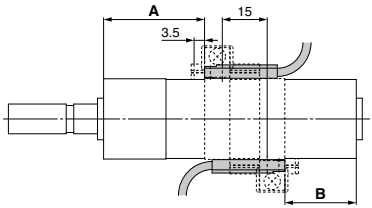
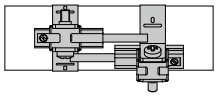
Minimum Stroke for Auto Switch Mounting

n: Number of auto switches (mm)

Auto switch model	Number of auto switches				
	With 1 pc.	With 2 pcs.		With n pcs.	
		Different surfaces	Same surface	Different surfaces	Same surface
D-M9□	5	15 Note 1)	40 Note 1)	$20 + 35\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	55 + 35 (n – 2) (n = 2, 3, 4, 5···)
D-M9□W	10	15 Note 1)	40 Note 1)	$20 + 35\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	55 + 35 (n – 2) (n = 2, 3, 4, 5···)
D-M9□A	10	25	40 Note 1)	$25 + 35\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	60 + 35 (n – 2) (n = 2, 3, 4, 5···)
D-A9□	5	15	30 Note 1)	$15 + 35\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	50 + 35 (n – 2) (n = 2, 3, 4, 5···)
D-M9□V	5	20	35	$20 + 35\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	35 + 35 (n – 2) (n = 2, 3, 4, 5···)
D-A9□V	5	15	25	$15 + 35\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	25 + 35 (n – 2) (n = 2, 3, 4, 5···)
D-M9□WV **D-M9□AV**	10	20	35	$20 + 35\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	35 + 35 (n – 2) (n = 2, 3, 4, 5···)
D-C7□ **D-C80**	5	15	50	$15 + 45\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	50 + 45 (n – 2) (n = 2, 3, 4, 5···)
D-H7□ **D-H7□W** **D-H7BA** **D-H7NF**	10	15	60	$15 + 45\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	60 + 45 (n – 2) (n = 2, 3, 4, 5···)
D-H7C **D-C73C** **D-C80C**	5	15	65	$15 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	65 + 50 (n – 2) (n = 2, 3, 4, 5···)
D-G5□ **D-K59□** **D-B5□** **D-B64**	5	15	75	$15 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	75 + 55 (n – 2) (n = 2, 3, 4, 5···)
D-B59W	10	20	75	$20 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6···) Note 3)	75 + 55 (n – 2) (n = 2, 3, 4, 5···)

Note 3) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

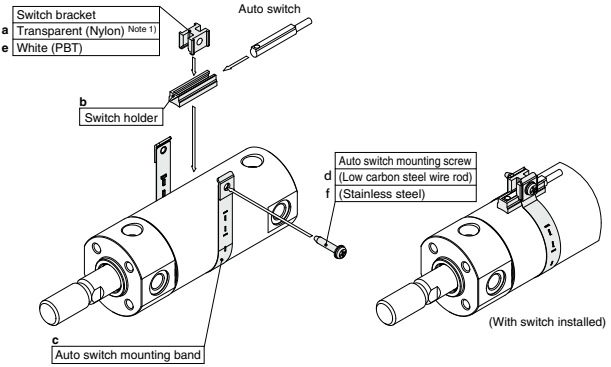
Note 1) Auto switch mounting

Auto switch model	With 2 auto switches	
	Different surfaces Note 1)	Same surface Note 1)
	 Correct auto switch mounting position is 3.5 mm from the back face of the switch holder.	 The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.
D-M9□ **D-M9□W**	Less than 20 stroke Note 2)	Less than 55 stroke Note 2)
D-M9□A	Less than 20 stroke Note 2)	Less than 60 stroke Note 2)
D-A9□	—	Less than 50 stroke Note 2)

Note 2) Minimum stroke for auto switch mounting in types other than those mentioned in Note 1.

Auto Switch Mounting Brackets/Part No.

Auto switch model	Bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
D-M9□(V) **D-M9□W(V)** **D-A9□(V)**	Note 1) BMA3-020 (A set of a, b, c, d)	Note 1) BMA3-025 (A set of a, b, c, d)	Note 1) BMA3-032 (A set of a, b, c, d)	Note 1) BMA3-040 (A set of a, b, c, d)	Note 1) BMA3-050 (A set of a, b, c, d)	Note 1) BMA3-063 (A set of a, b, c, d)	—	—
D-M9□A(V) Note 2)	BMA3-020S (A set of b, c, e, f)	BMA3-025S (A set of b, c, e, f)	BMA3-032S (A set of b, c, e, f)	BMA3-040S (A set of b, c, e, f)	BMA3-050S (A set of b, c, e, f)	BMA3-063S (A set of b, c, e, f)	—	—



∗ Band (c) is mounted so that the projected part is on the internal side (contact side with the tube).

D-H7□ **D-H7□W** **D-H7NF** **D-C7□/C80** **D-C73C/C80C**	BMA2-020A (A set of c and d)	BMA2-025A (A set of c and d)	BMA2-032A (A set of c and d)	BMA2-040A (A set of c and d)	BMA2-050A (A set of c and d)	BMA2-063A (A set of c and d)	—	—
D-H7BA	BMA2-020AS (A set of c and f)	BMA2-025AS (A set of c and f)	BMA2-032AS (A set of c and f)	BMA2-040AS (A set of c and f)	BMA2-050AS (A set of c and f)	BMA2-063AS (A set of c and f)	—	—
D-G5□/K59 **D-G5□W/K59W** **D-G5BA/G59F** **D-G5NT** **D-B5□/B64** **D-B59W**	BA-01 (A set of c and d)	BA-02 (A set of c and d)	BA-32 (A set of c and d)	BA-04 (A set of c and d)	BA-05 (A set of c and d)	BA-06 (A set of c and d)	BA-08 (A set of c and d)	BA-10 (A set of c and d)

Note 1) Since the switch bracket (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used.
Please contact SMC regarding other chemicals.

Note 2) When mounting a D-M9□A(V) type auto switch, if the switch bracket is mounted on the indicator light, it may damage the auto switch. Therefore, be sure to avoid mounting the switch bracket on the indicator light.

Band Mounting Brackets Set Part No.

Set part no.	Contents
BJ4-1	· Switch bracket (White/PBT) (e) · Switch holder (b)
BJ5-1	· Switch bracket (Transparent/Nylon) (a) · Switch holder (b)

[Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment.
(Since the auto switch mounting bracket is not included, order it separately.)
BBA3: D-B5/B6/G5/K5 types

Note) Refer to page 1369 for details on the BBA3.
When the D-G5BA type auto switch is shipped independently, the BBA3 is attached.

Operating Range

(mm)

Auto switch model	Bore size							
	20	25	32	40	50	63	80	100
D-M9□(V) D-M9□W(V) D-M9□A(V)	4.5	5.0	4.5	5.5	5.0	5.5	—	—
D-A9□	7	6	8	8	8	9	—	—
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/H7BA	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-G5BA/K59/K59W	4	4	4.5	5	6	6.5	6.5	7
D-G5NT	4	4	4.5	5	6	6.5	6.5	7

∗ Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Cylinder Mounting Bracket, by Stroke/Auto Switch Mounting Surfaces

st: Stroke (mm)

Auto switch model	Basic, Foot, Flange, Clevis			Trunnion		
	With 1 pc. (Rod cover side)	With 2 pcs. (Different surfaces)	With 2 pcs. (Same surface)	With 1 pc. (Rod cover side)	With 2 pcs. (Different surfaces)	With 2 pcs. (Same surface)
Auto switch mounting surface / Auto switch type	Port surface 	Port surface 	Port surface 			
D-M9□(V) D-M9□W(V) D-M9□A(V) D-A9□	10 st or more	15 to 44 st	45 st or more	10 st or more	15 to 44 st	45 st or more
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-H7BA/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-H7C/C73C/C80C	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-G5/K5/B5/B6 D-G5□W/K59W/G5BA D-G59F/G5NT	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 type is not available for ø80 and ø100.
∗ Adjust the auto switch mounting angle according to the customer's application.

Other than the applicable auto switches listed in "How to Order", the following auto switches are mountable.
Refer to pages 1271 to 1365 for the detailed specifications.

Type	Model	Electrical entry	Features	Applicable bore size
Solid state	D-H7A1, H7A2, H7B	Grommet (In-line)	—	ø20 to ø63
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indicator)	
	D-H7BA		Water resistant (2-color indicator)	
	D-G5NT		With timer	ø20 to ø100
Reed	D-C73, C76		—	ø20 to ø63
	D-C80		Without indicator light	
	D-B53		—	ø20 to ø100

∗ With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1340 and 1341.
∗ Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) are also available. For details, refer to page 1290.

Made to Order: Individual Specifications

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

Symbol

1 PTFE Grease -X446

Applicable to environments incompatible with mineral oil
PTFE grease (fluorine grease) is used as the lubricating grease.

Applicable Series

Description	Model	Action	Note
Standard type	CG1	Double acting, Single rod	Except with air cushion

How to Order

Standard model no. – **X446**

X446: PTFE grease

Specifications: Same as standard type

Dimensions: Same as standard type

* When grease is necessary for maintenance, grease pack is available, please order it separately.
GR-F-005 (Grease: 5 g)