

Air Cylinder

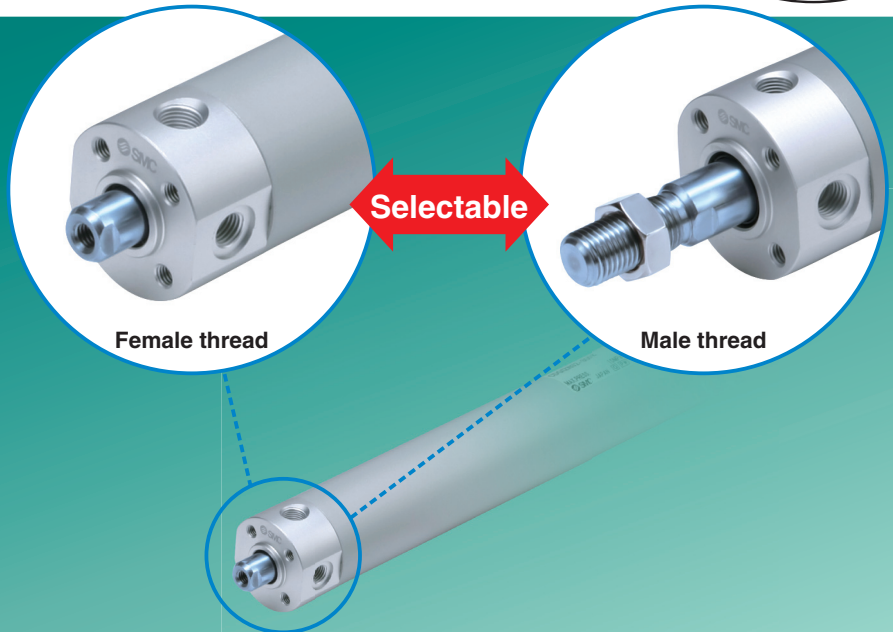
∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63, ∅ 80, ∅ 100

New

RoHS

Female rod end available as standard

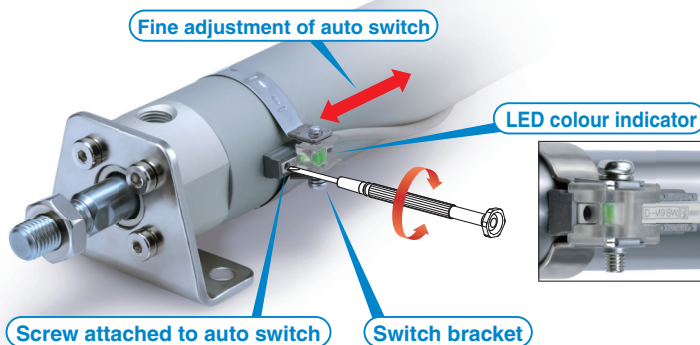
Rod end styles suitable for the application can be selected.



Easy fine adjustment of auto switch position

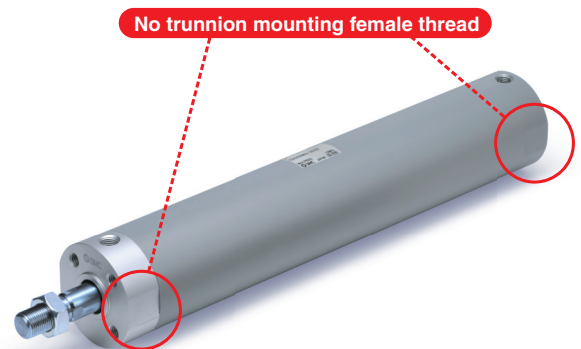
Fine adjustment of the auto switch position is possible by simply loosening the screw attached to the auto switch.

Transparent switch bracket improves visibility of indicator LED.



No trunnion mounting female thread added to basic type variation

No foreign matter accumulation due to the simple construction



New Direct mount, non-rotating rod type (CG1KR-Z) is added.

The models with rod end bracket and/or pivot bracket part numbers are expanded.

- CG1-Z (Single acting), CG1K-Z, CG1R-Z, CG1KR-Z, CG1Y-Z



Series **CG1**



CAT.EUS20-224C-UK

Part numbers with rod end bracket and/or pivot bracket available

Not necessary to order a bracket for the applicable cylinder separately
 Note) Mounting bracket is shipped together with the product, but not assembled.

Example) **CDG1** **D** **N20-50Z-** **N** **W** -M9BW

| Pivot bracket | |
|---------------|--|
| — | None |
| N | Pivot bracket is shipped together with the product, but not assembled. |

N: Kit of pivot bracket and clevis



Kit of pivot bracket and trunnion

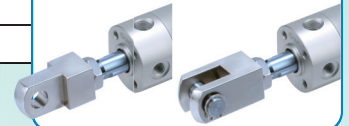


| Rod end bracket | |
|-----------------|----------------------|
| — | None |
| V | Single knuckle joint |
| W | Double knuckle joint |

With rod end bracket

V: Single knuckle joint

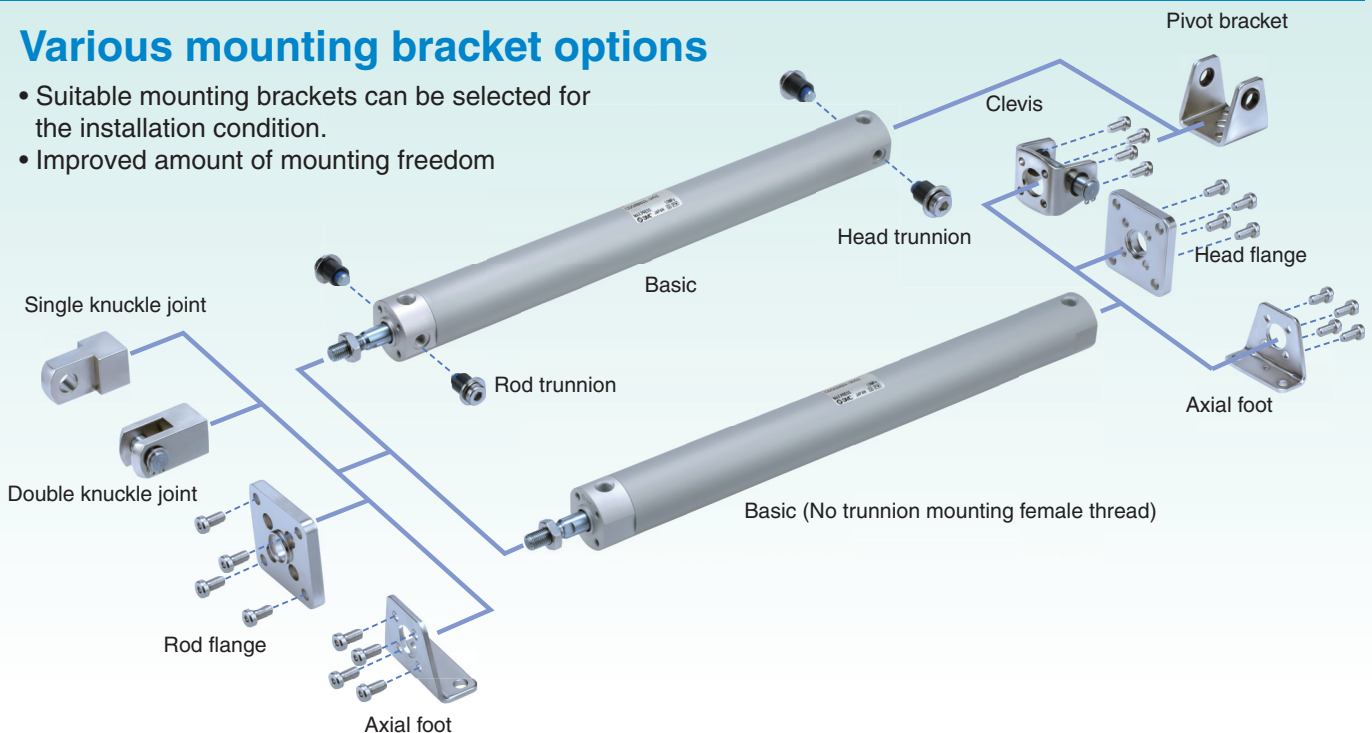
W: Double knuckle joint



* Applicable to only mounting D, U and T.

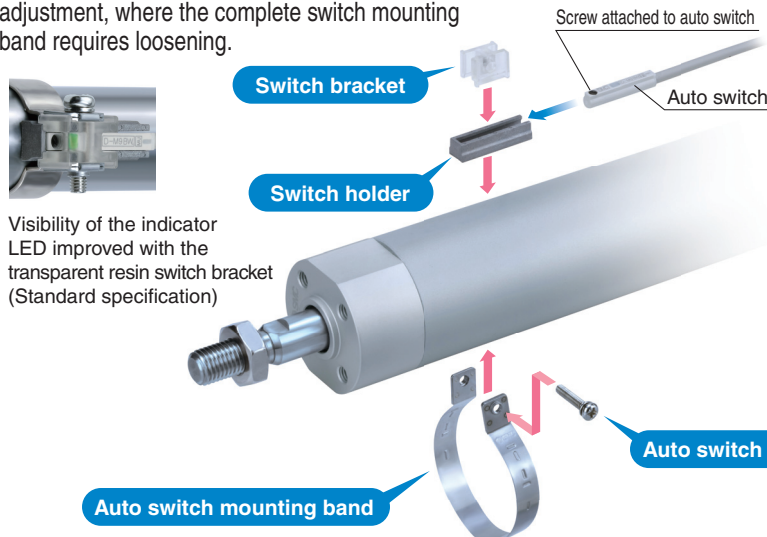
Various mounting bracket options

- Suitable mounting brackets can be selected for the installation condition.
- Improved amount of mounting freedom



Easy fine adjustment of auto switch position

Fine adjustment of the auto switch set position can be performed by loosening the auto switch attached screw without loosening the auto switch mounting band. Operability improved compared with the conventional auto switch set position adjustment, where the complete switch mounting band requires loosening.



Visibility of the indicator LED improved with the transparent resin switch bracket (Standard specification)

No environmental hazardous substances used

Compliant with EU RoHS directive.
 Lead free bushing is used as sliding material.

Specifications, performance and mounting method are same as the existing product.

Grease is selectable. (Option)

- Grease for food processing equipment (XC85)
- PTFE grease (X446)

Water resistant compact auto switch now available

- Solid state auto switch D-M9□A(V)

Stroke Variations

| Bore size [mm] | Standard stroke | | | | | | | | | |
|----------------|-----------------|----|----|-----|-----|-----|-----|-----|-----|---|
| | 25 | 50 | 75 | 100 | 125 | 150 | 200 | 250 | 300 | |
| 20 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 25 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 32 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 40 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 50 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 63 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 80 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 100 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Series Variations

| Series | Action | Type | Cushion | Bore size [mm] | | | | | | | | Variations | | | Page | |
|--|--|---------------|---------------|----------------|----|----|----|----|----|----|-----|---------------|-----------|--------------|------------|---------|
| | | | | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | With rod boot | Air-hydro | Clean series | | |
| Standard CG1-Z | Double acting | Single rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 5 |
| | | | Air cushion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Double acting | Double rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 23 |
| | | | Air cushion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Single acting | Single rod (Spring return/extend) | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 31 | |
| | | Air cushion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Non-rotating rod CG1K-Z | Double acting | Single rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 325 | |
| | | | Air cushion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | Double acting | Double rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 38 | |
| | | | Air cushion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Direct mount CG1R-Z | Double acting | Single rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 43 | |
| | | | Air cushion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Direct mount, Non-rotating rod CG1KR-Z | Double acting | Single rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 47 | |
| With end lock CBG1 | Double acting | Single rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 52 | |
| | | | Air cushion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Smooth Cylinder CG1Y-Z | Double acting | Single rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | www.smc.eu | |
| Low friction CG1□Q | Use the new series "Smooth Cylinder Series CG1Y" to realize both-direction low friction and low-speed operation. | | | | | | | | | | | | | | | |
| Series CG3 | | | | | | | | | | | | | | | | |
| Short type, Standard CG3 | Double acting | Single rod | Rubber bumper | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Page 56 |

Environmentally Resistant Specifications

Water Resistant ■ Corrosion Resistant

Stainless steel cylinder (Series CG5) www.smc.eu

Water Resistant

The use of a special scraper allows for improved water resistance.

Water-resistant cylinder (CG1□R/V) www.smc.eu

Corrosion Resistant

Fluororubber seal (-XC22) p. 90

Dust Resistant

Durability is 4 times stronger than the standard model.

Compact cylinder with stable lubrication function (Lube-retainer) (CG1□M) www.smc.eu

Prevents dust, etc., adhered to the rod from entering the internal parts

With heavy duty scraper (-XC4) p. 82

Spatter Resistant

With coil scraper (-XC35) p. 91

Temperature Measures

Heat resistant/Cold resistant cylinder (-XB6, -XB7) p. 81

Refer to "Operating Environment" in the Actuator Precautions.

Applications Requiring Lateral Load Resistance

For use in applications in which a lateral load exceeding the allowable value is to be applied, consider using a guide cylinder.

Combinations of Standard Products and Made to Order Specifications

Series CG1

- : Standard
- ◎ : Made to Order
- : Special product (Please contact SMC for details.)
- : Not available

| Series | CG1 (Standard type) | | | | CG1K (Non-rotating rod type) | | | |
|-----------------|------------------------|-----|------------|-----|---------------------------------|---------------|-----|------------|
| | Double acting | | | | Single acting | Double acting | | |
| | Single rod | | Double rod | | Single rod | Single rod | | Double rod |
| | Rubber | Air | Rubber | Air | Rubber | Rubber | Air | Rubber |
| Action/ Type | Page 5 | | Page 23 | | Page 31 | Page 38 | | Page 43 |
| Cushion | Page 5 | | Page 23 | | Page 31 | Page 38 | | Page 43 |
| Page | Page 5 | | Page 23 | | Page 31 | Page 38 | | Page 43 |

| Symbol | Specifications | Applicable bore size | ø 20 to ø 100 | | | | ø 20 to ø 40 | ø 20 to ø 63 | ø 40 to ø 63 | ø 20 to ø 63 |
|----------------------------------|---|----------------------|-----------------------|-----------------------|--|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Standard | Standard | | ● | ● | ● | ● | ● | ● | ● | ● |
| Long st | Long stroke | ø 20 to ø 100 | ● | ● | ● | ● | ○ | ● ^{Note 10)} | ● ^{Note 10)} | ● ^{Note 10)} |
| D | Built-in magnet | | ● | ● | ● | ● | ● | ● | ● | ● |
| CG1□F | With One-touch fittings ^{Note 15)} | ø 20 to ø 63 | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| CG1□-□ ^J _k | With rod boot | ø 20 to ø 100 | ● ^{Note 11)} | ● ^{Note 11)} | ● ^{Note 11)} | ● ^{Note 11)} | ○ | ○ | ○ | ○ |
| CG1□H | Air-hydro type | ø 20 to ø 63 | ● | — | ● | — | — | — | — | — |
| 10- | Clean series | ø 20 to ø 100 | ● | ● ^{Note 1)} | ● | ● ^{Note 1)} | ○ | — | — | — |
| 25A- ^{Note 9)} | Copper (Cu) and Zinc (Zn)-free ^{Note 15)} | ø 20 to ø 100 | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ |
| 20- ^{Note 9)} | Copper ^{Note 8)} and Fluorine-free | ø 20 to ø 100 | ● | ● | ● | ● | ○ | ● | ○ | ● |
| CG1□ ^R _V | Water resistant | ø 32 to ø 100 | ● | ● | ○ | ○ | ○ | — | — | — |
| CG1□M | Cylinder with stable lubrication function (Lube-retainer) | ø 20 to ø 100 | ● | ○ | ○ | ○ | — | — | — | — |
| XB6 | Heat resistant cylinder (-10 to 150 °C) ^{Note 7)} | ø 20 to ø 100 | ◎ ^{Note 2)} | ◎ | ◎ ^{Note 2)} | ◎ | ○ | — | — | — |
| XB7 | Cold resistant cylinder (-40 to 70 °C) ^{Note 7)} | | ◎ ^{Note 2)} | ○ | ◎ ^{Note 2)} ◎ ^{Note 5)} | ○ | ○ | — | — | — |
| XB9 | Low speed cylinder (10 to 50 mm/s) | | ◎ | ○ | ○ | ○ | — | — | — | — |
| XB13 | Low speed cylinder (5 to 50 mm/s) | | ◎ | ○ | ○ | ○ | — | — | — | — |
| XC4 | With heavy duty scraper | ø 32 to ø 63 | ◎ | ◎ | ○ | ○ | ○ | — | — | — |
| XC6 | Made of stainless steel | ø 20 to ø 100 | ◎ | ◎ | ◎ | ◎ | ◎ | — | — | — |
| XC8 | Adjustable stroke cylinder/Adjustable extension type | ø 20 to ø 63 | ◎ | ◎ | — | — | ○ | ◎ | ○ | — |
| XC9 | Adjustable stroke cylinder/Adjustable retraction type | | ◎ | ◎ | — | — | ○ | ◎ | ○ | — |
| XC10 | Dual stroke cylinder/Double rod type | | ◎ | ◎ | — | — | ○ | ◎ | ◎ | — |
| XC11 | Dual stroke cylinder/Single rod type | | ◎ | ◎ | — | — | — | ◎ | ○ | — |
| XC12 | Tandem cylinder | | ◎ | ○ | — | — | — | ◎ ^{Note 15)} | ○ | ○ |
| XC13 | Auto switch rail mounting | | ◎ | ◎ | ◎ | ◎ | ○ | ◎ | ○ | ○ |
| XC20 | Head cover axial port | ø 20 to ø 63 | ◎ | ○ | — | — | ◎ | ◎ | ○ | — |
| XC22 | Fluororubber seal | ø 20 to ø 100 | ◎ ^{Note 2)} | ◎ | ◎ ^{Note 2)} | ◎ | ○ | ○ | ○ | ○ |
| XC27 | Double clevis and double knuckle joint pins made of stainless steel | | ◎ | ◎ | ○ | ○ | ◎ | ◎ | ◎ | ○ |
| XC29 | Double knuckle joint with spring pin | | ◎ | ◎ | ○ | ○ | ◎ ^{Note 6)} | ○ | ○ | ○ |
| XC35 | With coil scraper | ø 20 to ø 63 | ◎ | ◎ | ○ | ○ | ○ | — | — | — |
| XC37 | Larger throttle diameter of connection port | | ◎ | ◎ | ◎ | ◎ | ○ | ○ | ○ | ○ |
| XC42 | Built-in shock absorber in head cover side | | ◎ | ◎ | — | — | ○ | ○ | ○ | — |
| XC85 | Grease for food processing equipment | ø 20 to ø 100 | ◎ | ◎ | ◎ | ◎ | ◎ | ○ | ○ | ○ |
| X446 | PTFE grease | ø 20 to ø 100 | ◎ | ○ | ○ | ○ | ○ | — | — | — |

- Note 1) ø 40 to ø 63 only
 Note 2) Without bumper
 Note 3) ø 32 to ø 100 only
 Note 4) SV type only (Heat resistant grease is used.)
 Note 5) ø 20 to ø 63 only
 Note 6) Single acting/spring return type (S) only
 Note 7) The products with an auto switch are not compatible.

| | CG1R (Direct mount type) | | CG1KR (Direct mount, Non-rotating rod type) | CBG1 ^{Note 15)} (With end lock) | | CG1□Y ^{Note 12)} (Smooth Cylinder) | Symbol |
|--|---|-----|---|---|-----------------------|--|----------------------------------|
| | Double acting | | Double acting | Double acting | | Double acting | |
| | Single rod | | Single rod | Single rod | | Single rod | |
| | Rubber | Air | Rubber | Rubber | Air | — | |
| | Page 47 | | Page 52 | Page 56 | | — | |
| | ø 20 to ø 63 | | ø 20 to ø 63 | ø 20 to ø 100 | | ø 20 to ø 100 | |
| | ● | ● | ● | ● | ● | ● | Standard |
| | ○ | ○ | ○ | ● | ● | ● ^{Note 10)} | Long st |
| | ● | ● | ● | ● | ● | ● | D |
| | ○ | ○ | ○ | ○ | ○ | ○ | CG1□F |
| | ○ | ○ | ○ | ● | ● | ○ | CG1□-□ ^J _K |
| | ○ | — | — | — | — | — | CG1□H |
| | ● | ○ | — | ○ | ○ | — | 10- |
| | ○ | ○ | ○ | ○ | ○ | ○ | 25A- ^{Note 9)} |
| | ● | ● | ○ | ○ | ○ | — | 20- ^{Note 9)} |
| | ○ | ○ | — | ○ | ○ | — | CG1□ ^R _V |
| | ○ | ○ | — | — | — | — | CG1□M |
| | ◎ ^{Note 2)} | ◎ | — | ○ | ○ | — | XB6 |
| | ◎ ^{Note 2)} ◎ ^{Note 15)} | ○ | — | — | — | — | XB7 |
| | ◎ ^{Note 15)} | ○ | — | ○ | ○ | — | XB9 |
| | ◎ ^{Note 15)} | ○ | — | — | — | — | XB13 |
| | ○ | ○ | — | ○ | ○ | — | XC4 |
| | ◎ | ◎ | — | ○ | ○ | ◎ | XC6 |
| | ◎ | ○ | ◎ ^{Note 15)} | ○ ^{Note 13)} | ○ ^{Note 13)} | ○ | XC8 |
| | ◎ | ○ | ◎ ^{Note 15)} | ○ ^{Note 14)} | ○ ^{Note 14)} | ○ | XC9 |
| | ○ | ○ | ○ | ○ | ○ | ○ | XC10 |
| | ○ | ○ | ○ | ○ | ○ | ○ | XC11 |
| | ○ | ○ | ○ | ○ | ○ | — | XC12 |
| | ◎ | ○ | ○ | ◎ | ◎ | ○ | XC13 |
| | ◎ | ○ | ◎ ^{Note 15)} | ○ | ○ | ◎ | XC20 |
| | ◎ ^{Note 2)} | ○ | ○ | ○ | ○ | — | XC22 |
| | ○ | ○ | ○ | ○ | ○ | ◎ | XC27 |
| | ○ | ○ | ○ | ○ | ○ | ○ | XC29 |
| | ○ | ○ | — | ○ | ○ | — | XC35 |
| | ○ | ○ | ○ | ○ | ○ | ○ | XC37 |
| | ○ | ○ | ○ | ○ | ○ | — | XC42 |
| | ◎ | ◎ | ○ | ○ | ○ | — | XC85 |
| | ○ | ○ | — | — | — | — | X446 |

Note 8) Copper-free for the externally exposed part
 Note 9) For details, refer to www.smc.eu.
 Note 10) Long stroke is beyond the performance guarantee.
 Note 11) Female rod end is available as a special order.
 Note 12) For details about the smooth cylinder, refer to www.smc.eu.
 Note 13) Available only for locking at head end.
 Note 14) Available only for locking at rod end.
 Note 15) The shape is the same as the existing product.

| | | |
|--------------------------------|-------------------------------------|---------------|
| Standard | Double Acting, Single Rod | CG1 |
| Standard | Double Acting, Double Rod | CG1W |
| Standard | Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | Double Acting, Single Rod | CG1K |
| Non-rotating Rod | Double Acting, Double Rod | CG1KW |
| Direct Mount | Double Acting, Single Rod | CG1R |
| Direct Mount, Non-rotating Rod | | CG1KR |
| With End Lock | | CBG1 |
| | | Auto Switch |
| | | Made to Order |

Air Cylinder: Standard Type Double Acting, Single Rod

Series CG1

∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63, ∅ 80, ∅ 100

RoHS

How to Order



CG1 **B** **N** **20** **100** **Z** **M9BW**

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 ∅ 80 and ∅ 100.
* 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 | |
|---------------|---------------------|---------------------|------------------|
| — | Rc ∅ 20 to ∅ 100 | M5 x 0.8 ∅ 20, ∅ 25 | Rc ∅ 32 to ∅ 100 |
| TN | NPT ∅ 20 to ∅ 100 | NPT* ∅ 32 to ∅ 100 | — |
| TF | M5 x 0.8 ∅ 20, ∅ 25 | G* ∅ 32 to ∅ 100 | — |
| | G ∅ 32 to ∅ 100 | | |

* Not available for ∅ 20 and ∅ 25.

Pivot bracket

| | |
|----------|--|
| — | 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

| | |
|----------|----------------------|
| — | 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 6.

Number of auto switches

| | |
|----------|----------|
| — | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|---|---------------------|
| — | Without auto switch |
|---|---------------------|

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

Suffix for cylinder (Rod boot)

| | |
|----------|--------------------------|
| — | Without rod boot |
| J | Nylon tarpaulin |
| K | Heat resistant tarpaulin |

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

Rod end thread

| | |
|----------|----------------|
| — | Male rod end |
| F | Female rod end |

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 6.

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator/light | Wiring (Output) | Load voltage | | Auto switch model | | | Lead wire length [m] | | | | | Pre-wired connector | Applicable load | | | | | | | | |
|---------------------------------------|---|------------------|-----------------|------------------------|--------------|-----------|----------------------|--------------|---------------|----------------------|----------|---------|-------|----------|---------------------|-----------------|------------|------------|------------|---|---|---|---|---|
| | | | | | DC | AC | Applicable bore size | | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | IC circuit | Relay, PLC | | | | | | | |
| | | | | | | | ∅ 20 to ∅ 63 | ∅ 80, ∅ 100 | Perpendicular | | | | | | | | | In-line | In-line | | | | | |
| Solid state auto switch | — | Grommet | — | 3-wire (NPN) | 5 V, 12 V | — | ∅ 20 to ∅ 63 | ∅ 80, ∅ 100 | M9NV | M9N | ● | ● | ● | ○ | — | ○ | IC circuit | — | | | | | | |
| | | | | 3-wire (PNP) | | | | | — | — | G59 | ● | — | ● | ○ | — | | | ○ | | | | | |
| | | | | 2-wire | | | | | — | — | M9PV | M9P | ● | ● | ● | ○ | | | — | ○ | | | | |
| | | Connector | | — | | | | | — | G5P | ● | ● | ● | ○ | — | ○ | | | | | | | | |
| | | | | — | | | | | — | M9BV | M9B | ● | ● | ● | ○ | — | | | ○ | | | | | |
| | | | | — | | | | | — | K59 | ● | ● | ● | ○ | — | ○ | | | | | | | | |
| | Diagnostic indication (2-colour indication) | Grommet | Yes | 3-wire (NPN) | 24 V | 5 V, 12 V | — | ∅ 20 to ∅ 63 | ∅ 80, ∅ 100 | M9NWV | M9NW | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | | | | | |
| | | | | 3-wire (PNP) | | | | | | — | — | G59W | ● | ● | ● | ○ | — | | | ○ | | | | |
| | | | | 2-wire | | | | | | — | — | M9PWV | M9PW | ● | ● | ● | ○ | | | — | ○ | | | |
| | | Grommet | | — | | | | | | — | G5PW | ● | — | ● | ○ | — | ○ | | | | | | | |
| | | | | — | | | | | | — | M9BWV | M9BW | ● | ● | ● | ○ | — | | | ○ | | | | |
| | | | | — | | | | | | — | K59W | ● | ● | ● | ○ | — | ○ | | | | | | | |
| Water resistant (2-colour indication) | Grommet | — | 3-wire (NPN) | 24 V | 5 V, 12 V | — | ∅ 20 to ∅ 63 | ∅ 80, ∅ 100 | M9NAV*** | M9NA*** | ○ | ○ | ● | ○ | — | ○ | IC circuit | — | | | | | | |
| | | | 3-wire (PNP) | | | | | | — | — | M9PAV*** | M9PA*** | ○ | ○ | ● | ○ | | | — | ○ | | | | |
| | | | 2-wire | | | | | | — | — | M9BAV*** | M9BA*** | ○ | ○ | ● | ○ | | | — | ○ | | | | |
| | Connector | | — | | | | | | — | G5BA*** | — | — | ● | ○ | — | ○ | | | | | | | | |
| | | | — | | | | | | — | H7NF | G59F | ● | — | ● | ○ | — | | | ○ | | | | | |
| | | | — | | | | | | — | — | — | ● | — | ● | ○ | — | | | ○ | | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 24 V | 12 V | — | ∅ 20 to ∅ 63 | ∅ 80, ∅ 100 | A96V | A96 | ● | — | ● | — | — | ○ | IC circuit | — | | | | | |
| | | | | — | | | | | | — | — | A93V | A93 | ● | — | ● | — | | | — | | | | |
| | | | | — | | | | | | — | — | A90V | A90 | ● | — | ● | — | | | — | | | | |
| | | | | — | | | | | | — | — | — | — | ● | — | ● | — | | | — | | | | |
| | | Connector | | — | | | | | | — | — | — | — | — | — | — | B54 | | | ● | — | ● | — | — |
| | | | | — | | | | | | — | — | — | — | — | — | — | B64 | | | ● | — | ● | — | — |
| | | | | — | | | | | | — | — | — | — | — | — | — | C73C | | | ● | — | ● | — | — |
| | | | | — | | | | | | — | — | — | — | — | — | — | C80C | | | ● | — | ● | — | — |
| Grommet | — | — | — | — | — | — | — | — | B59W | ● | — | ● | — | — | | | | | | | | | | |
| | — | — | — | — | — | — | — | — | — | ● | — | ● | — | — | | | | | | | | | | |

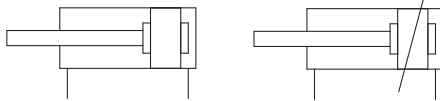
*** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
A water-resistant type cylinder is recommended for use in an environment which requires water resistance. However, please contact SMC for water-resistant cylinder of ∅ 20 and ∅ 25.
* Lead wire length symbols: 0.5 m..... — (Example) M9NW 5 m..... Z (Example) M9NWZ * Solid state auto switches marked with "○" are produced upon receipt of order.
1 m..... M (Example) M9NWM None..... N (Example) H7CN
3 m..... L (Example) M9NWL
* Since there are other applicable auto switches than listed above, refer to page 74 for details.
* For details about auto switches with pre-wired connector, refer to Auto Switch Guide.
* 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
(For details, refer to pages 77 to 93.)

| 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)*3 |
| -XB13 | Low speed cylinder (5 to 50 mm/s)*3 |
| -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*3 |
| -XC13 | Auto switch rail mounting |
| -XC20 | Head cover axial port*3 |
| -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 |
| -X446 | PTFE grease*3 |

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

| |
|--|
| Refer to pages 68 to 74 for cylinders with auto switches. |
| <ul style="list-style-type: none"> • 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 |

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 (used for changing the port location by 90°) | | | | | | | | |
| 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 ø 80 and ø 100 do not have basic (without trunnion mounting female thread), rod trunnion and head trunnion types. Foot, flange and clevis types of cylinder sizes from ø 20 to ø 63 do not have trunnion mounting female thread. Operate the cylinder within the allowable kinetic energy.

Accessories

| 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)** | ● | ● | ● | ● | ● | ● | ● |
| | Pivot bracket* | — | — | — | — | ●* | ●* | ● |
| | Rod boot | ● | ● | ● | ● | ● | ● | ● |

* Not available for ø 80 and ø 100.

** A double knuckle joint pin and retaining rings are shipped together.

Standard Strokes

| Bore size | Standard stroke ^{Note 1)} | Maximum manufacturable stroke ^{Note 2)} |
|-----------|--|--|
| 20 | 25, 50, 75, 100, 125, 150, 200 | 201 to 1500 |
| 25 | 25, 50, 75, 100, 125, 150, 200, 250, 300 | 301 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) The maximum manufacturable stroke shows the long stroke.

Note 3) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection". In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Double Acting, Single Rod **CG1**
 Standard Double Acting, Double Rod **CG1W**
 Single Acting, Spring Return/Extend **CG1**
 Non-rotating Rod Double Acting, Single Rod **CG1K**
 Non-rotating Rod Double Acting, Double Rod **CG1KW**
 Direct Mount Double Acting, Single Rod **CG1R**
 Direct Mount, Non-rotating Rod **CG1KR**
 With End Lock **CBG1**
 Auto Switch **Auto Switch**
 Made to Order **Made to Order**

Series CG1

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 <small>Note 1)</small> | CG-L020 | CG-L025 | CG-L032 | CG-L040 | CG-L050 | CG-L063 | CG-L080 | CG-L100 | 2 feet, 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 <small>Note 2)</small> | 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 1) Order two feet per cylinder.

Note 2) Can be combined with the trunnion pin and the clevis.

Mounting Brackets, Accessories/Material, Surface Treatment

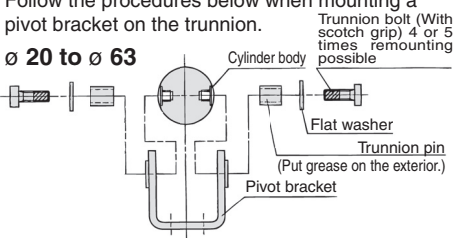
| Segment | Description | Material | Surface treatment | |
|-------------------|----------------------|-----------------------------|-------------------|----------------------------|
| Mounting brackets | Foot | Carbon steel | Nickel plating | |
| | Flange | Carbon steel (ø 20 to ø 63) | Nickel plating | |
| | | Cast iron (ø 80, ø 100) | Nickel plating | |
| | Clevis | Carbon steel (ø 20 to ø 63) | Nickel plating | |
| | | Cast iron (ø 80, ø 100) | Nickel plating | |
| | Trunnion pin | Trunnion pin | Carbon steel | Salt-bath nitrocarburising |
| | | 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 (ø 20 to ø 32) | Nickel plating | |
| | | Cast iron (ø 40 to ø 100) | Zinc chromated | |
| | Double knuckle joint | Carbon steel (ø 20 to ø 32) | Nickel plating | |
| | | Cast iron (ø 40 to ø 100) | Zinc chromated | |
| | Knuckle pin | Carbon steel | — | |
| | Clevis pin | Carbon steel | — | |
| | Pivot bracket | Carbon steel (ø 20 to ø 63) | Nickel plating | |
| | | Cast iron (ø 80, ø 100) | 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.

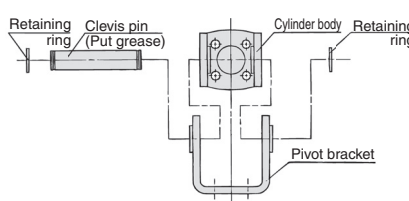
ø 20 to ø 63



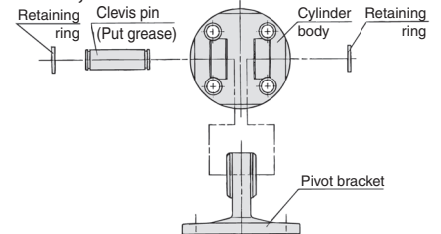
Mounting procedure for clevis

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

ø 20 to ø 63



ø 80, ø 100



Weights

| 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, ø 20, 100 stroke)

- Basic weight 0.18 kg (Flange, ø 20)
 - Additional weight for stroke 0.05 kg/50 mm
 - Air cylinder stroke 100 mm
 - Additional weight for switch magnet 0.01 kg
- $0.18 + 0.05 \times (100 / 50) + 0.01 = 0.29 \text{ kg}$

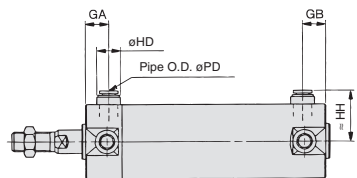
Built-in One-touch Fittings (The shape is the same as the existing product.)

CG1 Mounting style **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 existing 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 style Type (Cushion) Bore size - Stroke **Z**

• 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, 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.

Double Acting, Single Rod **CG1**
 Standard Double Acting, Double Rod **CG1W**
 Single Acting, Spring Return/Extend **CG1**
 Non-rotating Rod Double Acting, Single Rod **CG1K**
 Double Acting, Double Rod **CG1KW**
 Direct Mount Double Acting, Single Rod **CG1R**
 Direct Mount, Non-rotating Rod **CG1KR**
 With End Lock **CBG1**
 Auto Switch **Auto Switch**
 Made to Order **Made to Order**

Series CG1

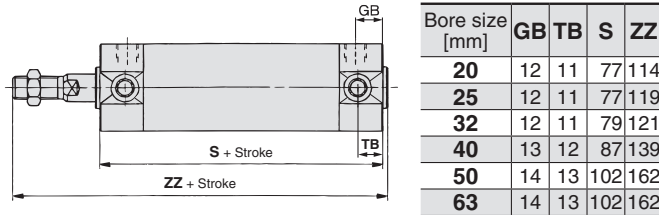
Air-hydro

CG1 **Mounting style** **H** **Bore size** - **Stroke** **Z** - **Pivot bracket** **Rod end bracket**

● Air-hydro

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.

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



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 (used for changing the port location by 90°) |

* Auto switch can be mounted.

Water Resistant

CDG1 **Mounting style** **Type** **Bore size** **Port thread type** **R** - **Stroke** **Z** - **Pivot bracket** **Rod end bracket** - **H7BAL** **-XC6**

● With auto switch (Built-in magnet)

● Water resistant cylinder

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

Water resistant 2-colour indication, solid state auto switch

| | |
|--------------|--------------|
| H7BAL | ø 32 to ø 63 |
| G5BAL | ø 80, ø 100 |

● Made to Order

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.

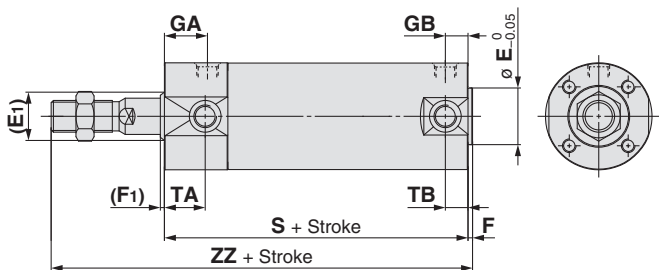
Specifications

| 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

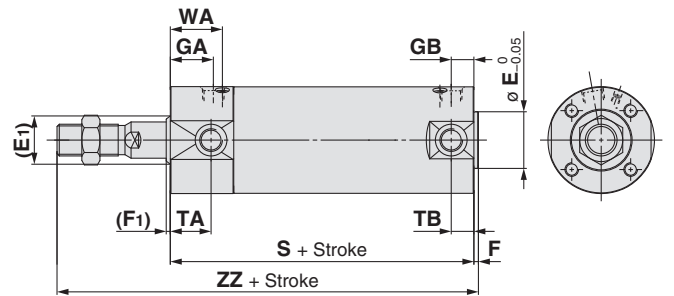


[mm]

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

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

With air cushion



Cylinder with Stable Lubrication Function (Lube-retainer)

CDG1 Mounting Z 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)

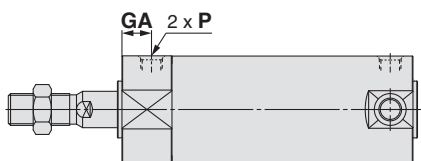
Specifications

| | |
|----------------------------|---------------------------------|
| 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)



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

⚠ Precautions

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smc.eu>

Handling

⚠ 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. Do not turn the cushion valve the number of rotations shown below or more from its fully closed state.

If it is turned the number of rotations shown below or more, the cushion valve may come off and jump out by the air pressure, causing a hazard.

| Bore size [mm] | Rotations | Hexagon wrench nominal size |
|----------------|-----------|-----------------------------|
| 20 | 2 | 1.5 |
| 25 | 3 | 1.5 |
| 32 | 4 | 1.5 |
| 40 | 5 | 1.5 |
| 50 | 3 | 3 |
| 63 | 4.5 | 3 |
| 80 | 5 | 4 |
| 100 | 5 | 4 |

3. Do not open the cushion valve after rotating it numerous times in a row. Though uncommon, there are cases in which the cushion valve may leak air.

The cushion valve should be adjusted by gradually opening it while checking the operation of the cylinder cushion. In the unlikely event that air leakage occurs, return the cushion needle to the fully-closed state, and readjust the cushion needle to the desired position.

4. Operate within the specified cylinder speed and kinetic energy.

Otherwise, cylinder and seal damage may occur.

5. Use caution regarding the cushion performance in the low-speed range.

There may be individual performance and effect variances when used near 50 mm/s. Please consult with SMC about usage.

6. When a cylinder is operated with one end fixed and other free (basic, flange types), a bending moment may act on the cylinder due to the vibration generated at the stroke end, which can damage the cylinder. In such a case, install a mounting bracket to suppress the vibration of the cylinder body or reduce the piston speed so that the cylinder does not vibrate. Also, use a mounting bracket to suppress vibrations when moving the cylinder body or when a cylinder is operated horizontally and fixed at one end at a high speed and frequency.

7. Do not apply excessive lateral load to the piston rod.

Easy checking method

Minimum operating pressure after the cylinder is mounted to the equipment [MPa] = Minimum operating pressure of cylinder [MPa] + {Load weight [kg] x 9.8 x Friction coefficient of guide/ Sectional area of cylinder [mm²]}

If smooth operation is confirmed within the above value, the load on the cylinder is the resistance of the thrust only and it can be judged as having no lateral load.

⚠ Caution

1. Do not use the air cylinder as an air-hydro cylinder.

This may result in oil leak.

2. Install a rod boot without twisting.

If the cylinder is installed with its bellows twisted, it could damage the bellows.

3. Tighten clevis bracket mounting bolts with the following proper tightening torque.

ø 20: 1.5 N·m, ø 25 to 32: 2.9 N·m,
ø 40: 4.9 N·m,
ø 50: 11.8 N·m, ø 63 to 80: 24.5 N·m,
ø 100: 42.2 N·m

Disassembly/Replacement

⚠ Caution

1. Do not replace the bushings.

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

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

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

3. Cylinders with ø 50 or larger bore sizes cannot be disassembled.

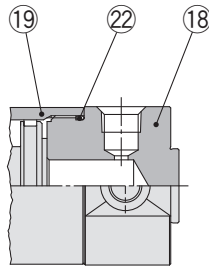
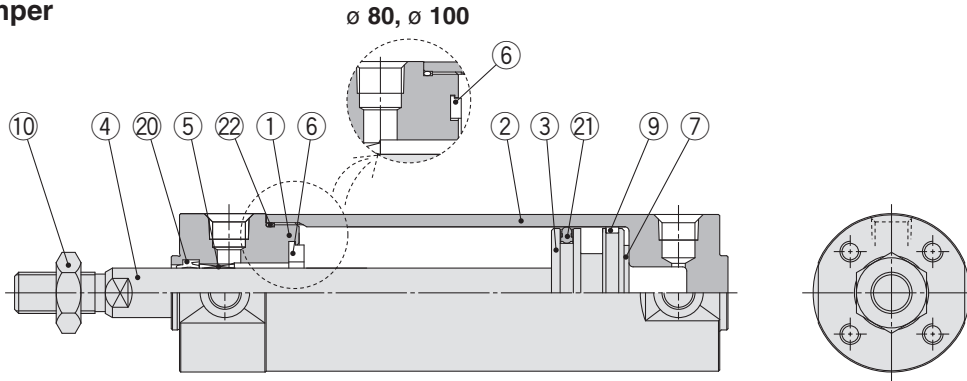
When disassembling cylinders with bore sizes of ø 20 through ø 40, grip the double flat part of either the tube cover or the rod cover with a vise and loosen the other side with a wrench or a monkey wrench etc., and then remove the cover. When re-tightening, tighten approximately 2 degrees more than the original position. (Cylinders with ø 50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. If disassembly is required, please contact SMC.)

Double Acting, Single Rod CG1
 Standard Double Acting, Double Rod CG1W
 Single Acting, Spring Return/Extend CG1
 Non-rotating Rod Double Acting, Single Rod CG1K
 Double Acting, Double Rod CG1KW
 Direct Mount Double Acting, Single Rod CG1R
 Direct Mount, Non-rotating Rod CG1KR
 With End Lock CBG1
 Auto Switch
 Made to Order

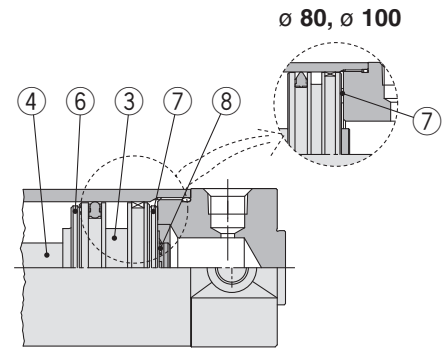
Series CG1

Construction

With rubber bumper

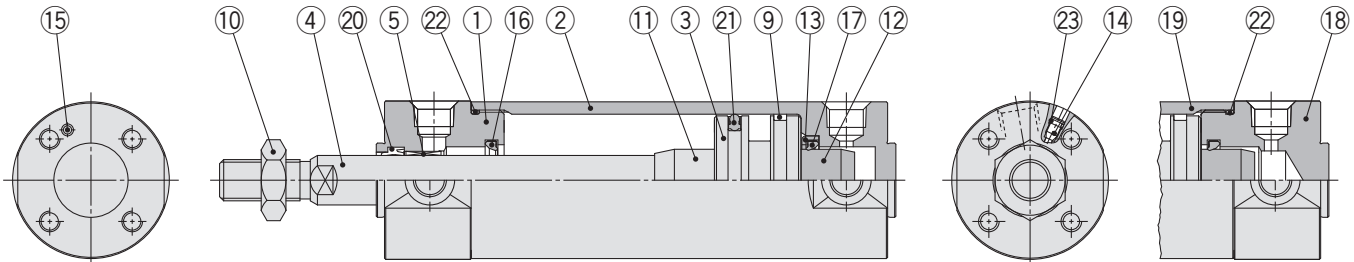


Long stroke



Long stroke
1001 to 1500

With air cushion



Long stroke

Component Parts

| No. | Description | Material | Note |
|-----|----------------|-----------------------------|---|
| 1 | Rod cover | Aluminium alloy | Hard anodised |
| 2 | Tube cover | Aluminium alloy | Hard anodised |
| 3 | Piston | Aluminium alloy | |
| 4 | Piston rod | Stainless steel | For $\varnothing 20$ or $\varnothing 25$ with built-in magnet |
| | | Carbon steel* | Hard chrome plating* |
| 5 | Bushing | Bearing alloy | |
| 6 | Bumper | Resin | $\varnothing 32$ or larger is common. |
| 7 | Bumper | Resin | |
| 8 | Retaining ring | Stainless steel | Except $\varnothing 80$ and $\varnothing 100$ |
| 9 | Wear ring | Resin | |
| 10 | Rod end nut | Carbon steel | Zinc chromated |
| 11 | Cushion ring A | Aluminium alloy | |
| 12 | Cushion ring B | Aluminium alloy | |
| 13 | Seal retainer | Rolled steel | Zinc chromated |
| 14 | Cushion valve | $\varnothing 40$ or smaller | Carbon steel |
| | | $\varnothing 50$ or larger | Steel wire |
| 15 | Steel ball | Carbon steel | |

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

* The material for $\varnothing 20$, $\varnothing 25$ cylinders with auto switches is made of stainless steel.

| No. | Description | Material | Note |
|-----|----------------|-----------------|---------------------------------------|
| 16 | Cushion seal A | Urethane | $\varnothing 32$ or larger is common. |
| 17 | Cushion seal B | Urethane | |
| 18 | Head cover | Aluminium alloy | Hard anodised |
| 19 | Cylinder tube | Aluminium alloy | Hard anodised |
| 20 | Rod seal | NBR | |
| 21 | Piston seal | NBR | |
| 22 | Tube gasket | NBR | |
| 23 | Valve seal | NBR | |

Replacement Parts: Seal Kit

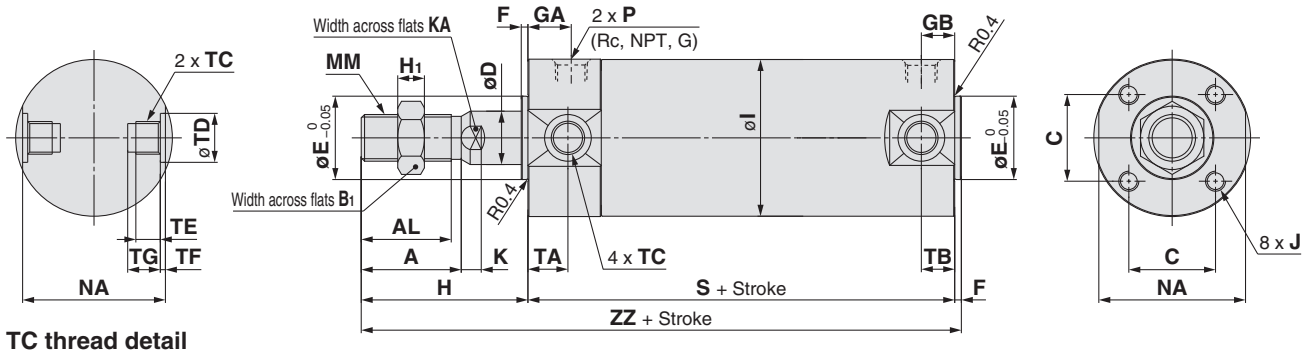
| Bore size [mm] | Kit no. | Contents |
|----------------|------------|----------------------------|
| 20 | CG1N20Z-PS | Set of the nos. 20, 21, 22 |
| 25 | CG1N25Z-PS | |
| 32 | CG1N32Z-PS | |
| 40 | CG1N40Z-PS | |

Note) Refer to the Specific Product Precautions on page 10 for Disassembly/Replacement. Order with the kit number according to the bore size.

* The seal kit includes a grease pack (10 g).

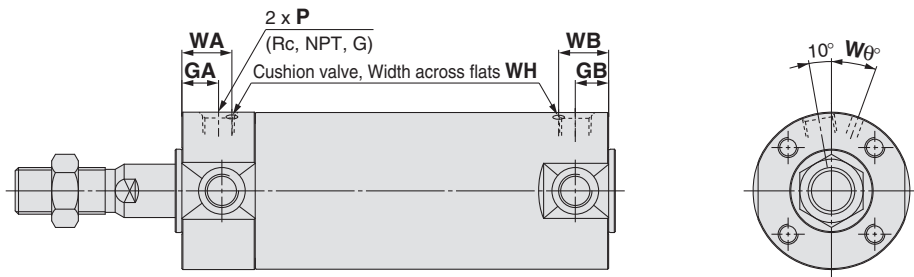
Order with the following part number when only the grease pack is needed. **Grease pack part number: GR-S-010** (10 g)

Basic: CG1BN

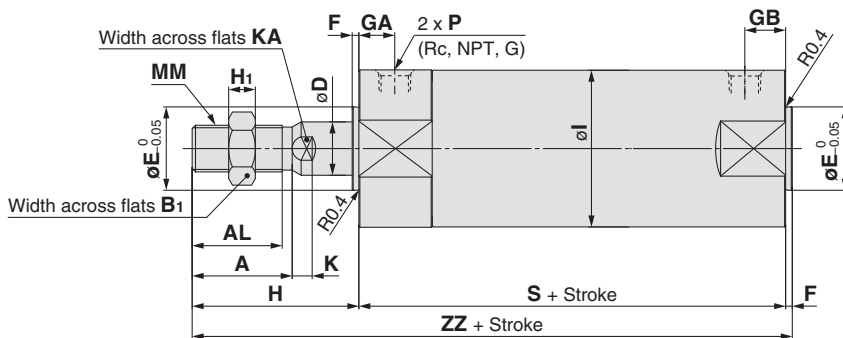


TC thread detail

With air cushion



Basic (Without trunnion mounting female thread): CG1ZN



| Bore size | Stroke range | | Rc, NPT port | | | G port | | | [mm] | | | | | | | | | | | | | | |
|-----------|--------------|-------------|--------------|---------|-----|--------|-----------|----------|------|------|----------------|------|----|----|---|----|----------------|-----|---------------------|-----|-----|----|------------|
| | Standard | Long stroke | GA | GB | P | GA | GB | P | A | AL | B ₁ | C | D | E | F | H | H ₁ | I | J | K | KA | MM | |
| 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 | 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 | 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 | 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 | 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 | 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 | 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 | 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 | 22 | 10 | 26 | M26 x 1.5 |

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

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

* Cylinder sizes ø 80 and ø 100 do not have trunnion mounting female thread on the width across flats NA.

Double Acting, Single Rod
CG1

Standard
Double Acting, Double Rod
CG1W

Single Acting, Spring Return/Extend
CG1

Non-rotating Rod
Double Acting, Single Rod
CG1K

Double Acting, Double Rod
CG1KW

Direct Mount
Double Acting, Single Rod
CG1R

Direct Mount, Non-rotating Rod
CG1KR

With End Lock
CBG1

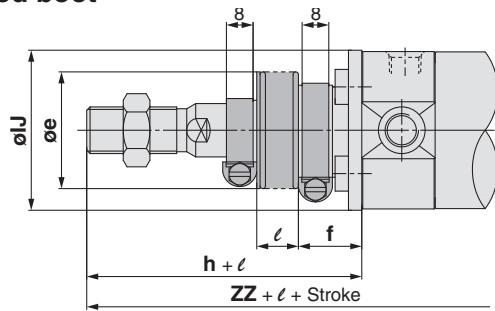
Auto Switch

Made to Order

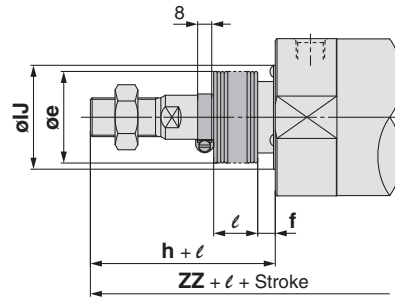
Series CG1

Basic: CG1BN

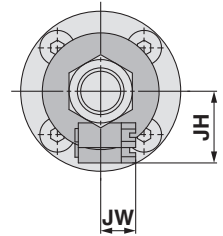
With rod boot



∅ 20 to ∅ 63



∅ 80, ∅ 100



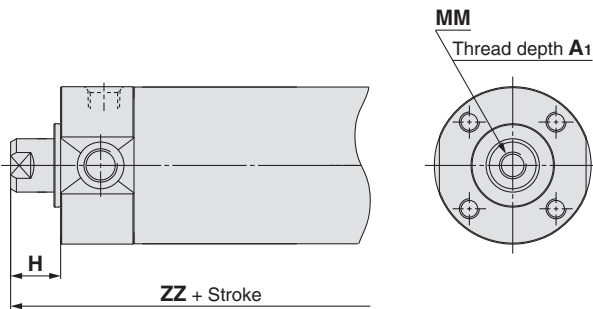
With Rod Boot

[mm]

| Bore size | e | f | h | IJ | JH (Preference) | JW (Preference) | I | 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



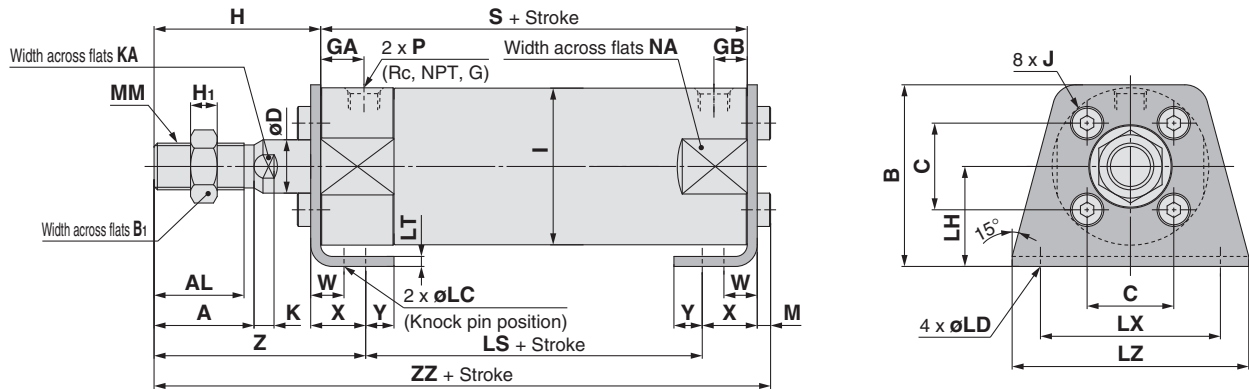
Female Rod End

[mm]

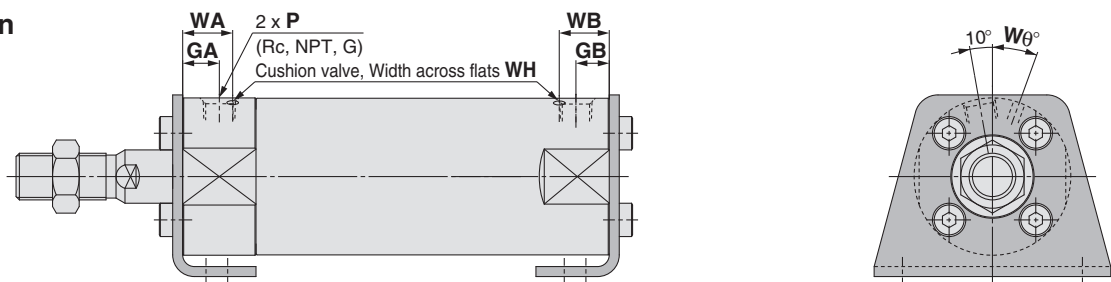
| Bore size | A1 | H | MM | ZZ |
|-----------|----|----|-----------|-----------|
| 20 | 8 | 13 | M4 x 0.7 | 84 (92) |
| 25 | 8 | 14 | M5 x 0.8 | 85 (93) |
| 32 | 12 | 14 | M6 x 1 | 87 (95) |
| 40 | 13 | 15 | M8 x 1.25 | 95 (104) |
| 50 | 18 | 16 | M10 x 1.5 | 108 (120) |
| 63 | 18 | 16 | M10 x 1.5 | 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.

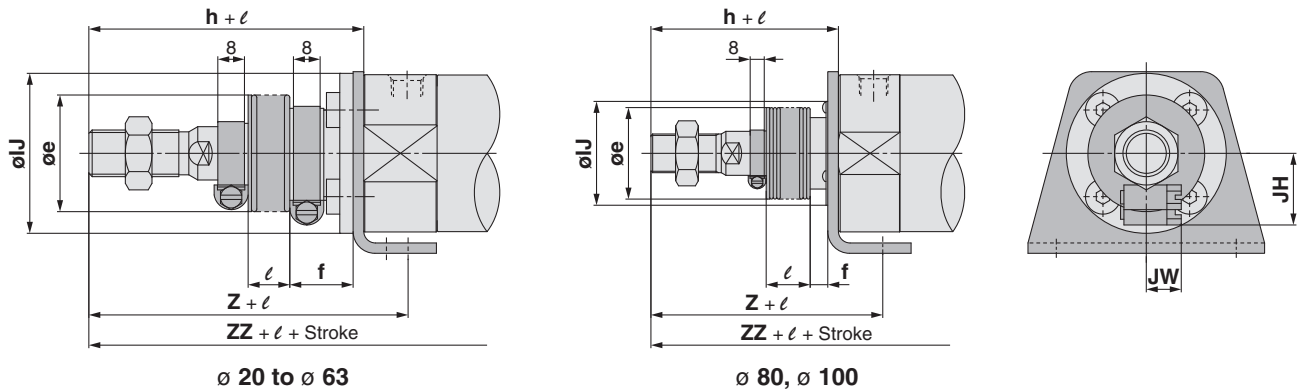
Axial Foot: CG1LN



With air cushion



With rod boot



| Bore size | Stroke range | | Rc, NPT port | | | G port | | | [mm] | | | | | | | | | | | | | | | | | | | | |
|-----------|--------------|-------------|--------------|---------|-----|--------|-----------|----------|------|------|------|----------------|------|----|----|----------------|-----|------------|-----|----|----|----|----|---------|-----|-----|-----|-----|------------|
| | Standard | Long stroke | GA | GB | P | GA | GB | P | A | AL | B | B ₁ | C | D | H | H ₁ | I | J | K | KA | LC | LD | LH | LS | LT | LX | LZ | M | MM |
| 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 |

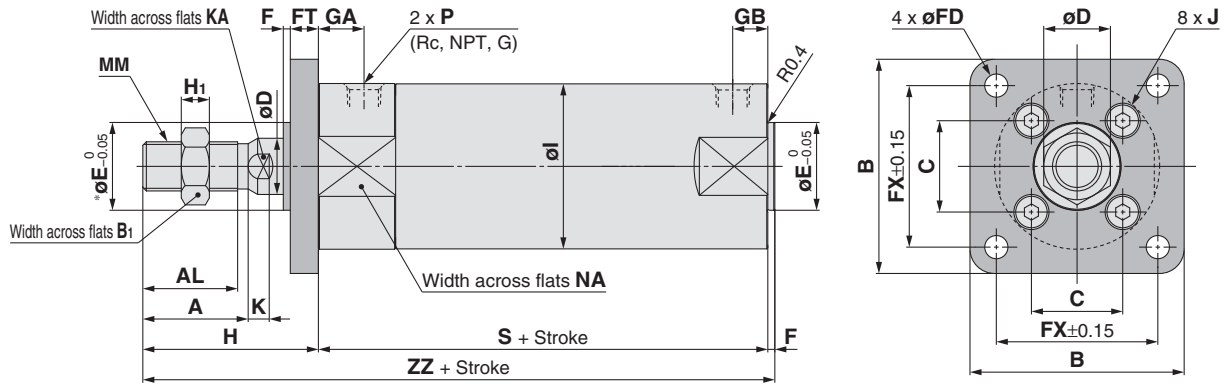
| Bore size | [mm] With Air Cushion | | | | | | | [mm] With Rod Boot | | | | [mm] With Rod Boot | | | | | | | | | | | | | |
|-----------|-----------------------|-----------|------|------|-----|------|---------------|--------------------|------------|-----------|----------|--------------------|------|------|-----------|-----|-----|----|----|----------------|----------------|------|------|------|---------------|
| | NA | S | W | X | Y | Z | ZZ | Bore size | Rc, NPT, G | | WA | WB | Wø | WH | Bore size | e | f | h | IJ | JH (Reference) | JW (Reference) | l | Z | ZZ | |
| 20 | 24 | 69 (77) | 10 | 15 | 7 | 47 | 110 (118) | 20 | 12 | 10 (12) | M5 x 0.8 | 16 | 15 | (16) | 25° | 1.5 | 20 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | 67 | 130 (138) |
| 25 | 29 | 69 (77) | 10 | 15 | 7 | 52 | 115.5 (123.5) | 25 | 12.5 | 10 (12.5) | M5 x 0.8 | 16 | 14.5 | (16) | 25° | 1.5 | 25 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | 74 | 137.5 (145.5) |
| 32 | 35.5 | 71 (79) | 10 | 16 | 8 | 53 | 117.5 (125.5) | 32 | 12 | 10 (12) | 1/8 | 16 | 14 | (16) | 25° | 1.5 | 32 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | 75 | 139.5 (147.5) |
| 40 | 44 | 78 (87) | 10 | 16.5 | 8.5 | 63.5 | 135 (144) | 40 | 13 | 10 (13) | 1/8 | 17 | 15 | (17) | 20° | 1.5 | 40 | 35 | 19 | 70 | 48 | 21.5 | 10.5 | 83.5 | 155 (164) |
| 50 | 55 | 90 (102) | 17.5 | 22 | 11 | 75.5 | 157.5 (169.5) | 50 | 14 | 12 (14) | 1/4 | 18 | 16 | (18) | 20° | 3 | 50 | 40 | 19 | 78 | 59 | 24 | 10.5 | 95.5 | 177.5 (189.5) |
| 63 | 69 | 90 (102) | 17.5 | 22 | 13 | 75.5 | 157.5 (169.5) | 63 | 14 | 12 (14) | 1/4 | 18 | 17 | (18) | 20° | 3 | 63 | 40 | 20 | 78 | 72 | 24 | 10.5 | 95.5 | 177.5 (189.5) |
| 80 | 86 | 108 (122) | 20 | 28.5 | 14 | 95 | 188.5 (202.5) | 80 | 20 | 16 (20) | 3/8 | 24 | 20 | (24) | 20° | 4 | 80 | 52 | 10 | 80 | 59 | — | — | 104 | 197.5 (211.5) |
| 100 | 106 | 108 (122) | 20 | 30 | 16 | 95 | 192 (206) | 100 | 20 | 16 (20) | 1/2 | 24 | 20 | (24) | 20° | 4 | 100 | 62 | 7 | 80 | 71 | — | — | 104 | 201 (215) |

* 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.
* The minimum stroke with rod boot is 20 mm.

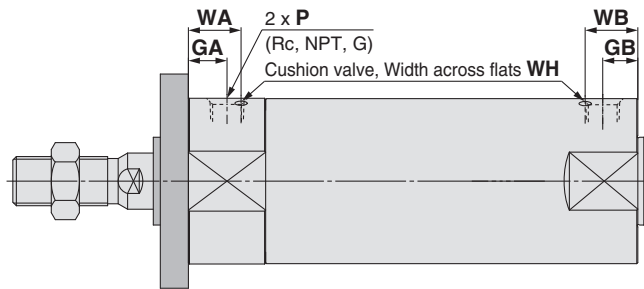
Double Acting, Single Rod **CG1**
Standard Double Acting, Double Rod **CG1W**
Single Acting, Spring Return/Extend **CG1**
Non-rotating Rod Double Acting, Single Rod **CG1K**
Non-rotating Rod Double Acting, Double Rod **CG1KW**
Direct Mount Double Acting, Single Rod **CG1R**
Direct Mount, Non-rotating Rod **CG1KR**
With End Lock **CBG1**
Auto Switch
Made to Order

Series CG1

Rod Flange: CG1FN

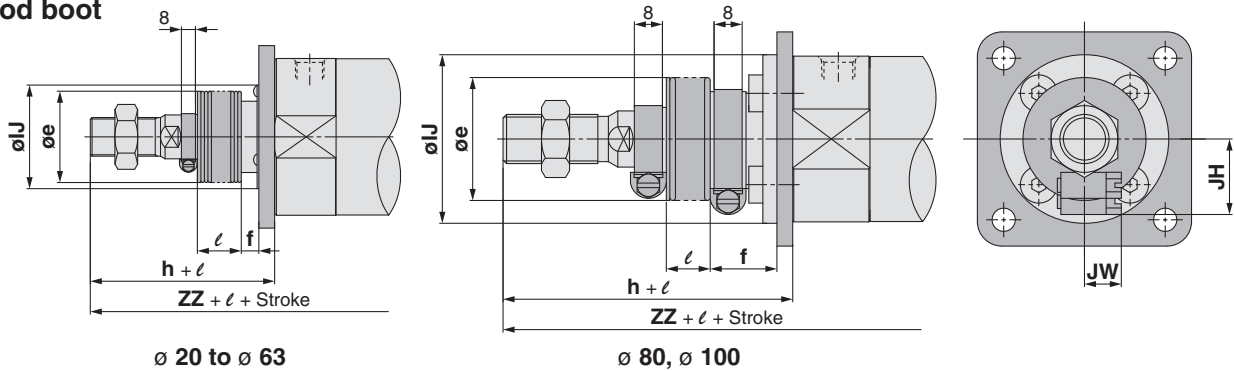


With air cushion



* End boss is machined on the flange for øE.

With rod boot



ø 20 to ø 63

ø 80, ø 100

| 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 |

| Bore size | [mm] | | | | | With Air Cushion [mm] | | | | With Rod Boot [mm] | | | | | | | | | | | | | |
|-----------|------|------------|------|-----------|-----------|-----------------------|------|-----------|----------|--------------------|-----------|-----|-----|-----------|----|----|----|----|----------------|----------------|---|----|-----------|
| | KA | MM | NA | S | ZZ | Bore size | GA | GB | P | WA | WB | Wθ | WH | Bore size | e | f | h | IJ | JH (Reference) | JW (Reference) | ℓ | ZZ | |
| 20 | 6 | M8 x 1.25 | 24 | 69 (77) | 106 (114) | 20 | 12 | 10 (12) | M5 x 0.8 | 16 | 15 (16) | 25° | 1.5 | 20 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | — | — | 126 (134) |
| 25 | 8 | M10 x 1.25 | 29 | 69 (77) | 111 (119) | 25 | 12.5 | 10 (12.5) | M5 x 0.8 | 16 | 14.5 (16) | 25° | 1.5 | 25 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | — | — | 133 (141) |
| 32 | 10 | M10 x 1.25 | 35.5 | 71 (79) | 113 (121) | 32 | 12 | 10 (12) | 1/8 | 16 | 14 (16) | 25° | 1.5 | 32 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | — | — | 135 (143) |
| 40 | 14 | M14 x 1.5 | 44 | 78 (87) | 130 (139) | 40 | 13 | 10 (13) | 1/8 | 17 | 15 (17) | 20° | 1.5 | 40 | 35 | 19 | 70 | 48 | 21.5 | 10.5 | — | — | 150 (159) |
| 50 | 18 | M18 x 1.5 | 55 | 90 (102) | 150 (162) | 50 | 14 | 12 (14) | 1/4 | 18 | 16 (18) | 20° | 3 | 50 | 40 | 19 | 78 | 59 | 24 | 10.5 | — | — | 170 (182) |
| 63 | 18 | M18 x 1.5 | 69 | 90 (102) | 150 (162) | 63 | 14 | 12 (14) | 1/4 | 18 | 17 (18) | 20° | 3 | 63 | 40 | 20 | 78 | 72 | 24 | 10.5 | — | — | 170 (182) |
| 80 | 22 | M22 x 1.5 | 86 | 108 (122) | 182 (196) | 80 | 20 | 16 (20) | 3/8 | 24 | 20 (24) | 20° | 4 | 80 | 52 | 10 | 80 | 59 | — | — | — | — | 191 (205) |
| 100 | 26 | M26 x 1.5 | 106 | 108 (122) | 182 (196) | 100 | 20 | 16 (20) | 1/2 | 24 | 20 (24) | 20° | 4 | 100 | 62 | 7 | 80 | 71 | — | — | — | — | 191 (205) |

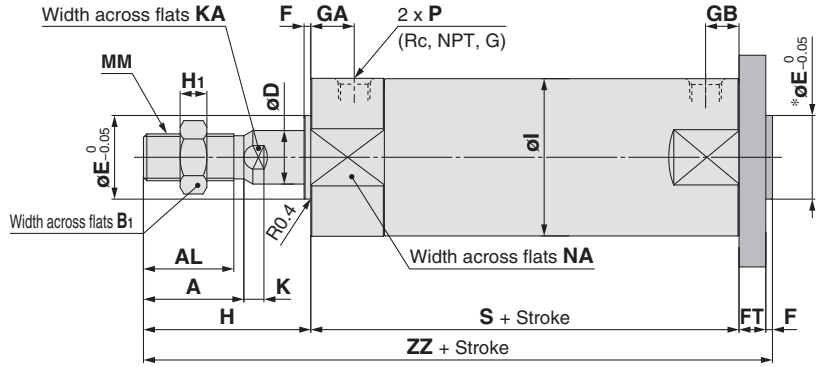
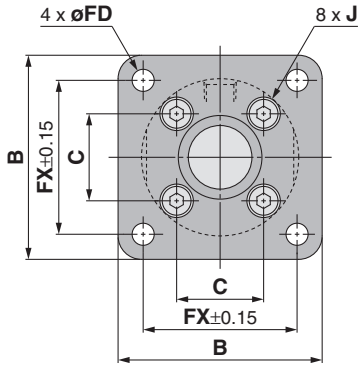
* For female rod end, since the wrench flap (K and KA portions) will be inside of the bracket when the piston rod is retracted at the stroke end, extend the piston rod to tighten the nut using a tool, and mount a workpiece on the rod end.

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

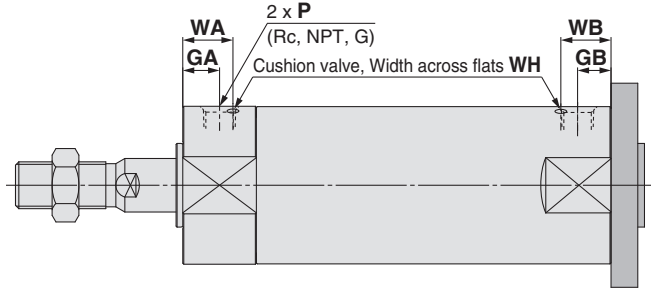
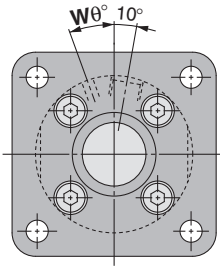
Note) (): Denotes the dimensions for long stroke.

* The minimum stroke with rod boot is 20 mm.

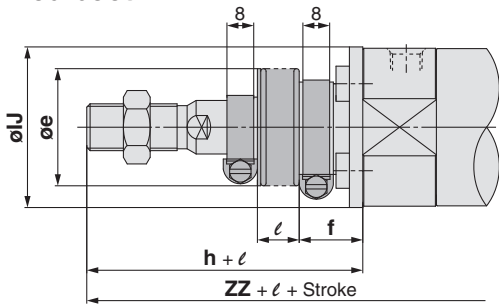
Head Flange: CG1GN



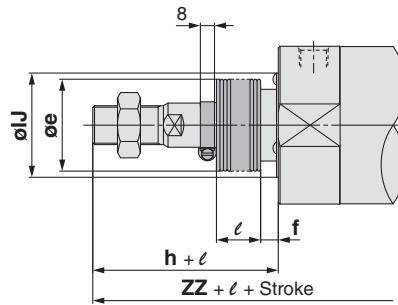
With air cushion



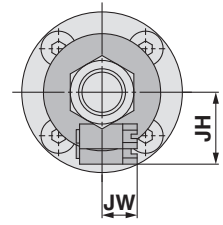
With rod boot



ø 20 to ø 63



ø 80, ø 100



| Bore size | Stroke range | | Rc, NPT port | | | G port | | | [mm] | | | | | | | | | | | | | | | |
|-----------|--------------|-------------|--------------|---------|-----|--------|-----------|----------|------|------|-----|----------------|------|----|----|---|-----|----|-----|----|----------------|-----|------------|-----|
| | Standard | Long stroke | GA | GB | P | GA | GB | P | A | AL | B | B ₁ | C | D | E | F | FD | FT | FX | H | H ₁ | I | J | K |
| 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 |

| Bore size | [mm] With Air Cushion | | | | | [mm] With Rod Boot | | | | | [mm] | | | | | | | | | | | | |
|-----------|-----------------------|------------|------|-----------|-----------|--------------------|------------|-----------|----------|----|------|------|-----|-----------|-----|----|----|----|----|------|------|------------|-----------|
| | KA | MM | NA | S | ZZ | Bore size | Rc, NPT, G | | | WA | WB | Wθ | WH | Bore size | e | f | h | JJ | JH | JW | ℓ | ZZ | |
| 20 | 6 | M8 x 1.25 | 24 | 69 (77) | 112 (120) | 20 | GA | GB | P | 16 | 15 | (16) | 25° | 1.5 | 20 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | 1/4 stroke | 132 (140) |
| 25 | 8 | M10 x 1.25 | 29 | 69 (77) | 118 (126) | 25 | 12.5 | 10 (12.5) | M5 x 0.8 | 16 | 14.5 | (16) | 25° | 1.5 | 25 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | | 140 (148) |
| 32 | 10 | M10 x 1.25 | 35.5 | 71 (79) | 120 (128) | 32 | 12 | 10 (12) | 1/8 | 16 | 14 | (16) | 25° | 1.5 | 32 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | | 142 (150) |
| 40 | 14 | M14 x 1.5 | 44 | 78 (87) | 138 (147) | 40 | 13 | 10 (13) | 1/8 | 17 | 15 | (17) | 20° | 1.5 | 40 | 35 | 19 | 70 | 48 | 21.5 | 10.5 | | 158 (167) |
| 50 | 18 | M18 x 1.5 | 55 | 90 (102) | 159 (171) | 50 | 14 | 12 (14) | 1/4 | 18 | 16 | (18) | 20° | 3 | 50 | 40 | 19 | 78 | 59 | 24 | 10.5 | | 179 (191) |
| 63 | 18 | M18 x 1.5 | 69 | 90 (102) | 159 (171) | 63 | 14 | 12 (14) | 1/4 | 18 | 17 | (18) | 20° | 3 | 63 | 40 | 20 | 78 | 72 | 24 | 10.5 | | 179 (191) |
| 80 | 22 | M22 x 1.5 | 86 | 108 (122) | 193 (207) | 80 | 20 | 16 (20) | 3/8 | 24 | 20 | (24) | 20° | 4 | 80 | 52 | 10 | 80 | 59 | — | — | | 202 (216) |
| 100 | 26 | M26 x 1.5 | 106 | 108 (122) | 196 (210) | 100 | 20 | 16 (20) | 1/2 | 24 | 20 | (24) | 20° | 4 | 100 | 62 | 7 | 80 | 71 | — | — | | 205 (219) |

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

* The minimum stroke with rod boot is 20 mm.

Double Acting, Single Rod
CG1

Standard
Double Acting, Double Rod
CG1W

Single Acting, Spring Return/Extend
CG1

Non-rotating Rod
Double Acting, Single Rod
CG1K

Double Acting, Double Rod
CG1KW

Direct Mount
Double Acting, Single Rod
CG1R

Direct Mount, Non-rotating Rod
CG1KR

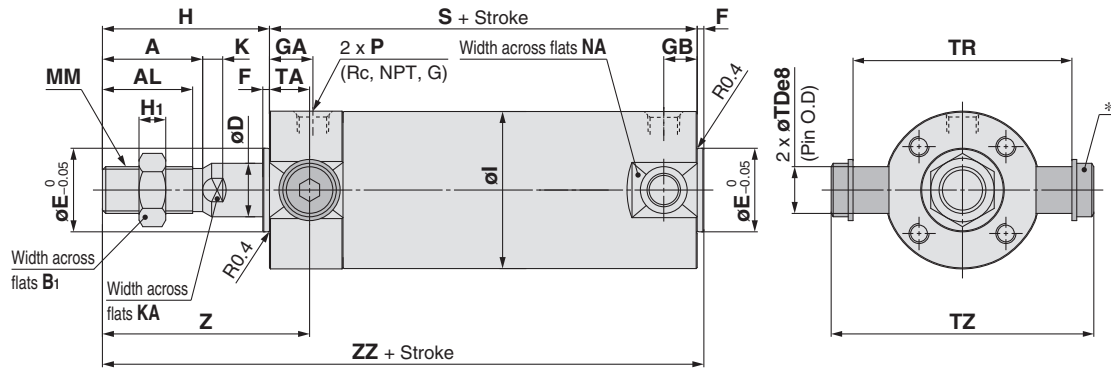
With End Lock
CBG1

Auto Switch

Made to Order

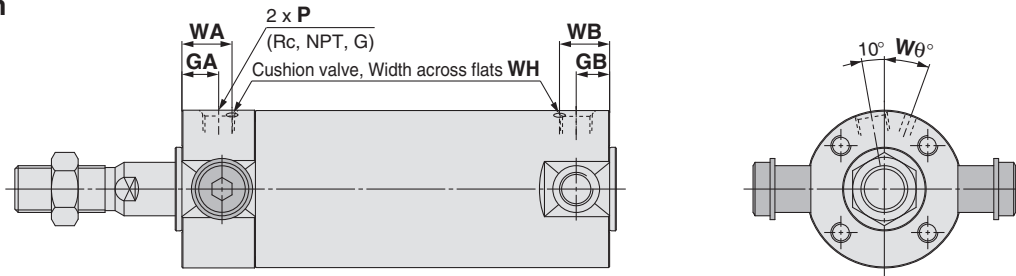
Series CG1

Rod Trunnion: CG1UN

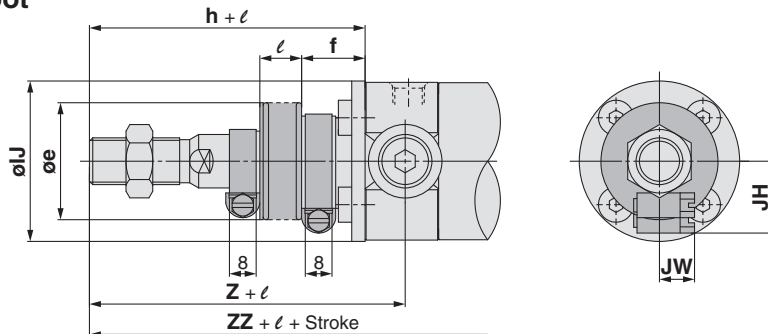


* Constructed of a trunnion pin, flat washer and hexagon socket head cap bolt.

With air cushion



With rod boot



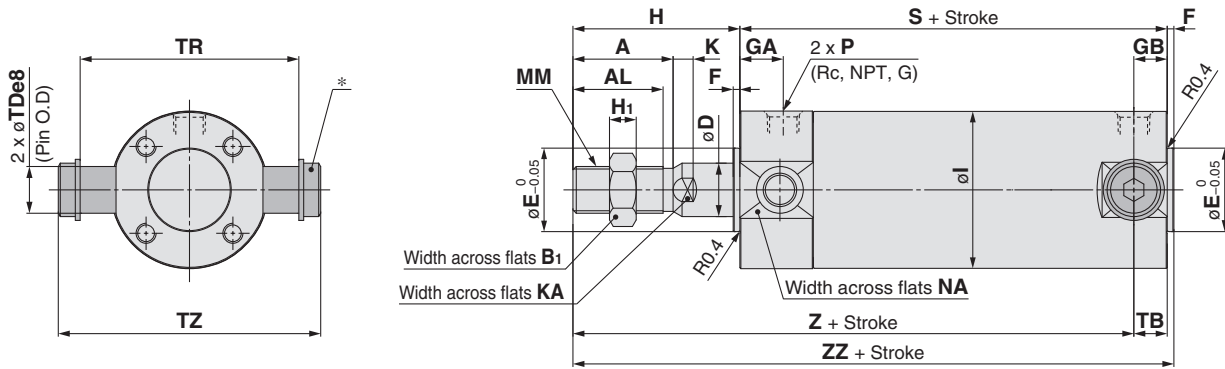
| Bore size | Stroke range | | Rc, NPT port | | | G port | | | A | AL | B ₁ | D | E | F | H | H ₁ | I | K | KA | MM | NA | S |
|-----------|--------------|-------------|--------------|---------|-----|--------|-----------|----------|----|------|----------------|----|----|---|----|----------------|----|-----|----|------------|------|----------|
| | 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) |

| Bore size | [mm] With Air Cushion | | | | | | [mm] With Rod Boot | | | | [mm] With Rod Boot | | | | | | | | | | | | | | |
|-----------|-----------------------|--|------|-------|----|-----------|--------------------|------------|-----------|----------|--------------------|------|------|-----------|-----|----|----|----|----|----|------|------|------------|----|-----------|
| | TA | TDe8 | TR | TZ | Z | ZZ | Bore size | Rc, NPT, G | | WA | WB | Wθ | WH | Bore size | e | f | h | IJ | JH | JW | l | Z | ZZ | | |
| 20 | 11 | 8 ^{-0.025} _{-0.047} | 39 | 47.6 | 46 | 106 (114) | 20 | 12 | 10 (12) | M5 x 0.8 | 16 | 15 | (16) | 25° | 1.5 | 20 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | 1/4 stroke | 66 | 126 (134) |
| 25 | 11 | 10 ^{-0.025} _{-0.047} | 43 | 53 | 51 | 111 (119) | 25 | 12.5 | 10 (12.5) | M5 x 0.8 | 16 | 14.5 | (16) | 25° | 1.5 | 25 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | | 73 | 133 (141) |
| 32 | 11 | 12 ^{-0.032} _{-0.059} | 54.5 | 67.7 | 51 | 113 (121) | 32 | 12 | 10 (12) | 1/8 | 16 | 14 | (16) | 25° | 1.5 | 32 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | | 73 | 135 (143) |
| 40 | 12 | 14 ^{-0.032} _{-0.059} | 65.5 | 78.7 | 62 | 130 (139) | 40 | 13 | 10 (13) | 1/8 | 17 | 15 | (17) | 20° | 1.5 | 40 | 35 | 19 | 70 | 48 | 21.5 | 10.5 | | 82 | 150 (159) |
| 50 | 13 | 16 ^{-0.032} _{-0.059} | 80 | 98.6 | 71 | 150 (162) | 50 | 14 | 12 (14) | 1/4 | 18 | 16 | (18) | 20° | 3 | 50 | 40 | 19 | 78 | 59 | 24 | 10.5 | | 91 | 170 (182) |
| 63 | 13 | 18 ^{-0.032} _{-0.059} | 98 | 119.2 | 71 | 150 (162) | 63 | 14 | 12 (14) | 1/4 | 18 | 17 | (18) | 20° | 3 | 63 | 40 | 20 | 78 | 72 | 24 | 10.5 | | 91 | 170 (182) |

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

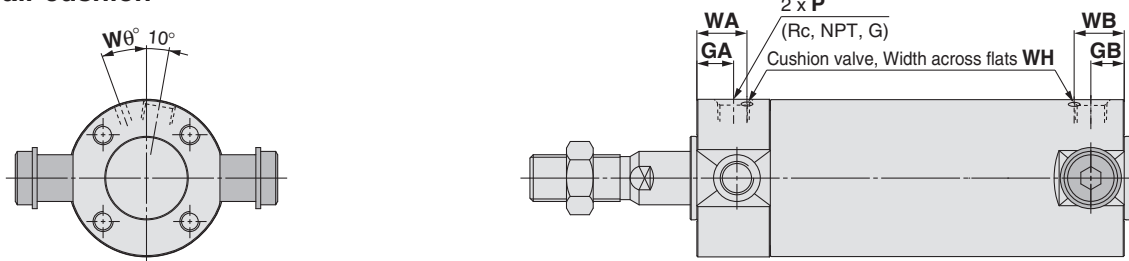
* The minimum stroke with rod boot is 20 mm.

Head Trunnion: CG1TN

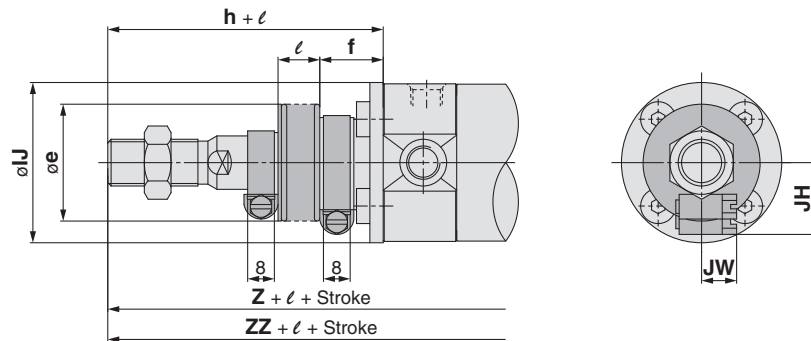


* Constructed of a trunnion pin, flat washer and hexagon socket head cap bolt.

With air cushion



With rod boot



| Bore size | Stroke range | | Rc, NPT port | | | G port | | | A | AL | B ₁ | D | E | F | H | H ₁ | 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) |

| Bore size | [mm] | | | | | | With Air Cushion [mm] | | | | With Rod Boot [mm] | | | | | | | | | | | | | |
|-----------|---------|--|------|-------|-----------|-----------|-----------------------|------------|-----------|----------|--------------------|------|------|-----|-----------|----|----|----|----|----|------|------|-----------|-----------|
| | TB | TDe8 | TR | TZ | Z | ZZ | Bore size | Rc, NPT, G | | | WA | WB | Wθ | WH | Bore size | e | f | h | IJ | JH | JW | l | Z | ZZ |
| 20 | 11 | 8 ^{-0.025} _{-0.047} | 39 | 47.6 | 93 (101) | 106 (114) | 20 | 12 | 10 (12) | M5 x 0.8 | 16 | 15 | (16) | 25° | 1.5 | 20 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | 113 (121) | 126 (134) |
| 25 | 11 | 10 ^{-0.025} _{-0.047} | 43 | 53 | 98 (106) | 111 (119) | 25 | 12.5 | 10 (12.5) | M5 x 0.8 | 16 | 14.5 | (16) | 25° | 1.5 | 25 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | 120 (128) | 133 (141) |
| 32 | 10 (11) | 12 ^{-0.032} _{-0.059} | 54.5 | 67.7 | 101 (108) | 113 (121) | 32 | 12 | 10 (12) | 1/8 | 16 | 14 | (16) | 25° | 1.5 | 30 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | 123 (130) | 135 (143) |
| 40 | 10 (12) | 14 ^{-0.032} _{-0.059} | 65.5 | 78.7 | 118 (125) | 130 (139) | 40 | 13 | 10 (13) | 1/8 | 17 | 15 | (17) | 20° | 1.5 | 35 | 40 | 19 | 70 | 48 | 21.5 | 10.5 | 138 (145) | 150 (159) |
| 50 | 12 (13) | 16 ^{-0.032} _{-0.059} | 80 | 98.6 | 136 (147) | 150 (162) | 50 | 14 | 12 (14) | 1/4 | 18 | 16 | (18) | 20° | 3 | 40 | 40 | 19 | 78 | 59 | 24 | 10.5 | 156 (167) | 170 (182) |
| 63 | 12 (13) | 18 ^{-0.032} _{-0.059} | 98 | 119.2 | 136 (147) | 150 (162) | 63 | 14 | 12 (14) | 1/4 | 18 | 17 | (18) | 20° | 3 | 40 | 40 | 20 | 78 | 72 | 24 | 10.5 | 156 (167) | 170 (182) |

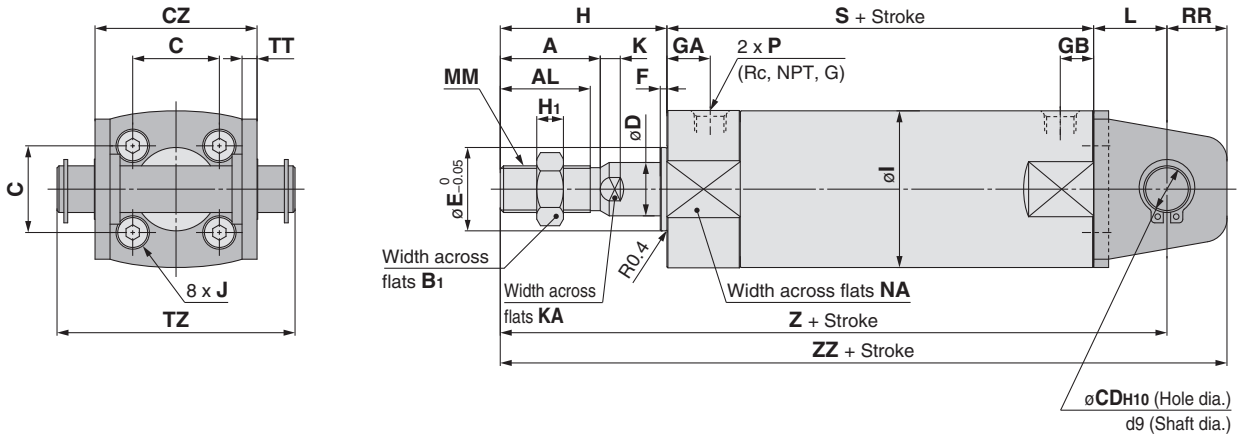
* Refer to the basic type for the female rod end.
Note) (): Denotes the dimensions for long stroke.

* The minimum stroke with rod boot is 20 mm.

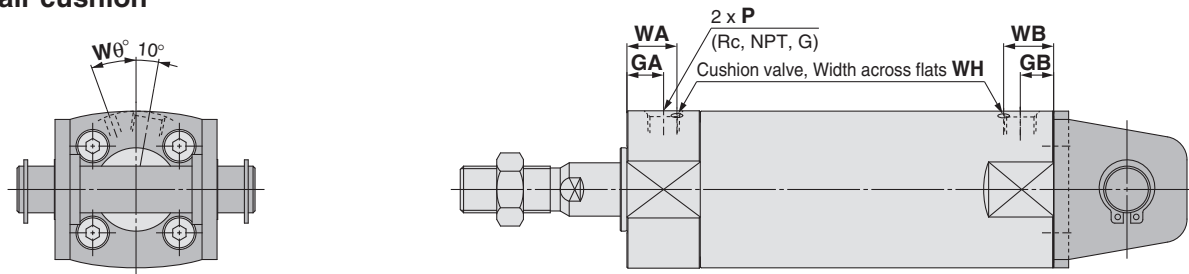
| | |
|-------------------------------------|----------------------|
| Double Acting, Single Rod | CG1 |
| Standard | CG1W |
| Double Acting, Double Rod | CG1 |
| Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | CG1K |
| Double Acting, Single Rod | CG1K |
| Double Acting, Double Rod | CG1KW |
| Direct Mount | CG1R |
| Double Acting, Single Rod | CG1R |
| Direct Mount, Non-rotating Rod | CG1KR |
| With End Lock | CBG1 |
| Auto Switch | Auto Switch |
| Made to Order | Made to Order |

Series CG1

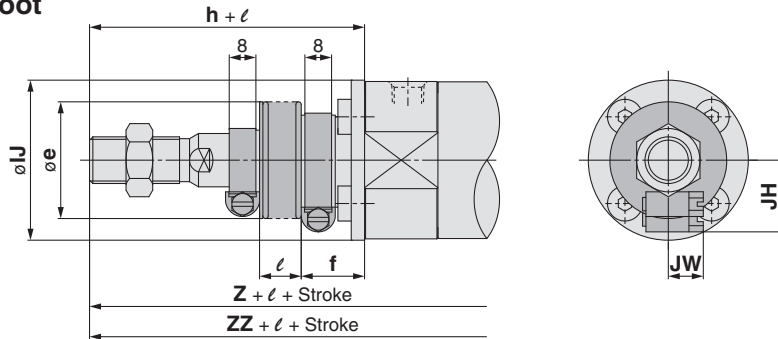
Clevis: CG1DN (ø 20 to ø 63)



With air cushion



With rod boot



| Bore size | Stroke range | | Rc, NPT port | | | G port | | | A | AL | B ₁ | C | CD | CZ | D | E | F | H | H ₁ | 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 |

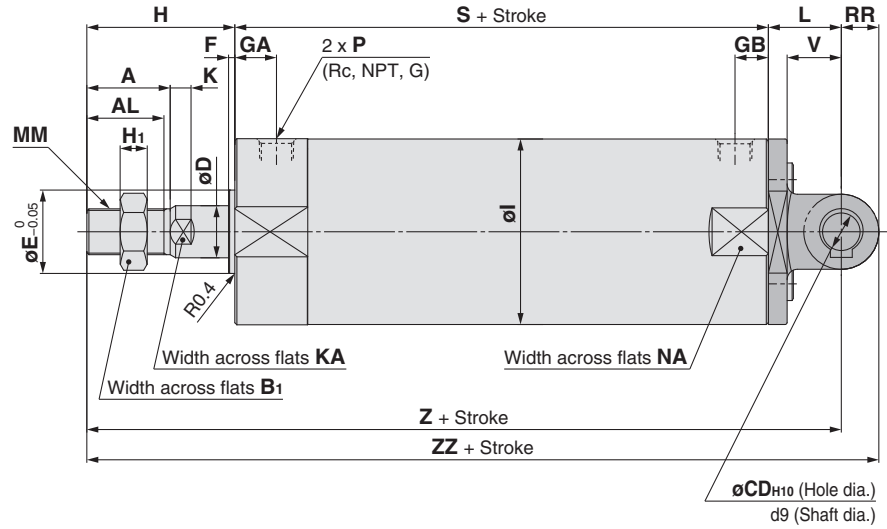
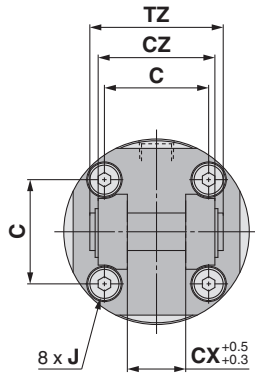
| Bore size | RR | S | TT | TZ | Z | ZZ | Applicable pin part no. | With Air Cushion | | | | With Rod Boot | | | | | | | | | | | | | | |
|-----------|----|----------|-----|-------|-----------|-----------|-------------------------|------------------|------|-----------|----------|---------------|------|------|-----------|-----|----|----|----|----|----|------|------|------------|-----------|-----------|
| | | | | | | | | GA | GB | P | WA | WB | Wθ | WH | Bore size | e | f | h | IJ | JH | JW | l | Z | ZZ | | |
| 20 | 11 | 69 (77) | 3.2 | 43.4 | 118 (126) | 129 (137) | CD-G02 | 20 | 12 | 10 (12) | M5 x 0.8 | 16 | 15 | (16) | 25° | 1.5 | 20 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | 1/4 stroke | 138 (146) | 149 (157) |
| 25 | 13 | 69 (77) | 3.2 | 48 | 125 (133) | 138 (146) | CD-G25 | 25 | 12.5 | 10 (12.5) | M5 x 0.8 | 16 | 14.5 | (16) | 25° | 1.5 | 25 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | | 147 (155) | 160 (168) |
| 32 | 15 | 71 (79) | 4.5 | 59.4 | 131 (139) | 146 (154) | CD-G03 | 32 | 12 | 10 (12) | 1/8 | 16 | 14 | (16) | 25° | 1.5 | 32 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | | 153 (161) | 168 (176) |
| 40 | 18 | 78 (87) | 4.5 | 71.4 | 150 (159) | 168 (177) | CD-G04 | 40 | 13 | 10 (13) | 1/8 | 17 | 15 | (17) | 20° | 1.5 | 40 | 35 | 19 | 70 | 48 | 21.5 | 10.5 | | 170 (179) | 188 (197) |
| 50 | 20 | 90 (102) | 6 | 86 | 173 (185) | 193 (205) | CD-G05 | 50 | 14 | 12 (14) | 1/4 | 18 | 16 | (18) | 20° | 3 | 50 | 40 | 19 | 78 | 59 | 24 | 10.5 | | 193 (205) | 213 (225) |
| 63 | 22 | 90 (102) | 8 | 105.4 | 178 (190) | 200 (212) | CD-G06 | 63 | 14 | 12 (14) | 1/4 | 18 | 17 | (18) | 20° | 3 | 63 | 40 | 20 | 78 | 72 | 24 | 10.5 | | 198 (210) | 220 (232) |

* A clevis pin, retaining rings and mounting bolts are included. Refer to the basic type for the female rod end.
 Note) (): Denotes the dimensions for long stroke.

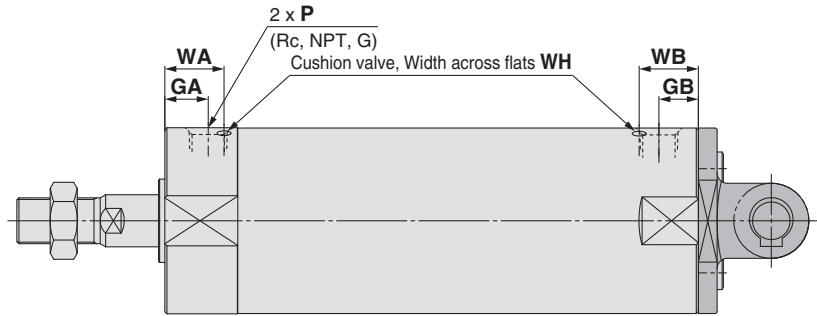
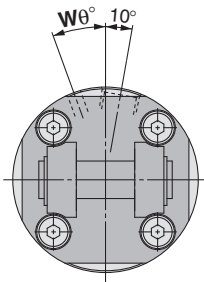
* The minimum stroke with rod boot is 20 mm.

Air Cylinder: Standard Type Double Acting, Single Rod **Series CG1**

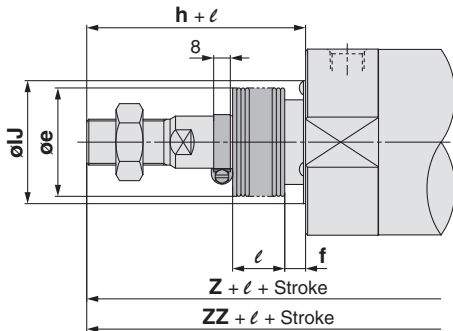
Clevis: CG1DN (ø 80, ø 100)



With air cushion



With rod boot



| Bore size | Stroke range | | Rc, NPT port | | | G port | | | [mm] | | | | | | | | | | | | | | | | | | |
|-----------|--------------|-------------|--------------|---------|-----|--------|-----------|-----|------|----|----------------|----|----|----|----|----|----|---|----|----------------|-----|------------|----|----|----|-----------|-----|
| | Standard | Long stroke | GA | GB | P | GA | GB | P | A | AL | B ₁ | C | CD | CX | CZ | D | E | F | H | H ₁ | I | J | K | KA | L | MM | NA |
| 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 |

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

| Bore size | Rc, NPT, G | | | [mm] | | | |
|-----------|------------|---------|-----|------|---------|-----|----|
| | GA | GB | P | WA | WB | Wθ | WH |
| 80 | 20 | 16 (20) | 3/8 | 24 | 20 (24) | 20° | 4 |
| 100 | 20 | 16 (20) | 1/2 | 24 | 20 (24) | 20° | 4 |

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

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

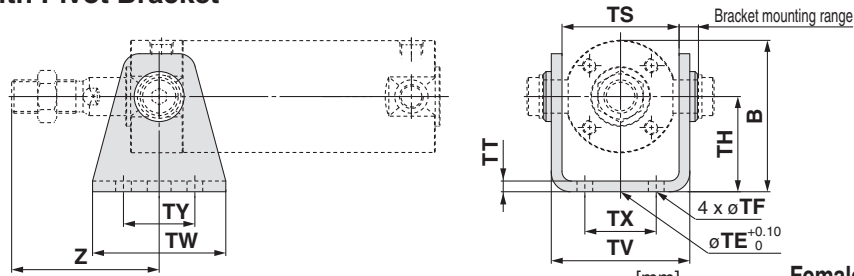
* The minimum stroke with rod boot is 20 mm.

| | |
|-------------------------------------|--------------|
| Double Acting, Single Rod | CG1 |
| Standard | CG1W |
| Double Acting, Double Rod | CG1 |
| Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | CG1K |
| Double Acting, Single Rod | CG1KW |
| Double Acting, Double Rod | CG1K |
| Direct Mount | CG1R |
| Double Acting, Single Rod | CG1R |
| Direct Mount, Non-rotating Rod | CG1KR |
| With End Lock | CBG1 |
| Auto Switch | CG1 |
| Made to Order | CG1 |

Series CG1

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

Rod Trunnion (U) with Pivot Bracket



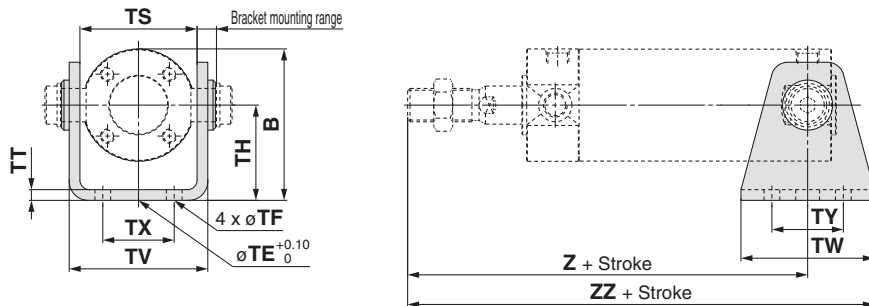
Male Thread

| 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



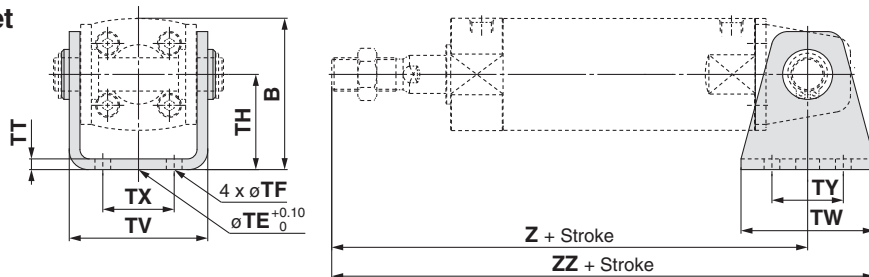
Male Thread

| 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 (82) | 99 (106) |
| 40 | 83 (90) | 111 (118) |
| 50 | 94 (105) | 126 (137) |
| 63 | 94 (105) | 131 (142) |

Clevis (D) with Pivot Bracket ø 20 to ø 63



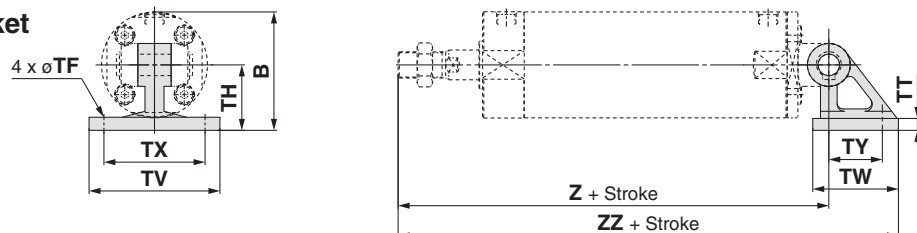
Male Thread

| 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 ø 80, ø 100



Male Thread

| 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) |

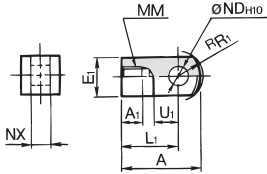
Series CG1

Dimensions of Accessories

Single Knuckle Joint

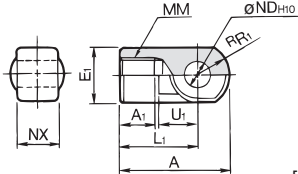
I-G02, G03

Material: Carbon steel



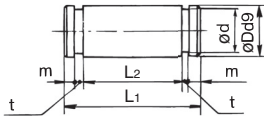
I-G04, G05, G08, G10

Material: Cast iron



| Part no. | Applicable bore size [mm] | A | A ₁ | E ₁ | L ₁ | MM | R ₁ | U ₁ | ND _{H10} | 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 | 22 | 30 | M14 x 1.5 | 12 | 14 | 10 ^{+0.058} ₀ | 18 ^{-0.3} _{-0.5} |
| I-G05 | 50, 63 | 56 | 18 | 28 | 40 | M18 x 1.5 | 16 | 20 | 14 ^{+0.070} ₀ | 22 ^{-0.3} _{-0.5} |
| I-G08 | 80 | 71 | 21 | 38 | 50 | M22 x 1.5 | 21 | 27 | 18 ^{+0.070} ₀ | 28 ^{-0.3} _{-0.5} |
| I-G10 | 100 | 79 | 21 | 44 | 55 | M26 x 1.5 | 24 | 31 | 22 ^{+0.084} ₀ | 32 ^{-0.3} _{-0.5} |

Knuckle Pin

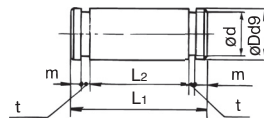


Material: Carbon steel

| Part no. | Applicable bore size [mm] | D _{d9} | L ₁ | d | L ₂ | 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



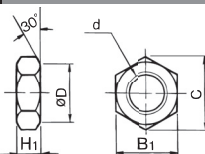
Material: Carbon steel

| Part no. | Applicable bore size [mm] | D _{d9} | L ₁ | d | L ₂ | 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 ø 80 and ø 100.

Rod End Nut



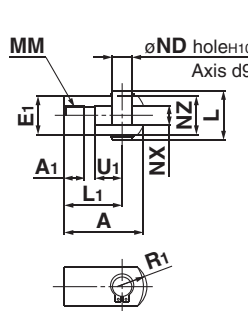
Material: Carbon steel

| Part no. | Applicable bore size [mm] | d | H ₁ | B ₁ | 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

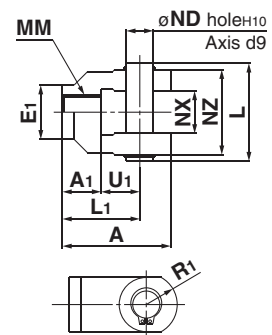
Y-G02, G03

Material: Carbon steel



Y-G04, G05, G08, G10

Material: Cast iron



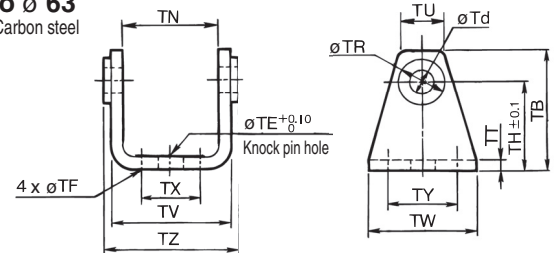
| Part no. | Applicable bore size [mm] | A | A ₁ | E ₁ | L ₁ | MM | R ₁ | U ₁ | ND | NX | NZ | L | Included pin part no. |
|----------|---------------------------|----|----------------|----------------|----------------|------------|----------------|----------------|----|------------------------------------|----|------|-----------------------|
| 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 | 22 | 30 | M14 x 1.5 | 12 | 14 | 10 | 18 ^{+0.5} _{+0.3} | 36 | 41.6 | IY-G04 |
| Y-G05 | 50, 63 | 56 | 20 | 28 | 40 | M18 x 1.5 | 16 | 20 | 14 | 22 ^{+0.5} _{+0.3} | 44 | 50.6 | IY-G05 |
| Y-G08 | 80 | 71 | 23 | 38 | 50 | M22 x 1.5 | 21 | 27 | 18 | 28 ^{+0.5} _{+0.3} | 56 | 64 | IY-G08 |
| Y-G10 | 100 | 79 | 24 | 44 | 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

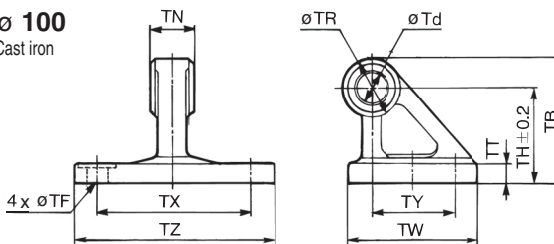
ø 20 to ø 63

Material: Carbon steel



ø 80, ø 100

Material: Cast iron



| 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} _{+0.1} | 36 | 11 |
| CG-100-24A | 100 | 90 | 22 | — | 13.5 | 65 | 32 ^{+0.1} _{+0.1} | 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 ^{-0.040} _{-0.076} |
| CG-025-24A | 25 | (20.7) | (39.8) | 42 | 20 | 28 | 42.1 | 10d ^{-0.040} _{-0.076} |
| CG-032-24A | 32 | (23.6) | (49.4) | 48 | 22 | 28 | 53.8 | 12d ^{-0.050} _{-0.093} |
| CG-040-24A | 40 | (27.3) | (58.4) | 56 | 30 | 30 | 64.6 | 14d ^{-0.050} _{-0.093} |
| CG-050-24A | 50 | (29.7) | (72.4) | 64 | 36 | 36 | 79.2 | 16d ^{-0.050} _{-0.093} |
| CG-063-24A | 63 | (34.3) | (90.4) | 74 | 46 | 46 | 97.2 | 18d ^{-0.050} _{-0.093} |
| CG-080-24A | 80 | — | — | 72 | 85 | 45 | 110 | 18d ^{-0.050} _{-0.093} |
| CG-100-24A | 100 | — | — | 93 | 100 | 60 | 130 | 22d ^{-0.065} _{-0.117} |

Double Acting, Single Rod CG1
Standard Double Acting, Double Rod CG1W
Single Acting, Spring Return/Extend CG1
Non-rotating Rod Double Acting, Single Rod CG1K
Double Acting, Double Rod CG1KW
Direct Mount Double Acting, Single Rod CG1R
Direct Mount, Non-rotating Rod CG1KR
With End Lock CG1
Auto Switch
Made to Order

Air Cylinder: Standard Type Double Acting, Double Rod Series **CG1W**

∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63, ∅ 80, ∅ 100

How to Order

CG1W L N 25 - 100 **Z -**

With auto switch **CDG1W L N 25 - 100** **Z - M9BW**

With auto switch (Built-in magnet)
Double acting, Double rod type

Mounting **Type**

| | |
|-----------|---|
| B | Basic |
| Z* | Basic (without trunnion mounting female thread) |
| L | Axial foot |
| F | Flange |
| U* | Trunnion |

| | |
|----------|---------------|
| 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 |

Auto switch

| | |
|---|---------------------|
| — | Without auto switch |
|---|---------------------|

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

Number of auto switches

| | |
|----------|----------|
| — | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Suffix for cylinder (Rod boot)

| | |
|------------|------------------------------------|
| — | Without rod boot |
| One side | J Nylon tarpaulin |
| Both sides | K Heat resistant tarpaulin |
| Both sides | JJ Nylon tarpaulin |
| Both sides | KK Heat resistant tarpaulin |

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

Rod end thread

| | |
|----------|----------------|
| — | Male rod end |
| F | Female rod end |

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 24.

Made to Order
For details, refer to page 24.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDG1WFA32-100Z

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | | Lead wire length [m] | | | | | Pre-wired connector | Applicable load | | | |
|---|---|---------------------------------------|-----------------|------------------------|--------------|---------------|----------------------|-------------|---------|----------------------|-------|-------|-------|----------|---------------------|-----------------|------------|------------|------------|
| | | | | | DC | AC | Applicable bore size | | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | | | | |
| | | | | | | | ∅ 20 to ∅ 63 | ∅ 80, ∅ 100 | | | | | | | | | | | |
| Solid state auto switch | — | Grommet | — | 3-wire (NPN) | 5 V, 12 V | — | Perpendicular | In-line | In-line | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | | |
| | | | | | | | — | — | — | ● | ● | ● | ○ | — | ○ | | | | |
| | | Connector | | 2-wire | 12 V | — | — | — | ● | ● | ● | ○ | — | ○ | — | | | ○ | |
| | | | | | | — | — | — | ● | ● | ● | ○ | — | ○ | | | | | |
| | Diagnostic indication (2-colour indication) | Grommet | Yes | 24 V | 3-wire (NPN) | 5 V, 12 V | — | M9NV | M9N | — | ● | ● | ● | ○ | — | ○ | | IC circuit | |
| | | | | | | | | — | — | — | ● | ● | ● | ○ | — | ○ | | | |
| | | | | | Connector | 2-wire | 12 V | — | — | — | ● | ● | ● | ○ | — | ○ | | — | ○ |
| | | | | | | | | — | — | — | ● | ● | ● | ○ | — | ○ | | | |
| | | Water resistant (2-colour indication) | Grommet | — | 5 V, 12 V | 3-wire (NPN) | — | — | M9NWV | M9NW | — | ● | ● | ● | ○ | — | | ○ | IC circuit |
| | | | | | | 3-wire (PNP) | | | — | — | — | ● | ● | ● | ○ | — | | ○ | |
| Diagnostic output (2-colour indication) | Grommet | Yes | 24 V | 2-wire | 12 V | — | — | — | — | ● | ● | ● | ○ | — | ○ | — | | | |
| | | | | | | | — | — | — | ● | ● | ● | ○ | — | ○ | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 5 V | — | A96V | A96 | — | ● | — | ● | ○ | — | ○ | IC circuit | Relay, PLC | | |
| | | | | | | | — | — | — | ● | — | ● | ○ | — | ○ | | | | |
| | | Connector | | 2-wire | 12 V | 100 V | A93V | A93 | — | ● | — | ● | ○ | — | ○ | IC circuit | | | |
| | | | | | | 100 V or less | A90V | A90 | — | ● | — | ● | ○ | — | ○ | | | | |
| | Diagnostic indication (2-colour indication) | Grommet | Yes | 24 V | 2-wire | 12 V | — | — | — | — | ● | — | ● | ○ | — | ○ | | — | |
| | | | | | | | | — | — | — | ● | — | ● | ○ | — | ○ | | | |
| | | | | | | | | — | — | — | ● | — | ● | ○ | — | ○ | | | |
| | | | | | | | | — | — | — | ● | — | ● | ○ | — | ○ | | | |
| | 24 V or less | Grommet | Yes | — | — | — | — | — | C73C | — | ● | — | ● | ○ | — | ○ | | IC circuit | |
| | | | | | | | | — | C80C | — | ● | — | ● | ○ | — | ○ | | | |
| — | — | — | — | — | — | — | — | B59W | — | ● | — | ● | ○ | — | ○ | — | | | |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m..... — (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 74 for details.

* For details about auto switches with pre-wired connector, refer to **Auto Switch Guide**.

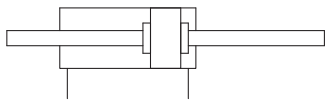
* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

Air Cylinder: Standard Type Double Acting, Double Rod **Series CG1W**

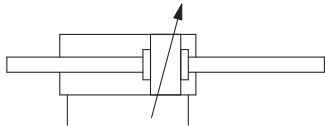


Symbol

Rubber bumper



Air cushion



Made to Order
(For details, refer to pages 77 to 93.)

| 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 |
| -XC6 | Made of stainless steel |
| -XC13 | Auto switch rail mounting |
| -XC22 | Fluororubber seal*1 |
| -XC37 | Larger throttle diameter of connection port |
| -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.

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.

| Refer to pages 68 to 74 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 |

Specifications

| Bore size [mm] | | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | |
|--------------------------------------|----------------------|--|--------------------|--------------------|------|------|------|------|----------------|-------|
| Action | | Double acting, Double rod | | | | | | | | |
| Lubricant | | Not required (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 °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, Flange, Trunnion | | | | | | | | |
| 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

** Rod trunnion type is not available for ø 80 and ø 100.

Foot and flange types of cylinder sizes from ø 20 to ø 63 do not have trunnion mounting female thread. Operate the cylinder within the allowable kinetic energy.

Accessories

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

* Not available for ø 80 and ø 100.

** A double knuckle joint pin and retaining rings are shipped together.

Standard Strokes

| Bore size [mm] | Standard stroke [mm] ^{Note 1)} | Maximum manufacturable stroke [mm] ^{Note 2)} |
|----------------|--|---|
| 20 | 25, 50, 75, 100, 125, 150, 200 | 201 to 1500 |
| 25 | 25, 50, 75, 100, 125, 150, 200, 250, 300 | 301 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) The maximum manufacturable stroke shows the long stroke.

Note 3) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection". In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Series CG1W

Weights

| Bore size [mm] | | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | (kg) |
|---------------------------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Basic weight | Basic | 0.13 | 0.22 | 0.33 | 0.55 | 1.02 | 1.37 | 2.64 | 4.09 | |
| | Axial foot | 0.24 | 0.35 | 0.49 | 0.77 | 1.50 | 2.09 | 3.60 | 5.84 | |
| | Flange | 0.21 | 0.32 | 0.47 | 0.75 | 1.36 | 1.87 | 3.35 | 5.44 | |
| | Trunnion | 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 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 | 0.01 | 0.04 | 0 | 0.01 | 0.04 | 0 | 0.04 | |
| Weight reduction for female rod end | | -0.02 | -0.04 | -0.04 | -0.10 | -0.20 | -0.20 | -0.38 | -0.54 | |

Calculation (Example) **CG1WLN32-100Z**
(Foot, ø 32, 100 stroke)

- Basic weight 0.49 (Foot, ø 32)
 - Additional weight 0.13/50 stroke
 - Air cylinder stroke 100 stroke
- $0.49 \times 0.13 \times 100/50 = 0.75 \text{ kg}$

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 feet, 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 |
| Pivot bracket | 1 | CG-020-24A | CG-025-24A | CG-032-24A | CG-040-24A | CG-050-24A | CG-063-24A | — | — | 1 pivot bracket |

(Note) Order two feet per cylinder.

Air-hydro

CDG1W Mounting type H Bore size - Stroke Rod end thread Z - Auto switch

| | |
|---|-----------------|
| — | Without magnet |
| D | Built-in magnet |

● Air-hydro

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.

Dimensions: Same as the standard type

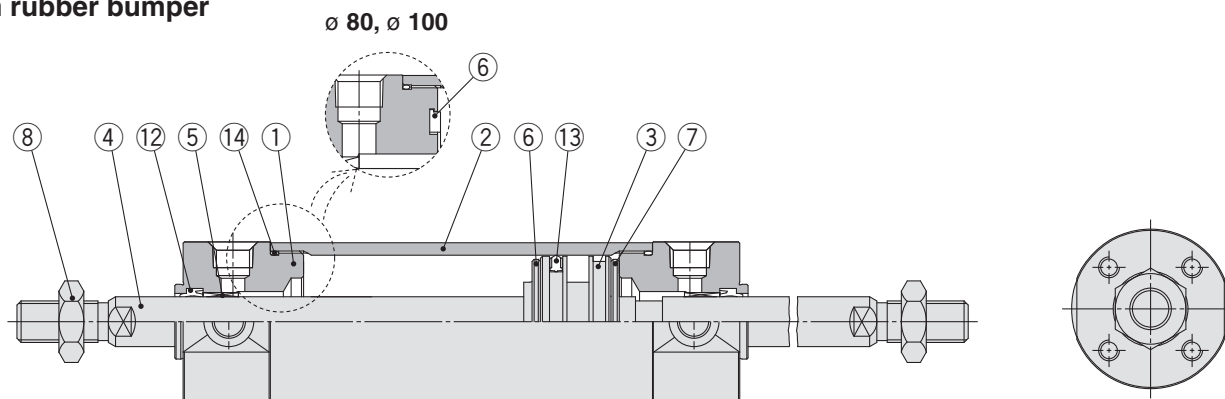
Specifications

| Bore size (mm) | 20, 25, 32, 40, 50, 63 |
|--------------------------------|--|
| Action | Double acting, Single rod |
| 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 temperatures | 5 to 60°C |
| Mounting | Basic, Axial foot, Flange, Trunnion |

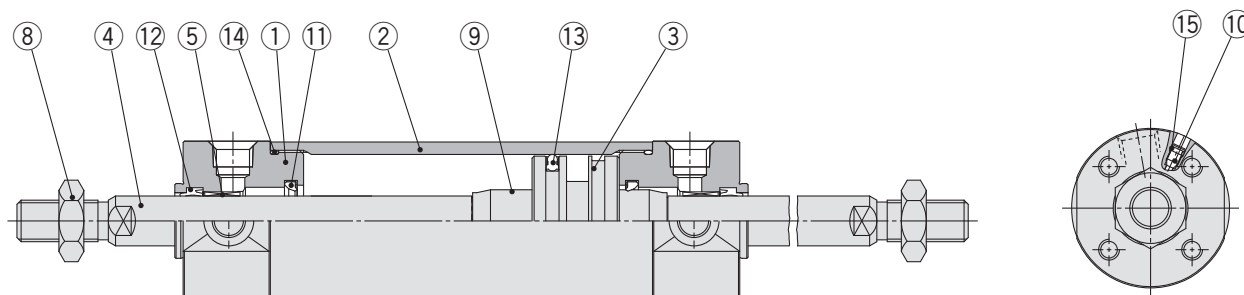
* Auto switch can be mounted.

Construction

With rubber bumper



With air cushion



Component Parts

| No. | Description | Material | Note |
|-----|---------------|-----------------|---------------------------------------|
| 1 | Rod cover | Aluminium alloy | Hard anodised |
| 2 | Cylinder tube | Aluminium alloy | Hard anodised |
| 3 | Piston | Aluminium alloy | |
| 4 | Piston rod | Stainless steel | For ø 20 or ø 25 with built-in magnet |
| | | Carbon steel* | Hard chrome plating* |
| 5 | Bushing | Bearing alloy | |
| 6 | Bumper | Resin | ø 32 or larger is common. |
| 7 | Bumper | Resin | |
| 8 | Rod end nut | Carbon steel | Zinc chromated |
| 9 | Cushion ring | Aluminium alloy | |
| 10 | Cushion valve | ø 40 or smaller | Carbon steel |
| | | ø 50 or larger | Steel wire |
| | | | Zinc chromated |
| 11 | Cushion seal | Urethane | |
| 12 | Rod seal | NBR | |
| 13 | Piston seal | NBR | |
| 14 | Tube gasket | NBR | |
| 15 | Valve seal | NBR | |

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

* The material for ø 20, ø 25 cylinders with auto switches is made of stainless steel.

Replacement Parts: Seal Kit

| Bore size [mm] | Kit no. | Contents |
|----------------|-------------|-------------------------------|
| 20 | CG1WN20Z-PS | Set of the nos. 12, 13, 14 |
| 25 | CG1WN25Z-PS | |
| 32 | CG1WN32Z-PS | |
| 40 | CG1WN40Z-PS | |

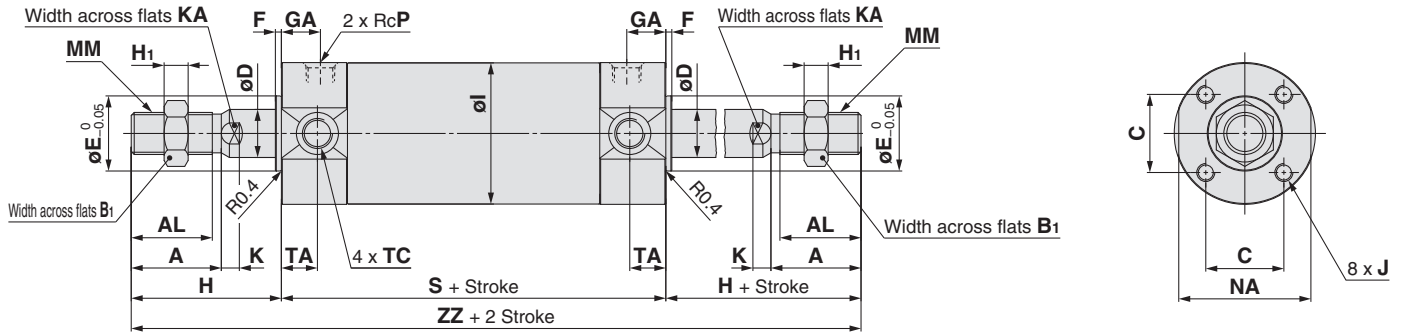
Note) Refer to the Specific Product Precautions on page 10 for Disassembly/Replacement. Order with the kit number according to the bore size.

* The seal kit includes a grease pack (10 g). Order with the following part number when only the grease pack is needed.

Grease pack part number: GR-S-010 (10 g)

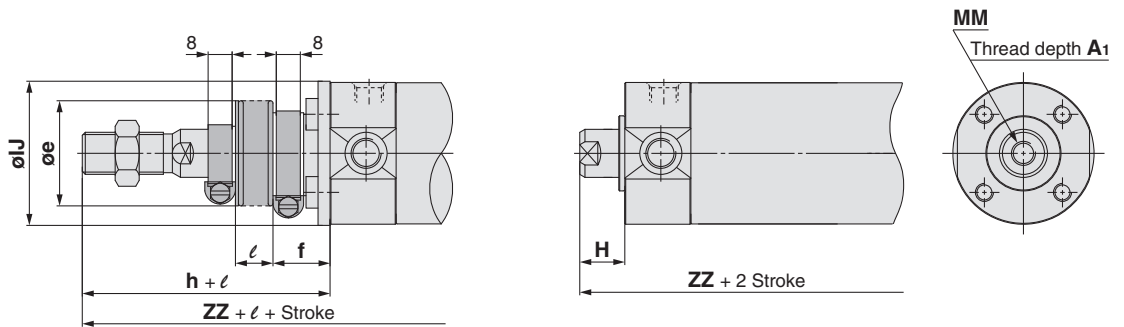
Series CG1W

Basic with Rubber Bumper: CG1WBN

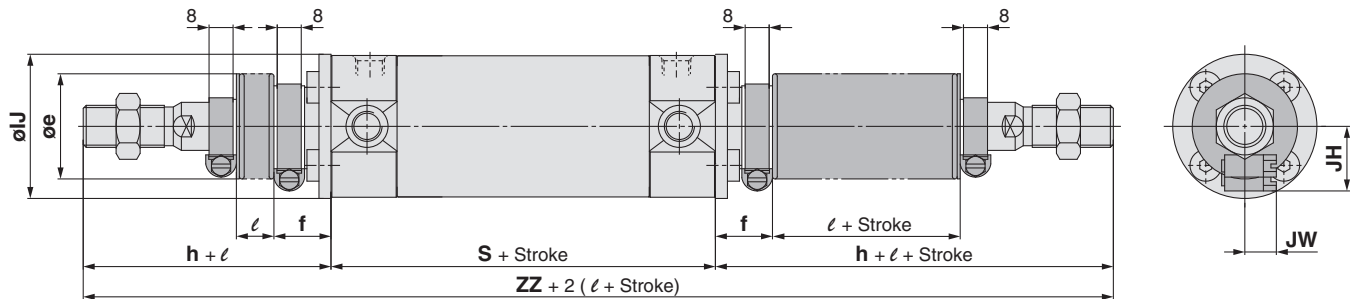


<With rod boot on one side>

Female rod end



<With rod boot on both sides>



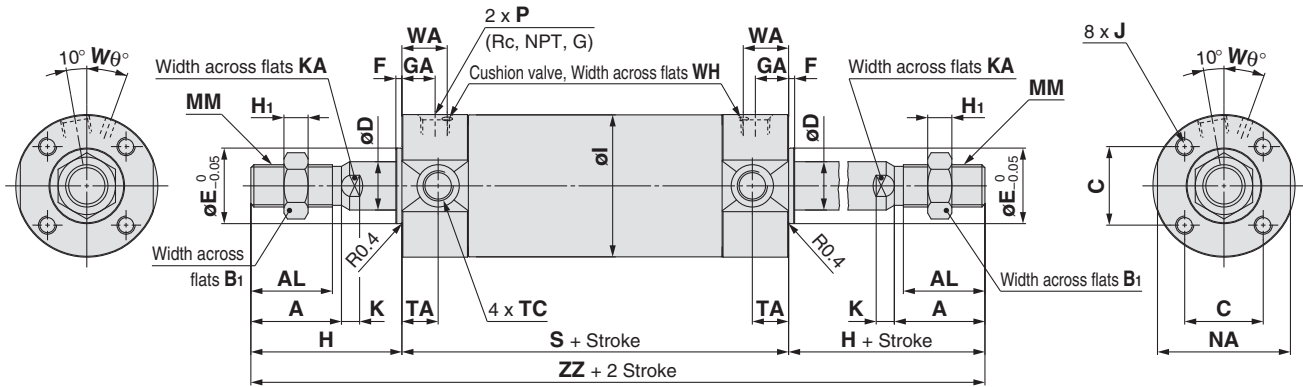
| Bore size | Stroke range | | A | AL | B ₁ | C | D | E | F | GA | H ₁ | I | J | K | KA | MM | NA | P | S |
|-----------|--------------|-------------|----|------|----------------|------|----|----|---|----|----------------|-----|---------------------|-----|----|------------|------|-----|-----|
| | Standard | Long stroke | | | | | | | | | | | | | | | | | |
| 20 | Up to 200 | 201 to 1500 | 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 300 | 301 to 1500 | 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 300 | 301 to 1500 | 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 300 | 301 to 1500 | 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 300 | 301 to 1500 | 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 300 | 301 to 1500 | 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 300 | 301 to 1500 | 40 | 37 | 32 | 50 | 25 | 40 | 3 | 20 | 13 | 89 | M10 x 1.5 depth 22 | 10 | 22 | M22 x 1.5 | 86 | 3/8 | 122 |
| 100 | Up to 300 | 301 to 1500 | 40 | 37 | 41 | 60 | 30 | 50 | 3 | 20 | 16 | 110 | M12 x 1.75 depth 22 | 10 | 26 | M26 x 1.5 | 106 | 1/2 | 122 |

| Bore size | TA | TC** | Without rod boot | | With rod boot on one side* | | | | | | | | | | With rod boot* on both sides | | Female Rod End | | | | |
|-----------|----|------------|------------------|-----|----------------------------|----|----|----|----------------|----------------|------------|-----|-----|-----------|------------------------------|-----------|----------------|-----|--|--|--|
| | | | H | ZZ | e | f | h | IJ | JH (Reference) | JW (Reference) | l | ZZ | ZZ | Bore size | A ₁ | H | MM | ZZ | | | |
| 20 | 11 | M5 x 0.8 | 35 | 147 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | 1/4 stroke | 167 | 187 | 20 | 8 | 13 | M4 x 0.7 | 103 | | | |
| 25 | 11 | M6 x 0.75 | 40 | 157 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | | 179 | 201 | 25 | 8 | 14 | M5 x 0.8 | 105 | | | |
| 32 | 11 | M8 x 1.0 | 40 | 159 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | | 181 | 203 | 32 | 12 | 14 | M6 x 1 | 107 | | | |
| 40 | 12 | M10 x 1.25 | 50 | 187 | 35 | 19 | 70 | 48 | 21.5 | 10.5 | | 207 | 227 | 40 | 13 | 15 | M8 x 1.25 | 117 | | | |
| 50 | 13 | M12 x 1.25 | 58 | 218 | 40 | 19 | 78 | 59 | 24 | 10.5 | | 238 | 258 | 50 | 18 | 16 | M10 x 1.5 | 134 | | | |
| 63 | 13 | M14 x 1.5 | 58 | 218 | 40 | 20 | 78 | 72 | 24 | 10.5 | | 238 | 258 | 63 | 18 | 16 | M10 x 1.5 | 134 | | | |
| 80 | — | — | 71 | 264 | 52 | 10 | 80 | 59 | — | — | | 273 | 282 | 80 | 21 | 19 | M14 x 1.5 | 160 | | | |
| 100 | — | — | 71 | 264 | 62 | 7 | 80 | 71 | — | — | 273 | 282 | 100 | 25 | 22 | M16 x 1.5 | 166 | | | | |

* The minimum stroke with rod boot is 20 mm.

** Cylinder sizes ø 80 and ø 100 do not have trunnion mounting female thread on the width across flats NA.

Basic with Air Cushion: CG1WBA



★ For the one with rod boot, refer to w/rubber bumper. [mm]

| Bore size | Stroke range | | A | AL | B ₁ | C | D | E | F | GA | H | H ₁ | I | J | K | KA |
|-----------|--------------|-------------|----|------|----------------|------|----|----|---|------|----|----------------|-----|---------------------|-----|----|
| | Standard | Long stroke | | | | | | | | | | | | | | |
| 20 | Up to 200 | 201 to 1500 | 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 1500 | 22 | 19.5 | 17 | 16.5 | 10 | 14 | 2 | 12.5 | 40 | 6 | 31 | M5 x 0.8 depth 7.5 | 5.5 | 8 |
| 32 | Up to 300 | 301 to 1500 | 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 1500 | 30 | 27 | 19 | 26 | 16 | 25 | 2 | 13 | 50 | 8 | 47 | M6 x 1 depth 12 | 6 | 14 |
| 50 | Up to 300 | 301 to 1500 | 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 1500 | 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 1500 | 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 | NA | P | S | TA | TC** | ZZ | WA | Wθ | WH |
|-----------|------------|------|----------|-----|----|------------|-----|----|-----|-----|
| 20 | M8 x 1.25 | 24 | M5 x 0.8 | 77 | 11 | M5 x 0.8 | 147 | 16 | 25° | 1.5 |
| 25 | M10 x 1.25 | 29 | M5 x 0.8 | 77 | 11 | M6 x 0.75 | 157 | 16 | 25° | 1.5 |
| 32 | M10 x 1.25 | 35.5 | Rc 1/8 | 79 | 11 | M8 x 1.0 | 159 | 16 | 25° | 1.5 |
| 40 | M14 x 1.5 | 44 | Rc 1/8 | 87 | 12 | M10 x 1.25 | 187 | 17 | 20° | 1.5 |
| 50 | M18 x 1.5 | 55 | Rc 1/4 | 102 | 13 | M12 x 1.25 | 218 | 18 | 20° | 3 |
| 63 | M18 x 1.5 | 69 | Rc 1/4 | 102 | 13 | M14 x 1.5 | 218 | 18 | 20° | 3 |
| 80 | M22 x 1.5 | 86 | Rc 3/8 | 122 | — | — | 264 | 24 | 20° | 4 |
| 100 | M26 x 1.5 | 106 | Rc 1/2 | 122 | — | — | 264 | 24 | 20° | 4 |

* For mounting brackets, refer to page 22.
** Cylinder sizes ø 80 and ø 100 do not have trunnion mounting female thread on the width across flats NA.

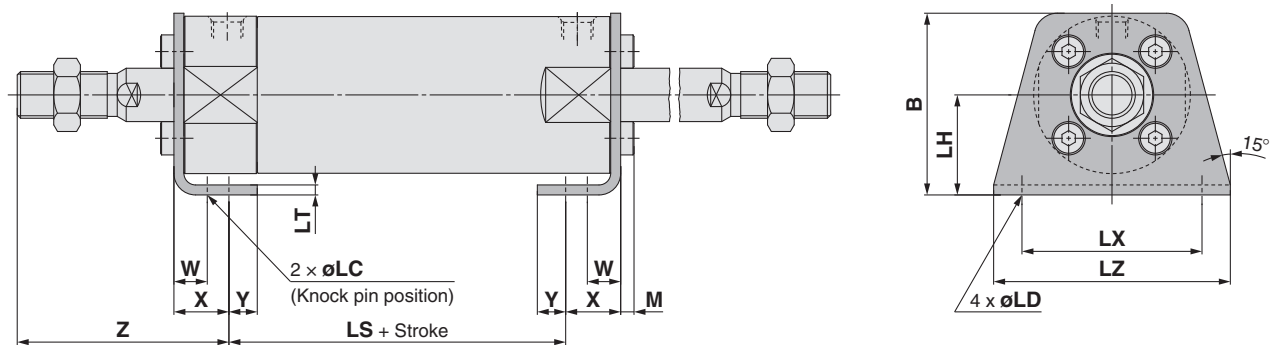
* Refer to w/rubber bumper for the female rod end.

| | |
|-------------------------------------|----------------------|
| Double Acting, Single Rod | CG1 |
| Standard | CG1W |
| Double Acting, Double Rod | CG1W |
| Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | CG1K |
| Double Acting, Single Rod | CG1K |
| Double Acting, Double Rod | CG1KW |
| Non-rotating Rod | CG1KW |
| Direct Mount | CG1R |
| Double Acting, Single Rod | CG1R |
| Double Acting, Double Rod | CG1R |
| Direct Mount, Non-rotating Rod | CG1KR |
| With End Lock | CBG1 |
| Auto Switch | Auto Switch |
| Made to Order | Made to Order |

Series CG1W

With Mounting Bracket

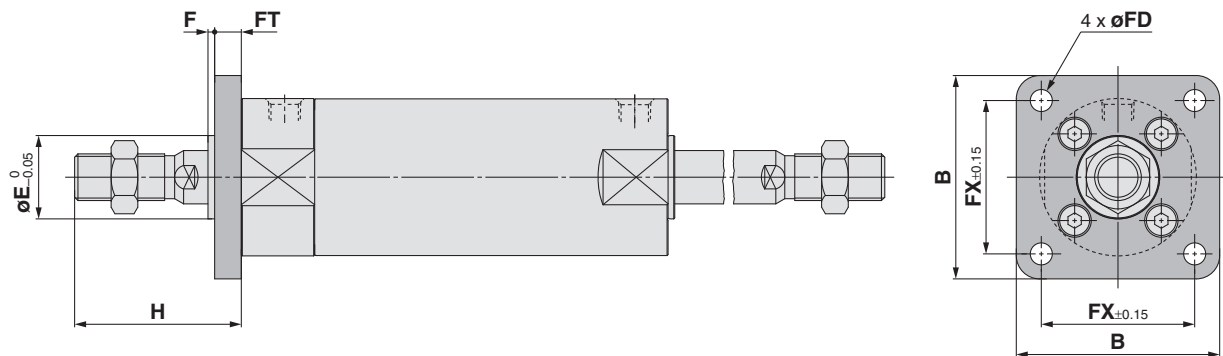
Axial foot: CG1WL□



| [mm] | | | | | | | | | | | | | | |
|-----------|--------------|------|----|----|----|----|-----|-----|-----|-----|------|------|-----|------|
| Bore size | Stroke range | B | LC | LD | LH | LS | LT | LX | LZ | M | W | X | Y | Z |
| 20 | Up to 1500 | 34 | 4 | 6 | 20 | 53 | 3 | 32 | 44 | 3 | 10 | 15 | 7 | 47 |
| 25 | Up to 1500 | 38.5 | 4 | 6 | 22 | 53 | 3 | 36 | 49 | 3.5 | 10 | 15 | 7 | 52 |
| 32 | Up to 1500 | 45 | 4 | 7 | 25 | 53 | 3 | 44 | 58 | 3.5 | 10 | 16 | 8 | 53 |
| 40 | Up to 1500 | 54.5 | 4 | 7 | 30 | 60 | 3 | 54 | 71 | 4 | 10 | 16.5 | 8.5 | 63.5 |
| 50 | Up to 1500 | 70.5 | 5 | 10 | 40 | 67 | 4.5 | 66 | 86 | 5 | 17.5 | 22 | 11 | 75.5 |
| 63 | Up to 1500 | 82.5 | 5 | 12 | 45 | 67 | 4.5 | 82 | 106 | 5 | 17.5 | 22 | 13 | 75.5 |
| 80 | Up to 1500 | 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 type.

Flange: CG1WF□



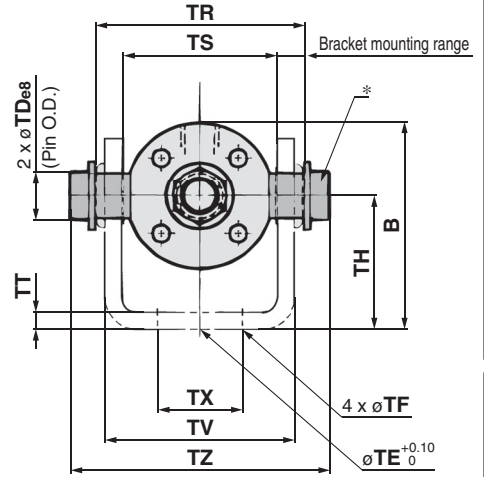
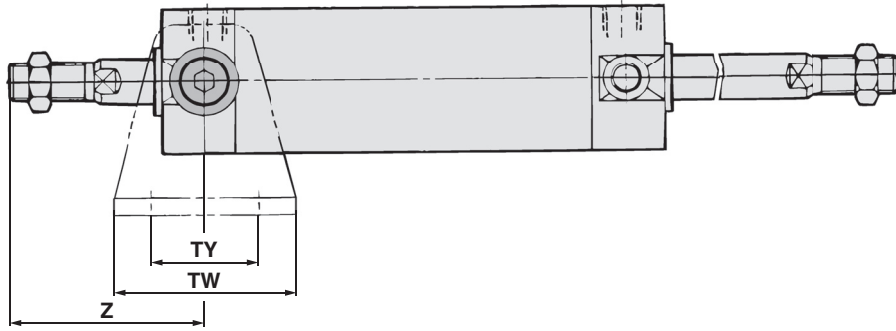
| [mm] | | | | | | | | |
|-----------|--------------|-----|----|---|-----|-----|----|----|
| Bore size | Stroke range | B | E | F | FX | FD | FT | H |
| 20 | Up to 1500 | 40 | 12 | 2 | 28 | 5.5 | 6 | 35 |
| 25 | Up to 1500 | 44 | 14 | 2 | 32 | 5.5 | 7 | 40 |
| 32 | Up to 1500 | 53 | 18 | 2 | 38 | 6.6 | 7 | 40 |
| 40 | Up to 1500 | 61 | 25 | 2 | 46 | 6.6 | 8 | 50 |
| 50 | Up to 1500 | 76 | 30 | 2 | 58 | 9 | 9 | 58 |
| 63 | Up to 1500 | 92 | 32 | 2 | 70 | 11 | 9 | 58 |
| 80 | Up to 1500 | 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 ϕE .

* Other dimensions are the same as basic type.

With Mounting Bracket

Trunnion: CG1WU□



| Bore size | Stroke range | B | TDe8 | TE | TF | TH | TR | TS | TT | TV | TW | TX | TY | TZ | Z [mm] | |
|-----------|--------------|------|--|----|-----|----|------|----|-----|--------|----|----|----|-------|------------------|---------------|
| | | | | | | | | | | | | | | | Without rod boot | With rod boot |
| 20 | Up to 1500 | 38 | 8 ^{-0.025} _{-0.047} | 10 | 5.5 | 25 | 39 | 28 | 3.2 | (35.8) | 42 | 16 | 28 | 47.6 | 46 | 66 + l |
| 25 | Up to 1500 | 45.5 | 10 ^{-0.025} _{-0.047} | 10 | 5.5 | 30 | 43 | 33 | 3.2 | (39.8) | 42 | 20 | 28 | 53 | 51 | 73 + l |
| 32 | Up to 1500 | 54 | 12 ^{-0.032} _{-0.059} | 10 | 6.6 | 35 | 54.5 | 40 | 4.5 | (49.4) | 48 | 22 | 28 | 67.7 | 51 | 73 + l |
| 40 | Up to 1500 | 63.5 | 14 ^{-0.032} _{-0.059} | 10 | 6.6 | 40 | 65.5 | 49 | 4.5 | (58.4) | 56 | 30 | 30 | 78.7 | 62 | 82 + l |
| 50 | Up to 1500 | 79 | 16 ^{-0.032} _{-0.059} | 20 | 9 | 50 | 80 | 60 | 6 | (72.4) | 64 | 36 | 36 | 98.6 | 71 | 91 + l |
| 63 | Up to 1500 | 96 | 18 ^{-0.032} _{-0.059} | 20 | 11 | 60 | 98 | 74 | 8 | (90.4) | 74 | 46 | 46 | 119.2 | 71 | 91 + l |

* Constructed of a pin, flat washer and hexagon socket head cap bolt.
* Other dimensions are the same as basic type.

| | |
|-------------------------------------|----------------------|
| Double Acting, Single Rod | CG1 |
| Double Acting, Double Rod | CG1W |
| Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | CG1K |
| Double Acting, Double Rod | CG1KW |
| Direct Mount | CG1R |
| Double Acting, Single Rod | CG1KR |
| With End Lock | CBG1 |
| Auto Switch | Auto Switch |
| Made to Order | Made to Order |

Air Cylinder: Standard Type

Single Acting, Spring Return/Extend

Series CG1

∅ 20, ∅ 25, ∅ 32, ∅ 40



How to Order

Cylinder stroke [mm] Refer to "Standard Strokes" on page 32.

Action

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

Pivot bracket

| | |
|---|---|
| — | None |
| N | Pivot bracket is shipped together with the product. |

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

Type

| | |
|---|---------------|
| N | Rubber bumper |
|---|---------------|

CG1 B N 25 - 100 S [] Z - [] - []

With auto switch CDG1 B N 25 - 100 S [] Z - [] - M9BW [] - []

With auto switch (Built-in magnet)

Mounting

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

Bore size

| | |
|----|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

Rod end thread

| | |
|---|----------------|
| — | Male rod end |
| F | Female rod end |

Rod end bracket

| | |
|---|----------------------|
| — | 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.

Number of auto switches

| | |
|---|----------|
| — | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|---|---------------------|
| — | Without auto switch |
|---|---------------------|

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

Made to Order
For details, refer to page 32.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDG1FN32-100TZ

Applicable Auto Switches/Refer to the Auto Switches Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length [m] | | | | | Pre-wired connector | Applicable load | | |
|---|---|------------------|-----------------|------------------------|---------------|--------|----------------------|---------------|----------------------|-------|-------|------------|------------|---------------------|-----------------|------------|---------|
| | | | | | DC | AC | Applicable bore size | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | IC circuit | Relay, PLC | |
| | | | | | | | ∅ 20 to ∅ 40 | Perpendicular | | | | | | | | | In-line |
| Solid state auto switch | — | Grommet | No | 3-wire (NPN) | 5 V, 12 V | — | M9NV | M9N | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | |
| | | | | 3-wire (PNP) | | | M9PV | M9P | ● | ● | ● | ○ | — | ○ | | | |
| | | Connector | | 2-wire | M9BV | M9B | ● | ● | ● | ○ | — | ○ | — | | | | |
| | | | | — | H7C | ● | — | ● | ● | — | — | — | — | | | | |
| | Diagnostic indication (2-colour indication) | Grommet | Yes | 3-wire (NPN) | 5 V, 12 V | — | M9NWV | M9NW | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | |
| | | | | 3-wire (PNP) | | | M9PWV | M9PW | ● | ● | ● | ○ | — | ○ | | | |
| | | | | 2-wire | M9BWV | M9BW | ● | ● | ● | ○ | — | ○ | — | | | | |
| | | | | 3-wire (NPN) | M9NAV** | M9NA** | ○ | ○ | ● | ○ | — | ○ | IC circuit | | | | |
| | | | | 3-wire (PNP) | M9PAV** | M9PA** | ○ | ○ | ● | ○ | — | ○ | | | | | |
| | | | | 2-wire | M9BAV** | M9BA** | ○ | ○ | ● | ○ | — | ○ | — | | | | |
| Diagnostic output (2-colour indication) | 4-wire (NPN) | — | 5 V, 12 V | — | H7NF | ● | — | ● | ○ | — | ○ | IC circuit | — | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 5 V | — | A96V | A96 | ● | — | ● | — | — | — | IC circuit | Relay, PLC | |
| | | | | — | | | 100 V | A93V | A93 | ● | — | ● | ● | — | | | — |
| | | | | No | 100 V or less | A90V | A90 | ● | — | ● | — | — | — | IC circuit | | | |
| | | | | Yes | 100 V, 200 V | — | B54 | ● | — | ● | ● | — | — | — | | | |
| | | Connector | No | 2-wire | 24 V | 12 V | 200 V or less | — | B64 | ● | — | ● | — | — | — | | — |
| | | | | — | — | — | — | C73C | ● | — | ● | ● | — | — | | | |
| | | | | — | 24 V or less | — | — | C80C | ● | — | ● | ● | ● | — | IC circuit | | |
| | | | | — | — | — | — | B59W | ● | — | ● | — | — | — | | | |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m..... — (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 74 for details.

* For details about auto switches with pre-wired connector, refer to the Auto Switches Guide.

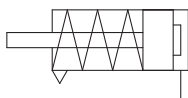
* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

Air Cylinder: Standard Type Single Acting, Spring Return/Extend **Series CG1**

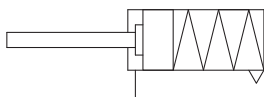


Symbol

Spring return, Rubber bumper



Spring extend, Rubber bumper



Made to Order
(For details, refer to pages 77 to 93.)

| Symbol | Specifications |
|--------|---|
| -XC6 | Made of stainless steel |
| -XC20 | Head cover axial port*2 |
| -XC27 | Double clevis and double knuckle joint pins made of stainless steel |
| -XC29 | Double knuckle joint with spring pin*1 |
| -XC85 | Grease for food processing equipment |

*1 Applicable only to single acting, spring return type.
For single acting, spring extend type, please contact SMC.

*2 Only compatible with cylinders with rubber bumper.

Refer to pages 68 to 74 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

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smc.eu>

Refer to page 10 for Handling and Disassembly/Replacement.

Specifications

| Bore size [mm] | 20 | 25 | 32 | 40 | 20 | 25 | 32 | 40 |
|--------------------------------------|---|----|----|----|------------------------------|----|----|----|
| Action | Single acting, Spring return | | | | Single acting, Spring extend | | | |
| Lubricant | Not required (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 °C to 70 °C With auto switch : -10 °C to 60 °C (No freezing) | | | | | | | |
| Piston speed | 50 to 1000 mm/s | | | | | | | |
| Stroke length tolerance | Up to 200 st ₀ ^{+1.4} mm | | | | | | | |
| Cushion | Rubber bumper | | | | | | | |
| Mounting | Basic, Basic (without trunnion mounting female thread), Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis (used for changing the port location by 90°) | | | | | | | |

Accessories

| 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) | ● | ● | ● | ● | ● | ● | ● |
| | Pivot bracket | — | — | — | — | ● | ● | ● |

* A double knuckle joint pin and retaining rings are shipped together.

Standard Strokes

| Bore size | Standard stroke [mm] Note1) |
|------------|--------------------------------|
| 20 | 25, 50, 75, 100, 125 |
| 25, 32, 40 | 25, 50, 75, 100, 125, 150, 200 |

Note 1) 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". In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Theoretical Output

Consult SMC

Spring Reaction Force

Consult SMC

Mounting Brackets/Part No.

| Mounting bracket | Order q'ty. | Bore size [mm] | | | | Contents |
|------------------|-------------|----------------|------------|------------|------------|---|
| | | 20 | 25 | 32 | 40 | |
| Axial foot | 2 Note) | CG-L020 | CG-L025 | CG-L032 | CG-L040 | 2 feet, 8 mounting bolts |
| Flange | 1 | CG-F020 | CG-F025 | CG-F032 | CG-F040 | 1 flange, 4 mounting bolts |
| Trunnion pin | 1 | CG-T020 | CG-T025 | CG-T032 | CG-T040 | 2 trunnion pins, 2 trunnion bolts, 2 flat washers |
| Clevis | 1 | CG-D020 | CG-D025 | CG-D032 | CG-D040 | 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 | 1 pivot bracket |

Note) Order two feet per cylinder.

Double Acting, Single Rod CG1
 Double Acting, Double Rod CG1W
 Standard CG1W
 Single Acting, Spring Return/Extend CG1
 Non-rotating Rod CG1K
 Double Acting, Single Rod CG1K
 Double Acting, Double Rod CG1KW
 Direct Mount CG1R
 Double Acting, Single Rod CG1R
 Direct Mount, Non-rotating Rod CG1KR
 With End Lock CBG1
 Auto Switch
 Made to Order

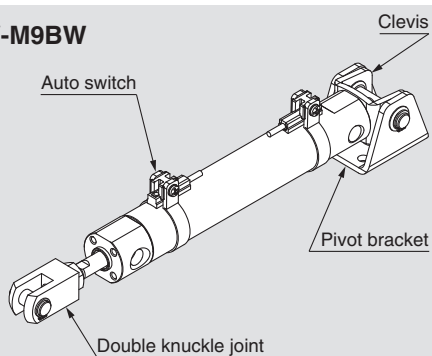
Series CG1

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.



Weights

Spring return [kg]

| Bore size [mm] | | 20 | 25 | 32 | 40 |
|-------------------------------------|---------------------------------|-------|-------|-------|-------|
| Basic weight | 25 st | 0.17 | 0.27 | 0.40 | 0.63 |
| | 50 st | 0.19 | 0.30 | 0.45 | 0.71 |
| | 75 st | 0.26 | 0.40 | 0.58 | 0.91 |
| | 100 st | 0.28 | 0.43 | 0.62 | 0.99 |
| | 125 st | 0.35 | 0.53 | 0.76 | 1.20 |
| | 150 st | — | 0.56 | 0.81 | 1.28 |
| | 200 st | — | 0.69 | 0.98 | 1.56 |
| Mounting bracket weight | Axial foot | 0.11 | 0.13 | 0.16 | 0.22 |
| | Flange | 0.08 | 0.10 | 0.14 | 0.20 |
| | Trunnion | 0.01 | 0.02 | 0.03 | 0.05 |
| | Clevis | 0.05 | 0.08 | 0.15 | 0.23 |
| Accessories | Pivot bracket | 0.08 | 0.09 | 0.17 | 0.25 |
| | Single knuckle joint | 0.05 | 0.09 | 0.09 | 0.10 |
| | Double knuckle joint (with pin) | 0.05 | 0.09 | 0.09 | 0.13 |
| Weight reduction for female rod end | | -0.01 | -0.02 | -0.02 | -0.05 |

Calculation (Example) **CG1LN20-100SZ** • Basic weight.....0.28 kg (ø 20)
 (Foot, ø 20, 100 stroke) • Mounting bracket weight.....0.11 kg (Foot)
 0.28 + 0.11 = **0.39 kg**

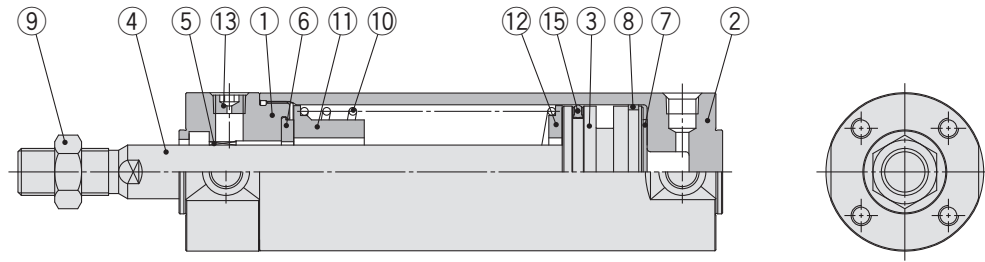
Spring extend [kg]

| Bore size [mm] | | 20 | 25 | 32 | 40 |
|-------------------------------------|---------------------------------|-------|-------|-------|-------|
| Basic weight | 25 st | 0.16 | 0.25 | 0.38 | 0.59 |
| | 50 st | 0.18 | 0.28 | 0.43 | 0.67 |
| | 75 st | 0.24 | 0.37 | 0.54 | 0.83 |
| | 100 st | 0.26 | 0.40 | 0.58 | 0.91 |
| | 125 st | 0.32 | 0.48 | 0.69 | 1.08 |
| | 150 st | — | 0.50 | 0.72 | 1.12 |
| | 200 st | — | 0.63 | 0.89 | 1.40 |
| Mounting bracket weight | Axial foot | 0.11 | 0.13 | 0.16 | 0.22 |
| | Flange | 0.08 | 0.10 | 0.14 | 0.20 |
| | Trunnion | 0.01 | 0.02 | 0.03 | 0.05 |
| | Clevis | 0.05 | 0.08 | 0.15 | 0.23 |
| Accessories | Pivot bracket | 0.08 | 0.09 | 0.17 | 0.25 |
| | Single knuckle joint | 0.05 | 0.09 | 0.09 | 0.10 |
| | Double knuckle joint (with pin) | 0.05 | 0.09 | 0.09 | 0.13 |
| Weight reduction for female rod end | | -0.01 | -0.02 | -0.02 | -0.05 |

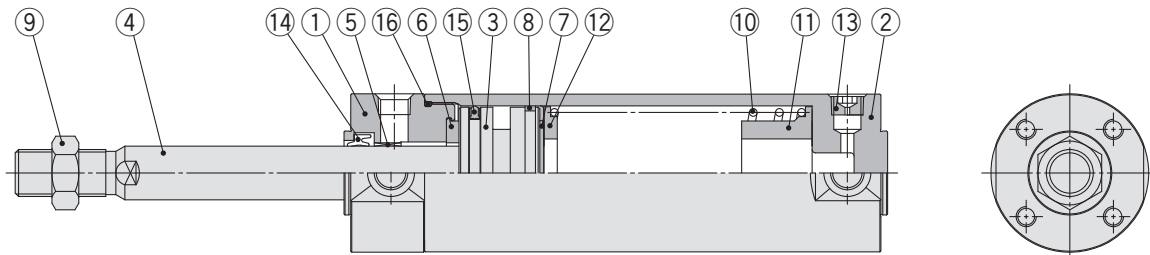
Calculation (Example) **CG1LN20-100TZ** • Basic weight.....0.26 kg (ø 20)
 (Foot, ø 20, 100 stroke) • Mounting bracket weight.....0.11 kg (Foot)
 0.26 + 0.11 = **0.37 kg**

Construction

Single acting, Spring return



Single acting, Spring extend



Component Parts

| No. | Description | Material | Note |
|-----|--------------------------|----------------------------------|---|
| 1 | Rod cover | Aluminium alloy | Hard anodised |
| 2 | Tube cover | Aluminium alloy | Hard anodised |
| 3 | Piston | Aluminium alloy | |
| 4 | Piston rod | Stainless steel Carbon steel* | For ϕ 20 or ϕ 25 with built-in magnet Hard chrome plating* |
| 5 | Bushing | Bearing alloy | |
| 6 | Bumper | Resin | ϕ 32 or larger is common. |
| 7 | Bumper | Resin | |
| 8 | Wear ring | Resin | |
| 9 | Rod end nut | Carbon steel | Zinc chromated |
| 10 | Return spring | Steel wire | Zinc chromated |
| 11 | Spring guide | Aluminium alloy | |
| 12 | Spring seat | Aluminium alloy | |
| 13 | Plug with breathing hole | Alloy steel | Black zinc chromated |
| 14 | Rod seal | NBR | |
| 15 | Piston seal | NBR | |
| 16 | Tube gasket | NBR | |

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

* The material for ϕ 20, ϕ 25 cylinders with auto switches is made of stainless steel.

Replacement Part: Seal

• For single acting, spring return

| No. | Description | Material | Part no. | | | |
|-----|-------------|----------|-------------|-------------|-------------|-------------|
| | | | 20 | 25 | 32 | 40 |
| 15 | Piston seal | NBR | CG1N20-S-PS | CG1N25-S-PS | CG1N32-S-PS | CG1N40-S-PS |

• 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 11.

Note) Refer to the Specific Product Precautions on page 10 for Disassembly/Replacement. Order with the kit number according to the bore size.

* The seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

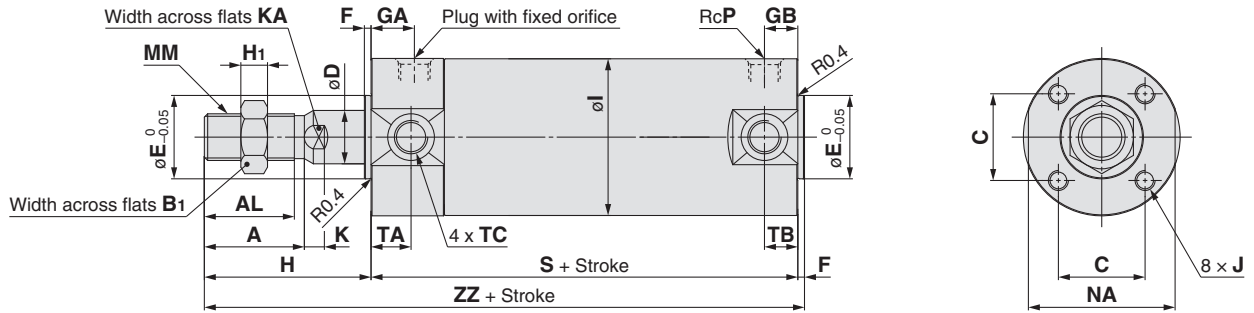
Grease pack part number: GR-S-010 (10 g)

| | | |
|------------------|-------------------------------------|--------------|
| Standard | Double Acting, Single Rod | CG1 |
| | Double Acting, Double Rod | CG1W |
| Non-rotating Rod | Single Acting, Spring Return/Extend | CG1 |
| | Double Acting, Single Rod | CG1K |
| Direct Mount | Double Acting, Double Rod | CG1KW |
| | Double Acting, Single Rod | CG1R |
| With End Lock | Double Acting, Single Rod | CG1KR |
| | Double Acting, Single Rod | CBG1 |
| Auto Switch | Double Acting, Single Rod | CG1KR |
| | Double Acting, Single Rod | CBG1 |
| Made to Order | Double Acting, Single Rod | CG1KR |
| Made to Order | Double Acting, Single Rod | CBG1 |

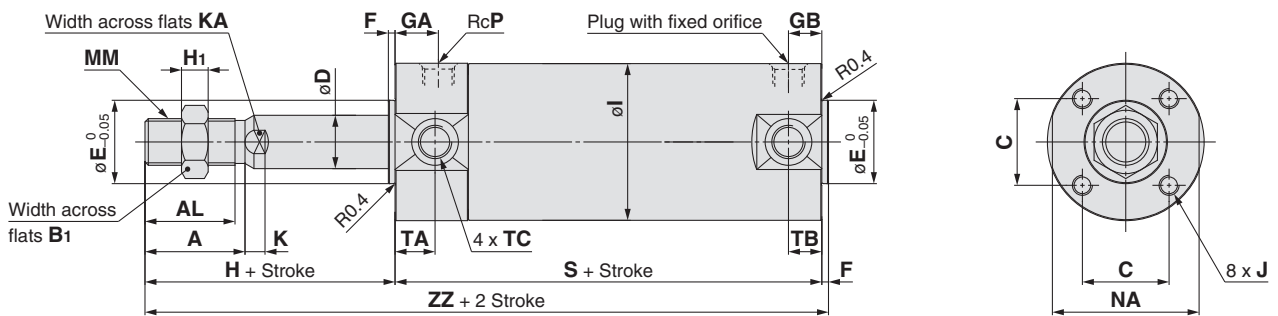
Series CG1

Basic

Spring return: CG1BN



Spring extend: CG1BN



Female rod end



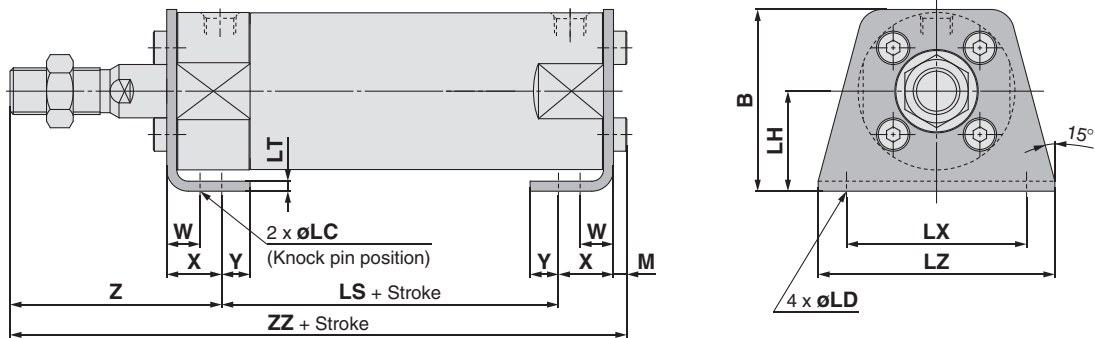
| Bore size | Stroke range | A | AL | B ₁ | C | D | E | F | GA | GB | H | H ₁ | I | J | K | KA | MM | NA | P |
|-----------|--------------|----|------|----------------|------|----|----|---|----|----|----|----------------|----|--------------------|-----|----|------------|------|-----|
| 20 | Up to 125 | 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 | TA | TB | TC | 1 to 50 st | | 51 to 100 st | | 101 to 125 st | | 126 to 200 st | | Female Rod End | | | | | | | |
|-----------|----|----|------------|------------|-----|--------------|-----|---------------|-----|---------------|-----|----------------|----------------|----|-----------|------------|--------------|---------------|---------------|
| | | | | S | ZZ | S | ZZ | S | ZZ | S | ZZ | Bore size | A ₁ | H | MM | 1 to 50 st | 51 to 100 st | 101 to 125 st | 126 to 200 st |
| 20 | 11 | 11 | M5 x 0.8 | 94 | 131 | 119 | 156 | 144 | 181 | — | — | 20 | 8 | 13 | M4 x 0.7 | 109 | 134 | 159 | — |
| 25 | 11 | 11 | M6 x 0.75 | 94 | 136 | 119 | 161 | 144 | 186 | 169 | 211 | 25 | 8 | 14 | M5 x 0.8 | 110 | 135 | 160 | 185 |
| 32 | 11 | 10 | M8 x 1.0 | 96 | 138 | 121 | 163 | 146 | 188 | 171 | 213 | 32 | 12 | 14 | M6 x 1 | 112 | 137 | 162 | 187 |
| 40 | 12 | 10 | M10 x 1.25 | 103 | 155 | 128 | 180 | 153 | 205 | 178 | 230 | 40 | 13 | 15 | M8 x 1.25 | 120 | 145 | 170 | 195 |

Air Cylinder: Standard Type Single Acting, Spring Return/Extend **Series CG1**

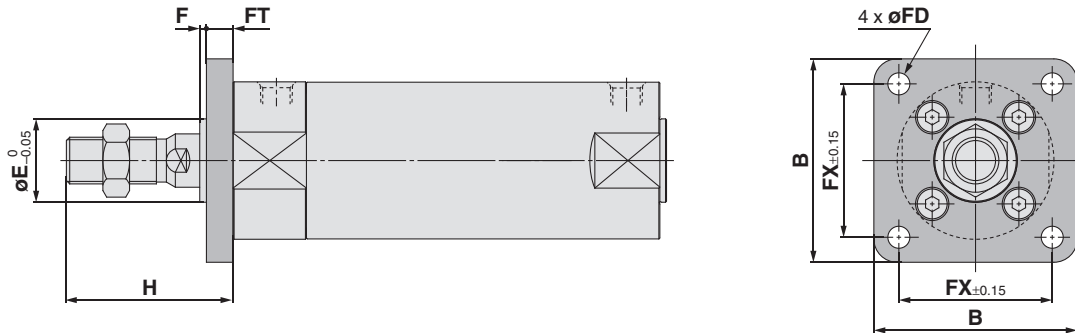
With Mounting Bracket (Note) The drawings below show the single acting/spring return type.)
The rod is in retracted state for spring extend type.

Axial foot: CG1LN

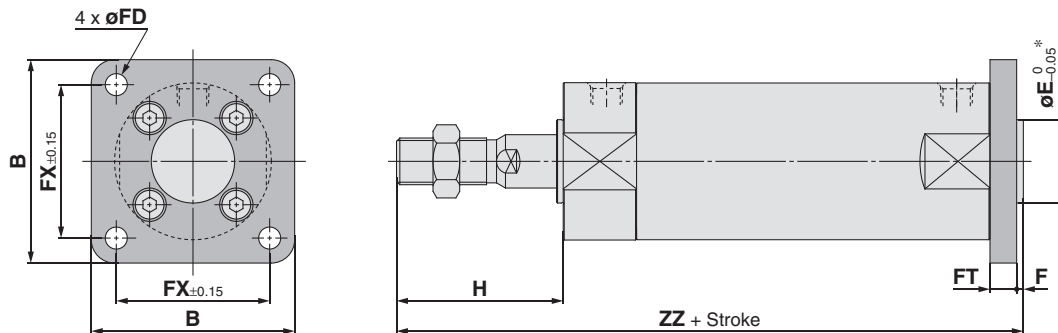


| Bore size | Stroke range | B | M | LC | LD | LH | LT | LX | LZ | W | X | Y | Z | 1 to 50 st | | 51 to 100 st | | 101 to 125 st | | 126 to 200 st | |
|-----------|--------------|------|-----|----|----|----|----|----|----|----|------|-----|------|------------|-------|--------------|-------|---------------|-------|---------------|-------|
| | | | | | | | | | | | | | | LS | ZZ | LS | ZZ | LS | ZZ | LS | ZZ |
| 20 | Up to 125 | 34 | 3 | 4 | 6 | 20 | 3 | 32 | 44 | 10 | 15 | 7 | 47 | 70 | 135 | 95 | 160 | 120 | 185 | — | — |
| 25 | Up to 200 | 38.5 | 3.5 | 4 | 6 | 22 | 3 | 36 | 49 | 10 | 15 | 7 | 52 | 70 | 140.5 | 95 | 165.5 | 120 | 190.5 | 145 | 215.5 |
| 32 | Up to 200 | 45 | 3.5 | 4 | 7 | 25 | 3 | 44 | 58 | 10 | 16 | 8 | 53 | 70 | 142.5 | 95 | 167.5 | 120 | 192.5 | 145 | 217.5 |
| 40 | Up to 200 | 54.5 | 4 | 4 | 7 | 30 | 3 | 54 | 71 | 10 | 16.5 | 8.5 | 63.5 | 76 | 160 | 101 | 185 | 126 | 210 | 151 | 235 |

Rod flange: CG1FN



Head flange: CG1GN



| Bore size | Stroke range | B | E | F | FX | FD | FT | H |
|-----------|--------------|----|----|---|----|-----|----|----|
| | | | | | | | | |
| 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.

Rod Flange [mm]

| Bore size | 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 Flange [mm]

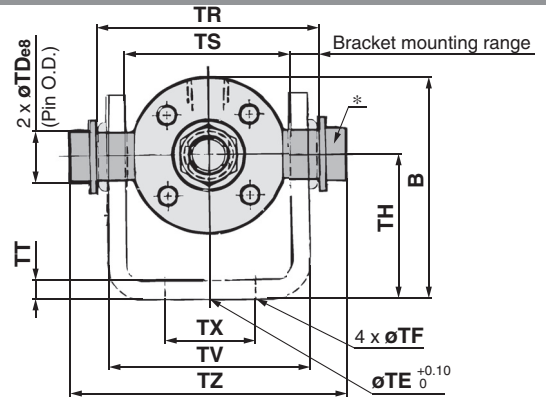
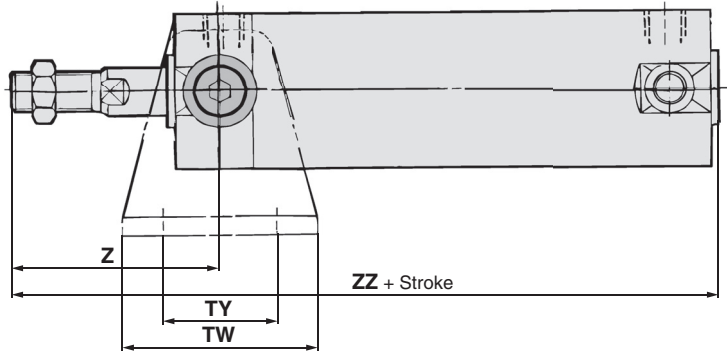
| Bore size | ZZ | | | |
|-----------|------------|--------------|---------------|---------------|
| | 1 to 50 st | 51 to 100 st | 101 to 125 st | 126 to 200 st |
| 20 | 130 | 162 | 187 | — |
| 25 | 143 | 168 | 193 | 218 |
| 32 | 145 | 170 | 195 | 220 |
| 40 | 163 | 188 | 213 | 238 |

Standard Double Acting, Single Rod CG1W
 Standard Double Acting, Double Rod CG1W
 Single Acting, Spring Return/Extend Single Rod CG1
 Non-rotating Rod Double Acting, Single Rod CG1K
 Non-rotating Rod Double Acting, Double Rod CG1KW
 Direct Mount Double Acting, Single Rod CG1R
 Direct Mount Double Acting, Double Rod CG1R
 Direct Mount, Non-rotating Rod Double Acting, Single Rod CG1KR
 Direct Mount, Non-rotating Rod Double Acting, Double Rod CG1KR
 With End Lock CBG1
 Auto Switch
 Made to Order

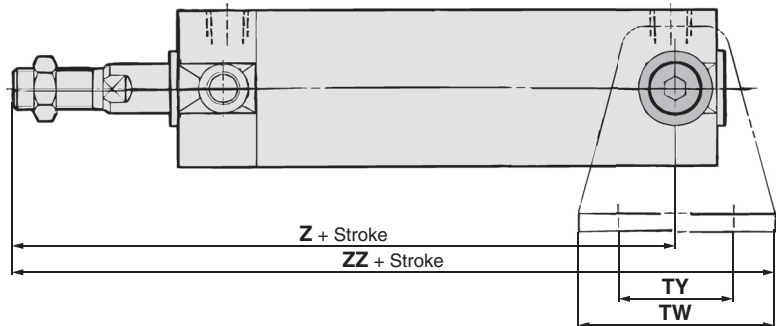
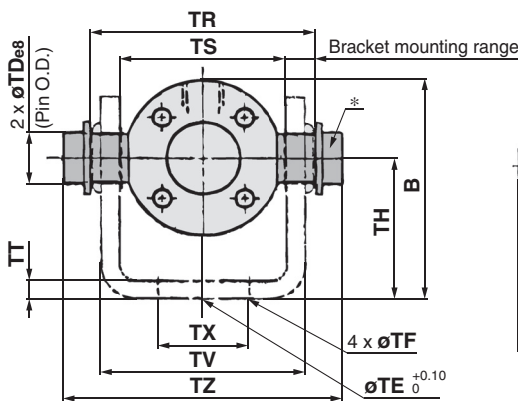
Series CG1

With Mounting Bracket

Rod trunnion: CG1UN



Head trunnion: CG1TN



| Bore size | Stroke range | 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 | 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 | 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 | 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 | 30 | 78.7 |

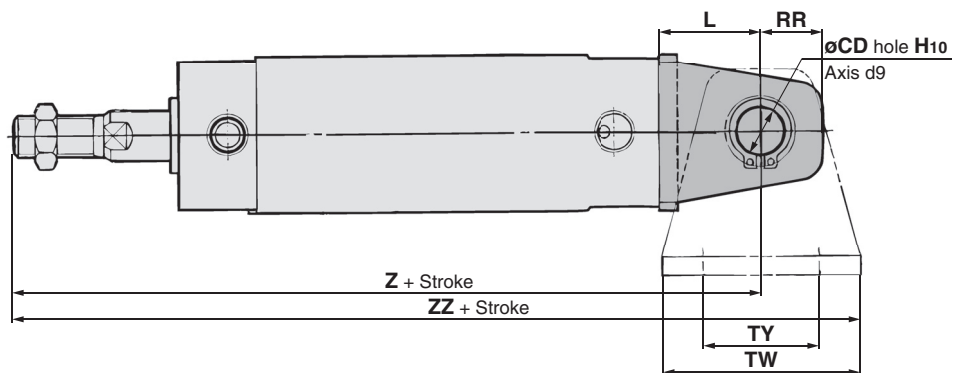
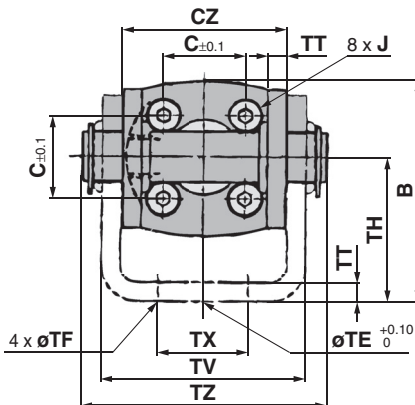
| Rod Trunnion | | ZZ | | | |
|--------------|----|------------|--------------|---------------|---------------|
| Bore size | Z | 1 to 50 st | 51 to 100 st | 101 to 125 st | 126 to 200 st |
| 20 | 46 | 131 | 156 | 181 | — |
| 25 | 51 | 136 | 161 | 186 | 211 |
| 32 | 51 | 138 | 163 | 188 | 213 |
| 40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

| Head Trunnion | | ZZ | | | | | | |
|---------------|------------|--------------|---------------|---------------|-----|-----|-----|-----|
| Bore size | 1 to 50 st | 51 to 100 st | 101 to 125 st | 126 to 200 st | | | | |
| 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 |

* Constructed of pins, flat washers and hexagon socket head cap bolts.
* Other dimensions are the same as basic type.

* Constructed of pins, flat washers and hexagon socket head cap bolts.
* Other dimensions are the same as basic type.

Clevis: CG1DN



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

| Clevis | | ZZ | | | | | | | | | | | | | | ZZ | | | | | | | |
|-----------|--------------|------|----|----|----|----|----|-----|----|------------|----|----|----|----|------|------------|--------------|---------------|---------------|-----|-----|-----|-----|
| Bore size | Stroke range | B | CD | CZ | L | RR | TE | TF | TH | TT | TV | 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 | Up to 125 | 38 | 8 | 29 | 14 | 11 | 10 | 5.5 | 25 | 3.2 (35.8) | 42 | 16 | 28 | 28 | 43.4 | 143 | 164 | 168 | 189 | 193 | 214 | — | — |
| 25 | Up to 200 | 45.5 | 10 | 33 | 16 | 13 | 10 | 5.5 | 30 | 3.2 (39.8) | 42 | 20 | 28 | 28 | 48 | 150 | 171 | 175 | 196 | 200 | 221 | 225 | 246 |
| 32 | Up to 200 | 54 | 12 | 40 | 20 | 15 | 10 | 6.6 | 35 | 4.5 (49.4) | 48 | 22 | 28 | 28 | 59.4 | 156 | 180 | 181 | 205 | 206 | 230 | 231 | 255 |
| 40 | Up to 200 | 63.5 | 14 | 49 | 22 | 18 | 10 | 6.6 | 40 | 4.5 (58.4) | 56 | 30 | 30 | 30 | 71.4 | 175 | 200 | 200 | 228 | 225 | 253 | 250 | 278 |

* For dimensions of pivot bracket, refer to page 22. * Other dimensions are the same as basic type.

Air Cylinder: Non-rotating Rod Type Double Acting

Series **CG1K**

∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63

How to Order

Type

| | |
|---|---------------------------------|
| N | Rubber bumper |
| A | Air cushion (∅ 40 to ∅ 63 only) |

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 39.

Pivot bracket

| | |
|---|---|
| — | None |
| N | Pivot bracket is shipped together with the product. |

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

CG1K B N 25 - 100 Z - - - -

With auto switch **CDG1K B N 25 - 100 Z - - - - M9BW - - - -**

With auto switch (Built-in magnet)
Double acting, Non-rotating rod type

Mounting

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

Bore size

| | |
|----|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |

Rod end bracket

| | |
|---|----------------------|
| — | 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.

Number of auto switches

| | |
|---|----------|
| — | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|---|---------------------|
| — | Without auto switch |
|---|---------------------|

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

Rod end thread

| | |
|---|----------------|
| — | Male rod end |
| F | Female rod end |

Made to Order
For details, refer to page 39.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDG1KFA32-100Z

Applicable Auto Switches/Refer to the Auto Switches Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length [m] | | | | | Pre-wired connector | Applicable load | | |
|-------------------------|------------------|------------------|-----------------|------------------------|--------------|-----------|----------------------|--------------|----------------------|-------|-------|-------|----------|---------------------|-----------------|------------|------------|
| | | | | | DC | AC | Applicable bore size | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | | | |
| | | | | | | | ∅ 20 to ∅ 32 | ∅ 40 to ∅ 63 | | | | | | | | | |
| Solid state auto switch | — | Grommet | No | 3-wire (NPN) | 5 V, 12 V | — | M9NV | M9N | ● | ● | ● | ○ | — | ○ | IC circuit | | |
| | | | | 3-wire (PNP) | | | M9PV | M9P | ● | ● | ● | ○ | — | ○ | | | |
| | | Connector | | 2-wire | 12 V | — | H7C | ● | — | ● | ● | — | — | — | — | — | — |
| | | | | 3-wire (NPN) | | 5 V, 12 V | 24 V | — | M9NWV | M9NW | ● | ● | ● | ○ | — | ○ | IC circuit |
| | 3-wire (PNP) | M9PWV | M9PW | ● | ● | | | | ● | ○ | — | ○ | | | | | |
| | Grommet | 2-wire | 12 V | No | M9BWV | M9BW | ● | ● | ● | ○ | — | ○ | — | — | — | | |
| | | 3-wire (NPN) | | | 5 V, 12 V | M9NAV** | M9NA** | ○ | ○ | ● | ○ | — | ○ | — | ○ | IC circuit | |
| | Grommet | 3-wire (PNP) | 12 V | Yes | | M9PAV** | M9PA** | ○ | ○ | ● | ○ | — | ○ | — | ○ | | IC circuit |
| | | 2-wire | | | M9BAV** | M9BA** | ○ | ○ | ● | ○ | — | ○ | — | ○ | — | ○ | |
| | Connector | 4-wire (NPN) | 5 V, 12 V | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| — | | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 5 V | — | A96V | A96 | ● | — | ● | — | — | — | — | IC circuit | |
| | | | | — | | | — | — | — | — | — | — | — | — | — | | |
| | | Connector | | 100 V | A93V | A93 | ● | — | ● | ● | — | — | — | — | — | IC circuit | |
| | | | | 100 V or less | A90V | A90 | ● | — | ● | ● | — | — | — | — | — | | |
| | Grommet | 200 V, 200 V | — | B54 | ● | — | ● | ● | — | — | — | — | — | — | | | |
| | | 200 V or less | — | B64 | ● | — | ● | — | — | — | — | — | — | | | | |
| | Connector | — | — | — | C73C | ● | — | ● | ● | ● | — | — | — | — | | | |
| | | 24 V or less | — | C80C | ● | — | ● | ● | ● | — | — | — | — | | | | |
| Grommet | — | — | — | B59W | ● | — | ● | — | — | — | — | — | — | | | | |
| | — | — | — | — | — | — | — | — | — | — | — | — | | | | | |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m..... — (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 74 for details.

* For details about auto switches with pre-wired connector, refer to the Auto Switch Guide.

* The D-A9□□/M9□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

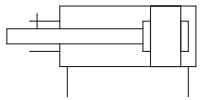
Standard Double Acting, Single Rod CG1
Standard Double Acting, Double Rod CG1W
Standard Single Acting, Spring Return/Extend CG1
Non-rotating Rod Double Acting, Single Rod CG1K
Non-rotating Rod Double Acting, Double Rod CG1W
Direct Mount Double Acting, Single Rod CG1R
Direct Mount Non-rotating Rod Double Acting, Single Rod CG1KR
With End Lock CG1
Auto Switch
Made to Order

Series CG1K

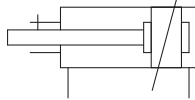


Symbol

Rubber bumper



Air cushion



Made to Order

(For details, refer to pages 77 to 93.)

| Symbol | Specifications |
|--------|---|
| -XA□ | Change of rod end shape |
| -XC8 | Adjustable stroke cylinder/Adjustable extension type*1 |
| -XC9 | Adjustable stroke cylinder/Adjustable retraction type*1 |
| -XC10 | Dual stroke cylinder/Double rod type |
| -XC11 | Dual stroke cylinder/Single rod type*1 |
| -XC12 | Tandem cylinder*1, *2 |
| -XC13 | Auto switch rail mounting*1 |
| -XC20 | Head cover axial port*1 |
| -XC27 | Double clevis and double knuckle joint pins made of stainless steel |

*1 Only compatible with cylinders with rubber bumper.

*2 The shape is the same as the existing product. Use the existing seal kit.

Refer to pages 68 to 74 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

Specifications

| Bore size [mm] | 20 | 25 | 32 | 40 | 50 | 63 |
|--|---|-------|-------|----|----|----|
| 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 500 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 (ø 40 to ø 63 only) | | | | | |
| Rod non-rotating accuracy ^(Note) | ±1° | ±0.8° | ±0.5° | | | |
| Mounting | Basic, Basic (without trunnion mounting female thread), Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis (used for changing the port location by 90°) | | | | | |

Note) The values are for standard strokes.

Accessories

| 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) | ● | ● | ● | ● | ● | ● | ● |
| | Pivot bracket | — | — | — | — | ● | ● | ● |

* A double knuckle joint pin and retaining rings are shipped together.

Standard Strokes

| Bore size | Standard stroke ^{Note 1)} | Maximum manufacturable stroke ^{Note 2)} |
|-----------|--|--|
| 20 | 25, 50, 75, 100, 125, 150, 200 | 201 to 1500 |
| 25 | 25, 50, 75, 100, 125, 150, 200, 250, 300 | 301 to 1500 |
| 32 | | |
| 40 | | |
| 50, 63 | | |

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

Note 2) The maximum manufacturable stroke shows the long stroke.

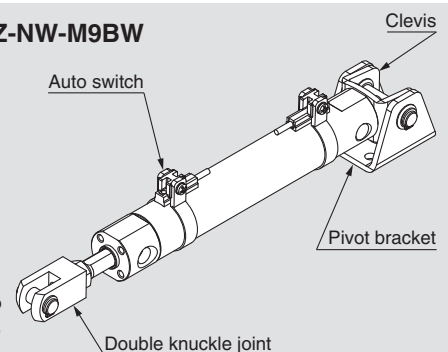
Note 3) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection". In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Ordering Example of Cylinder Assembly

Cylinder model: CDG1KDN20-100Z-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.



Weights

| Bore size [mm] | | 20 | 25 | 32 | 40 | 50 | 63 | [kg] |
|---------------------------------------|------------|-------|-------|-------|-------|-------|-------|------|
| Basic weight | Basic | 0.10 | 0.17 | 0.26 | 0.41 | 0.77 | 1.07 | |
| | Axial foot | 0.21 | 0.30 | 0.42 | 0.63 | 1.25 | 1.79 | |
| | Flange | 0.18 | 0.27 | 0.40 | 0.61 | 1.11 | 1.57 | |
| | Trunnion | 0.11 | 0.19 | 0.29 | 0.46 | 0.91 | 1.21 | |
| | Clevis | 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 50 mm of stroke | | 0.05 | 0.07 | 0.09 | 0.15 | 0.22 | 0.26 | |
| Additional weight with air cushion | | — | — | — | 0 | 0.01 | 0.04 | |
| Additional weight for long stroke | | 0.01 | 0.01 | 0.02 | 0.03 | 0.06 | 0.12 | |
| Weight reduction for female rod end | | -0.01 | -0.02 | -0.02 | -0.05 | -0.10 | -0.10 | |

Calculation (Example) **CG1KLN20-100Z**
(Foot, ø 20, 100 stroke)

- Basic weight 0.21 (Foot, ø 20)
- Additional weight 0.05/50 stroke
- Air cylinder stroke 100 stroke

$$0.21 + 0.05 \times 100/50 = 0.31 \text{ kg}$$

Mounting Brackets/Part No.

| Mounting bracket | Order q'ty. | Bore size [mm] | | | | | | Contents |
|------------------|-------------|----------------|------------|------------|------------|------------|------------|--|
| | | 20 | 25 | 32 | 40 | 50 | 63 | |
| Axial foot | 2 (Note) | CG-L020 | CG-L025 | CG-L032 | CG-L040 | CG-L050 | CG-L063 | 2 feet, 8 mounting bolts |
| Flange | 1 | CG-F020 | CG-F025 | CG-F032 | CG-F040 | CG-F050 | CG-F063 | 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 | 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 | 1 pivot bracket |

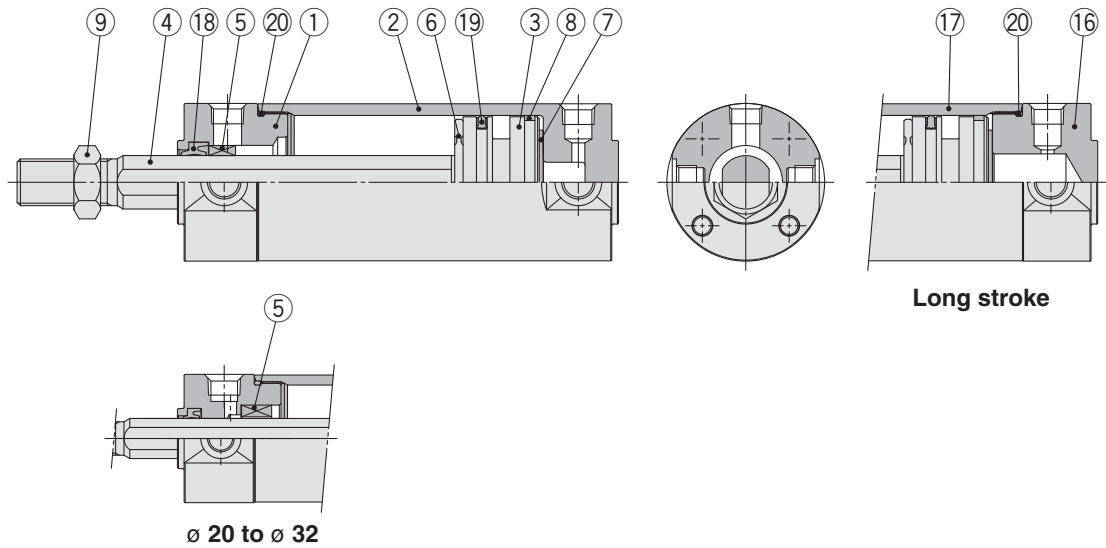
Note) Order two feet per cylinder.

| | | |
|--------------------------------|-------------------------------------|-----------------|
| Standard | Double Acting, Single Rod | CG1 |
| Standard | Double Acting, Double Rod | CG1W |
| Standard | Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | Double Acting, Single Rod | CG1K |
| Non-rotating Rod | Double Acting, Double Rod | CG1KW |
| Direct Mount | Double Acting, Single Rod | CG1R |
| Direct Mount, Non-rotating Rod | Double Acting, Double Rod | CG1KR |
| With End Lock | Double Acting, Single Rod | CBG1 |
| With End Lock | Double Acting, Double Rod | CBG1W |
| With End Lock | Single Acting, Spring Return/Extend | CBG1 |
| With End Lock | Single Acting, Spring Return/Extend | CBG1W |
| With End Lock | Non-rotating Rod | CG1K |
| With End Lock | Non-rotating Rod | CG1KW |
| With End Lock | Direct Mount | CG1R |
| With End Lock | Direct Mount, Non-rotating Rod | CG1KR |
| With End Lock | With End Lock | CBG1 |
| With End Lock | With End Lock | CBG1W |
| With End Lock | Auto Switch | CG1KAS |
| With End Lock | Auto Switch | CG1KASW |
| With End Lock | Made to Order | CG1KASO |
| With End Lock | Made to Order | CG1KASOW |

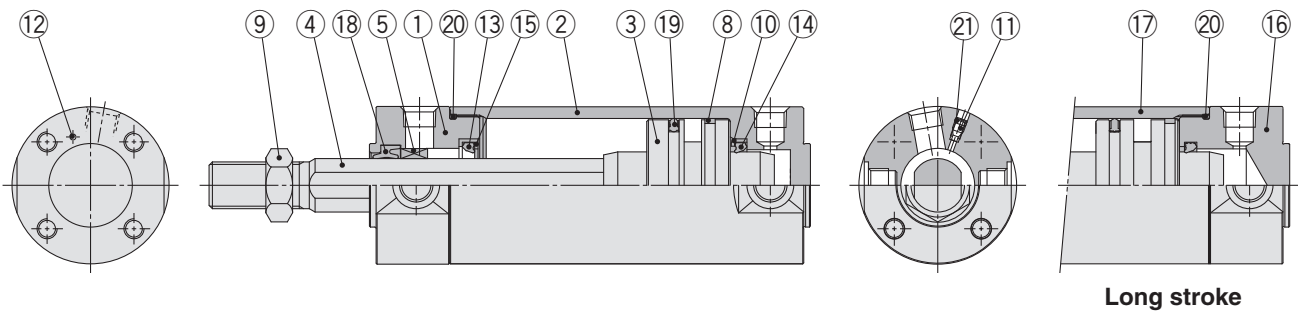
Series CG1K

Construction

With rubber bumper



With air cushion



Component Parts

| No. | Description | Material | Note |
|-----|---------------------|----------------------------------|---|
| 1 | Rod cover | Aluminium alloy | Hard anodised |
| 2 | Tube cover | Aluminium alloy | Hard anodised |
| 3 | Piston | Aluminium alloy | |
| 4 | Piston rod | Stainless steel Carbon steel* | For ø 20 or ø 25 with built-in magnet Hard chrome plating* |
| 5 | Non-rotating guide | Bearing alloy | |
| 6 | Bumper | Resin | ø 32 or larger is common. |
| 7 | Bumper | Resin | |
| 8 | Wear ring | Resin | |
| 9 | Rod end nut | Carbon steel | Zinc chromated |
| 10 | Seal retainer | Rolled steel | Zinc chromated |
| 11 | Cushion valve | ø 40 or smaller | Carbon steel Electroless nickel plating |
| | | ø 50 or larger | Steel wire Zinc chromated |
| 12 | Steel ball | Carbon steel | |
| 13 | Cushion seal A | Urethane | ø 32 or larger is common. |
| 14 | Cushion seal B | Urethane | |
| 15 | Cushion seal holder | Aluminium alloy | |
| 16 | Head cover | Aluminium alloy | Hard anodised |
| 17 | Cylinder tube | Aluminium alloy | Hard anodised |
| 18 | Rod seal | NBR | |
| 19 | Piston seal | NBR | |
| 20 | Tube gasket | NBR | |
| 21 | Valve seal | NBR | |

Replacement Parts: Seal Kit

| Bore size [mm] | Kit no. | Contents |
|----------------|-------------|-------------------------------|
| 20 | CG1KN20Z-PS | Set of the nos. 18, 19, 20 |
| 25 | CG1KN25Z-PS | |
| 32 | CG1KN32Z-PS | |
| 40 | CG1KN40Z-PS | |

Note) Refer to the Specific Product Precautions on page 10 for Disassembly/Replacement.
Order with the kit number according to the bore size.

* The seal kit includes a grease pack (10 g).
Order with the following part number when only the grease pack is needed.

Grease pack part number: GR-S-010 (10 g)

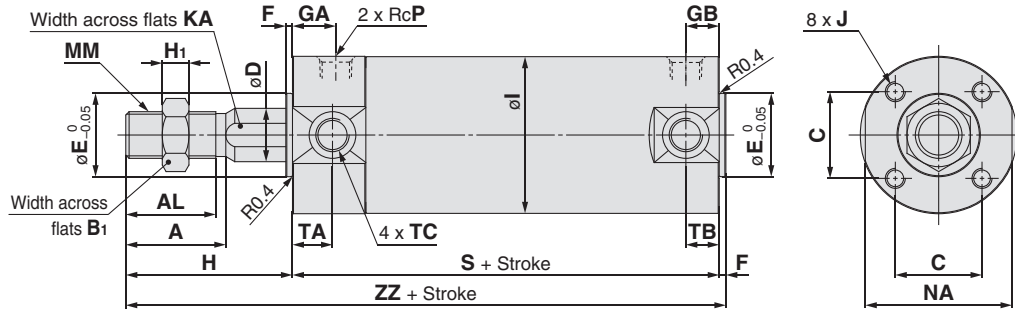
Note) For cylinders with auto switches, the magnet is installed in the piston.

* The material is stainless steel for ø 20 to ø 32.

Basic

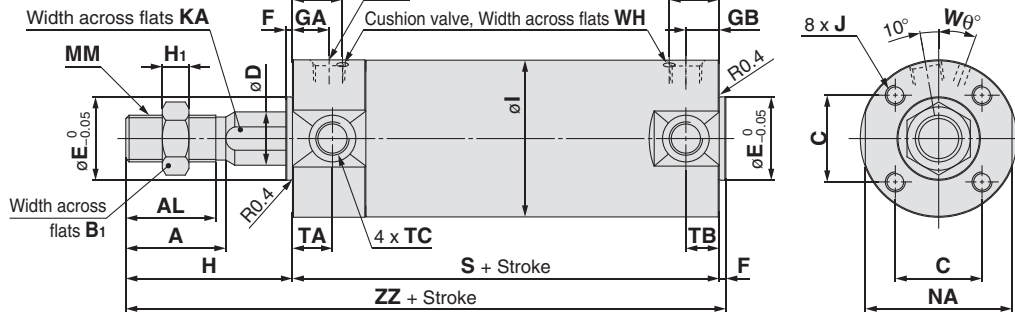
With rubber bumper

∅ 20 to ∅ 63



With air cushion

∅ 40 to ∅ 63

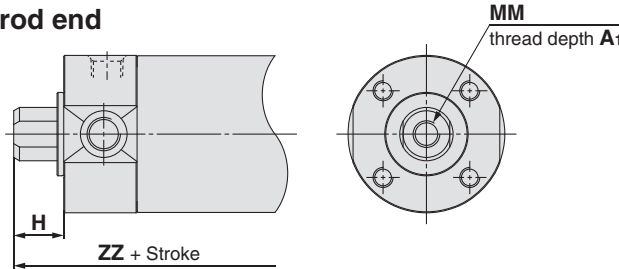


With Air Cushion [mm]

| Bore size | WA | WB | Wθ | WH |
|-----------|----|---------|-----|-----|
| 40 | 17 | 15 (17) | 20° | 1.5 |
| 50 | 18 | 16 (18) | 20° | 3 |
| 63 | 18 | 17 (18) | 20° | 3 |

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

Female rod end



Female Rod End [mm]

| Bore size | A1 | 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) |

| Bore size | Stroke range | | A | AL | B1 | C | D | E | F | GA | GB | H | H1 | I | J | KA | MM | NA | P | S | TA | TB | TC | ZZ |
|-----------|--------------|-------------|----|------|----|------|-----|----|---|----|---------|----|----|----|--------------------|----|------------|------|-----|----------|----|---------|------------|-----------|
| | Standard | Long stroke | | | | | | | | | | | | | | | | | | | | | | |
| 20 | Up to 200 | 201 to 1500 | 18 | 15.5 | 13 | 14 | 9.2 | 12 | 2 | 12 | 10 (12) | 35 | 5 | 26 | M4 x 0.7 depth 7 | 8 | M8 x 1.25 | 24 | 1/8 | 69 (77) | 11 | 11 | M5 x 0.8 | 106 (114) |
| 25 | Up to 300 | 301 to 1500 | 22 | 19.5 | 17 | 16.5 | 11 | 14 | 2 | 12 | 10 (12) | 40 | 6 | 31 | M5 x 0.8 depth 7.5 | 10 | M10 x 1.25 | 29 | 1/8 | 69 (77) | 11 | 11 | M6 x 0.75 | 111 (119) |
| 32 | Up to 300 | 301 to 1500 | 22 | 19.5 | 17 | 20 | 12 | 18 | 2 | 12 | 10 (12) | 40 | 6 | 38 | M5 x 0.8 depth 8 | 10 | M10 x 1.25 | 35.5 | 1/8 | 71 (79) | 11 | 10 (11) | M8 x 1.0 | 113 (121) |
| 40 | Up to 300 | 301 to 1500 | 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 | 301 to 1500 | 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 | 301 to 1500 | 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 the CG1 standard or long stroke model. Refer to pages 14 to 20.

Note 2) (): Denotes the dimensions for long stroke.

⚠ Precautions

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smc.eu>

* Caution on handling/disassembly is provided in addition to that shown below. Refer to page 10.

Handling/Disassembly

⚠ Caution

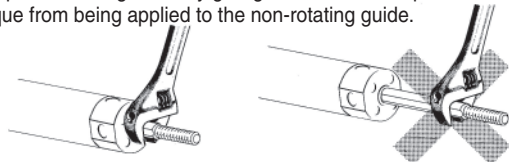
1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

- 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) | ∅ 20 | ∅ 25, ∅ 32 | ∅ 40, ∅ 50, ∅ 63 |
|---|------|------------|------------------|
| | 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**

∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63

How to Order

CG1KW L N 25 - 100 Z

With auto switch **CDG1KW L N 25 - 100 Z - M9BW**

With auto switch (Built-in magnet)
Non-rotating rod type
Double acting, Double rod type
Mounting
Type
Bore size
Cylinder stroke [mm]

| | |
|-----------|---|
| B | Basic |
| Z* | Basic (without trunnion mounting female thread) |
| L | Axial foot |
| F | Flange |
| U | Trunnion |

| | |
|----------|---------------|
| N | Rubber bumper |
|----------|---------------|

| | |
|----------|----------|
| — | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

| | |
|---|---------------------|
| — | Without auto switch |
|---|---------------------|

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

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

| | |
|-----------|-------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |

*Cylinder stroke [mm]
Refer to "Standard Strokes" on page 44.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDG1KWFN32-100Z

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length [m] | | | | | Pre-wired connector | Applicable load | | | |
|-------------------------|---|------------------|-----------------|------------------------|----------------|---------------|----------------------|---------------|----------------------|-------|-------|-------|----------|---------------------|-----------------|------------|---|---|
| | | | | | DC | AC | Applicable bore size | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | IC circuit | Relay, PLC | | |
| | | | | | | | ∅ 20 to ∅ 63 | | | | | | | | | | | |
| Solid state auto switch | — | Grommet | No | 3-wire (NPN) | 5 V, 12 V | — | M9NV | M9N | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | | |
| | | | | 3-wire (PNP) | | | M9PV | M9P | ● | ● | ● | ○ | — | ○ | | | | |
| | | Connector | | 2-wire | 12 V | M9BV | M9B | ● | ● | ● | ○ | — | ○ | — | | | | |
| | | | | — | — | — | H7C | ● | — | ● | ● | — | — | — | | | | |
| | Diagnostic indication (2-colour indication) | Grommet | Yes | 3-wire (NPN) | 5 V, 12 V | — | M9NWV | M9NW | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | | |
| | | | | 3-wire (PNP) | | | M9PWV | M9PW | ● | ● | ● | ○ | — | ○ | | | | |
| | | Connector | | 2-wire | 12 V | M9BWV | M9BW | ● | ● | ● | ○ | — | ○ | — | | | | |
| | | | | — | — | — | H7NF | ● | — | ● | ○ | — | ○ | — | | | | |
| | Water resistant (2-colour indication) | Grommet | No | 3-wire (NPN) | 5 V, 12 V | — | M9NAV** | M9NA** | ○ | ○ | ● | ○ | — | ○ | IC circuit | Relay, PLC | | |
| | | | | 3-wire (PNP) | | | M9PAV** | M9PA** | ○ | ○ | ● | ○ | — | ○ | | | | |
| Connector | | 2-wire | | 12 V | M9BAV** | M9BA** | ○ | ○ | ● | ○ | — | ○ | — | | | | | |
| | | — | | — | — | H7NF | ● | — | ● | ○ | — | ○ | — | | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 5 V | — | A96V | A96 | ● | — | ● | — | — | — | IC circuit | Relay, PLC | | |
| | | | | 2-wire | | | 100 V | A93V | A93 | ● | — | ● | ● | — | | | — | — |
| | | | | | | | 100 V or less | A90V | A90 | ● | — | ● | — | — | | | — | — |
| | | | | | | | 100 V, 200 V | — | B54 | ● | — | ● | ● | — | | | — | — |
| | | Connector | Yes | 200 V or less | — | B64 | ● | — | ● | — | — | — | — | | | | | |
| | | | | — | — | C73C | ● | — | ● | ● | ● | — | — | | | | | |
| | | | No | 24 V or less | — | C80C | ● | — | ● | ● | ● | — | — | | | | | |
| | | | | — | — | B59W | ● | — | ● | — | — | — | — | | | | | |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m..... — (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWX
None..... N (Example) H7CN

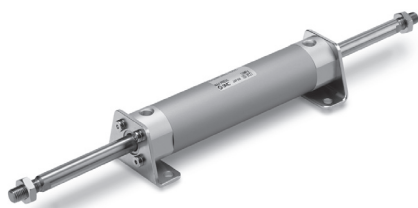
* Solid state auto switches marked with "○" are produced upon receipt of order.

* Since there are other applicable auto switches than listed above, refer to page 74 for details.

* For details about auto switches with pre-wired connector, refer to the Auto Switch Guide.

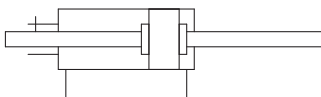
* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

Air Cylinder: Non-rotating Rod Type Double Acting, Double Rod **Series CG1KW**



Symbol

Rubber bumper



Specifications

| Bore size [mm] | 20 | 25 | 32 | 40 | 50 | 63 |
|---|--|-------|-------|-------|-------|-------|
| Action | Double acting, Double rod | | | | | |
| Lubricant | Not required (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 °C to 70 °C (No freezing) With auto switch : -10 °C to 60 °C | | | | | |
| Piston speed | 50 to 500 mm/s | | | | | |
| Stroke length tolerance | Up to 1000 st ^{+1.4} ₀ mm, Up to 1500 st ^{+1.8} ₀ mm | | | | | |
| Cushion | Rubber bumper | | | | | |
| Rod non-rotating accuracy ^{Note)} | ±1° | ±0.8° | ±0.5° | ±0.5° | ±0.5° | ±0.5° |
| Mounting | Basic, Basic (without trunnion mounting female thread), Axial foot, Flange, Trunnion | | | | | |

* Foot and flange types of cylinder sizes from ø 20 to ø 63 do not have trunnion mounting female thread. Operate the cylinder within the allowable kinetic energy. Refer to page 24 for details. Note) The values are for standard strokes.

| |
|---|
| Refer to pages 68 to 74 for cylinders with auto switches. |
| <ul style="list-style-type: none"> • 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 |

Accessories

| Mounting | | Basic | Axial foot | Flange | Trunnion |
|----------|----------------------------------|-------|------------|--------|----------|
| Standard | Rod end nut | ● | ● | ● | ● |
| | Single knuckle joint | ● | ● | ● | ● |
| Option | Double knuckle joint (with pin)* | ● | ● | ● | ● |
| | Pivot bracket | — | — | — | ● |

* A double knuckle joint pin and retaining rings are shipped together.

Weights

| Bore size [mm] | | 20 | 25 | 32 | 40 | 50 | 63 |
|---------------------------------------|------------|-------|-------|-------|-------|-------|-------|
| Basic weight | Basic | 0.13 | 0.22 | 0.33 | 0.55 | 1.02 | 1.37 |
| | Axial foot | 0.24 | 0.35 | 0.49 | 0.77 | 1.50 | 2.09 |
| | Flange | 0.21 | 0.32 | 0.47 | 0.75 | 1.36 | 1.87 |
| | Trunnion | 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 50 mm of stroke | | 0.07 | 0.10 | 0.13 | 0.23 | 0.34 | 0.38 |
| Weight reduction for female rod end | | -0.02 | -0.04 | -0.04 | -0.10 | -0.20 | -0.20 |

Calculation (Example) **CG1KWLN32-100Z**
 • Basic weight 0.49 (Foot, ø 32)
 • Additional weight 0.13/50 stroke
 • Air cylinder stroke 100 stroke
 $0.49 + 0.13 \times 100/50 = 0.75 \text{ kg}$

Standard Strokes

| Bore size | Standard stroke ^{Note 1)} | Maximum manufacturable stroke ^{Note 2)} |
|---------------|--|--|
| 20 | 25, 50, 75, 100, 125, 150, 200 | 201 to 1500 |
| 25 | 25, 50, 75, 100, 125, 150, 200, 250, 300 | 301 to 1500 |
| 32 | | |
| 40 | | |
| 50, 63 | | |

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

Note 2) The maximum manufacturable stroke shows the long stroke.

Note 3) Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection". In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Mounting Brackets/Part No.

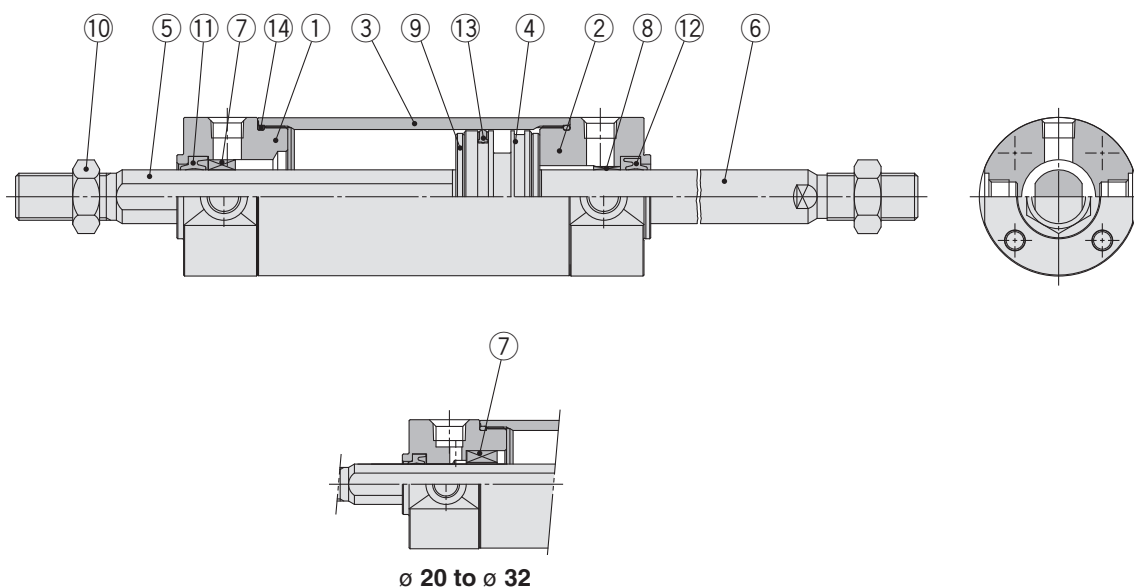
| Mounting bracket | Order q'ty | Bore size [mm] | | | | | | Contents |
|------------------|--------------------|----------------|------------|------------|------------|------------|------------|--|
| | | 20 | 25 | 32 | 40 | 50 | 63 | |
| Axial foot | 2 ^{Note)} | CG-L020 | CG-L025 | CG-L032 | CG-L040 | CG-L050 | CG-L063 | 2 feet, 8 mounting bolts |
| Flange | 1 | CG-F020 | CG-F025 | CG-F032 | CG-F040 | CG-F050 | CG-F063 | 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 |
| Pivot bracket | 1 | CG-020-24A | CG-025-24A | CG-032-24A | CG-040-24A | CG-050-24A | CG-063-24A | 1 pivot bracket |

Note) Order two feet per cylinder.

Standard Double Acting, Double Rod **CG1W**
 Standard Double Acting, Single Rod **CG1K**
 Non-rotating Rod Double Acting, Double Rod **CG1KW**
 Direct Mount Double Acting, Single Rod **CG1R**
 Direct Mount, Non-rotating Rod **CG1KR**
 With End Lock **CBG1**
 Auto Switch **CG1**
 Made to Order

Series CG1KW

Construction



Component Parts

| No. | Description | Material | Note |
|-----|--------------------|-----------------|---------------------------------------|
| 1 | Rod cover A | Aluminium alloy | Hard anodised |
| 2 | Rod cover B | Aluminium alloy | Hard anodised |
| 3 | Cylinder tube | Aluminium alloy | Hard anodised |
| 4 | Piston | Aluminium alloy | |
| 5 | Piston rod A | Stainless steel | ø 32 or smaller |
| | | Carbon steel* | Hard chrome plating* ø 40 or larger |
| 6 | Piston rod B | Stainless steel | For ø 20 or ø 25 with built-in magnet |
| | | Carbon steel** | Hard chrome plating* |
| 7 | Non-rotating guide | Bearing alloy | |
| 8 | Bushing | Bearing alloy | |
| 9 | Bumper | Resin | |
| 10 | Rod end nut | Carbon steel | Zinc chromated |
| 11 | Rod seal A | NBR | |
| 12 | Rod seal B | NBR | |
| 13 | Piston seal | NBR | |
| 14 | Tube gasket | NBR | |

* The material is stainless steel for ø 20 to ø 32.

** The material for ø 20, ø 25 cylinders with auto switches is made of stainless steel.

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

Replacement Parts: Seal Kit

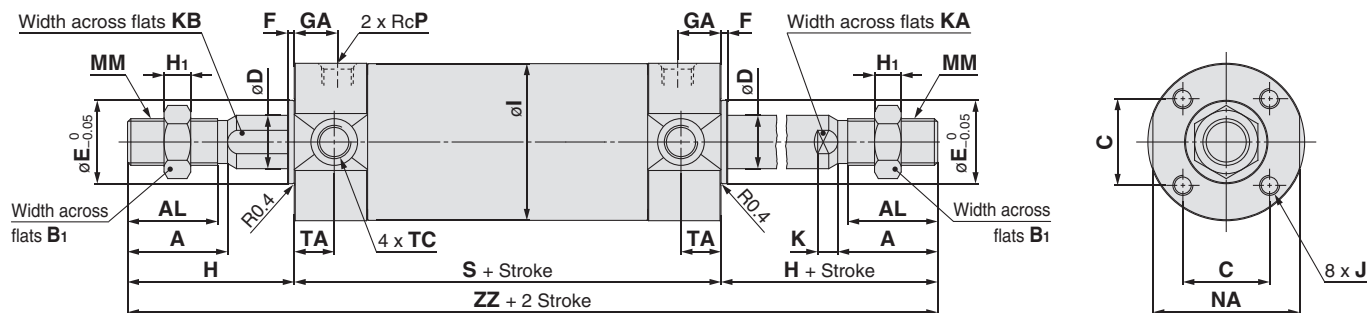
| Bore size [mm] | Kit no. | Contents |
|----------------|--------------|----------------------------|
| 20 | CG1KWN20Z-PS | Set of the nos. ⑪, ⑫, ⑬, ⑭ |
| 25 | CG1KWN25Z-PS | |
| 32 | CG1KWN32Z-PS | |
| 40 | CG1KWN40Z-PS | |

Note) Refer to the Specific Product Precautions on page 10 for Disassembly/Replacement. Order with the kit number according to the bore size.

* The seal kit includes a grease pack (10 g). Order with the following part number when only the grease pack is needed.

Grease pack part number: GR-S-010 (10 g)

Basic with Rubber Bumper: CG1KWBN



| Bore size | Stroke range | A | AL | B ₁ | C | D | DK | E | F | GA | H ₁ | I | J | K | KA | KB | MM | NA | P | S |
|-----------|--------------|----|------|----------------|------|----|-----|----|---|----|----------------|----|--------------------|-----|----|----|------------|------|-----|-----|
| 20 | Up to 1500 | 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 1500 | 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 1500 | 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 1500 | 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 1500 | 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 1500 | 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 |

[mm]

| Bore size | 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 1) Dimensions are the same as those for the CG1W standard. Refer to page 29.

⚠ Precautions

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smc.eu>

* Caution on handling/disassembly is provided in addition to that shown below. Refer to page 10.

Handling/Disassembly

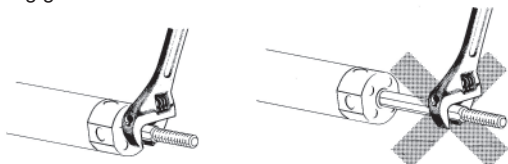
⚠ Caution

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) | ø 20 | ø 25, ø 32 | ø 40, ø 50, ø 63 |
|---|------|------------|------------------|
| | 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.

| | | |
|--------------------------------|-------------------------------------|----------------------|
| Standard | Double Acting, Single Rod | CG1 |
| Standard | Double Acting, Double Rod | CG1W |
| Standard | Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | Double Acting, Single Rod | CG1K |
| Non-rotating Rod | Double Acting, Double Rod | CG1KW |
| Direct Mount | Double Acting, Single Rod | CG1R |
| Direct Mount, Non-rotating Rod | Double Acting, Single Rod | CG1KR |
| With End Lock | | CBG1 |
| Auto Switch | | Auto Switch |
| Made to Order | | Made to Order |

Air Cylinder: Direct Mount Type Double Acting

Series CG1R

∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63

How to Order

CG1R N 25-100 Z-

With auto switch **CDG1R N 25-100 Z-M9BW**

With auto switch (Built-in magnet)

Type

| | |
|---|---------------|
| N | Rubber bumper |
| A | 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 Strokes" on page 48.

Rod end bracket

| | |
|---|----------------------|
| — | 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.

Number of auto switches

| | |
|---|----------|
| — | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

Auto switch

| | |
|---|---------------------|
| — | Without auto switch |
|---|---------------------|

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

Rod end thread

| | |
|---|----------------|
| — | Male rod end |
| F | Female rod end |

Made to Order
For details, refer to page 48.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDG1RA32-100Z

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length [m] | | | | | Pre-wired connector | Applicable load | | | | | | | | |
|---|---|------------------|-----------------|------------------------|--------------|-----------|----------------------|---------------|----------------------|-------|-------|-------|----------|---------------------|-----------------|------------|------------|---|---|---|---|------------|---|
| | | | | | DC | AC | Applicable bore size | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | IC circuit | Relay, PLC | | | | | | | |
| | | | | | | | ∅ 20 to ∅ 63 | Perpendicular | | | | | | | | | In-line | | | | | | |
| Solid state auto switch | — | Grommet | — | 3-wire (NPN) | 24 V | 5 V, 12 V | — | M9NV | M9N | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | | | | | | |
| | | | | 3-wire (PNP) | | | | M9PV | M9P | ● | ● | ● | ○ | — | ○ | | | | | | | | |
| | | 2-wire | | M9BV | | | | M9B | ● | ● | ● | ○ | — | ○ | | | | | | | | | |
| | | — | | H7C | | | | ● | — | ● | ● | ● | — | — | | | | | | | | | |
| | Diagnostic indication (2-colour indication) | Grommet | Yes | 3-wire (NPN) | 24 V | 5 V, 12 V | — | M9NWV | M9NW | ● | ● | ● | ○ | — | ○ | IC circuit | Relay, PLC | | | | | | |
| | | | | 3-wire (PNP) | | | | M9PWV | M9PW | ● | ● | ● | ○ | — | ○ | | | | | | | | |
| | Water resistant (2-colour indication) | Grommet | — | 3-wire (NPN) | 24 V | 5 V, 12 V | — | M9NAV** | M9NA** | ○ | ○ | ● | ○ | — | ○ | IC circuit | Relay, PLC | | | | | | |
| | | | | 3-wire (PNP) | | | | M9PAV** | M9PA** | ○ | ○ | ● | ○ | — | ○ | | | | | | | | |
| | Diagnostic output (2-colour indication) | Grommet | — | 2-wire | 24 V | 12 V | — | M9B WV | M9B W | ● | ● | ● | ○ | — | ○ | — | Relay, PLC | | | | | | |
| | | | | 4-wire (NPN) | | | | M9BA V** | M9BA** | ○ | ○ | ● | ○ | — | ○ | | | | | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 24 V | 12 V | — | A96V | A96 | ● | — | ● | — | — | — | IC circuit | Relay, PLC | | | | | | |
| | | | | — | | | | A93V | A93 | ● | — | ● | ● | — | — | | | | | | | | |
| | | | | — | | | | A90V | A90 | ● | — | ● | — | — | — | | | | | | | | |
| | | | | — | | | | — | B54 | ● | — | ● | ● | — | — | | | | | | | | |
| | | Connector | | No | | | | — | 2-wire | 24 V | 12 V | — | — | B64 | ● | — | ● | — | — | — | — | Relay, PLC | |
| | | | | | | | | | | | | | — | — | C73C | ● | — | ● | ● | — | | | — |
| | | | | | | | | | | | | | — | — | C80C | ● | — | ● | ● | — | | | — |
| | | | | | | | | | | | | | — | — | B59W | ● | — | ● | — | — | | | — |
| Diagnostic indication (2-colour indication) | Grommet | Yes | — | 24 V | — | — | — | — | — | — | — | — | — | — | Relay, PLC | | | | | | | | |
| | | | — | | | | — | — | — | — | — | — | — | | | — | | | | | | | |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m..... — (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 74 for details.

* For details about auto switches with pre-wired connector, refer to the Auto Switch Guide.

* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only the auto switch mounting brackets are assembled before shipment.)

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

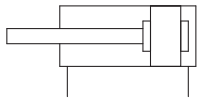
Space-saving has been realized.

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.

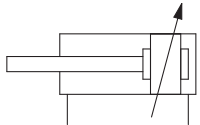


Symbol

Rubber bumper



Air cushion



Made to Order
(For details, refer to pages 77 to 93.)

| Symbol | Specifications |
|--------|---|
| -XA□ | Change of rod end shape |
| -XB6 | Heat resistant cylinder (-10 to 150 °C)*2 |
| -XB7 | Cold resistant cylinder (-40 to 70 °C)*1, *3 |
| -XB9 | Low speed cylinder (10 to 50 mm/s)*1, *3 |
| -XB13 | Low speed cylinder (5 to 50 mm/s)*1, *3 |
| -XC6 | Made of stainless steel |
| -XC8 | Adjustable stroke cylinder/Adjustable extension type*1 |
| -XC9 | Adjustable stroke cylinder/Adjustable retraction type*1 |
| -XC13 | Auto switch rail mounting*1 |
| -XC20 | Head cover axial port*1 |
| -XC22 | Fluororubber seal |
| -XC85 | Grease for food processing equipment |

- *1 Only compatible with cylinders with rubber bumper.
- *2 Cylinders with rubber bumper have no bumper.
- *3 The shape is the same as the existing product. Use the existing seal kit.

Refer to pages 68 to 74 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

Specifications

| Bore size [mm] | 20 | 25 | 32 | 40 | 50 | 63 |
|-------------------------------|--|----|----|----|----|----|
| 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 | | | | | |
| Stroke length tolerance | Up to 300 st $^{+1.4}_0$ mm | | | | | |
| Cushion | Rubber bumper, Air cushion | | | | | |

Standard Strokes

| Bore size | 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 |

- * Please consult with SMC for strokes which exceed the standard stroke length.
- 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". In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Tightening Torque: Tighten the cylinder mounting bolts with the following tightening torque.

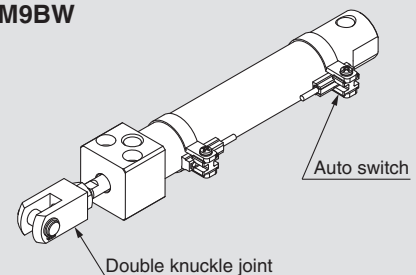
| Bore size [mm] | Hexagon socket head cap screw size | Tightening torque [N·m] |
|----------------|------------------------------------|-------------------------|
| 20 | M5 x 0.8 | 2.4 to 3.6 |
| 25 | M6 | 4.2 to 6.2 |
| 32 | M8 | 10.0 to 15.0 |
| 40 | M10 | 19.6 to 29.4 |
| 50 | M12 | 33.6 to 50.4 |
| 63 | M16 | 84.8 to 127.2 |

Ordering Example of Cylinder Assembly

Cylinder model: **CDG1RN20-100Z-W-M9BW**

Rod end bracket W: Double knuckle joint
Auto switch D-M9BW: 2 pcs.

- * Double knuckle joint and auto switch are shipped together with the product, but not assembled.



Double Acting, Single Rod **CG1**
 Standard Double Acting, Double Rod **CG1W**
 Single Acting, Spring Return/Extend **CG1**
 Non-rotating Rod Double Acting, Single Rod **CG1K**
 Non-rotating Rod Double Acting, Double Rod **CG1KW**
 Direct Mount Double Acting, Single Rod **CG1R**
 Direct Mount, Non-rotating Rod **CG1KR**
 With End Lock **CBG1**
 Auto Switch **Auto Switch**
 Made to Order **Made to Order**

Series CG1R

Weights

| 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 50 mm of stroke | 0.05 | 0.07 | 0.09 | 0.14 | 0.21 | 0.25 |
| Additional weight with air cushion | 0 | 0.01 | 0.04 | 0 | 0.01 | 0.04 |
| Weight reduction for female rod end | -0.01 | -0.02 | -0.02 | -0.05 | -0.10 | -0.10 |

Calculation (Example) **CG1RN32-100Z** (ø 32, 100 stroke)

- Basic weight..... 0.35
- Additional weight..... 0.09/50 stroke
- Air cylinder stroke..... 100 stroke

$$0.35 + 0.09 \times 100/50 = 0.53 \text{ kg}$$

Accessories

| Mounting | | Basic |
|----------|----------------------------------|-------|
| Standard | Rod end nut | ● |
| Option | Single knuckle joint | ● |
| | Double knuckle joint* (with pin) | ● |

* A double knuckle joint pin and retaining rings are shipped together.

⚠ Precautions

Be sure to read this before handling.
Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to “Handling Precautions for SMC Products” and the Operation Manual on SMC website, <http://www.smc.eu>

* Caution on handling/disassembly is provided in addition to that shown below. Refer to page 10.

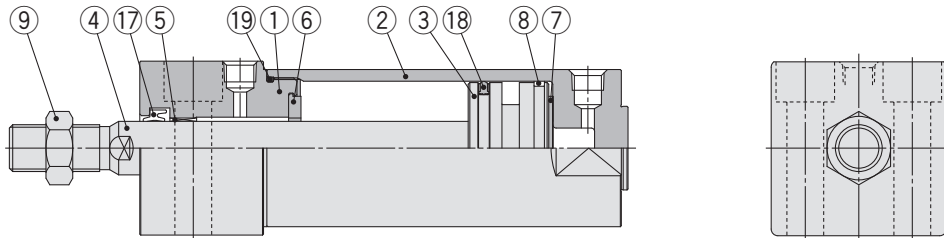
Handling/Disassembly

⚠ Caution

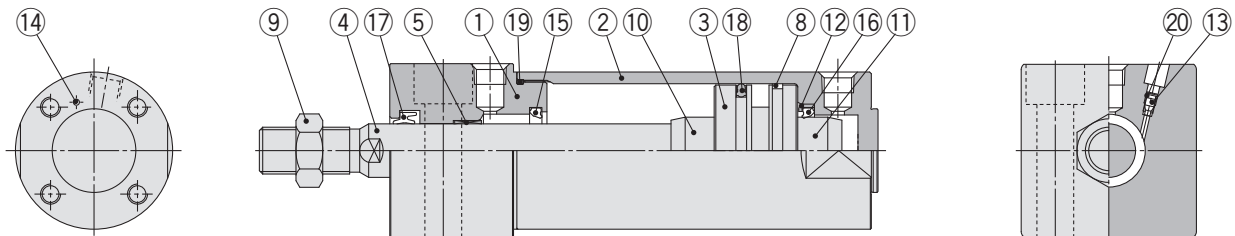
When a cylinder is operated with one end fixed and the other free, a bending moment may act on the cylinder due to vibration generated at the stroke end, which can damage the cylinder. In such a case, install a mounting bracket to suppress the vibration of the cylinder body or reduce the piston speed so that the cylinder does not vibrate. Also, use a mounting bracket when moving the cylinder body or when a long stroke cylinder is mounted horizontally and fixed at one end.

Construction

With rubber bumper



With air cushion



Component Parts

| No. | Description | Material | Note |
|-----|----------------|-----------------|---|
| 1 | Rod cover | Aluminium alloy | Hard anodised |
| 2 | Tube cover | Aluminium alloy | Hard anodised |
| 3 | Piston | Aluminium alloy | |
| 4 | Piston rod | Stainless steel | For ϕ 20 or ϕ 25 with built-in magnet |
| | | Carbon steel* | Hard chrome plating* |
| 5 | Bushing | Bearing alloy | |
| 6 | Bumper | Resin | ϕ 32 or larger is common. |
| 7 | Bumper | Resin | |
| 8 | Wear ring | Resin | |
| 9 | Rod end nut | Carbon steel | Zinc chromated |
| 10 | Cushion ring A | Aluminium alloy | |

| No. | Description | Material | Note |
|-----|----------------|----------------------|--------------------------------|
| 11 | Cushion ring B | Aluminium alloy | |
| 12 | Seal retainer | Rolled steel | Zinc chromated |
| 13 | Cushion valve | ϕ 40 or smaller | Carbon steel |
| | | ϕ 50 or larger | Steel wire |
| 14 | Steel ball | Carbon steel | Electroless nickel plating |
| 15 | Cushion seal A | Urethane | ϕ 32 or larger is common. |
| 16 | Cushion seal B | Urethane | |
| 17 | Rod seal | NBR | |
| 18 | Piston seal | NBR | |
| 19 | Tube gasket | NBR | |
| 20 | Valve seal | NBR | |

Note) For cylinders with auto switches, the magnet is installed in the piston.
* The material for ϕ 20, ϕ 25 cylinders with auto switches is made of stainless steel.

Replacement parts/Seal kit are the same as standard type, double acting, single rod. Refer to page 11.

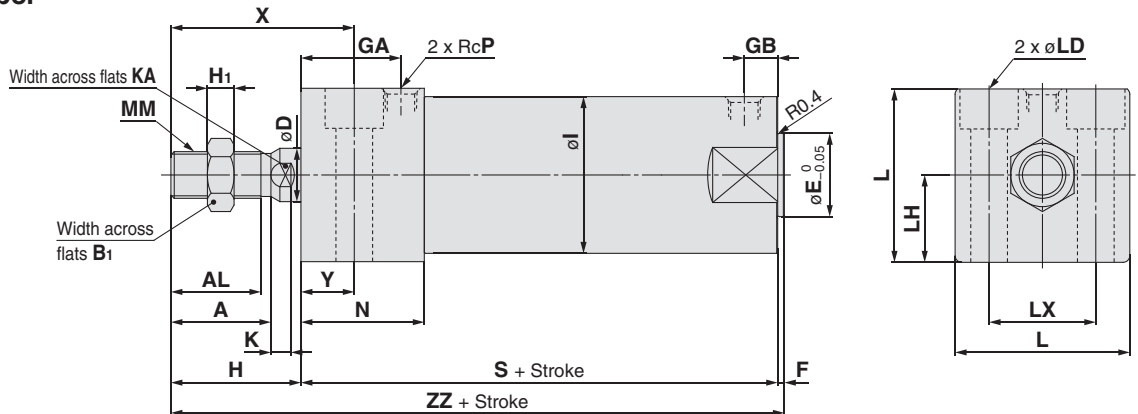
Note) Refer to the Specific Product Precautions on page 10 for Disassembly/Replacement.

| | | |
|--------------------------------|-------------------------------------|----------------------|
| Standard | Double Acting, Single Rod | CG1 |
| Standard | Double Acting, Double Rod | CG1W |
| Standard | Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | Double Acting, Single Rod | CG1K |
| Non-rotating Rod | Double Acting, Double Rod | CG1KW |
| Direct Mount | Double Acting, Single Rod | CG1R |
| Direct Mount, Non-rotating Rod | | CG1KR |
| With End Lock | | CBG1 |
| | | Auto Switch |
| | | Made to Order |

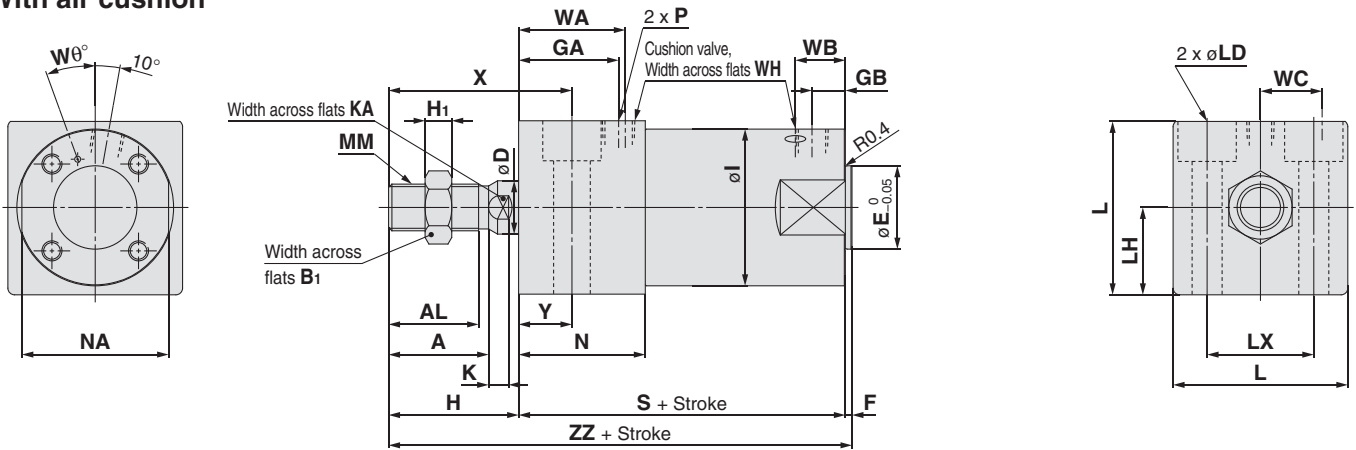
Series CG1R

Basic with Bottom Mounting

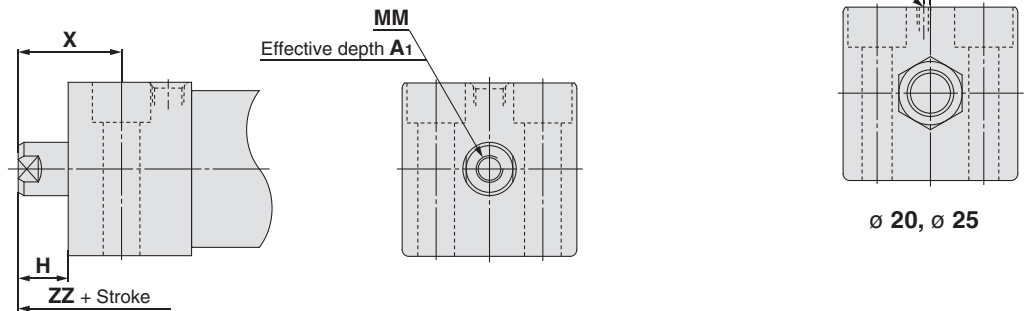
With rubber bumper



With air cushion



Female rod end



| Bore size | Stroke range | 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 | ø 5.5, ø 9.5 depth of counterbore 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 | ø 6.6, ø 11 depth of counterbore 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 | ø 9, ø 14 depth of counterbore 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 | ø 11, ø 17.5 depth of counterbore 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 | ø 14, ø 20 depth of counterbore 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 | ø 18, ø 26 depth of counterbore 18 | 38 | 46 | M18 x 1.5 | 50 | 1/4 | 114 | 64 | 19 | 161 |

With Air Cushion

| Bore size | Stroke range | P | WA | WB | WC | WD | Wθ | WH |
|-----------|--------------|----------|----|------|------|----|-----|-----|
| 20 | Up to 150 | M5 x 0.8 | 22 | 15 | 5.5 | 2 | 25° | 1.5 |
| 25 | Up to 200 | M5 x 0.8 | 24 | 14.5 | 7 | 2 | 25° | 1.5 |
| 32 | Up to 200 | Rc1/8 | 28 | 14 | 11.5 | — | 25° | 1.5 |
| 40 | Up to 300 | Rc1/8 | 32 | 15 | 15 | — | 20° | 1.5 |
| 50 | Up to 300 | Rc1/4 | 36 | 16 | 17.5 | — | 20° | 3 |
| 63 | Up to 300 | Rc1/4 | 42 | 17 | 20.5 | — | 20° | 3 |

Female Rod End

| Bore size | A ₁ | H | MM | X | ZZ |
|-----------|----------------|----|-----------|----|-----|
| 20 | 8 | 13 | M4 x 0.7 | 24 | 90 |
| 25 | 8 | 14 | M5 x 0.8 | 26 | 93 |
| 32 | 12 | 14 | M6 x 1 | 27 | 99 |
| 40 | 13 | 15 | M8 x 1.25 | 31 | 111 |
| 50 | 18 | 16 | M10 x 1.5 | 33 | 126 |
| 63 | 18 | 16 | M10 x 1.5 | 35 | 132 |

Air Cylinder: Direct Mount, Non-rotating Rod Type

Series CG1KR

∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63

How to Order

CG1KRN 25 - 100 Z - -

With auto switch **CDG1KRN 25 - 100 Z - M9BW - -**

With auto switch
(Built-in magnet)

Non-rotating rod type

Mounting

| | |
|----------|---------------|
| N | 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 |

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDG1KRN32-100Z

• Rod end thread

| | |
|----------|----------------|
| — | Male rod end |
| F | Female rod end |

• Number of auto switches

| | |
|----------|----------|
| — | 2 pcs. |
| S | 1 pc. |
| n | "n" pcs. |

• Rod end bracket

| | |
|----------|----------------------|
| — | None |
| V | Single knuckle joint |
| W | Double knuckle joint |

• Auto switch

| | |
|---|---------------------|
| — | Without auto switch |
|---|---------------------|

* 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.

• Cylinder stroke [mm]
Refer to "Standard Strokes" on page 53.

Made to Order
Refer to page 53 for details.

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator/light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | | | | | Pre-wired connector | Applicable load | | | | | |
|---|---|------------------|-----------------|------------------------|--------------|-------------|----------------------|---------------|----------------------|-------------|-------------|-------|------------|---------------------|-----------------|---------|---|---|------------|---|
| | | | | | DC | AC | Applicable bore size | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | | | | | | |
| | | | | | | | ∅ 20 to ∅ 63 | Perpendicular | | | | | | | | In-line | | | | |
| Solid state auto switch | — | Grommet | — | 3-wire (NPN) | 5 V, 12 V | — | M9NV | M9N | ● | ● | ● | ○ | — | ○ | IC circuit | | | | | |
| | | | | 3-wire (PNP) | | | M9PV | M9P | ● | ● | ● | ○ | — | ○ | | | | | | |
| | Diagnostic indication (2-colour indication) | Connector | Yes | 2-wire | 12 V | — | M9BV | M9B | ● | ● | ● | ○ | — | ○ | — | | | | | |
| | | | | — | | | H7C | ● | — | ● | ● | — | — | — | | | | | | |
| | Water resistant (2-colour indication) | Grommet | Yes | 3-wire (NPN) | 5 V, 12 V | — | M9NVV | M9NW | ● | ● | ● | ○ | — | ○ | IC circuit | | | | | |
| | | | | 3-wire (PNP) | | | M9PWW | M9PW | ● | ● | ● | ○ | — | ○ | | | | | | |
| | Diagnostic output (2-colour indication) | Grommet | No | 2-wire | 12 V | — | M9BWV | M9BW | ● | ● | ● | ○ | — | ○ | — | | | | | |
| | | | | 3-wire (NPN) | | | M9NAV** | M9NA** | ○ | ○ | ● | ○ | — | ○ | | | | | | |
| | | | | 3-wire (PNP) | | | M9PAV** | M9PA** | ○ | ○ | ● | ○ | — | ○ | | | | | | |
| | | | | 2-wire | | | M9BAV** | M9BA** | ○ | ○ | ● | ○ | — | ○ | | | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 5 V | — | A96V | A96 | ● | — | ● | — | — | — | IC circuit | | | | | |
| | | | | 2-wire | | | 24 V | 12 V | 100 V | A93V | A93 | ● | — | ● | | ● | — | — | IC circuit | |
| | | | | | | | | | 100 V or less | A90V | A90 | ● | — | ● | | — | — | — | | |
| | | | | | | | | | 100 V, 200 V | — | B54 | ● | — | ● | | ● | — | — | | |
| | | | | | | | | | 200 V or less | — | B64 | ● | — | ● | | — | — | — | | |
| | | | | | | | | | — | — | C73C | ● | — | ● | | ● | ● | — | | — |
| | | | | | | | | | 24 V or less | — | C80C | ● | — | ● | | ● | ● | — | | — |
| Diagnostic indication (2-colour indication) | Connector | No | — | — | — | B59W | ● | — | ● | — | — | — | IC circuit | | | | | | | |
| Grommet | Yes | — | — | — | — | — | — | — | — | — | — | — | | | | | | | | |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m — (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 74 for details.

* For details about auto switches with pre-wired connector, refer to the Auto Switch Guide.

* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only auto switch mounting brackets are assembled before shipment.)

Standard Acting, Single Rod CG1
Double Acting, Double Rod CG1W
Single Acting, Spring Return/Extend CG1
Non-rotating Rod Double Acting, Single Rod CG1K
Double Acting, Double Rod CG1KW
Direct Mount Double Acting, Single Rod CG1R
Direct Mount, Non-rotating Rod CG1KR
With End Lock CBG1
Auto Switch
Made to Order

Series CG1KR

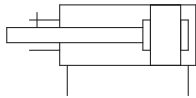
Series CG1KR direct mount, non-rotating rod type cylinder can be installed directly through the use of a square rod cover.

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.



Symbol Rubber bumper



Made to Order
(For details, refer to pages 77 to 93.)

| Symbol | Specifications |
|--------|---|
| -XC8 | Adjustable stroke cylinder/Adjustable extension type*1 |
| -XC9 | Adjustable stroke cylinder/Adjustable retraction type*1 |
| -XC20 | Head cover axial port |

*1 The shape is the same as the existing product.
Use the existing seal kit.

Accessories

| Mounting | | Basic |
|----------|----------------------------------|-------|
| Standard | Rod end nut | ● |
| Option | Single knuckle joint | ● |
| | Double knuckle joint* (with pin) | ● |

* A double knuckle joint pin and retaining rings are shipped together.

Refer to pages 68 to 74 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

Specifications

| Bore size [mm] | 20 | 25 | 32 | 40 | 50 | 63 |
|-------------------------------|--|-------|----|----|-------|----|
| 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 500 mm/s | | | | | |
| Stroke length tolerance | Up to 300 st ^{+1.4} ₀ mm | | | | | |
| Cushion | Rubber bumper | | | | | |
| Rod non-rotating accuracy | ±1° | ±0.8° | | | ±0.5° | |

Weights

| 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 joint (with pin) | 0.05 | 0.09 | 0.09 | 0.13 | 0.26 | 0.26 |
| Additional weight per 50 mm of stroke | 0.05 | 0.07 | 0.09 | 0.15 | 0.22 | 0.26 |
| Weight reduction for female rod end | -0.01 | -0.02 | -0.02 | -0.05 | -0.10 | -0.10 |

Calculation (Example) **CG1KRN32-100Z**
(ø 32, 100 stroke)

- Basic weight.....0.35
 - Additional weight.....0.09/50 stroke
 - Air cylinder stroke.....100 stroke
- $$0.35 + 0.09 \times 100/50 = 0.53 \text{ kg}$$

Standard Strokes

| Bore size | Standard stroke* |
|------------|--|
| 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 |

* Please consult with SMC for strokes which exceed the standard stroke length.

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". In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

Tightening Torque: Tighten the cylinder mounting bolts with the following tightening torque.

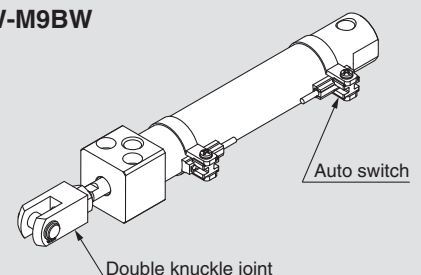
| Bore size [mm] | Hexagon socket head cap screw size | Tightening torque [N·m] |
|----------------|------------------------------------|-------------------------|
| 20 | M5 x 0.8 | 2.4 to 3.6 |
| 25 | M6 | 4.2 to 6.2 |
| 32 | M8 | 10.0 to 15.0 |
| 40 | M10 | 19.6 to 29.4 |
| 50 | M12 | 33.6 to 50.4 |
| 63 | M16 | 84.8 to 127.2 |

Ordering Example of Cylinder Assembly

Cylinder model: **CDG1KRN20-100Z-W-M9BW**

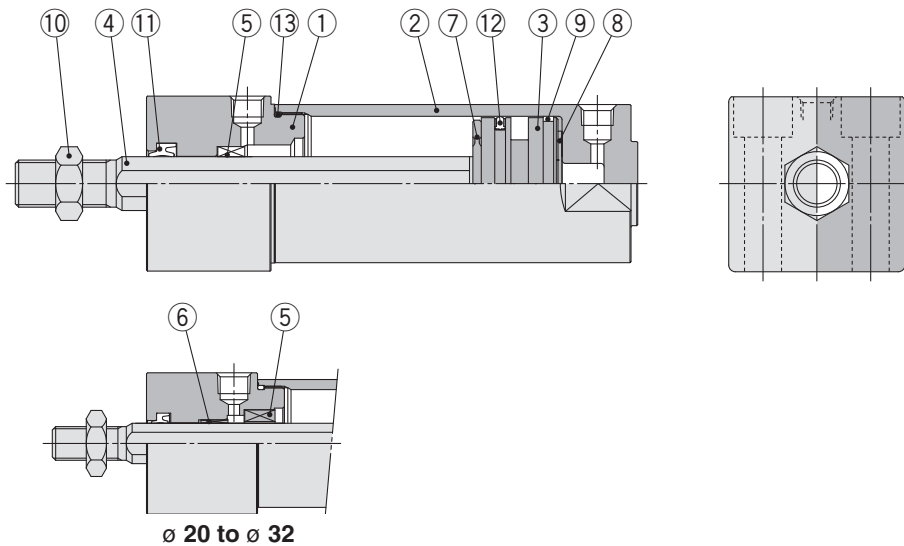
Rod end bracket W: Double knuckle joint
Auto switch D-M9BW: 2 pcs.

* Double knuckle joint and auto switch are shipped together with the product, but not assembled.



Construction

Non-rotating rod type/ Bottom mounting style



Component Parts

| No. | Description | Material | Note |
|-----|--------------------|--------------------------------|---------------------|
| 1 | Rod cover | Aluminium alloy | Clear hard anodised |
| 2 | Tube cover | Aluminium alloy | Clear hard anodised |
| 3 | Piston | Aluminium alloy | |
| 4 | Piston rod | ø 20 to ø 32 | Stainless steel |
| | | ø 40 to ø 63 | Carbon steel |
| 5 | Non-rotating guide | Oil-impregnated sintered alloy | |
| 6 | Bushing | Oil-impregnated sintered alloy | ø 20 to ø 32 only |
| 7 | Bumper | Resin | |
| 8 | Bumper | Resin | |
| 9 | Wear ring | Resin | |
| 10 | Rod end nut | Rolled steel | Zinc chromated |
| 11 | Rod seal | NBR | |
| 12 | Piston seal | NBR | |
| 13 | Tube gasket | NBR | |

Replacement parts/Seal kit are the same as double acting, non-rotating rod type. Refer to page 41.

Note) Refer to the Specific Product Precautions on page 10 for Disassembly/Replacement.

⚠ Precautions

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smc.eu>

Handling/Disassembly

⚠ Caution

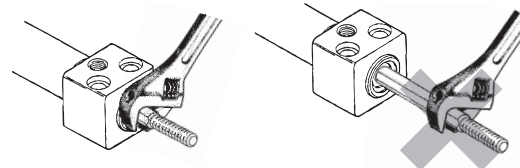
When a cylinder is operated with one end fixed and the other free, a bending moment may act on the cylinder due to vibration generated at the stroke end, which can damage the cylinder. In such a case, install a mounting bracket to suppress the vibration of the cylinder body or reduce the piston speed so that the cylinder does not vibrate. Also, use a mounting bracket when moving the cylinder body or when a long stroke cylinder is mounted horizontally and fixed at one end.

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) | ø 20 | ø 25, ø 32 | ø 40, ø 50, ø 63 |
|---|------|------------|------------------|
| | 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.

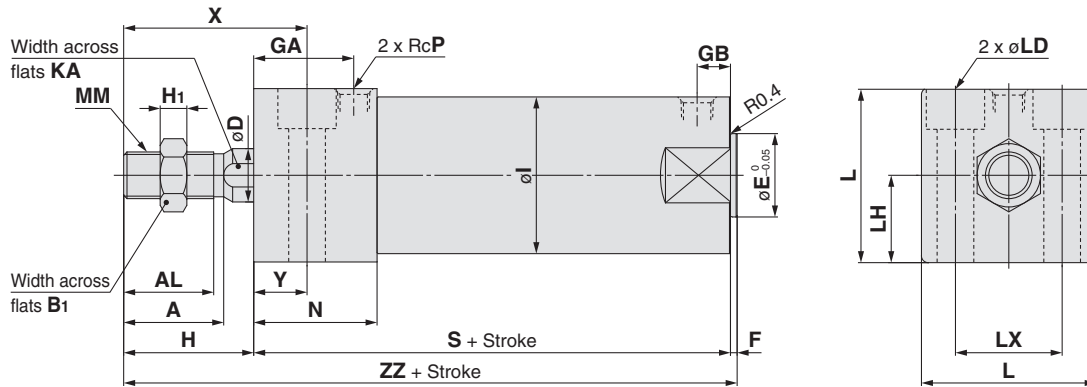
Air leakage may be happened, depending on the position in which a rod seal is fitted. Thus, please contact SMC when replacing them.

| | |
|-------------------------------------|-------|
| Double Acting, Single Rod | CG1 |
| Double Acting, Double Rod | CG1W |
| Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | CG1K |
| Double Acting, Double Rod | CG1W |
| Direct Mount | CG1R |
| Direct Mount, Non-rotating Rod | CG1KR |
| With End Lock | CBG1 |
| Auto Switch | |
| Made to Order | |

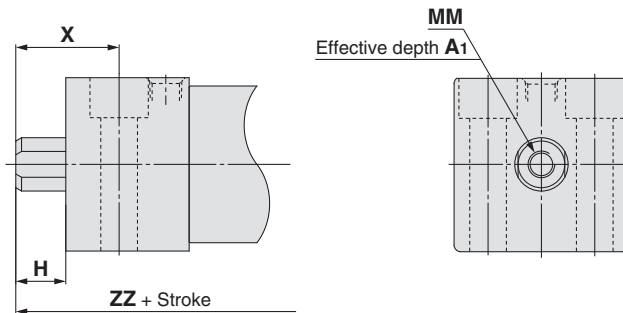
Series CG1KR

Basic with Bottom Mounting: CG1KRN

With rubber bumper



Female rod end



Female Rod End [mm]

| Bore size [mm] | A ₁ | H | MM | X | ZZ |
|----------------|----------------|----|-----------|----|-----|
| 20 | 8 | 13 | M4 x 0.7 | 24 | 90 |
| 25 | 8 | 14 | M5 x 0.8 | 26 | 93 |
| 32 | 12 | 14 | M6 x 1 | 27 | 99 |
| 40 | 13 | 15 | M8 x 1.25 | 31 | 111 |
| 50 | 18 | 16 | M10 x 1.5 | 33 | 126 |
| 63 | 18 | 16 | M10 x 1.5 | 35 | 132 |

| Bore size [mm] | Stroke range [mm] | A | AL | B ₁ | D | E | F | 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 | 2 | 20 | 10 | 27 | 5 | 26 | 8 | 30.4 | ø 5.5, ø 9.5 depth of counterbore 6 | 15 | 18 | M8 x 1.25 | 27 | 1/8 | 75 | 38 | 11 | 104 |
| 25 | Up to 200 | 22 | 19.5 | 17 | 11 | 14 | 2 | 22 | 10 | 32 | 6 | 31 | 10 | 36.4 | ø 6.6, ø 11 depth of counterbore 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 | 10 | 42.4 | ø 9, ø 14 depth of counterbore 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 | 14 | 52.4 | ø 11, ø 17.5 depth of counterbore 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 | 18 | 64.5 | ø 14, ø 20 depth of counterbore 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 | 18 | 76.6 | ø 18, ø 26 depth of counterbore 18 | 38 | 46 | M18 x 1.5 | 50 | 1/4 | 114 | 64 | 19 | 161 |

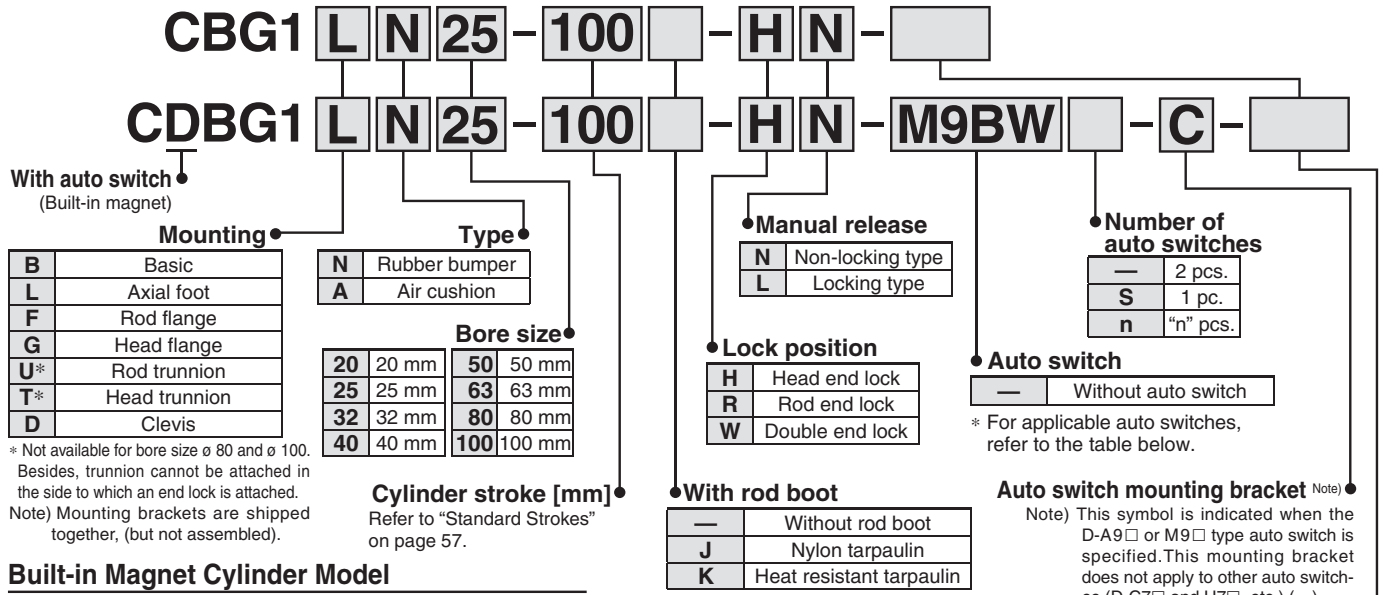
Auto switch mounting position is the same as that on page 70.

Air Cylinder: With End Lock

Series **CBG1**

∅ 20, ∅ 25, ∅ 32, ∅ 40, ∅ 50, ∅ 63, ∅ 80, ∅ 100

How to Order



Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch. (Example) CDBG1FA32-100-RL

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | | Lead wire length [m] | | | | | Pre-wired connector | Applicable load | | | | | | | |
|---------------------------------------|---|------------------|-----------------|------------------------|--------------|-----------|----------------------|-------------|---------|----------------------|-------|-------|-------|---------------|---------------------|-----------------|------------|---|---|---|---|---|---|
| | | | | | DC | AC | Applicable bore size | | | 0.5 (—) | 1 (M) | 3 (L) | 5 (Z) | None (N) | | | | | | | | | |
| | | | | | | | ∅ 20 to ∅ 63 | ∅ 80, ∅ 100 | In-line | | | | | | | | | | | | | | |
| Solid state auto switch | — | Grommet | — | 3-wire (NPN) | 24 V | 5 V, 12 V | — | M9NV | M9N | — | ● | ● | ● | ○ | — | IC circuit | | | | | | | |
| | | | | 3-wire (PNP) | | | | M9PV | M9P | — | ● | ● | ● | ○ | — | | | | | | | | |
| | | | | — | | | | — | G59 | ● | — | ● | ○ | — | ○ | | | | | | | | |
| | | 2-wire | | M9BV | | | | M9B | — | ● | ● | ● | ○ | — | — | | | | | | | | |
| | | — | | — | | | | K59 | ● | — | ● | ○ | — | ○ | | | | | | | | | |
| | | — | | H7C | | | | — | ● | — | ● | ● | ● | — | | | | | | | | | |
| | Diagnostic indication (2-colour indication) | Grommet | Yes | 3-wire (NPN) | 24 V | 5 V, 12 V | — | M9NWV | M9NW | — | ● | ● | ● | ○ | — | IC circuit | | | | | | | |
| | | | | 3-wire (PNP) | | | | M9PWV | M9PW | — | ● | ● | ● | ○ | — | | | | | | | | |
| | | | | 2-wire | | | | — | G59W | ● | — | ● | ○ | — | ○ | | | | | | | | |
| | | | | — | | | | — | G5PW | ● | — | ● | ○ | — | ○ | | | | | | | | |
| | | | | — | | | | M9BWV | M9BW | — | ● | ● | ● | ○ | — | | — | | | | | | |
| | | | | — | | | | — | K59W | ● | — | ● | ○ | — | ○ | | | | | | | | |
| Water resistant (2-colour indication) | Grommet | — | 3-wire (NPN) | 24 V | 5 V, 12 V | — | M9NAV** | M9NA** | — | ○ | ○ | ● | ○ | — | IC circuit | | | | | | | | |
| | | | 3-wire (PNP) | | | | M9PAV** | M9PA** | — | ○ | ○ | ● | ○ | — | | | | | | | | | |
| | | | 2-wire | | | | M9BAV** | M9BA** | — | ○ | ○ | ● | ○ | — | | | | | | | | | |
| | | | — | | | | — | G5BA** | — | ○ | ○ | ● | ○ | — | | | | | | | | | |
| | | | — | | | | — | H7NF | — | ● | — | ● | ○ | — | | IC circuit | | | | | | | |
| | | | — | | | | — | A96V | A96 | — | ● | — | ● | — | | | IC circuit | | | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (Equiv. to NPN) | 24 V | 12 V | — | A93V | A93 | — | ● | — | ● | — | IC circuit | | | | | | | | |
| | | | | — | | | | A90V | A90 | — | ● | — | ● | — | | | | | | | | | |
| | | | | 100 V | | | | — | B54 | ● | — | ● | — | — | | | | | | | | | |
| | | | | 100 V or less | | | | — | B64 | ● | — | ● | — | — | | | | | | | | | |
| | | Connector | | No | | | | Yes | 2-wire | 24 V | 12 V | — | — | C73C | — | — | ● | — | ● | — | — | | |
| | | | | | | | | | | | | | | — | — | C80C | — | — | ● | — | | ● | — |
| | | | | | | | | | | | | | | 200 V or less | — | B59W | ● | — | ● | — | | — | |
| | | | | | | | | | | | | | | 24 V or less | — | — | — | — | ● | — | | ● | — |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m — (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 74 for details.

* For details about auto switches with pre-wired connector, refer to the Auto Switch Guide.

* The D-A9□□/M9□□□ auto switches are shipped together, (but not assembled). (However, only auto switch mounting brackets are assembled before shipment.)

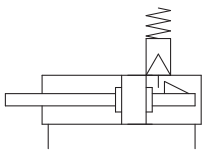
Standard Acting, Single Rod CG1
Double Acting, Double Rod CG1W
Single Acting, Spring Return/Extend CG1
Double Acting, Single Rod CG1K
Non-rotating Rod Double Acting, Double Rod CG1KW
Direct Mount Double Acting, Single Rod CG1R
Direct Mount, Non-rotating Rod CG1KR
With End Lock CGB1
Auto Switch
Made to Order

Series CBG1

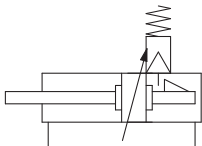


Symbol

Rubber bumper



Air cushion



Made to Order

(For details, refer to pages 77 to 93.)

| Symbol | Specifications |
|--------|---------------------------|
| -XA□ | Change of rod end shape |
| -XC13 | Auto switch rail mounting |

Refer to pages 68 to 74 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

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 | 0.15 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 | |
| Cushion | Rubber bumper, Air cushion | | | | | | | |
| Mounting** | Basic, Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis (used for changing the port location by 90°) | | | | | | | |

* 0.05 MPa except locking parts.

** Rod/Head trunnion types are not available for ø 80 and ø 100.

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] | ø 20 | ø 25 | ø 32 | ø 40 | ø 50 | ø 63 | ø 80 | ø 100 |
| | 215 | 330 | 550 | 860 | 1340 | 2140 | 3450 | 5390 |
| Backlash | 2 mm or less | | | | | | | |
| Manual release | Non-locking type, Locking type | | | | | | | |

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

Standard Strokes

| Bore size [mm] | Standard stroke [mm] ^{Note 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) Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

Note 2) 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.

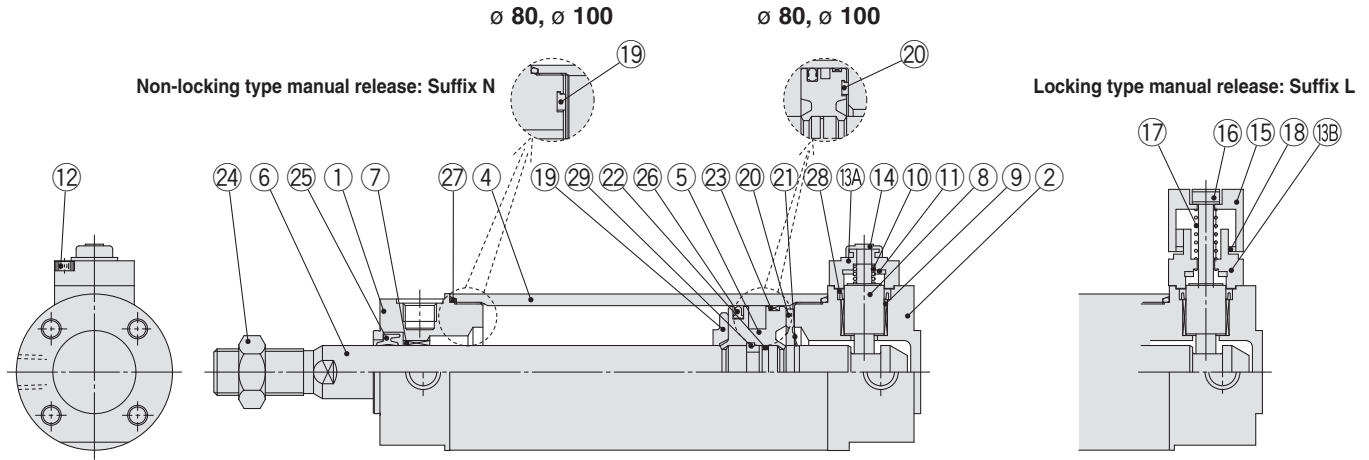
Rod Boot Material

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

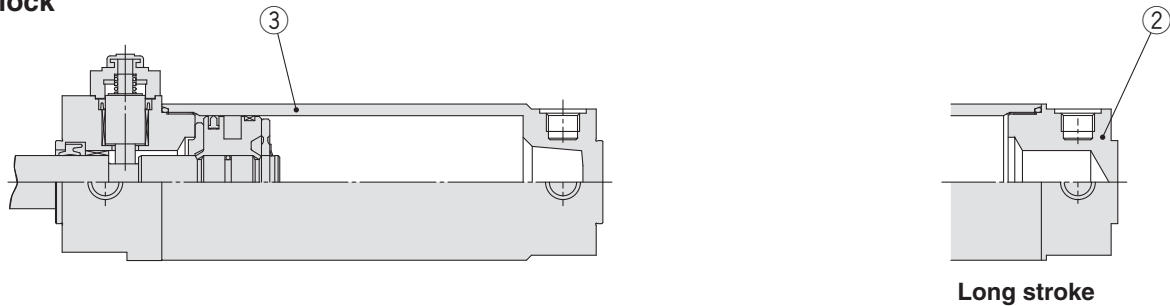
* Maximum ambient temperature for the rod boot itself.

Construction: With Rubber Bumper

Head end lock



Rod end lock



Component Parts

| No. | Description | Material | Note |
|-----|-------------------------------|----------------------|-----------------------------------|
| 1 | Rod cover | Aluminium alloy | Hard anodised |
| 2 | Head cover | Aluminium alloy | Hard anodised |
| 3 | Tube cover | Aluminium alloy | Hard anodised |
| 4 | Cylinder tube | Aluminium alloy | Hard anodised |
| 5 | Piston | Aluminium alloy | Chromated |
| 6 | Piston rod | Carbon steel* | Hard chrome plating* |
| 7 | Bushing | Bearing alloy | |
| 8 | Lock piston | Carbon steel | Hard chrome plating, Heat treated |
| 9 | Lock bushing | Copper alloy | |
| 10 | Lock spring | Stainless steel | |
| 11 | Bumper | Resin | |
| 12 | Hexagon socket head cap screw | Alloy steel | Black zinc chromated |
| 13A | Cap A | Aluminium die-casted | Black painted |
| 13B | Cap B | Carbon steel | Oxide film treated |
| 14 | Rubber cap | Synthetic rubber | |

Note) For cylinders with auto switches, the magnet is installed in the piston.
 * The material for $\varnothing 20, \varnothing 25$ cylinders with auto switches is made of stainless steel.

Replacement Parts: Seal Kit (With one end lock)

| Series | Bore size [mm] | Kit no. | Contents |
|---------------------------------|----------------|------------|--|
| CBG1□N Rubber bumper type | 20 | CBG1N20-PS | Set of the nos. (25, 26, 27, 28) and grease pack |
| | 25 | CBG1N25-PS | |
| | 32 | CBG1N32-PS | |
| | 40 | CBG1N40-PS | |

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

⚠ Caution

When disassembling cylinders with bore sizes of $\varnothing 20$ through $\varnothing 40$, grip the double flat part of either the tube 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 $\varnothing 50$ or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. If disassembly is required, please contact SMC.)

| No. | Description | Material | Note |
|-----|----------------------|-----------------|--|
| 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 | Resin | |
| 20 | Bumper B | Resin | $\varnothing 40$ or larger: Same as bumper A |
| 21 | Retaining ring | Stainless steel | Not available for $\varnothing 80, \varnothing 100$ |
| 22 | Piston gasket | NBR | |
| 23 | Wear ring | Resin | |
| 24 | Rod end nut | Carbon steel | Zinc chromated |
| 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 double end lock |
| 29 | Piston holder | Resin | $\varnothing 40$ to $\varnothing 100$, head end lock only |

Replacement Parts: Seal Kit (With double end lock)

| Series | Bore size [mm] | Kit no. | Contents |
|---------------------------------|----------------|--------------|--|
| CBG1□N Rubber bumper type | 20 | CBG1N20-PS-W | Set of the nos. (25, 26, 27, 28) and grease pack |
| | 25 | CBG1N25-PS-W | |
| | 32 | CBG1N32-PS-W | |
| | 40 | CBG1N40-PS-W | |

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

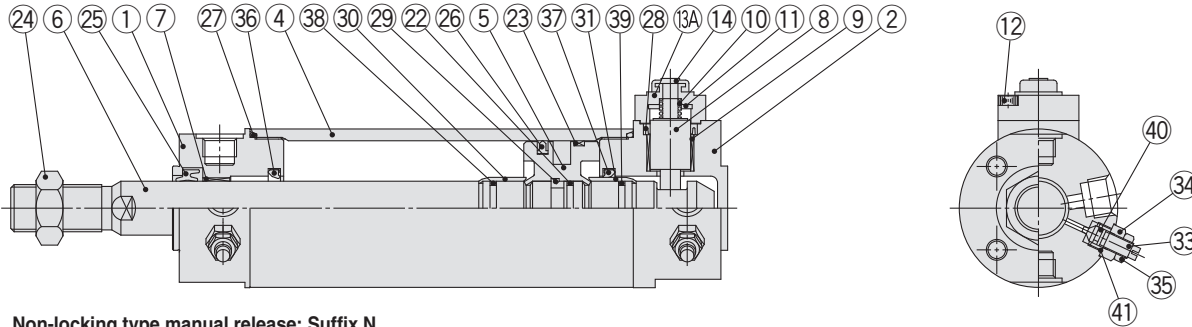
Double Acting, Single Rod **CG1**
 Standard Double Acting, Double Rod **CG1W**
 Single Acting, Spring Return/Extend **CG1**
 Non-rotating Rod Double Acting, Single Rod **CG1K**
 Double Acting, Double Rod **CG1KW**
 Direct Mount Double Acting, Single Rod **CG1R**
 Direct Mount, Non-rotating Rod **CG1KR**
 With End Lock **CBG1**
 Auto Switch
 Made to Order

Series CBG1

Construction: With Air Cushion

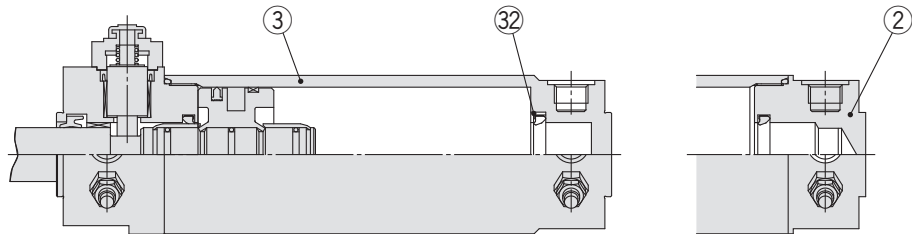
With air cushion

Head end lock



Non-locking type manual release: Suffix N

Rod end lock



Long stroke

Component Parts

| No. | Description | Material | Note |
|-----|-------------------------------|----------------------|-----------------------------------|
| 1 | Rod cover | Aluminium alloy | Hard anodised |
| 2 | Head cover | Aluminium alloy | Hard anodised |
| 3 | Tube cover | Aluminium alloy | Hard anodised |
| 4 | Cylinder tube | Aluminium alloy | Hard anodised |
| 5 | Piston | Aluminium alloy | Chromated |
| 6 | Piston rod | Carbon steel* | Hard chrome plating* |
| 7 | Bushing | Bearing alloy | |
| 8 | Lock piston | Carbon steel | Hard chrome plating, Heat treated |
| 9 | Lock bushing | Copper alloy | |
| 10 | Lock spring | Stainless steel | |
| 11 | Bumper | Resin | |
| 12 | Hexagon socket head cap screw | Alloy steel | Black zinc chromated |
| 13A | Cap A | Aluminium 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 |

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

* The material for $\phi 20$, $\phi 25$ cylinders with auto switches is made of stainless steel.

| No. | Description | Material | Note |
|-----|------------------------|-----------------|--|
| 22 | Piston gasket | NBR | |
| 23 | Wear ring | Resin | |
| 24 | Rod end nut | Carbon steel | Zinc chromated |
| 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 double end lock |
| 29 | Piston holder | Resin | $\phi 40$ to $\phi 100$ only |
| 30 | Cushion ring A | Aluminium alloy | Anodised |
| 31 | Cushion ring B | Aluminium alloy | Anodised |
| 32 | Seal retainer | Rolled steel | Only when using nickel plating, tube cover |
| 33 | Cushion valve | Rolled steel | Electroless nickel plating |
| 34 | Valve retainer | Rolled steel | Electroless nickel plating |
| 35 | Lock nut | Rolled steel | Nickel plating |
| 36 | Cushion seal A | Urethane | |
| 37 | Cushion seal B | Urethane | $\phi 32$ or larger: Same as A |
| 38 | Cushion ring gasket A | NBR | |
| 39 | Cushion ring gasket B | NBR | $\phi 32$ or larger: Same as A |
| 40 | Valve seal | NBR | |
| 41 | Valve retaining gasket | NBR | |

Replacement Parts: Seal Kit (With one end lock)

| Series | Bore size [mm] | Kit no. | Contents |
|-------------------------------|----------------|------------|---|
| CBG1□A Air cushion type | 20 | CBG1A20-PS | Set of the nos. 25, 26, 27, 28, 40, 41 and grease pack |
| | 25 | CBG1A25-PS | |
| | 32 | CBG1A32-PS | |
| | 40 | CBG1A40-PS | |

Order seal kit in accordance with the bore size.

* The seal kit includes a grease pack (10 g). Order with the following part number when only the grease pack is needed.

Grease pack part number: GR-S-010 (10 g)

Replacement Parts: Seal Kit (With double end lock)

| Series | Bore size [mm] | Kit no. | Contents |
|-------------------------------|----------------|--------------|---|
| CBG1□A Air cushion type | 20 | CBG1A20-PS-W | Set of the nos. 25, 26, 27, 28, 40, 41 and grease pack |
| | 25 | CBG1A25-PS-W | |
| | 32 | CBG1A32-PS-W | |
| | 40 | CBG1A40-PS-W | |

Order seal kit in accordance with the bore size.

* The seal kit includes a grease pack (10 g). Order with the following part number when only the grease pack is needed.

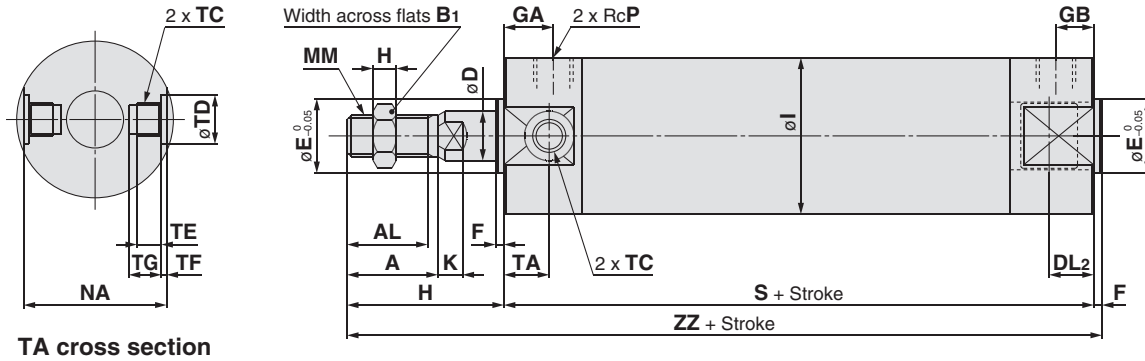
Grease pack part number: GR-S-010 (10 g)

⚠ Caution

When disassembling cylinders with bore sizes of $\phi 20$ through $\phi 40$, grip the double flat part of either the tube 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 $\phi 50$ or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. If disassembly is required, please contact SMC.)

Basic with Rubber Bumper: CBG1BN

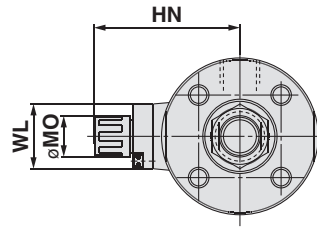
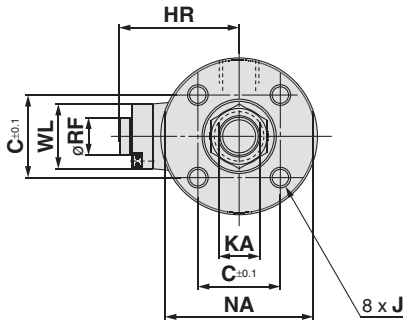
Head end lock: CBG1BN Bore size — Stroke — H□



TA cross section

Non-locking type manual release: Suffix N

Locking type manual release: Suffix L



| Bore size [mm] | Stroke range | A | AL | B ₁ | C | D | DL ₂ | E | F | GA | GB | H | H ₁ | 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 |

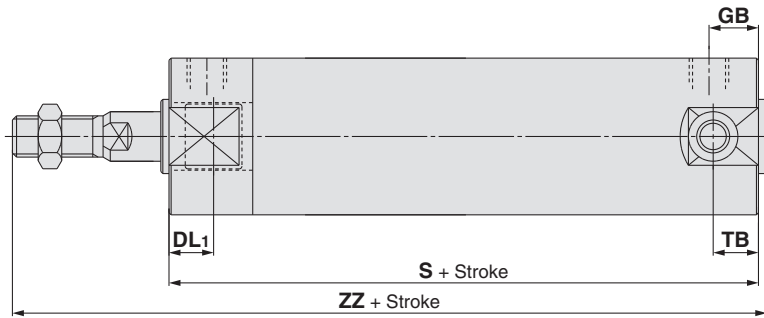
| Bore size [mm] | K | KA | MM | MO | NA | P | RF | S | TA | TC | TD | TE | TF | TG | WL | ZZ |
|----------------|-----|----|------------|----|------|-----|----|-----|----|------------|----------------|------|------|------|----|-----|
| 20 | 5 | 6 | M8 x 1.25 | 15 | 24 | 1/8 | 11 | 81 | 11 | M5 x 0.8 | $8^{+0.08}_0$ | 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 |

Double Acting, Single Rod **CG1**
 Double Acting, Double Rod **CG1W**
 Single Acting, Spring Return/Extend **CG1**
 Standard **CG1W**
 Non-rotating Rod **CG1K**
 Double Acting, Double Rod **CG1KW**
 Direct Mount **CG1R**
 Double Acting, Single Rod
 Direct Mount, Non-rotating Rod **CG1KR**
 With End Lock **CBG1**
 Auto Switch
 Made to Order

Series CBG1

Basic with Rubber Bumper: CBG1BN

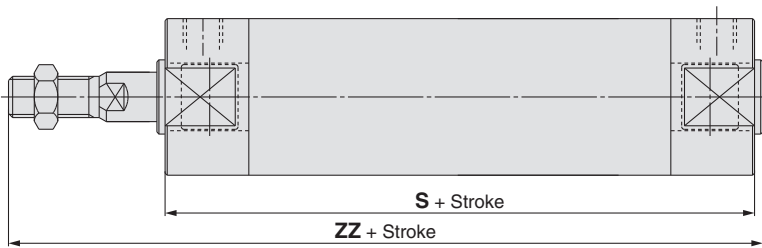
Rod end lock: CBG1BN — — R



| Bore size [mm] | DL1 | 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) |

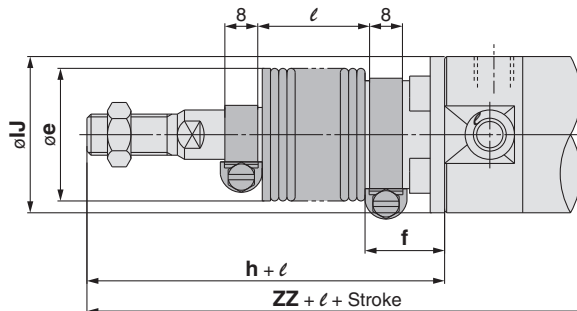
* (): Denotes the dimensions for long stroke.

Double end lock: CBG1BN — — W

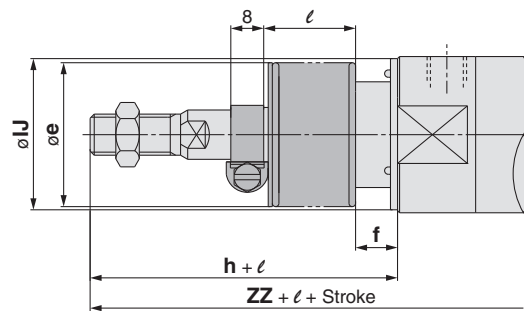


| Bore size [mm] | S | ZZ |
|----------------|-----|-----|
| 20 | 92 | 129 |
| 25 | 92 | 134 |
| 32 | 91 | 133 |
| 40 | 101 | 153 |
| 50 | 119 | 179 |
| 63 | 119 | 179 |
| 80 | 146 | 220 |
| 100 | 146 | 220 |

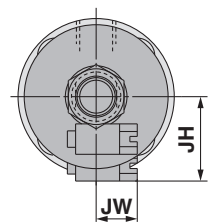
With rod boot



∅ 20 to ∅ 63



∅ 80, ∅ 100



| Bore size [mm] | e | f | h | IJ | JH (Reference) | JW (Reference) | l | Head end lock: -H <input type="text"/> | Rod end lock: -R <input type="text"/> | Double end lock: -W <input type="text"/> |
|----------------|----|----|----|----|----------------|----------------|------------|--|---------------------------------------|--|
| | | | | | | | | ZZ | ZZ | ZZ |
| 20 | 30 | 18 | 55 | 27 | 15.5 | 10.5 | 1/4 stroke | 138 | 137 (145) | 149 |
| 25 | 30 | 19 | 62 | 32 | 16.5 | 10.5 | | 145 | 144 (152) | 156 |
| 32 | 35 | 19 | 62 | 38 | 18.5 | 10.5 | | 145 | 145 (153) | 155 |
| 40 | 35 | 19 | 70 | 48 | 21.5 | 10.5 | | 164 | 159 (168) | 173 |
| 50 | 40 | 19 | 78 | 59 | 24 | 10.5 | | 187 | 182 (194) | 199 |
| 63 | 40 | 20 | 78 | 72 | 24 | 10.5 | | 187 | 182 (194) | 199 |
| 80 | 52 | 10 | 80 | 59 | — | — | | 213 | 207 (221) | 229 |
| 100 | 62 | 7 | 80 | 71 | — | — | | 213 | 207 (221) | 229 |

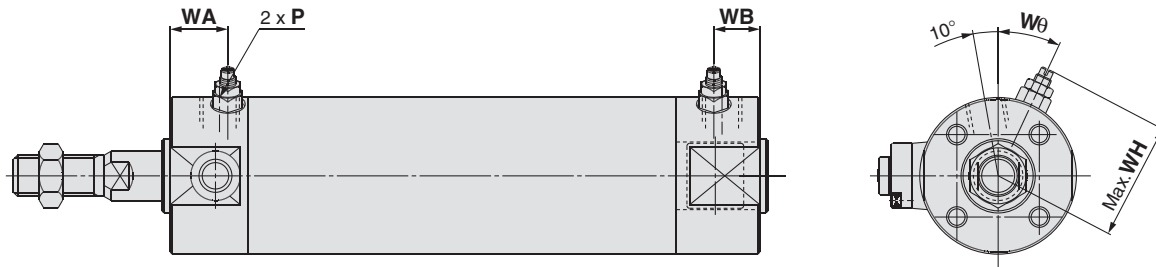
* (): Denotes the dimensions for long strokes.

** The minimum stroke with rod boot is 20 mm.

Basic with Air Cushion: CBG1BA

Head end lock: CBG1BA — — H

Rod end lock: CBG1BA — — R



Head End Lock: -H [mm]

| 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 | Rc1/8 | 16 | 16 | 28.5 | 25° |
| 40 | Rc1/8 | 16 | 16 | 33 | 20° |
| 50 | Rc1/4 | 18 | 18 | 40.5 | 20° |
| 63 | Rc1/4 | 18 | 18 | 47.5 | 20° |
| 80 | Rc3/8 | 22 | 22 | 60.5 | 20° |
| 100 | Rc1/2 | 22 | 22 | 71 | 20° |

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

Rod End Lock: -R [mm]

| 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 | Rc1/8 | 16 | 15 (16) | 28.5 | 25° |
| 40 | Rc1/8 | 16 | 15 (16) | 33 | 20° |
| 50 | Rc1/4 | 18 | 17 (18) | 40.5 | 20° |
| 63 | Rc1/4 | 18 | 17 (18) | 47.5 | 20° |
| 80 | Rc3/8 | 22 | 22 | 60.5 | 20° |
| 100 | Rc1/2 | 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 End Lock | CBG1 |
| Direct Mount | CG1R |
| Direct Mount, Non-rotating Rod | CG1KR |
| Non-rotating Rod | CG1K |
| Double Acting, Double Rod | CG1KW |
| Single Acting, Spring Return/Extend | CG1 |
| Standard | CG1W |
| Double Acting, Single Rod | CG1 |

Auto Switch

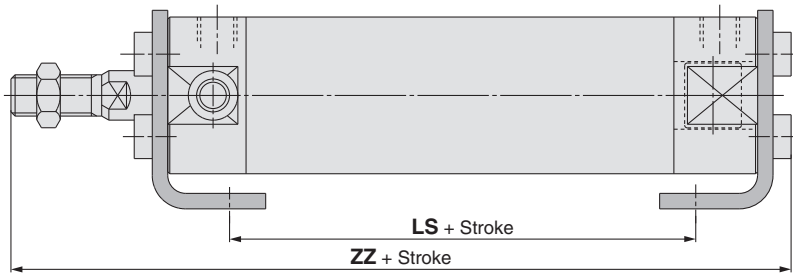
Made to Order

Series CBG1

With Mounting Bracket

(For dimensions other than listed below, refer to pages 60 to 62, 14 to 16.)

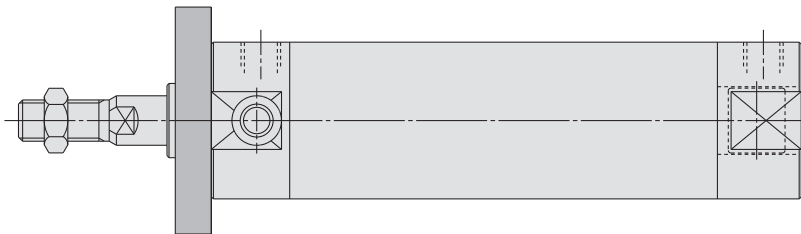
Axial foot: CBG1L□



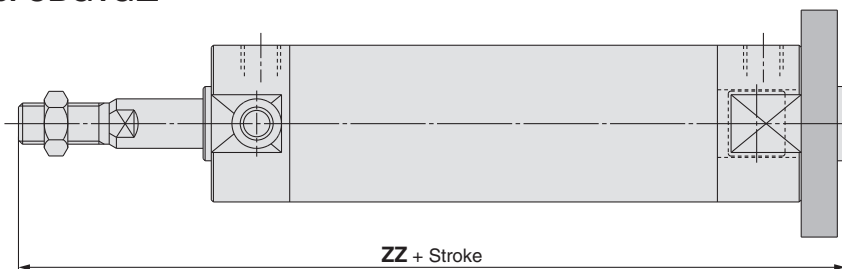
| Bore size [mm] | Head end lock: -H□ | | | Rod end lock: -R□ | | | Double end lock: -W□ | | |
|-------------------|--------------------|-------|------------------|-------------------|---------------|-------------------|----------------------|------------------|---------------|
| | LS | ZZ | | LS | ZZ | | LS | ZZ | |
| | | — | Without rod boot | | With rod boot | — | | Without rod boot | With rod boot |
| 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 flange: CBG1F□



Head flange: CBG1G□

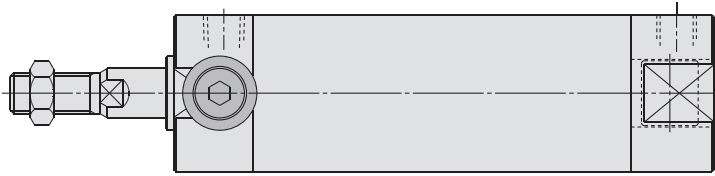


| Bore size [mm] | Head end lock: -H□ | | Rod end lock: -R□ | | Double end lock: -W□ | |
|-------------------|--------------------|---------------|-------------------|---------------|----------------------|---------------|
| | ZZ (Head flange) | | | | | |
| | Without rod boot | With rod boot | Without rod boot | With rod boot | Without rod boot | With rod boot |
| 20 | 124 | 144 + ℓ | 123 (131) | 143 (151) + ℓ | 135 | 155 + ℓ |
| 25 | 130 | 152 + ℓ | 129 (137) | 151 (159) + ℓ | 141 | 163 + ℓ |
| 32 | 130 | 152 + ℓ | 130 (138) | 152 (160) + 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 |

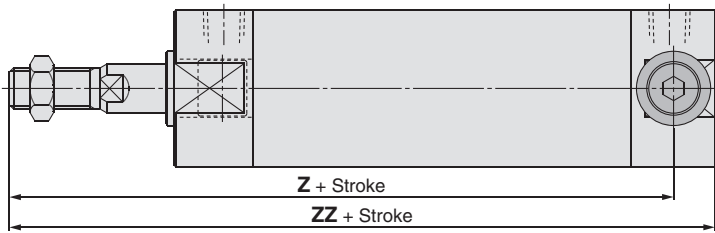
* (): Denotes the dimensions for long stroke.

With Mounting Bracket

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



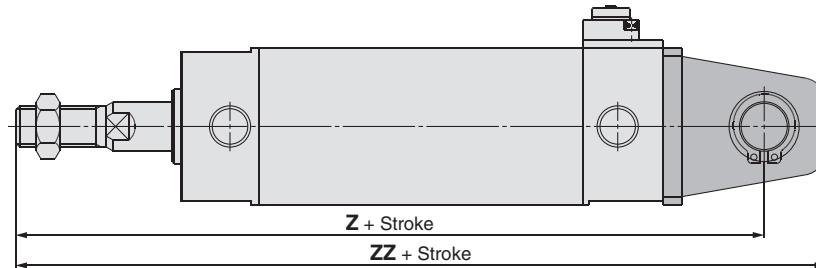
Head trunnion: CBG1T□
(Rod end lock -R□ only)



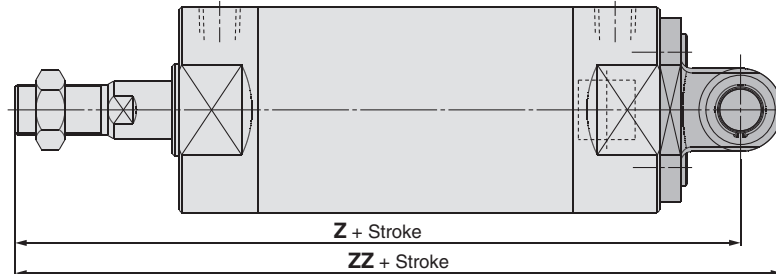
| Bore size [mm] | Rod end lock: -R□ | | | |
|----------------|-------------------|---------------|--------------------|---------------|
| | Z (Head trunnion) | | ZZ (Head trunnion) | |
| | Without rod boot | With rod boot | Without rod boot | With rod boot |
| 20 | 104 (112) | 124 (132) + ℓ | 117 (125) | 137 (145) + ℓ |
| 25 | 109 (117) | 131 (139) + ℓ | 122 (130) | 144 (152) + ℓ |
| 32 | 111 (119) | 133 (141) + ℓ | 123 (131) | 145 (153) + ℓ |
| 40 | 127 (134) | 147 (154) + ℓ | 139 (148) | 159 (168) + ℓ |
| 50 | 148 (159) | 168 (179) + ℓ | 162 (174) | 182 (194) + ℓ |
| 63 | 148 (159) | 168 (179) + ℓ | 162 (174) | 182 (194) + ℓ |

* () : Denotes the dimensions for long stroke.

Clevis: CBG1D□
ø 20 to ø 63



Clevis: CBG1D□
ø 80, ø 100



| 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 | 141 | 161 + ℓ | 129 (137) | 149 (157) + ℓ | 140 (148) | 160 (168) + ℓ |
| 25 | 137 | 159 + ℓ | 150 | 172 + ℓ | 136 (144) | 158 (166) + ℓ | 149 (157) | 171 (179) + ℓ |
| 32 | 141 | 163 + ℓ | 156 | 178 + ℓ | 141 (149) | 163 (171) + ℓ | 156 (164) | 178 (186) + ℓ |
| 40 | 164 | 184 + ℓ | 182 | 202 + ℓ | 159 (168) | 179 (188) + ℓ | 177 (186) | 197 (206) + ℓ |
| 50 | 190 | 210 + ℓ | 210 | 230 + ℓ | 185 (197) | 205 (217) + ℓ | 205 (217) | 225 (237) + ℓ |
| 63 | 195 | 215 + ℓ | 217 | 237 + ℓ | 190 (202) | 210 (222) + ℓ | 212 (224) | 232 (244) + ℓ |
| 80 | 236 | 245 + ℓ | 254 | 263 + ℓ | 230 (244) | 239 (253) + ℓ | 248 (262) | 257 (277) + ℓ |
| 100 | 244 | 253 + ℓ | 266 | 275 + ℓ | 238 (252) | 247 (261) + ℓ | 260 (274) | 269 (283) + 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 | 152 | 172 + ℓ |
| 25 | 148 | 170 + ℓ | 161 | 183 + ℓ |
| 32 | 151 | 173 + ℓ | 166 | 188 + ℓ |
| 40 | 173 | 193 + ℓ | 191 | 211 + ℓ |
| 50 | 202 | 222 + ℓ | 222 | 242 + ℓ |
| 63 | 207 | 227 + ℓ | 229 | 249 + ℓ |
| 80 | 252 | 261 + ℓ | 270 | 279 + ℓ |
| 100 | 260 | 269 + ℓ | 282 | 291 + ℓ |

* () : Denotes the dimensions for long stroke.

Double Acting, Single Rod **CG1**

Standard Double Acting, Double Rod **CG1W**

Single Acting, Spring Return/Extend **CG1**

Non-rotating Rod Double Acting, Single Rod **CG1K**

Double Acting, Double Rod **CG1KW**

Direct Mount Double Acting, Single Rod **CG1R**

Direct Mount, Non-rotating Rod **CG1KR**

With End Lock **CBG1**

Auto Switch

Made to Order



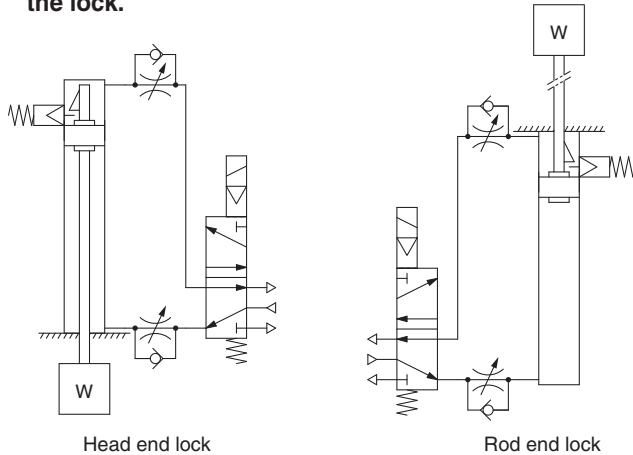
Series CBG1 Specific Product Precautions 1

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to “Handling Precautions for SMC Products” and the Operation Manual on SMC website, <http://www.smc.eu>

Use the Recommended Pneumatic Circuit

⚠ Caution

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



Handling

⚠ Caution

- 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.
- Back pressure is required when releasing the lock.**
Be sure air is supplied to the side of the cylinder without a lock mechanism, (side of the piston rod without lock for double end lock), before starting up, as in the above figures. Otherwise, the lock may not be released. (Refer to “Releasing the Lock”.)
- 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.
- 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.
- Do not operate multiple cylinders in synchronization.**
Avoid applications in which two or more cylinders with end lock are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.
- Use a speed controller with meter-out control.**
Lock cannot be released occasionally by meter-in control.
- 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.
- Do not use the air cylinder as an air-hydro cylinder.**
This may result in oil leak.
- Install a rod boot without twisting.**
If the cylinder is installed with its bellows twisted, it could damage the bellows.
- Adjust an auto switch position so that it operates for movement to both the stroke end and backlash (2 mm) positions.**
When a 2-colour 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.

Handling

⚠ Warning

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

Operating Pressure

⚠ Caution

1. Supply air pressure of 0.15 MPa or higher to the port on the lock mechanism side, as it is necessary for releasing the lock.

Exhaust Speed

⚠ Caution

1. The lock will be engaged 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 lock mechanism side is fully opened or closed, piston rod may not be 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 a 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

- Do not replace the bushings.**
The bushings are press-fit. To replace them, they must be replaced together with the cover assembly.
- 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.
- Cylinders with ϕ 50 or larger bore sizes cannot be disassembled.**
When disassembling cylinders with bore sizes of ϕ 20 through ϕ 40, grip the double flat part of either the tube 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 ϕ 50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. If disassembly is required, please contact SMC.)



Series CBG1

Specific Product Precautions 2

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smc.eu>

Manual Release

Caution

1. Non-locking type manual release

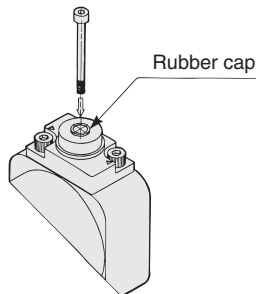
Insert the accessory bolt from the top of the rubber cap (it is not necessary to remove the rubber cap), and after screwing it into the lock piston, pull it to release the lock. If you stop pulling the bolt, the lock will return to an operational state.

Thread sizes, pulling forces and strokes are as shown below.

| Bore size [mm] | Thread size | Pulling force | Stroke [mm] |
|----------------|----------------------------|---------------|-------------|
| 20, 25, 32 | M2.5 x 0.45 x 25 L or more | 4.9 N | 2 |
| 40, 50, 63 | M3 x 0.5 x 30 L or more | 10 N | 3 |
| 80, 100 | M5 x 0.8 x 40 L or more | 24.5 N | 3 |

Remove the bolt for normal operation.

It can cause lock malfunction or faulty release.

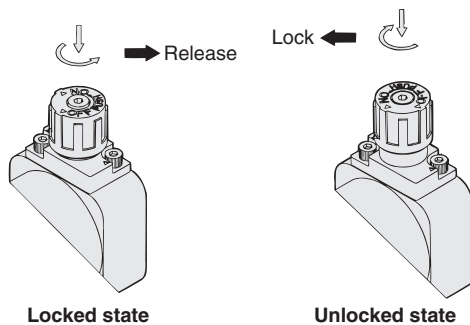


2. Locking type manual release

While pushing the M/O knob, turn it 90° counterclockwise. The lock is released (and remains in a released state) by aligning the ▲ mark on the cap with the ▼OFF mark on the M/O knob.

When locking is desired, turn the M/O knob 90° clockwise while pushing completely down, and align the ▲ mark on the cap with the ▼ON mark on the M/O knob. The correct position is confirmed by a clicking sound.

Failure to click it into place properly can cause the lock to disengage.

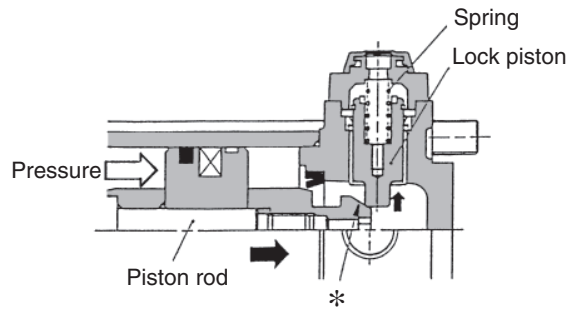


Working Principle

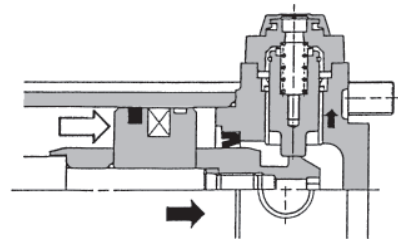
* The figures below are the same as those for Series CBA2.

●Head end lock (Rod end lock is the same.)

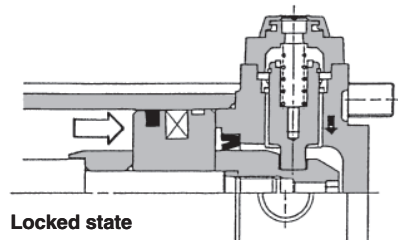
1. When the piston rod is getting closer to the stroke end, the taper part (*) of the piston rod edge will push the lock piston up.



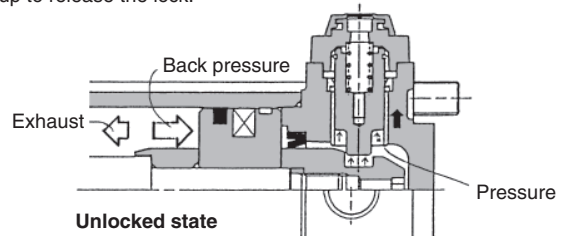
2. The lock piston is pushed up further.



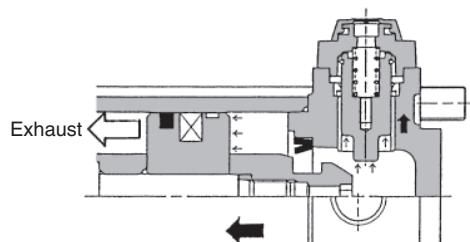
3. The lock piston is pushed up into the groove of the piston rod to lock it. (The lock piston is pushed up by spring force.) At this time, it is exhausted from the port on the head side and introduced into the atmosphere.



4. When pressure is supplied in the head side, lock piston will be pushed up to release the lock.



5. When the lock is released, the cylinder will move forward.



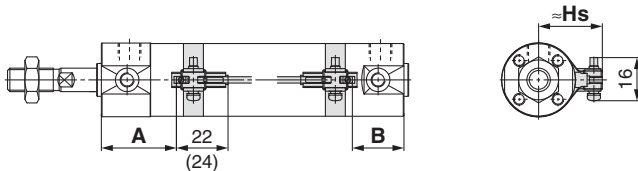
Double Acting, Single Rod CG1
 Double Acting, Double Rod CG1W
 Single Acting, Spring Return/Extend CG1
 Non-rotating Rod Double Acting, Single Rod CG1K
 Double Acting, Double Rod CG1KW
 Direct Mount Double Acting, Single Rod CG1R
 Direct Mount, Non-rotating Rod CG1KR
 With End Lock CBG1
 Auto Switch
 Made to Order

Series CG1

Auto Switch Mounting

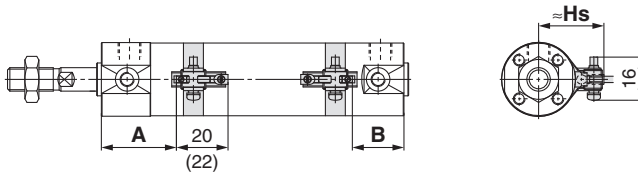
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Solid state auto switch
D-M9□/M9□W, D-M9□A
 ∅ 20 to ∅ 63



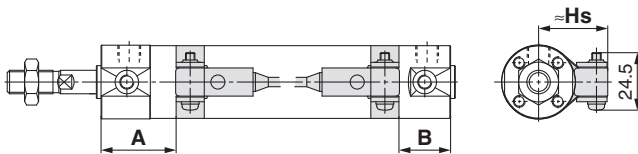
(): Dimension of the D-M9□A
 A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-M9□V/M9□WV, D-M9□AV
 ∅ 20 to ∅ 63

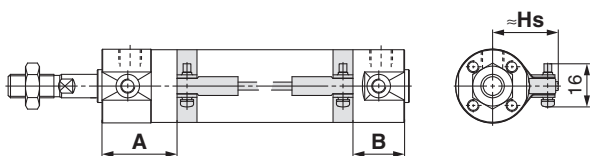


(): Dimension of the D-M9□AV
 A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

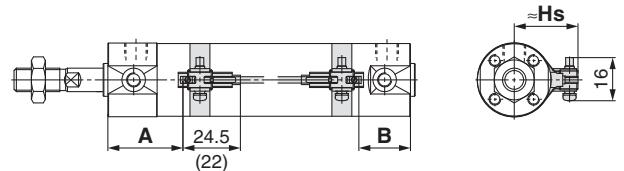
D-G5/K5/G5□W/G5BA
D-K59W, D-G59F, D-G5NT
 ∅ 20 to ∅ 100



D-H7□/H7□W
D-H7NF/H7BA/D-H7C
 ∅ 20 to ∅ 63

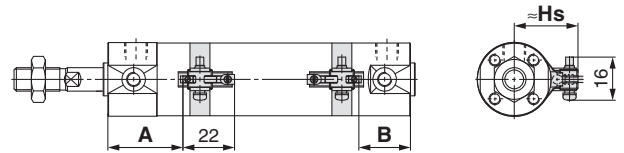


Reed auto switch
D-A9□
 ∅ 20 to ∅ 63



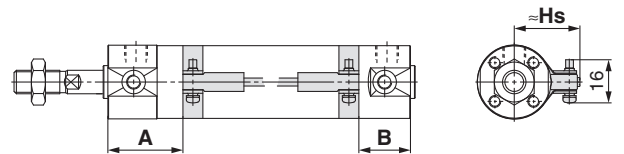
(): Dimension of the D-A9□
 A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-A9□V
 ∅ 20 to ∅ 63

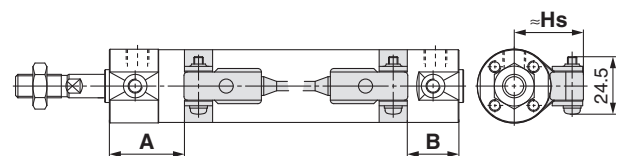


A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-C7/C8, D-C73C/C80C
 ∅ 20 to ∅ 63



D-B5/B6/B59W
 ∅ 20 to ∅ 100



Auto Switch Mounting Height

[mm]

| Auto switch model | 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 | |

With End Lock
CBG1
 Auto Switch
 Made to Order

Direct Mount, Non-rotating Rod
 Double Acting, Single Rod
CG1KR

Direct Mount, Double Rod
 Double Acting, Single Rod
CG1R

Non-rotating Rod
 Double Acting, Double Rod
CG1KW

Standard
 Double Acting, Double Rod
CG1W
 Single Acting, Spring Return/Extend
CG1

Double Acting, Single Rod
CG1

Series CG1

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 | 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□ D-C80 D-C73C D-C80C | 20 | 54.5 | 79.5 | 104.5 | — | 20.5 |
| | 25 | 54 | 79 | 104 | 129 | 21 |
| | 32 | 55.5 | 80.5 | 105.5 | 130.5 | 21.5 |
| | 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 |
| D-A9□(V) | 40 | 39 | 52 | 77 | 102 | 127 |
| | 20 | 29 | 45 | 70 | 95 | — |
| | 25 | 28.5 | 45.5 | 70.5 | 95.5 | 120.5 |
| | 32 | 30 | 46 | 71 | 96 | 121 |
| D-H7□ D-H7□W D-H7C D-H7BA D-H7NF | 40 | 35 | 48 | 73 | 98 | 123 |
| | 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 |
| D-C7□ D-C80 D-C73C D-C80C | 40 | 34.5 | 47.5 | 72.5 | 97.5 | 122.5 |
| | 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 |
| D-G5NT D-G59F | 40 | 35.5 | 48.5 | 73.5 | 98.5 | 123.5 |
| | 20 | 25 | 41 | 66 | 91 | — |
| | 25 | 24.5 | 41.5 | 66.5 | 91.5 | 116.5 |
| | 32 | 26 | 42 | 67 | 92 | 117 |
| D-B5□ D-B64 | 40 | 31 | 44 | 69 | 94 | 119 |
| | 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 |
| D-B59W | 40 | 29.5 | 42.5 | 67.5 | 92.5 | 117.5 |
| | 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 | 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 |
| Bore size | | | | | | | | | | | | | | |
| 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.

Standard
 Double Acting, Single Rod
CG1
 Double Acting, Double Rod
CG1W
 Single Acting, Spring Return/Extend
CG1
 Non-rotating Rod
 Double Acting, Single Rod
CG1K
 Double Acting, Double Rod
CG1KW
 Direct Mount
 Double Acting, Single Rod
CG1R
 Direct Mount, Non-rotating Rod
CG1KR
 With End Lock
CBG1
 Auto Switch
Made to Order

Series CG1

Auto Switch Proper Mounting Position (Detection at Stroke End)

With End Lock (CBG1)

[mm]

| Auto switch model | 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

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

Note 1) Auto switch mounting Note 3) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

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

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

Double Acting, Single Rod **CG1**

Standard **CG1W**

Double Acting, Double Rod

Single Acting, Spring Return/Extend **CG1**

Non-rotating Rod **CG1K**

Double Acting, Single Rod

Double Acting, Double Rod **CG1KW**

Direct Mount **CG1R**

Double Acting, Single Rod

Direct Mount, Non-rotating Rod **CG1KR**

With End Lock **CBG1**

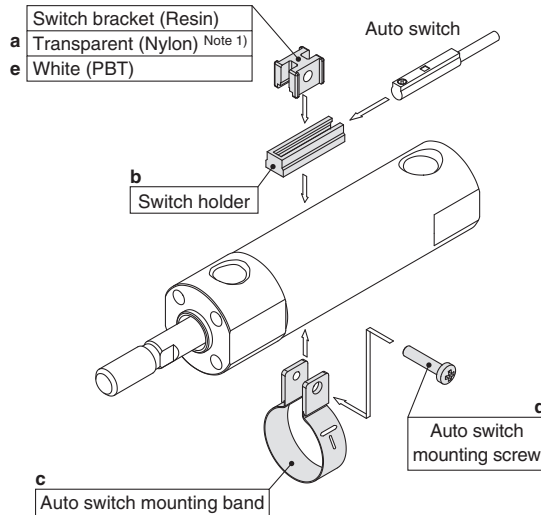
Auto Switch

Made to Order

Series CG1

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) | BMA3-020 (A set of a, b, c, d) | BMA3-025 (A set of a, b, c, d) | BMA3-032 (A set of a, b, c, d) | BMA3-040 (A set of a, b, c, d) | BMA3-050 (A set of a, b, c, d) | BMA3-063 (A set of a, b, c, d) | — | — |
| D-M9□A(V) ^{Note 2)} | BMA3-020S (A set of b, c, d, e) | BMA3-025S (A set of b, c, d, e) | BMA3-032S (A set of b, c, d, e) | BMA3-040S (A set of b, c, d, e) | BMA3-050S (A set of b, c, d, e) | BMA3-063S (A set of b, c, d, e) | — | — |



* 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 band and screw) | BMA2-025A (A set of band and screw) | BMA2-032A (A set of band and screw) | BMA2-040A (A set of band and screw) | BMA2-050A (A set of band and screw) | BMA2-063A (A set of band and screw) | — | — |
| D-H7BA | BMA2-020AS (A set of band and screw) | BMA2-025AS (A set of band and screw) | BMA2-032AS (A set of band and screw) | BMA2-040AS (A set of band and screw) | BMA2-050AS (A set of band and screw) | BMA2-063AS (A set of band and screw) | — | — |
| D-G5□/K59 D-G5□W/K59W D-G5BA/G59F D-G5NT D-B5□/B64 D-B59W | BA-01 (A set of band and screw) | BA-02 (A set of band and screw) | BA-32 (A set of band and screw) | BA-04 (A set of band and screw) | BA-05 (A set of band and screw) | BA-06 (A set of band and screw) | BA-08 (A set of band and screw) | BA-10 (A set of band and screw) |

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) As the indicator LED is projected from the switch unit, indicator LED may be damaged if the switch bracket is fixed on the indicator LED.

Band Mounting Brackets Set Part No.

| Set part no. | Contents |
|---|---|
| BMA2-□□□A(S) * S: Stainless steel screw | · Auto switch mounting band (c) · Auto switch mounting screw (d) |
| 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 3) Refer to the **Auto Switch Guide** for details on the BBA3.







When the D-G5BA type auto switch is shipped independently, the BBA3 is attached.

Operating Range

| 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

| 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 | Port surface  | Port surface  | Port surface  |  |  |  |
| Auto switch type | | | | | | |
| 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 ø 80 and ø 100.

* 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 the **Auto Switch Guide** for the detailed specifications.

| Type | Model | Electrical entry | Features | Applicable bore size | |
|-------------|--------------------|-------------------|---|-------------------------|--------------|
| Solid state | D-H7A1, H7A2, H7B | Grommet (In-line) | — | ø 20 to ø 63 | |
| | D-H7NW, H7PW, H7BW | | Diagnostic indication (2-colour indication) | | |
| | D-H7BA | | Water resistant (2-colour indication) | | |
| | D-G5NT | | With timer | ø 20 to ø 100 | |
| Reed | D-C73, C76 | | — | Without indicator light | ø 20 to ø 63 |
| | D-C80 | | — | | |
| | D-B53 | | — | ø 20 to ø 100 | |

* With pre-wired connector is also available for solid state auto switches. For details, refer to the **Auto Switch Guide**.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to the **Auto Switch Guide**.

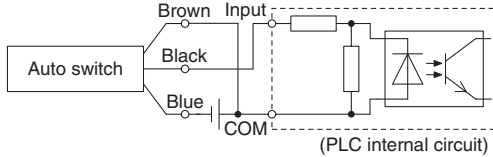
Standard
 Double Acting, Single Rod
CG1W
 Single Acting, Spring Return/Extend
CG1
 Non-rotating Rod
 Double Acting, Single Rod
CG1K
 Double Acting, Double Rod
CG1KW
 Direct Mount
 Double Acting, Single Rod
CG1R
 Direct Mount, Non-rotating Rod
CG1KR
 With End Lock
CBG1
 Auto Switch
Made to Order

Prior to Use

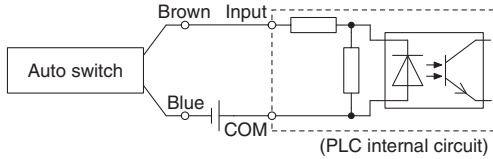
Auto Switch Connection and Example

Sink Input Specifications

3-wire, NPN

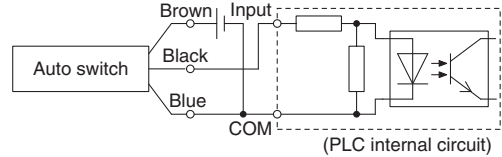


2-wire

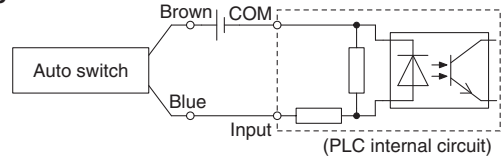


Source Input Specifications

3-wire, PNP



2-wire

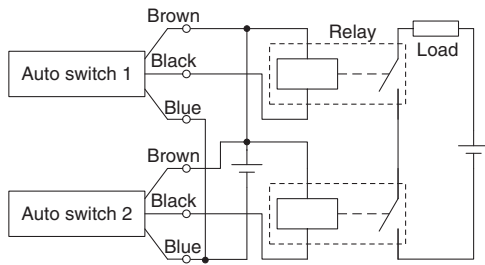


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

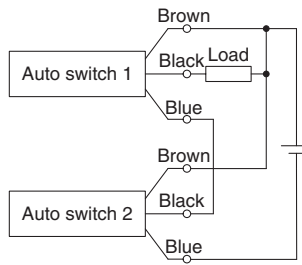
Example of AND (Series) and OR (Parallel) Connection

* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid.

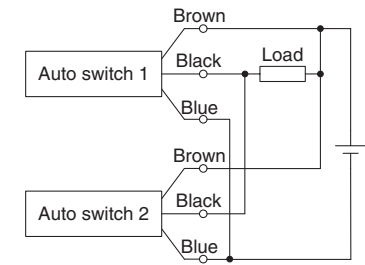
3-wire AND connection for NPN output (Using relays)



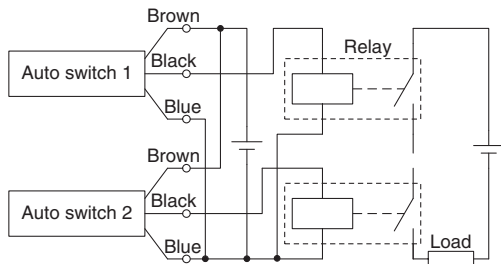
(Performed with auto switches only)



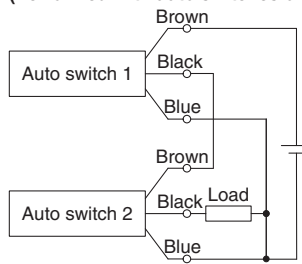
3-wire OR connection for NPN output



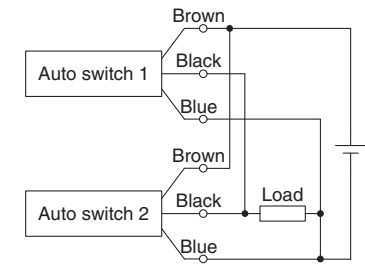
3-wire AND connection for PNP output (Using relays)



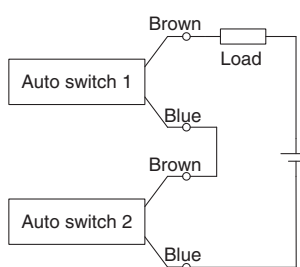
(Performed with auto switches only)



3-wire OR connection for PNP output



2-wire AND connection

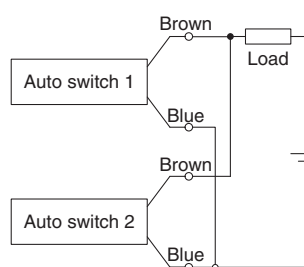


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with load voltage less than 20 V cannot be used.

$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \text{Residual voltage} \times 2 \text{ pcs.} \\ &= 24 \text{ V} - 4 \text{ V} \times 2 \text{ pcs.} \\ &= 16 \text{ V} \end{aligned}$$

Example: Power supply is 24 VDC
Internal voltage drop in auto switch is 4 V.

2-wire OR connection



(Solid state)
When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

(Reed)
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

$$\begin{aligned} \text{Load voltage at OFF} &= \text{Leakage current} \times 2 \text{ pcs.} \times \text{Load impedance} \\ &= 1 \text{ mA} \times 2 \text{ pcs.} \times 3 \text{ k}\Omega \\ &= 6 \text{ V} \end{aligned}$$

Example: Load impedance is 3 k Ω .
Leakage current from auto switch is 1 mA.

| | | | | | | | | | |
|----------------------|--------------------------------|---------------------------|---------------------------|-------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Made to Order | Auto Switch | | | | | | | | |
| With End Lock | CG1R | CG1KW | CG1K | CG1 | CG1W | CG1 | CG1 | CG1 | CG1 |
| | Direct Mount, Non-rotating Rod | Direct Mount | Non-rotating Rod | Single Acting, Spring Return/Extend | Standard | Standard | Standard | Standard | Standard |
| | Double Acting, Single Rod | Double Acting, Double Rod | Double Acting, Single Rod | Double Acting, Spring Return/Extend | Double Acting, Double Rod | Double Acting, Double Rod | Double Acting, Double Rod | Double Acting, Double Rod | Double Acting, Single Rod |

Series CG1

Simple Specials/Made to Order



Please contact SMC for detailed specifications, delivery and prices.

Simple Specials

The following special specifications can be ordered as a simplified Made-to-Order. There is a specification sheet available on paper and CD-ROM. Please contact your SMC sales representatives if necessary.

| Symbol | Specifications | CG1 (Standard type) | | | | |
|------------|-------------------------|------------------------|-----|------------|-----|---------------|
| | | Double acting | | | | Single acting |
| | | Single rod | | Double rod | | Single rod |
| | | Rubber | Air | Rubber | Air | Rubber |
| -XA0 to 30 | Change of rod end shape | ● | ● | ● | ● | |

Made to Order

| Symbol | Specifications | CG1 (Standard type) | | | | |
|--------|---|------------------------|-----|------------|-----|---------------|
| | | Double acting | | | | Single acting |
| | | Single rod | | Double rod | | Single rod |
| | | Rubber | Air | Rubber | Air | Rubber |
| -XB6 | Heat resistant cylinder (-10 to 150 °C) | ● | ● | ● | ● | |
| -XB7 | Cold resistant cylinder (-40 to 70 °C) | ● | | ● | | |
| -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 | ● | ● | ● | ● | ● Note 2) |
| -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 | ● | ● | ● | ● | |
| -XC27 | Double clevis and double knuckle joint pins made of stainless steel | ● | ● | | | ● |
| -XC29 | Double knuckle joint with spring pin | ● | ● | | | ● Note 2) |
| -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 | ● | ● | ● | ● | ● |
| -X446 | PTFE grease | ● | | | | |

Note 1) The shape is the same as the existing product. Use the existing seal kit.

Note 2) Single acting/spring return type (S) only

Simple Specials/Made to Order *Series CG1*

| CG1K (Non-rotating rod type) Double acting | | | CG1R (Direct mount type) Double acting | | CG1KR (Direct mount, Non-rotating rod type) Double acting | | CBG1 (With end lock) ^{Note 1)} Double acting | | Symbol | Page |
|--|-----|------------|--|-----|---|-----|---|-----|------------|---------------|
| Single rod | | Double rod | Single rod | | Single rod | | Single rod | | | |
| Rubber | Air | Rubber | Rubber | Air | Rubber | Air | Rubber | Air | | |
| ● | ● | | ● | ● | | | ● | ● | -XA1 to 30 | Page 79 |
| | | | | | | | | | | |
| | | | ● | ● | | | | | -XB6 | Page 81 |
| | | | ● | ● | | | | | -XB7 | Page 81 |
| | | | ● | ● | | | | | -XB9 | Page 81 |
| | | | ● | ● | | | | | -XB13 | Page 82 |
| | | | ● | ● | | | | | -XC4 | Page 82 |
| | | | ● | ● | | | | | -XC6 | Page 82 |
| ● | | | ● | ● | | | ● | | -XC8 | Page 83 |
| ● | | | ● | ● | | | ● | | -XC9 | Page 84 |
| ● | | | ● | ● | | | | | -XC10 | Page 85 |
| ● | | | ● | ● | | | | | -XC11 | Page 85, 86 |
| ● | | | ● | ● | | | | | -XC12 | Page 87 |
| ● | | | ● | ● | | | ● | ● | -XC13 | Page 87 to 89 |
| ● | | | ● | ● | | | ● | | -XC20 | Page 90 |
| ● | | | ● | ● | | | ● | | -XC22 | Page 90 |
| ● | | | ● | ● | | | | | -XC27 | Page 90 |
| ● | ● | | | ● | | | | | -XC29 | Page 91 |
| ● | ● | | | ● | | | | | -XC35 | Page 91 |
| ● | ● | | | ● | | | | | -XC37 | Page 91 |
| ● | ● | | | ● | | | | | -XC42 | Page 92 |
| | | | ● | ● | | | | | -XC85 | Page 93 |
| | | | ● | ● | | | | | -X446 | Page 93 |

| | | |
|------------------|-------------------------------------|-------|
| Standard | Double Acting, Single Rod | CG1 |
| | Double Acting, Double Rod | CG1W |
| | Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | Double Acting, Single Rod | CG1K |
| | Double Acting, Double Rod | CG1KW |
| Direct Mount | Double Acting, Single Rod | CG1R |
| | Double Acting, Single Rod | CG1KR |
| With End Lock | Double Acting, Single Rod | CBG1 |
| | Auto Switch | |
| | Made to Order | |

Series CG1 Simple Specials

These changes are dealt with Simple Specials System.

1 Change of Rod End Shape

Applicable Series

| Series | Action | Symbol for change of rod end shape | Note |
|-----------------------|--------|------------------------------------|------|
| Standard type | CG1 | Double acting, Single rod | *1 |
| | CG1W | Double acting, Double rod | |
| Non-rotating rod type | CG1K | Double acting, Single rod | *1 |
| Direct mount type | CG1R | Double acting, Single rod | *2 |
| With end lock | CBG1 | Double acting, Single rod | |

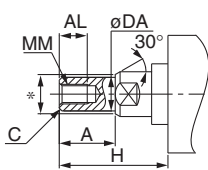
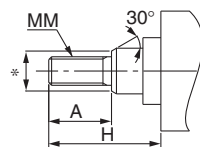
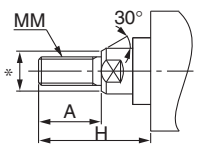
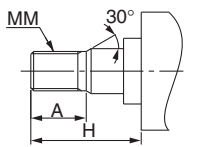
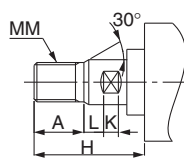
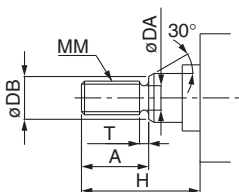
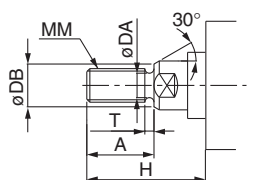
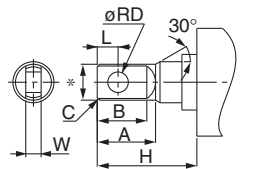
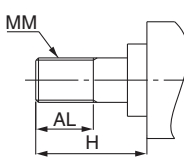
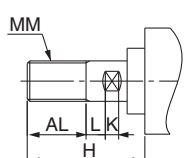
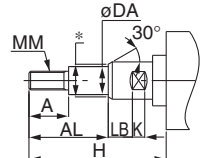
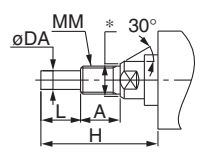
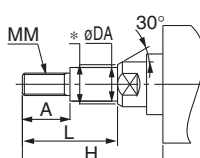
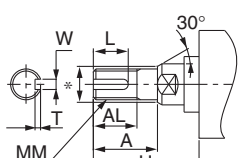
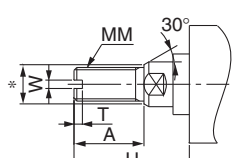
*1: Except rod end bracket, pivot bracket *2: Except pivot bracket

⚠ Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "*" will be as follows to the rod diameter (D). Enter any special dimension you desire.

- $$D \leq 6 \rightarrow D - 1 \text{ mm} \quad 6 < D \leq 25 \rightarrow D - 2 \text{ mm} \quad D > 25 \rightarrow D - 4 \text{ mm}$$
- In the case of double rod type and single acting retraction type, enter the dimensions when the rod is retracted.

| | | | |
|------------------------|------------------------|------------------------|------------------------|
| Symbol: A0 | Symbol: A1 | Symbol: A2 | Symbol: A3 |
| Symbol: A4 | Symbol: A5 | Symbol: A6 | Symbol: A7 |
| Symbol: A8 | Symbol: A9 | Symbol: A10 | Symbol: A11 |
| Symbol: A12 | Symbol: A13 | Symbol: A14 | Symbol: A15 |

| | | | |
|---|---|--|---|
| <p>Symbol: A16</p>  | <p>Symbol: A17</p>  | <p>Symbol: A18</p>  | <p>Symbol: A19</p>  |
| <p>Symbol: A20</p>  | <p>Symbol: A21</p>  | <p>Symbol: A22</p>  | <p>Symbol: A23</p>  |
| <p>Symbol: A24</p>  | <p>Symbol: A25</p>  | <p>Symbol: A26</p>  | <p>Symbol: A27</p>  |
| <p>Symbol: A28</p>  | <p>Symbol: A29</p>  | <p>Symbol: A30</p>  | |

| | | |
|--------------------------------|-------------------------------------|----------------------|
| Standard | Double Acting, Single Rod | CG1 |
| Standard | Double Acting, Double Rod | CG1W |
| Standard | Single Acting, Spring Return/Extend | CG1 |
| Non-rotating Rod | Double Acting, Single Rod | CG1K |
| Non-rotating Rod | Double Acting, Double Rod | CG1KW |
| Direct Mount | Double Acting, Single Rod | CG1R |
| Direct Mount, Non-rotating Rod | | CG1KR |
| With End Lock | | CBG1 |
| | | Auto Switch |
| | | Made to Order |

Series CG1

Made to Order

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



1 Heat Resistant Cylinder (−10 to 150 °C)

Symbol

-XB6

Air cylinder which changed the seal material and grease, so that it could be used even at higher temperature up to 150 from −10 °C.

Applicable Series

| Description | Model | Action | Note |
|-------------------|-------|---------------------------|---|
| Standard type | CG1 | Double acting, Single rod | Except with auto switch. Cylinders with rubber bumper have no bumper. |
| | CG1W | Double acting, Double rod | |
| Direct mount type | CG1R | Double acting, Single rod | |

- Note 1) Operate without lubrication from a pneumatic system lubricator.
 Note 2) Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.
 Note 3) In principle, it is impossible to make built-in magnet type and the one with auto switch. But, as for the one with auto switch, and the heat resistant cylinder with heat resistant auto switch, please contact SMC.
 Note 4) Piston speed is ranged from 50 to 500 mm/s.

How to Order

Standard model no. **- XB6**
 Heat resistant cylinder

Specifications

| | |
|--|-----------------------|
| Ambient temperature range | −10 °C to 150 °C |
| Seal material | Fluororubber |
| Grease | Heat resistant grease |
| Specifications other than above and external dimensions | Same as standard type |

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

2 Cold Resistant Cylinder (−40 to 70 °C)

Symbol

-XB7

Air cylinder which changed the seal material and grease, so that it could be used even at lower temperature down to −40 °C.

Applicable Series

| Description | Model | Action | Note |
|-------------------|-------|---------------------------|--|
| Standard type | CG1 | Double acting, Single rod | Except with air cushion and auto switch, rod end bracket, pivot bracket. Cylinders with rubber bumper have no bumper. Except with rod boot and with air cushion. |
| | CG1W | Double acting, Double rod | |
| Direct mount type | CG1R | Double acting, Single rod | Except with air cushion and with auto switch. Cylinders with rubber bumper have no bumper. |

- Note 1) Operate without lubrication from a pneumatic system lubricator.
 Note 2) Use dry air which is suitable for heatless air dryer etc. not to cause the moisture to be frozen.
 Note 3) Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.
 Note 4) Mounting auto switch is impossible.
 Note 5) Without a bumper.
 Piston speed is ranged from 50 to 500 mm/s.

How to Order

Standard model no. **- XB7**
 Cold resistant cylinder

Specifications

| | |
|----------------------------------|-----------------------|
| Ambient temperature range | −40 °C to 70 °C |
| Seal material | Low nitrile rubber |
| Grease | Cold resistant grease |
| Auto switch | Not mountable |
| Dimensions | Same as standard type |
| Additional specifications | Same as standard type |

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

3 Low Speed Cylinder (10 to 50 mm/s)

Symbol

-XB9

Even if driving at lower speeds 10 to 50 mm/s, there would be no stick-slip phenomenon and it can run smoothly.

Applicable Series

| Description | Model | Action | Note |
|-------------------|-------|---------------------------|---|
| Standard type | CG1 | Double acting, Single rod | Except with rod boot and with air cushion |
| Direct mount type | CG1R | Double acting, Single rod | Except with air cushion |

Note) Operate without lubrication from a pneumatic system lubricator.

How to Order

Standard model no. **- XB9**
 Low speed cylinder

Specifications

| | |
|----------------------------------|-----------------------|
| Piston speed | 10 to 50 mm/s |
| Dimensions | Same as standard type |
| Additional specifications | Same as standard type |

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

4 Low Speed Cylinder (5 to 50 mm/s)

Symbol
-XB13

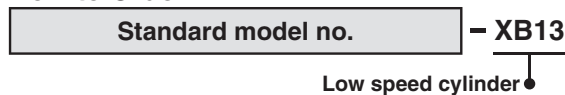
Even if driving at lower speeds 5 to 50 mm/s, there would be no stick-slip phenomenon and it can run smoothly.

Applicable Series

| Description | Model | Action | Note |
|-------------------|-------|---------------------------|---|
| Standard type | CG1 | Double acting, Single rod | Except with rod boot and with air cushion |
| Direct mount type | CG1R | Double acting, Single rod | Except with air cushion |

Note 1) Operate without lubrication from a pneumatic system lubricator.
Note 2) For speed adjustment, use speed controllers for controlling at lower speeds. (Series AS-FM/AS-M)

How to Order



Specifications

| | |
|---------------------------|-----------------------|
| Piston speed | 5 to 50 mm/s |
| Dimensions | Same as standard type |
| Additional specifications | Same as standard type |

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

5 With Heavy Duty Scraper

Symbol
-XC4

It is suitable for using cylinders under the environment, where there are much dusts in a surrounding area by using a heavy duty scraper on the wiper ring, or using cylinders under earth and sand exposed to the die-casted equipment, construction machinery, or industrial vehicles.

Applicable Series

| Description | Model | Action | Note |
|---------------|-------|---------------------------|-------------------|
| Standard type | CG1 | Double acting, Single rod | ø 32 to ø 63 only |

How to Order



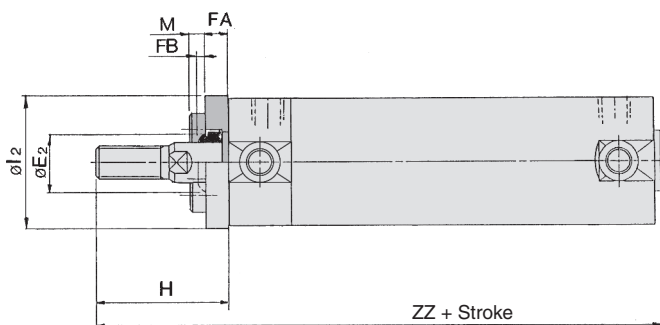
Specifications: Same as standard type

Caution

Do not replace heavy duty scrapers.

• Since heavy duty scrapers are press-fit, they must be replaced together with the scraper bracket.

Dimensions



| Bore size | E ₂ | FA | FB | M | l ₂ | H | | ZZ | |
|-----------|----------------|----|----|-----|----------------|-------------|---------------|-------------|---------------|
| | | | | | | Male thread | Female thread | Male thread | Female thread |
| 32 | 17 | 8 | 3 | 5 | 38 | 48 | 28 | 121 | 101 |
| 40 | 21 | 8 | 3 | 3.5 | 47 | 58 | 29 | 138 | 109 |
| 50 | 26 | 9 | 3 | 4.5 | 58 | 66 | 30 | 158 | 122 |
| 63 | 26 | 9 | 3 | 5.5 | 72 | 66 | 30 | 158 | 122 |

Long Stroke

* Other dimensions are the same as double acting, single rod, standard type.

* On the axial foot and the rod flange types, the mounting bracket is wedged and bolted between the cylinder and the scraper at the time of shipment. On other types, it is placed in the same package, (but not assembled).

| ZZ | |
|-------------|---------------|
| Male thread | Female thread |
| 129 | 109 |
| 147 | 118 |
| 170 | 134 |
| 170 | 134 |

6 Made of Stainless Steel

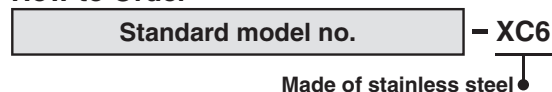
Symbol
-XC6

Suitable for the cases it is likely to generate rust by being immersed in the water and corrosion.

Applicable Series

| Description | Model | Action | Note |
|-------------------|-------|-------------------------------|------|
| Standard type | CG1 | Double acting, Single rod | |
| | | Single acting (Spring return) | |
| | CG1W | Double acting, Double rod | |
| Direct mount type | CG1R | Double acting, Single rod | |
| Smooth Cylinder | CG1Y | Double acting, Single rod | |

How to Order



Specifications

| | |
|---|-------------------------|
| Parts changed to stainless steel | Piston rod, Rod end nut |
| Specifications other than above and external dimensions | Same as standard type |

Standard Double Acting, Single Rod CG1
Standard Double Acting, Double Rod CG1W
Standard Single Acting, Spring Return/Extend CG1
Non-rotating Rod Double Acting, Single Rod CG1K
Non-rotating Rod Double Acting, Double Rod CG1KW
Direct Mount Double Acting, Single Rod CG1R
Direct Mount, Non-rotating Rod Double Acting, Single Rod CG1KR
With End Lock CBG1
Auto Switch
Made to Order

7 Adjustable Stroke Cylinder/Adjustable Extension Type

It adjusts the extending stroke by the stroke adjustable mechanism equipped in the head side.

Applicable Series

| Description | Model | Action | Note |
|-------------------------------------|-------|---------------|---------------------------|
| Standard type | CG1 | Double acting | |
| Non-rotating rod type | CG1K | Double acting | Except with air cushion |
| Direct mount type | CG1R | Double acting | Except with air cushion |
| Direct mount, Non-rotating rod type | CG1KR | Double acting | Except with air cushion*1 |

*1 The shape is the same as the existing product. Use the existing seal kit.

Specifications

| Stroke adjustment symbol | A | B |
|-------------------------------------|-----------------------|---------|
| Stroke adjustment range [mm] | 0 to 25 | 0 to 50 |
| Additional specifications | Same as standard type | |

How to Order

CG1 [Mounting style] [Type] [Bore size] - [Stroke] [Stroke adjustment symbol] Z - [Pivot bracket] [Rod end bracket] - **XC8**

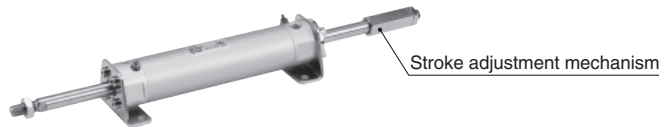
* Except head flange and clevis types

CG1KR [Mounting style] [Type] [Bore size] - [Stroke] [Stroke adjustment symbol] - **XC8**

● Adjustable stroke cylinder/Adjustable extension type

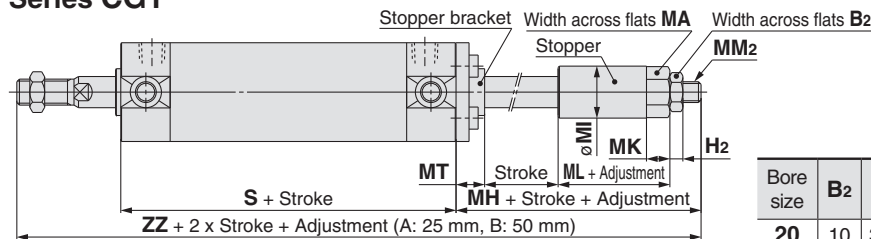
Warning Precautions

- When the cylinder is operating, if something gets caught between the stopper bracket for adjusting the stroke and the cylinder body, it could cause bodily injury or damage the peripheral equipment. Therefore, take preventive measures as necessary, such as installing a protective cover.
- To adjust the stroke, make sure to secure the wrench flats of the stopper bracket by a wrench etc. before loosening the lock nut. If the lock nut is loosened without securing the stopper bracket, be aware that the area that joins the load to the piston rod or the area in which the piston rod is joined with the load side and the stopper bracket side could loosen first. It may cause an accident or malfunction.



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

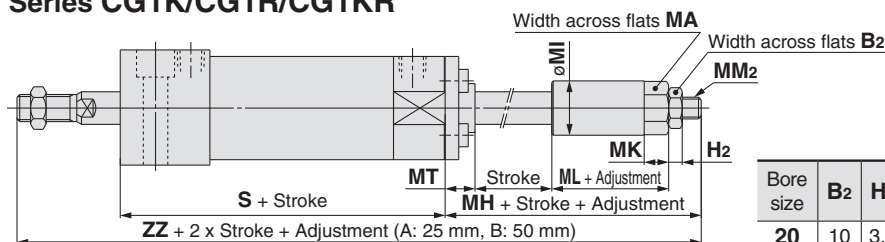
Series CG1



| Bore size | B2 | H2 | MA | MH | MI | MK | ML | MM2 | MT | S | ZZ |
|-----------|----|-----|----|----|----|----|----|------------|----|-----|-----|
| 20 | 10 | 3.6 | 12 | 38 | 14 | 7 | 18 | M6 x 1 | 9 | 77 | 150 |
| 25 | 13 | 5 | 17 | 41 | 20 | 9 | 18 | M8 x 1.25 | 11 | 77 | 158 |
| 32 | 13 | 5 | 17 | 41 | 20 | 9 | 18 | M8 x 1.25 | 11 | 79 | 160 |
| 40 | 17 | 6 | 19 | 47 | 25 | 10 | 24 | M10 x 1.25 | 11 | 87 | 184 |
| 50 | 19 | 8 | 24 | 60 | 32 | 13 | 32 | M14 x 1.5 | 11 | 102 | 220 |
| 63 | 19 | 8 | 24 | 60 | 32 | 13 | 32 | M14 x 1.5 | 13 | 102 | 220 |

* On the axial foot type, the foot is wedged and bolted between the cylinder and the stopper bracket at the time of shipment. On other types, it is placed in the same package, (but not assembled).

Series CG1K/CG1R/CG1KR



| Bore size | B2 | H2 | MA | MH | MI | MK | ML | MM2 | MT | S | ZZ |
|-----------|----|-----|----|----|----|----|----|------------|----|-----|-----|
| 20 | 10 | 3.6 | 12 | 38 | 14 | 7 | 18 | M6 x 1 | 9 | 83 | 148 |
| 25 | 13 | 5 | 17 | 41 | 20 | 9 | 18 | M8 x 1.25 | 11 | 85 | 158 |
| 32 | 13 | 5 | 17 | 41 | 20 | 9 | 18 | M8 x 1.25 | 11 | 91 | 164 |
| 40 | 17 | 6 | 19 | 47 | 25 | 10 | 24 | M10 x 1.25 | 11 | 103 | 189 |
| 50 | 19 | 8 | 24 | 60 | 32 | 13 | 32 | M14 x 1.5 | 11 | 120 | 225 |
| 63 | 19 | 8 | 24 | 60 | 32 | 13 | 32 | M14 x 1.5 | 13 | 126 | 231 |

8 Adjustable Stroke Cylinder/Adjustable Retraction Type

Symbol
-XC9

The retracting stroke of the cylinder can be adjusted by the adjustment bolt.

Applicable Series

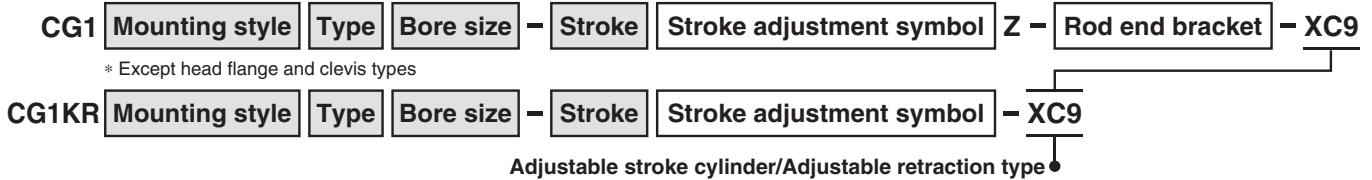
| Description | Model | Action | Note |
|-------------------------------------|-------|---------------------------|--|
| Standard type | CG1 | Double acting, Single rod | Except head flange and clevis types |
| Non-rotating rod type | CG1K | Double acting, Single rod | Except head flange and clevis types and with air cushion |
| Direct mount type | CG1R | Double acting, Single rod | Except with air cushion |
| Direct mount, Non-rotating rod type | CG1KR | Double acting | Except with air cushion*1 |

*1 The shape is the same as the existing product. Use the existing seal kit.

Specifications

| Stroke adjustment symbol | A | B |
|-------------------------------------|-----------------------|---------|
| Stroke adjustment range [mm] | 0 to 25 | 0 to 50 |
| Additional specifications | Same as standard type | |

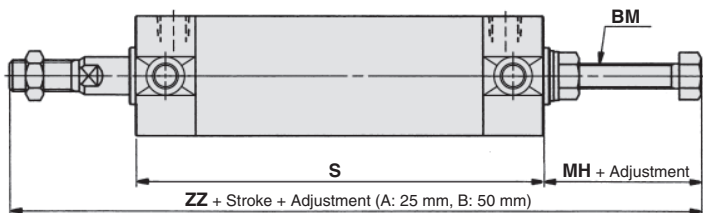
How to Order



Warning Precautions

- When air is supplied to the cylinder, if the stroke adjustment bolt is loosened in excess of the allowable stroke adjustment amount, be aware that the stroke adjustment bolt could fly out or air could be discharged, which could injure personnel or damage the peripheral equipment.
- Adjust the stroke when the cylinder is not pressurised. If it is adjusted in the pressurised state, the seal of the adjustment section could become deformed, leading to air leakage.

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



| Bore size | BM | S | Rubber bumper | | Air cushion | |
|-----------|------------|-----|---------------|-----|-------------|-----|
| | | | MH | ZZ | MH | ZZ |
| 20 | M6 x 1 | 77 | 23 | 135 | 21 | 133 |
| 25 | M6 x 1 | 77 | 23 | 140 | 21 | 138 |
| 32 | M8 x 1.25 | 79 | 25 | 144 | 25 | 144 |
| 40 | M12 x 1.75 | 87 | 40 | 177 | 39 | 176 |
| 50 | M12 x 1.75 | 102 | 33 | 193 | 37 | 197 |
| 63 | M16 x 2 | 102 | 40 | 200 | 44 | 204 |

* In the case of axial foot type, it is assembled at the time of shipment. On other types, it is placed in the same package, (but not assembled).

* Dimensions other than above are the same as those for the CG1 series, long stroke type.

Standard Double Acting, Single Rod CG1
Standard Double Acting, Double Rod CG1W
Standard Single Acting, Spring Return/Extend CG1
Non-rotating Rod Double Acting, Single Rod CG1K
Non-rotating Rod Double Acting, Double Rod CG1KW
Direct Mount Double Acting, Single Rod CG1R
Direct Mount Double Acting, Double Rod CG1RW
Direct Mount, Non-rotating Rod Double Acting, Single Rod CG1KR
Direct Mount, Non-rotating Rod Double Acting, Double Rod CG1KRW
With End Lock CBG1
Auto Switch

9 Dual Stroke Cylinder/Double Rod Type

Two cylinders are constructed as one cylinder in a back-to-back configuration allowing the cylinder stroke to be controlled in three steps.

Applicable Series

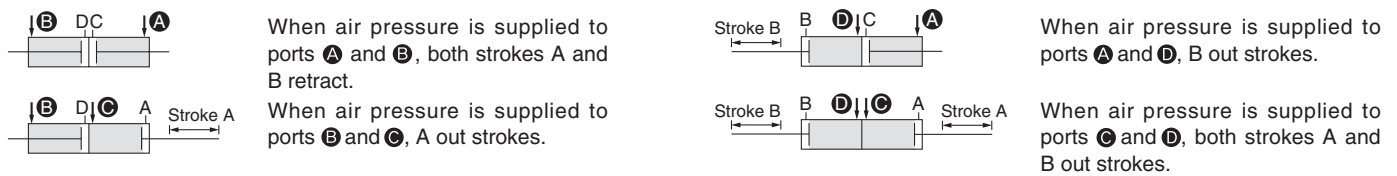
| Description | Model | Action | Note |
|-----------------------|-------|---------------------------|---------------------------------------|
| Standard type | CG1 | Double acting, Single rod | Except rod end bracket, pivot bracket |
| Non-rotating rod type | CG1K | Double acting, Single rod | Except rod end bracket, pivot bracket |



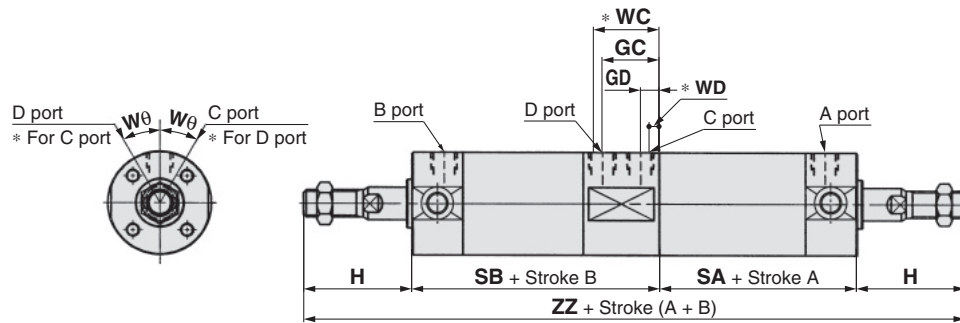
How to Order

CG1 **Mounting style** **Type** **Bore size** - **Stroke A** + **Stroke B** **Suffix** **Z** - **XC10**
 Dual stroke cylinder/Double rod type

Function



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



| Bore size | GC | GD | H | SA | SB | W θ | Air cushion | | ZZ |
|-----------|-----------|---------|----|-----------|-----------|------------|-------------|-----|-----|
| | | | | | | | WC | WD | |
| 20 | 20.5 (21) | 8.5 (9) | 35 | 56.5 (56) | 85.5 (86) | 30° | (25) | (5) | 212 |
| 25 | 21 (21.5) | 9 (8.5) | 40 | 56 | 86 | 30° | (25) | (5) | 222 |
| 32 | 23 | 9 | 40 | 58 | 90 | 30° | (27) | (5) | 228 |
| 40 | 23.5 (25) | 7.5 (9) | 50 | 66.5 (65) | 97.5 (99) | 20° | (29) | (5) | 264 |
| 50 | 29 | 13 | 58 | 75 | 117 | 20° | (33) | (9) | 308 |
| 63 | 28 | 12 | 58 | 76 | 116 (116) | 20° | (32) | (8) | 308 |

* (): With air cushion

10 Dual Stroke Cylinder/Single Rod Type

Two cylinders can be integrated by connecting them in line, and the cylinder stroke can be controlled in two stages in both directions.

Applicable Series

| Description | Model | Action | Note |
|-----------------------|-------|---------------------------|-------------------------|
| Standard type | CG1 | Double acting, Single rod | |
| Non-rotating rod type | CG1K | Double acting, Single rod | Except with air cushion |

Specifications: Same as standard type

* Please contact SMC for each manufacturable stroke length.

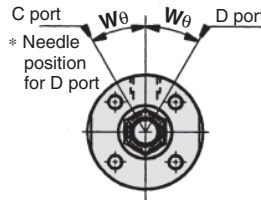
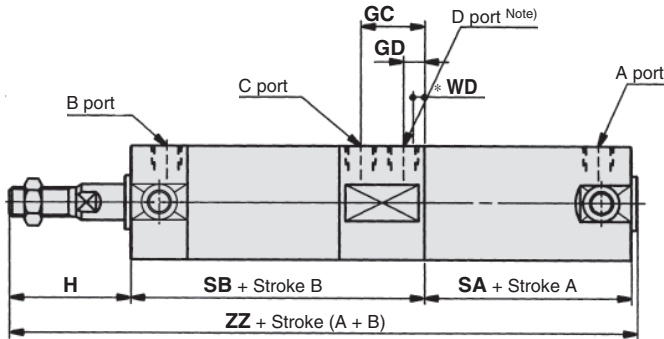
How to Order

CG1 **Mounting style** **Type** **Bore size** - **Stroke A** + **Stroke B-A** **Suffix** **Z** - **Pivot bracket** **Rod end bracket** - **XC11**
 CG1K **Mounting style** **Type** **Bore size** - **Stroke A** + **Stroke B-A** **Suffix** - **XC11**
 Dual stroke cylinder/Single rod type

10 Dual Stroke Cylinder/Single Rod Type

Symbol
-XC11

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



Note) D port style Type N: Rubber bumper, Plug with fixed orifice;
Type A: Air cushion, element non-installation (Release to atmospheric pressure)

CG1, CG1K

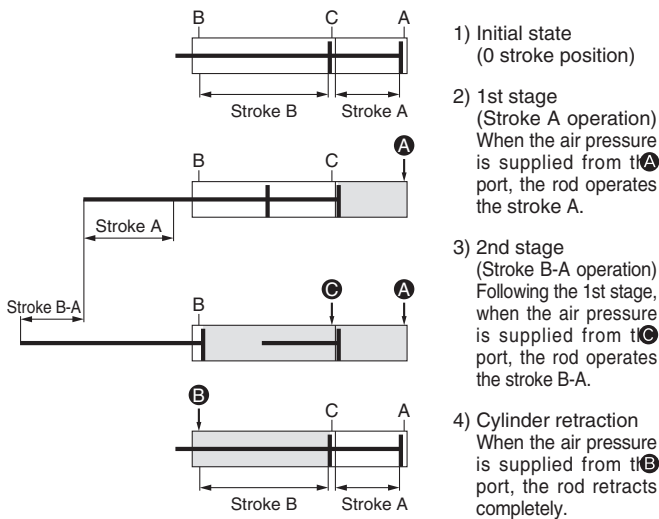
[mm]

| Bore size | GC | GD | H | SA | SB | W _θ | ZZ | Air cushion Long stroke ^{Note)} | | |
|-----------|-----------|---------|----|----|-----|----------------|-----|--|----|-----|
| | | | | | | | | WD | SA | ZZ |
| 20 | 21 | 9 | 35 | 48 | 87 | 30° | 172 | 5 | 56 | 180 |
| 25 | 21 (21.5) | 9 (8.5) | 40 | 48 | 87 | 30° | 177 | 6.5 | 56 | 185 |
| 32 | 23 | 9 | 40 | 50 | 91 | 30° | 183 | 5 | 58 | 191 |
| 40 | 25 | 9 | 50 | 56 | 100 | 20° | 208 | 5 | 65 | 217 |
| 50 | 29 | 13 | 58 | 63 | 118 | 20° | 241 | 9 | 75 | 253 |
| 63 | 28 | 12 | 58 | 64 | 117 | 20° | 241 | 8 | 76 | 253 |

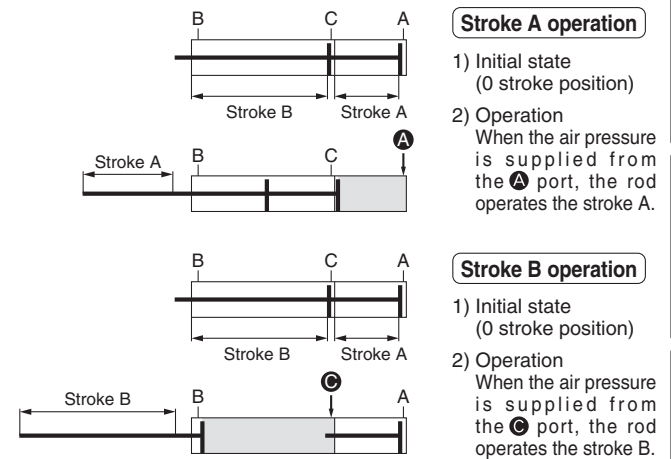
* () : With air cushion

Note) When the stroke A is a long stroke (ø 20: 201 mm or more, ø 25 to ø 63: 301 mm or more)

Functional description of dual stroke cylinder



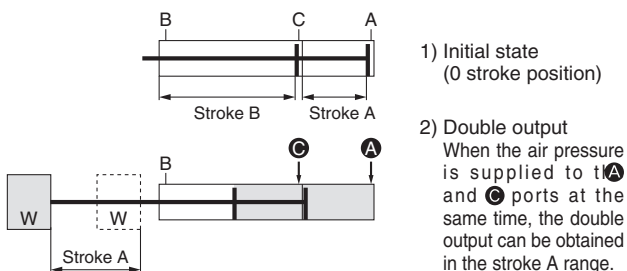
Stroke A or stroke B operation can be made individually.



Caution Precautions

1. Do not supply air until the cylinder is fixed with the attached bolt.
2. If air is supplied without securing the cylinder, the cylinder could lurch, posing the risk of bodily injury or damage to the peripheral equipment.

Double output is possible.



Double Acting, Single Rod **CG1**
Double Acting, Double Rod **CG1W**
Single Acting, Spring Return/Extend **CG1**
Non-rotating Rod Double Acting, Single Rod **CG1K**
Double Acting, Double Rod **CG1KW**
Direct Mount Double Acting, Single Rod **CG1R**
Direct Mount, Non-rotating Rod **CG1KR**
With End Lock **CBG1**
Auto Switch

Made to Order

11 Tandem Cylinder

This is a cylinder produced with two air cylinders in line allowing double the output force.

Applicable Series

| Description | Model | Action | Note |
|-----------------------|-------|---------------------------|-------------------------|
| Standard type | CG1 | Double acting, Single rod | Except with air cushion |
| Non-rotating rod type | CG1K | Double acting, Single rod | Except with air cushion |

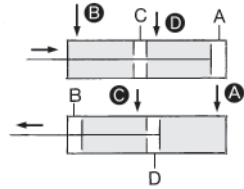
How to Order

Standard model no. **-XC12**



Specifications: Same as standard type

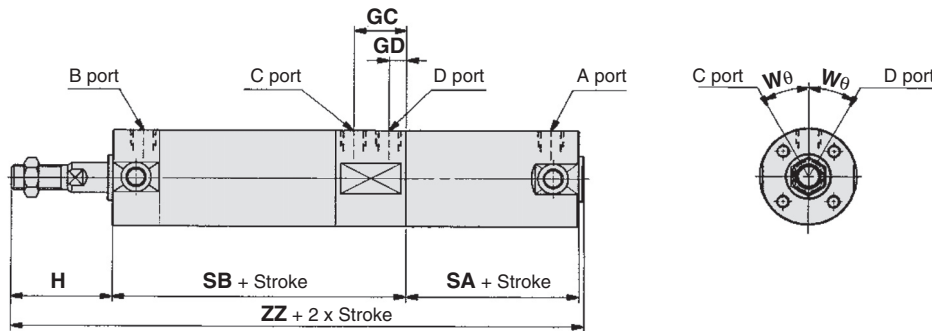
Function



When air pressure is supplied to ports **B** and **D**, the output force is doubled in the retract stroke.

When air pressure is supplied to ports **A** and **C**, the output force is doubled in the out stroke.

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



CG1 [mm]

| Bore size | GC | GD | H | SA | SB | W _θ | ZZ | Long stroke Note) | |
|-----------|----|----|----|----|-----|----------------|-----|-------------------|-----|
| | | | | | | | | SA | ZZ |
| 20 | 21 | 9 | 35 | 48 | 87 | 30° | 172 | 56 | 180 |
| 25 | 21 | 9 | 40 | 48 | 87 | 30° | 177 | 56 | 185 |
| 32 | 23 | 9 | 40 | 50 | 91 | 30° | 183 | 58 | 191 |
| 40 | 25 | 9 | 50 | 56 | 100 | 20° | 208 | 65 | 217 |
| 50 | 29 | 13 | 58 | 63 | 118 | 20° | 241 | 75 | 253 |
| 63 | 28 | 12 | 58 | 64 | 117 | 20° | 241 | 76 | 253 |

Note) In the case of long strokes (ø 20 : 201 mm or more, ø 25 to ø 63 : 301 mm or more)

CG1K [mm]

| Bore size | GC | GD | H | SA | SB | W _θ | ZZ |
|-----------|----|----|----|----|-----|----------------|-----|
| 20 | 21 | 9 | 35 | 48 | 87 | 30° | 172 |
| 25 | 21 | 9 | 40 | 48 | 87 | 30° | 177 |
| 32 | 23 | 9 | 40 | 50 | 91 | 30° | 183 |
| 40 | 24 | 8 | 50 | 57 | 99 | 20° | 208 |
| 50 | 28 | 12 | 58 | 64 | 117 | 20° | 241 |
| 63 | 28 | 12 | 58 | 64 | 117 | 20° | 241 |

* Please contact SMC for long stroke (301 mm or more) since SA-dimensions and ZZ-dimensions are different from those in the above table.

12 Auto Switch Rail Mounting

A cylinder on which a rail is mounted to enable auto switches, in addition to the standard method for mounting auto switches (Band mounting).

Applicable Series

| Description | Model | Action | Note |
|-----------------------|-------|---------------------------|--|
| Standard type | CG1 | Double acting, Single rod | Except trunnion and basic (without trunnion mounting female thread) types |
| | CG1W | Double acting, Double rod | Except trunnion and basic (without trunnion mounting female thread) types |
| Non-rotating rod type | CG1K | Double acting, Single rod | Except trunnion and basic (without trunnion mounting female thread) types, Except with air cushion |
| Direct mount type | CG1R | Double acting, Single rod | Except with air cushion |
| With end lock | CBG1 | Double acting, Single rod | For XC13A only |

Applicable Auto Switches

| Rail mounting | Solid state | D-M9□/M9□V, D-M9□W/M9□WV, D-M9□A/M9□AV, D-F7□, D-F7□V, D-F7BA, D-F79F, D-F79W, D-F7□WV, D-J79, D-J79C, D-J79W |
|----------------------------|--|---|
| | Reed | D-A7/A8, D-A7□H/A80H, D-A73C/A80C, D-A79W |
| Auto switch specifications | Refer to the Auto Switch Guide for additional information on auto switches. | |

How to Order

CDG1 Standard model no. **-XC13A**

Rail mounting direction

| | |
|----------------|--|
| XC13A | Mounted on the right side when viewed from the rod with the ports facing upward. |
| * XC13B | Mounted on the left side when viewed from the rod. |

* Not available for CBG1.



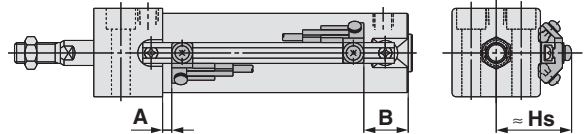
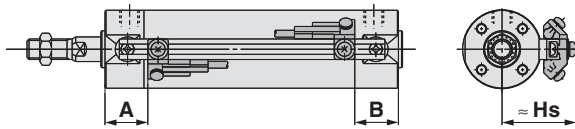
12 Auto Switch Rail Mounting

Symbol
-XC13

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

Series CDG1

Series CDG1R
(\varnothing 20 to \varnothing 63)



Auto Switch Proper Mounting Position (Detection at stroke end)
Applicable Cylinder Series: CDG1-XC13

| Auto switch model | D-M9□/D-M9□V D-M9□W/D-M9□WV D-M9□A/D-M9□AV | | D-F7□/F79F/F7□V D-J79/J79C D-F7□W/J79W/F7□WV | | D-F7BA/F7ABV D-A72/A7□H/A80H D-A73C/A80C | | D-F7NT | | D-A7□ D-A80 | | D-A79W | |
|-------------------|--|-------------|--|-------------|--|-------------|--------|-------------|----------------|-------------|--------|--|
| | A | B | A | B | A | B | A | B | A | B | | |
| 20 | 31.5 | 22.5 (30.5) | 30.5 | 21.5 (29.5) | 35.5 | 26.5 (34.5) | 30 | 21 (29) | 27.5 | 18.5 (26.5) | | |
| 25 | 31 | 23 (31) | 30 | 22 (30) | 35 | 27 (35) | 29.5 | 21.5 (29.5) | 27 | 19 (27) | | |
| 32 | 32.5 | 23.5 (31.5) | 31.5 | 22.5 (30.5) | 36.5 | 27.5 (35.5) | 31 | 22 (30) | 28.5 | 19.5 (27.5) | | |
| 40 | 37.5 | 25.5 (34.5) | 36.5 | 24.5 (33.5) | 41.5 | 29.5 (38.5) | 36 | 24 (33) | 33.5 | 21.5 (30.5) | | |
| 50 | 44.5 | 30.5 (42.5) | 43.5 | 29.5 (41.5) | 49 | 34.5 (46.5) | 43 | 29 (41) | 40.5 | 26.5 (38.5) | | |
| 63 | 43 | 32 (44) | 42 | 31 (43) | 47 | 36 (48) | 41.5 | 30.5 (42.5) | 39 | 28 (40) | | |
| 80 | 56 | 37 (51) | 55 | 36 (50) | 60 | 41 (55) | 54.5 | 35.5 (49.5) | 52 | 33 (47) | | |
| 100 | 55 | 38 (52) | 54 | 37 (51) | 59 | 42 (56) | 53.5 | 36.5 (50.5) | 51 | 34 (48) | | |

Note 1) (): For long stroke
Note 2) Adjust the auto switch after confirming the operating condition in the actual setting.

Auto Switch Proper Mounting Position (Detection at stroke end)
Applicable Cylinder Series: CDG1R-XC13

| Auto switch model | D-M9□/D-M9□V D-M9□W/D-M9□WV D-M9□A/D-M9□AV | | D-F7□/F79F/F7□V D-J79/J79C D-F7□W/J79W/F7□WV | | D-F7BA/F7ABV D-A72/A7□H/A80H D-A73C/A80C | | D-F7NT | | D-A7□ D-A80 | | D-A79W | |
|-------------------|--|------|--|------|--|------|--------|------|----------------|------|--------|--|
| | A | B | A | B | A | B | A | B | A | B | | |
| 20 | 10.5 | 22.5 | 9.5 | 21.5 | 14.5 | 26.5 | 9 | 21 | 6.5 | 18.5 | | |
| 25 | 10 | 23 | 9 | 22 | 14 | 27 | 8.5 | 21.5 | 6 | 19 | | |
| 32 | 11.5 | 23.5 | 10.5 | 22.5 | 15.5 | 27.5 | 10 | 22 | 7.5 | 19.5 | | |
| 40 | 16.5 | 25.5 | 15.5 | 24.5 | 20.5 | 29.5 | 15 | 24 | 12.5 | 21.5 | | |
| 50 | 18.5 | 30.5 | 17.5 | 29.5 | 22.5 | 34.5 | 17 | 29 | 14.5 | 26.5 | | |
| 63 | 17 | 32 | 16 | 31 | 21 | 36 | 15.5 | 30.5 | 13 | 28 | | |

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

Auto Switch Proper Mounting Position/Applicable Cylinder Series: CDBG1-XC13 [mm]

| Lock position | H (Head end) | | R (Rod end) | | W (Double end) | |
|---------------|--------------|-----------|-------------|------|----------------|-----------|
| | A | B Note 2) | A | B | A | B Note 2) |
| 20 | +0 | +12 | +11 | +0 | +11 | +12 |
| 25 | +0.5 | +11.5 | +11.5 | -0.5 | +11.5 | +11.5 |
| 32 | +0 | +10 | +10 | +0 | +10 | +10 |
| 40 | +0 | +14 | +9 | +0 | +9 | +14 |
| 50 | +0 | +17 | +12 | +0 | +12 | +17 |
| 63 | +1.5 | +15.5 | +13.5 | -1.5 | +13.5 | +15.5 |
| 80 | -1.5 | +23.5 | +14.5 | +1.5 | +14.5 | +23.5 |
| 100 | -0.5 | +23.5 | +15.5 | +0.5 | +15.5 | +22.5 |

Note 1) For cylinders with end lock, add the above values to those listed in the table for CG1-XC13.
Note 2) For the head and double end lock, add the above values to CG 1 -XC 1 3 (long stroke) to find B.
Note 3) Adjust the auto switch after confirming the operating condition in the actual setting.
Note 4) For the dimensions other than the auto switch proper mounting position and its mounting height, refer to the standard type of the CBG1 series.

Auto Switch Mounting Height [mm]

| Auto switch model | D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-F7□/F79F D-J79/F7NT D-F7□W/J79W/F7BA | D-F7□V D-F7□WV D-F7BAV | D-J79C | D-A7□ D-A80 | D-A73C D-A80C | D-A79W |
|-------------------|--|------------------------------|--------|----------------|------------------|--------|
| Bore size | Hs | Hs | Hs | Hs | Hs | Hs |
| 20 | 26.5 | 29 | 32 | 25.5 | 32.5 | 28 |
| 25 | 29 | 31.5 | 34.5 | 28 | 35 | 30.5 |
| 32 | 32.5 | 35 | 38 | 31.5 | 38.5 | 34 |
| 40 | 36.5 | 39 | 42 | 35.5 | 42.5 | 38 |
| 50 | 42 | 44.5 | 47.5 | 41 | 48 | 43.5 |
| 63 | 49 | 51.5 | 54.5 | 48 | 55 | 50.5 |
| 80 | 59 | 61.5 | 64.5 | 58 | 65 | 60.5 |
| 100 | 69.5 | 72 | 75 | 68.5 | 75.5 | 71 |

Standard Rod
Double Acting, Single Rod
CG1

Double Acting, Double Rod
CG1W

Single Acting, Spring Return/Extend
CG1

Non-rotating Rod
Double Acting, Single Rod
CG1K

Double Acting, Double Rod
CG1KW

Direct Mount
Double Acting, Single Rod
CG1R

Direct Mount, Non-rotating Rod
CG1KR

With End Lock
CG1

Auto Switch

Made to Order

12 Auto Switch Rail Mounting

Minimum Stroke for Auto Switch Mounting

| Auto switch model | Number of auto switches [mm] | | |
|--|------------------------------|--------------|---|
| | 1 | 2 | n (n: No. of auto switches) |
| | | Same surface | Same surface |
| D-M9□/M9□V D-F7□V D-J79C | 5 | 5 | 10 + 10 (n - 2) (n = 4, 6 ...) Note) |
| D-M9□WV D-M9□AV D-F7□WV D-F7BAV D-A79W | 10 | 15 | 10 + 15 (n - 2) (n = 4, 6 ...) Note) |
| D-M9□W D-M9□A | 10 | 15 | 15 + 15 (n - 2) (n = 4, 6 ...) Note) |
| D-F7□ D-J79 | 5 | 5 | 15 + 15 (n - 2) (n = 4, 6 ...) Note) |
| D-F7□W/J79W D-F7BA D-F79F/F7NT | 10 | 15 | 15 + 20 (n - 2) (n = 4, 6 ...) Note) |
| D-A7□/A80 D-A73C/A80C | 5 | 10 | 15 + 10 (n - 2) (n = 4, 6 ...) Note) |
| D-A7□H D-A80H | 5 | 10 | 15 + 15 (n - 2) (n = 4, 6 ...) Note) |

Note) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation. However, the minimum even number is 4. So, 4 is used for the calculation when "n" is 1 to 3.

Auto Switch Mounting Brackets/Part No.

| Auto switch model | Bore size [mm] |
|----------------------------|----------------|
| | ø 20 to ø 100 |
| D-M9□/M9□V D-M9□W/M9□WV | BQ2-012 |
| D-M9□A/M9□AV | BQ2-012S |

Note 1) When ordering the auto switches other than D-M9□□□ and D-F7BA(V) mentioned on the above, order auto switch mounting brackets BQ-1 separately.

Note 2) When adding D-M9□A(V), order a stainless steel screw set BBA2 together with BQ2-012S separately.
When adding the auto switch D-F7BA(V), order a stainless steel screw set BBA2 separately.

Operating Range

| Auto switch model | Bore size [mm] | | | | | | | |
|--|----------------|----|-----|----|-----|------|-----|------|
| | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
| D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV | 4 | 4 | 5 | 4 | 5.5 | 6.5 | 7.5 | 7 |
| D-F7□/F79F/F7□V D-J79/J79C D-F7□W/J79W/F7□WV D-F7BA/F7BAV D-F7NT | 4.5 | 4 | 4.5 | 5 | 5 | 6 | 6 | 6 |
| D-A7□/A80 D-A7□H/A80H D-A73C/A80C | 9 | 9 | 10 | 11 | 11 | 13.5 | 13 | 13.5 |
| D-A79W | 11 | 11 | 13 | 14 | 14 | 16.5 | 16 | 16.5 |

* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed. (Assuming approximately ±30 % dispersion.) It may vary substantially depending on an ambient environment.

13 Head Cover Axial Port

Symbol
-XC20

Head side port position is changed to the axial direction. (Standard head side port is plugged with hexagon socket head screw.)

Applicable Series

| Description | Model | Action | Note |
|-------------------------------------|-------|--------------------------------------|---------------------------|
| Standard type | CG1 | Double acting, Single rod | Except with air cushion |
| | CG1 | Single acting (Spring return/extend) | |
| Non-rotating rod type | CG1K | Double acting, Single rod | Except with air cushion |
| Direct mount type | CG1R | Double acting, Single rod | Except with air cushion |
| Direct mount, Non-rotating rod type | CG1KR | Double acting, Single rod | Except with air cushion*1 |

*1 The shape is the same as the existing product. Use the existing seal kit.

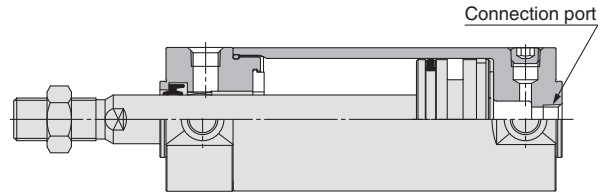
How to Order

Standard model no. **-XC20**
 Head cover axial port

Specifications: Same as standard type

* Be sure to use the speed controller since head side port has no throttle.

Construction



| Bore size [mm] | Port size |
|-----------------------|-----------|
| 20, 25, 32, 40 | Rc1/8 |
| 50, 63 | Rc1/4 |

* Same dimensions as standard type except port size.

14 Fluororubber Seal

Symbol
-XC22

Applicable Series

| Description | Model | Action | Note |
|-------------------|-------|---------------------------|--|
| Standard type | CG1 | Double acting, Single rod | Cylinders with rubber bumper have no bumper. |
| | CG1W | Double acting, Double rod | Cylinders with rubber bumper have no bumper. |
| Direct mount type | CG1R | Double acting, Single rod | Cylinders with rubber bumper have no bumper. |

How to Order

Standard model no. **-XC22**
 Fluororubber seal

Specifications

| | |
|--|--|
| Seal material | Fluororubber |
| Ambient temperature range | With auto switch ^{Note 1)} : -10 °C to 60 °C (No freezing) Without auto switch : -10 °C to 70 °C (No freezing) |
| Specifications other than above and external dimensions | Same as standard type |

Note 1) Please contact SMC, as the type of chemical and the operating temperature may not allow the use of this product.

Note 2) Cylinders with auto switches can also be produced; however, auto switch related parts (auto switch units, mounting brackets, built-in magnets) are the same as standard products. Before using these, please contact SMC regarding their suitability for the operating environment.

15 Double Clevis and Double Knuckle Joint Pins Made of Stainless Steel

Symbol
-XC27

To prevent the oscillating portion of the double clevis or the double knuckle joint from rusting, the material of the pin and the retaining ring has been changed to stainless steel.

Applicable Series

| Description | Model | Action | Note |
|-----------------------|-------|--------------------------------------|-----------------------------|
| Standard type | CG1 | Double acting, Single rod | Except with rod end bracket |
| | CG1 | Single acting (Spring return/extend) | Except with rod end bracket |
| Non-rotating rod type | CG1K | Double acting, Single rod | Except with rod end bracket |

Specifications

| | |
|--|---|
| Mounting | Only double clevis type (D), double knuckle joint |
| Pin and retaining ring material | Stainless steel 304 |
| Additional specifications | Same as standard type |

How to Order

CG1D Standard model no. **-XC27**
 Double clevis type Double clevis pin made of stainless steel

Y **G02, G03, G04, G05, G08, G10** **-XC27**
 Double knuckle joint Double knuckle joint pin made of stainless steel

IY **G02, G03, G04, G05, G08, G10** **-XC27**
CD **G02, G25, G03, G04, G05, G06** **-XC27**
 Clevis pin Knuckle pin Clevis pin Knuckle pin made of stainless steel

Double Acting, Single Rod CG1
 Double Acting, Double Rod CG1W
 Single Acting, Spring Return/Extend CG1
 Non-rotating Rod Double Acting, Single Rod CG1K
 Double Acting, Double Rod CG1W
 Direct Mount Double Acting, Single Rod CG1R
 Direct Mount, Non-rotating Rod CG1KR
 With End Lock CBG1
 Auto Switch
 Made to Order

16 Double Knuckle Joint with Spring Pin

Symbol
-XC29

To prevent loosening of the double knuckle joint

Applicable Series

| Description | Model | Action | Note |
|---------------|-------|--------------------------------------|-----------------------------|
| Standard type | CG1 | Double acting, Single rod | Except with rod end bracket |
| | CG1 | Single acting/spring return type (S) | Except with rod end bracket |

Specifications: Same as standard type

Dimensions: Same as standard type

How to Order

Standard model no. **-XC29**
Double knuckle joint with spring pin

17 With Coil Scraper

Symbol
-XC35

It gets rid of frost, ice, weld spatter, cutting chips adhered to the piston rod, and protects the seals etc.

Applicable Series

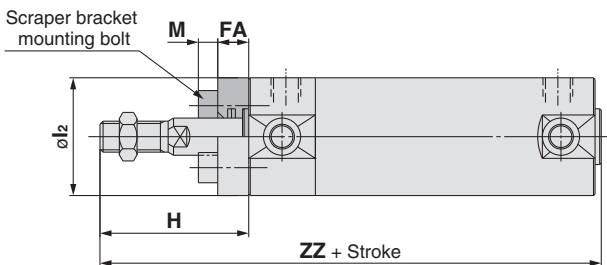
| Description | Model | Action | Note |
|---------------|-------|---------------------------|------|
| Standard type | CG1 | Double acting, Single rod | |

Specifications: Same as standard type

How to Order

Standard model no. **-XC35**
With coil scraper

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



| Bore size | Stroke range | | FA | H | | l ₂ | M | ZZ | |
|-----------|--------------|-------------|----|-------------|---------------|----------------|----|-------------|---------------|
| | Standard | Long stroke | | Male thread | Female thread | | | Male thread | Female thread |
| 20 | Up to 200 | 201 to 1500 | 6 | 39 | 27 | 27 | 4 | 110 (118) | 98 (106) |
| 25 | Up to 300 | 301 to 1500 | 6 | 44 | 28 | 32 | 5 | 115 (123) | 99 (107) |
| 32 | Up to 300 | 301 to 1500 | 6 | 44 | 28 | 38 | 5 | 117 (125) | 101 (109) |
| 40 | Up to 300 | 301 to 1500 | 7 | 54 | 29 | 47 | 6 | 134 (143) | 109 (118) |
| 50 | Up to 300 | 301 to 1500 | 7 | 62 | 30 | 58 | 8 | 154 (166) | 122 (134) |
| 63 | Up to 300 | 301 to 1500 | 7 | 62 | 30 | 72 | 10 | 154 (166) | 122 (134) |

Note) (): Long stroke

- * Other dimensions are the same as double acting, single rod, standard type.
- * On the axial foot and the rod flange types, the mounting bracket is welded and bolted between the cylinder and the scraper at the time of shipment. On other types, it is placed in the same package, (but not assembled).
- * The long stroke shows the maximum manufacturable stroke. For details about maximum stroke that can be used for each mounting bracket, contact SMC.

18 Larger Throttle Diameter of Connection Port

Symbol
-XC37

This is a cylinder with a piping port larger than the standard type.

Applicable Series

| Description | Model | Action | Note |
|-----------------|-------|---------------------------|---|
| Standard type | CG1 | Double acting, Single rod | * Except ϕ 80, ϕ 100 |
| Double rod type | CG1W | Double acting, Double rod | Except with air cushion * Except ϕ 80, ϕ 100 |

Dimensions (Throttle diameter of connection port) Dimensions other than below are the same as standard type.

| Bore size | [mm] | | |
|-----------|--------------------|------------------|---------------|
| | With rubber bumper | With air cushion | Standard type |
| 20 | 5 | 3 | (2.1) |
| 25 | 5 | 3.5 | (2.5) |
| 32 | | 6 | (3.3) |
| 40 | | 7 | (3.9) |
| 50 | | 9 | (4.5) |
| 63 | | 9 | (5.7) |

- * Use external stopper etc. not to be damaged with cylinder cover directly if exceeding the range of kinetic energy absorption.

How to Order

Standard model no. **-XC37**
Larger throttle diameter of connection port

Specifications: Same as standard type

19 Built-in Shock Absorber in Head Cover Side

Symbol
-XC42

A type of the CG1 series air cylinder in which a special shock absorber is enclosed in the head portion so that its ability to absorb energy during the retraction of the cylinder is considerably greater than the conventional air cushion.

Applicable Series

| Description | Model | Action | Note |
|---------------|-------|------------------------------|------|
| Standard type | CG1 | Double acting, Single rod | |

How to Order

Standard model no. **-XC42**
Built-in shock absorber in head cover side

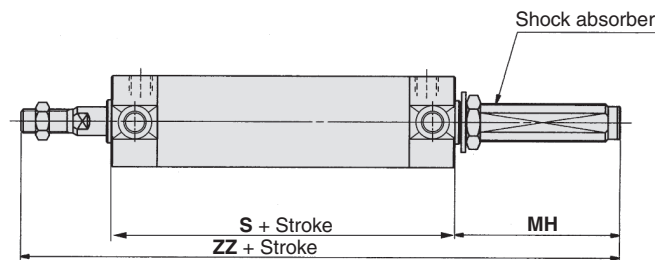


Specifications

| | |
|----------------------------------|-----------------------|
| Piston speed | 50 to 1000 mm/s |
| Additional specifications | Same as standard type |

* On the axial foot and head flange types, the bracket is mounted at the time of shipment. Others are shipped together, (but not assembled).

Dimensions (Dimensions other than below are the same as the CG1 long stroke type.)



| Bore size | Stroke range | Shock absorber | S | MH | ZZ |
|-----------|--------------|----------------|-----|------|-------|
| 20 | 10 to 350 | RBAC0806 | 77 | 23.5 | 135.5 |
| 25 | 10 to 400 | RBAC1007 | 77 | 31 | 148 |
| 32 | 15 to 450 | RBAC1412 | 79 | 55 | 174 |
| 40 | 15 to 800 | RBAC2015 | 87 | 62.5 | 199.5 |
| 50 | 15 to 1200 | RBAC2015 | 102 | 55.5 | 215.5 |
| 63 | 25 to 1200 | RBAC2725 | 102 | 92.5 | 252.5 |

* Shock absorbers are consumables.

The specifications for shock absorbers are the same as those for the RBC□□□□, but use the RBAC□□□□ when an external pressure is applied such as for a built-in cylinder. The maximum absorption energy may decrease depending on the operating conditions.

The shock absorber service life is different from that of the CG1 cylinder. Refer to the RB series Specific Product Precautions for the replacement period.

Standard Double Acting, Single Rod **CG1**
Standard Double Acting, Double Rod **CG1W**
Standard Single Acting, Spring Return/Extend **CG1**
Non-rotating Rod Double Acting, Single Rod **CG1K**
Non-rotating Rod Double Acting, Double Rod **CG1KW**
Direct Mount Double Acting, Single Rod **CG1R**
Direct Mount, Non-rotating Rod **CG1KR**
With End Lock **CBG1**
Auto Switch
Made to Order

20 Grease for Food Processing Equipment

Symbol
-XC85

Food grade grease (certified by NSF-H1) is used as lubricant.

Applicable Series

| Description | Model | Action | Note |
|-------------------|-------|---------------------------|------|
| Standard type | CG1 | Double acting, Single rod | |
| | CG1W | Double acting, Double rod | |
| Direct mount type | CG1R | Double acting, Single rod | |

How to Order

Standard model no. **-XC85**
Grease for food processing equipment

Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

Not installable zone

Food zone An environment where the raw materials and materials of food products, semi-finished food products and food products that make direct or indirect contact in a normal processing process.

Splash zone An area where a portion of food products accidentally splash and stick under the intended operating conditions. An environment where food products that enter this area do not return to the food product contact portion again, and are not used as food products.

Installable zone

Non-food zone Other environments including the food splash zone, except for the food contact portions.

Note 1) Avoid using this product in the food zone.
(Refer to the figure on the right.)

Note 2) When the product is used in an area of liquid splash, or a water resistant function is required for the product, please consult SMC.

Note 3) Operate without lubrication from a pneumatic system lubricator.

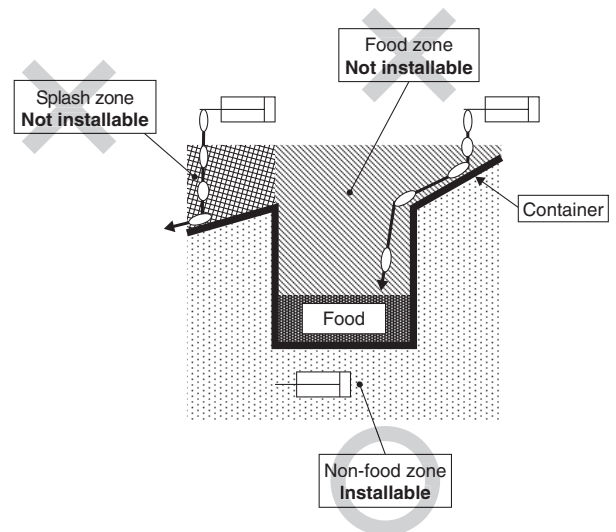
Note 4) Use the following grease pack for the maintenance work.

GR-H-010 (Grease: 10 g)

Note 5) Please contact SMC for details about the maintenance intervals for this cylinder, which differ from those of the standard cylinder.

Specifications

| | |
|---------------------------|-----------------------|
| Ambient temperature range | -10 °C to 70 °C |
| Seal material | Nitrile rubber |
| Grease | Grease for food |
| Auto switch | Mountable |
| Dimensions | Same as standard type |
| Additional specifications | Same as standard type |



21 PTFE Grease

Symbol
-X446

Applicable Series

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

How to Order

Standard model no. **-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)

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)¹⁾, and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
- ISO 10218-1: Manipulating industrial robots - Safety.
etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.²⁾ Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
 2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
 3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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