








# Air Cylinder

# Series CG1

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

## Series Variations

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

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

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

## How to Order



Without auto switch

**CG1** **L** **N** **25** **100** **□**

With auto switch

**CDG1** **L** **N** **25** **100** **□** **H7BW** **□**

Built-in magnet

Mounting style

|           |                          |
|-----------|--------------------------|
| <b>B</b>  | Basic style              |
| <b>L</b>  | Axial foot style         |
| <b>F</b>  | Rod side flange style    |
| <b>G</b>  | Head side flange style   |
| <b>U*</b> | Rod side trunnion style  |
| <b>T*</b> | Head side trunnion style |
| <b>D</b>  | Clevis style             |

\* Not available for ø80 or ø100.

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

Type

|          |                        |
|----------|------------------------|
| <b>N</b> | Non-lube/Rubber bumper |
| <b>A</b> | Non-lube/Air cushion   |

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

|            |                          |
|------------|--------------------------|
| <b>Nil</b> | Without rod boot         |
| <b>J</b>   | Nylon tarpaulin          |
| <b>K</b>   | Heat resistant tarpaulin |

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

Number of auto switches

|            |          |
|------------|----------|
| <b>Nil</b> | 2 pcs.   |
| <b>S</b>   | 1 pc.    |
| <b>n</b>   | "n" pcs. |

Auto switch

|            |                                       |
|------------|---------------------------------------|
| <b>Nil</b> | Without auto switch (Built-in magnet) |
|------------|---------------------------------------|

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

Bore size

|           |       |            |        |
|-----------|-------|------------|--------|
| <b>20</b> | 20 mm | <b>50</b>  | 50 mm  |
| <b>25</b> | 25 mm | <b>63</b>  | 63 mm  |
| <b>32</b> | 32 mm | <b>80</b>  | 80 mm  |
| <b>40</b> | 40 mm | <b>100</b> | 100 mm |

Cylinder stroke (mm)

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

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

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

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

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

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

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

## Substantially shorter length:

$\varnothing 20$  to  $\varnothing 40$ ... -15 to -30 mm  
 (in comparison with Series CM2)  
 $\varnothing 40$  to  $\varnothing 63$ ... -17 to -28 mm  
 (in comparison with Series CA1)  
 $\varnothing 80$ ,  $\varnothing 100$ ... -9 to -33 mm  
 (in comparison with Series CA1)

## High speed operation:

### 1000 mm/s

( $\varnothing 80$  and  $\varnothing 100$  operate at 700 mm/s)

## Air cushion standardized

Two cushions are available:  
an air cushion and rubber bumper

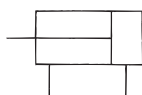
## Weight reduction of 10 to 50%

(50 mm stroke, in-house comparison)

## Highly accurate mounting brackets

(Axial foot style, Rod side frange style)

**JIS Symbol**  
Double acting



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

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

## Specifications

| Bore size (mm)                | 20   | 25 | 32 | 40 | 50 | 63 | 80   | 100 |
|-------------------------------|--|----|----|----|----|----|--|-----|
| Action                        | Double acting, Single rod  |    |    |    |    |    |  |     |
| Type                          | Non-lube   |    |    |    |    |    |  |     |
| Fluid                         | Air  |    |    |    |    |    |  |     |
| Proof pressure                | 1.5 MPa  |    |    |    |    |    |  |     |
| Maximum operating pressure    | 1.0 MPa  |    |    |    |    |    |  |     |
| Minimum operating pressure    | 0.05 MPa   |    |    |    |    |    |  |     |
| Ambient and fluid temperature | Without auto switch: -10 to 70°C (No freezing)<br>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 <sup>+0.14</sup> <sub>0</sub> mm, Up to 1200 <sup>+0.18</sup> <sub>0</sub> mm   |    |    |    |    |    | Up to 1000 <sup>+0.14</sup> <sub>0</sub> mm<br>Up to 1500 <sup>+0.18</sup> <sub>0</sub> mm |     |
| Thread tolerance              | JIS Class 2  |    |    |    |    |    |  |     |
| Cushion                       | Rubber bumper, Air cushion   |    |    |    |    |    |  |     |
| Mounting *                    | Basic style, Axial foot style, Rod side flange style,<br>Head side flange style, Rod side trunnion style,<br>Head side trunnion style, Clevis style<br>(Used for changing the port location by 90°.) |    |    |    |    |    |  |     |

Rod/Head side trunnion styles are not available for bore sizes  $\varnothing 80$  and  $\varnothing 100$ .

## Accessory

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

\* Trunnion bracket is not available for  $\varnothing 80$  and  $\varnothing 100$ .

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

## Standard Stroke

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

Note 1) Other intermediate strokes can be manufactured upon receipt of an order. Spaces are not used for the intermediate strokes.

Note 2) Long stroke applies to the axial foot style and the rod side flange style. If other length exceeds the stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

## Minimum Stroke for Auto Switch Mounting

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

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

## 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.

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Series CG1

## Mounting Bracket Part No.

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

Note 1) Order two foot brackets per cylinder.

Note 2) Clevis pin, snap ring and mounting bolt are shipped together with clevis style.

Note 3) Mounting bolts are shipped together for foot style and flange style.

## Auto Switch Mounting Bracket Part No.

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

\* Mounting screws set made of stainless steel

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(A switch mounting band is not included, so please order it separately.)

BBA3: For D-B5/B6/G5/K5

BBA4: For D-C7/C8/H7

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

## Weight

| Bore size (mm)                             |                  | 20   | 25   | 32   | 40   | 50   | 63   | 80   | 100  |
|--|------------------|------|------|------|------|------|------|------|------|
| Basic weight                               | Basic style      | 0.10 | 0.17 | 0.26 | 0.41 | 0.77 | 1.07 | 2.04 | 3.17 |
|  | Axial foot style | 0.21 | 0.30 | 0.42 | 0.63 | 1.25 | 1.79 | 3.00 | 4.92 |
|  | Flange style     | 0.18 | 0.27 | 0.40 | 0.61 | 1.11 | 1.57 | 2.75 | 4.52 |
|  | Trunnion style   | 0.11 | 0.19 | 0.29 | 0.46 | 0.91 | 1.21 | —    | —    |
|  | Clevis style     | 0.15 | 0.25 | 0.41 | 0.64 | 1.17 | 1.75 | 2.75 | 4.45 |
| Pivot bracket                              |                  | 0.08 | 0.09 | 0.17 | 0.25 | 0.44 | 0.80 | 0.98 | 1.75 |
| Single knuckle joint                       |                  | 0.05 | 0.09 | 0.09 | 0.10 | 0.22 | 0.22 | 0.39 | 0.57 |
| Double knuckle joint (With pin)            |                  | 0.05 | 0.09 | 0.09 | 0.13 | 0.26 | 0.26 | 0.64 | 1.31 |
| Additional weight per each 50 mm of stroke |                  | 0.05 | 0.07 | 0.09 | 0.15 | 0.22 | 0.26 | 0.35 | 0.49 |
| Additional weight with air cushion         |                  | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 |
| Additional weight for long stroke          |                  | 0.01 | 0.01 | 0.02 | 0.03 | 0.06 | 0.10 | 0.19 | 0.26 |

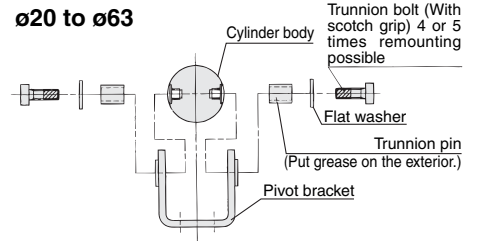
Calculation: (Example) CG1LA20-100  
(Foot style, ø20, 100 st)

- Basic weight.....0.21 (Foot, ø20)
  - Additional weight.....0.05/50 stroke
  - Cylinder stroke.....100 stroke
  - Additional weight by air cushion.....0.01 kg
- $$0.21 + 0.05 \times 100/50 + 0.01 = 0.32 \text{ kg}$$

## Mounting Procedure

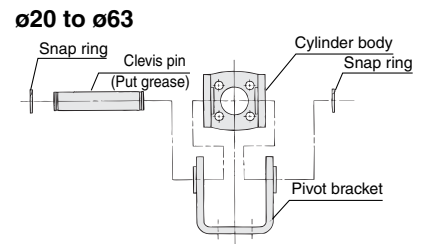
### Mounting procedure for trunnion

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

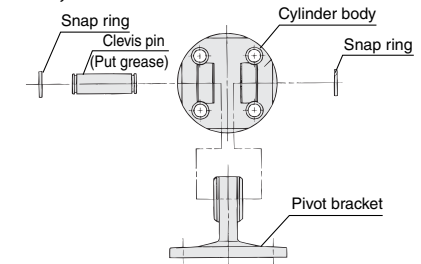


### Mounting procedure for clevis

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



### ø80, ø100



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

## Built-in One-touch Fittings

CG1 **Mounting style** N **Bore size** F — **Stroke**

↓  
Built-in One-touch fittings

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

### Specifications

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

\* Auto switch can be mounted.

### Applicable Tubing O.D./I.D.

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

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

## Clean Series

10-CG1 **Mounting style** N **Bore size** — **Stroke**

↓  
Clean series (With relief port)

The type which is applicable for using inside the clean room graded Class 100 by making an actuator's rod section a double seal construction and discharging by relief port directly to the outside of clean room.

### Specifications

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

\* Auto switch can be mounted.

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

## Air-hydro

CG1 **Mounting style** H **Bore size** — **Stroke**

↓  
Air-hydro

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

### Specifications

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

\* Auto switch can be mounted.

## Copper-free

20-CG1 **Mounting style** **Type** **Bore size** — **Stroke**

↓  
Copper-free

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

### Specifications

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

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

Dimensions are the same as double acting single rod, standard type.

\* Auto switch can be mounted.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

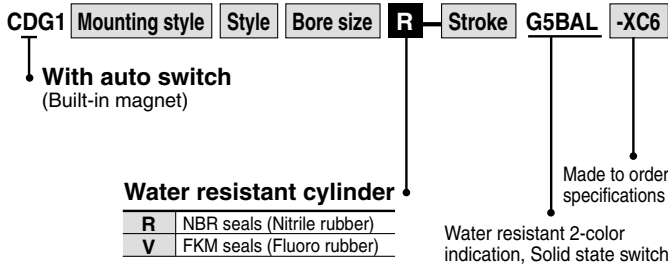
-X

20-

Data

# Series CG1

## Water Resistant



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

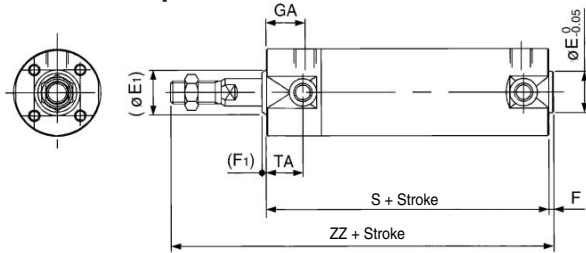
## Specifications

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

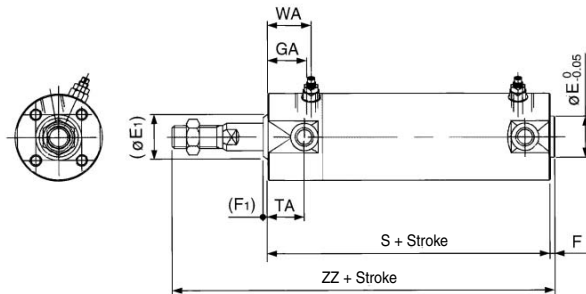
\* Specifications other than above are the same as standard, basic style.

## Dimensions

### With rubber bumper



### With air cushion



| Bore size (mm) | (E <sub>1</sub> ) | E* | (F <sub>1</sub> ) | F* | GA | S        | TA | WA | ZZ       |
|----------------|-------------------|----|-------------------|----|----|----------|----|----|----------|
| 32             | 17                | 18 | 2                 | 2  | 18 | 77(85)   | 17 | 22 | 119(127) |
| 40             | 21                | 25 | 2                 | 2  | 19 | 84(93)   | 18 | 22 | 136(145) |
| 50             | 26                | 30 | 2                 | 2  | 21 | 97(109)  | 20 | 25 | 157(169) |
| 63             | 26                | 32 | 2                 | 2  | 21 | 97(109)  | 20 | 25 | 157(169) |
| 80             | 32                | 40 | 3                 | 3  | 28 | 116(130) | —  | 30 | 190(204) |
| 100            | 37                | 50 | 3                 | 3  | 29 | 117(131) | —  | 31 | 191(205) |

\* These dimensions and other dimensions not indicated here are the same as standard.

\* ( ): Denotes the dimensions for long stroke.

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

## ⚠ Precautions

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

### Operating Precautions

#### ⚠ Warning

1. Do not operate the cushion valve in the fully closed or fully opened state.

Using it in the fully closed state will cause the cushion seal to be damaged. Using it in the fully opened state will cause the piston rod assembly or the cover to be damaged.

2. Operate within the specified cylinder speed.

Otherwise, cylinder and seal damage may occur.

#### ⚠ Caution

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

2. Install a rod boot without twisting.

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

### Disassembly/Replacement

#### ⚠ Caution

1. Do not replace the bushings or the cushion seals.

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

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

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

3. Do not replace One-touch fittings.

Because pipe fittings are press-fit, they must be replaced together with the cover assembly.

4. Those with a bore of ø50 or more cannot be disassembled.

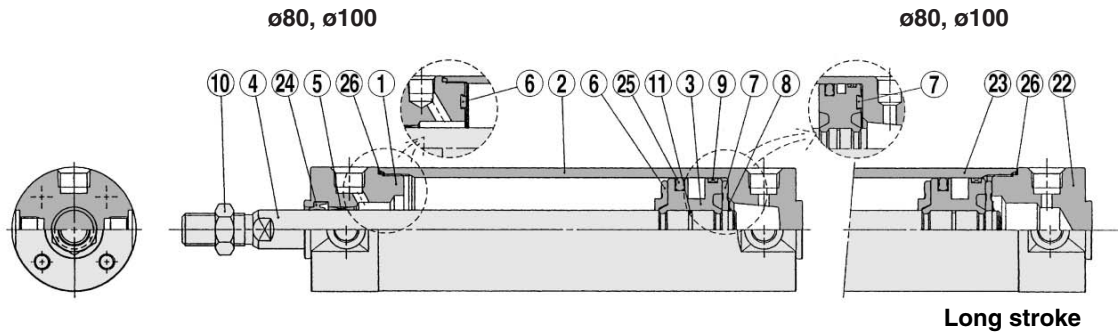
When disassembling cylinders with bore sizes of ø20 through ø40, grip the double flat part of either the head cover or the rod cover with a vise and loosen the other side with a wrench or a monkey wrench, etc., and then remove the cover. When re-tightening, tighten approximately 2 degrees more than the original position. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. Please contact SMC when disassembly is required.)



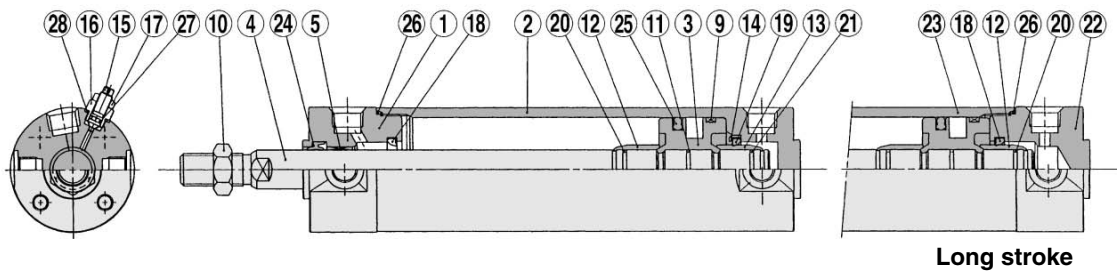
# Air Cylinder: Standard Type Double Acting, Single Rod **Series CG1**

## Construction

### With rubber bumper



### With air cushion



### Component Parts

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

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

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

### Replacement Parts: Seal Kit for Rubber Bumper

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

### Replacement Parts: Seal Kit for Air Cushion

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

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

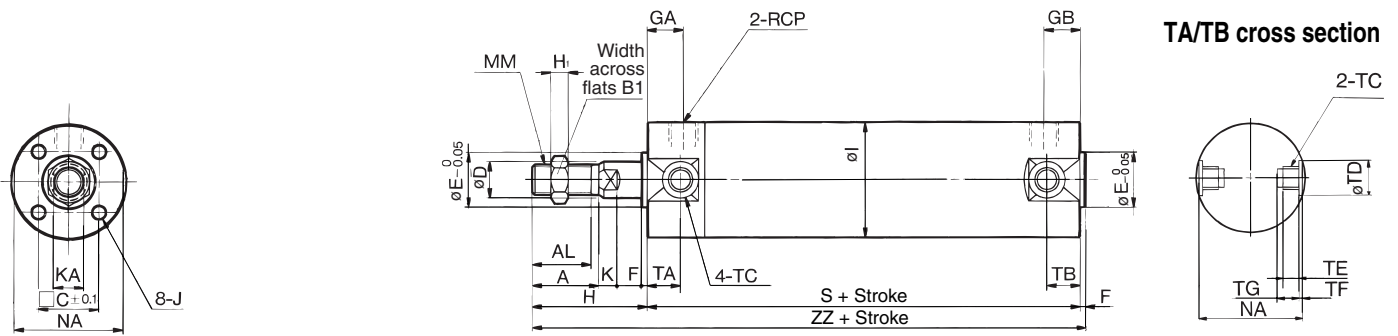
-X

20-

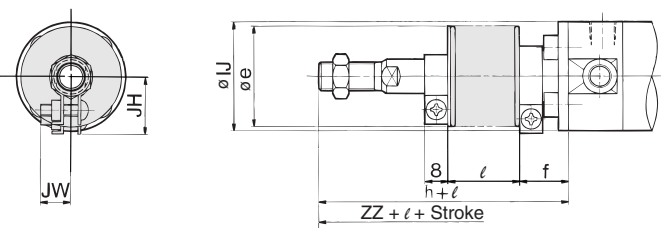
Data

# Series CG1

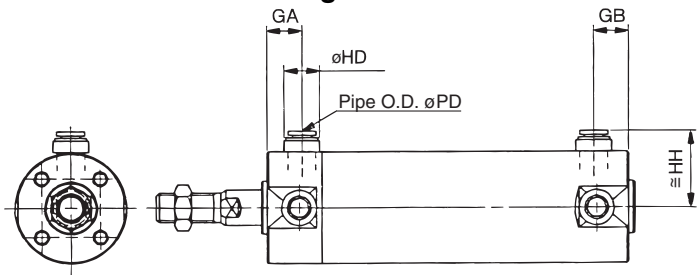
## Basic Style with Rubber Bumper: CG1BN



## Basic style with rod boot

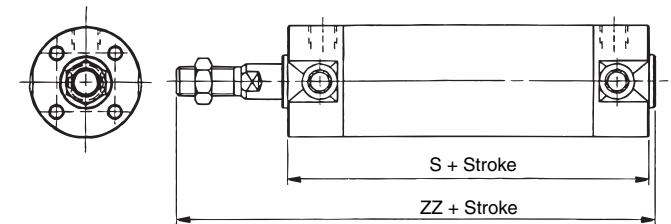


## Built-in One-touch fittings



Other dimensions are the same as standard.

## Air-hydro



Other dimensions are the same as the long stroke standard.

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

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

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

## TA/TB Sectional View

| Bore size (mm) | TC*        | TD <sub>H9</sub>                 | TE   | TF   | TG   |
|----------------|------------|----------------------------------|------|------|------|
| 20             | M5 x 0.8   | 8 <sup>+0.08</sup> <sub>0</sub>  | 4    | 0.5  | 5.5  |
| 25             | M6 x 0.75  | 10 <sup>+0.08</sup> <sub>0</sub> | 5    | 1    | 6.5  |
| 32             | M8 x 1.0   | 12 <sup>+0.08</sup> <sub>0</sub> | 5.5  | 1    | 7.5  |
| 40             | M10 x 1.25 | 14 <sup>+0.08</sup> <sub>0</sub> | 6    | 1.25 | 8.5  |
| 50             | M12 x 1.25 | 16 <sup>+0.08</sup> <sub>0</sub> | 7.5  | 2    | 10   |
| 63             | M14 x 1.5  | 18 <sup>+0.08</sup> <sub>0</sub> | 11.5 | 3    | 14.5 |
| 80             | —          | —                                | —    | —    | —    |
| 100            | —          | —                                | —    | —    | —    |

## With Rod Boot

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

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

## Built-in One-touch Fittings

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

## Air-hydro

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

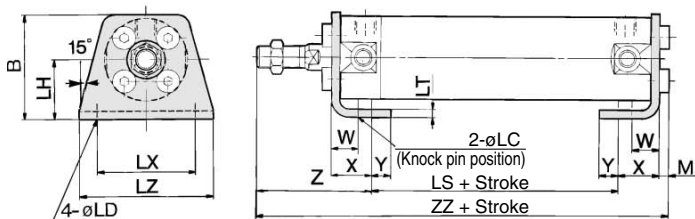
Note) ( ): Denotes the dimensions for long stroke.



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

## With Mounting Bracket

### Axial foot style: CG1LN



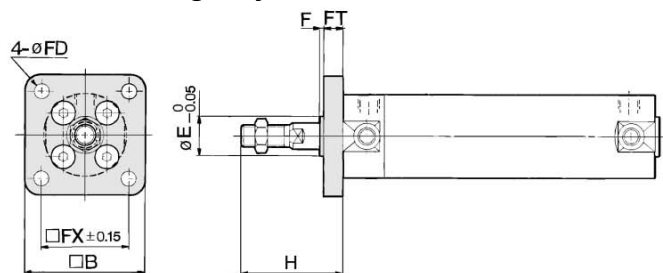
### Axial Foot Style

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

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

\* Other dimensions are the same as basic style.

### Rod side frange style: CG1FN



### Flange Style

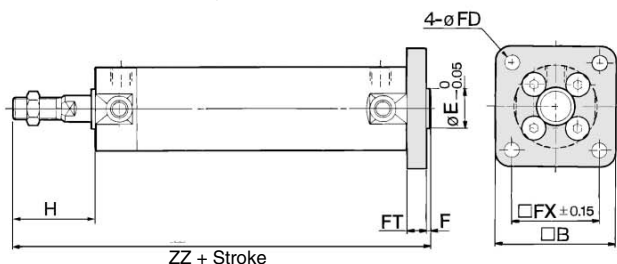
| Bore size (mm) | Stroke range |           | B   | E  | F | FX  | FD  | FT | H  | Head side flange ZZ |               |
|----------------|--------------|-----------|-----|----|---|-----|-----|----|----|---------------------|---------------|
|                | Rod side     | Head side |     |    |  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

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

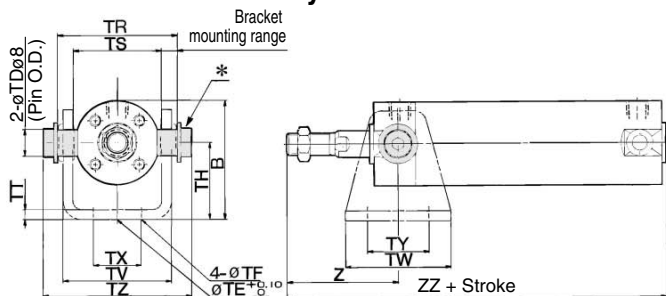
End boss is machined on the flange for øE.

\* Other dimensions are the same as basic style.

### Head side frange style: CG1GN



### Rod side trunnion style: CG1UN



### Trunnion Style

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

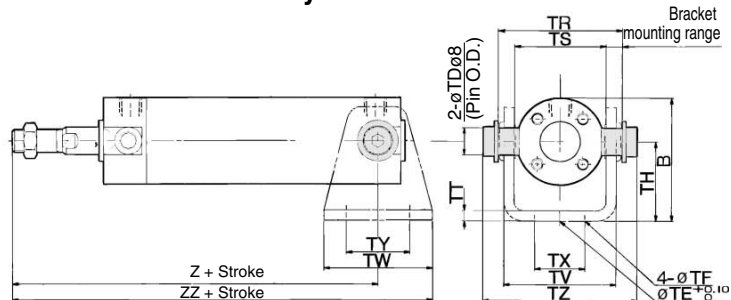
| Bore size (mm) | TW | TX | TY | TZ    | Rod side |                  | Head side |              |          |              |
|----------------|----|----|----|-------|----------|------------------|-----------|--------------|----------|--------------|
|                |    |    |    |       | Z       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

\* Consists of pin, flat washer and hexagon socket head cap bolt.

Note) ( ): Denotes the dimensions for long stroke. Refer to page 6-5-12 for pivot bracket.

\* Other dimensions are the same as basic style.

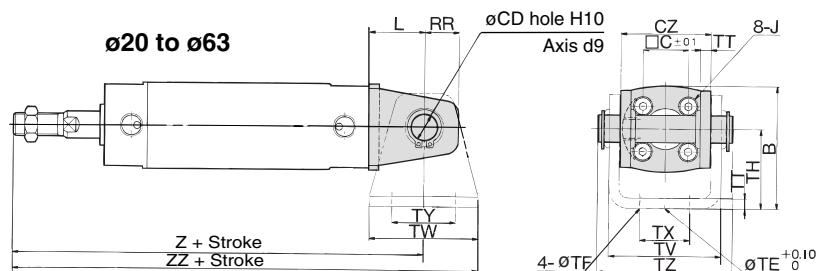
### Head side trunnion style: CG1TN



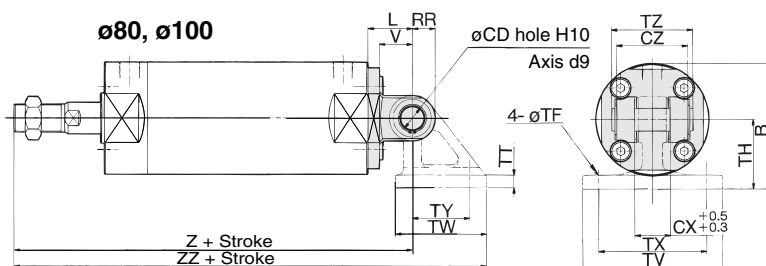
# Series CG1

## With Mounting Bracket

### Clevis style: CG1DN



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



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

### Clevis Style

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

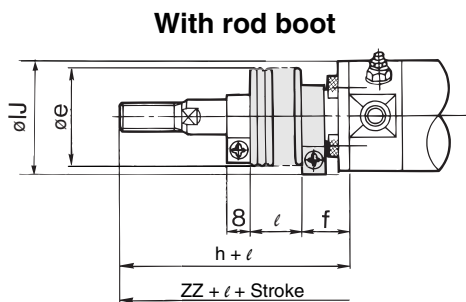
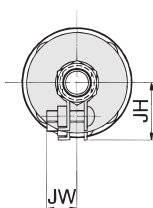
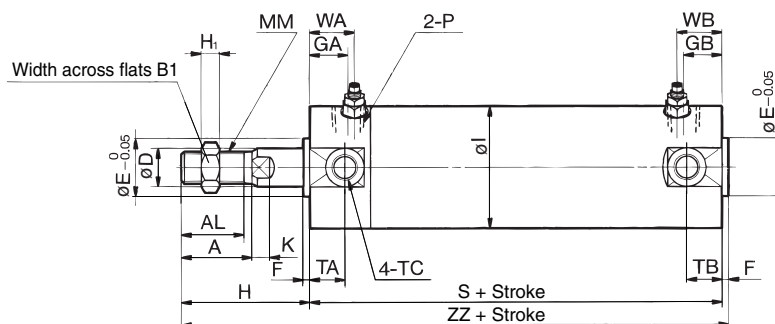
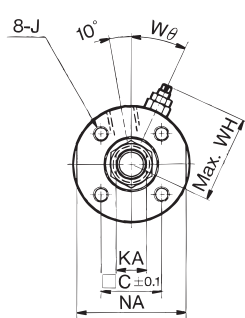
Note) ( ): Denotes the dimensions for long stroke.

\* Refer to page 6-5-12 for pivot bracket.

\* Other dimensions are the same as basic style.

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

## Basic Style with Air Cushion: CG1BA



**With Rod Boot**

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

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

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

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

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

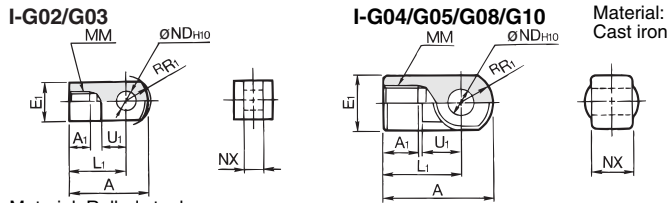
\* For mounting brackets, refer to page 6-5-12.

- CJ1
- CJP
- CJ2
- CM2
- CG1**
- MB
- MB1
- CA2
- CS1
- C76
- C85
- C95
- CP95
- NCM
- NCA
- D-
- X
- 20-
- Data

# Series CG1

# Accessory Bracket Dimensions

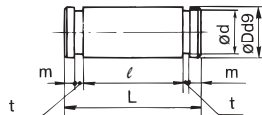
## Single Knuckle Joint



Material: Rolled steel

| Part no. | Applicable bore (mm) | A  | A <sub>1</sub> | E <sub>1</sub> | L <sub>1</sub> | MM         | R <sub>1</sub> | U <sub>1</sub> | ND <sub>H10</sub>                 | NX                                 |
|----------|----------------------|----|----------------|----------------|----------------|------------|----------------|----------------|-----------------------------------|------------------------------------|
| I-G02    | 20                   | 34 | 8.5            | □16            | 25             | M8 x 1.25  | 10.3           | 11.5           | 8 <sup>+0.058</sup> <sub>0</sub>  | 8 <sup>-0.2</sup> <sub>-0.4</sub>  |
| I-G03    | 25, 32               | 41 | 10.5           | □20            | 30             | M10 x 1.25 | 12.8           | 14             | 10 <sup>+0.058</sup> <sub>0</sub> | 10 <sup>-0.2</sup> <sub>-0.4</sub> |
| I-G04    | 40                   | 42 | 14             | ∅22            | 30             | M14 x 1.5  | 12             | 14             | 10 <sup>+0.058</sup> <sub>0</sub> | 18 <sup>-0.3</sup> <sub>-0.5</sub> |
| I-G05    | 50, 63               | 56 | 18             | ∅28            | 40             | M18 x 1.5  | 16             | 20             | 14 <sup>+0.070</sup> <sub>0</sub> | 22 <sup>-0.3</sup> <sub>-0.5</sub> |
| I-G08    | 80                   | 71 | 21             | ∅38            | 50             | M22 x 1.5  | 21             | 27             | 18 <sup>+0.070</sup> <sub>0</sub> | 28 <sup>-0.3</sup> <sub>-0.5</sub> |
| I-G10    | 100                  | 79 | 21             | ∅44            | 55             | M26 x 1.5  | 24             | 31             | 22 <sup>+0.084</sup> <sub>0</sub> | 32 <sup>-0.3</sup> <sub>-0.5</sub> |

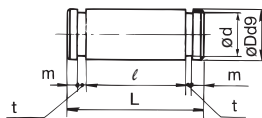
## Knuckle Pin



Material: Carbon steel

| Part no. | Applicable bore (mm) | Dd <sub>9</sub>                        | L    | d    | ℓ    | m    | t    | Applicable snap ring |
|----------|----------------------|--|------|------|------|------|------|----------------------|
| IY-G02   | 20                   | 8 <sup>-0.040</sup> <sub>-0.076</sub>  | 21   | 7.6  | 16.2 | 1.5  | 0.9  | Type C 8 for axis    |
| IY-G03   | 25, 32               | 10 <sup>-0.040</sup> <sub>-0.076</sub> | 25.6 | 9.6  | 20.2 | 1.55 | 1.15 | Type C 10 for axis   |
| IY-G04   | 40                   | 10 <sup>-0.040</sup> <sub>-0.076</sub> | 41.6 | 9.6  | 36.2 | 1.55 | 1.15 | Type C 10 for axis   |
| IY-G05   | 50, 63               | 14 <sup>-0.050</sup> <sub>-0.093</sub> | 50.6 | 13.4 | 44.2 | 2.05 | 1.15 | Type C 14 for axis   |
| IY-G08   | 80                   | 18 <sup>-0.050</sup> <sub>-0.093</sub> | 64   | 17   | 56.2 | 2.55 | 1.35 | Type C 18 for axis   |
| IY-G10   | 100                  | 22 <sup>-0.065</sup> <sub>-0.117</sub> | 72   | 21   | 64.2 | 2.55 | 1.35 | Type C 22 for axis   |

## Clevis Pin

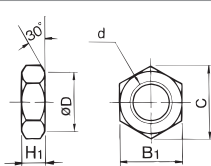


Material: Carbon steel

| Part no. | Applicable bore (mm) | Dd <sub>9</sub>                        | L     | d    | ℓ    | m    | t    | Applicable snap ring |
|----------|----------------------|--|-------|------|------|------|------|----------------------|
| CD-G02   | 20                   | 8 <sup>-0.040</sup> <sub>-0.076</sub>  | 43.4  | 7.6  | 38.6 | 1.5  | 0.9  | Type C 8 for axis    |
| CD-G25   | 25                   | 10 <sup>-0.040</sup> <sub>-0.076</sub> | 48    | 9.6  | 42.6 | 1.55 | 1.15 | Type C 10 for axis   |
| CD-G03   | 32                   | 12 <sup>-0.050</sup> <sub>-0.093</sub> | 59.4  | 11.5 | 54   | 1.55 | 1.15 | Type C 12 for axis   |
| CD-G04   | 40                   | 14 <sup>-0.050</sup> <sub>-0.093</sub> | 71.4  | 13.4 | 65   | 2.05 | 1.15 | Type C 14 for axis   |
| CD-G05   | 50                   | 16 <sup>-0.050</sup> <sub>-0.093</sub> | 86    | 15.2 | 79.6 | 2.05 | 1.15 | Type C 16 for axis   |
| CD-G06   | 63                   | 18 <sup>-0.050</sup> <sub>-0.093</sub> | 105.4 | 17   | 97.8 | 2.45 | 1.35 | Type C 18 for axis   |

\* Clevis pin and knuckle pin are common for bore size ∅80 and ∅100.

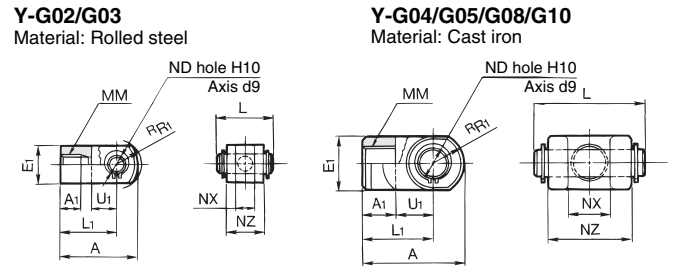
## Rod End Nut



Material: Rolled steel

| Part no. | Applicable bore (mm) | d          | H <sub>1</sub> | B <sub>1</sub> | C      | D    |
|----------|----------------------|------------|----------------|----------------|--------|------|
| NT-02    | 20                   | M8 x 1.25  | 5              | 13             | (15.0) | 12.5 |
| NT-03    | 25, 32               | M10 x 1.25 | 6              | 17             | (19.6) | 16.5 |
| NT-G04   | 40                   | M14 x 1.5  | 8              | 19             | (21.9) | 18   |
| NT-05    | 50, 63               | M18 x 1.5  | 11             | 27             | (31.2) | 26   |
| NT-08    | 80                   | M22 x 1.5  | 13             | 32             | (37.0) | 31   |
| NT-10    | 100                  | M26 x 1.5  | 16             | 41             | (47.3) | 39   |

## Double Knuckle Joint



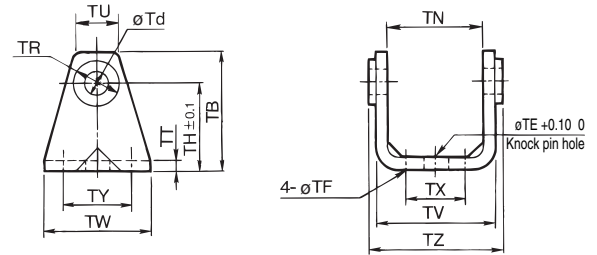
| Part no. | Applicable bore (mm) | A  | A <sub>1</sub> | E <sub>1</sub> | L <sub>1</sub> | MM         | R <sub>1</sub> | U <sub>1</sub> | ND | NX                                 | NZ | L    | Applicable pin part no. |
|----------|----------------------|----|----------------|----------------|----------------|------------|----------------|----------------|----|------------------------------------|----|------|-------------------------|
| Y-G02    | 20                   | 34 | 8.5            | □16            | 25             | M8 x 1.25  | 10.3           | 11.5           | 8  | 8 <sup>-0.4</sup> <sub>0</sub>     | 16 | 21   | IY-G02                  |
| Y-G03    | 25, 32               | 41 | 10.5           | □20            | 30             | M10 x 1.25 | 12.8           | 14             | 10 | 10 <sup>-0.2</sup> <sub>-0.4</sub> | 20 | 25.6 | IY-G03                  |
| Y-G04    | 40                   | 42 | 16             | ∅22            | 30             | M14 x 1.5  | 12             | 14             | 10 | 18 <sup>-0.5</sup> <sub>-0.3</sub> | 36 | 41.6 | IY-G04                  |
| Y-G05    | 50, 63               | 56 | 20             | ∅28            | 40             | M18 x 1.5  | 16             | 20             | 14 | 22 <sup>-0.5</sup> <sub>-0.3</sub> | 44 | 50.6 | IY-G05                  |
| Y-G08    | 80                   | 71 | 23             | ∅38            | 50             | M22 x 1.5  | 21             | 27             | 18 | 28 <sup>-0.5</sup> <sub>-0.3</sub> | 56 | 64   | IY-G08                  |
| Y-G10    | 100                  | 79 | 24             | ∅44            | 55             | M26 x 1.5  | 24             | 31             | 22 | 32 <sup>-0.5</sup> <sub>-0.3</sub> | 64 | 72   | IY-G10                  |

\* Knuckle pin and set ring are shipped together.

## Pivot Bracket (Order separately)

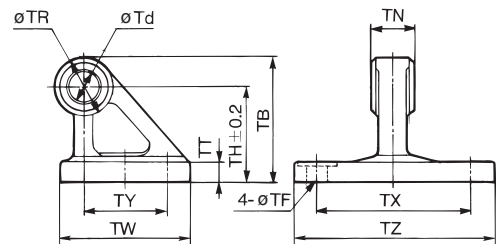
∅20 to ∅63

Material: Rolled steel



∅80, ∅100

Material: Cast iron

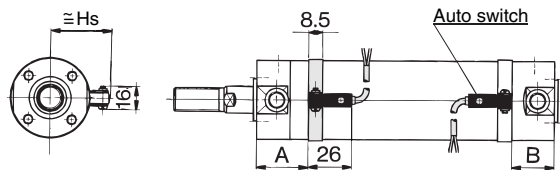


| Part no.   | Applicable bore (mm) | TB | Td | TE | TF   | TH | TN                                     | TR | TT  |
|------------|----------------------|----|----|----|------|----|--|----|-----|
| CG-020-24A | 20                   | 36 | 8  | 10 | 5.5  | 25 | (29.3)                                 | 13 | 3.2 |
| CG-025-24A | 25                   | 43 | 10 | 10 | 5.5  | 30 | (33.1)                                 | 15 | 3.2 |
| CG-032-24A | 32                   | 50 | 12 | 10 | 6.6  | 35 | (40.4)                                 | 17 | 4.5 |
| CG-040-24A | 40                   | 58 | 14 | 10 | 6.6  | 40 | (49.2)                                 | 21 | 4.5 |
| CG-050-24A | 50                   | 70 | 16 | 20 | 9    | 50 | (60.4)                                 | 24 | 6   |
| CG-063-24A | 63                   | 82 | 18 | 20 | 11   | 60 | (74.6)                                 | 26 | 8   |
| CG-080-24A | 80                   | 73 | 18 | —  | 11   | 55 | 28 <sup>-0.040</sup> <sub>-0.076</sub> | 36 | 11  |
| CG-100-24A | 100                  | 90 | 22 | —  | 13.5 | 65 | 32 <sup>-0.050</sup> <sub>-0.093</sub> | 50 | 12  |

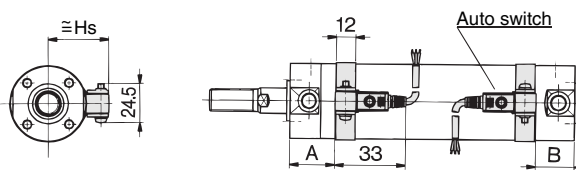
| Part no.   | Applicable bore (mm) | TU     | TV     | TW | TX  | TY | TZ   | Applicable pin O.D.                                  |
|------------|----------------------|--------|--------|----|-----|----|------|--|
| CG-020-24A | 20                   | (18.1) | (35.8) | 42 | 16  | 28 | 38.3 | 8d <sub>9</sub> <sup>-0.040</sup> <sub>-0.076</sub>  |
| CG-025-24A | 25                   | (20.7) | (39.8) | 42 | 20  | 28 | 42.1 | 10d <sub>9</sub> <sup>-0.040</sup> <sub>-0.076</sub> |
| CG-032-24A | 32                   | (23.6) | (49.4) | 48 | 22  | 28 | 53.8 | 12d <sub>9</sub> <sup>-0.050</sup> <sub>-0.093</sub> |
| CG-040-24A | 40                   | (27.3) | (58.4) | 56 | 30  | 30 | 64.6 | 14d <sub>9</sub> <sup>-0.050</sup> <sub>-0.093</sub> |
| CG-050-24A | 50                   | (29.7) | (72.4) | 64 | 36  | 36 | 79.2 | 16d <sub>9</sub> <sup>-0.050</sup> <sub>-0.093</sub> |
| CG-063-24A | 63                   | (34.3) | (90.4) | 74 | 46  | 46 | 97.2 | 18d <sub>9</sub> <sup>-0.050</sup> <sub>-0.093</sub> |
| CG-080-24A | 80                   | —      | —      | 72 | 85  | 45 | 110  | 18d <sub>9</sub> <sup>-0.050</sup> <sub>-0.093</sub> |
| CG-100-24A | 100                  | —      | —      | 93 | 100 | 60 | 130  | 22d <sub>9</sub> <sup>-0.065</sup> <sub>-0.117</sub> |

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

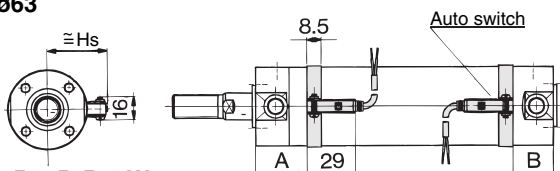
**D-C7, D-C8**  
ø20 to ø63



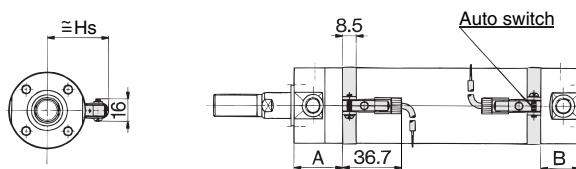
**D-G5, D-K5, D-G5□W, D-G5BAL**  
**D-K59W, D-G59F, D-G5NTL**



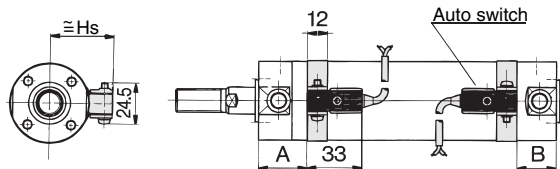
**D-H7□, D-H7□W**  
**D-H7NF, D-H7BAL**  
ø20 to ø63



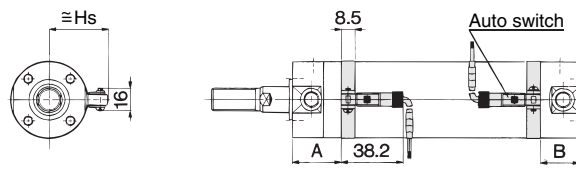
**D-C73C, D-C80C**  
ø20 to ø63



**D-B5, D-B6, D-B59W**  
ø20 to ø100



**D-H7C**  
ø20 to ø63



### Proper Auto Switch Mounting Position

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

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

### Auto Switch Mounting Height

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

### Operating Range

| Auto switch model                   | Bore size (mm) |     |     |    |     |      |     |     |
|-------------------------------------|----------------|-----|-----|----|-----|------|-----|-----|
|                                     | 20             | 25  | 32  | 40 | 50  | 63   | 80  | 100 |
| D-C7□/C80<br>D-C73C/C80C            | 8              | 10  | 9   | 10 | 10  | 11   | —   | —   |
| D-B5□/B64<br>D-B59W                 | 8              | 10  | 9   | 10 | 10  | 11   | 11  | 11  |
| D-H7□/H7□W<br>D-H7NF/H7BAL          | 4              | 4   | 4.5 | 5  | 6   | 6.5  | —   | —   |
| D-H7C                               | 7              | 8.5 | 9   | 10 | 9.5 | 10.5 | —   | —   |
| D-G5□/G5□W/G59F<br>D-G5BAL/K59/K59W | —              | —   | —   | —  | —   | —    | 6.5 | 7   |
| D-G5NTL                             | 4              | 4   | 4.5 | 5  | 6   | 6.5  | 6.5 | 7   |
| D-G5NBL                             | 35             | 40  | 40  | 45 | 45  | 45   | 45  | 50  |

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)

There may be the case it will vary substantially depending on an ambient environment.

CG1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X







20-

Data

# Series CG1

## Auto Switch Mounting Bracket, Mounting by Stroke

st: Stroke (mm)

| Mounting bracket  | Basic style, Foot style, Flange style, Clevis style   |   |   | Trunnion style *  |   |  |
|---|---|---|---|---|---|--|
|   | 1<br>(Rod cover side)   | 2<br>(Different sides)  | 2<br>(Mounted on the same side)   | 1   | 2<br>(Different sides)  | 2<br>(Mounted on the same side)  |
| No. of auto switches  |   |   |   |   |   |  |
| Switch mounting surface   | Port surface<br> | Port surface<br> | Port surface<br> |  |  |  |
| Switch type   |   |   |   |   |   |  |
| <b>D-C7/C8</b>  | 10 st or more   | 15 to 49 st   | 50 st or more   | 10 st or more   | 15 to 49 st   | 50 st or more  |
| <b>D-H7□/H7□W</b><br><b>D-H7BAL/H7NF</b>                                | 10 st or more   | 15 to 59 st   | 60 st or more   | 10 st or more   | 15 to 59 st   | 60 st or more  |
| <b>D-C73C/C80C/H7C</b>  | 10 st or more   | 15 to 64 st   | 65 st or more   | 10 st or more   | 15 to 64 st   | 65 st or more  |
| <b>D-B5/B6/G5/K5</b><br><b>D-G5□W/K59W/G5BAL</b><br><b>D-G59F/G5NTL</b> | 10 st or more   | 15 to 74 st   | 75 st or more   | 10 st or more   | 15 to 74 st   | 75 st or more  |
| <b>D-B59W</b>   | 15 st or more   | 20 to 74 st   | 75 st or more   | 15 st or more   | 20 to 74 st   | 75 st or more  |

\* Trunnion style is not available for bore sizes ø80 and ø100.

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

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

\* Timer equipped type, solid state auto switch (D-G5NTL) is also available.

\* Wide range detection type, solid state auto switch (D-G5NBL) is also available.

\* With pre-wire connector is available for D-G5NTL and D-G5NBL.



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

## How to Order

**Without auto switch**  
CG1W L N 25-100

**With auto switch**  
CDG1W L N 25-100 H7BW

**Built-in magnet**

**Double acting, double rod type**

**Mounting style**

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

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

**Type**

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

**Cylinder stroke (mm)**  
Refer to "Standard Stroke" on page 6-5-17.

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

**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**

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

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

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

**Suffix for cylinder (Rod boot)**

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

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

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

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

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

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

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

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

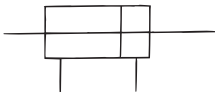


## Specifications

| Bore size (mm)                | 20  | 25 | 32 | 40 | 50 | 63 | 80   | 100 |
|-------------------------------|---|----|----|----|----|----|--|-----|
| Action                        | Double acting, Double rod   |    |    |    |    |    |  |     |
| Type                          | Non-lube  |    |    |    |    |    |  |     |
| Fluid                         | Air   |    |    |    |    |    |  |     |
| Proof pressure                | 1.5 MPa   |    |    |    |    |    |  |     |
| Maximum operating pressure    | 1.0 MPa   |    |    |    |    |    |  |     |
| Minimum operating pressure    | 0.8 MPa   |    |    |    |    |    |  |     |
| Ambient and fluid temperature | Without auto switch: -10 to 70°C (No freezing)<br>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 <sup>+1.4</sup> <sub>0</sub> mm  |    |    |    |    |    | Up to 1000 <sup>+1.4</sup> <sub>0</sub> mm |     |
|                               | Up to 1200 <sup>+1.8</sup> <sub>0</sub> mm  |    |    |    |    |    | Up to 1500 <sup>+1.8</sup> <sub>0</sub> mm |     |
| Thread tolerance              | JIS Class 2   |    |    |    |    |    |  |     |
| Cushion                       | Rubber bumper, Air cushion  |    |    |    |    |    |  |     |
| Mounting *                    | Basic style, Axial foot style, Rod side flange style, Rod side trunnion style                 |    |    |    |    |    |  |     |

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

### JIS Symbol



## Accessory

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

\* Not available for bore size ø80 and ø100.

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

## Standard Stroke

| Bore size (mm) | Standard stroke (mm) <sup>(1)</sup> | Long stroke (mm) | Maximum manufacturable stroke |
|----------------|-------------------------------------|------------------|-------------------------------|
| 20             | 25, 50, 75, 100, 125, 150, 200      | 201 to 350       | 1500                          |
| 25             | 25, 50, 75, 100, 125, 150, 200      | 301 to 400       |                               |
| 32             |                                     | 301 to 450       |                               |
| 40             |                                     | 301 to 800       |                               |
| 50, 63         |                                     | 301 to 1200      |                               |
| 80             |                                     | 301 to 1400      |                               |
| 100            |                                     | 301 to 1500      |                               |

Note 1) Other intermediate strokes can be manufactured upon receipt of order. Spacers are not used for the intermediate strokes.

Note 2) Long stroke applies to the axial foot style and the rod side flange style. If other mounting brackets are used, or the length exceeds the long stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

### With Auto Switch

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

### Rod Boot Material

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

\* Maximum ambient temperature for the rod boot itself.



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

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

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

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

\* Timer equipped type, solid state auto switch (D-G5NTL) is also available.

\* Wide range detection type, solid state auto switch (D-G5NBL) is also available.

\* With pre-wire connector is available for D-G5NTL and D-G5NBL.

# Series CG1W

## Weight

(kg)

| Bore size (mm)                             |                  | 20   | 25   | 32   | 40   | 50   | 63   | 80   | 100  |
|--|------------------|------|------|------|------|------|------|------|------|
| Basic weight                               | Basic style      | 0.13 | 0.22 | 0.33 | 0.55 | 1.02 | 1.37 | 2.64 | 4.09 |
|  | Axial foot style | 0.24 | 0.35 | 0.49 | 0.77 | 1.50 | 2.09 | 3.60 | 5.84 |
|  | Flange style     | 0.21 | 0.32 | 0.47 | 0.75 | 1.36 | 1.87 | 3.35 | 5.44 |
|  | Trunnion style   | 0.14 | 0.24 | 0.36 | 0.60 | 1.16 | 1.51 | —    | —    |
| Pivot bracket                              |                  | 0.08 | 0.09 | 0.17 | 0.25 | 0.44 | 0.80 | —    | —    |
| Single knuckle joint                       |                  | 0.05 | 0.09 | 0.09 | 0.10 | 0.22 | 0.22 | 0.39 | 0.57 |
| Double knuckle joint (With pin)            |                  | 0.05 | 0.09 | 0.09 | 0.13 | 0.26 | 0.26 | 0.64 | 1.31 |
| Additional weight per each 50 mm of stroke |                  | 0.07 | 0.10 | 0.13 | 0.23 | 0.34 | 0.38 | 0.54 | 0.77 |
| Additional weight with air cushion         |                  | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.03 | 0.09 | 0.10 |

Calculation: (Example) CG1WLN32-100 (Foot style, ø32, 100 st)

- Basic weight.....0.49 (Foot, ø32) • Cylinder stroke.....100 st
- Additional weight.....0.13/50 st 0.49 + 0.13 x 100/50 = 0.75 kg

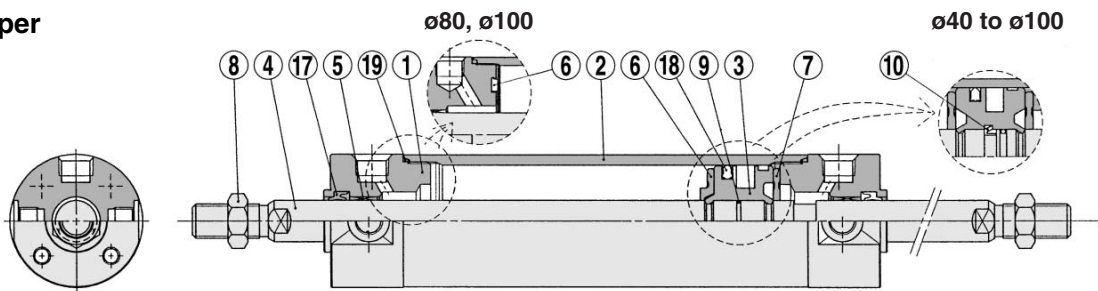


## Precautions

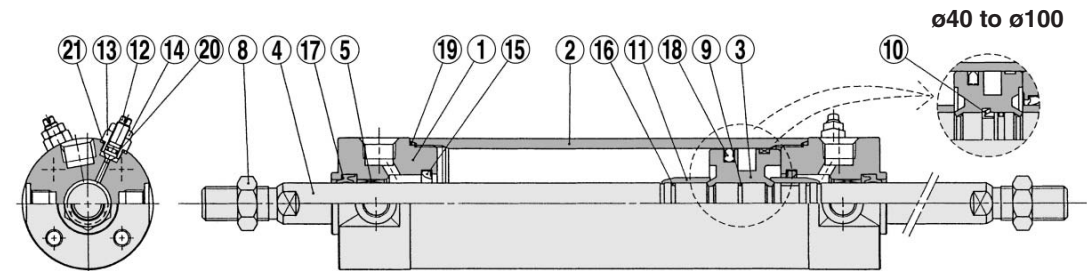
Be sure to read before handling. Refer to pages 6-20-3 to 6-20-6 for Safety Instructions and Actuator Precautions.

## Construction

### With rubber bumper



### With air cushion



## Component Parts

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

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

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

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

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

## Air-hydro

CG1W Mounting style H Bore size Stroke

↓  
Air-hydro

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

### Specifications

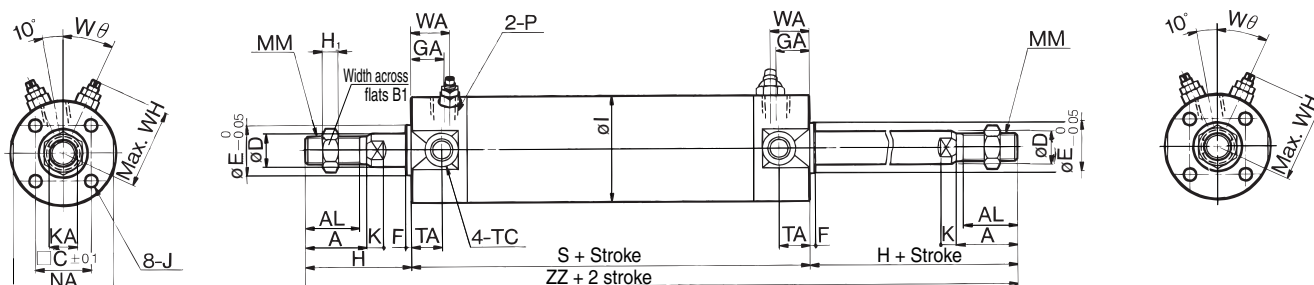
|                               |  |
|-------------------------------|--|
| Type                          | Air-hydro  |
| Bore size (mm)                | 20, 25, 32, 40, 50, 63   |
| Action                        | Double acting  |
| Fluid                         | Turbine oil  |
| Proof pressure  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

\* Auto switch can be mounted.

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

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

## Basic Style with Air Cushion: CG1WBA



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

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

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

\* For mounting brackets, refer to page 6-5-21.

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

## Copper-free

20-CG1W Mounting style Type Bore size Stroke

↓  
Copper-free

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

### Specifications

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

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

\* Auto switch capable

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

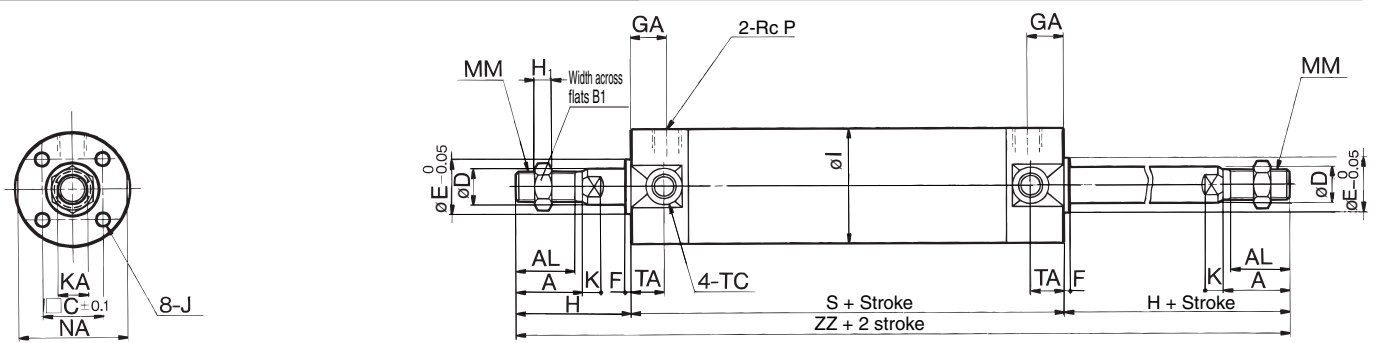
-X

20-

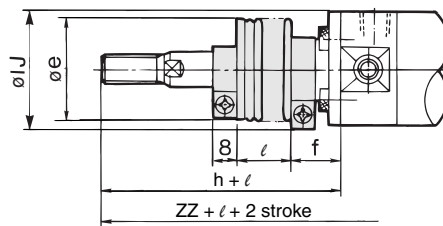
Data

# Series CG1W

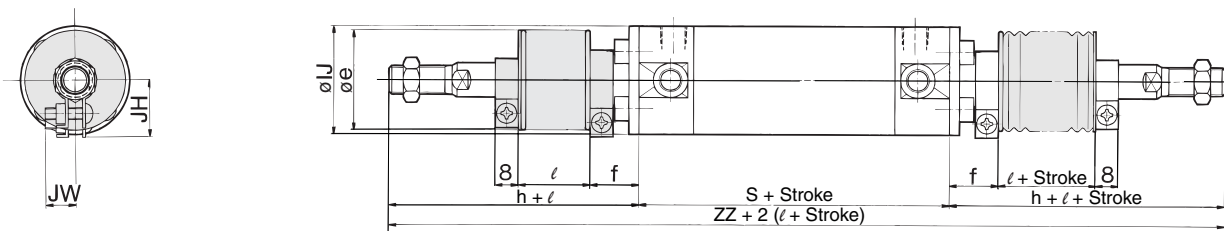
## Basic Style with Rubber Bumper: CG1WBN



### With rod boot at one end



### With rod boot at both ends



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

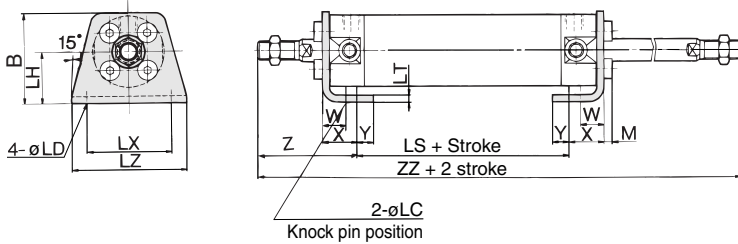
| Bore size (mm) | TA | TC**       | Without rod boot |     | With rod boot on one side* |    |    |    |        |        |             | With rod boot on both sides* |     | Air-hydro      |    |     |    |     |     |
|----------------|----|------------|------------------|-----|----------------------------|----|----|----|--------|--------|-------------|------------------------------|-----|----------------|----|-----|----|-----|-----|
|                |    |            | H                | ZZ  | e                          | f  | h  | IJ | JH     | JW     | l           | ZZ                           | ZZ  | Bore size (mm) | S  | ZZ  |    |     |     |
| 20             | 11 | M5 x 0.8   | 35               | 147 | 30                         | 16 | 55 | 27 | (14.5) | (11.5) | 0.25 stroke | 167                          | 187 | 20             | 77 | 147 |    |     |     |
| 25             | 11 | M6 x 0.75  | 40               | 157 | 30                         | 17 | 62 | 32 | (17.5) | (11.5) |             | 179                          | 201 |                |    |     | 25 | 77  | 157 |
| 32             | 11 | M8 x 1.0   | 40               | 159 | 35                         | 17 | 62 | 38 | (19.5) | (11.5) |             | 181                          | 203 |                |    |     | 32 | 79  | 159 |
| 40             | 12 | M10 x 1.25 | 50               | 187 | 35                         | 17 | 70 | 48 | (22.5) | (13)   |             | 207                          | 227 |                |    |     | 40 | 87  | 187 |
| 50             | 13 | M12 x 1.25 | 58               | 218 | 40                         | 17 | 78 | 59 | (25)   | (13)   |             | 238                          | 258 |                |    |     | 50 | 102 | 218 |
| 63             | 13 | M14 x 1.5  | 58               | 218 | 40                         | 18 | 78 | 72 | (25)   | (13)   |             | 238                          | 258 |                |    |     | 63 | 102 | 218 |
| 80             | —  | —          | 71               | 264 | 52                         | 10 | 80 | 59 | —      | —      |             | 273                          | 282 |                |    |     | —  | —   | —   |
| 100            | —  | —          | 71               | 264 | 62                         | 7  | 80 | 71 | —      | —      | 273         | 282                          | —   | —              | —  |     |    |     |     |

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



## With Mounting Bracket

### Axial foot style: CG1WLN

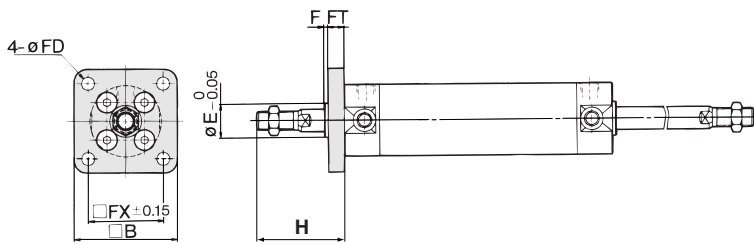


### Foot Style

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

\* Other dimensions are the same as basic style.

### Rod side flange style: CG1WFN



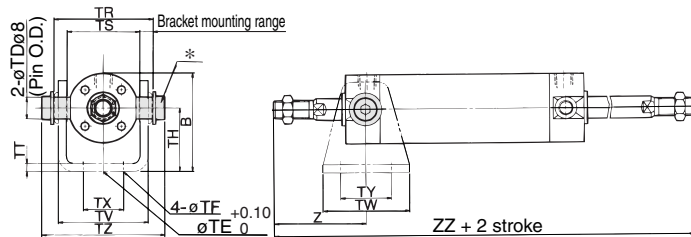
### Rod Side Flange Style

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

\* End boss is machined on the flange for øE.

\* Other dimensions are the same as basic style.

### Rod side trunnion style: CG1WUN



### Rod Side Trunnion Style

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

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

\* Consists of pin, flat washer and hexagon socket head cap bolt.

\* Other dimensions are the same as basic style.

## Mounting Bracket Part No.

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

\* Order two foot brackets per cylinder.

\*\* Mounting bolts are shipped together for foot style and flange style.

## Auto Switch Mounting Bracket Part No.

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



\* Mounting screws set made of stainless steel

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(A switch mounting band is not included, so please order it separately.)

BBA3: For D-B5/B6/G5/K5

BBA4: For D-C7/C8/H7

• D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.

When only a switch is shipped independently, BBA3 or BBA4 screws are attached.





# Air Cylinder: Standard Type

## Single Acting, Single Rod, Spring Return/Extend

# Series CG1

ø20, ø25, ø32, ø40

### How to Order

**Without auto switch**

**CG1** L N 25 — 100 S

**With auto switch**

**CDG1** L N 25 — 100 S — H7BW

**Built-in magnet** •

**Mounting style** •

|                                 |                                   |
|---------------------------------|-----------------------------------|
| <b>B</b> Basic style            | <b>U</b> Rod side trunnion style  |
| <b>L</b> Axial foot style       | <b>T</b> Head side trunnion style |
| <b>F</b> Rod side flange style  | <b>D</b> Clevis style             |
| <b>G</b> Head side flange style |                                   |

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

**Type** •

|                                 |  |
|---------------------------------|--|
| <b>N</b> Non-lube/Rubber bumper |  |
|---------------------------------|--|

**Bore size** •

|           |       |
|-----------|-------|
| <b>20</b> | 20 mm |
| <b>25</b> | 25 mm |
| <b>32</b> | 32 mm |
| <b>40</b> | 40 mm |

**Auto switch**

|            |                                       |
|------------|---------------------------------------|
| <b>Nil</b> | Without auto switch (Built-in magnet) |
|------------|---------------------------------------|

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

**Number of auto switches**

|            |          |
|------------|----------|
| <b>Nil</b> | 2 pcs.   |
| <b>S</b>   | 1 pc.    |
| <b>n</b>   | "n" pcs. |

**Action**

|          |                              |
|----------|------------------------------|
| <b>S</b> | Single acting, Spring return |
| <b>T</b> | Single acting, Spring extend |

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

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

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

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

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

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

# Air Cylinder: Standard Type

## Single Acting, Single Rod, Spring Return/Extend **Series CG1**

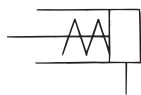


### Specifications

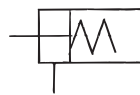
| Action                        | Single acting, Spring return  | Single acting, Spring extend |
|-------------------------------|---|------------------------------|
| Bore size (mm)                | 20, 25, 32, 40  |                              |
| Type                          | Non-lube  |      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

### JIS Symbol

Spring return



Spring extend



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

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

### Accessory

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

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

### Standard Stroke

| Bore size (mm) | Standard stroke (mm) <sup>Note)</sup> |
|----------------|---------------------------------------|
| 20             | 25, 50, 75, 100, 125                  |
| 25, 32, 40     | 25, 50, 75, 100, 125, 150, 200        |

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

### Mounting Bracket Part No.

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

\* Order two foot brackets per cylinder.

\*\* Mounting bolt is shipped together with foot style and flange style, and clevis pin, snap ring and mounting bolt with clevis style.

### Auto Switch Mounting Bracket Part No.

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



\* Mounting screws set made of stainless steel

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(A switch mounting band is not included, so please order it separately.)

BBA3: For D-B5/B6/G5

BBA4: For D-C7/C8/H7

• D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.

When only a switch is shipped independently, BBA3 or BBA4 screws are attached.

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Series CG1

## Weight

(kg)

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

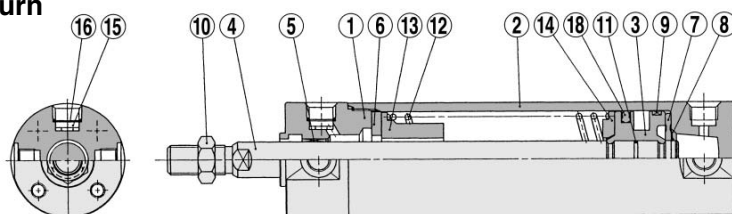
| Spring extend           |                           |      |      |      |      |
|-------------------------|---------------------------|------|------|------|------|
| Bore size (mm)          |                           | 20   | 25   | 32   | 40   |
| Basic weight            | 25 stroke           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

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

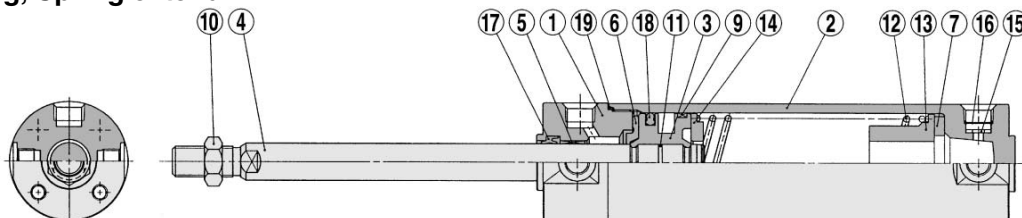
Calculation: (Example) CG1LN20-100T (Foot style, ø20, 100 st)  
 • Basic weight.....0.26 kg (ø20) • Mounting bracket weight....0.11 kg (Foot)  
 0.26 + 0.11 = 0.37 kg

## Construction

### Single acting, Spring return



### Single acting, Spring extend



### Component Parts

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

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

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

### Replacement Parts: For Single Acting, Spring Return

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

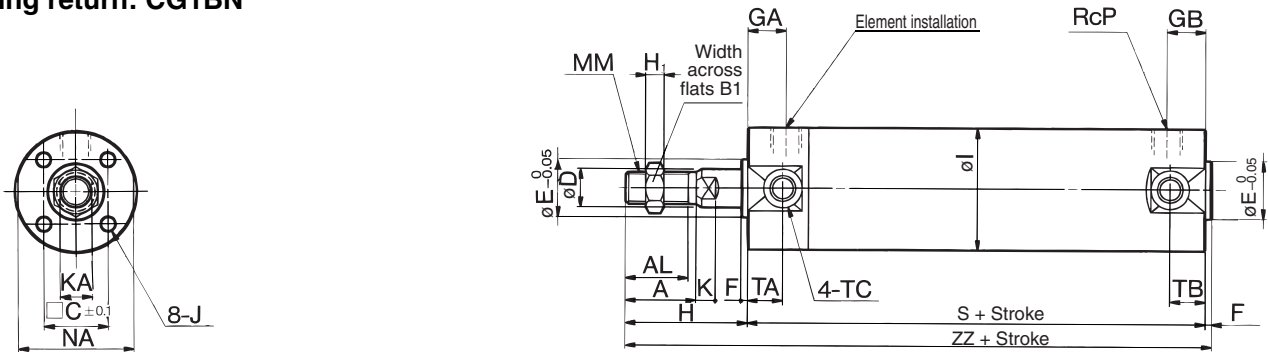
### Replacement Parts: For Single Acting, Spring Extend

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

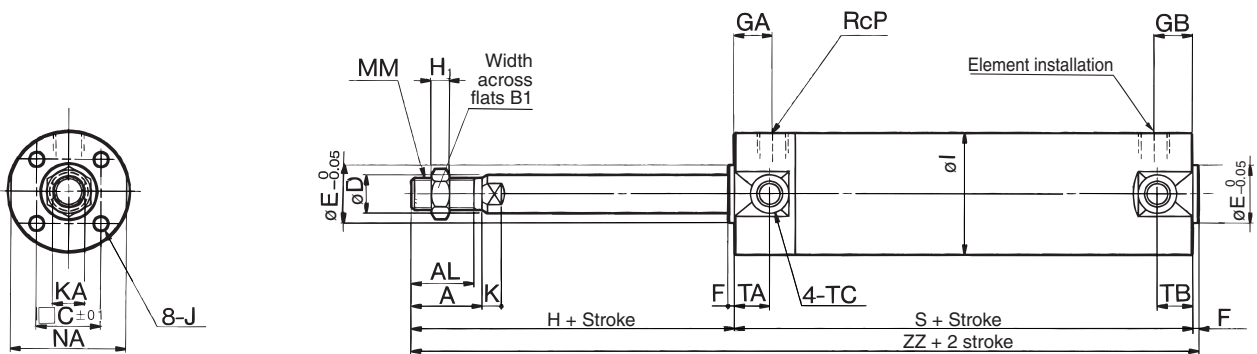
# Series CG1

## Basic Style

### Spring return: CG1BN



### Spring extend: CG1BN



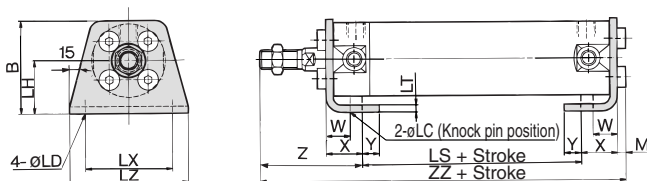
| Bore size (mm) | Stroke range (mm) | A  | AL   | B1 | C    | D  | E  | F | GA | GB | H  | H1 | I  | J                  | K   | KA | MM         | NA   | P   |
|----------------|-------------------|----|------|----|------|----|----|---|----|----|----|----|----|--------------------|-----|----|------------|------|-----|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

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

## With Mounting Bracket

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

### Axial foot style: CG1LN



### Axial Foot Style

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

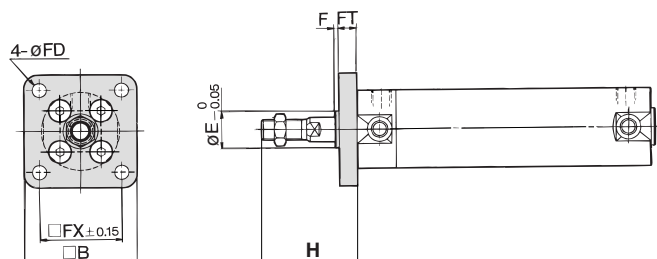
| Bore size (mm) | 1 to 50 st | 51 to 100 st | 101 to 125 st | 126 to 200 st | 1 to 50 st |       | 51 to 100 st |       | 101 to 125 st |    | 126 to 200 st |    |
|----------------|------------|--------------|---------------|---------------|------------|-------|--------------|-------|---------------|----|---------------|----|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

\* Other dimensions are the same as basic style.

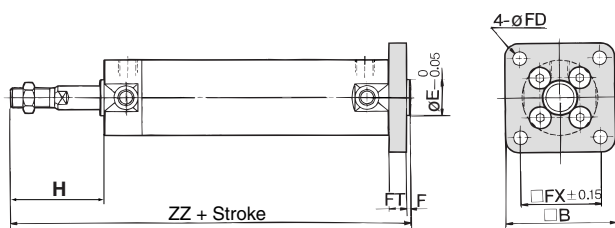
# Air Cylinder: Standard Type Single Acting, Single Rod, Spring Return/Extend **Series CG1**

## With Mounting Bracket

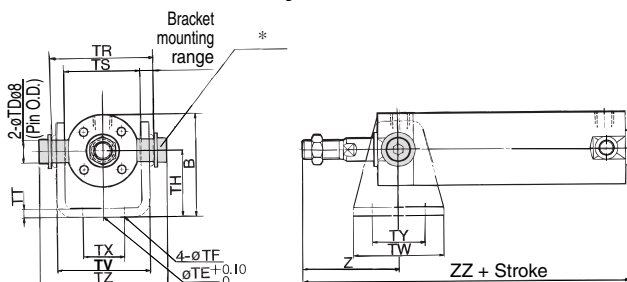
### Rod side flange style: CG1FN



### Head side flange style: CG1GN

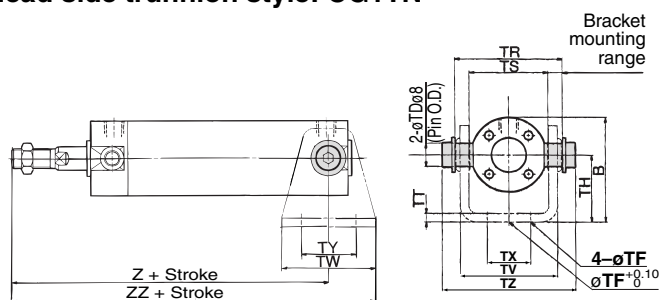


### Rod side trunnion style: CG1UN

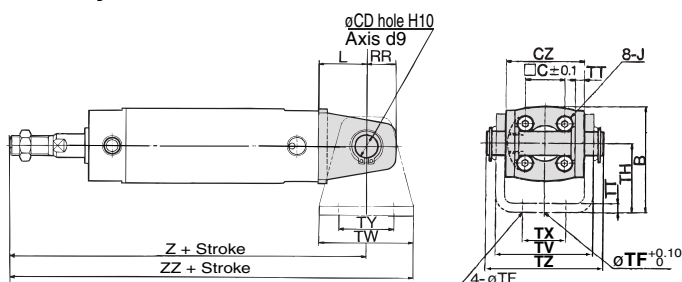


\* Clevis pin and snap ring are shipped together.

### Head side trunnion style: CG1TN



### Clevis style: CG1DN



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

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

\* End boss is machined on the flange for  $\phi E$ .

\* Other dimensions are the same as basic style.

### Rod Side Flange Style

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

### Head Side Flange Style

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

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

\* Consists of pin, flat washer and hexagon socket head cap bolt.

\* Other dimensions are the same as basic style.

### Rod Side Trunnion Style

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

### Head Side Trunnion Style

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

### Clevis Style

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

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

\* For dimensions of pivot bracket, refer to page 6-5-12.

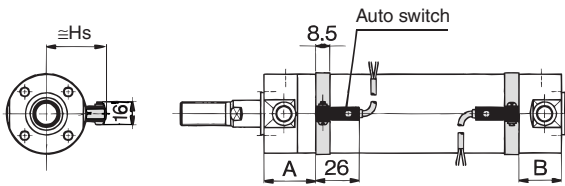
\* Other dimensions are the same as basic style.

- CJ1
- CJP
- CJ2
- CM2
- CG1**
- MB
- MB1
- CA2
- CS1
- C76
- C85
- C95
- CP95
- NCM
- NCA
- D-
- X
- 20-
- Data

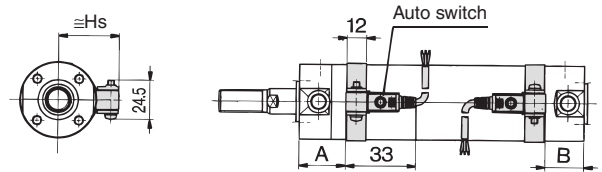
# Series CG1

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

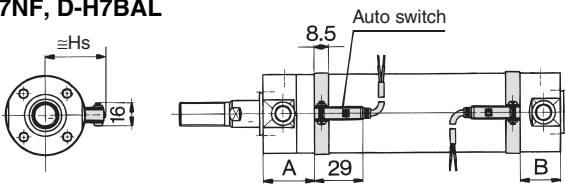
D-C7, D-C8



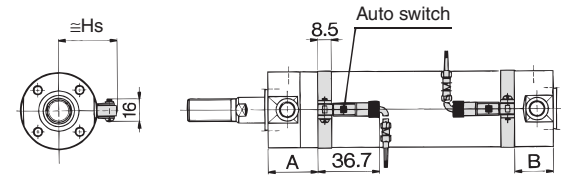
D-G5NTL



D-H7□, D-H7□W  
D-H7NF, D-H7BAL

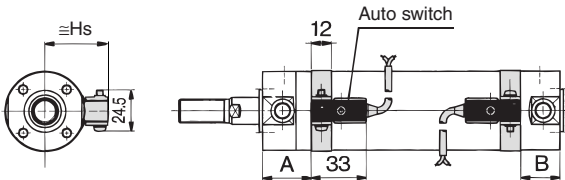


D-C73C, D-C80C

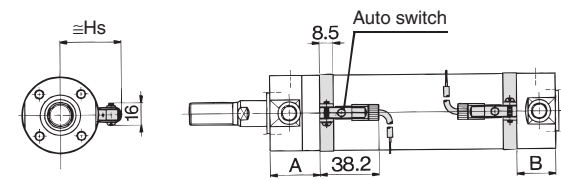


(36) : Denotes the values of D-H7LF.

D-B5, D-B6, D-B59W



D-H7C



### Single Acting, Spring Return

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

( ) : Denotes the dimensions with connector.

### Single Acting, Spring Extend

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

( ) : Denotes the dimensions with connector.



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

## Operating Range

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

\* Since this is a guideline including hysteresis, not meant to be guaranteed.

(Assuming approximately ±30% dispersion)

There may be the case it will vary substantially depending on an ambient environment.

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

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

\* Timer equipped type, solid state auto switch (D-G5NTL) is also available.

\* Wide range detection type, solid state auto switch (D-G5NBL) is also available.

\* With pre-wire connector is available for D-G5NTL and D-G5NBL.

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Air Cylinder: Non-rotating Rod Type Double Acting, Single Rod

## Series **CG1K**

ø20, ø25, ø32, ø40, ø50, ø63

### How to Order

**Without auto switch** CG1K **L** **N** **25** **100**

**With auto switch** CDG1K **L** **N** **25** **100** **H7BW**  

**Built-in magnet** •

**Double acting, non-rotating rod type** •

**Mounting style** •

|          |                          |
|----------|--------------------------|
| <b>B</b> | Basic style              |
| <b>L</b> | Axial foot style         |
| <b>F</b> | Rod side flange style    |
| <b>G</b> | Head side flange style   |
| <b>U</b> | Rod side trunnion style  |
| <b>T</b> | Head side trunnion style |
| <b>D</b> | Clevis style             |

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

**Cushion** •

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

**Bore size** •

|           |       |
|-----------|-------|
| <b>20</b> | 20 mm |
| <b>25</b> | 25 mm |
| <b>32</b> | 32 mm |
| <b>40</b> | 40 mm |
| <b>50</b> | 50 mm |
| <b>63</b> | 63 mm |

**Auto switch** •

|            |                                       |
|------------|---------------------------------------|
| <b>Nil</b> | Without auto switch (Built-in magnet) |
| <b>S</b>   | 1 pc.                                 |
| <b>n</b>   | "n" pcs.                              |

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

**Cylinder stroke (mm)**  
Refer to "Standard Stroke" on page 6-5-31.

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

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

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

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

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

# Air Cylinder: Non-rotating Rod Type Double Acting, Single Rod Series CG1K

## Non-rotating accuracy

$\phi 20, \phi 25 \dots \pm 1^\circ$   
 $\phi 32 \dots \pm 0.8^\circ$   
 $\phi 40 \text{ to } \phi 63 \dots \pm 0.5^\circ$

## High speed operation/Long service life

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

## Can operate without lubrication.

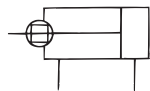
The same installation dimensions as the standard cylinder.

## Auto switches can also be mounted.

It can be installed with auto switches to simplify the detection of the stroke position of the cylinder.



JIS Symbol



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

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

## Specifications

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

## Accessory

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

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

## Standard Stroke

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



Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.

Note 2) The maximum limit is 1500 stroke, but the products that exceed the standard or the long stroke limit are not guaranteed.

## With Auto Switch

Double acting: Auto switch can be mounted for non-rotating rod.

Mounting position is the same as double acting, single rod type. Refer to page 6-5-13.

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

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

\* Timer equipped type, solid state auto switch (D-G5NTL) is also available.

\* Wide range detection type, solid state auto switch (D-G5NBL) is also available.

\* With pre-wire connector is available for D-G5NTL and D-G5NBL.

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Series CG1K

## Weight

(kg)

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

Calculation: (Example) CG1KLN20-100  
 (Foot style, ø20, 100<sup>st</sup>)

- Basic weight.....0.21 (Foot, ø20)
- Additional weight.....0.05/50<sup>st</sup>
- Cylinder stroke.....100<sup>st</sup>

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

## Mounting Bracket Part No.

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



\* Order two foot brackets per cylinder.

\*\* Mounting bolt is shipped together with foot style and flange style, and clevis pin, snap ring and mounting bolt for clevis style.

## Copper-free

20-CG1K Mounting style N Bore size Stroke

### Copper-free

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

## Specifications

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

## Auto Switch Mounting Bracket Part No.

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

\* Mounting screws set made of stainless steel

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(A switch mounting band is not included, so please order it separately.)

BBA3: For D-B5/B6/G5

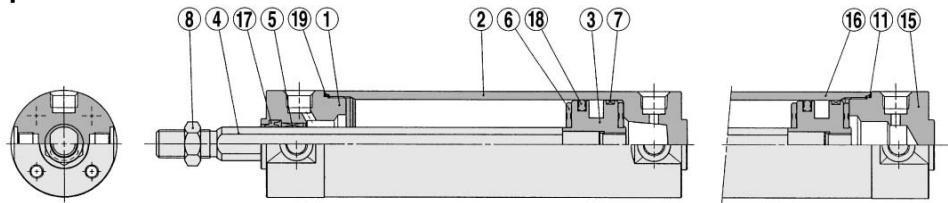
BBA4: For D-C7/C8/H7

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

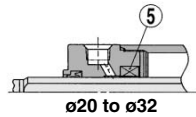
# Air Cylinder: Non-rotating Rod Type Double Acting, Single Rod Series CG1K

## Construction

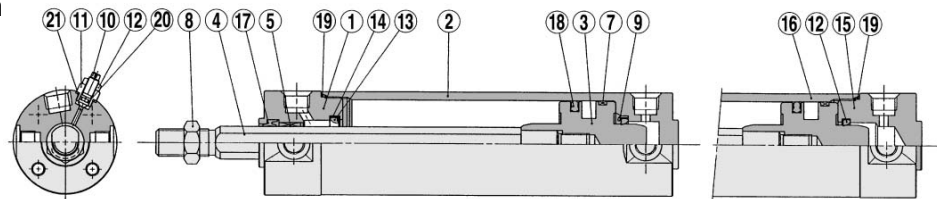
### With rubber bumper



Long stroke



### With air cushion



Long stroke

### Replacement Parts: Seal Kit for Rubber Bumper

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

### Replacement Parts: Seal Kit for Air Cushion

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

### Component Parts

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

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

\* The material is stainless steel for ø20 to ø32.

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

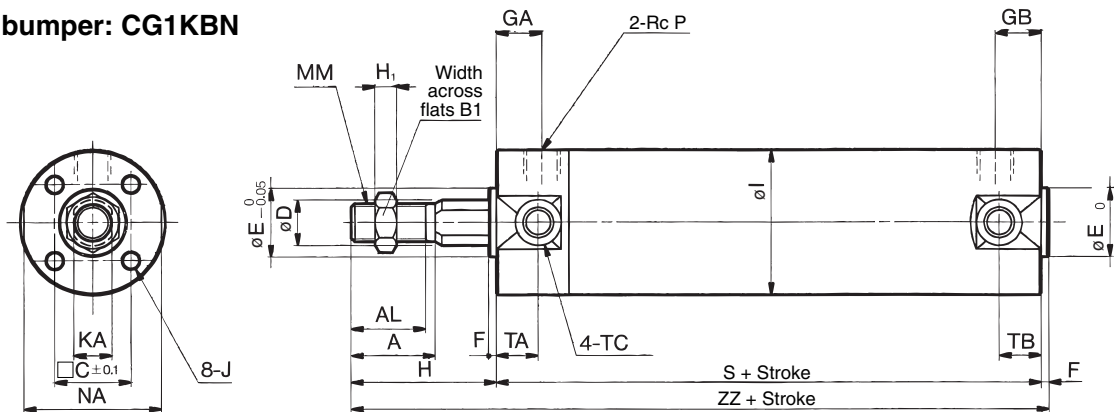
20-

Data

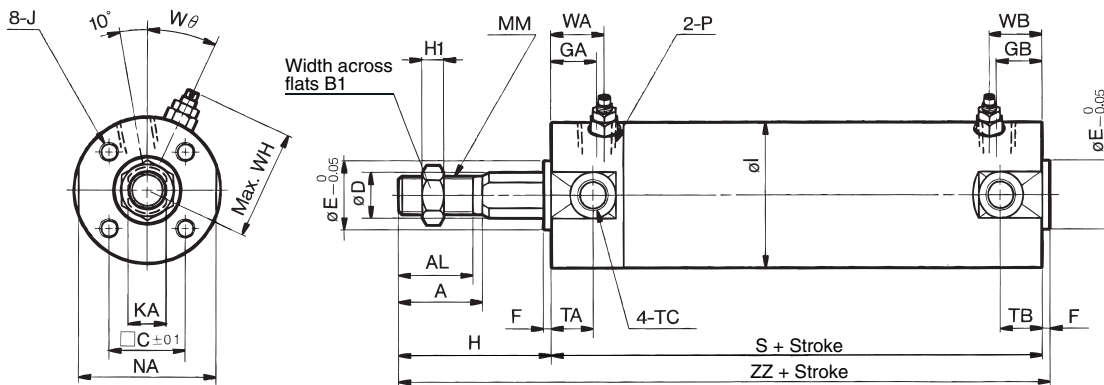
# Series CG1K

## Basic Style

With rubber bumper: CG1KBN  
 $\phi 20$  to  $\phi 63$



With air cushion: CG1KBA  
 $\phi 40$  to  $\phi 63$



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

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

Note 2) ( ): Long stroke

### With Air Cushion

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

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

## ⚠ Precautions

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

### Caution on Handling/Disassembly

#### ⚠ Caution

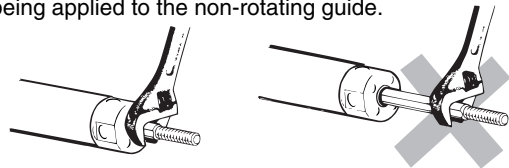
1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

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

| Allowable rotational torque (N·m or less) | $\phi 20$ | $\phi 25, \phi 32$ | $\phi 40, \phi 50, \phi 63$ |
|---|-----------|--------------------|-----------------------------|
|   |           | 0.2                | 0.25                        |

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

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



2. When replacing rod seals, please contact SMC.

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



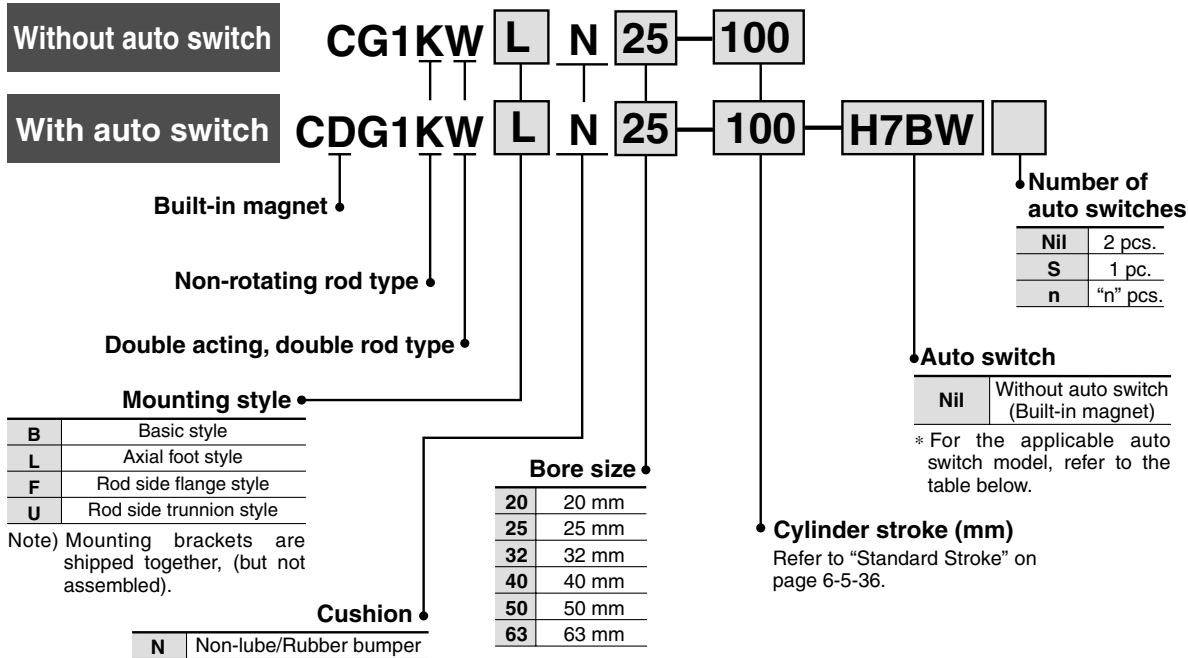


# Air Cylinder: Non-rotating Rod Type Double Acting, Double Rod

## Series **CG1KW**

ø20, ø25, ø32, ø40, ø50, ø63

### How to Order



CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

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

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

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

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

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

# Series CG1KW

## Non-rotating accuracy

$\phi 20, \phi 25 \dots \pm 1^\circ$   
 $\phi 32 \dots \pm 0.8^\circ$   
 $\phi 40 \text{ to } \phi 63 \dots \pm 0.5^\circ$

## High speed operation/Long service life

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

## Can operate without lubrication.

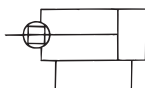
## The same installation dimensions as the standard cylinder.

## Auto switches can also be mounted.

It can be installed with auto switches to simplify the detection of the stroke position of the cylinder.



### JIS Symbol



## Specifications

| Bore size (mm)                | 20  | 25              | 32              | 40 | 50 | 63 |
|-------------------------------|---|-----------------|-----------------|----|----|----|
| Action                        | Double acting, Double rod   |                 |                 |    |    |    |
| Type                          | Non-lube  |                 |                 |    |    |    |
| Fluid                         | Air   |                 |                 |    |    |    |
| Proof pressure                | 1.5 MPa   |                 |                 |    |    |    |
| Maximum operating pressure    | 1.0 MPa   |                 |                 |    |    |    |
| Minimum operating pressure    | 0.08 MPa  |                 |                 |    |    |    |
| Ambient and fluid temperature | Without auto switch: $-10$ to $70^\circ\text{C}$ (No freezing)<br>With auto switch: $-10$ to $60^\circ\text{C}$ (No freezing) |                 |                 |    |    |    |
| Piston speed                  | 50 to 500 mm/s  |                 |                 |    |    |    |
| Thread tolerance              | JIS Class 2   |                 |                 |    |    |    |
| Stroke length tolerance       | Up to $600^{+1.4}_0$ mm   |                 |                 |    |    |    |
| Cushion                       | Rubber bumper   |                 |                 |    |    |    |
| Rod non-rotating accuracy     | $\pm 1^\circ$   | $\pm 0.8^\circ$ | $\pm 0.5^\circ$ |    |    |    |
| Mounting                      | Basic style, Axial foot style, Rod side flange style, Rod side trunnion style   |                 |                 |    |    |    |

## Accessory

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

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

## Standard Stroke

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

Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.

Note 2) The maximum limit is 1500 stroke, but the products that exceed the standard or long stroke limit are not guaranteed.

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

## Weight

(kg)

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

Calculation: (Example) CG1KWLN32-100 (Foot style, ø32, 100 st)

- Basic weight.....0.49 (Foot, ø32) • Cylinder stroke.....100 st
- Additional weight.....0.13/50 st                      0.49 + 0.13 x 100/50 = 0.75 kg

## Mounting Bracket Part No.

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

\* Order two foot brackets per a cylinder.

\*\* Mounting bolts are shipped together for foot style and flange style.

## Auto Switch Mounting Bracket Part No.

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

\* Mounting screws set made of stainless steel

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(Please order the mounting band separately, since it is not included.)

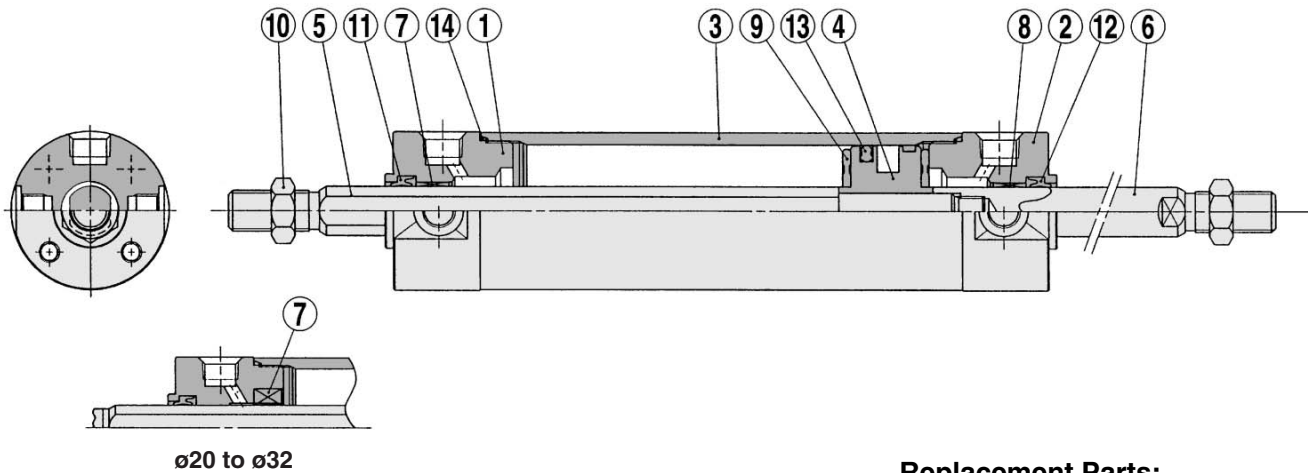
BBA3: For D-B5/B6/G5/K5

BBA4: For D-C7/C8/H7

• D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.

When only a switch is shipped independently, BBA3 or BBA4 screws are attached.

## Construction



ø20 to ø32

## Component Parts

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

\* The material is stainless steel for ø20 to ø32.

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

\*\*\* A magnet is equipped on the piston of the cylinder with auto switch.

## Replacement Parts: Seal Kit for Rubber Bumper

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

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

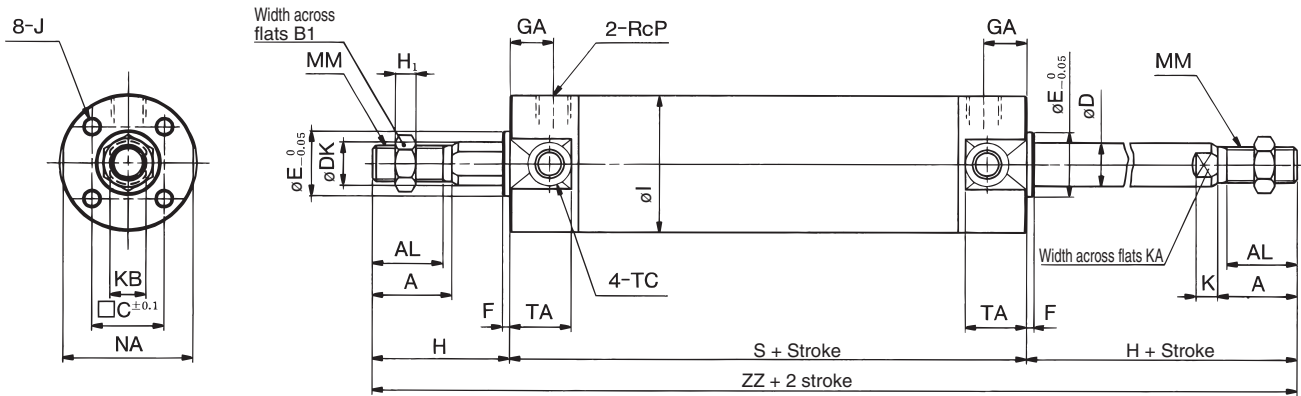
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20-

Data

# Series CG1KW

## Basic Style with Rubber Bumper: CG1KWBN



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

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

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

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

## ⚠ Precautions

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

### Caution on Handling/Disassembly

#### ⚠ Caution

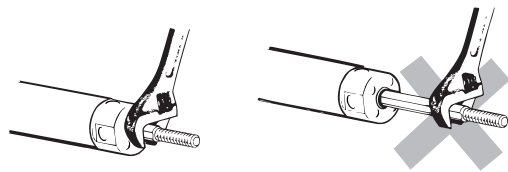
1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.

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

| Allowable rotational torque (N·m or less) | $\phi 20$ | $\phi 25, \phi 32$ | $\phi 40, \phi 50, \phi 63$ |
|---|-----------|--------------------|-----------------------------|
|   | 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.



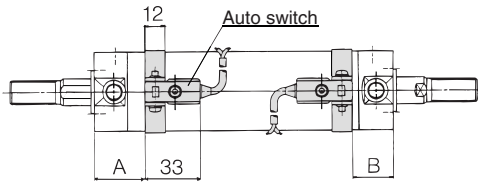
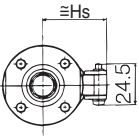
2. When replacing rod seals, please contact SMC.

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

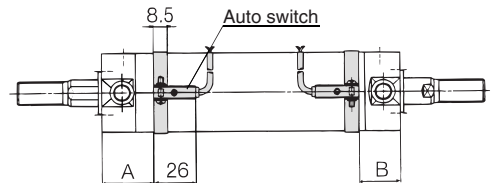
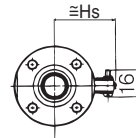
# Air Cylinder: Non-rotating Rod Type Double Acting, Double Rod Series **CG1KW**

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

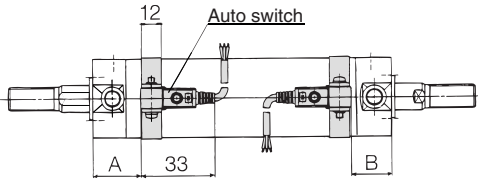
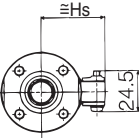
**D-B5/B6**



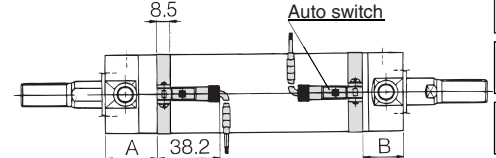
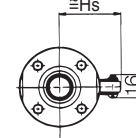
**D-C7/C8**



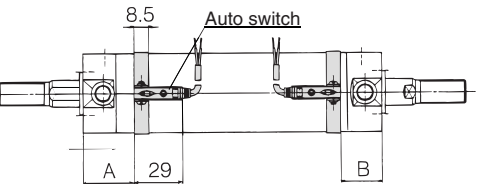
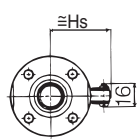
**G5NTL**



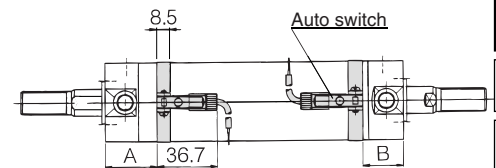
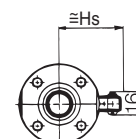
**D-H7C**



**D-H7□/H7□W/H7NF/H7BAL**



**D-C73C**



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

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

### Operating Range

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

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)  
There may be the case it will vary substantially depending on an ambient environment.

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

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

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

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

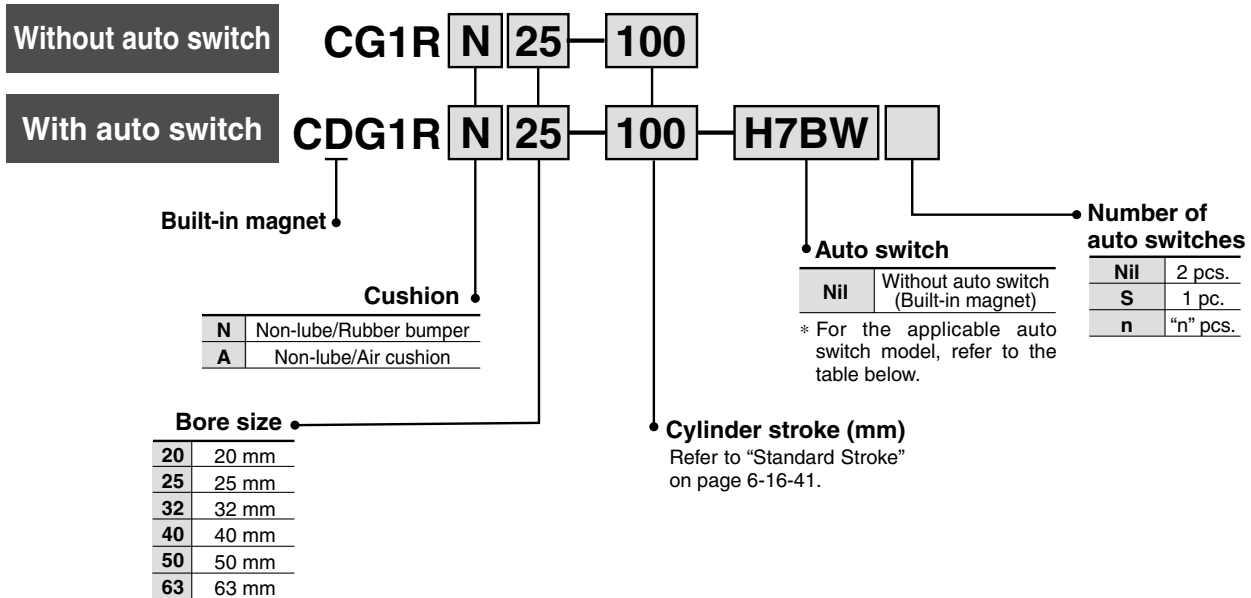
Data

# Air Cylinder: Direct Mount Type Double Acting, Single Rod

## Series **CG1R**

ø20, ø25, ø32, ø40, ø50, ø63

### How to Order



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

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

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

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

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



# Air Cylinder: Direct Mount Type Double Acting, Single Rod **Series CG1R**

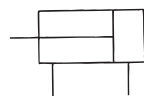
**Series CG1R direct mount cylinder can be installed directly through the use of a square rod cover.**

### Space-saving has been realized.

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



### JIS Symbol



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

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

### Specifications

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

### Weight

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

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

- Basic weight..... 0.35
  - Additional weight..... 0.09/50 st
  - Cylinder stroke..... 100 st
- 0.35 + 0.09 x 100/50 = 0.53 kg

### Accessory

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

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

### Standard Stroke

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

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

### Auto Switch Mounting Bracket Part No.

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



\* Mounting screws set made of stainless steel  
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.  
(Please order the mounting band separately, since it is not included.)

BBA3: For D-B5/B6/G5

BBA4: For D-C7/C8/H7

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

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Series CG1R

## Clean Series

10-CG1RN **Bore size** — **Stroke**

### Clean Series (With relief port)

The rod portion of the actuator has a double seal construction, and a relief port is provided to discharge the exhaust air directly outside of the clean room.

Thus, it can be used in a Class 100 clean room.

### Specifications

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

\* Auto switch can be mounted.

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

## Copper-free

20-CG1R **Type** — **Bore size** — **Stroke**

### Copper-free

This cylinder eliminates any influences of copper ions or fluororesins on color CRTs.

Copper materials have been nickel plated or replaced with non-copper materials to prevent the generation of copper ions.

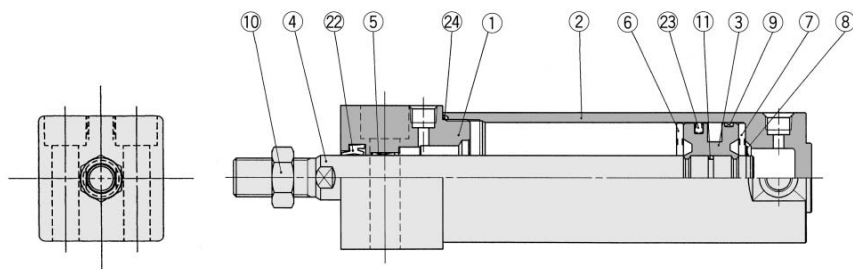
### Specifications

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

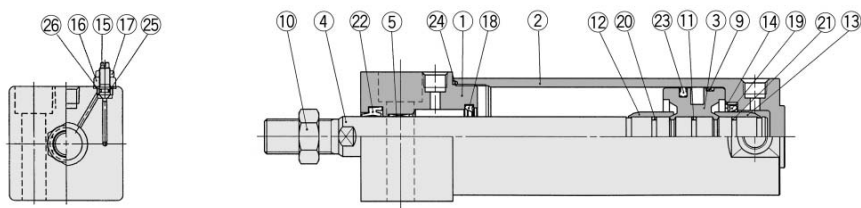
# Air Cylinder: Direct Mount Type Double Acting, Single Rod Series **CG1R**

## Construction

### Basic style: Bottom mounting style/with rubber bumper



### With air cushion



### Component Parts

| No. | Description    | Material                       | Note                                |
|-----|----------------|--------------------------------|-------------------------------------|
| ①   | Rod cover      | Aluminum alloy                 | Clear hard anodized                 |
| ②   | Tube cover     | Aluminum alloy                 | Clear hard anodized                 |
| ③   | Piston         | Aluminum alloy                 | Chromated                           |
| ④   | Piston rod     | Carbon steel *                 | Hard chrome plated                  |
| ⑤   | Bushing        | Oil-impregnated sintered alloy | ø40 or larger: Lead-bronze casted   |
| ⑥   | Bumper A       | Urethane                       |                                     |
| ⑦   | Bumper B       | Urethane                       | ø40 or larger: The same as bumper A |
| ⑧   | Snap ring      | Stainless steel                |                                     |
| ⑨   | Wear ring      | Resin                          |                                     |
| ⑩   | Rod end nut    | Rolled steel                   | Nickel plated                       |
| ⑪   | Piston gasket  | NBR                            |                                     |
| ⑫   | Cushion ring A | Brass                          |                                     |
| ⑬   | Cushion ring B | Brass                          | ø32 or larger: The same as A        |

| No. | Description            | Material     | Note                         |
|-----|------------------------|--------------|------------------------------|
| ⑭   | Seal retainer          | Rolled steel |                              |
| ⑮   | Cushion valve          | Rolled steel | Electroless nickel plated    |
| ⑯   | Valve retainer         | Rolled steel | Electroless nickel plated    |
| ⑰   | Lock nut               | Carbon steel | Nickel plated                |
| ⑱   | Cushion seal A         | Urethane     |                              |
| ⑲   | Cushion seal B         | Urethane     |                              |
| ⑳   | Cushion ring gasket A  | NBR          |                              |
| ㉑   | Cushion ring gasket B  | NBR          | ø32 or larger: The same as A |
| ㉒   | Rod seal               | NBR          |                              |
| ㉓   | Piston seal            | NBR          |                              |
| ㉔   | Tube gasket            | NBR          |                              |
| ㉕   | Valve seal             | NBR          |                              |
| ㉖   | Valve retaining gasket | NBR          |                              |

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

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

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

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

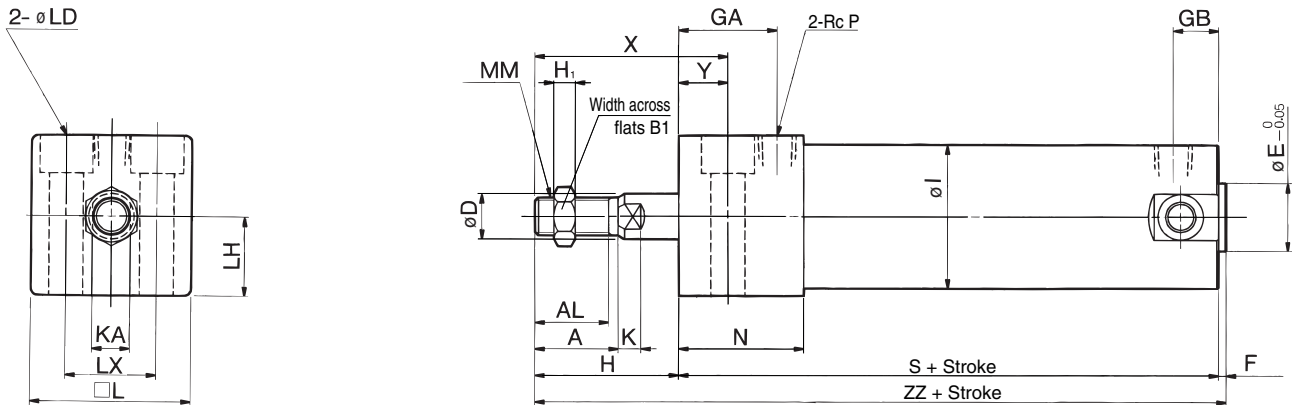
20-

Data

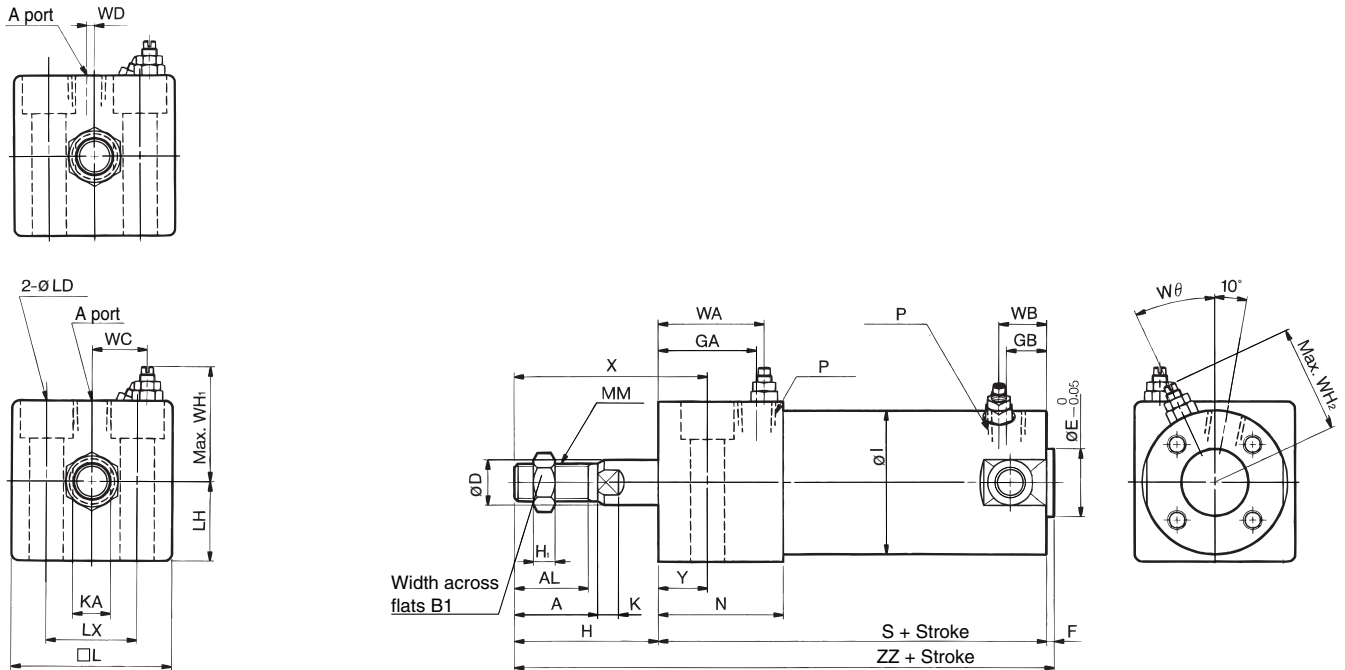
# Series CG1R

## Basic Style with Bottom Mounting

### With rubber bumper: CG1RN



### With air cushion: CG1RA



| Bore size (mm) | Stroke range (mm) | A  | AL   | B <sub>1</sub> | D  | E  | F | GA | GB | H  | H <sub>1</sub> | 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 | $\phi$ 5.5, $\phi$ 9.5 counterbore depth 6  | 15 | 18 | M8 x 1.25  | 27 | 1/8 | 75  | 38 | 11 | 104 |
| 25             | Up to 200         | 22 | 19.5 | 17             | 10 | 14 | 2 | 22 | 10 | 32 | 6              | 31 | 5.5 | 8  | 36.4 | $\phi$ 6.6, $\phi$ 11 counterbore depth 7   | 18 | 22 | M10 x 1.25 | 29 | 1/8 | 77  | 44 | 12 | 111 |
| 32             | Up to 200         | 22 | 19.5 | 17             | 12 | 18 | 2 | 26 | 10 | 32 | 6              | 38 | 5.5 | 10 | 42.4 | $\phi$ 9, $\phi$ 14 counterbore depth 9     | 21 | 24 | M10 x 1.25 | 33 | 1/8 | 83  | 45 | 13 | 117 |
| 40             | Up to 300         | 30 | 27   | 19             | 16 | 25 | 2 | 30 | 10 | 39 | 8              | 47 | 6   | 14 | 52.4 | $\phi$ 11, $\phi$ 17.5 counterbore depth 12 | 26 | 32 | M14 x 1.5  | 37 | 1/8 | 94  | 55 | 16 | 135 |
| 50             | Up to 300         | 35 | 32   | 27             | 20 | 30 | 2 | 33 | 12 | 45 | 11             | 58 | 7   | 18 | 64.5 | $\phi$ 14, $\phi$ 20 counterbore depth 14   | 32 | 41 | M18 x 1.5  | 44 | 1/4 | 108 | 62 | 17 | 155 |
| 63             | Up to 300         | 35 | 32   | 27             | 20 | 32 | 2 | 39 | 12 | 45 | 11             | 72 | 7   | 18 | 76.6 | $\phi$ 18, $\phi$ 26 counterbore depth 18   | 38 | 46 | M18 x 1.5  | 50 | 1/4 | 114 | 64 | 19 | 161 |

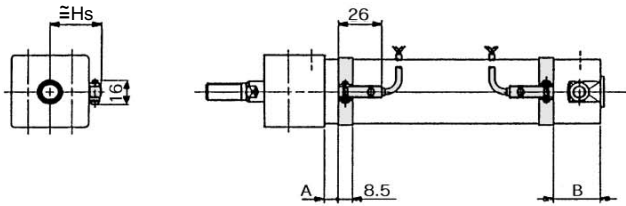
### With Air Cushion

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

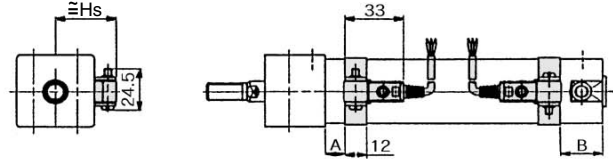
# Air Cylinder: Direct Mount Type Double Acting, Single Rod Series **CG1R**

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

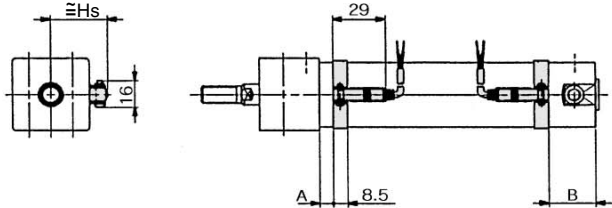
**D-C7**



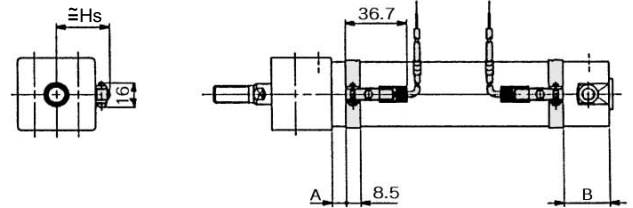
**D-G5, D-K5**



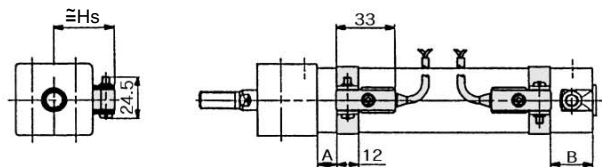
**D-H7**



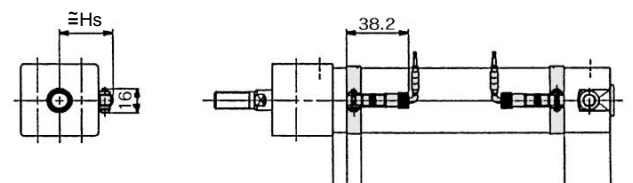
**D-C73C**



**D-B5**



**D-H7C**



### Proper Auto Switch Mounting Position

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

### Auto Switch Mounting Height

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

### Operating Range

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

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)  
There may be the case it will vary substantially depending on an ambient environment.

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

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

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

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

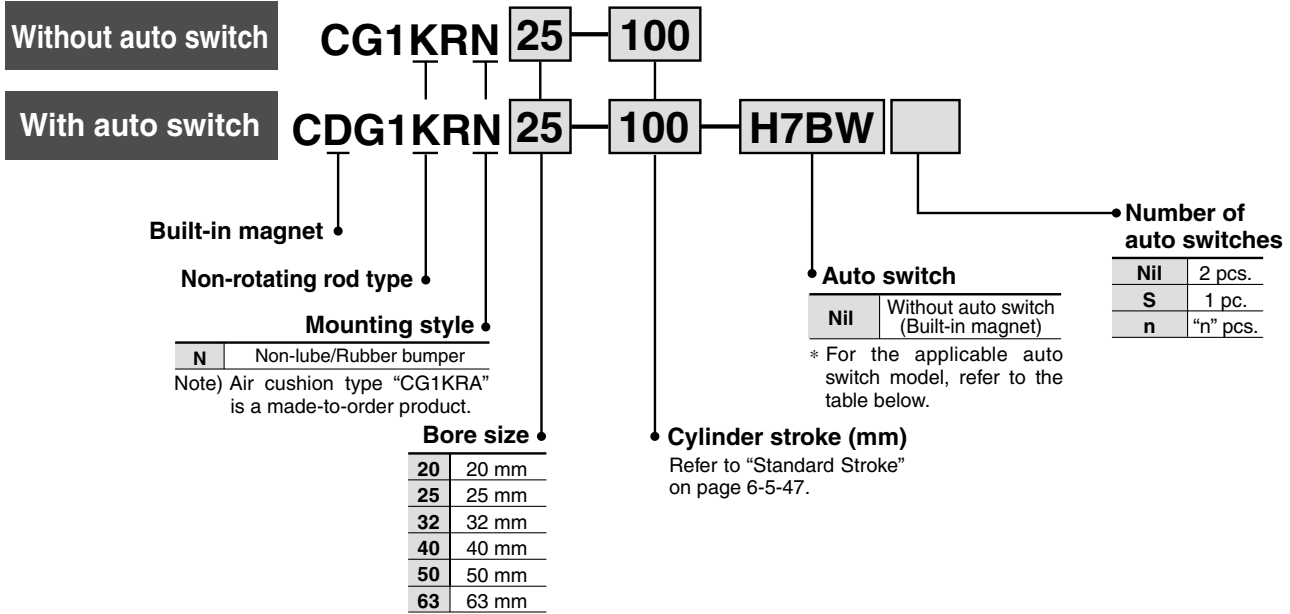


# Air Cylinder: Direct Mount, Non-rotating Rod Double Acting, Single Rod

## Series **CG1KR**

ø20, ø25, ø32, ø40, ø50, ø63

### How to Order



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

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

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

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

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



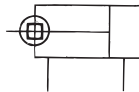
# Air Cylinder: Direct Mount, Non-rotating Rod Type Double Acting, Single Rod Series **CG1KR**

**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.



JIS Symbol



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

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

## Specifications

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

## Weight

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

Calculation: (Example) CG1KRN32-100 (ø32, 100 st)

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

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

## Standard Stroke

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

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

## Accessory

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

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

## Auto Switch Mounting Bracket Part No.

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



\* Mounting screws set made of stainless steel

The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.

(Please order the mounting band separately, since it is not included.)

BBA3: For D-B5/B6/G5

BBA4: For D-C7/C8/H7

- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped.

When only a switch is shipped independently, BBA3 or BBA4 screws are attached.

## Caution on Handling/Disassembly

### ⚠ Caution

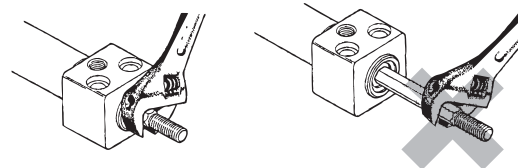
**1. Avoid using the air cylinder in such a way that rotational torque would be applied to the piston rod.**

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

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

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

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



**2. When replacing rod seals, please contact SMC.**

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

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

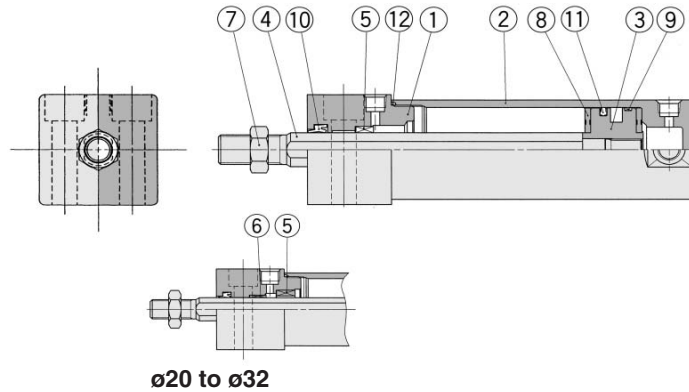
20-

Data

# Series CG1KR

## Construction

### Non-rotating rod type/Bottom mounting style



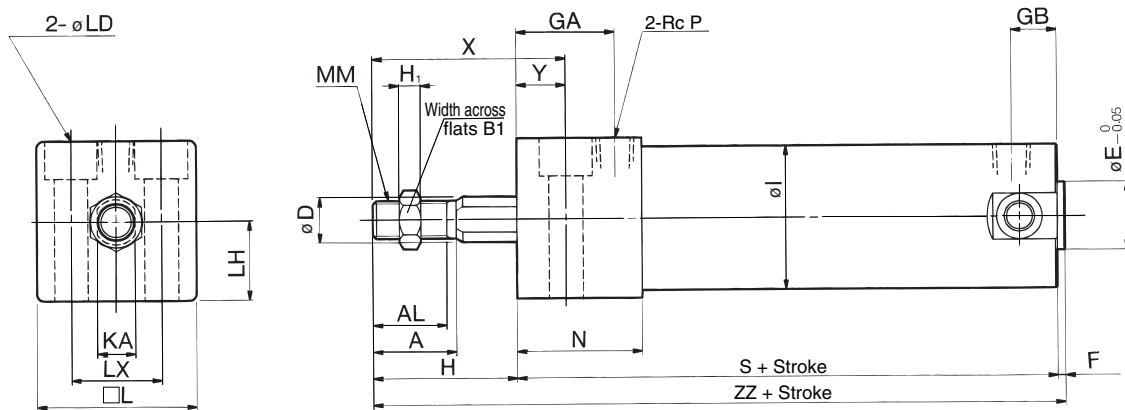
### Component Parts

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

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

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

### Basic Style with Bottom Mounting: CG1KRN



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

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



# Air Cylinder: Low Friction Type Double Acting, Single Rod

## Series CG1□Q

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

### How to Order

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

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

**Built-in magnet** (points to L and Q)

**Mounting style**

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

**Low friction type**

**Bore size**

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

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

**Auto switch**

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

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

**Number of auto switches**

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

**Low friction direction**

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

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

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

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

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

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

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

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

# Series CG1□Q

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

**Low sliding resistance**

**Stable sliding resistance**

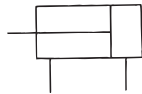
The sliding resistance remains stable even when the operating pressure changes.

**Long strokes can be manufactured.**

**Auto switches can be mounted.**



JIS Symbol

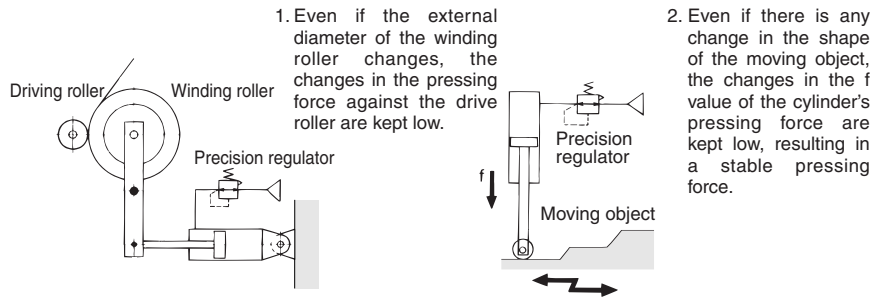


**Made to Order**  
**Made to Order Specifications**  
 (For details, refer to page 6-17-1.)

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

## Application Example

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



## Specifications

| Bore size (mm)                | 20  | 25 | 32 | 40 | 50            | 63 | 80 | 100 |
|-------------------------------|---|----|----|----|---------------|----|----|-----|
| Action                        | Double acting, Single rod   |    |    |    |               |    |    |     |
| Type                          | Non-lube  |    |    |    |               |    |    |     |
| Fluid                         | Air   |    |    |    |               |    |    |     |
| Proof pressure                | 1.05 MPa  |    |    |    |               |    |    |     |
| Maximum operating pressure    | 0.7 MPa   |    |    |    |               |    |    |     |
| Minimum operating pressure    | 0.025 MPa   |    |    |    | 0.01 MPa      |    |    |     |
| Ambient and fluid temperature | Without auto switch: -10 to 70°C (No freezing)<br>With auto switch: -10 to 60°C (No freezing)   |    |    |    |               |    |    |     |
| Piston speed                  | 500 mm/s  |    |    |    |               |    |    |     |
| Stroke length tolerance       | Up to 1000 <sup>+1.4</sup> <sub>0</sub> mm  |    |    |    |               |    |    |     |
| Cushion                       | None  |    |    |    | Rubber bumper |    |    |     |
| Mounting                      | Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style, Clevis style (Used for changing the port location by 90°.) |    |    |    |               |    |    |     |
| Direction of low friction     | One direction (Refer to "Selection of the Direction".)  |    |    |    |               |    |    |     |
| Allowable leakage             | 0.5 #/min (ANR) or less   |    |    |    |               |    |    |     |

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

## Accessory

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

\* Not available for bore size ø80 and ø100.

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

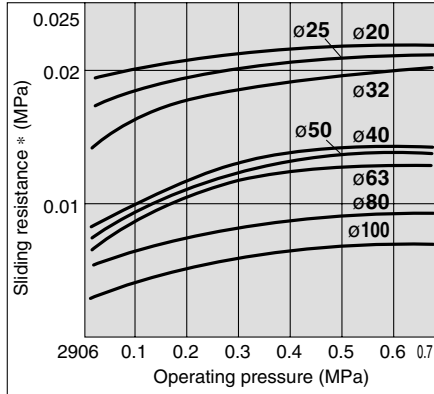
## Standard Stroke

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

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

# Air Cylinder: Low Friction Type Double Acting, Single Rod Series CG1□Q

## Sliding Resistance of the Low Friction Side



\* Conversion into the cylinder operating pressure.

## Selecting the Low Friction Direction

1. To use the air cylinder as a balancer, etc., pressurize it only from one of the ports as shown in the application example, and keep the other port open to the atmosphere.

To operate by applying pressure from the rod cover port:  
**Low friction direction B type (Application example (1))**

To operate by applying pressure from the head cover port:  
**Low friction direction F type (Application example (2))**

In either case, if the piston rod is moved by an external force, it will operate with low friction for both in the extending and retracting directions.

2. When it is necessary to operate it as an ordinary double acting cylinder at an even lower operating speeds, use a low speed cylinder (refer to "Made to Order" on page 6-17-19).

## Operating Precautions

### ⚠ Warning

1. In the direction of low friction operation, speed control must be effected through the meter-in system.

With meter-out control, the exhaust pressure will increase and create a greater sliding resistance.

## Weight

|  | Bore size (mm)   |      |      |      |      |      |      |      |      |
|--|------------------|------|------|------|------|------|------|------|------|
|  | 20               | 25   | 32   | 40   | 50   | 63   | 80   | 100  |      |
| Basic weight                               | Basic style      | 0.11 | 0.18 | 0.28 | 0.44 | 0.83 | 1.17 | 2.23 | 3.43 |
|  | Axial foot style | 0.22 | 0.31 | 0.44 | 0.66 | 1.31 | 1.89 | 3.19 | 5.18 |
|  | Flange style     | 0.19 | 0.28 | 0.42 | 0.64 | 1.17 | 1.67 | 2.94 | 4.78 |
|  | Trunnion style   | 0.12 | 0.20 | 0.31 | 0.49 | 0.97 | 1.31 | —    | —    |
|  | Clevis style     | 0.16 | 0.26 | 0.43 | 0.67 | 1.23 | 1.85 | 2.94 | 4.71 |
| Pivot bracket                              | 0.08             | 0.09 | 0.17 | 0.25 | 0.44 | 0.80 | 0.98 | 1.75 |      |
| Single knuckle joint                       | 0.05             | 0.09 | 0.09 | 0.10 | 0.22 | 0.22 | 0.39 | 0.57 |      |
| Double knuckle joint (With pin)            | 0.05             | 0.09 | 0.09 | 0.13 | 0.26 | 0.26 | 0.64 | 1.31 |      |
| Additional weight per each 50 mm of stroke | 0.05             | 0.07 | 0.09 | 0.15 | 0.22 | 0.26 | 0.35 | 0.49 |      |

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

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

## Mounting Bracket Part No.

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



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

## Auto Switch Mounting Bracket Part No.

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



- \* Mounting screws set made of stainless steel
- The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment. (Please order the mounting band separately, since it is not included.)  
BBA3: For D-B5/B6/G5/K5  
BBA4: For D-C7/C8/H7
- D-G5BAL and D-H7BAL switches are set on the cylinder with the stainless steel screws above when shipped. When a switch only is shipped, BBA3 or BBA4 screws are attached.
- \* The material is stainless steel on auto switch equipped styles ø20 and ø25.

## With Auto Switch

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

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

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

- \* Timer equipped type, solid state auto switch (D-G5NNTL) is also available.
- \* Wide range detection type, solid state auto switch (D-G5NBL) is also available.
- \* With pre-wire connector is available for D-G5NNTL and D-G5NBL.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

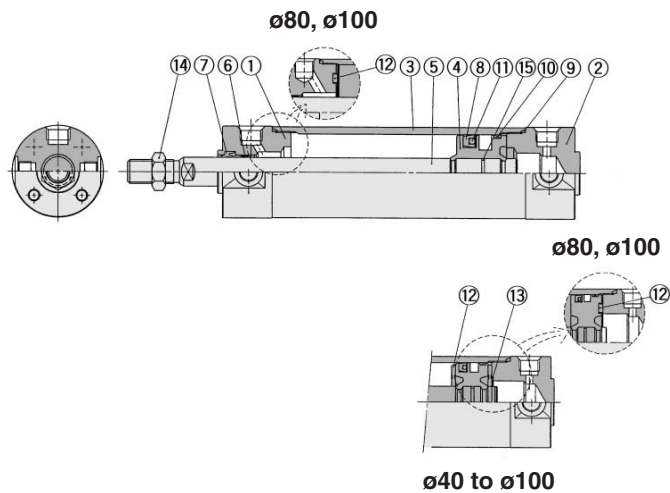
20-

Data



# Series CG1□Q

## Construction



## Component Parts

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

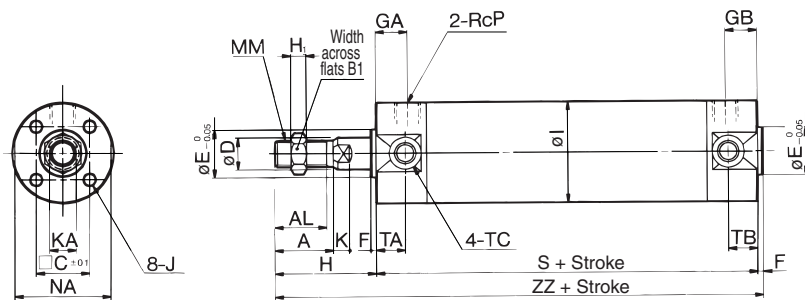
\* Stainless steel is used as the material for ø20 and ø25 cylinder with auto switch.

\* A magnet is equipped with the piston for cylinders with auto switch.

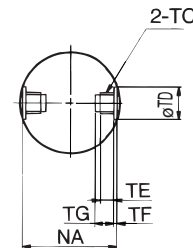
## Replacement Parts: Seal Kit

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

## Basic Style: CG1BQ



## TA/TB cross section



## TA/TB Cross Section

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

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

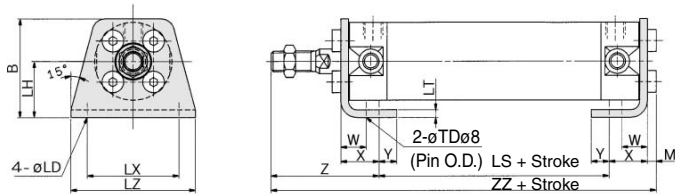
| Bore size (mm) | Stroke range (mm) | A  | AL   | B <sub>1</sub> | C    | D  | E  | F | GA | GB | H  | H <sub>1</sub> | I   | J                   | K   | KA | MM         | NA   | P   | S   | TA | TB | ZZ  |
|----------------|-------------------|----|------|----------------|------|----|----|---|----|----|----|----------------|-----|---------------------|-----|--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



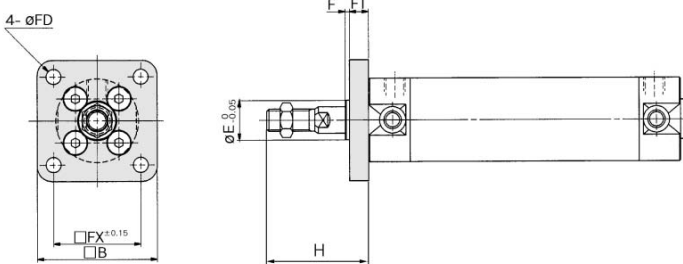
# Air Cylinder: Low Friction Type Double Acting, Single Rod Series **CG1□Q**

## With Mounting Bracket

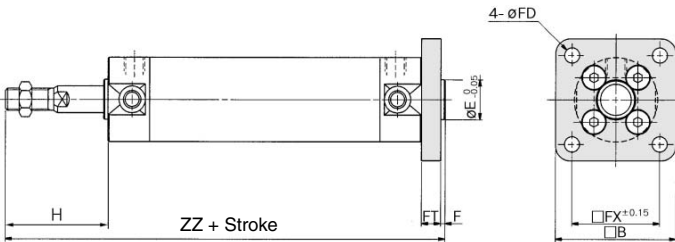
### Axial foot style: CG1LQ



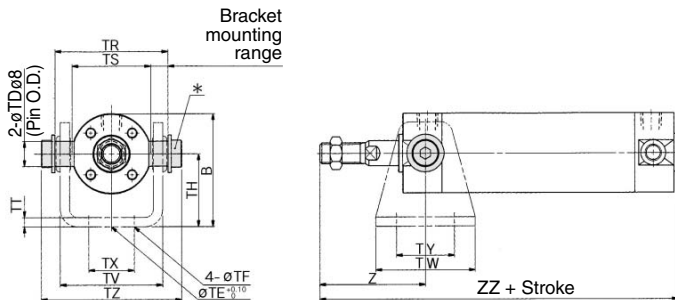
### Rod side flange style: CG1FQ



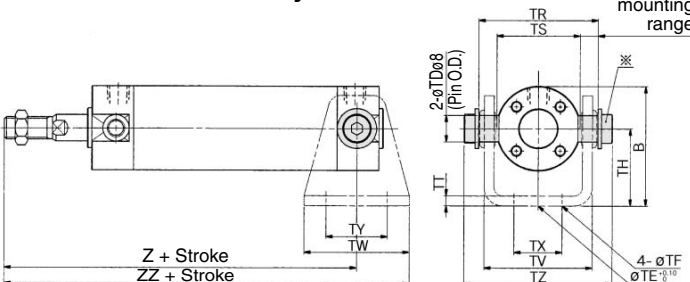
### Head side flange style: CG1GQ



### Rod side trunnion style: CG1UQ



### Head side trunnion style: CG1TQ



### Axial Foot Style

| Bore (mm) | B    | LC | LD | LH | LS | LT  | LX  | LZ  | M   | W    | X    | Y   | Z                | ZZ               |
|-----------|------|----|----|----|----|-----|-----|-----|-----|------|------|-----|------------------|------------------|
|           |      |    |    |    |    |     |     |     |     |      |      |     | Without rod boot | Without rod boot |
| 20        | 34   | 4  | 6  | 20 | 53 | 3   | 32  | 44  | 3   | 10   | 15   | 7   | 47               | 118              |
| 25        | 38.5 | 4  | 6  | 22 | 53 | 3   | 36  | 49  | 3.5 | 10   | 15   | 7   | 52               | 123.5            |
| 32        | 45   | 4  | 7  | 25 | 53 | 3   | 44  | 58  | 3.5 | 10   | 16   | 8   | 53               | 125.5            |
| 40        | 54.5 | 4  | 7  | 30 | 60 | 3   | 54  | 71  | 4   | 10   | 16.5 | 8.5 | 63.5             | 144              |
| 50        | 70.5 | 5  | 10 | 40 | 67 | 4.5 | 66  | 86  | 5   | 17.5 | 22   | 11  | 75.5             | 169.5            |
| 63        | 82.5 | 5  | 12 | 45 | 74 | 4.5 | 82  | 106 | 5   | 17.5 | 22   | 13  | 75.5             | 169.5            |
| 80        | 101  | 6  | 11 | 55 | 74 | 4.5 | 100 | 125 | 5   | 20   | 28.5 | 14  | 95               | 202.5            |
| 100       | 121  | 6  | 14 | 65 | 74 | 6   | 120 | 150 | 7   | 20   | 30   | 16  | 95               | 206              |

\* Other dimensions are the same as basic style.

### Flange Style

| Bore (mm) | Stroke range |           | B   | E  | F | FX  | FD  | FT | H  | Head side flange ZZ |
|-----------|--------------|-----------|-----|----|---|-----|-----|----|----|---------------------|
|           | Rod side     | Head side |     |    |   |     |     |    |    | Without rod boot    |
| 20        | Up to 350    | Up to 200 | 40  | 12 | 2 | 28  | 5.5 | 6  | 35 | 120                 |
| 25        | Up to 400    | Up to 300 | 44  | 14 | 2 | 32  | 5.5 | 7  | 40 | 126                 |
| 32        | Up to 450    | Up to 300 | 53  | 18 | 2 | 38  | 6.6 | 7  | 40 | 128                 |
| 40        | Up to 500    | Up to 500 | 61  | 25 | 2 | 46  | 6.6 | 8  | 50 | 147                 |
| 50        | Up to 1000   | Up to 600 | 76  | 30 | 2 | 58  | 9   | 9  | 58 | 171                 |
| 63        | Up to 1000   | Up to 600 | 92  | 32 | 2 | 70  | 11  | 9  | 58 | 171                 |
| 80        | Up to 1000   | Up to 750 | 104 | 40 | 3 | 82  | 11  | 11 | 71 | 207                 |
| 100       | Up to 1000   | Up to 750 | 128 | 50 | 3 | 100 | 14  | 14 | 71 | 210                 |

Note) End boss is machined on the flange for øE.

\* Other dimensions are the same as basic style.

### Trunnion Style

| Bore (mm) | Stroke range |           | B    | TDe8                                   | TE | TF  | TH | TR   | TS | TT  | TV     |
|-----------|--------------|-----------|------|--|----|-----|----|------|----|-----|--------|
|           | Rod side     | Head side |      |  |    |     |    |      |    |     |        |
| 20        | Up to 200    | Up to 200 | 38   | 8 <sup>-0.025</sup> <sub>-0.047</sub>  | 10 | 5.5 | 25 | 39   | 28 | 3.2 | (35.8) |
| 25        | Up to 300    | Up to 300 | 45.5 | 10 <sup>-0.025</sup> <sub>-0.047</sub> | 10 | 5.5 | 30 | 43   | 33 | 3.2 | (39.8) |
| 32        | Up to 300    | Up to 300 | 54   | 12 <sup>-0.032</sup> <sub>-0.059</sub> | 10 | 6.6 | 35 | 54.5 | 40 | 4.5 | (49.4) |
| 40        | Up to 500    | Up to 500 | 63.5 | 14 <sup>-0.032</sup> <sub>-0.059</sub> | 10 | 6.6 | 40 | 65.5 | 49 | 4.5 | (68.4) |
| 50        | Up to 600    | Up to 600 | 79   | 16 <sup>-0.032</sup> <sub>-0.059</sub> | 20 | 9   | 50 | 80   | 60 | 6   | (72.4) |
| 63        | Up to 600    | Up to 600 | 96   | 18 <sup>-0.032</sup> <sub>-0.059</sub> | 20 | 11  | 60 | 98   | 74 | 8   | (90.4) |

| Bore (mm) | TW | TX | TY | TZ    | Rod side         |                  | Head side        |                  |
|-----------|----|----|----|-------|------------------|------------------|------------------|------------------|
|           |    |    |    |       | Z                | ZZ               | Z                | ZZ               |
|           |    |    |    |       | Without rod boot | Without rod boot | Without rod boot | Without rod boot |
| 20        | 42 | 16 | 28 | 47.6  | 46               | 101              | 122              |                  |
| 25        | 42 | 20 | 28 | 53    | 51               | 106              | 127              |                  |
| 32        | 48 | 22 | 28 | 67.7  | 51               | 108              | 132              |                  |
| 40        | 56 | 30 | 30 | 78.7  | 62               | 125              | 153              |                  |
| 50        | 64 | 36 | 36 | 98.6  | 71               | 147              | 179              |                  |
| 63        | 74 | 46 | 46 | 119.2 | 71               | 147              | 184              |                  |

\* Consists of pin, flat washer and hexagon socket head cap bolt.

Note) For pivot bracket, refer to page 6-5-12.

\* Other dimensions are the same as basic style.

CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

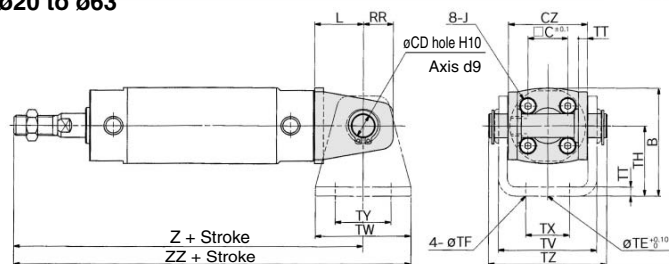
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# Series CG1□Q

## With Mounting Bracket

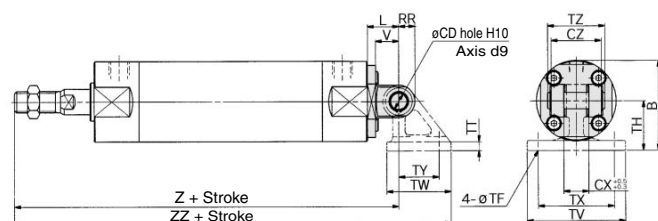
### Clevis style: CG1DQ

ø20 to ø63



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

ø80, ø100



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

### Clevis Style

| Bore size (mm) | Stroke range (mm) | B    | CD | CX | CZ | L  | RR | V  | TE | TF   | TH |
|----------------|-------------------|------|----|----|----|----|----|----|----|------|----|
| 20             | Up to 200         | 38   | 8  | —  | 29 | 14 | 11 | —  | 10 | 5.5  | 25 |
| 25             | Up to 300         | 45.5 | 10 | —  | 33 | 16 | 13 | —  | 10 | 5.5  | 30 |
| 32             | Up to 300         | 54   | 12 | —  | 40 | 20 | 15 | —  | 10 | 6.6  | 35 |
| 40             | Up to 500         | 63.5 | 14 | —  | 49 | 22 | 18 | —  | 10 | 6.6  | 40 |
| 50             | Up to 600         | 79   | 16 | —  | 60 | 25 | 20 | —  | 20 | 9    | 50 |
| 63             | Up to 600         | 96   | 18 | —  | 74 | 30 | 22 | —  | 20 | 11   | 60 |
| 80             | Up to 750         | 99.5 | 18 | 28 | 56 | 35 | 18 | 26 | —  | 11   | 55 |
| 100            | Up to 750         | 120  | 22 | 32 | 64 | 43 | 22 | 32 | —  | 13.5 | 65 |

| Bore size (mm) | TT  | TV     | TW | TX  | TY | TZ    | Z   | ZZ    | Applicable pin part no. |
|----------------|-----|--------|----|-----|----|-------|-----|-------|-------------------------|
| 20             | 3.2 | (35.8) | 42 | 16  | 28 | 43.4  | 126 | 147   | CD-G02                  |
| 25             | 3.2 | (39.8) | 42 | 20  | 28 | 48    | 133 | 154   | CD-G25                  |
| 32             | 4.5 | (49.4) | 48 | 22  | 28 | 59.4  | 139 | 163   | CD-G03                  |
| 40             | 4.5 | (58.4) | 56 | 30  | 30 | 71.4  | 159 | 187   | CD-G04                  |
| 50             | 6   | (72.4) | 64 | 36  | 36 | 86    | 185 | 217   | CD-G05                  |
| 63             | 8   | (90.4) | 74 | 46  | 46 | 105.4 | 190 | 227   | CD-G06                  |
| 80             | 11  | 110    | 72 | 85  | 45 | 64    | 228 | 286.5 | IY-G08                  |
| 100            | 12  | 130    | 93 | 100 | 60 | 72    | 236 | 312.5 | IY-G10                  |

Note) \* For pivot bracket, refer to page 6-5-12.

\* Other dimensions are the same as basic style.

# Air Cylinder: With End Lock

## Series **CBG1**

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

### How to Order

**CBG1** **L** **N** **25** **100** **H** **N**

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

**Built-in magnet**

**Mounting style**

|           |                          |
|-----------|--------------------------|
| <b>B</b>  | Basic style              |
| <b>L</b>  | Axial foot style         |
| <b>F</b>  | Rod side flange style    |
| <b>G</b>  | Head side flange style   |
| <b>U*</b> | Rod side trunnion style  |
| <b>T*</b> | Head side trunnion style |
| <b>D</b>  | Clevis style             |

\* Not available for bore size ø80 and ø100.  
Besides, trunnion cannot be attached in the side to which an end lock is attached.  
Note) Mounting brackets are shipped together, (but not assembled).

**Type**

|          |               |
|----------|---------------|
| <b>N</b> | Rubber bumper |
| <b>A</b> | Air cushion   |

**Bore size**

|           |       |            |        |
|-----------|-------|------------|--------|
| <b>20</b> | 20 mm | <b>50</b>  | 50 mm  |
| <b>25</b> | 25 mm | <b>63</b>  | 63 mm  |
| <b>32</b> | 32 mm | <b>80</b>  | 80 mm  |
| <b>40</b> | 40 mm | <b>100</b> | 100 mm |

**Manual release type**

|          |               |
|----------|---------------|
| <b>N</b> | Non-lock type |
| <b>L</b> | Lock type     |

**Lock position**

|          |                 |
|----------|-----------------|
| <b>H</b> | Head end lock   |
| <b>R</b> | Rod end lock    |
| <b>W</b> | Double end lock |

**With rod boot**

|            |                          |
|------------|--------------------------|
| <b>Nil</b> | Without rod boot         |
| <b>J</b>   | Nylon tarpaulin          |
| <b>K</b>   | Heat resistant tarpaulin |

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

**Cylinder stroke (mm)**

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

**Number of auto switches**

|            |          |
|------------|----------|
| <b>Nil</b> | 2 pcs.   |
| <b>S</b>   | 1 pc.    |
| <b>n</b>   | "n" pcs. |

**Auto switch**

|            |                                       |
|------------|---------------------------------------|
| <b>Nil</b> | Without auto switch (Built-in magnet) |
|------------|---------------------------------------|

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

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

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

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

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

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

- CJ1
- CJP
- CJ2
- CM2
- CG1**
- MB
- MB1
- CA2
- CS1
- C76
- C85
- C95
- CP95
- NCM
- NCA
- D-
- X
- 20-
- Data

# Series CBG1



## Specifications

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



\* 0.05 MPa except locking parts.

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

## Lock Specifications

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

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

## Standard Stroke

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



Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.

Note 2) Long stroke applies to the axial foot style and the rod side flange style. If other mounting brackets are used, or the length exceeds the long stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

## Minimum Stroke for Auto Switch Mounting

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

## Rod Boot Material

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

\* Maximum ambient temperature for the rod boot itself.



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

| Symbol | Specifications          |
|--------|-------------------------|
| -XA□   | Change of rod end shape |

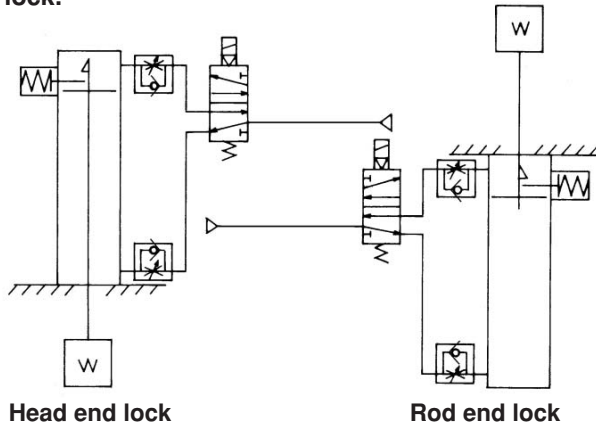
## ⚠️ Precautions

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

### Use the Recommended Pneumatic Circuit

#### ⚠️ Caution

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



### Operating Precautions

#### ⚠️ 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 side of cylinder without the locking mechanism, as above, prior to supplying air pressure to the side with end lock or lock may not be released. (⇨ Refer to "Releasing the Lock".)
- 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 end lock cylinders 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 an air cylinder as an air-hydro cylinder. This could result in leakage of oil.**
- 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-color indication switch is adjusted for green indication at the stroke end, it may change to red for the backlash return, but this is not abnormal.

### Operating Precautions

#### ⚠️ Warning

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

### Exhaust Speed

#### ⚠️ Caution

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

### Relation to Cushion

#### ⚠️ Caution

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

### Releasing the Lock

#### ⚠️ Warning

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

### Disassembly/Replacement

#### ⚠️ Caution

- Do not replace the bushings or the cushion seals.**  
The bushings and the cushion seals are press-fit. To replace them, they must be replaced together with the cover assembly.
- 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.
- Those with a bore of ø50 or more cannot be disassembled.**  
When disassembling cylinders with bore sizes of ø20 through ø40, grip the double flat part of either the head cover or the rod cover with a vise and loosen the other side with a wrench or a monkey wrench, etc., and then remove the cover. When re-tightening, tighten approximately 2 degrees more than the original position. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. Please contact SMC when disassembly is required.)

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

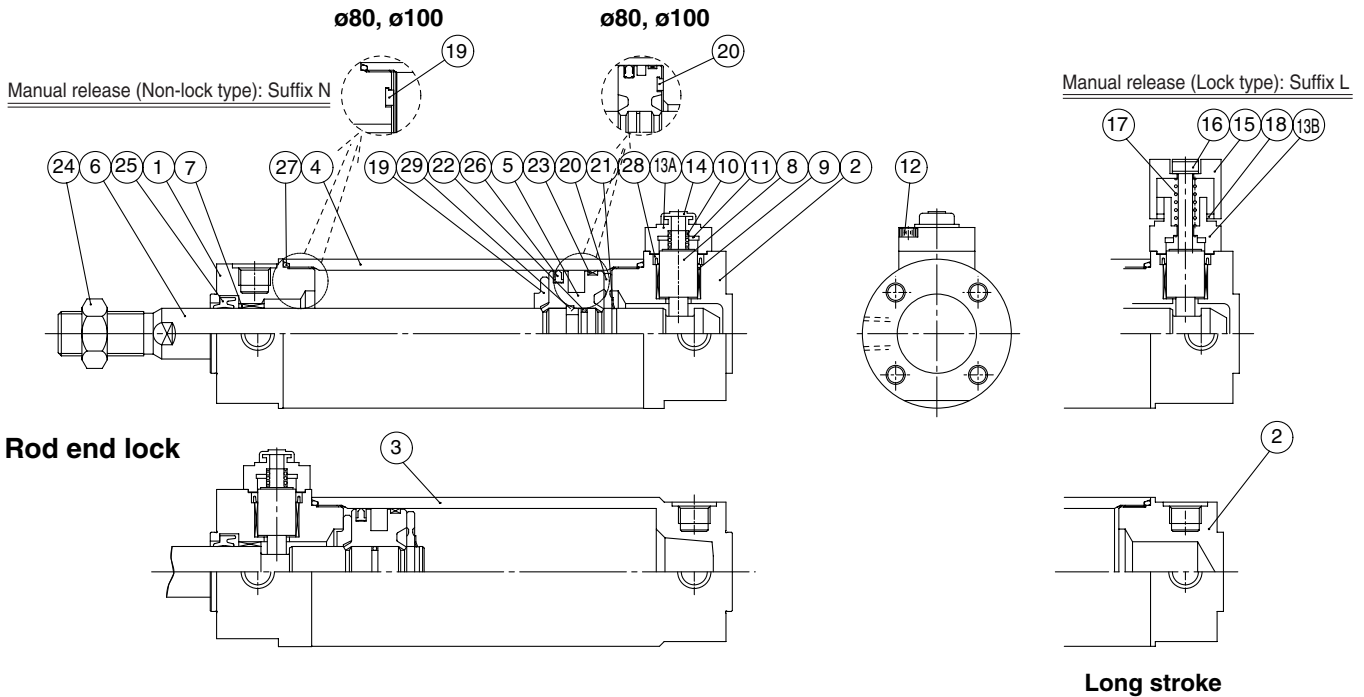
20-

Data

# Series CBG1

## Construction: With Rubber Bumper

### Head end lock



### Component Parts

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

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

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

| No. | Description          | Material        | Note                                |
|-----|----------------------|-----------------|-------------------------------------|
| ⑳   | Snap ring            | Stainless steel | None for ø80, ø100                  |
| ㉑   | Piston gasket        | NBR             |                                     |
| ㉒   | Wear ring            | Resin           |                                     |
| ㉓   | Rod end nut          | Rolled steel    | Nickel plated                       |
| ㉔   | Rod seal             | NBR             |                                     |
| ㉕   | Piston seal          | NBR             |                                     |
| ㉖   | Cylinder tube gasket | NBR             | 1 pc. when using tube cover         |
| ㉗   | Lock piston seal     | NBR             | 2 pcs. for with locks in both sides |
| ㉘   | Piston holder        | Urethane        | ø40 to ø100 only                    |

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

| Series                          | Bore size (mm) | Kit no.     | Contents   |
|---------------------------------|----------------|-------------|--|
| CBG1□N<br>Rubber bumper<br>type | 20             | CBG1N20-PS  | Set of nos. above<br>㉓, ㉔, ㉕, ㉖<br>and grease pack |
|                                 | 25             | CBG1N25-PS  |  |
|                                 | 32             | CBG1N32-PS  |  |
|                                 | 40             | CBG1N40-PS  |  |
|                                 | 50             | CBG1N50-PS  |  |
|                                 | 63             | CBG1N63-PS  |  |
|                                 | 80             | CBG1N80-PS  |  |
|                                 | 100            | CBG1N100-PS |  |

Order seal kit in accordance with the bore size.

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

| Series                          | Bore size (mm) | Kit no.       | Contents   |
|---------------------------------|----------------|---------------|--|
| CBG1□N<br>Rubber bumper<br>type | 20             | CBG1N20-PS-W  | Set of nos. above<br>㉓, ㉔, ㉕, ㉖<br>and grease pack |
|                                 | 25             | CBG1N25-PS-W  |  |
|                                 | 32             | CBG1N32-PS-W  |  |
|                                 | 40             | CBG1N40-PS-W  |  |
|                                 | 50             | CBG1N50-PS-W  |  |
|                                 | 63             | CBG1N63-PS-W  |  |
|                                 | 80             | CBG1N80-PS-W  |  |
|                                 | 100            | CBG1N100-PS-W |  |

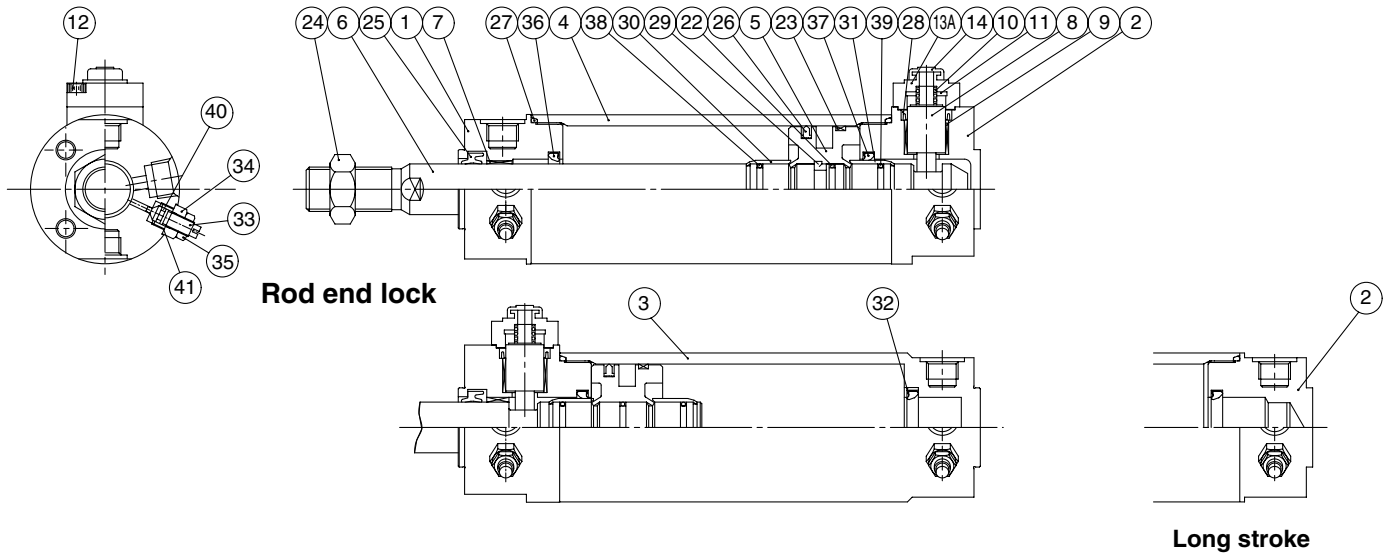
Order seal kit in accordance with the bore size.



## Construction: With Air Cushion

### With air cushion Head end lock

Manual release (Non-lock type): Suffix N



CJ1

CJP

CJ2

CM2

**CG1**

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

20-

Data

### Component Parts

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

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

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

### Replacement Parts:

#### Seal Kit (With lock at single end)

| Series                          | Bore size (mm) | Kit no.    | Contents  |
|---------------------------------|----------------|------------|---|
| CBG1□A<br>Rubber bumper<br>type | 20             | CBG1A20-PS | Set of nos. above<br>⑳, ㉑, ㉒, ㉓, ㉔<br>and grease pack |
|                                 | 25             | CBG1A25-PS |   |
|                                 | 32             | CBG1A32-PS |   |
|                                 | 40             | CBG1A40-PS |   |
|                                 | 50             | CBG1A50-PS |   |
|                                 | 63             | CBG1A63-PS |   |
|                                 | 80             | CBG1A80-PS |   |
| 100                             | CBG1A100-PS    |            |   |

Order seal kit in accordance with the bore size.

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

### Replacement Parts:

#### Seal Kit (With lock at double end)

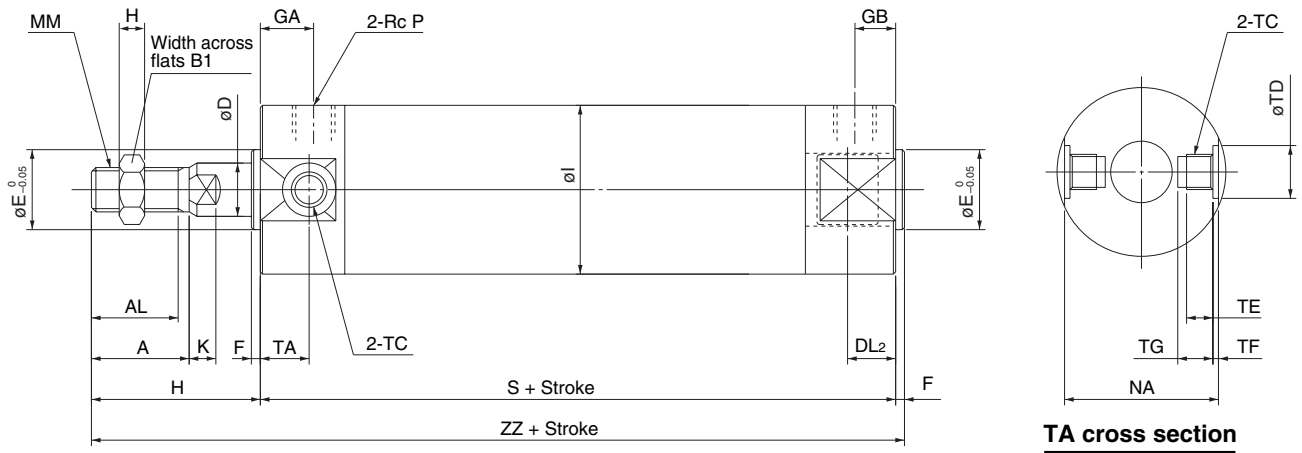
| Series                          | Bore size (mm) | Kit no.       | Contents  |
|---------------------------------|----------------|---------------|---|
| CBG1□A<br>Rubber bumper<br>type | 20             | CBG1A20-PS-W  | Set of nos. above<br>㉕, ㉖, ㉗, ㉘, ㉙<br>and grease pack |
|                                 | 25             | CBG1A25-PS-W  |   |
|                                 | 32             | CBG1A32-PS-W  |   |
|                                 | 40             | CBG1A40-PS-W  |   |
|                                 | 50             | CBG1A50-PS-W  |   |
|                                 | 63             | CBG1A63-PS-W  |   |
|                                 | 80             | CBG1A80-PS-W  |   |
|                                 | 100            | CBG1A100-PS-W |   |

Order seal kit in accordance with the bore size.

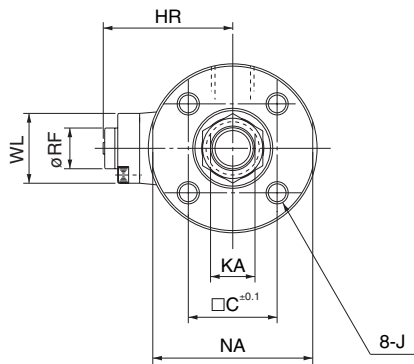
# Series CBG1

## Rubber Bumper Type: CBG1BN

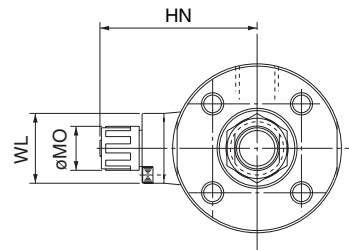
Head end lock: CBG1BN  —  — H□



Manual release (Non-lock type): Suffix N



Manual release (Lock type): Suffix L



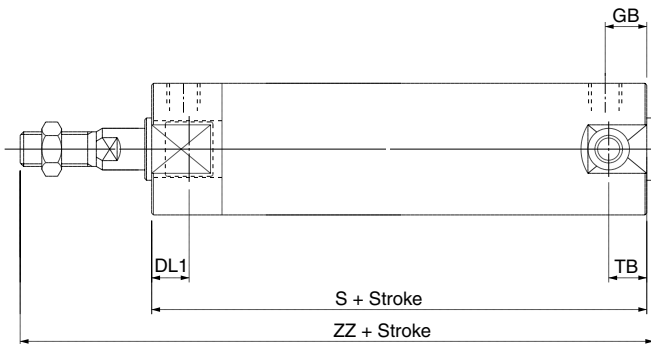
| Bore size (mm) | Stroke range | A  | AL   | B <sub>1</sub> | C    | D  | DL <sub>2</sub> | E  | F | GA | GB | H  | H <sub>1</sub> | HR   | HN (Max.) | I   | J                   |
|----------------|--------------|----|------|----------------|------|----|-----------------|----|---|----|----|----|----------------|------|-----------|-----|---------------------|
| 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         | TDH <sub>9</sub>                 | TE   | TF   | TG   | WL | ZZ  |
|----------------|-----|----|------------|----|------|-----|----|-----|----|------------|----------------------------------|------|------|------|----|-----|
| 20             | 5   | 6  | M8 x 1.25  | 15 | 24   | 1/8 | 11 | 81  | 11 | M5 x 0.8   | 8 <sup>+0.08</sup> <sub>0</sub>  | 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 <sup>+0.08</sup> <sub>0</sub> | 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 <sup>+0.08</sup> <sub>0</sub> | 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 <sup>+0.08</sup> <sub>0</sub> | 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 <sup>+0.08</sup> <sub>0</sub> | 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 <sup>+0.08</sup> <sub>0</sub> | 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 |

# Air Cylinder: With End Lock Series **CBG1**

## Rubber Bumper Type: **CBG1BN**

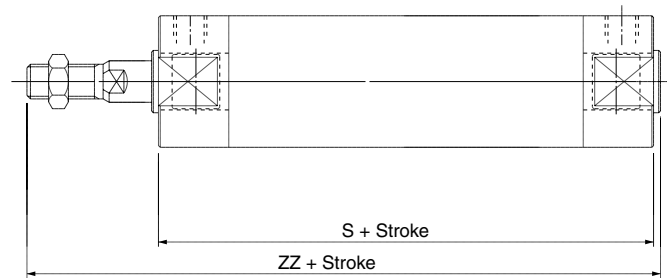
Rod end lock: **CBG1BN**   - R



| 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) |

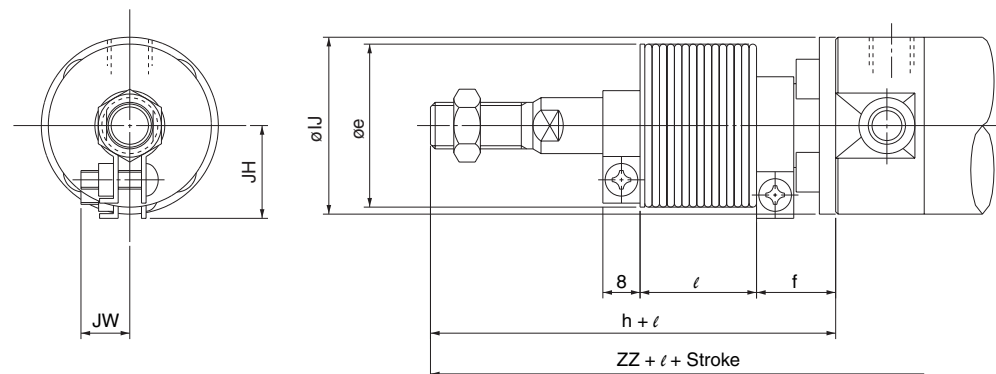
\* ( ): Denotes the dimensions for long stroke.

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



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

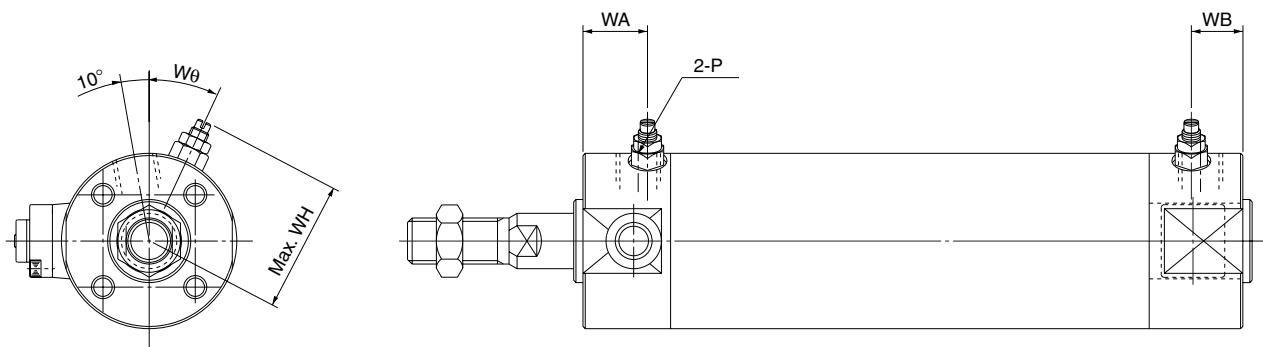
\* ( ): Denotes the dimensions for long strokes.  
\*\* The minimum stroke with rod boot is 20 mm.

# Series CBG1

## Air Cushion Type: CBG1BA

Head end lock: CBG1BA  Bore size  Stroke  - H

Rod end lock: CBG1BA  Bore size  Stroke  - R



### Head End Lock: -H

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

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

### Rod End Lock: -R

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

\* ( ): Denotes the dimensions for long strokes.

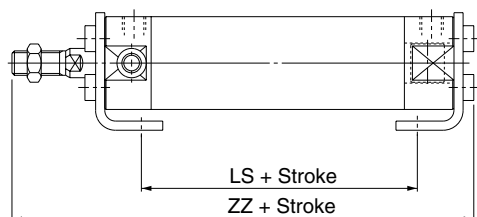
\*\* For dimensions other than the listed above, refer to the dimensions with rubber bumper.

# Air Cylinder: With End Lock Series **CBG1**

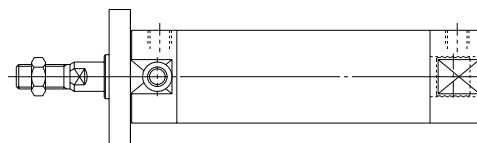
## With Mounting Bracket

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

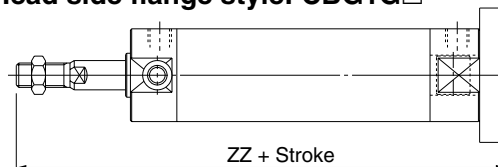
### Axial foot style: CBG1L□



### Rod side flange style: CBG1F□



### Head side flange style: CBG1G□



## Foot Style

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

\* ( ): Denotes the dimensions for long stroke.

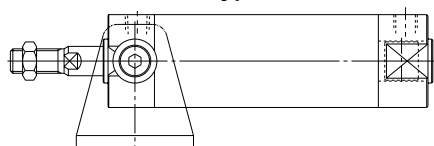
**Rod Side Flange Style** .... Overall length is the same as basic style.

### Head Side Flange Style

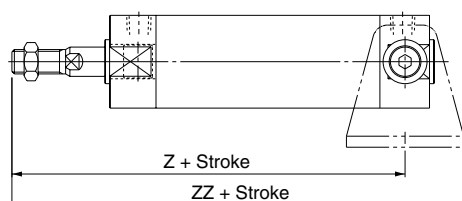
| Bore size (mm) | Head end lock: -H□    |               | Rod end lock/-R□ |               | Double end lock/-W□ |               |
|----------------|-----------------------|---------------|------------------|---------------|---------------------|---------------|
|                | ZZ (Head side flange)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

\* ( ): Denotes the dimensions for long stroke.

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



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



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

### Head Side Trunnion Style

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

\* ( ): Denotes the dimensions for long stroke.

CJ1

CJP

CJ2

CM2

CG1

MB

MB1

CA2

CS1

C76

C85

C95

CP95

NCM

NCA

D-

-X

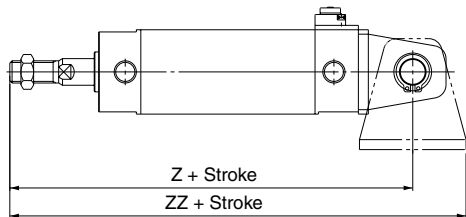
20-

Data

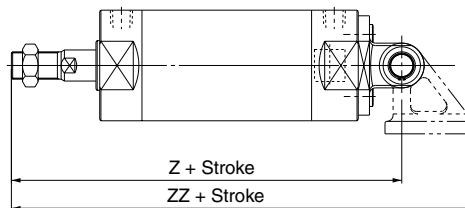
# Series CBG1

## With Mounting Bracket

Clevis style: CBG1D□  
ø20 to ø63



Clevis style: CBG1D□  
ø80 to ø100



## Clevis Style

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

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

\* ( ): Denotes the dimensions for long stroke.

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

| Type               | Model    | Electrical entry | Features                | Applicable bore size (mm) |
|--------------------|----------|------------------|-------------------------|---------------------------|
| Reed switch        | D-C80    | Grommet          | Without indicator light | 20 to 63                  |
|                    | D-C80C   | Connector        |                         |                           |
|                    | D-B53    | Grommet          | —                       | 20 to 100                 |
|                    | D-B64    | Grommet          | Without indicator light |                           |
| Solid state switch | D-G5NNTL | Grommet          | With timer              |                           |

\* With pre-wire connector is available for D-G5NNTL type, too. Refer to page 6-16-55 for details.

\* Wide range detection type, solid state auto switch (D-G5NBL type) is also available. For details, refer to page 6-16-59.



# Fine Lock Cylinder

## Double Acting, Single Rod

# Series *CLG1*

ø20, ø25, ø32, ø40

### How to Order

**Without auto switch** CLG1 **L N 25 100** **E**

**With auto switch** CDLG1 **L N 25 100** **E H7BW**

**Built-in magnet**

**Mounting style**

|          |                          |
|----------|--------------------------|
| <b>B</b> | Basic style              |
| <b>L</b> | Axial foot style         |
| <b>F</b> | Rod side flange style    |
| <b>G</b> | Head side flange style   |
| <b>U</b> | Rod side trunnion style  |
| <b>T</b> | Head side trunnion style |
| <b>D</b> | Clevis style             |

**Type**

|          |                        |
|----------|------------------------|
| <b>N</b> | Non-lube/Rubber bumper |
| <b>A</b> | Non-lube/Air cushion   |

**Bore size**

|           |       |
|-----------|-------|
| <b>20</b> | 20 mm |
| <b>25</b> | 25 mm |
| <b>32</b> | 32 mm |
| <b>40</b> | 40 mm |

**Cylinder stroke (mm)**

| Bore size (mm) | Standard stroke (mm)           | Long stroke (mm) |
|----------------|--------------------------------|------------------|
| <b>20</b>      | 25, 50, 75, 100, 125, 150, 200 | 201 to 350       |
| <b>25</b>      | 25, 50, 75, 100,               | 301 to 400       |
| <b>32</b>      | 125, 150, 200,                 | 301 to 450       |
| <b>40</b>      | 250, 300                       | 301 to 800       |

**Number of auto switches**

|            |          |
|------------|----------|
| <b>Nil</b> | 2 pcs.   |
| <b>S</b>   | 1 pc.    |
| <b>n</b>   | "n" pcs. |

**Auto switch**

|            |                                       |
|------------|---------------------------------------|
| <b>Nil</b> | Without auto switch (Built-in magnet) |
|------------|---------------------------------------|

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

**Lock operation**

|          |                                      |
|----------|--------------------------------------|
| <b>E</b> | Spring locking (Exhaust locking)     |
| <b>P</b> | Pneumatic locking (Pressure locking) |
| <b>D</b> | Spring and pneumatic locking         |

**With rod boot**

|            |                          |
|------------|--------------------------|
| <b>Nil</b> | Without rod boot         |
| <b>J</b>   | Nylon tarpaulin          |
| <b>K</b>   | Heat resistant tarpaulin |

- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP
- RLQ
- MLU
- ML1C
- D-
- X
- 20-

**Applicable Auto Switch**/Refer to page 9-15-1 for further information on auto switches.

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

\* Lead wire length symbols: 0.5 m..... Nil (Example) C73C  
 3 m..... L (Example) H73CL  
 5 m..... Z (Example) C73CZ  
 None..... N (Example) C73CN

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

• Since there are other applicable auto switches than listed, refer to page 9-2-29 for details.  
 • For details about auto switches with pre-wire connector, refer to page 9-15-66.

# Series CLG1

Provided with a compact lock mechanism, it is suitable for intermediate stop, emergency stop, and drop prevention.

## Locking in both directions

The piston rod can be locked in either direction of its cylinder stroke.



**Made to Order Specifications**  
(For details, refer to page 9-16-1.)

| Symbol | Specifications          |
|--------|-------------------------|
| -XA□   | Change of rod end shape |

## Weight

(kg)

| Bore size (mm)                             |                  | 20   | 25   | 32   | 40   |
|--|------------------|------|------|------|------|
| Basic weight                               | Basic style      | 0.61 | 0.97 | 1.06 | 1.35 |
|  | Axial foot style | 0.72 | 1.10 | 1.22 | 1.57 |
|  | Flange style     | 0.73 | 1.15 | 1.23 | 1.58 |
|  | Trunnion style   | 0.62 | 0.99 | 1.09 | 1.40 |
|  | Clevis style     | 0.66 | 1.05 | 1.21 | 1.58 |
| Rod side pivot bracket                     |                  | 0.11 | 0.13 | 0.20 | 0.27 |
| Head side 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 |
| Additional weight per each 50 mm of stroke |                  | 0.05 | 0.07 | 0.09 | 0.15 |
| Additional weight with air cushion         |                  | 0.01 | 0.01 | 0.02 | 0.02 |
| Additional weight for long stroke          |                  | 0.01 | 0.01 | 0.02 | 0.03 |

Calculation: (Example)

CLG1LA20-100 (Foot, ø20, 100 st)

- Basic weight..... 0.72
  - Additional weight..... 0.05/50 st
  - Air cylinder stroke..... 100 st
  - Additional weight of air cushion..... 0.01 kg
- 0.72 + 0.05 x 100/50 + 0.01 = 0.83 kg

## Model

| Series | Type     | Action        | Cushion       | Piston seal  | Bore size (mm) | Lock operation   |
|--------|----------|---------------|---------------|--------------|----------------|--|
| CLG1□N | Non-lube | Double acting | Rubber bumper | Special seal | 20, 25         | Spring locking (Exhaust locking)<br>Pneumatic locking (Pressure locking)<br>Spring and pneumatic locking |
| CLG1□A |          |               | Air cushion   |              | 32, 40         |  |

## Specifications

|                               |  |
|-------------------------------|--|
| Fluid                         | Air  |
| Proof pressure                | 1.5 MPa  |
| Maximum operating pressure    | 1 MPa  |
| Minimum operating pressure    | 0.08 MPa   |
| Ambient and fluid temperature | Without auto switch: -10 to 70°C (No freezing)<br>With auto switch: -10 to 60°C (No freezing)  |
| Piston speed                  | 50 to 500 mm/sec *   |
| Thread tolerance              | JIS Class 2  |
| Stroke length tolerance       | Up to 800 st $^{+1.4}_0$ mm  |
| Mounting **                   | Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style, Clevis style (Used when port position is changed to 90°.) |

\* Constraints associated with the allowable kinetic energy are imposed on the speeds at which the piston can be locked.

The maximum speed of 1000 mm/s can be accommodated if the piston is to be locked in the stationary state for the purpose of drop prevention.

\*\* The long stroke style is applicable to the basic style, the axial foot style, and the rod side flange style.

## Fine Lock Specifications

| Lock operation             | Spring locking (Exhaust locking) | Spring and pneumatic locking | Pneumatic locking (Pressure locking) |
|----------------------------|----------------------------------|------------------------------|--------------------------------------|
| Fluid                      | Air                              |                              |                                      |
| Maximum operating pressure | 0.5 MPa                          |                              |                                      |
| Unlocking pressure         | 0.3 MPa or more                  | 0.1 MPa or more              |                                      |
| Lock starting pressure     | 0.25 MPa or less                 | 0.05 MPa or more             |                                      |
| Locking direction          | Both directions                  |                              |                                      |

## Accessory

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

## Standard Stroke

| Bore size (mm) | Standard stroke (mm)           | Long stroke (mm)                         | Maximum manufacturable stroke (mm) |
|----------------|--------------------------------|--|------------------------------------|
| 20             | 25, 50, 75, 100, 125, 150, 200 | 201 to 350                               | 1500                               |
|                | 25                             | 25, 50, 75, 100, 125, 150, 200, 250, 300 |                                    |
| 32             |                                |  |                                    |
|                | 40                             |  |                                    |

\* Intermediate stroke is available, too.

## Rod Boot Material

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

\* Maximum ambient temperature for the rod boot itself.

## Minimum Stroke for Auto Switch Mounting

Due to the space requirements for installing auto switches, the minimum cylinder strokes are as shown in the table below.

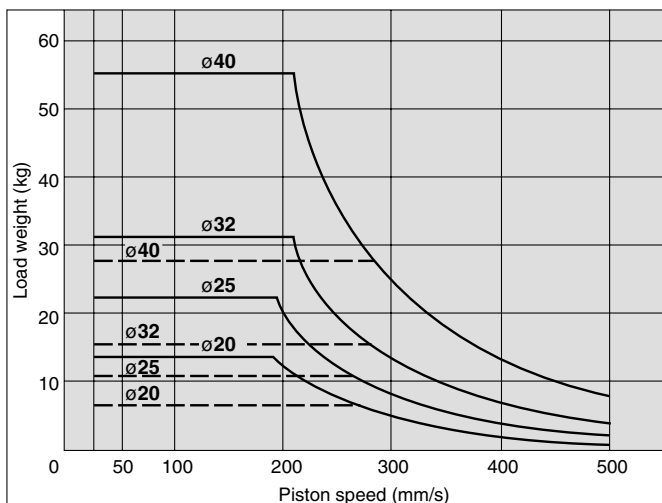
| Auto switch model                            | No. of auto switches mounted |       |
|--|------------------------------|-------|
|  | 1                            | 2     |
| D-B5□/B64<br>D-C7□/C80<br>D-H7□<br>D-G5□/K5□ | 10 mm                        | 15 mm |
| D-B59W                                       | 15 mm                        | 20 mm |

# Fine Lock Cylinder Double Acting, Single Rod Series CLG1

## ⚠ Caution/Allowable Kinetic Energy when Locking

| Bore size (mm)               | 20   | 25   | 32   | 40   |
|------------------------------|------|------|------|------|
| Allowable kinetic energy (J) | 0.26 | 0.42 | 0.67 | 1.19 |

- In terms of specific load conditions, the allowable kinetic energy indicated in the table above is equivalent to a 50% load ratio at 0.5 MPa, and a piston speed of 300 mm/sec. Therefore, if the operating conditions are below these values, calculations are unnecessary.
- Apply the following formula to obtain the kinetic energy of the load.
 
$$E_k = \frac{1}{2} mv^2$$
 Ek: Kinetic energy of load (J)  
 m: Load weight (kg)  
 v: Piston speed (m/s) (Average speed x 1.2 times)
- The piston speed will exceed the average speed immediately before locking. To determine the piston speed for the purpose of obtaining the kinetic energy of load, use 1.2 times the average speed as a guide.
- The relation between the speed and the load of the respective tube bores is indicated in the diagram below. Use the cylinder in the range below the line.
- During locking, the lock mechanism must sustain the thrust of the cylinder itself, in addition to absorbing the energy of the load. Therefore, even within a given allowable kinetic energy level, there is an upper limit to the size of the load that can be sustained. Thus, a horizontally mounted cylinder must be operated below the solid line, and a vertically mounted cylinder must be operated below the dotted line.

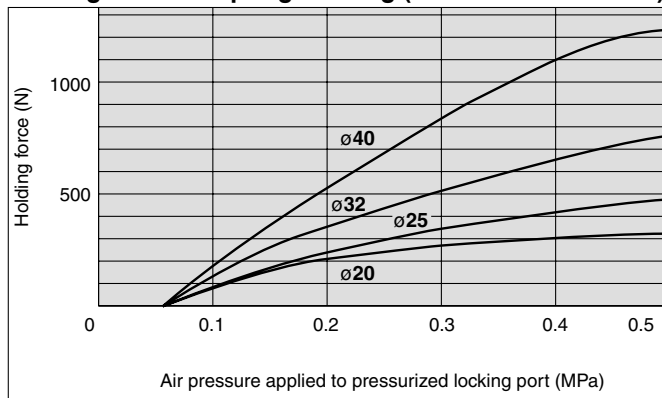


## Holding Force of Spring Locking (Maximum static load)

| Bore size (mm)    | 20  | 25  | 32  | 40  |
|-------------------|-----|-----|-----|-----|
| Holding force (N) | 196 | 313 | 443 | 784 |

(Note) Holding force at piston rod extended side decreases approximately 15%.

## Holding Force of Spring Locking (Maximum static load)



## ⚠ Caution

### Caution when Locking

The holding force is the lock's ability to hold a static load that does not involve vibrations or impacts, when it is locked without a load. Therefore, when normally using the cylinder near the upper limit of the holding force, be aware of the points described below.

- If the piston rod slips because the lock's holding force has been exceeded, the brake shoe could be damaged, resulting in a reduced holding force or shortened life.
- To use the lock for drop prevention purposes, the load to be attached to the cylinder must be within 35% of the cylinder's holding force.
- Do not use the cylinder in the locked state to sustain a load that involves impact.

### Stopping Accuracy (Not including tolerance of control system.) (mm)

| Locking method   | Piston speed (mm/s) |      |      |      |
|--|---------------------|------|------|------|
|  | 50                  | 100  | 300  | 500  |
| Spring locking (Exhaust locking)                                     | ±0.4                | ±0.5 | ±1.0 | ±2.0 |
| Pneumatic locking (Pressure locking)<br>Spring and pneumatic locking | ±0.2                | ±0.3 | ±0.5 | ±1.5 |

Condition/load: 25% of thrust force at 0.5 MPa Solenoid valve: Mounted to the lock port

## ⚠ Caution

### Recommended Pneumatic Circuit/Caution on Handling

For detailed specifications of the fine lock cylinder, Series CLG1 mentioned above, refer to pages 9-2-4 to 9-2-7.

Regarding the installation position and the mounting height of the auto switch, refer to page of Series CDG1 air cylinder (Double acting, Single rod), since the dimensions are the same.

## Auto Switch Mounting Bracket Part No.

| Auto switch model      | Bore size (mm) |          |          |          |
|------------------------|----------------|----------|----------|----------|
|                        | 20             | 25       | 32       | 40       |
| D-B5□/B64<br>D-G5□/K5□ | BA-01          | BA-02    | BA-32    | BA-04    |
| D-C7□/C80<br>D-H7□     | BMA2-020       | BMA2-025 | BMA2-032 | BMA2-040 |

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

## Mounting Bracket Part No.

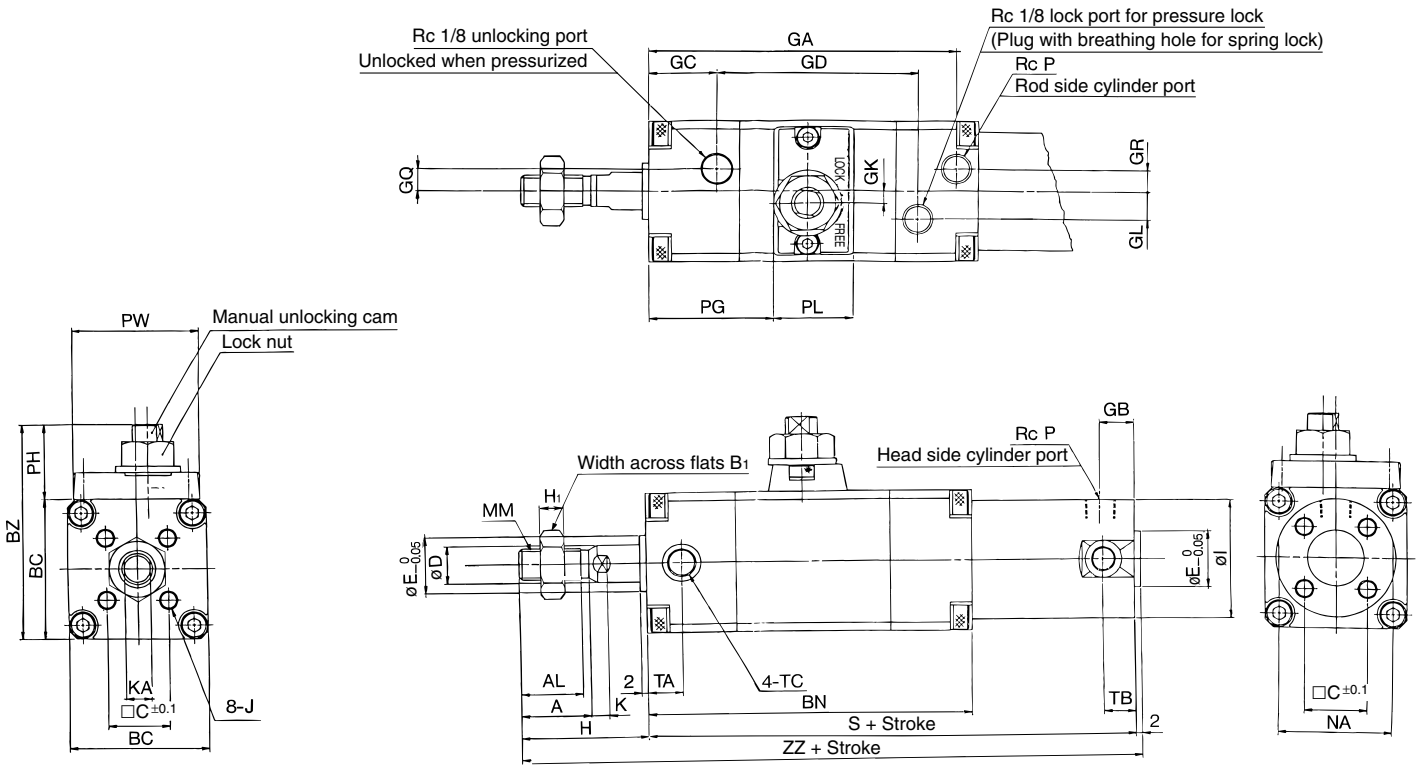
| Auto switch model       | Bore size (mm) |            |            |            |
|-------------------------|----------------|------------|------------|------------|
|                         | 20             | 25         | 32         | 40         |
| Axial foot *            | CLG-L020       | CLG-L025   | CLG-L032   | CLG-L040   |
| Flange                  | CLG-F020       | CLG-F025   | CLG-F032   | CLG-F040   |
| Trunnion pin            | CG-T020        | CG-T025    | CG-T032    | CG-T040    |
| Clevis **               | CG-D020        | CG-D025    | CG-D032    | CG-D040    |
| Rod side pivot bracket  | CLG-020-24     | CLG-025-24 | CLG-032-24 | CLG-040-24 |
| Head side pivot bracket | CG-020-24A     | CG-025-24A | CG-032-24A | CG-040-24A |

- \* When ordering foot bracket, order 2 pieces per cylinder.
- \*\* Clevis pin and snap ring are shipped together with clevis style.

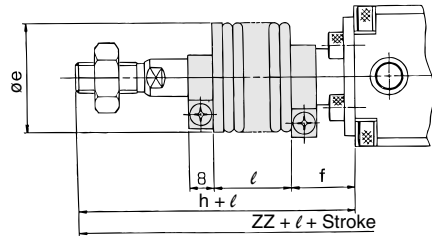
CL  
CL1  
MLGC  
CNG  
MNB  
CNA  
CNS  
CLS  
CLQ  
MLGP  
RLQ  
MLU  
ML1C  
D-  
-X  
20-  
Data

# Series CLG1

## Basic Style: CLG1BN



### With rod boot



| Bore size (mm) | Stroke range | AL   | A  | B <sub>1</sub> | BC | BN  | BZ   | C    | D  | E  | GA  | GB | GC | GD | GK  | GL  | GQ | GR | I  | J                  | K   | KA | MM         |
|----------------|--------------|------|----|----------------|----|-----|------|------|----|----|-----|----|----|----|-----|-----|----|----|----|--------------------|-----|----|------------|
| 20             | Up to 200    | 15.5 | 18 | 13             | 38 | 91  | 57.5 | 14   | 8  | 12 | 84  | 12 | 19 | 54 | 3.5 | 5.5 | 4  | 4  | 26 | M4 x 0.7 depth 7   | 4   | 6  | M8 x 1.25  |
| 25             | Up to 300    | 19.5 | 22 | 17             | 45 | 101 | 69   | 16.5 | 10 | 14 | 94  | 12 | 20 | 62 | 4   | 9   | 7  | 7  | 31 | M5 x 0.8 depth 7.5 | 5   | 8  | M10 x 1.25 |
| 32             | Up to 300    | 19.5 | 22 | 17             | 45 | 102 | 69   | 20   | 12 | 18 | 95  | 11 | 21 | 62 | 4   | 9   | 7  | 7  | 38 | M5 x 0.8 depth 8   | 5.5 | 10 | M10 x 1.25 |
| 40             | Up to 300    | 27   | 30 | 19             | 52 | 111 | 76   | 26   | 16 | 25 | 103 | 12 | 23 | 67 | 4   | 11  | 8  | 8  | 47 | M6 x 1 depth 12    | 6   | 14 | M14 x 1.5  |

| Bore size (mm) | Stroke range | H <sub>1</sub> | NA | P      | PG | PH   | PL | PW | S   | TA | TB | TC         | Without rod boot |     | With rod boot |    |    |             |     |
|----------------|--------------|----------------|----|--------|----|------|----|----|-----|----|----|------------|------------------|-----|---------------|----|----|-------------|-----|
|                |              |                |    |        |    |      |    |    |     |    |    |            | H                | ZZ  | e             | f  | h  | ℓ           | ZZ  |
| 20             | Up to 200    | 5              | 24 | Rc 1/8 | 33 | 19.5 | 20 | 38 | 141 | 11 | 11 | M5 x 0.8   | 35               | 178 | 30            | 16 | 55 | 0.25 stroke | 198 |
| 25             | Up to 300    | 6              | 29 | Rc 1/8 | 38 | 24   | 24 | 41 | 151 | 11 | 11 | M6 x 0.75  | 40               | 193 | 30            | 17 | 62 |             | 215 |
| 32             | Up to 300    | 6              | 36 | Rc 1/8 | 39 | 24   | 24 | 41 | 154 | 11 | 10 | M8 x 1     | 40               | 196 | 35            | 17 | 62 |             | 218 |
| 40             | Up to 300    | 8              | 44 | Rc 1/8 | 44 | 24   | 24 | 41 | 169 | 12 | 10 | M10 x 1.25 | 50               | 221 | 35            | 17 | 70 |             | 241 |

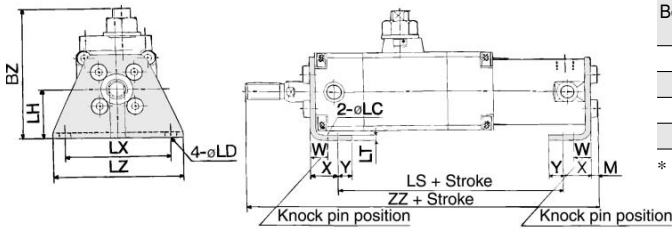
\* For long stroke refer to page 9-2-32.



# Fine Lock Cylinder Double Acting, Single Rod Series **CLG1**

## With Mounting Bracket

### Foot style: CLG1LN

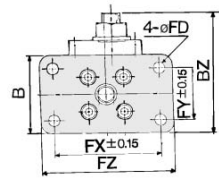


### Foot Style

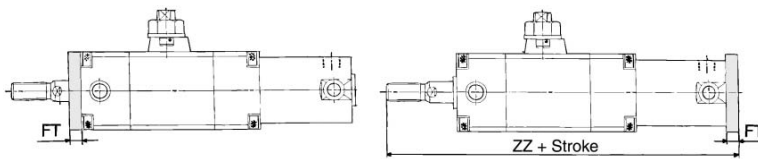
| Bore size (mm) | BZ   | M   | W  | X    | Y   | LC | LD  | LH | LS  | LT | LX | LZ | Without rod boot | With rod boot |
|----------------|------|-----|----|------|-----|----|-----|----|-----|----|----|----|------------------|---------------|
|                | ZZ   |     |    |      |     |    |     |    |     |    |    |    | Z                | ZZ            |
| 20             | 63.5 | 3   | 10 | 15   | 7   | 4  | 6   | 25 | 117 | 3  | 50 | 62 | 182              | 202           |
| 25             | 74.5 | 3.5 | 10 | 15   | 7   | 4  | 6   | 28 | 127 | 3  | 57 | 70 | 197.5            | 219.5         |
| 32             | 74.5 | 3.5 | 10 | 16   | 8   | 4  | 6.6 | 28 | 128 | 3  | 60 | 74 | 200.5            | 222.5         |
| 40             | 83   | 4   | 10 | 16.5 | 8.5 | 4  | 6.6 | 33 | 142 | 3  | 68 | 84 | 226              | 246           |

\* For long stroke, refer to page 9-2-32.

### Rod side flange style: CLG1FN



### Head side flange style: CLG1GN



### Rod Side Flange Style

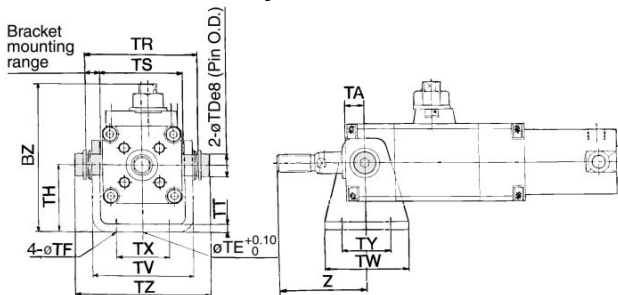
| Bore size (mm) | B  | BZ   | FD  | FT | FX | FY | FZ |
|----------------|----|------|-----|----|----|----|----|
| 20             | 38 | 57.5 | 5.5 | 6  | 52 | 25 | 65 |
| 25             | 45 | 69   | 5.5 | 7  | 60 | 30 | 75 |
| 32             | 45 | 69   | 6.6 | 7  | 60 | 30 | 75 |
| 40             | 52 | 76   | 6.6 | 8  | 66 | 36 | 82 |

\* For long stroke, refer to page 9-2-32.

### Head Side Flange Style

| Bore size (mm) | Without rod boot | With rod boot |
|----------------|------------------|---------------|
|                | ZZ               | ZZ            |
| 20             | 182              | 202           |
| 25             | 198              | 220           |
| 32             | 201              | 223           |
| 40             | 227              | 247           |

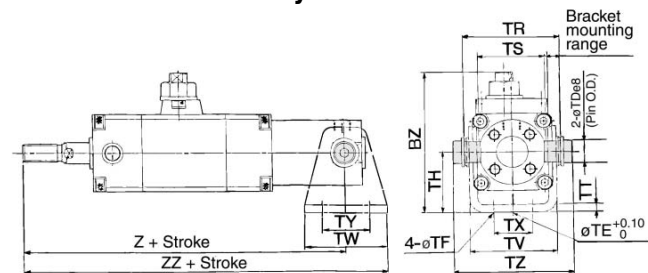
### Rod side trunnion style: CLG1UN



### Rod Side Trunnion Style

| Bore size (mm) | BZ   | TDe8                        | TE | TF  | TH   | TR   | TS | TT  | TV   | TW | TX | TY | TZ   | Without rod boot | With rod boot |
|----------------|------|-----------------------------|----|-----|------|------|----|-----|------|----|----|----|------|------------------|---------------|
|                | Z    |                             |    |     |      |      |    |     |      |    |    |    |      | Z                | Z             |
| 20             | 69.5 | 8 <sup>-0.025/-0.047</sup>  | 10 | 5.5 | 31   | 51   | 40 | 3.2 | 47.8 | 42 | 26 | 28 | 59.6 | 46               | 66            |
| 25             | 83.5 | 10 <sup>-0.025/-0.047</sup> | 10 | 5.5 | 37   | 58   | 47 | 3.2 | 54.8 | 42 | 28 | 28 | 68   | 51               | 73            |
| 32             | 85   | 12 <sup>-0.032/-0.059</sup> | 10 | 6.6 | 38.5 | 62.5 | 47 | 4.5 | 57.4 | 48 | 28 | 28 | 75.7 | 51               | 73            |
| 40             | 92.5 | 14 <sup>-0.032/-0.059</sup> | 10 | 6.6 | 42.5 | 72.5 | 54 | 4.5 | 65.4 | 56 | 36 | 30 | 85.7 | 62               | 82            |

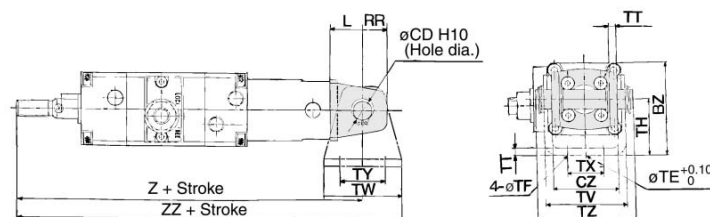
### Head side trunnion style: CLG1TN



### Head Side Trunnion Style

| Bore size (mm) | BZ   | TDe8                        | TE | TF  | TH | TR   | TS | TT  | TV   | TW | TX | TY | TZ   | Without rod boot | With rod boot |
|----------------|------|-----------------------------|----|-----|----|------|----|-----|------|----|----|----|------|------------------|---------------|
|                | Z    |                             |    |     |    |      |    |     |      |    |    |    |      | ZZ               | Z             |
| 20             | 63.5 | 8 <sup>-0.025/-0.047</sup>  | 10 | 5.5 | 25 | 39   | 28 | 3.2 | 35.8 | 42 | 16 | 28 | 47.6 | 165              | 186           |
| 25             | 76.5 | 10 <sup>-0.025/-0.047</sup> | 10 | 5.5 | 30 | 43   | 33 | 3.2 | 39.8 | 42 | 20 | 28 | 53   | 180              | 201           |
| 32             | 81.5 | 12 <sup>-0.032/-0.059</sup> | 10 | 6.6 | 35 | 54.5 | 40 | 4.5 | 49.4 | 48 | 22 | 28 | 67.7 | 184              | 208           |
| 40             | 90   | 14 <sup>-0.032/-0.059</sup> | 10 | 6.6 | 40 | 65.5 | 49 | 4.5 | 58.4 | 56 | 30 | 30 | 78.7 | 209              | 237           |

### Clevis style: CLG1DN



### Clevis Style

| Bore size (mm) | BZ   | CDH10                  | CZ                    | L  | RR | TE | TF  | TH  | TT  | TV   | TW   | TX | TY | TZ   |
|----------------|------|------------------------|-----------------------|----|----|----|-----|-----|-----|------|------|----|----|------|
|                | 20   | 44                     | 8 <sup>-0.058/0</sup> | 29 | 14 | 11 | 10  | 5.5 | 25  | 3.2  | 35.8 | 42 | 16 | 28   |
| 25             | 52.5 | 10 <sup>-0.058/0</sup> | 33                    | 16 | 13 | 10 | 5.5 | 30  | 3.2 | 39.8 | 42   | 20 | 28 | 48   |
| 32             | 57.5 | 12 <sup>-0.070/0</sup> | 40                    | 20 | 15 | 10 | 6.6 | 35  | 4.5 | 49.4 | 48   | 22 | 28 | 59.4 |
| 40             | 66   | 14 <sup>-0.070/0</sup> | 49                    | 22 | 18 | 10 | 6.6 | 40  | 4.5 | 58.4 | 56   | 30 | 30 | 71.4 |

\* Clevis pin and snap ring are attached.

| Bore size (mm) | Without rod boot | With rod boot |
|----------------|------------------|---------------|
|                | Z                | ZZ            |
| 20             | 190              | 211           |
| 25             | 207              | 228           |
| 32             | 214              | 238           |
| 40             | 241              | 269           |

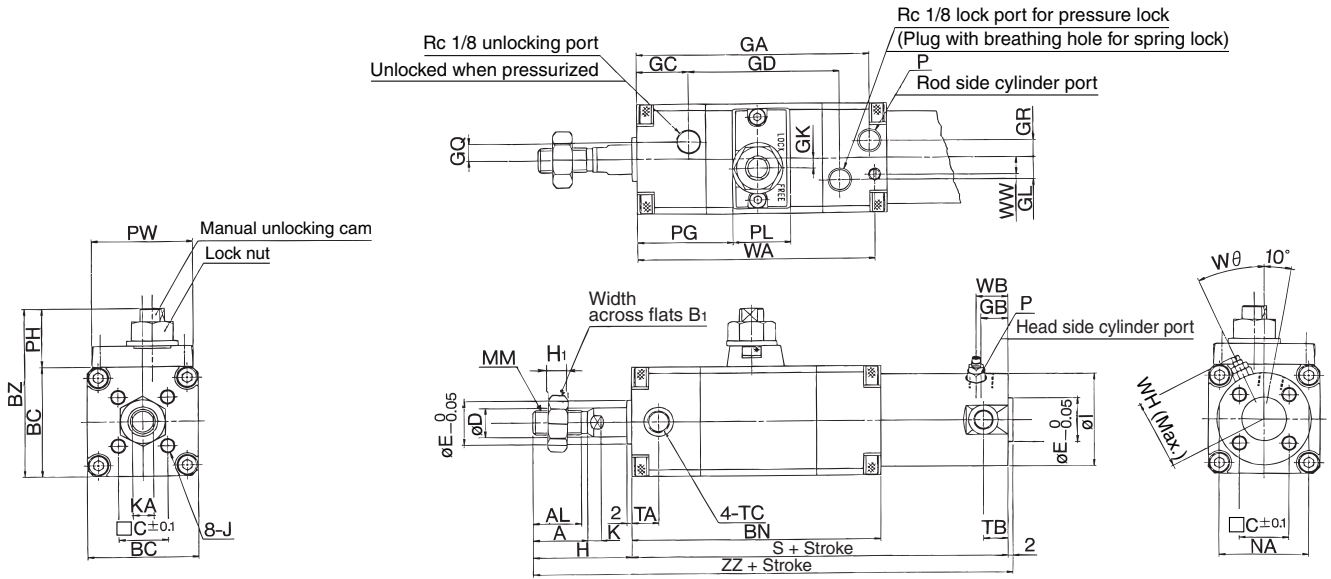
- CL
- CL1
- MLGC
- CNG
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data



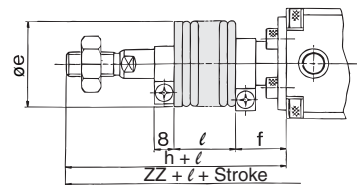
# Series CLG1

## Basic Style with Air Cushion: CLG1BA

\* Refer to page 9-2-31 for mounting bracket, since the dimensions except GA, P, WA, WB, WH, WW, Wθ are the same.



### With rod boot

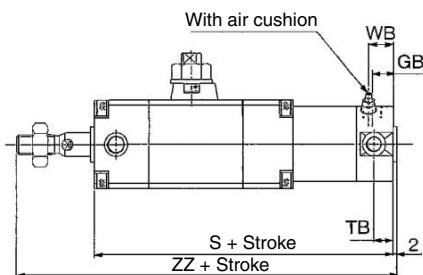


| Bore size (mm) | Stroke range | AL   | A  | B <sub>1</sub> | BC | BN  | BZ   | C    | D  | E  | GA  | GB | GC | GD | GK  | GL  | GQ | GR | I  | J                  | K   | KA | MM         | NA |
|----------------|--------------|------|----|----------------|----|-----|------|------|----|----|-----|----|----|----|-----|-----|----|----|----|--------------------|-----|----|------------|----|
| 20             | Up to 200    | 15.5 | 18 | 13             | 38 | 91  | 57.5 | 14   | 8  | 12 | 85  | 12 | 19 | 54 | 3.5 | 5.5 | 4  | 4  | 26 | M4 x 0.7 depth 7   | 4   | 6  | M8 x 1.25  | 24 |
| 25             | Up to 300    | 19.5 | 22 | 17             | 45 | 101 | 69   | 16.5 | 10 | 14 | 95  | 12 | 20 | 62 | 4   | 9   | 7  | 7  | 31 | M5 x 0.8 depth 7.5 | 5   | 8  | M10 x 1.25 | 29 |
| 32             | Up to 300    | 19.5 | 22 | 17             | 45 | 102 | 69   | 20   | 12 | 18 | 95  | 11 | 21 | 62 | 4   | 9   | 7  | 7  | 38 | M5 x 0.8 depth 8   | 5.5 | 10 | M10 x 1.25 | 36 |
| 40             | Up to 300    | 27   | 30 | 19             | 52 | 111 | 76   | 26   | 16 | 25 | 103 | 12 | 23 | 67 | 4   | 11  | 8  | 8  | 47 | M6 x 1 depth 12    | 6   | 14 | M14 x 1.5  | 44 |

| Bore size (mm) | Stroke range | H <sub>1</sub> | P        | PG | PH   | PL | PW | S   | TA | TB | TC         | WA    | WW  | WB | WH   | Wθ  | Without rod boot |     | With rod boot |    |    |                 |
|----------------|--------------|----------------|----------|----|------|----|----|-----|----|----|------------|-------|-----|----|------|-----|------------------|-----|---------------|----|----|-----------------|
|                |              |                |          |    |      |    |    |     |    |    |            |       |     |    |      |     | H                | ZZ  | e             | f  | h  | l               |
| 20             | Up to 200    | 5              | M5 x 0.8 | 33 | 19.5 | 20 | 38 | 141 | 11 | 11 | M5 x 0.8   | 86    | 5.5 | 14 | 23   | 30° | 35               | 178 | 30            | 16 | 55 | 198             |
| 25             | Up to 300    | 6              | M5 x 0.8 | 38 | 24   | 24 | 41 | 151 | 11 | 11 | M6 x 0.75  | 96    | 7   | 14 | 25   | 30° | 40               | 193 | 30            | 17 | 62 | 0.25 stroke 215 |
| 32             | Up to 300    | 6              | Rc 1/8   | 39 | 24   | 24 | 41 | 154 | 11 | 10 | M8 x 1     | 97    | 7   | 13 | 28.5 | 25° | 40               | 196 | 35            | 17 | 62 | 218             |
| 40             | Up to 300    | 8              | Rc 1/8   | 44 | 24   | 24 | 41 | 169 | 12 | 10 | M10 x 1.25 | 105.5 | 9   | 14 | 33   | 20° | 50               | 221 | 35            | 17 | 70 | 241             |

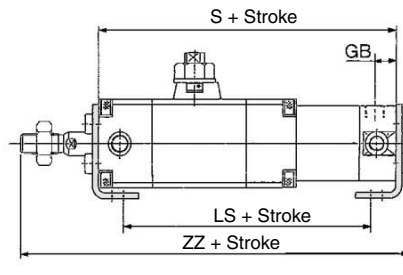
## Long Stroke/Refer to pages 9-2-30 to 9-2-32 for mounting dimensions except the table below.

### Basic style



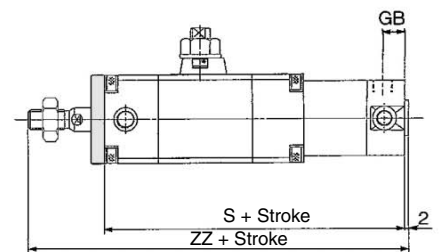
| Bore size (mm) | Stroke range | GB | S   | Without rod boot |     | TB | WB |
|----------------|--------------|----|-----|------------------|-----|----|----|
|                |              |    |     | ZZ               | ZZ  |    |    |
| 20             | 201 to 350   | 12 | 149 | 186              | 206 | 11 | 14 |
| 25             | 301 to 400   | 12 | 159 | 201              | 223 | 11 | 14 |
| 32             | 301 to 450   | 12 | 162 | 204              | 226 | 11 | 14 |
| 40             | 301 to 800   | 13 | 178 | 230              | 250 | 12 | 15 |

### Foot style



| Bore size (mm) | Stroke range | GB | S   | LS  | Without rod boot |       | With rod boot |
|----------------|--------------|----|-----|-----|------------------|-------|---------------|
|                |              |    |     |     | ZZ               | ZZ    |               |
| 20             | 201 to 350   | 12 | 149 | 125 | 190              | 210   |               |
| 25             | 301 to 400   | 12 | 159 | 135 | 205.5            | 227.5 |               |
| 32             | 301 to 450   | 12 | 162 | 136 | 208.5            | 230.5 |               |
| 40             | 301 to 800   | 13 | 178 | 151 | 235              | 255   |               |

### Rod side flange style



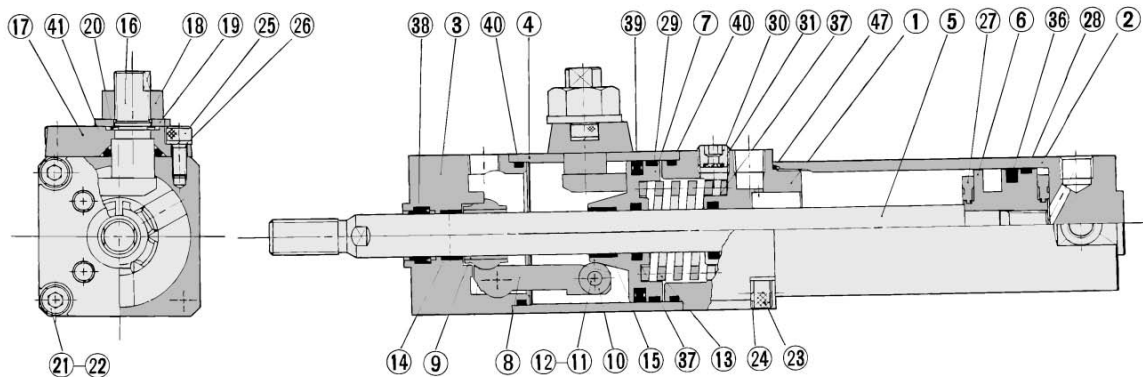
| Bore size (mm) | Stroke range | GB | S   | Without rod boot |     | With rod boot |
|----------------|--------------|----|-----|------------------|-----|---------------|
|                |              |    |     | ZZ               | ZZ  |               |
| 20             | 201 to 350   | 12 | 149 | 186              | 206 |               |
| 25             | 301 to 400   | 12 | 159 | 201              | 223 |               |
| 32             | 301 to 450   | 12 | 162 | 204              | 226 |               |
| 40             | 301 to 800   | 13 | 178 | 230              | 250 |               |



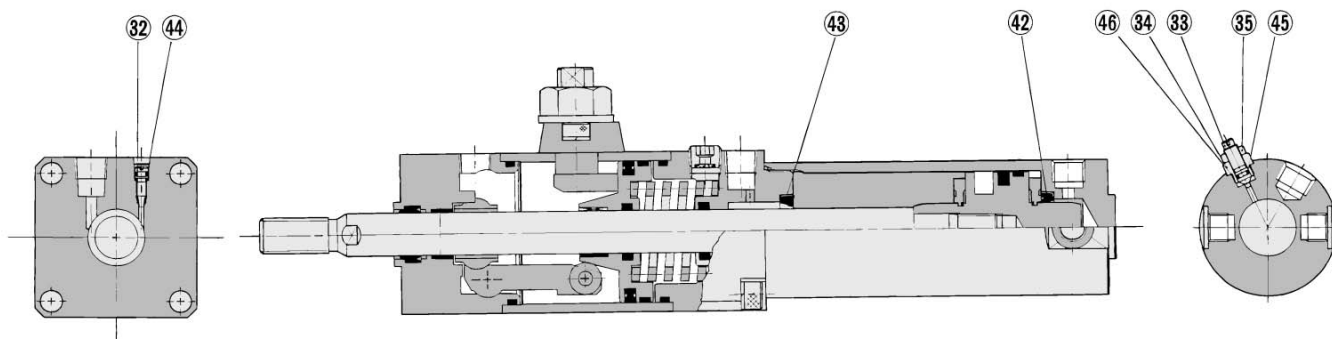
# Fine Lock Cylinder Double Acting, Single Rod Series **CLG1**

## Construction

### With rubber bumper: CLG1BN



### With air cushion: CLG1BA



### Component Parts

| No. | Description             | Material                       | Note   |
|-----|-------------------------|--------------------------------|--|
| ①   | Rod cover               | Aluminum alloy                 | Black hard anodized                            |
| ②   | Tube cover              | Aluminum alloy                 | Hard anodized                                  |
| ③   | Cover                   | Carbon steel                   | Nitrided                                       |
| ④   | Intermediate cover      | Aluminum alloy                 | Black hard anodized                            |
| ⑤   | Piston rod              | Carbon steel *                 | Hard chrome plated                             |
| ⑥   | Piston                  | Aluminum alloy                 | Chromated, Hard anodized<br>(With air cushion) |
| ⑦   | Brake piston            | Carbon steel                   | Nitrided                                       |
| ⑧   | Brake arm               | Carbon steel                   | Nitrided                                       |
| ⑨   | Brake shoe              | Special friction material      |  |
| ⑩   | Roller                  | Carbon steel                   | Nitrided                                       |
| ⑪   | Pin                     | Carbon steel                   | Heat treated                                   |
| ⑫   | Snap ring               | Carbon tool steel              | Nickel plated                                  |
| ⑬   | Brake spring            | Spring steel wire              | Dacrodized                                     |
| ⑭   | Bushing                 | Oil-impregnated sintered alloy |  |
| ⑮   | Bushing                 | Oil-impregnated sintered alloy |  |
| ⑯   | Manual lock release cam | Chromium molybdenum steel      | Nickel plated                                  |
| ⑰   | Cam guide               | Carbon steel                   | Nitrided, painted                              |

\* In the  $\phi 20$  and  $\phi 25$  cylinders with auto switches, the piston rod is made of stainless steel.

| No. | Description                   | Material                  | Note                      |
|-----|-------------------------------|---------------------------|---------------------------|
| ⑱   | Lock nut                      | Rolled steel              | Nickel plated             |
| ⑲   | Flat washer                   | Rolled steel              | Nickel plated             |
| ⑳   | Snap ring                     | Carbon tool steel         | Nickel plated             |
| ㉑   | Hexagon socket head cap screw | Chromium molybdenum steel | Black zinc chromated      |
| ㉒   | Spring washer                 | Steel wire                | Black zinc chromated      |
| ㉓   | Hexagon socket head cap screw | Chromium molybdenum steel | Black zinc chromated      |
| ㉔   | Spring washer                 | Steel wire                | Black zinc chromated      |
| ㉕   | Hexagon socket head cap screw | Chromium molybdenum steel | Black zinc chromated      |
| ㉖   | Spring washer                 | Steel wire                | Black zinc chromated      |
| ㉗   | Bumper                        | Urethane                  |                           |
| ㉘   | Wear ring                     | Resin                     |                           |
| ㉙   | Wear ring                     | Resin                     |                           |
| ㉚   | Hexagon socket head plug      | Carbon steel              | Type E only               |
| ㉛   | Element                       | Bronze                    | Type E only               |
| ㉜   | Cushion valve A               | Brass                     | Electroless nickel plated |
| ㉝   | Cushion valve B               | Rolled steel              | Electroless nickel plated |
| ㉞   | Cushion valve retainer        | Rolled steel              | Electroless nickel plated |
| ㉟   | Lock nut                      | Carbon steel              | Nickel plated             |

| No. | Description               | Material |
|-----|---------------------------|----------|
| ㉞   | Piston seal               | NBR      |
| ㉟   | Rod seal A                | NBR      |
| ㊱   | Rod seal B                | NBR      |
| ㊲   | Brake piston seal         | NBR      |
| ㊳   | Intermediate cover gasket | NBR      |
| ㊴   | Cam gasket                | NBR      |
| ㊵   | Cushion seal A            | NBR      |
| ㊶   | Cushion seal B            | NBR      |
| ㊷   | Valve seal A              | NBR      |
| ㊸   | Valve seal B              | NBR      |
| ㊹   | Valve retaining gasket    | NBR      |
| ㊺   | Cylinder tube gasket      | NBR      |

Note) Please contact SMC if the fine lock unit must be disassembled.

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

D-

-X

20-

Data

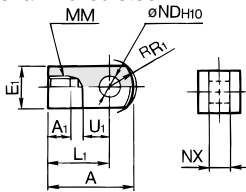
# Series CLG1

# Accessory Bracket Dimensions

## Single Knuckle Joint

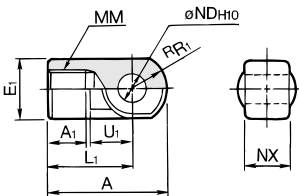
### I-G02/G03

Material: Rolled steel



### I-G04

Material: Cast iron

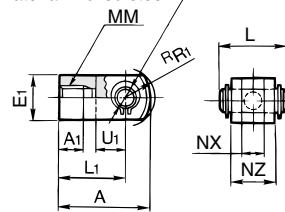


| Part no. | Applicable bore size (mm) | A  | A <sub>1</sub> | E <sub>1</sub> | L <sub>1</sub> | MM         | R <sub>R1</sub> | U <sub>1</sub> | NDH <sub>10</sub>                 | NX                                 |
|----------|---------------------------|----|----------------|----------------|----------------|------------|-----------------|----------------|-----------------------------------|------------------------------------|
| I-G02    | 20                        | 34 | 8.5            | □16            | 25             | M8 x 1.25  | 10.3            | 11.5           | 8 <sup>+0.058</sup> <sub>0</sub>  | 8 <sup>-0.2</sup> <sub>-0.4</sub>  |
| I-G03    | 25, 32                    | 41 | 10.5           | □20            | 30             | M10 x 1.25 | 12.8            | 14             | 10 <sup>+0.058</sup> <sub>0</sub> | 10 <sup>-0.2</sup> <sub>-0.4</sub> |
| I-G04    | 40                        | 42 | 14             | ∅22            | 30             | M14 x 1.5  | 12              | 14             | 10 <sup>+0.058</sup> <sub>0</sub> | 18 <sup>-0.3</sup> <sub>-0.5</sub> |

## Double Knuckle Joint \* Knuckle pin and snap ring are packaged.

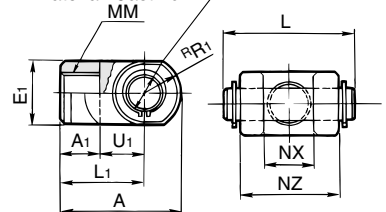
### Y-G02/G03

Material: Rolled steel



### Y-G04

Material: Cast iron

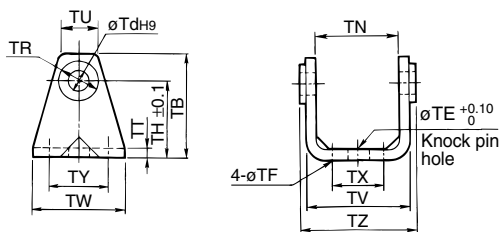


| Part no. | Applicable bore size (mm) | A  | A <sub>1</sub> | E <sub>1</sub> | L <sub>1</sub> | MM         | R <sub>R1</sub> | U <sub>1</sub> | NDH <sub>10</sub>                 | NX                                 | NZ | L    | Applicable pin part no. |
|----------|---------------------------|----|----------------|----------------|----------------|------------|-----------------|----------------|-----------------------------------|------------------------------------|----|------|-------------------------|
| Y-G02    | 20                        | 34 | 8.5            | □16            | 25             | M8 x 1.25  | 10.3            | 11.5           | 8 <sup>+0.058</sup> <sub>0</sub>  | 8 <sup>-0.4</sup> <sub>-0.2</sub>  | 16 | 21   | IY-G02                  |
| Y-G03    | 25, 32                    | 41 | 10.5           | □20            | 30             | M10 x 1.25 | 12.8            | 14             | 10 <sup>+0.058</sup> <sub>0</sub> | 10 <sup>-0.4</sup> <sub>-0.2</sub> | 20 | 25.6 | IY-G03                  |
| Y-G04    | 40                        | 42 | 16             | ∅22            | 30             | M14 x 1.5  | 12              | 14             | 10 <sup>+0.058</sup> <sub>0</sub> | 18 <sup>-0.5</sup> <sub>-0.3</sub> | 36 | 41.6 | IY-G04                  |

## Rod Side Pivot Bracket

### ∅20 to ∅40

Material: Rolled steel



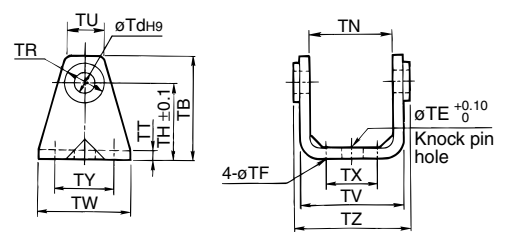
| Part no.   | Applicable bore size (mm) | TB | TdH9                              | TE | TF  | TH   | TN |
|------------|---------------------------|----|-----------------------------------|----|-----|------|----|
| CLG-020-24 | 20                        | 42 | 8 <sup>+0.036</sup> <sub>0</sub>  | 10 | 5.5 | 31   | 40 |
| CLG-025-24 | 25                        | 48 | 10 <sup>+0.036</sup> <sub>0</sub> | 10 | 5.5 | 37   | 47 |
| CLG-032-24 | 32                        | 53 | 12 <sup>+0.043</sup> <sub>0</sub> | 10 | 6.6 | 38.5 | 47 |
| CLG-040-24 | 40                        | 60 | 14 <sup>+0.043</sup> <sub>0</sub> | 10 | 6.6 | 42.5 | 55 |

| Part no.   | Applicable bore size (mm) | TR | TT  | TU   | TV   | TW | TX | TY | TZ   |
|------------|---------------------------|----|-----|------|------|----|----|----|------|
| CLG-020-24 | 20                        | 13 | 3.2 | 21.2 | 47.8 | 42 | 26 | 28 | 50   |
| CLG-025-24 | 25                        | 15 | 3.2 | 21.3 | 54.8 | 42 | 28 | 28 | 57   |
| CLG-032-24 | 32                        | 17 | 4.5 | 25.6 | 57.4 | 48 | 28 | 28 | 61.4 |
| CLG-040-24 | 40                        | 21 | 4.5 | 26.3 | 65.4 | 56 | 36 | 30 | 71.4 |

## Head Side Pivot Bracket

### ∅20 to ∅40

Material: Rolled steel

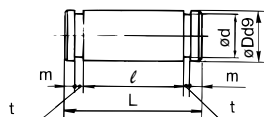


| Part no.   | Applicable bore size (mm) | TB | Td | TE | TF  | TH | TN     |
|------------|---------------------------|----|----|----|-----|----|--------|
| CG-020-24A | 20                        | 36 | 8  | 10 | 5.5 | 25 | (29.3) |
| CG-025-24A | 25                        | 43 | 10 | 10 | 5.5 | 30 | (33.1) |
| CG-032-24A | 32                        | 50 | 12 | 10 | 6.6 | 35 | (40.4) |
| CG-040-24A | 40                        | 58 | 14 | 10 | 6.6 | 40 | (49.2) |

| Part no.   | Applicable bore size (mm) | TR | TT  | TU   | TV   | TW | TX | TY | TZ   |
|------------|---------------------------|----|-----|------|------|----|----|----|------|
| CG-020-24A | 20                        | 13 | 3.2 | 18.1 | 35.8 | 42 | 16 | 28 | 38.3 |
| CG-025-24A | 25                        | 15 | 3.2 | 20.7 | 39.8 | 42 | 20 | 28 | 42.1 |
| CG-032-24A | 32                        | 17 | 4.5 | 23.6 | 49.4 | 48 | 22 | 28 | 53.8 |
| CG-040-24A | 40                        | 21 | 4.5 | 27.3 | 58.4 | 56 | 30 | 30 | 64.6 |

## Knuckle Pin

Material: Carbon steel

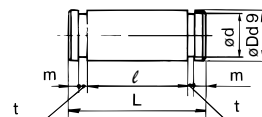


| Part no. | Applicable bore size (mm) | Dd9                                    | L    | d   |
|----------|---------------------------|--|------|-----|
| IY-G02   | 20                        | 8 <sup>-0.040</sup> <sub>-0.076</sub>  | 21   | 7.6 |
| IY-G03   | 25, 32                    | 10 <sup>-0.040</sup> <sub>-0.076</sub> | 25.6 | 9.6 |
| IY-G04   | 40                        | 10 <sup>-0.040</sup> <sub>-0.076</sub> | 41.6 | 9.6 |

| Part no. | ℓ    | m    | t    | Applicable snap ring |
|----------|------|------|------|----------------------|
| IY-G02   | 16.2 | 1.5  | 0.9  | Type C 8 for axis    |
| IY-G03   | 20.2 | 1.55 | 1.15 | Type C 10 for axis   |
| IY-G04   | 36.2 | 1.55 | 1.15 | Type C 10 for axis   |

## Clevis Pin

Material: Carbon steel

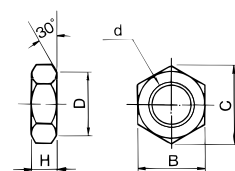


| Part no. | Applicable bore size (mm) | Dd9                                    | L    | d    |
|----------|---------------------------|--|------|------|
| CD-G02   | 20                        | 8 <sup>-0.040</sup> <sub>-0.076</sub>  | 43.4 | 7.6  |
| CD-G25   | 25                        | 10 <sup>-0.040</sup> <sub>-0.076</sub> | 48   | 9.6  |
| CD-G03   | 32                        | 12 <sup>-0.050</sup> <sub>-0.093</sub> | 59.4 | 11.5 |
| CD-G04   | 40                        | 14 <sup>-0.050</sup> <sub>-0.093</sub> | 71.4 | 13.4 |

| Part no. | ℓ    | m    | t    | Applicable snap ring |
|----------|------|------|------|----------------------|
| CD-G02   | 38.6 | 1.5  | 0.9  | Type C 8 for axis    |
| CD-G25   | 42.6 | 1.55 | 1.15 | Type C 10 for axis   |
| CD-G03   | 54   | 1.55 | 1.15 | Type C 12 for axis   |
| CD-G04   | 65   | 2.05 | 1.15 | Type C 14 for axis   |

## Rod End Nut

Material: Carbon steel



| Part no. | Applicable bore size (mm) | B  | C    | D    | d          | H |
|----------|---------------------------|----|------|------|------------|---|
| NT-02    | 20                        | 13 | 15.0 | 12.5 | M8 x 1.25  | 5 |
| NT-03    | 25, 32                    | 17 | 19.6 | 16.5 | M10 x 1.25 | 6 |
| NT-G04   | 40                        | 19 | 21.9 | 18   | M14 x 1.5  | 8 |