

# Compact Guide Cylinder Series *MGQ*

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

## How to Order

**Compact Guide Cylinder** **MGQ** **M** **25** **—** **30** **—** **M9BW** **—** **—**

• **Compact Guide Cylinder**

• **Bearing type**

|          |                      |
|----------|----------------------|
| <b>M</b> | Slide bearing        |
| <b>L</b> | Ball bushing bearing |

• **Bore size**

|           |       |            |        |
|-----------|-------|------------|--------|
| <b>12</b> | 12 mm | <b>40</b>  | 40 mm  |
| <b>16</b> | 16 mm | <b>50</b>  | 50 mm  |
| <b>20</b> | 20 mm | <b>63</b>  | 63 mm  |
| <b>25</b> | 25 mm | <b>80</b>  | 80 mm  |
| <b>32</b> | 32 mm | <b>100</b> | 100 mm |

• **Thread type**

|            |          |             |
|------------|----------|-------------|
| <b>Nil</b> | M5 x 0.8 | ø12, ø16    |
|            | Rc       |             |
| <b>TN</b>  | NPT      | ø20 to ø100 |
| <b>TF</b>  | G        |             |

• **Cylinder stroke (mm)**  
Refer to "Standard Stroke" on page 339.

• **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. |

• **Made to Order**  
(Refer to page 339 for details.)

## Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

| Type               | Special function | Electrical entry | Indicator light | Wiring (Output)         | Load voltage |              | Auto switch model     |                            | Lead wire length (m)     |           |        |        | Pre-wired connector | Applicable load |                 |            |
|--------------------|------------------|------------------|-----------------|-------------------------|--------------|--------------|-----------------------|----------------------------|--------------------------|-----------|--------|--------|---------------------|-----------------|-----------------|------------|
|                    |                  |                  |                 |                         | DC           |              | AC                    | Perpendicular              | In-line                  | 0.5 (Nil) | 1 (M)  | 3 (L)  |                     | 5 (Z)           |                 |            |
| Solid state switch | —                | Grommet          | Yes             | 3-wire (NPN)            | 24V          | 5V, 12V      | —                     | <b>M9NV</b>                | <b>M9N</b>               | ●         | ●      | ●      | ○                   | ○               | IC circuit      | Relay, PLC |
|                    | 3-wire (PNP)     |                  |                 | <b>M9PV</b>             |              |              |                       | <b>M9P</b>                 | ●                        | ●         | ●      | ○      | ○                   |                 |                 |            |
|                    | 2-wire           |                  |                 | 12V                     |              | <b>M9BV</b>  |                       | <b>M9B</b>                 | ●                        | ●         | ●      | ○      | ○                   | —               |                 |            |
|                    | 3-wire (NPN)     |                  |                 | 5V, 12V                 |              | <b>M9NWV</b> |                       | <b>M9NW</b>                | ●                        | ●         | ●      | ○      | ○                   | IC circuit      |                 |            |
|                    | 3-wire (PNP)     |                  |                 |                         |              | <b>M9PWV</b> |                       | <b>M9PW</b>                | ●                        | ●         | ●      | ○      | ○                   |                 |                 |            |
|                    | 2-wire           |                  |                 | 12V                     |              | <b>M9BWV</b> |                       | <b>M9BW</b>                | ●                        | ●         | ●      | ○      | ○                   | —               |                 |            |
| Reed switch        | —                | Grommet          | Yes             | 3-wire (NPN equivalent) | —            | 5V           | —                     | <b>A96V</b>                | <b>A96</b>               | ●         | —      | ●      | —                   | —               | IC circuit      | —          |
|                    |                  |                  | No              | 2-wire                  | 24V          | 12V          | 100V<br>100 V or less | <b>A93V</b><br><b>A90V</b> | <b>A93</b><br><b>A90</b> | ●<br>●    | —<br>— | ●<br>● | —<br>—              | —<br>—          | —<br>IC circuit | Relay, PLC |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW  
 1 m ..... M (Example) M9NWM  
 3 m ..... L (Example) M9NWL  
 5 m ..... Z (Example) M9NWLZ

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

\* Since there are other applicable auto switches than listed, refer to page 351 for details.  
 \* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.  
 \* Auto switches are shipped together (not assembled).

Air cylinder integrated with guide has achieved anti-lateral load and high non-rotating accuracy.

Space-saving and compact design

Suitable as stoppers or lifters in conveyor line

2 types of guide rod bearing are available depending upon the application

Slide bearing/Ball bushing bearing



**Made to Order Specifications**  
(For details, refer to pages 1829 to 2021.)

| Symbol | Specifications                                                 |
|--------|----------------------------------------------------------------|
| —XA□   | Change of rod end shape                                        |
| —XB6   | Heat resistant cylinder (−10 to 150°C)                         |
| —XB9   | Low speed cylinder (10 to 50 mm/s)                             |
| —XB10  | Intermediate stroke (Using exclusive body)                     |
| —XC22  | Fluororubber seals                                             |
| —XC56  | With knock pin holes                                           |
| —XC79  | Machining tapped hole, drilled hole, and pin hole additionally |
| —X168  | Helical insert thread                                          |
| —X367  | Bottom mounting style                                          |
| —X399  | Long bushing type                                              |
| —X563  | With anti-strong magnetic field switch (D-P4DW)                |

## Specifications

| Bearing type                  | Slide bearing                           |                | Ball bushing bearing |
|-------------------------------|-----------------------------------------|----------------|----------------------|
| Model                         | MGQM                                    |                | MGQL                 |
| Bore size (mm)                | 12, 16, 20, 25, 32, 40, 50, 63, 80, 100 |                |                      |
| Action                        | Double acting                           |                |                      |
| Fluid                         | Air                                     |                |                      |
| Proof pressure                | 1.5 MPa                                 |                |                      |
| Max. operating pressure       | 1.0 MPa                                 |                |                      |
| Min. operating pressure       | ø12, ø16                                | 0.12 MPa       |                      |
|                               | ø20 to ø100                             | 0.1 MPa        |                      |
| Ambient and fluid temperature | −10 to 60°C (No freezing)               |                |                      |
| Piston speed                  | ø12 to ø63                              | 50 to 500 mm/s |                      |
|                               | ø80, ø100                               | 50 to 400 mm/s |                      |
| Cushion                       | Rubber bumper on both ends              |                |                      |
| Lubrication                   | Non-lube                                |                |                      |
| Stroke length tolerance       | $+1.5^0$ mm                             |                |                      |

## Standard Stroke

| Model                                                     | Standard stroke (mm)                          | Intermediate stroke (mm)                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MGQ <sup>M</sup> <sub>L</sub> 12, 16                      | 10, 20, 30, 40, 50, 75, 100                   | As for the intermediate strokes other than the standard strokes at left are manufactured by means of installing a spacer.<br>ø12 to ø32 ..... Stroke available by the 1 stroke interval<br>ø40 to ø100 .... Stroke available by the 5 stroke interval (Example)<br>1. For MGQM20-21 st, MGQM20-30 st is provided with a 5 mm + 4 mm ≤ 9 mm width spacer.<br>2. For MGQM50-40 st, MGQM50-50 st is provided with a 10 mm width spacer. |
| MGQ <sup>M</sup> <sub>L</sub> 20, 25                      | 20, 30, 40, 50, 75, 100<br>125, 150, 175, 200 |                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| MGQ <sup>M</sup> <sub>L</sub> 32, 40<br>50, 63<br>80, 100 | 25, 50, 75, 100, 125<br>150, 175, 200         |                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Theoretical Output

| Bore size (mm) | Rod size (mm) | Operating direction | Piston area (mm <sup>2</sup> ) | Operating pressure (MPa) |      |      |      |      |      |      |      |      |  |  |
|----------------|---------------|---------------------|--------------------------------|--------------------------|------|------|------|------|------|------|------|------|--|--|
|                |               |                     |                                | 0.2                      | 0.3  | 0.4  | 0.5  | 0.6  | 0.7  | 0.8  | 0.9  | 1.0  |  |  |
| 12             | 6             | OUT                 | 113                            | 23                       | 34   | 45   | 57   | 68   | 79   | 90   | 102  | 113  |  |  |
|                |               | IN                  | 85                             | 17                       | 26   | 34   | 43   | 51   | 60   | 68   | 77   | 85   |  |  |
| 16             | 8             | OUT                 | 201                            | 40                       | 60   | 80   | 101  | 121  | 141  | 161  | 181  | 201  |  |  |
|                |               | IN                  | 151                            | 30                       | 45   | 60   | 76   | 91   | 106  | 121  | 136  | 151  |  |  |
| 20             | 10            | OUT                 | 314                            | 63                       | 94   | 126  | 157  | 188  | 220  | 251  | 283  | 314  |  |  |
|                |               | IN                  | 236                            | 47                       | 71   | 94   | 118  | 142  | 165  | 189  | 212  | 236  |  |  |
| 25             | 12            | OUT                 | 491                            | 98                       | 147  | 196  | 246  | 295  | 344  | 393  | 442  | 491  |  |  |
|                |               | IN                  | 378                            | 76                       | 113  | 151  | 189  | 227  | 265  | 302  | 340  | 378  |  |  |
| 32             | 16            | OUT                 | 804                            | 161                      | 241  | 322  | 402  | 482  | 563  | 643  | 724  | 804  |  |  |
|                |               | IN                  | 603                            | 121                      | 181  | 241  | 302  | 362  | 422  | 482  | 543  | 603  |  |  |
| 40             | 16            | OUT                 | 1257                           | 251                      | 377  | 503  | 629  | 754  | 880  | 1006 | 1131 | 1257 |  |  |
|                |               | IN                  | 1056                           | 211                      | 317  | 422  | 528  | 634  | 739  | 845  | 950  | 1056 |  |  |
| 50             | 20            | OUT                 | 1963                           | 393                      | 589  | 785  | 982  | 1178 | 1374 | 1570 | 1767 | 1963 |  |  |
|                |               | IN                  | 1649                           | 330                      | 495  | 660  | 825  | 990  | 1154 | 1319 | 1484 | 1649 |  |  |
| 63             | 20            | OUT                 | 3117                           | 623                      | 935  | 1247 | 1559 | 1870 | 2182 | 2494 | 2805 | 3117 |  |  |
|                |               | IN                  | 2803                           | 561                      | 841  | 1121 | 1402 | 1682 | 1962 | 2242 | 2523 | 2803 |  |  |
| 80             | 25            | OUT                 | 5027                           | 1005                     | 1508 | 2011 | 2514 | 3016 | 3519 | 4022 | 4524 | 5027 |  |  |
|                |               | IN                  | 4536                           | 907                      | 1361 | 1814 | 2268 | 2722 | 3175 | 3629 | 4082 | 4536 |  |  |
| 100            | 30            | OUT                 | 7854                           | 1571                     | 2356 | 3142 | 3927 | 4712 | 5498 | 6283 | 7069 | 7854 |  |  |
|                |               | IN                  | 7147                           | 1429                     | 2144 | 2859 | 3574 | 4288 | 5003 | 5718 | 6432 | 7147 |  |  |

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)



MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

-X□

Individual  
-X□

# Series MGQ

## Mass/Slide Bearing: MGQM12 to 100

(kg)

| Bore size (mm) | Model   | Standard stroke (mm) |      |      |      |      |       |       |       |       |       |       |       |
|----------------|---------|----------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                |         | 10                   | 20   | 25   | 30   | 40   | 50    | 75    | 100   | 125   | 150   | 175   | 200   |
| 12             | MGQM12  | 0.23                 | 0.27 | —    | 0.31 | 0.34 | 0.38  | 0.48  | 0.58  | —     | —     | —     | —     |
| 16             | MGQM16  | 0.34                 | 0.39 | —    | 0.45 | 0.50 | 0.55  | 0.68  | 0.80  | —     | —     | —     | —     |
| 20             | MGQM20  | —                    | 0.54 | —    | 0.61 | 0.69 | 0.76  | 0.94  | 1.09  | 1.24  | 1.39  | 1.54  | 1.69  |
| 25             | MGQM25  | —                    | 0.83 | —    | 0.93 | 1.04 | 1.13  | 1.44  | 1.68  | 1.92  | 2.16  | 2.40  | 2.64  |
| 32             | MGQM32  | —                    | —    | 1.51 | —    | —    | 1.91  | 2.29  | 2.69  | 3.09  | 3.49  | 3.89  | 4.29  |
| 40             | MGQM40  | —                    | —    | 1.65 | —    | —    | 2.24  | 2.46  | 2.87  | 3.28  | 3.69  | 4.10  | 4.51  |
| 50             | MGQM50  | —                    | —    | 2.54 | —    | —    | 3.09  | 3.65  | 4.21  | 4.77  | 5.33  | 5.89  | 6.45  |
| 63             | MGQM63  | —                    | —    | 3.01 | —    | —    | 3.63  | 4.23  | 4.85  | 5.47  | 6.09  | 6.71  | 7.33  |
| 80             | MGQM80  | —                    | —    | 5.66 | —    | —    | 6.59  | 7.49  | 8.41  | 9.33  | 10.25 | 11.17 | 12.09 |
| 100            | MGQM100 | —                    | —    | 8.96 | —    | —    | 10.27 | 11.57 | 12.90 | 14.23 | 15.56 | 16.89 | 18.22 |

## Mass/Ball Bushing Bearing: MGQL12 to 100

(kg)

| Bore size (mm) | Model   | Standard stroke (mm) |      |      |      |      |      |       |       |       |       |       |       |
|----------------|---------|----------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                |         | 10                   | 20   | 25   | 30   | 40   | 50   | 75    | 100   | 125   | 150   | 175   | 200   |
| 12             | MGQL12  | 0.23                 | 0.26 | —    | 0.29 | 0.35 | 0.38 | 0.46  | 0.53  | —     | —     | —     | —     |
| 16             | MGQL16  | 0.35                 | 0.39 | —    | 0.44 | 0.52 | 0.57 | 0.70  | 0.82  | —     | —     | —     | —     |
| 20             | MGQL20  | —                    | 0.54 | —    | 0.60 | 0.70 | 0.75 | 0.90  | 1.04  | 1.18  | 1.32  | 1.46  | 1.60  |
| 25             | MGQL25  | —                    | 0.84 | —    | 0.93 | 1.08 | 1.17 | 1.37  | 1.58  | 1.79  | 2.00  | 2.21  | 2.42  |
| 32             | MGQL32  | —                    | —    | 1.32 | —    | —    | 1.67 | 2.09  | 2.45  | 2.81  | 3.17  | 3.53  | 3.89  |
| 40             | MGQL40  | —                    | —    | 1.46 | —    | —    | 1.82 | 2.27  | 2.63  | 2.99  | 3.35  | 3.71  | 4.07  |
| 50             | MGQL50  | —                    | —    | 2.11 | —    | —    | 2.59 | 3.19  | 3.68  | 4.17  | 4.66  | 5.15  | 5.64  |
| 63             | MGQL63  | —                    | —    | 2.65 | —    | —    | 3.19 | 3.85  | 4.39  | 4.93  | 5.47  | 6.01  | 6.55  |
| 80             | MGQL80  | —                    | —    | 5.49 | —    | —    | 6.38 | 7.95  | 8.79  | 9.63  | 10.47 | 11.31 | 12.15 |
| 100            | MGQL100 | —                    | —    | 8.34 | —    | —    | 9.53 | 11.78 | 12.96 | 14.14 | 15.32 | 16.50 | 17.68 |

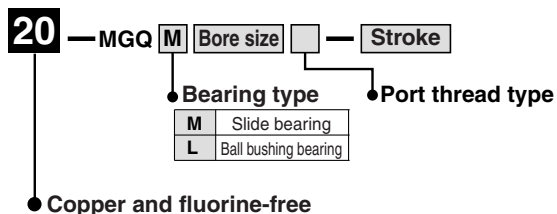
## Copper and Fluorine-free Series (For CRT manufacturing process)

To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

### Specifications

| Applicable series | MGQM                                      | MGQL                 |
|-------------------|-------------------------------------------|----------------------|
| Bearing type      | Slide bearing                             | Ball bushing bearing |
| Bore size (mm)    | 12, 16, 20, 25, 32<br>40, 50, 63, 80, 100 |                      |

## How to Order





# Series MGQ

## Specific Product Precautions

Be sure to read before handling. Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

### Mounting

#### ⚠ Warning

1. Avoid placing your hands or fingers between the plate and the body.

- Be very careful to prevent your hands or fingers from getting caught in the gap between the cylinder body and the plate when air is applied.

#### ⚠ Caution

1. Do not scratch or gouge the sliding portion of the piston rod and the guide rod.

- Damaged seals, etc. will result in leakage or malfunction.

2. Do not dent or scratch the mounting surface of a body and a plate.

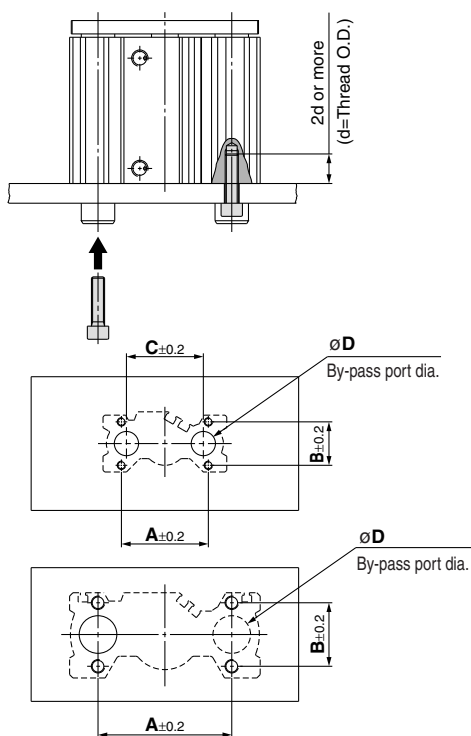
- The flatness of the mounting surface may not be maintained, which would cause the sliding resistance to increase.

3. Make sure that the cylinder mounting surface has a flatness of 0.05 mm or less.

- If the flatness of the workpieces and brackets mounted on the plate is not appropriate, sliding resistance may increase.

4. When mounting on the bottom of the cylinder, the guide rod protrudes from the bottom at the retraction stroke end. Therefore, drill holes for the hexagon socket bolts used for mounting purposes, and relief holes for the guide rods.

Moreover, in applications where impact occurs from a stopper, etc., the mounting bolts should be inserted to a depth of 2 d or more.



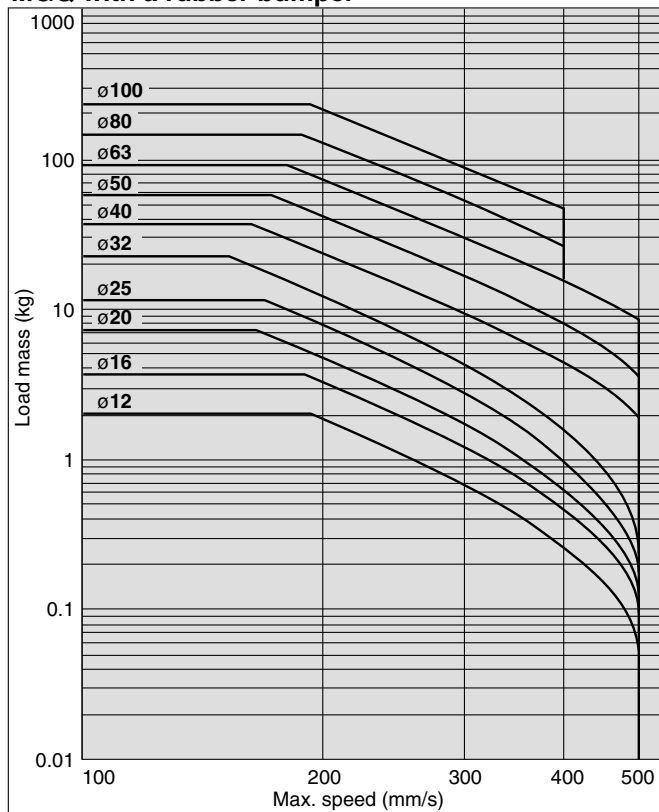
| Bore size<br>(mm) | A<br>(mm) | B<br>(mm) | C<br>(mm) | øD(mm) |      | Hexagon socket<br>head cap screw |
|-------------------|-----------|-----------|-----------|--------|------|----------------------------------|
|                   |           |           |           | MGQM   | MGQL |                                  |
| 12                | 40        | 18        | 36        | 10     | 8    | M4 x 0.7                         |
| 16                | 42        | 22        | 38        | 12     | 10   | M5 x 0.8                         |
| 20                | 52        | 26        | 46        | 14     | 12   | M5 x 0.8                         |
| 25                | 62        | 32        | 56        | 18     | 15   | M6 x 1                           |
| 32                | 80        | 38        | —         | 22     | 18   | M8 x 1.25                        |
| 40                | 90        | 38        | —         | 22     | 18   | M8 x 1.25                        |
| 50                | 100       | 44        | —         | 27     | 22   | M10 x 1.5                        |
| 63                | 110       | 44        | —         | 27     | 22   | M10 x 1.5                        |
| 80                | 140       | 56        | —         | 31     | 28   | M12 x 1.75                       |
| 100               | 170       | 62        | —         | 39     | 33   | M14 x 2                          |

C dimension for a bore size of 32 to 100 is identical to the A dimension.

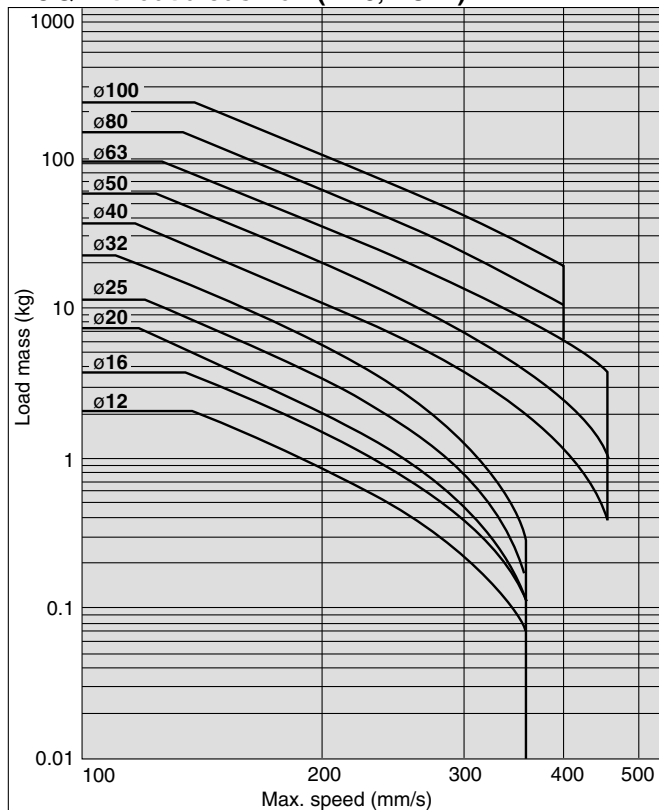
### Allowable Kinetic Energy

Load mass and cylinder speed should be observed within the range given in the graph below.

#### MGQ with a rubber bumper



#### MGQ without a cushion (XB6, XC22)



MGJ

MGP

MGQ

MGG

MGC

MGF

MGZ

MGT

D-□

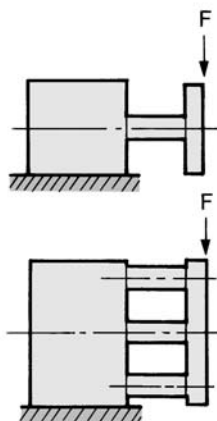
-X□

Individual

-X□

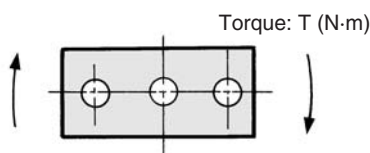
## Operating Conditions

### Allowable Lateral Load (Ordinary load)



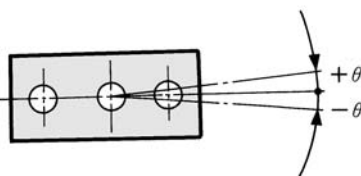
| Bore size<br>(mm) | Bearing type | Stroke (mm) |    |     |    |    |     |      |      |     |     |     |     | F(N) |
|-------------------|--------------|-------------|----|-----|----|----|-----|------|------|-----|-----|-----|-----|------|
|                   |              | 10          | 20 | 25  | 30 | 40 | 50  | 75   | 100  | 125 | 150 | 175 | 200 |      |
| 12                | MGQM         | 21          | 18 | —   | 15 | 13 | 12  | 9    | 8    | —   | —   | —   | —   |      |
|                   | MGQL         | 27          | 22 | —   | 17 | 21 | 19  | 15   | 13   | —   | —   | —   | —   |      |
| 16                | MGQM         | 34          | 28 | —   | 25 | 22 | 19  | 15   | 13   | —   | —   | —   | —   |      |
|                   | MGQL         | 38          | 30 | —   | 26 | 37 | 33  | 28   | 23   | —   | —   | —   | —   |      |
| 20                | MGQM         | —           | 51 | —   | 44 | 38 | 34  | 57   | 49   | 42  | 37  | 33  | 30  |      |
|                   | MGQL         | —           | 55 | —   | 47 | 78 | 69  | 53   | 44   | 30  | 26  | 23  | 21  |      |
| 25                | MGQM         | —           | 70 | —   | 60 | 53 | 47  | 77   | 65   | 56  | 49  | 44  | 40  |      |
|                   | MGQL         | —           | 71 | —   | 61 | 77 | 72  | 59   | 51   | 42  | 36  | 32  | 29  |      |
| 32                | MGQM         | —           | —  | 196 | —  | —  | 167 | 137  | 108  | 87  | 77  | 69  | 63  |      |
|                   | MGQL         | —           | —  | 88  | —  | —  | 59  | 275  | 216  | 156 | 136 | 121 | 109 |      |
| 40                | MGQM         | —           | —  | 196 | —  | —  | 167 | 137  | 108  | 87  | 77  | 69  | 63  |      |
|                   | MGQL         | —           | —  | 88  | —  | —  | 59  | 275  | 216  | 156 | 136 | 121 | 109 |      |
| 50                | MGQM         | —           | —  | 294 | —  | —  | 255 | 215  | 176  | 138 | 123 | 111 | 101 |      |
|                   | MGQL         | —           | —  | 137 | —  | —  | 88  | 392  | 313  | 207 | 182 | 162 | 146 |      |
| 63                | MGQM         | —           | —  | 294 | —  | —  | 255 | 215  | 176  | 138 | 123 | 111 | 101 |      |
|                   | MGQL         | —           | —  | 137 | —  | —  | 88  | 392  | 313  | 207 | 182 | 162 | 146 |      |
| 80                | MGQM         | —           | —  | 353 | —  | —  | 304 | 255  | 206  | 168 | 151 | 137 | 126 |      |
|                   | MGQL         | —           | —  | 235 | —  | —  | 157 | 863  | 686  | 465 | 411 | 368 | 333 |      |
| 100               | MGQM         | —           | —  | 539 | —  | —  | 470 | 412  | 343  | 278 | 252 | 230 | 211 |      |
|                   | MGQL         | —           | —  | 470 | —  | —  | 313 | 1370 | 1070 | 708 | 627 | 562 | 509 |      |

### Allowable Rotational Torque of Plate



| Bore size<br>(mm) | Bearing type | Stroke (mm) |      |       |      |      |       |       |       |       |       |       |       | T (N·m) |
|-------------------|--------------|-------------|------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|---------|
|                   |              | 10          | 20   | 25    | 30   | 40   | 50    | 75    | 100   | 125   | 150   | 175   | 200   |         |
| 12                | MGQM         | 0.29        | 0.24 | —     | 0.21 | 0.18 | 0.16  | 0.13  | 0.10  | —     | —     | —     | —     |         |
|                   | MGQL         | 0.48        | 0.39 | —     | 0.31 | 0.37 | 0.33  | 0.27  | 0.23  | —     | —     | —     | —     |         |
| 16                | MGQM         | 0.51        | 0.43 | —     | 0.35 | 0.31 | 0.27  | 0.23  | 0.19  | —     | —     | —     | —     |         |
|                   | MGQL         | 0.73        | 0.58 | —     | 0.48 | 0.71 | 0.64  | 0.53  | 0.44  | —     | —     | —     | —     |         |
| 20                | MGQM         | —           | 0.91 | —     | 0.78 | 0.71 | 0.63  | 1.04  | 0.88  | 0.77  | 0.68  | 0.60  | 0.55  |         |
|                   | MGQL         | —           | 1.26 | —     | 1.06 | 1.77 | 1.58  | 1.22  | 1.01  | 0.69  | 0.60  | 0.53  | 0.48  |         |
| 25                | MGQM         | —           | 1.53 | —     | 1.31 | 1.16 | 1.03  | 1.68  | 1.42  | 1.24  | 1.09  | 0.98  | 0.88  |         |
|                   | MGQL         | —           | 1.96 | —     | 1.69 | 2.16 | 2.00  | 1.65  | 1.41  | 1.18  | 1.01  | 0.90  | 0.81  |         |
| 32                | MGQM         | —           | —    | 3.92  | —    | —    | 2.94  | 2.45  | 3.46  | 1.72  | 1.53  | 1.37  | 1.24  |         |
|                   | MGQL         | —           | —    | 1.96  | —    | —    | 0.98  | 5.88  | 4.41  | 3.12  | 2.72  | 2.42  | 2.18  |         |
| 40                | MGQM         | —           | —    | 4.41  | —    | —    | 3.43  | 2.94  | 2.45  | 1.94  | 1.72  | 1.54  | 1.40  |         |
|                   | MGQL         | —           | —    | 2.45  | —    | —    | 1.47  | 6.37  | 5.39  | 3.51  | 3.06  | 2.72  | 2.45  |         |
| 50                | MGQM         | —           | —    | 7.35  | —    | —    | 5.88  | 4.90  | 4.41  | 3.43  | 3.06  | 2.77  | 2.52  |         |
|                   | MGQL         | —           | —    | 3.43  | —    | —    | 2.20  | 10.78 | 8.33  | 5.18  | 4.55  | 4.05  | 3.65  |         |
| 63                | MGQM         | —           | —    | 7.84  | —    | —    | 6.37  | 5.39  | 4.90  | 3.77  | 3.37  | 3.04  | 2.77  |         |
|                   | MGQL         | —           | —    | 3.92  | —    | —    | 2.45  | 11.76 | 9.31  | 5.69  | 5.01  | 4.46  | 4.02  |         |
| 80                | MGQM         | —           | —    | 11.76 | —    | —    | 9.80  | 7.84  | 6.86  | 5.88  | 5.28  | 4.79  | 4.39  |         |
|                   | MGQL         | —           | —    | 9.31  | —    | —    | 5.88  | 31.36 | 24.50 | 16.28 | 14.39 | 12.88 | 11.66 |         |
| 100               | MGQM         | —           | —    | 22.54 | —    | —    | 19.60 | 16.66 | 14.70 | 11.81 | 10.67 | 9.74  | 8.96  |         |
|                   | MGQL         | —           | —    | 21.56 | —    | —    | 13.72 | 63.70 | 49.00 | 30.09 | 26.65 | 23.89 | 21.63 |         |

### Non-rotating Accuracy of Plate



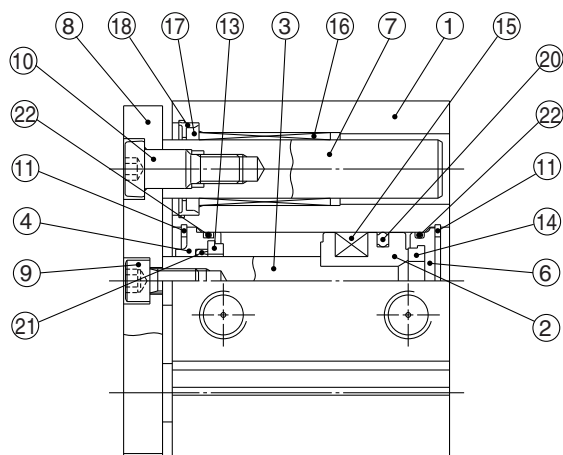
For non-rotating accuracy  $\theta$  without load, use a value no more than the values in the table as a guide.

| Bore size<br>(mm) | Non-rotating accuracy $\theta$ |                  |
|-------------------|--------------------------------|------------------|
|                   | MGQM                           | MGQL             |
| 12                | $\pm 0.08^\circ$               | $\pm 0.10^\circ$ |
| 16                |                                |                  |
| 20                | $\pm 0.07^\circ$               | $\pm 0.09^\circ$ |
| 25                |                                |                  |
| 32                | $\pm 0.06^\circ$               | $\pm 0.08^\circ$ |
| 40                |                                |                  |
| 50                | $\pm 0.05^\circ$               | $\pm 0.06^\circ$ |
| 63                |                                |                  |
| 80                | $\pm 0.04^\circ$               | $\pm 0.05^\circ$ |
| 100               |                                |                  |

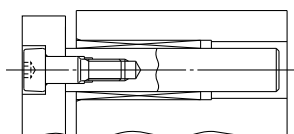
# Series MGQ

## Construction/Series MGQM

### MGQM12 to 25



50 stroke or less

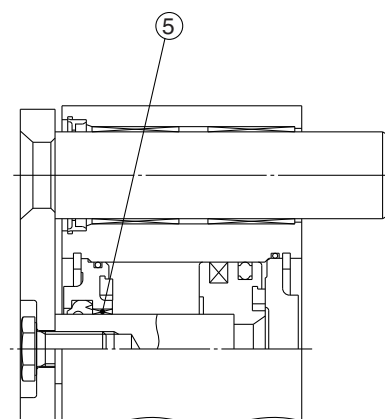
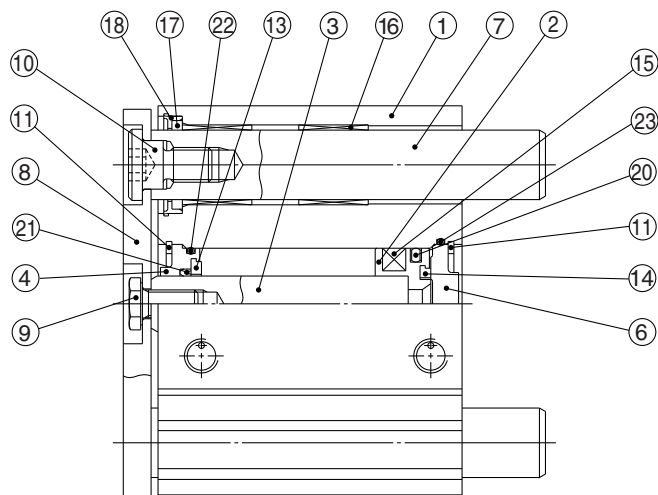


ø12, ø16



ø20, ø25 Over 50 stroke

### MGQM32 to 100



Over 50 stroke

## Component Parts

| No. | Description         | Material               | Note                           |
|-----|---------------------|------------------------|--------------------------------|
| 1   | Body                | Aluminum alloy         | Hard anodized                  |
| 2   | Piston              | Aluminum alloy         | Chromated                      |
| 3   | Piston rod          | Stainless steel        | ø12 to ø25                     |
|     |                     | Carbon steel           | ø32 to ø100 Hard chrome plated |
| 4   | Collar              | Aluminum bearing alloy | ø12 to ø40 White anodized      |
|     |                     | Aluminum alloy casted  | ø50 to ø100 Painted            |
| 5   | Bushing             | Babbitt                | ø50 to ø100                    |
| 6   | Head cover          | Aluminum alloy         | ø12 to ø63 Chromated           |
|     |                     |                        | ø80 to ø100 Painted            |
| 7   | Guide rod           | Carbon steel           | Hard chrome plated             |
| 8   | Plate               | Carbon steel           | Nickel plated                  |
| 9   | Plate mounting bolt | Carbon steel           | Nickel plated                  |
| 10  | Guide bolt          | Carbon steel           | Nickel plated                  |

| No. | Description    | Material          | Note             |
|-----|----------------|-------------------|------------------|
| 11  | Retaining ring | Carbon tool steel | Phosphate coated |
| 12  | Retaining ring | Carbon tool steel | Phosphate coated |
| 13  | Bumper A       | Urethane          |                  |
| 14  | Bumper B       | Urethane          |                  |
| 15  | Magnet         | —                 |                  |
| 16  | Slide Bearing  | Babbitt           |                  |
| 17  | Felt           | Felt              |                  |
| 18  | Holder         | Resin             |                  |
| 19  | Ball bushing   |                   |                  |
| 20* | Piston seal    | NBR               |                  |
| 21* | Rod seal       | NBR               |                  |
| 22* | Gasket A       | NBR               |                  |
| 23* | Gasket B       | NBR               |                  |

## Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.  | Description                             |
|----------------|----------|-----------------------------------------|
| 12             | MGQ12-PS | A set of 20, 21, 22 and 23 listed above |
| 16             | MGQ16-PS |                                         |
| 20             | MGQ20-PS |                                         |
| 25             | MGQ25-PS |                                         |
| 32             | MGQ32-PS |                                         |

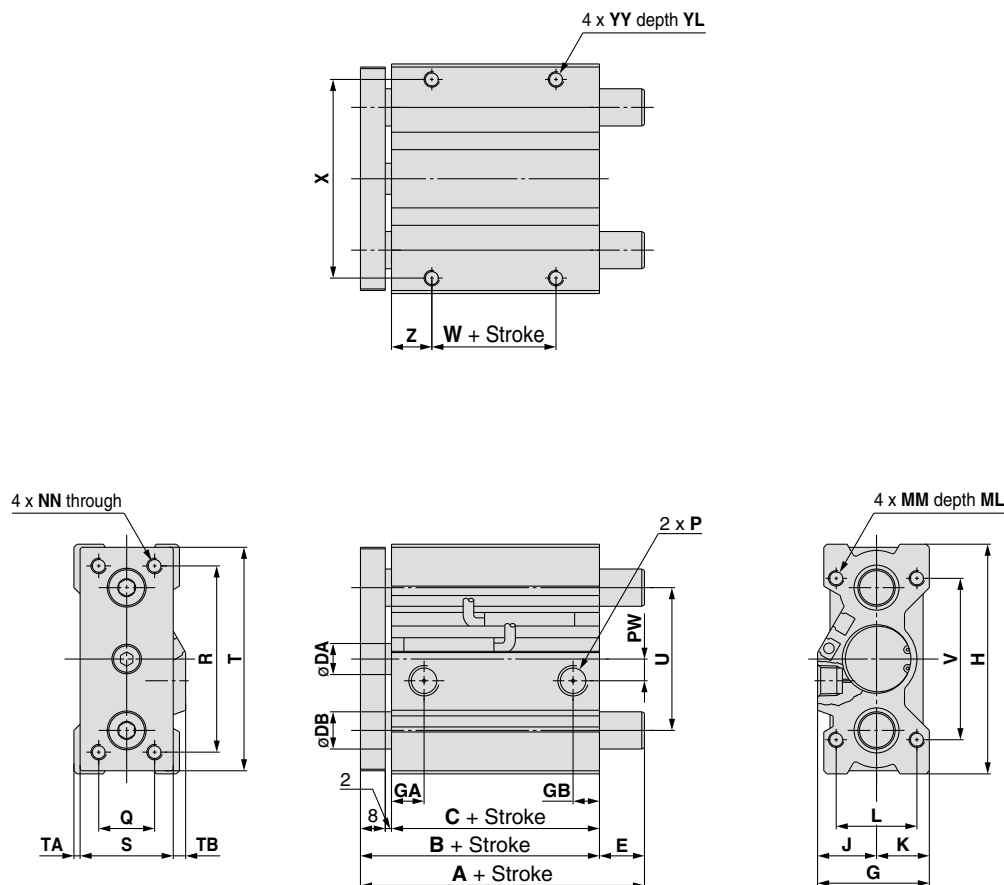
\* Seal kit includes 20 to 23. Order the seal kit, based on each bore size.

| Bore size (mm) | Kit no.   | Description                             |
|----------------|-----------|-----------------------------------------|
| 40             | MGQ40-PS  | A set of 20, 21, 22 and 23 listed above |
| 50             | MGQ50-PS  |                                         |
| 63             | MGQ63-PS  |                                         |
| 80             | MGQ80-PS  |                                         |
| 100            | MGQ100-PS |                                         |

\* Since the seal kit does not include a grease pack, order it separately.  
Grease pack part no.: GR-S-010 (10 g)

# Series MGQ

## Bore Size ø12 to ø25: MGQM, MGQL



### MGQM, MGQL Common Dimensions

| Bore size<br>(mm) | Standard stroke<br>(mm) | B    | C    | DA | G  | GA   | GB  | H  | J  | K  | L  | MM       | ML | NN       | P        |        |      | PW | Q  | R  |
|-------------------|-------------------------|------|------|----|----|------|-----|----|----|----|----|----------|----|----------|----------|--------|------|----|----|----|
|                   |                         |      |      |    |    |      |     |    |    |    |    |          |    |          | Nil      | TN     | TF   |    |    |    |
| 12                | 10, 20, 30, 40,         | 39   | 29   | 6  | 29 | 11   | 7.5 | 58 | 16 | 13 | 18 | M4 x 0.7 | 10 | M4 x 0.7 | M5 x 0.8 | —      | —    | 7  | 14 | 48 |
| 16                | 50, 75, 100             | 43   | 33   | 8  | 33 | 11   | 8   | 64 | 18 | 15 | 22 | M5 x 0.8 | 13 | M5 x 0.8 | M5 x 0.8 | —      | —    | 5  | 16 | 52 |
| 20                | 20, 30, 40, 50, 75, 100 | 47   | 37   | 10 | 36 | 10.5 | 8.5 | 74 | 19 | 17 | 26 | M5 x 0.8 | 13 | M5 x 0.8 | Rc1/8    | NPT1/8 | G1/8 | 7  | 18 | 60 |
| 25                | 125, 150, 175, 200      | 47.5 | 37.5 | 12 | 42 | 11.5 | 9   | 88 | 21 | 21 | 32 | M6 x 1.0 | 15 | M6 x 1.0 | Rc1/8    | NPT1/8 | G1/8 | 8  | 26 | 70 |

| Bore size<br>(mm) | S  | T  | TA  | TB  | U  | V  | W  | X  | YY       | YL | Z  |
|-------------------|----|----|-----|-----|----|----|----|----|----------|----|----|
| 12                | 22 | 56 | 2   | 5   | 36 | 40 | 5  | 50 | M4 x 0.7 | 7  | 12 |
| 16                | 25 | 62 | 2.5 | 5.5 | 38 | 42 | 7  | 54 | M5 x 0.8 | 8  | 13 |
| 20                | 30 | 72 | 2   | 4   | 46 | 52 | 10 | 64 | M5 x 0.8 | 8  | 13 |
| 25                | 38 | 86 | 2   | 2   | 56 | 62 | 10 | 76 | M6 x 1.0 | 9  | 14 |

### MGQM (Slide bearing)/A, DB, E Dimensions (mm)

| Bore size<br>(mm) | A             |            | DB | E             |            |
|-------------------|---------------|------------|----|---------------|------------|
|                   | 50 st or less | Over 50 st |    | 50 st or less | Over 50 st |
| 12                | 39            |            | 8  | 0             |            |
| 16                | 43            |            | 10 | 0             |            |
| 20                | 47            | 61.5       | 12 | 0             | 14.5       |
| 25                | 47.5          | 62         | 16 | 0             | 14.5       |

### MGQL (Ball bushing bearing)/A, DB, E Dimensions (mm)

| Bore size<br>(mm) | A             |            | DB | E             |            |
|-------------------|---------------|------------|----|---------------|------------|
|                   | 30 st or less | Over 30 st |    | 30 st or less | Over 30 st |
| 12                | 43            | 55         | 6  | 4             | 16         |
| 16                | 49            | 65         | 8  | 6             | 22         |
| 20                | 57            | 74         | 10 | 10            | 27         |
| 25                | 63.5          | 79.5       | 13 | 16            | 32         |

Note) For intermediate strokes other than standard strokes, refer to the Manufacture of Intermediate Stroke on page 339.

• Bore size 12 and 16 are only for the M5 x 0.8 port.

• For bore size 20 or more, Rc, NPT and G ports can be selected. (Refer to page 338.)