

Rotary Clamp Cylinder: Double Guide Type

Series MK2T

ø20, ø25, ø32, ø40, ø50, ø63

How to Order

MK2T B 20 - **10 R N** - **M9BW** -

Rotary clamp cylinder
Double guide type

Mounting bracket

| | |
|----------|---|
| B | Through-hole/Both ends tapped common (Standard) |
| G | Head end flange |

* Mounting bracket is included, (but not assembled).

Bore size

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

Cylinder port

| | | |
|------------|----------|------------|
| Nil | M thread | ø20, ø25 |
| | Rc | |
| TN | NPT | ø32 to ø63 |
| TF | G | |

Clamp stroke

| Symbol | Clamp stroke | Applicable bore size |
|-----------|--------------|----------------------|
| 10 | 10 mm | ø20 to ø40 |
| 20 | 20 mm | ø20 to ø63 |
| 50 | 50 mm | ø50 to ø63 |

Number of auto switches

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

Auto switch type

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

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

Body option

| | |
|------------|--------------------------|
| Nil | Standard (Female thread) |
| N | With arm |

* Arms are included when shipped, (but not assembled).

Rotary direction (Unclamp → Clamp)

| | |
|----------|------------------|
| R | Clockwise |
| L | Counterclockwise |

Made to Order
(Refer to page 1255.)

Applicable Auto Switches

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) | | | None (N) | | | | | | | |
| | | | | | | | ø20, ø25 | ø32 to ø63 | ø20, ø25 | ø32 to ø63 | | | | | | | | | | | | | | |
| Solid state switch | | Grommet | | 3-wire (NPN) | 24 V | — | 5 V, 12 V | M9NV | M9N | ● | — | ● | ○ | — | ○ | IC circuit | | | | | | | | |
| | | | | 3-wire (PNP) | | | | | | ● | — | ● | ○ | — | ○ | | | | | | | | | |
| | Connector | 2-wire | 12 V | — | | | | | | J79C | — | ● | — | ● | ● | | ● | — | — | — | | | | |
| | | 3-wire (NPN) | 5 V, 12 V | M9NVV | | | | | | M9NW | ● | ● | ● | ○ | — | | ○ | IC circuit | | | | | | |
| | Diagnostic indication (2-color indication) | Grommet | Yes | 3-wire (PNP) | | | | | | 12 V | M9PVV | M9PW | ● | ● | ● | | ○ | — | ○ | IC circuit | | | | |
| | | | | 2-wire | | | | | | 12 V | M9B | M9B | ● | — | ● | | ○ | — | ○ | — | | | | |
| | Water resistant (2-color indication) | Grommet | | 3-wire (NPN) | | | | | | 5 V, 12 V | M9NAV | M9NA | ○ | ○ | ● | | ○ | — | ○ | IC circuit | | | | |
| | | | | 3-wire (PNP) | | | | | | 12 V | M9PAV | M9PA | ○ | ○ | ● | | ○ | — | ○ | — | | | | |
| | Diagnostic output (2-color indication) | | | 2-wire | | | | | | 12 V | M9BAV | M9BA | ○ | ○ | ● | | ○ | — | ○ | — | | | | |
| | Magnetic field resistant (2-color indication) | | | 4-wire | | | | | | 5 V, 12 V | — | — | F79F | ● | — | | ● | ○ | — | ○ | IC circuit | | | |
| | | | 2-wire (No polarity) | — | — | — | P4DW** | — | — | ● | ● | — | ○ | — | | | | | | | | | | |
| Reed switch | | Grommet | Yes | 3-wire (NPN equivalent) | 24 V | — | 5 V | — | A96V | A96 | ● | — | ● | — | — | — | IC circuit | | | | | | | |
| | | | | Connector | | | | | | | 2-wire | 12 V | 200 V | — | A72 | — | A72H | ● | — | ● | — | — | — | |
| | | | | | | | | | | | | 12 V | 100 V | A93V | A93 | ● | — | ● | — | — | — | | | |
| | | | | Grommet | | | | | | | Yes | 5 V, 12 V | 100 V or less | A90V | A90 | ● | — | ● | — | ● | ● | — | — | IC circuit |
| | | | | | | | | | | | | 12 V | — | A73C | — | ● | — | ● | — | ● | ● | — | — | |
| | | | | Connector | | | | | | | No | 5 V, 12 V | 24 V or less | A80C | — | ● | — | ● | — | ● | ● | — | — | IC circuit |
| — | — | A79W | — | | ● | — | ● | — | — | — | | — | — | | | | | | | | | | | |

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
 1 m M (Example) M9NWM
 3 m L (Example) M9NWL
 5 m Z (Example) M9NWZ
 None N (Example) J79CN

* Solid state auto switches marked with "○" are produced upon receipt of order.
 ** For D-P4DW, ø40 to ø63 are available.
 ** Only D-P4DW type is assembled at the time of shipment.

* Since there are other applicable auto switches than listed, refer to page 1260 for details.
 * For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
 * When D-M9□(V)/M9□W(V)/M9□A(V)/A9□(V) types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to page 1261 for details.
 * Auto switches are shipped together (not assembled).

Rotary Clamp Cylinder: Double Guide Type *Series MK2T*



Specifications

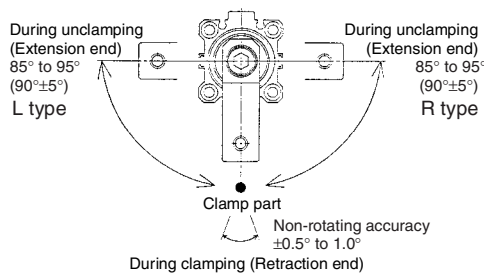
| Bore size (mm) | 20 | 25 | 32 | 40 | 50 | 63 |
|---|---|---------------------|-----|---------------------|-----|------|
| Action | Double acting | | | | | |
| Rotation angle ^{Note 1)} | 90° ±5° | | | | | |
| Rotary direction ^{Note 2)} | Clockwise, Counterclockwise | | | | | |
| Rotary stroke (mm) | 19 | | 29 | | 33 | |
| Clamp stroke (mm) | 10, 20 | | | 20, 50 | | |
| Theoretical clamp force (N) ^{Note 3)} | 100 | 185 | 300 | 525 | 825 | 1300 |
| Fluid | Air | | | | | |
| Proof pressure | 1.5 MPa | | | | | |
| Operating pressure range | 0.1 to 1 MPa | | | | | |
| Ambient and fluid temperature | Without auto switch: -10 to 70°C (No freezing) | | | | | |
| | With auto switch: -10 to 60°C (No freezing) | | | | | |
| Lubrication | Non-lube | | | | | |
| Piping port size | M5 x 0.8 | Rc1/8, NPT1/8, G1/8 | | Rc1/4, NPT1/4, G1/4 | | |
| Mounting | Through-hole/Both ends tapped common, Head end flange | | | | | |
| Cushion | Rubber bumper | | | | | |
| Stroke length tolerance | +1.0 0 | | | | | |
| Piston speed | 50 to 200 mm/s | | | | | |
| Non-rotating accuracy (Clamp part) | ±1.0° | | | ±0.5° | | |

Note 1) Refer to "Rotary Angle" figure.

Note 2) Direction of rotation viewed from the rod end when the piston rod is retracting.

Note 3) At 0.5 MPa.

Rotary Angle



Made to Order

(For details, refer to page 2021.)

| Symbol | Description |
|--------------|------------------------|
| X1859 | With head end pin hole |

Theoretical Output

Unit: N

| Bore size (mm) | Rod size (mm) | Operating direction | Piston area (cm ²) | Operating pressure (MPa) | | | |
|----------------|---------------|---------------------|--------------------------------|--------------------------|------|------|------|
| | | | | 0.3 | 0.5 | 0.7 | 1.0 |
| 20 | 12 | R | 2 | 60.8 | 100 | 139 | 200 |
| | | H | 3 | 90.2 | 149 | 208 | 298 |
| 25 | 12 | R | 3.7 | 112 | 185 | 258 | 370 |
| | | H | 4.9 | 149 | 245 | 341 | 490 |
| 32 | 16 | R | 6 | 182 | 300 | 418 | 600 |
| | | H | 8 | 243 | 400 | 557 | 800 |
| 40 | 16 | R | 10.5 | 319 | 525 | 731 | 1050 |
| | | H | 12.5 | 380 | 625 | 870 | 1250 |
| 50 | 20 | R | 16.5 | 502 | 825 | 1149 | 1648 |
| | | H | 19.6 | 596 | 980 | 1365 | 1961 |
| 63 | 25 | R | 26 | 780 | 1300 | 1820 | 2600 |
| | | H | 31.2 | 948 | 1560 | 2172 | 3121 |

Note) Theoretical output (N) = Pressure (MPa) x Piston area (cm²) x 100

Operating direction

R: Rod end (Clamp)

H: Head end (Unclamp)

Option/Arm

| Bore size (mm) | Part no. | Accessories |
|----------------|-----------|--|
| 20 | MK-A020 | Clamp bolt, Hexagon socket head cap screw, |
| 25 | | |
| 32 | MK-A032 | Hexagon nut, Spring washer |
| 40 | | |
| 50 | MK-A050 | |
| 63 | MK2T-A063 | |

Mass/Through-hole Mounting

Unit: g

| Clamp stroke (mm) | Bore size (mm) | | | | | |
|-------------------|----------------|-----|-----|------|------|------|
| | 20 | 25 | 32 | 40 | 50 | 63 |
| 10 | 367 | 448 | 806 | 1008 | — | — |
| 20 | 433 | 520 | 914 | 1127 | 2049 | 2609 |
| 50 | — | — | — | — | 2672 | 3354 |

Mounting Bracket/Flange

| Bore size (mm) | Part no. | Accessories |
|----------------|-----------|----------------------------------|
| 20 | CQS-F020 | Hexagon socket head cap screw |
| 25 | CQS-F025 | |
| 32 | MK2T-F032 | |
| 40 | MK2T-F040 | |
| 50 | MK2T-F050 | |
| 63 | MK2T-F063 | |

Additional Mass

Unit: g

| Bore size (mm) | 20 | 25 | 32 | 40 | 50 | 63 |
|---|-----|-----|-----|-----|-----|-----|
| With arm | 100 | 100 | 200 | 200 | 350 | 600 |
| Head end flange (including mounting bolt) | 133 | 153 | 166 | 198 | 345 | 531 |

Calculation: (Example) **MK2TG20-10RN**

• Standard calculation: MK2TB20-10R 367 g

• Extra mass calculation: Head end flange 133 g

With arm 100 g

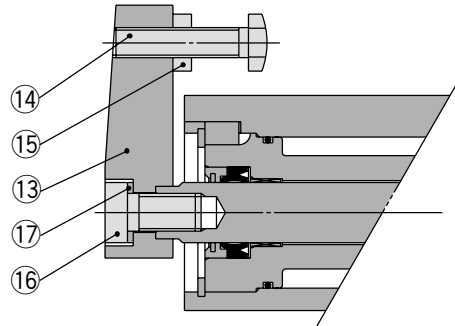
600 g

Series MK2T

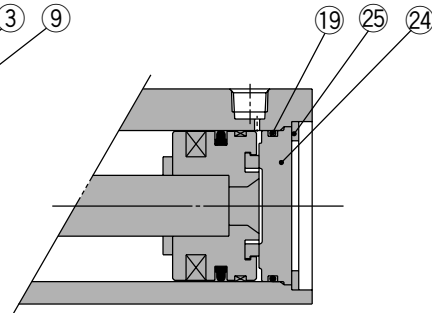
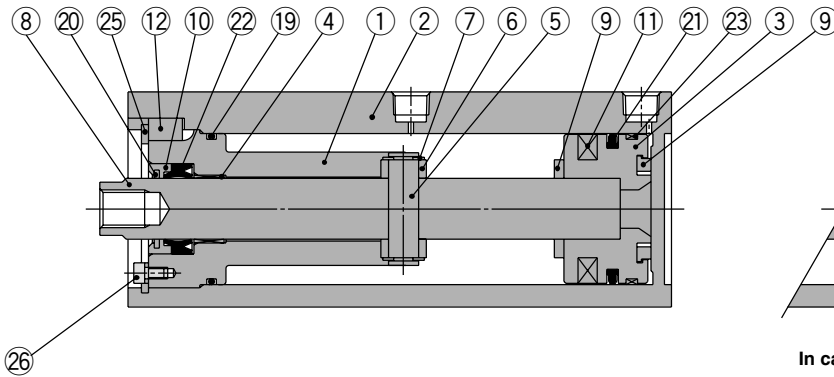
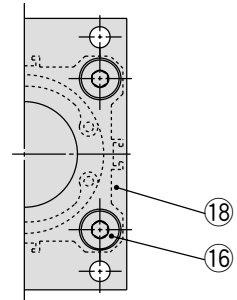
Construction

MK2T□20 to 63

With arm (N)



Head end flange (G)



In case of clamp stroke 50 mm

Component Parts

| No. | Description | Material | Note |
|-----|----------------|--------------------------------|-----------|
| 1 | Rod cover | Structural steel | |
| 2 | Cylinder tube | Aluminum alloy | |
| 3 | Piston | Aluminum alloy | |
| 4 | Bushing | Oil-impregnated sintered alloy | ø20, 25 |
| | | Bronze casted | ø32 to 63 |
| 5 | Guide shaft | Stainless steel | ø20, 25 |
| | | Structural steel | ø32 to 63 |
| 6 | Guide roller | Structural steel | |
| 7 | Retaining ring | Steel for special applications | ø20, 25 |
| | | | ø32 to 63 |
| 8 | Piston rod | Stainless steel | ø20, 25 |
| | | Structural steel | ø32 to 63 |
| 9 | Bumper | Urethane | |
| 10 | Seal retainer | Aluminum alloy | |
| 11 | Magnet | — | |
| 12 | Key | Structural steel | |

Component Parts

| No. | Description | Material | Note |
|-----|-------------------------------|---|------------------|
| 13 | Arm | Structural steel | |
| 14 | Clamp bolt | Structural steel | |
| 15 | Hexagon nut | Structural steel | |
| 16 | Hexagon socket head cap screw | Structural steel | |
| 17 | Spring washer | Steel wire | |
| 18 | Flange | Structural steel | |
| 19 | Gasket | NBR | |
| 20 | Coil scraper | Bronze | |
| 21 | Piston seal | NBR | |
| 22 | Rod seal | NBR | |
| 23 | Wear ring | Resin | |
| 24 | Bottom plate | Aluminum alloy | |
| 25 | Retaining ring | Steel for special applications | |
| | | Hexagon socket head cap screw (with SW) | Structural steel |
| | | Washer | Stainless steel |
| 26 | Hexagon socket head cap screw | Structural steel | |

Replacement Parts: Seal Kit

| Bore size (mm) | 20 | 25 | 32 | 40 | 50 | 63 |
|----------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|
| Kit no. | MK2T20-PS | MK2T25-PS | MK2T32-PS | MK2T40-PS | MK2T50-PS | MK2T63-PS |
| Content | Set of nos. above 19 20 21 22 | | | | | |

* Seal kit includes 19, 20, 21, 22. Order the seal kit, based on each bore size.

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⚠️ 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.

⚠️ Caution

Clamp Arm Mounting

- Use a clamp arm that is available as an option. To fabricate a clamp arm, make sure that the allowable bending moment and the inertial moment will be within the specified range. If a clamp arm that exceeds the specified value is installed, the internal mechanism in the cylinder could become damaged.

Ensuring Safety

- If one side of the piston is pressurized by supplying air with the clamp arm attached, the piston will move vertically while the clamp arm rotates. This operation could be hazardous to personnel, as their hands or feet could get caught by the clamp arm, or could lead to equipment damage. Therefore, it is important to secure as a danger zone a cylindrical area with the length of the clamp arm as its radius, and the stroke plus 20 mm as its height.

Installation and Adjustment/ Clamp Arm Removal and Reinstallation

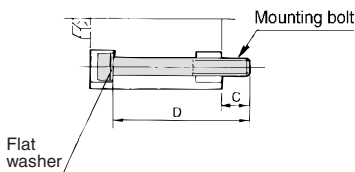
- During the removal or reinstallation of the clamp arm, make sure to use a wrench or a vise to secure the clamp arm before removing or tightening the bolt. This is to prevent the bolt tightening torque from being applied to the piston rod, which could damage the cylinder's internal mechanism.

Mounting Bolt for MK2TB

Mounting: Mounting bolt for through-hole type is available.

Ordering: Add the word "MK2TB" to the mounting bolt size.

Example) **M5 x 115 L (MK2TB) 4 pcs.**



Note) Be sure to use a flat washer to mount cylinders via through-holes.

| Cylinder model | C | D | Mounting bolt size |
|----------------|------|-----|--------------------|
| MK2TB20-10 | 11 | 115 | M5 x 115 L |
| MK2TB20-20 | 11 | 135 | M5 x 135 L |
| MK2TB25-10 | 8.5 | 115 | M5 x 115 L |
| MK2TB25-20 | 8.5 | 135 | M5 x 135 L |
| MK2TB32-10 | 11.5 | 145 | M5 x 145 L |
| MK2TB32-20 | 11.5 | 165 | M5 x 165 L |
| MK2TB40-10 | 7.5 | 145 | M5 x 145 L |
| MK2TB40-20 | 7.5 | 165 | M5 x 165 L |
| MK2TB50-20 | 13.5 | 185 | M6 x 185 L |
| MK2TB50-50 | 10 | 245 | M6 x 245 L |
| MK2TB63-20 | 13 | 185 | M8 x 185 L |
| MK2TB63-50 | 14 | 250 | M8 x 250 L |

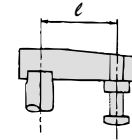
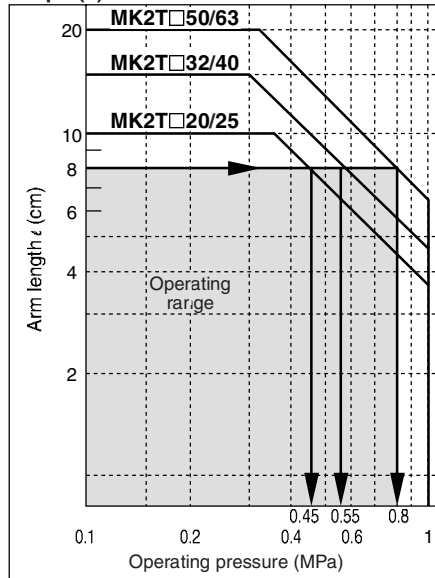
Precautions for Designing and Mounting Arms

When arms are to be made separately, their length and weight should be within the following range.

1. Allowable bending moment

Use the arm length and operating pressure within Graph (1) for allowable bending moment loaded piston rod.

Graph (1)

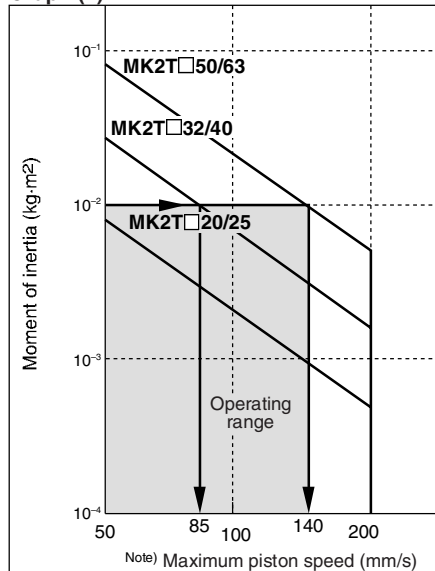


When arm length is 8 cm, pressure should be less than
MK2T□20/25: 0.45 MPa
MK2T□32/40: 0.55 MPa
MK2T□50/63: 0.8 MPa.

2. Moment of inertia

When the arm is long and heavy, damage of internal parts may be caused due to inertia. Use the inertia moment and cylinder speed within Graph (2) based on arm requirements.

Graph (2)

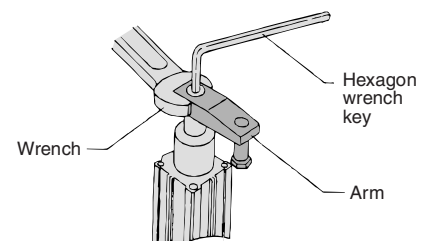


When arm's moment of inertia is 1×10^{-2} kg·m², cylinder speed should be less than
MK2T□32/40: 85 mm/s
MK2T□50/63: 140 mm/s.
For calculating moment of inertia, refer to pages 1234, 1235 and 1264.

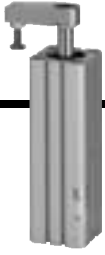
Note) Maximum piston speed is equivalent to approximately 1.6x the average piston speed. (Rough indication)

- To attach and detach the arm to and from the piston rod, fix the arm with a wrench or vise and then tighten the bolt. (If an excessive force is applied in the rotary direction, it may bring about the damage to the internal mechanism.) Refer to the following table for the tightening torque for mounting.

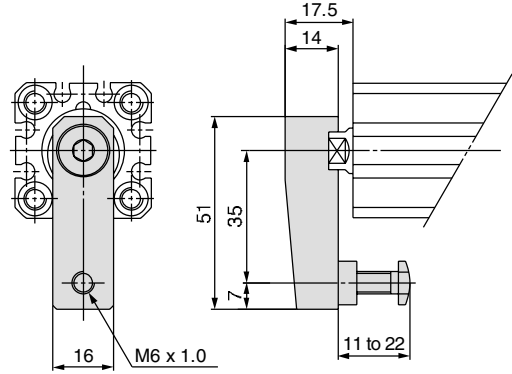
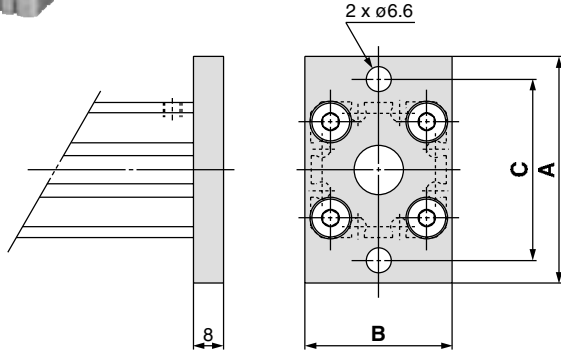
| Bore size (mm) | Proper tightening torque (N·m) |
|----------------|--------------------------------|
| 20, 25 | 4 to 6 |
| 32, 40 | 8 to 10 |
| 50 | 14 to 16 |
| 63 | 106 to 127 |



Series MK2T

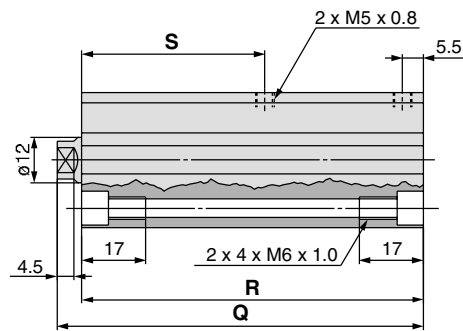
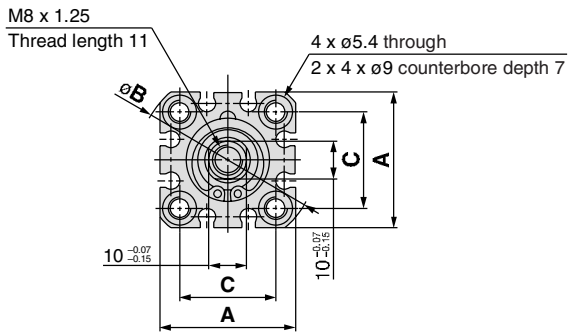


Dimensions: $\varnothing 20, \varnothing 25$



Head End Flange (mm)

| Model | A | B | C |
|----------------|----|----|----|
| MK2TG20 | 60 | 39 | 48 |
| MK2TG25 | 64 | 42 | 52 |



Through-hole/Both Ends Tapped Common (Standard) (mm)

| Bore size | A | $\varnothing B$ | C | Clamp stroke 10 mm | | | Clamp stroke 20 mm | | |
|-----------|----|-----------------|------|--------------------|-------|----|--------------------|-------|----|
| | | | | Q | R | S | Q | R | S |
| 20 | 36 | 47 | 25.5 | 116.5 | 110.5 | 59 | 136.5 | 130.5 | 69 |
| 25 | 40 | 52 | 28 | 119 | 113 | 59 | 139 | 133 | 69 |

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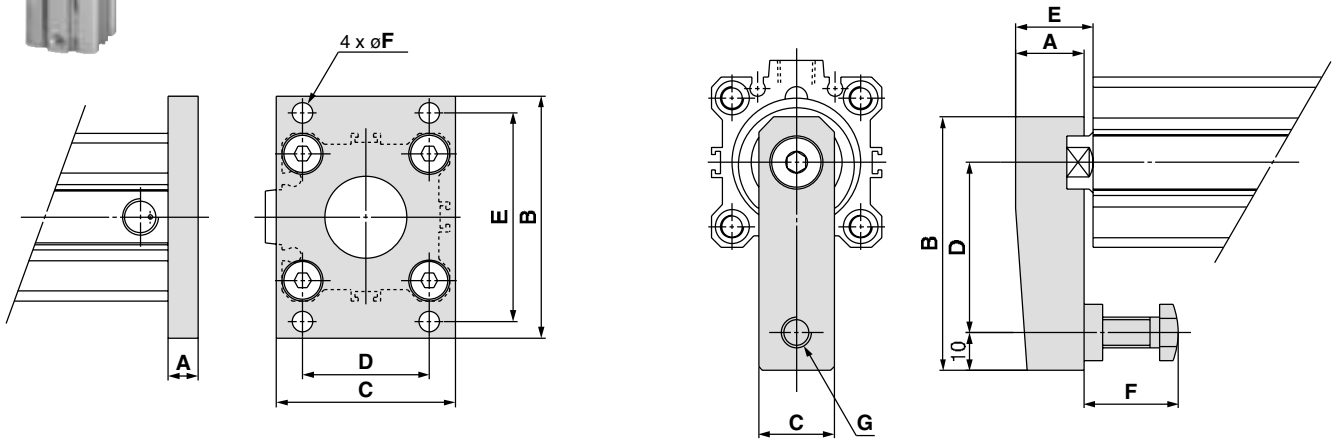
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Rotary Clamp Cylinder: Double Guide Type *Series MK2T*



Dimensions: $\phi 32$, $\phi 40$, $\phi 50$, $\phi 63$

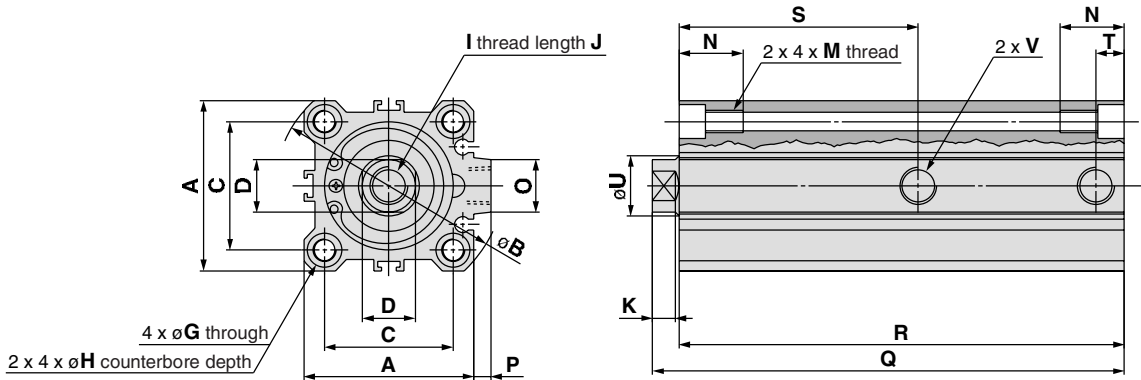


Head End Flange

| Model | A | B | C | D | E | ϕF |
|----------------|---|-----|----|----|----|----------|
| MK2TG32 | 8 | 65 | 48 | 34 | 56 | 5.5 |
| MK2TG40 | 8 | 72 | 54 | 40 | 62 | 5.5 |
| MK2TG50 | 9 | 89 | 67 | 50 | 76 | 6.6 |
| MK2TG63 | 9 | 108 | 80 | 60 | 92 | 9 |

With Arm

| Model | A | B | C | D | E | F | G |
|--------------------|----|----|----|----|------|----------|-----------|
| MK2T□32□□□N | 18 | 67 | 20 | 45 | 21.5 | 15 to 25 | M8 x 1.25 |
| MK2T□40□□□N | 18 | 67 | 20 | 45 | 21 | 15 to 25 | M8 x 1.25 |
| MK2T□50□□□N | 22 | 88 | 22 | 65 | 29.5 | 20 to 40 | M10 x 1.5 |
| MK2T□63□□□N | 32 | 91 | 32 | 65 | 34.5 | 20 to 40 | M10 x 1.5 |



Through-hole/Both Ends Tapped Common (Standard)

| Bore size | A | ϕB | C | D | G | H | I | J | K | M | N | O | P | ϕU | V | | |
|-----------|----|----------|----|---------------------------|-----|---------------|------------|----|---|-----------|------|----|-----|----------|--------|---------|-------|
| | | | | | | | | | | | | | | | Nil | TN | TF |
| 32 | 45 | 60 | 34 | 14 ^{+0.07/-0.15} | 5.5 | 9 depth 7 | M10 x 1.5 | 12 | 6 | M6 x 1.0 | 17 | 14 | 4.5 | 16 | Rc 1/8 | NPT 1/8 | G 1/8 |
| 40 | 52 | 69 | 40 | 14 ^{+0.07/-0.15} | 5.5 | 9 depth 7 | M10 x 1.5 | 12 | 6 | M6 x 1.0 | 17 | 14 | 5 | 16 | Rc 1/8 | NPT 1/8 | G 1/8 |
| 50 | 64 | 86 | 50 | 17 ^{+0.07/-0.15} | 6.6 | 11 depth 8 | M12 x 1.75 | 15 | 7 | M8 x 1.25 | 22 | 19 | 7 | 20 | Rc 1/4 | NPT 1/4 | G 1/4 |
| 63 | 77 | 103 | 60 | 22 ^{+0.07/-0.15} | 9 | 14 depth 10.5 | M16 x 2 | 21 | 8 | M10 x 1.5 | 28.5 | 19 | 7 | 25 | Rc 1/4 | NPT 1/4 | G 1/4 |

| Bore size | Clamp stroke 10 mm | | | | Clamp stroke 20 mm | | | | Clamp stroke 50 mm | | | |
|-----------|--------------------|-----|----|-----|--------------------|-----|------|------|--------------------|-------|-------|----|
| | Q | R | S | T | Q | R | S | T | Q | R | S | T |
| 32 | 148 | 140 | 74 | 7.5 | 168 | 160 | 84 | 7.5 | — | — | — | — |
| 40 | 151.5 | 144 | 75 | 8 | 171.5 | 164 | 85 | 8 | — | — | — | — |
| 50 | — | — | — | — | 191 | 179 | 91.5 | 12.5 | 254.5 | 242.5 | 121.5 | 14 |
| 63 | — | — | — | — | 192 | 182 | 93 | 10.5 | 256 | 246 | 123 | 15 |

GENTLE AUTOMATIC SOLUTION SDN BHD

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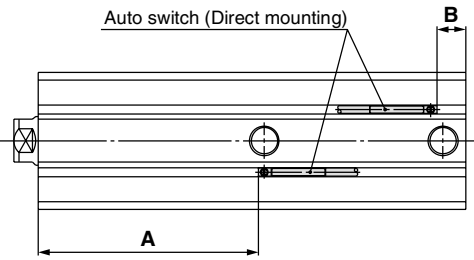
email:sales@gentle.com.my / gpauto@tm.net.my

Series MK2T

Auto Switch Proper Mounting Position (Detection at Stroke End)

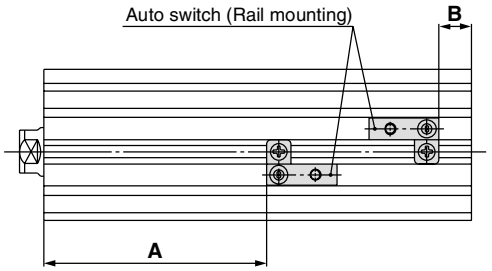
ø20 to ø63

D-M9□
D-M9□V
D-M9□W
D-M9□WV
D-M9□AL
D-M9□AVL
D-A9□
D-A9□V



ø32 to ø63

D-F7□/J79
D-F7□V
D-J79C
D-F7□W/J79W
D-F7□WV
D-F7BAL/F7BAVL
D-F79F/F7NTL
D-A7□/A80
D-A73C/A80C
D-A7□H/A80H
D-A79W
D-P4DWL



| Mounting | Rail mounting | | | | | | | | Direct mounting | | | | | | |
|-------------|---------------|-----------|---|------|--------|------|---------|------|---|------|-----------------|------|---------|------|------|
| | D-A7 D-A8 | | D-A7□H/A80H D-A73C/A80C D-F7□/F79F/J79 D-F7□V/J79C D-F7BA□/F7□W D-J79W/F7□WV | | D-A79W | | D-P4DWL | | D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL | | D-A9□ D-A9□V | | D-F7NTL | | |
| | A | B | A | B | A | B | A | B | A | B | A | B | A | B | |
| MK2T20 | — | — | — | — | — | — | — | — | — | 60.5 | 9 | 56.5 | 5 | 63 | 11.5 |
| MK2T25 | — | — | — | — | — | — | — | — | — | 61 | 11 | 57 | 7 | 63.5 | 13.5 |
| MK2T32 | 73 (73.5) | 10.5 (11) | 73.5 | 11 | 70.5 | 8 | — | — | — | 76 | 13.5 | 72 | 9.5 | 78.5 | 16 |
| MK2T40 | 74 (74.5) | 13 (13.5) | 74.5 | 13.5 | 71.5 | 10.5 | 70 | 9 | 77 | 16 | 73 | 12 | 79.5 | 18.5 | 18.5 |
| MK2T50-20st | 89.5 (90) | 18.5 (19) | 90 | 19 | 87 | 16 | 85.5 | 14.5 | 92.5 | 21.5 | 88.5 | 17.5 | 95 | 24 | 24 |
| MK2T50-50st | 119.5 (120) | 22 (22.5) | 120 | 22.5 | 117 | 19.5 | 115.5 | 18 | 122.5 | 25 | 118.5 | 21 | 125 | 27.5 | 27.5 |
| MK2T63-20st | 91.5 (92) | 19.5 (20) | 92 | 20 | 89 | 17 | 87.5 | 15.5 | 94.5 | 22.5 | 90.5 | 18.5 | 97 | 25 | 25 |
| MK2T63-50st | 121.5 (122) | 23.5 (24) | 122 | 24 | 119 | 21 | 117.5 | 19.5 | 124.5 | 26.5 | 120.5 | 22.5 | 127 | 29 | 29 |

* () : D-A72

Note) When setting an auto switch, confirm the operation and adjust its mounting position.

Operating Range

Operating Range (Dimensions)

(mm)

| Auto switch model | Bore size | | | | | |
|--|-----------|-----|-----|------|-----|------|
| | 20 | 25 | 32 | 40 | 50 | 63 |
| D-M9□/M9□V | 3 | 3.5 | 4.5 | 4.5 | 5 | 5 |
| D-M9□W/M9□WV D-M9□AL/M9□AVL | 5.5 | 5.5 | 6.5 | 5.5 | 6.5 | 6.5 |
| D-A9□/A9□V | 9 | 9.5 | 9 | 9.5 | 9.5 | 11 |
| D-F7□/J79 D-F7□V/F79F/J79C D-F7□W/F7□WV D-F79F/F7BAL/F7BAVL/F7NTL | — | — | 6 | 6 | 6 | 6.5 |
| D-A7□/A80 D-A7H/A80H D-A73C/A80C | — | — | 9.5 | 11.5 | 11 | 13.5 |
| D-A79W | — | — | 6 | 7 | 7 | 9.5 |
| D-P4DWL | — | — | — | 5 | 5 | 5 |

* 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.

* Figures for models D-M9□(V), M9□W(V), M9□A(V)L, and A9□(V) with ø32 or more indicate the operating range when using the existing auto switch-mounting groove, without using auto switch mounting bracket (BQ2-012).

Other than the models listed in "How to Order", the following auto switches are applicable.

For detailed specifications, refer to pages 1719 to 1827.

| Auto switch type | Model | Electrical entry | Features | Applicable bore size | |
|------------------|--------------------|--------------------------|--|----------------------|------------|
| Solid state | D-F7NV, F7PV, F7BV | Grommet (Perpendicular) | — | ø20 to ø63 | |
| | D-F7NWV, F7BWW | | Diagnostic indication (2-color indication) | | |
| | D-F7BAVL | | Water resistant | | |
| | D-F79, F7P, J79 | Grommet (In-line) | — | | ø40 to ø63 |
| | D-F79W, F7PW, J79W | | Diagnostic indication (2-color indication) | | |
| | D-F7BAL | | Water resistant (2-color indication) | | |
| | D-F7NTL | | With timer | | |
| D-P5DWL | — | Magnetic field resistant | ø40 to ø63 | | |
| Reed | D-A73 | Grommet (Perpendicular) | — | ø20 to ø63 | |
| | D-A80 | | Without indicator light | | |
| | D-A73H, A76H | Grommet (In-line) | — | | ø20 to ø63 |
| | D-A80H | | Without indicator light | | |

* With pre-wired connector is available for solid state auto switches, too. For details, refer to pages 1784 and 1785.

* Normally closed (NC = b contact), solid state auto switch (D-F9G/F9H type) are also available. For details, refer to page 1746.

GENTLE AUTOMATIC SOLUTION SDN BHD

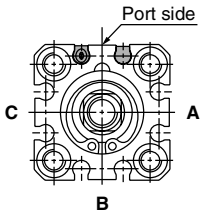
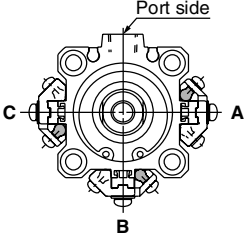
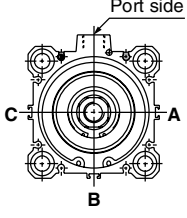
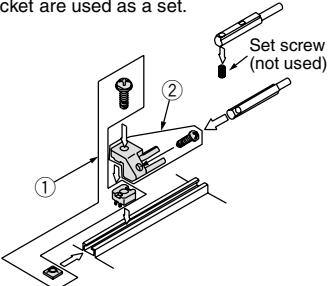
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Auto Switch Mounting Bracket/Part No.

| Auto switch mounting surface | Bore size (mm) | | |
|--|---|---|--|
| | ø20, ø25 | ø32, ø40, ø50 | ø63 |
| |  |  |  |
| Auto switch model | Auto switch mounting surface | Auto switch mounting surface | Auto switch mounting surface |
| | Port, A, B, C sides | Port side | A, B, C sides |
| D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL D-A9□ D-A9□V | No auto switch mounting bracket necessary. | No auto switch mounting bracket necessary. | ① BQ-2 ② BQ2-012 Two types of auto switch mounting bracket are used as a set.  |
| | | | |

Note 1) For ø32 to ø50 of each cylinder series, when mounting compact auto switches on one of the three sides other than the port side (above A, B, C side) in the figure above, a separate auto switch mounting bracket is necessary as shown in the table above, so please order one separately from the cylinder.
 (The same is true when mounting compact auto switches with the auto switch mounting rail, not using the compact auto switch mounting groove, for diameters ø63.)

Example

MK2TB32-10R-M9BW 1 unit
 BQ-2 2 pcs.
 BQ2-012 2 pcs.

Note 2) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment.

| Auto switch model | Bore size (mm) | | | |
|---|----------------|----------|----|----|
| | 32 | 40 | 50 | 63 |
| D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F7BAL/F7BAVL D-F79F/F7NTL D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W | BQ-2 | | | |
| D-P4DWL | — | BQP1-050 | | |

Note 3) When the cylinder is shipped, an auto switch mounting bracket and auto switch are included in the shipment. However, ø40 to ø63 with the D-P4DWL are assembled at the time of shipment.

[Mounting screw set made of stainless steel]

The set of stainless steel mounting screws (with nuts) described below is available and can be used depending on the operating environment. (Please order the auto switch spacer BQ-2, since it is not included.)

The "D-F7BAL/F7BAVL" switch is set on the cylinder with the stainless steel screws above when shipped.

When only a switch is shipped independently, "BBA2" screw set is attached.

Note 4) When mounting D-M9□A(V)L anywhere other than the port side of ø32, ø40, ø50, please order auto switch mounting brackets BQ2-012S, BQ-2, and the stainless steel screw set BBA2 separately.

Detailed Contents of Stainless Steel Mounting Screw Set

| Part no. | Content | | | Applicable auto switch mounting bracket part no. | Applicable auto switch |
|-------------|--|-----------------|-----|--|------------------------------|
| | Description | Size | No. | | |
| BBA2 | Auto switch mounting screw | M3 x 0.5 x 8 ℓ | 1 | BQ-1 | D-A7 D-A8 D-F7 D-J7 |
| | | M3 x 0.5 x 10 ℓ | 1 | BQ-2 | |
| | Auto switch mounting nut (Square nut) | M3 x 0.5 | 1 | BQ-1 | |
| | Auto switch mounting nut (Convex type) | M3 x 0.5 | 1 | BQ-2 | |

Note 5) When using BQ-1, BBA2 may be used by itself.

When using BQ-2, BQ-2 and BBA2 should be used together as a set, and used in combination with the auto switch spacer (black resin material) and stainless steel screws.

Auto Switch Mounting Bracket Mass

| Mounting bracket part no. | Mass (g) |
|---------------------------|----------|
| BQ-1 | 1.5 |
| BQ-2 | 1.5 |
| BQ2-012 | 5 |
| BQP1-050 | 16 |