Water Resistant Cylinder (Pneumatic/Hydraulic)

Pneumatic: CM2/CG1/MB/MB1/CQ2/CA2/MGP/MGG/MK/RSQ Series
Hydraulic: CHDKB/CH2F Series

Compatible with an operating environment with coolants.

Anti-coolant performance has been improved compared to the standard cylinders.
Applicable for an operating environment where water splashes.
Water Resistant Air Cylinders (Pneumatic/Hydraulic)

Suitable for using under the atmosphere having coolant in the machine tools.
Also, compatible with environments where water is splashed on the food machinery, or car washing machines, etc

Special scraper
- Dramatically improved water resistance compared to standard cylinders

Relation of Coolant Entry and Sliding Distance

Conditions
Operating conditions: Air
Pressure: 0.5 MPa
Coolant: Water-soluble
Piston speed: 200 mm/sec
Operating cycle: 60 cpm

- Two types of standard seal material
  - Nitrile rubbers (NBR)
  - Fluororubbers (FKM)

Mounting brackets, accessories, and nut material: Stainless steel
The following accessories need to be prepared separately. (Please order separately.) Refer to the "Accessories" page of each series for details.

<table>
<thead>
<tr>
<th>Series</th>
<th>Bore size (mm)</th>
<th>Foot</th>
<th>Flange</th>
<th>Single knuckle joint</th>
<th>Double knuckle joint</th>
<th>Mouting nut</th>
<th>Rod end nut</th>
<th>Accessories page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM2</td>
<td>20, 25, 32, 40</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>Best Pneumatics No. 2-1 p. 190</td>
</tr>
<tr>
<td>CG1</td>
<td>20, 25, 32, 40</td>
<td>○*</td>
<td>○*</td>
<td>○</td>
<td>○</td>
<td>—</td>
<td>○</td>
<td>Best Pneumatics No. 2-1 p. 309-1</td>
</tr>
<tr>
<td>CG2</td>
<td>20, 25, 32, 40</td>
<td>—</td>
<td>—</td>
<td>○</td>
<td>○</td>
<td>—</td>
<td>□</td>
<td>Best Pneumatics No. 2-1 p. 736</td>
</tr>
<tr>
<td></td>
<td>20, 25, 32, 40</td>
<td>—</td>
<td>—</td>
<td>○</td>
<td>○</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Applicable Cylinder

<table>
<thead>
<tr>
<th>Air Cylinder</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM2 Series</td>
</tr>
<tr>
<td>CG1 Series</td>
</tr>
<tr>
<td>MB Series</td>
</tr>
</tbody>
</table>

Square tube type air cylinder
MB1 Series
ø32 to ø100

Compact cylinder
CQ2 Series
ø20 to ø100
## Water resistant 2-color indicator solid state auto switch

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable cylinder</th>
<th>Lead wire</th>
</tr>
</thead>
</table>
| D-F7BA(V)/ Rail mounting | CQ2 (ø20 to ø100) | Oilproof vinyl cabtire cord: ø3.4  
0.2 mm², 2 cores (Brown, Blue), 3 m (standard) |
| | MB (ø16 to ø63) | |
| | RSQ (ø32 to ø50) | |
| | CA2 (ø40 to ø100) | Oilproof vinyl cabtire cord: ø4, 0.3 mm²  
2 cores (Brown, Blue), 3 m (standard) |
| | CH2F (ø32 to ø100) | |
| D-F5BAL/ Tie-rod mounting | MB (ø32 to ø100) | Oilproof vinyl cabtire cord: ø3.4  
0.2 mm², 2 cores (Brown, Blue), 3 m (standard) |
| | CA2 (ø40 to ø100) | |
| | CH2F (ø32 to ø100) | |
| D-H7BAL/ Band mounting | CM2 (ø20 to ø40) | Oilproof vinyl cabtire cord: ø3.4 |
| | CG1 (ø32 to ø63) | 0.2 mm², 2 cores (Brown, Blue), 3 m (standard) |
| | MGG (ø32 to ø63) | |
| D-G5BAL/ Band mounting | CG1 (ø80, ø100) | Oilproof vinyl cabtire cord: ø4, 0.3 mm²  
2 cores (Brown, Blue), 3 m (standard) |
| | MGG (ø80, ø100) | |
| D-Y7BAL/ Direct mounting Note 1) | MB (ø32 to ø100) | Oilproof vinyl cabtire cord: ø3.4  
0.15mm², 2 cores (Brown, Blue), 3 m (standard) |
| | MB1 (ø32 to ø100) | |
| | CA2 (ø40 to ø100) | |
| | CHKDB (ø32 to ø100) | |
| D-M9□A(V)/L/Direct mounting Note 1) | CM2 (ø20 to ø40) | Oilproof vinyl cabtire cord: 2.7 x 3.2 Elliptical shape, 0.15 mm², 2 cores (D-M9BA(V)),  
3 cores (D-M9NA(V), D-M9PA(V)) |
| | CG1 (ø32 to ø63) | |
| | MGG (ø32 to ø63) | |
| | MB (ø32 to ø100) | |
| | MB1 (ø32 to ø100) | |
| | CA2 (ø40 to ø100) | |
| | CHKDB (ø20 to ø100) | |

Note 1) Tie-rod mounting for CA2 and MB  
Note 2) This product is not made to be used in water.  
Refer to pages 1575 to 1701 for the detailed specifications of auto switches.

## Hydraulic Cylinders

### CHKDB Series
- **Compact hydraulic cylinder conforming to JIS/10 MPa**
- ø20 to ø100

### CH2F Series
- **Hydraulic cylinder conforming to JIS/7 MPa**
- ø32 to ø100

### CA2 Series
- ø40 to ø100

### MGP Series
- ø20 to ø100

### Guide cylinder MGG Series
- ø32 to ø100

### MK Series
- ø16 to ø63

### Stopper cylinder RSQ Series
- ø32 to ø50
Air Cylinders

CM2 Series ø20 to ø40

How to Order

CDM2 Mounting Bore size Port thread type Stroke Water resistant cylinder

RA Stroke

Water resistant cylinder

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

Cushion

Nil Rubber bumper
A Air cushion

Water resistant 2-color indicator solid state auto switch

Made to Order specifications

Caution

The scraper cannot be replaced since it is press-fit in the rod cover.

Specifications

Action Double acting, Single rod
Bore size (mm) 20, 25, 32, 40
Cushion Rubber bumper, Air cushion
Auto switch mounting Band mounting
Made to Order Made of stainless steel (-XC6)

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

Dimensions

Male rod end

Bore size (mm) E1 NN1 H ZZ (mm)
20 22.5 2 22 x 1.5 24 99
25 26.5 2 26 x 1.5 24 99
32 26.5 2 26 x 1.5 24 101
40 32.5 2 32 x 2 26 130

* Other specifications are the same as double acting, single rod standard type.
(An asterisk means it is the same as the standard type.)

Mounting Bracket: Part No.

Mounting bracket Min. order (ø) Bore size (mm) Description (At min. order qty.)
Axial foot type 1 2 CM-L020C 2 feet, 1 mounting nut
Flange 1 CM-F020C 1 Flange
Trunnion (with nuts) 1 CM-T020C 1 trunnion, 1 trunnion nut

* The brackets for ø25 to ø40 are the same as the standard type.
** Order 2 foot brackets for each cylinder unit.

CG1 Series ø32 to ø100

How to Order

CDG1 Mounting Type Bore size Port thread type Stroke Rod end thread Water resistant cylinder

R - Stroke Z -

Pivot bracket Rod end bracket Auto switch XC6

Water resistant 2-color indicator solid state auto switch

Made to Order specifications

Caution

The scraper cannot be replaced since it is press-fit in the rod cover.

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
Made to Order Made of stainless steel (-XC6)

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

Dimensions

Rubber bumper

Air cushion

Bore size (mm) E1 E1 (F1) F1 GA S TA WA ZZ (mm)
32 17 18 2 2 2 18 77 (85) 17 22 119 (127)
40 21 25 2 2 2 19 84 (93) 18 23 136 (145)
50 26 30 2 2 2 21 97 (109) 20 25 157 (169)
63 26 32 2 2 2 21 97 (109) 20 25 157 (169)
80 32 40 3 3 3 28 116 (130) — 32 190 (204)
100 37 50 3 3 3 29 117 (131) — 33 191 (205)

* Other specifications are the same as the double acting, single rod standard type.
(An asterisk means it is the same as the standard type.)

( ): For the long stroke type
### MB Series \( \phi 32 \text{ to } \phi 100 \)

**How to Order**
- **Mounting**: 
- **Bore size**: \( \phi 32, 40, 50, 63, 80, 100 \)
- **Port thread type**: \( R \)  
- **Stroke**: \( R \)  
- **Made to Order**: 
- **Specifications**: 
  - **Action**: Double acting, Single rod
  - **Cushion**: Air cushion, Rubber bumper
  - **Auto switch mounting**: Tie rod mounting
  - **Made to Order**: Made of stainless steel \(-\text{XC68}\)

**Specifications**
- **Action**: Double acting, Single rod
- **Bore size (mm)**: \( \phi 32, 40, 50, 63, 80, 100 \)
- **Cushion**: Air cushion, Rubber bumper
- **Auto switch mounting**: Tie rod mounting
- **Made to Order**: Made of stainless steel \(-\text{XC68}\)

**Dimensions**

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>H (mm)</th>
<th>ZZ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>47</td>
<td>135 (141)</td>
</tr>
<tr>
<td>40</td>
<td>58</td>
<td>146 (152)</td>
</tr>
<tr>
<td>50</td>
<td>67</td>
<td>165 (173)</td>
</tr>
<tr>
<td>63</td>
<td>67</td>
<td>165 (173)</td>
</tr>
<tr>
<td>80</td>
<td>81</td>
<td>199 (209)</td>
</tr>
<tr>
<td>100</td>
<td>81</td>
<td>199 (209)</td>
</tr>
</tbody>
</table>

* Other specifications are the same as the double acting, single rod standard type.
* ( ): For the type without a rubber bumper

### MB1 Series \( \phi 32 \text{ to } \phi 100 \)

**How to Order**
- **Mounting**: 
- **Bore size**: \( \phi 32, 40, 50, 63, 80, 100 \)
- **Port thread type**: \( R \)  
- **Stroke**: \( R \)  
- **Made to Order**: 
- **Specifications**: 
  - **Action**: Double acting, Single rod
  - **Cushion**: Air cushion, Rubber bumper
  - **Auto switch mounting**: Tie rod mounting
  - **Made to Order**: Made of stainless steel \(-\text{XC68}\)

**Specifications**
- **Action**: Double acting, Single rod
- **Bore size (mm)**: \( \phi 32, 40, 50, 63, 80, 100 \)
- **Cushion**: Air cushion, Rubber bumper
- **Auto switch mounting**: Tie rod mounting
- **Made to Order**: Made of stainless steel \(-\text{XC68}\)

**Dimensions**

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>F (mm)</th>
<th>H (mm)</th>
<th>ZZ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>15</td>
<td>47</td>
<td>135 (141)</td>
</tr>
<tr>
<td>40</td>
<td>17</td>
<td>58</td>
<td>146 (152)</td>
</tr>
<tr>
<td>50</td>
<td>19</td>
<td>67</td>
<td>165 (173)</td>
</tr>
<tr>
<td>63</td>
<td>19</td>
<td>67</td>
<td>165 (173)</td>
</tr>
<tr>
<td>80</td>
<td>25</td>
<td>81</td>
<td>199 (209)</td>
</tr>
<tr>
<td>100</td>
<td>25</td>
<td>81</td>
<td>199 (209)</td>
</tr>
</tbody>
</table>

* Other specifications are the same as the double acting, single rod standard type.
* ( ): For the type without a rubber bumper
### Air Cylinders

#### Compact Cylinder

**CQ2 Series** ø20 to ø100

**How to Order**

- **Mounting**: With/without switch (Built-in magnet)
- **Bore size (mm)**: 20, 25, 32, 40, 50, 63, 80, 100
- **Port/thread type**: B (through-hole) only
- **Stroke (mm)**: Z
- **Option**: M9 A/V/L XCS

**Water resistant cylinder**

- **R**: NBR seals (Nitrile rubber)
- **V**: FKM seals (Fluororubber)

**Suffix**

- **NIL**: Retaining ring, piston rod, rod end nut material: Stainless steel
- **A**: Piston rod, rod end nut, cover holding bolt material: Stainless steel

**Specifications**

- **Action**: Double acting, Single rod
- **Bore size (mm)**: 20, 25, 32, 40, 50, 63, 80, 100
- **Mounting**: ø20 to ø32: B (through-hole) only
- **Cushion**: None
- **Minimum operating pressure**: 0.08 MPa
- **Auto switch mounting**: Tie-rod mounting type

**Made to Order**

- Retaining ring, piston rod, rod end nut material: Stainless steel (-XC6)

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

Refer to page 949 for details.

#### CA2 Series

**CA2 Series** ø40 to ø100

**How to Order**

- **Mounting**: With/without switch (Built-in magnet)
- **Bore size (mm)**: 40, 50, 63, 80, 100
- **Port/thread type**: B (through-hole), F (rod side flange)
- **Curve**: A (both ends tapped), G (head side flange), L (foot), D (double clevis)
- **Stroke (mm)**: Z
- **Option**: M9 A/V/L XCS8

**Water resistant cylinder**

- **R**: NBR seals (Nitrile rubber)
- **V**: FKM seals (Fluororubber)

**Specifications**

- **Action**: Double acting, Single rod
- **Bore size (mm)**: 40, 50, 63, 80, 100
- **Cushion**: Air cushion
- **Auto switch mounting**: Tie-rod mounting type
- **Made to Order**: Made of stainless steel (Piston rod is hard chrome plated) (-XC66)

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

Note 1: Air-hydro type, rod boot specifications are excluded.

Note 2: Combination of auto switches and steel tube is not available.

**Dimensions**

*Other specifications are the same as the double acting, single rod standard type.*
Air Cylinders

Compact guide cylinder
MGP Series ø20 to ø100

How to Order

MGP
Bore size Port thread type - Stroke Z - M9::AVL - XC6A

- Slide bearing
- Water resistant cylinder
- NBR seals (Nitrile rubber)
- Water resistant 2-color indicator solid state switch

* Piston rod and guide rod are made of stainless steel.

Specifications

<table>
<thead>
<tr>
<th>Applicable series</th>
<th>MGP</th>
<th>MGPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearing type</td>
<td>Slide bearing</td>
<td>Slide bearing</td>
</tr>
<tr>
<td>Bore size (mm)</td>
<td>20, 25, 32, 40, 50, 63, 80, 100</td>
<td>20, 25, 32, 40, 50, 63, 80, 100</td>
</tr>
<tr>
<td>Cushion</td>
<td>Rubber bumper</td>
<td>Without cushion</td>
</tr>
<tr>
<td>Auto switch mounting</td>
<td>Direct mounting</td>
<td>Direct mounting</td>
</tr>
<tr>
<td>Minimum operating pressure</td>
<td>0.13 MPa</td>
<td>0.13 MPa</td>
</tr>
<tr>
<td>Made to Order</td>
<td>-XC6A</td>
<td>Made to Order</td>
</tr>
</tbody>
</table>

* Specifications other than above are the same as standard, basic type. Note) Refer to the Best Pneumatics No. 2-2 for details.

Dimensions

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>50 st or less</th>
<th>Over 50 st</th>
<th>Over 200 st</th>
<th>B</th>
<th>DA</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>66</td>
<td>123</td>
<td>123</td>
<td>66</td>
<td>10</td>
</tr>
<tr>
<td>25</td>
<td>67.5</td>
<td>123.5</td>
<td>123.5</td>
<td>67.5</td>
<td>10</td>
</tr>
<tr>
<td>32</td>
<td>87</td>
<td>141.5</td>
<td>141.5</td>
<td>71.5</td>
<td>14</td>
</tr>
<tr>
<td>40</td>
<td>87</td>
<td>141.5</td>
<td>141.5</td>
<td>78</td>
<td>16</td>
</tr>
<tr>
<td>50</td>
<td>99.5</td>
<td>161.5</td>
<td>161.5</td>
<td>83</td>
<td>20</td>
</tr>
<tr>
<td>63</td>
<td>99.5</td>
<td>161.5</td>
<td>161.5</td>
<td>88</td>
<td>20</td>
</tr>
<tr>
<td>80</td>
<td>110.5</td>
<td>186.5</td>
<td>186.5</td>
<td>102.5</td>
<td>25</td>
</tr>
<tr>
<td>100</td>
<td>130.5</td>
<td>194.5</td>
<td>194.5</td>
<td>120</td>
<td>30</td>
</tr>
</tbody>
</table>

Guide cylinder
MGG Series ø32 to ø100

How to Order

MGG
Bore size Port thread type - Stroke Z - M9::AVL - XC6A

- Slide bearing
- Water resistant cylinder
- NBR seals (Nitrile rubber)
- Water resistant 2-color indicator solid state switch

* A scraper is installed on piston rod parts only.

Specifications

<table>
<thead>
<tr>
<th>Action</th>
<th>Double acting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore size (mm)</td>
<td>32, 40, 50, 63, 80, 100</td>
</tr>
<tr>
<td>Bearing type</td>
<td>Slide bearing</td>
</tr>
<tr>
<td>Cushion</td>
<td>Built-in rubber bumper and shock absorber</td>
</tr>
<tr>
<td>Auto switch mounting</td>
<td>Band mounting</td>
</tr>
<tr>
<td>Made to Order</td>
<td>-XC6, -XC6A, -XC6B, -XC6C</td>
</tr>
</tbody>
</table>

| Specifications other than above are the same as standard, basic type. Note) Refer to the Best Pneumatics No. 2-2 for details. |

Dimensions

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>50 st or less</th>
<th>Over 50 st</th>
<th>Over 200 st</th>
<th>E</th>
<th>FB</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>(0)</td>
<td>(24)</td>
<td>(57)</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>40</td>
<td>(0)</td>
<td>(24)</td>
<td>(56)</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>50</td>
<td>(9)</td>
<td>(27.5)</td>
<td>(63.5)</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>63</td>
<td>(11.5)</td>
<td>(32.5)</td>
<td>(73.5)</td>
<td>27</td>
<td>23</td>
</tr>
<tr>
<td>80</td>
<td>(8)</td>
<td>(35)</td>
<td>(84)</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>100</td>
<td>(10.5)</td>
<td>(35.5)</td>
<td>(74.5)</td>
<td>35</td>
<td>32</td>
</tr>
</tbody>
</table>

* The dimensions in ( ) are the same as standard type. |
* The FB dimensions change for the XC6A. |
## How to Order

<table>
<thead>
<tr>
<th>MK</th>
<th>Mounting</th>
<th>Bore size</th>
<th>Port thread type</th>
<th>Body option</th>
<th>Clamp stroke</th>
<th>Rotary direction</th>
<th>Option</th>
</tr>
</thead>
</table>

- **Bore size**
  - Ø16: Ø16 mm
  - Ø20: Ø20 mm
  - Ø25: Ø25 mm
  - Ø32: Ø32 mm
  - Ø40: Ø40 mm
  - Ø50: Ø50 mm
  - Ø63: Ø63 mm

- **Port thread type**
  - Z

- **Clamp stroke**
  - Q

- **Rotary direction**
  - R

- **Body option**
  - M

## Specifications

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>16</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>63</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>Double acting</td>
<td>Rubber bumper</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cushion</td>
<td>Rubber bumper</td>
<td>Direct mounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum operating pressure</td>
<td>0.15 MPa</td>
<td>(0.1 MPa)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Dimensions

### Ø16

- **Bore size**: Ø16 mm
- **Rod state**: Retracted/Extended
- **Clamp stroke (mm)**:
  - 10 mm: 78
  - 20 mm: 95.5
  - 30 mm: 118.5

### Ø20, Ø25

- **Bore size**: Ø20 mm
- **Rod state**: Retracted/Extended
- **Clamp stroke (mm)**:
  - 10 mm: 72
  - 20 mm: 93

- **Bore size**: Ø25 mm
- **Rod state**: Retracted/Extended
- **Clamp stroke (mm)**:
  - 10 mm: 73
  - 20 mm: 131

### Ø32 to Ø63

- **Bore size**: Ø32 mm to Ø63 mm
- **Rod state**: Retracted/Extended
- **Clamp stroke (mm)**:
  - 10 mm: 75
  - 20 mm: 137

- **Bore size**: Ø40 mm
- **Rod state**: Retracted/Extended
- **Clamp stroke (mm)**:
  - 10 mm: 75

- **Bore size**: Ø50 mm
- **Rod state**: Retracted/Extended
- **Clamp stroke (mm)**:
  - 10 mm: 76

- **Bore size**: Ø63 mm
- **Rod state**: Retracted/Extended
- **Clamp stroke (mm)**:
  - 10 mm: 90
Air Cylinder

RSQ Series ø32 to ø50

How to Order

RSDQ Mounting  Bore size R • Stroke D Z • Mounting bolt - M9: A/V: Suffix

• With auto switch (Built-in magnet)

• Water resistant cylinder
  R  NBR seals (Nitrile rubber)
  V  FKM seals (Fluororubber)

Water resistant 2-color indicator, • solid state auto switch

Specifications

<table>
<thead>
<tr>
<th>Action</th>
<th>Double acting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore size (mm)</td>
<td>ø32, ø40, ø50</td>
</tr>
<tr>
<td>Cushion</td>
<td>Rubber bumper</td>
</tr>
<tr>
<td>Rod end configuration</td>
<td>Round bar</td>
</tr>
<tr>
<td>Auto switch mounting</td>
<td>Direct mounting</td>
</tr>
</tbody>
</table>

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

Dimensions

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>A</th>
<th>H</th>
<th>V</th>
<th>VA</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>80</td>
<td>32</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>40</td>
<td>89.5</td>
<td>37</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>91</td>
<td>37</td>
<td>29</td>
<td>0</td>
</tr>
</tbody>
</table>

* Other specifications are the same as the double acting.
Hydraulic Cylinders

Compact hydraulic cylinder conforming to JIS/10 MPa

**CHKD Series** ø20 to ø100

**How to Order**
- CHKD Bore size | Port thread type | R | Stroke | End type | M9×3A/VL
- With auto switch (Built-in magnet)

** Specifications**
- **Action**: Double acting, Single rod
- **Bore size (mm)**: 20, 25, 32, 40, 50, 63, 80, 100
- **Cushion**: None
- **Auto switch mounting**: Direct mounting

**Dimensions**

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

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Hydraulic cylinder conforming to JIS/7 MPa

**CH2F Series** ø32 to ø100

**How to Order**
- CH2F Mounting | Bore size | Rod series | R | Stroke | Option | F5BAL
- With auto switch (Built-in magnet)

** Specifications**
- **Action**: Double acting, Single rod
- **Bore size (mm)**: 32, 40, 50, 63, 80, 100
- **Cushion**: Cushion seal type
- **Auto switch mounting**: Tie-rod mounting

**Dimensions**

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

---

**How to Order**
- CHKD Bore size | Port thread type | R | Stroke | End type | M9×3A/VL
- With auto switch (Built-in magnet)

** Specifications**
- **Action**: Double acting, Single rod
- **Bore size (mm)**: 20, 25, 32, 40, 50, 63, 80, 100
- **Cushion**: None
- **Auto switch mounting**: Direct mounting

**Dimensions**

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

---

**How to Order**
- CH2F Mounting | Bore size | Rod series | R | Stroke | Option | F5BAL
- With auto switch (Built-in magnet)

** Specifications**
- **Action**: Double acting, Single rod
- **Bore size (mm)**: 32, 40, 50, 63, 80, 100
- **Cushion**: Cushion seal type
- **Auto switch mounting**: Tie-rod mounting

**Dimensions**

* Specifications other than above are the same as standard, basic type.
1. Before installing a cylinder, thoroughly flush out the piping to prevent dust or cutting chips from entering the cylinder. For the hydraulic cylinder, use the air bleed valve to bleed the air inside the cylinder.

2. Eccentric loads applied to the piston rod dramatically shorten the service life. Use the piston rod by always applying a load in an axial direction.

3. Make sure not to scratch or gouge the sliding portion of the piston rod, as this could damage the seals and lead to leaks. Attach a cover or other protection in locations where the cylinder is exposed to grinding sludge or machining chips.

4. When the cylinder is used in a place where the liquid from the piston rod is lightly splashed, and exposed to dust or sand, use a heavy duty scraper (-XC4).

5. If there is a possibility that liquid splashes on cylinder fittings when using an air cylinder, use insert fittings, self-align fittings, piping, etc. Consider the compatibility of liquid components and piping materials before using.

6. When selecting seals, generally use NBR (nitrile rubber) seals with liquids that do not contain chlorine and sulfur, and use FKM (fluororubber) seals with liquids that contain chlorine and sulfur. However, depending on the type and the brand of liquid that splashes on the cylinder, the operating life of seals may be reduced dramatically (such as coolant liquid). In cases where special additives are used, or where liquid caused trouble with the current nitrile or fluororubber seals in the past, request an investigation or set up a test period for the use of the seals.

Examples of coolants

- Shimiron, PA-O-5 (Daido Chemical Industry Co., Ltd.) (NBR seals)
- Noritake Cool, AFG-S (Noritake Co., Ltd.) (NBR seals)
- Yushiroken, S-48S (Yushiro Chemical Industry Co., Ltd.) (NBR seals)
- Yushiroken, EC-50-T3 (Yushiro Chemical Industry Co., Ltd.) (NBR seals)
- Yushiron Oil, No. 23 (Yushiro Chemical Industry Co., Ltd.) (FKM seals)
- Daphne Cut, Hs-1 (Idemitsu Kosan Co., Ltd.) (FKM seals)

7. Please consult with SMC separately when liquid contains sulfur, which is used for cylinders with a guide (MGP, MGG).
**Made to Order Common Specifications:**

**-XC93□: With Greater Water Resistance + Stable Lubrication Function**

- 5 times stronger against water (liquids) than the standard model
- Equipped with the greater water resistant scraper (Fluororubber). The Lube-retainer creates grease coating around the piston rod, which improves lubrication.
- Stainless steel can be selected for the piston rod and rod end nut.

### Applicable Series

<table>
<thead>
<tr>
<th>Series</th>
<th>Description</th>
<th>Model</th>
<th>Action</th>
<th>Note</th>
<th>Vol. no. (for std model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHC</td>
<td>High power cylinder</td>
<td>RHC</td>
<td>Double acting, Single rod</td>
<td>Applicable bore size ø32, ø40 Rc port only</td>
<td>-S From P. 351</td>
</tr>
</tbody>
</table>

### How to Order

- Standard model no. — XC93
- Piston rod, Rod end nut material
  - Nil: Standard (Carbon steel)
  - S: Stainless steel

### Dimensions

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

![Diagram of the cylinder](image)

<table>
<thead>
<tr>
<th>Bore size</th>
<th>Stroke range</th>
<th>A*</th>
<th>F*</th>
<th>FL*</th>
<th>H*</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>Up to 1000</td>
<td>22</td>
<td>21</td>
<td>14.5</td>
<td>51</td>
<td>3</td>
</tr>
<tr>
<td>40</td>
<td>Up to 1000</td>
<td>24</td>
<td>22.5</td>
<td>16.5</td>
<td>54.5</td>
<td>3</td>
</tr>
</tbody>
</table>

*: Same as the standard model.