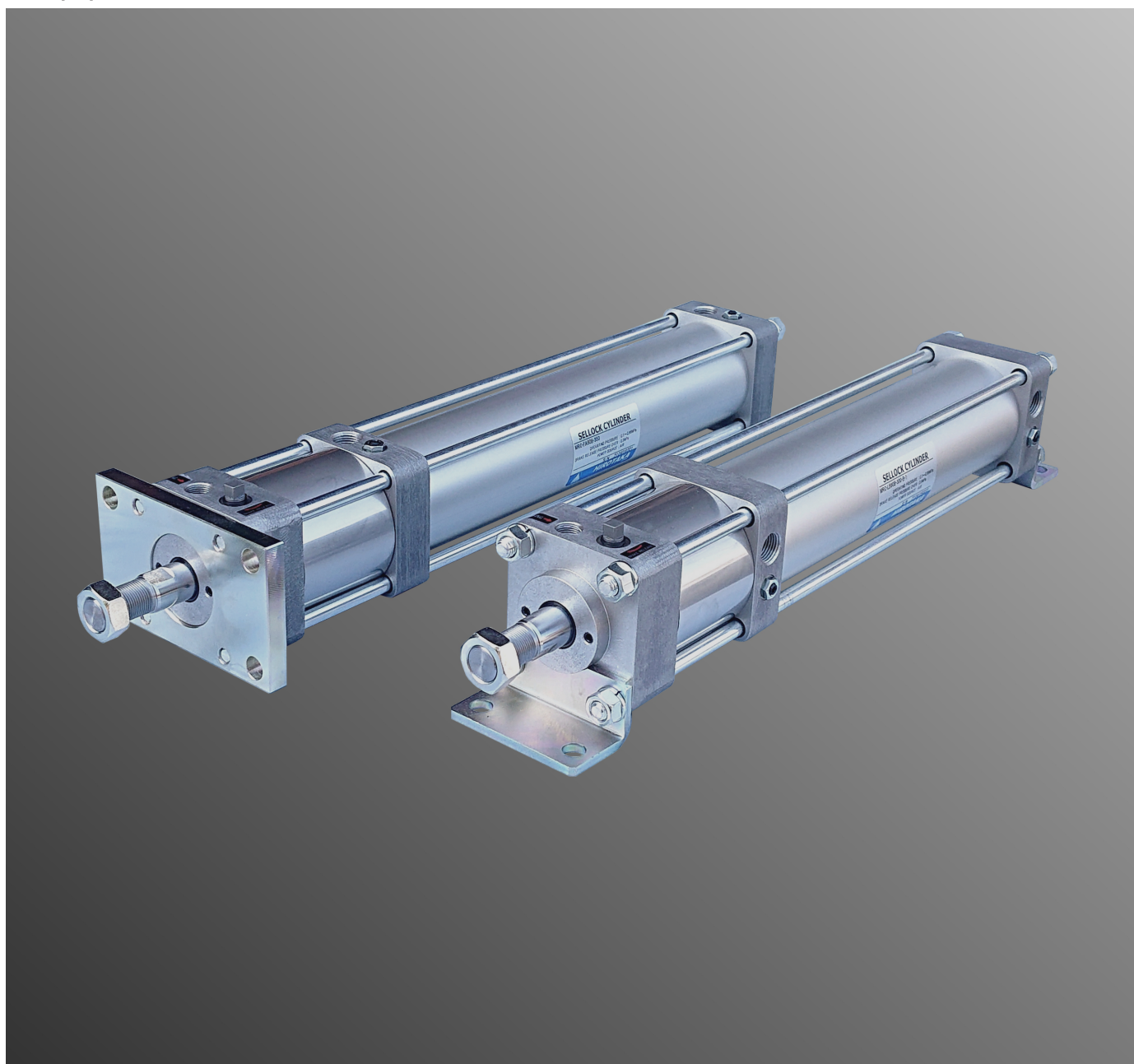Air cylinder with brake system

# SELLOCK CYLINDER

Air cylinder with braking functions such as intermediate stop and drop prevention.
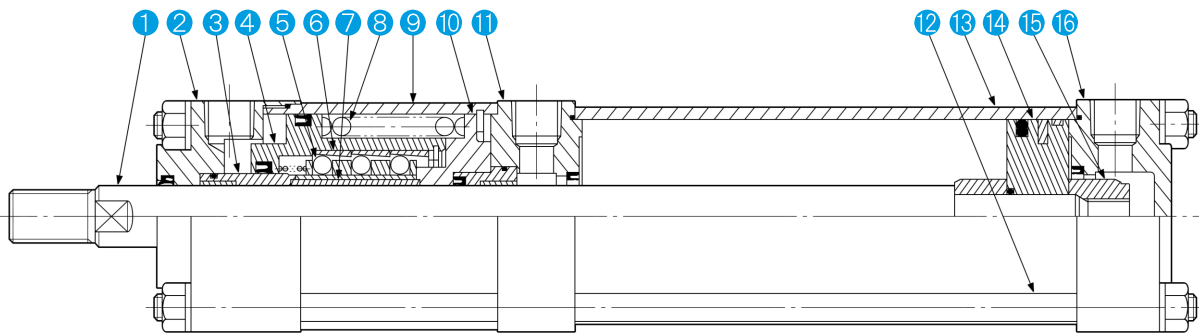


**HIROTAKA MFG. CO.,LTD.**

## Overview

It is possible to lock the piston rod in both directions of pushing and pulling.

Ideal for stopping in the middle of the stroke, emergency stop and fall prevention.

Demonstrates stable braking force with a long life.



| No. | Description | Material | No. | Description | Material | No. | Description | Material |
|---|---|---|---|---|---|---|---|---|
| 1 | Piston rod | Carbon steel | 7 | Brake metal | Copper alloy | 13 | Cylinder tube | Aluminum alloy |
| 2 | Braking system | Aluminum alloy | 8 | Spring | Piano wire | 14 | Cylinder piston | Aluminum alloy |
| 3 | Sleeve | Carbon steel | 9 | Brake tube | Carbon steel | 15 | Cushion collar | Carbon steel |
| 4 | Brake piston | Carbon steel | 10 | Brake cover | Carbon steel | 16 | Head cover | Aluminum alloy |
| 5 | Steel ball | Bearing steel | 11 | Rod cover | Aluminum alloy | | | |
| 6 | Taper ring | Bearing steel | 12 | Tie-rod | Rolled steel | | | |

※ No. 11 and 16 of φ125 are cast iron.

## Features

**1 High boost efficiency**

Since it is a mechanical method that presses the steel ball with taper ring, the optimum taper angle generates a large braking force and the brake is unlocked without difficulty even with low air pressure.

**2 Long-life brake metal**

By optimally arranging a large number of steel balls, the gripping area of the brake metal is wide, and by adopting the centering action mechanism, the grip method is not eccentric and the life of the brake metal is very long.

**3 Braking force with little change**

Since the braking force is generated by a strong spring, the safety design is such that the brakes are applied naturally even when the air runs our. In addition, since the using spring has a very low spring constant, it is a long-life product that does not change the braking force even after long-term use.

**4 Simple design**

Easy to install with no obstructive protrusions.

**5 Compact style**

By shortening the total length of the cylinder and consolidating the brake part, it is easy to incorporate it into the device.

**6 Easy to install cylinder**

Since the piping port, cushion needle, unlocking port, manual unlocking lever, etc. are unified in the same direction, the degree the degree of freedom in device design is improved due to the compact appearance.

## Specifications

| Fluid | Air |
|---|---|
| Operating pressure | 0.1 to 0.99 MPa |
| Proof pressure | 1.5 MPa |
| Unlocking pressure | 0.3 MPa |
| Ambient temperature | − 5 to 80℃ (No frozen) |
| Operating speed | 50 to 1000 mm/sec |
| Lubrication | No required 〈Note 1〉 |
| Stopping accuracy | ± 1 mm (300 mm/sec) 〈Note 2〉 |
| Locking force | Cylinder thrust at air pressure 0.75 MPa |

〈Note 1〉 If lubricating, additive−free turbine oil ISO VG32 or VG46 is recommended.
〈Note 2〉 The values will vary depending on the unlocking valve, scan time, cylinder speed, etc.

## Bore size and stroke limit

Unit : mm

| Bore size | 40 | 50 | 63 | 80 | 100 | 125 |
|---|---|---|---|---|---|---|
| Stroke limit | 500 | 600 | 600 | 750 | 750 | 1000 |

## Basic pneumatic circuit



| Action | SOL−1 | SOL−2 | SOL−3 |
|---|---|---|---|
| Locked stop | OFF | OFF | OFF |
| Forward | OFF | ON | ON |
| Reverse | ON | OFF | ON |

If the piston rod pops out when the brake is unlocked, be sure to install a regulator at the position shown in the figure to prevent it from popping out.

## Operating principle



● Unlocking

When air is supplied to the brake release port, the brake piston ② moves to the right due to the force of compressed air. The inner diameter of the taper ring ④ is angled, and the inner diameter increases as it moves to the right, so the steel ball ③ loses the force to be pushed toward the center and the brake metal ⑤ is released.

● Locking

When air is exhausted inside the brake release port, the brake piston ② moves to the left due to the force of the spring ⑥. Since the taper ring ④ has a small inner diameter on the left side, the steel ball ③ is pushed toward the center and the brake metal ⑤ grips the piston rod ① strongly.

There are many rows of steel balls in the axial direction, and the area for grasping the brake metal is wide. And it is designed so that the fluctuation of the tightening force of each steel ball due to the optimum angle of the taper ring and the variation of the inner diameter is minimized.

Since the movement of the steel ball rolls when the brake is released and when it is locked, the boosting efficiency is maximized.

## Theoretical thrust and Locking force



Unit : N

| Bore size (mm) | | Operating pressure : MPa | | | | | | Locking force |
|---|---|---|---|---|---|---|---|---|
| | | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | |
| 40 | F 1 | 252 | 377 | 503 | 629 | 754 | 880 | 942 |
| | F 2 | 220 | 331 | 440 | 551 | 662 | 772 | |
| 50 | F 1 | 392 | 588 | 784 | 980 | 1176 | 1372 | 1472 |
| | F 2 | 329 | 494 | 658 | 823 | 987 | 1152 | |
| 63 | F 1 | 622 | 933 | 1244 | 1555 | 1866 | 2177 | 2337 |
| | F 2 | 559 | 839 | 1118 | 1398 | 1677 | 1957 | |
| 80 | F 1 | 1004 | 1506 | 2008 | 2510 | 3012 | 3514 | 3770 |
| | F 2 | 906 | 1359 | 1812 | 2265 | 2718 | 3171 | |
| 100 | F 1 | 1570 | 2355 | 3140 | 3925 | 4710 | 5495 | 5890 |
| | F 2 | 1430 | 2145 | 2860 | 3575 | 4290 | 5005 | |
| 125 | F 1 | 2454 | 3681 | 4908 | 6135 | 7362 | 8589 | 9203 |
| | F 2 | 2262 | 3393 | 4524 | 5655 | 6786 | 7917 | |

## Air consumption



The table shows the air consumption required for one cycle of 10mm stroke.
Example : MRC−LB−50B−100
Operating pressure : 0.5 MPa, 10 cycles per minute
0.22 (L) × 100/10 (stroke) × 10 (cycles) = 22 L/min (ANR)

# MRC‑FA‑50B‑150‑BZ‑2‑JIH2ME‑AC100V‑KO

| Symbol | Mounting type |
|--------|---------------|
| SD | Basic |
| LB | Axial foot |
| FA | Rod flange |
| FB | Head flange |
| CA | Single clevis |
| CB | Double clevis |
| TC | Center trunnion |

| Symbol | Type |
|--------|------|
| MRC | Standard |
| MRCV | Brake release valve mounted type |

| Symbol | Bore size |
|--------|-----------|
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |
| 80 | 80 mm |
| 100 | 100 mm |
| 125 | 125 mm |

| Symbol | Stroke |
|--------|--------|
| 50 | 50 mm |
| 75 | 75 mm |
| 100 | 100 mm |
| 150 | 150 mm |
| 200 | 200 mm |
| 300 | 300 mm |
| 400 | 400 mm |
| 500 | 500 mm |

| Symbol | Cushion |
|--------|---------|
| B | With both sides |
| H | With head cover side |
| R | With rod cover side |
| N | Without cushion |

| Symbol | Cylinder port location |
|--------|------------------------|
| Nil | |
| B | |
| C | |
| D | |

* View from the rod side
* Cushion needle is in the same position

| Symbol | Number of auto switches |
|--------|-------------------------|
| 1 | 1 pc. |
| 2 | 2 pcs. |
| N | "N" pcs. |

| Symbol | Unlocking port location |
|--------|-------------------------|
| Nil | |
| X | |
| W | |
| Z | |

* View from the rod side
* No selection for brake release valve mounted type

| Symbol | Accessory |
|--------|-----------|
| J | With rod boot |
| I | Single knuckle joint |
| Y | Double knuckle joint |

| Symbol | Auto switch |
|--------|-------------|
| RS6 | Read auto switch |
| H2ME | Solid state auto switch |

| Symbol | Brake release valve voltage |
|--------|-----------------------------|
| AC100V | 100 VAC |
| AC200V | 200 VAC |
| DC24V | 24 VDC |

* Only brake release valve mounted type can be selected

| Symbol | Manual brake release lever location |
|--------|-------------------------------------|
| Nil | |
| Q | |
| R | |
| O | |

* View from the rod side
* Cannot be installed in the position as the brake release valve

| Symbol | Brake release valve location |
|--------|------------------------------|
| Nil | |
| K | |
| L | |
| M | |

* View from the rod side
* When the mounting type is the rod flange, it cannot be attached to the K and M positions.
* When the mounting type is the axial foot, it cannot be attached to the K and L positions.

---

## Stopping accuracy and Overrun amount

### Standard type
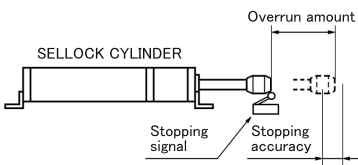


Due to the time delay caused by the brake release valve, scan time, air supply / exhaust, etc., from the output of the stop signal during the operation of the cell lock cylinder until the brake actually works and the piston rod stops, the piston rod sure to overrun to some extent.
The variation in the stop position after overrun is the stop accuracy.
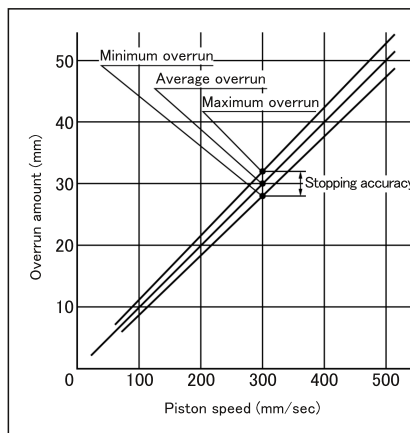


* Repeated stop accuracy varies depending on the type of brake release valve, sequencer scan time, cylinder speed change, etc.

Variation width of stop position caused by scan time of sequencer and cylinder speed
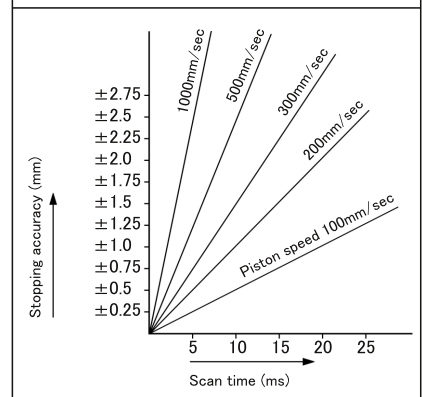


When using a sequencer with a cylinder speed of 300 mm/sec and a scan time of 5 ms, set the variation width of the stop position to 1.5 mm and the stop accuracy to ± 0.75 mm.
Furthermore, the stop accuracy is added to the above value depending on the variation of valve response, cylinder speed, sensor, etc.

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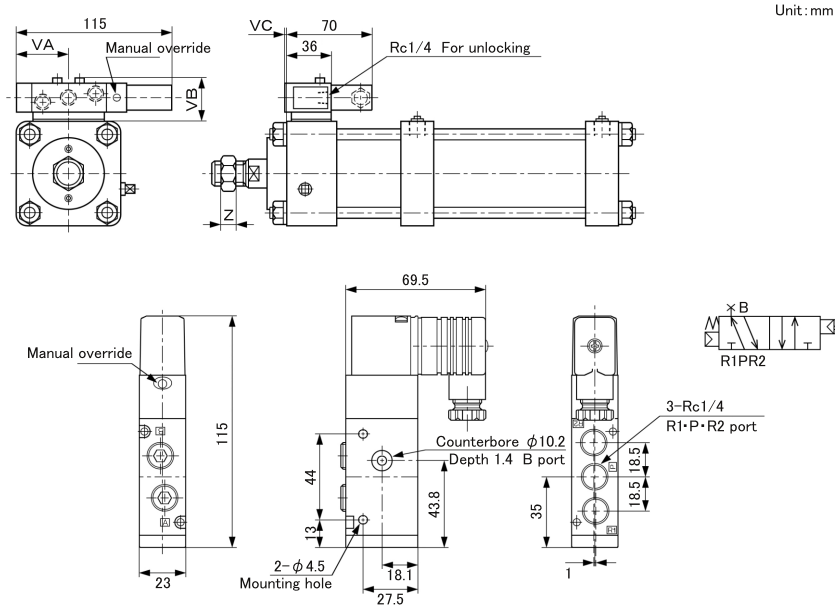
## How to manually release the brake
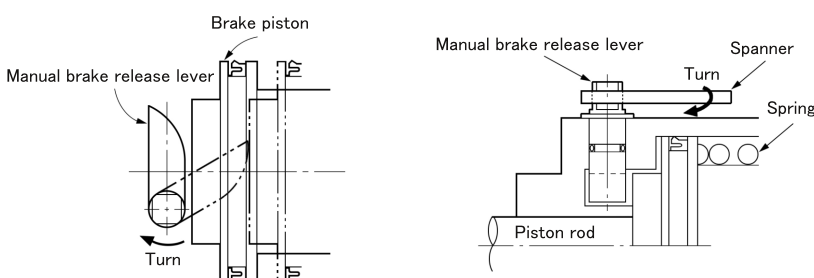


Hang the spanner on the brake release lever and turn it clockwise to push back the brake piston and unlock it.
When the brake release lever returns to its original position, the brake will lock, so keep the brake release lever in the unlock position while releasing the lock.
When you release your hand, the brake release lever returns to its original position and the brake locks.

● Unlocking valve is mounted on the position side of the unlocking port.

● If the mounting type is the rod flange, the unlocking valve cannot be installed at the positions of the unlocking port X and Z.
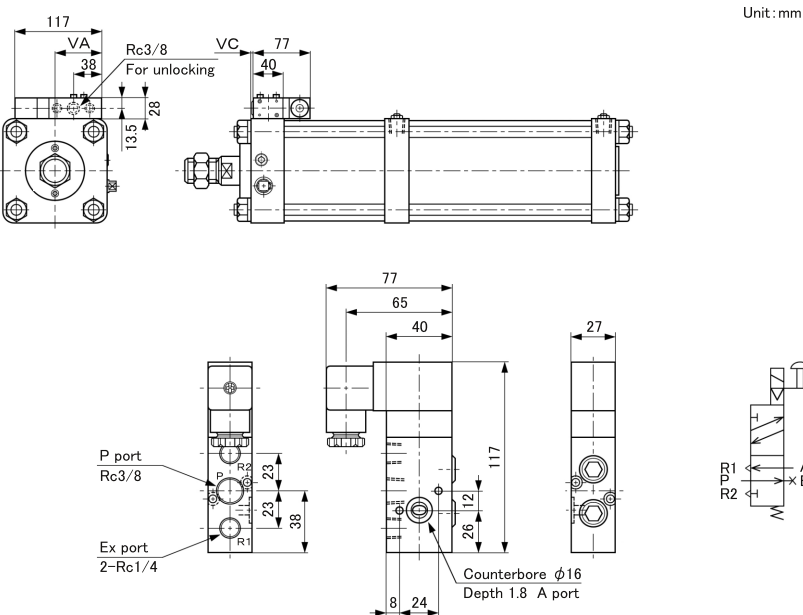
## Bore size 40 mm to 100 mm

Unit：mm



| Brake release valve specifications | |
|---|---|
| Fluid | Air |
| Operating pressure range | 0.15 to 0.7MPa |
| Ambient temperature | 5 to 50℃ |
| Action | Pilot operated |
| Piping connection | Direct piping |
| Effective sectional area | 12mm² |
| Lubrication | No required |
| Manual override | Non-locking push type |

| Solenoid specifications | | |
|---|---|---|
| Rated voltage | | 100 VAC, 50/60 Hz<br>200 VAC, 50/60 Hz<br>24 VDC |
| Operating voltage range | AC100V | 100～110V(100±10%) |
| | AC200V | 200～220V(200±10%) |
| | DC24V | 24V(24±10%) |
| Starting current | AC100V | 50Hz:0.046A,60Hz:0.042A |
| | AC200V | 50Hz:0.023A,60Hz:0.021A |
| | DC24V | 0.075A |
| Power consumption | AC100V | 50Hz:1.8W,60Hz:1.5W |
| | AC200V | 50Hz:1.8W,60Hz:1.5W |
| | DC24V | 20W |
| Wiring method | | DIN connector |

Unit：mm

| Bore size \ Symbol | VA | VB | VC |
|---|---|---|---|
| 40 | 38.5 | 35 | 4 |
| 50 | 38.5 | 35 | 3 |
| 63 | 37.0 | 28 | 0 |
| 80 | 42.0 | 28 | 1 |
| 100 | 50.0 | 28 | 1 |

## Bore size 125 mm

Unit：mm



| Unlocking valve specifications | |
|---|---|
| Fluid | Air |
| Operating pressure range | 0.15 to 0.9MPa |
| Ambient temperature | 5 to 50℃ |
| Action | Pilot operated |
| Piping connection | Direct piping |
| Effective sectional area | 25mm² |
| Lubrication | No required |
| Manual override | Non-locking push type |

| Solenoid specifications | | | |
|---|---|---|---|
| Rated voltage | | | 100 VAC, 50/60 Hz<br>200 VAC, 50/60 Hz<br>24 VDC |
| Operating voltage range | | AC100V | 90 to 130V(100⁺³⁰₋₃₀%) |
| | | AC200V | 180 to 250V(200⁺³⁰₋₃₀%) |
| | | DC24V | 21.6 to 26.4V(24±10%) |
| Power consumption | Starting | AC100V | 50Hz:10.6VA,60Hz:9.4VA |
| | | AC200V | 50Hz:10.2VA,60Hz:9.2VA |
| | | DC24V | ― |
| | Excitation | AC100V | 50Hz:5.5VA,60Hz:4.4VA |
| | | AC200V | 50Hz:5.4VA,60Hz:4.4VA |
| | | DC24V | 5.8W |
| Insulation resistance | | | 10 MΩ or more |
| Wiring method | | | DIN connector |

Unit：mm

| Bore size \ Symbol | VA | VC |
|---|---|---|
| 125 | 63 | 3 |

## Dimentions

● Basic
Symbol：SD
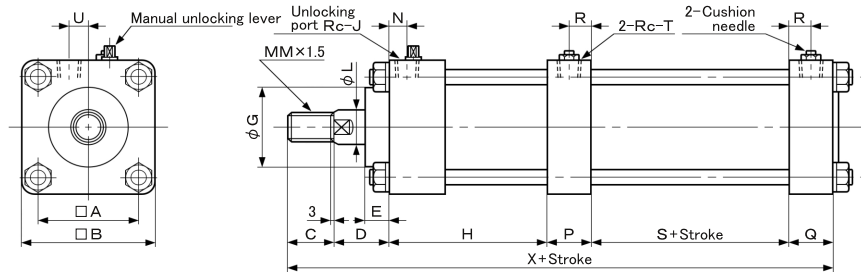


● Axial foot
Symbol：LB
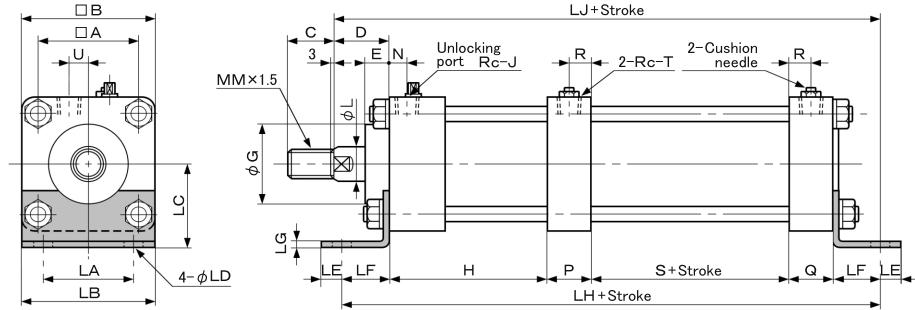


● Flange
Symbol：FA・FB
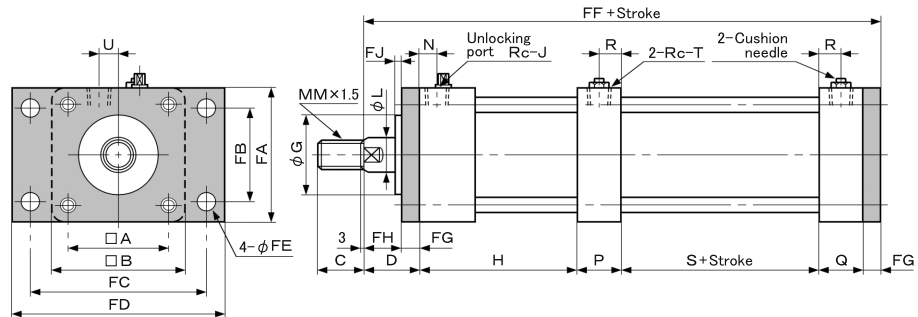


Unit：mm

| Bore size (mm) | A | B | C | D | E | G | H | J | L | MM | N | P | Q | R | S | T | U | V | X | LA | LB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 48 | 65 | 22 | 25 | 10 | 47 | 74 | 1/4 | 16 | 14 | 10 | 20 | 21 | 10 | 27 | 1/4 | 10 | 9 | 189 | 40 | 65 |
| 50 | 55 | 70 | 28 | 32 | 12 | 55 | 90 | 1/4 | 20 | 18 | 12 | 20 | 21 | 10 | 28 | 1/4 | 10 | 9 | 219 | 45 | 70 |
| 63 | 63 | 80 | 28 | 32 | 12 | 55 | 104 | 1/4 | 20 | 18 | 13 | 26 | 26 | 13 | 28 | 3/8 | 12 | 12 | 244 | 60 | 80 |
| 80 | 76 | 96 | 36 | 40 | 12 | 60 | 121 | 3/8 | 25 | 22 | 14 | 32 | 32 | 16 | 32 | 1/2 | 15 | 12 | 293 | 71 | 96 |
| 100 | 92 | 116 | 45 | 40 | 13 | 65 | 144 | 3/8 | 30 | 26 | 14 | 32 | 32 | 16 | 35 | 1/2 | 15 | 12 | 328 | 85 | 116 |
| 125 | 114 | 140 | 50 | 44 | 15 | 80 | 180 | 3/8 | 35 | 30 | 14 | 33 | 33 | 17 | 46 | 1/2 | 15 | 12 | 386 | 100 | 140 |

| Bore size (mm) | LC | LD | LE | LF | LG | LH | LJ | FA | FB | FC | FD | FE | FF | FG | FH | FJ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 40 | 10 | 15 | 31.5 | 4.5 | 205 | 198.5 | 65 | 35 | 90 | 110 | 10 | 177 | 10 | 15 | 0 |
| 50 | 45 | 10 | 15 | 31.5 | 4.5 | 222 | 222.5 | 70 | 45 | 90 | 115 | 10 | 201 | 10 | 22 | 2 |
| 63 | 53 | 12 | 16 | 31.5 | 4.5 | 247 | 247.5 | 80 | 60 | 112 | 135 | 12 | 226 | 10 | 22 | 2 |
| 80 | 63 | 15 | 16 | 35.5 | 6 | 288 | 292.5 | 96 | 71 | 132 | 160 | 15 | 271 | 14 | 26 | 0 |
| 100 | 75 | 15 | 16 | 40 | 6 | 323 | 323 | 116 | 85 | 150 | 180 | 15 | 297 | 14 | 26 | 0 |
| 125 | 85 | 19 | 20 | 45 | 6 | 382 | 381 | 140 | 100 | 190 | 230 | 19 | 350 | 14 | 30 | 1 |

Note) A rod end nut is attached with all types.
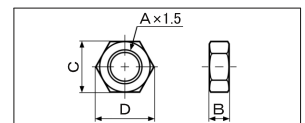
### Rod end nut



| Bore size (mm) | A | B | C | D |
|---|---|---|---|---|
| 40 | M14 | 8 | 22 | 25.4 |
| 50 | M18 | 11 | 27 | 31.2 |
| 63 | M18 | 11 | 27 | 31.2 |
| 80 | M22 | 13 | 32 | 37 |
| 100 | M26 | 16 | 41 | 47.3 |
| 125 | M30 | 18 | 46 | 53.1 |

## Dimentions

● Clevis
Symbol：CA・CB
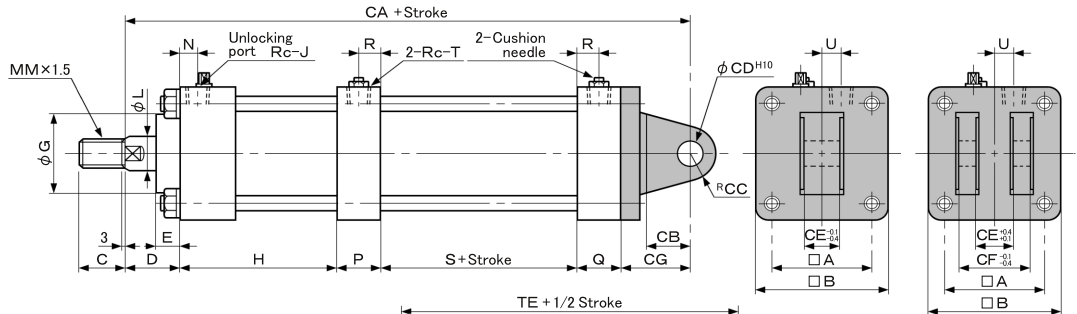


● Trunnion
Symbol：TC
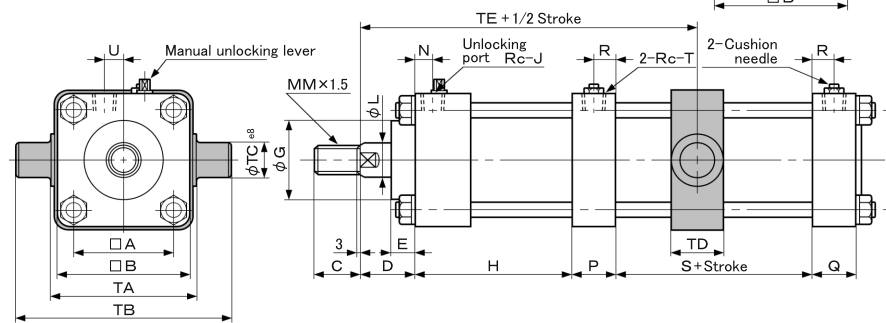


Unit：mm

| Bore size (mm) | A | B | C | D | E | G | H | J | L | MM | N | P | Q | R | S | T | U | V | CA | CB | CC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 48 | 65 | 22 | 25 | 10 | 47 | 74 | 1/4 | 16 | 14 | 10 | 20 | 21 | 10 | 27 | 1/4 | 10 | 9 | 201 | 20 | 12 |
| 50 | 55 | 70 | 28 | 32 | 12 | 55 | 90 | 1/4 | 20 | 18 | 12 | 20 | 21 | 10 | 28 | 1/4 | 10 | 9 | 225 | 20 | 12 |
| 63 | 63 | 80 | 28 | 32 | 12 | 55 | 104 | 1/4 | 20 | 18 | 13 | 26 | 26 | 13 | 28 | 3/8 | 12 | 12 | 258 | 27 | 16 |
| 80 | 76 | 96 | 36 | 40 | 12 | 60 | 121 | 3/8 | 25 | 22 | 14 | 32 | 32 | 16 | 32 | 1/2 | 15 | 12 | 314 | 39 | 20 |
| 100 | 92 | 116 | 45 | 40 | 13 | 65 | 144 | 3/8 | 30 | 26 | 14 | 32 | 32 | 16 | 35 | 1/2 | 15 | 12 | 343 | 40 | 25 |
| 125 | 114 | 140 | 50 | 44 | 15 | 80 | 180 | 3/8 | 35 | 30 | 14 | 33 | 33 | 17 | 46 | 1/2 | 15 | 12 | 399 | 40 | 25 |

| Bore size (mm) | CD | CE | CF | CG | TA | TB | TC | TD | TE |
|---|---|---|---|---|---|---|---|---|---|
| 40 | 12 | 18 | 36 | 34 | 80 | 112 | 16 | 28 | 117 |
| 50 | 12 | 18 | 36 | 34 | 80 | 112 | 16 | 28 | 136 |
| 63 | 16 | 22 | 44 | 42 | 100 | 140 | 20 | 40 | 159 |
| 80 | 20 | 28 | 56 | 57 | 112 | 162 | 25 | 40 | 196 |
| 100 | 25 | 32 | 64 | 60 | 140 | 204 | 32 | 45 | 224 |
| 125 | 25 | 32 | 64 | 63 | 170 | 234 | 32 | 45 | 276 |

Note) A rod end nut is attached with all types.

### Bellows



| Bore size (mm) | A | B | C | D | φE | φF | φJ | H |
|---|---|---|---|---|---|---|---|---|
| 40 | M14 | 22 | 5 | 20 | 16 | 47 | 75 | 40 |
| 50 | M18 | 28 | 12 | 20 | 20 | 55 | 80 | 47 |
| 63 | M18 | 28 | 12 | 20 | 20 | 55 | 80 | 47 |
| 80 | M22 | 36 | 16 | 24 | 25 | 60 | 85 | 55 |
| 100 | M26 | 45 | 16 | 24 | 30 | 65 | 90 | 55 |
| 125 | M30 | 50 | 20 | 24 | 35 | 80 | 95 | 59 |

### Knuckle joint

Single knuckle joint
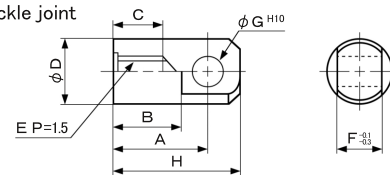


| Symbol | Bore size (mm) | A | B | C | φD | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|
| I－04 | 40 | 40 | 25 | 20 | 22 | 14 | 12 | 10 | 51 |
| I－05 | 50 | 45 | 30 | 24 | 24 | 18 | 16 | 12 | 57 |
| I－06 | 63 | 45 | 30 | 24 | 24 | 18 | 16 | 12 | 57 |
| I－08 | 80 | 53 | 35 | 29 | 32 | 22 | 20 | 16 | 69 |
| I－10 | 100 | 63 | 45 | 35 | 32 | 26 | 20 | 16 | 79 |
| I－12 | 125 | 90 | 60 | 46 | 50 | 30 | 30 | 25 | 115 |

Double knuckle joint
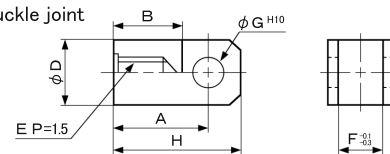


| Symbol | Bore size (mm) | A | B | □D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| Y－04 | 40 | 40 | 25 | 25 | 14 | 12 | 10 | 51 |
| Y－05 | 50 | 45 | 30 | 32 | 18 | 16 | 12 | 57 |
| Y－06 | 63 | 45 | 30 | 32 | 18 | 16 | 12 | 57 |
| Y－08 | 80 | 53 | 35 | 38 | 22 | 20 | 16 | 69 |
| Y－10 | 100 | 63 | 45 | 38 | 26 | 20 | 16 | 79 |
| Y－12 | 125 | 90 | 60 | 60 | 30 | 30 | 25 | 115 |

## Auto Switch

### Read auto switch

| Model No. | RS-6 | |
|---|---|---|
| Voltage | 24 VDC | 100 V / 200 VAC |
| Maximum switching current | 20 mA | 20 mA |
| Maximum switching capacity | 5 W | 5 VA |
| Average operating time | 1 mSEC | |
| Insulation resistance | 100 MΩ or more (500 VDC measured via megger) | |
| Inpact resistance | 30 G | |
| Working temperature range | −10 to 60 ℃ (freezing not allowed) | |
| Lead wire | Two − core cable, 1 m | |
| Indicating lamp | Red LED illuminates when turned ON | |

### Read auto switch

**Dimentions and internal circuit**

RS-6

27

13

13

1000±20

LED

Contact protection circuit

Brown(+)

Blue(−)

### Solid state auto switch

| Model No. | H2ME |
|---|---|
| Output type | NPN |
| Voltage | 5, 12, 24 VDC |
| Maximum load current | 5 mA (5 VDC),10 mA (12 VDC),20 mA (24 VDC) |
| Maximum switching current | 100 mA (5 VDC), 200 mA (24 VDC) |
| Internal voltage drop | 0.6 V or less (24 VDC) |
| Maximum leakage current | 0.1 mA or less (24 VDC) |
| Inpact resistance | 30 G |
| Working temperature range | −10 to 60 ℃ (freezing not allowed) |
| Lead wire | Three − core cable, 1 m |
| Indicating lamp | Red LED illuminates when turned ON |

### Solod state auto switch

**Dimentions and internal circuit**

H2ME

27

13

13

1000±20

LED

Contact protection circuit

Brown(+)

Black OUT

Blue(−)

Main Circuit

About mounting compatibility：Read auto switch（RS-6）and Solid state auto switch（H2ME）can use the same switch bracket.

## Mass

Unit：kg
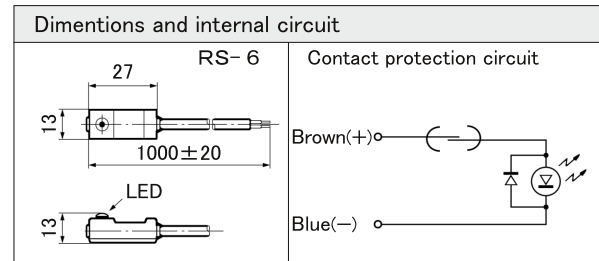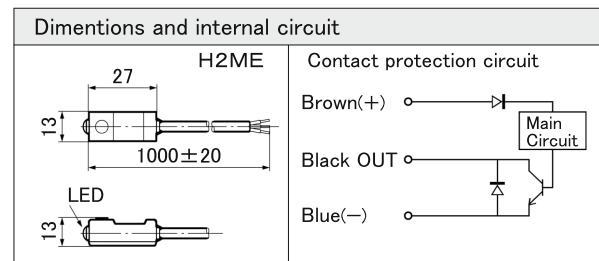
| Bore size (mm) | Basic weight at 0 mm of stroke | | | | | Additional weight per each 100 mm of stroke |
|---|---|---|---|---|---|---|
| | Basic type | Foot type | Flange type | Clevis type | Trunnion type | |
| 40 | 2.23 | 2.41 | 2.66 | 2.58 | 2.61 | 0.42 |
| 50 | 3.30 | 3.47 | 3.80 | 3.74 | 3.82 | 0.50 |
| 63 | 4.00 | 4.37 | 5.06 | 4.55 | 4.85 | 0.55 |
| 80 | 7.30 | 8.07 | 9.18 | 8.84 | 8.66 | 1.00 |
| 100 | 11.45 | 12.37 | 14.14 | 13.60 | 13.97 | 1.23 |
| 125 | 29.70 | 29.40 | 31.20 | 30.90 | 31.30 | 1.86 |

Example） MRC−LB−50B−300

Basic weight at 0 mm of stroke ： 3.47kg

Additional weight at 300 mm of stroke ： $0.5 \times \frac{300}{100} = 1.5$kg

3.47 ＋ 1.5 ＝ 4.97kg

## Auto switch setting position

A          B
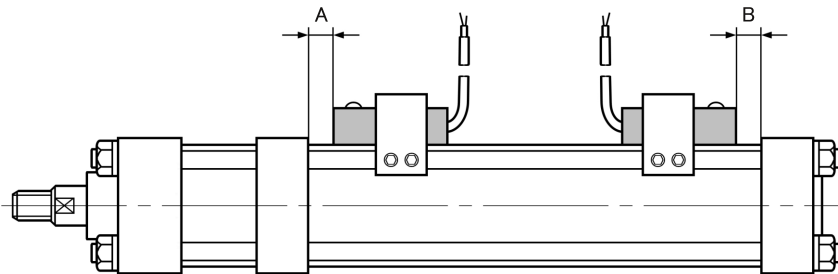
**Operating range : ℓ**
● The distance until the piston moves, the auto switch turns on, and the piston moves in the same direction and turns off.

**Hysteresis : C**
● The distance from the position where the piston moves and the auto switch turns on until the piston moves in the opposite direction and turns off.

**Most sensitive position and Mounting position**
● Most sensitive position of the auto switch is in the center of the auto switch.
● When using the auto switch to detect the position of the stroke end, install it at the positions shown in Tables A and B in order to operate it at the most sensitive position.

**Distance between auto switches**
● When installing two or more auto switches, keep the distance between the auto switches at least 15 mm.

Unit : mm

| Bore size (mm) | Proper mounting position | | Operating range | hysteresis |
|---|---|---|---|---|
| | A | B | ℓ | C |
| 40 | 0 | 0 | 11 | |
| 50 | 0 | 2 | 11 | |
| 63 | 0 | 3 | 12 | 2.5 or less |
| 80 | 0 | 3 | 12 | |
| 100 | 2 | 3 | 12 | |
| 125 | 2 | 3 | 12 | |

## Precautions for safe handling of read auto switch

**Connecting of lead wire**
● Be sure to connect the auto switch in series with a load such as a relay or sequencer without connecting it directly to the power supply.

**Switching capacity**
● Do not use a load that exceeds the maximum switching capacity of the auto switch.

**Contact protection**
● When using with an inductive load such as a relay, install a contact protection circuit. And if the lead wire length exceeds 10m, please contact us.

**Polarity**
● In case of DC24V, be careful about the polarity. Be sure to connect the brown lead wire to ⊕ and the blue lead wire to ⊖.

**Voltage**
● Be sure to use below the working voltage. If the working voltage and current of the auto switch are too small, the indicator light may not turn on.

**Magnetic shield**
● If strong magnetism is generated around the auto switch, install a magnetic shield.

**Cylinder speed**
● When installing the auto switch in the middle of the stroke, please note that the relay may not respond if the piston speed is too fast.

## "Tips" for improving stop accuracy

### Exhaust in the brake port as soon as possible.



SOL1    SOL2
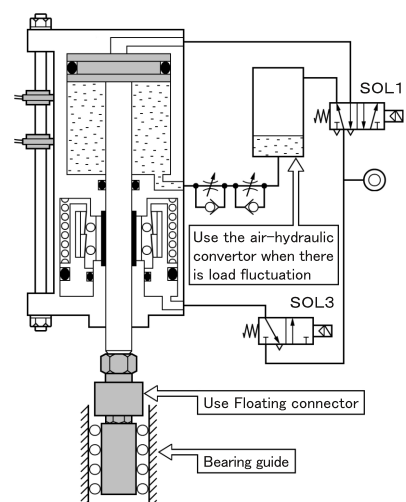SOL3
Thick and short piping
Install the regulator
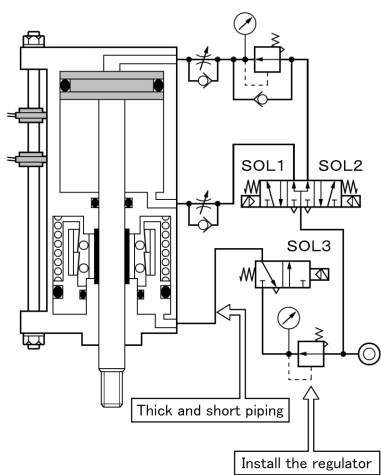
- Bring the brake release valve (SOL3) closer to the brake release port.
- If the brake release valve is installed far from the brake release port, or if a valve with a small flow rate is used, install a quick exhaust valve on the brake release port.
- Install a regulator to keep the supply air pressure of the brake release valve constant (about 0.3 MPa) in order to stabilize the stop accuracy.

### Prevent the electric control signal of the brake release valve from fluctuating.



SOL1    SOL2
SOL3
Sequencer
Less variation sensor    Attention to the scan time
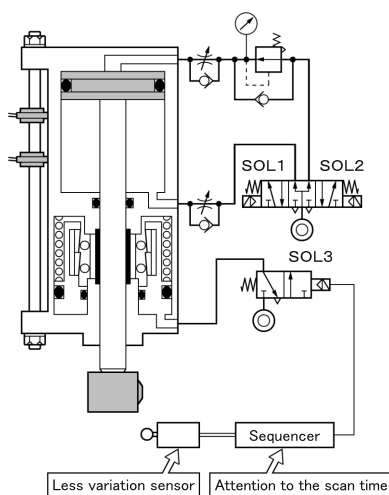
- When sending a stop signal through the sequencer, attention to the scan time and do not pass it through the sequencer circuit if there is a lot of variation.
- Use the interior type as much as possible for the stop sensor, and when using the exterior type, use the type with less variation.
  (Proximity switch, auto switch, etc. are desirable)

### Keep the cylinder speed constant.



SOL1
Use the air-hydraulic convertor when there is load fluctuation
SOL3
Use Floating connector
Bearing guide

- The guide part should be a bearing guide, avoiding the use of sliding guide as much as possible.
- For axial foot type and flange type, use the floating connector to prevent misalignment with the guide.
- When the stop pitch is 50 mm or less or the speed is high, release the brake first and then operate the operating valve. (At this time, make sure to balance the pressure of the cylinder accurately so that it does not pop out when the brake is released.)
- If the stopping near the stroke end (50 mm or less), use a type without cushion.
- If the speed changes (when the load fluctuates or a sliding guide is used), use an air-hydraulic convertor to stabilize the speed.
  ※ Please contact us as it cannot be used with standard products.

－MEMO－

## ●LINE UP●

PNEUMATIC POWER CYLINDER

PNEUMATIC BOOSTER

POWER PACK CYLINDER

RUSH BOOSTER

HYDRAULIC CYLINDER

FREE LOCK PAD

SELLOCK CYLINDER

FLOATING CONNECTOR

AUTO CLAMPER

SEL NUT

LINEA BRAKE


PNEUMATIC AND HYDRAULIC

EQUIPMENT