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# PNEUMATIKA

# Solenoid valve(3/2 way)

## 3V1 Series

## Specification

| Model | 3V1-M5 | 3V1-06 |
|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | |
| Acting | Direct acting | |
| Port size [Note1] | M5 | 1/8" |
| Valve type | 3 port 2 position | |
| Lubrication | Not required | |
| Operating pressure | 0~0.8MPa(0~114psi) | |
| Proof pressure | 1.2MPa(175psi) | |
| Temperature | -20~70℃ | |
| Orifice size | Φ1.2mm | |
| Material of body | Aluminum alloy | |

[Note1] PT thread, G thread and NPT thread are available.

## Symbol


## Coil specification

| Item | Specification | | | | |
|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | |
| Power consumption | 4.5VA | 4.5VA | 5.0VA | 3.0W | 3.0W |
| Protection | IP65(DIN40050) | | | | |
| Temperature classification | B Class | | | | |
| Electrical entry | Terminal, Grommet | | | | |
| Activating time | 0.05 sec and below | | | | |
| Max. frequency [Note 1] | 10 cycle/sec | | | | |

[Note 1] The maximum actuation frequency is in the no-load state.

## Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. No need to add oil for lubrication.
3. Several valves can be installed integrately to save installation space.
4. Affiliated manual devices are equipped to facilitate installation and debugging.
5. Several standard voltage grades are optional.

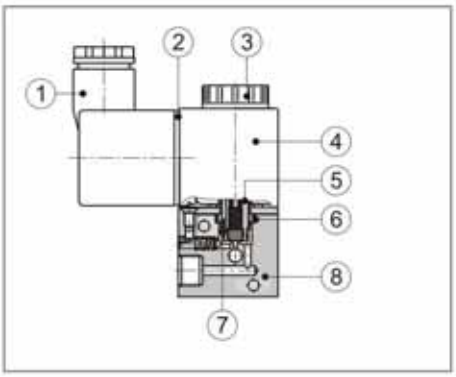
## Ordering code

3V 1 06 A □ □

1 2 3 4 5 6

| 1 Model | 2 Code | 3 Port size | 4 Standard voltage | 5 Electrical entry | 6 Thread type |
|---|---|---|---|---|---|
| 3V: Solenoid valve (3/2 way) | 1: 1 Series | M5: M5 | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | No this code |
| | | 06: 1/8" | | | Blank: PT<br>G: G<br>T: NPT |

## Inner structure




| No. | Item | No. | Item |
|---|---|---|---|
| 1 | Connector | 5 | Armature |
| 2 | Gasket | 6 | O-ring |
| 3 | Coil nut | 7 | Return spring |
| 4 | Coil | 8 | Body |

# Solenoid valve(3/2 way)

## 3V2 Series

## Specification

| Model | | 3V206 | 3V208 |
|---|---|---|---|
| Fluid | | Air(to be filtered by 40μm filter element) | |
| Acting | | Direct acting | |
| Port size [Note1] | | 1/8" | 1/4" |
| Valve type | | 3 port 2 position | |
| Orifice size | | 3.2mm²(Cv=0.18) | 3.4mm²(Cv=0.19) |
| Lubrication | | Not required | |
| Operating pressure | Common | 0~0.8MPa(0~114psi) | |
| | vacuum | -102.2kPa~0.1MPa(-1.45~14.2psi) | |
| Proof pressure | | 1.2MPa(175psi) | |
| Temperature | | -20~70℃ | |
| Material of body | | Aluminum alloy | |

[Note1] PT thread, G thread and NPT thread are available.

## Symbol


## Coil specification

| Item | Specification |
|---|---|
| Standard voltage | AC220V、AC110V、AC24V、DC24V、DC12V |
| Scope of voltage | AC: ±15% DC: ±10% |
| Power consumption | AC: 7VA DC: 7.0W |
| Protection | IP65(DIN40050) |
| Temperature classification | B Class |
| Electrical entry | Terminal, Grommet |
| Activating time | 0.05 sec and below |
| Max. frequency [Note1] | 10 cycle/sec |

[Note1] The maximum actuation frequency is in the no-load state.

## Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. Normally closed and normally open types are optional.
3. Structure in coaxial blanking mode: leakage proof and large air flow.
4. No need to add oil for lubrication.
5. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Several standard voltage grades are optional.
7. Can be used under vacuum condition.

## Ordering code

### Ordering code of solenoid valve

3V 2 08 NC A □ □

1 2 3 4 5 6 7

| ①Model | ②Code | ③Port size | ④Acting type | ⑤Standard voltage | ⑥Electrical entry | ⑦Thread type |
|---|---|---|---|---|---|---|
| 3V: Solenoid valve(3/2 way) | 2: 2 Series | 06: 1/8"<br>08: 1/4" | NC: Normally closed<br>NO: Normally opened | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | Blank: PT<br>G: G<br>T: NPT |

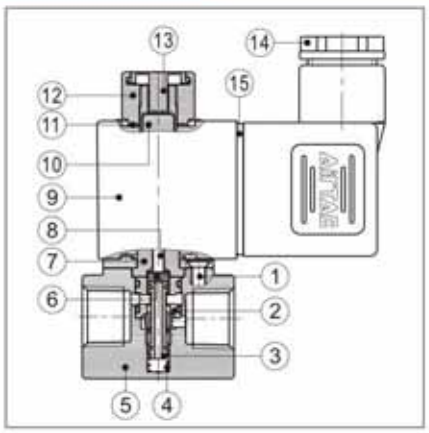
### Ordering code of accessories

F-3V2 FA

1 2 3

| ①Accessories code | ②Valve type | ③Accessories type |
|---|---|---|
| F: Mounting accessories | 3V2: Solenoid valve(3/2 way) | FA: FA Bracket |

## Inner structure




| No. | Item | No. | Item |
|---|---|---|---|
| 1 | Pilot screw | 9 | Coil |
| 2 | Spacer | 10 | Armature |
| 3 | Spool | 11 | Washer |
| 4 | Spring | 12 | Coil nut |
| 5 | Body | 13 | Manual button |
| 6 | Washer | 14 | Connector |
| 7 | Electromagnet set | 15 | Gasket |
| 8 | Man drill | | |

# Solenoid valve(3/2 way)

## 3V2M Series

## Specification

| Model | 3V2M |
|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) |
| Acting | Direct acting |
| Port size [Note1] | 1/8" |
| Valve type | 3 port 2 position |
| Orifice size | 1.7mm²(Cv=0.1) |
| Exhaust type | Centralized exhaust, Separated exhaust |
| Operating pressure | 0~0.8MPa(0~114psi) |
| Proof pressure | 1.2MPa(175psi) |
| Temperature | -20~70℃ |
| Material of body | Aluminum alloy |

[Note1] PT thread, G thread and NPT thread are available.

## Symbol


## Coil specification

| Item | specification |
|---|---|
| Standard voltage | AC220V、AC110V、AC24V、DC24V、DC12V |
| Scope of voltage | AC: ±15% DC: ±10% |
| Power consumption | AC: 7VA DC: 7.0W |
| Protection | IP65(DIN40050) |
| Temperature classification | B Class |
| Electrical entry | Terminal, Grommet |
| Activating time | 0.05 sec and below |
| Max. frequency [Note1] | 10 cycle/sec |

[Note1] The maximum actuation frequency is in the no-load state.

## Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. Normally closed and normally open types are optional.
3. Structure in coaxial blanking mode: leakage proof and large air flow.
4. No need to add oil for lubrication.
5. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Valve needs to be used with the sub-base and allows various connection combinations to save space.
7. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
8. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.
9. Can adjust the installation direction of special sub-base seal for NO or NC functions.

## Ordering code

### Ordering code for valve

3V2M NC A □

| ① Model | ② Acting type | ③ Standard voltage | ④ Electrical entry |
|---|---|---|---|
| 3V2M: Solenoid valve(3/2 way, with manifold) | NC: Normally closed<br>NO: Normally opened | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet |

### Ordering code for manifold

3V2M 5F D □

| ① Model | ② Number of stations | ③ Exhaust type | ④ Thread type |
|---|---|---|---|
| 3V2M: Solenoid valve(3/2 way, with manifold) | 1F: 1 Stations<br>2F: 2 Stations<br>.....<br>20F: 20 Stations | Blank: Centralized exhaust<br>D: Separated exhaust | Blank: PT<br>G: G<br>T: NPT |

[Note]: Manifold kits contains manifold, seal and screw. The port size is only 1/8".

### Ordering code for valve's group(valve+manifold)

3V2M NC A □ - 5F D □

| ① Model | ② Acting type | ③ Standard voltage | ④ Electrical entry | ⑤ Number of stations | ⑥ Exhaust type | ⑦ Thread type |
|---|---|---|---|---|---|---|
| 3V2M: Solenoid valve (3/2 way, with manifold) | NC: Normally closed<br>NO: Normally opened | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | 1F: 1 Station<br>2F: 2 Stations<br>3F: 3 Stations<br>.....<br>20F: 20 Stations | Blank: Centralized exhaust<br>D: Separated exhaust | Blank: PT<br>G: G<br>T: NPT |

### Ordering code for blank plate

P-3V2M-R2

| ① Subassembly type | ② Valve type | ③ Accessories type |
|---|---|---|
| P: subassembly | 3V2M: Solenoid valve(3/2 way, with manifold) | R2: Blank plate for manifold |

[Note]: Blank plate kits contains blank plate and screw.

# Solenoid valve(3/2 way)

## 3V3 Series

## Specification

| Model | | 3V308 |
|---|---|---|
| Fluid | | Air(to be filtered by 40 μ m filter element) |
| Acting | | Direct acting |
| Port size [Note1] | | 1/4" |
| Valve type | | 3 port 2 position |
| Orifice size | | 11mm²(Cv=0.62) |
| Lubrication | | Not required |
| Operating pressure | Common | 0~0.8MPa(0~114psi) |
| | vacuum | -102.2kPa~0.1MPa(-1.45~14.2psi) |
| Proof pressure | | 1.2MPa(175psi) |
| Temperature | | -20~70℃ |
| Material of body | | Aluminum alloy |

[Note1] PT thread, G thread and NPT thread are available.

## Symbol


## Coil specification

| Item | specification |
|---|---|
| Standard voltage | AC220V、AC110V、AC24V、DC24V、DC12V |
| Scope of voltage | AC: ±15% DC: ±10% |
| Power consumption | AC: 10VA DC: 6.5W |
| Protection | IP65(DIN40050) |
| Temperature classification | B Class |
| Electrical entry | Terminal, Grommet |
| Activating time | 0.05 sec and below |
| Max. frequency [Note1] | 10 cycle/sec |

[Note1] The maximum actuation frequency is in the no-load state.

## Product feature

1. Direct acting type and normally closed mode, flexible in direction change.
2. Normally closed and normally open types are optional.
3. Structure in coaxial blanking mode: leakage proof and large air flow.
4. No need to add oil for lubrication.
5. Affiliated manual devices are equipped to facilitate installation and debugging.
6. Several standard voltage grades are optional.
7. Can be used under vacuum condition.

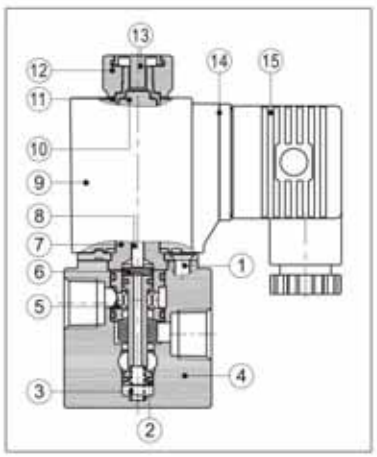
## Ordering code

3V 3 08 NC A □ □

1 2 3 4 5 6 7

| ①Model | ②Code | ③Port size | ④Acting type | ⑤Standard voltage | ⑥Electrical entry | ⑦Thread type |
|---|---|---|---|---|---|---|
| 3V: Solenoid valve (3/2 way) | 3: 3 Series | 08: 1/4" | NC: Normally closed<br>NO: Normally opened | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | Blank: PT<br>G: G<br>T: NPT |

## Inner structure




| No. | Item | No. | Item |
|---|---|---|---|
| 1 | Pilot screw | 9 | Coil |
| 2 | Spool | 10 | Armature |
| 3 | Spring | 11 | Washer |
| 4 | Body | 12 | Coil nut |
| 5 | Washer | 13 | Manual button |
| 6 | Spacer | 14 | Gasket |
| 7 | Electromagnet set | 15 | Connector |
| 8 | Man drill | | |

# Solenoid valve(3/2 way)

## 3V100 Series

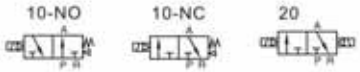
## Specification

| Model | 3V110-M5 | 3V120-M5 | 3V110-06 | 3V120-06 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40μm filter element) | | | |
| Acting | Internal pilot or external pilot | | | |
| Port size [Note1] | M5 | | 1/8" | |
| Orifice size | 5.5mm²(Cv=0.31) | | 12.0mm²(Cv=0.67) | |
| Valve type | 3 port 2 position | | | |
| Lubrication [Note2] | Not required | | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |

[Note 1] PT thread, G thread and NPT thread are available.

[Note 2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

## Symbol




## Product feature

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Affiliated manual devices are equipped to facilitate installation and debugging.
7. Several standard voltage grades are optional.
8. Integrate with the manifold to save installation space.

## Coil specification

| Item | specification | | | | |
|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | |
| Power consumption | 3.5VA | 3.5VA | 4.0VA | 2.5W | 2.5W |
| Protection | IP65(DIN40050) | | | | |
| Temperature classification | B Class | | | | |
| Electrical entry | Terminal, Grommet | | | | |
| Activating time | 0.05 sec and below | | | | |
| Max. frequency [Note 1] | 5 cycle/sec | | | | |

[Note 1] The maximum actuation frequency is in the no-load state.

## Ordering code

3V 1 10 06 NO A □ □ – W

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

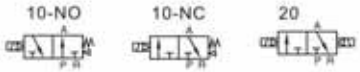
| ①Model | ②Code | ③Valve type | ④Port size | ⑤Acting type | ⑥Standard voltage | ⑦Electrical entry | ⑧Thread type | | ⑨Pilot type |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | M5 | 1/8" | Blank: Internal pilot |
| 3V:Solenoid valve (3/2 way) | 1: 100 Series | 10: Single solenoid | M5: M5<br>06: 1/8" | NC: Normally closed<br>NO: Normally opened | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | No this code | Blank: PT<br>G: G<br>T: NPT | Without M5 thread hole |
| | | 20: Double solenoid | | No this code | | | | | W: External pilot<br>With M5 thread hole |

Please refer to 57 for manifold specification and the order way.

# Solenoid valve(3/2 way)

## 3V200 Series

## Symbol




## Specification

| Model | 3V210-06 | 3V220-06 | 3V210-08 | 3V220-08 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Internal pilot or external pilot | | | |
| Port size [Note 1] | In=Out=1/8" | | In=Out=1/4" | |
| Orifice size | 14.0mm²(Cv=0.78) | | 16.0mm²(Cv=0.89) | |
| Valve type | 3 port 2 position | | | |
| Lubrication [Note 2] | Not required | | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |

[Note 1] PT thread, G thread and NPT thread are available.
[Note 2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

## Product feature

1. Pilot-oriented mode:Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Affiliated manual devices are equipped to facilitate installation and debugging.
7. Several standard voltage grades are optional.
8. Integrate with the manifold to save installation space.

## Coil specification

| Item | specification | | | | |
|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | |
| Power consumption | 4.5VA | 4.5VA | 5.0VA | 3.0W | 3.0W |
| Protection | IP65(DIN40050) | | | | |
| Temperature classification | B Class | | | | |
| Electrical entry | Terminal, Grommet | | | | |
| Activating time | 0.05 sec and below | | | | |
| Max. frequency [Note1] | 5 cycle/sec | | | | |

[Note 1] The maximum actuation frequency is in the no-load state.

## Ordering code

3V 2 10 08 NO A □ □ – W

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

| ①Model | ②Code | ③Valve type | ④Port size | ⑤Acting type | ⑥Standard voltage | ⑦Electrical entry | ⑧Thread type | ⑨Pilot type |
|---|---|---|---|---|---|---|---|---|
| 3V:Solenoid valve (3/2 way) | 2: 200 Series | 10: Single solenoid | 06: 1/8"<br>08: 1/4" | NC: Normally closed<br>NO: Normally opened | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | Blank: PT<br>G: G<br>T: NPT | Blank: Internal pilot<br>Without M5 thread hole<br>W: External pilot<br>With M5 thread hole |
| | | 20: Double solenoid | | No this code | | | | |

Please refer to 57 for manifold specification and the order way.

# Solenoid valve(3/2 way)

## 3V300 Series

## Specification

| Model | 3V310-08 | 3V320-08 | 3V310-10 | 3V320-10 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Internal pilot or external pilot | | | |
| Port size [Note 1] | In=Out=1/4" | | In=Out=3/8" | |
| Orifice size | 25.0mm²(Cv=1.39) | | 30.0mm²(Cv=1.67) | |
| Valve type | 3 port 2 position | | | |
| Lubrication [Note2] | Not required | | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

## Symbol


## Product feature

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Affiliated manual devices are equipped to facilitate installation and debugging.
7. Several standard voltage grades are optional.
8. Integrate with the manifold to save installation space.

## Coil specification

| Item | specification | | | | |
|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | |
| Power consumption | 4.5VA | 4.5VA | 5.0VA | 3.0W | 3.0W |
| Protection | IP65(DIN40050) | | | | |
| Temperature classification | B Class | | | | |
| Electrical entry | Terminal, Grommet | | | | |
| Activating time | 0.05 sec and below | | | | |
| Max. frequency [Note1] | 5 cycle/sec | | | | |

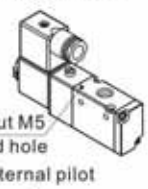
[Note1] The maximum actuation frequency is in the no-load state.

## Ordering code

3V 3 10 10 NO A □ □ – W

1 2 3 4 5 6 7 8 9

| ① Model | ② Code | ③ Valve type | ④ Port size | ⑤ Acting type | ⑥ Standard voltage | ⑦ Electrical entry | ⑧ Thread type | ⑨ Pilot type |
|---|---|---|---|---|---|---|---|---|
| 3V: Solenoid valve (3/2 way) | 3: 300 Series | 10: Single solenoid<br>20: Double solenoid | 08: 1/4"<br>10: 3/8" | NC: Normally closed<br>NO: Normally opened<br>No this code | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | Blank: PT<br>G: G<br>T: NPT | Blank: Internal pilot<br>W: External pilot |



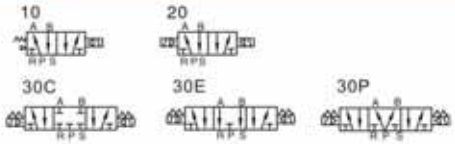


Please refer to 57 for manifold specification and the order way.

# Solenoid valve(5/2 way,5/3 way)

## 4V100 Series

## Symbol




## Specification

| Model | 4V110-M5<br>4V120-M5 | 4V130C-M5<br>4V130E-M5<br>4V130P-M5 | 4V110-06<br>4V120-06 | 4V130C-06<br>4V130E-06<br>4V130P-06 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Internal pilot or external pilot | | | |
| Port size [Note1] | In=Out=M5 | | In=Out=1/8" | |
| Orifice size | 5.5mm² (Cv=0.31) | 5.0mm² (Cv=0.28) | 12.0mm² (Cv=0.67) | 9.0mm² (Cv=0.50) |
| Valve type | 5 port 2 position | 5 port 3 position | 5 port 2 position | 5 port 3 position |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Lubrication [Note2] | Not required | | | |
| Max.frequency [Note3] | 5 cycle/sec | 3cycle/sec | 5 cycle/sec | 3 cycle/sec |
| Weight (g) | 4V110-M5:120<br>4V120-M5:175 | 200 | 4V110-06:120<br>4V120-06:175 | 200 |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

## Product feature

1. Pilot-oriented mode: Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction .
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

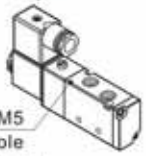
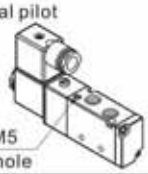
## Coil specification

| Item | specification | | | | |
|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | |
| Power consumption | 3.5VA | 3.5VA | 4.0VA | 2.5W | 2.5W |
| Protection | IP65(DIN40050) | | | | |
| Temperature classification | B Class | | | | |
| Electrical entry | Terminal, Grommet | | | | |
| Activating time | 0.05 sec and below | | | | |

## Ordering code

4V 1 10 06 A □ □ – W

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

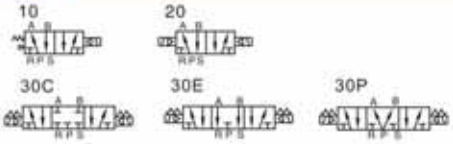
| ①Model | ②Code | ③Valve type | ④Port size | ⑤Voltage | ⑥Electrical entry | ⑦Thread type | ⑧Pilot type |
|---|---|---|---|---|---|---|---|
| 4V: Solenoid valve (5/2, 5/3 way) | 1: 100 Series | 10: Single solenoid 5/2 way<br>20: Double solenoid 5/2 way<br>30C: Double solenoid 5/3 way closed center<br>30E: Double solenoid 5/3 way exhaust center<br>30P: Double solenoid 5/3 way pressure center | M5: M5<br>06: 1/8" | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | No this code<br>Blank: PT<br>G: G<br>T: NPT | Blank: Internal pilot<br>  <br>Without M5 thread hole<br>W: External pilot<br>  <br>With M5 thread hole |

Please refer to 58 for manifold specification and the order way.

# Solenoid valve(5/2 way,5/3 way)

## 4V200 Series

## Symbol




## specification

| Model | 4V210-06<br>4V220-06 | 4V230C-06<br>4V230E-06<br>4V230P-06 | 4V210-08<br>4V220-08 | 4V230C-08<br>4V230E-08<br>4V230P-08 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Internal pilot or external pilot | | | |
| Port size [Note1] | In=Out=Exhaust=1/8" | | In=Out=1/4" Exhaust=1/8" | |
| Orifice size | 14.0mm² (Cv=0.78) | 12.0mm² (Cv=0.67) | 16.0mm² (Cv=0.89) | 12.0mm² (Cv=0.67) |
| Valve type | 5 port 2 position | 5 port 3 position | 5 port 2 position | 5 port 3 position |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Operating pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Lubrication [Note2] | Not required | | | |
| Max. frequency [Note3] | 5 cycle/sec | 3 cycle/sec | 5 cycle/sec | 3 cycle/sec |
| Weight (g) | 4V210-06:220<br>4V220-06:320 | 360 | 4V210-08:220<br>4V220-08:320 | 360 |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

## Product feature

1. Pilot-oriented mode:Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

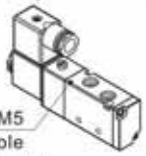
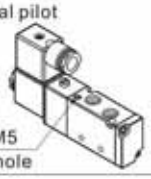
## Coil specification

| Item | specification | | | | |
|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | |
| Power consumption | 4.5VA | 4.5VA | 5.0VA | 3.0W | 3.0W |
| Protection | IP65(DIN40050) | | | | |
| Temperature classification | B Class | | | | |
| Electrical entry | Terminal, Grommet | | | | |
| Activating time | 0.05 sec and below | | | | |

## Ordering code

4V 2 10 08 A □ □ - W

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

| ①Model | ②Code | ③Valve type | ④Port size | ⑤Voltage | ⑥Electrical entry | ⑦Thread type | ⑧Pilot type |
|---|---|---|---|---|---|---|---|
| 4V: Solenoid valve (5/2, 5/3 way) | 2: 200 Series | 10: Single solenoid 5/2 way<br>20: Double solenoid 5/2 way<br>30C: Double solenoid 5/3 way closed center<br>30E: Double solenoid 5/3 way exhaust center<br>30P: Double solenoid 5/3 way pressure center | 06: 1/8"<br>08: 1/4" | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | Blank: PT<br>G: G<br>T: NPT | Blank: Internal pilot<br>  <br>Without M5 thread hole<br>W: External pilot<br>  <br>With M5 thread hole |

Please refer to 58 for manifold specification and the order way.

# Solenoid valve(5/2 way,5/3 way)

## 4V300 Series

## Specification

| Model | 4V310-08<br>4V320-08 | 4V330C-08<br>4V330E-08<br>4V330P-08 | 4V310-10<br>4V320-10 | 4V330C-10<br>4V330E-10<br>4V330P-10 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Internal pilot or external pilot | | | |
| Port size [Note1] | In=Out=Exhaust=1/4" | | In=Out=3/8" Exhaust=1/4" | |
| Orifice size | 25.0mm² (Cv=1.40) | 18.0mm² (Cv=1.00) | 30.0mm² (Cv=1.68) | 18.0mm² (Cv=1.00) |
| Valve type | 5 port 2 position | 5 port 3 position | 5 port 2 position | 5 port 3 position |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Lubrication [Note2] | Not required | | | |
| Max.frequency [Note3] | 4 cycle/sec | 3 cycle/sec | 4 cycle/sec | 3 cycle/sec |
| Weight (g) | 4V310-08:310<br>4V320-08:400 | 450 | 4V310-10:310<br>4V320-10:400 | 450 |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

## Symbol


## Product feature

1. Pilot-oriented mode:Internal pilot or external pilot.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Three position solenoid valves have three kinds of central function for your choice.
4. Double control solenoid valves have memory function.
5. Internal hole adopts special processing technology which has littleattrition friction, low start pressure and long service life.
6. No need to add oil for lubrication.
7. It is available to form integrated valve group with the base to save installation space.
8. Affiliated manual devices are equipped to facilitate installation and debugging.
9. Several standard voltage grades are optional.

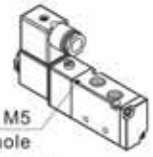
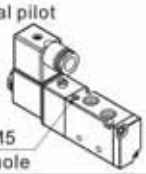
## Coil specification

| Item | specification | | | | |
|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | |
| Power consumption | 4.5VA | 4.5VA | 5.0VA | 3.0W | 3.0W |
| Protection | IP65(DIN40050) | | | | |
| Temperature classification | B Class | | | | |
| Electrical entry | Terminal, Grommet | | | | |
| Activating time | 0.05 sec and below | | | | |

## Ordering code

4V 3 10 10 A □ □ – W

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

| ①Model | ②Code | ③Valve type | ④Port size | ⑤Voltage | ⑥Electrical entry | ⑦Thread type | ⑧Pilot type |
|---|---|---|---|---|---|---|---|
| 4V: Solenoid valve (5/2, 5/3 way) | 3: 300 Series | 10: Single solenoid 5/2 way<br>20: Double solenoid 5/2 way<br>30C: Double solenoid 5/3 way closed center<br>30E: Double solenoid 5/3 way exhaust center<br>30P: Double solenoid 5/3 way pressure center | 08: 1/4"<br>10: 3/8" | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | Blank: PT<br>G: G<br>T: NPT | Blank: Internal pilot<br>  <br>Without M5 thread hole<br>W: External pilot<br>  <br>With M5 thread hole |

Please refer to 58 for manifold specification and the order way.

# Solenoid valve(5/2 way)

## 4M(NAMUR) Series

## Symbol


## Product feature

1. Internally piloted structure.
2. Structure in sliding column mode: good tightness and sensitive reaction.
3. Double control solenoid valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Install in the side plate with the surface upward, which can be used by directly connecting with the actuators.
7. Affiliated manual devices are equipped to facilitate installation and debugging.
8. Several standard voltage grades are optional.

## Flow chart

Please refer to the same types of 4V series solenoid valves.

## Specification

| Model | 4M110-M5<br>4M120-M5 | 4M110-06<br>4M120-06 | 4M210-06<br>4M220-06 | 4M210-08<br>4M220-08 | 4M310-08<br>4M320-08 | 4M310-10<br>4M320-10 |
|---|---|---|---|---|---|---|
| Fluid | Air(to be filtered by 40μm filter element) | | | | | |
| Acting | Internal pilot | | | | | |
| Port size [Note1] | In=Out=M5 | In=Out =1/8" | In=Out =1/8" | In=1/4" Out=1/8" | In=Out =1/4" | In=3/8" Out=1/4" |
| Orifice size | 5.5mm² (Cv=0.31) | 12.0mm² (Cv=0.67) | 14.0mm² (Cv=0.78) | 16.0mm² (Cv=0.89) | 25.0mm² (Cv=1.40) | 30.0mm² (Cv=1.68) |
| Valve type | 5 port 2 position | | | | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | | | |
| Proof pressure | 1.2MPa(175psi) | | | | | |
| Temperature | -20~70℃ | | | | | |
| Material of body | Aluminum alloy | | | | | |
| Lubrication [Note2] | Not required | | | | | |
| Max.frequency[Note3] | 5 cycle/sec | | | | 4 cycle/sec | |
| Weight (g) | 4M110:120 | 4M120:175 | 4M210:220 | 4M220:320 | 4M310:310 | 4M320:400 |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

## Coil specification

| Item | 4M110 4M120 | | | | | 4M210 4M220 4M310 4M320 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Standard voltage | AC220V | AC110V | AC24V | DC24V | DC12V | AC220V | AC110V | AC24V | DC24V | DC12V |
| Scope of voltage | AC: ±15% DC: ±10% | | | | | | | | | |
| Power consumption | 3.5VA | 3.5VA | 4.0VA | 2.5W | 2.5W | 4.5VA | 4.5VA | 5.0VA | 3.0W | 3.0W |
| Protection | IP65(DIN40050) | | | | | | | | | |
| Temperature classification | B Class | | | | | | | | | |
| Electrical entry | Terminal, Grommet | | | | | | | | | |
| Activating time | 0.05 sec and below | | | | | | | | | |

## Ordering code

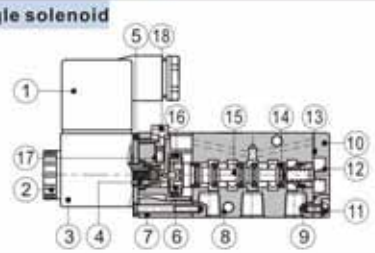
4M 3 10 10 A □ □

1 2 3 4 5 6 7

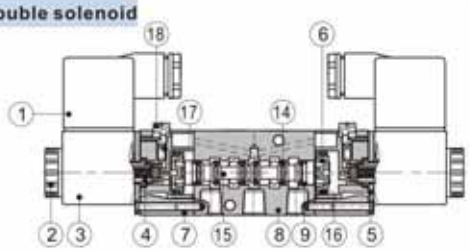
| ① Model | ② Code | ③ Valve type | ④ Port size | ⑤ Voltage | ⑥ Electrical entry | ⑦ Thread type |
|---|---|---|---|---|---|---|
| 4M: Solenoid valve (5/2 way NAMUR type) | 1: 100 Series | 10: Single solenoid<br>20: Double solenoid | M5: M5<br>06: 1/8" | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V | Blank: Terminal<br>I: Grommet | No this code |
| | 2: 200 Series | | 06: 1/8"<br>08: 1/4" | | | Blank: PT<br>G: G<br>T: NPT |
| | 3: 300 Series | | 08: 1/4"<br>10: 3/8" | | | |

## Inner structure

Single solenoid




Double solenoid




| No. | Item | No. | Item |
|---|---|---|---|
| 1 | Connector | 10 | Bottom cover |
| 2 | Coil net | 11 | Fixed screw |
| 3 | Coil | 12 | Spool spring |
| 4 | Armature | 13 | Bottom cover gasket |
| 5 | Fixed plate | 14 | Spool O-ring |
| 6 | Piston | 15 | Spool |
| 7 | Pilot kit | 16 | Piston O-ring |
| 8 | Body | 17 | Override spring |
| 9 | Wear ring | 18 | Manual override |

# Solenoid valve(Accessories)

## Manifold

### Specification

| Item\Manifold Model | 100M | 200M | 300M |
|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | |
| Temperature | -20~70℃ | | |
| Adaptable valve's series | 3V100 Series | 3V200 Series | 3V300 Series |

### Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

### Ordering code

**Ordering code for manifold**

3V100M 5F □

① ② ③

| ①Model | ②Number of stations | ③Thread type |
|---|---|---|
| 3V100M: 100 Series manifold<br>3V200M: 200 Series manifold<br>3V300M: 300 Series manifold | 1F: 1 station<br>2F: 2 station<br>3F: 3 station<br>.....<br>16F: 16 station | Blank: PT<br>G: G<br>T: NPT |

**Ordering code for blank plate**

P-3V100M-R2

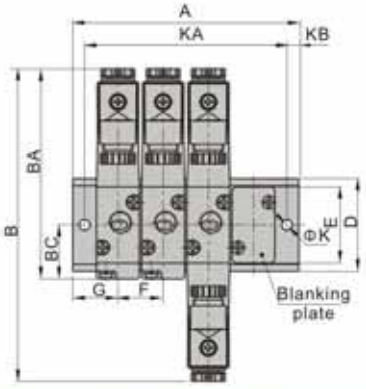
① ② ③

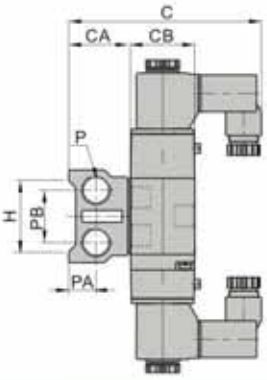
| ①Kits | ②Model | ③Code |
|---|---|---|
| P: Kits | 3V100M: 100Series manifold<br>3V200M: 200Series manifold<br>3V300M: 300Series manifold | R2: Blank plate for manifold |

[Note] 1. Ordering code contains the two parts of the manifold' s and the blank plate' s;
2. Manifold kits contains manifold, seal and screw;
3. Blank plate kits contains blank plate and screw.

### Dimensions

**With 3V solenoid valve**




| Model\Item | B | BA | BC | C | CA | CB | D | E | F | G | H | K | KB | P | PA | PB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3V100M | 131.5 | 88.5 | 22.7 | 81 | 26 | 27 | 39 | 32 | 19 | 19 | 30 | 4.5 | 5 | 1/4" | 11.5 | 22 |
| 3V200M | 162.5 | 109 | 27.7 | 92.5 | 26 | 35 | 45 | 40 | 23 | 23 | 35 | 4.5 | 6 | 1/4" | 11.5 | 25 |
| 3V300M | 175 | 120 | 32.5 | 99 | 30 | 40 | 52 | 47 | 28 | 27 | 42 | 4.5 | 6 | 3/8" | 13.5 | 28 |

| Model\Item | A | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1F | 2F | 3F | 4F | 5F | 6F | 7F | 8F | 9F | 10F | 11F | 12F | 13F | 14F | 15F | 16F |
| 3V100M | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 | 209 | 228 | 247 | 266 | 285 | 304 | 323 |
| 3V200M | 46 | 69 | 92 | 115 | 138 | 161 | 184 | 207 | 230 | 253 | 276 | 299 | 322 | 345 | 368 | 391 |
| 3V300M | 54 | 82 | 110 | 138 | 166 | 194 | 222 | 250 | 278 | 306 | 334 | 362 | 390 | 418 | 446 | 474 |

| Model\Item | KA | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1F | 2F | 3F | 4F | 5F | 6F | 7F | 8F | 9F | 10F | 11F | 12F | 13F | 14F | 15F | 16F |
| 3V100M | 28 | 47 | 66 | 85 | 104 | 123 | 142 | 161 | 180 | 199 | 218 | 237 | 256 | 275 | 294 | 313 |
| 3V200M | 34 | 57 | 80 | 103 | 126 | 149 | 172 | 195 | 218 | 241 | 264 | 287 | 310 | 333 | 356 | 379 |
| 3V300M | 42 | 70 | 98 | 126 | 154 | 182 | 210 | 238 | 266 | 294 | 322 | 350 | 378 | 406 | 434 | 462 |

# Solenoid valve(Accessories)

## Manifold

### Specification

| Item\Manifold Model | 100M | 200M | 300M | 400M |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Temperature | -20~70℃ | | | |
| Adaptable valve's series | 4V100 Series | 4V200 Series | 4V300 Series | 4V400 Series |

### Product feature

1. It is available to integrate the direction control valves of the same series to form valve group to save space and cost.
2. It is easy to examine when there are faults owning to the unified air intake and exhaust and unified wiring.
3. Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

### Ordering code

**Ordering code for manifold**

100M 5F □

| ① Model | ② Number of stations [Note1] | ③ Thread type |
|---|---|---|
| 100M:100 Series manifold<br>200M:200 Series manifold<br>300M:300 Series manifold<br>400M:400 Series manifold | 1F: 1 Station<br>2F: 2 Station<br>3F: 3 Station<br>.....<br>16F: 16 Station | Blank: PT<br>G: G<br>T: NPT |

**Ordering code for blank plate**

P-100M-R2

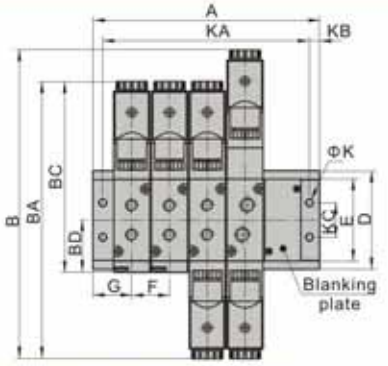
| ① Kits model | ② Model | ③ Code |
|---|---|---|
| P: Kits | 100M: 100 Series manifold<br>200M: 200 Series manifold<br>300M: 300 Series manifold<br>400M: 400 Series manifold | R2: Blank plate for manifold |

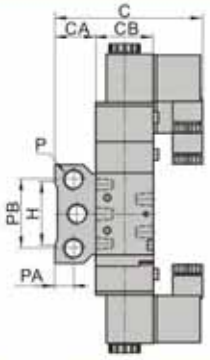
[Note1] 100M, 200M series have a maximum of 16 stations ; 300M series have a maximum of 12 stations; 400M series have a maximum of 8 stations.

[Note] 1. Ordering code contains the two parts of the manifold' s and the blank plate' s. 2. Manifold kits contains manifold, seal and screw;
3. Blank plate kits contains blank plate and screw。

### Dimensions

**With 4V solenoid valve**




| Model\Item | B | BA | BC | BD | C | CA | CB | D | E | F | G | H | K | KB | KC | P | PA | PB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100M□F | 154.5 | 142.5 | 99.5 | 28 | 79 | 26 | 27 | 58 | 43 | 19 | 19 | 36 | 4.5 | 5 | 20 | 1/4" | 12.5 | 40 |
| 200M□F | 189 | 171 | 117 | 31.7 | 93 | 27 | 35 | 61 | 51 | 23 | 23 | 38 | 4.5 | 6 | 21 | 1/4" | 13 | 43 |
| 300M□F | 208 | 190 | 135 | 40 | 99.5 | 31 | 40 | 75 | 65 | 28 | 27 | 54 | 4.5 | 6 | 26 | 3/8" | 15 | 53 |
| 400M□F | 243 | 223 | 168.5 | 57 | 112.5 | 39 | 50 | 104 | 94.5 | 35 | 31.5 | 75 | 5.5 | 7 | 32 | 1/2" | 19 | 68 |

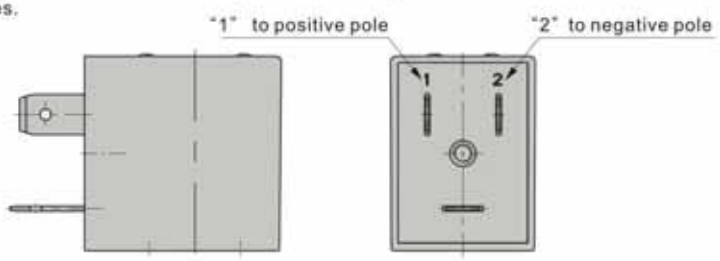
| Model\Item | A | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1F | 2F | 3F | 4F | 5F | 6F | 7F | 8F | 9F | 10F | 11F | 12F | 13F | 14F | 15F | 16F |
| 100M□F | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 | 209 | 228 | 247 | 266 | 285 | 304 | 323 |
| 200M□F | 46 | 69 | 92 | 115 | 138 | 161 | 184 | 207 | 230 | 253 | 276 | 299 | 322 | 345 | 368 | 391 |
| 300M□F | 54 | 82 | 110 | 138 | 166 | 194 | 222 | 250 | 278 | 306 | 334 | 362 | - | - | - | - |
| 400M□F | 63 | 98 | 133 | 168 | 203 | 238 | 273 | 308 | - | - | - | - | - | - | - | - |

| Model\Item | KA | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1F | 2F | 3F | 4F | 5F | 6F | 7F | 8F | 9F | 10F | 11F | 12F | 13F | 14F | 15F | 16F |
| 100M□F | 28 | 47 | 66 | 85 | 104 | 123 | 142 | 161 | 180 | 199 | 218 | 237 | 256 | 275 | 294 | 313 |
| 200M□F | 34 | 57 | 80 | 103 | 126 | 149 | 172 | 195 | 218 | 241 | 264 | 287 | 310 | 333 | 356 | 379 |
| 300M□F | 42 | 70 | 98 | 126 | 154 | 182 | 210 | 238 | 266 | 294 | 322 | 350 | - | - | - | - |
| 400M□F | 49 | 84 | 119 | 154 | 189 | 224 | 259 | 294 | - | - | - | - | - | - | - | - |

# Coil
## 080, 092 Series

### Attentions for block wiring

Coil terminal with DC specification has polar indicator lights, thus when wiring, notice positive and negative poles, "1" shall be connected topositive pole, "2" to negative pole. If the poles are connected inversely, the indicator lights will not shine but valve still actuates.



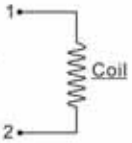
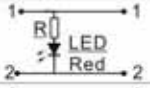
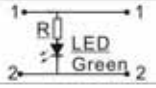
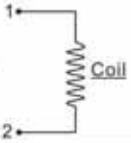

### Ordering code

CD A080 A

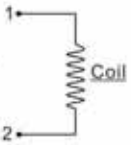
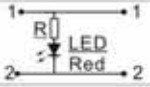
(1) (2) (3)

| 1 Coil type | 2 Coil's bore | 3 Voltage |
|---|---|---|
| CD: Terminal<br>CL: Grommet | A080: The first product of Φ8.0mm bore)<br>A092: The first product of Φ9.0mm bore) | A: AC220V<br>B: DC24V<br>C: AC110V<br>E: AC24V<br>F: DC12V |

### 080 Series

| Production series | Coil type | Voltage | Coil inside connection diagram | Connector type | Connector inside connection diagram | Memo |
|---|---|---|---|---|---|---|
| 3V100 Series<br>4V100 Series<br>4M100 Series | CDA080 Terminal | AC |  | PL1515T-P1 | - | Applied to CDA080 AC, DC type coil |
| | | | | PL1515T-P2 |  | Applied to CDA080 AC type coil |
| | CDA080 Terminal | DC | | PL1515T-P3 |  | Applied to CDA080 DC type coil |
| | CLA080 Grommet | AC |  | - | - | - |
| | CLA080 Grommet | DC | | - | - | - |

### 092 Series

| Production series | Coil type | Voltage | Coil inside connection diagram | Connector type | Connector inside connection diagram | Memo |
|---|---|---|---|---|---|---|
| 3V1 Series<br>3V200 Series<br>3V300 Series<br>4V200 Series<br>4V300 Series<br>4V400 Series<br>4M200 Series<br>4M300 Series<br>ESV200 Series<br>ESV300 Series<br>ESV400 Series<br>ESV600 Series | CDA092 Terminal | AC |  | 4V210-005-P1 | - | Applied to CDA092 AC,DC type coil |
| | | | | 4V210-005-P2 |  | Applied to CDA092 AC type coil |
| | CDA092 Terminal | DC | | 4V210-005-P3 |  | Applied to CDA092 DC type coil |
| | CLA092 Grommet | AC | | - | - | - |
| | CLA092 Grommet | DC | | - | - | - |

# Air valve( 3/2 way)

## 3A100 Series

## Specification

| Model | 3A110-M5 | 3A120-M5 | 3A110-06 | 3A120-06 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Exterior control | | | |
| Port size [Note1] | M5 | | 1/8" | |
| Orifice size | 5.5mm²(Cv=0.31) | | 12.0mm²(Cv=0.67) | |
| Valve type | 3 port 2 position | | | |
| Lubrication [Note2] | Not required | | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Max. frequency [Note3] | 5 cycle/sec | | | |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

## Symbol


## Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double air control valves have memory function.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. No need to add oil for lubrication.
5. Multi-mounting helps to install and apply.
6. Integrate with the manifold to save installation space.

## Ordering code

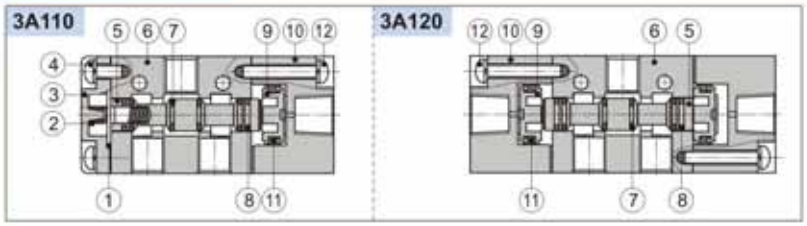
3A 1 10 06 NO □

(1) (2) (3) (4) (5) (6)

| 1 Model | 2 Code | 3 Valve type | 4 Port size | 5 Acting type | 6 Thread type | |
|---|---|---|---|---|---|---|
| 3A: Air Valve (3/2 way) | 1: 100 Series | 10: Single air control | M5: M5 06: 1/8" | NC: Normally close | M5 | 1/8" |
| | | | | NO: Normally open | No this code | Blank: PT G: G T: NPT |
| | | 20: Double air control | | No this code | | |

Please refer to 86 for manifold specification and the order way.

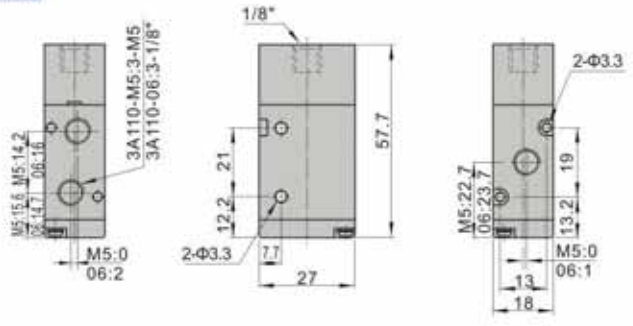
## Inner structure



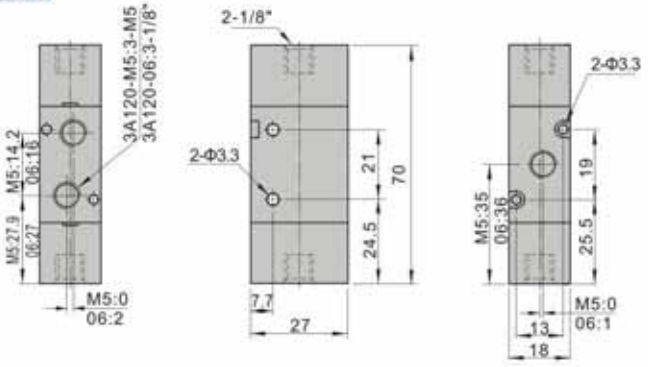

| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Bottom cover gasket | 5 | Spool | 9 | Piston |
| 2 | Spring | 6 | Body | 10 | Pilot body |
| 3 | Bottom cover | 7 | O-ring | 11 | Piston O-ring |
| 4 | Bottom cover screw | 8 | Wear ring | 12 | Piston screw |

## Dimension

### 3A110

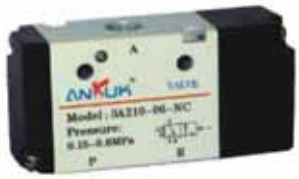



### 3A120



# Air valve( 3/2 way)

## 3A200 Series



## Specification

| Model | 3A210-06 | 3A220-06 | 3A210-08 | 3A220-08 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Exterior control | | | |
| Port size [Note1] | In=Out=1/8" | | In=Out=1/4" | |
| Orifice size | 14.0mm²(Cv=0.78) | | 16.0mm²(Cv=0.89) | |
| Valve type | 3 port 2 position | | | |
| Lubrication [Note2] | Not required | | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Max. frequency [Note3] | 5 cycle/sec | | | |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

## Symbol


## Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double air control valves have memory function.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. No need to add oil for lubrication.
5. Multi-mounting helps to install and apply.
6. Integrate with the manifold to save installation space.

## Ordering code

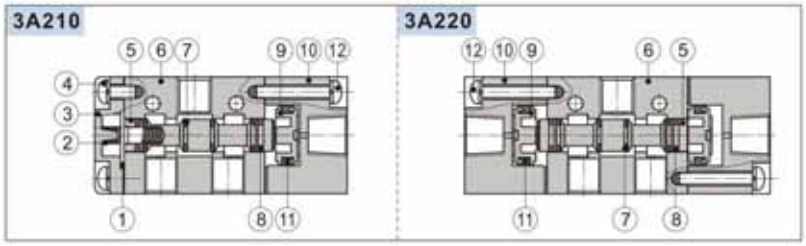
3A 2 10 08 NO □

1 2 3 4 5 6

| 1 Model | 2 Code | 3 Valve type | 4 Port size | 5 Acting type | 6 Thread type |
|---|---|---|---|---|---|
| 3A: Air Valve (3/2 way) | 2: 200 Series | 10: Single air control | 06: 1/8" 08: 1/4" | NC: Normally close NO: Normally open | Blank: PT G: G T: NPT |
| | | 20: Double air control | | No this code | |

Please refer to 86 for manifold specification and the order way.

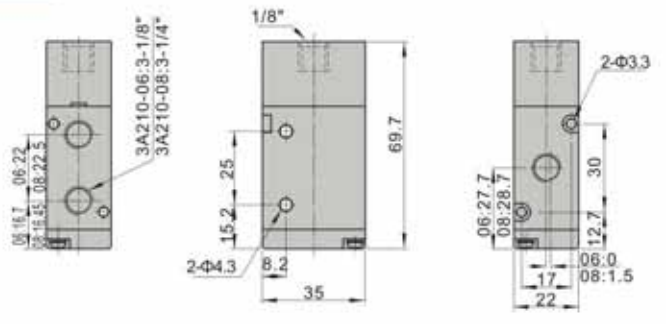
## Inner structure



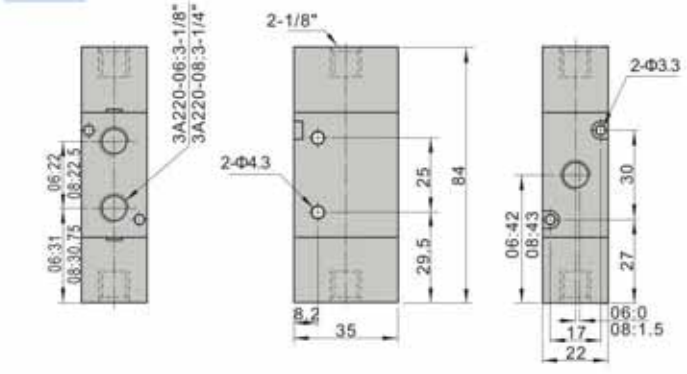

| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Bottom cover gasket | 5 | Spool | 9 | Piston |
| 2 | Spring | 6 | Body | 10 | Pilot body |
| 3 | Bottom cover | 7 | O-ring | 11 | Piston O-ring |
| 4 | Bottom cover screw | 8 | Wear ring | 12 | Piston screw |

## Dimension

3A210




3A220



# Air valve( 3/2 way)

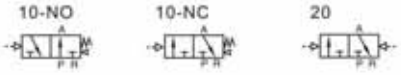
## 3A300 Series

## Specification

| Model | 3A310-08 | 3A320-08 | 3A310-10 | 3A320-10 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Exterior control | | | |
| Port size [Note1] | In=Out=1/4" | | In=Out=3/8" | |
| Orifice size | 25.0mm²(Cv=1.39) | | 30.0mm²(Cv=1.67) | |
| Valve type | 3 port 2 position | | | |
| Lubrication [Note2] | Not required | | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Max. frequency [Note3] | 5 cycle/sec | | | |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span.Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency is in the no-load state.

## Symbol




## Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double air control valves have memory function.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. No need to add oil for lubrication.
5. Multi-mounting helps to install and apply.
6. Integrate with the manifold to save installation space.

## Ordering code

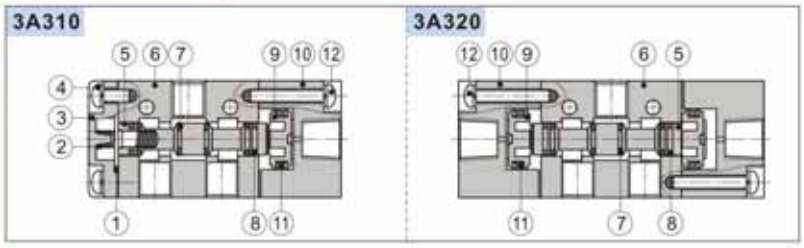
3A 3 10 10 NO □

1 2 3 4 5 6

| 1 Model | 2 Code | 3 Valve type | 4 Port size | 5 Acting type | 6 Thread type |
|---|---|---|---|---|---|
| 3A: Air Valve (3/2 way) | 3: 300 Series | 10: Single air control | 08: 1/4" 10: 3/8" | NC: Normally close NO: Normally open | Blank: PT G: G T: NPT |
| | | 20: Double air control | | No this code | |

Please refer to 86 for manifold specification and the order way.

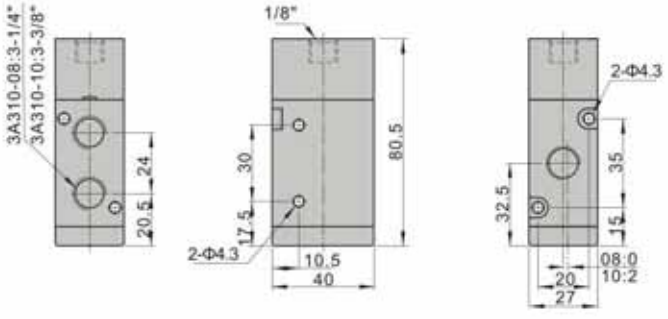
## Inner structure



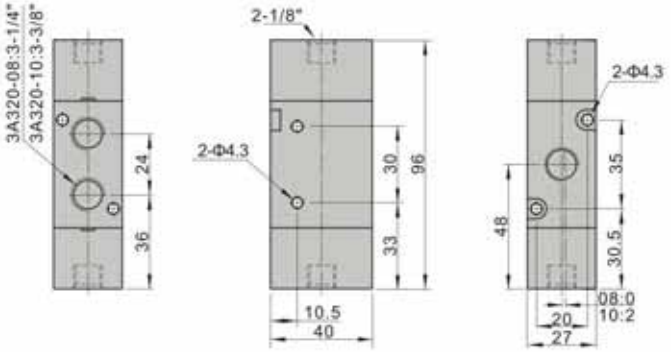

| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Bottom cover gasket | 5 | Spool | 9 | Piston |
| 2 | Spring | 6 | Body | 10 | Pilot body |
| 3 | Bottom cover | 7 | O-ring | 11 | Piston O-ring |
| 4 | Bottom cover screw | 8 | Wear ring | 12 | Piston screw |

## Dimension

### 3A310




### 3A320



# Air valve(5/2 way, 5/3 way)

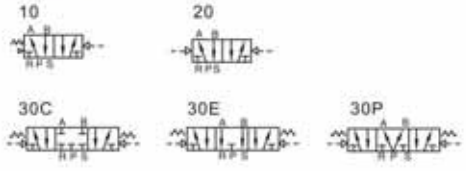
## 4A100 Series

## Specification

| Model | 4A110-M5<br>4A120-M5 | 4A130C-M5<br>4A130E-M5<br>4A130P-M5 | 4A110-06<br>4A120-06 | 4A130C-06<br>4A130E-06<br>4A130P-06 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Exterior control | | | |
| Port size [Note1] | In=Out=M5 | | In=Out=1/8" | |
| Orifice size | 5.5mm² (Cv=0.31) | 5.0mm² (Cv=0.28) | 12.0mm² (Cv=0.67) | 9.0mm² (Cv=0.50) |
| Valve type | 5 port 2 position | 5 port 3 position | 5 port 2 position | 5 port 3 position |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Lubrication [Note2] | Not required | | | |
| Max. frequency [Note3] | 5 cycle/sec | 3 cycle/sec | 5 cycle/sec | 3 cycle/sec |
| Weight (g) | 4A110-M5:85<br>4A120-M5:140 | 165 | 4A110-06:85<br>4A120-06:140 | 165 |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency of no-load state.

## Symbol




## Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

## Ordering code

4A 1 10 06 □

① ② ③ ④ ⑤

| ① Model | ② Code | ③ Valve type | ④ Port size | ⑤ Thread type |
|---|---|---|---|---|
| 4A: Air Valve(5/2, 5/3 way) | 1: 100 Series | 10: Single air control 5/2 way<br>20: Double air control 5/2 way<br>30C: Double air control 5/3 way closed center<br>30E: Double air control 5/3 way exhaust center<br>30P: Double air control 5/3 way pressure center | M5: M5 | No this code |
| | | | 06: 1/8" | Blank: PT<br>G: G<br>T: NPT |

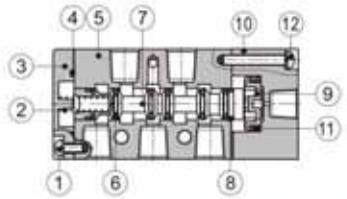
Please refer to 87 for manifold specification and the order way.

# Air valve(5/2 way, 5/3 way)

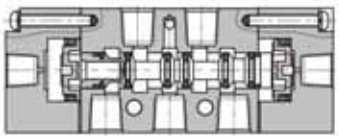
## 4A100 Series

### Inner structure

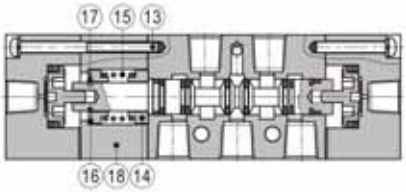
**4A110**




**4A120**



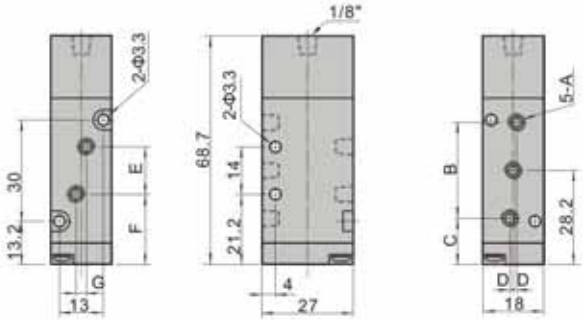
**4A130C**




| No. | Item | No. | Item | No. | Item | No. | Item | No. | Item | No. | Item | No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Screw | 3 | Bottom cover | 5 | Body | 7 | Spool | 9 | Piston | 11 | O-ring | 13 | Screw | 15 | Return Spring | 17 | E Clip |
| 2 | Spring | 4 | Bottom cover gasket | 6 | O-ring | 8 | Wear ring | 10 | Pilot body | 12 | Screw | 14 | Spring holder | 16 | Spring holder | 18 | Side cover |

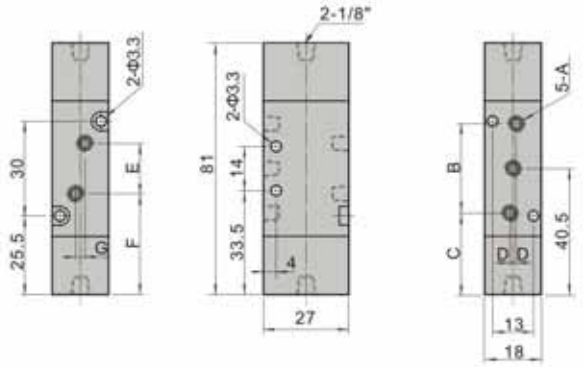
### Dimension

**4A110**



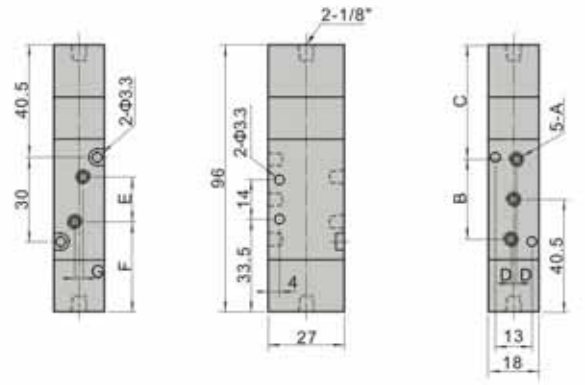

| Model\Item | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 4A110-M5 | M5x0.8 | 27 | 14.7 | 0 | 14 | 21.2 | 0 |
| 4A110-06 | 1/8" | 28 | 14.2 | 1 | 16 | 20.2 | 3 |

**4A120**




| Model\Item | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 4A120-M5 | M5x0.8 | 27 | 27 | 0 | 14 | 33.5 | 0 |
| 4A120-06 | 1/8" | 28 | 26.5 | 1 | 16 | 32.5 | 3 |

**4A130**




| Model\Item | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 4A130-M5 | M5x0.8 | 27 | 42 | 0 | 14 | 33.5 | 0 |
| 4A130-06 | 1/8" | 28 | 41.5 | 1 | 16 | 32.5 | 3 |

# Air valve(5/2 way, 5/3 way)

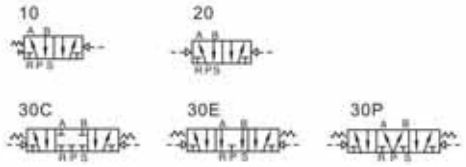
## 4A200 Series

## Specification

| Model | 4A210-06<br>4A220-06 | 4A230C-06<br>4A230E-06<br>4A230P-06 | 4A210-08<br>4A220-08 | 4A230C-08<br>4A230E-08<br>4A230P-08 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Exterior control | | | |
| Port size [Note1] | In=Out=Exhaust=1/8" | | In=Out=1/4" Exhaust=1/8" | |
| Orifice size | 14.0mm² (Cv=0.78) | 12.0mm² (Cv=0.67) | 16.0mm² (Cv=0.89) | 12.0mm² (Cv=0.67) |
| Valve type | 5 port 2 position | 5 port 3 position | 5 port 2 position | 5 port 3 position |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Lubrication [Note2] | Not required | | | |
| Max. frequency [Note3] | 5 cycle/sec | 3 cycle/sec | 5 cycle/sec | 3 cycle/sec |
| Weight (g) | 4A210-06:185<br>4A220-06:285 | 365 | 4A210-08:185<br>4A220-08:285 | 365 |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency of no-load state.

## Symbol




## Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

## Ordering code

4A 2 10 08 □

① ② ③ ④ ⑤

| ①Model | ②Code | ③Valve type | ④Port size | ⑤Thread type |
|---|---|---|---|---|
| 4A: Air Valve(5/2, 5/3 way) | 2: 200 Series | 10: Single air control 5/2 way<br>20: Double air control 5/2 way<br>30C: Double air control 5/3 way closed center<br>30E: Double air control 5/3 way exhaust center<br>30P: Double air control 5/3 way pressure center | 06: 1/8"<br>08: 1/4" | Blank: PT<br>G: G<br>T: NPT |

Please refer to 87 for manifold specification and the order way.

# Air valve(5/2 way, 5/3 way)

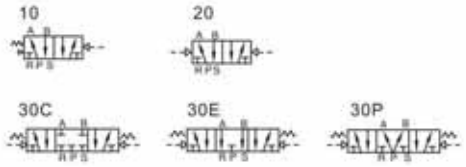
## 4A300 Series

## Specification

| Model | 4A310-08<br>4A320-08 | 4A330C-08<br>4A330E-08<br>4A330P-08 | 4A310-10<br>4A320-10 | 4A330C-10<br>4A330E-10<br>4A330P-10 |
|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | |
| Acting | Exterior control | | | |
| Port size [Note1] | In=Out=Exhaust=1/4" | | In=Out=3/8" Exhaust=1/4" | |
| Orifice size | 25.0mm² (Cv=1.40) | 18.0mm² (Cv=1.00) | 30.0mm² (Cv=1.68) | 18.0mm² (Cv=1.00) |
| Valve type | 5 port 2 position | 5 port 3 position | 5 port 2 position | 5 port 3 position |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | |
| Temperature | -20~70℃ | | | |
| Material of body | Aluminum alloy | | | |
| Lubrication [Note2] | Not required | | | |
| Max. frequency [Note3] | 4 cycle/sec | 3 cycle/sec | 4 cycle/sec | 3 cycle/sec |
| Weight (g) | 4A310-08:275<br>4A320-08:365 | 505 | 4A310-10:275<br>4A320-10:365 | 505 |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency of no-load state.

## Symbol




## Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

## Ordering code

4A 3 10 10 □

① ② ③ ④ ⑤

| ①Model | ②Code | ③Valve type | ④Port size | ⑤Thread type |
|---|---|---|---|---|
| 4A: Air Valve(5/2, 5/3 way) | 3: 300 Series | 10: Single air control 5/2 way<br>20: Double air control 5/2 way<br>30C: Double air control 5/3 way closed center<br>30E: Double air control 5/3 way exhaust center<br>30P: Double air control 5/3 way pressure center | 08: 1/4"<br>10: 3/8" | Blank: PT<br>G: G<br>T: NPT |

Please refer to 87 for manifold specification and the order way.

# Air valve(5/2 way, 5/3 way)

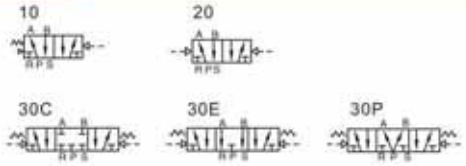
## 4A400 Series

## Specification

| Model | 4A410-15 | 4A420-15 | 4A430C-15 | 4A430E-15 | 4A430P-15 |
|---|---|---|---|---|---|
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | |
| Acting | Exterior control | | | | |
| Port size [Note1] | In=Out=Exhaust=1/2" | | | | |
| Orifice size | 50.0mm²(Cv=2.79) | | 30.0mm²(Cv=1.68) | | |
| Valve type | 5 port 2 position | | 5 port 3 position | | |
| Operating pressure | 0.15~0.8MPa(21~114psi) | | | | |
| Proof pressure | 1.2MPa(175psi) | | | | |
| Temperature | -20~70 ℃ | | | | |
| Material of body | Aluminum alloy | | | | |
| Lubrication [Note2] | Not required | | | | |
| Max. frequency [Note3] | 3 cycle/sec | | | | |
| Weight (g) | 555 | 685 | 735 | | |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.
[Note3] The maximum actuation frequency of no-load state.

## Symbol




## Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Three position air valves have three kinds of central function for your choice.
3. Double air control valves have memory function.
4. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
5. No need to add oil for lubrication.
6. Integrate with the manifold to save installation space.

## Ordering code

4A 4 10 15 □

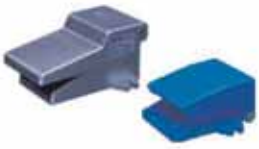
① ② ③ ④ ⑤

| ① Model | ② Code | ③ Valve type | ④ Port size | ⑤ Thread type |
|---|---|---|---|---|
| 4A: Air Valve(5/2, 5/3 way) | 4: 400 Series | 10: Single air control 5/2 way<br>20: Double air control 5/2 way<br>30C: Double air control 5/3 way closed center<br>30E: Double air control 5/3 way exhaust center<br>30P: Double air control 5/3 way pressure center | 15: 1/2" | Blank: PT<br>G: G<br>T: NPT |

Please refer to 87 for manifold specification and the order way.

# Manual, mechanical and other valves

## Compendium of Manual, mechanical and other valve

| P97 | Product feature | Photo | P99 | Product feature | Photo |
|---|---|---|---|---|---|
| 4H Series Hand lever valve | ●Sliding column structure<br>●Manual operation<br>●Panel-mounting<br>●5/2way、5/3 way |  | 3L Series Push-pull valve | ●Sliding column structure<br>●Manual operation<br>●Panel-mounting<br>●3/2 way |  |
| **P100** | Product feature | Photo | **P101** | Product feature | Photo |
| 4L Series Push-pull valve | ●Sliding column structure<br>●Manual operation<br>●Panel-mounting<br>●5/2 way |  | HSV Series Hand slide valve | ●There are several ways of internal and external thread connection<br>●Hand slide operation<br>●3/2 way |  |
| **P102** | Product feature | Photo | **P104** | Product feature | Photo |
| 4HV Series Hand lever valve | ●Body installation and Panel installation<br>●Manual operation<br>●With lock and without lock are optional<br>●4/2 way、4/3 way |  | S3 Series Control valve | ●Shut-off structure<br>●Manual control or mechanical control<br>●Several control set are optional<br>●Multi-mounting<br>●3/2 way |  |
| **P107** | Product feature | Photo | **P110** | Product feature | Photo |
| M3 Series Control valve | ●Sliding column structure<br>●Manual control or mechanical control<br>●Several control set are optional<br>●Multi-mounting<br>●3/2 way |  | M5 Series Control valve | ●Sliding column structure<br>●Manual control or mechanical control<br>●Several control set are optional<br>●Multi-mounting<br>●5/2 way |  |
| **P113** | Product feature | Photo | **P118** | Product feature | Photo |
| CM3 Series Control valve | ●Shut-off structure<br>●Manual control or mechanical control<br>●Several control set are optional<br>●Multi-mounting<br>●3/2 way、5/3 way |  | ZM3 Series Control valve | ●Sliding column structure<br>●Mechanical control<br>●Several control set are optional<br>●Multi-mounting<br>●3/2 way |  |
| **P120** | Product feature | Photo | **P122** | Product feature | Photo |
| 3F Series 3FM Series 4F Series Foot pedal valve | ●3F,3FM:Direct acting(NC)<br>●4F: Direct acting<br>●Foot pedal control<br>●With lock and without lock are optional<br>●3F、3FM: 3/2 way<br>●4F: 5/2way |  | ASC Series Flow control valve | ●Allows air to exhaust and cut off air flow<br>●Multi-mounting<br>●100、200、300 Series |  |
| **P123** | Product feature | Photo | **P124** | Product feature | Photo |
| NRV Series Non-return valve | ●Large valid area of section<br>●Compact structure<br>●Excellence hermetical capability |  | PCV Series Pilot non-return valve | ●Fitting joint and thread are optional for pilot port |  |

## Installation and Application

1. Before installing, be sure the valve hasn't been damaged via transportation.
2. It's suggested to use the medium lubricated by 40 μ m filter element. Be aware of the flow direction and port size.
3. Please notice whether the installation condition accords with technical requirements (such as "working pressure" and "scope of application temperature"), then the equipment can be installed and used.
4. Take measure to avoid vibration and frozen.
5. Before using the fittings and tubes make sure they are clean. When connecting to fittings, be sure the PTFE Thread seal tape is used correctly.
6. To keep the dust away, Never forget to install dirt-proof boot in air intake and outlet during dismounting.

# Hand lever valve (5/2 way, 5/3 way)

## 4H Series

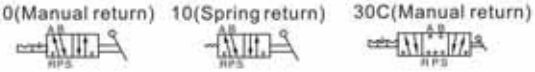
## Specification

| Model | 210-06 | 230-06 | 210-08 | 230-08 | 310-08 | 330-08 | 310-10 | 330-10 |
|---|---|---|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | | | | |
| Operating | Manual control direct acting type) | | | | | | | |
| Port size[Note1] | In=Out =Exhaust=1/8" | | In=Out=1/4"; Exhaust=1/8" | | In=Out =Exhaust=1/4" | | In=Out=3/8"; Exhaust=1/4" | |
| Orifice size | 14.0mm² (Cv=0.78) | 12.0mm² (Cv=0.67) | 16.0mm² (Cv=0.89) | 12.0mm² (Cv=0.67) | 25.0mm² (Cv=1.39) | 18.0mm² (Cv=1.00) | 30.0mm² (Cv=1.67) | 18.0mm² (Cv=1.00) |
| Valve type | 5/2 way | 5/3 way | 5/2 way | 5/3 way | 5/2 way | 5/3 way | 5/2 way | 5/3 way |
| Lubrication [Note2] | Not required | | | | | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | | | |
| Temperature | -20~70℃ | | | | | | | |
| Material body | Aluminum alloy | | | | | | | |
| Operating angle | ±15° | ±8.5° | ±15° | ±8.5° | ±18° | ±10° | ±18° | ±10° |

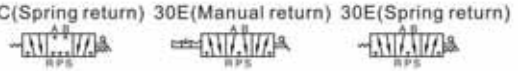
[Note1] PT thread, G thread and NPT thread are available;
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

## Symbol

10(Manual return) 10(Spring return) 30C(Manual return)



30C(Spring return) 30E(Manual return) 30E(Spring return)



## Product feature

1. Manual operation, smooth actuation, and exact and reliable orientation.
2. Sliding column structure has good tightness and light weight and is easy to install and dismount.
3. Internal hole adopts special processing technology which has little attrition friction, long service life.
4. No need to add oil for lubrication.
5. Panel-mounting makes it convenient to install and apply.

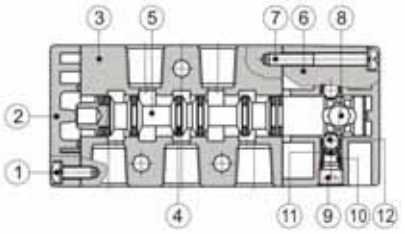
## Ordering code

4H 2 30C 08 □

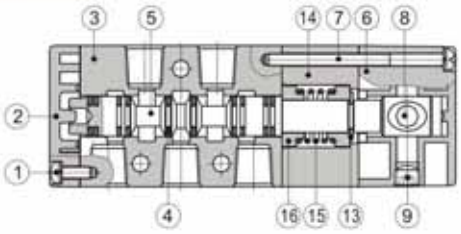
| ① Model | ② Code | ③ Valve type | ④ Port size | ⑤ Thread type |
|---|---|---|---|---|
| 4H: Manual return<br>4HA: Spring return | 2: 200 Series | 10: 5/2 Way<br>30C: 5/3 Way closed center<br>30E: 5/3 Way exhaust center | 06: 1/8"<br>08: 1/4" | Blank: PT<br>G: G<br>T: NPT |
| | 3: 300 Series | | 08: 1/4"<br>10: 3/8" | |

## Inner structure

4H210



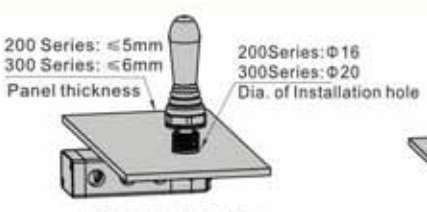

4HA230C



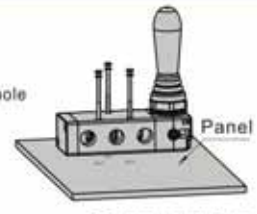

| No. | Item | No. | Item |
|---|---|---|---|
| 1 | Round head screw | 9 | Stop screw |
| 2 | Bottom cover | 10 | Spring |
| 3 | Body | 11 | Steel ball jacket |
| 4 | O-ring | 12 | Steel ball |
| 5 | Spool | 13 | E clip |
| 6 | Top cover | 14 | Side cover |
| 7 | Round head cover | 15 | Spring |
| 8 | Axle | 16 | Spring holder |

## Installation

1. 5/3 way manual return hand lever valve is positioned by steel ball, which is convenient to switch. Please applythe proper force to avoid the position mismatch and misoperation.
2. When installed by panel, disassemble the gasket according to the practical requirement.
3. Below is the installation method for reference.
   Note: Please give your attention on the panel thickness and hole dimension when installed by panel.




Panel Installation



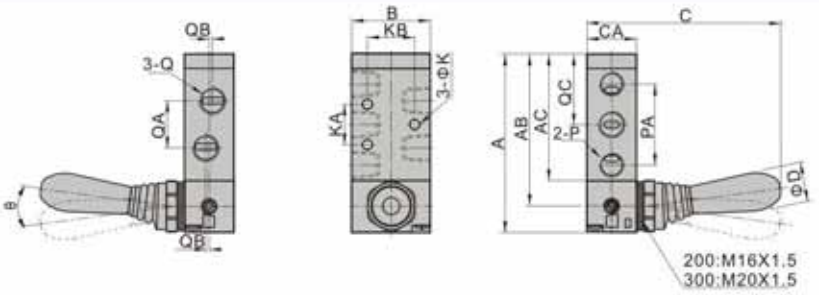

Body Installation

# Hand lever valve (5/2 way, 5/3 way)

## 4H Series

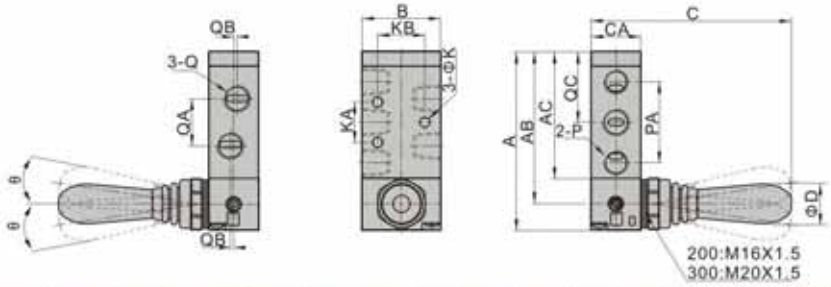
### Dimensions

**4H210\310、4HA210\310**



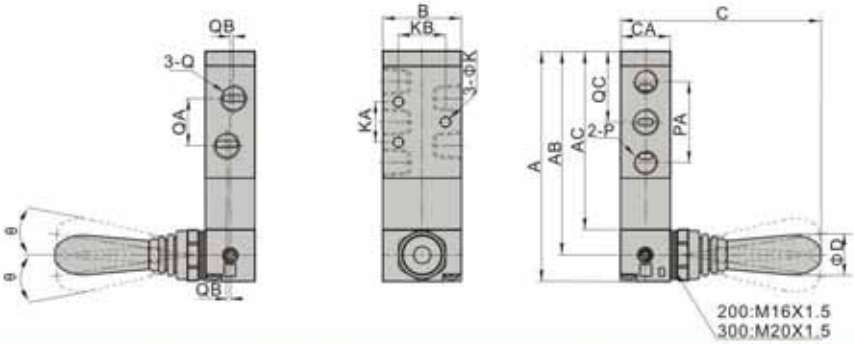

| Model\Item | A | AB | AC | B | C | CA | D | K | KA | KB | P | PA | Q | QA | QB | QC | Θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4H210-06<br>4HA210-06 | 81.5 | 69.5 | 57.5 | 35 | 90 | 22 | 18 | 4.3 | 20 | 23.5 | 1/8" | 36 | 1/8" | 18 | - | 32.5 | 15 |
| 4H210-08<br>4HA210-08 | 81.5 | 69.5 | 57.5 | 35 | 90 | 22 | 18 | 4.3 | 20 | 23.5 | 1/8" | 36 | 1/4" | 21 | 1.5 | 32.5 | 15 |
| 4H310-08<br>4HA310-08 | 101 | 87 | 73 | 40 | 93.5 | 27 | 18 | 4.3 | 24 | 27.5 | 1/4" | 45 | 1/4" | 22 | - | 40.5 | 18 |
| 4H310-10<br>4HA310-10 | 101 | 87 | 73 | 40 | 93.5 | 27 | 18 | 4.3 | 24 | 27.5 | 1/4" | 45 | 3/8" | 24 | 2 | 40.5 | 18 |

**4H230、4H330**




| Model\Item | A | AB | AC | B | C | CA | D | K | KA | KB | P | PA | Q | QA | QB | QC | Θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4H230C-06<br>4H230E-06 | 81.5 | 69.5 | 57.5 | 35 | 90.5 | 22 | 18 | 4.3 | 20 | 23.5 | 1/8" | 36 | 1/8" | 18 | - | 32.5 | 8.5 |
| 4H230C-08<br>4H230E-08 | 81.5 | 69.5 | 57.5 | 35 | 90.5 | 22 | 18 | 4.3 | 20 | 23.5 | 1/8" | 36 | 1/4" | 21 | 1.5 | 32.5 | 8.5 |
| 4H330C-08<br>4H330E-08 | 101 | 87 | 73 | 40 | 94 | 27 | 18 | 4.3 | 24 | 27.5 | 1/4" | 45 | 1/4" | 22 | - | 40.5 | 10 |
| 4H330C-10<br>4H330E-10 | 101 | 87 | 73 | 40 | 94 | 27 | 18 | 4.3 | 24 | 27.5 | 1/4" | 45 | 3/8" | 24 | 2 | 40.5 | 10 |

**4HA230、4HA330**




| Model\Item | A | AB | AC | B | C | CA | D | K | KA | KB | P | PA | Q | QA | QB | QC | Θ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4HA230C-06<br>4HA230E-06 | 100.5 | 88.5 | 76.5 | 35 | 90.5 | 22 | 18 | 4.3 | 20 | 23.5 | 1/8" | 36 | 1/8" | 18 | - | 32.5 | 8.5 |
| 4HA230C-08<br>4HA230E-08 | 100.5 | 88.5 | 76.5 | 35 | 90.5 | 22 | 18 | 4.3 | 20 | 23.5 | 1/8" | 36 | 1/4" | 21 | 1.5 | 32.5 | 8.5 |
| 4HA330C-08<br>4HA330E-08 | 120 | 106 | 92 | 40 | 94 | 27 | 18 | 4.3 | 24 | 27.5 | 1/4" | 45 | 1/4" | 22 | - | 40.5 | 10 |
| 4HA330C-10<br>4HA330E-10 | 120 | 106 | 92 | 40 | 94 | 27 | 18 | 4.3 | 24 | 27.5 | 1/4" | 45 | 3/8" | 24 | 2 | 40.5 | 10 |

# Push-pull valve(3/2way)

## 3L Series

## Specification

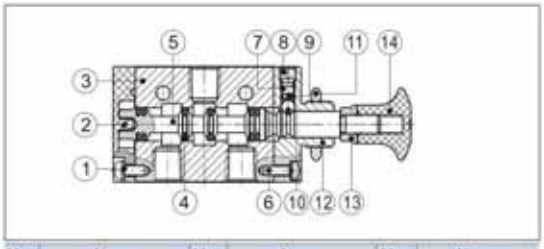
| Model | 3L110-06 | 3L210-06 | 3L210-08 | 3L310-08 | 3L310-10 |
|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | |
| Operating | Manual control direct acting type) | | | | |
| Port size[Note1] | 1/8" | | 1/4" | | 3/8" |
| Orifice size | 12.0mm² (Cv=0.67) | 14.0mm² (Cv=0.78) | 16.0mm² (Cv=0.89) | 25.0mm² (Cv=1.39) | 30.0mm² (Cv=1.67) |
| Valve type | 3/2 Way | | | | |
| Lubrication [Note2] | Not required | | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | |
| Temperature | -20~70℃ | | | | |
| Material body | Aluminum alloy | | | | |

[Note1] PT thread, G thread and NPT thread are available;

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

## Symbol

## Inner structure




| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Round head screw | 6 | Round head screw | 11 | Hexagon nut |
| 2 | Bottom cover | 7 | Spring | 12 | Top cover |
| 3 | Body | 8 | Stop screw | 13 | Safety nut |
| 4 | O-ring | 9 | Spring base | 14 | Hand grip |
| 5 | Spool | 10 | Steel ball | | |

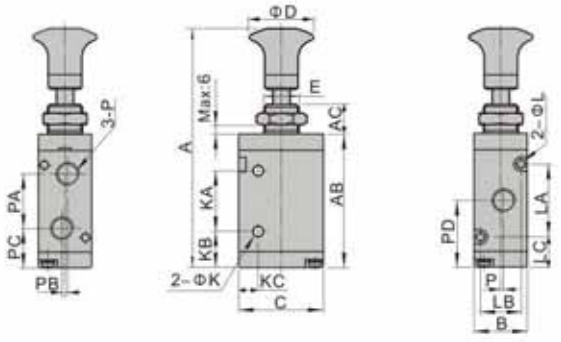
## Ordering code

3L 2 10 08 □

1 2 3 4 5

| 1 Model | 2 Code | 3 Valve type | 4 Port size | 5 Thread type |
|---|---|---|---|---|
| 3L: 3 port 2 position push-pull valve | 1: 100 Series | 10: 2 position | 06: 1/8" | Blank: PT<br>G: G<br>T: NPT |
| | 2: 200 Series | | 06: 1/8"<br>08: 1/4" | |
| | 3: 300 Series | | 08: 1/4"<br>10: 3/8" | |

## Dimensions




| Item\Model | 3L11006 | 3L21006 | 3L21008 | 3L31008 | 3L31010 |
|---|---|---|---|---|---|
| A | 87 | 98 | 98 | 106.5 | 106.5 |
| AB | 47.8 | 57.8 | 57.8 | 66.5 | 66.5 |
| AC | 10 | 10 | 10 | 10 | 10 |
| B | 18 | 22 | 22 | 27 | 27 |
| C | 27 | 35 | 35 | 40 | 40 |
| D | 25 | 25 | 25 | 25 | 25 |
| E | M12×0.75 | M14×1.0 | M14×1.0 | M16×1.0 | M16×1.0 |
| K | 3.1 | 4.3 | 4.3 | 4.3 | 4.3 |
| KA | 21 | 25 | 25 | 30 | 30 |
| KB | 13 | 16 | 16 | 18 | 18 |
| KC | 7.7 | 8 | 8 | 10 | 10 |
| L | 3.3 | 3.3 | 3.3 | 4.3 | 4.3 |
| LA | 19 | 30 | 30 | 35 | 35 |
| LB | 13 | 17 | 17 | 20 | 20 |
| LC | 14 | 13.5 | 13.5 | 15.5 | 15.5 |
| P | 1/8" | 1/8" | 1/4" | 1/4" | 3/8" |
| PA | 16 | 22.5 | 22.5 | 24 | 24 |
| PB | 2 | 0 | 0 | 0 | 0 |
| PC | 15.5 | 17.5 | 17.5 | 21 | 21 |
| PD | 24.5 | 28.5 | 28.5 | 33 | 33 |
| PE | 1 | 0 | 1.5 | 0 | 2 |

# Push-pull valve(5/2way)

## 4L Series

## Specification

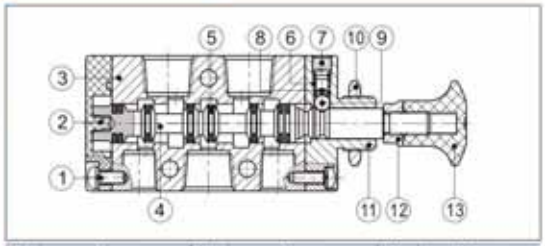
| Model | 4L110-06 | 4L210-06 | 4L210-08 | 4L310-08 | 4L310-10 |
|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | |
| Operating | Manual control direct acting type) | | | | |
| Port size[Note1] | 1/8" | | 1/4" | | 3/8" |
| Orifice size | 12.0mm² (Cv=0.67) | 14.0mm² (Cv=0.78) | 16.0mm² (Cv=0.89) | 25.0mm² (Cv=1.39) | 30.0mm² (Cv=1.67) |
| Valve type | 5/2 Way | | | | |
| Lubrication [Note2] | Not required | | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | |
| Temperature | -20~70℃ | | | | |
| Material body | Aluminum alloy | | | | |

[Note1] PT thread, G thread and NPT thread are available;

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

## Symbol

## Inner structure




| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Round head screw | 6 | Spring | 11 | Top cover |
| 2 | Bottom cover | 7 | Stop screw | 12 | Safety nut |
| 3 | Body | 8 | Spring base | 13 | Hand grip |
| 4 | Spool | 9 | Steel ball | | |
| 5 | O-ring | 10 | Hexagon nut | | |

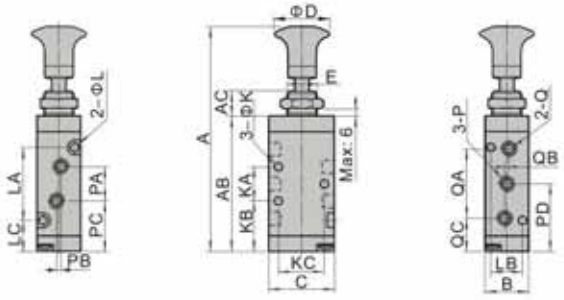
## Ordering code

4L 2 10 08 □

1 2 3 4 5

| ①Model | ②Code | ③Valve type | ④Port size | ⑤Thread type |
|---|---|---|---|---|
| 4L: 5 port 2 position push-pull valve | 1: 100 Series | 10: 2 position | 06: 1/8" | Blank: PT<br>G: G<br>T: NPT |
| | 2: 200 Series | | 06: 1/8"<br>08: 1/4" | |
| | 3: 300 Series | | 08: 1/4"<br>10: 3/8" | |

## Dimensions




| Item\Model | 4L11006 | 4L21006 | 4L21008 | 4L31008 | 4L31010 |
|---|---|---|---|---|---|
| A | 98 | 106 | 106 | 121.5 | 121.5 |
| AB | 58.8 | 65.8 | 65.8 | 81 | 81 |
| AC | 10 | 10 | 10 | 10 | 10 |
| B | 18 | 22 | 22 | 27 | 27 |
| C | 27 | 35 | 35 | 40 | 40 |
| D | 25 | 25 | 25 | 25 | 25 |
| E | M12×0.75 | M14×1.0 | M14×1.0 | M16×1.0 | M16×1.0 |
| K | 3.3 | 4.3 | 4.3 | 4.3 | 4.3 |
| KA | 14 | 20 | 20 | 24 | 24 |
| KB | 22 | 22.5 | 22.5 | 28.5 | 28.5 |
| KC | 19 | 23.5 | 23.5 | 27.5 | 27.5 |
| L | 3.3 | 3.3 | 3.3 | 4.3 | 4.3 |
| LA | 30 | 38 | 38 | 50 | 50 |
| LB | 13 | 17 | 17 | 20 | 20 |
| LC | 14 | 13.5 | 13.5 | 15.5 | 15.5 |
| P | 1/8" | 1/8" | 1/4" | 1/4" | 1/4" |
| PA | 16 | 18 | 21 | 22 | 24 |
| PB | 3 | 0 | 3 | 0 | 4 |
| PC | 21 | 23.5 | 22 | 29.5 | 28.5 |
| PD | 29 | 32.5 | 32.5 | 40.5 | 40.5 |
| Q | 1/8" | 1/8" | 1/8" | 1/4" | 3/8" |
| QA | 28 | 36 | 36 | 45 | 45 |
| QB | 2 | 0 | 0 | 0 | 0 |
| QC | 15 | 14.5 | 14.5 | 18 | 18 |

# Hand slide valve(3/2 way)

## HSV Series

## Specification

| Model | HSV06 | HSV08 | HSV10 | HSV15 | HSV20 | HSV25 |
|---|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | | |
| Operating | Manual control direct acting type | | | | | |
| Port size [Note1] | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| Orifice size | 23.0mm² (Cv=1.28) | 40.0mm² (Cv=2.20) | 62.0mm² (Cv=3.50) | 140.0mm² (Cv=7.80) | 250.0mm² (Cv=13.80) | 392.0mm² (Cv=21.78) |
| Valve type | 3/2 Way | | | | | |
| Lubrication | Not required | | | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | |
| Temperature | -20~70℃ | | | | | |
| Material body | Aluminum alloy | | | | | |

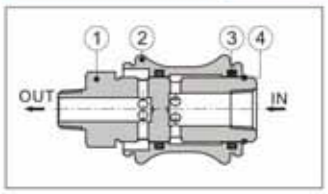
[Note1] PT thread, G thread and NPT thread are available.

## Symbol


## Product feature

1. There are several ways of internal and external thread connection, suitable for the application in different pipeline systems.
2. The direction-change slides smoothly and has good hand feeling.
3. There is large effective circulating area.
4. The valve spool surface is treated with acid washing passivation, and the surface of valve body is oxidized to keep the color for a long time.

## Inner structure




| No. | Item |
|---|---|
| 1 | Valve plug |
| 2 | Body |
| 3 | O-ring |
| 4 | Clip |

## Ordering code

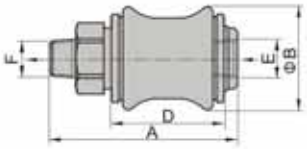
HSV 08 SS □

1 2 3 4

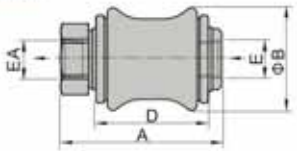
| 1 Model | 2 Port size | 3 Dovt thread | 4 Thread type |
|---|---|---|---|
| HSV: Hand slide valve | 06: 1/8"<br>08: 1/4"<br>10: 3/8"<br>15: 1/2"<br>20: 3/4"<br>25: 1" | Blank: Standard<br>SS: Double male thread<br>FF: Double female thread<br>SF: Male and female thread | Blank: PT<br>G: G<br>T: NPT |

## Dimensions

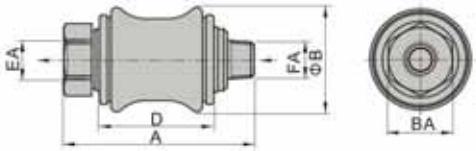
**Standard**



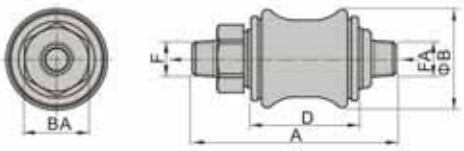

**Double female thread(FF)**




**Male and female thread(SF)**




**Double male thread(SS)**



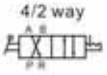

| Model\Item | A | | | | B | BA | D | E | EA | F | FA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Standard | Double female thread | Male and female thread | Double male thread | | | | | | | |
| HSV06 | 50 | 43 | 50 | 57 | 27.5 | 17 | 30 | 1/8" | 1/8" | 1/8" | 1/8" |
| HSV08 | 58 | 47 | 58 | 69 | 30 | 19 | 32.5 | 1/4" | 1/4" | 1/4" | 1/4" |
| HSV10 | 68.5 | 55.5 | 68.5 | 81.5 | 35.5 | 22 | 39 | 3/8" | 3/8" | 3/8" | 3/8" |
| HSV15 | 85.5 | 70.5 | 85.5 | 100.5 | 44 | 30 | 50 | 1/2" | 1/2" | 1/2" | 1/2" |
| HSV20 | 96.5 | 79.5 | 96.5 | 113.5 | 53.5 | 36 | 58 | 3/4" | 3/4" | 3/4" | 3/4" |
| HSV25 | 114.5 | 96.5 | 114.5 | 132.5 | 65.5 | 44 | 70 | 1" | 1" | 1" | 1" |

# Hand lever valve (4/2 way, 4/3 way)

## 4HV, 4HVL Series

### Symbol

4/2 way



4/2 way with lock

4/3 way closed center

4/3 way closed center type with lock

### Specification

| Model | 4HV2□□ -06(L) | 4HV2□□ -08(L) | 4HV3□□ -08(L) | 4HV3□□ -10(L) | 4HV4□□ -15(L) | 4HV4□□ -20(L) |
|---|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | | |
| Operating | Manual control direct acting type | | | | | |
| Port size [Note1] | 1/8" | 1/4" | 1/4" | 3/8" | 1/2" | 3/4" |
| Orifice size | 14.0mm² (Cv=0.78) | 16.0mm² (Cv=0.89) | 30.0mm² (Cv=1.67) | 33.0mm² (Cv=1.83) | 88.0mm² (Cv=4.89) | 95.0mm² (Cv=5.27) |
| Valve type | 4/2 Way、4/3 Way | | | | | |
| Lubrication | Not required | | | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | |
| Temperature | -20~70℃ | | | | | |
| Operating angle | 90°(4/3 Way: 45°) | | | | | |

[Note1] PT thread, G thread and NPT thread are available.

### Product feature

1. The direction-change turns lightly with good hand feeling and exact orientation.
2. Large effective circulating area leads to little pressure loss.
3. Panel and body installation are optional. The panel installation can be attached with installing nut.

### Ordering code

4HV 2 30 06 S L □

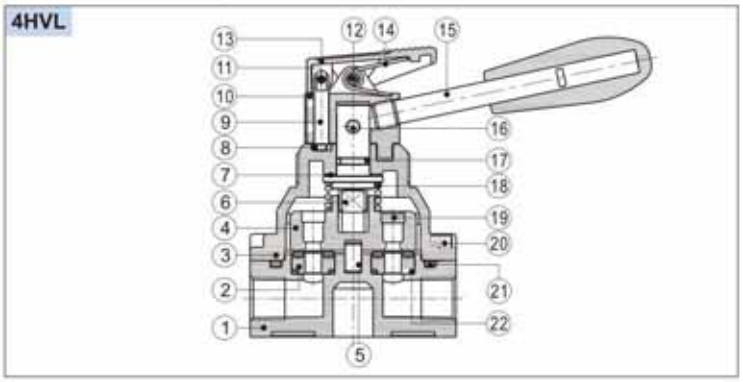
① ② ③ ④ ⑤ ⑥ ⑦

| ①Model | ②Code | ③Valve type | ④Port size | ⑤Installation | ⑥Note | ⑦Thread type |
|---|---|---|---|---|---|---|
| 4HV: Hand lever valve | 2: 2 Series | 10: 4 port 2 position<br>30: 4 port 3 position [Note1] | 06: 1/8"<br>08: 1/4" | Blank: Body installation<br>S: Panel installation [Note2] | Blank: Without lock<br>L: With lock | Blank: PT<br>G: G<br>T: NPT |
| | 3: 3 Series | | 08: 1/4"<br>10: 3/8" | | | |
| | 4: 4 Series | | 15: 1/2"<br>20: 3/4" | | | |

[Note1] 4 port 3 position only has closed center type. [Note2] The panel installation can be attached with installing nut.

### Inner structure

4HVL




| No. | Item | No. | Item |
|---|---|---|---|
| 1 | Body | 12 | Pin one |
| 2 | Seal base | 13 | Front cover |
| 3 | Valve cover | 14 | Spring |
| 4 | Valve plug | 15 | Handle |
| 5 | Column pin | 16 | Pin two |
| 6 | Shaft | 17 | Shaft O-ring |
| 7 | Washer | 18 | Spring |
| 8 | Fixing plate | 19 | Iron plate |
| 9 | Lock pin | 20 | Fixing screw |
| 10 | Valve cap | 21 | Body O-ring |
| 11 | Spring pin | 22 | Seal base O-ring |

# Control valve(3/2way)

## S3 Series

## Specification

| Model | S3B | S3C | S3D | S3V | S3R | S3L | S3Y | S3PM | S3PP | S3PF | S3PL | S3HS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | | | | | | | | |
| Operating | External control direct acting type | | | | | | | | | | | |
| Port size [Note1] | 05:M5 06:1/8" 08:1/4" | | | | | | | | | | | |
| Orifice size | 05:2.5 mm² (Cv=0.14) 06:8.0mm² (Cv=0.45) 08:12.0mm² (Cv=0.67) | | | | | | | | | | | |
| Valve type | 3/2 Way | | | | | | | | | | | |
| Lubrication [Note2] | Not required | | | | | | | | | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | | | | | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | | | | | | | |
| Temperature ℃ | -20~70 | | | | | | | | | | | |
| Material body | Aluminum alloy | | | | | | | | | | | |

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

## Symbol

## Product feature

1. The external force required by changing the direction of the series of S3B, S3R, S3L and S3V is provided by external mechanism, which can be used for position test or limit switch.
2. The series of S3PF, S3PM, S3PP, S3PL, S3Y, S3HS, S3C and S3D are operated manually, owning control joints with several structure forms and suitable for application under different conditions.
3. Shut-off structure has good tightness and is sensitive in direction changing and lubricant is not necessary.
4. Multi-mounting makes it convenient to install and apply.
5. The control joints of series of S3C, S3D, S3Y, S3R and S3L are made of metal which has long service life and more reliable and steady performance.

## Reversal stroke

Unit: mm

| Type | Spool stroke | Button stroke | Type | Spool stroke | Roller(handle) stroke |
|---|---|---|---|---|---|
| S3B | 2.4~4.0 | - | S3R | 2.4~3.4 | 5.5~7.8 |
| S3PF | 2.4~4.0 | 3.8~5.4 | S3L | 2.4~3.4 | 6.0~8.6 |
| S3PP | 2.4~4.0 | 3.8~5.4 | S3V | 2.4~3.8 | 3.4~4.8 |
| S3PM | 2.4~4.0 | 3.8~5.4 | S3C | 2.4~3.8 | 14.4~18.4 |
| S3PL | 2.4~4.0 | 5.9~7.5 | S3D | 2.4~3.8 | 7.4~9.4 |
| S3HS | 2.4~4.0 | 5.1~6.7 | | | |

## Ordering code

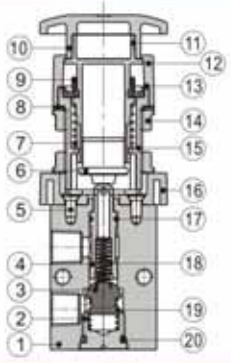
S3 PM 06 R □

(1) (2) (3) (4) (5)

| 1 Valve's type | 2 Model | 3 Port size | 4 Button color | 5 Thread type | |
|---|---|---|---|---|---|
| | | | | M5 | 1/8" 1/4" |
| S3: S type 3/2 Way | B:Basic type | 05:M5 06:1/8" 08:1/4" | No this code | No this code | Blank:PT G: G T: NPT |
| | C:Long handle type | | | | |
| | D:Short handle type | | | | |
| | Y:Lever type | | | | |
| | R:Roller type | | | | |
| | L:Roller with free return type | | | | |
| | V:Vertical type | | | | |
| | PL:Latching type | | R:Red | | |
| | PP:Protruding type | | R:Red G:Green B:Black | | |
| | PF:Flat type | | | | |
| | PM:Mushroom type | | | | |
| | HS:Selector type | | | | |

## Inner structure

S3PM




| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Body | 8 | Clamping gasket | 15 | Button body |
| 2 | Bottom cover | 9 | Dust cover | 16 | Connector |
| 3 | Stopper plug | 10 | Button cap | 17 | O-ring |
| 4 | Valve core | 11 | Main body of button | 18 | Spring |
| 5 | Screw | 12 | Top cover | 19 | Spring |
| 6 | Button pressing buckle | 13 | Button ring | 20 | O-ring |
| 7 | Spring | 14 | Clamping nut | | |

# Control valve(3/2way)

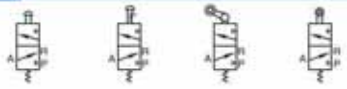
## M3 Series

## Specification

| Model | | M3B | M3C | M3D | M3R | M3L | M3Y | M3PM | M3PP | M3PF | M3PL | M3HS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluid | | Air (to be filtered by 40 μm filter element) | | | | | | | | | | |
| Operating | | External control direct acting type | | | | | | | | | | |
| Port size [Note1] | | 05: M5 06: 1/8" 08: 1/4" | | | | | | | | | | |
| Orifice size | Mini type | 05: 2.5mm²(Cv=0.14) | | | | | | | | | | |
| | 110 | 06: 8.0mm² (Cv=0.45) | | | | | | | | | | |
| | 210 | 06: 9.0mm² (Cv=0.50) 08: 12.0mm² (Cv=0.67) | | | | | | | | | | |
| Valve type | | 3/2 Way | | | | | | | | | | |
| Lubrication [Note2] | | Not required | | | | | | | | | | |
| Pressure range | | 0~1.0MPa(0~145psi) | | | | | | | | | | |
| Proof pressure | | 1.5MPa(215psi) | | | | | | | | | | |
| Temperature ℃ | | -20~70 | | | | | | | | | | |
| Material body | | Aluminum alloy | | | | | | | | | | |

[Note1] PT thread, G thread and NPT thread are available.
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. It is suggested to use ISO VG32 lubricant or the oil with the same grade.

## Symbol

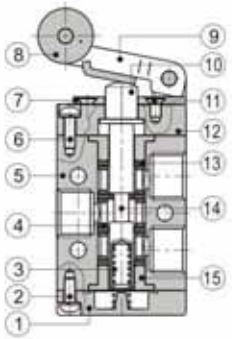


## Product feature

1. Exhaust outlet locates over the (body), which is convenient to install muffler to decrease noise and pollution.
2. The external force required by direction-change of series of M3B,M3R and M3L is provided by external mechanism, which can be used for position test or stroke switch] limit switch.
3. M3C, M3D, M3Y, M3PF, M3PM, M3PP, M3PL and M3HS are operated manually, owning control joints with several structure forms and suitable for application under different conditions.
4. It is in sliding column structure that the control force is not influenced by working pressure (that is, there is no back pressure effect); internal circle is sealed with good tightness and the direction-change is sensitive.
5. No need to add oil for lubrication.
6. Multi-mounting makes it convenient to install and apply;
7. The control joints of series of M3C, M3D, M3Y, M3R, and M3L are made of metal which has long service life and more reliable and steady performance.

## Inner structure

**M3R210**




| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Botton cover | 6 | Screw | 11 | Screw |
| 2 | Screw | 7 | Roller holder | 12 | Fore cover |
| 3 | Spring | 8 | Roller | 13 | Piston O-ring |
| 4 | Spacer | 9 | Rotating block | 14 | Spool |
| 5 | Body | 10 | Axle | 15 | Positioning block |

## Reversal stroke

Unit:mm

| Common type | | | | | | Mini type | | |
|---|---|---|---|---|---|---|---|---|
| Type | Spool stroke | Button stroke | Type | Spool stroke | Roller(handle) stroke | Type | Spool stroke | Roller stroke |
| M3B | 2.0~3.3 | – | M3R | 2.0~3.0 | 4.6~6.8 | M3B05 | 2.0~3.3 | – |
| M3PF | 2.0~3.3 | 3.8~5.1 | M3L | 2.0~3.0 | 5.0~7.8 | M3R05 | 2.0~3.0 | 6.0~8.5 |
| M3PP | 2.0~3.3 | 3.8~5.1 | M3C | 2.0~3.0 | 11.0~16.0 | M3L05 | 2.0~3.0 | 7.0~10.0 |
| M3PM | 2.0~3.3 | 3.8~5.1 | M3D | 2.0~3.0 | 5.5~8.0 | | | |
| M3PL | 2.0~3.3 | 5.9~7.2 | | | | | | |
| M3HS | 2.0~3.3 | 5.1~6.4 | | | | | | |

## Ordering code

**Common type** M3 PM 210 06 R □

(1) (2) (3) (4) (5) (6)

| 1 Valve's type | 2 Model | 3 Code | 4 Port size | 5 Button color | 6 Thread type |
|---|---|---|---|---|---|
| M3: M type 3/2 Way | B: Basic type | 110: 100 Series single control | 06: 1/8" | No this code | Blank: PT<br>G: G<br>T: NPT |
| | C: Long handle type | | | | |
| | D: Short handle type | | | | |
| | Y: Lever type | | | | |
| | R: Roller type | | | | |
| | L: Roller with free return type | 210: 200 Series single control | 06: 1/8"<br>08: 1/4" | | |
| | PL: Latching type | | | R: Red | |
| | PP: Protruding type | | | R: Red<br>G: Green<br>B: Black | |
| | PF: Flat type | | | | |
| | PM: Mushroom type | | | | |
| | HS: Selector type | | | | |

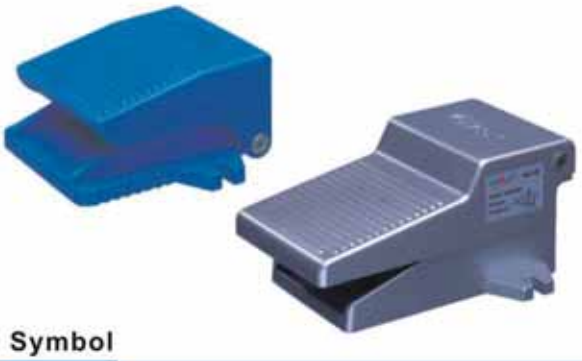
**Mini type** M3 R 05

(1) (2) (3)

| 1 Valve's type | 2 Model | 3 Port size |
|---|---|---|
| M3: M type 3/2 Way | B: Basic type<br>R: Roller type<br>L: Roller with free return type | 05: M5 |

# Foot pedal valve ( 3/2way )

## 3F, 3FM Series



## Specification

| Model | 3FM210-M5 | 3F210-06 | 3FM210-06 | 3F210-08 | 3FM210-08 |
|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | |
| Operating | Acting type controlled by foot normally closed | | | | |
| Port size[Note1] | M5 | 1/8" | 1/8" | 1/4" | 1/4" |
| Valve type | 3/2 Way | | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | |
| Temperature | -20~70℃ | | | | |
| Material body | 3FM:Plastic; 3F:Aluminum alloy | | | | |
| Lubrication | Not required | | | | |

[Note1] PT thread, G thread and NPT thread are available.

## Symbol

Without lock

With lock

## Product feature

1. Direct acting and normally closed type.
2. The 3F series has aluminum foot pedal and 3FM series has plastic foot pedal, in direct acting type, horizontal and compact structure.
3. If the duration of direction-change is long, the valves with lock may be selected.
4. The clamping framework is steady and reliable that it is easy and quick to unlock. However, with the limitation of the dimension of structure, it can not bear frequent strong impact.

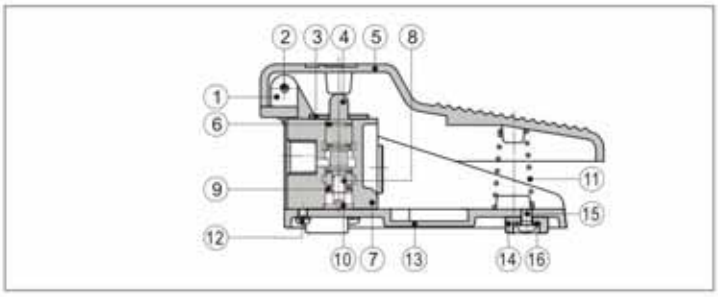
## Ordering code

3F210 08 L □

① ② ③ ④

| ① Model | ② Port size | ③ Note | ④ Thread type | |
|---|---|---|---|---|
| 3FM210: 3/2 way foot pedal valve (mini type) | M5: M5<br>06: 1/8"<br>08: 1/4" | No this code | M5 | 1/8" 1/4" |
| 3F210: 3/2 way foot pedal valve | 06: 1/8"<br>08: 1/4" | Blank: Without lock<br>L: With lock | No this code | Blank: PT<br>G: G<br>T: NPT |

## Inner structure

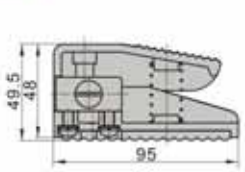


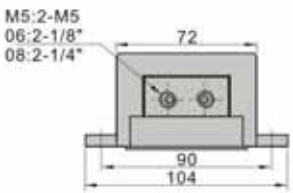

| No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|
| 1 | Bushing | 7 | Body | 13 | Base |
| 2 | Fixed screw | 8 | Spring | 14 | Base pad |
| 3 | Fixed plate | 9 | E clip | 15 | Fixed screw |
| 4 | Spool | 10 | Spring bolder | 16 | Clip |
| 5 | Pedal | 11 | Override | | |
| 6 | O-ring | 12 | Fixed screw | | |

**Note** ⚠ Lockable type should be added grease periodically to ensure the machine can work regularly

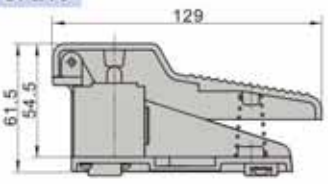
## Dimensions

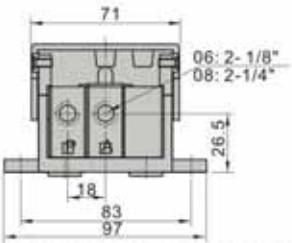
### 3FM210



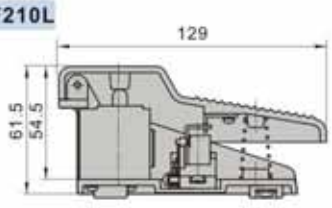



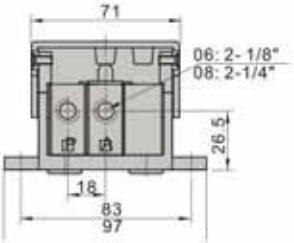

### 3F210



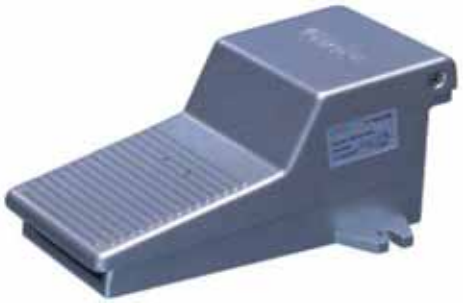

### 3F210L



# Foot pedal valve ( 5/2way )

## 4F Series



## Specification

| Model | 4F210-08 | 4F210-08L | 4F210-08F | 4F210-08LF |
|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | |
| Operating | Acting type controlled by foot | | | |
| Port size [Note1] | 1/4" | | | |
| Valve type | 5/2 Way | | | |
| Pressure range | 0~1.0MPa(0~145psi) | | | |
| Proof pressure | 1.5MPa(215psi) | | | |
| Temperature | -20~70℃ | | | |
| Material body | Aluminum alloy | | | |
| Lubrication | Not required | | | |

[Note1] PT thread, G thread and NPT thread are available.

## Symbol


## Product feature

1. The aluminum foot pedal is designed with direct acting, which is steady and reliable.
2. If the duration of direction-change is long, the valves with lock may be selected.
3. The clamping framework is steady and reliable that it is easy and quick to unlock. However, with the limitation of the dimension of structure, it can not bear frequent strong impact.
4. Plastic guard with high strength may be selected.

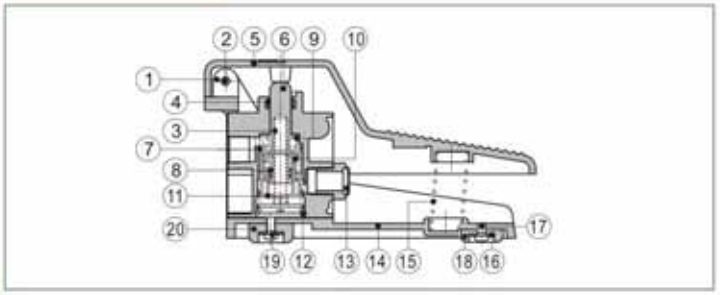
## Ordering code

4F210 08 L □

① ② ③ ④

| ①Model | ②Port size | ③Note | ④Thread type |
|---|---|---|---|
| 4F210: 5/2 way foot pedal valve | 08: 1/4" | Blank: Without lock<br>L: With lock<br>F: With guard<br>LF: With lock and guard | Blank: PT<br>G: G<br>T: NPT |

## Inner structure

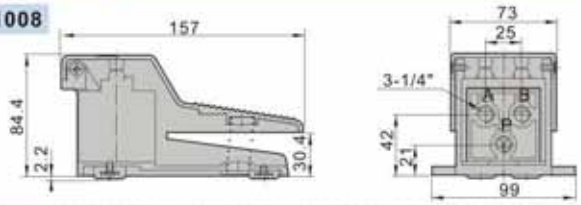



| No. | Item | No. | Item | No. | Item | No. | Item |
|---|---|---|---|---|---|---|---|
| 1 | Pin | 6 | Spool | 11 | Bottom cover | 16 | Washer |
| 2 | Screw | 7 | O-ring | 12 | C clip | 17 | Screw |
| 3 | Spring | 8 | O-ring | 13 | Silencer | 18 | Base pad |
| 4 | E clip | 9 | Front cover | 14 | Base | 19 | Screw |
| 5 | Pedal | 10 | Piston | 15 | Pedal spring | 20 | Base pad |

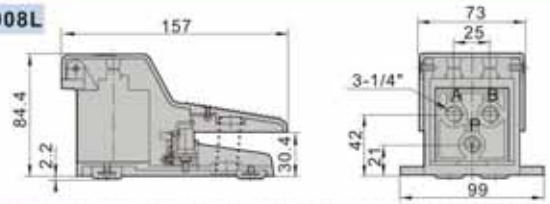
**Note** Lockable type should be added grease periodically to ensure the machine can work regularly.

## Dimensions

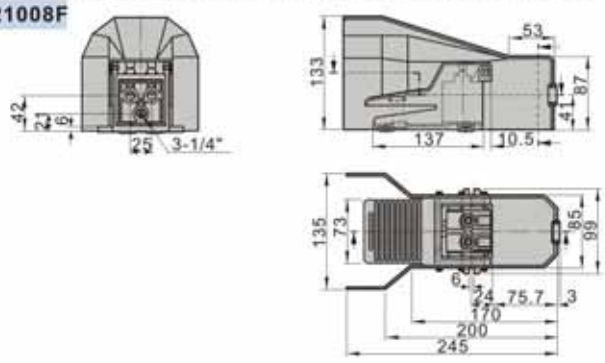
### 4F21008



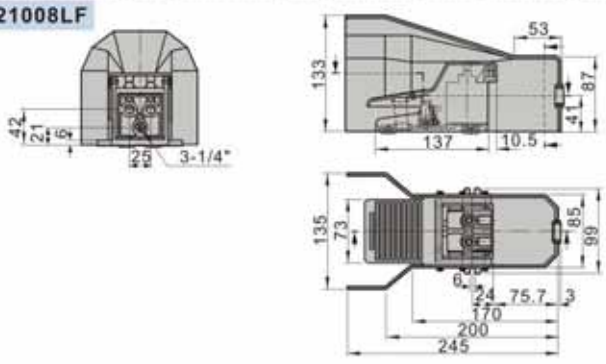

### 4F21008L




### 4F21008F




### 4F21008LF



# Flow control valve

## ASC Series

## Specification

| Model | | ASC100-06 | ASC200-08 | ASC300-10 | ASC300-15 |
|---|---|---|---|---|---|
| Fluid | | Air (to be filtered by 40 μm filter element) | | | |
| Port size [Note1] | | 1/8" | 1/4" | 3/8" | 1/2" |
| Pressure range | | 0.05~0.95MPa(7-135psi) | | | |
| Proof pressure | | 1.5MPa(215psi) | | | |
| Temperature | | -20~70℃ | | | |
| Material body | | Aluminum alloy | | | |
| Flow (L/min) | Control flow | 200 | 450 | 1250 | 1650 |
| | Free flow | 400 | 800 | 1500 | 2500 |

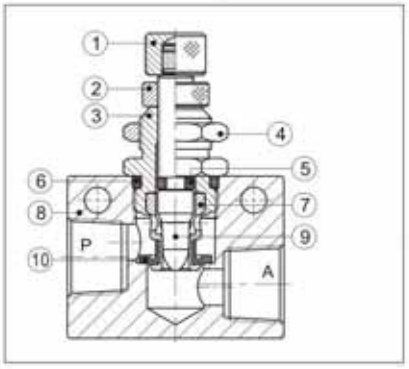
[Note1] PT thread, G thread and NPT thread are available.

## Symbol


## Product feature

1. Small and compact structure.
2. Allows air to exhaust and cut off air flow. The adjustment screw is both sensitive and precise.
3. Can be mounted in various position to facilitate installation and application.

## Inner structure




| No. | Item |
|---|---|
| 1 | Adjustment cap |
| 2 | Clamping cap |
| 3 | Throttle body |
| 4 | Hexagon nut |
| 5 | O-ring |
| 6 | O-ring |
| 7 | Throttle sheath |
| 8 | Body |
| 9 | Throttle column |
| 10 | Spool O-ring |

## Ordering code

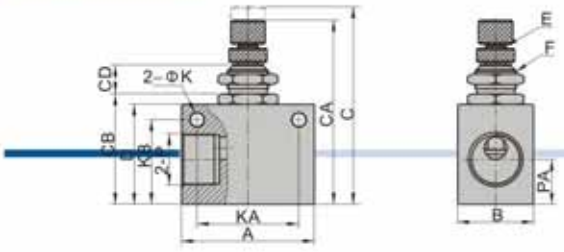
ASC 300 10 □

① ② ③ ④

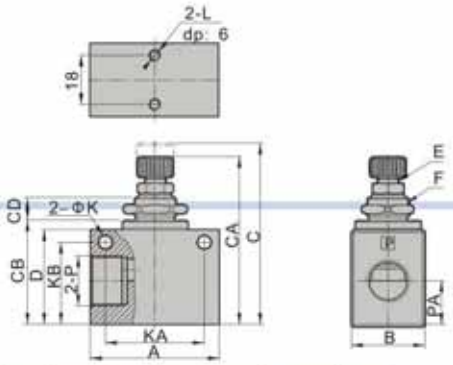
| ① Model | ② Code | ③ Port size | ④ Thread type |
|---|---|---|---|
| ASC: Flow control valve | 100: 100 series | 06: 1/8" | Blank: PT<br>G: G<br>T: NPT |
| | 200: 200 series | 08: 1/4" | |
| | 300: 300 series | 10: 3/8" | |
| | | 15: 1/2" | |

## Dimensions

**ASC100\ASC200**




**ASC300**




| Model\Item | A | B | C | CA | CB | CD | D | E | F | K | KA | KB | L | P | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASC10006 | 32 | 18 | 52.5 | 47 | 26 | 8.6 | 23 | M6×0.5 | M12×0.75 | 4.3 | 22 | 18 | M4×0.7 | 1/8" | 10 |
| ASC20008 | 36 | 18 | 56.5 | 51 | 30 | 8.6 | 27 | M6×0.5 | M12×0.75 | 4.3 | 26 | 23 | M4×0.7 | 1/4" | 13.5 |
| ASC30010 | 50 | 28 | 74 | 65 | 40.5 | 10 | 37 | M8×0.75 | M16×1.0 | 5.3 | 35 | 32 | M4×0.7 | 3/8" | 17.5 |
| ASC30015 | 50 | 28 | 74 | 65 | 40.5 | 10 | 37 | M8×0.75 | M16×1.0 | 5.3 | 35 | 32 | M4×0.7 | 1/2" | 17.5 |

# Non-return valve

## NRV Series

## Specification

| Model | NRV06 | NRV08 | NRV10 | NRV15 | NRV20 | NRV25 |
|---|---|---|---|---|---|---|
| Fluid | Air (to be filtered by 40 μm filter element) | | | | | |
| Port size [Note1] | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| Orifice size $mm^2$(Cv valve) | 18(1.0) | 27(1.5) | 60(3.33) | 73(4.06) | 230(12.78) | 260(14.44) |
| Pressure range | 0.02~1.0MPa(2.9~145psi) | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | |
| Temperature | -20~70℃ | | | | | |
| Material of body | Aluminum alloy | | | | | |

[Note1] PT thread, G thread and NPT thread are available.

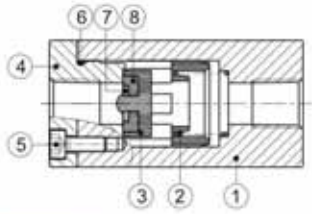
## Symbol


## Product feature

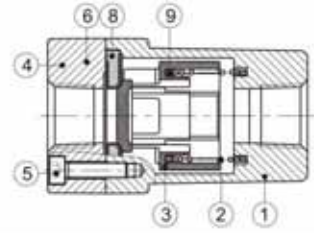
1. There are many port sizes: 1/8", 1/4", 3/8", 1/2", 3/4", 1".
2. It allows the fluid to flow in one direction **ONLY**.
3. It is prevent backflow due to sudden drop in pressure or decrease in air consumption .
4. There is large valid area of section.
5. The spool is made of POM, valve's core sealed with rubber, and it has a compact structure.

## Inner structure

**NRV06\NRV08**




**NRV10~25**




| No. | Item |
|---|---|
| 1 | Body |
| 2 | Spring |
| 3 | Spool |
| 4 | End cover |
| 5 | Screw |
| 6 | O-ring |
| 7 | Washer |
| 8 | Gasker washer |
| 9 | Bumper |

## Ordering code

**NRV 08 □**

① ② ③

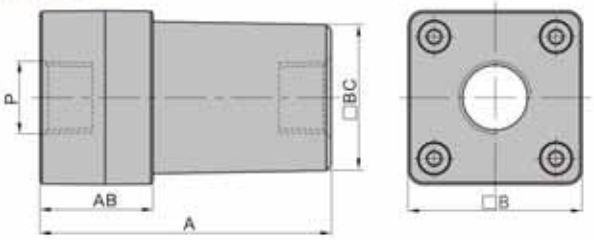
| ① Model | ② Port size | ③ Thread type |
|---|---|---|
| NRV: Non-return valve | 06: 1/8"<br>08: 1/4"<br>10: 3/8"<br>15: 1/2"<br>20: 3/4"<br>25: 1" | Blank: PT<br>G: G<br>T: NPT |

## Dimensions

**NRV06\NRV08**


| Model\Item | A | AB | B | BA | BC | P |
|---|---|---|---|---|---|---|
| NRV06 | 50 | - | 25 | 30 | - | 1/8" |
| NRV08 | 50 | - | 25 | 30 | - | 1/4" |
| NRV10 | 67 | 26 | 40 | - | 33.6 | 3/8" |
| NRV15 | 67 | 26 | 40 | - | 33.6 | 1/2" |
| NRV20 | 95 | 31.5 | 52 | - | 46.7 | 3/4" |
| NRV25 | 95 | 31.5 | 52 | - | 46.7 | 1" |

**NRV10~25**



# Fluid control valve(2/2way)

## Compendium of Fluid control valve

| P127 | Product feature | Photo | P129 | Product feature | Photo |
|---|---|---|---|---|---|
| 2S Series direct-acting and normally closed | ●Shut-off structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  | 2S Series internally piloted and normally closed | ●Piston piloted structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  |
| **P131** | Product feature | Photo | **P133** | Product feature | Photo |
| 2KS Series direct-acting andnormally opened | ●Shut-off structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  | 2KS Series internally piloted and normally opened | ●Piston piloted structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  |
| **P135** | Product feature | Photo | **P137** | Product feature | Photo |
| 2W Series direct-acting and normally closed | ●Shut-off structure<br>●Width operation pressure<br>●Body material: Brass<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  | 2W Series internally piloted and normally closed | ●Piston piloted structure<br>●Width operation pressure<br>●Body material: Brass<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  |
| **P139** | Product feature | Photo | **P141** | Product feature | Photo |
| 2KW Series direct-acting and normally opened | ●Shut-off structure<br>●Width operation pressure<br>●Body material: Brass<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  | 2KW Series internally piloted and normally opened | ●Piston piloted structure<br>●Width operation pressure<br>●Body material: Brass<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  |
| **P143** | Product feature | Photo | **P145** | Product feature | Photo |
| 2L Series direct-acting and normally closed | ●Shut-off structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids and higher temperature<br>●Terminal and Grommet<br>●2/2 way |  | 2L Series internally piloted and normally closed | ●Piston piloted structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids and higher temperature<br>●Terminal and Grommet<br>●2/2 way |  |
| **P147** | Product feature | Photo | **P149** | Product feature | Photo |
| 2KL Series direct-acting and normally opened | ●Shut-off structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids and higher temperature<br>●Terminal and Grommet<br>●2/2 way |  | 2KL Series internally piloted and normally opened | ●Piston piloted structure<br>●Width operation pressure<br>●Body material: SUS304<br>●Adopt many fluids and higher temperature<br>●Terminal and Grommet<br>●2/2 way |  |
| **P152** | Product feature | Photo | **P154** | Product feature | Photo |
| 2V Series | ●Direct-acting and diaphragm piloted optional<br>●Body material: Stainless steel or brass<br>●Adopt many fluids<br>●Terminal and Grommet<br>●2/2 way |  | 2J Series angle seat valve | ●Air piloted structure<br>●Body and pitman material: Stainless steel<br>●The structure of valve is angles at 45° degrees with streamline inner chamber design<br>●Adopt many fluids and higher temperature |  |

## Installation and Application

1. Before installing, be sure the valve hasn't been damaged via transportation.
2. The coil must be pure vertical, the inlet and outlet on body must be horizontal. it's suggested to use the medium lubricated by 40 μ m filter element. Be aware of the flow direction and port size.
3. Please notice whether the installation condition accords with technical requirements (such as "voltage","actuation frequency", "working pressure" and "scope of application temperature"), then the equipment can be installed and used.
4. Take measure to avoid vibration and frozen.
5. Before using the fittings and tubes make sure they are clean. When connecting tofittings, be sure the PTFE Thread Seal Tape is used correctly.
6. To keep the dust away, Default paragraph font;Never forget to install dirt-proof boot in air intake and outlet during dismounting.

# Angle seat valve(2/2 way)

## 2J Series

## Symbol


(NC) (NO)

## Product feature

1. Air piloted and can be used non electric, inflammable and explosive environment. The start-up pressure is low; and the high pressure could be controlled by the low pressure.
2. The accessories such as the noumenon and slide bar are made of stainless steel, which are of excellent rustproof quality. The seals are made of Teflon and can be applied extensively in areas with high temperature and strong corrosive liquids.
3. The structure of valve is angles at 45° degrees with streamline inner chamber design . The reduced tunnel resistance allows liquid to run more smoothly thus achieving high flow. Filtration core are added at inlet port to prevent the entrance of impurities and extend life span of the seals.
4. Actuator is fitted with visual position indicator. This allows for visual checking and adjustment of flowrate.
5. Control point is made of metal insert. Mounting plate can be used to for NAMUR value.
6. The actuator part can be rotated at 360° degrees and is easily installed.

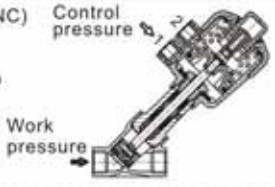
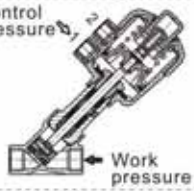
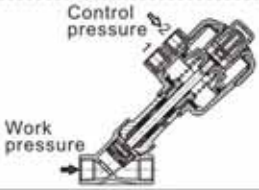
## Specification

| Model\Item | | Port | Actuator size(mm) | Orifice size(mm) | Kv | Min.pilot pressure(bar) | Max.differentia pressure(bar) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| 2JS150 2JW150 | -10 | G3/8 | 40 | 15 | 4.4 | 4.8 | 13 | 0.8 |
| | -15 | G1/2 | | | | | | 0.7 |
| | -10 | G3/8 | 50 | | 4.8 | 4.3 | 16 | 0.8 |
| | -15 | G1/2 | | | | | | 0.7 |
| 2JS200 2JW200 | -20 | G3/4 | 40 | 20 | 7.9 | 4.8 | 6.5 | 0.9 |
| | | | 50 | | 8 | 4.3 | 11 | 0.95 |
| | | | 63 | | 10 | 4.2 | 16 | 1.6 |
| 2JS250 2JW250 | -25 | G1 | 63 | 25 | 19 | 4.2 | 11 | 1.9 |
| | | | 80 | | 20 | 5.0 | 16 | 2.5 |
| 2JS320 2JW320 | -32 | G1 1/4 | 63 | 32 | 27 | 4.2 | 6 | 2.5 |
| | | | 80 | | 28 | 5.0 | 15 | 3.0 |
| 2JSK150 2JWK150 | -10 | G3/8 | 40 | 15 | 4.4 | For details, please refer to normally-opened-type fluid pressure – control pressure curve | 16 | 0.8 |
| | -15 | G1/2 | | | | | | 0.7 |
| | -10 | G3/8 | 50 | | 4.8 | | 16 | 0.8 |
| | -15 | G1/2 | | | | | | 0.7 |
| 2JSK200 2JWK200 | -20 | G3/4 | 40 | 20 | 7.9 | | 16 | 0.9 |
| | | | 50 | | 8 | | 16 | 0.9 |
| 2JSK250 2JWK250 | -25 | G1 | 50 | 25 | 14.5 | | 16 | 1.2 |
| | | | 63 | | 19 | | 16 | 1.6 |
| 2JSK320 2JWK320 | -32 | G1 1/4 | 63 | 32 | 27 | | 16 | 2.2 |
| | | | 80 | | 28 | | 16 | 2.4 |
| 2JSY150 2JWY150 | -10 | G3/8 | 40 | 15 | 4.4 | For details, please refer to normally-closed-water-hammer-type fluid pressure – control pressure curve | 16 | 0.8 |
| | -15 | G1/2 | | | | | | 0.7 |
| | -10 | G3/8 | 50 | | 4.8 | | 16 | 0.8 |
| | -15 | G1/2 | | | | | | 0.7 |
| 2JSY200 2JWY200 | -20 | G3/4 | 40 | 20 | 7.9 | | 16 | 0.9 |
| | | | 50 | | 8 | | 16 | 0.9 |
| 2JSY250 2JWY250 | -25 | G1 | 50 | 25 | 14.5 | | 16 | 1.3 |
| | | | 63 | | 19 | | 16 | 1.7 |
| 2JSY320 2JWY320 | -32 | G1 1/4 | 63 | 32 | 27 | | 16 | 2.3 |

## Ordering code

2J S K 150 15 Q50 G

1 2 3 4 5 6 7

| 1 Model | 2 Valve body meterial | 3 Acting type | 4 Orifice size | 5 Port size | 6 Size of actuator | 7 Thread type |
|---|---|---|---|---|---|---|
| 2J: Angle seat valve(2/2 way) | S: SUS316L<br>W: SUS304 | Blank: No water-hammer(NC)<br>The working medium flows to the down side of valve inlet (Flow from the bottom part to upper part of piston)<br>  | 150: Φ15mm | 10: 3/8"<br>15: 1/2" | Q40: Φ40mm<br>Q50: Φ50mm<br>Q63: Φ63mm<br>Q80: Φ80mm | G: G<br>T: NPT |
| | | Y: Water-hammer(NC)<br>The working medium flows to the upper side of valve inlet (Flow from the upper part to bottom part of piston)<br>  | 200: Φ20mm | 20: 3/4" | | |
| | | K: Normal opened<br>The working medium flows to the down side of valve inlet (Flow from the bottom part to upper part of piston)<br>  | 250: Φ25mm | 25: 1" | | |
| | | | 320: Φ32mm | 32: 1 1/4" | | |

# Preparation unit

To achieve the optimization of system performance, the first thing is to get the gas source which accords with the specifications. Preparation unit with good performance are the precondition to make sure the gas source. AirTAC has many kinds of preparation unit for your choice:
1. G series;  2. A, B series;  3. Other accessory series.

# Preparation unit——GA Series

## GAC Series F.R.L. combination

### Symbol

No reflux valve is attached

Reflux valve is attached

### Product feature

1. Oil dripping adopts gap seal structure, which makes the adjustment of oil supply more reliable.
2. Oil feed ring can only make one full turn. The quantity of oil supply, basically taking on linear distribution. The quantity of oil supply can be generally calculated according to the position of graduation ring.
3. Filling of oil while the lubricator is under pressure is made possible.
4. Special drip nozzle structure will produce negative pressure in oil dripping outlet and the mist flow is minimal.
5. Quick and reliable mounting clamps makes it convenient to install and use.
6. The performance of pressure adjustment is reliable with high precision.
7. The efficiency of eliminating moisture and solid grain is high.
8. Two drain types are available: manual drain+semi-auto drain and automatic drain.
9. Three bowl materials are available: PC, Metal and Nylon.

### Specification

| Model | | GAC200-06 | GAC200-08 | GAC300-08 | GAC300-10 | GAC400-08 | GAC400-10 | GAC400-15 | GAC600-20 | GAC600-25 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | | | | |
| Port size [Note1] | | 1/8" | 1/4" | 1/4" | 3/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| Filtering grade | | 40 μ m or 5 μ m | | | | | | | | |
| Pressure range | | 0.15~0.9MPa(20~130psi) | | | | | | | | |
| Max. pressure | | 1.0MPa(145psi) | | | | | | | | |
| Proof pressure | | 1.5MPa(215psi) | | | | | | | | |
| Temperature range | | −5~70°C(Unfreeze) | | | | | | | | |
| Capacity of drain bowl | | 25CC | | 60CC | | 100CC | | | 205CC | |
| Capacity of oil bowl | | 36CC | | 98CC | | 185CC | | | 410CC | |
| Recommended lubricant | | ISO VG 32 or equivalent | | | | | | | | |
| Weight | | 750g | | 1300g | | 2390g | | | 4600g | |
| Constitute | Filter | GAF200-06 | GAF200-08 | GAF300-08 | GAF300-10 | GAF400-08 | GAF400-10 | GAF400-15 | GAF600-20 | GAF600-25 |
| | Regulator | GAR200-06 | GAR200-08 | GAR300-08 | GAR300-10 | GAR400-08 | GAR400-10 | GAR400-15 | GAR600-20 | GAR600-25 |
| | Lubricator | GAL200-06 | GAL200-08 | GAL300-08 | GAL300-10 | GAL400-08 | GAL400-10 | GAL400-15 | GAL600-20 | GAL600-25 |

[Note1] PT thread, G thread and NPT thread are available.

### Ordering code

GAC300 □ 10 □ S □ W G K

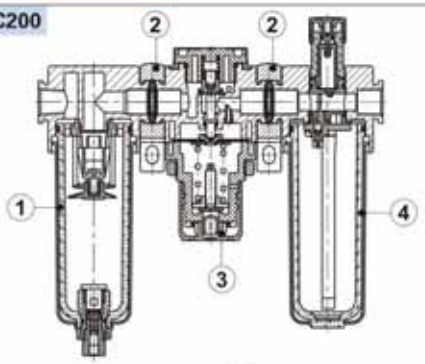
1 2 3 4 5 6 7 8 9

| 1 Model | 2 Bowl material | 3 Port size | 4 Drain type | 5 Type code | 6 Pressure gauge | 7 Filtering grade | 8 Thread type | 9 Code of reflux valve |
|---|---|---|---|---|---|---|---|---|
| GAC200:GA200 Series F.R.L unit | Blank: PC bowl | 06: 1/8"<br>08: 1/4" | Blank: Semi-auto drain +Manual drain<br>A: Automatic drain | S: Standard<br>L: Lower pressure [Note1] | Blank: Circular<br>N: No gauge | Blank: 40 μ m<br>W: 5 μ m | Blank: PT (MPa/psi)<br>G: G (bar/MPa)<br>T: NPT (psi/bar) | Blank: No reverse flow valve is attached<br>K: Reverse flow valve is attached [Note2] |
| GAC300:GA300 Series F.R.L unit | C: Metal bowl | 08: 1/4"<br>10: 3/8" | | | | | | |
| GAC400:GA400 Series F.R.L unit | N: Nylon bowl | 08: 1/4"<br>10: 3/8"<br>15: 1/2" | | | | | | |
| GAC600:GA600 Series F.R.L unit | C: Metal bowl | 20: 3/4"<br>25: 1" | | | | | | |

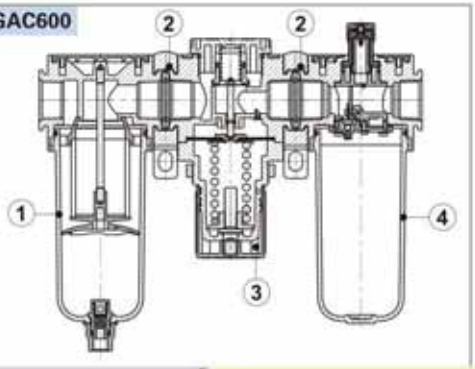
[Note1] The maximum work pressure of lower pressure type is 0.4MPa(58psi); [Note2] Please refer to page 179 for details of reflux valve.

### Inner structure

GAC200




GAC600




| No. | Item | No. | Item |
|---|---|---|---|
| 1 | GA series filter | 3 | GA series regulator |
| 2 | Bracket | 4 | GA series lubricator |

# Preparation unit——GA Series

## GAFC Series FR.L. combination

### Symbol

No reflux valve is attached

Reflux valve is attached

### Product feature

1. Quick and reliable mounting clamps makes it convenient to install and use.
2. The performance of pressure adjustment is reliable with high precision.
3. The efficiency of eliminating moisture and solid grain is high.
4. Two drain types are available: manual drain+semi-auto drain and automatic drain.
5. Three bowl materials are available: PC, Metal and Nylon.

### Specification

| Model | | GAFC200-06 | GAFC200-08 | GAFC300-08 | GAFC300-10 | GAFC400-08 | GAFC400-10 | GAFC400-15 | GAFC600-20 | GAFC600-25 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | | | | |
| Port size [Note1] | | 1/8" | 1/4" | 1/4" | 3/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| Filtering grade | | 40 μ m or 5 μ m | | | | | | | | |
| Pressure range | | 0.15~0.9MPa(20~130psi) | | | | | | | | |
| Max. pressure | | 1.0MPa(145psi) | | | | | | | | |
| Proof pressure | | 1.5MPa(215psi) | | | | | | | | |
| Temperature range | | -5~70°C(Unfreeze) | | | | | | | | |
| Capacity of drain bowl | | 25CC | | 60CC | | 100CC | | | 205CC | |
| Capacity of oil bowl | | 36CC | | 98CC | | 185CC | | | 410CC | |
| Recommended lubricant | | ISO VG 32 or equivalent | | | | | | | | |
| Weight | | 590g | | 1020g | | 1810g | | | 3430g | |
| Constitute | Filter & Regulator | GAFR200-06 | GAFR200-08 | GAFR300-08 | GAFR300-10 | GAFR400-08 | GAFR400-10 | GAFR400-15 | GAFR600-20 | GAFR600-25 |
| | Lubricator | GAL200-06 | GAL200-08 | GAL300-08 | GAL300-10 | GAL400-08 | GAL400-10 | GAL400-15 | GAL600-20 | GAL600-25 |

[Note1] PT thread, G thread and NPT thread are available.

### Ordering code

GAFC300 □ 10 □ S □ W G K

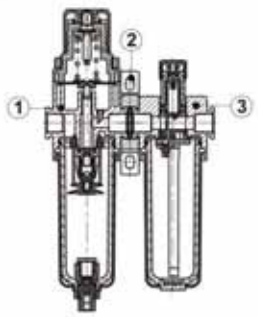
1 2 3 4 5 6 7 8 9

| 1 Model | 2 Bowl material | 3 Port size | 4 Drain type | 5 Type code | 6 Pressure gauge | 7 Filtering grade | 8 Thread type | 9 Code of reflux valve |
|---|---|---|---|---|---|---|---|---|
| GAFC200:GA200 Series FR.L unit | Blank: PC bowl | 06: 1/8"<br>08: 1/4" | Blank: Semi-auto drain +Manual drain<br>A: Automatic drain | S: Standard<br>L: Lower pressure [Note1] | Blank: Circular<br>N: No gauge | Blank: 40 μ m<br>W: 5 μ m | Blank: PT (MPa/psi)<br>G: G (bar/MPa)<br>T: NPT (psi/bar) | Blank: No reverse flow valve is attached<br>K: Reverse flow valve is attached [Note2] |
| GAFC300:GA300 Series FR.L unit | C: Metal bowl | 08: 1/4"<br>10: 3/8" | | | | | | |
| GAFC400:GA400 Series FR.L unit | N: Nylon bowl | 08: 1/4"<br>10: 3/8"<br>15: 1/2" | | | | | | |
| GAFC600:GA600 Series FR.L unit | C: Metal bowl | 20: 3/4"<br>25: 1" | | | | | | |

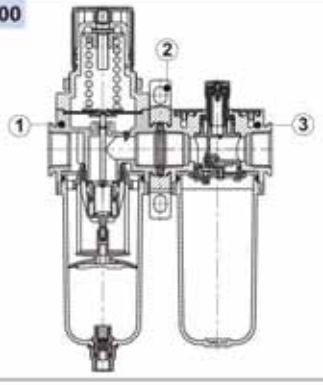
[Note1] The maximum work pressure of lower pressure type is 0.4MPa(58psi); [Note2] Please refer to page 179 for details of reflux valve.

### Inner structure

GAFC200




GAFC600




| No. | Item |
|---|---|
| 1 | GA series filter & regulator |
| 2 | Bracket |
| 3 | GA series lubricator |

# Preparation unit——G Series

## GPF Series Oil mist filter

## Specification

| Model | | GPF20006 | GPF20008 | GPF30008 | GPF30010 | GPF40010 | GPF40015 |
|---|---|---|---|---|---|---|---|
| Fluid | | Air | | | | | |
| Port size [Note1] | | 1/8" | 1/4" | 1/4" | 3/8" | 3/8" | 1/2" |
| Filtering grade | M | 0.3μm(Capture efficiency 99.9%) | | | | | |
| | D | 0.01μm(Capture efficiency 99.9%) | | | | | |
| Pressure range | | 0.15~1.0MPa | | | | | |
| Proof pressure | | 1.5MPa | | | | | |
| Temperature range | | -5~70°C(Unfreeze) | | | | | |
| Bowl Material | | Polycarbonate, Nylon, Metal | | | | | |
| Capacity of drain bowl | | 19CC | | 54.5CC | | 89CC | |
| Weight | PC bowl | 207g | | 356g | | 620g | |
| | Metallic bowl | 238g | | 397g | | 627g | |

[Note1] PT thread, G thread and NPT thread are available.

## Symbol

## Product feature

1. Low pressure drop, high oil mist remove efficiency up to 99% and large drain bowl.
2. 0.3μm and 0.01μm filtering grade are available.
3. Two drain types are available: manual and semi-auto drain, and automatic drain.
4. To meet the needs of different environment the bowl material has Poly Carbonate, nylon and metal can be selected.
5. Monomeric products can select the bracket for installation, others can be used with F.R.L Combination.

## Ordering code

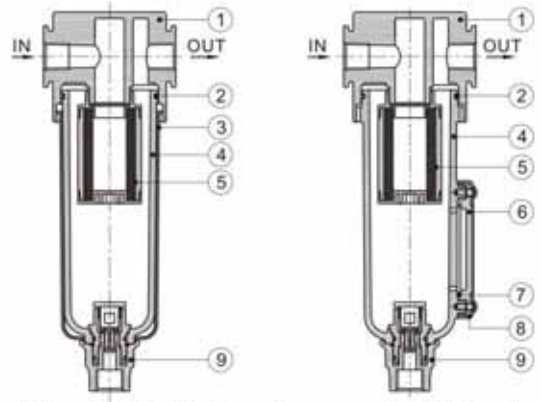
GPF300 □ 08 □ □ M G

① ② ③ ④ ⑤ ⑥ ⑦

| ① Model | ② Bowl Material | ③ Port size | ④ Drain type | ⑤ Accessories | ⑥ Filtering grade | ⑦ Thread type |
|---|---|---|---|---|---|---|
| GPF200: 200 Series Oil mist filter | Blank: PC bowl+Metallic bowl guard<br>C: Metallic bowl<br>N: Nylon bowl+Metallic bowl guard | 06: 1/8"<br>08: 1/4" | Blank: Manual and Semi-auto drain<br>A: Automatic drain | Blank: Bracket<br>J: No bracket | M: 0.3μm<br>D: 0.01μm | Blank: PT<br>G: G<br>T: NPT |
| GPF300: 300 Series Oil mist filter | | 08: 1/4"<br>10: 3/8" | | | | |
| GPF400: 400 Series Oil mist filter | | 10: 3/8"<br>15: 1/2" | | | | |

## Inner structure

GPF300




PC bowl+Metallic bowl guard　　Metallic bowl

| No. | Item | Material |
|---|---|---|
| 1 | Body | Aluminium alloy |
| 2 | O-ring | NBR |
| 3 | Meter cover | SPCC |
| 4 | Drain bowl | PC\nylon\aluminium alloy |
| 5 | Filter core | Polymer materials |
| 6 | Liquid meter cover | PC |
| 7 | Liquid meter seal | NBR |
| 8 | Liquid meter inside cover | SPCC |
| 9 | Drain connection | Plastic |

# Preparation unit——GA Series

## GAR Series Regulator

## Symbol

No reflux valve is attached

Reflux valve is attached

## Product feature

1. Circular square pressure gauge which with clip and magnifier is used to save installation space.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. Balanced design is adopted for the pressure adjustment mechanism.
4. In addition to panel installation, the bracket is optional for installation.

## Specification

| Model | GAR200-06 | GAR200-08 | GAR300-08 | GAR300-10 | GAR400-08 | GAR400-10 | GAR400-15 | GAR600-20 | GAR600-25 |
|---|---|---|---|---|---|---|---|---|---|
| Fluid | Air | | | | | | | | |
| Port size [Note1] | 1/8" | 1/4" | 1/4" | 3/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| Pressure range | 0.05~0.9MPa(7~130psi) | | | | | | | | |
| Max. pressure | 1.0MPa(145psi) | | | | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | | | | |
| Temperature range | -20~70°C | | | | | | | | |
| Weight | 170g | | 300g | | 570g | | | 1390g | |

[Note1] PT thread, G thread and NPT thread are available.

## Ordering code

GAR300 10 S □ □ G K

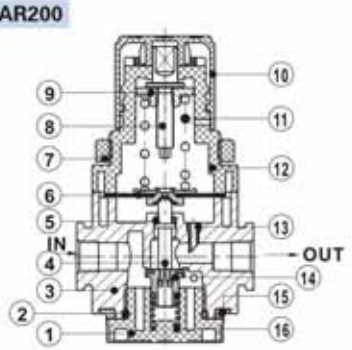
1 2 3 4 5 6 7

| ①Model | ②Port size | ③Type code | ④Accessories | ⑤Pressure gauge | ⑥Thread type | ⑦Code of reflux valve |
|---|---|---|---|---|---|---|
| GAR200:GA200 Series regulator | 06: 1/8"<br>08: 1/4" | S: Standard<br>L: Lower pressure [Note1] | Blank: Bracket<br>J: No bracket | Blank: Circular<br>N: No gauge | Blank: PT (MPa/psi)<br>G: G (bar/MPa)<br>T: NPT (psi/bar) | Blank: No reverse flow valve is attached<br>K: Reverse flow valve is attached [Note2] |
| GAR300:GA300 Series regulator | 08: 1/4"<br>10: 3/8" | | | | | |
| GAR400:GA400 Series regulator | 08: 1/4"<br>10: 3/8"<br>15: 1/2" | | | | | |
| GAR600:GA600 Series regulator | 20: 3/4"<br>25: 1" | | | | | |

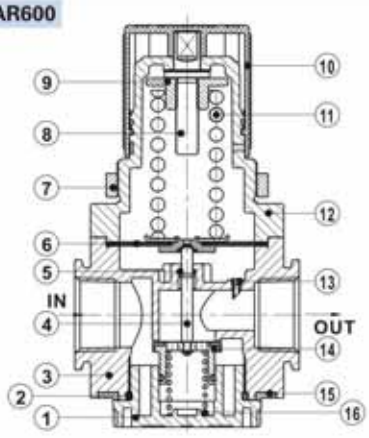
[Note1] The maximum work pressure of lower pressure type is 0.4MPa(58psi); [Note2] Please refer to page 179 for details of reflux valve.

## Inner structure

GAR200




GAR600




| No. | Item | Material |
|---|---|---|
| 1 | Valve cap | Aluminum alloy(GR600)\POM(others) |
| 2 | O-ring | NBR |
| 3 | Body | Aluminum alloy |
| 4 | Spool | Brass(GR600)\POM(others) |
| 5 | O-ring | NBR |
| 6 | Diaphragm | NBR |
| 7 | Fixed ring | Aluminum alloy (GR600)\POM(others) |
| 8 | Adjusting spindle | Steel |
| 9 | Regulator nut | Steel |
| 10 | Pressure knob | POM |
| 11 | Pressure spring | SWPB |
| 12 | Adjusting seat | Aluminum alloy (GR600)\POM(others) |
| 13 | Feed back tuble | POM |
| 14 | Pressure plug | Aluminum alloy & steel |
| 15 | Bottom cover | POM |
| 16 | Spring | SWPB |

# Preparation unit——A,B series

## Compendium of A,B Series preparation unit

| P181 | Product feature | Photo | P183 | Product feature | Photo |
|---|---|---|---|---|---|
| AC、BC Series F.R.L Unit | ●The efficiency of water separating is high<br>●The pressure loss is low<br>●The flow of miststart is low<br>●Convenient for installation and application<br>●AC/BC series is optional<br>●High-strength plastic shields is optional<br>●Port size: 1/8" 1/4" 3/8" 1/2" |  | AFC、BFC Series FR.L Unit | ●The efficiency of water separating is high<br>●The pressure loss is low<br>●The flow of miststart is low<br>●Convenient for installation and application<br>●AFC/BFC series is optional<br>●High-strength plastic shields is optional<br>●Port size: 1/8" 1/4" 3/8" 1/2" |  |
| **P185** | Product feature | Photo | **P187** | Product feature | Photo |
| AFR、BFR Series Filter-Regulator | ●The efficiency of water separating is high<br>●The pressure loss is low<br>●With fixing bracket convenient for use<br>●AFR/BFR series is optional<br>●High-strength plastic shields is optional<br>●Port size: 1/8" 1/4" 3/8" 1/2" |  | AF、BF Series Filter | ●The pressure loss is low<br>●High-strength plastic shields is optional<br>●The filter precision includes 5μm and 40μm(optional)<br>●AF/BF series is optional<br>●Port size: 1/8" 1/4" 3/8" 1/2" |  |
| **P188** | Product feature | Photo | **P190** | Product feature | Photo |
| AR、BR Series Regulator | ●Adjusting pressure steadily<br>●Faceplate fixing and bracket fixing is optional<br>●Standard type, lower pressure type is optional<br>●AR/BR series is optional<br>●Port size: 1/8" 1/4" 3/8" 1/2" |  | AL、BL Series Lubricator | ●The flow of miststart is low<br>●The pressure loss is low<br>●High-strength plastic shields is optional<br>●AL/BL series is optional<br>●Port size: 1/8" 1/4" 3/8" 1/2" |  |

## Installation and application

1. Check whether the components have been damaged during transportation before installing and using.
2. Pay attention to whether the flow direction of air (notice "→" direction) and thread type are correct.
3. Please notice whether installation condition accords with technical requirements (such as "working pressure" and "applied temperature range").
4. The medium used or installation environment shall be noticed. The matters with chlorine, carbon compound, aromatic compound and oxidizing acid and alkali shall be avoided to prevent the damage of bowl and oil bowl.
5. Regularly clean or change filter core. Lubricators and regulators shall be in descending order.
6. Keep dust away. The dust cover shall be installed in intake and outlet when the device is dismantled and stored.

# Preparation unit——A, B Series

## AC、BC Series F.R.L. Combination

### Symbol

### Product feature

1. The structure is delicate and compact, which is convenient for installation and application.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. The pressure loss is low and the efficiency of water separating is high.
4. The quantity of oil dripping can be directly observed through transparent check-dome.
5. In addition to standard type, lower pressure type is optional (The highest adjustable pressure is 0.4MPa).

### Specification

| Model | | Ac1500 | AC2000 | BC2000 | BC3000 | BC4000 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port size [Note1] | | 1/8" | 1/4" | 1/4" | 3/8" | 1/2" |
| Filtering grade | | 40μm or 5μm | | | | |
| Pressure range | | Semi-auto and automatic drain:0.15~0.9MPa(20~130Psi) Manual drain:0.05~0.9MPa(7~130Psi) | | | | |
| Max. pressure | | 1.0MPa(145Psi) | | | | |
| Proof pressure | | 1.5MPa(215Psi) | | | | |
| Temperature range | | -5~70°C(unfreeze) | | | | |
| Capacity of drain bowl | | 15CC | | 60CC | | |
| Capacity of oil bowl | | 25CC | | 90CC | | |
| Recommended lubricant | | ISO VG 32 or equivalent | | | | |
| Weight | | 700g | | 900g | | |
| Constitute | Filter | AF1500 | AF2000 | BF2000 | BF3000 | BF4000 |
| | Regulator | AR1500 | AR2000 | BR2000 | BR3000 | BR4000 |
| | Lubricator | AL1500 | AL2000 | BL2000 | BL3000 | BL4000 |

[Note1] PT thread, G thread and NPT thread are available.

### Ordering code

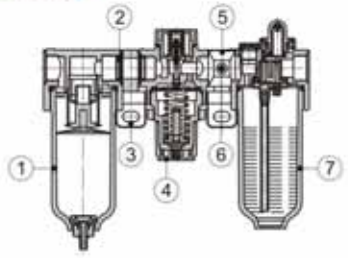
AC 2000 M □ □ 1 W □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

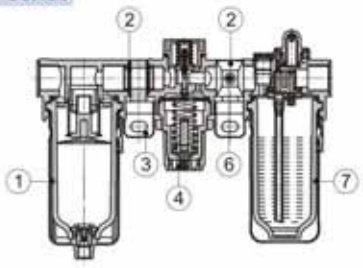
| ① Model | ② Port size | ③ Drain type | ④ Type code | ⑤ Pressure gauge | ⑥ Scale | ⑦ Filtering grade | ⑧ Thread type |
|---|---|---|---|---|---|---|---|
| AC: A Series F.R.L unit | 1500: 1/8"<br>2000: 1/4" | Blank: Semi-auto drain<br>M: Manual drain | Blank: Standard (0.9MPa)<br>L: Lower pressure (0.4MPa) | Blank: Pressure gauge<br>N: No pressure gauge | 1: MPa<br>2: psi<br>3: bar<br>4: kgf/cm² & psi | Blank: 40μm<br>W: 5μm | Blank: PT (Scale: MPa or kgf/cm² & psi)<br>G: G(Scale:bar)<br>T: NPT(Scale:psi) |
| BC: B Series F.R.L unit | 2000: 1/4"<br>3000: 3/8"<br>4000: 1/2" | Blank: Semi-auto drain<br>M: Manual drain<br>A: Automatic drain | | | | | |

### Inner structure

**AC Series**




**BC Series**

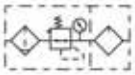



| No. | Item | No. | Item |
|---|---|---|---|
| 1 | AF, BF Series filter | 5 | A, B Series fix kit |
| 2 | A, B Series gasket | 6 | Screw |
| 3 | A, B Series bracket | 7 | AL, BL Series lubricator |
| 4 | AR, BR Series regulator | | |

# Preparation unit——A, B Series

## AFC、BFC Series FR.L. Combination

### Symbol



### Product feature

1. The structure is delicate and compact, which is convenient for installation and application.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. The pressure loss is low and the efficiency of water separating is high.
4. The quantity of oil dripping can be directly observed through transparent check dome.
5. In addition to standard type, lower pressure type is optional (The highest adjustable pressure is 0.4MPa).

### Specification

| Model | | AFC1500 | AFC2000 | BFC2000 | BFC3000 | BFC4000 |
|---|---|---|---|---|---|---|
| Fluid | | Air | | | | |
| Port size [Note1] | | 1/8" | 1/4" | 1/4" | 3/8" | 1/2" |
| Filtering grade | | 40μm or 5μm | | | | |
| Pressure range | | Semi-auto and automatic drain:0.15~0.9MPa(20~130Psi) Manual drain:0.05~0.9MPa(7~130Psi) | | | | |
| Max. pressure | | 1.0MPa(145Psi) | | | | |
| Proof pressure | | 1.5MPa(215Psi) | | | | |
| Temperature range | | -5~70°C(unfreeze) | | | | |
| Capacity of drain bowl | | 15CC | | 60CC | | |
| Capacity of oil bowl | | 25CC | | 90CC | | |
| Recommended lubricant | | ISO VG 32 or equivalent | | | | |
| Weight | | 500g | | 700g | | |
| Constitute | Filter-Regulator | AFR1500 | AFR2000 | BFR2000 | BFR3000 | BFR4000 |
| | Lubricator | AL1500 | AL2000 | BL2000 | BL3000 | BL4000 |

[Note1] PT thread, G thread and NPT thread are available.

### Ordering code

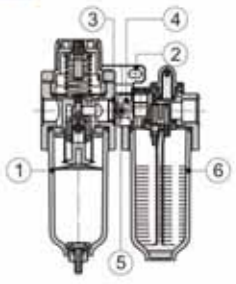
AFC 2000 M □ □ 1 W □

1 2 3 4 5 6 7 8

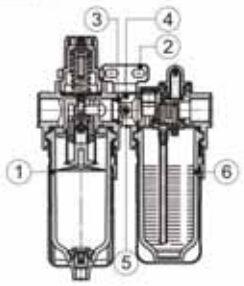
| 1 Model | 2 Port size | 3 Drain type | 4 Type code | 5 Pressure gauge | 6 Scale | 7 Filtering grade | 8 Thread type |
|---|---|---|---|---|---|---|---|
| AFC: A Series FR.L unit | 1500: 1/8"<br>2000: 1/4" | Blank: Semi-auto drain<br>M: Manual drain | Blank: Standard (0.9MPa)<br>L: Lower pressure (0.4MPa) | Blank: Pressure gauge<br>N: No pressure gauge | 1: MPa<br>2: psi<br>3: bar<br>4: kgf/cm² & psi | Blank: 40μm<br>W: 5μm | Blank: PT (Scale: MPa or kgf/cm² & psi)<br>G: G(Scale:bar)<br>T: NPT(Scale:psi) |
| BFC: B Series FR.L unit | 2000: 1/4"<br>3000: 3/8"<br>4000: 1/2" | Blank: Semi-auto drain<br>M: Manual drain<br>A: Automatic drain | | | | | |

### Inner structure

**AFC Series**




**BFC Series**




| No. | Item |
|---|---|
| 1 | AFR, BFR Series filter & regulator |
| 2 | A, B Series bracket |
| 3 | A, B Series gasket |
| 4 | A, B Series fixed kit |
| 5 | Screw |
| 6 | AL, BL Series lubricator |

# Preparation unit——A, B Series

## AFR、BFR Series Filter & regulator

### Symbol

### Product feature

1. The structure is delicate and compact, which is convenient for installation and application.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. The pressure loss is low and the efficiency of water separating is high;
4. In addition to standard type, lower pressure type is optional(The highest adjustable pressure is 0.4MPa).

### Specification

| Model | AFR1500 | AFR2000 | BFR2000 | BFR3000 | BFR4000 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Port size [Note1] | 1/8" | 1/4" | 1/4" | 3/8" | 1/2" |
| Filtering grade | 40μm or 5μm | | | | |
| Pressure range | Semi-auto and automatic drain:0.15~0.9MPa(20~130Psi) Manual drain:0.05~0.9MPa(7~130Psi) | | | | |
| Max. pressure | 1.0MPa(145Psi) | | | | |
| Proof pressure | 1.5MPa(215Psi) | | | | |
| Temperature range | -5~70°C(unfreeze) | | | | |
| Capacity of drain bowl | 15CC | | 60CC | | |
| Weight | 260g | | 400g | | |

[Note1] PT thread, G thread and NPT thread are available.

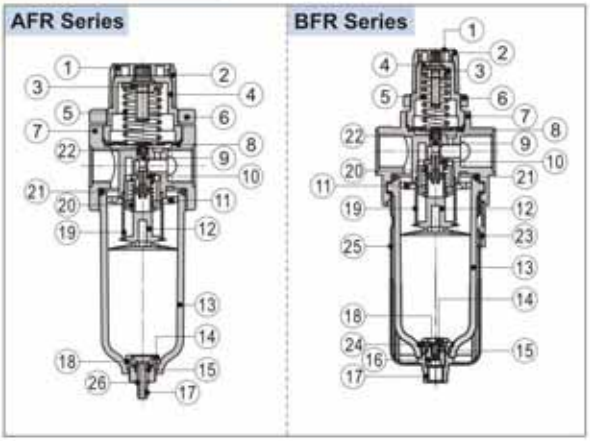
### Ordering code

AFR 2000 M □ □ □ 1 W □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

| ① Model | ② Port size | ③ Drain type | ④ Type code | ⑤ Accessories | ⑥ Pressure gauge | ⑦ Scale | ⑧ Filtering grade | ⑨ Thread type |
|---|---|---|---|---|---|---|---|---|
| AFR: A Series Filter & regulator | 1500: 1/8"<br>2000: 1/4" | Blank: Semi-auto drain<br>M: Manual drain | Blank: Standard (0.9MPa)<br>L: Lower pressure (0.4MPa) | Blank: Bracket<br>J: No bracket | Blank: Pressure gauge<br>N: No pressure gauge | 1: MPa<br>2: psi<br>3: bar<br>4: kgf/cm² & psi | Blank: 40μm<br>W: 5μm | Blank: PT (Scale: Mpa orkgf/cm² & psi)<br>G: G(Scale:bar)<br>T: NPT(Scale:psi) |
| BFR: B Series Filter & regulator | 2000: 1/4"<br>3000: 3/8"<br>4000: 1/2" | Blank: Semi-auto drain<br>M: Manual drain<br>A: Automatic drain | | | | | | |

### Inner structure




| No. | Item | Material | No. | Item | | Material |
|---|---|---|---|---|---|---|
| 1 | Push button | POM | 14 | Drain kit | | POM |
| 2 | Adjusting button | POM | 15 | Return spring | | Stainless steel |
| 3 | Adjusting nut | Steel | 16 | Drain seat | | POM |
| 4 | Adjusting seat | POM | 17 | Drain pillar | | POM |
| 5 | Adjusting spring | SWC | 18 | Drain O-ring | | NBR |
| 6 | Fixed ring | POM | 19 | Filter element | 5μm | Makrolon fiber |
| 7 | Body | Aluminum alloy | | | 40μm | Agglomerated by bronze grain |
| 8 | Diaphragm | SUS304 & rubber | 20 | Return spring | | Stainless steel |
| 9 | Balance needle | POM | 21 | Drain bowl O-ring | | NBR |
| 10 | Needle gasket | Aluminum alloy & rubber | 22 | Needle O-ring | | NBR |
| 11 | Air guider | POM | 23 | Bowl guard switch | | POM |
| 12 | Umbrella baffle | POM | 24 | Gasket | | POM |
| 13 | Drain bowl | PC | 25 | Bowl guard | | PA66 |
| | | | 26 | Clip | | Spring steel |

# Preparation unit——A, B Series

## AF、BF Series Filter

## Symbol

## Product feature

**AF Series**

1. The structure is delicate and compact.
2. The pressure loss is low and the efficiency of water separating is high;
3. The filter precision includes 5 μ m and 40 μ m(optional);

**BF Series**

1. The pressure loss is low and the efficiency of water separating is high.
2. The bowl has high-strength plastic shields outside,which is more safe and reliable to use.
3. The filter precision includes 5 μ m and 40 μ m (optional).

## Specification

| Model | AF1500 | AF2000 | BF2000 | BF3000 | BF4000 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Port size [Note1] | 1/8" | 1/4" | 1/4" | 3/8" | 1/2" |
| Filtering grade | 40 μ m or 5 μ m | | | | |
| Pressure range | Semi-auto and automatic drain:0.15~1.0MPa(20~145Psi) Manual drain:0~1.0MPa(0~145Psi) | | | | |
| Proof pressure | 1.5MPa(215Psi) | | | | |
| Temperature range | -5~70°C(unfreeze) | | | | |
| Capacity of drain bowl | 15CC | | 60CC | | |
| Weight | 140g | | 330g | | |

[Note1] PT thread, G thread and NPT thread are available.

## Ordering code

AF 2000 M W □

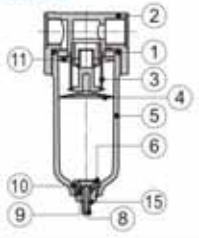
1 2 3 4 5

| 1 Model | 2 Port size | 3 Drain type [Note] | 4 Filtering grade | 5 Thread type |
|---|---|---|---|---|
| AF:A Series Filter | 1500: 1/8"<br>2000: 1/4" | Blank: Semi-auto drain<br>M: Manual drain | Blank: 40 μ m<br>W: 5 μ m | Blank: PT<br>G: G<br>T: NPT |
| BF:B Series Filter | 2000: 1/4"<br>3000: 3/8"<br>4000: 1/2" | Blank: Semi-auto drain<br>M: Manual drain<br>A: Automatic drain | | |

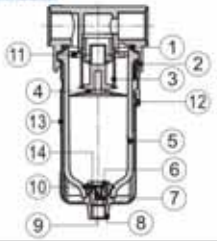
[Note1] The drain modes of different series are different.
Please refer to P182 for details.

## Inner structure

**AF Series**



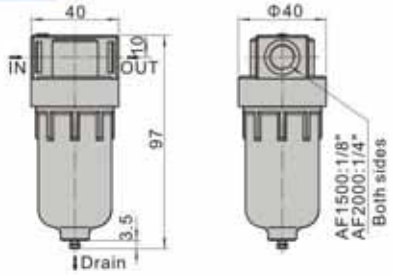

**BF Series**



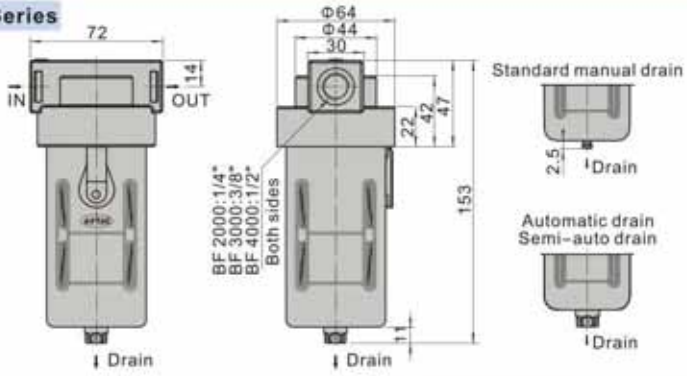

| No. | Item | | Material | No. | Item | Material |
|---|---|---|---|---|---|---|
| 1 | Drain bowl O-ring | | NBR | 8 | Drain pillar | POM |
| 2 | Body | | Aluminum alloy | 9 | Return spring | Stainless steel |
| 3 | Filter element | 5 μ m | Makrolon fiber | 10 | Gasket | POM |
| | | 40 μ m | Agglomerated by bronze grain | 11 | Air guider | POM |
| 4 | Umbrella baffle | | POM | 12 | Bowl guard switch | POM |
| 5 | Drain bowl | | PC | 13 | Bowl guard | PA6 |
| 6 | Drain kit | | POM | 14 | Drain seat O-ring | NBR |
| 7 | Drain seat | | POM | 15 | Clip | Spring steel |

## Dimensions

**AF Series**




**BF Series**



# Preparation unit——A, B Series

## AR、BR Series Regulator

## Symbol

## Product feature

1. The structure is delicate and compact, which is convenient for installation and application.
2. The pressed-in self-locking mechanism can prevent the abnormal movement of the set pressure caused by external interfere.
3. In addition to standard type, lower pressure type is optional (The highest adjustable pressure is 0.4MPa).

## Specification

| Model | AR1500 | AR2000 | BR2000 | BR3000 | BR4000 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Port size [Note1] | 1/8" | 1/4" | 1/4" | 3/8" | 1/2" |
| Pressure range | 0.05~0.9MPa(7~130Psi) | | | | |
| Max. pressure | 1.0MPa(145Psi) | | | | |
| Proof pressure | 1.5MPa(215Psi) | | | | |
| Temperature range | -20~70℃ | | | | |
| Weight | 200g | | 230g | | |

[Note1] PT thread, G thread and NPT thread are available.

## Ordering code

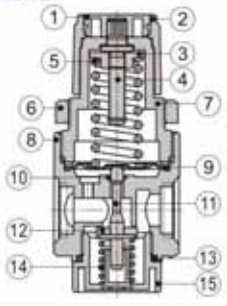
AR 2000 L □ □ 1 □

1 2 3 4 5 6 7

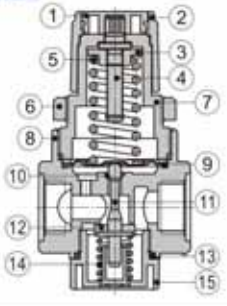
| 1 Model | 2 Port size | 3 Type code | 4 Accessories | 5 Pressure gauge | 6 Scale | 7 Thread type |
|---|---|---|---|---|---|---|
| AR: A Series Regulator | 1500: 1/8"<br>2000: 1/4" | Blank: Standard (0.9MPa)<br>L: Lower pressure (0.4MPa) | Blank: Bracket<br>J: No bracket | Blank: Pressure gauge<br>N: No pressure gauge | 1: MPa<br>2: psi<br>3: bar<br>4: kgf/cm² & psi | Blank: PT (Scale: Mpa orkgf/cm² & psi)<br>G: G(Scale:bar)<br>T: NPT(Scale:psi) |
| BR: B Series Regulator | 2000: 1/4"<br>3000: 3/8"<br>4000: 1/2" | | | | | |

## Inner structure

AR Series




BR Series




| No. | Item | Material |
|---|---|---|
| 1 | Push button | POM |
| 2 | Adjusting button | POM |
| 3 | Adjusting nut | Steel |
| 4 | Adjusting pillar | Steel |
| 5 | Adjusting spring | SWC |
| 6 | Fixed ring | POM |
| 7 | Adjusting seat | POM |
| 8 | Body | Aluminum alloy |
| 9 | Diaphragm | SUS304 & rubber |
| 10 | Needle O-ring | NBR |
| 11 | Balance needle | POM |
| 12 | Needle gasket | Aluminum alloy & rubber |
| 13 | Cap O-ring | NBR |
| 14 | Return spring | Stainless steel |
| 15 | Regulator cap | POM |

# Preparation unit——A, B Series

## AL、BL Series Lubricator

### Symbol

### Product feature

1. The structure is delicate and compact.
2. The quantity of oil dripping can be directly observed through transparent inspection sheet.
3. BL has high-strength plastic shields, which is more safe and reliable to use.
4. The pressure loss and the flow of miststart is low.

### Specification

| Model | AI1500 | AL2000 | BL2000 | BL3000 | BL4000 |
|---|---|---|---|---|---|
| Fluid | Air | | | | |
| Port size [Note1] | 1/8" | 1/4" | 1/4" | 3/8" | 1/2" |
| Pressure range | 0.05~1.0MPa(7~145Psi) | | | | |
| Proof pressure | 1.5MPa(215Psi) | | | | |
| Temperature range | -5~70°C(unfreeze) | | | | |
| Capacity of oil bowl | 25CC | | 90CC | | |
| Recommended lubricant | ISO VG 32 or equivalent | | | | |
| Weight | 170g | | 250g | | |

[Note1] PT thread, G thread and NPT thread are available.

### Ordering code

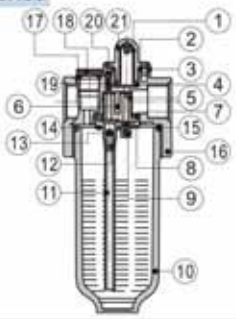
AL 2000 □

① ② ③

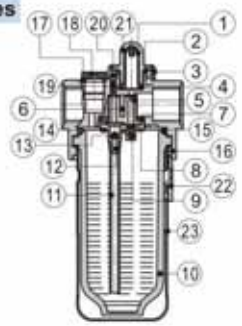
| ① Model | ② Port size | ③ Thread type |
|---|---|---|
| AL：A Series Lubricator | 1500: 1/8"<br>2000: 1/4" | Blank: PT<br>G: G<br>T: NPT |
| BL：B Series Lubricator | 2000: 1/4"<br>3000: 3/8"<br>4000: 1/2" | |

### Inner structure

AL Series



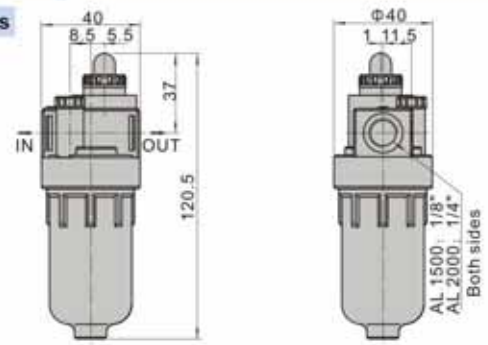

BL Series



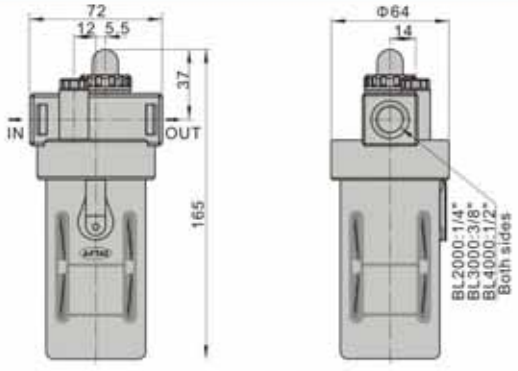

| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 1 | Drip pipe | PC | 13 | Ball | Stainless steel |
| 2 | Dripper O-ring | NBR | 14 | Lubricator fixed plate | SPCC |
| 3 | Oil adjusting dial | POM | 15 | Oil bowl O-ring | NBR |
| 4 | Adjusting ring | NBR | 16 | Body | Aluminum alloy |
| 5 | Lubricator seat | POM | 17 | Oil filling nut O-ring | NBR |
| 6 | Partition | PU | 18 | Oil filling plug | Steel |
| 7 | Lubricator kit gasket | NBR | 19 | Needle spring | Stainless steel |
| 8 | Adjustor | HDPE | 20 | Injector pin | Bronze |
| 9 | Return spring | Stainless steel | 21 | Check-dome | PC |
| 10 | Oil bowl | PC | 22 | Bowl guard switch | POM |
| 11 | Sunk tube | PU | 23 | Bowl guard | PA6 |
| 12 | Lubricator kit | POM | | | |

### Dimensions

AL Series




BL Series



# Preparation unit——Other series

## ADW Series dripleg drain

### Symbol

### Product feature

1. The float is with lever structure. Low position enables more stable drain.
2. The bowl made of High intensity PC and covered by steel case is safer to use.
3. Double strainer guarantees the operation of the drainer.
4. Inlet with large port size prevents accumulation of particles or rust.
5. The drainage bowl with large capacity can keep more rust and dirt than general drains.
6. The drain is equipped with large float and sensitive to control.
7. The bowl with large size can store a certain amount of water which reduces discharging time and extends the service life.

### Ordering code

ADW 400 10 □

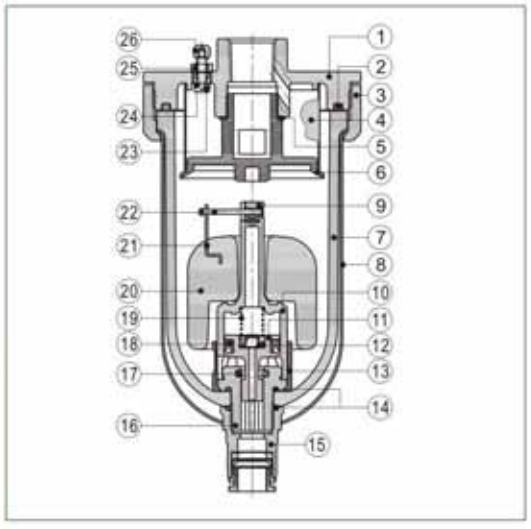
| 1 Model | 2 Series code | 3 Port size | 4 Thread type |
|---|---|---|---|
| ADW: Dripleg drain | 400: 400 Series | 10: 3/8"<br>15: 1/2" | Blank: PT<br>G: G<br>T: NPT |

### Specification

| Model | ADW400-10 | ADW400-15 |
|---|---|---|
| Fluid | Air | |
| Pressure range | 0.15~1.0MPa(22~145psi) | |
| Max. pressure | 1.0MPa(145psi) | |
| Proof pressure | 1.5MPa(215psi) | |
| Temperature range | -5~70℃(Unfreezeing) | |
| Port size [Note1] | IN=3/8" | IN=1/2" |

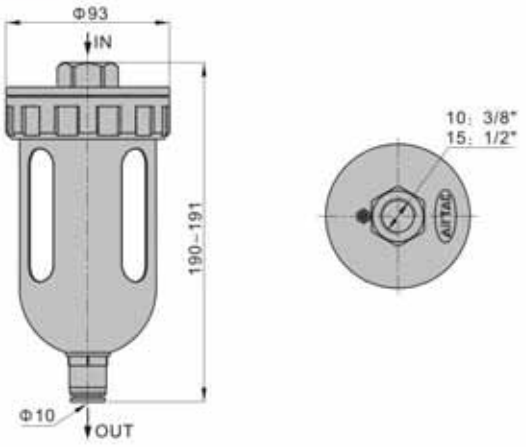
[Note1] PT thread, G thread and NPT thread are available.

### Inner structure and material of major parts




| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 1 | Body | Aluminum alloy | 14 | O-ring | NBR |
| 2 | O-ring | NBR | 15 | Drain joint set | |
| 3 | Body nut | Aluminum alloy | 16 | Drain baffle | POM |
| 4 | Filter gauze | Stainless steel | 17 | O-ring | VITON |
| 5 | Fixed ring | NBR | 18 | O-ring | NBR |
| 6 | Filter | POM | 19 | Spring | Spring steel |
| 7 | Drain bowl | PC | 20 | Float | PU rigid foam |
| 8 | Bowl guard | 08F | 21 | Link iron | Stainless steel |
| 9 | Valve | Stainless steel & & rubber | 22 | Lever | Stainless steel |
| 10 | Piston | Aluminum alloy | 23 | Adjustable screw | Stainless steel |
| 11 | Float | PC+ABS | 24 | Gasket | EPDM |
| 12 | Silencer | Agglomerated by brass grain | 25 | Balance needle seat | Stainless steel |
| 13 | Filter element | Stainless steel & & rubber | 26 | Screw | Steel |

### Dimensions




### Installation and application

1. ADW400 series are applicable to following air compressing equipments: air storage tank, dryer, filter, and piping.
2. Minimum 300mm room is required if the bottom end of above-mentioned equipments being connected with a (1/2") joint.
3. Using a 1/2" hand lever valve between the air compressing equipment and the inlet of ADW400 is good for maintenance.
4. The air displacement of the air compressing equipment can't be lower than 182 L/min.
5. Make sure the drain is vertical downward and the drain pipe is not bended upside.
6. Do not use acidoid or volatile oil gas (hydrochloric acid, petrol, methylbenzene, etc.) to clean the PC bowl. This may cause break.
7. Push the hexagon nut of the body to release the residual pressure before dissembling the PC bowl and metal protection case to avoid any injury or harm.

# ISO15552 Standard cylinder

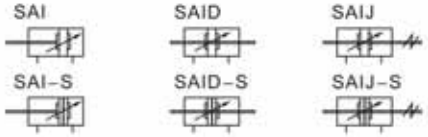
## SAI Series

## Specification

| Bore size(mm) | | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|
| Acting type | | Double acting | | | | | | | | |
| Fluid | | Air(to be filtered by 40μm filter element) | | | | | | | | |
| Mounting type | SAI | Basic FA FB CA CB CR LB TC FTC TCM1 TCM2 | | | | | | | | |
| | SAID、SAIJ | Basic FA LB TC FTC TCM1 TCM2 | | | | | | | | |
| Operating pressure | | 0.15~1.0MPa(22~145psi)(1.5~10.0bar) | | | | | | | | |
| Proof pressure | | 1.5MPa(215psi)(15bar) | | | | | | | | |
| Temperature ℃ | | -20~70 | | | | | | | | |
| Speed range mm/s | | 30~800 | | | | | | 30~500 | | |
| Stroke tolerance | | 0~250 $^{+1.0}_{0}$ | | 251~1000 $^{+1.5}_{0}$ | | | 1001~1500 $^{+2.0}_{0}$ | | | |
| Cushion type | | Variable cushion | | | | | | | | |
| Adjustable cushion stroke | | 27 | | 30 | | 36 | | 40 | 50 | |
| Port size [Note1] | | 1/8" | 1/4" | | 3/8" | | 1/2" | | 3/4" | |

[Note1] PT thread, G thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke | Max. stroke |
|---|---|---|---|
| 32 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 1000 | 1800 |
| 40 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 | 1200 | 1800 |
| 50 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1200 | 1800 |
| 63 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 1800 |
| 80 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 1800 |
| 100 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 1800 |
| 125 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 1800 |
| 160 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 2000 |
| 200 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 2000 |

[Note] Consult us for non-standard stroke.

## Product feature

1. ISO15552 (original ISO6431) standard cylinder;
2. The piston seal is composed of two Y-shape one-way seal structure, which has compensation function, long service life and low start-up pressure;
3. The 米-shaped aluminum pipe without tie rod has good corrosion esistance. With sensor switch groove on the two sides of body;
4. The buffer adjustment of cylinder is smooth and steady;
5. Cylinders and accessories for installation with several specifications are optional.

## Ordering code

SAI 160 □ ×50 S □ □ □

SAID160 □ ×50 S □ □ □

SAIJ 160 □ ×50-20 S □ □ □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

| ① Model | ② Bore size | ③ Rod Material | ④ Stroke | ⑤ Adjustable stroke | ⑥ Magnet | ⑦ Mounting type[Note1] | ⑧ Seals Material | ⑨ Thread type |
|---|---|---|---|---|---|---|---|---|
| SAI: Double acting type | 32<br>40<br>50<br>63<br>80<br>100<br>125<br>160<br>200 | Blank: Medium carbon steel<br>A: SUS420J2<br>B: SUS304 | Refer to stroke table for details | No this code | Blank: Without magnet<br>S: With magnet | Blank<br>LB<br>FA<br>FB<br>CA<br>CB<br>CR<br>FTC<br>TC | Blank: TPU<br>H: Viton<br>N: NBR | Blank: PT<br>G: G<br>T: NPT |
| SAID: Double rod type | | | | | | Blank<br>LB<br>FA<br>FTC<br>TC | | |
| SAIJ: Adjustable stroke type | | | | 10<br>20<br>30<br>40<br>50<br>75<br>100 | | | | |

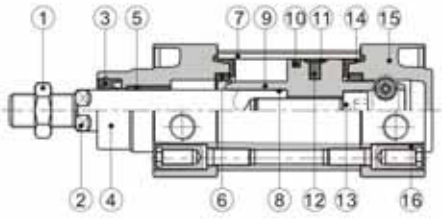
[Note1] CR is used with CB; FTC、TC are used with TCM1、TCM2.

# ISO15552 Standard cylinder

## SAI Series

### Inner structure and material of major parts

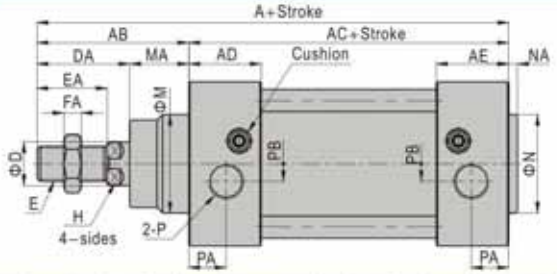
SAI

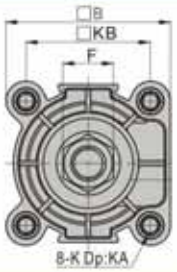



| NO. | Item | Material |
|---|---|---|
| 1 | Rod nut | Carbon steel\Stainless steel |
| 2 | Piston rod | Carbon steel with 20μm chrome plated or Stainless steel |
| 3 | Front cover packing | TPU |
| 4 | Front cover | Aluminum alloy |
| 5 | Bushing | Wear resistant material |
| 6 | Cushing O-ring | TPU |
| 7 | Barrel | Aluminum alloy |
| 8 | O-ring | NBR |
| 9 | Piston | Aluminum alloy |
| 10 | Piston Seal | TPU |
| 11 | Wear ring | Wear resistant material |
| 12 | Magnet | Plastic(Φ100 and below)\Rubber(Others) |
| 13 | Bolt | Carbon steel |
| 14 | Buffer gasket | TPU |
| 15 | Back cover | Aluminum alloy |
| 16 | Screw | Carbon steel\Stainless steel |

### Dimensions

SAI

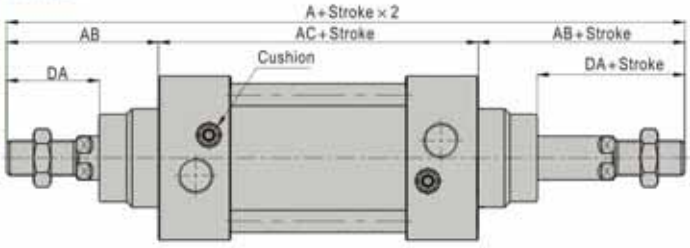


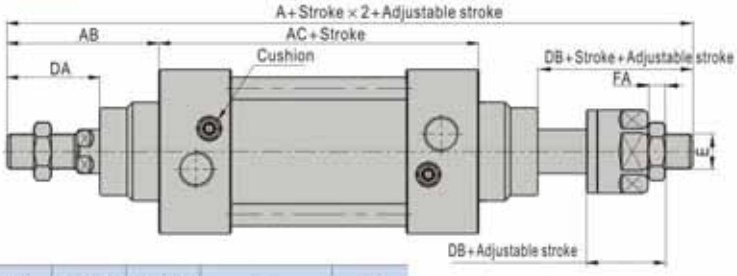

| Bore size\Item | A | AB | AC | AD | AE | B | D | DA | E | EA | F | FA | M | MA | H | K(Without TC) | K(WithTC) | KA(Without TC) | KA(WithTC) | KB | N | NA | P | PA | PB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 142 | 48 | 94 | 27.5 | 27.5 | 47 | 12 | 29 | M10×1.25 | 22 | 17 | 6 | 30 | 19 | 10 | M6 | M5 | 16 | 14 | 32.5 | 30 | 3 | 1/8" | 13 | 5.5 |
| 40 | 159 | 54 | 105 | 32 | 32 | 53 | 16 | 33 | M12×1.25 | 24 | 17 | 7 | 35 | 21 | 13 | M6 | M5 | 16 | 16 | 38 | 35 | 3.5 | 1/4" | 17 | 6 |
| 50 | 175 | 69 | 106 | 31 | 31 | 65 | 20 | 42 | M16×1.5 | 32 | 23 | 8 | 40 | 27 | 17 | M8 | M6 | 16 | 16 | 46.5 | 40 | 3.5 | 1/4" | 15.5 | 7.5 |
| 63 | 190 | 69 | 121 | 33 | 33 | 75 | 20 | 42 | M16×1.5 | 32 | 23 | 8 | 45 | 27 | 17 | M8 | M6 | 16 | 16 | 56.5 | 45 | 4 | 3/8" | 16.5 | 7.5 |
| 80 | 214 | 86 | 128 | 33 | 33 | 95 | 25 | 53 | M20×1.5 | 40 | 26 | 10 | 45 | 33 | 22 | M10 | M8 | 17 | 16 | 72 | 45 | 4 | 3/8" | 16.5 | 9 |
| 100 | 229 | 91 | 138 | 37 | 37 | 115 | 25 | 55 | M20×1.5 | 40 | 26 | 10 | 55 | 36 | 22 | M10 | M8 | 17 | 16 | 89 | 55 | 4 | 1/2" | 18.5 | 9.5 |
| 125 | 279 | 119 | 160 | 46 | 46 | 140 | 32 | 74 | M27×2.0 | 54 | 41 | 13.5 | 60 | 45 | 27 | M12 | M12 | 20 | 20 | 110 | 60 | 4 | 1/2" | 23 | 14 |
| 160 | 332 | 152 | 180 | 50 | 50 | 180 | 40 | 94 | M36×2.0 | 72 | 55 | 18 | 65 | 58 | 36 | M16 | M16 | 24 | 24 | 140 | 65 | 4 | 3/4" | 25 | 15 |
| 200 | 347 | 167 | 180 | 50 | 50 | 220 | 40 | 100 | M36×2.0 | 72 | 55 | 18 | 75 | 67 | 36 | M16 | M16 | 24 | 24 | 175 | 75 | 5 | 3/4" | 25 | 15 |

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

SAID




SAIJ




| Bore size\Item | A | | AB | AC | DA | DB | E | FA |
|---|---|---|---|---|---|---|---|---|
| Model | SAID | SAIJ | | | | | | |
| 32 | 190 | 188 | 48 | 94 | 29 | 27 | M10X1.25 | 6 |
| 40 | 213 | 208 | 54 | 105 | 33 | 28 | M12X1.25 | 7 |
| 50 | 244 | 231 | 69 | 106 | 42 | 29 | M16X1.5 | 8 |
| 63 | 259 | 246 | 69 | 121 | 42 | 29 | M16X1.5 | 8 |
| 80 | 300 | 282.5 | 86 | 128 | 53 | 35.5 | M20X1.5 | 10 |
| 100 | 320 | 300.5 | 91 | 138 | 55 | 35.5 | M20X1.5 | 10 |
| 125 | 398 | 366.5 | 119 | 160 | 74 | 42.5 | M27X2.0 | 13.5 |
| 160 | 484 | 458 | 152 | 180 | 94 | 68 | M36X2.0 | 18 |
| 200 | 514 | 482 | 167 | 180 | 100 | 68 | M36X2.0 | 18 |

Remark:
1. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
2. The unmarked dimension is the same as SAI standard type.

# Standard cylinder(Tir-rod)

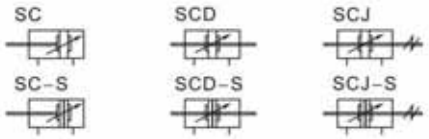
## SC Series

## Specification

| Bore size(mm) | | 32 | 40 | 50 | 63 | 80 | 100 |
|---|---|---|---|---|---|---|---|
| Acting type | | Double acting | | | | | |
| Fluid | | Air(to be filtered by 40 μ m filter element) | | | | | |
| Mounting type | SC | Basic FA FB CA CB LB TC TCM1 | | | | | |
| | SCD、SCJ | Basic FA LB TC TCM1 | | | | | |
| Operating pressure | | 0.15~1.0MPa(22~145psi)(1.5~10.0bar) | | | | | |
| Proof pressure | | 1.5MPa(215psi)(15bar) | | | | | |
| Temperature ℃ | | -20~70 | | | | | |
| Speed range mm/s | | 30~800 | | | | | |
| Stroke tolerance | | 0~250 $^{+1.0}_{0}$ | 251~1000 $^{+1.5}_{0}$ | | 1001~1500 $^{+2.0}_{0}$ | | |
| Cushion type | | Variable cushion | | | | | |
| Adjustable cushion stroke | | 21 | | | | 28 | 29 |
| Port size [Note1] | | 1/8" | 1/4" | | 3/8" | | 1/2" |

[Note1] PT thread, G thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Product feature

1. Standard cylinder manufactured by our enterprise.
2. The seal of piston adopts heterogeneous two way seal structure. It's dimension is tight and it has the function of grease reservation.
3. It is tie rod cylinder. The cylinder barrel and front/rear cap is jointed by tie rods with high reliability.
4. Compared with ISO15552 standard cylinder, SC series cylinder with the same bore size is shorter.
5. The buffer adjustment of cylinder is smooth and steady.
6. Cylinders and mounting accessories with several specifications are optional.
7. The seal material with high temperature resistance is adopted to guarantee the normal operation of cylinder at 150□ .

## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke | Max. stroke |
|---|---|---|---|
| 32 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 1000 | 2000 |
| 40 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1200 | 2000 |
| 50 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1200 | 2000 |
| 63 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 2000 |
| 80 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 2000 |
| 100 | 25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000 | 1500 | 2000 |

[Note] If the stroke is ≥1600mm within the maximum stroke scope, it is treated as non-standard one.
Please contact the company for other special strokes.

## Ordering code

SC 50×50 S □ □ □
SCD 50×50 S □ □ □
SCJ 50×50-20 S □ □ □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

| ① Model | ② Bore size | ③ Stroke | ④ Adjustable stroke | ⑤ Magnet | ⑥ Mounting type[Note1] | ⑦ Seals Material | ⑧ Thread type |
|---|---|---|---|---|---|---|---|
| SC: Double acting type | 32<br>40<br>50<br>63<br>80<br>100 | Refer to stroke table for details | No this code | Blank: Without magnet<br>S: With magnet | Blank<br>LB<br>FA<br>FB<br>CA<br>CB<br>TC | Blank: TPU<br>H: Viton<br>N: NBR | Blank: PT<br>G: G<br>T: NPT |
| SCD: Double rod type | | | | | Blank<br>LB | | |
| SCJ: Adjustable stroke type | | | 10<br>20<br>30<br>40<br>50<br>75<br>100 | | FA<br>TC | | |

[Note1] The accessories are the same as SAU series, please refer to page 48~51 for details; TC is used with TCM1.

# Mini cylinder(Stainless steel, ISO6432)

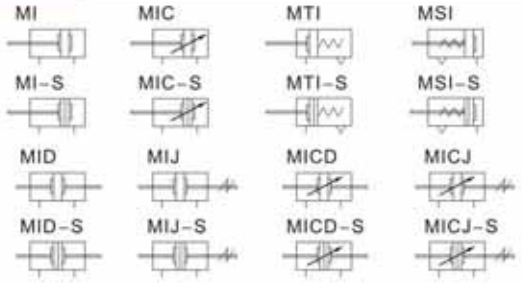
## MI Series

## Specification

| Bore size(mm) | | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|---|---|---|
| Acting type | | Double acting、Single acting_Push、Single acting_Pull | | | | | | | |
| | | – | | | Double acting with cushion | | | | |
| Fluid | | Air(to be filtered by 40μm filter element) | | | | | | | |
| Operating pressure | Double acting | 0.15~1.0MPa(22~145psi)(1.5~10.0bar) | | | | | | | |
| | Single acting | 0.2~1.0MPa(28~145psi)(2.0~10.0bar) | | | | | | | |
| Proof pressure | | 1.5MPa(215psi)(15bar) | | | | | | | |
| Temperature ℃ | | -20~70 | | | | | | | |
| Speed range mm/s | | Double acting：30~800 Single acting：50~800 | | | | | | | |
| Stroke tolerance | | $0\sim150\ ^{+1.0}_{0}$ $>150\ ^{+1.5}_{0}$ | | | | | | | |
| Cushion type | | MIC Series: Variable cushion | | | | | Other series: Bumper | | |
| Port size [Note1] | | M5×0.8 | | | | | 1/8" | | 1/4" |

[Note1] PT thread, G thread thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Stroke

| Bore size (mm) | | Standard stroke (mm) | Max.std stroke | Max. stroke |
|---|---|---|---|---|
| MI | 8 | 10 15 20 25 30 40 50 60 75 80 100 125 150 | 150 | 200 |
| | 10 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 | 200 | 200 |
| | 12 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 | 250 | 500 |
| MI | 16 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 | 500 | 600 |
| MIC | 20 25 32 40 | 350 400 450 500 | 500 | 800 |
| MID | 8 | 10 15 20 25 30 40 50 60 75 80 100 | 100 | – |
| MIJ | 10 | 10 15 20 25 30 40 50 60 75 80 100 | 100 | – |
| | 12 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 | 200 | – |
| MID | 16 20 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 | 300 | – |
| MIJ | 25 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 | 300 | – |
| MICD | 32 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 | 500 | – |
| MICJ | 40 | 350 400 450 500 | 500 | – |
| MSI | 8 10 12 | 10 15 20 25 30 40 50 | – | – |
| MTI | 16 | 10 15 20 25 30 40 50 60 75 80 100 | – | – |
| | 20 25 32 40 | 10 15 20 25 30 40 50 60 75 80 100 125 150 | – | – |

[Note] Consult us for non-standard stroke.

## Product feature

1. In accordance with ISO6432 standard(Φ8~Φ25).
2. Front and back cover owns fixed bumper pad which can reduce the impact of direction-change of the cylinder.
3. There are several mode of back cover, which makes the installation of cylinder more convenient.
4. Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.
5. Piston rod and cylinder body with the material of stainless steel make the cylinder adapt general working environment with corrosivity.
6. There are cylinders and accessories with several specifications for installation for your choice.

## Ordering code

MI 10×40 S CA □ □
MID 10×40 S □ □
MIJ 10×40-30 S □ □

1 2 3 4 5 6 7 8

| 1 Model | 2 Bore size | 3 Stroke | 4 Adjustable stroke | 5 Magnet | 6 Back cover | 7 Mounting type [Note1] | 8 Thread type |
|---|---|---|---|---|---|---|---|
| MI: Mini cylinder(Double acting) | 8 10 12 16 20 25 32 40 | Refer to stroke table for details | No this code | Blank: Without magnet<br>S: With magnet | Refer below table for details | Blank: No accessories<br>FA: FA type<br>SDB: SDB type<br>LB: LB type<br>TC: TC type | Blank: PT<br>G: G<br>T: NPT |
| MIC: Mini cylinder (Double acting with cushion) | 16 20 25 32 40 | | | | | | |
| MSI: Mini cylinder(Single acting_push) | 8 10 12 16 20 25 32 40 | | | | | | |
| MTI: Mini cylinder(Single acting_pull) | | | | | | | |
| MID: Mini cylinder(Double rod) | | | | | | | |
| MICD: Mini cylinder (Double rod with cushion) | 16 20 25 32 40 | | | | No this code | Blank: No accessories<br>FA: FA type<br>LB: LB type<br>TC: TC type | |
| MIJ: Mini cylinder(Adjustable stroke) | 8 10 12 16 20 25 32 40 | | 10 20 30 40 50 75 100 | | | | |
| MICJ: Mini cylinder(Adjustable stroke with cushion) | 16 20 25 32 40 | | | | | | |

[Note1] Please refer to page 72~73 for accessory parts.

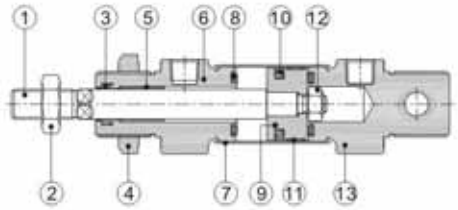
| Model | Back cover | Bore size |
|---|---|---|
| MI MSI MTI | CA: Pivot type | Φ8~Φ25 |
| | U: Perpendicular 90° | Φ8~Φ40 |
| | R: Axial air-in | Φ16~Φ40 |
| | CM: Round-end type | Φ16~Φ40 |
| MIC | CA: Pivot type | Φ16~Φ25 |
| | U: Perpendicular 90° | Φ16~Φ40 |
| | CM: Round-end type | Φ16~Φ40 |
| Others | No this code | |

# Mini cylinder(Stainless steel, ISO6432)

## MI Series

### Inner structure and material of major parts

**MI-CA**

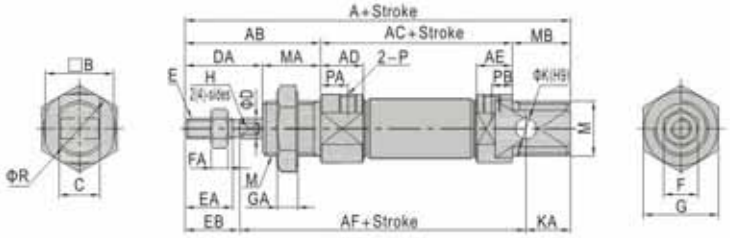



| NO. | Item | Material |
|---|---|---|
| 1 | Rod | SUS304 |
| 2 | Rod nut | Carbon steel |
| 3 | Front cover packing | NBR |
| 4 | Front cover nut | Carbon steel |
| 5 | Bushing | Wear resistant material |
| 6 | Front cover | Aluminum alloy |
| 7 | Barrel | SUS304(Φ8~Φ12)\SUS316L(Others) |
| 8 | Bumper | TPU |
| 9 | Piston | SUS304(Φ8~Φ12)\Aluminum alloy(Others) |
| 10 | Piston seal | NBR |
| 11 | Wear ring | Wear resistant material |
| 12 | Nut | Carbon steel |
| 13 | Back cover | Aluminum alloy |

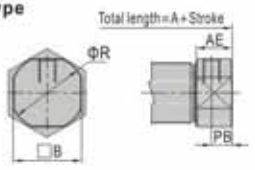
### Dimensions

**MI**

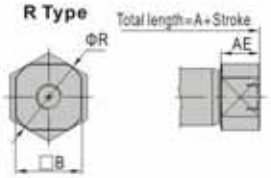
**CA Type**



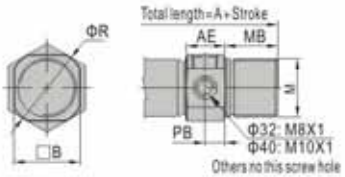

**U Type**




**R Type**




**CM Type**

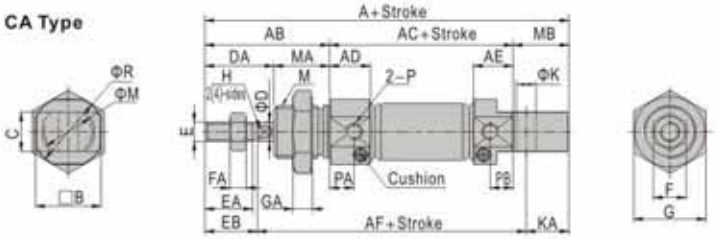



| Bore size\Item | A | | | | AB | AC | AD | AE | | AF | B | C | D | DA | E | EA | EB | F | FA | G | GA | H | K | KA | M | MA | MB | P | PA | PB | | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Back cover | CA | U | R | CM | | | | CA | U/R/CM | | | | | | | | | | | | | | | | | | | | | CA | U/CM | |
| 8 | 86 | 74 | - | - | 28 | 46 | 11.5 | 9.5 | 9.5 | 64 | 15 | 8 | 4 | 16 | M4×0.7 | 10.5 | 12 | 7 | 2.2 | 17 | 6 | - | 4 | 10 | M12×1.25 | 12 | 12 | M5×0.8 | 7 | 5 | 5 | 17 |
| 10 | 86 | 74 | - | - | 28 | 46 | 11.5 | 9.5 | 9.5 | 64 | 15 | 8 | 4 | 16 | M4×0.7 | 10.5 | 12 | 7 | 2.2 | 17 | 6 | - | 4 | 10 | M12×1.25 | 12 | 12 | M5×0.8 | 7 | 5 | 5 | 17 |
| 12 | 105 | 88 | - | - | 38 | 50 | 12.5 | 10.5 | 10.5 | 75 | 18 | 12 | 6 | 21 | M6×1.0 | 14 | 16 | 10 | 5 | 22 | 6 | 5(2-Sides) | 6 | 14 | M16×1.5 | 17 | 17 | M5×0.8 | 8 | 6 | 6 | 20 |
| 16 | 111 | 94 | 94 | 111 | 38 | 56 | 12.5 | 10.5 | 10.5 | 82 | 20 | 12 | 6 | 21 | M6×1.0 | 14.5 | 16 | 10 | 5 | 22 | 6 | 5(2-Sides) | 6 | 13 | M16×1.5 | 17 | 17 | M5×0.8 | 8 | 6 | 6 | 22 |
| 20 | 126 | 106 | 106 | 126 | 44 | 62 | 14.5 | 14.5 | 14.5 | 95 | 25 | 16 | 8 | 24 | M8×1.25 | 18 | 20 | 12 | 6 | 29 | 7 | 6(2-Sides) | 8 | 11 | M22×1.5 | 20 | 20 | 1/8" | 7.5 | 7.5 | 7.5 | 29 |
| 25 | 137 | 114.5 | 115 | 137 | 50 | 65 | 16 | 16 | 16 | 104 | 30 | 16 | 10 | 28 | M10×1.25 | 20.5 | 22 | 17 | 6 | 29 | 7 | 8(4-Sides) | 8 | 11 | M22×1.5 | 22 | 22 | 1/8" | 8 | 8 | 8 | 33.5 |
| 32 | - | 125 | 126 | 140 | 58 | - | 16.5 | - | 16.5 | - | 34.5 | - | 12 | 28 | M10×1.25 | 17.5 | 20 | 17 | 6 | 36 | 7 | 10(4-Sides) | - | - | M30×1.5 | 30 | 14 | 1/8" | 9 | - | 9 | 37.5 |
| 40 | - | 158 | 158 | 174 | 69 | - | 22 | - | 22 | - | 42.5 | - | 16 | 34 | M12×1.25 | 21 | 24 | 17 | 7 | 46 | 8 | 14(4-Sides) | - | - | M38×1.5 | 35 | 16 | 1/4" | 12 | - | 12 | 46.5 |

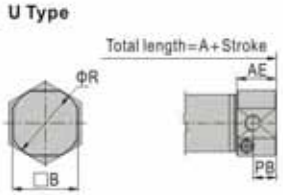
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

**MIC** Φ16~Φ25

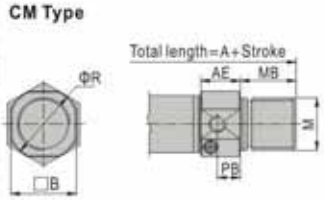
**CA Type**




**U Type**




**CM Type**




| Bore size\Item | A | | AB | AC | AD | AE | | AF | B | C | D | DA | E | EA | EB | F | FA | G | GA | H | K | KA | M | MA | MB | P | PA | PB | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Back cover | CA/CM | U | | | | CA/CM | U | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 111 | 94 | 38 | 56 | 12.5 | 12 | 12 | 82 | 20 | 12 | 6 | 21 | M6×1.0 | 14.5 | 16 | 10 | 5 | 22 | 6 | 5(2-Sides) | 6 | 13 | M16×1.5 | 17 | 17 | M5×0.8 | 7.5 | 7 | 22 |
| 20 | 126 | 106 | 44 | 62 | 14.5 | 14.5 | 14.5 | 95 | 25 | 16 | 8 | 24 | M8×1.25 | 18 | 20 | 12 | 6 | 29 | 7 | 6(2-Sides) | 8 | 11 | M22×1.5 | 20 | 20 | 1/8" | 7.5 | 7.5 | 29 |
| 25 | 137 | 113.5 | 50 | 65 | 16 | 16 | 14.5 | 104 | 30 | 16 | 10 | 28 | M10×1.25 | 20.5 | 22 | 17 | 6 | 29 | 7 | 8(4-Sides) | 8 | 11 | M22×1.5 | 22 | 22 | 1/8" | 8 | 8 | 33.5 |

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

# Mini cylinder(Stainless steel)

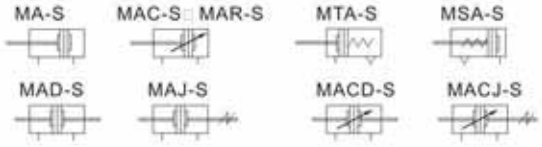
## MA Series

## Specification

| Bore size(mm) | | 16 | 20 | 25 | 32 | 40 | 50 | 63 |
|---|---|---|---|---|---|---|---|---|
| Acting type | MSA/MTA | Single acting | | | | | – | |
| | MA/MAD/MAJ | Double acting | | | | | – | |
| | MAR | – | Double acting | | | | | |
| | MAC/MACD/MACJ | – | Double acting with cushion | | | | | |
| Fluid | | Air(to be filtered by 40μm filter element) | | | | | | |
| Operating pressure | Double acting | 0.15~1.0MPa(22~145psi)(1.5~10.0bar) | | | | | | |
| | Single acting | 0.2~1.0MPa(28~145psi)(2.0~10.0bar) | | | | | | |
| Proof pressure | | 1.5MPa(215psi)(15bar) | | | | | | |
| Temperature □ | | -20~70 | | | | | | |
| Speed range mm/s | | Double acting □ 30~800 Single acting □ 50~800 | | | | | | |
| Stroke tolerance | | $0\sim150^{+1.0}_{0}$ $>150^{+1.5}_{0}$ | | | | | | |
| Cushion type | | MAC/MACD/MACJ Series: Variable cushion; Other series: Bumper | | | | | | |
| Port size [Note1] | | M5×0.8 | 1/8" | | | | 1/4" | |

[Note1] PT thread, G thread thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Stroke

| Bore size (mm) | | Standard stroke (mm) | Max.std stroke | Max. stroke |
|---|---|---|---|---|
| MA | 16 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | 600 |
| MA MAC MAR | 20 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | 800 |
| | 25 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | 800 |
| | 32 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | 800 |
| | 40 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | 800 |
| MAC | 50 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | 800 |
| MAR | 63 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | 800 |
| MAD\MAJ | 16 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 | 300 | - |
| MAD MAJ MACD MACJ | 20 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 | 300 | - |
| | 25 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 | 300 | - |
| | 32 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | - |
| | 40 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | - |
| MACD | 50 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | - |
| MACJ | 63 | 10 15 20 25 30 40 50 60 75 80 100 125 150 160 175 200 250 300 350 400 450 500 | 500 | - |
| MSA | 16 | 10 15 20 25 30 40 50 60 75 80 100 | - | - |
| | 20 | 10 15 20 25 30 40 50 60 75 80 100 125 150 | - | - |
| | 25 | 10 15 20 25 30 40 50 60 75 80 100 125 150 | - | - |
| | 32 | 10 15 20 25 30 40 50 60 75 80 100 125 150 | - | - |
| | 40 | 10 15 20 25 30 40 50 60 75 80 100 125 150 | - | - |
| MTA | 16 | 10 15 20 25 30 40 50 60 75 80 100 | - | - |
| | 20 | 10 15 20 25 30 40 50 60 75 80 100 | - | - |
| | 25 | 10 15 20 25 30 40 50 60 75 80 100 | - | - |
| | 32 | 10 15 20 25 30 40 50 60 75 80 100 | - | - |
| | 40 | 10 15 20 25 30 40 50 60 75 80 100 | - | - |

[Note] Consult us for non-standard stroke.

## Product feature

1. Standard cylinder manufactured by our enterprise.
2. Piston adopts heterogeneous two-way seal structure. It has compact size and has the function of grease reservation.
3. Front cover has fixed bumper which can reduce the impact of direction change of the cylinder.
4. There are several modes of back cover, which makes the installation of cylinder more convenient.
5. Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.
6. The cylinder body has stainless steel pipes with high precision to produce high strength and corrosion resistance.
7. There are cylinders and mounting accessories with several specifications for your choice.
8. All cylinders of this series have magnet.

## Ordering code

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MA | 20×50 | | S | CM | □ | □ | | |
| MAD | 20×50 | | S | | □ | □ | | |
| MAJ | 20×50 | -20 | S | | □ | □ | | |
| MAR | U | 20×50 | | S | | □ | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| 1 Model | 2 Front cover | 3 Bore size | | 4 Stroke | 5 Adjustable St. | 6 Magnet | 7 Back cover | 8 Mounting type[Note1] | 9 Thread type[Note2] |
|---|---|---|---|---|---|---|---|---|---|
| MA: Mini cylinder(Double acting)<br>MAC: Mini cylinder (Double acting with cushion)<br>MSA: Mini cylinder(Single acting_push)<br>MTA: Mini cylinder(Single acting_pull) | No this code | Model | Bore size | Refer to stroke table for details | No this code | S: With magnet | CA: Pivot type<br>U: Flat-end type<br>CM: Round-end type | Blank: No accessories<br>FA: FA type<br>SDB: SDB type<br>LB: LB type | Blank: PT<br>G: G<br>T: NPT |
| MAD: Mini cylinder(Double rod)<br>MACD: Mini cylinder (Double rod with cushion) | | MA<br>MSA<br>MTA<br>MAD<br>MAJ | 16<br>20<br>25<br>32<br>40 | | | | No this code | Blank: No accessories<br>FA: FA type<br>LB: LB type | |
| MAJ: Mini cylinder(Adjustable stroke)<br>MACJ: Mini cylinder (Adjustable stroke with cushion) | | MAC<br>MAR<br>MACD<br>MACJ | 20<br>25<br>32<br>40<br>50<br>63 | | 10 20<br>30 40<br>50 75 100 | | | | |
| MAR: Mini cylinder (Double acting with cushion) | F: Front mounting<br>U: Up mounting | | | | No this code | | | No this code | |

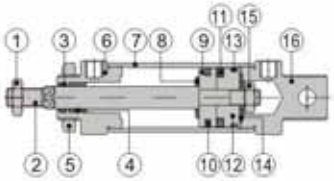
[Note1] Please refer to page 100~101 for accessory parts.
[Note2] Standard thread is blank here.

# Mini cylinder(Stainless steel)

## MA Series

### Inner structure and material of major parts

**MA-CA**



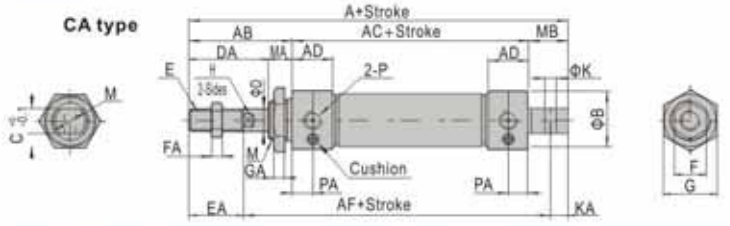

| NO. | Item | Material |
|---|---|---|
| 1 | Rod nut | Carbon steel |
| 2 | Piston rod | Carbon steel with 20 μ mchrome plated |
| 3 | Front cover packing | NBR |
| 4 | Bushing | Wear resistant material |
| 5 | Front cover nut | Carbon steel |
| 6 | Front cover | Aluminum alloy |
| 7 | Barrel | Stainless steel |
| 8 | Bumper | NBR |
| 9 | Piston | Aluminum alloy |
| 10 | Piston seal | NBR |
| 11 | Magnet | Plastic |
| 12 | Magnet holder | Aluminum alloy |
| 13 | Wear ring | Wear resistant material |
| 14 | Washer | Free cutting material |
| 15 | Nut | Carbon steel |
| 16 | Back cover | Aluminum alloy |

### Dimensions

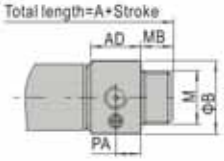
**MA** Φ16~Φ40

**MAC** Φ20~Φ40

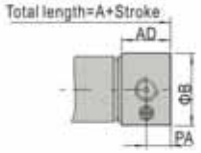
**CA type**




**CM type**



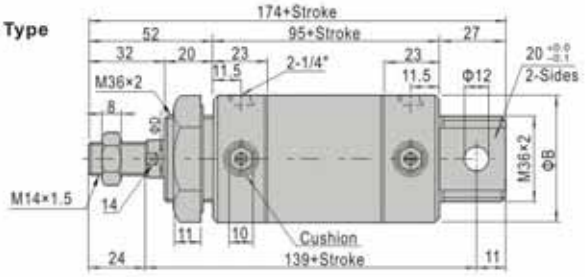

**U type**

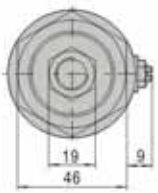



| Bore size\Item | A | | | AB | AC | AD | AF | B | C | D | DA | E | EA | F | FA | G | GA | H | K | KA | M | MA | MB | | P | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Back cover | CA | CM | U | | | | | | | | | | | | | | | | | | | | CA | CM | | |
| 16 | 114 | 114 | 98 | 38 | 60 | 10 | 91 | 21 | 12 | 6 | 22 | M6×1.0 | 16 | 10 | 5 | 22 | 6 | 5 | 6 | 7 | M16×1.5 | 16 | 16 | 16 | M5×0.8 | 5 |
| 20 | 137 | 128 | 116 | 40 | 76 | 16 | 108 | 27 | 16 | 8 | 28 | M8×1.25 | 20 | 12 | 6 | 29 | 7 | 6 | 8 | 9 | M22×1.5 | 12 | 21 | 12 | 1/8" | 8 |
| 25 | 141 | 134 | 120 | 44 | 76 | 16 | 110 | 30 | 16 | 10 | 30 | M10×1.25 | 22 | 17 | 6 | 29 | 7 | 8 | 8 | 9 | M22×1.5 | 14 | 21 | 14 | 1/8" | 8 |
| 32 | 147 | 134 | 120 | 44 | 76 | 16 | 113 | 35 | 16 | 12 | 30 | M10×1.25 | 22 | 17 | 6 | 32 | 8 | 10 | 10 | 12 | M24×2.0 | 14 | 27 | 14 | 1/8" | 8 |
| 40 | 149 | 136 | 122 | 46 | 76 | 16.5 | 113 | 41.5 | 20 | 16 | 32 | M12×1.25 | 24 | 17 | 7 | 41 | 9 | 14 | 12 | 12 | M30×2.0 | 14 | 27 | 14 | 1/8" | 8 |

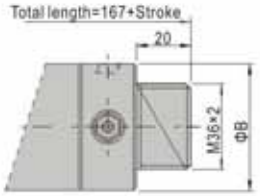
**MAC** Φ50\Φ63

**CA Type**




**CM Type**




**U Type**

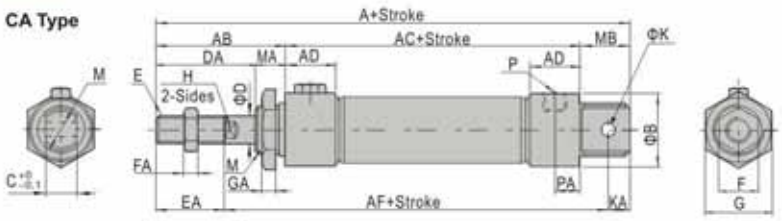

| Bore size\Item | B | D |
|---|---|---|
| 50 | 53 | 16 |
| 63 | 67 | 16 |

# Mini cylinder(Stainless steel)

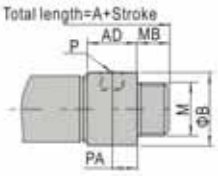
## MA Series

### MSA Φ16-Φ40

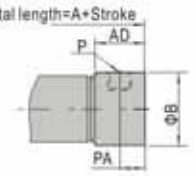
CA Type




CM Type




U Type

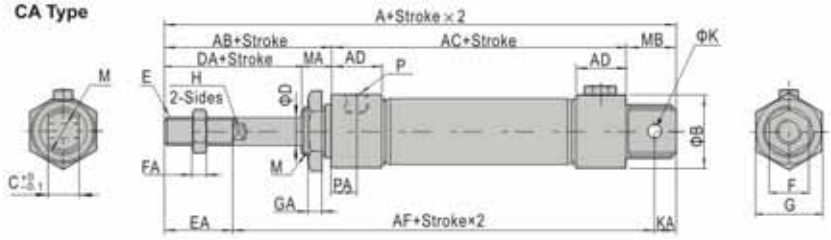



| Item | A | | | | | | | | | AB | AC | | | AD | AF | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Back cover | CA | | | CM | | | U | | | - | - | | | - | - | | |
| Bore size\Stroke | ≤50 | 51~100 | ≥101 | ≤50 | 51~100 | ≥101 | ≤50 | 51~100 | ≥101 | - | ≤50 | 51~100 | ≥101 | - | ≤50 | 51~100 | ≥101 |
| 16 | 139 | 164 | - | 139 | 164 | - | 123 | 148 | - | 38 | 85 | 110 | - | 10 | 116 | 141 | - |
| 20 | 162 | 187 | 212 | 153 | 178 | 203 | 141 | 166 | 191 | 40 | 101 | 126 | 151 | 16 | 133 | 158 | 183 |
| 25 | 166 | 191 | 216 | 159 | 184 | 209 | 145 | 170 | 195 | 44 | 101 | 126 | 151 | 16 | 135 | 160 | 185 |
| 32 | 172 | 197 | 222 | 159 | 184 | 209 | 145 | 170 | 195 | 44 | 101 | 126 | 151 | 16 | 138 | 163 | 188 |
| 40 | 174 | 199 | 224 | 161 | 186 | 211 | 147 | 172 | 197 | 46 | 101 | 126 | 151 | 16.5 | 138 | 163 | 188 |

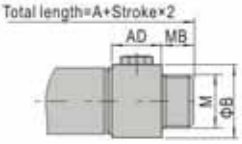
| Bore size\Item / Back cover | B | C | D | DA | E | EA | F | FA | G | GA | H | K | KA | M | MA | MB | | P | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | CA | CM | | |
| 16 | 21 | 12 | 6 | 22 | M6×1.0 | 16 | 10 | 5 | 22 | 6 | 5 | 6 | 7 | M16×1.5 | 16 | 16 | 16 | M5×0.8 | 5 |
| 20 | 27 | 16 | 8 | 28 | M8×1.25 | 20 | 12 | 6 | 29 | 7 | 6 | 8 | 9 | M22×1.5 | 12 | 21 | 12 | 1/8" | 8 |
| 25 | 30 | 16 | 10 | 30 | M10×1.25 | 22 | 17 | 6 | 29 | 7 | 8 | 8 | 9 | M22×1.5 | 14 | 21 | 14 | 1/8" | 8 |
| 32 | 35 | 16 | 12 | 30 | M10×1.25 | 22 | 17 | 6 | 32 | 8 | 10 | 10 | 12 | M24×2.0 | 14 | 27 | 14 | 1/8" | 8 |
| 40 | 41.5 | 20 | 16 | 32 | M12×1.25 | 24 | 17 | 7 | 41 | 9 | 14 | 12 | 12 | M30×2.0 | 14 | 27 | 14 | 1/8" | 8 |

### MTA Φ16-Φ40

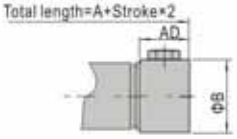
CA Type




CM Type




U Type




| Item | A | | | | | | | | | | | | AC | | | | AF | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Back cover | CA | | | | CM | | | | U | | | | - | | | | - | | | |
| Bore size\Stroke | ≤25 | ≤50 | ≤75 | ≤100 | ≤25 | ≤50 | ≤75 | ≤100 | ≤25 | ≤50 | ≤75 | ≤100 | ≤25 | ≤50 | ≤75 | ≤100 | ≤25 | ≤50 | ≤75 | ≤100 |
| 16 | 129 | 139 | 154 | 164 | 129 | 139 | 154 | 164 | 113 | 123 | 138 | 148 | 75 | 85 | 100 | 110 | 106 | 116 | 131 | 141 |
| 20 | 152 | 162 | 177 | 187 | 143 | 153 | 168 | 178 | 131 | 141 | 156 | 166 | 91 | 101 | 116 | 126 | 123 | 133 | 148 | 158 |
| 25 | 156 | 166 | 181 | 191 | 149 | 159 | 174 | 184 | 135 | 145 | 160 | 170 | 91 | 101 | 116 | 126 | 125 | 135 | 150 | 160 |
| 32 | 162 | 172 | 192 | 202 | 149 | 159 | 179 | 189 | 135 | 145 | 165 | 175 | 91 | 101 | 121 | 131 | 128 | 138 | 158 | 168 |
| 40 | 164 | 174 | 194 | 204 | 151 | 161 | 181 | 191 | 137 | 147 | 167 | 177 | 91 | 101 | 121 | 131 | 128 | 138 | 158 | 168 |

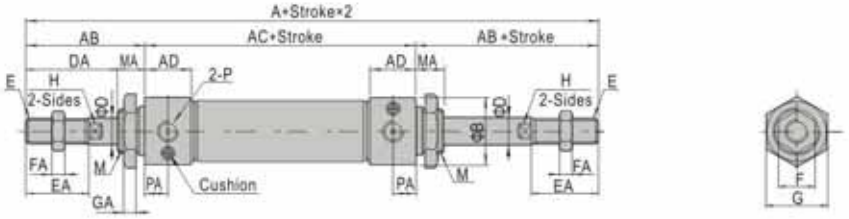
| Bore size\Item / Back cover | AB | AD | B | C | D | DA | E | EA | F | FA | G | GA | H | K | KA | M | MA | MB | | P | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | CA | CM | | |
| 16 | 38 | 10 | 21 | 12 | 6 | 22 | M6×1.0 | 16 | 10 | 5 | 22 | 6 | 5 | 6 | 7 | M16×1.5 | 16 | 16 | 16 | M5×0.8 | 5 |
| 20 | 40 | 16 | 27 | 16 | 8 | 28 | M8×1.25 | 20 | 12 | 6 | 29 | 7 | 6 | 8 | 9 | M22×1.5 | 12 | 21 | 12 | 1/8" | 8 |
| 25 | 44 | 16 | 30 | 16 | 10 | 30 | M10×1.25 | 22 | 17 | 6 | 29 | 7 | 8 | 8 | 9 | M22×1.5 | 14 | 21 | 14 | 1/8" | 8 |
| 32 | 44 | 16 | 35 | 16 | 12 | 30 | M10×1.25 | 22 | 17 | 6 | 32 | 8 | 10 | 10 | 12 | M24×2.0 | 14 | 27 | 14 | 1/8" | 8 |
| 40 | 46 | 16.5 | 41.5 | 20 | 16 | 32 | M12×1.25 | 24 | 17 | 7 | 41 | 9 | 14 | 12 | 12 | M30×2.0 | 14 | 27 | 14 | 1/8" | 8 |

# Mini cylinder(Stainless steel)

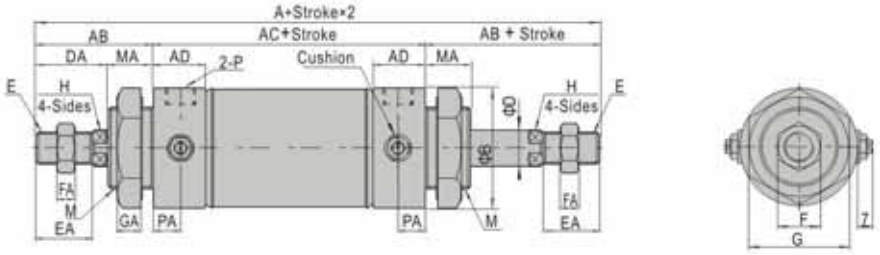
## MA Series

### MAD/MACD

Φ16~Φ40



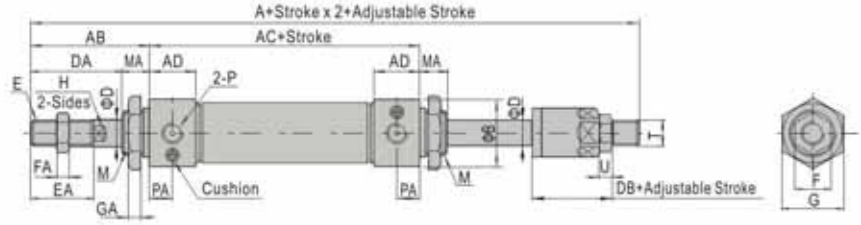

Φ50/Φ63



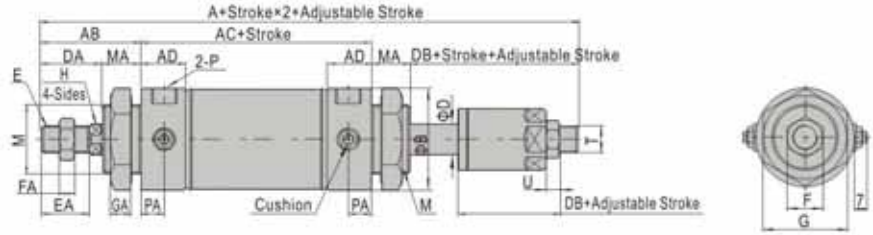

| Bore size\Item | A | AB | AC | AD | B | D | DA | E | EA | F | FA | G | GA | H | M | MA | P | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 136 | 38 | 60 | 10 | 21 | 6 | 22 | M6×1.0 | 16 | 10 | 5 | 22 | 6 | 5 | M16×1.5 | 16 | M5×0.8 | 5 |
| 20 | 156 | 40 | 76 | 16 | 27 | 8 | 28 | M8×1.25 | 20 | 12 | 6 | 29 | 7 | 6 | M22×1.5 | 12 | 1/8" | 8 |
| 25 | 164 | 44 | 76 | 16 | 30 | 10 | 30 | M10×1.25 | 22 | 17 | 6 | 29 | 7 | 8 | M22×1.5 | 14 | 1/8" | 8 |
| 32 | 164 | 44 | 76 | 16 | 35 | 12 | 30 | M10×1.25 | 22 | 17 | 6 | 32 | 8 | 10 | M24×2.0 | 14 | 1/8" | 8 |
| 40 | 168 | 46 | 76 | 16.5 | 41.5 | 16 | 32 | M12×1.25 | 24 | 17 | 7 | 41 | 9 | 14 | M30×2.0 | 14 | 1/8" | 8 |
| 50 | 199 | 52 | 95 | 23 | 53 | 16 | 32 | M14×1.5 | 24 | 19 | 8 | 46 | 11 | 14 | M36×2.0 | 20 | 1/4" | 11.5 |
| 63 | 199 | 52 | 95 | 23 | 67 | 16 | 32 | M14×1.5 | 24 | 19 | 8 | 46 | 11 | 14 | M36×2.0 | 20 | 1/4" | 11.5 |

### MAJ/MACJ

Φ16~Φ40




Φ50/Φ63




| Bore size\Item | A | AB | AC | AD | B | D | DA | DB | E | EA | F | FA | H | M | MA | P | PA | G | GA | T | U |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 135 | 38 | 60 | 10 | 21 | 6 | 22 | 21 | M6×1.0 | 16 | 10 | 5 | 5 | M16×1.5 | 16 | M5×0.8 | 5 | 22 | 6 | M6×1.0 | 5 |
| 20 | 153 | 40 | 76 | 16 | 27 | 8 | 28 | 25 | M8×1.25 | 20 | 12 | 6 | 6 | M22×1.5 | 12 | 1/8" | 8 | 29 | 7 | M8×1.25 | 6 |
| 25 | 161 | 44 | 76 | 16 | 30 | 10 | 30 | 27 | M10×1.25 | 22 | 17 | 6 | 8 | M22×1.5 | 14 | 1/8" | 8 | 29 | 7 | M10×1.25 | 6 |
| 32 | 161 | 44 | 76 | 16 | 35 | 12 | 30 | 27 | M10×1.25 | 22 | 17 | 6 | 10 | M24×2.0 | 14 | 1/8" | 8 | 32 | 8 | M10×1.25 | 6 |
| 40 | 164 | 46 | 76 | 16.5 | 41.5 | 16 | 32 | 28 | M12×1.25 | 24 | 17 | 7 | 14 | M30×2.0 | 14 | 1/8" | 8 | 41 | 9 | M12×1.25 | 7 |
| 50 | 195 | 52 | 95 | 23 | 53 | 16 | 32 | 28 | M14×1.5 | 24 | 19 | 8 | 14 | M36×2.0 | 20 | 1/4" | 11.5 | 46 | 11 | M12×1.25 | 7 |
| 63 | 195 | 52 | 95 | 23 | 67 | 16 | 32 | 28 | M14×1.5 | 24 | 19 | 8 | 14 | M36×2.0 | 20 | 1/4" | 11.5 | 46 | 11 | M12×1.25 | 7 |

# Compact cylinder

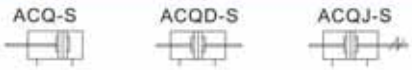
## ACQ Series——Big bore size

## Specification

| Bore size(mm) | 125 | 140 | 160 |
|---|---|---|---|
| Acting type | Double acting | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | |
| Operating pressure | 0.15~1.0MPa(22~145psi) | | |
| Proof pressure | 1.5MPa(215psi) | | |
| Temperature ℃ | -20~70 | | |
| Speed range mm/s | 30~500 | | |
| Stroke tolerance | Stroke≤100 $^{+1.0}_{0}$ | Stroke>100 $^{+1.5}_{0}$ | |
| Cushion type | Bumper | | |
| Port size [Note1] | 3/8" | | |

[Note1] PT thread, G thread thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke | Max.stroke |
|---|---|---|---|
| 125<br>140<br>160 | 10 20 30 40 50 75 100 125 150 175 200 250 300 | 300 | 300 |

Note) The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 35mm stroke cylinder(bore size160) has the same dimensions of 40 std. stroke cylinder, so the value of "CA" is 131mm.

## Product feature

1. JIS standard is implemented.
2. C clip is adopted to connect the cylinder body and back cover or front cover to make it compact and reliable.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of grease reservation.
5. Compact structure can effectively save installation space.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.

## Ordering code

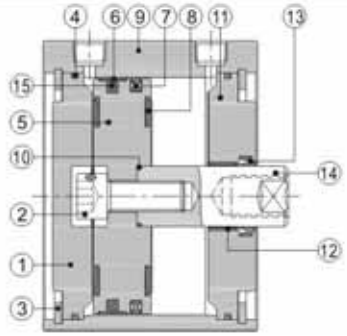
ACQ 125×30 S B □
ACQD 125×30 S B □
ACQJ 125×30-30 S B □

1 2 3 4 5 6 7

| 1 Model | 2 Bore size | 3 Stroke | 4 Adjustable Stroke | 5 Magnet | 6 Rod type | 7 Thread type |
|---|---|---|---|---|---|---|
| ACQ: Compact cylinder (Double acting) | 125 140 160 | Refer to stroke table for details | No this code | S: With magnet | Blank: Female thread<br>B: Male thread | Blank: PT<br>G: G<br>T: NPT |
| ACQD: Compact cylinder (Double rod) | | | | | | |
| ACQJ: Compact cylinder (Adjustable stroke) | | | 10 20 30 40 50 75 100 | | | |

## Inner structure and material of major parts

**ACQ-S**




| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | Back cover | Aluminum alloy | 9 | Body | Aluminum alloy |
| 2 | Screw | Carbon steel | 10 | O-ring | NBR |
| 3 | C clip | Spring steel | 11 | Front cover | Aluminum alloy |
| 4 | O-ring | NBR | 12 | Bushing | Wear resistant material |
| 5 | Piston | Aluminum alloy | 13 | Front cover packing | NBR |
| 6 | Wear ring | Wear resistant material | 14 | Piston rod | Carbon steel with 20 μ m chrome plated |
| 7 | Piston seal | NBR | | | |
| 8 | Bumper | NBR | 15 | Magnet | Rubber |

# Compact cylinder

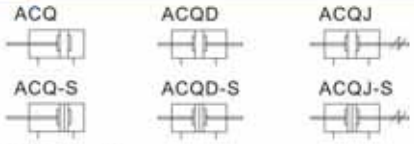
## ACQ Series——Longer stroke

## Specification

| Bore size(mm) | 32 | 40 | 50 | 63 | 80 | 100 |
|---|---|---|---|---|---|---|
| Acting type | Double acting | | | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi) | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | |
| Temperature ℃ | -20~70 | | | | | |
| Speed range mm/s | 30~500 | | | | | |
| Stroke tolerance | $^{+1.5}_{0}$ | | | | | |
| Cushion type | Bumper | | | | | |
| Port size [Note1] | PT1/8 | | PT1/4 | | PT3/8 | |

[Note1] PT thread, G thread thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Product feature

1. JIS standard is implemented.
2. C clip is adopted to connect the cylinder body and back cover or front cover, and riveted structure is adopted to connect piston and piston rod to make it compact and reliable.
3. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of greasel reservation.
5. Compact structure can effectively save installation space.
6. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
7. Installing accessories with various specifications are optional.

## Stroke

| Bore size(mm) | Standard stroke (mm) | Max.std stroke | Max.stroke |
|---|---|---|---|
| 32 40 50 63 80 100 | 125 150 175 200 250 300 | 300 | 350 |

Note) Within allowable stroke scope, when the stroke is larger than the maximum value, it shall be treated as non-standard one. Please contact the company for other special strokes.

## Ordering code

ACQ 50 x 150 S B □ □
ACQD 50 x 150 S B □ □
ACQJ 50 x 150–30 S B □ □

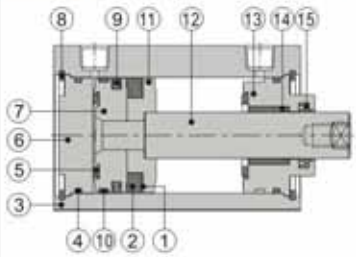
1 2 3 4 5 6 7 8

| 1 Model | 2 Bore size | 3 Stroke | 4 Adjustable Stroke | 5 Magnet | 6 Rod type | 7 Mounting type [Note1] | 8 Thread type |
|---|---|---|---|---|---|---|---|
| ACQ: Compact cylinder (Double acting) | 32 40 50 63 80 100 | Refer to stroke table for details | No this code | Blank: Without magnet S: With magnet | Blank: Female thread B: Male thread | Blank: No accessories FA: FA type FB: FB type CB: CB type LB: LB type | Blank: PT G: G T: NPT |
| ACQD: Compact cylinder (Double rod) | | | | | | Blank: No accessories FA: FA type FB: FB type LB: LB type | |
| ACQJ: Compact cylinder (Adjustable stroke) | | | 10 20 30 40 50 75 100 | | | | |

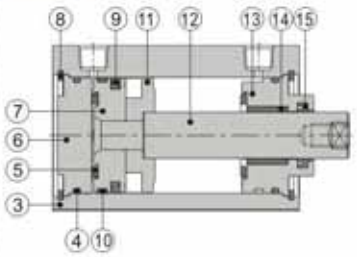
[Note1]Please refer to page 128~129 for accessory parts.

## Inner structure and material of major parts

ACQ-S




ACQ




| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | Magnet washer | NBR | 10 | Wear ring | No(Φ32)\Wear resistant material(Others) |
| 2 | Magnet | Plastic | | | |
| 3 | Body | Aluminum alloy | 11 | Magnet holder | Aluminum alloy |
| 4 | O-ring | NBR | 12 | Piston rod | Carbon steel with 20 μ m chrome plated |
| 5 | Bumper | NBR | | | |
| 6 | Back cover | Aluminum alloy | 13 | Front cover | Aluminum alloy |
| 7 | Piston | Aluminum alloy | 14 | Bushing | No(Φ32)\Wear resistant material(Others) |
| 8 | C clip | Spring steel | | | |
| 9 | Piston seal | NBR | 15 | Front cover packing | NBR |

# Compact cylinder

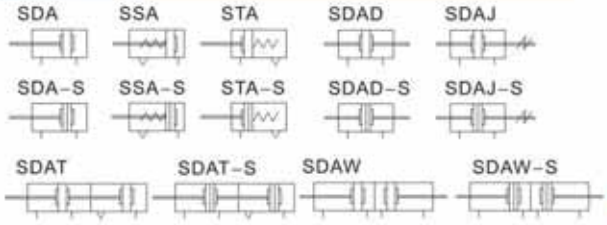
## SDA Series

## Specification

| Bore size(mm) | | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acting type | | Double acting | | | | | | | | | |
| | | Single acting_Push type、Single acting_Pull type | | | | | | | | | – |
| Fluid | | Air(to be filtered by 40μm filter element) | | | | | | | | | |
| Operating pressure | Double acting | 0.15~1.0MPa(22~145psi)(1.5~10.0bar) | | | | | | | | | |
| | Single acting | 0.2~1.0MPa(28~145psi)(2.0~10.0bar) | | | | | | | | | |
| Proof pressure | | 1.5MPa(215psi)(15bar) | | | | | | | | | |
| Temperature ℃ | | -20~70 | | | | | | | | | |
| Speed range mm/s | | Double acting：30~500 Single acting：50~500 | | | | | | | | | |
| Stroke tolerance | | Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$ | | | | | | | | | |
| Cushion type | | Bumper | | | | | | | | | |
| Port size [Note1] | | M5×0.8 | | | | 1/8" | | 1/4" | | 3/8" | |

[Note1] PT thread, G thread thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Product feature

1. Manufactured by our enterprise.
2. Riveted structure is adopted to connect the cylinder body and back cover, and piston and piston rod to make it compact and reliable;
3. The inner diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
4. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of grease reservation.
5. Compact structure can effectively save installation space.
6. There are magnetic switch slots around the cylinder body, which is convenient to install sensor switch
7. Mounting accessories with various specifications are optional.

## Stroke

| Bore size (mm) | | | Standard stroke (mm) | Max.std stroke | Max. stroke |
|---|---|---|---|---|---|
| 12 16 | Double acting | With magnet | 5 10 15 20 25 30 35 40 45 50 | 50 | 70 |
| | | Without magnet | 5 10 15 20 25 30 35 40 45 50 55 60 | 60 | 80 |
| | Single acting | | 5 10 15 20 25 30 | 30 | - |
| 20 | Double acting | With magnet | 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 | 90 | 130 |
| | | Without magnet | 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 | 100 | 140 |
| | Single acting | | 5 10 15 20 25 30 | 30 | - |
| 25 32 40 50 63 | Double acting | With magnet | 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 110 120 | 120 | 150 |
| | | Without magnet | 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 110 120 130 | 130 | 160 |
| | Single acting | | 5 10 15 20 25 30 | 30 | - |
| 80 100 | Double acting | With magnet | 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 110 120 | 120 | 150 |
| | | Without magnet | 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 100 110 120 130 | 130 | 160 |

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

## Ordering code

SDA 20×30 S B □
SDAD 20×30 S B □
SDAJ 20×30-30 S B □
① ② ③ ④ ⑤ ⑥ ⑦

| ①Model | ②Bore size | ③Stroke | ④Adjustable Stroke | ⑤Magnet | ⑥Rod type | ⑦Thread type [Note1] |
|---|---|---|---|---|---|---|
| SDA: Compact cylinder(Double acting) | 12 16 20 25 32 40 50 63 80 100 | Refer to stroke table for details | No this code | Blank: Without magnet S: With magnet | Blank: Female thread B: Male thread | Blank: PT G: G T: NPT |
| SSA: Compact cylinder(Single acting-push) | 12 16 20 25 32 40 50 63 | | | | | |
| STA: Compact cylinder(Single acting-pull) | | | | | | |
| SDAD: Compact cylinder(Double rod) | 12 16 20 25 32 40 50 63 80 100 | | | | | |
| SDAJ: Compact cylinder(Adjustable stroke) | | | 10 20 30 40 50 75 100 | | | |

SDAT 20×30×10 S B □
① ② ③ ④ ⑤ ⑥ ⑦

| ①Model | ②Bore size | ③Stroke 1 | ④Stroke 2 | ⑤Magnet | ⑥Rod type | ⑦Thread type [Note1] |
|---|---|---|---|---|---|---|
| SDAT: Compact cylinder (Duplex type) | 12 16 20 25 32 40 50 63 80 100 | Refer to stroke table for details | Refer to stroke table for details | Blank: Without magnet S: With magnet | Blank: Female thread B: Male thread | Blank: PT G: G T: NPT |
| SDAW: Compact cylinder(Duplex-end type) | | | | | | |

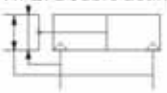
[Note1] Standard thread is blank here.

# Air gripper(parallel style——ball bearing)

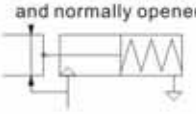
## HFZ Series

## Symbol

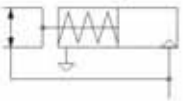
HFZ: Double acting



HFTZ: Single acting and normally opened



HFSZ: Single acting and normally closed



## Gripping force and stroke

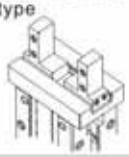
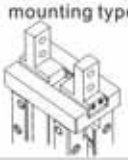
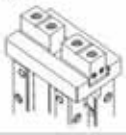
| Acting type | | Double acting(HFZ) | | | | | | | Single acting_NO (HFTZ) | | | | | | | Single acting_NC (HFSZ) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bore size | | 6 | 10 | 16 | 20 | 25 | 32 | 40 | 6 | 10 | 16 | 20 | 25 | 32 | 40 | 6 | 10 | 16 | 20 | 25 | 32 | 40 |
| Gripping force per finger Effective value(N) | External | 3.3 | 11 | 34 | 45 | 69 | 160 | 255 | 1.9 | 7 | 27 | 35 | 55 | 133 | 220 | - | - | - | - | - | - | - |
| | Internal | 6.1 | 17 | 45 | 68 | 102 | 195 | 320 | - | - | - | - | - | - | - | 3.7 | 13 | 38 | 59 | 87 | 163 | 270 |
| Opening/Closing stroke(Both sides)(mm) | | 3 | 3 | 6 | 10 | 14 | 22 | 30 | 3 | 3 | 6 | 10 | 14 | 22 | 30 | 3 | 3 | 6 | 10 | 14 | 22 | 30 |
| Weight (g) | F Type | 24 | - | - | - | - | - | - | 25 | - | - | - | - | - | - | 25 | - | - | - | - | - | - |
| | Others | 25 | 56 | 124 | 236 | 428 | 729 | 1268 | 26 | 57 | 125 | 238 | 430 | 778 | 1365 | 26 | 57 | 125 | 238 | 430 | 778 | 1365 |

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.
Add) Please refer to page 256 for the definition of "L".

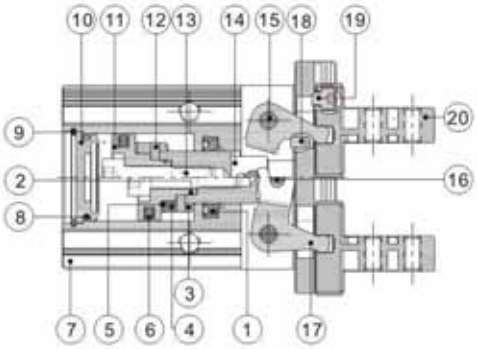
## Ordering code

**HFZ 20 □**

**1 2 3**

| ①Model | ②Bore size | ③Finger type | | | |
|---|---|---|---|---|---|
| HFZ: Air finger(Double acting)<br>HFSZ: Air finger (Single acting and nrmally closed)<br>HFTZ: Air finger (Single acting and normally opened) | 6<br>10<br>16<br>20<br>25<br>32<br>40 | Blank:Standard  | | | |
| | 6 | B:Side mounting type  | N:Thru.hole mounting type  | F:Bottom mounting type  | HFZ series are all attached with magnet. |

## Inner structure and material of major parts




| NO. | Item | Material |
|---|---|---|
| 1 | Rod packing | NBR |
| 2 | O-ring | NBR |
| 3 | Bumper | TPU |
| 4 | Magnet | Sintered metal(Neodymium-iron-boron) |
| 5 | Magnet washer | NBR |
| 6 | Piston seal | NBR |
| 7 | Body | Aluminum alloy |
| 8 | O-ring | NBR |
| 9 | C clip | Spring steel |
| 10 | Back cover | Aluminum alloy |
| 11 | Piston | Aluminum alloy/Stainless steel |
| 12 | Magnet fixed flake | Stainless steel |
| 13 | Screw | Carbon steel |
| 14 | Piston rod | Aluminum alloy/Stainless steel |
| 15 | Pin | Stainless steel |
| 16 | Pin | Stainless steel |
| 17 | Curved bar | Stainless steel |
| 18 | Pin | Stainless steel |
| 19 | Countersink screw | Carbon steel |
| 20 | Assembly of clamping jaw and guide rail | Stainless steel |

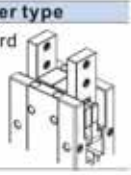
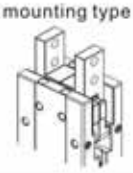
# Air gripper(Mechanical parallel style)

## HFP Series

## Ordering code

**HFP 20 □**

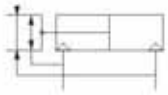
**1 2 3**

| 1 Model | 2 Bore size | 3 Finger type |
|---|---|---|
| HFP: Air finger(Double acting) (mechanical parallel style)<br>HFTP: Air finger (Single acting and normally closed) (mechanical parallel style) | 10<br>16<br>20<br>25<br>32 | Blank: Standard  <br>N: Thru.hole mounting type  |

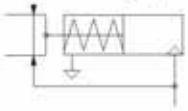
[Note] HFP series are all attached with magnet.

## Symbol

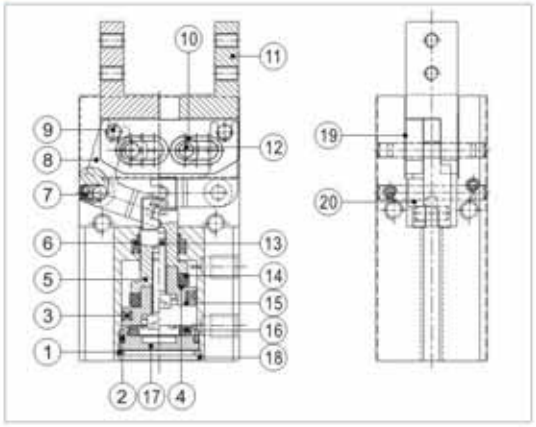
HFP: Double acting



HFTP: Single acting and normally opened



## Inner structure and material of major parts

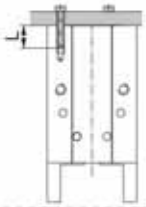


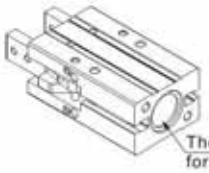

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | C clip | Spring steel | 11 | Gripping jaws | Stainless steel |
| 2 | O-ring | NBR | 12 | Pin | Stainless steel |
| 3 | Piston seal | NBR | 13 | Screw | Carbon steel |
| 4 | Magnet washer | NBR | 14 | Magnet | Sintered metal (Neodymium-iron-boron) |
| 5 | Piston rod | Aluminum alloy Stainless steel | 15 | Piston | Aluminum alloy Stainless steel |
| 6 | Rod packing | NBR | 16 | Bumper | TPU |
| 7 | Countersink screw | Carbon steel | 17 | Back cover | Aluminum alloy |
| 8 | Curved bar | Stainless steel | 18 | Body | Aluminum alloy |
| 9 | Pin | Stainless steel | 19 | Retaining ring | Stainless steel |
| 10 | Guide sleeve | Stainless steel | 20 | Stopper sleeve | Stainless steel |

## Installation and application

1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torgue of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

### Tail installation type

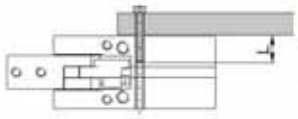




The bore of the tail is used for mounting and positioning

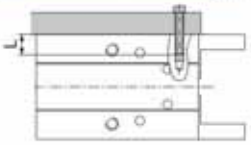
| Bore size | The bolts type | Max. locking moment | Max. screwed depth | The aperture of the positioning bore | The depth of the positioning bore |
|---|---|---|---|---|---|
| 10 | M3×0.5 | 1.0N.m | 6mm | Φ11mm $^{+0.05}_{0}$ | 1.0mm |
| 16 | M4×0.7 | 2.0N.m | 8mm | Φ17mm $^{+0.05}_{0}$ | 1.2mm |
| 20 | M5×0.8 | 4.5N.m | 10mm | Φ21mm $^{+0.05}_{0}$ | 1.2mm |
| 25 | M6×1.0 | 7.0N.m | 12mm | Φ26mm $^{+0.05}_{0}$ | 1.5mm |
| 32 | M6×1.0 | 7.0N.m | 12mm | Φ34mm $^{+0.05}_{0}$ | 1.5mm |

### The installation of the front threaded hole



| Bore size | The bolts type | Max. locking moment(Nm) | Max. screwed depth(mm) |
|---|---|---|---|
| 10 | M3×0.5 | 0.7 | 5 |
| 16 | M4×0.7 | 2.0 | 8 |
| 20 | M5×0.8 | 4.5 | 10 |
| 25 | M6×1.0 | 7.0 | 12 |
| 32 | M6×1.0 | 7.0 | 12 |

### Surface installation type



| Bore size | The bolts type | Max. locking moment (Nm) | Max. screwed depth (mm) |
|---|---|---|---|
| 10 | M3×0.5 | 1.0 | 6 |
| 16 | M4×0.7 | 2.0 | 8 |
| 20 | M5×0.8 | 4.5 | 10 |
| 25 | M6×1.0 | 7.0 | 12 |
| 32 | M6×1.0 | 7.0 | 12 |

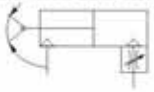
6. Other contents of installation and operation are the same with those of HFZ. Refer to the "Installation and Operation" instruction of HFZ.

# Air gripper(Angular style)

## HFY Series

## Symbol

HFY: Double acting



HFTY: Single acting and normally opened

## Gripping force and stroke

| Acting type | | Double acting(HFY) | | | | | | Single acting Normally opened(HFTY) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bore size | | 6 | 10 | 16 | 20 | 25 | 32 | 6 | 10 | 16 | 20 | 25 | 32 |
| Theoretical gripping torque (N·cm) | Closed | 7.4×P | 17.6×P | 90×P | 152×P | 304×P | 637×P | 5.7×P | 11.8×P | 71.2×P | 122.4×P | 252×P | 589×P |
| | Opened | 10.6×P | 29.4×P | 129×P | 252×P | 473×P | 904×P | - | - | - | - | - | - |
| Max. length of griping point (L)(mm) | | 30 | 30 | 40 | 60 | 70 | 85 | 30 | 30 | 40 | 60 | 70 | 85 |
| Opening angle (°) | | $30\ ^{+3}_{0}$ | | | | | | | | | | | |
| Closing angle (°) | | $-10\ ^{0}_{-3}$ | | | | | | | | | | | |

[Note] The P in the gripping torque shown in the above chart represents the actual use of air pressure.

## Ordering code

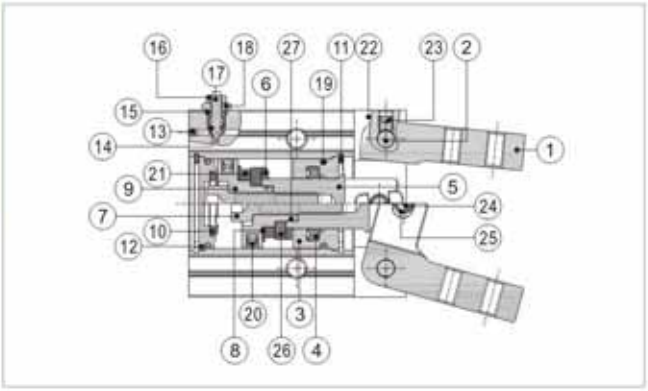
**HFY 20**

① ②

| ① Model | ② Bore size |
|---|---|
| HFY: Air finger (Angle style, Double acting) | 6 |
| | 10 |
| | 16 |
| HFTY: Air finger (Angle style, Single acting and normally opened) | 20 |
| | 25 |
| | 32 |

[Note] HFY series are all attached with magnet.

## Inner structure and material of major parts




| NO. | Item | Material |
|---|---|---|
| 1 | Gripping jaws | Carbon steel |
| 2 | Pin | Stainless steel |
| 3 | Front cover | Aluminum alloy |
| 4 | Rod packing | NBR |
| 5 | Piston rod | Aluminum alloy/Stainless steel |
| 6 | Bumper | TPU |
| 7 | Countersink screw | Carbon steel |
| 8 | Magnet washer | NBR |
| 9 | Piston | Aluminum alloy/Stainless steel |
| 10 | Bumper | TPU |
| 11 | C clip | Spring steel |
| 12 | Back cover | Aluminum alloy |
| 13 | Steel ball | Stainless steel |
| 14 | O-ring | NBR |
| 15 | O-ring | NBR |
| 16 | Screw cap | Carbon steel |
| 17 | Adjustable nut | Brass |
| 18 | Fixed nut | Brass |
| 19 | O-ring | NBR |
| 20 | Piston seal | NBR |
| 21 | Magnet | Sintered metal(Neodymium-iron-boron) |
| 22 | Body | Aluminum alloy |
| 23 | Countersink screw | Carbon steel |
| 24 | Pin | Stainless steel |
| 25 | Pin sheath | Stainless steel |
| 26 | Magnet fixed flake | Stainless steel |
| 27 | O-ring | NBR |

# Twist clamp cylinder

## ACK Series

## Specification

| Bore size(mm) | 25 | 32 | 40 | 50 | 63 |
|---|---|---|---|---|---|
| Acting type | Double acting | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi) | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | |
| Temperature ℃ | -20~70 | | | | |
| Speed range mm/s | 50~200 | | | | |
| Stroke tolerance | $^{+1.0}_{0}$ | | | | |
| Rotary angle tolerance | ±1.5° | | | | |
| Cushion type [Note1] | No cushion | | | | |
| Port size [Note2] | M5×0.8 | 1/8" | | | |

[Note1] If there is no buffering device, exhaust throttle shall be added to achieve buffering effect.
[Note2] PT thread, G thread and NPT thread are available.

## Symbol

## Stroke

| Bore size(mm) | Stroke type | 90° | 180° | Total stroke (90° /180° ) |
|---|---|---|---|---|
| 25 | Rotation stroke | 14 | 20 | 26 |
| 32 | Clamping stroke | 12 | 6 | 26 |
| 40 | Rotation stroke | 15 | 21 | 27 |
| | Clamping stroke | 12 | 6 | 27 |
| 50 | Rotation stroke | 15 | 21 | 29 |
| 63 | Clamping stroke | 14 | 8 | 29 |

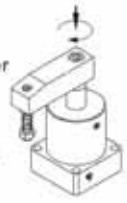
## Product feature

1. The material of seals guarantees the reliable performance of the cylinder that is used under various conditions.
2. Three-slot guide structure leads to high guide precision.
3. There are single and double side clamping fingers can be selected (90°).
4. Levorotatory and dextrorotary are available; 90°and 180°.
5. The material of piston rod is made from special alloy steel, which has longer life after heat treatment.

## Ordering code

ACK L 25×90 □

① ② ③ ④ ⑤

| ① Model | ② Rotary direction | ③ Bore size | ④ Rotary angle | ⑤ Thread type[Note1] |
|---|---|---|---|---|
| ACK: Twist clamp cylinder(Double acting type)<br>ACKD: Twist clamp cylinder (Double push plate type, only for 90° ) | L: Push and turn left<br>When the piston of cylinder moves downward, the swivel arms moves anticlockwise, this is called levorotatory.<br>  <br>R: Push and turn right<br>When the piston of cylinder moves downward, the swivel arms moves clockwise, this is called dextrorotary.<br>  | 25 32 40 50 63 | 90: 90°<br>180: 180° | Blank: PT<br>G: G<br>T: NPT |

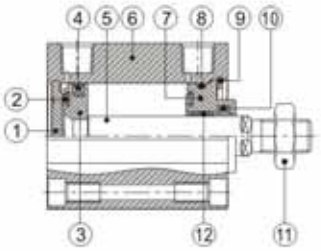
[Note1] When the thread is standard, the code is blank.

# Compact cylinder

## SDA Series

### Inner structure and material of major parts

**SDA**

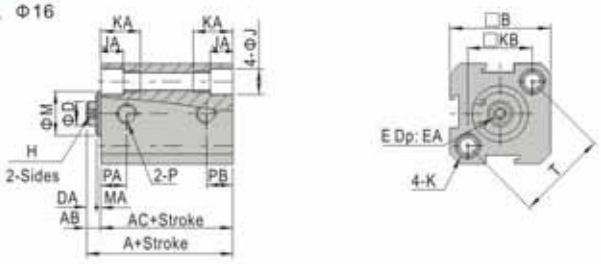



| NO. | Item | Material |
|---|---|---|
| 1 | Back cover | No(Φ12, 16)/Aluminum alloy(Others) |
| 2 | Bumper | NBR |
| 3 | Piston | Brass(Φ12, 16)/Aluminum alloy(Others) |
| 4 | Piston seal | NBR |
| 5 | Piston rod | Carbon steel with 20 μ m chrome plated |
| 6 | Body | Aluminum alloy |
| 7 | Front cover | Aluminum alloy |
| 8 | O-ring | NBR |
| 9 | C clip | Spring steel |
| 10 | Front cover packing | NBR |
| 11 | Piston nut | Carbon steel |
| 12 | Bushing | No(Φ12~32)/Wear resistant material(Others) |

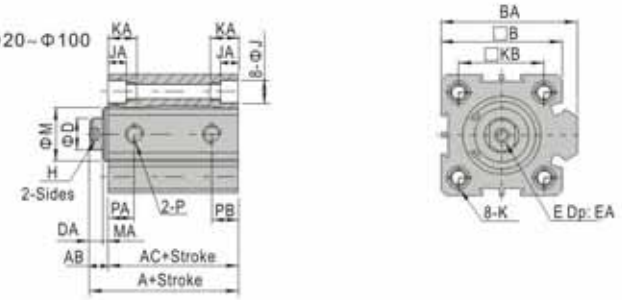
### Dimensions

**SDA**

Φ12、Φ16



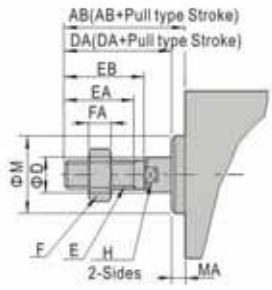

Φ20~Φ100



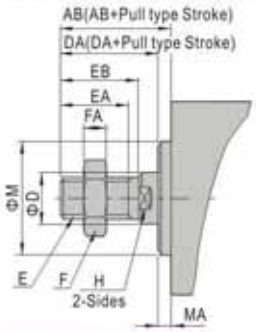

| Item / Bore size | A Without magnet | AC Without magnet | A With magnet | AC With magnet | AB | B | BA | D | DA | E | EA | H | J | JA | K | KA | KB | M | MA | P | PA St= | PA St>5 | PB St=5 | PB St>5 | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 22 | 17 | 32 | 27 | 5 | 25 | - | 6 | 4 | M3×0.5 | 6 | 5 | 6.5 | 4.5 | M5×0.8Thru.hole:Φ4.2 | 12 | 16.2 | 10.2 | 1 | M5×0.8 | 7.5 | 7.5 | 5 | 5 | 23 |
| 16 | 24 | 18.5 | 34 | 28.5 | 5.5 | 29 | - | 6 | 4 | M3×0.5 | 6 | 5 | 6.5 | 4.5 | M5×0.8Thru.hole:Φ4.2 | 12 | 19.8 | 11 | 1.5 | M5×0.8 | 8 | 8 | 5.5 | 5.5 | 28 |
| 20 | 25 | 19.5 | 35 | 29.5 | 5.5 | 34 | 36 | 8 | 4 | M4×0.7 | 8 | 6 | 6.5 | 4.5 | M5×0.8Thru.hole:Φ4.2 | 14 | 24 | 13 | 1.5 | M5×0.8 | 9 | 9 | 5.5 | 5.5 | - |
| 25 | 27 | 21 | 37 | 31 | 6 | 40 | 42 | 10 | 4 | M5×0.8 | 10 | 8 | 8.2 | 5.5 | M6×1.0Thru.hole:Φ5.2 | 15 | 28 | 17 | 2 | M5×0.8 | 9 | 9 | 5.5 | 5.5 | - |
| 32 | 31.5 | 24.5 | 41.5 | 34.5 | 7 | 44 | 50 | 12 | 4.5 | M6×1.0 | 12 | 10 | 8.2 | 5.5 | M6×1.0Thru.hole:Φ5.2 | 16 | 34 | 22 | 2.5 | 1/8" | 9 | 9 | 6.5 | 9 | - |
| 40 | 33 | 26 | 43 | 36 | 7 | 52 | 58.5 | 16 | 4 | M8×1.25 | 12 | 14 | 10.5 | 6.5 | M8×1.25Thru.hole:Φ6.7 | 20 | 40 | 28 | 3 | 1/8" | 9.5 | 9.5 | 7.5 | 7.5 | - |
| 50 | 37 | 28 | 47 | 38 | 9 | 62 | 71.5 | 20 | 5 | M10×1.5 | 15 | 17 | 10.5 | 6.5 | M8×1.25Thru.hole:Φ6.7 | 25 | 48 | 38 | 4 | 1/4" | 8 | 10.5 | 8 | 10.5 | - |
| 63 | 41 | 32 | 51 | 42 | 9 | 75 | 84.5 | 20 | 5 | M10×1.5 | 15 | 17 | 10.5 | 6.5 | M8×1.25Thru.hole:Φ6.7 | 25 | 60 | 40 | 4 | 1/4" | 9.5 | 12 | 9.5 | 11 | - |
| 80 | 52 | 41 | 62 | 51 | 11 | 94 | 104 | 25 | 6 | M14×1.5 | 20 | 22 | 17 | 11 | M12×1.75Thru.hole:Φ10.4 | 25 | 74 | 45 | 5 | 3/8" | 11.5 | 14.5 | 11.5 | 14.5 | - |
| 100 | 63 | 51 | 73 | 61 | 12 | 114 | 124 | 32 | 7 | M18×1.5 | 20 | 27 | 19 | 13 | M14×2.0Thru.hole:Φ12.4 | 30 | 90 | 55 | 5 | 3/8" | 16 | 20.5 | 16 | 20.5 | - |

**Male thread**

Φ12、Φ16




Φ20~Φ100




| Bore size\Item | AB | D | DA | E | EA | EB | F | FA | H | M | MA SDAD\SDAJ | MA Others |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 17 | 6 | 16 | M5×0.8 | 10 | 12 | 8 | 4 | 5 | 10.2 | 1 | 1 |
| 16 | 17.5 | 6 | 16 | M5×0.8 | 10 | 12 | 8 | 4 | 5 | 11 | 1.5 | 1.5 |
| 20 | 20.5 | 8 | 19 | M6×1.0 | 13 | 15 | 10 | 5 | 6 | 13 | 1.5 | 1.5 |
| 25 | 23 | 10 | 21 | M8×1.25 | 15 | 17 | 12 | 6 | 8 | 17 | 2 | 2 |
| 32 | 25 | 12 | 22 | M10×1.25 | 15 | 18 | 17 | 6 | 10 | 22 | 3 | 2.5 |
| 40 | 35 | 16 | 32 | M14×1.5 | 25 | 28 | 19 | 8 | 14 | 28 | 3 | 3 |
| 50 | 37 | 20 | 33 | M18×1.5 | 25 | 28 | 27 | 11 | 17 | 38 | 4 | 4 |
| 63 | 37 | 20 | 33 | M18×1.5 | 25 | 28 | 27 | 11 | 17 | 40 | 4 | 4 |
| 80 | 44 | 25 | 39 | M22×1.5 | 30 | 33 | 32 | 13 | 22 | 45 | 5 | 5 |
| 100 | 50 | 32 | 45 | M26×1.5 | 35 | 38 | 36 | 13 | 27 | 55 | 5 | 5 |

# Mini free mount cylinder

## MU Series

## Specification

| Bore size(mm) | | 4 | 6 | 8 | 10 | 12 | 16 | 20 |
|---|---|---|---|---|---|---|---|---|
| Acting type | | MU□ Double acting MSU□ Single acting_Pull type | | | | | | |
| Fluid | | Air(to be filtered by 40μm filter element) | | | | | | |
| Operating pressure | Double acting | 0.15~0.7MPa(22~100psi) | | | | | | |
| | Single acting | 0.3~0.7MPa(44~100psi) | | | 0.2~0.7MPa(29~100psi) | | | |
| Proof pressure | | 1.2MPa(175psi) | | | | | | |
| Temperature □ | | -20~70 | | | | | | |
| Speed range mm/s | | Double acting□ 30~500 Single acting□ 50~500 | | | | | | |
| Stroke tolerance | | $^{+1.0}_{0}$ | | | | | | |
| Cushion type | | No | | | | Bumper | | |
| Port size | | M3×0.5 | | | | M5×0.8 | | |

Add) Refer to P338 for detail of sensor switch.

## Symbol


## Stroke

| Bore size (mm) | | Standard stroke (mm) | Max.std stroke |
|---|---|---|---|
| 4 | Double acting | 4 6 8 10 15 20 | 20 |
| | Single acting | 4 6 | 6 |
| 6 | Double acting | 4 6 8 10 15 20 25 30 | 30 |
| | Single acting | 4 6 8 | 8 |
| 8 | Double acting | 4 6 8 10 15 20 25 30 | 30 |
| | Single acting | 4 6 8 10 | 10 |
| 10 | Double acting | 4 6 8 10 15 20 25 30 | 30 |
| | Single acting | 4 6 8 10 | 10 |
| 12 | Double acting | 5 10 15 20 25 30 35 40 45 50 | 50 |
| | Single acting | 5 10 | 10 |
| 16 | Double acting | 5 10 15 20 25 30 35 40 45 50 | 50 |
| | Single acting | 5 10 | 10 |
| 20 | Double acting | 5 10 15 20 25 30 35 40 45 50 | 50 |
| | Single acting | 5 10 | 10 |

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

## Product feature

1. JIS standard is implemented.
2. Cylinder can be mounted from 4 directions, and convenient to install and use.
3. Multitudinous cylinder can be mounted side by side to save space.
4. The front end of the cylinder is designed with boss. Centering can be done easily.
5. The internal diameter of the body is treated with rolling followed by the treatment of hard anodizing, forming an excellent abrasion resistance and durability.
6. With magnet type is of the feature of position sensing.
7. There are magnetic switch slots around the cylinder body, which is convenient to install inducting switch.
8. The seal of piston adopts heterogeneous two-way seal structure. It has compact dimension and the function of grease reservation.

## Ordering code

MU □ 12×10 S □

MSU □ 12×10 S □

① ② ③ ④ ⑤ ⑥

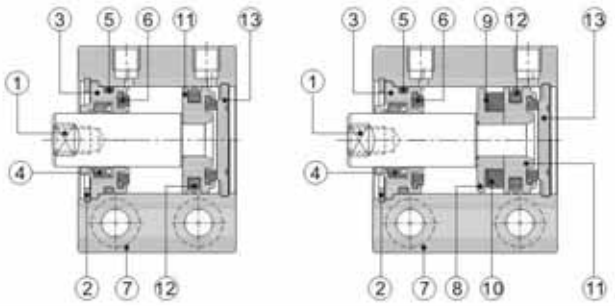
| ① Model | ② Body mounted type | ③ Bore size | ④ Stroke | ⑤ Magnet | ⑥ Rod type |
|---|---|---|---|---|---|
| | | 4 | Refer to stroke table for details | No this code(Without magnet) | Blank: No thread; B: Male thread |
| MU: Mini free mount cylinder (double acting) | No this code | 6 | | | |
| | | 8 | | Blank: Without magnet<br>S: With magnet | Blank: Female thread<br>B: Male thread |
| MSU: Mini free mount cylinder (single acting-push) | | 10 | | | |
| | Blank: Transverse mounting | 12 | | | |
| | R: Axial mounting | 16 | | | |
| | | 20 | | | |

# Mini free mount cylinder

## MU Series

### Inner structure and material of major parts

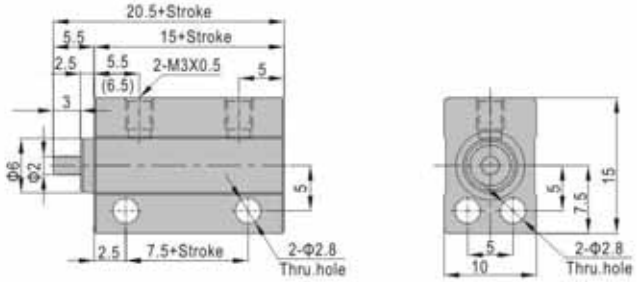
**MU12** **MU12-S**



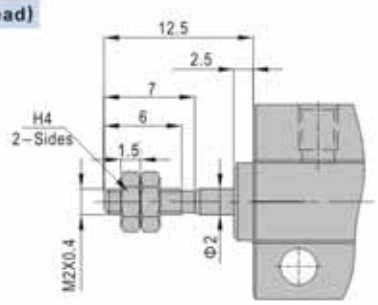

| NO. | Item | Material |
|---|---|---|
| 1 | Piston rod | Stainless steel or Carbon steel with 20 μ m chrome plated |
| 2 | C clip | Spring steel |
| 3 | Front cover | Aluminum alloy |
| 4 | Front cover packing | NBR |
| 5 | O-ring | NBR |
| 6 | Bumper | TPU |
| 7 | Body | Aluminum alloy |
| 8 | Magnet holder | Brass(Φ12)/Aluminum alloy(Others) |
| 9 | Magnet washer | NBR |
| 10 | Magnet | Sintered metal (Neodymium-iron-boron) |
| 11 | Piston | Brass(Φ12,16)/Aluminum alloy(Others) |
| 12 | Piston seal | NBR |
| 13 | Back cover | No(Φ12,16)/Aluminum alloy |

### Dimensions

**Φ4**

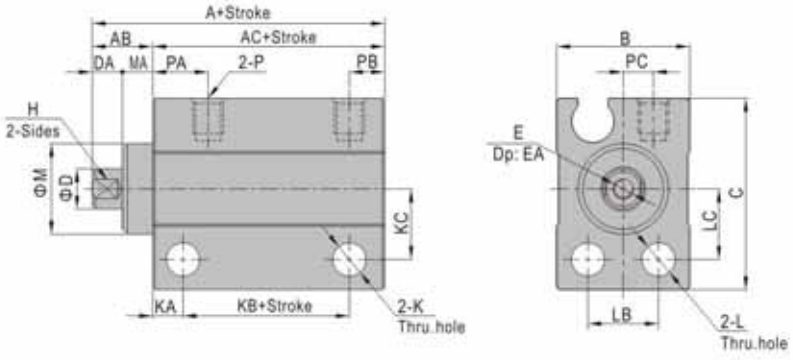



**Φ4(Male thread)**



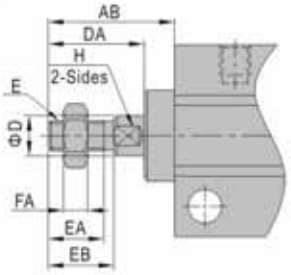

[Note] The value in the "( )" is single-acting type's value.

**Φ6~Φ10**




| Bore size\Item | A | AC | KB | A | AC | KB | AB | B | C | D | | DA | E | EA | H | K | KA | KC | L | LB | LC | M | MA | P | PA | PB | PC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | With magnet | | | Without magnet | | | | | | MU | MSU | | | | | | | | | | | | | | | | |
| 6 | 24 | 18 | 11.5 | 19 | 13 | 6.5 | 6 | 13 | 19 | 4 | 3.5 | 3 | M2.5×0.45 | 5 | 3.5 | 3.3 | 3 | 7 | 3.3 | 7 | 7 | 9 | 3 | M3×0.5 | 5.5 | 3.5 | 3 |
| 8 | 24 | 18 | 11.5 | 19 | 13 | 6.5 | 6 | 13 | 21 | 5 | | 3 | M3×0.5 | 6 | 4.5 | 3.3 | 3 | 8 | 3.3 | 7 | 8 | 11 | 3 | M3×0.5 | 5.5 | 3.5 | 3 |
| 10 | 24 | 18 | 11.5 | 19 | 13 | 6.5 | 6 | 13.5 | 22 | 6 | | 3 | M3×0.5 | 6 | 5 | 3.3 | 3 | 8.5 | 3.3 | 7 | 8.5 | 12 | 3 | M3×0.5 | 5.5 | 3.5 | 3.5 |

**Φ6~Φ10(Male thread)**




| Bore size\Item | AB | D(MU) | D(MSU) | DA | E | EA | EB | FA | H |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 12.5 | 4 | 3.5 | 9.5 | M3×0.5 | 5.5 | 6.5 | 2.4 | 3.5 |
| 8 | 14.5 | 5 | 5 | 11.5 | M4×0.7 | 7 | 8.5 | 3 | 4.5 |
| 10 | 16.5 | 6 | 6 | 13.5 | M5×0.8 | 9 | 10.5 | 4 | 5 |

[Note] The unmarked dimensions are the same as Female type.

# Multi-mount cylinder

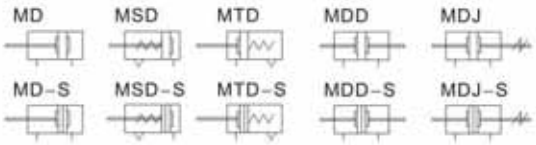
## MD Series

## Specification

| Bore size(mm) | | 6 | 10 | 16 | 20 | 25 | 32 |
|---|---|---|---|---|---|---|---|
| Acting type | MD/MDD/MDJ | Double acting | | | | | |
| | MSD/MTD | Single acting | | | | | |
| Fluid | | Air(to be filtered by 40 μ m filter element) | | | | | |
| Operating pressure | Double acting | 0.15~1.0MPa(22~145psi) | | | | | |
| | Single acting | 0.2~1.0MPa(28~145psi) | | | | | |
| Proof pressure | | 1.5MPa(215psi) | | | | | |
| Temperature ℃ | | -20~70 | | | | | |
| Speed range mm/s | | Double acting: 30~500 Single acting: 50~500 | | | | | |
| Stroke tolerance | | $^{+1.0}_{0}$ | | | | | |
| Cushion type | | Bumper | | | | | |
| Port size [Note] | | M5×0.8 | | | | | 1/8" |

[Note1] PT thread, G thread thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol




## Stroke

| Bore size (mm) | | Standard stroke (mm) | Max.std stroke | Max.stroke |
|---|---|---|---|---|
| 6 | Double acting | 5 10 15 20 25 30 35 | 35 | 40 |
| | Single acting | 5 10 15 20 | 20 | - |
| 10 | Double acting | 5 10 15 20 25 30 35 | 35 | 40 |
| | Single acting | 5 10 15 20 | 20 | - |
| 16 | Double acting | 5 10 15 20 25 30 40 50 | 50 | 70 |
| | Single acting | 5 10 15 20 | 20 | - |
| 20 | Double acting | 5 10 15 20 25 30 40 50 60 | 60 | 80 |
| | Single acting | 5 10 15 20 | 20 | - |
| 25 | Double acting | 5 10 15 20 25 30 40 50 60 | 60 | 80 |
| | Single acting | 5 10 15 20 | 20 | - |
| 32 | Double acting | 5 10 15 20 25 30 40 50 60 | 60 | 80 |
| | Single acting | 5 10 15 20 | 20 | - |

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

## Product feature

1. Manufactured by our enterprise.
2. There are several ways to fix the cylinder and it is convenient to install and use.
3. Several cylinders can be assembled together to effectively save the installation space.
4. The guide precision of piston rod is high and no additional lubricant is needed.
5. Cylinders of various specifications are optional.
6. The seal material with high temperature resistance is adopted to guarantee the normal operation of cylinder at 150℃(Option).

## Ordering code

MD 32×30 S □
MDD32×30 S □
MDJ 32×30-30 S □

1 2 3 4 5 6

| 1 Model | 2 Bore size | 3 Stroke | 4 Adjustable stroke | 5 Magnet | 6 Thread type [Note1] |
|---|---|---|---|---|---|
| MD: Multi-mount cylinder(Double acting type) | 6 10 16 20 25 32 | Refer to stroke table for details | No this code | Blank: Without magnet<br>S: With magnet | Blank: PT<br>G: G<br>T: NPT |
| MSD: Multi-mount cylinder(Single acting-push type) | | | | | |
| MTD: Multi-mount cylinder(Single acting-pull type) | | | | | |
| MDD: Multi-mount cylinder(Double rod type) | | | | | |
| MDJ: Multi-mount cylinder(Adjustable stroke type) | | | 10 20 30 | | |

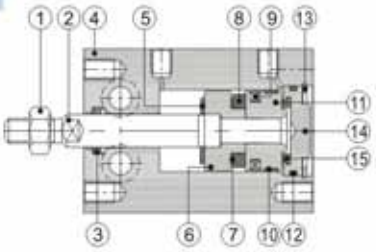
[Note1] Standard thread is blank here.

# Multi-mount cylinder

## MD Series

### Inner structure and material of major parts

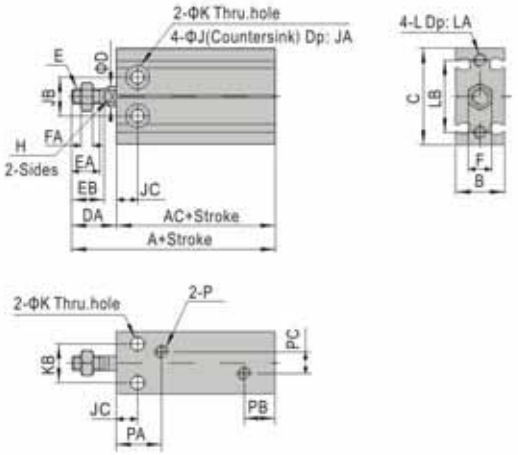
**MD-S**




| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | Rod nut | Carbon steel | 9 | Piston seal | NBR |
| 2 | Piston rod | Stainless steel | 10 | Wear ring | Wear resistant material |
| 3 | Rod packing | NBR | 11 | Piston | Aluminum alloy |
| 4 | Body | Aluminum alloy | 12 | O-ring | NBR |
| 5 | Bumper | TPU | 13 | C-clip | Spring steel |
| 6 | Magnet holder | Aluminum alloy | 14 | Back cover | Aluminum alloy |
| 7 | Magnet washer | NBR | 15 | Bumper | TPU |
| 8 | Magnet | Sintered metal(Neodymium-iron-boron) | | | |

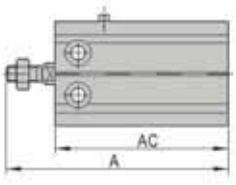
### Dimensions

**MD**

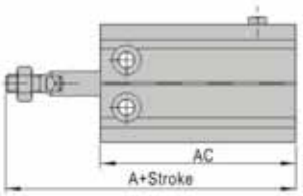



| Bore size\Item | Without magnet | | With magnet | | B | C | D | DA | E | EA | EB | F | FA | H | J | JA | JB | JC | K | KB | L | LA | LB | P | PA | PB | PC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | AC | A | AC | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 46 | 33 | 46 | 33 | 16.5 | 22 | 3 | 13 | M3×0.5 | 7 | 8 | 5.5 | 2.5 | - | 6 | 5 | 10 | 7 | 3.3 | 7 | M3×0.5 | 5 | 17 | M5×0.8 | 14 | 10 | – |
| 10 | 52 | 36 | 52 | 36 | 16.5 | 24 | 4 | 16 | M4×0.7 | 10 | 11 | 7 | 2 | - | 6 | 5.5 | 11 | 7 | 3.3 | 9 | M3×0.5 | 5 | 18 | M5×0.8 | 15.5 | 10 | – |
| 16 | 46 | 30 | 56 | 40 | 20 | 32 | 6 | 16 | M5×0.8 | 11 | 12.5 | 8 | 4 | 5 | 7.5 | 6.5 | 14 | 7 | 4.5 | 12 | M4×0.7 | 5 | 25 | M5×0.8 | 14.5 | 10 | 3 |
| 20 | 55 | 36 | 65 | 46 | 26 | 40 | 8 | 19 | M6×1.0 | 12 | 14 | 10 | 5 | 6 | 9.5 | 8 | 16 | 9 | 5.5 | 16 | M5×0.8 | 7.5 | 30 | M5×0.8 | 19 | 11 | 9 |
| 25 | 63 | 40 | 73 | 50 | 32 | 50 | 10 | 23 | M8×1.25 | 15.5 | 18 | 12 | 6 | 8 | 9.5 | 9 | 20 | 10 | 5.5 | 20 | M5×0.8 | 8 | 38 | M5×0.8 | 21.5 | 8.5 | 12 |
| 32 | 69 | 42 | 79 | 52 | 40 | 62 | 12 | 27 | M10×1.25 | 19.5 | 22 | 17 | 6 | 10 | 11 | 11.5 | 24 | 11 | 6.5 | 24 | M6×1.0 | 9 | 48 | 1/8" | 23 | 12.5 | 13 |

**MSD**




**MTD**



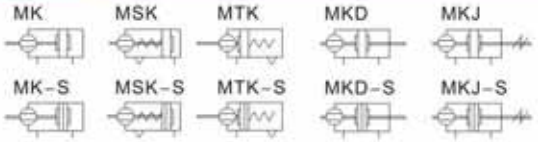

| Item | A(Without magnet) | | | | A(With magnet) | | | | AC(Without magnet) | | | | AC(With magnet) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bore size\Stroke | 5St | 10St | 15St | 20St | 5St | 10St | 15St | 20St | 5St | 10St | 15St | 20St | 5St | 10St | 15St | 20St |
| 6 | 56 | 61 | 71 | 76 | 56 | 61 | 71 | 76 | 43 | 48 | 58 | 63 | 43 | 48 | 58 | 63 |
| 10 | 62 | 67 | 77 | 82 | 62 | 67 | 77 | 82 | 46 | 51 | 61 | 66 | 46 | 51 | 61 | 66 |
| 16 | 61 | 66 | 81 | 86 | 71 | 76 | 91 | 96 | 45 | 50 | 65 | 70 | 55 | 60 | 75 | 80 |
| 20 | 70 | 75 | 90 | 95 | 80 | 85 | 100 | 105 | 51 | 56 | 71 | 76 | 61 | 66 | 81 | 86 |
| 25 | 78 | 83 | 98 | 103 | 88 | 93 | 108 | 113 | 55 | 60 | 75 | 80 | 65 | 70 | 85 | 90 |
| 32 | 84 | 89 | 104 | 109 | 94 | 99 | 114 | 119 | 57 | 62 | 77 | 82 | 67 | 72 | 87 | 92 |

Remark) The unmarked dimension is the same as MD standard type.

# Multi-mount cylinder

## MK Series

## Symbol




## Specification

| Bore size(mm) | | 6 | 10 | 16 | 20 | 25 | 32 |
|---|---|---|---|---|---|---|---|
| Acting type | MK/MKD/MKJ | Double acting | | | | | |
| | MSK/MTK | Single acting | | | | | |
| Fluid | | Air(to be filtered by 40μm filter element) | | | | | |
| Operating pressure | Double acting | 0.15~1.0MPa(22~145psi) | | | | | |
| | Single acting | 0.2~1.0MPa(28~145psi) | | | | | |
| Proof pressure | | 1.5MPa(215psi) | | | | | |
| Temperature ℃ | | -20~70 | | | | | |
| Speed range mm/s | | Double acting: 30~500 Single acting: 50~500 | | | | | |
| Stroke tolerance | | $^{+1.0}_{0}$ | | | | | |
| Cushion type | | Bumper | | | | | |
| Port size [Note] | | M5×0.8 | | | | | 1/8" |

[Note1] PT thread, G thread thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Stroke

| Bore size (mm) | | Standard stroke (mm) | Max.std stroke | Max.stroke |
|---|---|---|---|---|
| 6 | Double acting | 5 10 15 20 25 30 35 | 35 | 40 |
| | Single acting | 5 10 15 20 | 20 | - |
| 10 | Double acting | 5 10 15 20 25 30 35 | 35 | 40 |
| | Single acting | 5 10 15 20 | 20 | - |
| 16 | Double acting | 5 10 15 20 25 30 40 50 | 50 | 70 |
| | Single acting | 5 10 15 20 | 20 | - |
| 20 | Double acting | 5 10 15 20 25 30 40 50 60 | 60 | 80 |
| | Single acting | 5 10 15 20 | 20 | - |
| 25 | Double acting | 5 10 15 20 25 30 40 50 60 | 60 | 80 |
| | Single acting | 5 10 15 20 | 20 | - |
| 32 | Double acting | 5 10 15 20 25 30 40 50 60 | 60 | 80 |
| | Single acting | 5 10 15 20 | 20 | - |

Note) 1. Please contact the company for other special strokes.
2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

## Product feature

1. Manufactured by our enterprise.
2. There are several fixation ways for the cylinder, and also convenient to install and use.
3. Several cylinders can be assembled together to effectively save the installation space.
4. The guide precision of piston rod is high and no additional lubricant is needed.
5. Fixated block is attached to piston rod, which prevents it from rotating.
6. Various cylinders are available for your choice.
7. The seal material with high temperature resistance is adopted to guaranteethe normal operation of cylinder at 150℃(Option).

## Ordering code

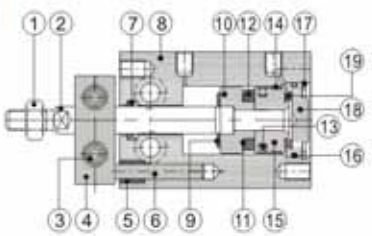
MK 32×30 S □
MDK 32×30 S □
MKJ 32×30-30 S □
① ② ③ ④ ⑤ ⑥

| ① Model | ② Bore size | ③ Stroke | ④ Adjustable stroke | ⑤ Magnet | ⑥ Thread type [Note1] |
|---|---|---|---|---|---|
| MK: Multi-mount cylinder(Double acting no-rotating type) | 6 10 16 20 25 32 | Refer to stroke table for details | No this code | Blank: Without magnet<br>S: With magnet | Blank: PT<br>G: G<br>T: NPT |
| MSK: Multi-mount cylinder(Single acting-push no-rotating type) | | | | | |
| MTK: Multi-mount cylinder (Single acting-pull no-rotating type) | | | | | |
| MKD: Multi-mount cylinder(Double rod no-rotating type) | | | | | |
| MKJ: Multi-mount cylinder(Adjustable stroke no-rotating type) | | | 10 20 30 | | |

[Note1] Standard thread is blank here.

## Inner structure and material of major parts

MK-S




| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | Rod nut | Carbon steel | 11 | Magnet washer | NBR |
| 2 | Piston rod | Stainless steel | 12 | Magnet | Sintered metal(Neodymium-iron-boron) |
| 3 | Screw | Carbon steel | 13 | Piston seal | NBR |
| 4 | No-rotating plate | Aluminum alloy | 14 | Wear ring | Wear resistant material |
| 5 | Bushing | Brass | 15 | Piston | Aluminum alloy |
| 6 | Fixed rod | Stainless steel | 16 | O-ring | NBR |
| 7 | Rod packing | NBR | 17 | C-clip | Spring steel |
| 8 | Body | Aluminum alloy | 18 | Back cover | Aluminum alloy |
| 9 | Bumper | TPU | 19 | Bumper | TPU |
| 10 | Magnet holder | Aluminum alloy | | | |

# Twin-rod cylinder

## TN Series

## Specification

| Bore size(mm) | 10 | 16 | 20 | 25 | 32 |
|---|---|---|---|---|---|
| Acting type | Double acting | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi) | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | |
| Temperature ℃ | -20~70 | | | | |
| Speed range mm/s | 30~500 | | | | |
| Adjustable stroke mm | -10~0 | | | | |
| Stroke tolerance | ≤100 $^{+1.0}_{0}$ | | >100 $^{+1.5}_{0}$ | | |
| Cushion type | Bumper | | | | |
| Non-rotating tolerance [Note1] | ±0.4° | ±0.3° | | | |
| Port size [Note2] | M5×0.8 | | | | 1/8" |

[Note1] Retract position.
[Note2]PT thread, G thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol

## Product feature

1. Enterprises standard is implemented.
2. Embeded installation and fixation mode saves the installation space.
3. It is good resistance to bending and twisting moments.
4. Mounting holes on three sides facilitates multi-position mounting.
5. Bumper in front of the barrel can adjust the stroke of cylinder and relieve impact.
6. Standard configuration of this series has magnet and the type without magnet is not available.

## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 10 | 10 20 30 40 50 60 70 80 90 100 | 100 |
| 16 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |
| 20 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |
| 25 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |
| 32 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |

[Note] When the stroke less then or equal to 100mm, The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 35mm stroke cylinder has the same dimensions of 40 std. stroke cylinder.

## Ordering code

TN 20×50 S □

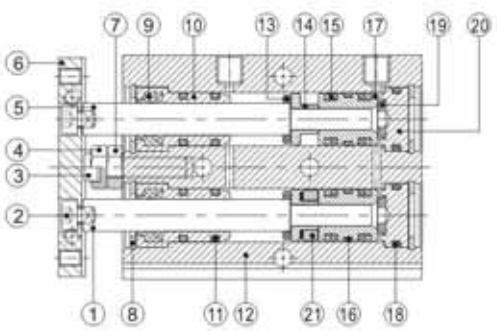
1 2 3 4 5

| 1 Model | 2 Bore size | 3 Stroke | 4 Magnet [Note1] | 5 Thread type [Note 2] |
|---|---|---|---|---|
| TN: Twin-rod cylinder (Double acting type) | 10 16 20 25 32 | Refer to stroke table for details | S: With magnet | Blank: PT<br>G: G<br>T: NPT |

[Note1] TN Series are all with magnet. [Note2] When the thread is standard, the code is blank.

## Inner structure and material of major parts

TN



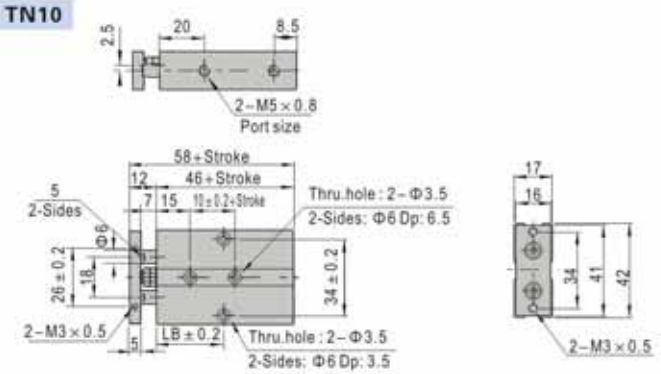

| NO. | Item | | Material | NO. | Item | | Material |
|---|---|---|---|---|---|---|---|
| 1 | Piston rod B | Φ32 | S45C | 12 | Body | | Aluminum alloy |
| | | Other | SUS304 | 13 | Bumper | | TPU |
| 2 | Screw | | Carbon steel | 14 | Magnet holder | Φ10 | SUS303 |
| 3 | Bumper | | POM | | | Other | Aluminum alloy |
| 4 | Adjustable nut | | Carbon steel | 15 | Piston seal | | NBR |
| 5 | Piston rod A | | S45C | 16 | Wear ring | | Wear resistant material |
| 6 | Fixing plate | | Free cutting steel | 17 | Piston | Φ10 | SUS303 |
| 7 | Screw | | Carbon steel | | | Other | Aluminum alloy |
| 8 | C clip | | Spring steel | 18 | Seal ring | | NBR |
| 9 | Wiper seal | | NBR | 19 | Bumper | | TPU |
| 10 | Front cover | | Aluminum alloy | 20 | Back cover | | Aluminum alloy |
| 11 | O-ring | | NBR | 21 | Magnet | | Sintered metal(Neodymium-iron-boron) |

# Twin-rod cylinder

## TN Series

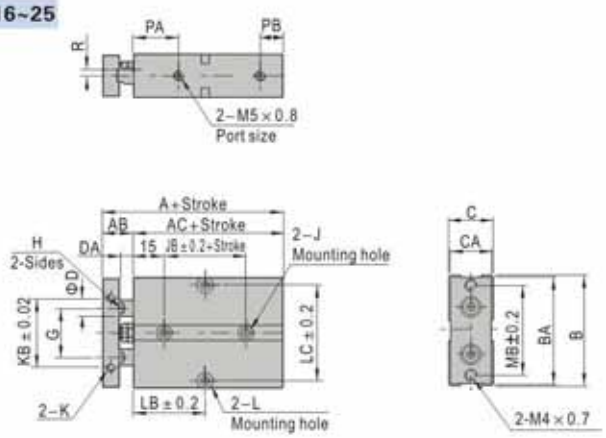
## Dimensions

### TN10




| Item\Stroke | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| LB | 30 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |

### TN16~25

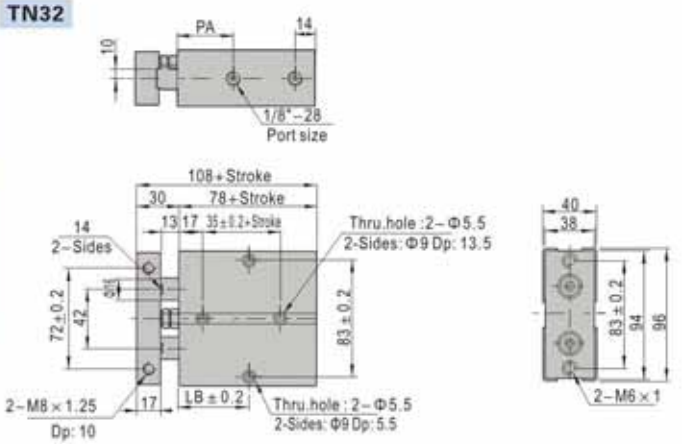



| Bore size\Item | A | AB | AC | B | BA | C | CA | D | DA | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 68 | 15 | 53 | 54 | 53 | 21 | 20 | 8 | 7 | 24 | 6 | Both sides: Φ7.5Dp:7.5Thru.hole: Φ4.5 |
| 20 | 78 | 20 | 58 | 62 | 61 | 25 | 24 | 10 | 10 | 28 | 8 | Both sides: Φ7.5Dp:7.5Thru.hole: Φ4.5 |
| 25 | 81 | 19 | 62 | 73 | 72 | 30 | 29 | 12 | 9 | 34 | 10 | Both sides: Φ7.5Dp:7.5Thru.hole: Φ4.5 |

| Bore size\Item | JB | K | KB | PA | PB | L | LC | MB | R |
|---|---|---|---|---|---|---|---|---|---|
| 16 | 20 | M4×0.7Dp:5 | 34 | 22 | 11 | Both sides: Φ8Dp:4.5Thru.hole: Φ4.5 | 47 | 47 | 3 |
| 20 | 20 | M4×0.7Dp:5 | 44 | 25 | 12 | Both sides: Φ8Dp:4.5Thru.hole: Φ4.5 | 55 | 55 | 3.5 |
| 25 | 30 | M4×0.7Dp:6 | 56 | 27 | 12 | Both sides: Φ8Dp:4.5Thru.hole: Φ4.5 | 66 | 66 | 6 |

| Bore size\Item | LB | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stroke≤ | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 125 | 150 | 175 | 200 |
| 16 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 87.5 | 100 | 112.5 | 125 |
| 20 | 35 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 87.5 | 100 | 112.5 | 125 |
| 25 | 40 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 92.5 | 105 | 117.5 | 130 |

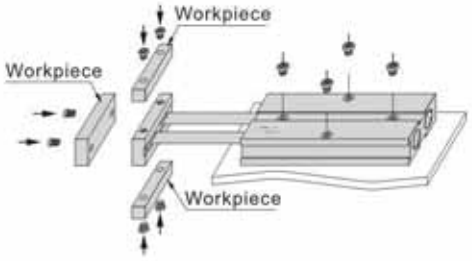
### TN32



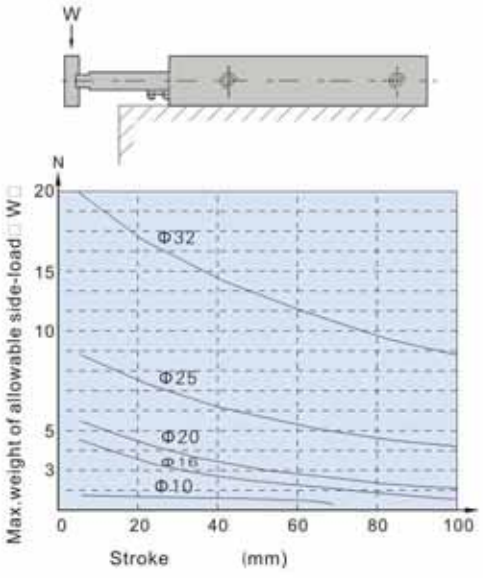

| Item\Stroke | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 125 | 150 | 175 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LB | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 102.5 | 115 | 127.5 | 140 |
| PA | 35 | 40 | | | | | | | | | | | | |

## Installation and application

1、How to mount workpiece:




2、Max. weight of allowable side-load



# Twin-rod cylinder

## TR Series

## Specification

| Bore size(mm) | 6 | 10 | 16 | 20 | 25 | 32 |
|---|---|---|---|---|---|---|
| Acting type | Double acting | | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi) | | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | | |
| Temperature ℃ | -20~70 | | | | | |
| Speed range mm/s | 30~500 | | | | | |
| Adjustable stroke mm | ~5~0 | | | | | |
| Stroke tolerance | $\leq 100\ ^{+1.0}_{0}$ | | | $>100\ ^{+1.5}_{0}$ | | |
| Cushion type | Bumper | | | | | |
| Non-rotating tolerance [Note1] | ±0.2° | ±0.15° | | | ±0.1° | |
| Port size [Note2] | M5×0.8 | | | | 1/8" | |

[Note1] Retract position.

[Note2]PT thread, G thread and NPT thread are available.

Add) Refer to P338 for detail of sensor switch.

## Symbol

## Product feature

1. JIS standard is implemented.
2. The non-rotating precision is high and deflection of the end of piston rod is low, which is suitable for precise guide.
3. It adopts lengthening type sliding supporting guide. No additional lubricant is needed and it has good performance of guide.
4. Mounting holes on three sides facilitates multi-position mounting.
5. It is good resistance to bending and twisting moments.
6. Except for the axial, each side of the cylinder has installation orifices to provide several installation and fixation ways for the customers.
7. There are two groups of air intake and outlet at two sides of the cylinder for the actual selection.
8. Bumper in front of the barrel can adjust the stroke of cylinder and relieve impact.
9. Standard configuration of this series has magnet and the type without magnet is not available.

## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 6 | 10 20 30 40 50 | 50 |
| 10 | 10 20 30 40 50 60 70 80 90 100 | 100 |
| 16 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |
| 20 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |
| 25 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |
| 32 | 10 20 30 40 50 60 70 80 90 100 125 150 175 200 | 200 |

[Note] When the stroke less then or equal to 100mm, The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 35mm stroke cylinder has the same dimensions of 40 std. stroke cylinder.

## Ordering code

TR 20×50 S □

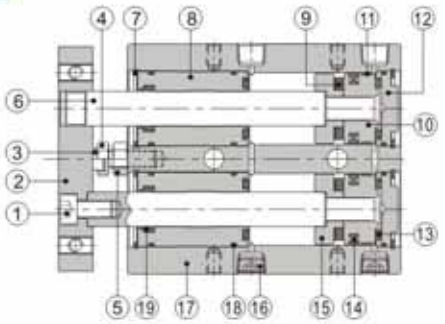
1 2 3 4 5

| 1 Model | 2 Bore size | 3 Stroke | 4 Magnet [Note1] | 5 Thread type [Note 2] |
|---|---|---|---|---|
| TR: Twin-rod cylinder (Double acting type) | 6 10 16 20 25 32 | Refer to stroke table for details | S: With magnet | Blank: PT<br>G: G<br>T: NPT |

[Note1] TR Series are all with magnet. [Note2] When the thread is standard, the code is blank.

## Inner structure and material of major parts

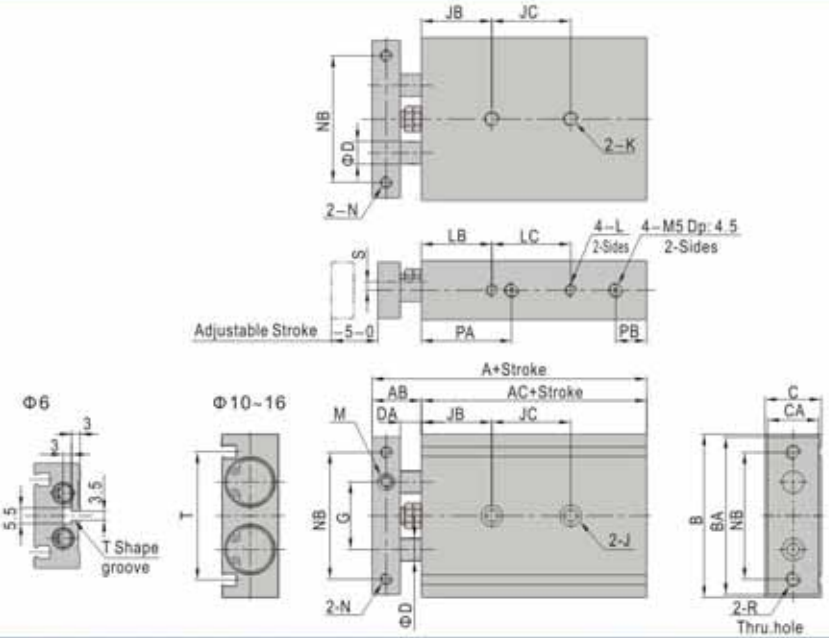
TR




| NO. | Item | | Material | NO. | Item | | Material |
|---|---|---|---|---|---|---|---|
| 1 | Screw | | Carbon steel | 10 | Piston | Φ6,10 | SUS304 |
| 2 | Fixing plate | | Aluminum alloy | | | Other | Aluminum alloy |
| 3 | Bumper | | POM | 11 | Wear ring | | Nylon 6 |
| 4 | Screw | | Free cutting steel | 12 | Back cover | | Aluminum alloy |
| 5 | Nut | | Carbon steel | 13 | Bumper | | TPU |
| 6 | Piston rod | Φ25,32 | Carbon steel | 14 | Piston seal | | NBR |
| | | Other | SUS304 | 15 | Magnet holder | Φ6,10 | SUS304 |
| 7 | C clip | | Spring steel | | | Other | Aluminum alloy |
| 8 | Front cover | | Aluminum alloy | 16 | Screw | | Carbon steel |
| 9 | Magnet | Φ32 | Plastic | 17 | Body | | Aluminum alloy |
| | | Other | Sintered metal (Neodymium-iron-boron) | 18 | Back cover O-ring | | NBR |
| | | | | 19 | Wiper seal | | NBR |

## Dimensions

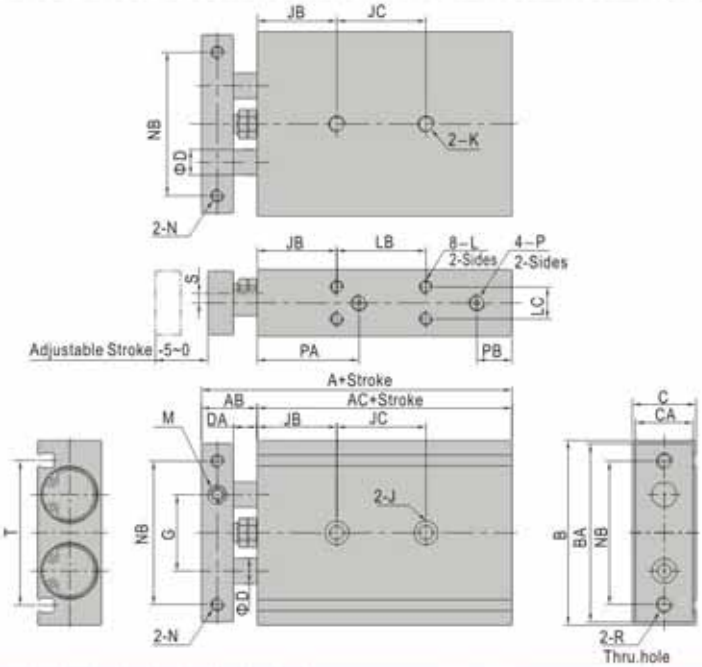
### TR6~16




| Bore size\Item / Stroke | A | AB | AC | B | BA | C | CA | D | DA | G | JC LC 10~25 | 30~50 | 60~80 | 90~100 | 125 | 150 | 175 | 200 | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 58.5 | 13.5 | 45 | 37 | 35 | 16 | 14 | 4 | 8 | 16 | JC=10+Stroke/2 LC=13+Stroke | | - | - | - | - | - | - | 26 |
| 10 | 72 | 17 | 55 | 46 | 44 | 17 | 15 | 6 | 9 | 20 | 30 | 40 | 50 | 60 | - | - | - | - | 36.5 |
| 16 | 79 | 19 | 60 | 58 | 56 | 20 | 18 | 8 | 9 | 25 | 25 | 35 | 45 | 55 | 65 | 75 | 145 | 145 | 46.5 |

| Bore size\Item | J | JB | K | L | LB | M | N | NB | PA | PB | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | One side: Φ6.5Dp:3.5Thru.hole: Φ3.5 | 13 | - | M3×0.5Dp:4.5 | 10 | M3×0.5 | M3×0.5Thru.hole | 28 | 24.5 | 6.5 | M3×0.5 | 4.5 |
| 10 | One side: Φ6.5Dp:3.5Thru.hole: Φ3.5 | 20 | M4×0.7Dp:7 | M3×0.5Dp:5 | 20 | M5×0.8 | M3×0.5Thru.hole | 35 | 30 | 8 | M4×0.7 | 3.5 |
| 16 | One side: Φ8.0Dp:4.5Thru.hole: Φ4.5 | 30 | M5×0.8Dp:8 | M4×0.7Dp:5 | 30 | M6×1.0 | M4×0.7Thru.hole | 45 | 38 | 8 | M5×0.8 | 5 |

### TR20~32




| Bore size\Item / Stroke | A | AB | AC | B | BA | C | CA | D | DA | G | JB | JC LB 10~25 | 30~50 | 60~100 | 125 | 150 | 175 | 200 | P | PA | PB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 94 | 24 | 70 | 64 | 62 | 25 | 23 | 10 | 12 | 28 | 30 | 30 | 40 | 60 | 80 | 80 | 100 | 100 | M5×0.8 | 46 | 9 |
| 25 | 96 | 24 | 72 | 80 | 78 | 30 | 28 | 12 | 12 | 35 | 30 | 30 | 40 | 60 | 80 | 80 | 100 | 100 | 1/8" | 43 | 9 |
| 32 | 112 | 30 | 82 | 98 | 96 | 38 | 36 | 16 | 14 | 44 | 30 | 40 | 50 | 70 | 90 | 90 | 110 | 110 | 1/8" | 53 | 10 |

| Bore size\Item | J | K | L | LC | M | N | NB | R | S | T |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | One side:Φ9.5Dp:5.5Thru.hole:Φ5.5 | M6×1.0Dp:10 | M4×0.7Dp:7 | 9.5 | M8×1.25 | M4×0.7Dp:6 | 50 | M5×0.8 | 6.5 | 52 |
| 25 | One side: Φ11Dp:6.5Thru.hole: Φ7 | M8×1.25Dp:12 | M5×0.8Dp:7 | 13 | M8×1.25 | M5×0.8Dp:7.5 | 60 | M6×1.0 | 9 | 61 |
| 32 | One side: Φ11Dp:6.5Thru.hole: Φ7 | M8×1.25Dp:12 | M5×0.8Dp:7 | 20 | M10×1.5 | M5×0.8Dp:8 | 75 | M6×1.0 | 11.5 | 73 |

# Tri-rod cylinder

## TCL,TCM Series

## Specification

| Bore size(mm) | | 6 | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acting type | | Double acting | | | | | | | | | | | |
| Fluid | | Air(to be filtered by 40 μ m filter element) | | | | | | | | | | | |
| Operating pressure | | 0.15~0.7MPa(22~100psi) | | 0.15~1.0MPa(22~145psi) | | | | | | | | | |
| Proof pressure | | 1.2MPa(175psi) | | 1.5MPa(215psi) | | | | | | | | | |
| Temperature ℃ | | -20~70 | | | | | | | | | | | |
| Speed range mm/s | | 50~500 | | 30~500 | | | | | | | | 50~400 | |
| Stroke tolerance | | ≤100 $^{+1.0}_{0}$ >100 $^{+1.5}_{0}$ | | | | | | | | | | | |
| Cushion type | | Bumper | | | | | | | | | | | |
| Non-rotating tolerance [Note1] | TCL | - | | ±0.08° | | ±0.07° | | ±0.06° | | ±0.05° | | ±0.04° | |
| | TCM | ±0.1° | | ±0.10° | | ±0.09° | | ±0.08° | | ±0.06° | | ±0.05° | |
| Port size [Note2] | | M3×0.5 | | M5×0.8 | | 1/8" | | | | 1/4" | | 3/8" | |

[Note1] Retract position.
[Note2]PT thread, G thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol

## Product feature

1. JIS standard is implemented.
2. Two guides of special bearing steel and linear bearing or bronze bearing guide are used to prevent rotating. They can bear high torque and radial load.
   ★Note: Steel ball linear bearing: It is suitable for elevation action of cylinder or the situation requiring high precision and high bearing ability, especially for the situation requiring low fraction action process.
   Bronze sliding bearing: it is suitable for the action that has radial load resistance. Compared with normal cylinder of same use, the horizontal impact resistance is doubled and it has stronger torsion rigidity.
3. Drive unit and guide unit are in the same barrel that no additional accessories are needed with minimal space required. The air intake is optional and it is convenient to install.
4. The bottom, back side and fixing plate of main body respectively has two exact orientation orifices (See ΦPA orifice and the orifice in XX point), which can provide orientation installation with high precision for the special situation.
5. Options of switch mounting with provision 4 mounting slots.
6. Special design of main body provides multi-mount;

## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 6 | 5 10 15 20 | 20 |
| 10 | 5 10 15 20 25 30 | 30 |
| 12 | 10 20 25 30 40 50 60 70 75 80 90 100 125 150 | 150 |
| 16 | 10 20 25 30 40 50 60 70 75 80 90 100 125 150 175 200 | 200 |
| 20 25 | 20 25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250 | 250 |
| 32 40 50 63 | 25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250 | 250 |
| 80 100 | 25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250 | 250 |

[Note] When the discrepancy between non-standard stroke and standard stroke is 1~5mm, The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 86mm stroke cylinder has the same dimensions of 90 std. stroke cylinder. But 84mm stroke cylinder shout be ordered by non-standard stroke.

## Ordering code

TC M 50×50 S □

① ② ③ ④ ⑤ ⑥

| ① Model | ② Bearing type | ③ Bore size | ④ Stroke | ⑤ Magnet [Note1] | ⑥ Thread type [Note 2] |
|---|---|---|---|---|---|
| TC: Tri-rod cylinder (Double acting type) | M: Bronze bearing | 6 | Refer to stroke table for details | S: With magnet | Blank: PT<br>G: G<br>T: NPT |
| | | 10 | | | |
| | L: Linear bearing<br>M: Bronze bearing | 12 | | | |
| | | 16 | | | |
| | | 20 | | | |
| | | 25 | | | |
| | | 32 | | | |
| | | 40 | | | |
| | | 50 | | | |
| | | 63 | | | |
| | | 80 | | | |
| | | 100 | | | |

[Note1] TC Series are all with magnet. [Note2] When the thread is standard, the code is blank.

# Slide table cylinder

## STW Series

## Symbol

## Specification

| Bore size(mm) | 10 | 16 | 20 | 25 | 32 |
|---|---|---|---|---|---|
| Acting type | Double acting | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi)(1.5~10bar) | | | | |
| Proof pressure | 1.5MPa(215psi)(15bar) | | | | |
| Temperature □ | -20~70 | | | | |
| Speed range mm/s | 30~500 | | | | |
| Stroke tolerance | Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$ | | | | |
| Cushion type | Shock absorber | | | | |
| Non-rotating tolerance [Note1] | ±0.1° | ±0.05° | | ±0.03° | |
| Port size [Note2] | M5×0.8 | | | 1/8" | |

[Note1] Retract position.

[Note2]PT thread, G thread and NPT thread are available.

Add) Refer to P338 for detail of sensor switch.

## Product feature

1. Both body and fixing plates can be installed.
2. Three sets of air inlet and outlet are available for customer to choose and convenient for piping.
3. The structure of double-piston rod provides the good performance of anti-bending and anti-torsion and can bear relatively stronger movement radial and load.
4. Buffer device such as the integrated shock absorber can effectively slowdown impact velocity and extend life.

## Stroke

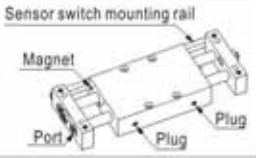
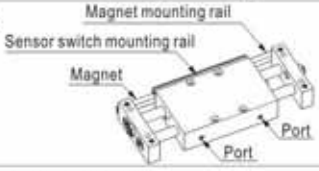
| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 10 | 25 50 75 100 | 100 |
| 16 | 25 50 75 100 125 150 175 200 | 200 |
| 20 | 25 50 75 100 125 150 175 200 | 200 |
| 25 | 25 50 75 100 125 150 175 200 | 200 |
| 32 | 25 50 75 100 125 150 175 200 | 200 |

[Note] Consult us for non-standard stroke.

## Ordering code

STW B 25 × 50 S □

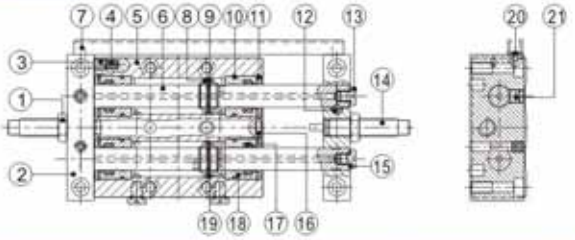
1 2 3 4 5 6

| 1 Model | 2 Mounting type | 3 Bore size | 4 Stroke | 5 Magnet | 6 Thread type [Note1] |
|---|---|---|---|---|---|
| STW: Slide table cylinder (Double acting type) | A: Fixing plate mounted   B: Body mounted   | 10 16 20 25 32 | Refer to stroke table for details | S: With magnet | Blank: PT<br>G: G<br>T: NPT |

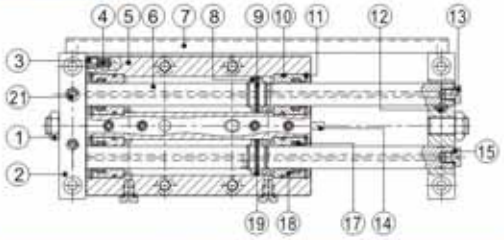
[Note1] When the thread is standard, the code is blank.

## Inner structure and material of major parts

**STWA16X25S**




**STWA16X50~200S**




| | Item | Material | | Item | Material | NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Hexagon nut | Carbon steel | 6 | Piston rod | Carbon steel | 11 | C clip | Spring steel | 17 | O-ring | NBR |
| 2 | Fixing plate | Aluminum alloy | 7 | Sensor switch mounting rail | Aluminum alloy | 12 | Pin | Carbon steel | 18 | Front cover | Aluminum alloy |
| 3 | Washer | NBR | | | | 13 | Plug screw | Carbon steel | 19 | Piston seal | NBR |
| 4 | Magnet | Sintered metal (Neodymium-iron-boron) | 8 | Piston | Aluminum alloy | 14 | Shock absorber | Combination | 20 | Screw | Carbon steel |
| | | | 9 | | NBR | 15 | O-ring | NBR | 21 | Countersink screw | Carbon steel |
| 5 | Body | Aluminum alloy | 10 | | NBR | 16 | Bumper | Carbon steel | | | |

# Compact slide cylinder

## HLH Series

## Specification

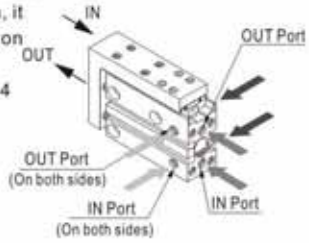
| Bore size(mm) | 6 | 10 | 16 | 20 |
|---|---|---|---|---|
| Guide rail width mm | 5 | 7 | 9 | 12 |
| Acting type | Double acting | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | |
| Operating pressure | 0.15~0.7MPa(22~100psi)(1.5~7.0bar) | | | |
| Proof pressure | 1.2MPa(175psi)(12.0bar) | | | |
| Temperature □ | -20~70 | | | |
| Speed range mm/s | 50~500 | | | |
| Allowable kinetic energy J | 0.008 | 0.025 | 0.05 | 0.1 |
| Stroke tolerance | $^{+1.0}_{0}$ | | | |
| Cushion type | Bumper | | | |
| Sensor switches [Note1] | CMSH, DMSH(S) | | | |
| Port size | M5×0.8 | | | |

[Note1] Refer to P338 for detail of sensor switch.

## Symbol

## Product feature

1. Miniature linear roller ball bearing integrated wise cylinder.
2. With the excellent straightness and non-rotation precision, it is more suitable for precision assembly.
3. Mounting is possible from 4 directions.
4. Piping is possible from 3 directions.




## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 6 | 5 10 15 20 25 30 | 30 |
| 10 | 5 10 15 20 25 30 40 50 | 50 |
| 16 | 5 10 15 20 25 30 40 50 60 | 60 |
| 20 | 5 10 15 20 25 30 40 50 60 | 60 |

[Note] Consult us for non-standard stroke.

## Ordering code

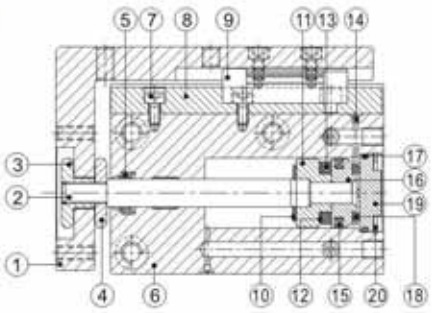
HLH 20 × 30 S

① ② ③ ④

| ① Model | ② Bore size | ③ Stroke | ④ Magnet |
|---|---|---|---|
| HLH: Compact slide cylinder(Double acting type) | 6 10 16 20 | Refer to stroke table for details | S: With magnet |

## Inner structure and material of major parts

HLH




| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | Slide table | Aluminum alloy | 12 | Magnet washer | NBR |
| 2 | Piston rod | Stainless steel | 13 | Magnet | Sintered metal (Neodymium-iron-boron) |
| 3 | Hexagon nut | Carbon steel | | | |
| 4 | Hexagon nut | Carbon steel | 14 | Steel ball | SUS304 |
| 5 | Rod seal | NBR | 15 | Piston seal | NBR |
| 6 | Body | Aluminum alloy | 16 | Piston | Aluminum alloy |
| 7 | Screw | Carbon steel | 17 | O-ring | NBR |
| 8 | Linear guide | Stainless steel | 18 | Bumper | TPU |
| 9 | Slide block | | 19 | Back cover | Aluminum alloy |
| 10 | Bumper | TPU | 20 | C clip | Spring steel |
| 11 | Magnet holder | Aluminum alloy | | | |

# Compact slide cylinder(Recirculating linear ball bearing)

## HLQ、HLQL Series

## Specification

| Bore size(mm) | 6 | 8 | 12 | 16 | 20 | 25 |
|---|---|---|---|---|---|---|
| Guide rail width(mm) | 10 | 10 | 7 | 9 | 9 | 12 |
| Number of guide rail | Single guide rail | | Double guide rail | | | |
| Acting type | Double acting | | | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | | |
| Operating pressure | 0.15~0.7MPa(22~100psi)(1.5~7.0bar) | | | | | |
| Proof pressure | 1.2MPa(175psi)(12.0bar) | | | | | |
| Temperature ℃ | -20~70 | | | | | |
| Speed range mm/s | 50~500 | | | | | |
| Stroke tolerance | Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$ | | | | | |
| Cushion type | Bumper(Both ends)、Shock absorber | | | | | |
| Sensor switches | CMSH、DMSH(S) | | | | | |
| Port size [Note1] | M5×0.8 | | | | 1/8" | |

[Note1] PT thread, G thread, NPT thread are available.
Refer to P338 for detail of sensor switch.

## Symbol

## Stroke

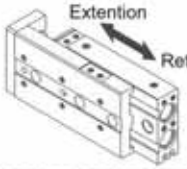
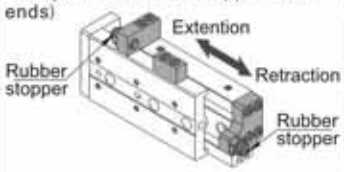
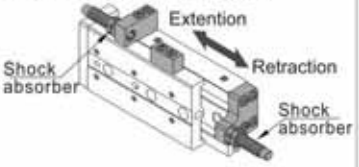
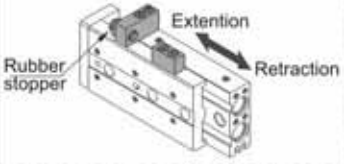
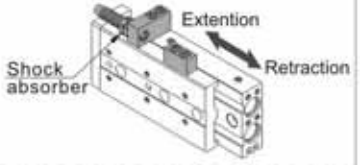
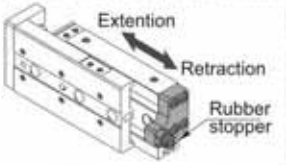
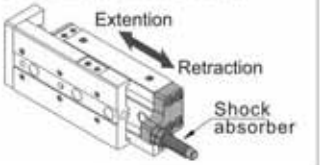
| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 6 | 10 20 30 40 50 | 50 |
| 8 | 10 20 30 40 50 75 | 75 |
| 12 | 10 20 30 40 50 75 100 | 100 |
| 16 | 10 20 30 40 50 75 100 125 | 125 |
| 20 | 10 20 30 40 50 75 100 125 150 | 150 |
| 25 | 10 20 30 40 50 75 100 125 150 | 150 |

[Note] Consult us for non-standard stroke.

## Ordering code

HLQ 20 × 30 S AS □

① ② ③ ④ ⑤ ⑥

| ①Model | ②Bore Size | ③Stroke | ④Magnet | ⑤Adjuster option [Note1] | ⑥Thread type [Note2] |
|---|---|---|---|---|---|
| HLQ: Compact slide cylinder (Double acting type) (Recirculating linear ball bearing)<br>HLQL: Symmetrical Compact slide cylinder (Double acting type) (Recirculating linear ball bearing) | 6<br>8<br>12<br>16<br>20<br>25 | Refer to stroke table for details | S: With magnet | Blank: Without adjuster(Basic type)<br>  <br>A: Adjustable rubber stopper(Both ends)<br>  <br>B: Shock absorber(Both ends)<br>  <br>AS: Adjustable rubber stopper(Extention)<br>  <br>BS: Shock absorber(Extention)<br>  <br>AF: Adjustable rubber stopper(Retraction)<br>  <br>BF: Shock absorber(Retraction)<br>  | Blank: PT<br>G: G<br>T: NPT |

[Note1] B type, BS type, BF type are unavailable for bore size of Φ6. [Note2]When the thread is standard, the code is blank.

# Compact slide cylinder(Recirculating linear ball bearing)

## HLQ、HLQL Series

**Table 1:** Maximum allowable kinetic energy(Emax)
Maximum allowable applied load(Wmax)

| Model | Max. allowable kinetic energy Emax(J) | | | Max. allowable applied load Wmax(N) |
|---|---|---|---|---|
| | Basic type | Rubber stopper type | Shock absorber type | |
| HLQ6 | 0.01 | 0.01 | – | 4 |
| HLQ8 | 0.024 | 0.024 | 0.048 | 8 |
| HLQ12 | 0.05 | 0.05 | 0.1 | 15 |
| HLQ16 | 0.1 | 0.1 | 0.2 | 30 |
| HLQ20 | 0.13 | 0.13 | 0.26 | 40 |
| HLQ25 | 0.22 | 0.22 | 0.44 | 70 |

**Note:** Symbol and unit

| Symbol | Item | Unit |
|---|---|---|
| A, B | Correction value for center position distance of moment | mm |
| a | Acceleration of inertia | – |
| E | Kinetic energy | J |
| Ea | Allowable kinetic energy | J |
| Emax | Maximum allowable kinetic energy | J |
| g | Acceleration of gravity g=9.81 | $m/s^2$ |
| K | Mounting work coefficient | – |
| L1, L2, L3 | Overhang | mm |
| Mp, My, Mr | Dynamic moment(Pitch、Yaw、Roll) | Nm |
| $Mp_{max}$, $My_{max}$, $Mr_{max}$ | Maximum allowable dynamic moment (Pitch、Yaw、Roll) | Nm |
| Mpo, Myo, Mro | Static moment(Pitch、Yaw、Roll) | Nm |
| $Mpo_{max}$, $Myo_{max}$, $Mro_{max}$ | Maximum allowable static moment (Pitch、Yaw、Roll) | Nm |
| Va | Average speed | mm/s |
| W | Applied load | N |
| Wmax | Maximum allowable applied load | N |
| β | Applied load coefficient | - |

**Table 2:** Maximum allowable moment(Nm),
Correction value for center position distance of moment(mm)

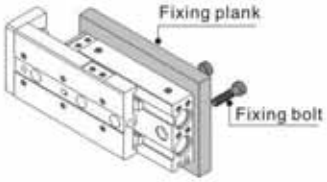
| Bore size | Stroke | Static moment | | | Dynamic moment | | | Correction value | |
|---|---|---|---|---|---|---|---|---|---|
| | | $Mpo_{max}$ | $Myo_{max}$ | $Mro_{max}$ | $Mp_{max}$ | $My_{max}$ | $Mr_{max}$ | A | B |
| 6 | 10 | 3.3 | 3.8 | 2.6 | 0.7 | 0.7 | 0.6 | 30 | 7 |
| | 20 | 3.3 | 3.8 | 2.6 | 0.7 | 0.8 | 0.6 | 40 | |
| | 30 | 3.3 | 3.8 | 2.6 | 0.7 | 0.8 | 0.6 | 50 | |
| | 40 | 7.2 | 7.9 | 3.6 | 1.3 | 1.3 | 0.6 | 60 | |
| | 50 | 12.4 | 12.7 | 4.7 | 1.8 | 1.8 | 0.6 | 70 | |
| 8 | 10 | 10.1 | 9.1 | 8.8 | 2.5 | 2.5 | 2.0 | 30 | 7 |
| | 20 | 10.1 | 9.1 | 8.8 | 2.6 | 2.6 | 2.0 | 40 | |
| | 30 | 10.1 | 9.1 | 8.8 | 2.8 | 2.8 | 2.0 | 50 | |
| | 40 | 12.4 | 10.8 | 10.1 | 3.4 | 3.4 | 2.3 | 60 | |
| | 50 | 23.6 | 24.8 | 13.9 | 4.4 | 4.4 | 2.1 | 70 | |
| | 75 | 32.8 | 35.3 | 16.4 | 4.6 | 4.6 | 1.8 | 95 | |
| 12 | 10 | 8.5 | 8.5 | 13.6 | 2.5 | 2.5 | 4 | 32 | 11 |
| | 20 | 8.5 | 8.5 | 13.6 | 2.5 | 2.5 | 4 | 44 | |
| | 30 | 8.5 | 8.5 | 13.6 | 2.5 | 2.5 | 4 | 54 | |
| | 40 | 8.5 | 8.5 | 13.6 | 2.5 | 2.5 | 4 | 62 | |
| | 50 | 8.5 | 8.5 | 13.6 | 2.5 | 2.5 | 4 | 72 | |
| | 75 | 52.3 | 52.3 | 85.6 | 18.9 | 18.9 | 13 | 115 | |
| | 100 | 53.9 | 53.9 | 86.9 | 19.5 | 19.5 | 13 | 142 | |
| 16 | 10 | 33.6 | 33.6 | 35.2 | 8.4 | 8.4 | 8.8 | 49 | 12 |
| | 20 | 33.6 | 33.6 | 35.2 | 8.4 | 8.4 | 8.8 | 49 | |
| | 30 | 33.6 | 33.6 | 35.2 | 8.4 | 8.4 | 8.8 | 59 | |
| | 40 | 33.6 | 33.6 | 35.2 | 8.4 | 8.4 | 8.8 | 69 | |
| | 50 | 33.6 | 33.6 | 35.2 | 8.4 | 8.4 | 8.8 | 79 | |
| | 75 | 70.2 | 70.2 | 62.5 | 28.1 | 28.1 | 25 | 120 | |
| | 100 | 76.6 | 76.6 | 62.5 | 38.3 | 38.3 | 25 | 150 | |
| | 125 | 78 | 78 | 62.5 | 39 | 39 | 25 | 175 | |
| 20 | 10 | 34.8 | 34.8 | 36.8 | 8.7 | 8.7 | 9.2 | 53 | 14 |
| | 20 | 34.8 | 34.8 | 36.8 | 8.7 | 8.7 | 9.2 | 53 | |
| | 30 | 34.8 | 34.8 | 36.8 | 8.7 | 8.7 | 9.2 | 63 | |
| | 40 | 34.8 | 34.8 | 36.8 | 8.7 | 8.7 | 9.2 | 73 | |
| | 50 | 34.8 | 34.8 | 36.8 | 8.7 | 8.7 | 9.2 | 83 | |
| | 75 | 70.2 | 70.2 | 74.5 | 28.1 | 28.1 | 29.7 | 123 | |
| | 100 | 76.6 | 76.6 | 74.5 | 38.3 | 38.3 | 29.7 | 157 | |
| | 125 | 78 | 78 | 74.5 | 39 | 39 | 29.7 | 178 | |
| | 150 | 98.4 | 98.4 | 74.5 | 49.2 | 49.2 | 29.7 | 210 | |
| 25 | 10 | 56.7 | 56.7 | 51 | 16.2 | 16.2 | 17 | 60 | 17 |
| | 20 | 56.7 | 56.7 | 51 | 16.2 | 16.2 | 17 | 60 | |
| | 30 | 56.7 | 56.7 | 51 | 16.2 | 16.2 | 17 | 70 | |
| | 40 | 56.7 | 56.7 | 51 | 16.2 | 16.2 | 17 | 80 | |
| | 50 | 56.7 | 56.7 | 51 | 16.2 | 16.2 | 17 | 90 | |
| | 75 | 122.5 | 122.5 | 138.5 | 49 | 49 | 55.4 | 130 | |
| | 100 | 173.8 | 173.8 | 138.5 | 79 | 79 | 55.4 | 168 | |
| | 125 | 217 | 217 | 138.5 | 108.6 | 108.6 | 55.4 | 205 | |
| | 150 | 221.8 | 221.8 | 138.5 | 110.9 | 110.9 | 55.4 | 230 | |

## Installation and application

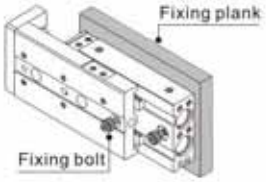
1. How to mount cylinder:

1.1) Cylinder can to be mounted from 3 directions

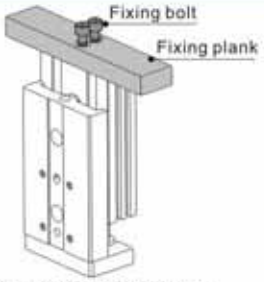
**Vertical Mounting(Body thread holes)**




**Vertical Mounting(Body through holes)**

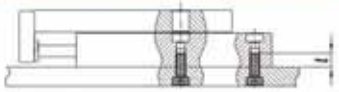



**Axial Mounting (Body thread holes)**



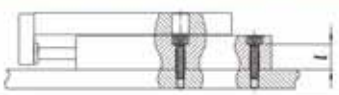

1.2) When mounting an compact slide cylinder, screws of appropriate length should be used and tightened properly within the maximum tightening torque. If screws are tightened beyond designed limits, malfunction may occur. If they are tightened insufficiently, it may result in sliding of falling off from its position.

**Vertical Mounting(Body thread holes)**



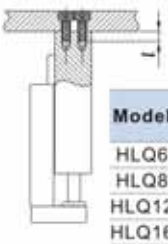
| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|---|---|---|---|
| HLQ6 | M4×0.7 | 2.1 | 8 |
| HLQ8 | M4×0.7 | 2.1 | 8 |
| HLQ12 | M5×0.8 | 4.4 | 10 |
| HLQ16 | M6×1.0 | 4.4 | 10 |
| HLQ20 | M6×1.0 | 7.4 | 12 |
| HLQ25 | M8×1.25 | 18.0 | 16 |

**Vertical Mounting(Body through holes)**



| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|---|---|---|---|
| HLQ6 | M3×0.5 | 1.2 | 8.0 |
| HLQ8 | M3×0.5 | 1.2 | 9.6 |
| HLQ12 | M4×0.7 | 2.8 | 13.4 |
| HLQ16 | M5×0.8 | 5.7 | 16.7 |
| HLQ20 | M5×0.8 | 5.7 | 22.0 |
| HLQ25 | M6×1.0 | 10.0 | 27.0 |

**Axial Mounting(Body thread holes)**



| Model | Bolt used | Max. tightening torque (Nm) | Max. screw-in depth(mm) |
|---|---|---|---|
| HLQ6 | M2.5×0.45 | 0.5 | 3.5 |
| HLQ8 | M3×0.5 | 0.9 | 4.0 |
| HLQ12 | M4×0.7 | 2.1 | 6.0 |
| HLQ16 | M5×0.8 | 4.4 | 7.0 |
| HLQ20 | M5×0.8 | 4.4 | 8.0 |
| HLQ25 | M6×1.0 | 7.4 | 10.0 |

# Compact slide cylinder(Roller bearing)

## HLS、HLSL Series

## Specification

| Bore size(mm) | 6 | 8 | 12 | 16 | 20 | 25 |
|---|---|---|---|---|---|---|
| Acting type | Double acting | | | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | | |
| Operating pressure | 0.15~0.7MPa(22~100psi)(1.5~7.0bar) | | | | | |
| Proof pressure | 1.2MPa(175psi)(12.0bar) | | | | | |
| Temperature ℃ | -20~70 | | | | | |
| Speed range mm/s | 50~500 | | | | | |
| Stroke tolerance | Stroke≤100 $^{+1.0}_{0}$ Stroke>100 $^{+1.5}_{0}$ | | | | | |
| Cushion type | Bumper(Both ends)、Shock absorber | | | | | |
| Sensor switches | CMSH、DMSH(S) | | | | | |
| Port size [Note1] | M5×0.8 | | | | 1/8" | |

[Note1] PT thread, G thread, NPT thread are available.
Refer to P338 for detail of sensor switch.

## Symbol

## Stroke

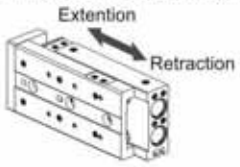
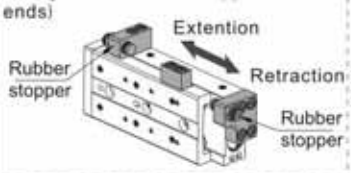
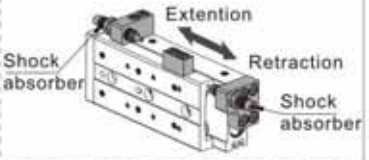
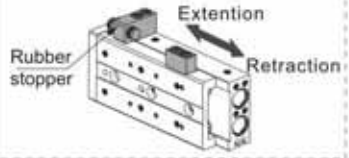
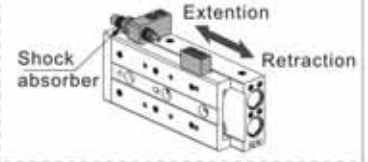
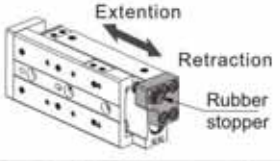
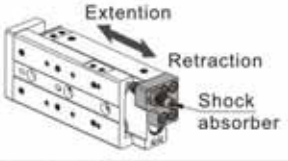
| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 6 | 10 20 30 40 50 | 50 |
| 8 | 10 20 30 40 50 75 | 75 |
| 12 | 10 20 30 40 50 75 100 | 100 |
| 16 | 10 20 30 40 50 75 100 125 | 125 |
| 20 | 10 20 30 40 50 75 100 125 150 | 150 |
| 25 | 10 20 30 40 50 75 100 125 150 | 150 |

[Note] Consult us for non-standard stroke.

## Ordering code

HLS 20 × 30 S AS □

1 2 3 4 5 6

| 1 Model | 2 Bore Size | 3 Stroke | 4 Magnet | 5 Adjuster option [Note1] | | 6 Thread type [Note2] |
|---|---|---|---|---|---|---|
| HLS: Compact slide cylinder (Double acting type) (Roller bearing)<br>HLSL: Symmetrical Compact slide cylinder (Double acting type) (Roller bearing) | 6<br>8<br>12<br>16<br>20<br>25 | Refer to stroke table for details | S: With magnet | Blank: Without adjuster(Basic type)<br>  | | Blank: PT<br>G: G<br>T: NPT |
| | | | | A: Adjustable rubber stopper(Both ends)<br>  | B: Shock absorber(Both ends)<br>  | |
| | | | | AS: Adjustable rubber stopper(Extention)<br>  | BS: Shock absorber(Extention)<br>  | |
| | | | | AF: Adjustable rubber stopper(Retraction)<br>  | BF: Shock absorber(Retraction)<br>  | |

[Note1] B type, BS type, BF type are unavailable for bore size of Φ6. [Note2]When the thread is standard, the code is blank.

# Rodless magnetic cylinder

## RMS Series

## Specification

| Series name | RMS Series | RMS、RMSF Series | | | | RMSP Series | | |
|---|---|---|---|---|---|---|---|---|
| Bore size(mm) | 10 | 16 | 20 | 25 | 32 | 40 | 16 | 20 | 32 |
| Acting type | Double acting | | | | | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | | | | | |
| Operating pressure | 0.15~0.7MPa(22~100psi)(1.5~7bar) | | | | | | | | |
| Proof pressure | 1.2MPa(175psi)(12.0bar) | | | | | | | | |
| Temperature ℃ | -20~70 | | | | | | | | |
| Speed range mm/s | 50~400 | | | | | | | | |
| Stroke tolerance mm | 0~250 $^{+1.0}_{0}$ 251~1000 $^{+1.5}_{0}$ 1001~ $^{+2.0}_{0}$ | | | | | | | | |
| Cushion type | Bumper | Variable cushion+Fixed cushion | | | | | | | |
| Port size [Note1] | M5×0.8 | 1/8" | | | | 1/4" | M5×0.8 | 1/8" | |
| Safe holding force N | 55 | 140 | 220 | 350 | 550 | 900 | 140 | 220 | 550 |

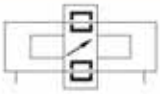
[Note1] PT thread, G thread and NPT thread are available.

## Stroke

| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 10 | 50 100 150 200 250 300 | 1000 |
| 16 | 50 100 150 200 250 300 350 400 450 500 | 1500 |
| 20 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000 | 2000 |
| 25 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000 | 2500 |
| 32 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000 | 3000 |
| 40 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000 | 3000 |

[Note] Consult us for non-standard stroke.

## Symbol



## Product feature

1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets. The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston). The carriage slide freely along the main tube.
2. It is dust-proof as the isolation between the carriage and piston.
3. It is compact in space.
4. The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action.

## Ordering code

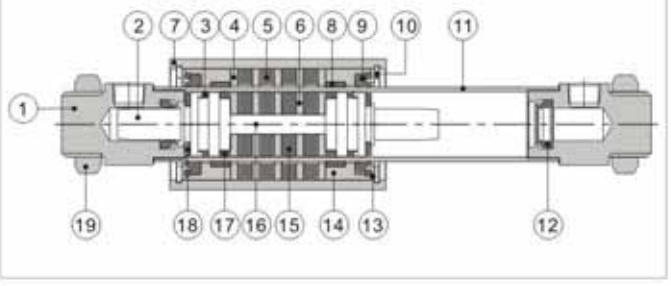
RMS □ 20×200 □ □

1 2 3 4 5 6

| 1 Model | 2 Version | 3 Bore size | 4 Stroke | 5 Mounting type [Note1] | 6 Thread type [Note2] |
|---|---|---|---|---|---|
| RMS: Rodless magnetic cylinder | Blank: basic version | 10 16 20 25 32 40 | Refer to stroke table for details | Blank: non bracket<br>LB: LB type<br>FA: FA type | Blank: PT<br>G: G<br>T: NPT |
| | P: P size version | 16 20 32 | | | |
| | F: F size version | 16 20 25 32 40 | | | |

[Note1] RMSF40 series do not have FA mounting accessories.
[Note2]Blank on thread code means metric M thread. There is only metric thread for Φ16. If G or NPT thread is needed, please comment.

## Inner structure and material of major parts

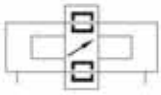



| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | End cap | Aluminum alloy | 11 | Barrel | Stainless steel |
| 2 | Piston | Aluminum alloy | 12 | Cushion O-ring | TPU |
| 3 | Piston seal | TPU | 13 | Washer | Stainless steel |
| 4 | Magnet washer | Carbon steel | 14 | Cover | Aluminum alloy |
| 5 | Magnet | Rare-earth material | 15 | Magnet | Rare-earth material |
| 6 | Magnet washer | Carbon steel | 16 | Connecting rod | Stainless steel |
| 7 | Body | Aluminum alloy | 17 | Wear ring | Wear resistant material |
| 8 | Wear ring | Wear resistant material | 18 | Bumper | NBR |
| 9 | Scraping dust ring | Plastics | 19 | Nut | Stainless steel |
| 10 | C Clip | Spring steel | | | |

# Rodless magnetic cylinder(With guide)

## RMT Series

## Symbol



## Specification

| Bore size(mm) | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|
| Acting type | Double acting | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | |
| Operating pressure | 0.2~0.7MPa(30~100psi(2.0~7bar) | 0.25~0.7MPa(36~100psi(2.5~7bar) | | | |
| Proof pressure | 1.2MPa(175psi)(12.0bar) | | | | |
| Temperature ℃ | -20~70 | | | | |
| Speed range mm/s | 50~400 | | | | |
| Stroke tolerance mm | 0~250 $^{+1.0}_{0}$ | 251~1000 $^{+1.5}_{0}$ | 1001~ $^{+2.0}_{0}$ | | |
| Cushion type | Fixed cushion | Shock absorber(Available) | | | |
| Safe holding force N | 140 | 220 | 350 | 550 | 900 |
| Port size [Note1] | M5×0.8 | 1/8" | | | 1/4" |

[Note1] PT thread, G thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Product feature

1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets. The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston). The carriage slide freely along the main tube.
2. It is dust-proof as the isolation between the carriage and piston.
3. It is compact in space.
4. The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action. If shock absorber be used, the cushioning effect is more perfection.
5. Double guides ensure high precision and can endure proper side load or prejudicial load.

## Stroke

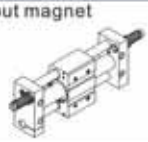
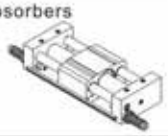
| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 16 | 50 100 150 200 250 300 350 400 450 500 | 750 |
| 20 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 | 1000 |
| 25 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 | 1500 |
| 32 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 | 1500 |
| 40 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000 | 1500 |

[Note] Consult us for non-standard stroke.

## Ordering code

RMT 20×100 S □ □

① ② ③ ④ ⑤ ⑥

| ① Model | ② Bore size | ③ Stroke | ④ Magnet | ⑤ Cushion type | ⑥ Thread type [Note1] |
|---|---|---|---|---|---|
| RMT: Rodless magnetic cylinder(With guide) | 16 20 25 32 40 | Refer to stroke table for details | Blank: Without magnet  | Blank: With two adjustable nuts  | Blank: PT<br>G: G<br>T: NPT |
| | | | S: With magnet  | A: With two shock absorbers  | |

[Note1] Blank on thread code means metric M thread. There is only metric thread for Φ16. If G or NPT thread is needed, please comment.

# Rodless magnetic cylinder(With exactitude guide)

## RMTL Series

## Specification

| Bore size(mm) | 10 | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|
| Acting type | Double acting | | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | | |
| Operating pressure | 0.2~0.7MPa(30~100psi(2.0~7bar) | | | | | |
| Proof pressure | 1.2MPa(175psi)(12.0bar) | | | | | |
| Temperature □ | -20~70 | | | | | |
| Speed range mm/s | 50~500 | | | | | |
| Stroke tolerance mm | 0~250 $^{+1.0}_{0}$ | | 251~1000 $^{+1.5}_{0}$ | | 1001~ $^{+2.0}_{0}$ | |
| Cushion type | Fixed cushion | | Shock absorber(Available) | | | |
| Safe holding force N | 55 | 140 | 220 | 350 | 550 | 900 |
| Port size [Note1] | M5×0.8 | | 1/8" | | | 1/4" |

[Note1] PT thread, G thread and NPT thread are available.
Add) Refer to P338 for detail of sensor switch.

## Symbol

## Product feature

1. This magnetic cylinder is basically a pneumatic rodless cylinder featuring a mobile piston fitted with annular magnets. The mobile carriage is also equipped with magnets to provide magnetic coupling (carriage/piston). The carriage slide freely along the main tube.
2. It is dust-proof as the isolation between the carriage and piston.
3. It is compact in space.
4. The non adjustable rubber bumpers and the adjustable pneumatic cushioning on both ends of the cylinder ensure the smooth action. If shock absorber be used, the cushioning effect is more perfection.
5. Double guides ensure high precision and can endure proper side load or prejudicial load.

## Stroke

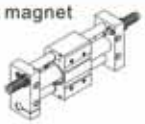
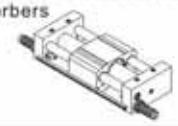
| Bore size (mm) | Standard stroke (mm) | Max.std stroke |
|---|---|---|
| 10 | 50 100 150 200 250 300 | 500 |
| 16 | 50 100 150 200 250 300 350 400 450 500 | 750 |
| 20 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 | 1000 |
| 25 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 | 1500 |
| 32 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 | 1500 |
| 40 | 50 100 150 200 250 300 350 400 450 500 600 700 750 800 900 1000 | 1500 |

[Note] Consult us for non-standard stroke.

## Ordering code

RMTL 20 × 100 S □ □

① ② ③ ④ ⑤ ⑥

| ① Model | ② Bore size | ③ Stroke | ④ Magnet | ⑤ Cushion type [Note1] | ⑥ Thread type |
|---|---|---|---|---|---|
| RMTL: Rodless magnetic cylinder (With exactitude guide) | 10 16 | Refer to stroke table for details | Blank: Without magnet  | Blank: With two adjustable nuts  | Blank: M5 |
| | 20 25 32 40 | | S: With magnet  | A: With two shock absorbers  | Blank: PT<br>G: G<br>T: NPT |

[Note1] When **A** type is selected, the two adjustable nuts are added too.

# Rotary table cylinder

## HRQ Series

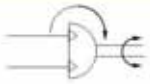
## Specification

| Specification | | 2 | 3 | 7 | 10 | 20 | 30 | 50 | 70 | 100 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acting type | | Double rack and pinion(Double acting) | | | | | | | | | |
| Fluid | | Air(to be filtered by 40μm filter element) | | | | | | | | | |
| Operating pressure | With adjustment bolt | 0.15~0.7MPa(22~100psi)(1.5~7.0bar) | | | | | | | | | |
| | With internal shock absorber | - | | | 0.15~0.7MPa(22~100psi)(1.5~7.0bar) | | | | | | |
| Proof pressure | | 1.2MPa(175psi)(12.0bar) | | | | | | | | | |
| Temperature ℃ | | -20~70 | | | | | | | | | |
| Angle adjustment range | | 0~190° | | | | | | | 0~190° | | |
| Repeatable precision | With adjustment bolt | 0.2° | | | | | | | | | |
| | With internal shock absorber | - | | | 0.05° | | | | | | |
| Theoretic moment (Nm)(0.5MPa) | | 0.2 | 0.33 | 0.63 | 1.1 | 2.2 | 2.8 | 5.0 | 7.5 | 11.0 | 22.0 |
| Cushion type | With adjustment bolt | Rubber bumper | | | | | | | | | |
| | With internal shock absorber | – | | | Shock absorber | | | | | | |
| Port size | End ports | M5×0.8 | | | | | 1/8" [Note1] | | | | |
| | Side ports | | | | | | M5×0.8 | | | | |
| Weight g | | 120 | 175 | 270 | 535 | 940 | 1260 | 2060 | 2890 | 4100 | 7650 |

[Note1] PT thread, G thread and NPT thread are available.

Add) Refer to P338 for detail of sensor switch.

## Symbol



## Product feature

1. Rack and pinion design, stable functioning.
2. Double cylinder structure, double output could be achieved.
3. The manufacturing precision of working platform is high, and is easy for installation , and is of precise orientation.
4. The center of working platform has a through hole, and pipe can be located and passed through this hole;
5. Guide hole is designed on the both side of the cylinder body (10~200) or undersurface (2~7), which is simply to install.
6. Two modes of buffer could be chosen, adjustment bolt buffer and internal shock absorber, the maximum buffer energy of internal shock absorber is 3-5 times that of adjustment bolt buffer.

## Maximum allowed movement energy and rotation times

| Model | Maximal allowed energy (J) | | Rotation times (s/90° ) | |
|---|---|---|---|---|
| | With adjustment bolt | With internal shock absorber | With adjustment bolt | With internal shock absorber |
| HRQ2 | 0.0015 | - | 0.2~0.7 | - |
| HRQ3 | 0.002 | - | 0.2~0.7 | - |
| HRQ7 | 0.006 | - | 0.2~1.0 | - |
| HRQ10 | 0.01 | 0.04 | 0.2~1.0 | 0.2~0.7 |
| HRQ20 | 0.025 | 0.12 | 0.2~1.0 | 0.2~0.7 |
| HRQ30 | 0.05 | 0.12 | 0.2~1.0 | 0.2~0.7 |
| HRQ50 | 0.08 | 0.30 | 0.2~1.0 | 0.2~0.7 |
| HRQ70 | 0.24 | 1.1 | 0.2~1.5 | 0.2~1.0 |
| HRQ100 | 0.32 | 1.6 | 0.2~2.0 | 0.2~1.0 |
| HRQ200 | 0.56 | 2.9 | 0.2~2.5 | 0.2~1.0 |

[Note]

1: The movement energy should not exceed the allowed maximum energy, or the inner accessories of product would be damaged;

2: When the rotation times of with shock absorber is larger than the allowed tolerance, the bigger effect will be lost.

## Ordering code

HRQ 20 A □

① ② ③ ④

| ①Model | ②Specification | ③Cushion type | ④Thread type |
|---|---|---|---|
| HRQ: Rotary Table/Rack & Pinion Style | 2 | Blank: With adjustment bolt | No this code |
| | 3 | | |
| | 7 | | |
| | 10 | Blank: With adjustment bolt<br>A: With internal shock absorber | Blank: PT<br>G: G<br>T: NPT |
| | 20 | | |
| | 30 | | |
| | 50 | | |
| | 70 | | |
| | 100 | | |
| | 200 | | |

[Note] HRQ series are all atteched with magnet.

# Air gripper(wide style)

## HFT Series

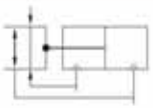
## Specification

| Bore size (mm) | 10 | 16 | 20 | 25 | 32 |
|---|---|---|---|---|---|
| Acting type | Double acting | | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | |
| Operating pressure | 0.15~0.7MPa(22~100psi) | 0.25~0.7MPa(35~100psi) | | | |
| Proof pressure | 1.2MPa(175psi) | | | | |
| Temperature | -20~70℃ | | | | |
| Lubrication | Cylinder: No necessary | | | | |
| Cushion type | Bumper | | | | |
| Repeatablity | ±0.1mm | | | | |
| Gripping force (N)[Note1] | 14 | 45 | 74 | 131 | 228 |
| Max. frequency | 40 cycle/minute | | | | 20 cycle/minute |
| Port size | M5×0.8 | | | | 1/8" |

[Note1] Pressure 0.5MPa and gripping length 40mm(Ø10 – Ø25) or 80mm(Ø32)。

Add) Refer to P338 for detail of sensor switch.

## Symbol



## Product feature

1. Design for large workpiece.
2. Double pistons design to increase the clamping force.
3. Magnet is included in the standard configuration.
4. The gripper opening or closing can be precisely synchronized with the rack & pinion mechanism.

## Stroke

| Bore size (mm) | Standard stroke (mm) | Max. stroke (mm) |
|---|---|---|
| 10 | 20 30 40 60 | 60 |
| 16 | 30 40 60 80 | 80 |
| 20 | 40 60 80 100 | 100 |
| 25 | 40 60 80 100 | 100 |
| 32 | 60 80 100 150 | 150 |

[Note] Consult us for non-standard stroke.

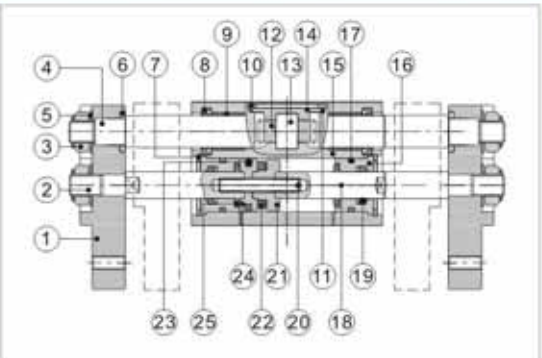
## Ordering code

HFT 10 ×20 S □

1 2 3 4 5

| 1 Model | 2 Bore size | 3 Stroke | 4 Magnet | 5 Thread type |
|---|---|---|---|---|
| HFT: Wide air gripper (Double acting) | 10 | 20 30 40 60 | S: With magnet | No this code |
| | 16 | 30 40 60 80 | | |
| | 20 | 40 60 80 100 | | |
| | 25 | 40 60 80 100 | | |
| | 32 | 60 80 100 150 | | Blank: PT<br>G: G<br>T: NPT |

## Inner structure and material of major parts

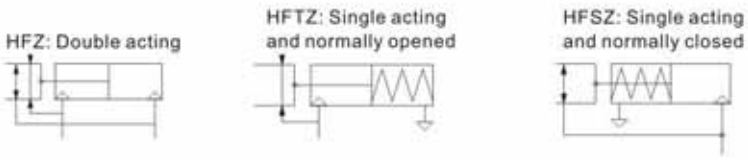



| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | Faceplate | Aluminum alloy | 14 | Gear cover | Carbon steel |
| 2 | Piston rod A | Stainless steel | 15 | Body | Aluminum alloy |
| 3 | Locknut | Carbon steel | 16 | Front cover | Aluminum alloy |
| 4 | Leader | Stainless steel | 17 | O-ring | NBR |
| 5 | Washer | Spring steel | 18 | Piston rod B | Stainless steel |
| 6 | Gasket | Carbon steel | 19 | O-ring | NBR |
| 7 | C clip | Spring steel | 20 | Joint bole | Stainless steel |
| 8 | Dustproof ring | TPU | 21 | Magnet seat | Brass/Aluminum alloy |
| 9 | Bearing | Wear resistant material | 22 | Magnet | Sintered metal (Neodymium-iron-boron) |
| 10 | C clip | Spring steel | | | |
| 11 | O-ring | NBR | 23 | Piston O-ring | NBR |
| 12 | Gear | Chrome molybdenum steel | 24 | Piston | Brass/Aluminum alloy |
| 13 | Gear axes | Bearing steel | 25 | Bumper | TPU |

# Air gripper(parallel style——ball bearing)

## HFZ Series

## Symbol




## Gripping force and stroke

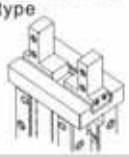
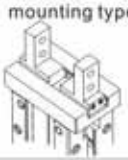
| Acting type | | Double acting(HFZ) | | | | | | | Single acting_NO (HFTZ) | | | | | | | Single acting_NC (HFSZ) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bore size | | 6 | 10 | 16 | 20 | 25 | 32 | 40 | 6 | 10 | 16 | 20 | 25 | 32 | 40 | 6 | 10 | 16 | 20 | 25 | 32 | 40 |
| Gripping force per finger Effective value(N) | External | 3.3 | 11 | 34 | 45 | 69 | 160 | 255 | 1.9 | 7 | 27 | 35 | 55 | 133 | 220 | - | - | - | - | - | - | - |
| | Internal | 6.1 | 17 | 45 | 68 | 102 | 195 | 320 | - | - | - | - | - | - | - | 3.7 | 13 | 38 | 59 | 87 | 163 | 270 |
| Opening/Closing stroke(Both sides)(mm) | | 3 | 3 | 6 | 10 | 14 | 22 | 30 | 3 | 3 | 6 | 10 | 14 | 22 | 30 | 3 | 3 | 6 | 10 | 14 | 22 | 30 |
| Weight (g) | F Type | 24 | - | - | - | - | - | - | 25 | - | - | - | - | - | - | 25 | - | - | - | - | - | - |
| | Others | 25 | 56 | 124 | 236 | 428 | 729 | 1268 | 26 | 57 | 125 | 238 | 430 | 778 | 1365 | 26 | 57 | 125 | 238 | 430 | 778 | 1365 |

[Note] The gripping force in the above table is in the working pressure of 0.5MPa, and with a gripping point of L=20mm.
Add) Please refer to page 256 for the definition of "L".

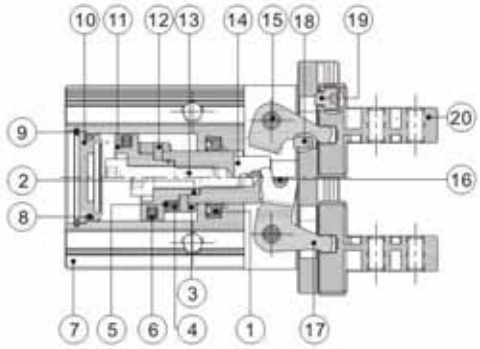
## Ordering code

**HFZ 20 □**

**1 2 3**

| ① Model | ② Bore size | ③ Finger type | | | |
|---|---|---|---|---|---|
| HFZ: Air finger(Double acting)<br>HFSZ: Air finger (Single acting and nrmally closed)<br>HFTZ: Air finger (Single acting and normally opened) | 6<br>10<br>16<br>20<br>25<br>32<br>40 | Blank:Standard  | | | |
| | 6 | B:Side mounting type  | N:Thru.hole mounting type  | F:Bottom mounting type  | HFZ series are all attached with magnet. |

## Inner structure and material of major parts




| NO. | Item | Material |
|---|---|---|
| 1 | Rod packing | NBR |
| 2 | O-ring | NBR |
| 3 | Bumper | TPU |
| 4 | Magnet | Sintered metal(Neodymium-iron-boron) |
| 5 | Magnet washer | NBR |
| 6 | Piston seal | NBR |
| 7 | Body | Aluminum alloy |
| 8 | O-ring | NBR |
| 9 | C clip | Spring steel |
| 10 | Back cover | Aluminum alloy |
| 11 | Piston | Aluminum alloy/Stainless steel |
| 12 | Magnet fixed flake | Stainless steel |
| 13 | Screw | Carbon steel |
| 14 | Piston rod | Aluminum alloy/Stainless steel |
| 15 | Pin | Stainless steel |
| 16 | Pin | Stainless steel |
| 17 | Curved bar | Stainless steel |
| 18 | Pin | Stainless steel |
| 19 | Countersink screw | Carbon steel |
| 20 | Assembly of clamping jaw and guide rail | Stainless steel |

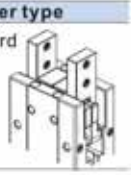
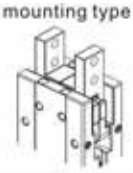
# Air gripper(Mechanical parallel style)

## HFP Series

## Ordering code

**HFP 20 □**

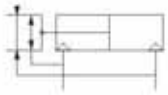
**1 2 3**

| 1 Model | 2 Bore size | 3 Finger type |
|---|---|---|
| HFP: Air finger(Double acting) (mechanical parallel style)<br>HFTP: Air finger (Single acting and normally closed) (mechanical parallel style) | 10<br>16<br>20<br>25<br>32 | Blank: Standard  <br>N: Thru.hole mounting type  |

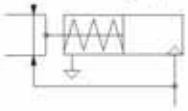
[Note] HFP series are all attached with magnet.

## Symbol

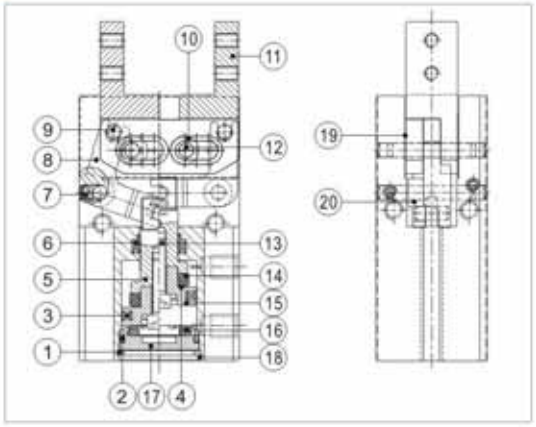
HFP: Double acting



HFTP: Single acting and normally opened



## Inner structure and material of major parts

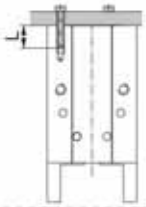


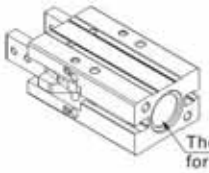

| NO. | Item | Material | NO. | Item | Material |
|---|---|---|---|---|---|
| 1 | C clip | Spring steel | 11 | Gripping jaws | Stainless steel |
| 2 | O-ring | NBR | 12 | Pin | Stainless steel |
| 3 | Piston seal | NBR | 13 | Screw | Carbon steel |
| 4 | Magnet washer | NBR | 14 | Magnet | Sintered metal (Neodymium-iron-boron) |
| 5 | Piston rod | Aluminum alloy Stainless steel | 15 | Piston | Aluminum alloy Stainless steel |
| 6 | Rod packing | NBR | 16 | Bumper | TPU |
| 7 | Countersink screw | Carbon steel | 17 | Back cover | Aluminum alloy |
| 8 | Curved bar | Stainless steel | 18 | Body | Aluminum alloy |
| 9 | Pin | Stainless steel | 19 | Retaining ring | Stainless steel |
| 10 | Guide sleeve | Stainless steel | 20 | Stopper sleeve | Stainless steel |

## Installation and application

1. Due to the abrupt changes, the circuit pressure is low, which will lead to the decrease of the gripping force and falling of the work-pieces. In order to avoid the harm to the human body and damage to the equipment, anti-dropping device must be equipped.
2. Don't use the air gripper under strong external force and impact force.
3. When install and fix the air gripper, avoid falling down, collision and damage.
4. When fixing the gripping jaw parts, don't twist the gripping jaw.
5. There are several kinds of installation method, and the locking torgue of fastening screw must be within the prescribed torque range shown in the below chart. If the locking torque is too large, it will cause the dysfunctional. If the locking torque is too small, it will cause the position deviation and fall.

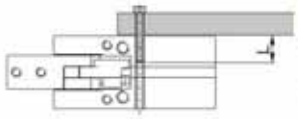
### Tail installation type





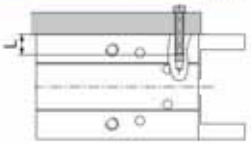

| Bore size | The bolts type | Max. locking moment | Max. screwed depth | The aperture of the positioning bore | The depth of the positioning bore |
|---|---|---|---|---|---|
| 10 | M3×0.5 | 1.0N.m | 6mm | Φ11mm $^{+0.05}_{0}$ | 1.0mm |
| 16 | M4×0.7 | 2.0N.m | 8mm | Φ17mm $^{+0.05}_{0}$ | 1.2mm |
| 20 | M5×0.8 | 4.5N.m | 10mm | Φ21mm $^{+0.05}_{0}$ | 1.2mm |
| 25 | M6×1.0 | 7.0N.m | 12mm | Φ26mm $^{+0.05}_{0}$ | 1.5mm |
| 32 | M6×1.0 | 7.0N.m | 12mm | Φ34mm $^{+0.05}_{0}$ | 1.5mm |

### The installation of the front threaded hole



| Bore size | The bolts type | Max. locking moment(Nm) | Max. screwed depth(mm) |
|---|---|---|---|
| 10 | M3×0.5 | 0.7 | 5 |
| 16 | M4×0.7 | 2.0 | 8 |
| 20 | M5×0.8 | 4.5 | 10 |
| 25 | M6×1.0 | 7.0 | 12 |
| 32 | M6×1.0 | 7.0 | 12 |

### Surface installation type



| Bore size | The bolts type | Max. locking moment (Nm) | Max. screwed depth (mm) |
|---|---|---|---|
| 10 | M3×0.5 | 1.0 | 6 |
| 16 | M4×0.7 | 2.0 | 8 |
| 20 | M5×0.8 | 4.5 | 10 |
| 25 | M6×1.0 | 7.0 | 12 |
| 32 | M6×1.0 | 7.0 | 12 |

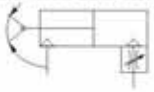
6. Other contents of installation and operation are the same with those of HFZ. Refer to the "Installation and Operation" instruction of HFZ.

# Air gripper(Angular style)

## HFY Series

## Symbol

HFY: Double acting



HFTY: Single acting and normally opened

## Gripping force and stroke

| Acting type | | Double acting(HFY) | | | | | | Single acting Normally opened(HFTY) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bore size | | 6 | 10 | 16 | 20 | 25 | 32 | 6 | 10 | 16 | 20 | 25 | 32 |
| Theoretical gripping torque (N·cm) | Closed | 7.4×P | 17.6×P | 90×P | 152×P | 304×P | 637×P | 5.7×P | 11.8×P | 71.2×P | 122.4×P | 252×P | 589×P |
| | Opened | 10.6×P | 29.4×P | 129×P | 252×P | 473×P | 904×P | - | - | - | - | - | - |
| Max. length of griping point (L)(mm) | | 30 | 30 | 40 | 60 | 70 | 85 | 30 | 30 | 40 | 60 | 70 | 85 |
| Opening angle (°) | | $30\ ^{+3}_{0}$ | | | | | | | | | | | |
| Closing angle (°) | | $-10\ ^{0}_{-3}$ | | | | | | | | | | | |

[Note] The P in the gripping torque shown in the above chart represents the actual use of air pressure.

## Ordering code

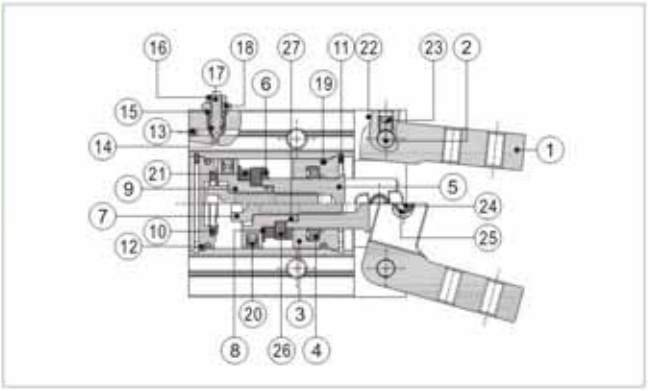
HFY 20

① ②

| ① Model | ② Bore size |
|---|---|
| HFY: Air finger (Angle style, Double acting) | 6 |
| | 10 |
| | 16 |
| HFTY: Air finger (Angle style, Single acting and normally opened) | 20 |
| | 25 |
| | 32 |

[Note] HFY series are all attached with magnet.

## Inner structure and material of major parts




| NO. | Item | Material |
|---|---|---|
| 1 | Gripping jaws | Carbon steel |
| 2 | Pin | Stainless steel |
| 3 | Front cover | Aluminum alloy |
| 4 | Rod packing | NBR |
| 5 | Piston rod | Aluminum alloy/Stainless steel |
| 6 | Bumper | TPU |
| 7 | Countersink screw | Carbon steel |
| 8 | Magnet washer | NBR |
| 9 | Piston | Aluminum alloy/Stainless steel |
| 10 | Bumper | TPU |
| 11 | C clip | Spring steel |
| 12 | Back cover | Aluminum alloy |
| 13 | Steel ball | Stainless steel |
| 14 | O-ring | NBR |
| 15 | O-ring | NBR |
| 16 | Screw cap | Carbon steel |
| 17 | Adjustable nut | Brass |
| 18 | Fixed nut | Brass |
| 19 | O-ring | NBR |
| 20 | Piston seal | NBR |
| 21 | Magnet | Sintered metal(Neodymium-iron-boron) |
| 22 | Body | Aluminum alloy |
| 23 | Countersink screw | Carbon steel |
| 24 | Pin | Stainless steel |
| 25 | Pin sheath | Stainless steel |
| 26 | Magnet fixed flake | Stainless steel |
| 27 | O-ring | NBR |

# Twist clamp cylinder

## ACK Series

## Specification

| Bore size(mm) | 25 | 32 | 40 | 50 | 63 |
|---|---|---|---|---|---|
| Acting type | Double acting | | | | |
| Fluid | Air(to be filtered by 40μm filter element) | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi) | | | | |
| Proof pressure | 1.5MPa(215psi) | | | | |
| Temperature ℃ | -20~70 | | | | |
| Speed range mm/s | 50~200 | | | | |
| Stroke tolerance | $^{+1.0}_{0}$ | | | | |
| Rotary angle tolerance | ±1.5° | | | | |
| Cushion type [Note1] | No cushion | | | | |
| Port size [Note2] | M5×0.8 | 1/8" | | | |

[Note1] If there is no buffering device, exhaust throttle shall be added to achieve buffering effect.
[Note2] PT thread, G thread and NPT thread are available.

## Symbol

## Stroke

| Bore size(mm) | Stroke type | 90° | 180° | Total stroke (90° /180° ) |
|---|---|---|---|---|
| 25 | Rotation stroke | 14 | 20 | 26 |
| 32 | Clamping stroke | 12 | 6 | 26 |
| 40 | Rotation stroke | 15 | 21 | 27 |
| | Clamping stroke | 12 | 6 | 27 |
| 50 | Rotation stroke | 15 | 21 | 29 |
| 63 | Clamping stroke | 14 | 8 | 29 |

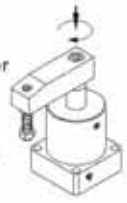
## Product feature

1. The material of seals guarantees the reliable performance of the cylinder that is used under various conditions.
2. Three-slot guide structure leads to high guide precision.
3. There are single and double side clamping fingers can be selected (90°).
4. Levorotatory and dextrorotary are available; 90°and 180°.
5. The material of piston rod is made from special alloy steel, which has longer life after heat treatment.

## Ordering code

ACK L 25×90 □

① ② ③ ④ ⑤

| ① Model | ② Rotary direction | ③ Bore size | ④ Rotary angle | ⑤ Thread type[Note1] |
|---|---|---|---|---|
| ACK: Twist clamp cylinder(Double acting type)<br>ACKD: Twist clamp cylinder (Double push plate type, only for 90° ) | L: Push and turn left<br>When the piston of cylinder moves downward, the swivel arms moves anticlockwise, this is called levorotatory.<br>  <br>R: Push and turn right<br>When the piston of cylinder moves downward, the swivel arms moves clockwise, this is called dextrorotary.<br>  | 25 32 40 50 63 | 90: 90°<br>180: 180° | Blank: PT<br>G: G<br>T: NPT |

[Note1] When the thread is standard, the code is blank.

# Rotary clamp cylinder

## QCK Series

## Specification

| Bore size(mm) | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 |
|---|---|---|---|---|---|---|---|---|
| Acting type | Double acting | | | | | | | |
| Fluid | Air(to be filtered by 40 μ m filter element) | | | | | | | |
| Operating pressure | 0.15~1.0MPa(22~145psi)(1.5~10bar) | | | | | | | |
| Proof pressure | 1.5MPa(215psi)(15bar) | | | | | | | |
| Temperature | -20~70℃ | | | | | | | |
| Speed range | 50~200mm/s | | | | | | | |
| Rotation angle | 90° | | | | | | | |
| Repeatability | ±2° | | | | | | | |
| Rotation direction | Turn left or turn right | | | | | | | |
| Rotation stroke(mm) | 7.5 | | 9.5 | | 15 | | 19 | |
| Clamping stroke (mm) | 10 20 | | 10 20 30 | | 10 20 30 50 | | | |
| Stroke tolerance | $^{+1.0}_{0}$ | | | | | | | |
| Cushion type | Bumper | | | | | | | |
| Port size [Note1] | M5×0.8 | | | | 1/8" | | 1/4" | |

[Note1]PT thread, G thread and NPT thread are available.
Add) QCK series are all attached with magnet,
please refer to Page 338 for the specific content of sensor switch.

## Symbol

## Product feature

1. It can be used on welding fixfure, the QPQ surface treatment prevent piston rod damage by welding slag; better than chrome plated piston rod.
2. The front cover with stainless steel dust scraping ring, can keep the dust and welding slag out, and protect cylinder internal parts.
3. The mounting dimension of body is the same as ACQ series, can use ACQ series' accessories.

## Ordering code

QCK L 32×10 S M FB □

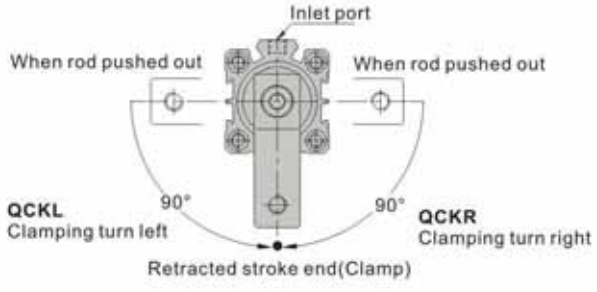
1 2 3 4 5 6 7 8

| ① Model | ② Rotation direction | ③ Bore size | ④ Clamping stroke | ⑤ Magnet | ⑥ Rod type | ⑦ Mounting type [Note1] | ⑧ Thread type [Note2] |
|---|---|---|---|---|---|---|---|
| QCK: Rotary clamp cylinder | L: Push and turn left<br>R: Push and turn right | 12 | 10 20 | S: With magnet | Blank: Taper type (with clamp arm)<br>M: Across flat position type(without clamp arm) | Blank: No bracket<br>FB: FB type | Blank: PT<br>G: G<br>T: NPT |
| | | 16 | 10 20 30 | | | | |
| | | 20 | | | | | |
| | | 25 | | | | | |
| | | 32 | 10 20 30 50 | | | | |
| | | 40 | | | | | |
| | | 50 | | | | | |
| | | 63 | | | | | |

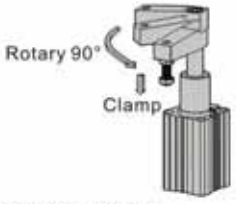
[Note1] Back flange is same as ACQ series (please refer right table), if need front flange, please contact us.
[Note2] When the thread is standard, the code is blank.

| Bore size\Accessories | FB | Material | Bore size\Accessories | FB | Material |
|---|---|---|---|---|---|
| 12 | F-ACQ12FA | Aluminum alloy | 32 | F-ACQ32FA | Aluminum alloy |
| 16 | F-ACQ16FA | | 40 | F-ACQ40FA | |
| 20 | F-ACQ20FA | | 50 | F-ACQ50FA | |
| 25 | F-ACQ25FA | | 63 | F-ACQ63FA | |

## The definition of rotation direction and angle

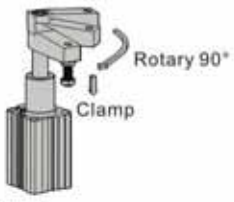



Levorotatory(QCKL):
When the piston of cylinder moves downward, the swivel arms moves anticlockwise, this is called levorotatory.




The order code is **L**

Dextrorotary(QCKR):
When the piston of cylinder moves downward, the swivel arms moves clockwise. this is called dextrorotary.




The order code is **R**

# Cylinder joint accessory

## I Knuckle

### Table for I knuckle and cylinder

| Cylinder | SE | | | | | | | SAI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 |
| F-M10X125I | ● | | | | | | | ● | | | | | | | | |
| F-M12X125I | | ● | | | | | | | ● | | | | | | | |
| F-M16X150I | | | ● | ● | | | | | | ● | ● | | | | | |
| F-M20X150I | | | | | ● | ● | | | | | | ● | ● | | | |
| F-M27X200I | | | | | | | ● | | | | | | | ● | | |
| F-M36X200I | | | | | | | | | | | | | | | ● | ● |

| Cylinder | SGC | | | | SC/SAU | | | | | SC | | | | JSI | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 125 | 160 | 200 | 250 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
| F-M10X125I | | | | | ● | | | | | | | | | | ● | | | | | | |
| F-M12X125I | | | | | | ● | | | | | | | | | | | | | | | |
| F-M14X150I | | | | | | | | | | | | | | | | ● | | | | | |
| F-M16X150I | | | | | | | ● | ● | | | | | | | | | | | | | |
| F-M18X150I | | | | | | | | | | | | | | | | | ● | ● | | | |
| F-M20X150I | | | | | | | | | ● | ● | | | | | | | | | | | |
| F-M22X150I | | | | | | | | | | | | | | | | | | | ● | | |
| F-M26X150I | | | | | | | | | | | | | | | | | | | | ● | |
| F-M27X200I | ● | | | | | | | | | | ● | | | | | | | | | | ● |
| F-M36X200I | | ● | ● | | | | | | | | | ● | ● | | | | | | | | |
| F-M42X200I | | | | ● | | | | | | | | | | ● | | | | | | | |

| Cylinder | MI | | | | | | | | MPG | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 6 | 8 | 10 | 12 | 16 |
| F-M3X050I | | | | | | | | | ● | | | | |
| F-M4X070I | ● | ● | | | | | | | | ● | ● | | |
| F-M5X080I | | | | | | | | | | | | ● | ● |
| F-M6X100I | | | ● | ● | | | | | | | | | |
| F-M8X125I | | | | | ● | | | | | | | | |
| F-M10X125I | | | | | | ● | ● | | | | | | |
| F-M12X125I | | | | | | | | ● | | | | | |

### Ordering code

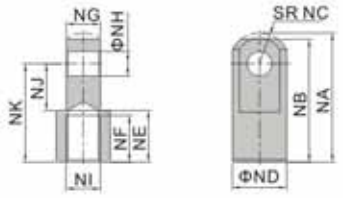
**F-M16X150 I**

1 2 3 4

| ① Accessories code | ② Screw thread | ③ Thread pitch | ④ Code |
|---|---|---|---|
| | M3：M3 | 050：0.5mm | I:I Knuckle |
| | M4：M4 | 070：0.7mm | |
| | M5：M5 | 080：0.8mm | |
| | M6：M6 | 100：1.0mm | |
| | M8：M8 | 125：1.25mm | |
| | M10：M10 | | |
| | M12：M12 | | |
| | M14：M14 | 150：1.5mm | |
| | M16：M16 | | |
| | M18：M18 | | |
| | M20：M20 | | |
| | M22：M22 | | |
| | M26：M26 | | |
| | M27：M27 | 200：2.0mm | |
| | M36：M36 | | |
| | M42：M42 | | |

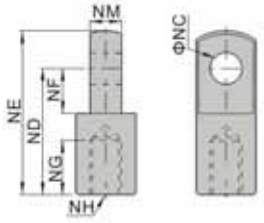
## Dimensions

### M14\M18\M22\M26




| Type\Item | NA | NB | NC | ND | NE | NF | NG | NH | NJ | NK | NI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F-M14X150I | 52.5 | 50 | 12.5 | 22 | 21 | 19 | 13.8 | 10 | 19 | 40 | M14×1.5 |
| F-M18X150I | 66.5 | 64 | 16.5 | 28 | 27 | 24 | 19.8 | 14 | 24 | 50 | M18×1.5 |
| F-M22X150I | 83.5 | 80 | 23.5 | 40 | 29 | 26 | 29.8 | 22 | 34 | 60 | M22×1.5 |
| F-M26X150I | 83.5 | 80 | 23.5 | 40 | 29 | 26 | 29.8 | 22 | 34 | 60 | M26×1.5 |

### Others




| Type\Item | NC | ND | NE | NF | NG | NH | NM |
|---|---|---|---|---|---|---|---|
| F-M3x050I | 3 | 12 | 15.5 | 5 | 5 | M3×0.5 | 3 |
| F-M4x070I | 4 | 16 | 21 | 6.8 | 8 | M4×0.7 | 4 |
| F-M5x080I | 5 | 25 | 32 | 14.1 | 7.5 | M5×0.8 | 6.3 |
| F-M6x100I | 6 | 21 | 28 | 8.5 | 8 | M6×1.0 | 6 |
| F-M8x125I | 8 | 30 | 40 | 11 | 15 | M8×1.25 | 8 |
| F-M10x125I | 10 | 40 | 50 | 15 | 20 | M10×1.25 | 10 |
| F-M12x125I | 12 | 48 | 62 | 24 | 20 | M12×1.25 | 12 |
| F-M16x150I | 16 | 64 | 82 | 32 | 23 | M16×1.5 | 16 |
| F-M20x150I | 20 | 80 | 102 | 40 | 30 | M20×1.5 | 20 |
| F-M27x200I | 30 | 110 | 139 | 51 | 45 | M27×2.0 | 30 |
| F-M36x200I | 35 | 144 | 181 | 65 | 55 | M36×2.0 | 35 |
| F-M42x200I | 40 | 168 | 211 | 85 | 62 | M42×2.0 | 40 |

# Cylinder joint accessory

## Y Knuckle

## Ordering code

**F-M16X150 Y**

1 2 3 4

| ①Accessories code | ②Screw thread | ③Thread pitch | ④Code |
|---|---|---|---|
| | M3：M3 | 050：0.5mm | |
| | M4：M4 | 070：0.7mm | |
| | M5：M5 | 080：0.8mm | |
| | M6：M6 | 100：1.0mm | |
| | M8：M8 | 125：1.25mm | |
| | M10：M10 | | |
| | M12：M12 | | |
| | M14：M14 | 150：1.5mm | Y:Y Knuckle |
| | M16：M16 | | |
| | M18：M18 | | |
| | M20：M20 | | |
| | M22：M22 | | |
| | M26：M26 | | |
| | M27：M27 | 200：2.0mm | |
| | M36：M36 | | |
| | M42：M42 | | |

## Table for Y knuckle and cylinder

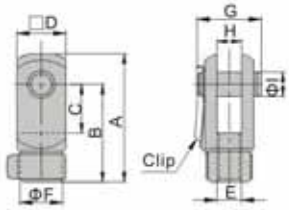
| Cylinder | SE | | | | | | | SAI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 |
| F-M10X125Y | ● | | | | | | | ● | | | | | | | | |
| F-M12X125Y | | ● | | | | | | | ● | | | | | | | |
| F-M16X150Y | | | ● | ● | | | | | | ● | ● | | | | | |
| F-M20X150Y | | | | | ● | ● | | | | | | ● | ● | | | |
| F-M27X200Y | | | | | | | ● | | | | | | | ● | | |
| F-M36X200Y | | | | | | | | | | | | | | | ● | ● |

| Cylinder | SGC | | | | SC/SAU | | | | | SC | | | | JSI | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 125 | 160 | 200 | 250 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
| F-M10X125Y | | | | | ● | | | | | | | | | | ● | | | | | | |
| F-M12X125Y | | | | | | ● | | | | | | | | | | | | | | | |
| F-M14X150Y | | | | | | | | | | | | | | | | ● | | | | | |
| F-M16X150Y | | | | | | | ● | ● | | | | | | | | | | | | | |
| F-M18X150Y | | | | | | | | | | | | | | | | | ● | ● | | | |
| F-M20X150Y | | | | | | | | | ● | ● | | | | | | | | | | | |
| F-M22X150Y | | | | | | | | | | | | | | | | | | | ● | | |
| F-M26X150Y | | | | | | | | | | | | | | | | | | | | ● | |
| F-M27X200Y | ● | | | | | | | | | ● | | | | | | | | | | | ● |
| F-M36X200Y | | ● | ● | | | | | | | | ● | ● | | | | | | | | | |
| F-M42X200Y | | | | ● | | | | | | | | | ● | | | | | | | | |

| Cylinder | MI | | | | | | | | MPG | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 6 | 8 | 10 | 12 | 16 |
| F-M3X050Y | | | | | | | | | ● | | | | |
| F-M4X070Y | ● | ● | | | | | | | | ● | ● | | |
| F-M5X080Y | | | | | | | | | | | | ● | ● |
| F-M6X100Y | | | ● | ● | | | | | | | | | |
| F-M8X125Y | | | | | ● | | | | | | | | |
| F-M10X125Y | | | | | | ● | ● | | | | | | |
| F-M12X125Y | | | | | | | | ● | | | | | |

## Dimensions

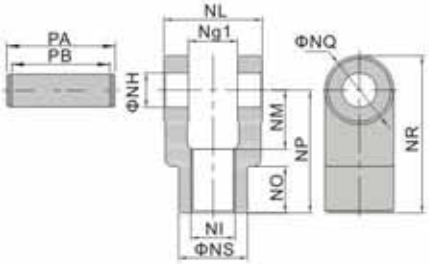
### M10 and below




| Type\Item | A | B | C | D | F |
|---|---|---|---|---|---|
| F-M3X050Y | 15.5 | 12 | 5 | 6 | 6 |
| F-M4X070Y | 22 | 16 | 8 | 8 | 7 |
| F-M5X080Y | 28 | 21 | 10.2 | 12 | 10 |
| F-M6X100Y | 32 | 24 | 12 | 12 | 10 |
| F-M8X125Y | 42 | 32 | 16 | 16 | 14 |
| F-M10X125Y | 52 | 40 | 20 | 19 | 18 |

| Type\Item | E | G | H | I |
|---|---|---|---|---|
| F-M3X050Y | M3×0.5 | 9 | 3 | 3 |
| F-M4X070Y | M4×0.7 | 11.5 | 4 | 4 |
| F-M5X080Y | M5×0.8 | 15.5 | 6.5 | 5 |
| F-M6X100Y | M6×1.0 | 16 | 6 | 6 |
| F-M8X125Y | M8×1.25 | 21 | 8 | 8 |
| F-M10X125Y | M10×1.25 | 25 | 10 | 10 |

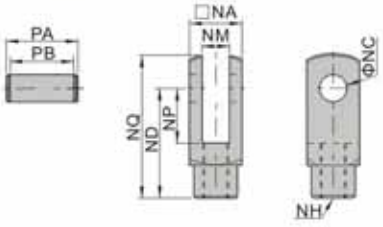
### M14\M18\M22\M26




| Type\Item | NG1 | NH | NI | NL | NM |
|---|---|---|---|---|---|
| F-M14X150Y | 14.2 | 10 | M14×1.5 | 27.8 | 19 |
| F-M18X150Y | 20.2 | 14 | M18×1.5 | 39.8 | 24 |
| F-M22X150Y | 30.2 | 22 | M22×1.5 | 59.8 | 34 |
| F-M26X150Y | 30.2 | 22 | M26×1.5 | 59.8 | 34 |

| Type\Item | NO | NP | NQ | NR | NS | PA | PB |
|---|---|---|---|---|---|---|---|
| F-M14X150Y | 17 | 40 | 22 | 51 | 22 | 34.6 | 28.8 |
| F-M18X150Y | 19 | 50 | 28 | 64 | 28 | 47 | 40.8 |
| F-M22X150Y | 20 | 65 | 40 | 85 | 40 | 69.2 | 60.8 |
| F-M26X150Y | 20 | 65 | 40 | 85 | 40 | 69.2 | 60.8 |

### Others




| Type\Item | NA | NC | ND | NP | NQ |
|---|---|---|---|---|---|
| F-M12X125Y | 25.4 | 12 | 48 | 24 | 62 |
| F-M16X150Y | 32 | 16 | 64 | 32 | 80 |
| F-M20X150Y | 44.4 | 20 | 80 | 40 | 102 |
| F-M27X200Y | 54 | 30 | 110 | 55 | 139 |
| F-M36X200Y | 70 | 35 | 144 | 73 | 179 |
| F-M42X200Y | 85 | 40 | 168 | 86 | 211 |

| Type\Item | NM | NH | PA | PB |
|---|---|---|---|---|
| F-M12X125Y | 12 | M12×1.25 | 32.4 | 26.2 |
| F-M16X150Y | 16 | M16×1.5 | 39 | 32.8 |
| F-M20X150Y | 20 | M20×1.5 | 53.4 | 45.2 |
| F-M27X200Y | 30 | M27×2.0 | 64.2 | 54.8 |
| F-M36X200Y | 35 | M36×2.0 | 80.2 | 70.8 |
| F-M42X200Y | 40.3 | M42×2.0 | 115 | 93 |

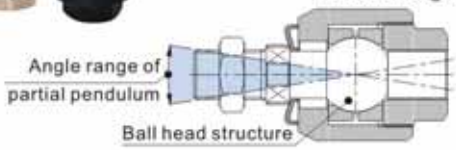
# Cylinder joint accessory

## Floating Joint

**Effectively dissolving the extra external force caused by eccentricity**

**Internal use of ball head structure**

The internal use of ball head structure, flexible swing; axial no gap, deflection angle wide.




**Various thread type specifications**

| Thread type | | | |
|---|---|---|---|
| M3X0.5 | M8X1.25 | M16X1.5 | M22X1.5(New) |
| M4X0.7 | M10X1.25 | M18X1.5 | M26X1.5(New) |
| M5X0.8 | M12X1.25 | M20X1.5 | M27X2.0(New) |
| M6X1.0 | M14X1.5 | | M36X2.0(New) |

New

**Thread type can be matched with a variety of series cylinders**

## Table for floating joint and cylinder

| Cylinder Accessory | PB | | | | | MI | | | | | | | | MA | | | | | | | MF | | | | MBL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4 | 6 | 10 | 12 | 16 | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 20 | 25 | 32 | 40 | 20 | 25 | 32 | 40 | 50 | 63 |
| F-M3X050F | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F-M4X070F | | | ● | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| F-M5X080F | | | | ● | ● | | | | | | | | | | | | | | | | | | | | | | | | | |
| F-M6X100F | | | | | | | | ● | ● | | | | | ● | | | | | | | | | | | | | | | | |
| F-M8X125F | | | | | | | | | | ● | | | | | ● | | | | | | ● | | | | ● | | | | | |
| F-M10X125F | | | | | | | | | | | ● | ● | | | | ● | ● | | | | | ● | ● | | | ● | ● | | | |
| F-M12X125F | | | | | | | | | | | | | ● | | | | | ● | | | | | | ● | | | | ● | | |
| F-M14X150F | | | | | | | | | | | | | | | | | | | ● | ● | | | | | ● | | | | ● | ● |

| Cylinder Accessory | ACQ | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
| F-M8X125F | | | ● | | | | | | | |
| F-M10X125F | | | | ● | | | | | | |
| F-M12X125F | | | | | | | | | | |
| F-M14X150F | | | | | ● | ● | | | | |
| F-M16X150F | | | | | | | | | | |
| F-M18X150F | | | | | | | ● | ● | | |
| F-M20X150F | | | | | | | | | | |
| F-M22X150F | | | | | | | | | ● | |
| F-M26X150F | | | | | | | | | | ● |

| Cylinder Accessory | SG/SGC | | | | | SE | | | | | | SAI | | | | | | SAI/SC | | | SC/SAU | | | | | | JSI | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 125 | 160 | 200 | 250 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 32 | 40 | 50 | 63 | 80 | 100 | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
| F-M10X125F | | | | | ● | | | | | | | ● | | | | | | | | | ● | | | | | | ● | | | | | | |
| F-M12X125F | | | | | | ● | | | | | | | ● | | | | | | | | | ● | | | | | | | | | | | |
| F-M14X150F | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | | | | |
| F-M16X150F | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | | | ● | ● | | | | | | | |
| F-M18X150F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | | | |
| F-M20X150F | | | | | | | | | ● | ● | | | | | | ● | ● | | | | | | | | ● | ● | | | | | | | |
| F-M22X150F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | | |
| F-M26X150F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | |
| F-M27X200F | ● | | | | | | | | | | ● | | | | | | | ● | | | | | | | | | | | | | | | ● |
| F-M36X200F | | ● | ● | | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | | | | |

## Ordering code

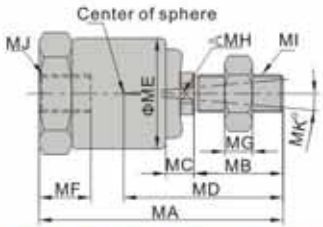
F - M22 X 150 F

1 2 3 4

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Accessories code | | | | | | | | | | | | | | | | |
| 2 Screw thread | M3 | M4 | M5 | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 | M22 | M26 | M27 | M36 | |
| 3 Thread pitch | 050:0.5mm | 070:0.7mm | 080:0.8mm | 100:1.0mm | 125:1.25mm | | | 150:1.5mm | | | | | | 200:2.0mm | | |
| 4 Code | F: Floating joint | | | | | | | | | | | | | | | |

## Dimensions

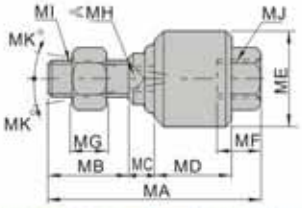
### M6 and below


| Type\Item | MA | MB | MC | MD | ME | MF | MG | MH | MI\MJ | ML | MM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F-M3X050F | 23.5 | 7.5 | 3 | 15 | 11.8 | 5.5 | 2.4 | 4 | M3×0.5 | 5.5 | 12 |
| F-M4X070F | 26 | 9.5 | 3 | 17 | 11.8 | 6 | 3 | 4 | M4×0.7 | 7 | 12 |
| F-M5X080F | 34.5 | 13.5 | 3.5 | 22.8 | 13.8 | 8 | 4 | 6 | M5×0.8 | 8 | 14 |
| F-M6X100F | 34.5 | 13.5 | 3.5 | 22.8 | 13.8 | 8 | 4 | 6 | M6×1.0 | 10 | 14 |

Note: Angle compensation: ±5° . Radial direction compensation: 0.5

### M8 and above




| Type\Item | MA | MB | MC | MD | ME | MF | MG | MH | MI/MJ | MK |
|---|---|---|---|---|---|---|---|---|---|---|
| F-M8X125F | 51 | 20 | 6 | 17 | 24 | 10.5 | 6 | 8 | M8×1.25 | 13 |
| F-M10X125F | 58 | 22 | 7 | 21 | 26 | 11 | 6 | 10 | M10×1.25 | 12 |
| F-M12X125F | 58 | 22 | 8 | 21 | 28 | 11.5 | 7 | 12 | M12×1.25 | 12 |
| F-M14X150F | 70 | 22.5 | 8.5 | 28 | 34.5 | 16 | 8 | 15 | M14×1.5 | 12 |
| F-M16X150F | 90 | 27 | 10 | 41 | 44.5 | 19 | 8 | 17 | M16×1.5 | 7 |
| F-M18X150F | 92 | 27 | 10 | 41 | 44.5 | 21 | 11 | 18 | M18×1.5 | 7 |
| F-M20X150F | 102 | 29 | 13 | 46 | 53 | 22 | 10 | 22 | M20×1.5 | 10 |
| F-M22X150F | 108 | 32 | 13 | 46 | 53 | 25 | 13 | 22 | M22×1.5 | 5 |
| F-M26X150F | 120 | 32 | 14.5 | 52.5 | 59.5 | 25 | 13 | 27 | M26×1.5 | 5 |
| F-M27X200F | 136.5 | 40 | 14.5 | 52.5 | 59.5 | 40 | 13.5 | 27 | M27×2.0 | 5 |
| F-M36X200F | 194.5 | 60 | 20.5 | 77.5 | 84 | 54 | 18 | 36 | M36×2.0 | 5 |

# Cylinder joint accessory

## Universal Joint

### Table for universal joint and cylinder

| Cylinder | SE | | | | | | | SAI | | | | | | SAI/SC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 |
| F-M10X125U | ● | | | | | | | ● | | | | | | | | |
| F-M12X125U | | ● | | | | | | | ● | | | | | | | |
| F-M16X150U | | | ● | ● | | | | | | ● | ● | | | | | |
| F-M20X150U | | | | | ● | ● | | | | | | ● | ● | | | |
| F-M27X200U | | | | | | | ● | | | | | | | ● | | |
| F-M36X200U | | | | | | | | | | | | | | | ● | ● |

| Cylinder | SGC | | | | SC/SAU | | | | | | JSI | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 125 | 160 | 200 | 250 | 32 | 40 | 50 | 63 | 80 | 100 | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
| F-M10X125U | | | | | ● | | | | | | ● | | | | | | |
| F-M12X125U | | | | | | ● | | | | | | | | | | | |
| F-M14X150U | | | | | | | | | | | | ● | | | | | |
| F-M16X150U | | | | | | | ● | ● | | | | | | | | | |
| F-M18X150U | | | | | | | | | | | | | ● | ● | | | |
| F-M20X150U | | | | | | | | | ● | ● | | | | | | | |
| F-M26X150U | | | | | | | | | | | | | | | | ● | |
| F-M27X200U | ● | | | | | | | | | | | | | | | | ● |
| F-M36X200U | | ● | ● | | | | | | | | | | | | | | |

| Cylinder | ACQ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
| F-M5X080U | ● | | | | | | | | | |
| F-M6X100U | | ● | | | | | | | | |
| F-M8X125U | | | ● | | | | | | | |
| F-M10X125U | | | | ● | | | | | | |
| F-M12X125U | | | | | | | | | | |
| F-M14X150U | | | | | ● | ● | | | | |
| F-M16X150U | | | | | | | | | | |
| F-M18X150U | | | | | | | ● | ● | | |
| F-M20X150U | | | | | | | | | | |
| F-M26X150U | | | | | | | | | | ● |

| Cylinder | MA | | | | | | | MF | | | | MBL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 20 | 25 | 32 | 40 | 20 | 25 | 32 | 40 | 50 | 63 |
| F-M6X100U | ● | | | | | | | | | | | | | | | | |
| F-M8X125U | | ● | | | | | | ● | | | | ● | | | | | |
| F-M10X125U | | | ● | ● | | | | | ● | ● | | | ● | ● | | | |
| F-M12X125U | | | | | ● | | | | | | | | | | ● | | |
| F-M14X150U | | | | | | ● | ● | | | | ● | | | | | ● | ● |

| Cylinder | PB | | | | | MI | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accessory | 4 | 6 | 10 | 12 | 16 | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 |
| F-M4X070U | | | ● | | | ● | ● | | | | | | |
| F-M5X080U | | | | ● | ● | | | | | | | | |
| F-M6X100U | | | | | | | | ● | ● | | | | |
| F-M8X125U | | | | | | | | | | ● | | | |
| F-M10X125U | | | | | | | | | | | ● | ● | |
| F-M12X125U | | | | | | | | | | | | | ● |

### Ordering code

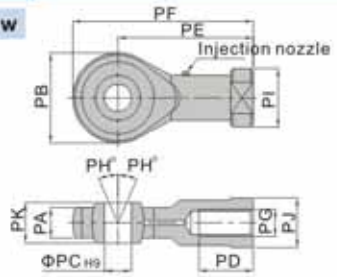
**F-M10X125 U**

1 2 3 4

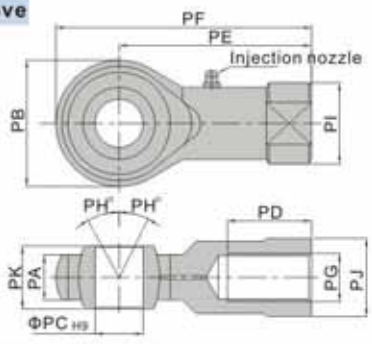
| 1 Accessories code | 2 Screw thread | 3 Thread pitch | 4 Code |
|---|---|---|---|
| | M4：M4 | 070：0.7mm | U: Universal joint |
| | M5：M5 | 080：0.8mm | |
| | M6：M6 | 100：1.0mm | |
| | M8：M8 | 125：1.25mm | |
| | M10：M10 | | |
| | M12：M12 | | |
| | M14：M14 | 150：1.5mm | |
| | M16：M16 | | |
| | M18：M18 | | |
| | M20：M20 | | |
| | M26：M26 | | |
| | M27：M27 | 200：2.0mm | |
| | M36：M36 | | |

### Dimensions

**M8 and below**




**M10 and above**




| Type\Item | PA | PB | PC | PD | PE | PF | PG | PH | PI | PJ | PK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F-M4X070U | 6 | 18 | 5 | 10 | 27 | 36 | M4×0.7 | 13 | 12.5 | 10 | 8 |
| F-M5X080U | 6 | 18 | 5 | 10 | 27 | 36 | M5×0.8 | 13 | 12.5 | 10 | 8 |
| F-M6X100U | 6.8 | 20 | 6 | 12 | 30 | 40 | M6×1.0 | 13 | 13 | 11 | 9 |
| F-M8X125U | 9 | 24 | 8 | 16 | 36 | 48 | M8×1.25 | 13 | 16 | 14 | 12 |
| F-M10X125U | 11 | 26 | 10 | 20 | 43 | 56 | M10×1.25 | 13 | 19 | 17 | 14 |
| F-M12X125U | 12 | 32 | 12 | 22 | 50 | 66 | M12×1.25 | 13 | 22 | 19 | 16 |
| F-M14X150U | 14 | 36 | 14 | 28 | 57 | 75 | M14×1.5 | 13 | 25 | 22 | 19 |
| F-M16X150U | 15 | 40 | 16 | 28 | 64 | 84 | M16×1.5 | 15 | 27 | 22 | 21 |
| F-M18X150U | 16.5 | 46 | 18 | 30 | 71 | 94 | M18×1.5 | 15 | 31 | 27 | 23 |
| F-M20X150U | 18 | 46 | 20 | 33 | 77 | 100 | M20×1.5 | 15 | 34 | 30 | 25 |
| F-M26X150U | 22 | 60 | 25 | 48 | 94 | 124 | M26×1.5 | 15 | 42 | 36 | 31 |
| F-M27X200U | 25 | 70 | 30 | 51 | 110 | 145 | M27×2.0 | 15 | 50 | 41 | 37 |
| F-M36X200U | 27.5 | 80 | 35 | 56 | 125 | 165 | M36×2.0 | 15 | 57.5 | 50 | 43 |

# Shock absorber——ACA, ACJ Series

## Compendium of ACA/ACJ Series


## Specification

| Model | Stroke (mm) | Max. energy absorbed (Nm) | Max. energy absorbed/hour(Nm/h) | Max. effective mass(kg) | | | Max. impact speed(m/s) | | | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | High speed | Middle speed | Low speed | High speed | Middle speed | Low speed | |
| ACA0806 | 6 | 3 | 5400 | 5 | 20 | 25 | 4 | 2 | 1 | 12 |
| ACA1007 | 7 | 6 | 14500 | 10 | 40 | 50 | 4 | 2 | 1 | 26 |
| ACA1210 | 10 | 10 | 30000 | 18 | 60 | 80 | 4 | 2 | 1 | 40 |
| ACA1215 | 15 | 14 | 35000 | 25 | 90 | 115 | 4 | 2 | 1 | 48 |
| ACA1412 | 12 | 18 | 36000 | 30 | 110 | 150 | 4 | 2 | 1 | 70 |
| ACA1416 | 16 | 22 | 39000 | 40 | 140 | 180 | 4 | 2 | 1 | 78 |
| ACA1420 | 20 | 25 | 45000 | 45 | 155 | 200 | 4 | 2 | 1 | 85 |
| ACA1616 | 16 | 35 | 43000 | 60 | 220 | 285 | 4 | 2 | 1 | 105 |
| ACA1620 | 20 | 40 | 47000 | 70 | 250 | 325 | 4 | 2 | 1 | 115 |
| ACA1625 | 25 | 45 | 51000 | 80 | 280 | 365 | 4 | 2 | 1 | 125 |
| ACA2020 | 20 | 60 | 50000 | 240 | 660 | 960 | 4 | 2 | 1 | 175 |
| ACA2025 | 25 | 65 | 54000 | 260 | 720 | 1040 | 4 | 2 | 1 | 185 |
| ACA2030 | 30 | 70 | 58000 | 280 | 780 | 1120 | 4 | 2 | 1 | 210 |
| ACA2040 | 40 | 80 | 65000 | 320 | 890 | 1280 | 4 | 2 | 1 | 225 |
| ACA2525 | 25 | 100 | 75000 | 400 | 1100 | 1600 | 4 | 2 | 1 | 290 |
| ACA2550 | 50 | 150 | 85000 | 600 | 1650 | 2400 | 4 | 2 | 1 | 370 |
| ACA2725 | 25 | 140 | 85000 | 560 | 1550 | 2240 | 4 | 2 | 1 | 372 |
| ACA2750 | 50 | 250 | 95000 | 1000 | 2780 | 4000 | 4 | 2 | 1 | 475 |
| ACA3325 | 25 | 180 | 100000 | 720 | 2000 | 2880 | 4 | 2 | 1 | 596 |
| ACA3350 | 50 | 300 | 120000 | 1200 | 3300 | 4800 | 4 | 2 | 1 | 750 |
| ACA3625 | 25 | 220 | 135000 | 880 | 2400 | 3500 | 4 | 2 | 1 | 702 |
| ACA3650 | 50 | 350 | 150000 | 1400 | 2500 | 5600 | 4 | 2 | 1 | 889 |

| Model | Stroke(mm) | Max. energy absorbed (Nm) | Max. energy absorbed/hour(Nm/h) | Max. effective mass(kg) | Max. impact speed(m/s) | Weight(g) |
|---|---|---|---|---|---|---|
| ACJ1007 | 7 | 6 | 14500 | 50 | 4 | 28 |
| ACJ1210 | 10 | 10 | 30000 | 80 | 4 | 43 |
| ACJ1412 | 12 | 20 | 36000 | 160 | 4 | 75 |
| ACJ2020 | 20 | 60 | 50000 | 960 | 4 | 189 |
| ACJ2525 | 25 | 100 | 75000 | 1600 | 4 | 308 |
| ACJ2550 | 50 | 150 | 85000 | 2400 | 4 | 395 |
| ACJ2725 | 25 | 140 | 85000 | 2240 | 4 | 396 |
| ACJ2750 | 50 | 250 | 95000 | 4000 | 4 | 510 |
| ACJ3325 | 25 | 180 | 100000 | 2880 | 4 | 540 |
| ACJ3350 | 50 | 300 | 110000 | 4800 | 4 | 800 |
| ACJ3625 | 25 | 220 | 125000 | 2500 | 4 | 750 |
| ACJ3650 | 50 | 350 | 130000 | 5600 | 4 | 950 |
| ACJ4225 | 25 | 350 | 150000 | 5600 | 4 | 1150 |
| ACJ4250 | 50 | 700 | 180000 | 11200 | 4 | 1420 |
| ACJ4275 | 75 | 1050 | 210000 | 16800 | 4 | 1720 |

# Accessories——Shock absorber

## ACA, ACJ Series

### Product feature

1. Excellent and stable deceleration and shock absorbing; if impacted by load, the resistance will automatically adjust.
2. Outer body of integrated structure is treated by QPQ, which has optimum corrosion and wear resistance and can withstand high pressure; it is easy to install and adjust for all threaded outer body which has good heat dissipation.
3. With high hardness stainless steel shaft, the shock absorber has better impact and corrosion resistance, and it can work under adverse conditions.
4. Special oiling process leads to stable shock absorbing.
5. Compact structure and high max. absorbed energy.
6. We use Special lubricants as buffer medium, which adapts to wide temperature range and ensures stable cushioning.

### Ordering code

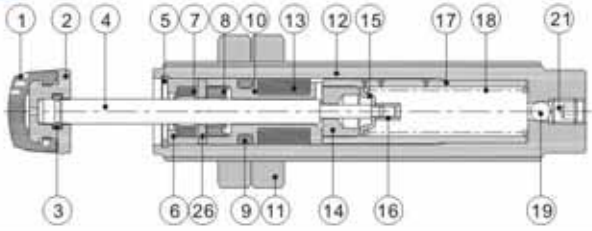
**ACA 20 20 – 1 N**

**1 2 3 4 5**

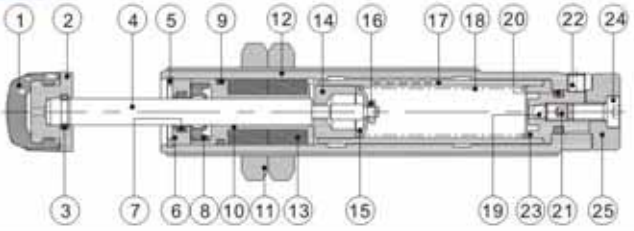
| 1 Model | 2 Body male thread | 3 Stroke | 4 Impact speed | 5 Prevention crash cap |
|---|---|---|---|---|
| ACA: Self-compensation type shock absorber | 08:M8 | The pecification for detail | 1: High speed(Light load)<br>2: Middle speed(Middle load)<br>3: Low speed(Heavy load) | Blank: Plastic cap<br>N: No cap |
| | 10:M10 | | | |
| | 12:M12 | | | |
| | 14:M14 | | | |
| | 16:M16 | | | Blank: Plastic cap<br>F: Iron cap<br>N: No cap |
| | 20:M20 | | | |
| | 25:M25 | | | |
| | 27:M27 | | | |
| | 33:M33 | | | Blank: Plastic cap<br>F: Iron cap |
| | 36:M36 | | | |
| ACJ: Adjustable type shock absorber | 10:M10 | | Not this code | Blank: Plastic cap<br>N: No cap |
| | 12:M12 | | | |
| | 14:M14 | | | |
| | 20:M20 | | | Blank: Plastic cap<br>F: Iron cap<br>N: No cap |
| | 25:M25 | | | |
| | 27:M27 | | | |
| | 33:M33 | | | Blank: Plastic cap<br>F: Iron cap |
| | 36:M36 | | | |
| | 42:M42 | | | |

### Inner structure and material of major parts

**ACA**




**ACJ**




| No. | Item | Material | No. | Item | Material |
|---|---|---|---|---|---|
| 1 | Bump cap | PA66(M8)\TPU(M10~M14)\TPU or S45C(M20~M42) | 14 | Piston | Brass |
| 2 | Bump cap(core) | No(M8)\Cutting steel(Othres) | 15 | Spring seat | Spring steel |
| 3 | O-ring | NBR | 16 | Busher | Brass(M8~M12)\Aluminum(M20~M27) |
| 4 | Piston rod | Stainless steel(M8~M27)\S45C(M33~M42) | 17 | Inlet body | Cutting steel(M8~M14)\Seamless steel tuble(M20~M42) |
| 5 | Clip | No(M8~M10)\Spring steel(M12~M42) | 18 | Spring | SWPB |
| 6 | Front cover | Brass(M8)\Cutting steel(M10)\Aluminum(M12~M42) | 19 | Ball | GCr15 |
| 7 | Front cover gasket | No(M8)\TPU(M10~M42) | 20 | O-ring | NBR |
| 8 | Front cover gasket | NBR | 21 | Set screw | Low alloy steel |
| 9 | O-ring | NBR | 22 | Set screw | Low alloy steel |
| 10 | Correcting body | Brass | 23 | Back cover | Brass |
| 11 | Nut | SS41 | 24 | Screw | Low alloy steel |
| 12 | Body | Cutting steel | 25 | Knob | Aluminum alloy |
| 13 | Accumulator | Foamex | 26 | Washer | SUS304(M10~M14)\No(Othres) |

# PLASTIC PUSH-IN FITTINGS

# Plastic Push-In Fittings

## Product Features

Pneumatic fitting is used in a variety of automation control system, automation equipment, automated machinery and so on.

The Plastic Push in Fittings are used in Pneumatic piping and come in a wide variety of models to meet all your needs in pneumatic piping.

Even after installation,the direction of the tube can be changed freely.

Nickle-Plated Metal body ensures Anti-Corrosion and Anti-Contamination.

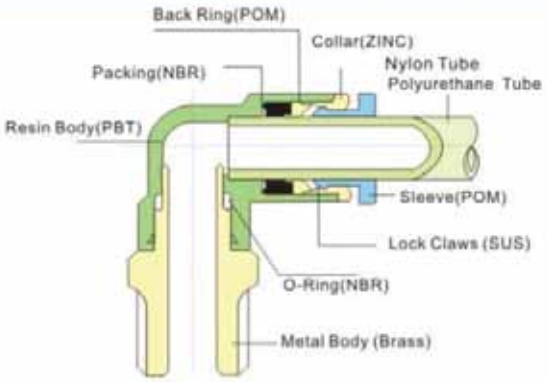
All R and NPT threads are coated with sealant.

All cylindrical threads are equipped with standard O-ring seals .

One-Touch Fittings,Plastic Push in Fittings come in a variety of types, moulds and sizes to satisfy various tube demands.

Accept metric and inch tube, and PT®, BSPT), NPT thread.

## Structure Chart




## Specification

| | |
|---|---|
| Fluid | Air. Vacuum |
| Operating Pressure | 0-1. 0Mpa |
| Negative Pressure | -100Kpa (10Torr) |
| Max Pressure | 1. 5Mpa |
| Operating Temperature | 5-60° C |
| Applicable Tube | PU/Nylon and Polyurethane |

## How to Order?

PC | 8 | - | G01 | *

1 2 3 4

1. Model
2. Tube Outer Diameter
3. Thread
4. Body Color

1. Model 2. Tube Outer Dia.

| | Metric Size | | | | | | Inch Size | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | 4 | 6 | 8 | 10 | 12 | 16 | 5/32 | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 |
| Tube outer diameter mm | ϕ4 | ϕ6 | ϕ8 | ϕ10 | ϕ12 | ϕ16 | ϕ5/32 | ϕ3/16 | ϕ1/4 | ϕ5/16 | ϕ3/8 | ϕ1/2 |

3. Thread Type And Size

| | Metric Size | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Code | M5 | M6 | M8 | M10 | M12 | M12A | M14 | M16 | M20 |
| Thread | M5*0. 8 | M6*1 | M8*1 | M10*1 | M12*125 | M12*15 | M14*15 | M16*15 | M20*15 |

| | 55° Taper Pipe Thread | | | | |
|---|---|---|---|---|---|
| Code | 01 | 02 | 03 | 04 | 06 |
| Thread | R1/8 | R1/4 | R3/8 | R1/2 | R3/4 |

| | 55° G Thread | | | | |
|---|---|---|---|---|---|
| Code | G01 | G02 | G03 | G04 | G06 |
| Thread | G1/8 | G1/4 | G3/8 | G1/2 | G3/4 |

| UNF | 60° American Standard taper pipe thread (NPT) | | | | | |
|---|---|---|---|---|---|---|
| Code | U10 | N01 | N02 | N03 | N04 | N06 |
| Thread | 10-32UNF | NPT1/8 | NPT1/4 | NPT3/8 | NPT1/2 | NPT3/4 |

4.Body Color Blank:black A:gray

# Plastic Push–In Fittings



**PC**


**PC-G**


| PC/PC-G MODEL(ØD–T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |

**POC**


**POC-G**


| POC/POC-G MODEL(ØD–T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |

**PL**


**PL-G**


| PL/PL-G MODEL(ØD–T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |

**PT**


**PT-G**


| PT/PT-G MODEL(ØD–T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |

# Plastic Push-In Fittings


| PST/PST-G MODEL(ØD-T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |


| PWT/PWT-G MODEL(ØD-T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |


| PLL/PLL-G MODEL(ØD-T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |


| PLF/PLF-G MODEL(ØD-T) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N2 | 3/8-N4 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 1/4-N3 | 1/2-N02 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 1/4-N4 | 1/2-N03 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 5/32-N3 | 5/16-N1 | 1/2-N04 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-UNF | 5/16-N2 | | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N1 | 5/16-N3 | | 04-04 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N2 | 5/16-N4 | | 06-M5 | 10-02 | 14-04 | 06-G04 | 12-G04 |
| 3/16-N3 | 3/8-N1 | | 06-M6 | 10-03 | 16-02 | 08-G01 | 14-G02 |
| 1/4-UNF | 3/8-N2 | | 06-01 | 10-04 | 16-03 | 08-G02 | 14-G03 |
| 1/4-N1 | 3/8-N3 | | 06-02 | 12-01 | 16-04 | 08-G03 | 14-G04 |
| | | | 06-03 | | | 08-G04 | 16-G03 |
| | | | | | | | 16-G04 |

# Plastic Push–In Fittings



**PCF** **PCF-G**


| PCF/PCF–G MODEL(ØD–T) | | | | | | |
|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-N1 | PCF 5/16-N3 | 04-M5 | 08-01 | 12-03 | 04-G01 | 08-G04 |
| 5/32-N2 | PCF 5/16-N4 | 04-01 | 08-02 | 12-04 | 04-G02 | 10-G01 |
| 3/16-N1 | PCF 3/8-N1 | 04-02 | 08-03 | 14-02 | 04-G03 | 10-G02 |
| 3/16-N2 | PCF 3/8-N2 | 04-03 | 08-04 | 14-03 | 06-G01 | 10-G03 |
| 1/4-N1 | PCF 3/8-N3 | 06-M5 | 10-01 | 14-04 | 06-G02 | 10-G04 |
| 1/4-N2 | PCF 3/8-N4 | 06-01 | 10-02 | 16-02 | 06-G03 | 12-G02 |
| 1/4-N3 | PCF 1/2-N2 | 06-02 | 10-03 | 16-03 | 08-G01 | 12-G03 |
| 5/16-N1 | PCF 1/2-N3 | 06-03 | 10-04 | 16-04 | 08-G02 | 12-G04 |
| 5/16-N2 | PCF1/2-N4 | 06-04 | 12-02 | | 08-G03 | 14-G03 |
| | | | | | | 14-G04 |

**PMF** **PMF-G**


| PMF/PMF–G MODEL(ØD–T) | | | | | |
|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | Tube(Metric)-Thread(Rc) | | Tube(Metric)-Thread(G) | |
| 5/32-N1 | 3/8-N3 | 04-01 | 08-04 | 04-G1 | 10-G02 |
| 3/16-N1 | 1/2-N2 | 04-02 | 10-01 | 04-G2 | 10-G03 |
| 3/16-N2 | 1/2-N3 | 04-03 | 10-02 | 04-G3 | 10-G04 |
| 1/4-N1 | 1/2-N4 | 06-01 | 10-03 | 06-G1 | 12-G02 |
| 1/4-N2 | | 06-02 | 10-04 | 06-G2 | 12-G03 |
| 5/16-N1 | | 06-03 | 12-02 | 06-G3 | 12-G04 |
| 5/16-N2 | | 06-04 | 12-03 | 08-G1 | |
| 5/16-N3 | | 08-01 | 12-04 | 08-G2 | |
| 3/8-N2 | | 08-02 | | 08-G3 | |

**PUC**


| PUC MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 14 |
| | 16 |

**PUL**


| PUL MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 14 |
| | 16 |

**PUT**


| PUT MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 14 |
| | 16 |

**PY**


| PY MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 14 |
| | 16 |

# Plastic Push-In Fittings

## PG


| PG MODEL(ØD2-ØD1) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 3/16-5/32 | 0604 |
| 1/4-5/32 | 0804 |
| 1/4-3/16 | 0806 |
| 5/16-5/32 | 1006 |
| 5/16-1/4 | 1008 |
| 3/8-1/4 | 1208 |
| 3/8-5/16 | 1210 |
| 1/2-1/4 | 1412 |
| 1/2-5/16 | 1612 |
| 1/2-3/8 | 1614 |

## PW


| PW MODEL(ØD1-ØD2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 3/16-5/32 | 0604 |
| 1/4-5/32 | 0804 |
| 1/4-3/16 | 0806 |
| 5/16-5/32 | 1006 |
| 5/16-1/4 | 1008 |
| 3/8-1/4 | 1208 |
| 3/8-5/16 | 1210 |
| 1/2-5/16 | 1412 |
| 1/2-3/8 | 1614 |

## PGT


| PGT MODEL(ØD1-ØD2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 1/4-5/32 | 0604 |
| 5/16-1/4 | 0806 |
| 3/8-1/4 | 1006 |
| 3/8-5/16 | 1008 |
| 1/2-5/16 | 1208 |
| 1/2-3/8 | 1210 |
| | 1610 |
| | 1412 |
| | 1612 |
| | 1614 |

## PZA


| PZA MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | |

## PMM


| PMM MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | |

## PLM


| PLM MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | |

## PLJ


| PLJ MODEL(ØD1-ØD2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 16 |
| 1/4-5/32 | 0604 |
| 5/16-1/4 | 0806 |
| 3/8-1/4 | 1008 |
| 3/8-5/16 | 1210 |

## PGJ


| PGJ MODEL(ØD1-Ø D2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 1/8-1/4 | 0604 |
| 5/32/1/8 | 0804 |
| 5/32-1/4 | 0806 |
| 1/4-1/8 | 1006 |
| 1/4-5/32 | 1008 |
| 5/16-5/32 | 1206 |
| 5/16-1/4 | 1208 |
| 3/8-1/4 | 1210 |
| 3/8-5/16 | |
| 1/2-1/4 | |
| 1/2-5/16 | |
| 1/2-3/8 | |

# Plastic Push-In Fittings


| PH/PH-G MODEL(ØD-T) | | | | | |
|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | Tube(Metric)-Thread(R) | | Tube(Metric)-Thread(G) | |
| 1/8-UNF | 1/4-N3 | 04-M5 | 08-02 | 04-G01 | 10-G04 |
| 5/32-U | 5/16-N1 | 04-M6 | 08-03 | 04-G02 | 12-G03 |
| 5/32-N1 | 5/16-N2 | 04-01 | 08-04 | 06-G01 | 12-G04 |
| 5/32-N2 | 5/16-N3 | 04-02 | 10-01 | 06-G02 | |
| 3/16-UNF | 5/16-N4 | 06-M5 | 10-02 | 06-G03 | |
| 3/16-N1 | 3/8-N2 | 06-M6 | 10-03 | 08-G01 | |
| 3/16-N2 | 3/8-N3 | 06-01 | 10-04 | 08-G02 | |
| 3/16-N3 | 3/8-N4 | 06-02 | 12-02 | 08-G03 | |
| 1/4-UNF | 1/2-N3 | 06-03 | 12-03 | 08-G04 | |
| 1/4-N1 | 1/2-N4 | 06-04 | 12-04 | 10-G02 | |
| 1/4-N2 | | 08-01 | | 10-G03 | |


| PHF/PHF-G MODEL(ØD-T) | | | | | |
|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | Tube(Metric)-Thread(R) | | Tube(Metric)-Thread(G) | |
| 1/8-UNF | 5/16-N1 | 04-M5 | 08-02 | 04-G1 | 08-G04 |
| 5/32-UNF | 5/16-N2 | 04-M6 | 08-03 | 04-G2 | 10-G01 |
| 5/32-N1 | 5/16-N3 | 04-01 | 08-04 | 04-G3 | 10-G02 |
| 3/16-UNF | 5/16-N4 | 04-02 | 10-01 | 06-G1 | 10-G03 |
| 3/16-N1 | 3/8-N2 | 06-M5 | 10-02 | 06-G2 | 10-G04 |
| 3/16-N2 | 3/8-N3 | 06-M6 | 10-03 | 06-G3 | 10-G04 |
| 3/16-N3 | 3/8-N4 | 06-01 | 10-04 | 06-G4 | 12-G03 |
| 1/4-UNF | 1/2-N3 | 06-02 | 12-02 | 08-G1 | 12-G04 |
| 1/4-N1 | 1/2-N4 | 06-03 | 12-03 | 08-G2 | |
| 1/4-N2 | | 06-04 | 12-04 | 08-G3 | |
| 1/4-N3 | | 08-01 | | | |


| PKD/PKD-G MODEL(ØD1-ØD2-T) | | |
|---|---|---|
| Tube(Inch)-Thread(NPT) | Tube(Metric)-Thread(R) | Tube(Metric)-Thread(G) |
| 3/16-5/32-N1 | 0604-01 | 0604-G01 |
| 1/4-5/32-N1 | 0804-01 | 0804-G01 |
| 5/16-5/32-N2 | 0804-02 | 0804-G02 |
| 5/16-3/16-N2 | 0806-01 | 0806-G01 |
| 5/16-1/4-N2 | 0806-02 | 0806-G02 |
| 3/8-1/4-N3 | 1006-02 | 1006-G02 |
| 3/8-5/16-N3 | 1006-03 | 1006-G03 |
| | 1008-02 | 1008-G02 |
| | 1008-03 | 1008-G03 |


| PKG MODEL(ØD1-ØD2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 3/16-5/32 | 0604 |
| 1/4-5-32 | 0804 |
| 5/16-5-32 | 0806 |
| 5/16-3/16 | 1006 |
| 5/16-1/4 | 1008 |
| 3/8-1/4 | |
| 3/8-5/16 | |


| PKJ MODEL(ØD1-ØD2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 3/16-5/32 | 0604 |
| 1/4-5-32 | 0804 |
| 5/16-5-32 | 0806 |
| 5/16-3/16 | 1006 |
| 5/16-1/4 | 1008 |
| 3/8-1/4 | |
| 3/8-5/16 | |

# Plastic Push-In Fittings

## PYJ


| PYJ MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | |

## PP


| PP MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 16 |

## PIJ


| PIJ MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 16 |

## PPF


| PPF MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |
| 1/2 | 16 |

## PA


| PA MODEL(ØD-T) | |
|---|---|
| Tube(Metric)-Thread(NPT/PT) | Tube(Inch)-Thread(G) |
| 04-M5 | 06-G01 |
| 06-01 | 08-G02 |
| 08-02 | 10-G02 |
| 10-02 | 10-G03 |
| 10-03 | 12-G03 |
| 10-03 | 12-G04 |
| 12-04 | |
| | |

## PAF


| PAF MODEL(ØD-T) | |
|---|---|
| Tube(Metric)-Thread(NPT/PT) | Tube(Inch)-Thread(G) |
| 04-M5 | 06-G01 |
| 06-01 | 08-G02 |
| 08-02 | 10-G02 |
| 10-02 | 10-G03 |
| 10-03 | 12-G03 |
| 12-03 | 12-G04 |
| 12-04 | |
| | |

## NPT


| NPT MODEL(ØD-T) | | | | | | |
|---|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | Tube(Metric)-Thread(R) | | | Tube(Metric)-Thread(G) | |
| 5/32-UNF | 1/4-N3 | 04-M5 | 06-04 | 12-02 | 04-G01 | 10-G01 |
| 5/32-N1 | 5/16-N1 | 04-M6 | 08-01 | 12-03 | 04-G02 | 10-G02 |
| 5/32-N2 | 5/16-N2 | 04-01 | 08-02 | 12-04 | 04-G03 | 10-G03 |
| 3/16-UNF | 5/16-N3 | 04-02 | 08-03 | 14-01 | 06-G01 | 10-G04 |
| 3/16-N1 | 5/16-N4 | 04-03 | 08-04 | 14-02 | 06-G02 | 12-G02 |
| 3/16-N2 | 3/8-N1 | 06-M5 | 10-01 | 14-03 | 06-G03 | 12-G03 |
| 3/16-N3 | 3/8-N2 | 06-M6 | 10-02 | 14-04 | 08-G01 | 12-G04 |
| 1/4-UNF | 3/8-N3 | 06-01 | 10-03 | 16-01 | 08-G02 | 14-G01 |
| 1/4-N1 | 3/8-N4 | 06-02 | 10-04 | 16-03 | 08-G03 | 16-G03 |
| 1/4-N2 | 1/2-N2 | 06-03 | 12-01 | 16-04 | 08-G04 | 16-G04 |

## PWJ


| PWJ MODEL(ØD1-ØD2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 1/4-5/32 | 0604 |
| 5/16-1/4 | 0806 |
| 3/8-1/4 | 1006 |
| 3/8-5/16 | 1210 |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

## NPGT


| NPGT MODEL(ØD1-ØD2) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 1/4-5/32 | 0604 |
| 5/16-1/4 | 0806 |
| 3/8-1/4 | 1006 |
| 3/8-5/16 | 1008 |
| 1/2-3/8 | 1208 |
| | 1210 |
| | 1610 |
| | 1412 |
| | 1612 |
| | 1614 |

# Speed Controllers

## Product Features

Speed Controllers Application:

Valve used for controlling the operation speed of a driving device.

Used for movement of machines such as cylinder ,pneumatic finger ,etc.

Feature:

Precisely permit the optimal rate of airflow for the smooth cylinder movement of driving devices.

The Compact and light body permits use in confined space .

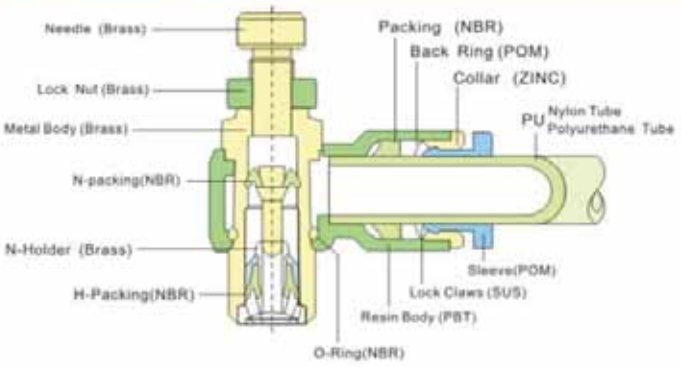
Uni-directional airflow is available for either exhaust or inlet flow control methods.

The compact design provides a comparable range of speed as the conventional speed controllers do.

All R and NPT threads are coated with sealant.

All cylindrical threads are equipped with standard O-ring seals .

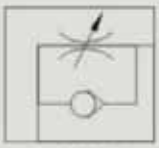
## Structure Chart




## Specification

| Fluid | Air(No other gases or liquids) | |
|---|---|---|
| Operating Pressure | 0-150PSI | 0~9.9Kgf/cm²(0~990kpa) |
| Negative Pressure | 7.5PSI | 0.5Kgf/cm²(50kpa) |
| Operating Temperature | 32~140°F | 0~60°C |
| Applicable Tube | PU Polyurethane and Nylon | |

## Control Way

| Type | Control Out | Control In |
|---|---|---|
| Symbol |  SC06-01 |  SC06-01B |

When you order Control In type,please put B at the end of model type.
For example,SC06-01B.


| SC/SC-G MODEL(ØD-T) | | | | | |
|---|---|---|---|---|---|
| Tube(Inch)-Thread(NPT) | | Tube(Metric)-Thread(R) | | Tube(Metric)-Thread(G) | |
| 1/8-UNF | 1/4-N3 | 04-M5 | 08-04 | 04-G01 | 10-G02 |
| 5/32-UNF | 5/16-N1 | 04-01 | 10-01 | 04-G02 | 10-G03 |
| 5/32-N1 | 5/16-N2 | 04-02 | 10-02 | 06-G01 | 10-G04 |
| 5/32-N2 | 5/16-N3 | 06-M5 | 10-03 | 06-G02 | 12-G02 |
| 3/16-UNF | 5/16-N4 | 06-01 | 10-04 | 06-G03 | 12-G03 |
| 3/16-N1 | 3/8-N2 | 06-02 | 12-02 | 06-G04 | 12-G04 |
| 3/16-N2 | 3/8-N3 | 06-03 | 12-03 | 08-G01 | |
| 3/16-N3 | 3/8-N4 | 06-04 | 12-04 | 08-G02 | |
| 1/4-UNF | 1/2-N3 | 08-01 | 4-M6 | 08-G03 | |
| 1/4-N1 | 1/2-N4 | 08-02 | 6-M6 | 08-G04 | |
| 1/4-N2 | | 08-03 | | 10-G01 | |

SCF


| SCF MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 5/32 | 04 |
| 3/16 | 06 |
| 1/4 | 08 |
| 5/16 | 10 |
| 3/8 | 12 |

SCJ


| SCJ MODEL(ØD) | |
|---|---|
| Tube(Inch) | Tube(Metric) |
| 06-04 | 04 |
| 08-06 | 06 |
| 10-08 | 08 |
| | 10 |