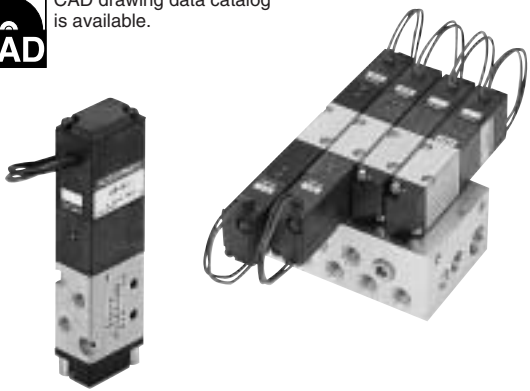




CAD drawing data catalog
is available.



KOGANEI

VALVES GENERAL CATALOG

SOLENOID VALVES 110 SERIES INDEX

SOLENOID VALVES 110 SERIES

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Caution

Before use, be sure to read the "Safety Precautions" on p. 31.

110 Series Solenoid Valve, Air-piloted Valve Order Codes

| 2-, 3-port valve Number of ports | 2-, 3-port valve Valve function | 3-position valve Valve function | Sub-base | Port fitting specifications <small>Note 2</small> | Manual override | Wiring type |
|-------------------------------------|------------------------------------|------------------------------------|----------------------|--|-----------------------------|--|
| 3-port | Normally closed (NC) | Closed center | Without sub-base | Female thread : Blank -J41, -J42, -J43 : Quick fitting for φ 4 tube -J61, -J62, -J63 : Quick fitting for φ 6 tube | Non-locking type | Lead wire length: 300mm [11.8in.] is standard. Grommet type |
| 2-port | Normally open (NO) | Exhaust center | With sub-base | ● 2(A) port of 111E1 4(A) port of 110E1 | Locking protruding type | Straight connector with LED indicator |
| | | Pressure center | | ● 1(P), 2(A) ports of 111E1 | | L connector with LED indicator |
| | | | | ● 4(A), 2(B) ports of 5-port | | |
| | | | | ● 1(P), 4(A), 2(B) ports of 110-4E1 | | |

| | Basic model | | | | | Voltage |
|--|-----------------------------------|-----------|-----|-----|--|---|
| Direct piping | 2-, 3-port | 111E1 | -2 | -11 | -J41, -J42 -J61, -J62 <small>Note 3</small> | -83 -PSL -PLL DC12V DC24V AC100V AC200V |
| | 5-port single solenoid | 110-4E1 | | | -J42, -J43 -J62, -J63 <small>Note 3</small> | |
| | 5-port double solenoid | 110-4E2 | | | -J42 -J62 <small>Note 4</small> | |
| | 5-port 3-position | 113-4E2 | -13 | -14 | | |
| Sub-base piping | 2-, 3-port | A111E1 | -2 | -11 | | -83 -PSL -PLL DC12V DC24V AC100V AC200V |
| | 5-port single solenoid | A110-4E1 | | | -25 | |
| | 5-port double solenoid | A110-4E2 | | | | |
| | 5-port 3-position | A113-4E2 | -13 | -14 | | |
| For manifold with combination mounting of 2-, 3-, 5-port valves only <small>Note 1</small> | 2-, 3-port for 110M□F, FE | 110E1 | -2 | -11 | -J41 -J61 | -83 -PSL -PLL DC12V DC24V AC100V AC200V |
| | 5-port, 2-position for 110M□F, FE | 110-4KE2 | | | -J42 -J62 | |
| | 5-port, 3-position for 110M□F, FE | 113-4KE2 | -13 | -14 | | |
| | 2-, 3-port for 110M□A, AJ | A110E1 | -2 | -11 | | |
| | 5-port, 2-position for 110M□A, AJ | A110-4KE2 | | | | |
| | 5-port, 3-position for 110M□A, AJ | A113-4KE2 | -13 | -14 | | |
| Direct piping air-piloted valve (made to order) | 5-port single pilot | 110-4A | | | -J42, -J43 -J62, -J63 | -83 -PSL -PLL DC12V DC24V AC100V AC200V |
| | 5-port double pilot | 110-4A2 | | | -J42 -J62 | |
| Sub-base piping air-piloted valve (made to order) | 5-port single pilot | A110-4A | | | | -83 -PSL -PLL DC12V DC24V AC100V AC200V |
| | 5-port double pilot | A110-4A2 | | | | |

Notes : 1. They cannot be used as single units.
 2. The port fittings are for φ 4: TSK4-M8M, and for φ 6: TSK6-M8M.
 3. Side mounting of valve is not possible when -J41, -J42, -J43, -J61, -J62, or -J63 is selected, because in these cases there are no mounting holes on the valve side surface.
 4. Mounting on the manifold only is possible when -J42 or -J62 is selected for the 110-4E2 or 113-4E2, because in these cases they do not have mounting holes.

Additional Parts (To be ordered separately)

| | | | |
|---|---|--|--|
| Speed controller SCE-M5 | Muffler KM-05 | Mounting base 110-21 | Block-off plate 111 M -BP |
| ● For direct piping ● For sub-base piping | ● For direct piping ● For sub-base piping | ● For direct piping ● For 2-, 3-port and 5-port single solenoids | ● For F type manifold ● For FE type manifold ● For A type, AJ type manifolds |

110 Series Manifold Order Codes

2-, 3-port valve

Number of ports

3-port

Blank

2-port

-2

2-, 3-port valve

Valve function

Normally closed (NC)

Blank

Normally open (NO)

-11

3-position valve

Valve function

Closed center

Blank

Exhaust center

-13

Pressure center

-14

Port fitting specifications

Note 2

Female thread : Blank

-J41, -J42 : Quick fitting for φ 4 tube

-J61, -J62 : Quick fitting for φ 6 tube

-J41 -J61

● 2(A) port of 111E1 (4(A) port of 110E1)

-J42 -J62

● 4(A), 2(B) ports of 5-port

Manual override

Non-locking type

Blank

Locking protruding type

-83

Wiring type

● Lead wire length: 300mm [11.8in.] is standard.

Grommet type

Blank

Straight connector with LED indicator

-PSL

L connector with LED indicator

-PLL

Straight connector with LED indicator

-CPSL -CMSL

L connector with LED indicator

-CPLL -CMLL

● -CP□L : DC12V and DC24V positive side, and AC100V, AC200V.

● -CM□L : DC12V and DC24V negative side.

Manifold Connection port

Quick fittings for φ 4 tube

-J4

Quick fittings for φ 6 tube

-J6

| Manifold model Number of units | | Station | Basic model | | | | | Voltage | | | | | | |
|--|------|--------------|--------------------------|--------|------------|----|-----|--------------|-----|--|------------|--|------------|------------------------------------|
| Manifold for 2-, 3-port valves | 111M | 2 ∴ 20 | F | stn. □ | -111E1 | -2 | -11 | -J41 -J61 | -83 | -PSL -PLL -CPSL -CMSL -CPLL -CMLL | -J4 -J6 | DC12V DC24V AC100V AC200V | | |
| | | | A AJ | stn. □ | -A111E1 | -2 | -11 | | | | | | | |
| Manifold for combination mounting of 2-, 3-, 5-port valves | 110M | 2 ∴ 20 | F FE ^{Note1} | stn. □ | -110E1 | -2 | -11 | -J41 -J61 | -83 | -PSL -PLL -CPSL -CMSL -CPLL -CMLL | | DC12V DC24V AC100V AC200V | | |
| | | | | stn. □ | -110-4E1 | | | -J42 -J62 | | | | | | |
| | | | | stn. □ | -110-4E2 | | | | | | | | | |
| | | | | stn. □ | -110-4KE2 | | | | | | | | | |
| | | | | stn. □ | -110-4KE2 | | | -13 -14 | | | | | | |
| | | | A AJ | stn. □ | -A110E1 | -2 | -11 | | | | -83 | -PSL -PLL -CPSL -CMSL -CPLL -CMLL | -J4 -J6 | DC12V DC24V AC100V AC200V |
| | | | | stn. □ | -A110-4E1 | | | | | | | | | |
| | | | | stn. □ | -A110-4E2 | | | | | | | | | |
| | | | | stn. □ | -A110-4KE2 | | | | | | | | | |
| | | | | stn. □ | -A110-4KE2 | | | -13 -14 | | | | | | |
| Manifold for mounting 5-port valve (made to order) | 110M | 2 ∴ 20 | F | stn. □ | -110-4A | | | -J42 -J62 | | | | | | |
| | | | | stn. □ | -110-4A2 | | | | | | | | | |
| | | | A AJ | stn. □ | -A110-4A | | | | | -J4 -J6 | | | | |
| | | | | stn. □ | -A110-4A2 | | | | | | | | | |

- Valve mounting location from the left-hand side when facing the 4(A), 2(B) ports.
- Since a twin solenoid valve requires 2 stations per valve to mount, the second station (solenoid 12(S1) side) should be blank.
- Notes : 1. Since the PR port on the port fitting type valves is located on the opposite side from the manifold, pilot air is exhausted directly from the valve. For that reason, collective exhaust is not possible and the port fitting type valves cannot be used for the manifold.
- 2. Fitting used for port fitting specifications, φ 4: TSK-M&M, φ 6: TSK6-M&M.
- Specify the valve model for each station.
- Enter **-BP** when closing a station with a block-off plate without mounting a valve.
- Specify only for F type manifolds.
- For the AJ type manifold only, specify either of the two.
- It is not required when ordering a single valve unit.
- Pre-wired common terminal for AC100V and AV200V is either **-CPSL** or **-CPLL**.

Made to Order The 110 series includes made to order items of various kinds for further system development. For details, see p.315~317.

Straight connector with LED indicator

-PSLN

- Without lead wire
- Connector, contacts included.

L connector with LED indicator

-PLLN

- Without lead wire
- Connector, contacts included.

Lead wire length

-1L
-3L

- For plug connector
- Length (mm)
- 1L : 1000 [39in.]
- 3L : 3000 [118in.]

DIN connector

-39

- Cannot be used with -L.

LED indicator with built-in varistor

-L

- Cannot be used with -39.

Built-in interface unit

-FA

- Possible to be directly controlled by output from micro computer or other logic devices.
- With LED indicator

Air-piloted valves 110 series

- 5-port, 2-position
- Single pilot
- Double pilot

Made to Order

Air-piloted valves 110 series

- The ideal air valve for master valves or pilot valves for total pneumatic control.



Effective Area

mm² (Cv)

| Specifications | Basic model | For direct piping, F type manifold | For sub-base, A, AJ type manifolds |
|--|---|--|--|
| | | 110-4A, 110-4A2 | A110-4A, A110-4A2 |
| Single valve | | 4.2 [0.23] | 4.0 [0.22] |
| Built-in quick fitting for ϕ 4 tube | -J42 4(A), 2(B) ports with fittings | 3.6 [0.20] | 3.6 [0.20] (When mounted on the AJ type manifold with -J4 specification) |
| | -J43 1(P), 4(A), 2(B) ports with fittings | | — |
| Built-in quick fitting for ϕ 6 tube | -J62 4(A), 2(B) ports with fittings | — | 4.0 [0.22] (When mounted on the AJ type manifold with -J4 specification) |
| | -J63 1(P), 4(A), 2(B) ports with fittings | — | — |
| Remarks | | <ul style="list-style-type: none"> ● Attaching TS4-M5 to the 1(P), 4(A), 2(B) ports gives the value 1.8 [0.1]. ● On the F type manifold, attaching TS4-M5 to the 4(A), 2(B) ports gives the value 2.1 [0.12]. ● When large flow rates are required, we recommend the built-in quick fittings. | <ul style="list-style-type: none"> ● Attaching TS4-01 to the 1(P), 4(A), 2(B) ports on the sub-base (-25) gives the value 3.2 [0.18]. |

Specifications

| Item | Basic model | For direct piping, F type manifold | | For sub-base, A, AJ type manifolds | |
|--|-------------|---|-----------------------|--|--|
| | | Single pilot | Double pilot | Single pilot | Double pilot |
| Media | | Air | | | |
| Operation type | | Air-piloted type | | | |
| Number of positions and ports | | 2 positions, 5 ports | | | |
| Effective area (Cv) mm ² | | 4.2 [0.23] ^{Note 1} | | | |
| Port size | Main | M5×0.8 ^{Note 2} | | — ^{Note 2} | |
| | Pilot | M5×0.8 | | | |
| Lubrication | | Not required | | | |
| Operating pressure range MPa (kgf/cm ²) [psi.] | Main | 0.15~0.7 {1.5~7.1} [22~102] | 0~0.7 {0~7.1} [0~102] | 0.15~0.7 {1.5~7.1} [22~102] | 0~0.7 {0~7.1} [0~102] |
| | Pilot | See the table "Minimum Pilot Pressure" | | | |
| Proof pressure MPa (kgf/cm ²) [psi.] | | 1.05 {10.7} [152] | | | |
| Operating temperature range (atmosphere and media) °C [°F] | | 5~60 [41~140] | | | |
| Shock resistance m/s ² (G) | | 1373.0 {140.0} (Axial direction 294.2 {30.0}) | | | |
| Mounting direction | | Any | | | |
| Maximum operating frequency Hz | | 5 | | | |
| Mass g [oz.] | | 40 [1.41] | 45 [1.59] | 45 [1.59] (140 [4.94]) ^{Note 3} | 50 [1.76] (145 [5.11]) ^{Note 3} |

Notes: 1. For details, see the effective area.

2. For details, see the port size.

3. Figures in parentheses () are the mass with sub-plate: -25.

※ For optional specifications and order codes, see p.301 ~ 302.

Port Size

| Specifications | Basic model | Port | For direct piping, F type manifold | For sub-base, A, AJ type manifolds | Remarks | |
|------------------------|-------------|--------------|------------------------------------|------------------------------------|---|------------------------|
| | | | 110-4A, 110-4A2 | A110-4A, A110-4A2 | | |
| Female thread | | 1 (P) | M5×0.8 | — | Standard | |
| | | 4(A), 2(B) | | | | |
| | | 3(R2), 5(R1) | | | | |
| Built-in quick fitting | -J42 | 1 (P) | M5×0.8 | — | <ul style="list-style-type: none"> ● Straight type ● For ϕ 4 tube ● For both nylon tubes and urethane tubes | |
| | | 4(A), 2(B) | Built-in quick fitting | | | |
| | -J43 | 1 (P) | Built-in quick fitting | | | |
| | | 4(A), 2(B) | M5×0.8 | | | |
| Sub-base -25 | | 1 (P) | — | Rc1/8 | ● All ports sub-base piping | |
| | | 4(A), 2(B) | | | | |
| | | 3(R2), 5(R1) | | | | |
| F type manifold | | 1 (P) | Rc1/8 | M5×0.8 or quick fitting | ● 1(P), 3(R2), 5(R1) manifold, 4(A), 2(B) valve piping | |
| | | 4(A), 2(B) | | | | |
| | | 3(R2), 5(R1) | Rc1/8 | | | |
| A type manifold | | 1 (P) | — | Rc1/8 | ● All ports manifold piping | |
| | | 4(A), 2(B) | | | | |
| | | 3, 5(R) | | | | Rc1/4 |
| AJ type manifold | | 1 (P) | — | Rc1/4 | <ul style="list-style-type: none"> ● All ports manifold piping ● 4(A), 2(B) ports ● -J4 : For ϕ 4 tube ● -J6 : For ϕ 6 tube | |
| | | 4(A), 2(B) | | -J4 | | Built-in quick fitting |
| | | | | -J6 | | Built-in quick fitting |
| | | 3, 5(R) | | Rc1/4 | | |

Manifold Specifications and Port Size

| Manifold model | Specifications | Port | Port size | |
|----------------|---|----------------|--|---------------------------------|
| F type | P, R manifold piping A, B valve piping | 1 (P) | Rc1/8 | |
| | | 4 (A), 2 (B) | M5×0.8 or quick fitting (Valve order code: -J42) | |
| | | 3 (R2), 5 (R1) | Rc1/8 | |
| A type | All ports manifold piping | 1 (P) | Rc1/8 | |
| | | 4 (A), 2 (B) | Rc1/8 | |
| | | 3, 5 (R) | Rc1/4 | |
| AJ type | A, B ports built-in quick fittings All ports manifold piping | 1 (P) | Rc1/8 | |
| | | 4 (A), 2 (B) | -J4 | Quick fitting for ϕ 4 tube |
| | | | -J6 | Quick fitting for ϕ 6 tube |
| | | 3, 5 (R) | Rc1/4 | |

※ For optional specifications and order codes, see p.302.

Manifold Mass

g [oz.]

| Manifold model | Mass calculation of each unit (n=number of units) | Mounting valve | | | |
|----------------|---|----------------|-----------|-----------|-----------|
| | | 110-4A | 110-4A2 | A110-4A | A110-4A2 |
| F type | (20×n)+30 [(0.71×n)+1.06] | 40 [1.41] | 45 [1.59] | — | — |
| A type | (60×n)+60 [(2.12×n)+2.12] | — | — | 45 [1.59] | 50 [1.76] |
| AJ type | -J4 (67×n)+60 [(2.36×n)+2.12] | — | — | 45 [1.59] | 50 [1.76] |
| | -J6 (64×n)+60 [(2.26×n)+2.12] | — | — | 45 [1.59] | 50 [1.76] |

Calculation example: The mass of 110M 10F strn.1~5 110-4A, strn.6~10 110-4A2 becomes (20×10)+30+(40×5)+(45×5)=655g [23.10 oz.]

Minimum Pilot Pressure

MPa (kgf/cm²) [psi.]

| Model | Main pressure | 0.15 {1.5} [22] | 0.3 {3.0} [44] | 0.5 {5.1} [73] | 0.7 {7.1} [102] |
|---------|---------------|-----------------|-----------------|-----------------|-----------------|
| 110-4A | | 0.15 {1.5} [22] | 0.25 {2.5} [36] | 0.34 {3.5} [49] | 0.45 {4.5} [65] |
| 110-4A2 | | 0.08 {0.8} [12] | 0.10 {1.0} [15] | 0.12 {1.2} [17] | 0.14 {1.4} [20] |

Required Time for Switching

S

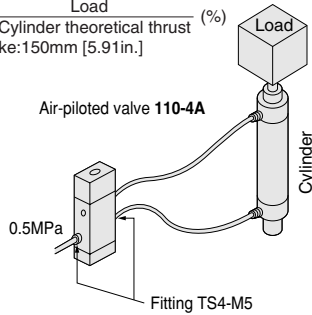
| Model | Operation | Pilot line length L m [ft.] | | | | | | Measurement circuit | Measurement conditions |
|----------|-----------|-----------------------------|----------|-----------|-----------|------------|-------------|---------------------|---|
| | | 2 [6.6] | 6 [19.7] | 10 [32.8] | 20 [65.6] | 50 [163.9] | 100 [327.8] | | |
| 110-4A | ON | 0.06 | 0.14 | 0.26 | 0.63 | 2.30 | 6.54 | | <ul style="list-style-type: none"> ● Pilot valve=050-4E1 (effective area 1.2mm² [Cv: 0.067]) ● Tube inner diameter = 4mm [0.16in.] ● Air pressure (both main and pilot)=0.5MPa [73psi.] |
| | OFF | 0.12 | 0.33 | 0.67 | 1.65 | 6.30 | 19.50 | | |
| A110-4A2 | ON | 0.07 | 0.16 | 0.29 | 0.70 | 2.66 | 7.40 | | |
| | OFF | | | | | | | | |

Cylinder Operating Speed and Flow Rate

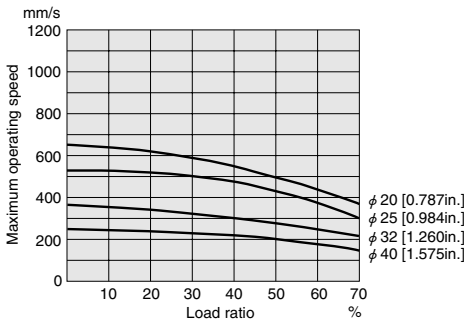
110-4A

● Measurement conditions

- Air pressure : 0.5MPa {5.1kgf/cm²} [73psi.]
- Piping inner diameter and length : φ 2.5 [0.10in.]×1000mm [39in.]
- Fitting : Quick fitting TS4-M5
- Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
- Cylinder stroke:150mm [5.91in.]



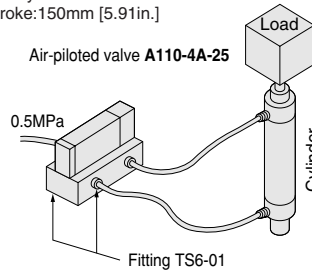
Maximum operating speed



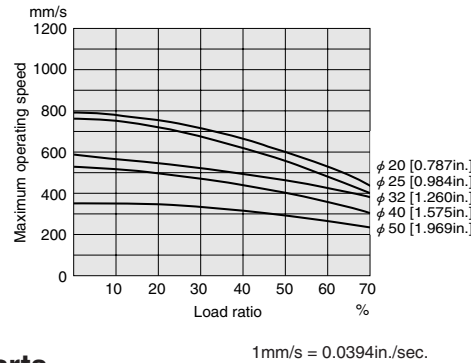
A110-4A-25

● Measurement conditions

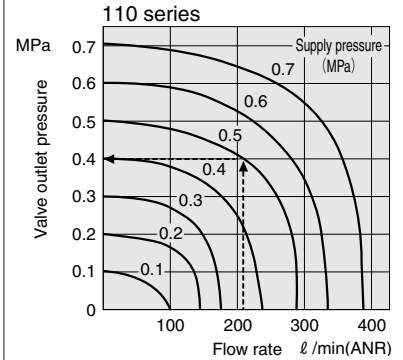
- Air pressure : 0.5MPa {5.1kgf/cm²} [73psi.]
- Piping inner diameter and length : φ 4 [0.16in.]×1000mm [39in.]
- Fitting : Quick fitting TS6-01
- Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
- Cylinder stroke:150mm [5.91in.]



Maximum operating speed



Flow rate



1MPa = 145psi., 1 l /min = 0.0353 ft³/min.

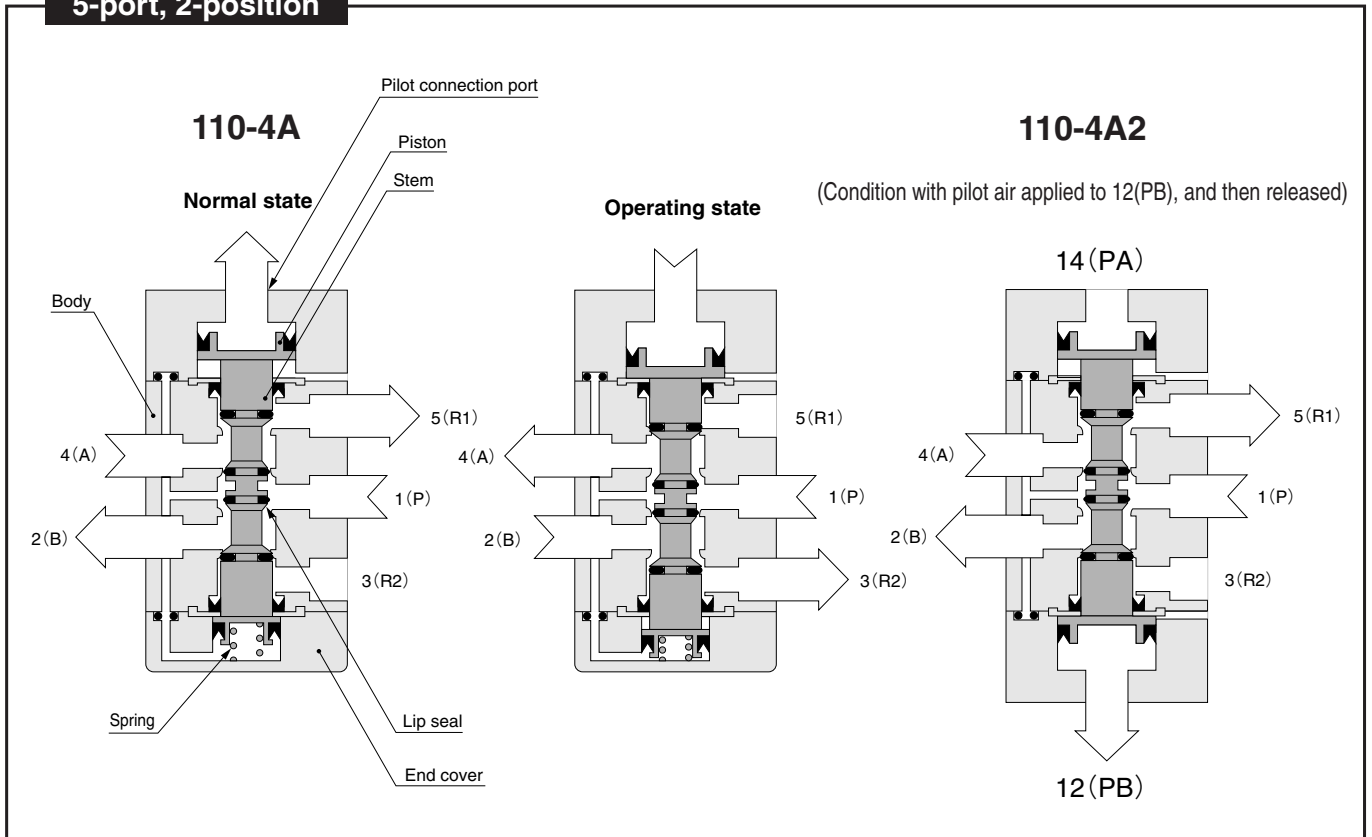
How to read the graph

When the supply pressure is 0.5MPa [73psi.] and the flow rate is 210 l /min [7.41ft³/min.] (ANR), the valve outlet pressure becomes 0.4 MPa [58psi.].

SOLENOID VALVES 110 SERIES

Operating Principles and Major Parts

5-port, 2-position

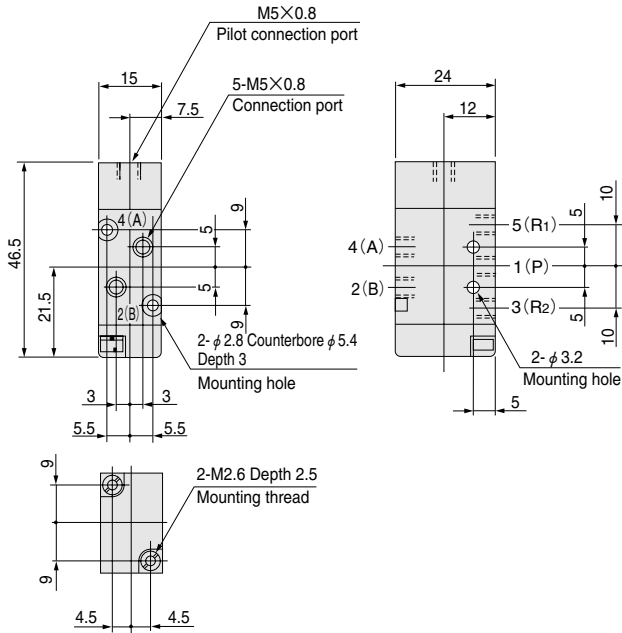


Major Parts and Materials

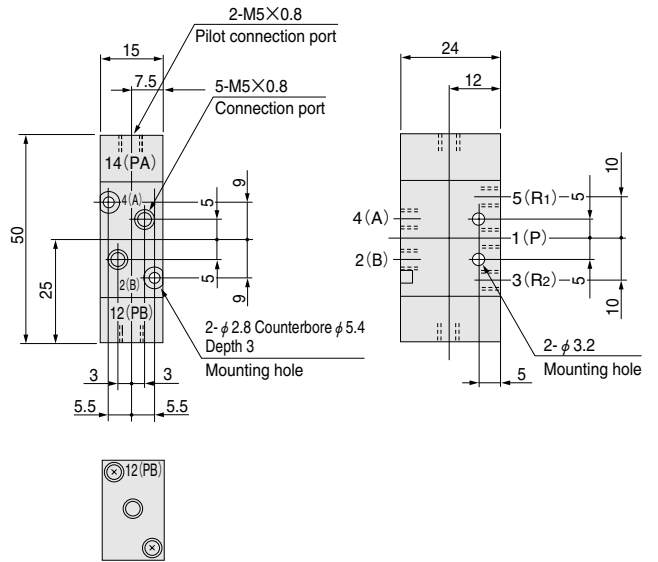
| Parts | Materials |
|---------------|---------------------------|
| Body | Aluminum alloy |
| Stem | (anodized) |
| Lip seal | Synthetic rubber |
| Mounting base | Mild steel (zinc plated) |
| Sub-base | Aluminum alloy (anodized) |

Dimensions of Air-piloted 5-port, 2-position Valve (mm)

110-4A

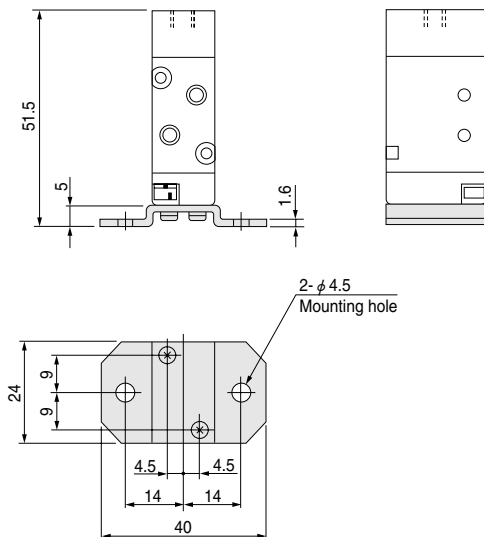


110-4A2

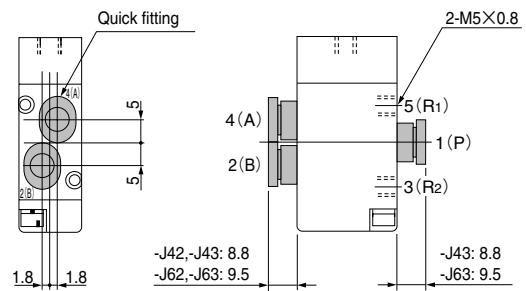


Options

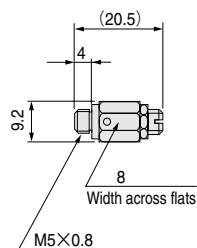
● Mounting base : -21



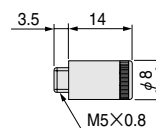
- With quick fittings: -J42 (For φ 4 tube, 4(A), 2(B) ports with fittings)
 - J43 (For φ 4 tube, 1(P), 4(A), 2(B) ports with fittings)
 - J62 (For φ 6 tube, 4(A), 2(B) ports with fittings)
 - J63 (For φ 6 tube, 1(P), 4(A), 2(B) ports with fittings)
- The drawing shows the -J43 specification.



● Speed controller : -70



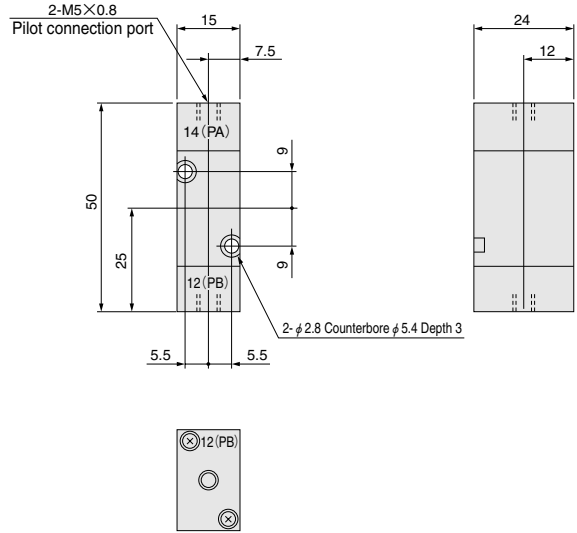
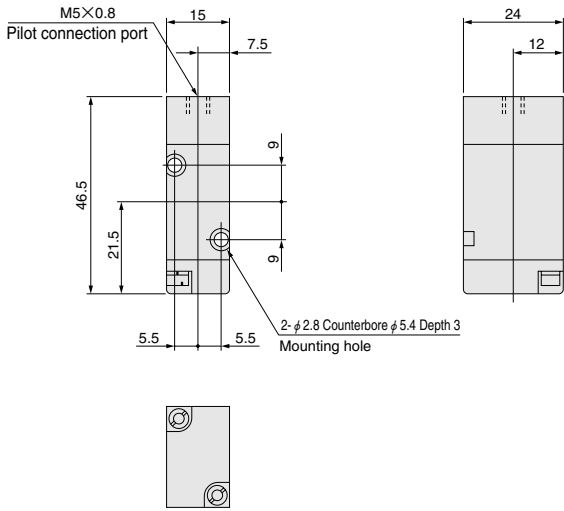
● Muffler : -75



Dimensions of Air-piloted 5-port, 2-position Valve (mm)

A110-4A

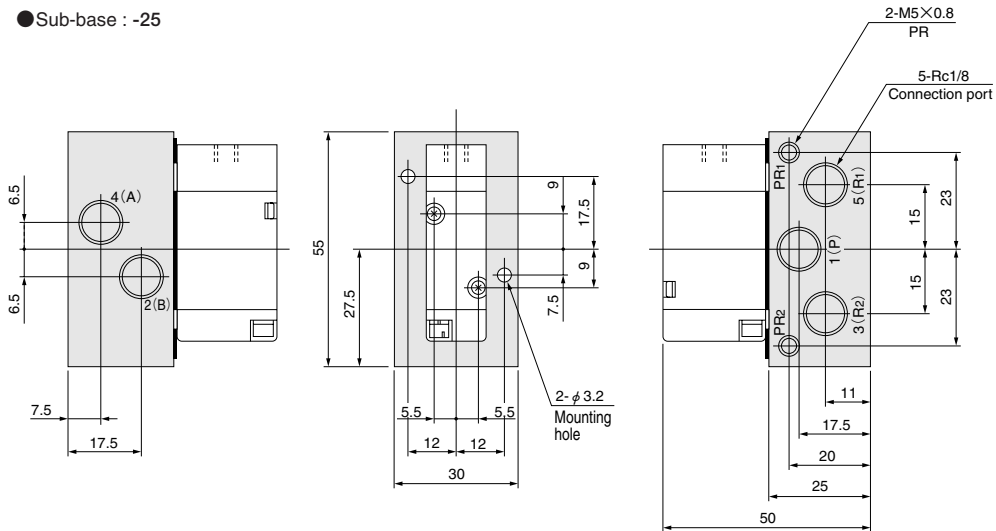
A110-4A2



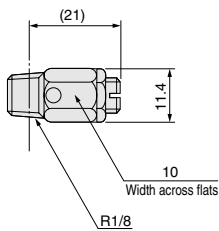
SOLENOID VALVES 110 SERIES

Options

● Sub-base : -25



● Speed controller : -70



Handling Instructions and Precautions

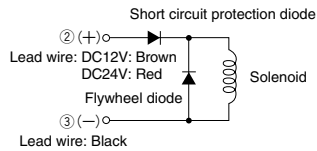


Solenoid

Internal circuit

●DC12V, DC24V

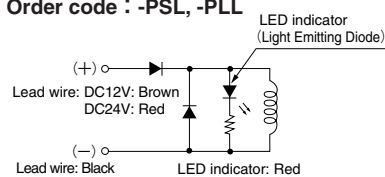
Standard solenoid (Surge suppression)



② and ③ are for with DIN connector (Order code : -39).

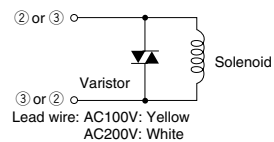
Solenoid with LED indicator (Surge suppression)

Order code : -PSL, -PLL



●AC100V, AC200V

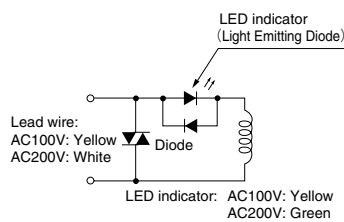
Standard solenoid (Surge suppression)



② and ③ are for with DIN connector (Order code : -39).

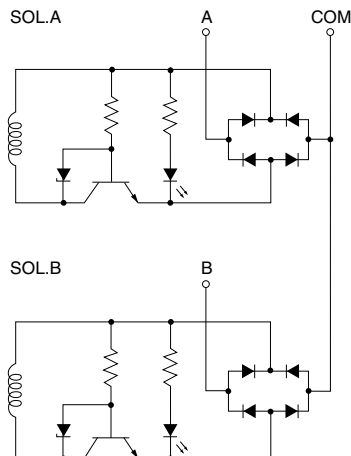
Solenoid with LED indicator (Surge suppression)

Order code : -PSL, -PLL



●DC24V

Tandem solenoid



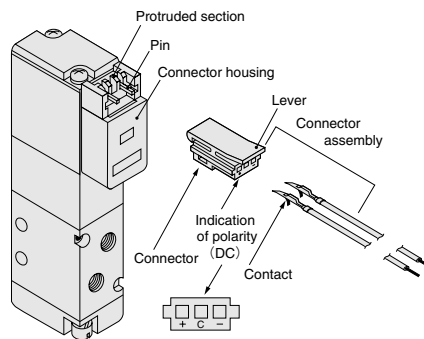
- Cautions:**
1. Do not apply megger between the lead wires.
 2. The DC solenoid will not short circuit even if the wrong polarity is applied, but the valve will not operate.
 3. Leakage current inside the circuit could result in failure of the solenoid valve to return, or in other erratic operation. Always use it within the range of the allowable leakage current. If circuit conditions, etc. cause the leakage current to exceed the allowable leakage current, consult us.
 4. For double solenoid and twin solenoid, avoid energizing both solenoids simultaneously. The valve could fall into a neutral position.



Plug connector

Attaching and removing plug connector

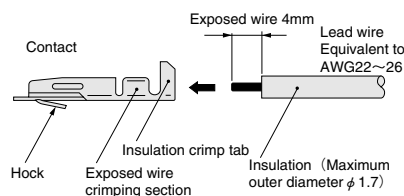
Use fingers to insert the connector into the pin, push it in until the lever claw latches onto the protruded section of the connector housing, and complete the connection. To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the protruded section of the connector housing, and pull it out.



※ Illustration shows the 110 series.

Crimping of connecting lead wire and contact

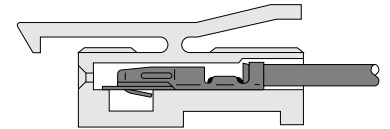
To crimp lead wires into contacts, strip off 4mm [0.16in.] of the insulation from the end of the lead wire, insert it into the contact, and crimp it. Be sure to avoid catching the insulation on the exposed wire crimping section.



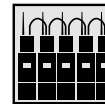
- Cautions:**
1. Do not pull hard on the lead wire.
 2. Always use a dedicated tool for crimping of connecting lead wire and contact.
Contact: Model 702062-2M
Manufactured by Sumiko Tech, Inc.
Crimping tool: Model F1-702062
Manufactured by Sumiko Tech, Inc.

Attaching and removing contact and connector

Insert the contact with a lead wire into a plug connector hole until the contact hook latches on the connector and is secured to the plug connector. Confirm that the lead wire cannot be easily pulled out. To remove it, insert a tool with a fine tip (such as a small screwdriver) into the rectangular hole on the side of the plug connector to push up on the hook, and then pull out the lead wire.



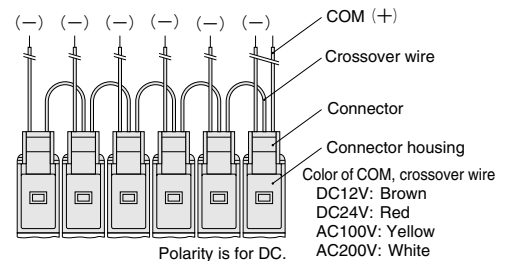
- Cautions:**
1. Do not pull hard on the lead wire. It could result in defective contacts, breaking wires, etc.
 2. If the pin is bent, use a small screwdriver, etc. to gently straighten out the pin, and then complete the connection to the plug connector.



Common terminal pre-wired plug connector

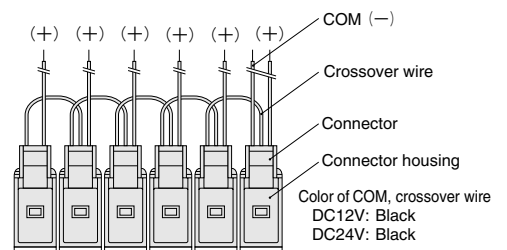
1. Pre-wired common terminal at DC positive side or AC.

Order code With straight connector: -CPSL
With L connector: -CPLL



2. Pre-wired common terminal at DC negative side

Order code With straight connector: -CMSL
With L connector: -CMLL



- Cautions:**
1. The diagrams show the straight connector configuration. While the connector's orientation is different in the case of the L connector, in every case the first COM lead wire comes from the last station's mounted valve.
 2. Since the COM terminal is connected to a crossover terminal inside the connector housing, the connector cannot be switched between a positive common and a negative common by changing the connectors.

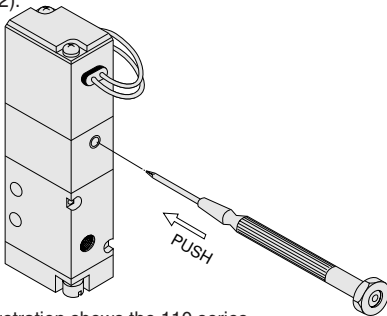


Manual override

Non-locking type

To operate the manual override, press it all the way down. The single solenoid valve works the same as when in the energized state as long as the manual override is pushed down, and returns to the normal position upon release.

For the double solenoid and twin solenoid valves, pressing the manual override on the 12(S1) side switches the 12(S1) to enter the energized position, and the unit remains in that state even after the manual override is released. To return it to the normal position, operate the manual override on the 14(S2) side. This is the same for the solenoid 14(S2).

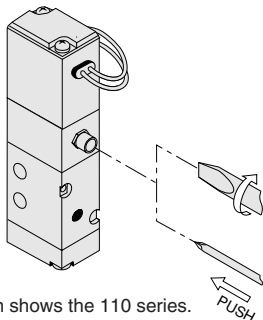


※ Illustration shows the 110 series.

Locking protruding type

Use a small screwdriver to turn the adjusting knob several times in the clockwise direction, and lock the manual override in place. When locked, turning the adjusting knob several times in the counterclockwise direction releases a spring on the manual override, returns it to the normal position, and releases the lock.

For the locking protruding type, when the adjusting knob is not turned, this type acts just like the non-locking type, like the valve is the energized position as long as the manual override is pushed down, and it returns to the normal position upon release.



※ Illustration shows the 110 series.

Cautions: 1. The 110 series valves are internal pilot type solenoid valves. As a result, the manual override cannot switch the main valve without air supplied from the 1(P) port.

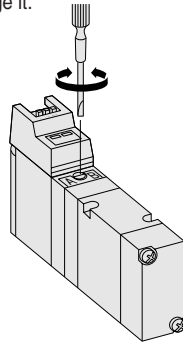
2. Always release the lock of the locking type and locking protruding type manual override before commencing normal operation.
3. Do not attempt to operate the manual override with a pin or other object having an extremely fine tip. It could damage the manual override button.
4. Do not turn the adjusting knob more than needed. It could result in defective operation.



Manual override (Tandem solenoid)

Locking type

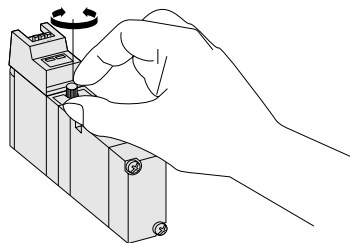
To lock the locking type manual override, use a small screwdriver to push down the manual override in all the way, then set the 0 position as the reference point and turn it in the clockwise direction as far as position A. This achieves the same conditions as when the 14(SA) side is energized, and the manual override is locked in place. For the 12(SB) side, turn it in the counterclockwise direction as far as position B. To release the lock, return the manual override to the 0 position. A spring mechanism returns the manual override to its normal position, and the lock is released. Care should be taken to avoid excessive turning of the manual override, which could damage it.



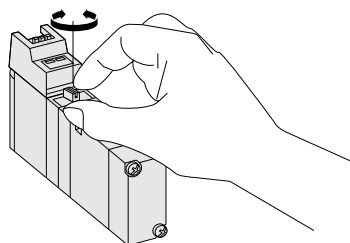
Locking protruding type, locking manual lever type

To lock the locking protruding type manual override or locking manual lever type, use either a small screwdriver or your fingertips to push the manual override button (manual lever) all the way down, then set the 0 position as the reference point and turn it in the clockwise direction as far as position A. This achieves the same conditions as when the 14(SA) side is energized, and the manual override button (manual lever) is locked in place. For the 12(SB) side, turn it in the counterclockwise direction as far as position B. To release the lock, return the manual override button (manual lever) to the 0 position. A spring mechanism returns the manual override button (manual lever) to its normal position, and the lock is released. Care should be taken to avoid excessive turning of the manual override button (manual lever), which could damage it.

Locking protruding type manual override



Locking manual lever type



- Cautions:**
1. The 110 series valves are internal pilot type solenoid valves. As a result, the manual override cannot switch the main valve without air supplied from the 1(P) port.
 2. Always release the lock of the locking protruding type manual override before commencing normal operation.
 3. Do not attempt to operate the manual override with a pin or other object having an extremely fine tip. It could damage the manual override button.
 4. Do not turn the adjusting knob more than needed. It could result in defective operation.

Mounting base 110-21

When installing a mounting base to the valve, always use the provided screws. The recommended tightening torque for the screws is 49N·cm {5kgf·cm} [4.3in·lbf].

Mounting valves on manifold

When mounting valves on manifold, apply the recommended tightening torque of 39.2N·cm {4kgf·cm} [3.5in·lbf] for the valve mounting screws.

Handling Instructions and Precautions (PC Board Manifold)

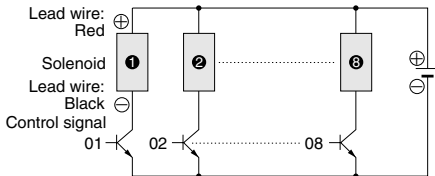


Solenoid

Circuit configurations

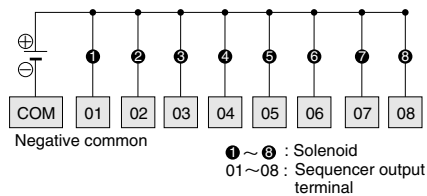
● For positive common type (standard)

Operation example



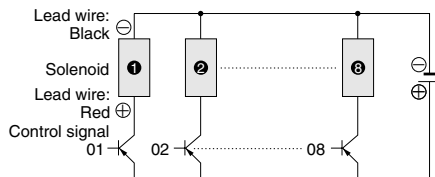
Correspondence to sequencer

Output module is negative common type.



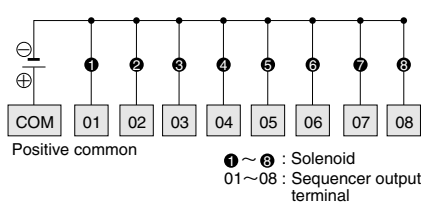
● For negative common type (optional: -CM)

Operation example



Correspondence to sequencer

Output module is positive common type.

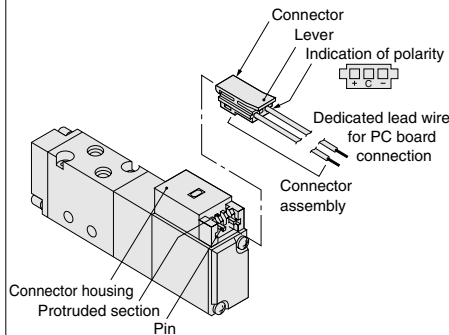


Plug connector

Attaching and removing plug connector

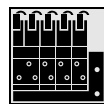
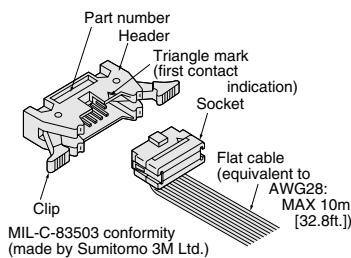
Use fingers to insert the connector into the pin, push it in until the lever claw latches onto the protruded section of the connector housing, and complete the connection.

To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the protruded section of the connector housing, and pull it out.



- Cautions:**
1. Do not pull hard on the lead wire. It could result in defective contacts, breaking wires, etc.
 2. If the pin is bent, use a small screwdriver, etc. to gently straighten out the pin, and then complete the connection to the plug connector.

Connector for flat cable



Manifold

Print circuit board

Avoid using in the locations listed below, as it may result in deterioration of the print circuit board or a short circuit in the wiring. If use in such conditions is unavoidable, always provide a cover or other adequate protective measures.

1. Locations subject to high levels of dust or oil mists
2. Locations subject to salt, corrosive gases, or conductive particles
3. Locations directly subject to condensation, direct sunlight, or other weather effects

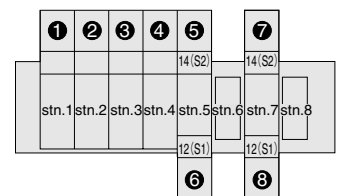
Combination mounting for different type of valves

In the 110 series manifold for combination mounting of 2-, 3-, 5-port, and the PC board manifold for combination mounting of 2-, 3-, 5-port, single solenoids can be mounted together with double solenoids, or with twin solenoids, and a total number of up to 8 or 16 solenoids can be mounted.

In this case, observe the following precautions:

1. Always use a block-off plate (-BP) to close the next right station (the side with the higher numbered station) of the double solenoid valve mounting station.
2. When using block-off plates (-BP) for some reason other than item 1, place them together on the higher numbered stations side.
3. Connector pin numbers are allocated to stations in order from the left end of the manifold. For a double solenoid mounting, the upper pins are allocated to 14(S2) and the lower ones to 12(S1), with the upper 14(S2) numbers being the smaller pin numbers. And for a twin solenoid mounting, the left side is allocated to 14(S2) and the right side allocated to 12(S1), with the left side 14(S2) numbers being the smaller pin numbers.

Example of 4 single solenoid valves and 2 double solenoid valves installation on an 8 unit manifold:

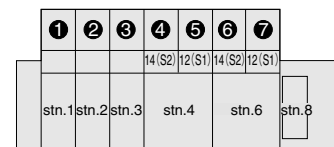


Connector pin location of 8 units:

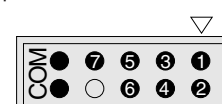


Remark: The standard is positive common wiring. Negative common wiring is optional (-CM).

Example of 3 single solenoid valves and 2 double solenoid valves installation on an 8 unit manifold:



Connector pin location of 8 units:



Remark: The standard is positive common wiring. Negative common wiring is optional (-CM).