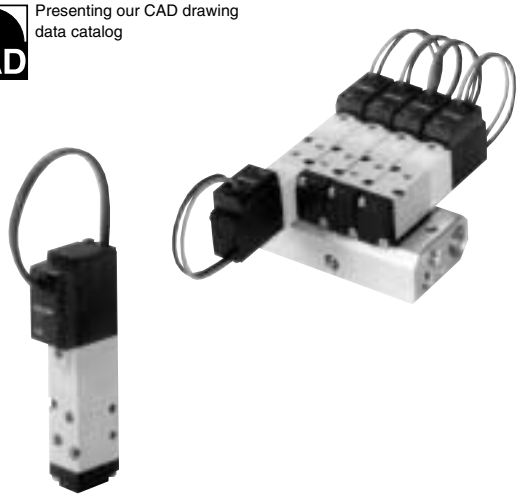
Presenting our CAD drawing data catalog



KOGANEI

VALVES GENERAL CATALOG

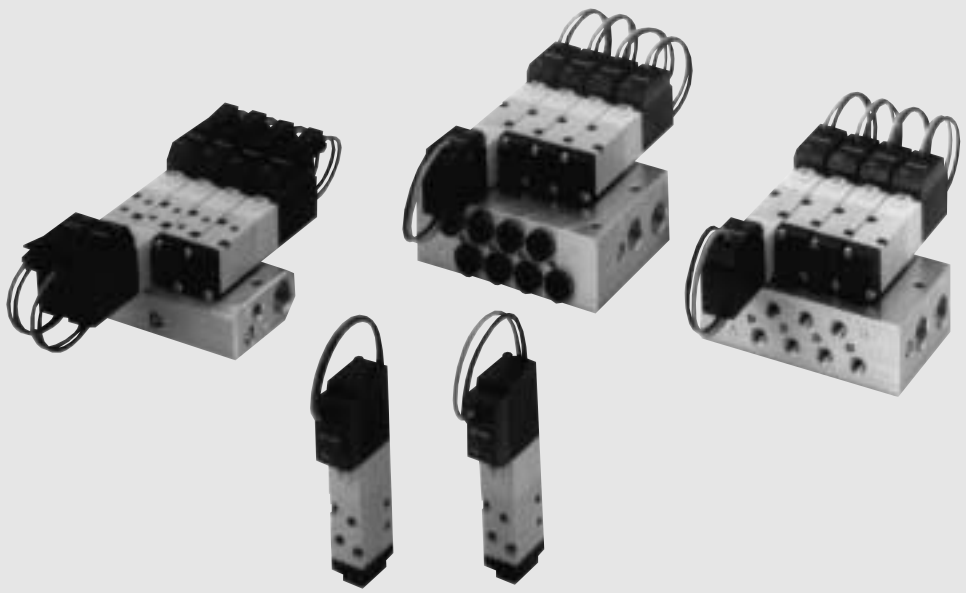
SOLENOID VALVES 040 SERIES INDEX

POWERFUL & LOW POWER CONSUMPTION

SOLENOID VALVES 040 SERIES

The solenoid valve 040 series achieves its highly reliable, powerful and low current basic performance into a thin body with valve width of 10mm.
These reliable 2-, 3-, 5-port pilot type solenoid valve has features of flywheel diodes for surge suppression as standard equipment.
Moreover, the 040 series line-up features detailed improvements in utility, including an AJ type manifold that offers excellent ease of assembly and maintenance, a twin solenoid whose length, wiring, and piping are the same as the single solenoid while maintaining functions of a double solenoid, and a PC board manifold containing a print circuit board with connector.

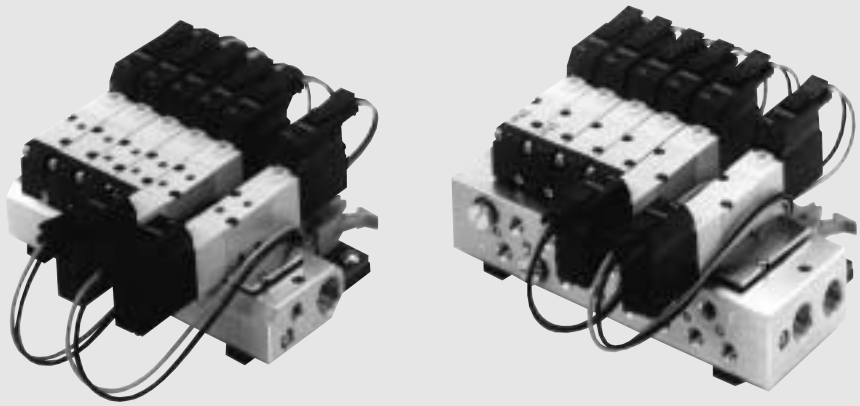
SOLENOID VALVES 040 SERIES



- Pilot type solenoid valve
- 2-, 3-, 5-port
- Effective area 1.5mm^2
- Power consumption 0.7W

Optimum for operation of ϕ6～ϕ25 double acting and single acting cylinders, pilot-operated valves and actuators, etc.

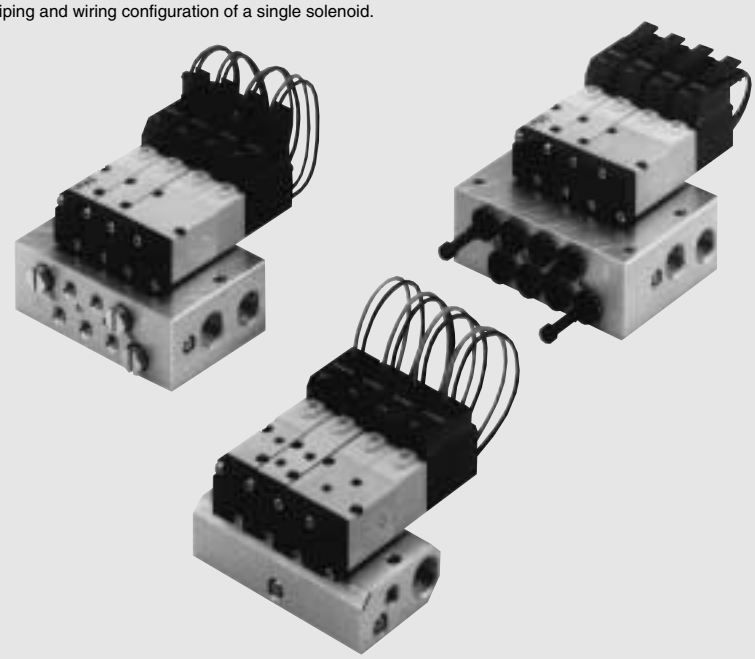
PC BOARD MANIFOLD 040 SERIES



- Pilot type solenoid valve
- 2-, 3-, 5-port
- Effective area 1.5mm^2
- Power consumption 0.7W
- Only available for 8 stations and 16 stations.

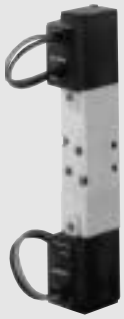
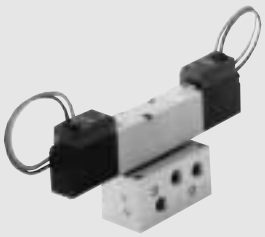
TWIN SOLENOID VALVES 040 SERIES

New space-saving type valve is installable with the solenoid valve 040 series and the 040 series PC board manifold.
Retains the basic performance and functions of a double solenoid while also achieving the piping and wiring configuration of a single solenoid.



- Pilot type solenoid valve
- 5-port
- Effective area 1.5mm^2
- Power consumption 0.7W

Single unit

	Pilot type solenoid valve **040** series	
	2-, 3-port	5-port, 2-position
Direct piping	Normally closed (NC)  **041E1** **(□040E1**[Note]**)** Normally open (NO)  **041E1-11** **(□040E1-11**[Note]**)**	Single solenoid  **040-4E1** Double solenoid  **040-4E2** Twin solenoid  **□040-4KE2** Note
Sub-base piping	Normally closed (NC)  **A041E1-25** Normally open (NO)  **A041E1-11-25**	Single solenoid  **A040-4E1-25** Double solenoid  **A040-4E2-25**

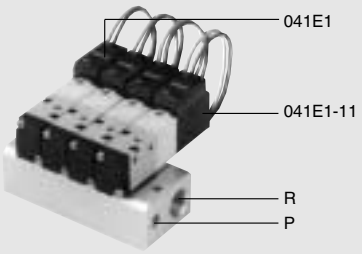
Note: The 040E1, A040E1, and 040-4KE2, A040-4KE2 are for manifolds for combined mounting of 2-, 3-, 5-port valves. They cannot be used as a single unit. When using 2-, 3-port valves as a single unit, please use 041E1, A041E1-25.

Manifold

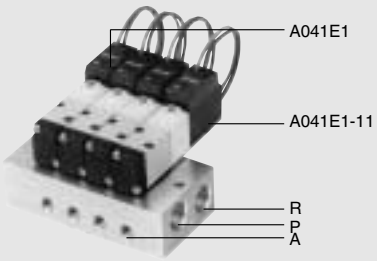
040 series

Small sized manifold for 2-, 3-port valve

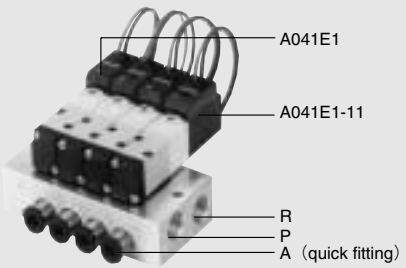
041M□F—F type (P, R) manifold



041M□A—A type (all port) manifold

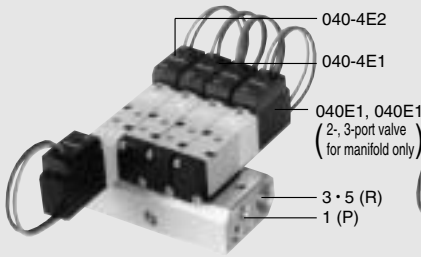


041M□AJ—AJ type (all port, with quick fitting) manifold

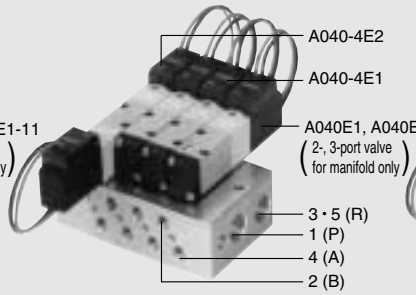


Manifold for combined mounting for 2-, 3-, 5-port valve

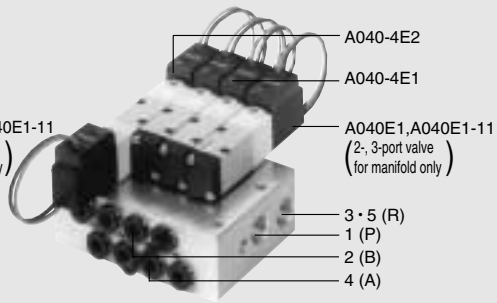
040M□F—F type (P, R) manifold



040M□A—A type (all port) manifold

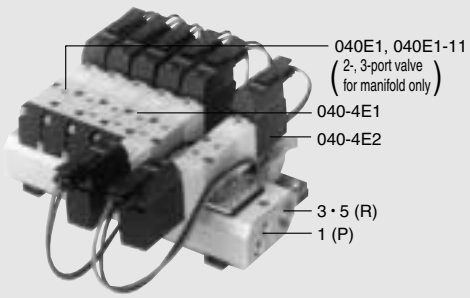


040M□AJ—AJ type (all port, with quick fitting) manifold

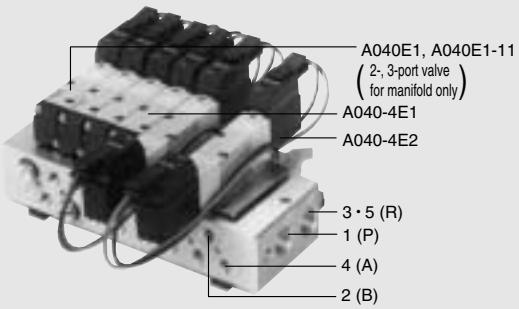


PC board manifold Note

040M□FP—F type (P, R) manifold

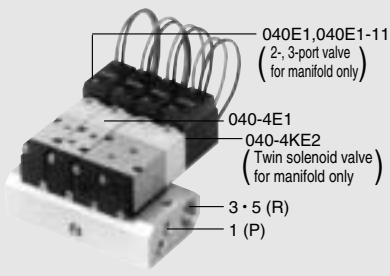


040M□AP—A type (all port) manifold

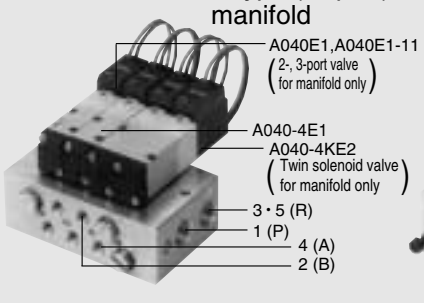


Twin solenoid valve

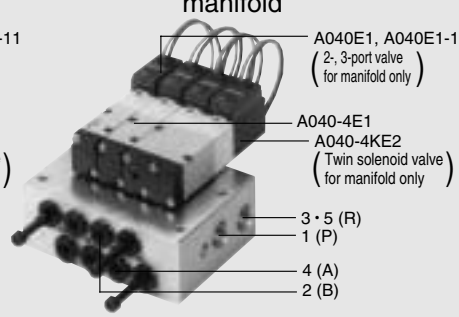
040M□F—F type (P, R) manifold



040M□A—A type (all port) manifold



040M□AJ—AJ type (all port, with quick fitting) manifold



Note: Only available for 8 stations or 16 stations.

SOLENOID VALVES
040 SERIES

Basic Models and Valve Functions

Item \ Basic model					
	Direct piping, F type manifold	**041E1 (040E1**[Note]**)**	**040-4E1**	**040-4E2**	**040-4KE2**[Note]
	Sub-base piping, A, AJ type manifold	**A041E1 (A040E1**[Note]**)**	**A040-4E1**	**A040-4E2**	**A040-4KE2**[Note]
Number of positions		2 positions			
Number of ports		2, 3 ports	5 ports		
Valve function		Normally closed (NC, standard) or Normally open (NO, option)	Single solenoid	Double solenoid	Twin solenoid

Remark: For optional specifications and order code, see p. 104～105.
Note: The **040E1**, **A040E1**, and **040-4KE2**, **A040-4KE2** are manifolds for combined mounting of 2-, 3-, 5-port valves.
They cannot be used as a single unit. When using 2-, 3-port valves as a single unit, please use **041E1**, **A041E1-25**.

Specifications

Item \ Basic model					
	Direct piping, F type manifold	**041E1 (040E1)**	**040-4E1**	**040-4E2**	**040-4KE2**
	Sub-base piping, A, AJ type manifold	**A041E1 (A040E1)**	**A040-4E1**	**A040-4E2**	**A040-4KE2**
Media		Air			
Operation method		Internal pilot type			
Effective area〔Cv〕Note 1 mm²		1.5〔0.08〕			
Port size Note 2		M3×0.5			
Lubrication		Not required			
Operating pressure range MPa {kgf/cm²}		0.2～0.7 {2.0～7.1}			
Proof pressure MPa {kgf/cm²}		1.05 {10.7}			
Response time Note 3 ON/OFF ms	DC5V, DC12V	Max. 12/18	12	Max. 12	
	DC6V, DC24V	Max. 12/18	12	Max. 12	
Maximum operating frequency Hz		5			
Minimum time to energize for self holding ms		—	50		
Operating temperature range (atmosphere and media) °C		5～50			
Shock resistance m/s²{G}		1373.0 {140.0} (axial direction 245.0 {25.0})			
Mounting direction		Any			

Notes: 1. For details, see the effective area on p. 103.
2. For details, see the port size on p. 103.
3. Values when air pressure is 0.5MPa {5.1kgf/cm²}.
Values of **040-4E2** and **040-4KE2** are switching from the opposite position.

Remark: Conversion to psi., 1MPa=145psi., 1kgf/cm²=14.2psi., e.g. 0.2MPa=29psi.

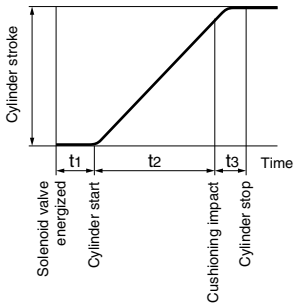
Solenoid Specifications

Item \ Rated voltage		DC 5V	DC 6V	DC 12V	DC 24V
Type		With built-in flywheel diode for surge suppression			
Operating voltage range DC V		4.5～5.5 (5±10%)	5.4～6.6 (6±10%)	10.8～13.2 (12±10%)	21.6～26.4 (24±10%)
Current mA (Power consumption when rated voltage is applied: W)		120 (0.6) (With LED indicator 121 (0.6))	105 (0.6) (With LED indicator 106 (0.6))	55 (0.7) (With LED indicator 56 (0.7))	28 (0.7) (With LED indicator 29 (0.7))
Maximum allowable leakage current mA		10	7	5	2
Insulation resistance MΩ		Min. 100			
Wiring Note	Standard	Grommet type			
	Option	Plug connector type			
Lead wire length Note		300mm			
Color of lead wire		Green (+) Black (–)	Blue (+) Black (–)	Brown (+) Black (–)	Red (+) Black (–)
Color of LED indicator		Red			
Surge suppression (as standard)		Flywheel diode			

Note: See made to order on p. 105.

Cylinder operating speed

How to obtain cylinder speed



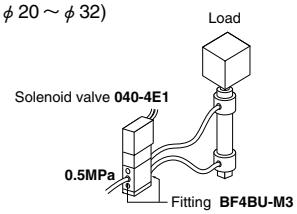
To obtain the time required for the cylinder to complete 1 stroke, add cylinder's delay time, t_1 (time between energizing of solenoid valve and actual starting of cylinder), to the cylinder's max. operating time, t_2.

When a cushion is used, add the cushioning time, t_3, to the above calculation. Standard cushioning time t_3 is approximately 0.2 seconds.

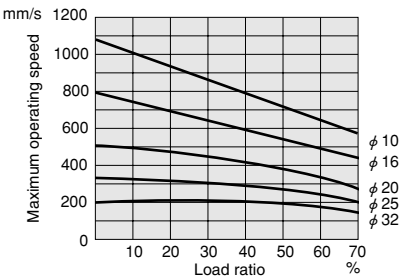
040-4E1

Measurement conditions

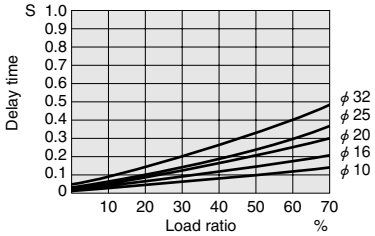
- Air pressure: 0.5MPa {5.1kgf/cm²}
- Piping inner diameter and length: ϕ2.5× 1000mm
- Fitting: Barb fitting BF4BU-M3
- Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
- Cylinder stroke: 60mm (ϕ10, ϕ16) 100 mm (ϕ20～ϕ32)



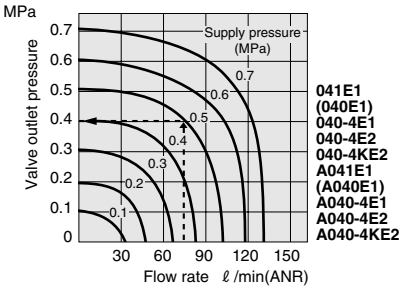
Maximum operating speed



Delay time



Flow Rate



How to read the graph

If supply pressure is 0.5MPa and flow is 75 ℓ/min (ANR), the valve outlet pressure becomes 0.4 MPa.

Effective Area〔Cv〕

mm²

Basic model	Standard (single valve)	Remarks
041E1 **(040E1)** **040-4E1** **040-4E2** **040-4KE2**	1.5〔0.08〕	● When the quick fitting TS3-M3M is installed to P, A, B ports, the value becomes 0.75〔0.04〕. ● When the quick fitting TS3-M3M is installed to P, A, B ports on F type manifold, the value becomes 0.80〔0.05〕.
A041E1 **(A040E1)** **A040-4E1** **A040-4E2** **A040-4KE2**	1.5〔0.08〕	● When the quick fitting TS4-M5M is installed to P, A, B ports on A type manifold, the value becomes 1.30〔0.07〕.

Solenoid Valve Port Size

Basic model	Port	Port specifications	Port size
041E1 **(040E1** Note**)**	P, A, R	Female thread	M3×0.5
040-4E1 **040-4E2** **040-4KE2**	P, A, B, R	Female thread	M3×0.5
A041E1-25 **A040-4E1-25** **A040-4E2-25**	P	Female thread	M5×0.8
	A, B		
	R		
	PR		

Note: 040E1 is dedicated valve for manifold. Cannot be connected to the P port with fitting.

Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
041M□F **040M□F**	P	Manifold	M5×0.8
	A, B	Valve	M3×0.5
	R	Manifold	Rc1/8
041M□A **040M□A**	P	Manifold	Rc1/8
	A, B		M5×0.8
	R		Rc1/8 (Common for R, PR)
	PR		
041M□AJ **040M□AJ**	P	Manifold	Rc1/8
	A, B		Quick fitting for φ4
	R		Rc1/8 (Common for R, PR)
	PR		

Valve Mass

g

Basic model	Mass
041E1	20
(040E1)	22
040-4E1	22
040-4E2	37
040-4KE2	45
A041E1	21 (38)
(A040E1)	22
A040-4E1	22 (45)
A040-4E2	37 (60)
A040-4KE2	45

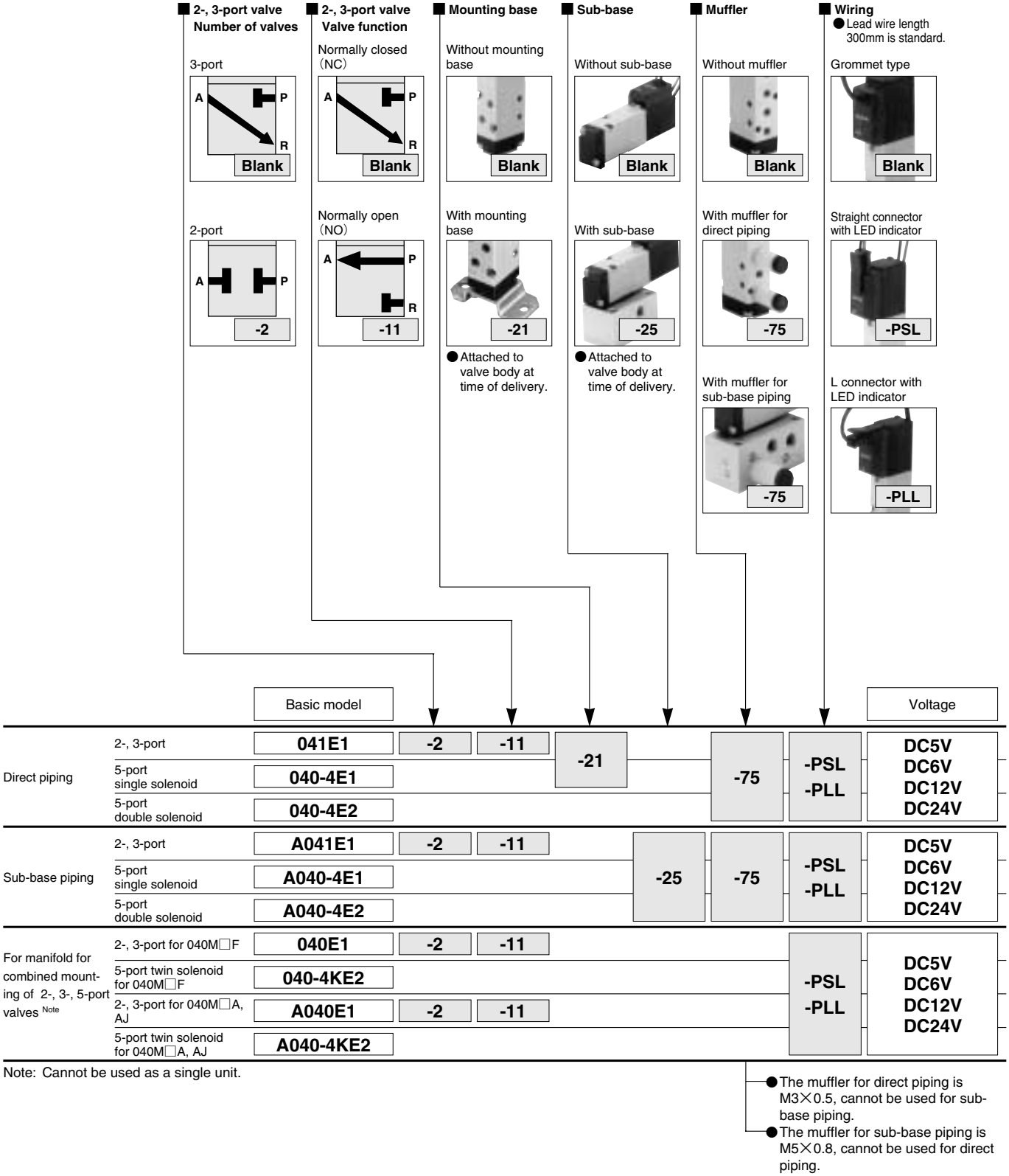
Remark: Figures in parentheses ( ) are the mass with sub-base: **-25**.

Manifold Mass

g

Manifold model	Mass calculation of each unit (n=number of units)	Block-off plate
041M□F	(10.5×n)+15	2
041M□A	(12.5×n)+19	3
041M□AJ	(14×n)+24	
040M□F	(9×n)+15	3
040M□A	(18×n)+38	4
040M□AJ	(27.5×n)+50	

040 Series Solenoid Valve Order Code

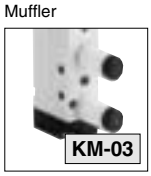


Note: Cannot be used as a single unit.

- The muffler for direct piping is M3×0.5, cannot be used for sub-base piping.
- The muffler for sub-base piping is M5×0.8, cannot be used for direct piping.

Additional Parts (Sold Separately)

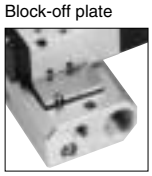
Muffler



● For direct piping

● For sub-base piping

Block-off plate

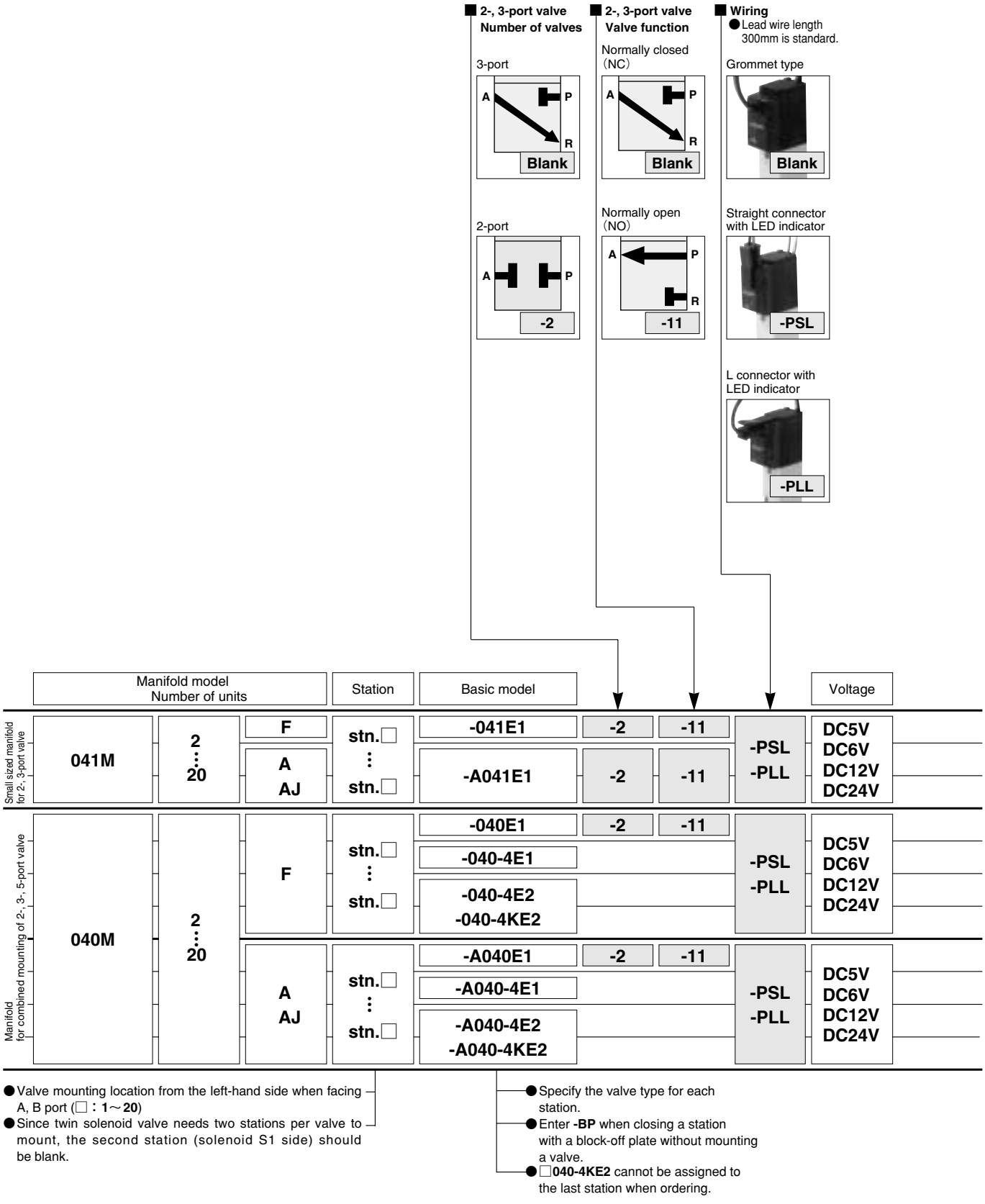


● 040 M F -BP

F—For F type manifold
A—For A, AJ type manifold

041—For 041M
040—For 040M

040 Series Manifold Order Code



- Valve mounting location from the left-hand side when facing A, B port (□ : **1**～**20**)
- Since twin solenoid valve needs two stations per valve to mount, the second station (solenoid S1 side) should be blank.

- Specify the valve type for each station.
- Enter **-BP** when closing a station with a block-off plate without mounting a valve.
- □**040-4KE2** cannot be assigned to the last station when ordering.

Made to Order

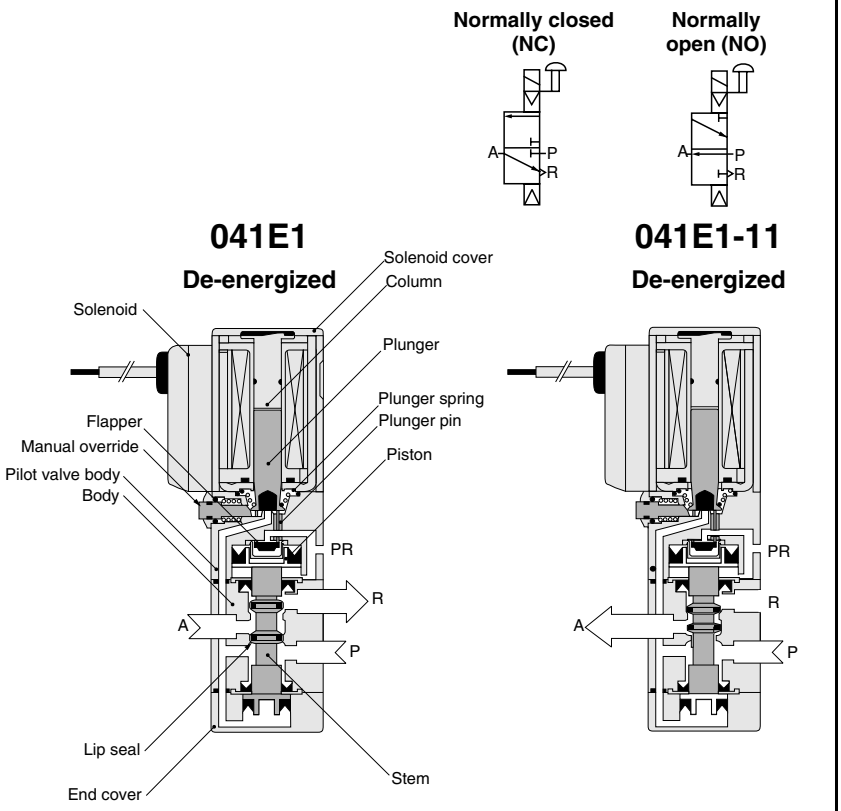
Lead wire length

- For plug connector
- Length (mm) **-1L**: 1000, **-3L**: 3000

Grommet type with LED indicator

Locking type manual override

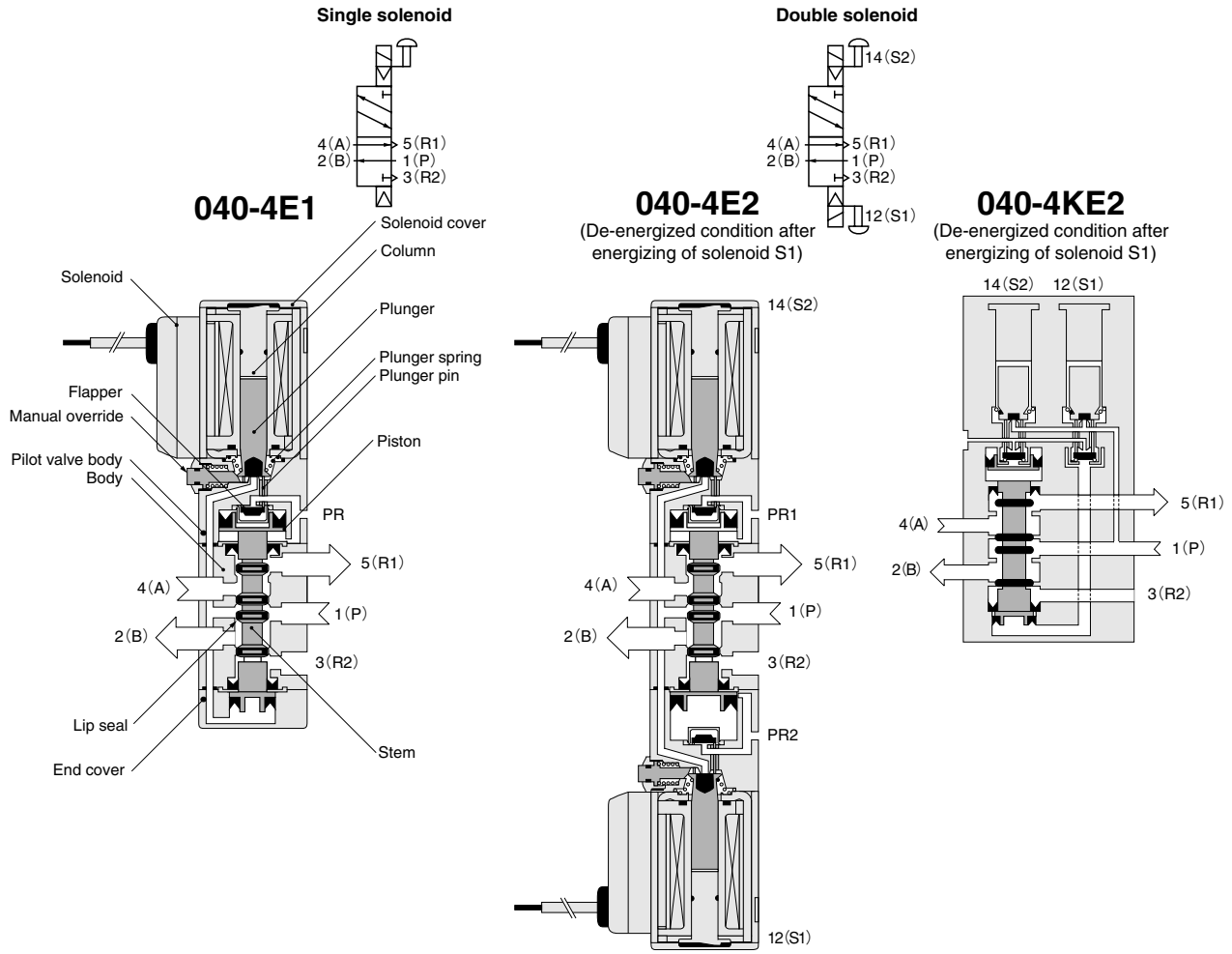
3-port



Major Parts and Materials

Parts		Materials
Valve	Body	Aluminum alloy (anodized)
	Stem	
	Lip seal	Synthetic rubber
	Flapper	
	Mounting base	Steel (zinc plated)
	Sub-base	Aluminum alloy (anodized)
	Plunger	Magnetic stainless
	Column	
Manifold	Body	Aluminum alloy (anodized)
	Block-off plate	Steel (nickel plated)
	Seal	Synthetic rubber

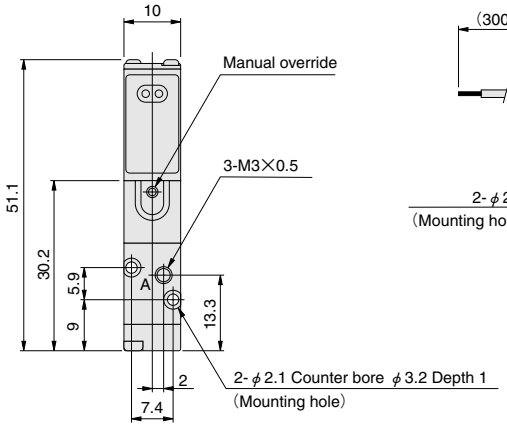
5-port

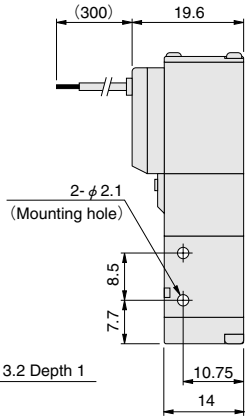


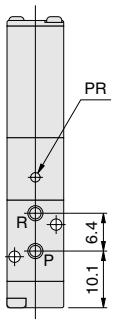
Dimensions of Solenoid Valve for 2-, 3-port (Scale 3/4, Unit mm)

041E1

041E1

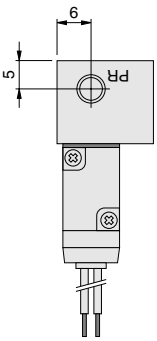


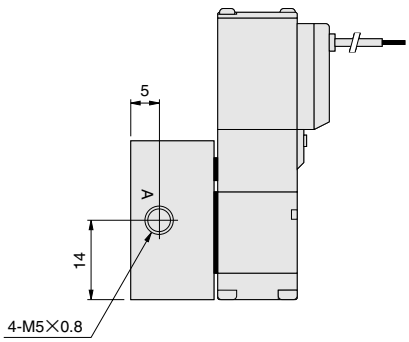


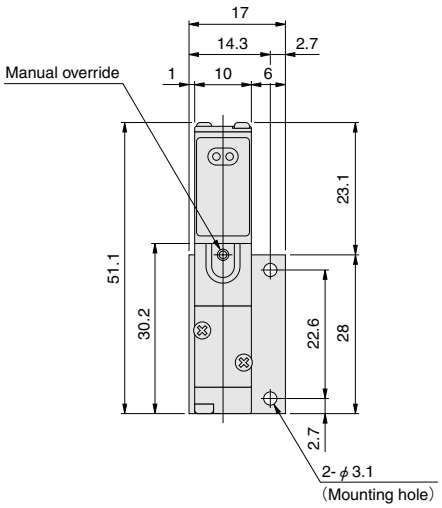


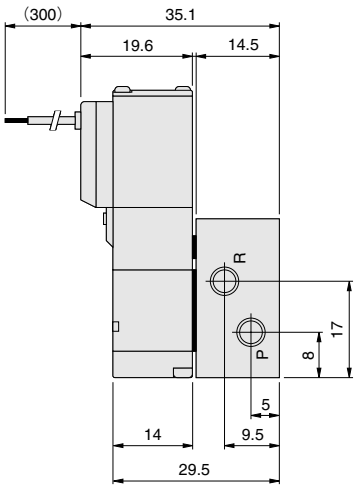
A041E1-25

A041E1



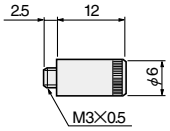




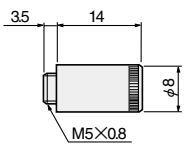


Options

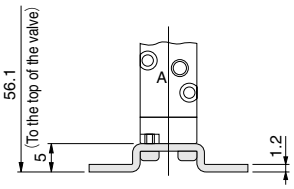
● Muffler: **-75** 040MUFF
For direct piping
Order code for sold separately: KM-03

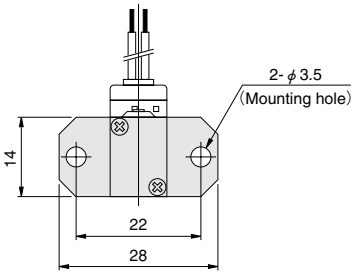


For sub-base piping
Order code for sold separately: KM-05



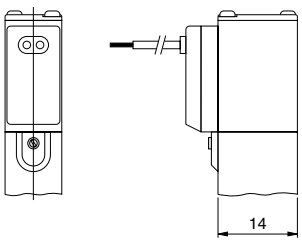
● Mounting base: **-21**





Made to Order

● Locking type manual override: **-81**

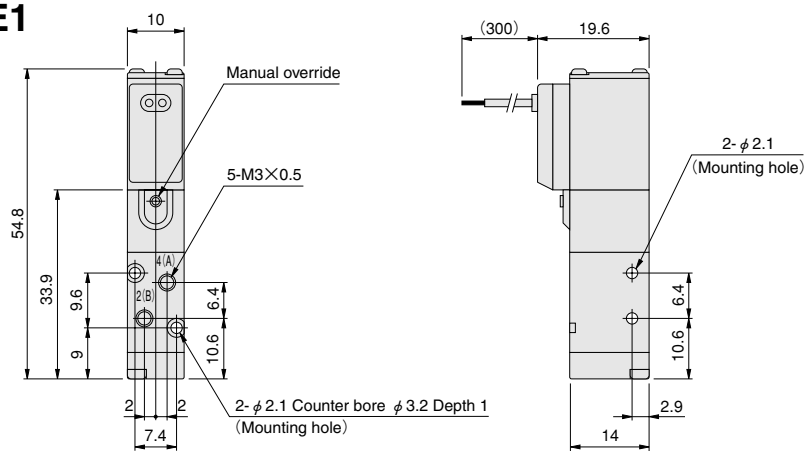


For wiring options and made to order, see p. 109.

Dimensions of Solenoid Valve 5-port , 2-position (Scale 3/4, Unit mm)

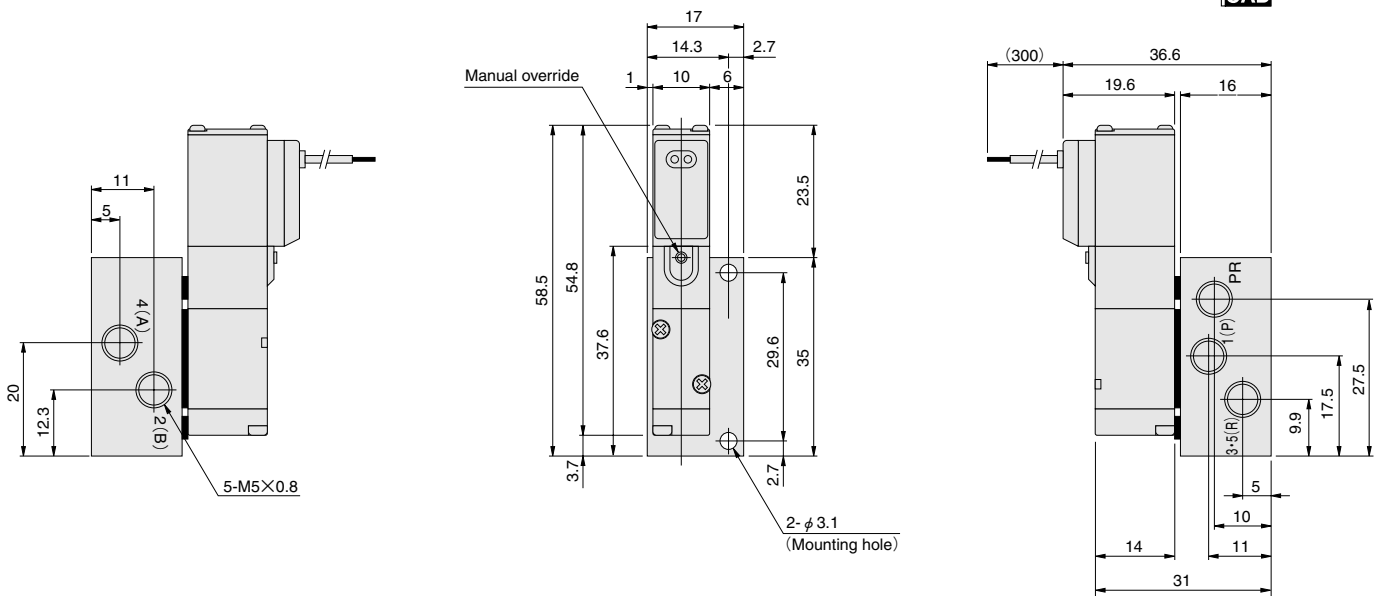
040-4E1

040-4E1



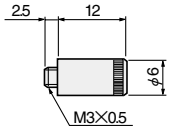
A040-4E1-25

A040-4E1

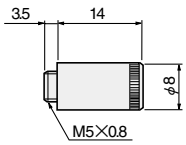


Options

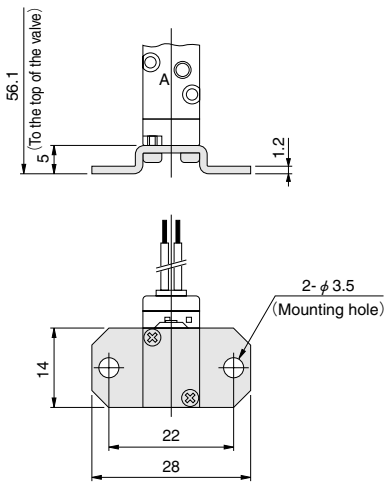
● Muffler: **-75** 040MUFF
For direct piping
Order code for sold separately: KM-03



For sub-base piping
Order code for sold separately: KM-05

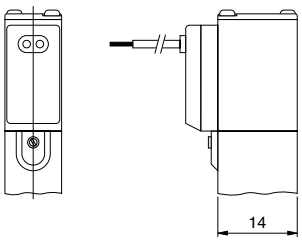


● Mounting base: **-21**



Made to Order

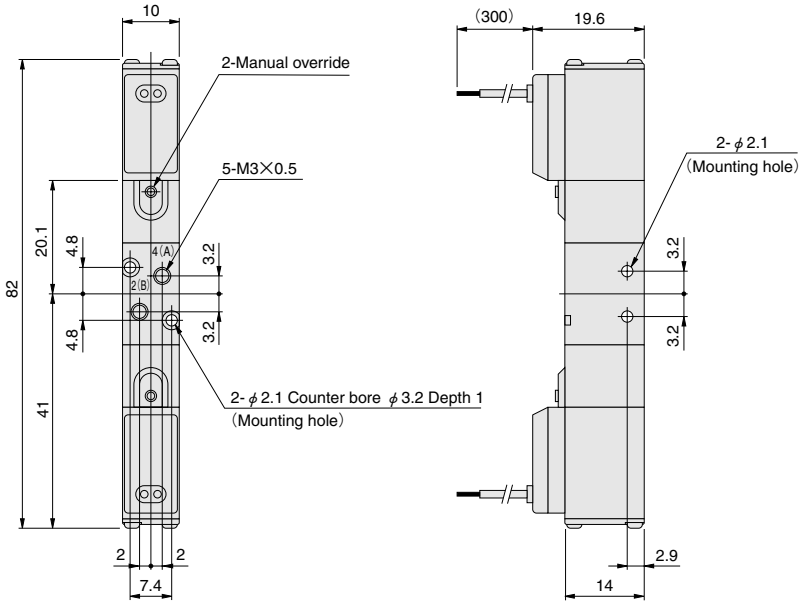
● Locking type manual override: **-81**



Dimensions of Solenoid Valve 5-port , 2-position (Scale 3/4, Unit mm)

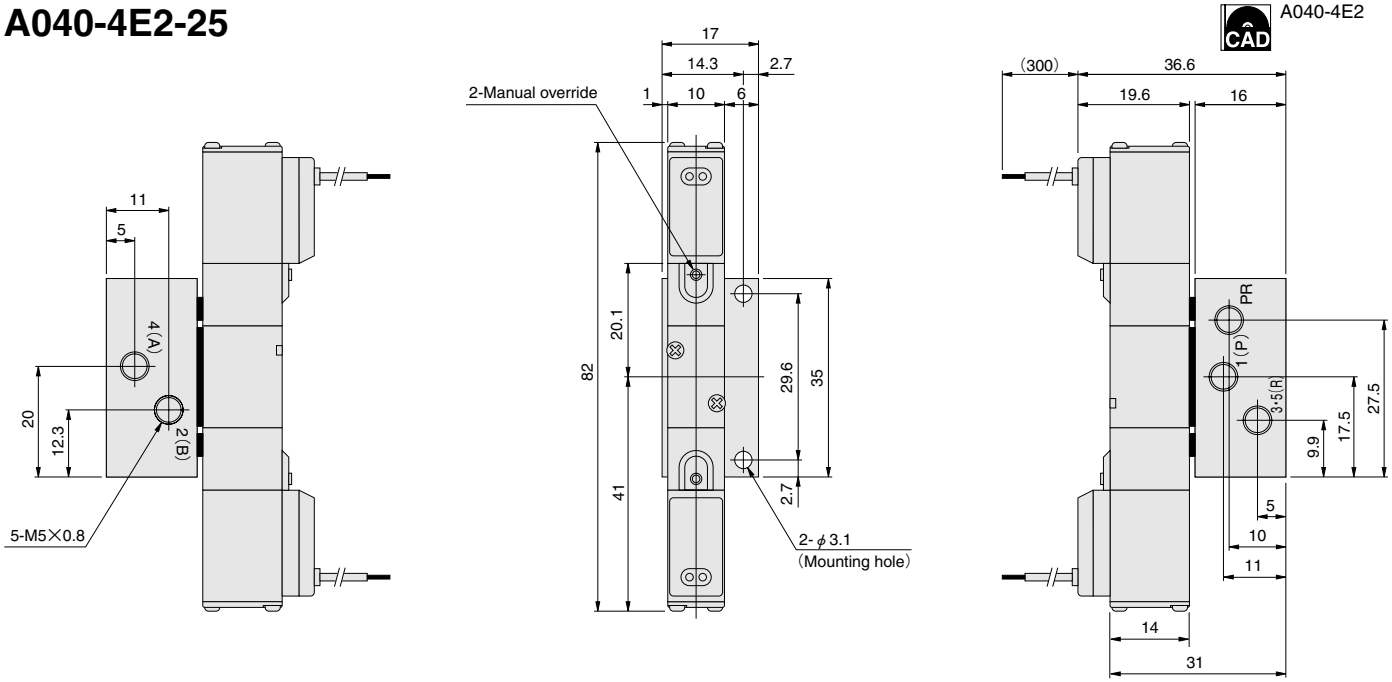
040-4E2

CAD 040-4E2



A040-4E2-25

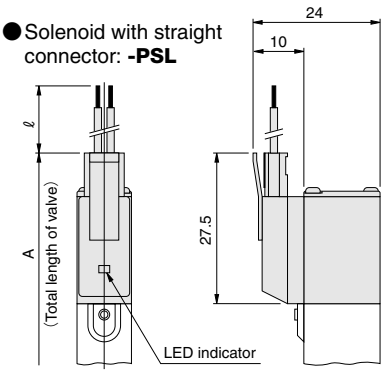
CAD A040-4E2



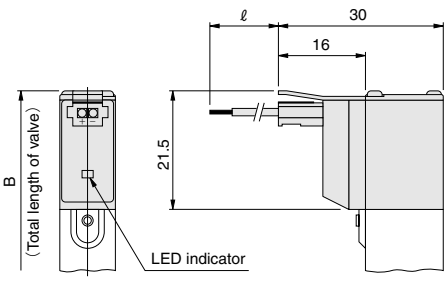
Options

CAD A040SOL

● Solenoid with straight connector: **-PSL**



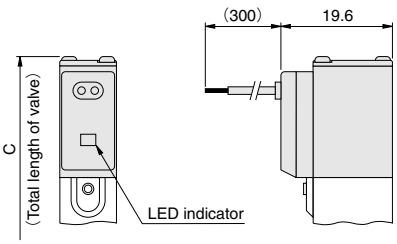
● Solenoid with L connector: **-PLL**



Made to Order

CAD A040SOL

● Grommet type with LED indicator: **-L**

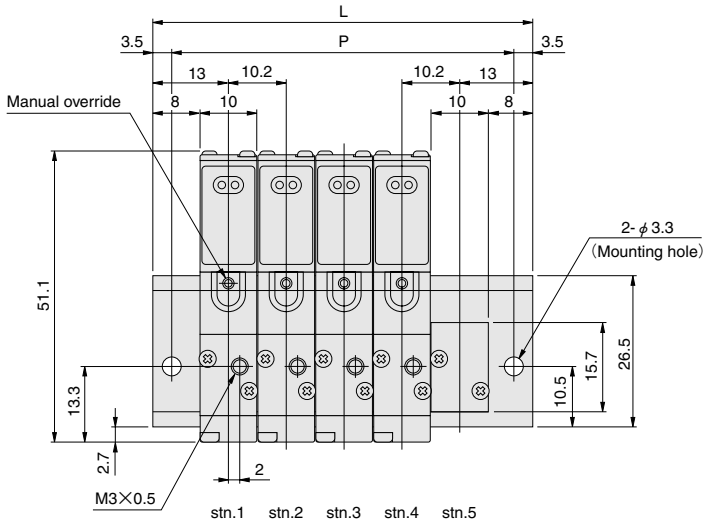


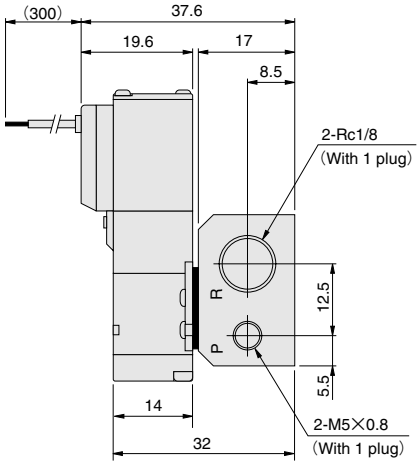
Model / Code	A	B	C	ℓ (Lead wire length)	Remarks
041E1,A041E1-25	57.7	51.7	51.1	**-PSL,-PLL,-L**: 300 (standard length) Made to order **-1L**: 1000, **-3L**: 3000	Length to the end of the valve or sub-base
040-4E1,040-4KE2	61.4	55.4	54.8		
A040-4E1-25,A040-4KE2	65.1	59.1	58.5		
040-4E2,A040-4E2-25	95.2	83.2	82		Total length to the end of the opposite side solenoid

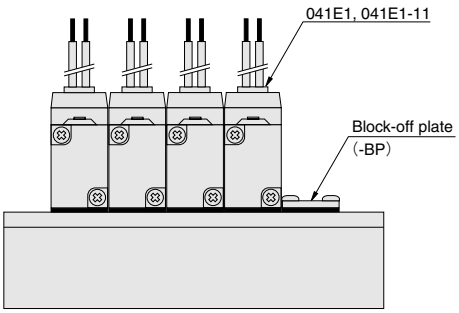
Dimensions of Manifold for 2-, 3-port (Scale 3/4, Unit mm)

041M□F

041MF





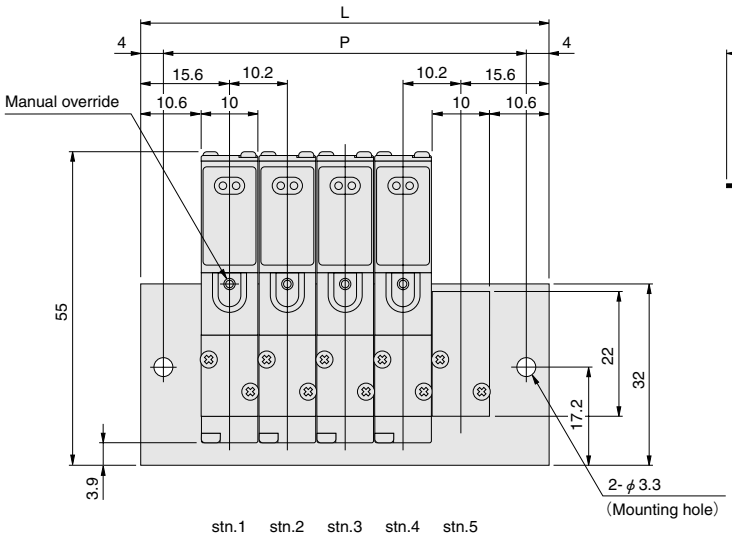


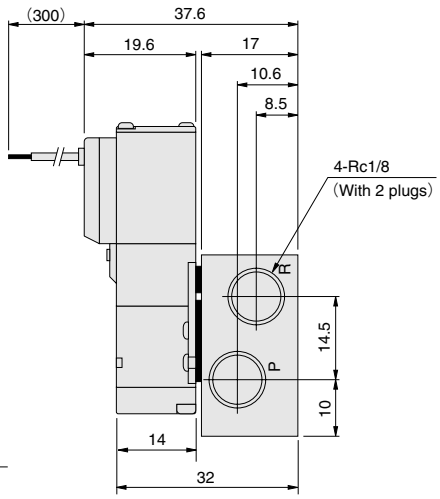
Unit dimensions

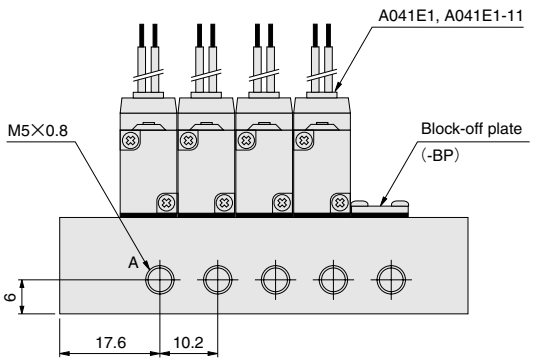
Model	L	P	Model	L	P
041M2F	36.2	29.2	041M12F	138.2	131.2
3F	46.4	39.4	13F	148.4	141.4
4F	56.6	49.6	14F	158.6	151.6
5F	66.8	59.8	15F	168.8	161.8
6F	77	70	16F	179	172
7F	87.2	80.2	17F	189.2	182.2
8F	97.4	90.4	18F	199.4	192.4
9F	107.6	100.6	19F	209.6	202.6
10F	117.8	110.8	20F	219.8	212.8
11F	128	121	—	—	—

041M□A

041MA







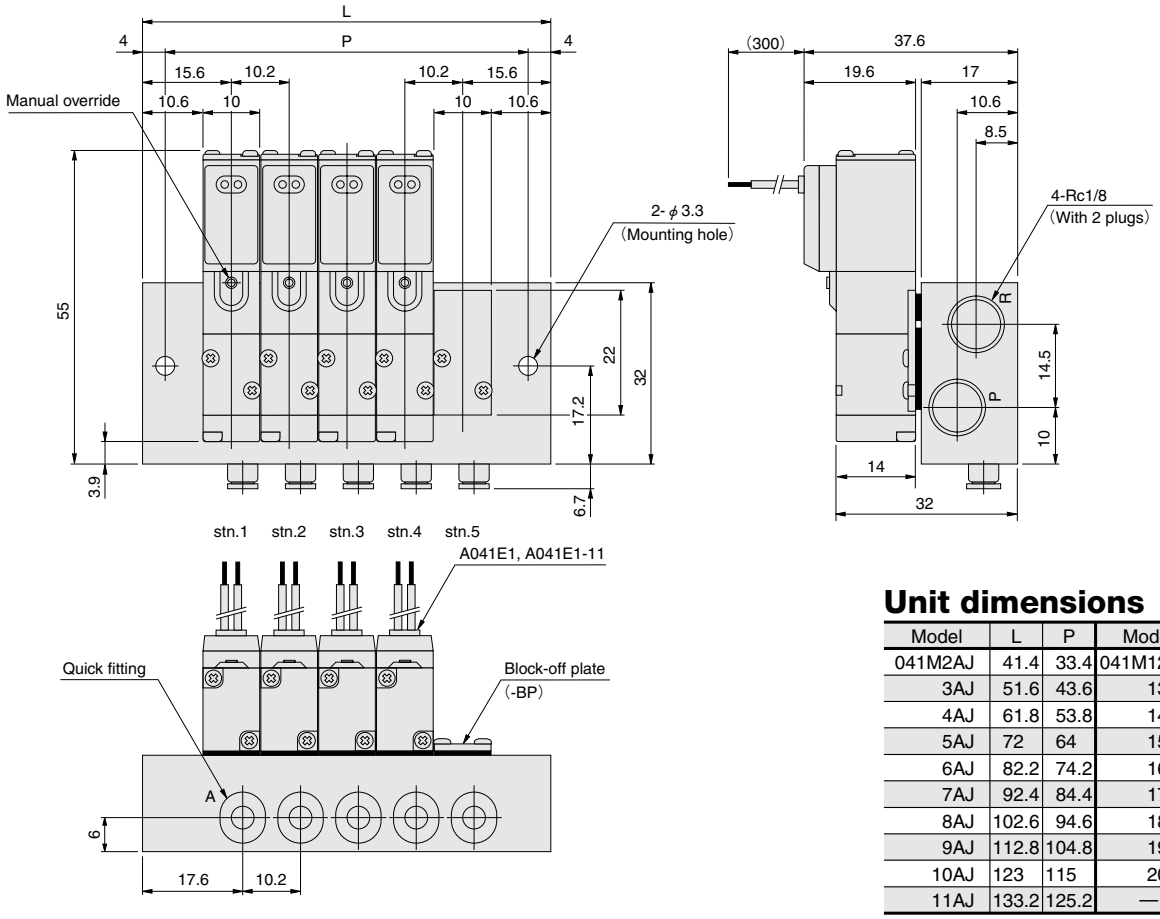
Unit dimensions

Model	L	P	Model	L	P
041M2A	41.4	33.4	041M12A	143.4	135.4
3A	51.6	43.6	13A	153.6	145.6
4A	61.8	53.8	14A	163.8	155.8
5A	72	64	15A	174	166
6A	82.2	74.2	16A	184.2	176.2
7A	92.4	84.4	17A	194.4	186.4
8A	102.6	94.6	18A	204.6	196.6
9A	112.8	104.8	19A	214.8	206.8
10A	123	115	20A	225	217
11A	133.2	125.2	—	—	—

For wiring options and made to order, see p. 114.

041M□AJ

041MAJ



Unit dimensions

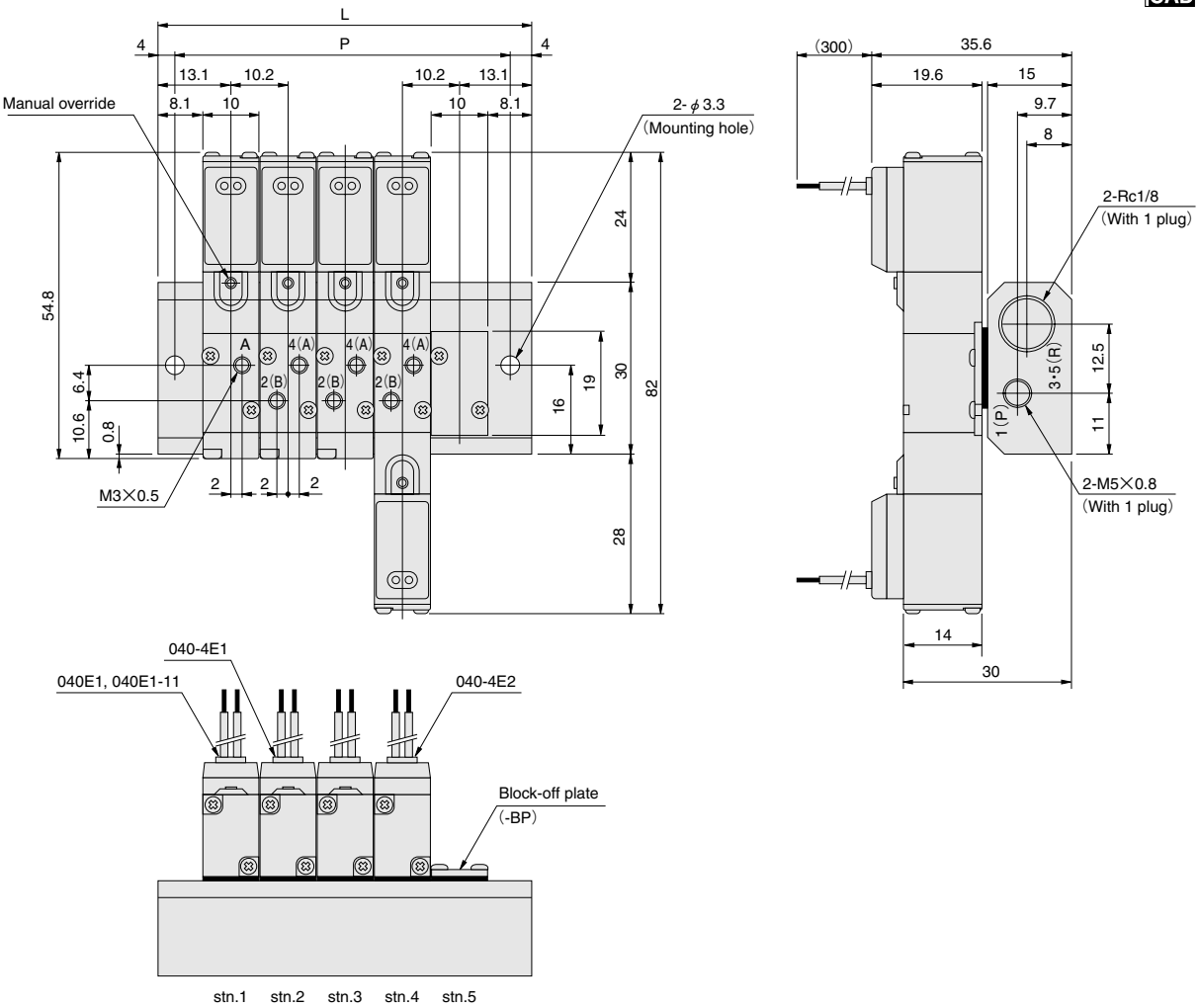
Model	L	P	Model	L	P
041M2AJ	41.4	33.4	041M12AJ	143.4	135.4
3AJ	51.6	43.6	13AJ	153.6	145.6
4AJ	61.8	53.8	14AJ	163.8	155.8
5AJ	72	64	15AJ	174	166
6AJ	82.2	74.2	16AJ	184.2	176.2
7AJ	92.4	84.4	17AJ	194.4	186.4
8AJ	102.6	94.6	18AJ	204.6	196.6
9AJ	112.8	104.8	19AJ	214.8	206.8
10AJ	123	115	20AJ	225	217
11AJ	133.2	125.2	—	—	—

For wiring options and made to order, see p. 114.

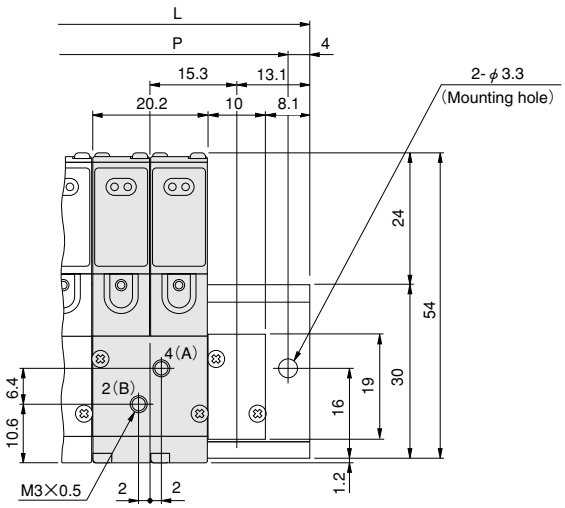
Dimensions of Manifold for Combined Mounting of 2-, 3-, 5-port Valves (Scale 3/4, Unit mm)

040M□F

040MF



Example of twin solenoid valve combined mounting



Unit dimensions

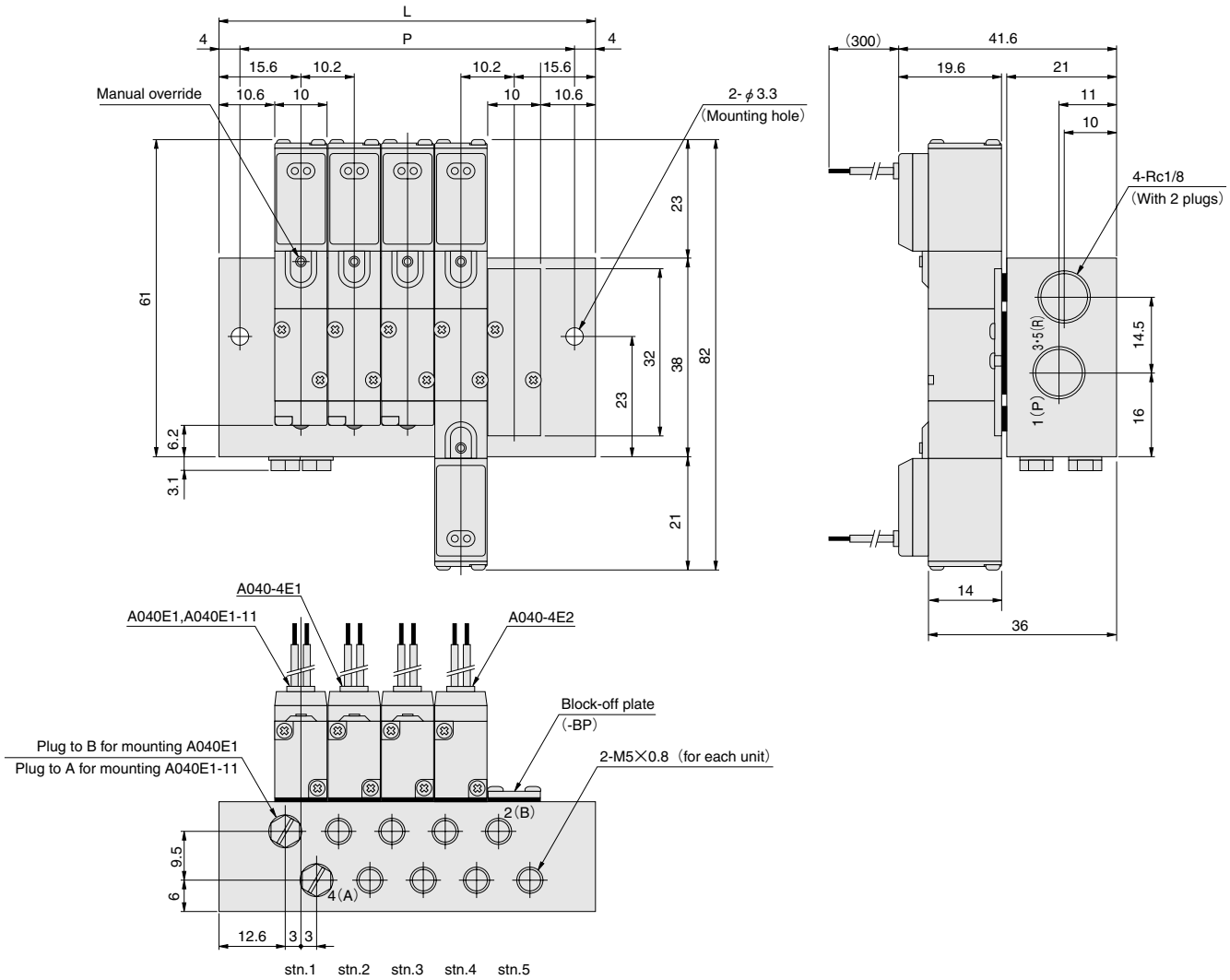
Model	L	P	Model	L	P
040M2F	36.4	28.4	040M12F	138.4	130.4
3F	46.6	38.6	13F	148.6	140.6
4F	56.8	48.8	14F	158.8	150.8
5F	67	59	15F	169	161
6F	77.2	69.2	16F	179.2	171.2
7F	87.4	79.4	17F	189.4	181.4
8F	97.6	89.6	18F	199.6	191.6
9F	107.8	99.8	19F	209.8	201.8
10F	118	110	20F	220	212
11F	128.2	120.2	—	—	—

For wiring options and made to order, see p. 114.

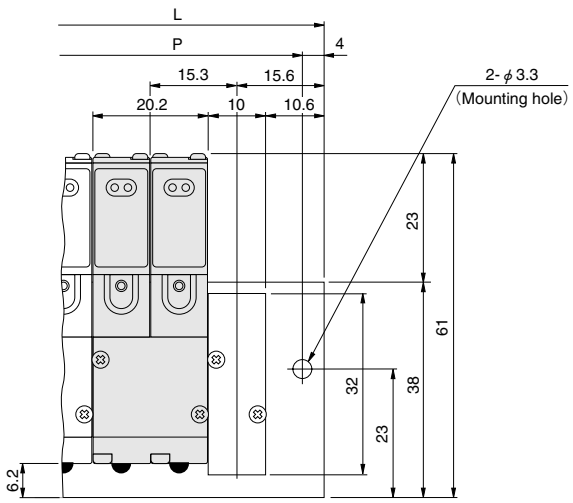
Dimensions of Manifold for Combined Mounting of 2-, 3-, 5-port Valves (Scale 3/4, Unit mm)

040M□A

040MA



Example of twin solenoid valve combined mounting



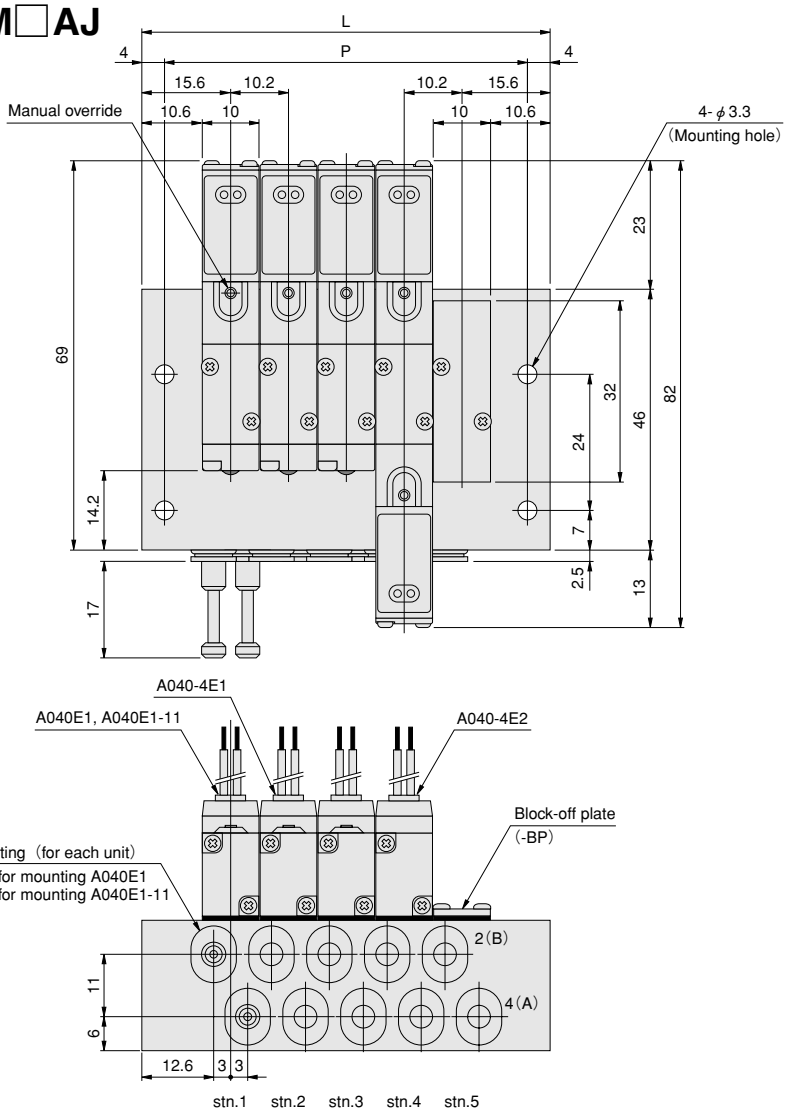
Unit dimensions

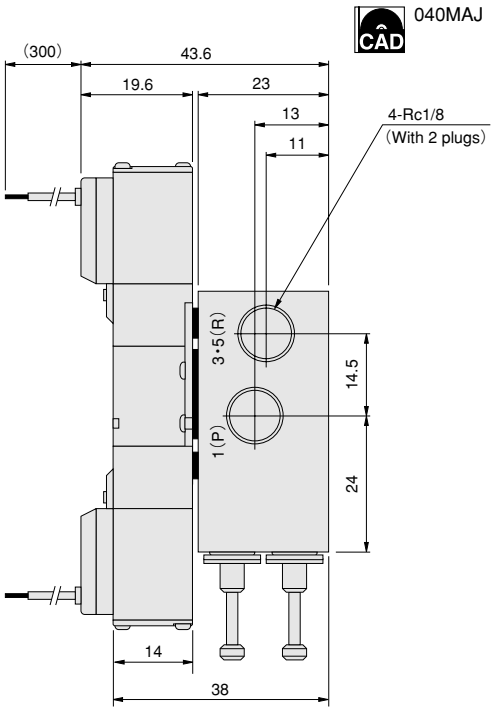
Model	L	P	Model	L	P
040M2A	41.4	33.4	040M12A	143.4	135.4
3A	51.6	43.6	13A	153.6	145.6
4A	61.8	53.8	14A	163.8	155.8
5A	72	64	15A	174	166
6A	82.2	74.2	16A	184.2	176.2
7A	92.4	84.4	17A	194.4	186.4
8A	102.6	94.6	18A	204.6	196.6
9A	112.8	104.8	19A	214.8	206.8
10A	123	115	20A	225	217
11A	133.2	125.2	—	—	—

For wiring options and made to order, see p. 114.

Dimensions of Manifold for 5-port, 2-position (Scale 3/4, Unit mm)

040M□AJ





Unit dimensions

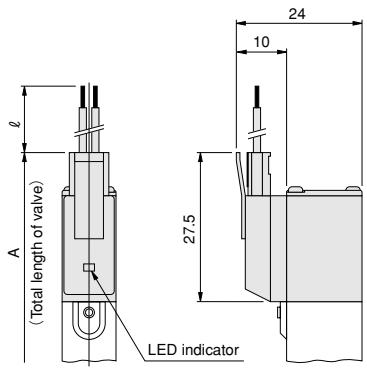
Model	L	P	Model	L	P
040M2AJ	41.4	33.4	040M12AJ	143.4	135.4
3AJ	51.6	43.6	13AJ	153.6	145.6
4AJ	61.8	53.8	14AJ	163.8	155.8
5AJ	72	64	15AJ	174	166
6AJ	82.2	74.2	16AJ	184.2	176.2
7AJ	92.4	84.4	17AJ	194.4	186.4
8AJ	102.6	94.6	18AJ	204.6	196.6
9AJ	112.8	104.8	19AJ	214.8	206.8
10AJ	123	115	20AJ	225	217
11AJ	133.2	125.2	—	—	—

Combined mounting of twin solenoid valve is acceptable. See p. 112.

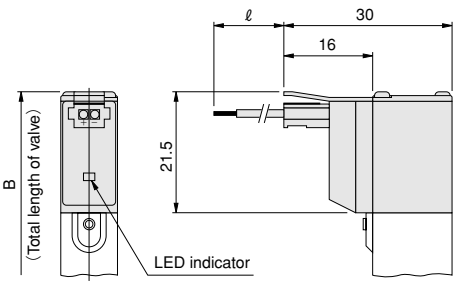
Options

CAD A040SOL

● Solenoid with straight connector: **-PSL**



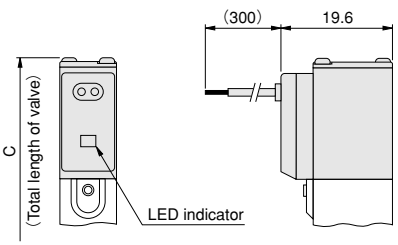
● Solenoid with L connector: **-PLL**



Made to Order

CAD A040SOL

● Grommet type with LED indicator: **-L**



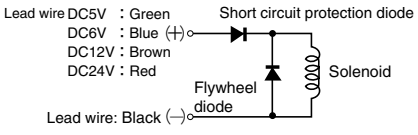
Model \ Code	A	B	C	ℓ (Lead wire length)	Remarks
041E1, A041E1	57.7	51.7	51.1	**-PSL, -PLL, -L**: 300 (standard length) Made to order **-1L**: 1000, **-3L**: 3000	Length to the end of the valve
040E1, A040E1, 040-4E1, A040-4E1 ,040-4KE2, A040-4KE2	61.4	55.4	54.8		
040-4E2, A040-4E2	95.2	83.2	82		Total length to the end of the opposite side solenoid

Solenoid

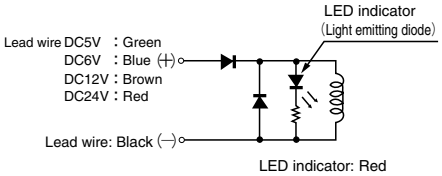
Internal circuit

●DC5V, DC6V, DC12V, DC24V

Standard solenoid (surge suppression)



Solenoid with LED indicator (surge suppression)
Order code : -PSL, -PLL



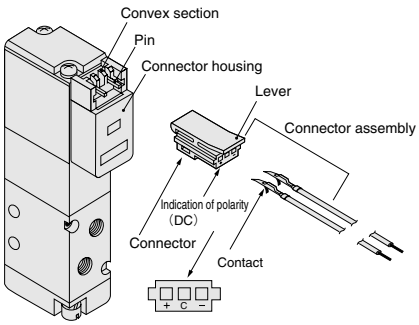
※The PC board manifold is DC24V only.

Cautions: 1. Do not apply megger between the lead wires.
2. While there is no danger with a DC solenoid of a short circuit due to the wrong polarity, 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 within the range of the allowable leakage current. If circuit conditions, etc., cause the leakage current to exceed the maximum allowable leakage current, consult us.
4. For double solenoid and twin solenoid, avoid energizing both solenoids simultaneously. The valve could fall into a neutral state.

Plug connector

Attaching and removing plug connector

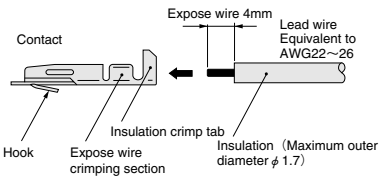
Use fingers to insert the connector into the pin, push in until the lever claw catches on the convex section on the connector housing, and complete the connection.
To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the convex section on the connector housing, and pull out.



※Illustration shows the110 series.

Crimping of connecting lead wire and contact

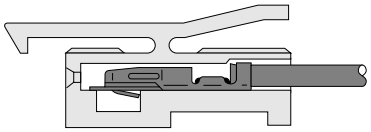
To crimp lead wires into contacts, strip off 4 mm of the insulation from the tip of the lead wire, insert into the contact, and crimp it. Be sure at this time to avoid catching the insulation on the wire as crimping section.



Cautions: 1. Do not pull hard on the lead wire.
2. Always use the 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 lead wire into a plug connector □ hole until the contact hook catches and is secured to the plug connector. Confirm that the lead wire cannot be easily pulled out.
To remove, 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.

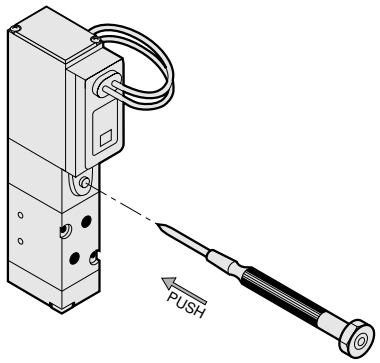


Cautions: 1. Do not pull hard on the lead wire. It could result in defective contacts, breaking wires, etc.
2. If the pin is bent, use a small screwdriver, etc., to gently straighten out the pin, and then complete the connection to the plug connector.

Manual override

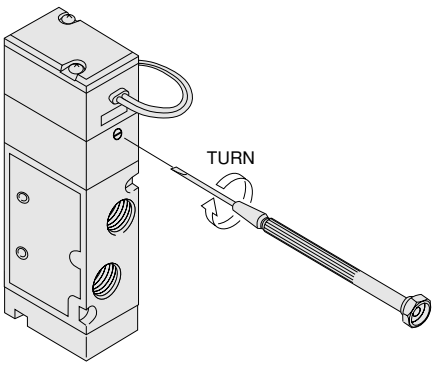
Non-lock type

To operate, press the manual override all the way down. The valve works the same as an energized state as long as the manual override is pushed down, and returns to the rest position upon release.
In the double solenoid and twin solenoid, pressing the manual override on the S1 (S2) side switches the state of the S1 (S2) to energized state, and the unit remains in that state even after the manual override is released. To return to the rest position, operate the manual override on the S2 (S1) side.



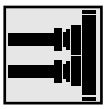
Lock type

To lock the manual override, use a small screwdriver to push down on the manual override all the way down and turn it clockwise 45 degrees. When locked, turning the manual override 45 degrees in a counterclockwise direction returns it to its original position, and releases the lock.



※Illustration shows the 240 series.

Cautions: 1. The 040 series are pilot type solenoid valves. As the result, the manual override cannot switch the main valve without supplying air from the P port.
2. Always release the lock on the locking type 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.



Fitting

Recommended fittings

041E1

Parts \ Port		A port	P, R port Note 1	P port Note 2	R port
Quick fitting		TS3-M3M TL3-M3M TLL3-M3M	TS3-M3M TL3-M3M TLL3-M3M	TS3-M3M	—
TAC fitting	For urethane tube	BF4BU-M3 BF3BU-M3	BF4BU-M3 BF3BU-M3	BF4BU-M3 BF3BU-M3	—
	For nylon tube	BF4-M3 BF3.2-M3	BF4-M3 BF3.2-M3	BF4-M3 BF3.2-M3	
Muffler		—	—	—	KM-03

040-4E1, 040-4E2, 040-4KE2

Parts \ Port		A, B port	P, R port Note 1	P port Note 2	R port
Quick fitting		TS3-M3M	TS3-M3M TL3-M3M TLL3-M3M	TS3-M3M	—
TAC fitting	For urethane tube	BF4BU-M3 BF3BU-M3	BF4BU-M3 BF3BU-M3	BF4BU-M3 BF3BU-M3	—
	For nylon tube	BF4-M3 BF3.2-M3	BF4-M3 BF3.2-M3	BF4-M3 BF3.2-M3	
Muffler		—	—	—	KM-03

Notes :1. For piping to the P port only, TSH4-M3M may also be used.
2. These fittings may be used for mounting a muffler to the R port.

A041E1-25

Parts \ Port	A port	P port	R, PR port
Quick fitting	TS4-M50 TS4-M5M TSH4-M5M	TS4-M50 TS4-M5M TSH4-M5M	TS4-M50 TS4-M5M TSH4-M5M
Muffler	—	—	KM-03 150-30A
Speed controller (for reference)	—	—	SCE-M5

A040-4E1-25, A040-4E2-25

Parts \ Port	A, B port	P port	R, PR port
Quick fitting	TS4-M50 TSH4-M5 TS4-M5M TSH4-M5M	TS4-M50 TSH4-M5 TS4-M5M TSH4-M5M	TS4-M50 TSH4-M5 TS4-M5M TSH4-M5M
Muffler	—	—	KM-03 150-30A

PC BOARD MANIFOLD
040 SERIES

Manifold Basic Models and Specifications

Item \ Basic model	Manifold function		P, R manifold	All port manifold
	Number of units	8 stations	**040M8FP**	**040M8AP**
		16 stations	**040M16FP**	**040M16AP**
Type of mounting valve	2-, 3-port		**040E1**	**A040E1**
	5-port, single solenoid		**040-4E1**	**A040-4E1**
	5-port, double solenoid		**040-4E2**	**A040-4E2**
	5-port, twin solenoid		**040-4KE2**	**A040-4KE2**
Wiring			Connector type for flat cable (AWG28) Note 1: With short clip (standard) With long clip (option) Note 2	
Common wiring			Plus common (standard) Minus common (option: **-CM**) Note	
Operating temperature range (atmosphere and media) °C			5～50	
Shock resistance m/s²{G}			245.2 {25.0}	
Mounting direction			Any	

Notes: 1. For details about specifications, see the specifications of connector for flat cable.
2. For order codes, see p. 119.

Solenoid Valve Specifications

Item \ Basic model	For FP type manifold	040E1	040-4E1	040-4E2	040-4KE2
	For AP type manifold	A040E1	A040-4E1	A040-4E2	A040-KE2
Media		Air			
Operation method		Internal pilot type			
Effective area〔Cv〕 mm²		1.5〔0.08〕			
Lubrication		Not required			
Operating pressure range MPa {kgf/cm²}		0.2～0.7 {2.0～7.1}			
Proof pressure MPa {kgf/cm²}		1.05 {10.7}			
Response time Note ms ON/OFF	DC5V, DC12V	Max. 12/15		12	Max. 12
	DC6V, DC24V	Max. 12/15		12	Max. 12
Maximum operating frequency Hz		5			
Minimum time to energize for self holding ms		—		50	

Note: Values when air pressure is 0.5MPa {5.1kgf/cm²}. Values of □**040-4E2** and □**040-4KE2** are switching from the opposite position.
Remark: Conversion to psi., 1MPa=145psi., 1kgf/cm²=14.2psi., e.g. 0.2MPa=29psi.

Solenoid Specifications

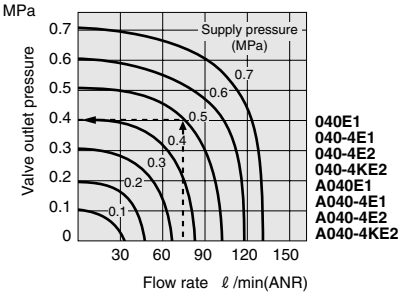
Item \ Rated voltage	DC5V	DC6V	DC12V	DC24V
Type	With built-in flywheel diode for surge suppression			
Operating voltage range DC V	4.5～5.5 (5±10%)	5.4～6.6 (6±10%)	10.8～13.2 (12±10%)	21.6～26.4 (24±10%)
Current (Power consumption when rated voltage is applied: W) mA	130 (0.7)	115 (0.7)	65 (0.8)	40 (1.0)
Maximum allowable leakage current mA	10	7	5	2
Insulation resistance MΩ	Min. 100			
Wiring	Plug connector type straight connector **-PSL:** With dedicated lead wire for PC board connection, with connector			
Color of lead wire	Red (+), Black (–)			
Color of LED indicator	Red			

Specifications of Connector for Flat Cable

Order code \ Item	Header	Socket Note	Strain relief Note	Standard
Blank	Box type, with short clip (Product number: 3662-5002SCSC)	Open end type, with nose (Product number: 7910-6500SC)	—	MIL-C-83503 conformity (made by Sumitomo 3M Ltd.)
-LC	Box type, with long clip (Product number: 3662-5002LCSC)		With attached (Product number: 3448-7910J)	

Remark: While the connector has a center slot (groove), note that it has no key grooves for prevention of erroneous insertion.
Note: Included at time of delivery.

Flow Rate



How to read the graph

If supply pressure is 0.5MPa and flow rate is 75 ℓ/min (ANR), the valve outlet pressure becomes 0.4 MPa.

Manifold Connection Port Size

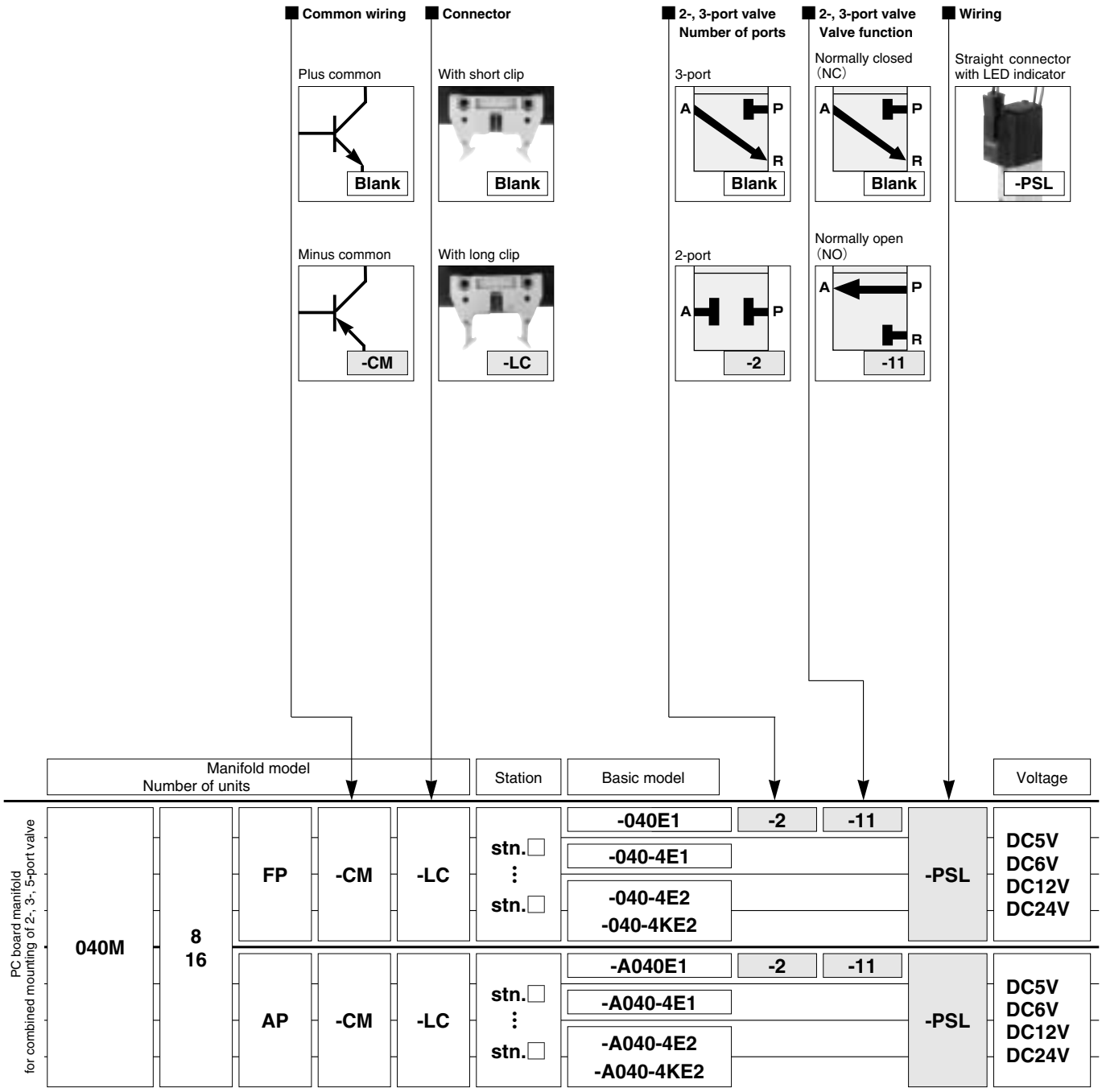
Manifold model	Port	Location of piping connection	Port size
040M□FP	P	Manifold	M5×0.8
	A, B	Valve	M3×0.5
	R	Manifold	Rc1/8
040M□AP	P	Manifold	Rc1/8
	A, B		M5×0.8
	R		Rc1/8
	PR		(Common for R, PR)

Mass

g

Manifold model	Manifold Mass	Mounting valve mass				Block-off plate
		□040E1	□040-4E1	□040-4E2	□040-4KE2	
040M8FP	122	22	22	37	45	3
040M16FP	229					
040M8AP	217	22	22	37	45	4
040M16AP	396					

PC Board Manifold 040 Series Order Code



Remark: **040E1** is 3-port, and normally closed (NC) as standard.

- Valve mounting location from the left-hand side when facing A, B port (□: **1**～**16**)
- Since twin solenoid valve needs two stations per valve to mount, the second station (solenoid S1 side) should be blank.
- When selecting □**040-4E2**, always enter **-BP** for the next station.

- Specify the valve type for each station.
- Enter **-BP** when closing a station with a block-off plate without mounting a valve.
- □**040-4E2** cannot be mounted to the last station.
- □**040-4KE2** cannot be assigned to the last station when ordering.

Additional Parts (Sold Separately)

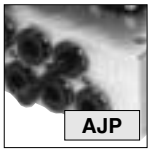
Block-off plate

● **040 M F -BP**

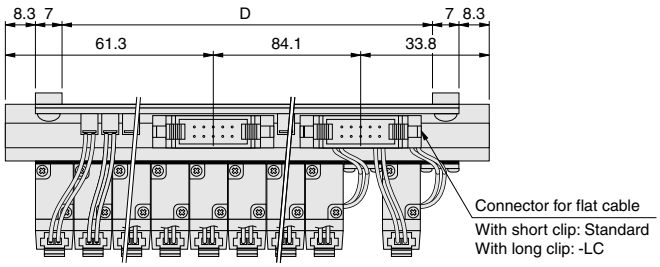
F—For FP type manifold
A—AP, AJP type manifold

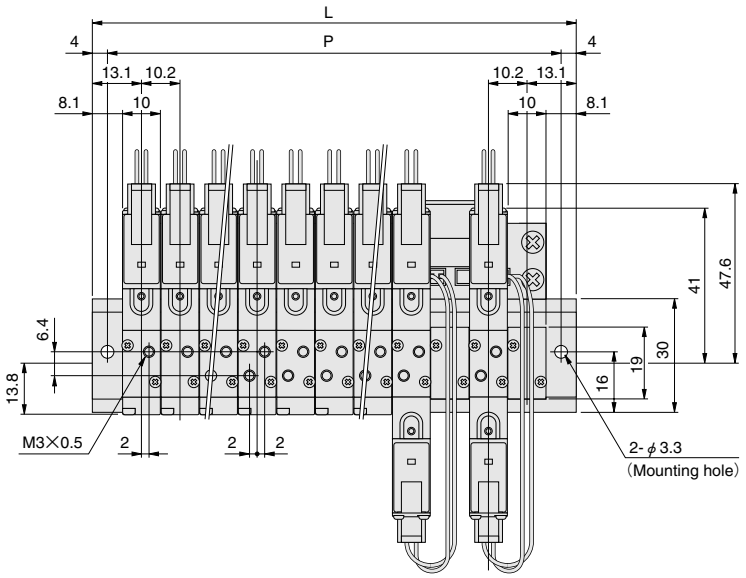
Made to Order For details, see p. 122.

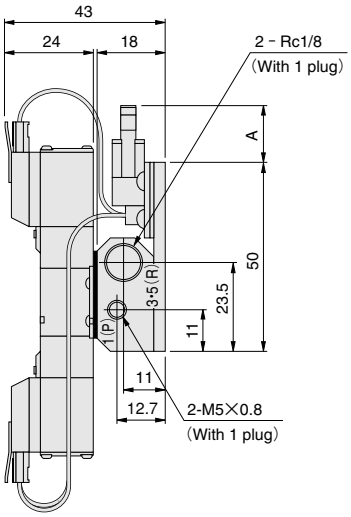
AJP type manifold

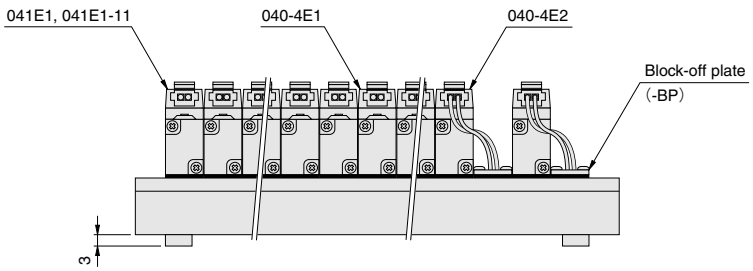


040M8FP
040M16FP









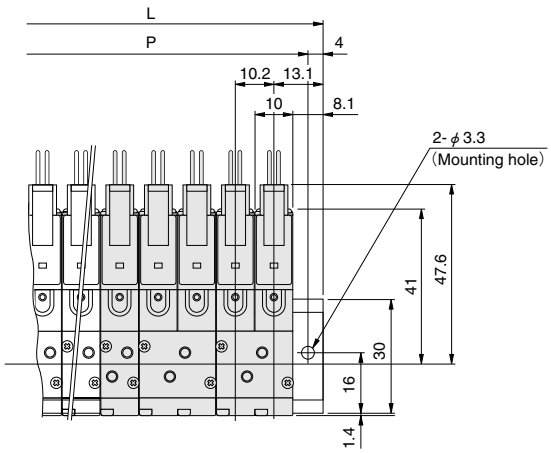
Unit dimensions

Model	L	P	D
040M8FP	97.6	89.6	67
040M16FP	179.2	171.2	148.6

Option dimensions

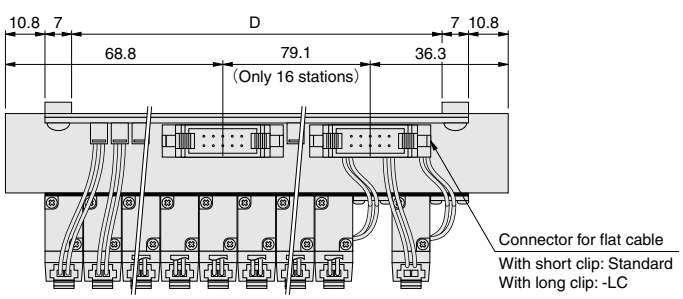
Type	A
Short clip	12.5
Long clip	15.5

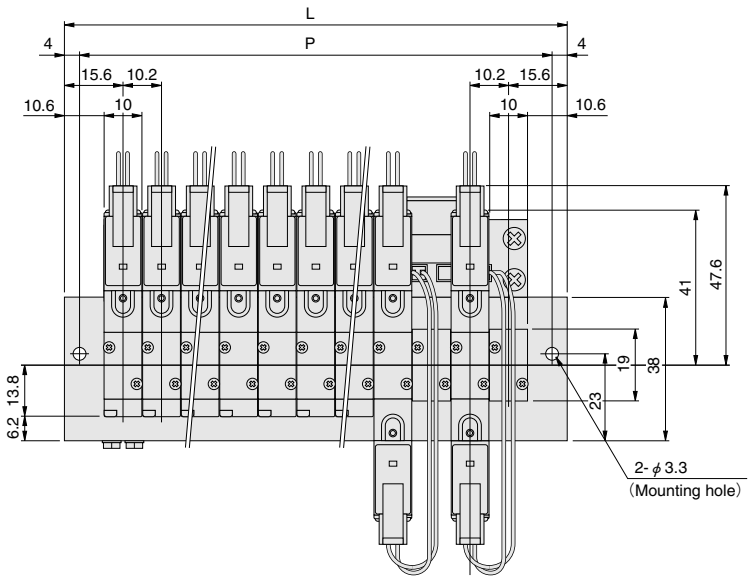
Example of twin solenoid valve combined mounting

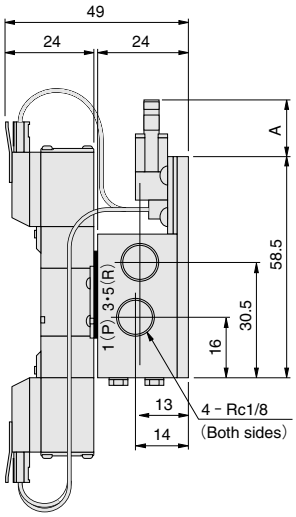


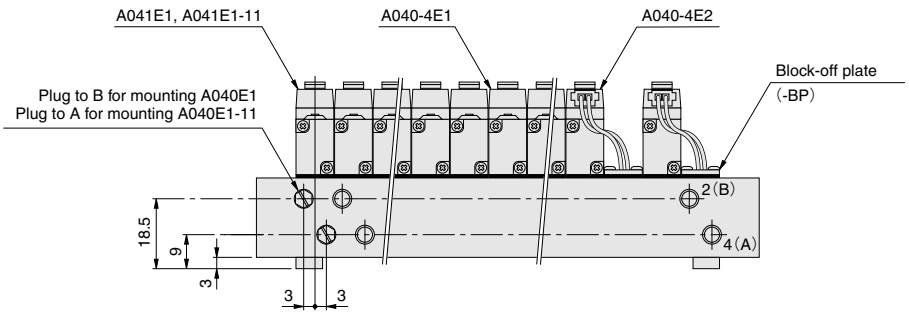
Dimensions (Scale 1/2, Unit mm)

040M8AP
040M16AP









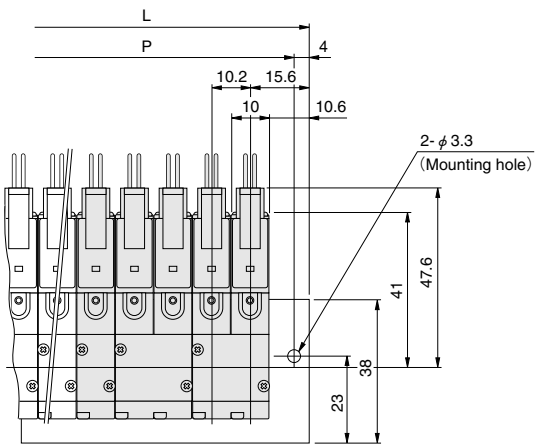
Unit dimensions

Model	L	P	D
040M8AP	102.6	94.6	67
040M16AP	184.2	176.2	148.6

Option dimensions

Type	A
Short clip	12.5
Long clip	15.5

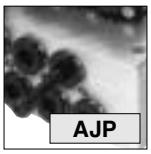
Example of twin solenoid valve combined mounting



Made to Order

A variety of made to order items are available to further expansion of the range of applications for the PC board manifolds compatible with the solenoid valve 040 series.

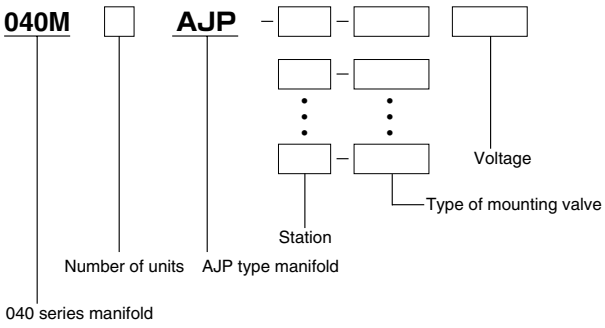
AJP type manifold



Specifications

The manifold, solenoid valve, and solenoid specifications are the same as the AP type manifold specifications.
See p. 118.

Order Code



Remarks 1. For the type of mounting valve, see p. 119.
2. The order code for the block-off plate sold separately is **040MA-BP**.

Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Piping size
040M□AJP	P	Manifold	Rc1/8
	A, B		Quick fitting for ϕ 4
	R		Rc1/8 (R, PR common)
	PR		

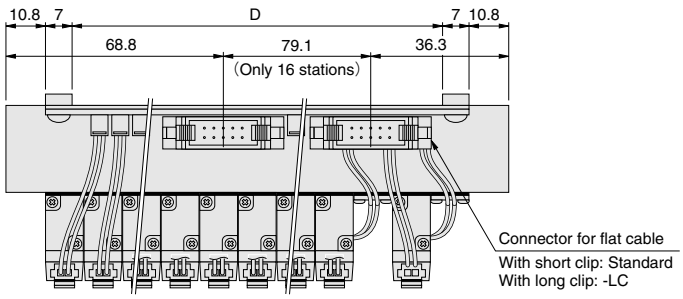
Manifold Mass

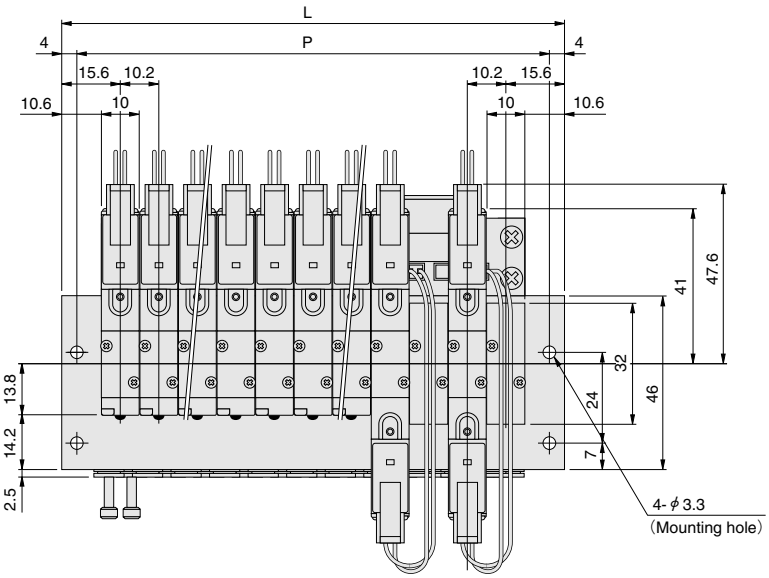
g

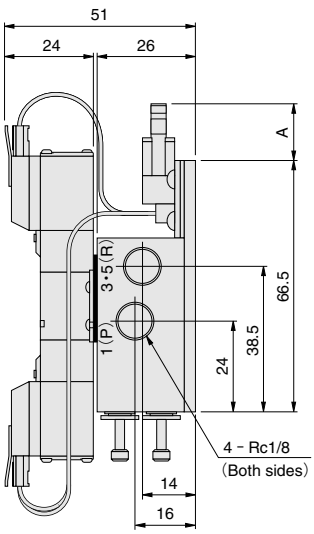
Manifold model	Manifold Mass	□040E1	□040-4E1	□040-4E2	□040-4KE2	Block-off plate
040M8AJP	305	22	22	37	45	4
040M16AJP	560					

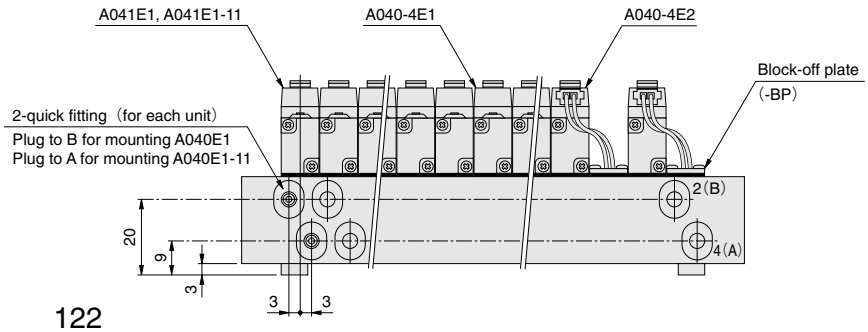
Dimensions (Scale 1/2, Unit mm)

040M8AJP
040M16AJP









Unit dimensions

Model	L	P	D
040M8AJP	102.6	94.6	67
040M16AJP	184.2	176.2	148.6

Option dimensions

Type	A
Short clip	12.5
Long clip	15.5

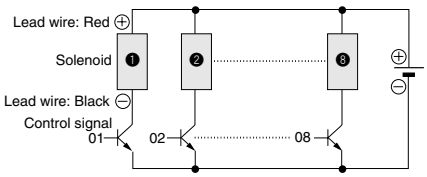
Handling Instructions and Precautions (PC Board Manifold)

Solenoid

Circuit configurations

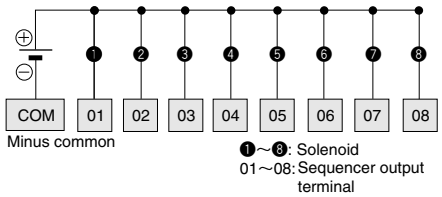
● **For plus common type (standard)**

Operation example



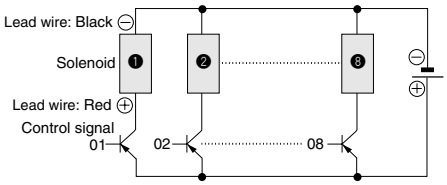
Corresponding to sequencer

Output module is minus common type.



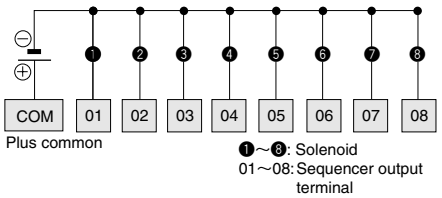
●**For minus common type（option: -CM）**

Operation example



Corresponding to sequencer

Output module is plus common type.



Cautions: 1. Do not apply megger between the lead wires.

2. While there is no danger with a DC solenoid of a short circuit due to the wrong polarity, 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 within the range of the allowable leakage current. If circuit conditions, etc., cause the leakage current to exceed the maximum allowable leakage current, consult us.

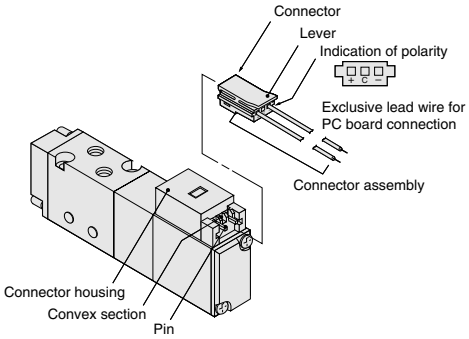
4. For double solenoid and twin solenoid, avoid energizing both solenoids simultaneously. The valve could fall into a neutral state.

5. Ensure that voltage drops due to resistance in the cable used remains within the voltage range for the solenoid valve.
If the supplied voltage fails to reach the minimum required voltage, the valve could fail to operate properly.

Plug connector

Attaching and removing plug connector

Use fingers to insert the connector into the pin, push in until the lever claw catches on the convex section on 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 convex section on the connector housing, and pull out.



Cautions: 1. Do not pull hard on the lead wire.It could result in defective contacts, shorted lines, 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.

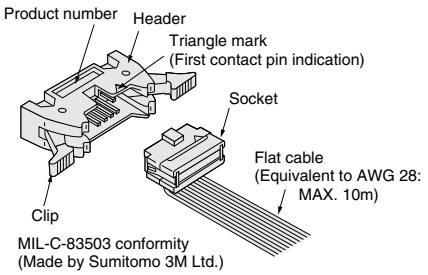
Dedicated lead wire for PC board connection

Order code by one unit (Number of wires to use)

	Order code	□040E1	□040-4E1	□040-4E2	□040-4KE2
For standard	**Y160208**	1	1	1	2
	Y160209 Note	0	0	1	0
For **-CM**	**Y160225**	1	1	1	2
	Y160226 Note	0	0	1	0

Note: **Y160209** and **Y160226** are for dedicated lead wires for double solenoid (solenoid S1 side).

Connector for flat cable



Manifold

Print circuit board

Avoid use in the locations listed below, as it may result in deterioration of the print circuit board or shorts 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 subjected to salt, corrosive gases or conductive particles.

3. Locations directly subject to condensation, direct sunlight or other weather effects.

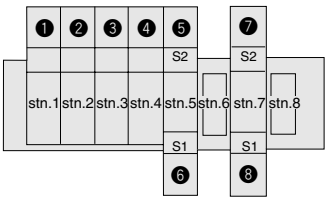
Combined mounting for different type of valves

In the 040 Series manifold for combined mounting of 2-, 3-, 5-port valves and PC board manifold for combined mounting of 2-, 3-, 5-port valves, single solenoids may be combined with double solenoids, or with twin solenoids, and a total number of up to 8 or 16 solenoids can be mounted.

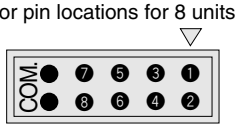
In this case, observe the following precautions.

1. Always use a block-off plate (**-BP**) to close the right station (the side with the higher numbered station) of the station where the double solenoid valve is mounted.
2. If using block-off plates (**-BP**) for some reason other than the above Item 1, place them 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 S2 and the lower ones to S1, with the upper S2 numbers being allocated the smaller pin numbers. And for a twin solenoid mounting, the left side is allocated to S2 and the right side to S1, with the left-side S2 numbers being the smaller pin numbers.

Example of an 8 units manifold, with 4 single solenoid valves and 2 double solenoid valves mounted

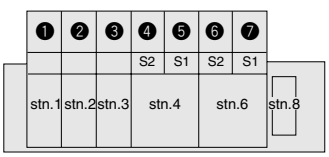


Connector pin locations for 8 units

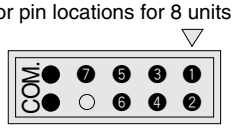


Remark: The standard is plus common wiring. Minus common wiring is optional (**-CM**).

Example of an 8 units manifold, with 3 single solenoid valves and 2 double solenoid valves mounted



Connector pin locations for 8 units



Remark: The standard is plus common wiring. Minus common wiring is optional (**-CM**).