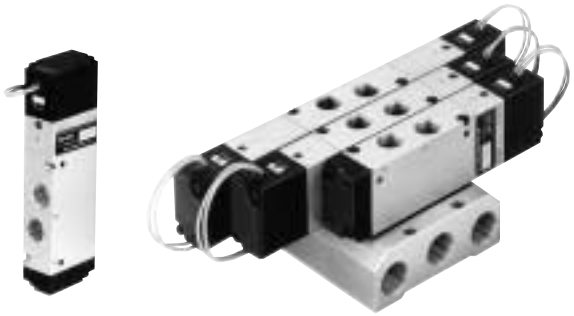
Presenting our CAD drawing data catalog



KOGANEI

VALVES GENERAL CATALOG

SOLENOID VALVES 280 SERIES

INDEX

Achieves high specs as a key valve for mid-sized actuators.

SOLENOID VALVES 280 SERIES

The powerful and low current 280 series solenoid valves inherited the features of thin and square body concept. It demonstrates the potential for enabling to fast operation of middle-sized φ50～φ125 cylinders. Moreover, use of a low current solenoid ensures reliability. In addition, optional items offer assembly and maintenance effectiveness, with a 5-port and 2-, 3-position line-up products achieving “easy to use.”

Low Power Consumption and Highly Reliable Solenoids

A built-in varistor for AC and flywheel diode for DC are standard equipment for surge suppression, as a feature of Koganei’s highly reliable valve series designs. Achieves low current requirements of DC24V-65mA (1.6W), with advanced levels of reliability and easy to use.

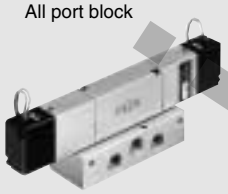
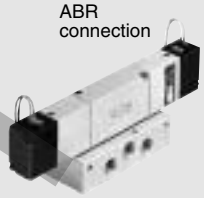
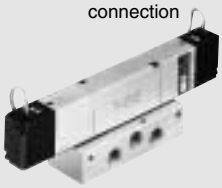
Optional System Emphasizes Function

Two types of plug connectors, straight and L types, achieve easy wiring installation and removal. In addition, an Rc1/4 connection port size eases piping connections with actuators, to offer large piping space saving with the F type and A type manifolds, and to increase space efficiency.

ORDER ONLINE

Basic Models and Configuration of 280 Series

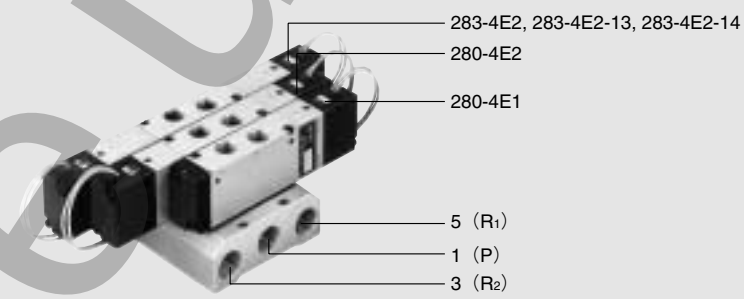
Single unit

	5-port				
	2-position			3-position	
Direct piping	 Single solenoid **280-4E1**	 Double solenoid **280-4E2**	 All port block **283-4E2**	 ABR connection **283-4E2-13**	 PAB connection **283-4E2-14**
	2-position			3-position	
Sub-base piping	Single solenoid  **A280-4E1-25**	Double solenoid  **A280-4E2-25**	All port block  **A283-4E2-25**	ABR connection  **A283-4E2-13-25**	PAB connection  **A283-4E2-14-25**

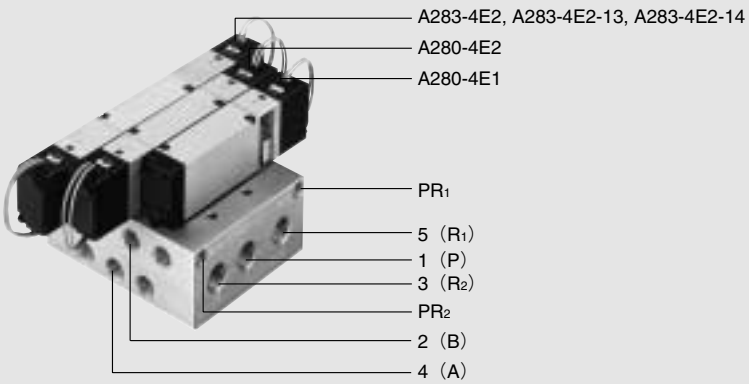
Manifold

Manifold for mounting 5-port valves

280M□F—F type(P, R) manifold



280M□A—A type (all port) manifold



SOLENOID VALVES 280 SERIES

Basic Models and Valve Functions

Item \ Basic model	Direct piping, F type manifold	280-4E1	280-4E2	283-4E2
	Sub-base piping, A type manifold	A280-4E1	A280-4E2	A283-4E2
Number of positions		2 positions		3 positions
Number of ports		5 ports		
Valve function		Single solenoid	Double solenoid	All port block (standard), ABR connection (option) or PAB connection (option)

Remark: For optional specifications and order code, see p. 668～669.

Specifications

Item \ Basic model	Direct piping, F type manifold	280-4E1	280-4E2	283-4E2
	Sub-base piping, A type manifold	A280-4E1	A280-4E2	A283-4E2
Media		Air		
Operation method		Internal pilot type		
Effective area〔Cv〕Note 1 mm²		25〔1.39〕		22〔1.22〕
Port size Note 2		Rc 1/4		
Lubrication		Not required		
Operating pressure range MPa {kgf/cm²}		0.17～0.7 {1.7～7.1}		
Proof pressure MPa {kgf/cm²}		1.05 {10.7}		
Response time Note 3 ms ON/OFF	DC12V, DC24V	Max. 15/30	Max. 15	Max. 20/25
	AC100V, AC200V	Max. 15/25	Max. 15	Max. 15/20
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 Note 4 m/s² {G}		1373.0 {140.0} (343.2 {35.0})	1373.0 {140.0} (245.2 {25.0})	1373.0 {140.0} (441.3 {45.0})
Mounting direction		Any		

Notes: 1. For details, see the effective area on p. 667.
2. For details, see the port size on p. 667.
3. Values when air pressure is 0.5MPa {5.1 kgf/cm²}. The values for □280-4E2 are switching from the opposite position, and for □ 283-4E2 are those of the all port block valve, switching from the neutral state.
4. Values in parentheses ( ) are for the axial direction.

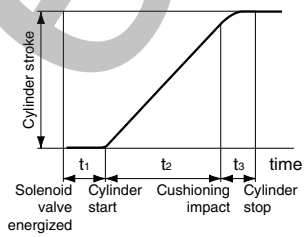
Remark: Conversion to psi., 1Mpa=145psi., 1kgf/cm²=14.2psi., e.g. 0.17Mpa=24.7psi.

Solenoid Specifications

Item \ Rated voltage		DC12V	DC24V	AC100V		AC200V	
Type		With built-in flywheel diode for surge suppression		Shading type			
Operating voltage range V		10.8～13.2 (12±10%)	21.6～26.4 (24±10%)	90～132 (100 $^{+32}_{-10}$%)		180～264 (200 $^{+32}_{-10}$%)	
Current (When rated voltage is applied)	Frequency Hz	—	—	50	60	50	60
	Starting mA (r.m.s.)	—	—	55	49	28	25
	Energizing mA (r.m.s.)	130 (1.6W) [With LED indicator 140 (1.7W)]	65 (1.6W) [With LED indicator 75 (1.8W)]	24	19	12	10
Maximum allowable leakage current mA		8	4	4		2	
Insulation resistance MΩ		Min. 100					
Wiring and lead wire length	Standard	Grommet type：300㎜					
	Option	Plug connector type：300㎜, with DIN connector See made to order on p. 675.					
Color of lead wire		Brown (+) Black (−)	Red (+) Black (−)	Yellow		White	
Color of LED indicator		Red		Yellow		Green	
Surge suppression (as standard)		Flywheel diode		Varistor			

Cylinder Operating Speed

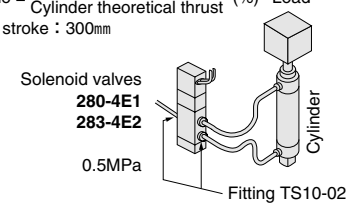
How to obtain cylinder speed



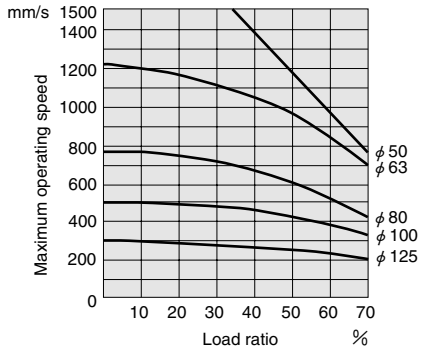
280-4E1 283-4E2

Measurement conditions

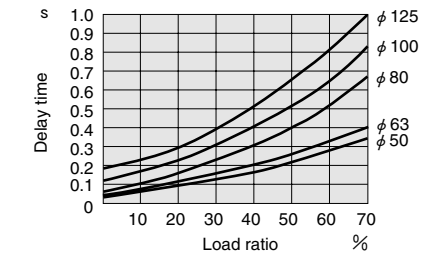
- Air pressure：0.5MPa {5.1kgf/cm²}
- Piping inner diameter and length: φ7.5×1000㎜
- Fitting:Quick fitting TS10-02
- Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
- Cylinder stroke：300㎜



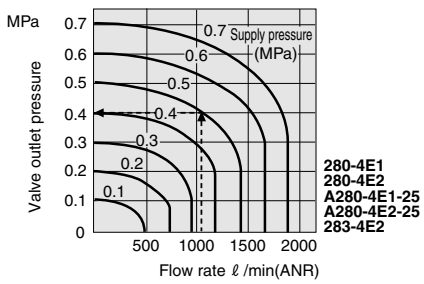
Maximum operating speed



Delay time



Flow Rate



How to read the graph

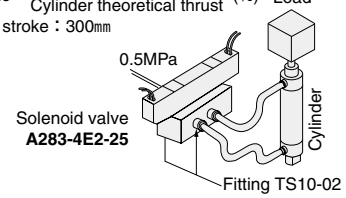
If supply pressure is 0.5MPa and flow rate is 1050 ℓ/min (ANR), the valve outlet pressure becomes 0.4MPa.

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.

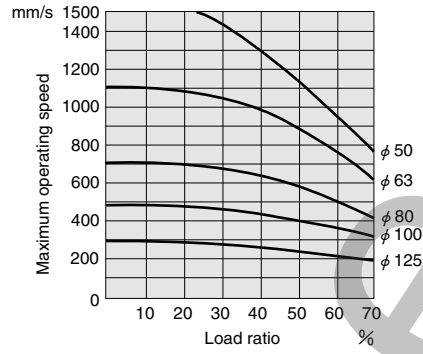
A283-4E2-25

Measurement conditions

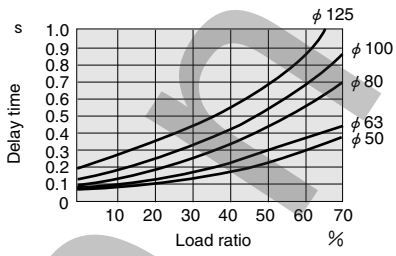
- Air pressure : 0.5MPa {5.1kgf/cm²}
- Piping inner diameter and length: φ7.5×1000mm
- Fitting:Quick fitting TS10-02
- Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
- Cylinder stroke : 300mm

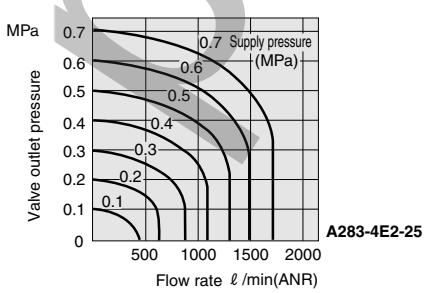


Maximum operating speed



Delay time





Effective Area〔Cv〕

mm²

Basic model	Standard (single valve)	Remarks
280-4E1 **280-4E2**	25 〔1.39〕	●Attaching TS10-02 to the P, A, B ports brings the value to 24.7.
283-4E2	22 〔1.22〕	●Attaching TS10-02 to the P, A, B ports brings the value to 20.4.
A280-4E1 **A280-4E2**	22 〔1.22〕	●When mounting to a sub-base or manifold. ●Attaching TS10-02 to the sub-base P, A, B ports brings the value to 17.1.
A283-4E2	20 〔1.11〕	

Solenoid Valve Port Size

Basic model	Port	Port specifications	Port size
280-4E1 **280-4E2** **283-4E2**	P	Female thread	Rc 1/4
	A, B		
	R		
A280-4E1-25 **A280-4E2-25** **A283-4E2-25**	P	Female thread	Rc 1/4
	A, B		
	R		
	PR	Female thread	M5×0.8

Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
280M□F	P	Manifold	Rc 3/8
	A, B	Valve	Rc 1/4
	R	Manifold	Rc 3/8
280M□A	P	Manifold	Rc 3/8
	A, B		Rc 1/4
	R		Rc 3/8
	PR		Rc 1/8

Valve Mass

g

Basic model	Mass
280-4E1	230
280-4E2	330
283-4E2	380
A280-4E1	240 (460)
A280-4E2	330 (550)
A283-4E2	390 (610)

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

Manifold Mass

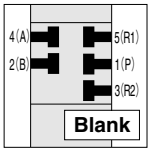
g

Manifold model	Mass calculation of each unit (n=number of units)	Block-off plate
280M□F	(85×n)+100	35
280M□A	(530×n)+560	50

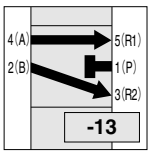
280 Series Solenoid Valve, Air Piloted Valve Order Code

3-position valve Valve function

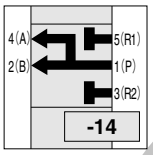
All port block



ABR connection



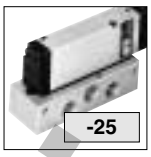
PAB connection



Sub-base

Without sub-base

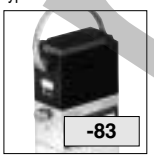
With sub-base



Manual override

Non-locking type manual override

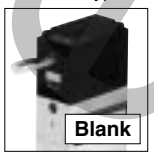
Locking protruding type manual override



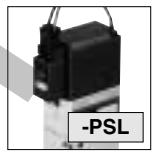
Wiring

●Lead wire length 300 mm is standard.

Grommet type



Straight connector with LED indicator



L connector with LED indicator

DIN connector

●Not available with **-L.**

		Basic model		Sub-base	Manual override	Wiring	Voltage
Direct piping	5-port single solenoid	280-4E1			-83	-PSL -PLL -39	DC12V AC100V DC24V AC200V
	5-port double solenoid	280-4E2					
	5-port 3-position	283-4E2	-13, -14		-83		
Sub-base piping	5-port single solenoid	A280-4E1		-25	-83	-PSL -PLL -39	DC12V AC100V DC24V AC200V
	5-port double solenoid	A280-4E2					
	5-port 3-position	A283-4E2	-13, -14		-83		
Direct piping air piloted valve (made to order)	5-port single pilot	280-4A					
	5-port double pilot	280-4A2					
Sub-base piping air piloted valve (made to order)	5-port single pilot	A280-4A		-25			
	5-port double pilot	A280-4A2					

Additional Parts (Sold Separately)

Speed controller

●For both direct piping and sub-base piping

Muffler

●For both direct piping and sub-base piping

Mounting base

●For direct piping, single solenoid

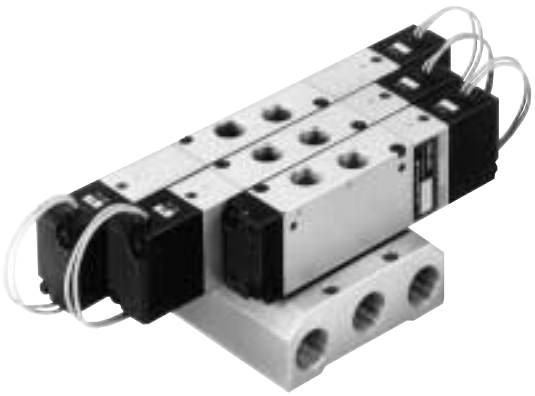
Block-off plate

● 280 M F -BP

280—For 280M

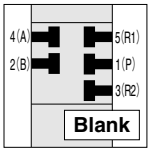
F — F type manifold
A — A type manifold

280 Series Manifold Order Code

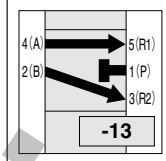


3-position valve Valve function

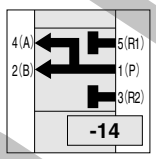
All port block



ABR connection



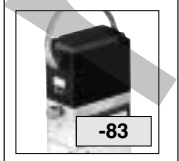
PAB connection



Manual override

Non-locking type manual override

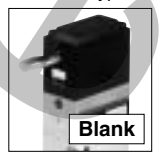
Locking protruding type Manual override



Wiring

●Lead wire length 300 mm is standard.

Grommet type



Straight connector with LED indicator

L connector with LED indicator

DIN connector

●Not available with **-L**.

Manifold model Number of units			Station	Basic model			Voltage
Manifold for mounting 5-port valves							
280M	2 ⋮ 10	F	stn.□ ⋮ stn.□	-280-4E1		-83	DC12V DC24V AC100V AC200V
				-280-4E2			
				-283-4E2	-13, -14	-83	
		A	stn.□ ⋮ stn.□	-A280-4E1		-83	
				-A280-4E2			
				-A283-4E2	-13, -14	-83	
Manifold for mounting 5-port valves (made to order)							
280M	2 ⋮ 10	F	stn.□ ⋮ stn.□	-280-4A			
				-280-4A2			
		A	stn.□ ⋮ stn.□	-A280-4A			
				-A280-4A2			

-PSL, -PLL, -39

●Valve mounting location from the left-hand side when facing A, B port.

●Specify the valve type for each station.
●Enter **-BP** when closing a station with a block-off plate without mounting a valve.

Made to Order

The solenoid valves 280 series includes made to order items of various kinds for further system development.
For details, see p. 674～675.

FE type manifold

●P, R, PR manifold **280M□FE**

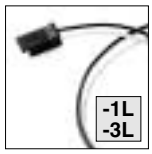
Straight connector with LED indicator

●Without lead wire
●Connector, contacts included

L connector with LED indicator

●Without lead wire
●Connector, contacts included

Lead wire length



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

Common terminal pre-wiring straight connector with LED indicator

Common terminal pre-wiring L connector with LED indicator

●**-CP□L**： Plus side of DC12V, DC24V, and AC100V, AC200V.
●**-CM□L**： Minus side of DC12V and DC24V.

With LED indicator and varistor

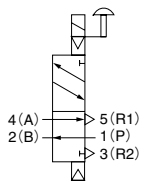
Air piloted valves 280 series

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

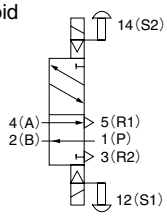
Operating Principle and Symbol

5-port, 2-position

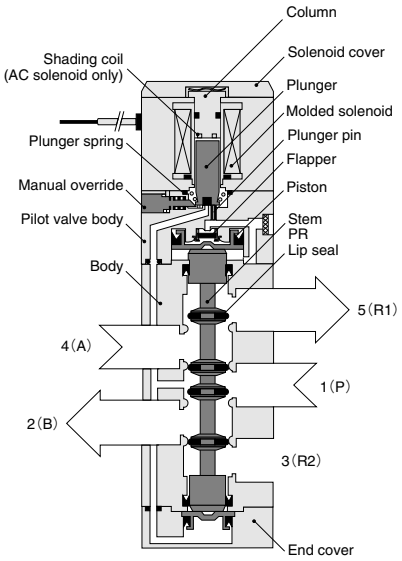
Single solenoid



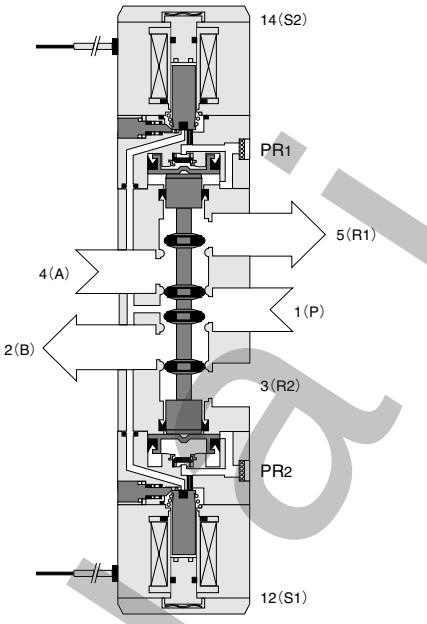
Double solenoid



280-4E1
De-energized



280-4E2
(De-energized condition after energizing solenoid S1)

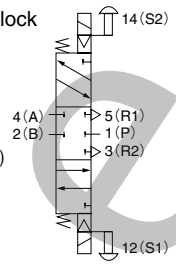


Major Parts and Materials

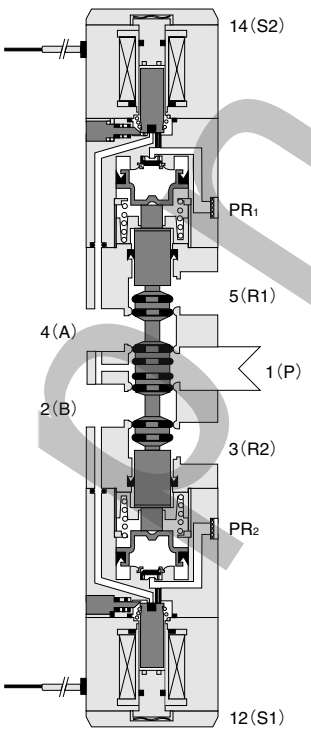
Parts		Materials
Valve	Body	Aluminum alloy (anodized)
	Stem	
	Lip seal	Synthetic rubber
	Seal	
	Flapper	
	Plunger	Magnetic stainless
	Column	
	Sub-base	Aluminum alloy (anodized)
	Mounting base	Steel (zinc plated)
Manifold	Body	Aluminum alloy (anodized)
	Block-off plate	Steel (nickel plated)
	Seal	Synthetic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

5-port, 3-position

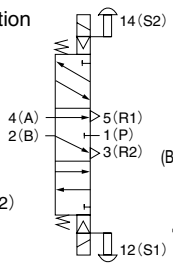
All port block



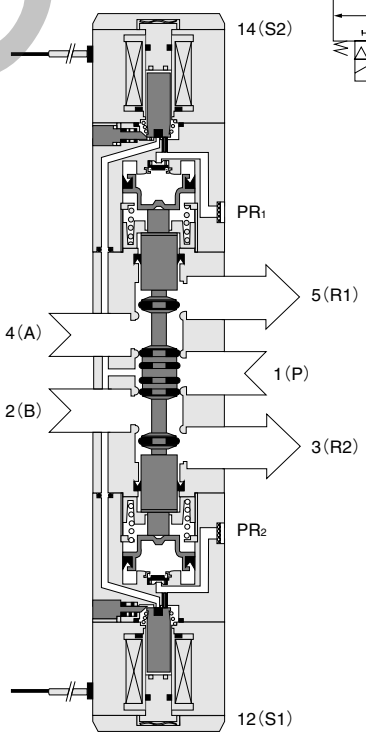
283-4E2
(Both solenoid S1 and S2 are de-energized)



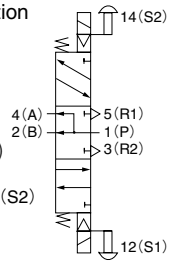
ABR connection



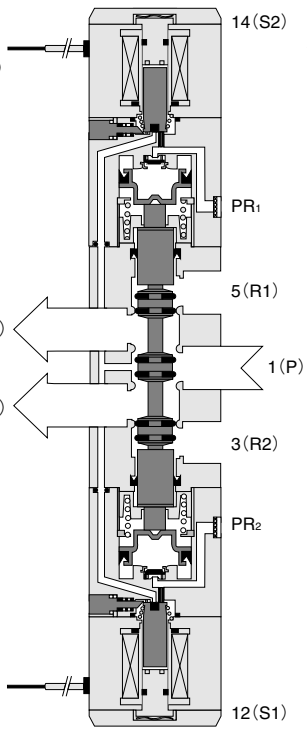
283-4E2-13
(Both solenoid S1 and S2 are de-energized)



PAB connection

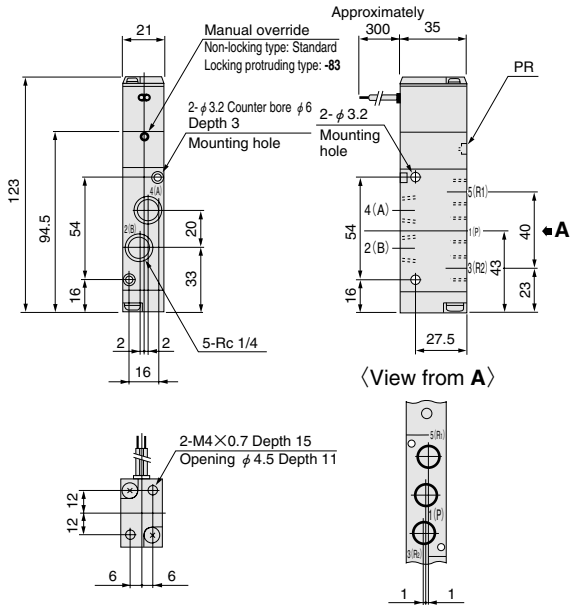


283-4E2-14
(Both solenoid S1 and S2 are de-energized)

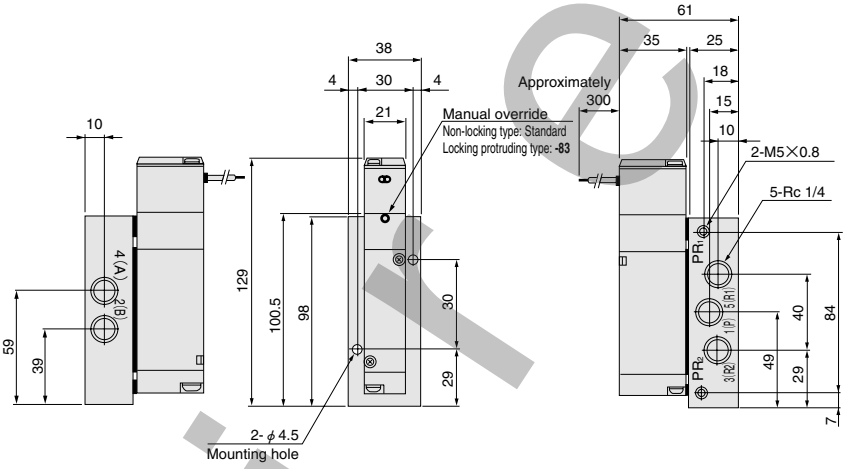


Dimensions of Solenoid Valve 5-port , 2-, 3-position (Scale 1/4, Unit mm)

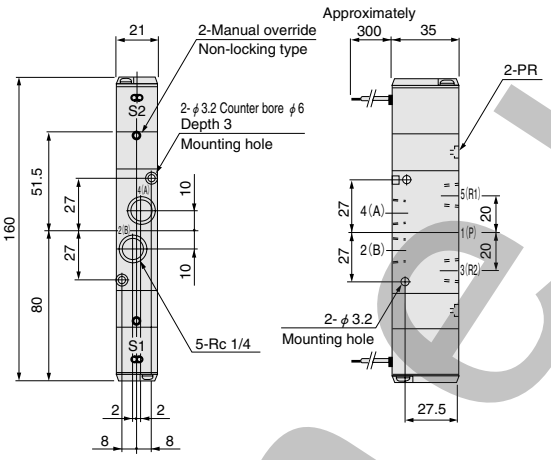
280-4E1 CAD 280-4E1



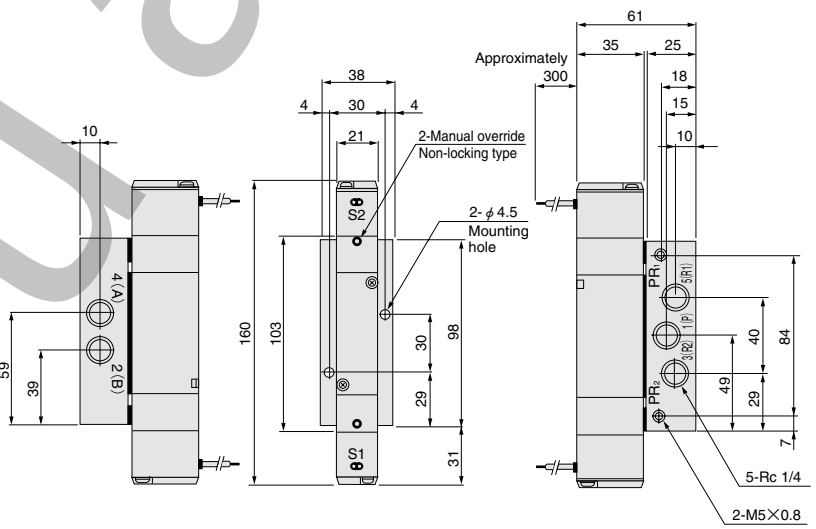
A280-4E1-25 CAD A280-4E1



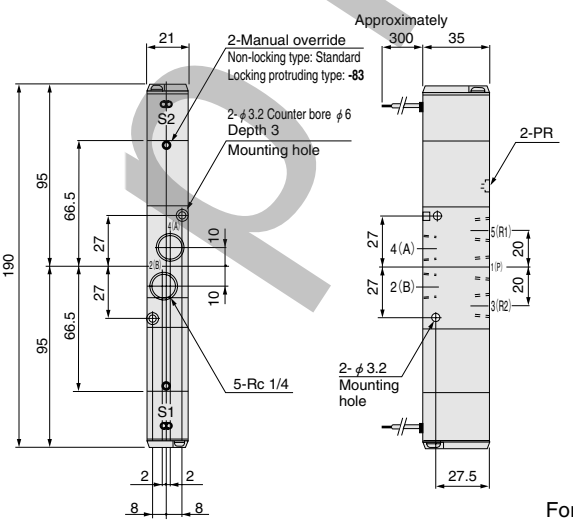
280-4E2 CAD 280-4E2



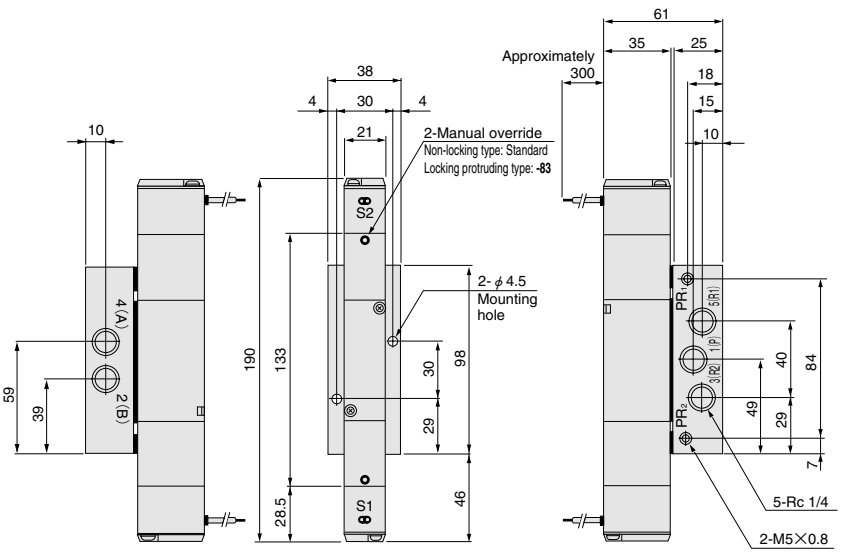
A280-4E2-25 CAD A280-4E2



283-4E2 CAD 283-4E2



A283-4E2-25 CAD A283-4E2

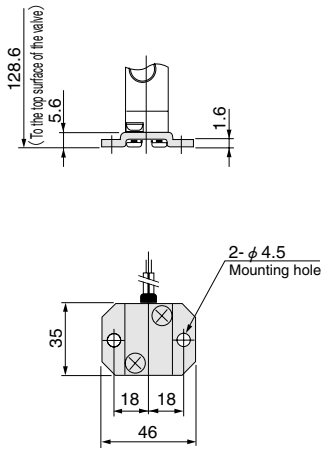


For options and made to order, see p. 672.

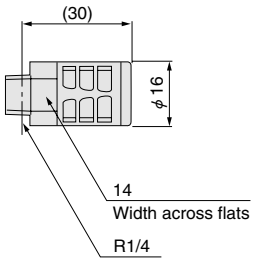
Additional Parts (Sold Separately) (Scale 1/4, Unit mm)

280ADD

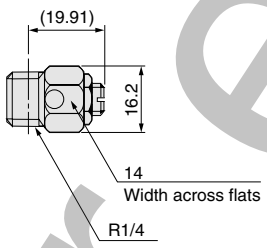
●Mounting base：**280-21**



●Muffler：**KM-22**
（Scale 1/2, Unit mm）

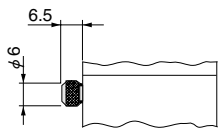


●Speed controller：**SCE-02**
（Scale 1/2, Unit mm）

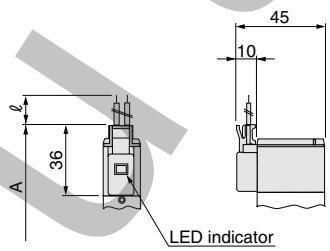


Options

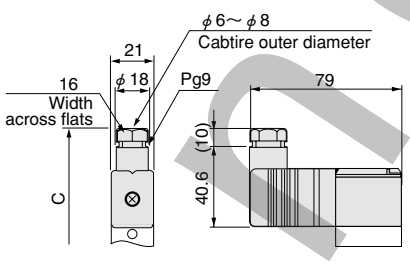
●Locking protruding type manual override：**-83** (Scale 1/2, Unit mm)
280ADD



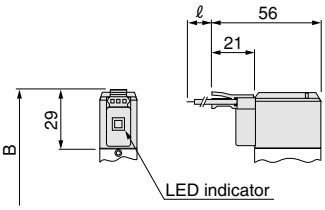
●Solenoid with straight connector：**-PSL**
280SOL



●Solenoid with DIN connector：**-39**
280SOL

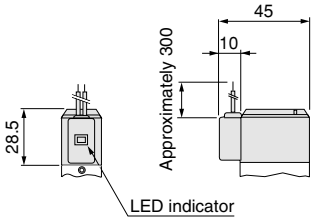


●Solenoid with L connector：**-PLL**
280SOL



Made to Order

●Solenoid with LED indicator：**-L**
280SOL



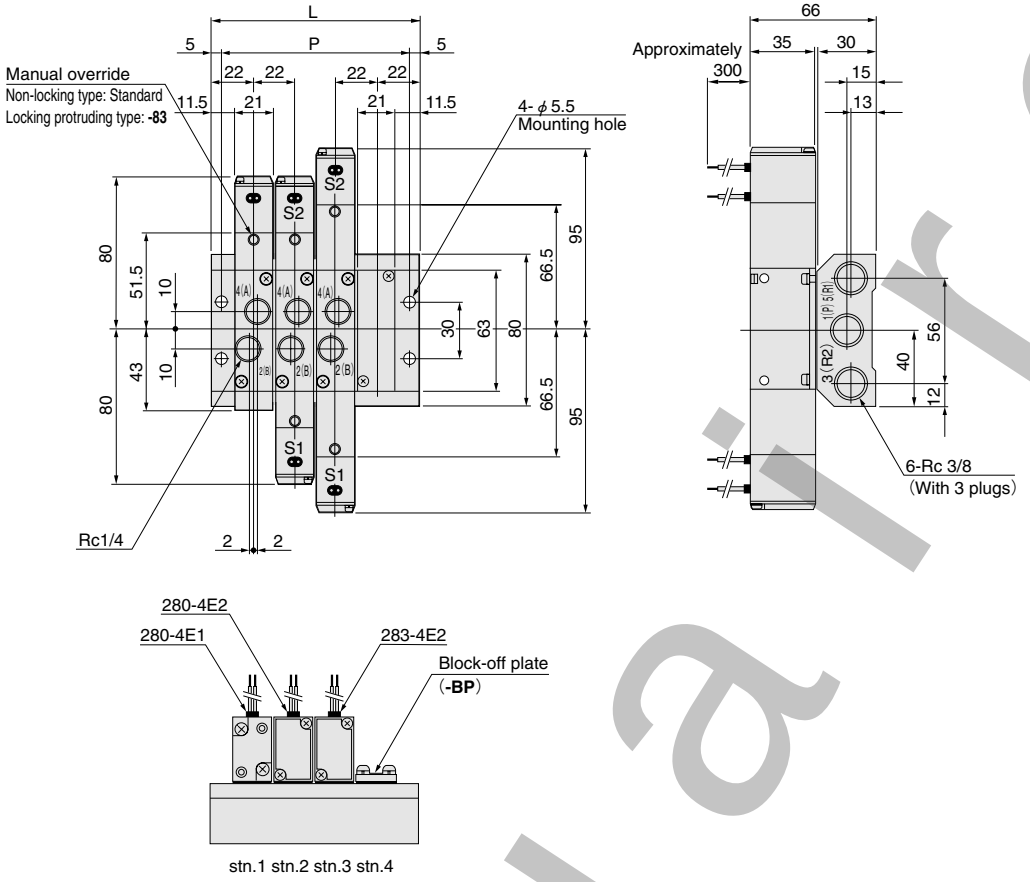
mm

Model / Code	A	B	C	ℓ (lead wire length)	Remarks
280-4E1	130.5	123.5	(145.2)	**-PSL**, **-PLL** : 300 Made to order : **-1L** : 1000, **-3L** : 3000	Length to the end of the valve or sub-base
A280-4E1-25	136.5	129.5	(151.2)		
280-4E2, A280-4E2-25	175	161	(204.4)		Total length to end of the opposite side solenoid
283-4E2, A283-4E2-25	205	191	(234.4)		

Dimensions of Manifold (Scale 1/4, Unit mm)

280M□F

280MF



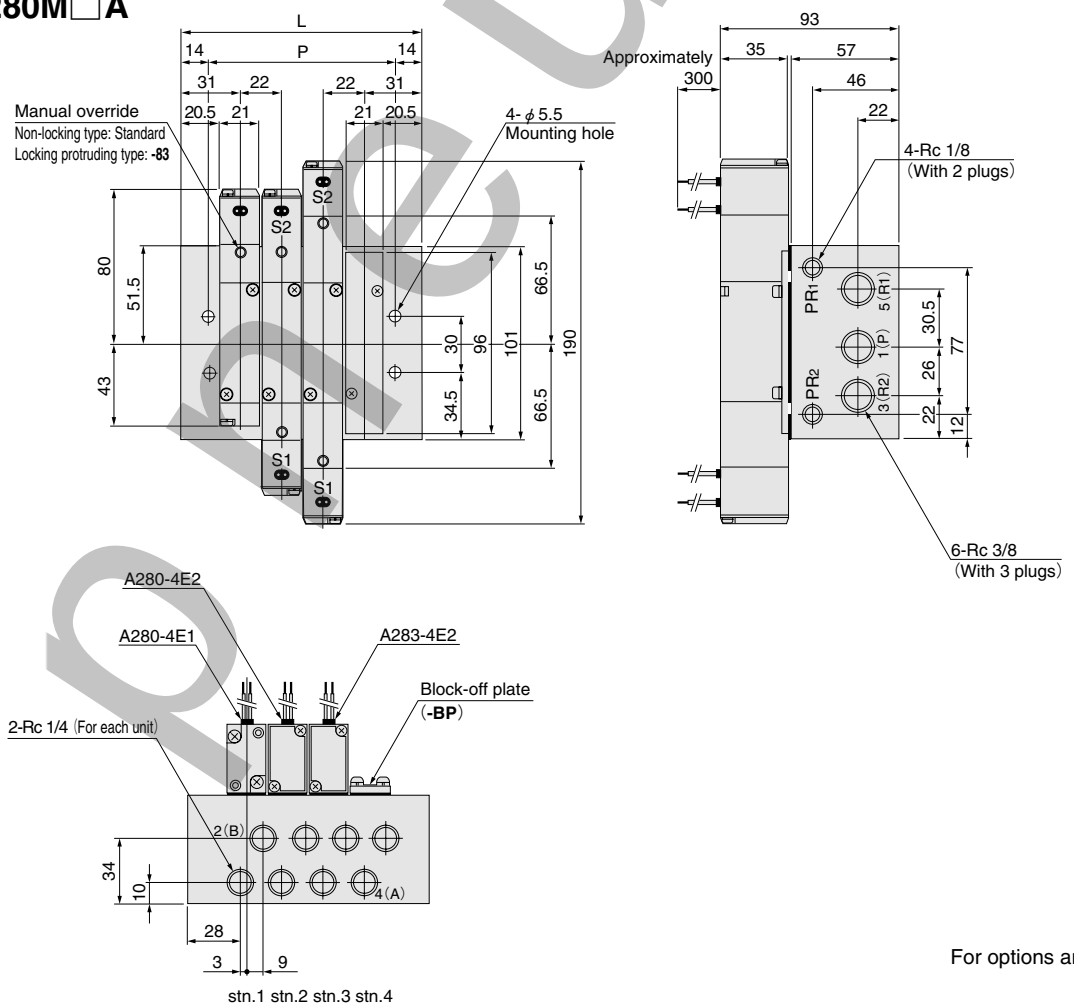
stn.1 stn.2 stn.3 stn.4

Unit dimensions

Model	L	P
280M2F	66	56
3F	88	78
4F	110	100
5F	132	122
6F	154	144
7F	176	166
8F	198	188
9F	220	210
10F	242	232

280M□A

280MA



stn.1 stn.2 stn.3 stn.4

Unit dimensions

Model	L	P
280M2A	84	56
3A	106	78
4A	128	100
5A	150	122
6A	172	144
7A	194	166
8A	216	188
9A	238	210
10A	260	232

For options and made to order, see p. 672.

Made to Order

The 280 series solenoid valves includes a variety of made to order items for application in a broader range of control and wiring methods.

FE type manifold

- The pilot exhaust (PR) is available with the manifolds.
- Can mount the direct piping type 280 series solenoid valves.

Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
280M□FE	P	Manifold	Rc 3/8
	A,B	Valve	Rc 1/4
	R	Manifold	Rc 3/8
	PR	Manifold	Rc 1/8

Manifold Mass

g

Manifold model	Mass calculation of each unit (n=number of units)	Block-off plate
280M□FE	(160×n) +190	50

Order code

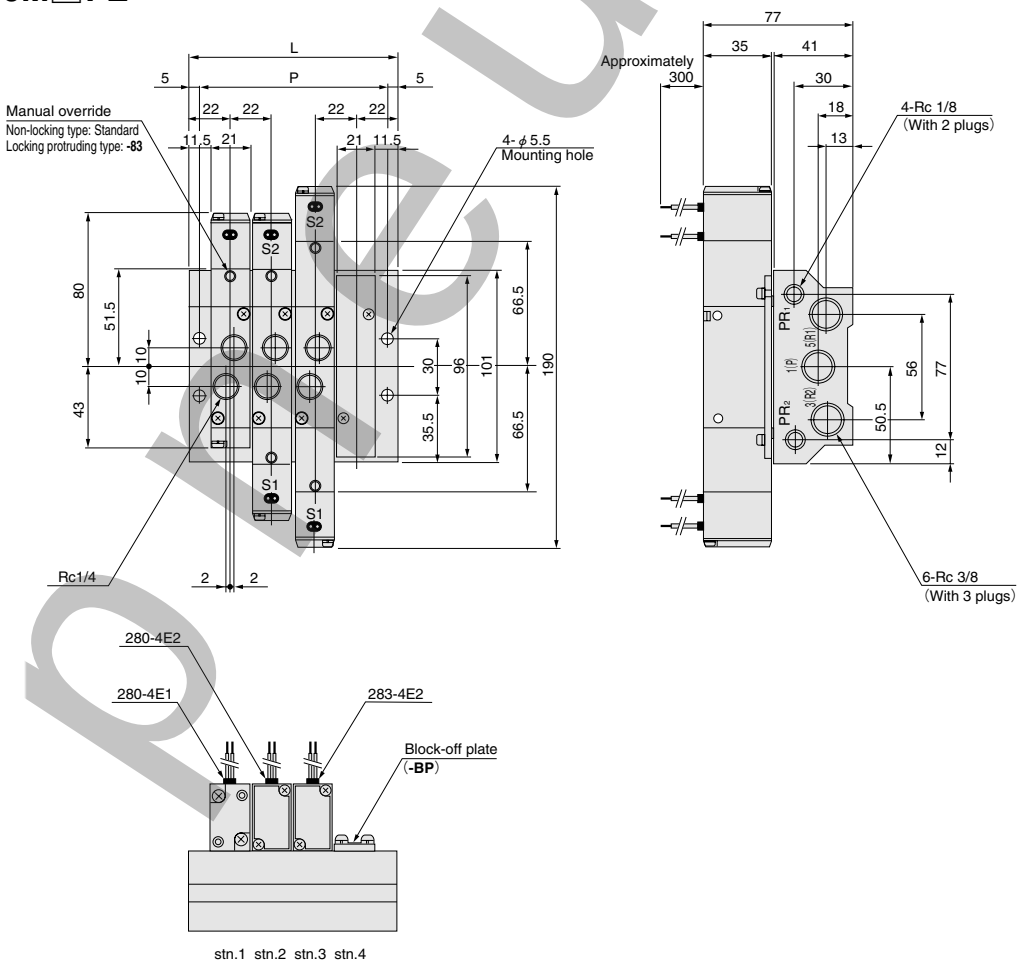
280M □ **FE** □ □

Type of mounting valve
Station
FE type manifold
Number of units
280 series manifold

Notes: 1. For the type of mounting valve, see p. 668.
2. The order code for the block-off plate sold separately is **280MFE-BP**.

280M□FE

CAD 280MFE



Unit dimensions

Model	L	P
280M2FE	66	56
3FE	88	78
4FE	110	100
5FE	132	122
6FE	154	144
7FE	176	166
8FE	198	188
9FE	220	210
10FE	242	232

Plug connector

Straight connector with LED indicator

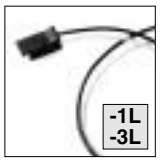
●Without lead wire
●Connector and contact included

L connector with LED indicator

●Without lead wire
●Connector and contact included

●To order, enter **-PSLN, -PLLN** in place of the normal option code for the wiring method.

Lead wire length



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

●For lead wire length, **-1L** is 1000㎜ and **-3L** is 3000㎜.
When ordering, enter **-1L** or **-3L** following the wiring option code.

LED indicator

The LED indicator for confirmation of operation is also available without a plug connector. Offers a clean monoblock look with the compact cover.

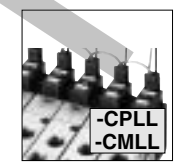
●To order, enter **-L** in place of the normal option code for the wiring method.
●A varistor for surge suppression is also provided. (For the AC100V and AC200V only. For DC12V and DC24V, a flywheel diode for surge suppression is provided as standard equipment.)

Common terminal pre-wiring plug-connector

●Terminals connected inside the connector housing, are connected by crossover wires, so that one common wire can handle a 10-stations manifold.
●Greatly reduces the wiring manhours required during unit assembly or maintenance.

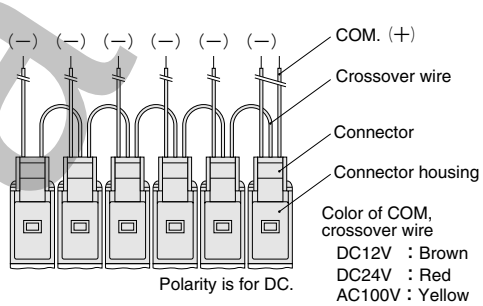
Common terminal wiring straight connector with LED indicator

Common terminal wiring L connector with LED indicator

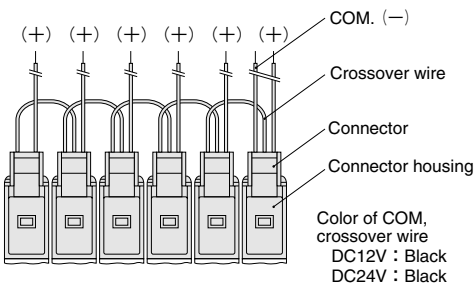


●**-CP□L**：Plus side of DC12V, DC24V, and AC100V, AC200V.
●**-CM□L**：Minus side of DC12V and DC24V.

1. Common terminal pre-wiring for DC plus side and AC.
Order code With straight connector: -CPSL
With L connector: -CPLL



2. Common terminal pre-wiring for DC minus side
Order code With straight connector: -CMSL
With L connector: -CMLL



Cautions: 1. The diagram shows the straight connector configuration. While the connector's facing direction is different in the case of L connector, in every case the COM. lead wire outlets come from the last station's mounting valve.
2. Since the COM. terminal is connected to a crossover terminal inside the connector housing, the connector cannot be switched between a plus common and a minus common by changing the connectors.

●To order, enter **-CPSL, -CMSL, -CPLL, -CMLL** in place of the normal option code for the wiring method.

Air piloted valves 280 series

●The optimum air piloted valve for master valves or pilot valves used in complete pneumatic control.

Basic Models and Valve Functions

Item \ Basic model			
Direct piping, F type manifold		**280-4A**	**280-4A2**
Sub-base piping, A type manifold		**A280-4A**	**A280-4A2**
Number of positions		2 positions	
Number of ports		5 ports	
Valve function		Single pilot	Double pilot

Remarks: For optional specifications and order codes, see p. 668～669.

Specifications

Item \ Basic model		For direct piping, F type manifold		For sub-base piping, A type manifold	
		Single pilot	Double pilot	Single pilot	Double pilot
		280-4A	**280-4A2**	**A280-4A**	**A280-4A2**
Media		Air			
Effective area〔Cv〕Note 1 mm²		25〔1.39〕		22〔1.22〕	
Port size Note 2	P, A, B, R	Rc 1/4			
	PA	Rc 1/8			
Lubrication		Not required			
Operating pressure range MPa {kgf/cm²}	Main	0.17～0.7 {1.7～7.1}	0～0.7 {0～7.1}	0.17～0.7 {1.7～7.1}	0～0.7 {0～7.1}
	Pilot	See the table "Minimum Pilot Pressure"			
Proof pressure MPa {kgf/cm²}		1.05 {10.7}			
Operating temperature range (atmosphere and media) °C		5～50			
Shock resistance m/s² {G}	Lateral direction	1373.0 {140.0}			
	Axial direction	882.6 {90.0}			
Mounting direction		Any			

Notes: 1. For details, see the effective area.
2. For details, see the port size.

Remark: Conversion to psi., 1Mpa=145psi., 1kgf/cm²=14.2psi., e.g. 0.17Mpa=24.7psi.

Effective Area〔Cv〕

mm²

Basic model	Standard (single valve)	Remarks
280-4A **280-4A2**	25 〔1.39〕	●Attaching TS10-02 to the P, A, B ports brings the value to 24.7.
A280-4A **A280-4A2**	22 〔1.22〕	●When mounting to a sub-base or manifold. ●Attaching TS10-02 to the sub-base P, A, B ports brings the value to 17.1.

Air piloted Valve Connection Port

Basic model	Port specifications		Port size
280-4A	P, A, B, R	Female thread	Rc 1/4
	PA		Rc 1/8
280-4A2	P, A, B, R	Female thread	Rc 1/4
	PA, PB		Rc 1/8
280-4A-25	P, A, B, R	Female thread	Rc 1/4
	PA		Rc 1/8
	PR		M5×0.8
A280-4A2-25	P, A, B, R	Female thread	Rc 1/4
	PA, PB		Rc 1/8
	PR		M5×0.8

Manifold Connection Port Size

Manifold model	Port	Location of piping connection	Port size
280M□F	P	Manifold	Rc 3/8
	A,B	Valve	Rc 1/4
	R	Manifold	Rc 3/8
280M□FE	P	Manifold	Rc 3/8
	A,B	Valve	Rc 1/4
	R	Manifold	Rc 3/8
	PR	Manifold	Rc 1/8
280M□A	P	Manifold	Rc 3/8
	A,B		Rc 1/4
	R		Rc 3/8
	PR		Rc 1/8

Air piloted Valve Mass

g

Basic model	Mass
280-4A	142
280-4A2	160
A280-4A	154（365）
A280-4A2	171（388）

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
280M□F	（85×n）+100	35
280M□FE	（160×n）+190	50
280M□A	（530×n）+560	50

Minimum Pilot Pressure

MPa {kgf/cm²}

Model \ Main pressure	0.15 {1.5}	0.3 {3.0}	0.5 {5.1}	0.7 {7.1}
280-4A	0.10 {1.0}	0.17 {1.7}	0.26 {2.7}	0.35 {3.6}
280-4A2	0.02 {0.2}	0.02 {0.2}	0.02 {0.2}	0.02 {0.2}

Time Required for Switching

s

Model	Operation	Pilot line length ℓ m					
		2	6	10	20	50	100
280-4A	ON	0.063	0.129	0.190	0.443	1.430	3.930
	OFF	0.071	0.172	0.284	0.599	2.008	5.250
280-4A2	ON	0.050	0.132	0.218	0.485	1.540	4.100
	OFF	0.049	0.132	0.212	0.485	1.540	4.100

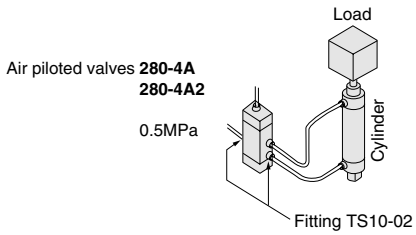
Measurement conditions: Pilot valve: Koganei solenoid valve (Effective area 2mm²)
Air pressure (Both main and pilot): 0.5MPa
Tube inner diameter: 4mm

Cylinder Operating Speed

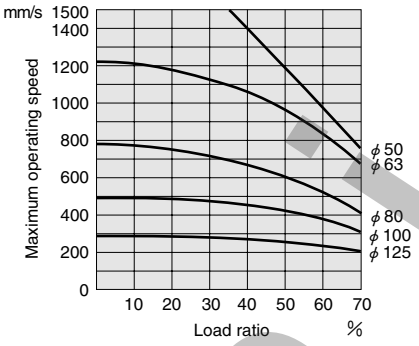
280-4A
280-4A2

Measurement conditions

- Air pressure : 0.5MPa {5.1kgf/cm²}
- Piping inner diameter and length: φ 7.5×1000mm
- Fitting:Quick fitting TS10-02
- Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
- Cylinder stroke : 300mm



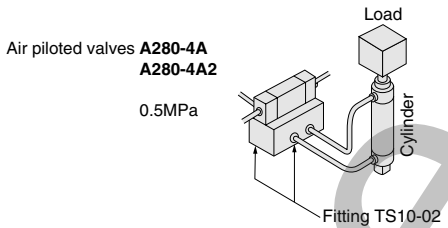
Maximum operating speed



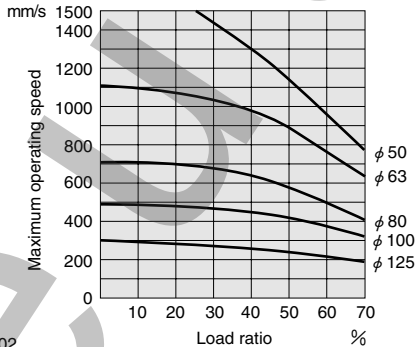
A280-4A
A280-4A2

Measurement conditions

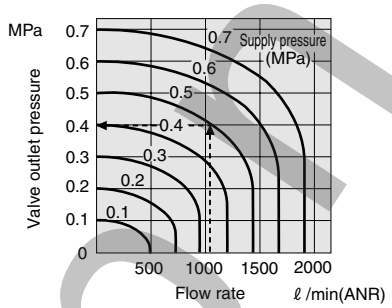
- Air pressure : 0.5MPa {5.1kgf/cm²}
- Piping inner diameter and length: φ 7.5×1000mm
- Fitting:Quick fitting TS10-02
- Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
- Cylinder stroke : 300mm



Maximum operating speed



Flow Rate



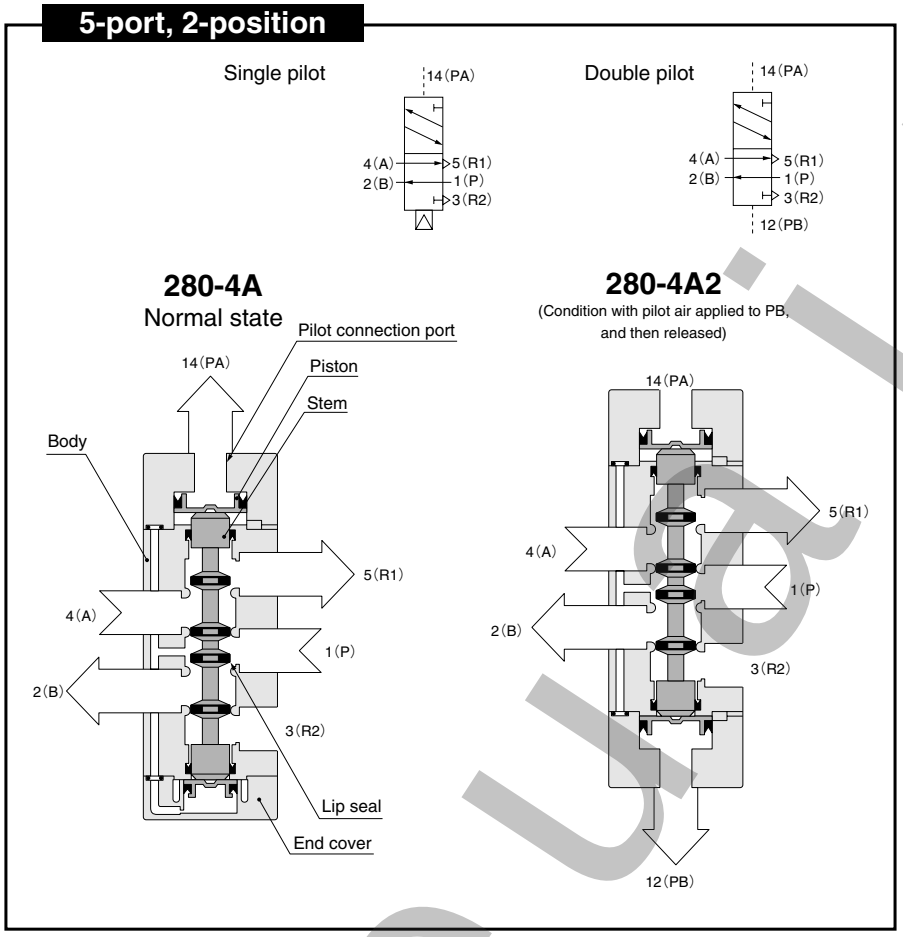
280-4A
280-4A2
A280-4A-25
A280-4A2-25

How to read the graph

If supply pressure is 0.5MPa and flow rate is 1050 ℓ /min (ANR), the valve outlet pressure becomes 0.4MPa.

Operating Principle and Symbol

5-port, 2-position



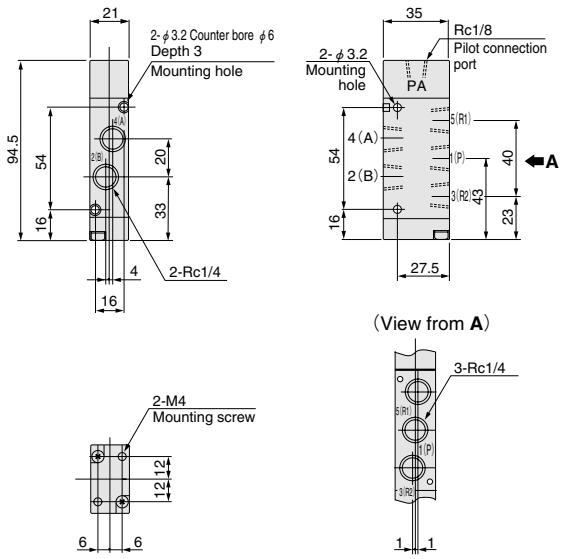
Major Parts and Materials

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

Dimensions of Air Piloted Valves 5-port, 2-position (Scale 1/4, Unit mm)

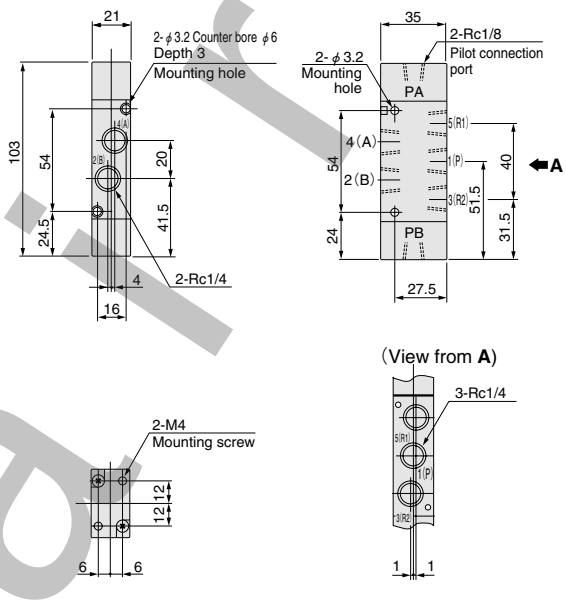
280-4A

CAD 280-4A



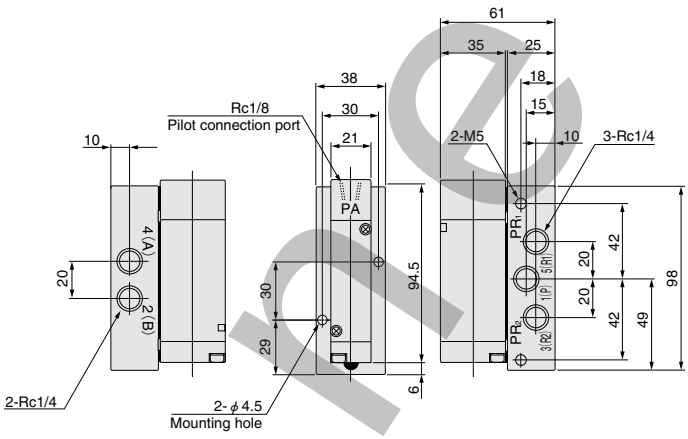
280-4A2

CAD 280-4A2



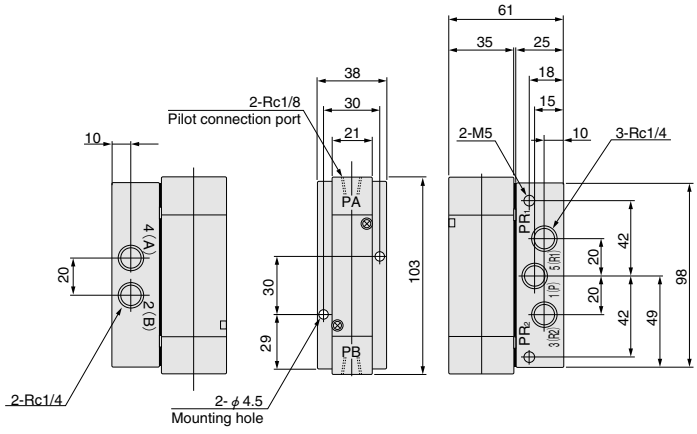
A280-4A-25

CAD A280-4A



A280-4A2-25

CAD A280-4A2

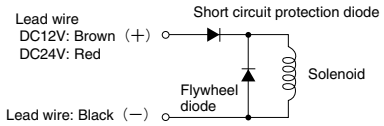


Solenoid

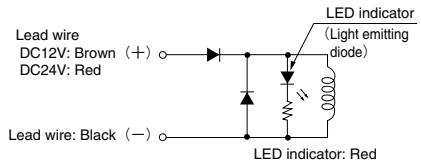
Internal circuit

●DC12V, DC24V

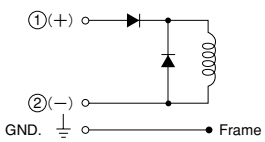
Standard solenoid (surge suppression)



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

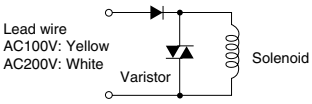


Solenoid with DIN connector (surge suppression)
Order code：-39

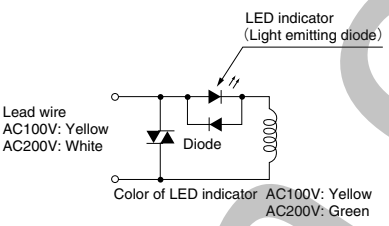


●AC100V, AC200V

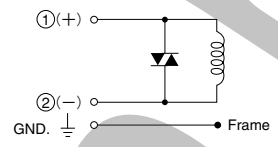
Standard solenoid (surge suppression)



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



Solenoid with DIN connector (surge suppression)
Order code：-39

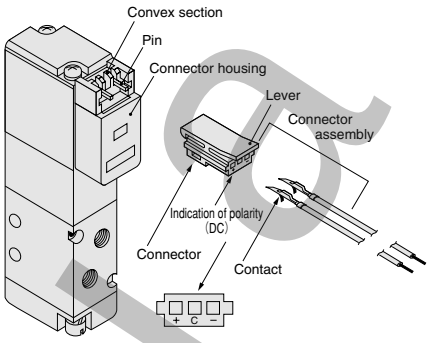


Cautions: 1. Do not apply megger between the lead wires.
2. While there is no danger with a DC solenoid of a short circuit due to the wrong polarity, the valve will not operate.
3. Leakage current inside the circuit could result in failure of the solenoid valve to return or in other erratic operation. 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 energizing, avoid energizing both solenoids simultaneously. The valve could fall into a neutral state.

Plug connector

Attaching and removing plug connector

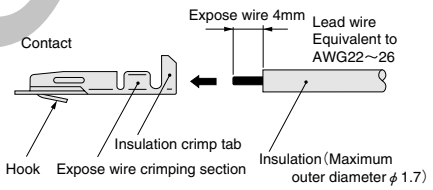
Use fingers to insert the connector into the pin, push in until the lever claw catches on the convex section on the connector housing, and complete the connection.
To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the convex section on the connector housing,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



※Illustration shows the 110 series.

Crimping of connecting lead wire and contact

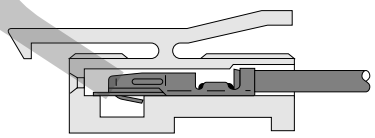
To crimp lead wires into contacts, strip off 4㎜ of the insulation from the end of the lead wire, insert into the contact, and crimp it. Be sure at this time to avoid catching the insulation on the expose wire as crimping section.



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

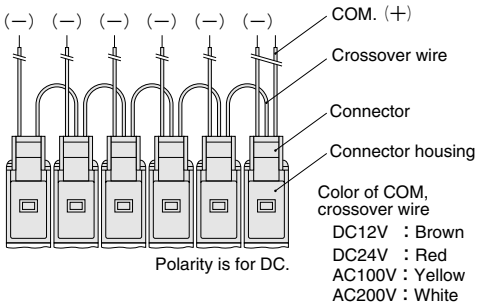
Insert the contact with lead wire into a plug connector □ hole until the contact hook catches and is secured to the plug connector. Confirm that the lead wire cannot be easily pulled out.
To remove, insert a tool with a fine tip (such as a small screwdriver) into the rectangular hole on the side of the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



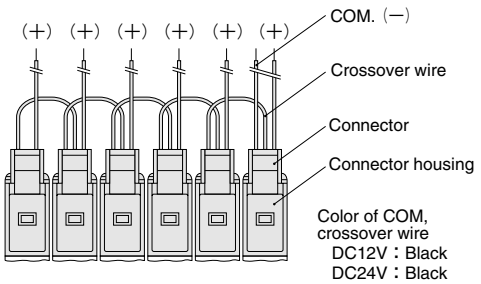
Cautions: 1. Do not pull hard on the lead wire.It could result in defective contacts, breaking wires, etc.
2. If the pin is bent, use a small screwdriver, etc., to gently straighten out the pin, and then complete the connection to the plug connector.

Common terminal plug connector

1. Common terminal pre-wiring for DC plus side and AC.
Order code **With straight connector: -CPSL**
With L connector: -CPLL



2. Common terminal pre-wiring for DC minus side
Order code **With straight connector: -CMSL**
With L connector: -CMLL

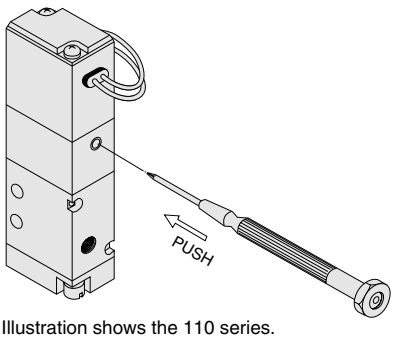


Cautions: 1. The diagram shows the straight connector configuration.
While the connector's facing direction is different in the case of the L connector, in every case the COM. lead wire outlet comes from the last station's mounted valve.
2. Since the COM. terminal is connected to a crossover terminal inside the connector housing, the connector cannot be switched between a plus common and a minus common by changing the connectors.

Manual override

Non-locking type

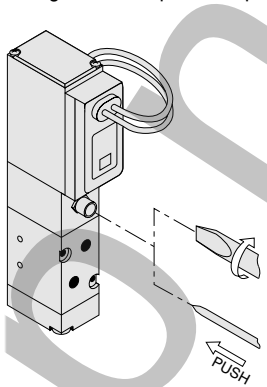
To operate, press the manual override all the way down. In the single solenoid, the valve works the same as an energized state as long as the manual override is pushed down, and returns to the rest position upon release.
In the double solenoid, pressing the manual override on the S1 (S2) side switches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



※Illustration shows the 110 series.

Locking protruding type

Use a small screwdriver to turn the adjusting knob several times in a clockwise direction, and lock the manual override in place. When locked, turning the adjusting knob several times in a counterclockwise direction releases a spring on the manual override, returns it to the original position, and releases the lock.
For the locking protruding type, if the adjusting knob is never turned, this type acts just like the non-locking type, like the valve energizing status as long as the manual override is pushed down, and returning to the rest position upon release.



※Illustration shows the 040 series.

Cautions: 1. The 280 series are internal pilot type solenoid valves. As a result, the manual override cannot switch the main valve without supplying air from the P port.

2. Always release the lock on the locking or locking protruding type manual override before commencing normal operation.

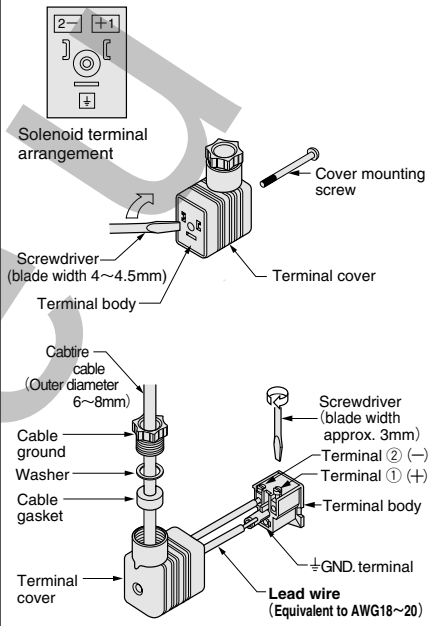
3. Do not attempt to operate the manual override with a pin or other object having an extremely fine tip. It could damage the manual override button.

4. Do not turn the adjusting knob more than the amount needed. It could result in defective operation.

DIN connector

Wiring instructions

Remove the cover mounting screws, and lift the terminal cover off from the solenoid.
Insert a screwdriver, etc. (blade width of 4～4.5㎜), into the groove on the boundary between the terminal body and terminal cover, lightly pry up the terminal body and lift it from the terminal cover.
Slip a cable ground, washer, and cable gasket over a cabtire cable (outer diameter 6～8㎜), insert the cable into the terminal cover's wiring outlet, and connect the core wire of the lead wire to the each terminal of a terminal block (screwdriver blade width of about 3㎜).



〔**Conforming to DIN43650 FORM B**〕