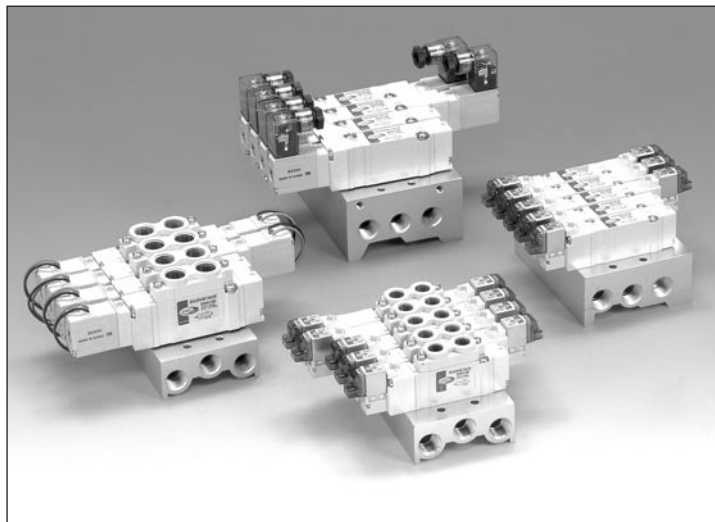


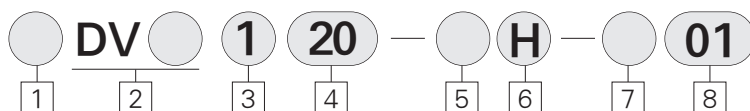
Series *DV1000 · 3000 · 4000*

5port Pilot Solenoid Valve



- **Quick response time & large flow capacity**
 - Response time is less than 12ms (DV1000)
 - Increase of CV factor (2.5 times larger than conventional valve with the same body width)
 - Low power consumption : 0.6W (Current draw : 25mA at 24V DC)
- **High reliability**
 - Long life
 - Wear Ring → To prevent spool abrasion
 - U Packing → To minimize frictional resistance
 - Piston return type at retraction
- **Product Features**
 - Easy wiring
 - Nickel plated (Copper free) application as standard
 - Built-in LED for grommet type as standard

How to order



1 Series

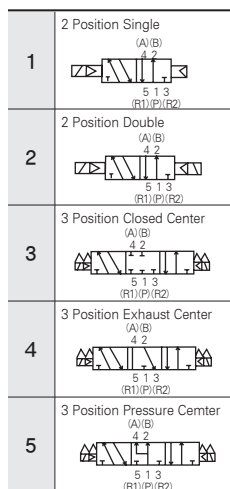
Blank : Rc(PT)
U : NPT

2 DV Valve Series

1 : DV1000 Series
3 : DV3000 Series
4 : DV4000 Series

3 Configuration

1 : Single Solenoid
2 : Double Solenoid
3 : Closed Center
4 : Exhaust Center
5 : Pressure Center



4 Manifold Specifications

20 : Body Ported
40 : Base Mounted

5 Voltage

1 : AC110V
2 : AC220V *
5 : DC24V
6 : DC12V

* AC 220V type, Inquire Separately

6 Electrical Entry

H : Horizontal Connector
V : Vertical Connector
G : Grommet Type (Basic Option Lamp)
D : Din Terminal Type (Without Lamp)
DZ : Din terminal Type (With Lamp)-only, 24VDC

* G, D, DZ Types are for only DV3000, DV4000

7 Blank : Rc(PT)

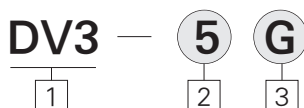
G : Rc(PF)

8 Port Size

Blank : Without Sub Plate
M5 : M5×0.8 (Series DV1000)
10 : 10-32UNF (Series UDV1000)
01 : Rc(PT) 1/8 (Series DV3000)
02 : Rc(PT) 1/4 (Series DV4000)

* When using a TPC valve be sure to use the TPC gasket
* It is standard to attach the LAMP/SURGE voltage protection circuit. (Products without a LAMP or SURGE voltage protection circuit should be contacted separately)

How to order



1 DV Series Pilot Valve Ass'y

2 Voltage

1 : AC110V
2 : AC220V
5 : DC24V

* AC 110V/220V type, Inquire Separately

3 Electrical Entry

G : Grommet type (With Lamp as Standard)
D : Din Terminal type (Without Lamp)
DZ : Din Terminal type (With Lamp)

Manifold



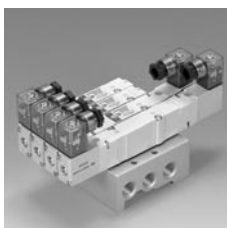
Body ported(Plug Type)



Base Mounted(Grommet Type)



Body ported(DIN Type)



Base Mounted(DIN Type)

Specifications

Series		DV1000	DV3000	DV4000
Acting		5 Port Pilot Type Solenoid Valve(Rubber Seal)		
Fluid		Air		
Operating Pressure Range	2Position Single	0.15~0.7MPa(20~100psi)		
	2Position Double	0.1~0.7MPa(14~100psi)		
	3 Position	0.2~0.7MPa(27~100psi)		
Ambient and Fluid Temperature℃(°F)		MAX. 50℃(122°F)		
Manual Override		Push & Lock Type		
Pilot Exhaust Type		Individual exhaust, Common exhaust for main valve and pilot Valve		
Lubrication		Not Required		
Mounting Position		Free		
Impact/Vibration Resistance(m/s ²)	H.V	150/30(8.3~2000Hz)		
	G,D,DZ	300/50		
Max. Operating Frequency	2Position	10	5	5
	3 Position	3	3	3
Protection Structure		Dust Proof		
Lead Electrical Entry		Connector Mounting Type (H:Horizontal,V:Vertical), Grommet, Din Terminal Type		
Voltage		DC12, DC24V, AC110V, AC220V		
Voltage Allowance		-10(%)~+10(%) of Rated Voltage		
Polarity		Non-polar (standard)(※DC24V:Polarity type)		
Response Time(ms)	at 5kgf/cm ² (71.1psi)	H.V	~12ms	~18 ms
		G,D,DZ	-	~26 ms
Power Consumption(W)	H.V	1.0(※DC24V:0.6)(Indicator Light and Surge suppressor)		
	G,D,DZ	With Lamp(1.8) Without Lamp(1.6)		
Effective Orifice		Single	3.6mm ² (Cv0.2)	9.0mm ² (Cv0.5) 16.2mm ² (Cv0.9)

Series DV1000 · 3000 · 4000 Body Ported Type Effective Orifice and Reponse Time

Type	Valve Model	Port Size Rc(PT)/NPT	Configuration		Operating Pressure Range Mpa(psi)	Effective Orifice (mm ²) (Cv)	Response Time(ms)		Weight · g(oz)
							H,V	G,D,DZ	
DV1120-○-M5	DV 1120	M5/10-32 UNF	2	Single	0.15~0.70 (20~100)	3.6 (0.20)	~12	-	52(1.83)
DV1220-○-M5	DV 1220			Double	0.10~0.70 (14~100)	3.6 (0.20)	~10	-	64(2.26)
DV1320-○-M5	DV 1320		3	Closed Center	0.20~0.70 (27~100)	3.3 (0.18)	~16	-	68(2.4)
DV1420-○-M5	DV 1420			Exhaust Center	0.20~0.70 (27~100)	3.3 (0.18)	~16	-	68(2.4)
DV1520-○-M5	DV 1520			Pressure Center	0.20~0.70 (27~100)	3.6 (0.20)	~16	-	68(2.4)
DV3120-○-M5	DV 3120	Rc(PT)/NPT 1/8"	2	Single	0.15~0.70 (20~100)	9.0 (0.50)	~18	~26	120(4.23)
DV3220-○-M5	DV 3220			Double	0.10~0.70 (14~100)	9.0 (0.50)	~18	~22	134(4.72)
DV3320-○-M5	DV 3320		3	Closed Center	0.20~0.70 (27~100)	7.2 (0.40)	~32	~38	142(5.01)
DV3420-○-M5	DV 3420			Exhaust Center	0.20~0.70 (27~100)	7.2 (0.40)	~32	~38	142(5.01)
DV3520-○-M5	DV 3520			Pressure Center	0.20~0.70 (27~100)	9.5 (0.53)	~32	~38	142(5.01)
DV4120-○-M5	DV 4120	Rc(PT)/NPT 1/4"	2	Single	0.15~0.70 (20~100)	16.2 (0.90)	~30	~38	124(4.37)
DV4220-○-M5	DV 4220			Double	0.10~0.70 (14~100)	16.2 (0.90)	~30	~30	136(4.8)
DV4320-○-M5	DV 4320		3	Closed Center	0.20~0.70 (27~100)	10.8 (0.60)	~50	~56	144(5.08)
DV4420-○-M5	DV 4420			Exhaust Center	0.20~0.70 (27~100)	10.8 (0.60)	~50	~56	144(5.08)
DV4520-○-M5	DV 4520			Pressure Center	0.20~0.70 (27~100)	17.1 (0.96)	~50	~56	144(5.08)

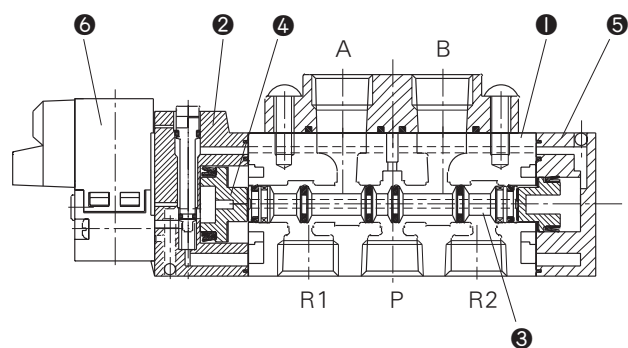
Series DV1000 · 3000 · 4000 Base Mounted Type Effective Orifice and Reponse Time

Type	Valve Model	Port Size		Configuration		Operating Pressure Range Mpa(psi)	Effective Orifice (mm ²) (Cv)	Response Time(ms)		Weight · g(oz)
		P, R1, R2	A, B					H,V	G,D,DZ	
DV1140-○-M5	DV 1140	Rc(PT)/NPT 1/8"	Rc(PT)/NPT M5×0.8 10-32 UNF	2	Single	0.15~0.70 (20~100)	4.0 (0.22)	~12	-	46(1.62)
DV1240-○-M5	DV 1240				Double	0.10~0.70 (14~100)	4.0 (0.22)	~10	-	58(2.05)
DV1340-○-M5	DV 1340			3	Closed Center	0.20~0.70 (27~100)	3.6 (0.20)	~16	-	62(2.19)
DV1440-○-M5	DV 1440				Exhaust Center	0.20~0.70 (27~100)	3.6 (0.20)	~16	-	62(2.19)
DV1540-○-M5	DV 1540				Pressure Center	0.20~0.70 (27~100)	3.8 (0.21)	~16	-	62(2.19)
DV3140-○-M5	DV 3140	Rc(PT)/NPT 1/4"	Rc(PT)/NPT 1/8"	2	Single	0.15~0.70 (20~100)	9.5 (0.53)	~18	~26	92(3.24)
DV3240-○-M5	DV 3240				Double	0.10~0.70 (14~100)	9.5 (0.53)	~18	~22	106(3.74)
DV3340-○-M5	DV 3340			3	Closed Center	0.20~0.70 (27~100)	7.2 (0.40)	~32	~38	114(4.02)
DV3440-○-M5	DV 3440				Exhaust Center	0.20~0.70 (27~100)	7.2 (0.40)	~32	~38	114(4.02)
DV3540-○-M5	DV 3540				Pressure Center	0.20~0.70 (27~100)	10.0 (0.55)	~32	~38	114(4.02)
DV4140-○-M5	DV 4140	Rc(PT)/NPT 3/8"	Rc(PT)/NPT 1/4"	2	Single	0.15~0.70 (20~100)	16.2 (0.90)	~30	~38	80(2.8)
DV4240-○-M5	DV 4240				Double	0.10~0.70 (14~100)	16.2 (0.90)	~30	~30	96(3.4)
DV4340-○-M5	DV 4340			3	Closed Center	0.20~0.70 (27~100)	10.8 (0.60)	~50	~56	104(3.67)
DV4440-○-M5	DV 4440				Exhaust Center	0.20~0.70 (27~100)	10.8 (0.60)	~50	~56	104(3.67)
DV4540-○-M5	DV 4540				Pressure Center	0.20~0.70 (27~100)	17.1 (0.96)	~50	~56	104(3.67)

Series DV1000/3000/4000

Construction / Body Ported type

2 Position Single

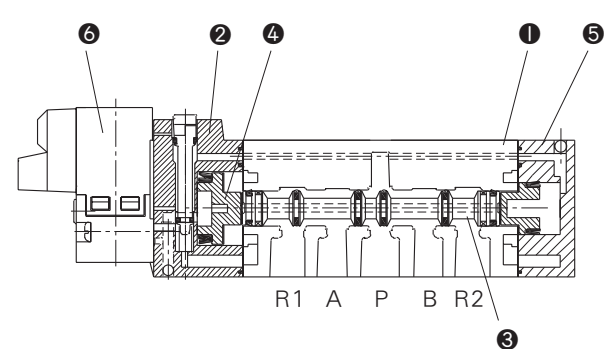


Main parts

No.	Description	Material	Note
1	Body	Aluminum die cast	(DV4000Aluminum Die Cast)
2	Adapter plate	Resin	
3	Spool	Aluminum	
4	Piston	Resin	
5	End cover	Resin	
6	Solenoid ass'y	-	

Construction / Base mounted type

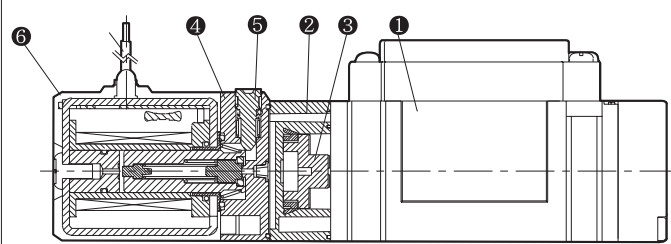
2 Position Single



Main parts

No.	Description	Material	Note
1	Body	Aluminum die cast	(DV4000Aluminum Die Cast)
2	Adapter plate	Resin	
3	Spool	Aluminum	
4	Piston	Resin	
5	End cover	Resin	
6	Solenoid ass'y	-	

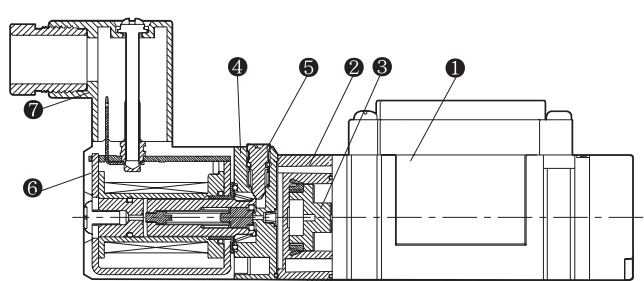
Construction / Grommet type



Main parts

No.	Description	Material	Note
1	Body	-	DV3000/DV4000 SERIES
2	Adapter plate	Resin	
3	Piston	Resin	
4	Pilot body	Resin	
5	Manual	Resin	
6	Solenoid coil	-	
7	Lead wire	-	

Construction / Din terminal type



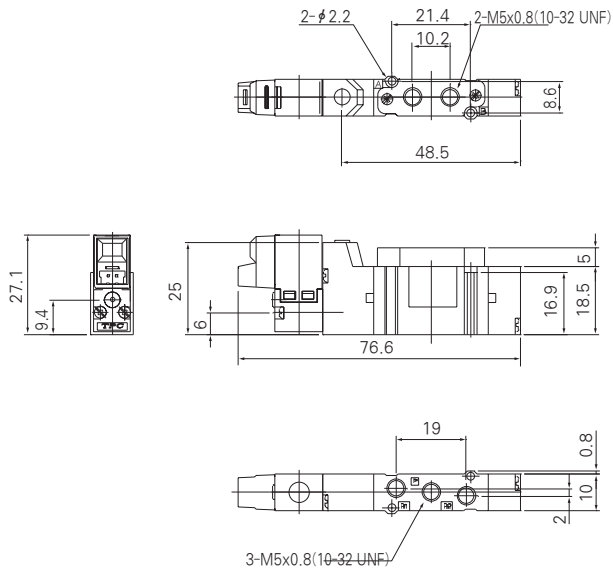
Main parts

No.	Description	Material	Note
1	Body	-	DV3000/DV4000 SERIES
2	Adapter plate	Resin	
3	Piston	Resin	
4	Pilot body	Resin	
5	Manual	Resin	
6	Solenoid coil	-	
7	Din connector ass'y	-	mpm

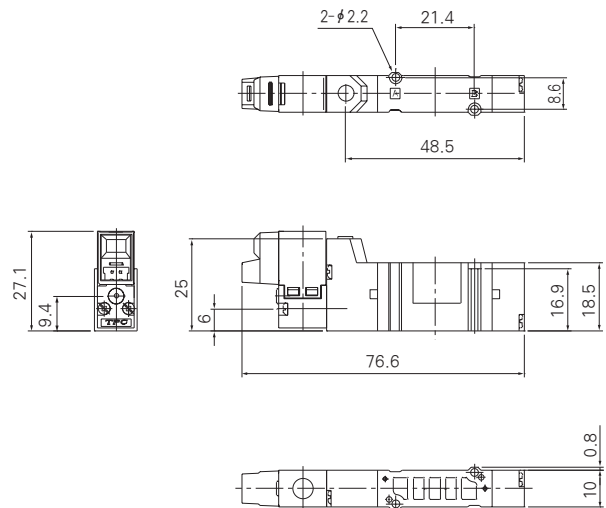
Series DV1000 / 2 Position / H: Horizontal Connector Type

(Unit:mm)

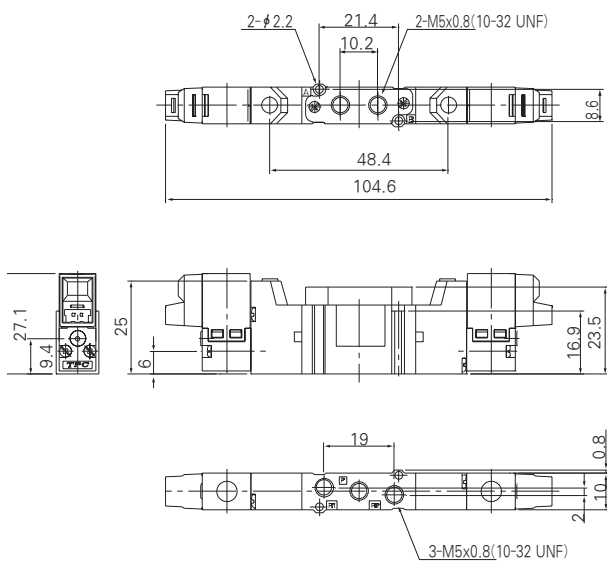
DV1120 Single / Body Ported Type



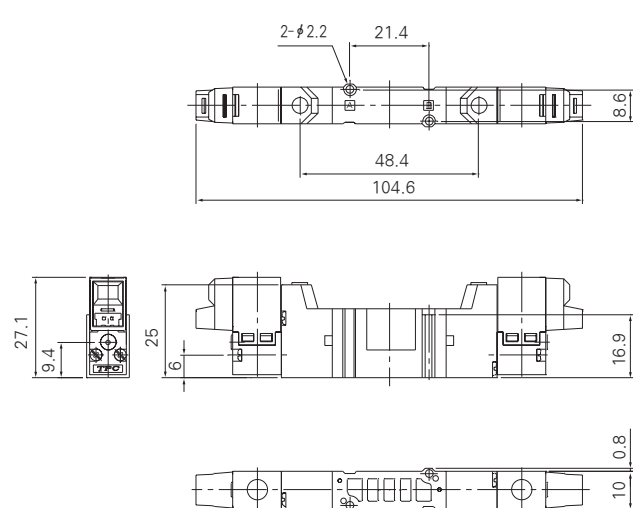
DV1140 Single / Base Mounted Type



DV1220 Double / Body Ported Type



DV1240 Double / Base Mounted Type



DW

DV100

DV1000 -
3000 - 4000

DS300

DS3000

DS5000

DS2000

DX2R

DP300 -
3000 - 5000

DS6000

DX2

DM

DH

DT220

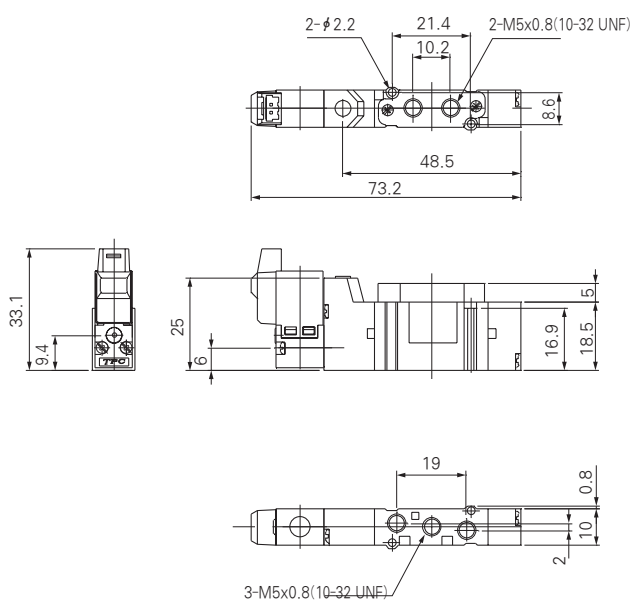
DC

Series DV1000

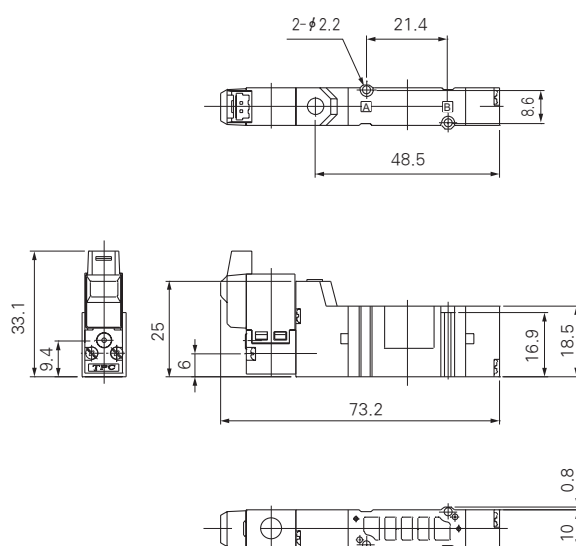
Series DV1000 / 2 Position / V: Vertical Connector Type

(Unit:mm)

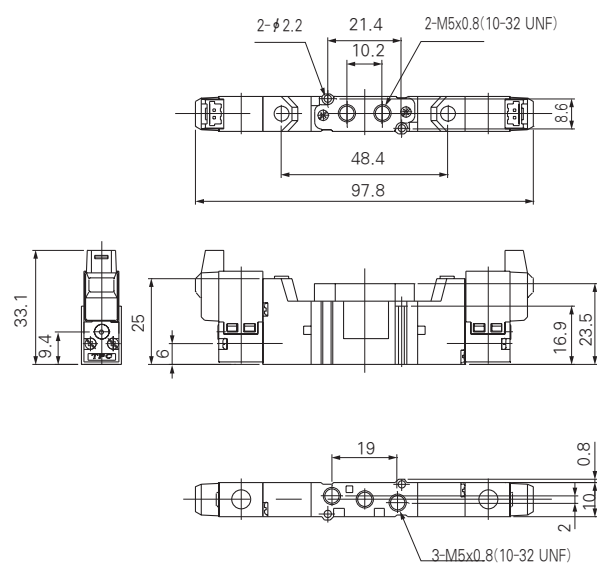
DV1120 Single / Body Ported Type



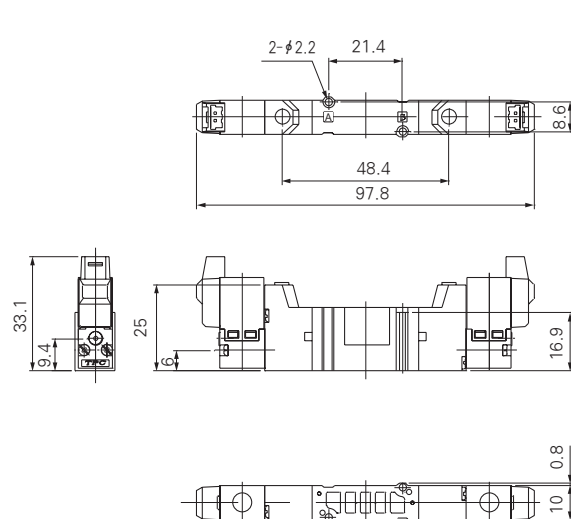
DV1140 Single / Base Mounted Type



DV1220 Double / Body Ported Type



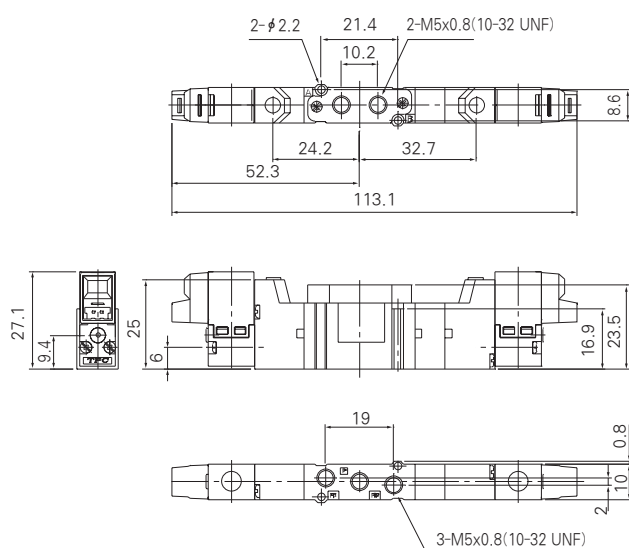
DV1240 Double / Base Mounted Type



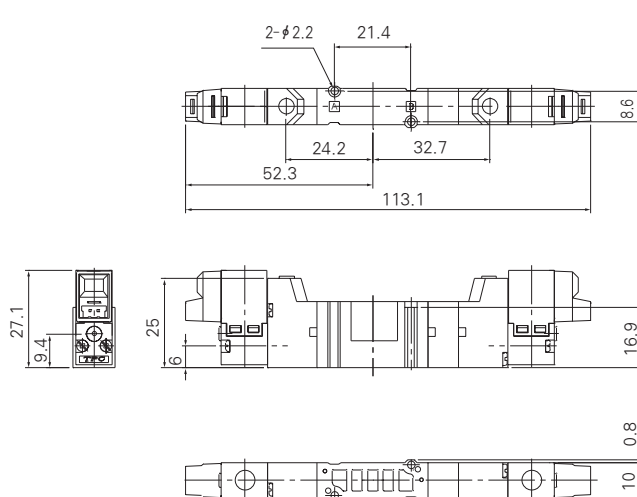
Series DV1000 / 3 Position / H: Horizontal Connector Type

(Unit:mm)

DV1320/1420/1520 3 Position / Body Ported Type



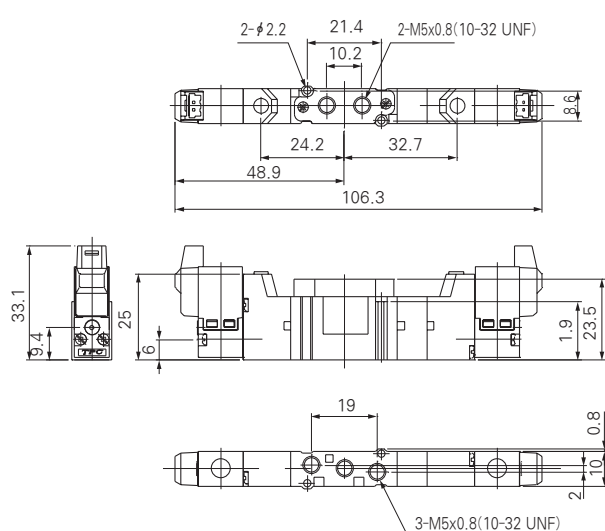
DV1320/1420/1520 3 Position / Body Ported Type



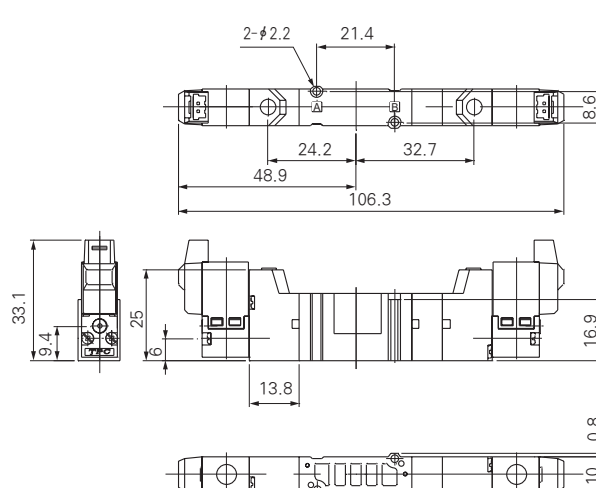
Series DV1000 / 3 Position / V: Vertical Connector Type

(Unit:mm)

DV1320/1420/1520 3 Position / Body Ported Type



DV1320/1420/1520 3 Position / Body Ported Type



DW

DV100

DV1000 -
3000 - 4000

DS300

DS3000

DS5000

DS2000

DX2R

DP300 -
3000 - 5000

DS6000

DX2

DM

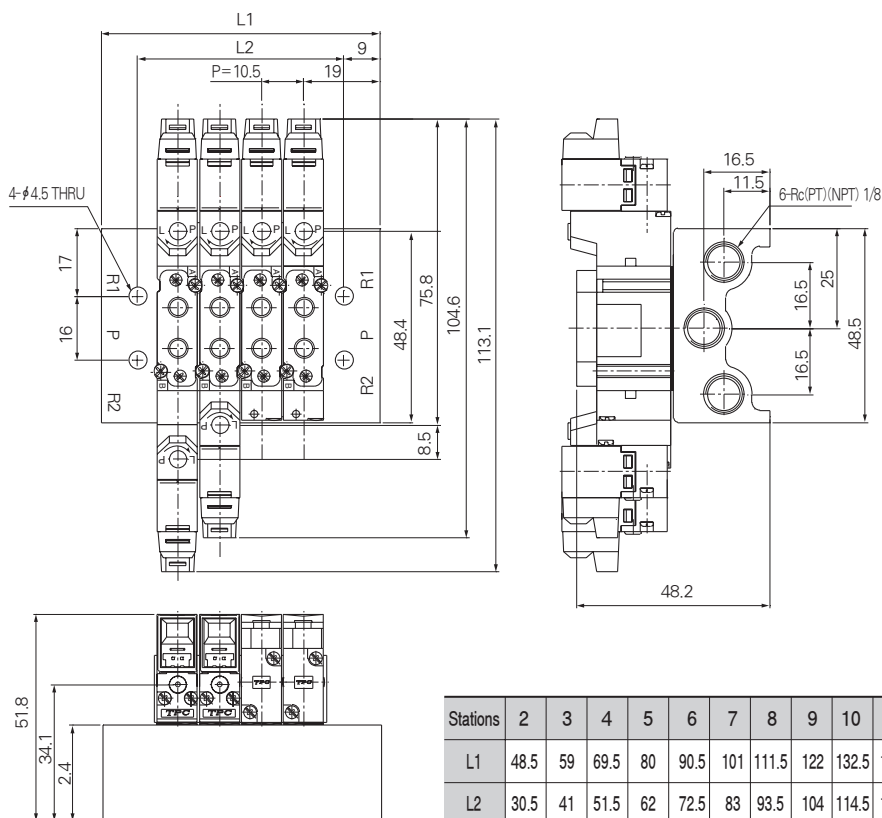
DH

DT220

DC

Series DV1000

Manifold Dimensions / Series DV1000 (Body Ported) / H: Horizontal Connector Type



How to order

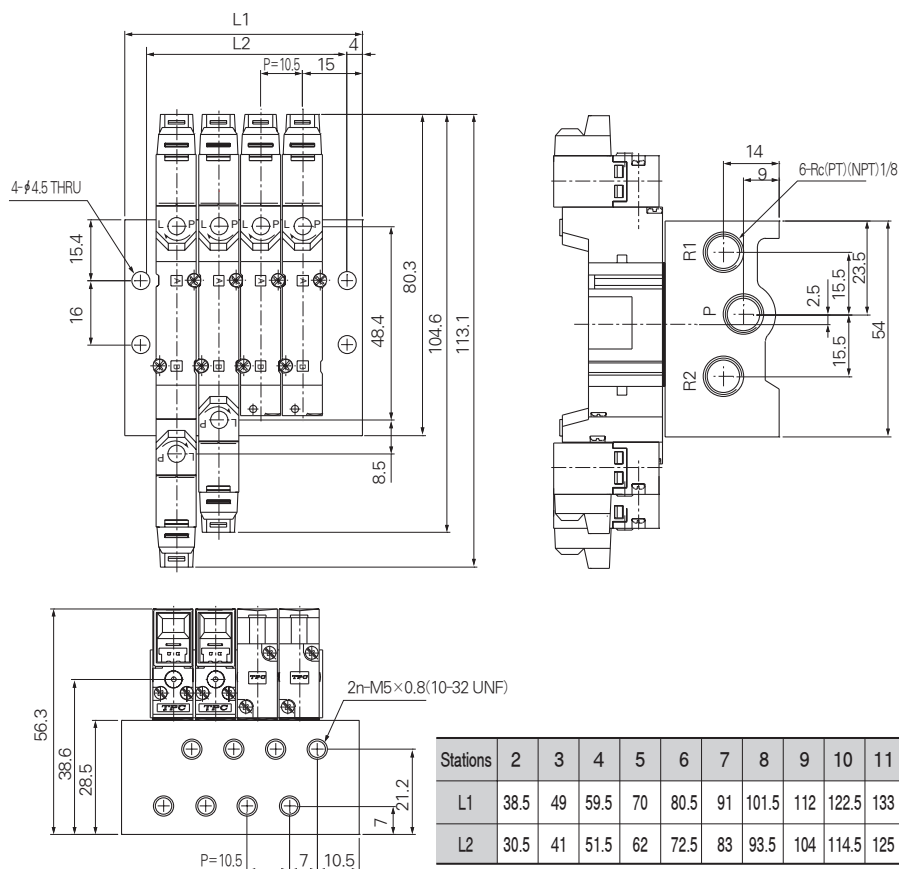
DVM1 — 20 — 05

1 2 3

- ☐ 1 DV1000 Manifold
☐ 2 Body Ported Type
☐ 3 Stations (2~20)

(mm)																			
Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5	227	237.5
L2	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5

Manifold Dimensions / Series DV1000 (Base Mounted) / H: Horizontal Connector Type



How To Order

DVM1 — 40 — 05

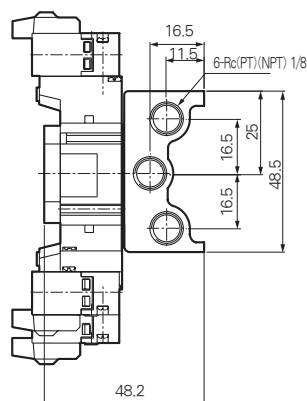
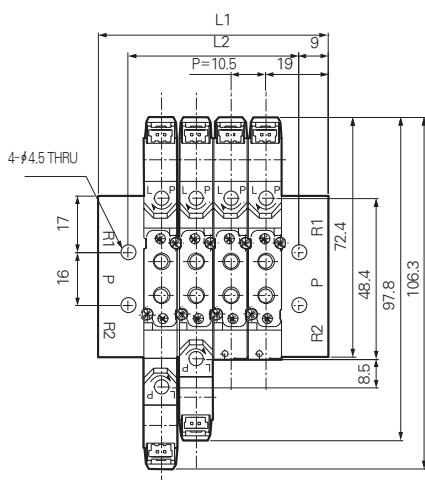
1 2 3

- ① DV1000 Manifold
- ② Base Mounted type
- ③ Stations (2~20)

(mm)																			
Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	38.5	49	59.5	70	80.5	91	101.5	112	122.5	133	143.5	154	164.5	175	185.5	196	206.5	217	227.5
L2	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5

Dimensions / Series DV1000 (Body Ported) / V: Vertical Connector Type

(Unit:mm)

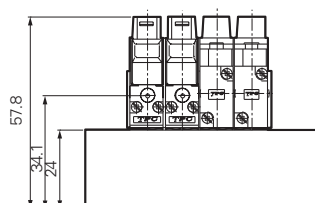


How To Order

DVM1 — **20** — **05**

1 2 3

- 1 DV1000 Manifold
- 2 Body Ported Type
- 3 Stations (2~20)

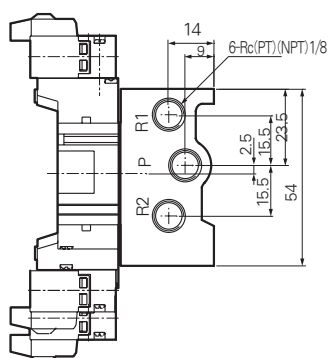
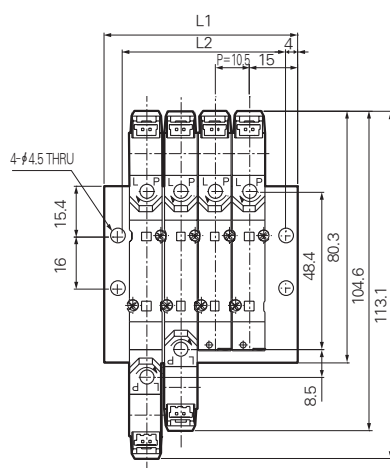


Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	48.5	59	69.5	80	90.5	101	111.5	122	132.5	143	153.5	164	174.5	185	195.5	206	216.5	227	237.5
L2	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5

(mm)

Dimensions / Series DV1000 (Base Mounted) / V: Vertical Connector Type

(Unit:mm)

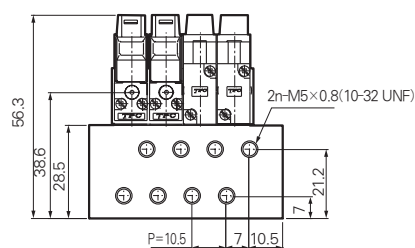


How To Order

DVM1 — **40** — **05**

1 2 3

- 1 DV1000 Manifold
- 2 Base Mounted type
- 3 Stations (2~20)



Stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	38.5	49	59.5	70	80.5	91	101.5	112	122.5	133	143.5	154	164.5	175	185.5	196	206.5	217	227.5
L2	30.5	41	51.5	62	72.5	83	93.5	104	114.5	125	135.5	146	156.5	167	177.5	188	198.5	209	219.5

(mm)

DW

DV100

DV1000 -
3000 - 4000

DS300

DS3000

DS5000

DS2000

DX2R

DP300 -
3000 - 5000

DS6000

DX2

DM

DH

DT220

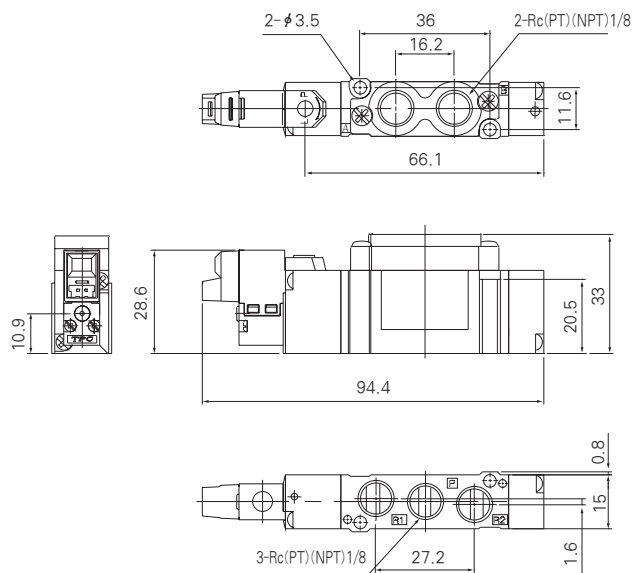
DC

Series DV1000

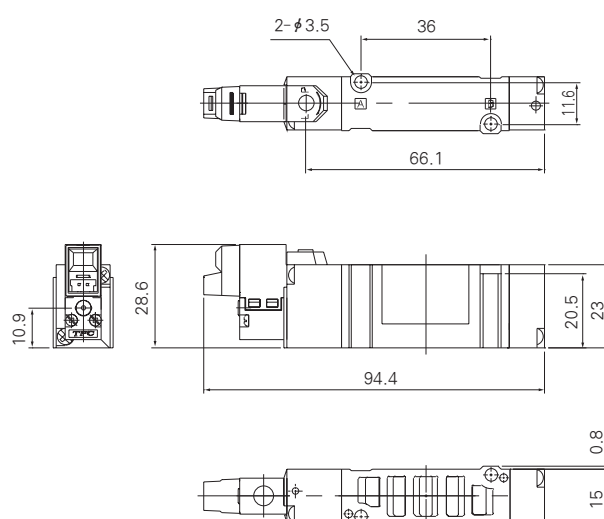
Series DV3000 / 2 Position / H: Horizontal Connector Type

(Unit:mm)

DV3120 Single / Body Ported Type



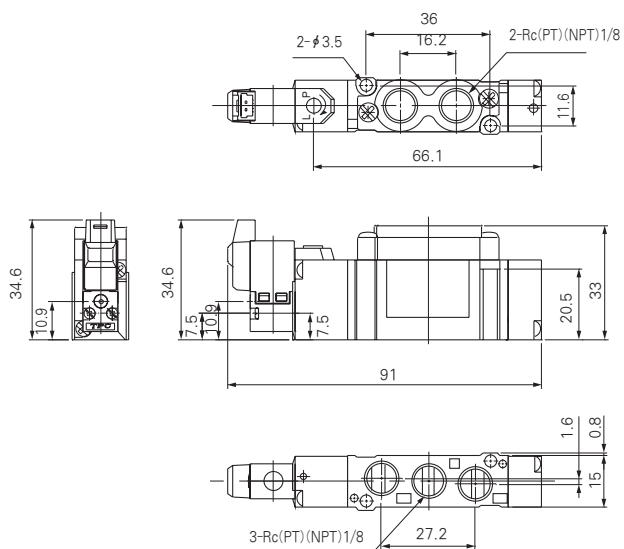
DV3140 Single / Base Mounted Type



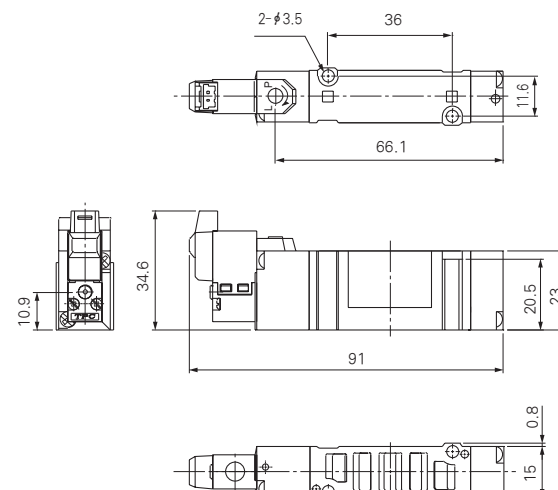
Series DV3000 / 2 Position / V: Vertical Connector Type

(Unit:mm)

DV3120 Single / Body Ported Type



DV3140 Single / Base Mounted Type



Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard by labeling "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO4414^{Note1)}, KS B 6376^{Note2)}, JIS B 8370^{Note3)} and other safety practices.

 **Danger** : In extreme conditions, there is a possibility of serious injury or loss of life.

 **Warning** : Operator error could result in serious injury or loss of life.

 **Caution** : Operator error could result in injury or equipment damage.

※1) ISO4414 : Pneumatic fluid power—Recommendations for the application of equipment to transmission and control systems.

※2) KS B 6376 : Pneumatic system axiom

※3) JIS B 8370 : Pneumatic system axiom

Warning

● **Contact us if the product is to be used in any of the following conditions:**

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

● **The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.**

Since the products specified here are used in various operating conditions, their compatibility with the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.

● **Only trained personnel should operate pneumatically operated machinery and equipment.**

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

● **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**

1. Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for the equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is re-started, take measures to prevent quick extensions of the cylinder piston rod etc.(Bleed air into the system gradually to create back-pressure.)

Precautions

Be sure to read before handling.

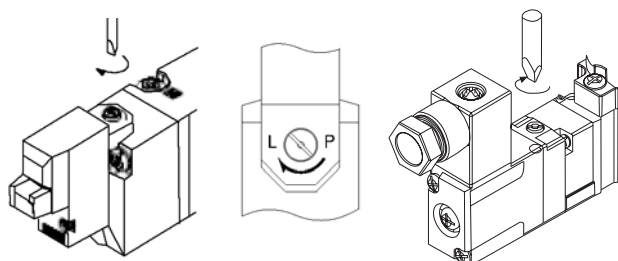
Refer to safety instructions and common precautions.

⚠ Caution

Manual operation

[The Push-turn Lock method driver operation]

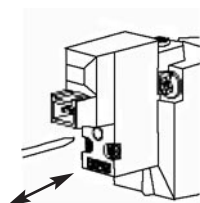
While pushing the manual button turn to the arrow direction. If you do not turn and push you can use the Non-lock Push method to operate. When using a driver you can use a watch driver to easily turn. When removing the Lock you can turn to the opposite direction of the arrow. If you press too hard you will damage the valve.



Caution) When activating automatically have the manual button on the Lock stage and make sure to activate after removing the Lock.

[Non-lock Push method manual operation]

Using the Solenoid coil side manual operation press lightly on the manual button under the coil connector with a driver as seen below.



Pilot air exhaust port

1) Collection exhaustion

The DV series is a type that the pilot valve exhaustion is collected to the main valve. Be careful that the exhaust port is clear of obstructions. The P, R port is on both sides of the manifold and you can select the exhaust direction according to the installation location. The P port exhaust must have the appropriate size for the exhaust connection hole in order to prevent an output deficiency of the actuator and operational errors due to a shortage in pressure. Make sure to use plenty of exhaust port on both sides to ensure no operational errors occur due to exhaust resistance when you are installing the R port noise device.

2) Individual exhaust

① Since it is in to type of individual exhaustion that releases air in the pilot valve into atmosphere, it cannot be used in places requiring high purity.

② Use connector type(H or V) to exhaust(grouped exhaustion) pilot air in grouped state through main valve.

[Using the 3 port valve]

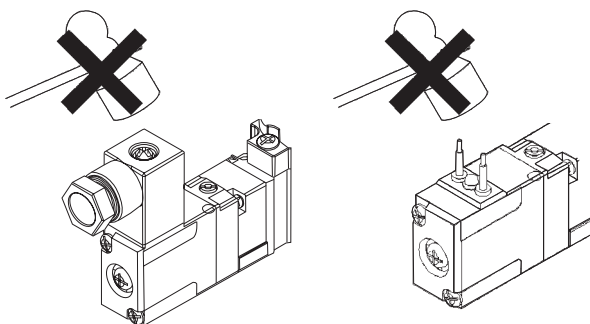
The DV series has a specification of a 5 port valve but if you are using a 3 port valve use one direction of a cylinder port (A,B) to stop up the plug and you will be able to use the Normal Close (N.C) or Normal Open (N.O) 3 port valve.

Except, use with the exhaust port(R1, R2) open.

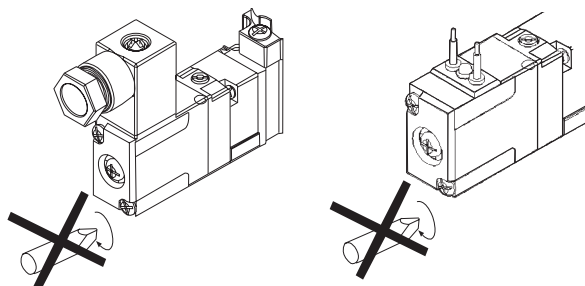
Location of the plug		B port	A port
Conversion Method		N.C	N.O
Number of Solenoids	Single		
	Double		

Cautions for wiring and use

1) Be careful to prevent connector case of solenoid coil or lamp from being broken by shock.

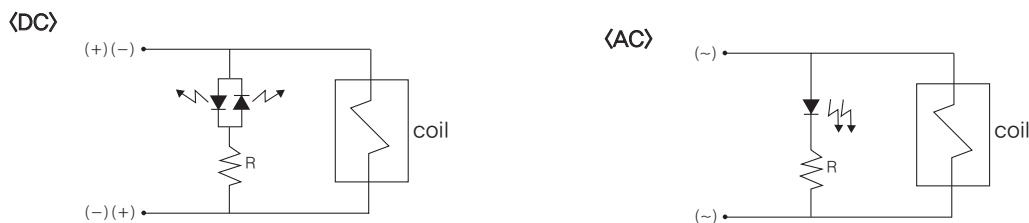


2) Do not assemble/disassemble screw at the center of solenoid coil, because it is to fasten core.



Precautions

- 3) Avoid the following places where the life of valve may be radically reduced.
 - a. Place with much dust, moisture, vibration or shock
 - b. Place subject to the influence of salt, corrosive gas and chemicals
 - c. Place where the neighboring temperature is not in the range of 0~60°C(32~140°F)
- 4) By operating solenoid valve, keep the fluctuation of rated voltage within + / -10% of rated voltage. Otherwise, malfunction may be caused or coil may be damaged.
- 5) Surge voltage that generated while supplying/blocking power to/at solenoid valve may affect magnetic circuit adversely. Thus, it is required to prepare measure for this problem in the case of PLC control.
- 6) Though power is blocked, operation may continue due to leakage current in the magnetic circuit. Thus, be sure to keep the residual leakage current at both ends under 20% of rated voltage for AC and under 3% of rated voltage for DC.
- 7) Valves of AC 110V, AC 220V Specification
Our valve is a non-standard option specification solenoid Coil which you may ask about when ordering.



How to use the plug connector

When you are installing the connector hold the lever and connector body with your hands and insert the connector in the connector housing, then lock it by pressing in the connector lever hook. When you are separating the connector press the lever to disconnect the hook from the connector housing. When you are pulling the lead line too lightly or put too much force it will result in poor connections or disconnections.

[How to Use DIN Connector]

Wiring

- 1) Loosen set screw and pull out the connector from the terminal block of the solenoid.
- 2) Pull out screw and insert a screwdriver to the slit area near the bottom of terminal block to separate block and housing.
- 3) Loose terminal screw of terminal block, place bare end of lead wire into terminal in accordance with wiring method, and affix it securely with the terminal screw.
- 4) Tighten ground nut to secure the wire.

⚠ Caution

Use the cabtire cable(ø 3.5 to ø 7) for wiring to meet IP65 standard(enclosure). Tighten the ground nut and set screw with the specified range of torque.

Change of electrical entry(Orientation)

After separating terminal block and housing, mount housing at any position(total 4 directions, per 90 degrees), therefore, changing electrical entry.

* In the case of indicator light, avoid damaging the light with lead wire.

Precautions

Plug connector in out vertically, never at an angle.