

KONAN®

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3/4/5 Port • For pneumatic control

Explosion-proof / Compact explosion-proof
For hydrogen / Intrinsic safety solenoid valves

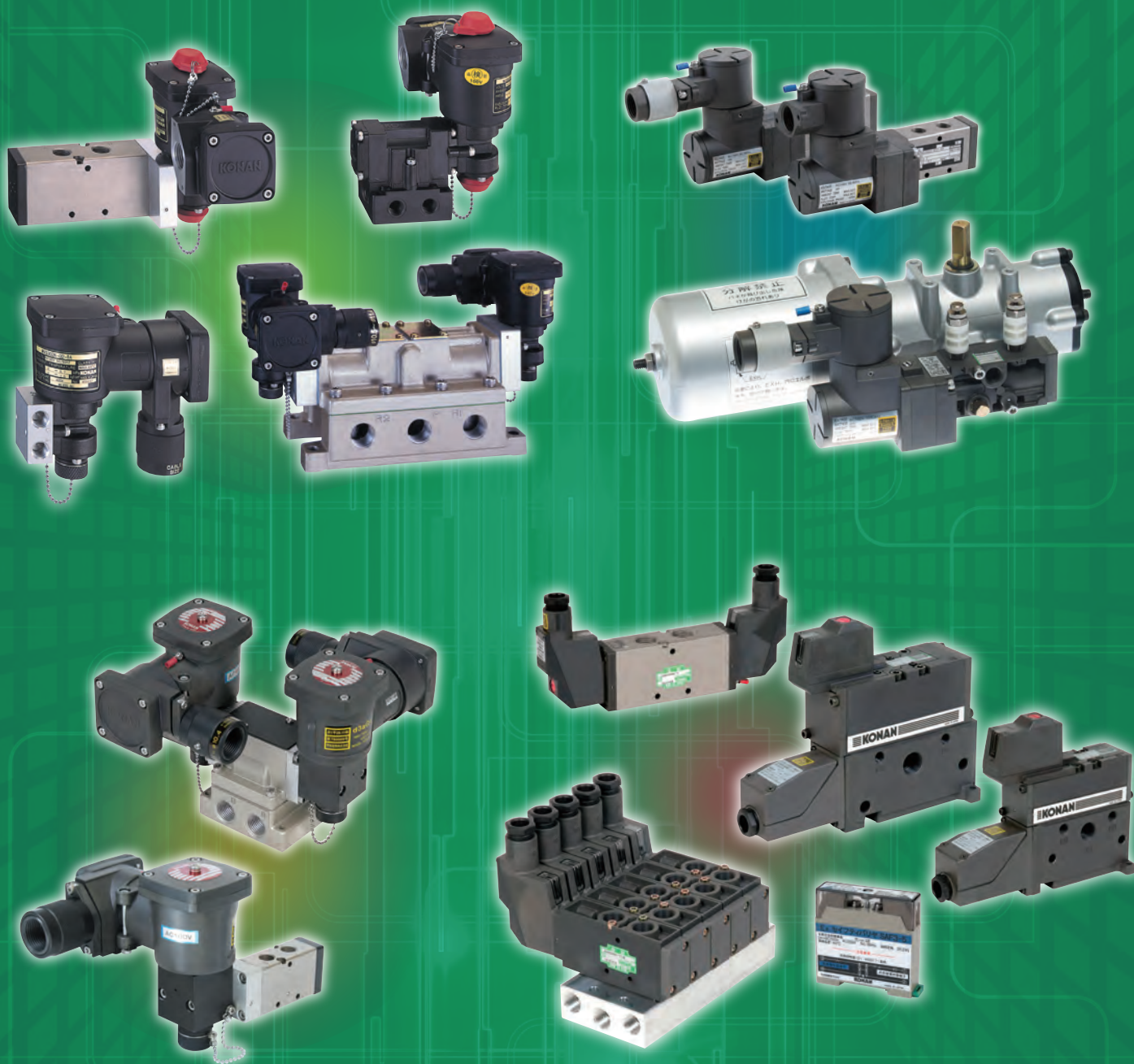
Explosion-proof and drip-proof solenoid valve lineup

Explosion-proof solenoid valves

**d2G4
Exd II BT4**

Compact explosion-proof solenoid valves

**d2G4
Exd II BT4**



Explosion-proof solenoid valves for hydrogen

d3aG4

Intrinsic safety solenoid valves / Explosion-proof barrier

**Exia II BT5
Exia II C**

Variety of explosion-proof / drip-proof

Application	Proof types		
For general pneumatic control Listed in this catalog.	Flame-proof enclosure construction	Explosion-proof construction standard for electric equipment	d2G4
			d3aG4 (Explosion-proof for hydrogen)
		Technical standards conforming to the international standards	Exd II BT4
	Intrinsic safety construction	Explosion-proof construction standard for electric equipment	i2G4
		Technical standards conforming to the international standards	Exia II BT5
Drip-proof			



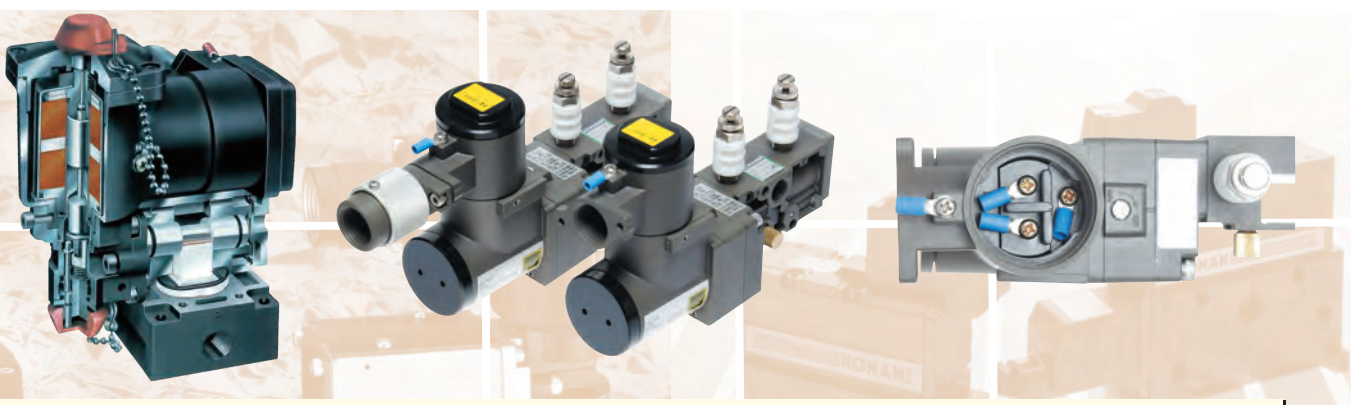
Application	Proof types		
For Fluid Control	Flame-proof enclosure construction	Explosion-proof construction standard for electric equipment	d2G4
			d3aG4 (Explosion-proof for hydrogen)
		Technical standards conforming to the international standards	Exd II BT4
		Class NK	d2G4
NEMA4 drip-proof : Conforms to JIS C 0920 (protection class:5/jet-proof) and IEC 144 (protection class:IP55)			
NEMA4,7 explosion-proof, drip-proof : Conforms to JIS C 0920 (protection class:5/jet-proof) and IEC 144 (protection class:IP65)			

For pneumatic control

3/4/5 Port Explosion-proof
4/5 Port For hydrogen

5 Port Compact explosion-proof
5 Port Intrinsic safety

Feature	Port	External wire connection system	Verifying nation				Page
			For Europe	For Korea	For China	For Taiwan	
Magnet-latched (Double-acting) For general use (Single-acting)	3 Port	Conduit tube system					Page A-7
		Pressure-resistant packing system					Page A-11
	4 Port	Conduit tube system					Page A-17
		Pressure-resistant packing system					
	5 Port	Conduit tube system					
		Pressure-resistant packing system					
Compact explosion-proof	5 Port	Conduit tube system					
		Pressure-resistant packing system	Page B-3				
For general use	4 Port	Conduit tube system	Page C-3				
	5 Port	Pressure-resistant packing system	Page C-7				
For general use (single acting)	4 Port	Conduit tube system	●	●			Page A-11
		Pressure-resistant packing system	●	●	●	●	
	5 Port	Conduit tube system	●	●			Page A-17
		Pressure-resistant packing system	●	●	●	●	
Compact explosion-proof	5 Port	Conduit tube system	●				Page B-3
		Pressure-resistant packing system	●	●	●		
For general use	5 Port	—					Page D-9
		—					
Magnet-latched (Double-acting) For general use (Single-acting)	3 Port						Page A-7
	4 Port	Pressure-resistant packing system					Page A-11
	5 Port						Page A-17



For solenoid valves for various fluid, refer to Cat.No.7110E "MAGFLOW series".

List of representative types of overseas authentication, explosion-proof solenoid valves

For pneumatic control	Flame-proof enclosure construction	Exd II BT4	Gasket connection type	4-Port	External wire connection system	Verifying nation	Model type	
					Conduit tube system	Japan	MVS80/MVS81 MVD80/MVD81	
					Pressure-resistant packing system			
					Conduit tube system	Europe	MVS80/MVS81 MVD8	
					Pressure-resistant packing system			
					Conduit tube system	Korea		
				Pressure-resistant packing system				
				Conduit tube system	China			
				Pressure-resistant packing system				
				Conduit tube system	Taiwan			
				Gasket connection type	5-Port	Wire connection system	Verifying nation	Model type
						Conduit tube system	Japan	MVS2F/MVD2F MVPCF/MVPOF/MVPEF
Pressure-resistant packing system								
Conduit tube system	Europe							
Pressure-resistant packing system								
Conduit tube system	Korea							
Pressure-resistant packing system								
Pressure-resistant packing system	China							
Pressure-resistant packing system								
Pressure-resistant packing system	Taiwan							
Conduit tube system								
Pressure-resistant packing system	Japan	MVS2F/MVD2F MVPCF/MVPOF/MVPEF						
Pressure-resistant packing system								
Pressure-resistant packing system	Europe							
Conduit tube system								
Pressure-resistant packing system	Korea							
Pressure-resistant packing system								
Conduit tube system	China							
Pressure-resistant packing system								
Pressure-resistant packing system	Taiwan							
Direct piping type	5-Port		Wire connection system	Verifying nation	Model type			
			Conduit tube system	Japan	453S 453D			
			Pressure-resistant packing system					
			Pressure-resistant packing system	Europe	453S			
			Conduit tube system					
			Pressure-resistant packing system	Korea				
			Conduit tube system					
			Pressure-resistant packing system	China				
			Pressure-resistant packing system					
		Pressure-resistant packing system	Taiwan					
		Compact explosion-proof NAMUR standard compliant type	5-Port	Wire connection system	Verifying nation	Model type		
				Conduit tube system	Japan	4N4S 4N4D		
Pressure-resistant packing system								
Conduit tube system	Korea							
Pressure-resistant packing system								
Compact explosion-proof Direct piping type	5-Port			Conduit tube system	Japan		454S 454D	
		Pressure-resistant packing system						
		Conduit tube system	Korea					
		Pressure-resistant packing system						

Housing	Body size	Port size	Cable size	Rated voltage	Verifying nation
3E	- 02 - 03	- □□□		- □□□□□	
2E			- □□		
2Y			- □□		
3E			- □□		- H
2E			- □□		- C
3E			- □□		- W
2E			- □□		
2Y			- □□		

Body size
- 03
- 08

Housing
1E
2E
2Y
1E
2E
1E
2E
2Y
1E
2E
2Y
1E
2E
1E
2E
2Y

Port size	Cable size	Rated voltage	Verifying nation
- □□□		- □□□□□	
	- □□		
	- □□		
	- □□		- H
	- □□		- C
	- □□		- W
	- □□		
	- □□		
	- □□		- H
	- □□		- C
	- □□		- W
	- □□		
	- □□		
	- □□		- H
	- □□		- C
	- □□		- W

Body size	Port size	Housing		
20 40	□	K C	- E	1E
				2E
				2Y
				1E
				2E
				1E
				2E
				2Y
				1E
				2E

Cable size	Rated voltage	Verifying nation
	- □□□□□	
- □□		
- □□		
- □□		- H
- □□		- C
- □□		- W
- □□		
- □□		
- □□		- H
- □□		- C
- □□		- W
- □□		
- □□		
- □□		- H
- □□		- C
- □□		- W

Body size	Port size
10	□
10 20	□

Proof
- P
- H
E
H

Cable size	Rated voltage
01	
□□	
01	
□□	
E01	
- E□□	
E01	
- E□□	

Explosion-proof Solenoid Valves and Valve Systems


General Handling Instructions and Precautions

Please read the following general handling instructions and precautions carefully before ordering solenoid valves.

Safety Precautions

References:

JIS B9702:
Safety of machinery- principles of risk assessment
JIS B6370:
Pneumatic fluid power -general rules relating to systems

 **Warning** Following information is based on a risk assessment for Konan products. Each section provides information essential for safe operation of the products and prevention of risk and damage that may affect operators. Please read carefully.

1. Selection of solenoid valves

Solenoid valves are used to activate actuators by switching air flow in a pneumatic system with electrical signals. In order to ensure safe system operation it is significant to select appropriate valve type. Therefore the entire pneumatic system designer should determine the solenoid valve taking into consideration the required operation, performance, and countermeasure to system failure. Electric components need to have explosion-proof construction respectively depending on the purpose of use, type of explosive gas and dangerous place where the components are used. As electric components having explosion-proof construction show where those components can be used by symbols, check the symbols to select a suitable component.

2. Solenoid valve installation

As pneumatic components are operated with compressed air, sudden blowout, unintended operation by residual air inside actuators (bursting out of a cylinder etc.), and other risks should be taken into account. A sufficiently trained person should be responsible for installation and maintenance of a solenoid valve.

(Konan provides training for operation and maintenance of pneumatic components. Feel free to contact our sales personnel for details.) This series of solenoid valves is explosion-proof type. For actual handling of the valves, personnel with sufficient knowledge about explosion-proof wiring should be responsible.

3. Maintenance of solenoid valves

Make sure before maintenance of solenoid valves that the pneumatic system is in a safe position or the system is mechanically fixed. Compressed air remains as energy even after shut off of air supply. Close the air supply line and exhaust air inside the pneumatic circuit at the same time. Carefully read the details in "7. Maintenance" described later.

4. Solenoid valve installation site

For use of solenoid valves under following conditions sufficient safety measure should be taken. Consult us for details.
1) Operating conditions are not within the specified range.
2) Significant risks for users, properties, or environment are anticipated.
Eg: Use for nuclear power plants, vehicles, medical components, etc.

Users Instructions

Caution 1. Transport of solenoid valves

- 1) A solenoid valve is supplied in a package. Do not treat the package roughly to prevent valve deformation and other damage that may result in valve operational failure.
- 2) Plastic plugs are attached to the valve connection ports to prevent dusts and rusts from entering the valve during transport or storage before installation. Do not remove the plugs until immediately before piping.

Caution 2. Storage

- 1) Installation site
Transport a valve to the specified site just before installation. If the valve is to be stored at the installation site, keep it packed and protect from wind, rain, and dusts.
- 2) Storage
If a valve is to be stored for more than 1 year, keep it packed. Long-term storage may result in sticking of packings. In such case conduct pre-conditioning operation of the valve before regular use. After a long period of storage, aging, constriction, or deformation of packings would be a concern. Consult us for use of the valves after long period of storage.

Caution 3. Surrounding environment

- 1) Vibration/shock
Solenoid valve is a complex component. Exposure of the valve to excessive shock or vibration may cause operational failure, loosening of clamps, or early wearing of spool packings. Make sure at installation of the valve that the valve is not in line with the direction susceptible to vibration/shock.
- 2) Surrounding environment
Environment surrounding a valve should be considered carefully.

Avoid places where the valve is exposed to rain and wind, salt air, corrosive gas, chemical fluids, seawater, steam, etc.

- 3) Ambient temperature
Sufficient care should be taken for ambient temperature as well as fluid temperature. Even if a valve is installed in a cool place, when heated air inside a cylinder under high temperature environment is exhausted through the valve, it may cause deterioration of packings or valve operational failure due to thermal expansion of the internal components.
- 4) Breathing hole
The main valve and pilot solenoid valve are equipped with a breathing hole required for operation. As it is possible that water, foreign materials, etc. enter through the breathing hole, take measures by adjusting the attachment position, adding a cover, etc.

Caution 4. Piping

- 1) Disposal of drains
For use of a valve at lower limit of working pressure, care should be taken for lubrication, disposal of drains, and supply air volume. (Inlet port should be as large as possible. If possible install an air tank in front of the valve.)
- 2) Compressed air
Air supplied to a valve should be filtrated by air filter with nominal filtration range of no more than 40µm to avoid excessive drain or oil. Contaminated air may cause deterioration of packings and other components, which leads to extremely short life of the valve or early operational failure. In the case of intrinsic safety solenoid valves, use air filters less than 5µm.
In the case of using air whose dryness is high (dew point is -40°C or less), it is possible that shortage of lubricant occurs at an early stage, which shortens the service life. Consult with our sales personnel.
- 3) Piping

Do not remove plastic plugs attached to the valve connection ports until immediately before piping in order to prevent dusts and rusts from entering the valve during transport or storage before installation. For steel tube piping make sure to use galvanized pipe.

4) Pipe narrowing

Do not narrow part of valve inlet ports. Especially when vinyl or other resinous tube is used for piping and air flow path at the tube joint is extremely narrow, air flow rate decreases and thus operational failure may occur. Sufficient care should also be taken when using copper tube joint and rubber hose joint.

5) Pipe length

If cylinder speed is adjusted by reducing air exhausted from a 5-port solenoid valve, confirm the limit of the air reduction. If pipe volume between the solenoid valve and the cylinder is large, favorable speed control cannot be achieved. Make sure that the pipe volume / cylinder volume is not more than 0.1.

6) Pipe cleaning

After piping is completed, clean the pipe by air flushing. Use clean air for fluid, as dusts and drain in the fluid cause significant harm to the valve function and shorten the valve life.

7) Piping connection

Make sure to perform correct piping connection.

As pneumatic solenoid valves make significant noise at air exhaustion, use silencer or other means to absorb noise.

Konan provides silencers that meet various types of solenoid valves as well as silencers incorporating throttle valve.

8) Pipe screwing

When a pipe or a nipple is screwed to a solenoid valve, up to 4 or 5 threads should be screwed for 6A to 25A (Rc1/8 – 1) port size. Any forceful screwing beyond this may result in cracking of the valve body or leakage/malfunction. Care should also be taken for contamination with fragments of sealing materials. In the case of direct piping type, make sure not screwing up mounting screw too tight at valve installation.

9) Piping of manifold type solenoid valves

Manifold type solenoid valves should be operated by sequence control of individual valves in principle. If 2 or more valves are operated simultaneously, inlet supply pressure drops or supply pressure volume to loading components decreases. Up to 3 units can be operated simultaneously. Inlet port and exhaust port are at both end of manifold base to enable piping from either direction.

Seal unnecessary ports with plugs. For accomplishment of accurate operation piping at both end of manifold base (2 sites) is recommended.

Caution 5.Lubrication

Explosion-proof pneumatic solenoid valves can be used without lubrication. If lubricating oil is to be used, care should be taken for the oil quality. Packings incorporated in the valves can contribute to stable valve operation only with quality mineral oil. Inappropriate lubricating oil deteriorates sealing quality. Especially use of spindle oil often causes expansion of packings. Also make sure to select oil that does not emulsify with drain. JIS K 2213 (ISO VG32 or VG46) type turbine oil is recommended for lubricating oil.

After lubrication do not use the valve without lubrication or the valve life may become extremely short.

Caution 6.Wiring

1) Explosion-proof wiring

For lead-in of conductors into the terminal box, follow the "Recommended Practices for Explosion-protected Electrical Installation in General Industries" (issued by the National Institute of Occupational Safety and Health.)

i) Conduit tube type

Use thick steel conduit and screw 5 or more threads at the screw joint. As the explosion-proof performance depends on the screwing precision, care should be taken for conduit installation. Elbow, flexible, or union joints to be used should also be explosion-proof type. Konan conduit type screw is G1/2.

ii) Pressure-resistant packing type

Use pressure-resistant packing type connector when performing cable wiring. (Approved pressure-resistant packing type connector should be used. Use the connector attached to the solenoid valve.)

Before wiring, make sure that cables conform to the cable size described on the products.

2) Applied voltage

Do not apply voltage with the terminal box opened. Check the valve nameplate and apply specified rated voltage. Use of the valve with inappropriate voltage may result in coil damage or valve operational failure. Use the valve after checking if voltage fluctuation is within allowable range. If the valve is used with voltage not within the specified range, solenoid burnout and other failure may occur. The allowable voltage range means that instant valve operation can be performed without problem within the range, not that the valve can be continuously operated within the range.

Warning 7.Maintenance

Use conditions of solenoid valves differ depending on users.

The complying method varies depending on users, for example, whether preventive maintenance or breakdown maintenance is employed. The maintenance method is different depending on use conditions and importance of facilities. From the above situation, we propose recommended replacement intervals from the standpoints of preventive maintenance.

1) Maintenance should be performed in accordance with the maintenance manual.

As a pilot solenoid valve is an explosion-proof component, do not disassemble it. Disassembly may impair the explosion-proof performance, resulting in accidents. When replacing a pilot solenoid valve, use a finished part.

If it is necessary to disassemble pilot solenoid valves for maintenance, etc., consult with our sales personnel.

2) Follow the below steps when uninstalling a solenoid valve.

i) Shut off supply pressure.

ii) Exhaust residual pressure inside pneumatic circuit.

Compressed air remains as energy even after shut off of air supply. Exhaust pressure inside the pneumatic circuit using residual pressure exhaust valve, relief function of a regulator, or drain cock of an air filter.

iii) Shut down power source.

Not only disconnect the solenoid valve side terminal but also turn off the power source.

iv) Uninstall the valve.

3) Operation frequency

Explosion-proof pneumatic solenoid valves are soft seal spool type solenoid valve series using squeeze packings. According to the JIS standard, minimal operation frequency of this type of valve is specified as once in 30 days.

For safety maintenance should therefore be performed once in 30 days.

4) Push button

If a push button of a solenoid valve is pushed, the valve coil is energized. Care should be taken so that a third party does not push the button without discretion. A cap with which a push button part is covered protects a push button from being operated by mistake and water from intruding into the inside of housing. Do not remove the cap except when it is necessary to operate the push button.

Explosion-proof Solenoid Valves and Valve Systems

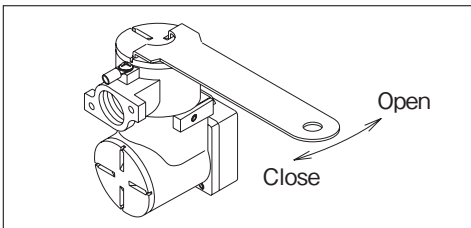
General Handling Instructions and Precautions

Compact explosion proof solenoid valve 4N4 · 454 series

Electrical connection

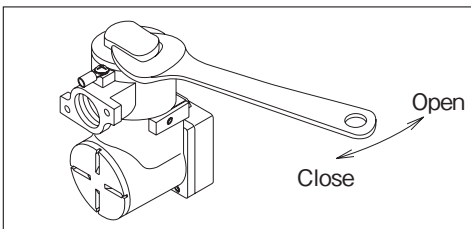
【Structural standard】

The cover of the terminal box is built in a locking system to be opened or closed by a special tool. When opening or closing, use the special tool furnished to the product, and fit the end of the tool tightly to the groove of the cover, and turn in the opening or closing direction as shown in the drawing.



【Ex. explosion-proof】

The cover of the terminal box can be opened or closed by spanner or the like furnished to the product, and fit the end of the tool tightly to the groove of the cover, and turn in the opening or closing direction as shown in the drawing.



Warning **Wiring**

- 1) Before opening or closing the terminal box or when detaching or attaching the electrical terminals, be sure to turn off the power source in advance.
- 2) When connecting wires outdoors or in a place where water may intrude, take protective measures properly to prevent rainwater or the like intruding into the terminal box.

Explosion-proof and drip-proof solenoid valve lineup **vol. 1**

d2G4

Explosion-proof construction
standard for electric equipment

Exd IIBT4

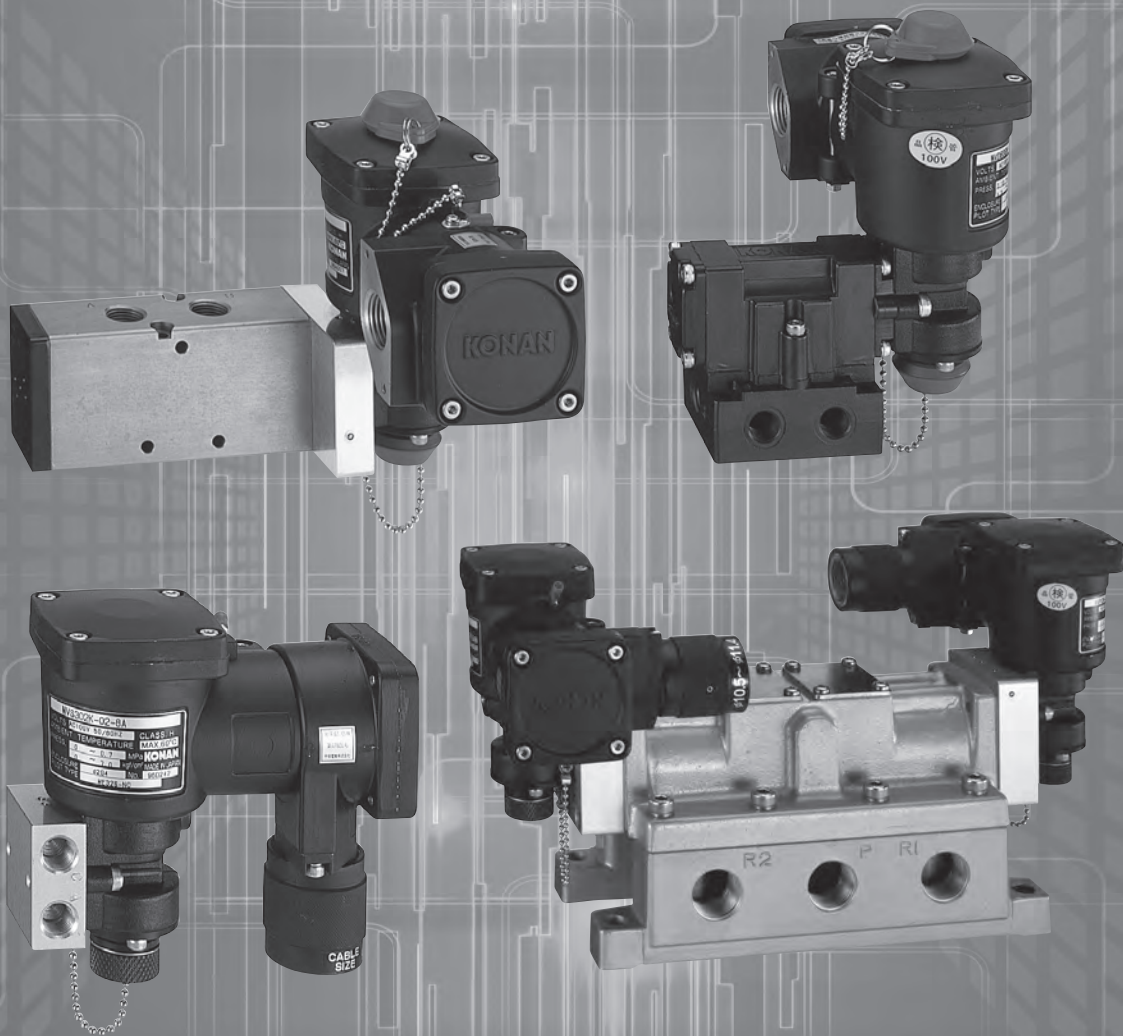
Technical standards conforming
to the international standards

For pneumatic
control

3/4/5 Port

**Explosion-proof
solenoid valve**

For China / For Korea



d2G4

Explosion-proof construction standard for electric equipment

Exd II BT4

Technical standards conforming to the international standards

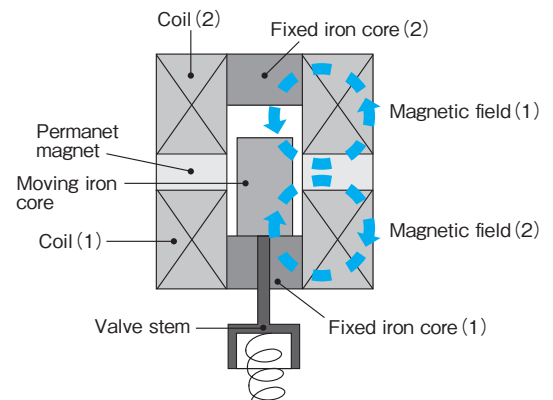
Ultra-Compact Solenoid Valves which Utilize Advanced Watertight and Explosion-Proof Technology

1 ● For the prevention of mis-operation, a standardized cover cap is provided on the terminal unit.

2 ● The enlarged wiring space of the terminal block permits 270° rotation by single bolt operation in the same way as for solenoid housing, thus significantly facilitating the explosion-proof electrical work to be carried out with extreme care.

3 ● The solenoid housing may rotated by 360 °, thus permitting the cable outlet to be installed optionally in 3-dimensional direction.
● The installation work can be performed readily by the use of the use of a single bolt.

4 ● The use of a magnet-latched solenoid allows two coils to be housed within a single casing, thus reducing the number of cable outlets to one.
● The moving iron core attracted and retained to the fixed iron core (1) by the magnetic field (1) of the permanent magnet is freed from the magnetic field (1) and attracted to the fixed iron core (2) when the coil (2) is energized. The moving iron core is retained by the magnetic field (2) even when the coil is de-energized.
● When the coil (1) is energized, the moving iron is freed by the magnetic field (2) and attracted to the fixed iron core. The moving iron core is retained by the magnetic field (1) even when the coil is de-energized.



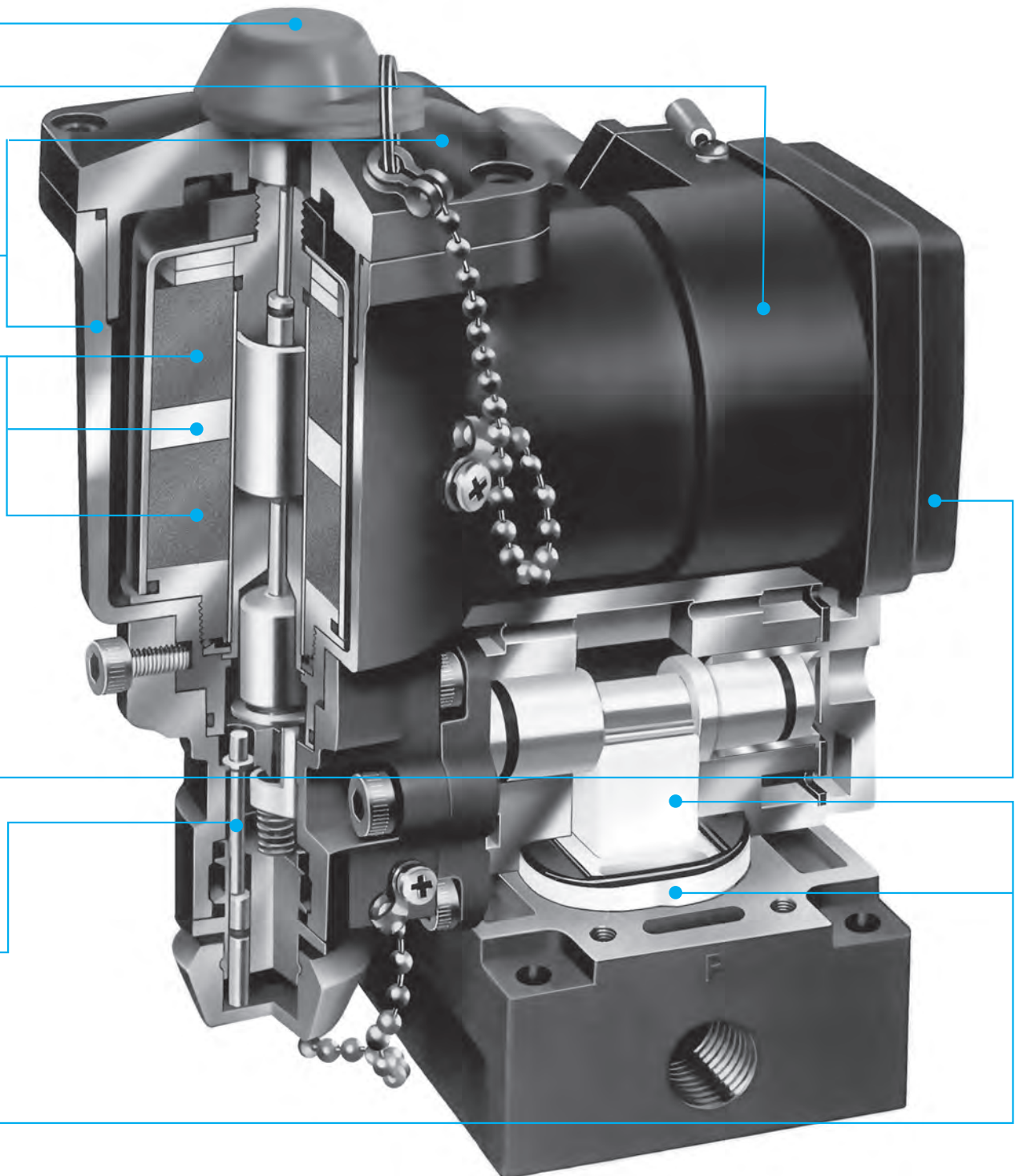
5 ● simple, easy-handling, water-proof, pressure-resistant packing type cable gland is provided as a standard component.

6 ● Simple push-button operation permits direct manual control of the moving iron core. The manual operation is practicable irrespective of energization or de-energization.
● To take full advantage of the features of the magnet-latched solenoid, manual locking is effected by the magnetic circuit of permanent magnet.
(Vibration resistance and impact resistance of the manually-operated lock are not less than 3G and 7G respectively.)

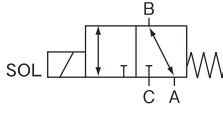
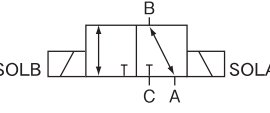
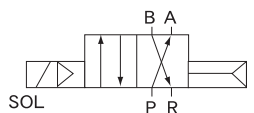
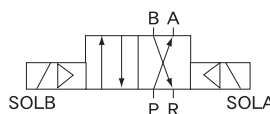
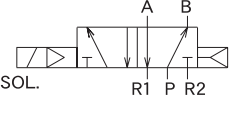
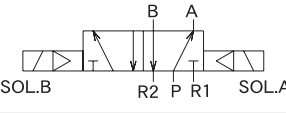
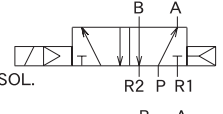
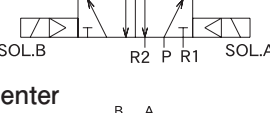
7 ● An innovative lubrication-free slide selector applied with high-hardness ceramics is incorporated, thus providing a semi-permanent durability and the most suitable application for high/low frequency operations.

3/4/5 Port • For pneumatic control
Explosion-proof and drip-proof solenoid valves

The main models of Konan's double acting explosion-proof solenoid valve are applied Konan's newly-developed magnet-latched solenoid. Furthermore, the innovative 4-port solenoid valve is mounted with a slide-type ceramic valve disc excellent in durability.



Model List

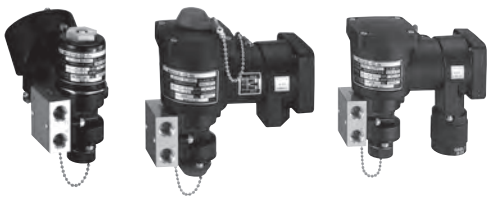

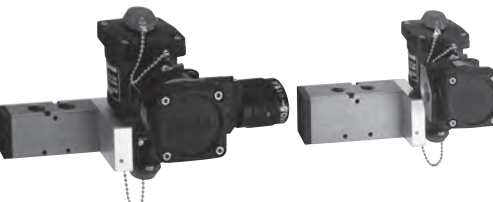
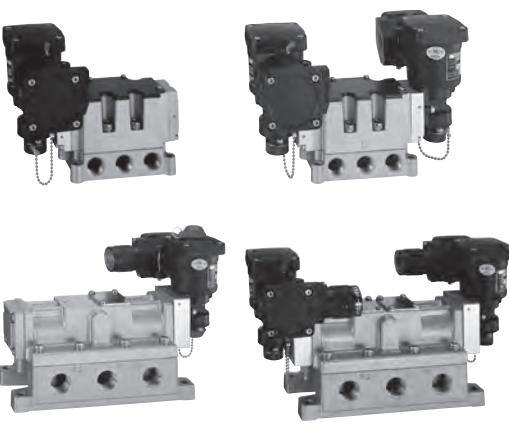
	● Type & Composition of Valve	● Port size					● Type of Flow Path in Valve
		Rc 1/4	Rc 3/8	Rc 1/2	Rc 3/4	Rc 1	
3 Port	Popet valve system Direct acting type Direct piping type Pilot solenoid valve + Subplate	●	—	—	—	—	● Return  ● Hold 
	(For large port size, consult separately.)						
4 Port	Ceramic slide valve system Pilot type Gasket connection type Pilot solenoid valve + Valve body+subplate	●	●	●	—	—	● Return  ● Hold 
	(For large port size, consult separately.)						
5 Port	Spool valve system Pilot type Straight piping type Pilot solenoid valve + Valve body	●	●	●	—	—	● Return  ● Hold 
	Spool valve system Pilot type Gasket connection type Pilot solenoid valve + Valve body+subplate	●	●	●	03 Type		● Return  ● Hold 
		08 Type					
	08 Type						

2 • 3 Port MAGFLOW SERIES EXPLOSION-PROOF SOLENOID VALVE

3/4/5 Port • For pneumatic control Explosion-proof and drip-proof solenoid valves

To meet diversified customer needs, Konan's drip-proof and explosion-proof solenoid valves are available in a variety of types as shown in the following list. Especially, the double-acting solenoid valve equipped with a newly-developed magnet-latched solenoid has been made compact enough in shape to eliminate its conventional image, such as reduction in number of cable outlets to one.

Among the explosion-proof and drip-proof solenoid valves, various kinds of manifold type combined with models given in the following list are also manufactured. For details, consult separately.

	<p>● Type of Construction for Explosion-proof and Drip-proof</p>	<p>● INDEX</p>
	<p>Flame-proof enclosure construction : d2G4 Exd II BT4</p> <p>■ Conduit tube system</p> <p>Drip-proof protection class : IP66</p>	<p>Cautions for use A-5</p> <p>Specification A-7</p> <p>Model Code A-8</p> <p>Wire connections A-8</p> <p>Precautions in control circuit design A-8</p> <p>External Dimensions A-9</p>
	<p>■ Pressure-resistant packing system</p> <p>Drip-proof protection class : IP66 Can be used outdoors</p>	<p>Specification A-11</p> <p>Model Code A-12</p> <p>Wire connections A-12</p> <p>Precautions in control circuit design A-12</p> <p>External Dimensions A-13</p>
	<p>Drip-proof</p> <p>Drip-proof protection class : Equivalent to IP54</p>	<p>Specification A-17</p> <p>Model Code A-18</p> <p>Wire connections A-18</p> <p>Precautions in control circuit design A-18</p> <p>External Dimensions A-19</p>
		<p>Return. Hold</p> <p>Specification A-23</p> <p>Model Code A-24</p> <p>Wire connections A-24</p> <p>Precautions in control circuit design A-24</p> <p>External Dimensions A-25</p> <hr/> <p>3-Position Type</p> <p>Specification A-29</p> <p>Model Code A-30</p> <p>Wire connections A-30</p> <p>Precautions in control circuit design A-31</p>

(Besides the solenoid valves given in the above list , explosion-proof solenoid valves for use with various kinds of fluid such as air, gas, oil, steam, chemical solutions, etc. are available. For details, refer to No.7110E catalogue.)

Cautions for use

1

Lubrication of the solenoid valve main body is not needed, but when lubrication of other devices is needed, use JISK2213 additive turbine oil ISO VG32 or VG46.

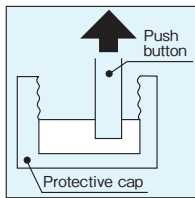
2

When operating two or more solenoid valves of manifold type simultaneously, note that that the P port (supply) pressure may be lowered, or that the flow rate to the load device may decline. For obtaining a more secure operation, the both-end P and R port piping is recommended.

3

Operation of manual push button (pilot solenoid valve)

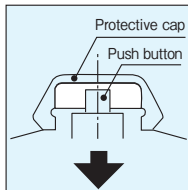
● In case of single solenoid



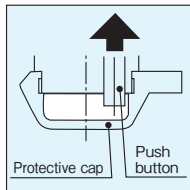
- 1) Remove the aluminum protective cap (screw-in type), and manipulate (push up) the push button.
 - 2) Note that that the standard type is not locked.
- ※ If lock mechanism is needed, specify when ordering the product.

● In case of Magnet-latched type

A) Remove the rubber-made protective cap (red), and manipulate the push button.



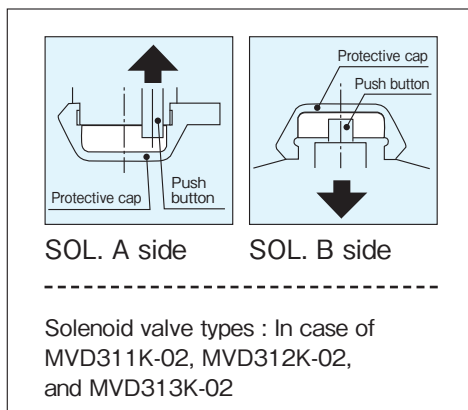
SOL. A side



SOL. B side

- SOL. A side — Push down.
- SOL. B side — Push up.

<Caution> Solenoid valve type: Only in case of MVD311K-02, MVD312K-02, and MVD313K-02, the solenoid valves SOL. A and SOL.B are as shown below.



- SOL. A side — Push up.
- SOL. B side — Push down.

B) Note that that the solenoid of Magnet-latched type is not provided with locking mechanism.

※ In any case, be sure to put on the protective cap after use of the manual push button.

4

If leaving it behind without use for 1 year or longer, check it before use.

**3/4/5 Port • For pneumatic control
Explosion-proof and drip-proof solenoid valves**

MVS300K/MVD300K Series

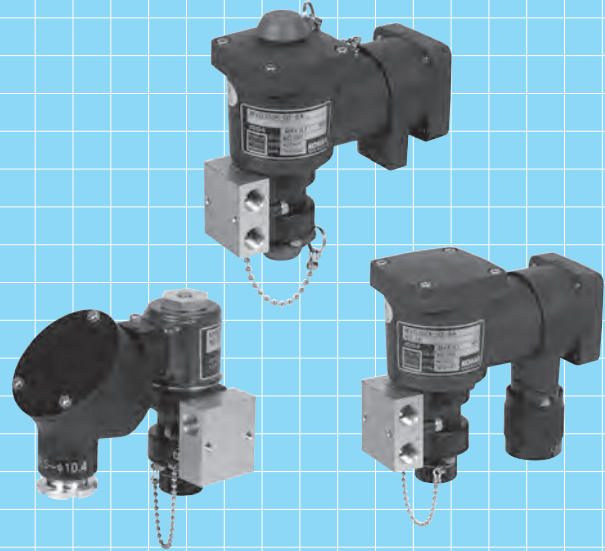
3-Port Solenoid Valves

Explosion-proof, Drip-proof

Poppet valve system, Direct acting type

Direct piping type Rc1/4

Return / Hold



Specifications

			Return	Hold	Return	Hold
Type	Explosion-proof type	Pressure-resistant packing	MVS302K - 02	MVD302K - 02	MVS312K - 02	MVD312K - 02
		Conduit tube	MVS303K - 02	MVD303K - 02	MVS313K - 02	MVD313K - 02
	Drip-proof type		MVS301K - 02	MVD301K - 02	MVS311K - 02	MVD311K - 02
Port size (Rc)			1/4			
Effective sectional area (CV value)			1mm ² (0.05)		4mm ² (0.2)	
Operating pressure			0 ~ 0.7MPa		0 ~ 0.1MPa	
Pressure resistance			1.05MPa			
Operating temperature			- 20 ~ 60°C			
Operating frequency			1 cycle / s max.			
Operation (response) time			0.05s max.			
Solenoid	Rated voltage		Refer to Model Code			
	Voltage fluctuation tolerance		- 15% ~ 10% of rated voltage			
	Temperature rise	80 deg max.	65 deg max.	80 deg max.	65 deg max.	
	Insulation class		Class H			
	Insulation resistance		10MΩ min.			
	Rated current		Refer to Rated current data on page A-39			
	Explosion-proof standard		Flame-proof enclosure construction d2G4			
Mass			Approx. 1.3kg			

● At the operating temperature of 5°C or below, use extreme care for protection against frosting by removing the water contained in the fluid for use.

■ Return • explosion-proof verification approval No.

No. T47926

■ Hold • explosion-proof verification approval No.

No. T34655

Safety Integrity Level

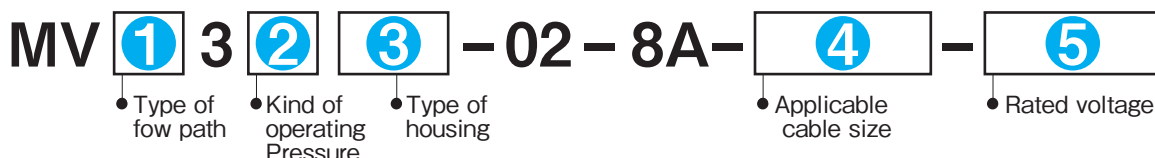
“MVS302K-02-8A” is a product equivalent to “SIL3”.

Safety Integrity Level, discrete level (one out of possible four) for specifying the safety integrity requirements of the safety functions to be allocated to the E/E/PE safety-related systems where Safety Integrity Level 4 is the highest level and Safety Integrity Level 1 is the lowest.

Safety Integrity Level	PFDavg (Average Probability of Failure on Demand)
SIL 4	Less than 10^{-5} more 10^{-4}
SIL 3	Less than 10^{-4} more 10^{-3}
SIL 2	Less than 10^{-3} more 10^{-2}
SIL 1	Less than 10^{-2} more 10^{-1}

Model Code

When ordering, specify the model as follows:



1 Type of flow path

Type of valve	JIS symbol	Designation
2 position Return		S
2 position Hold (Magnet-latched system)		D

• This valve is commonly used from normally-closed and normally-open positions

4 Applicable cable size (when housing is 1K* or 2K*)

Wire size ϕd *	Applicable cable size	Designation
$\phi 8.5$	$\phi 7.5 \sim 8.4$	No.8
$\phi 9.5$	$\phi 8.5 \sim 9.4$	No.9
$\phi 10.5$	$\phi 9.5 \sim 10.4$	No.10
$\phi 11.5$	$\phi 10.5 \sim 11.4$	No.11
$\phi 12.5$	$\phi 11.5 \sim 12.4$	No.12
$\phi 13.5$	$\phi 12.5 \sim 13.4$	No.13

* For size ϕd , refer to page A-35 from A-38

2 Kind of operating pressure

Operating pressure	Effective sectional area	Designation
0 ~ 0.7 MPa	1 mm ²	0
0 ~ 0.1 MPa	4mm ² (Large flow type)	1

5 Rated voltage

Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 50/60Hz	AC120
AC125V 50/60Hz	AC125
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

* When ordering, specify the frequency 50 Hz or 60 Hz.

3 Type of housing

Type of housing (External wire connection system)	Designation
Explosion-proof type Pressure resistant packing system	2K *
Conduit tube system	3K
Drip-proof type	1K *

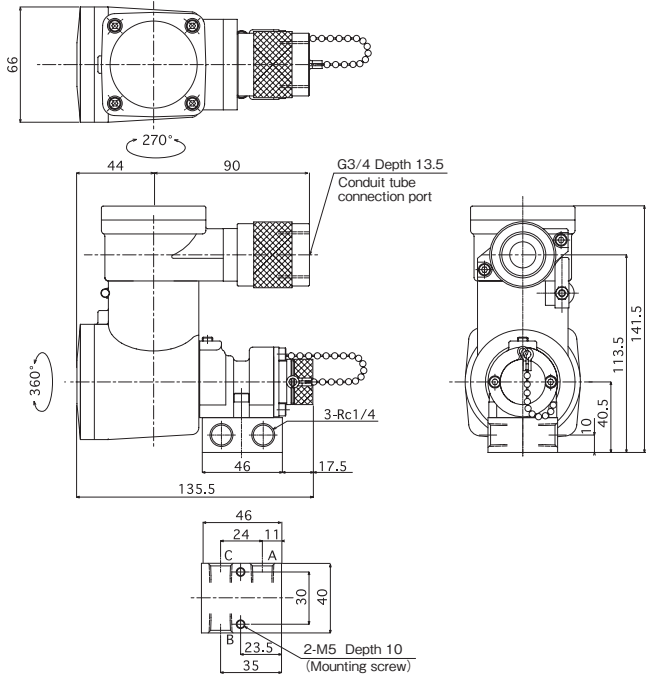
* In the case of pressure resistant packing system, drip-proof type please enter the 4 applicable cable size.
In the case of conduit tube system, no need to fill out the 4 applicable cable size.

Outside Dimensions

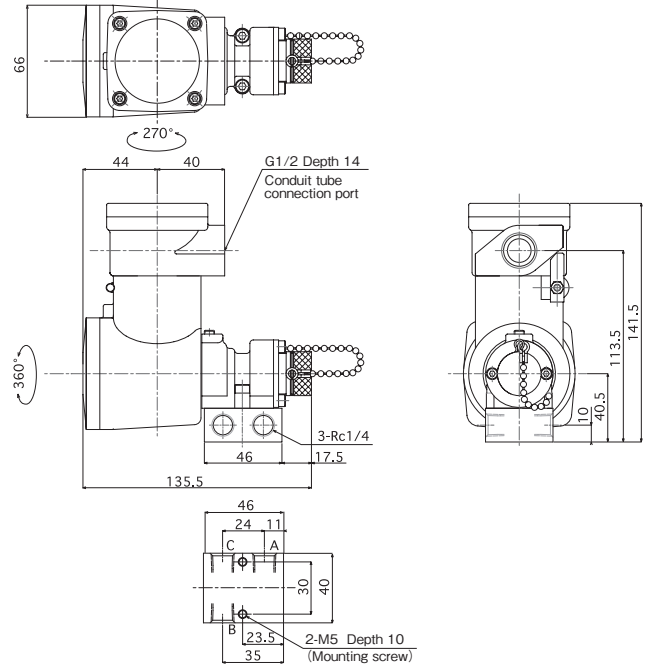
[Pressure-resistant packing]

[Conduit tube]

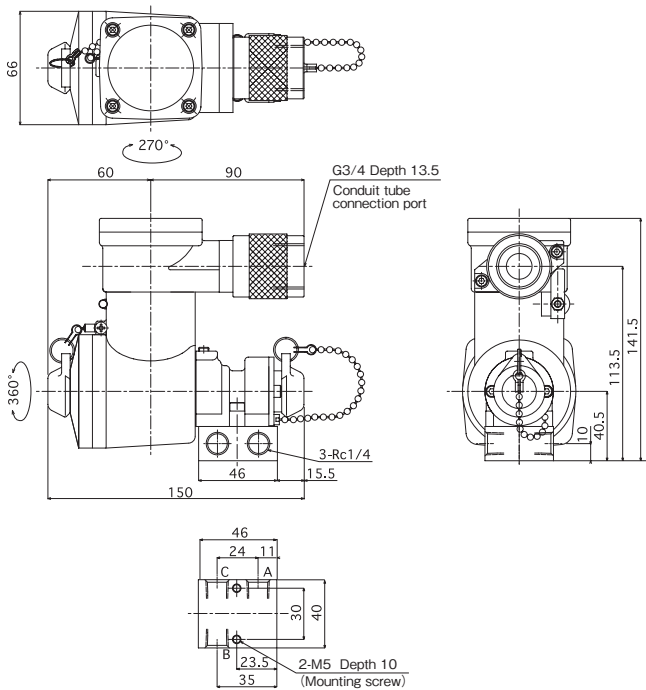
MVS302K-02 (Return)
MVS312K-02



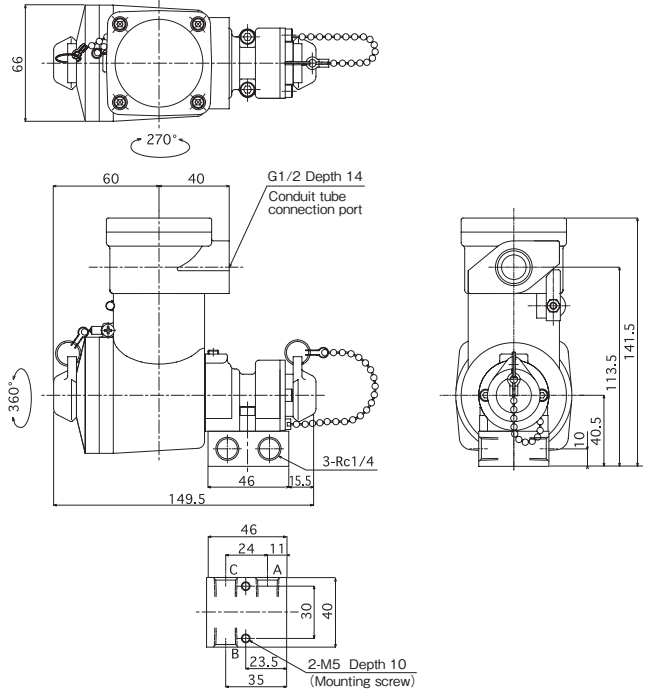
MVS303K-02 (Return)
MVS313K-02



MVD302K-02 (Hold)
MVD312K-02

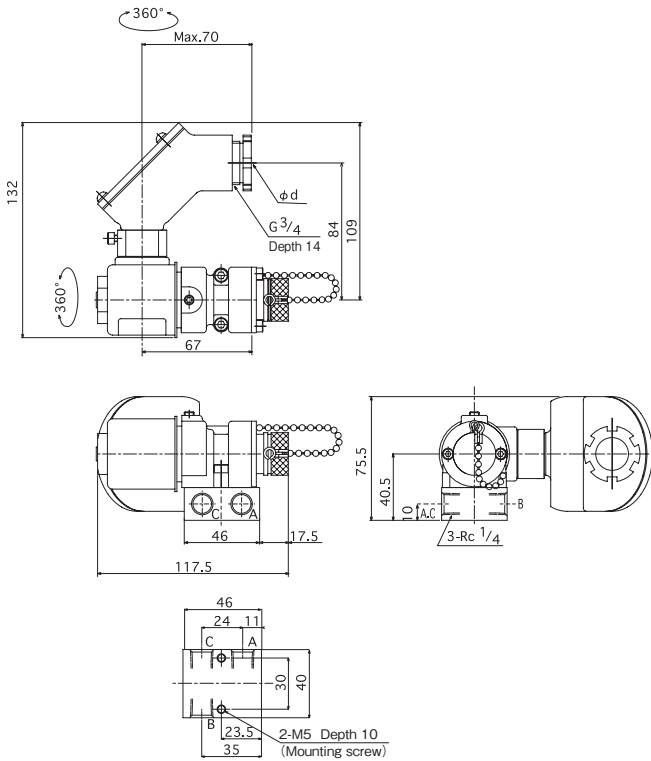


MVD303K-02 (Hold)
MVD313K-02

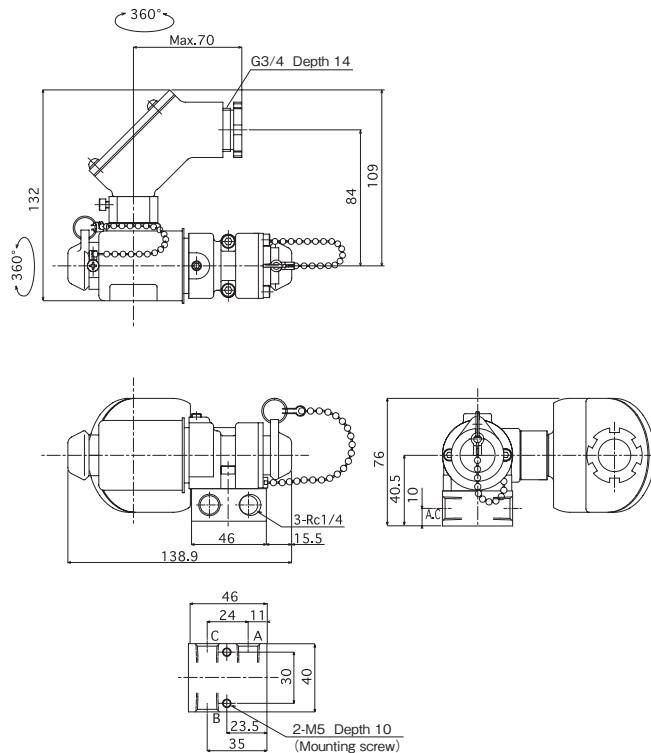


[Drip-proof type]

MVS301K-02 (Return)
MVS311K-02



MVD301K-02 (Hold)
MVD311K-02

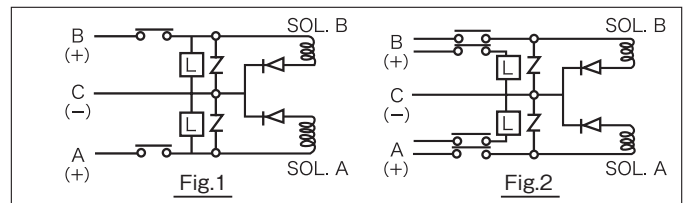


Precautions in operation circuit design

< Cause of magnet-latched system > (Hold)

If the load L such as relay, lamp or the like is connected in parallel with coil as shown in Fig.1, a voltage induced in SOL B when SOL A is ON (or in SOL A when SOL B is ON) may lead malfunction of the load L.

To prevent this, individual contacts should be provided as shown in Fig.2.



MVS800K/MVD800K Series

4-Port Solenoid Valves

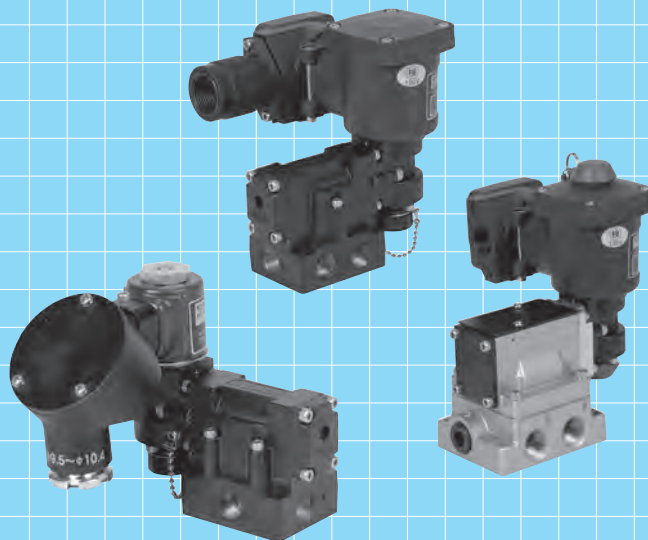
Explosion-proof, Drip-proof

Ceramic slide valve system, Pilot type

Gasket connection type Rc1/4 · 3/8 · 1/2

Return / Hold

This valve can be used as a 3-port valve by closing one of OUT ports (plug).



Specifications

			Return				Hold			
Type	Explosion-proof type	Pressure-resistant packing	MVS812K - 02	MVS802K - 03	MVD812K - 02	MVD802K - 03	MVS812E - 02	MVS802E - 03	MVD812E - 02	MVD802E - 03
		Conduit tube	MVS813K - 02	MVS803K - 03	MVD813K - 02	MVD803K - 03	MVS813E - 02	MVS803E - 03	MVD813E - 02	MVD803E - 03
	Drip-proof type		MVS811K - 02	MVS801K - 03	MVD811K - 02	MVD801K - 03				
Port size (Rc)			1/4	3/8	3/8	1/2	1/4	3/8	3/8	1/2
Effective sectional area (CV value)			16mm ² (0.9)	18mm ² (1.0)	55mm ² (3.0)	60mm ² (3.3)	16mm ² (0.9)	18mm ² (1.0)	55mm ² (3.0)	60mm ² (3.3)
Operating pressure			0.12 ~ 0.7MPa							
Pressure resistance			1.05MPa							
Operating temperature			- 20 ~ 60°C							
Operating frequency			1 cycle / s max.				1 cycle / 6 months min.			
Operation (response) time			0.1s max.							
Solenoid	Rated voltage		Refer to Model Code							
	Voltage fluctuation tolerance		- 15% ~ 10% of rated voltage							
	Temperature rise		80 deg max.				65 deg max.			
	Insulation class		Class H							
	Insulation resistance		10MΩ min.							
	Rated current		Refer to Rated current data on page A-39							
	Explosion-proof standard		Flame-proof enclosure construction d2G4 / Exd II BT4							
Mass			Approx. 2.0kg							

● At the operating temperature of 5°C or below, use extreme care for protection against frosting by removing the water contained in the fluid for use.

【Explosion-proof verification approval No.】

■ d2G4 · Return

No. T47926

■ Exd II BT4 · Return

No. TC16744

■ Exd II BT4 · Return (Europe) ■ Exd II BT4 Gb · Return (China)

TÜV.11.ATEX7945X

A number changes at every official approval.

■ d2G4 · Hold

No. T34655

■ Exd II BT4 · Hold

No. TC15045

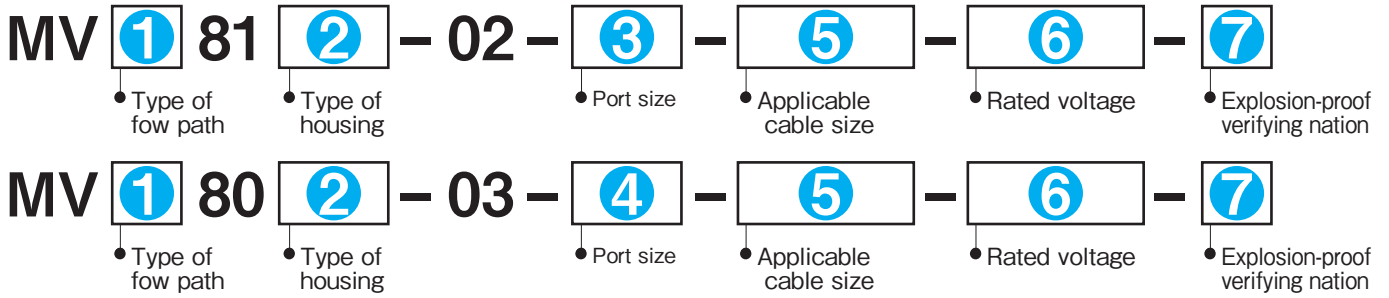
■ Exd II BT4 · Return (Korea) ■ Exd II BT4 Gb · Return (Taiwan)

11 - AV4BO - 0196

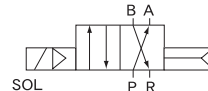
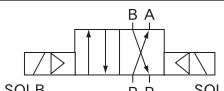
A number changes at every official approval.

Model Code

When ordering, specify the model as follows:



1 Type of flow path

Type of valve	JIS symbol	Designation
2 position	Return 	S
	Hold (Note) (Magnet-latched system) 	D

3 Port size

Port size	Designation
Rc1/4	8A
Rc3/8	10A

4 Port size

Port size	Designation
Rc3/8	10A
Rc1/2	15A

5 Applicable cable size (when housing is 1K* or 2K* or 2E*)

Wire size ϕd *	Applicable cable size	Designation
$\phi 8.5$	$\phi 7.5 \sim 8.4$	No.8
$\phi 9.5$	$\phi 8.5 \sim 9.4$	No.9
$\phi 10.5$	$\phi 9.5 \sim 10.4$	No.10
$\phi 11.5$	$\phi 10.5 \sim 11.4$	No.11
$\phi 12.5$	$\phi 11.5 \sim 12.4$	No.12
$\phi 13.5$	$\phi 12.5 \sim 13.4$	No.13

* For size ϕd , refer to page A-35 from A-38

6 Rated voltage

Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 50/60Hz	AC120
AC125V 50/60Hz	AC125 ¹⁾
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

1) In Ex. Explosion-proof type return valve, AC125 is not applicable.

* When ordering, specify the frequency 50 Hz or 60 Hz.

◆ 2 and 7 is ordering in the pair.

2 Type of housing

7 Explosion-proof verifying nation (Note)

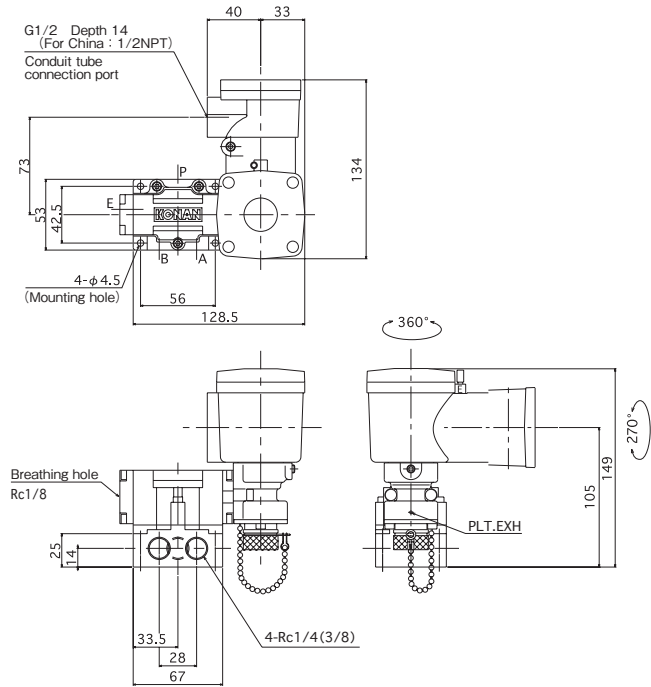
Type of housing (External wire connection system)		Designation	Verifying nation	Designation	
JIS explosion-proof d2G4	Pressure resistant packing system	2K*	Japan	No entry	
	Conduit tube system	3K			
Explosion-proof for hydrogen d3aG4	Please refer to page C-3 of explosion-proof for hydrogen.				
EX. Explosion-proof	Exd II BT4 (Japan) Exd II BT4 Gb (China) Exd II BT4 (Korea)	Pressure resistant packing system	2E*	Japan	No entry
		Conduit tube system	3E	China	C
II 2G Exd II BT4 Gb (Europe) Exd II BT4 Gb (Taiwan)	Pressure resistant packing system	2Y	Korea	H	
			Europe	No entry	
Drip-proof type		1K*	Taiwan	W	

* In the case of pressure resistant packing system, drip-proof type please enter the applicable cable size.
In the case of conduit tube system, no need to fill out the applicable cable size.

(Note) In the case of an overseas explosion-proof hold type, it is MVD8 type. Consult separately.

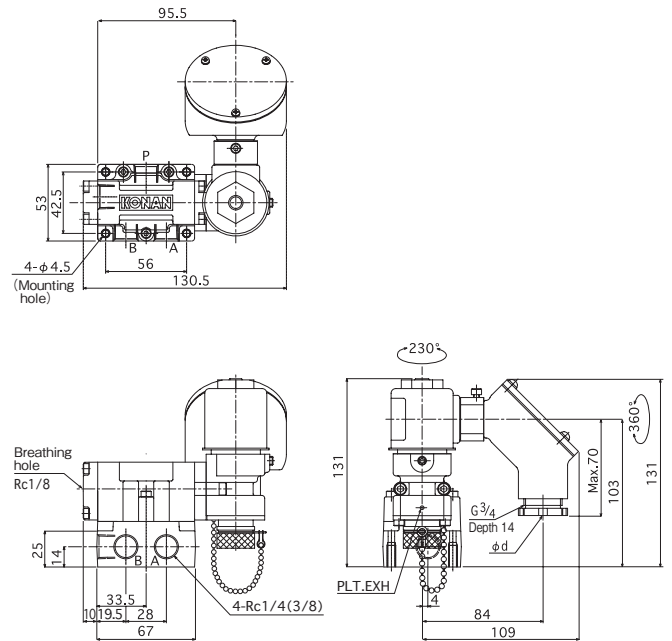
[Conduit tube]

MVS813K-02 (Return)
MVS813E-02

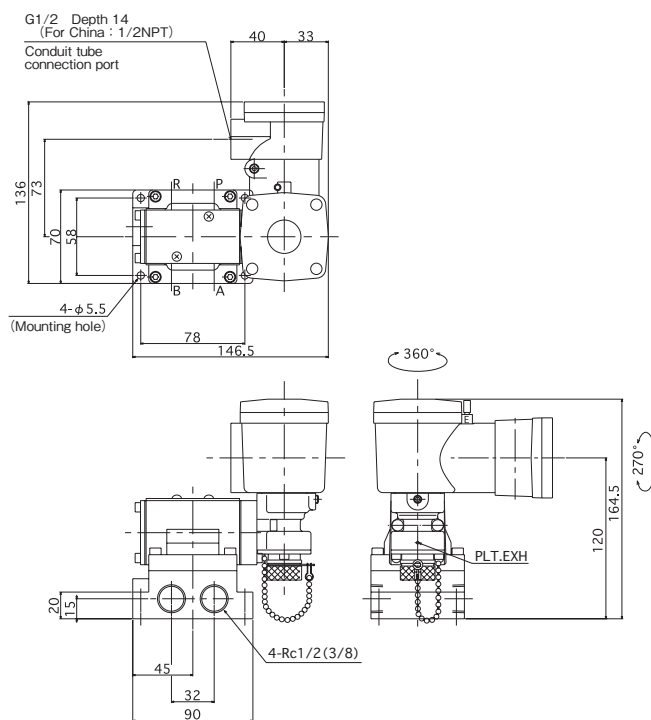


[Drip-proof type]

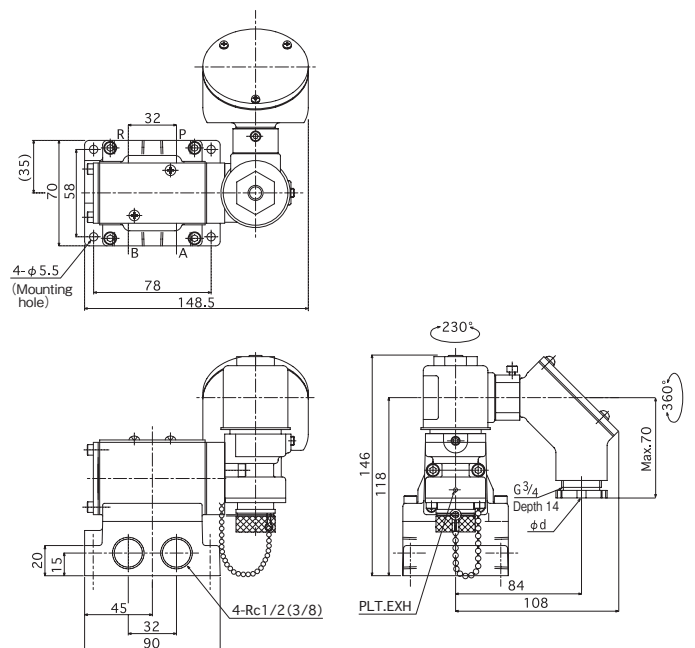
MVS811K-02 (Return)



MVS803K-03 (Return)
MVS803E-03



MVS801K-03 (Return)

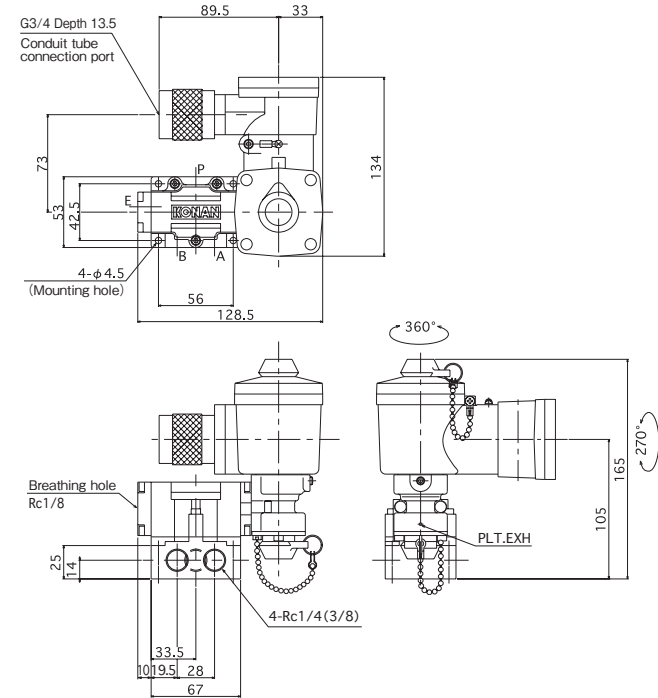


Outside Dimensions

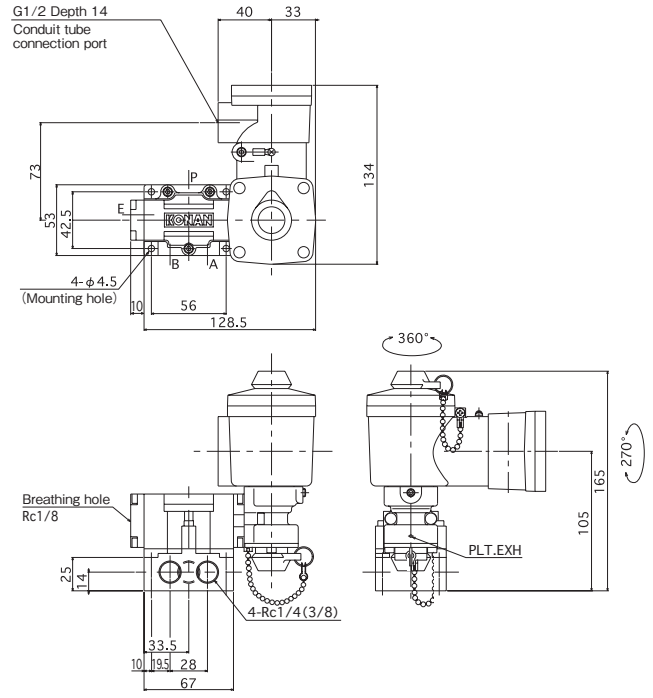
[Pressure-resistant packing]

[Conduit tube]

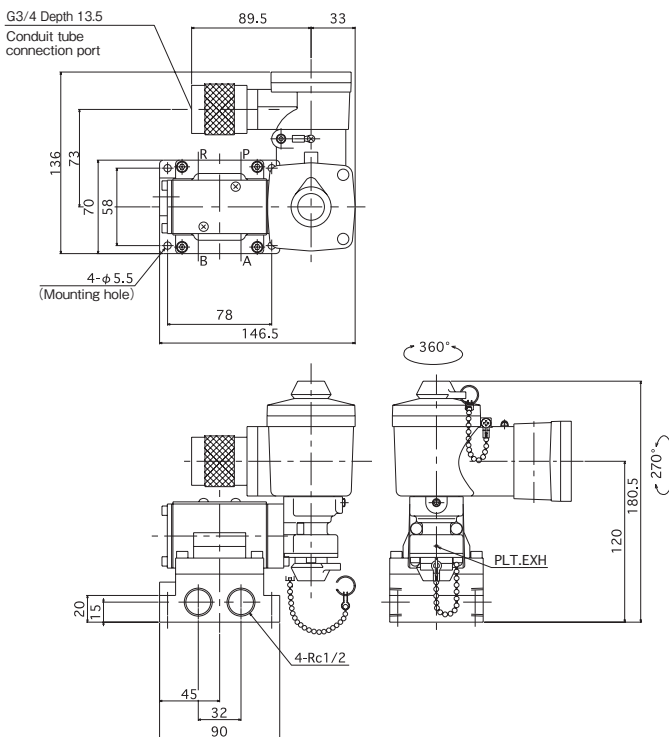
MVD812K-02 (Hold)
MVD812E-02



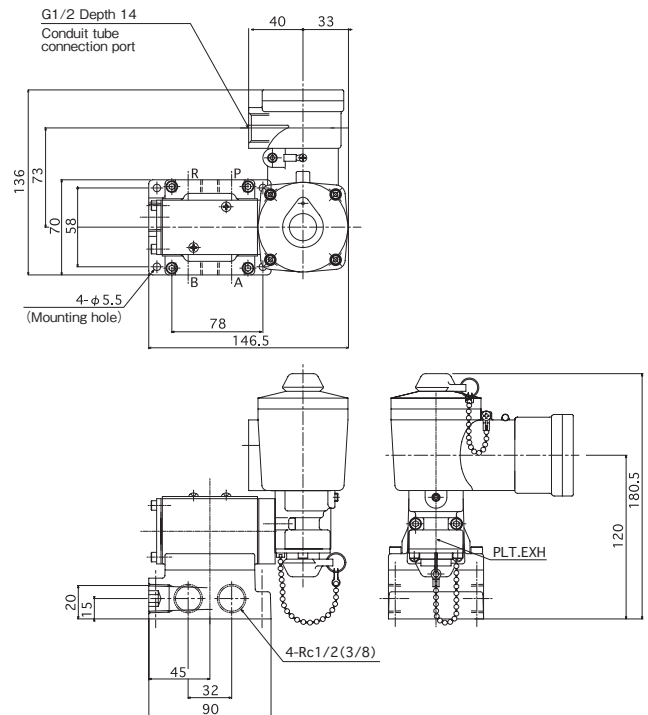
MVD813K-02 (Hold)
MVD813E-02



MVD802K-03 (Hold)
MVD802E-03



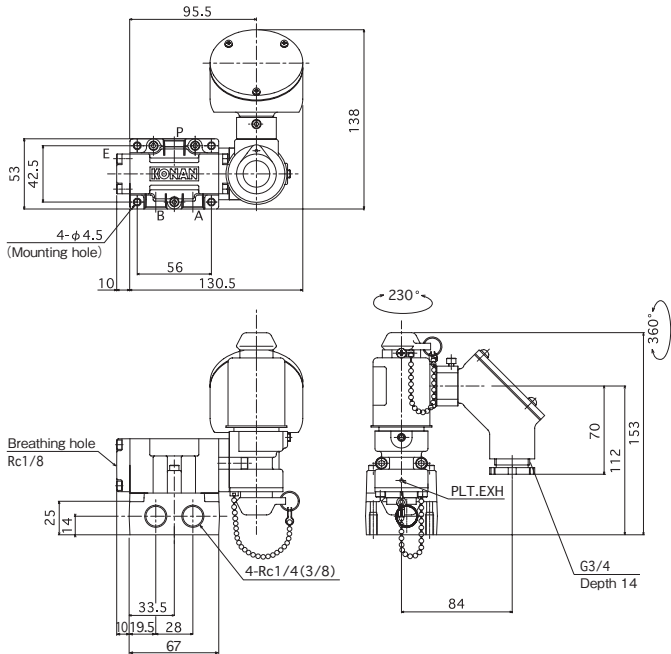
MVD803K-03 (Hold)
MVD803E-03



Precautions in operation circuit design

[Drip-proof type]

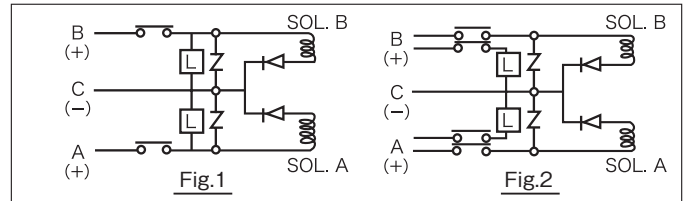
MVD811K-02 (Hold)



< Cause of magnet-latched system > (Hold)

If the load L such as relay, lamp or the like is connected in parallel with coil as shown in Fig.1, a voltage induced in SOL B when SOL A is ON (or in SOL A when SOL B is ON) may lead malfunction of the load L.

To prevent this, individual contacts should be provided as shown in Fig.2.

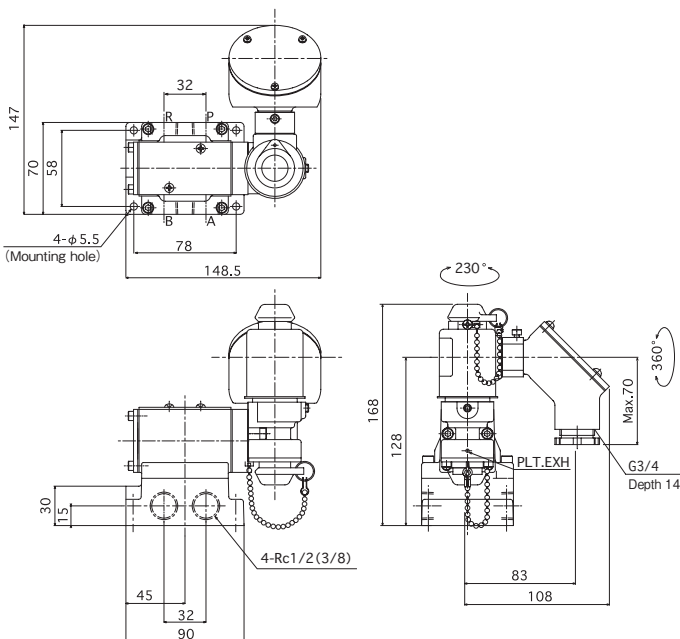


Pilot breathing hole

When the breathing hole operates, it inhales open air.

If this solenoid valve frequently get wet in water, install a street elbow or the like so that the breathing hole faces downward.

MVD801K-03 (Hold)



453S/453D Series

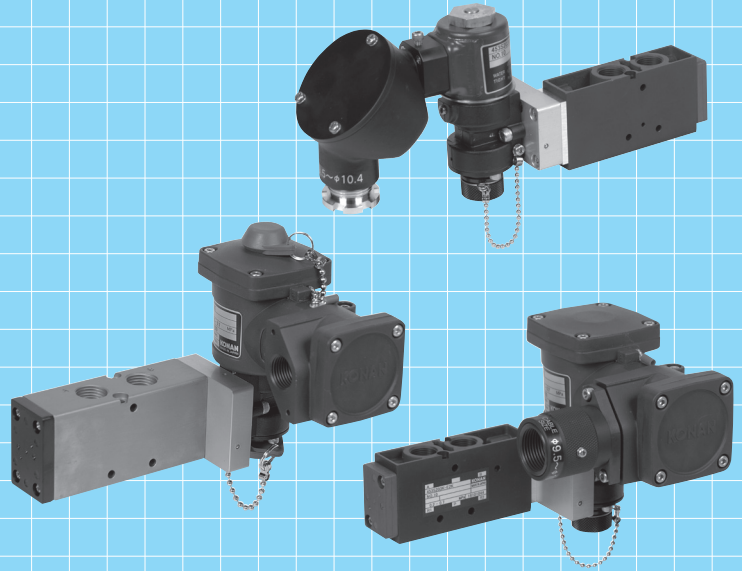
5-Port Solenoid Valves

Explosion-proof

Spool valve system, Pilot type

Direct piping type Rc1/4 · 3/8 · 1/2

Return / Hold



Specifications

			Return		Hold		Return		Hold	
Type	Explosion-proof type	Pressure-resistant packing	453S202K-E2K 453S202K-E2E 453S202K-E2Y	453S203K-E2K 453S203K-E2E 453S203K-E2Y	453D202K-E2K 453D202K-E2E	453D203K-E2K 453D203K-E2E	453S403C-E2K 453S403C-E2E 453S403C-E2Y	453S404C-E2K 453S404C-E2E	453D403C-E2K 453D403C-E2E	453D404C-E2K 453D404C-E2E
		Conduit tube	453S202K-E1K 453S202K-E1E	453S203K-E1K 453S203K-E1E	453D202K-E1K 453D202K-E1E	453D203K-E1K 453D203K-E1E	453S403C-E1K 453S403C-E1E	453S404C-E1K 453S404C-E1E	453D403C-E1K 453D403C-E1E	453D404C-E1K 453D404C-E1E
	Drip-proof type	453S202K-E3K	453S203K-E3K	453D202K-E3K	453D203K-E3K	453S403C-E3K	453S404C-E3K	453D403C-E3K	453D404C-E3K	
Port size (Rc)			1/4	3/8	1/4	3/8	3/8	1/2	3/8	1/2
Effective sectional area (CV value)			22mm ² (1.2)				40mm ² (2.2)			
Operating pressure			0.2 ~ 0.7MPa							
Pressure resistance			1.05MPa							
Operating temperature			- 5 ~ 50°C							
Operating frequency			1 cycle / s max.				1 cycle / 6 months min.			
Operation (response) time			0.05 s max.							
Solenoid	Rated voltage		Refer to Model Code							
	Voltage fluctuation tolerance		- 15% ~ 10% of rated voltage							
	Temperature rise		80 deg max.	65 deg max.	80 deg max.	65 deg max.				
	Insulation class		Class H							
	Insulation resistance		10MΩ min.							
	Rated current		Refer to Rated current data on page A-39							
	Explosion-proof standard		Flame-proof enclosure construction d2G4 / Exd II BT4							
Mass			Approx. 1.7kg		Approx. 1.8kg		Approx. 2.0kg		Approx. 2.1kg	

● At the operating temperature of 5°C or below, use extreme care for protection against frosting by removing the water contained in the fluid for use.

【Explosion-proof verification approval No.】

■ d2G4 · Return

No. T47926

■ Exd II BT4 · Return

No. TC16744

■ Exd II BT4 · Return (Europe) ■ Exd II BT4 Gb · Return (China)

TÜV.11.ATEX7945X

A number changes at every official approval.

■ d2G4 · Hold

No. T34655

■ Exd II BT4 · Hold

No. TC15045

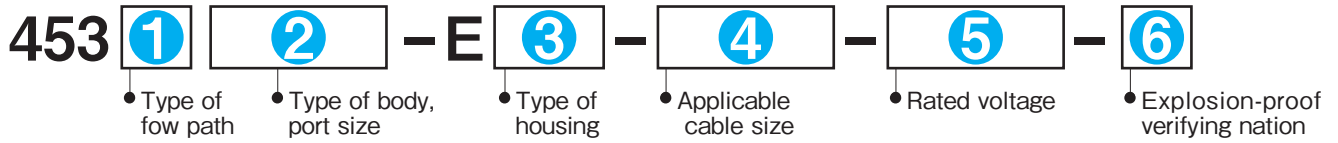
■ Exd II BT4 · Return (Korea) ■ Exd II BT4 Gb · Return (Taiwan)

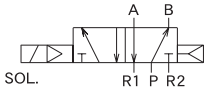
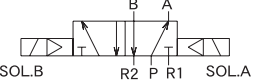
11 - AV4BO - 0196

A number changes at every official approval.

Model Code

When ordering, specify the model as follows:



1 Type of flow path		
Type of valve	JIS symbol	Designation
2 position	Return 	S
	Hold (Note) (Magnet-latched system) 	D

2 Type of body, port size		
Type of body	Port size	Designation
B20	Rc1/4	202K
	Rc3/8	203K
B40	Rc3/8	403C
	Rc1/2	404C

◆ **3** and **6** is ordering in the pair.

3 Type of housing		6 Explosion-proof verifying nation	
Type of housing (External wire connection system)	Designation	Verifying nation	Designation
JIS explosion-proof d2G4	Pressure resistant packing system	Japan	No entry
	Conduit tube system		
Explosion-proof for hydrogen d3aG4	Please refer to page C-3 of explosion-proof for hydrogen.		
EX: Explosion-proof Exd II BT4 (Japan) Exd II BT4 Gb (China) Exd II BT4 (Korea)	Pressure resistant packing system	2E*	Japan No entry
	Conduit tube system	1E	China C Korea H
II 2G Exd II BT4 Gb (Europe) Exd II BT4 Gb (Taiwan)	Pressure resistant packing system	2Y	Europe No entry
			Taiwan W
Drip-proof type		3K*	

* In the case of pressure resistant packing system, drip-proof type please enter the applicable cable size.
In the case of conduit tube system, no need to fill out the applicable cable size.

(Note) In the case of an overseas explosion-proof hold type, external form dimensions are different. Consult separately.

4 Applicable cable size (when housing is 2K* or 3K* or 2E*)		
Wire size ϕ d *	Applicable cable size	Designation
ϕ 8.5	ϕ 7.5 ~ 8.4	No.8
ϕ 9.5	ϕ 8.5 ~ 9.4	No.9
ϕ 10.5	ϕ 9.5 ~ 10.4	No.10
ϕ 11.5	ϕ 10.5 ~ 11.4	No.11
ϕ 12.5	ϕ 11.5 ~ 12.4	No.12
ϕ 13.5	ϕ 12.5 ~ 13.4	No.13

* For size ϕ d , refer to page A-35 from A-38

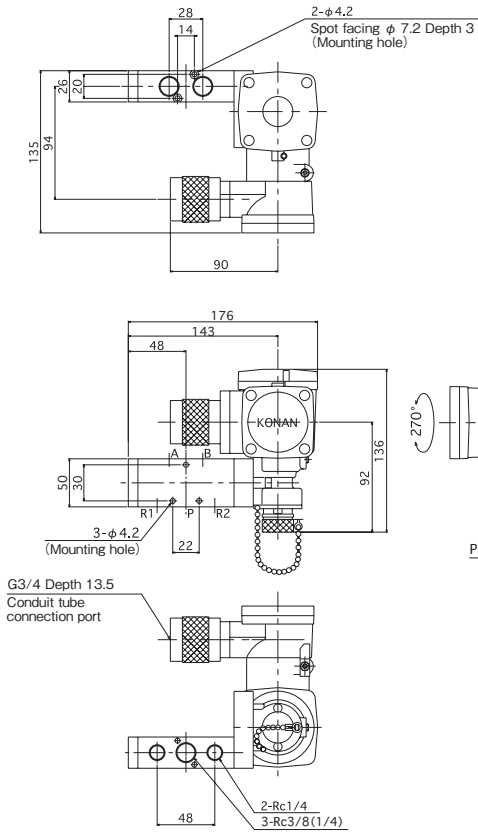
5 Rated voltage	
Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 50/60Hz	AC120
AC125V 50/60Hz	AC125 ¹⁾
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

1) In Ex. Explosion-proof type return valve, AC125 is not applicable.
* When ordering, specify the frequency 50 Hz or 60 Hz.

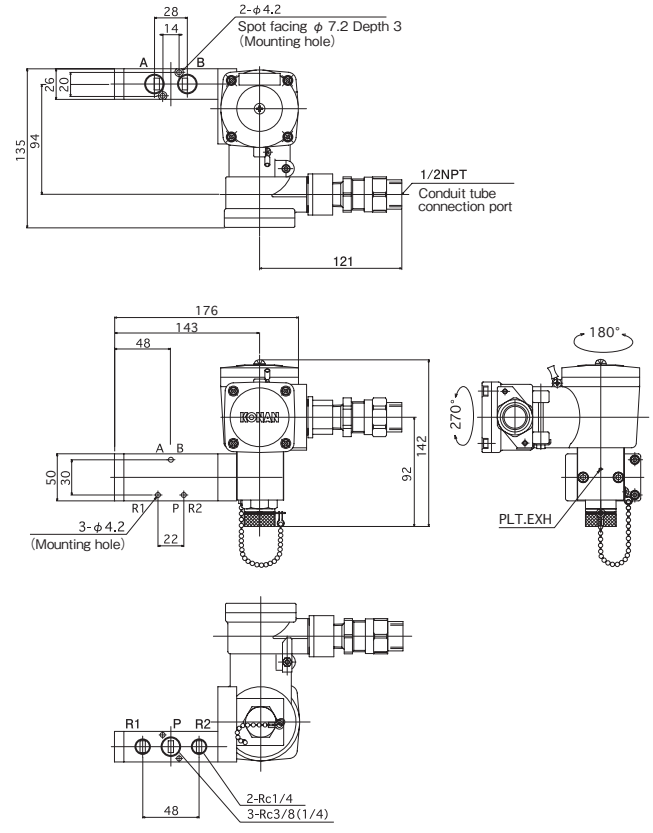
Outside Dimensions

[Pressure-resistant packing]

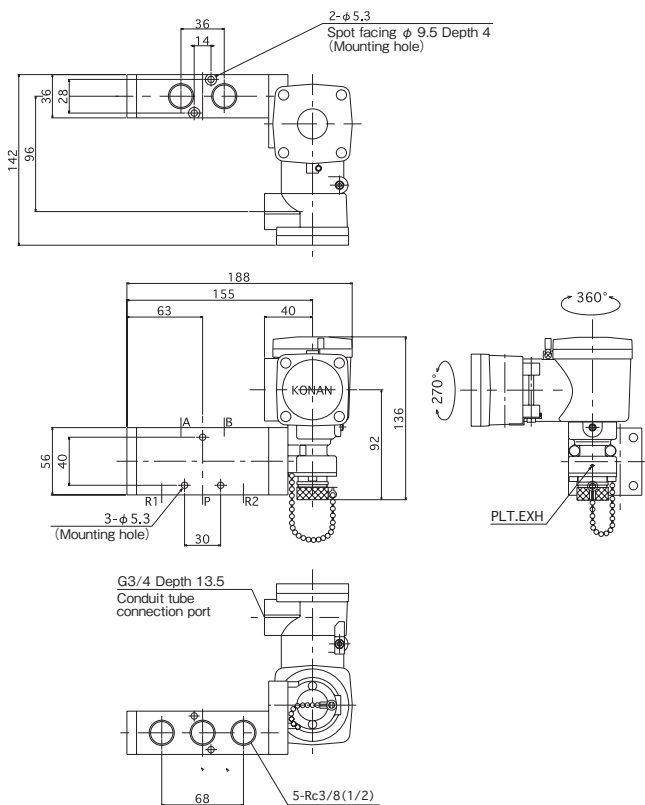
453S202 · 203K-E2K (Return)
453S202 · 203K-E2E



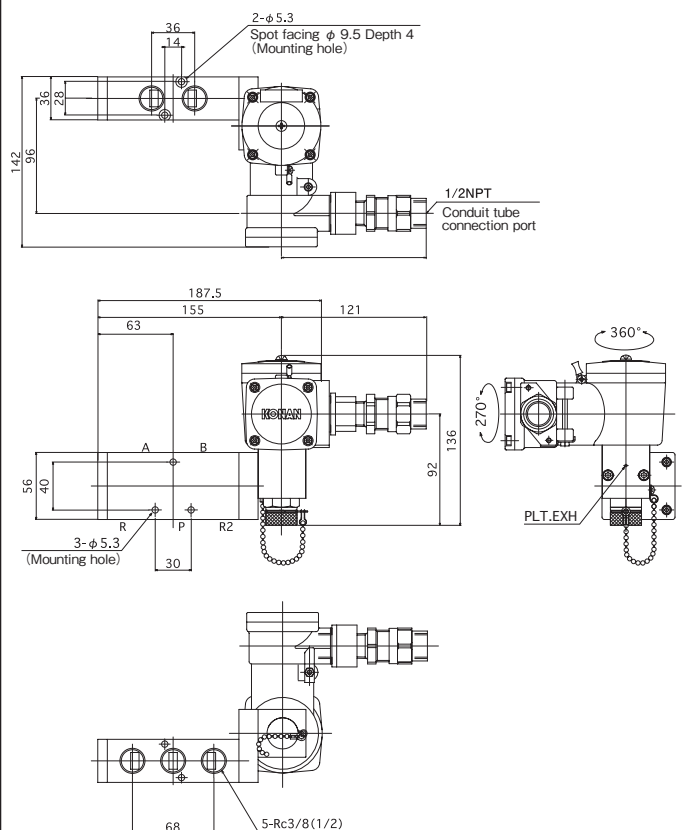
453S202 · 203K-E2Y (Return)



453S403 · 404C-E1K (Return)
453S403 · 404C-E1E

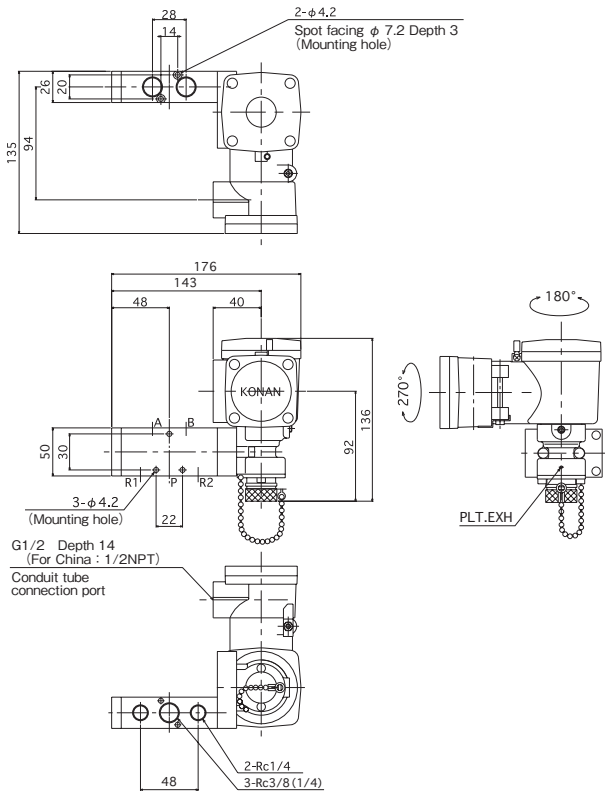


453S403 · 404C-E2Y (Return)



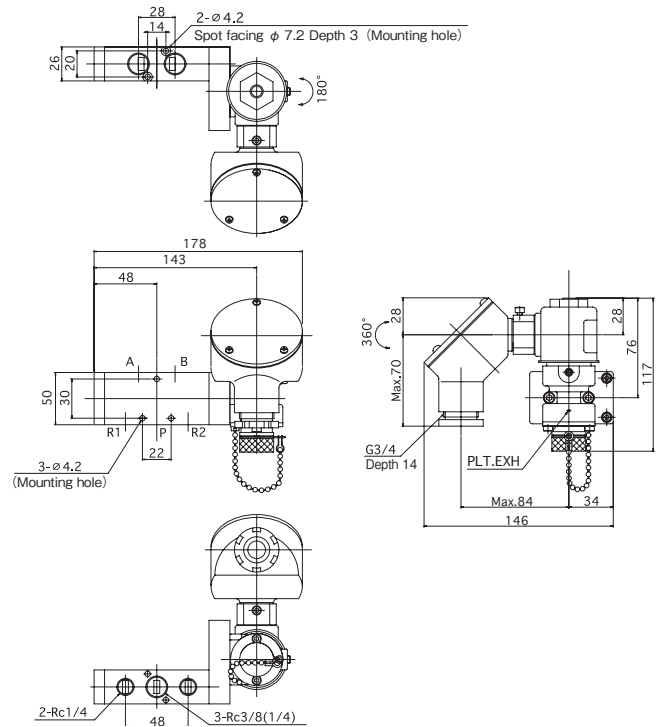
[Conduit tube]

453S202 · 203K-E1K (Return)
453S202 · 203K-E1E

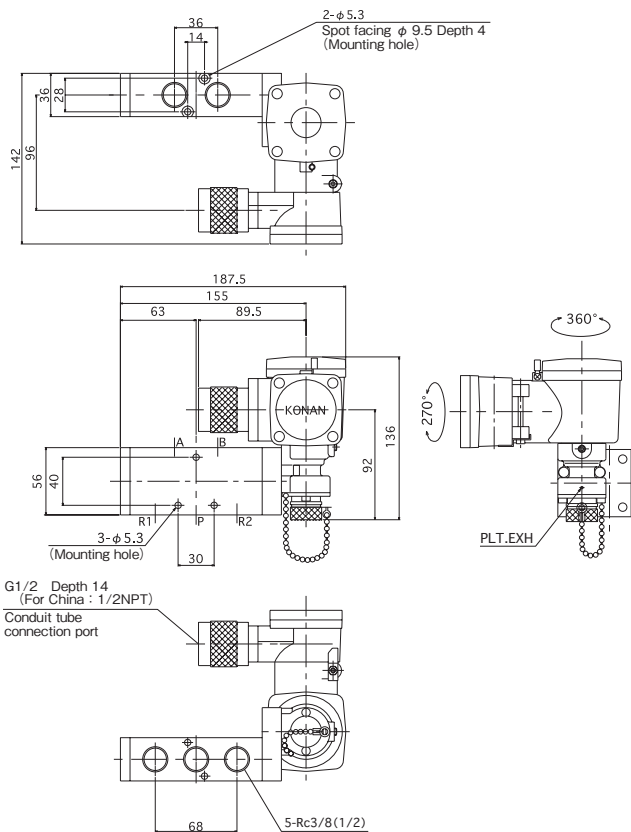


[Drip-proof type]

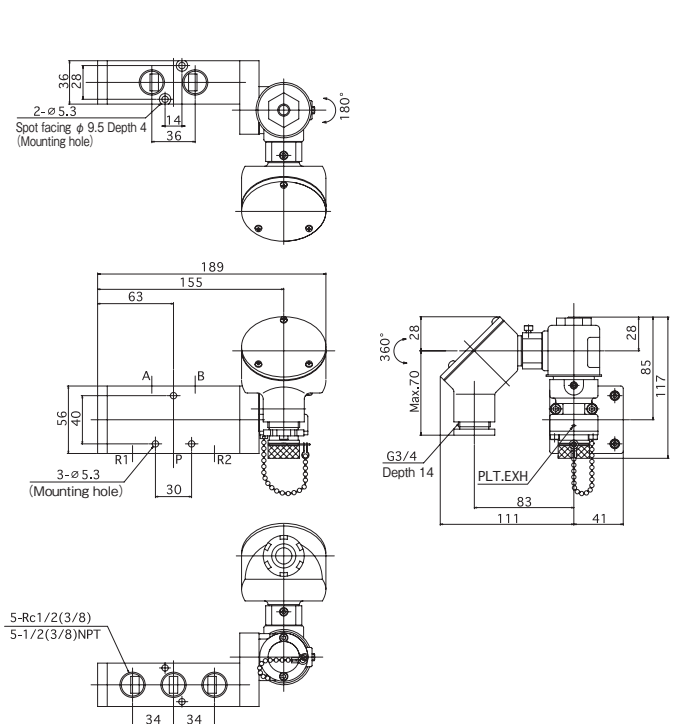
453S202 · 203K-E3K (Return)



453S403 · 404C-E2K (Return)
453S403 · 404C-E2E



453S403 · 404C-E3K (Return)



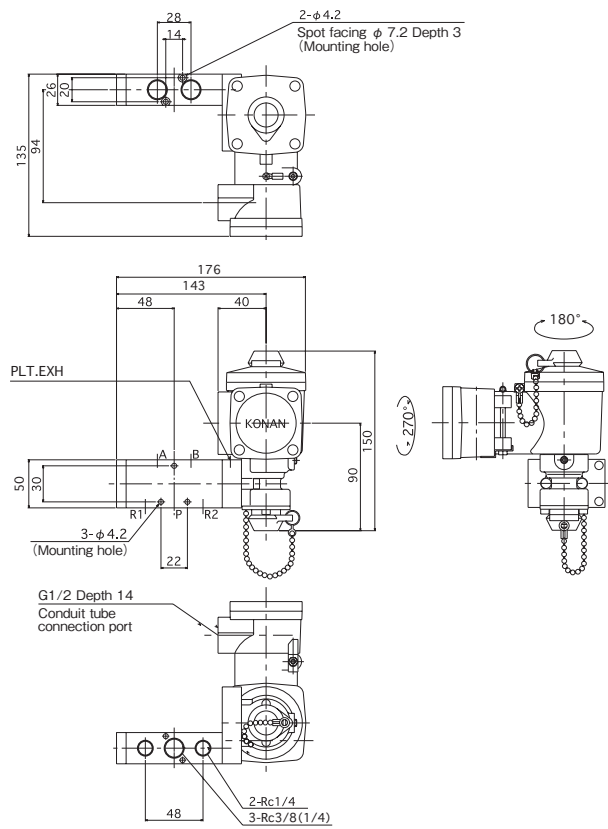
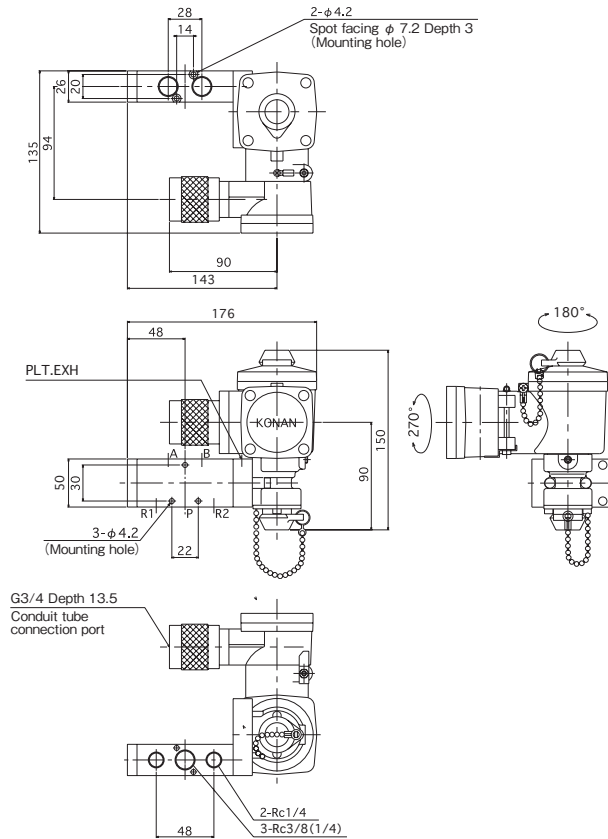
Outside Dimensions

[Pressure-resistant packing]

[Conduit tube]

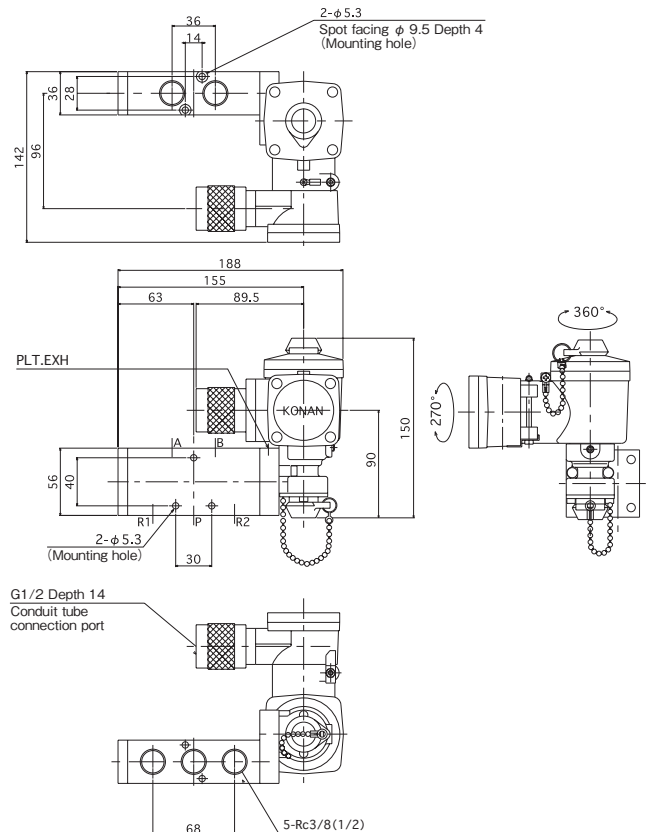
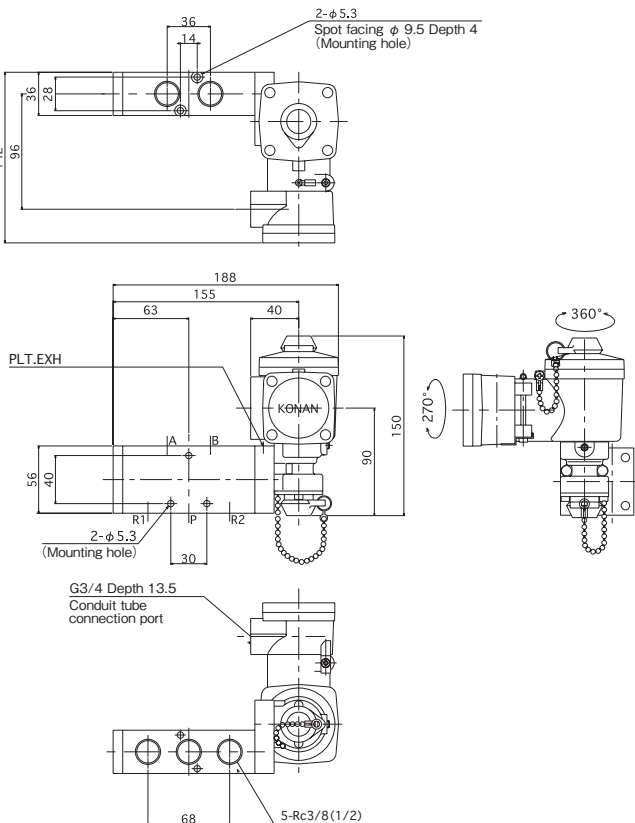
453D202 · 203K-E2K (Hold)
453D202 · 203K-E2E

453D202 · 203K-E1K (Hold)
453D202 · 203K-E1E



453D403 · 404C-E1K (Hold)
453D403 · 404C-E1E

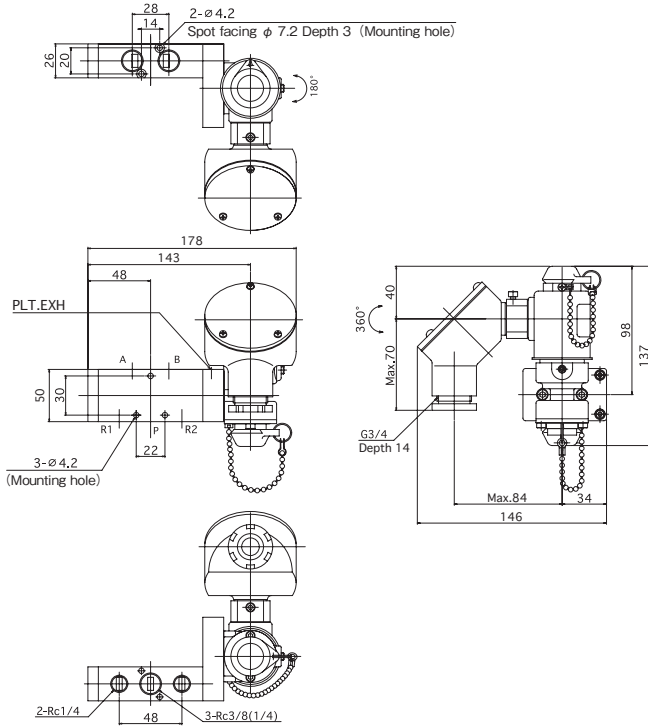
453D403 · 404C-E2K (Hold)
453D403 · 404C-E2E



Precautions in operation circuit design

[Drip-proof type]

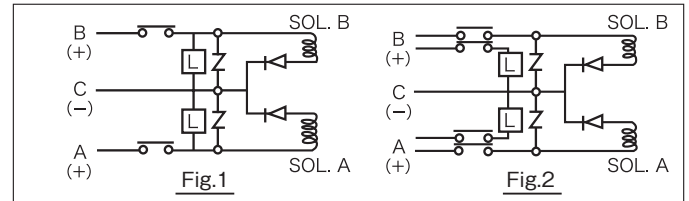
453D202 · 203K-E3K (Hold)



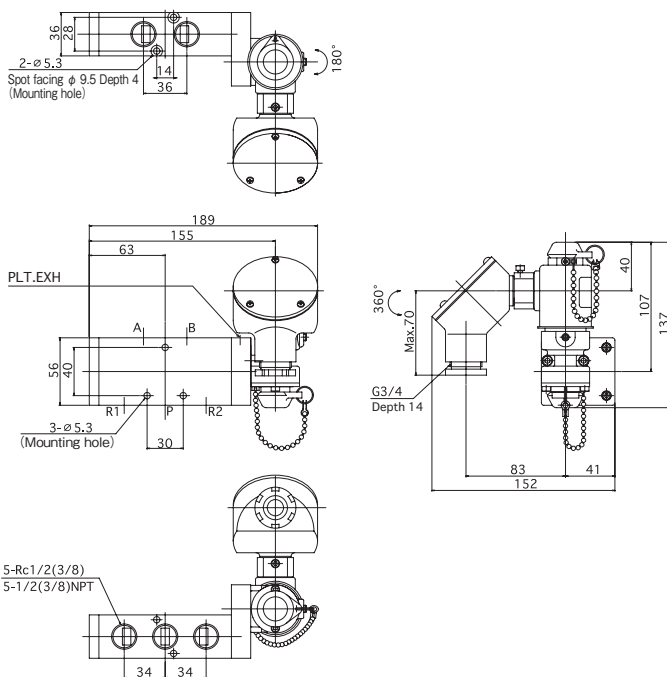
< Cause of magnet-latched system > (Hold)

If the load L such as relay, lamp or the like is connected in parallel with coil as shown in Fig.1, a voltage induced in SOL B when SOL A is ON (or in SOL A when SOL B is ON) may lead malfunction of the load L.

To prevent this, individual contacts should be provided as shown in Fig.2.



453D403 · 404C-E3K (Hold)



MVS2F/MVD2F · MVS2N/MVD2N Series

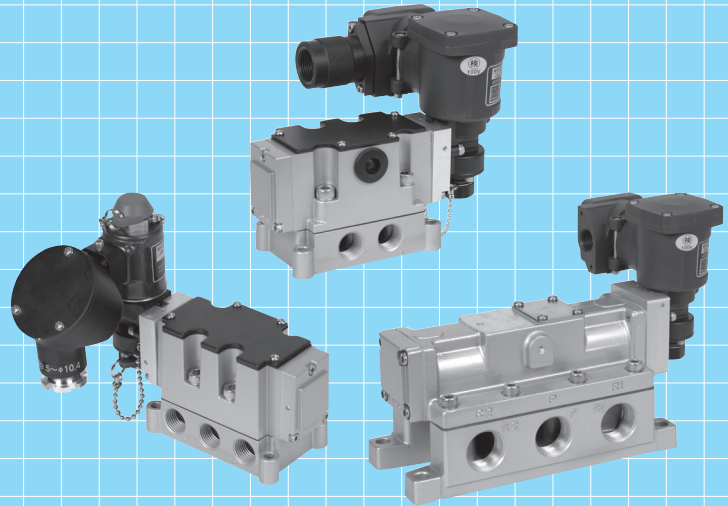
5-Port Solenoid Valves

Explosion-proof, Drip-proof

Spool valve system, Pilot type

Gasket connection type Rc1/4 · 3/8 · 1/2 · 3/4 · 1

Return / Hold



Specifications

			Return	Hold	Return	Hold
Type	Explosion-proof type	Pressure-resistant packing	MVS2F-03-E2K MVS2F-03-E2E MVS2F-03-E2Y	MVD2F-03-E2K MVD2F-03-E2E	MVS2N-08-E2K MVS2N-08-E2E MVS2N-08-E2Y	MVD2N-08-E2K MVD2N-08-E2E
		Conduit tube	MVS2F-03-E1K MVS2F-03-E1E	MVD2F-03-E1K MVD2F-03-E1E	MVS2N-08-E1K MVS2N-08-E1E	MVD2N-08-E1K MVD2N-08-E1E
	Drip-proof type		MVS2F-03-E3K	MVD2F-03-E3K	MVS2N-08-E3K	MVD2N-08-E3K
Port size (Rc)			1/4 · 3/8 · 1/2		3/4 · 1	
Effective sectional area (CV value)			40mm ² (2.2) · 55mm ² (3.0) · 70mm ² (3.8)		175mm ² (9.5) · 185mm ² (10.0)	
Operating pressure			0.2 ~ 0.7MPa		0.12 ~ 0.7MPa	
			In case of separate pilot supply type Pilot operating pressure ≥ Operating pressure			
Pressure resistance			1.05MPa			
Operating temperature			- 5 ~ 60°C		- 20 ~ 50°C	
Operating frequency			1 cycle / s max. / 1 cycle / 6 months min.			
Operation (response) time			0.1 s max.		0.3 s max.	
Solenoid	Rated voltage		Refer to Model Code			
	Voltage fluctuation tolerance		- 15% ~ 10% of rated voltage			
	Temperature rise		80 deg max.	65 deg max.	80 deg max.	65 deg max.
	Insulation class		Class H			
	Insulation resistance		10MΩ min.			
	Rated current		Refer to Rated current data on page A-39			
	Explosion-proof standard		Flame-proof enclosure construction d2G4 / Exd II BT4			
Mass			Approx. 3.0kg		Approx. 5.0kg	

● At the operating temperature of 5°C or below, use extreme care for protection against frosting by removing the water contained in the fluid for use.

【Explosion-proof verification approval No.】

■ d2G4 · Return

No. T47926

■ Exd II BT4 · Return

No. TC16744

■ Exd II BT4 · Return (Europe) ■ Exd II BT4 Gb · Return (China)

TÜV.11.ATEX7945X

A number changes at every official approval.

■ d2G4 · Hold

No. T34655

■ Exd II BT4 · Hold

No. TC15045

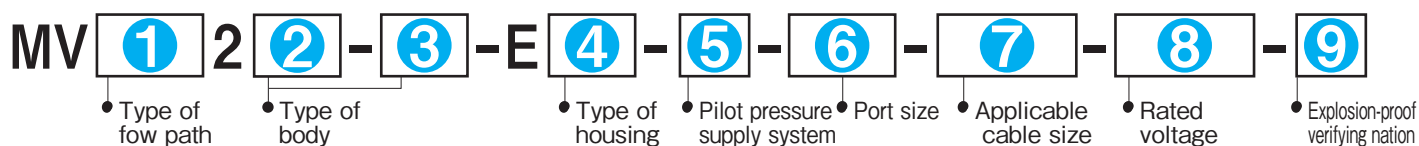
■ Exd II BT4 · Return (Korea) ■ Exd II BT4 Gb · Return (Taiwan)

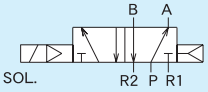
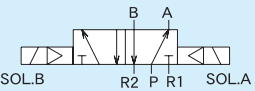
11 - AV4BO - 0196

A number changes at every official approval.

Model Code

When ordering, specify the model as follows:



1 Type of flow path				
Type of valve		JIS symbol	Designation	
2 position	Return		S	
	Hold (Note) (Magnet-latched system)		D	

5 Pilot pressure supply system	
Type	Designation
Internal pilot type (Standard)	No entry
Separate pilot supply type	P

◆ 2, 3 and 6 is ordering in three items set.

2 3 Type of body				6 Port size
Type of body	Port size	2 Designation	3 Designation	Designation
03	Rc1/4	F	03	8A
	Rc3/8			10A
	Rc1/2			15A
08	Rc3/4	N	08	20A
	Rc1			25A

7 Applicable cable size (when housing is 2K* or 3K* or 2E*)		
Wire size ϕd *	Applicable cable size	Designation
$\phi 8.5$	$\phi 7.5 \sim 8.4$	No.8
$\phi 9.5$	$\phi 8.5 \sim 9.4$	No.9
$\phi 10.5$	$\phi 9.5 \sim 10.4$	No.10
$\phi 11.5$	$\phi 10.5 \sim 11.4$	No.11
$\phi 12.5$	$\phi 11.5 \sim 12.4$	No.12
$\phi 13.5$	$\phi 12.5 \sim 13.4$	No.13

※ For size ϕd , refer to page A-35 from A-38

◆ 4 and 9 is ordering in the pair.

4 Type of housing			9 Explosion-proof verifying nation	
Type of housing (External wire connection system)		Designation	Verifying nation	Designation
JIS explosion-proof d2G4	Pressure resistant packing system	2K*	Japan	No entry
	Conduit tube system	1K		
EX. Explosion-proof	Pressure resistant packing system	2E*	Japan	No entry
	Conduit tube system	1E	China	C
II 2G Exd II BT4 Gb (Europe) Exd II BT4 Gb (Taiwan)	Pressure resistant packing system	2Y	Korea	H
			Europe	No entry
Drip-proof type		3K*	Taiwan	W

※ In the case of pressure resistant packing system, drip-proof type please enter the 7 applicable cable size.
In the case of conduit tube system, no need to fill out the 7 applicable cable size.

(Note) In the case of an overseas explosion-proof hold type, external form dimensions are different. Consult separately.

8 Rated voltage	
Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 50/60Hz	AC120
AC125V 50/60Hz	AC125 ¹⁾
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220

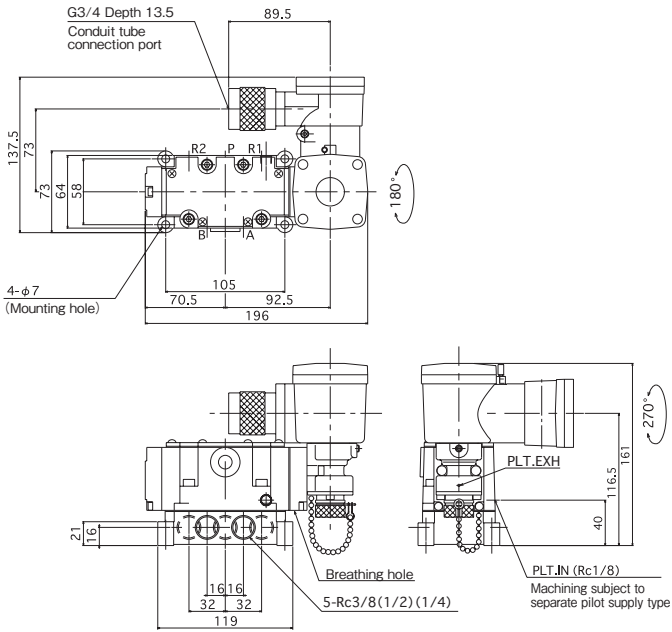
Rated voltage	Designation
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

1) In Ex. Explosion-proof type return valve, AC125 is not applicable.
※ When ordering, specify the frequency 50 Hz or 60 Hz.

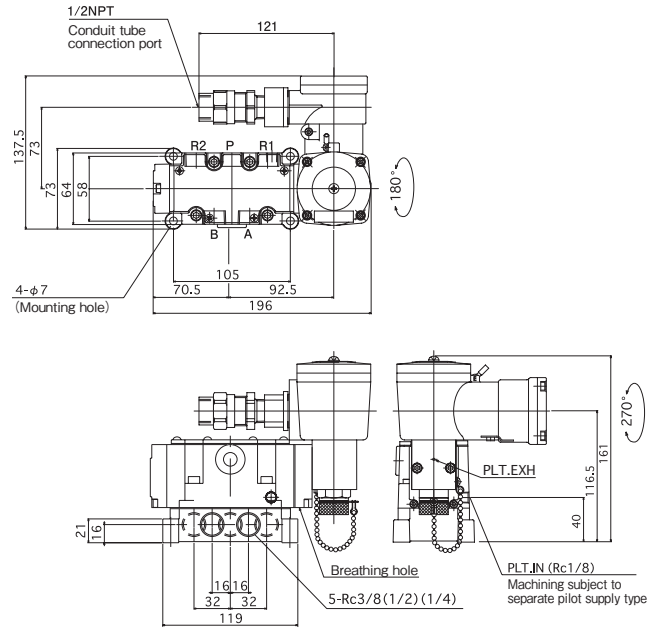
Outside Dimensions

[Pressure-resistant packing]

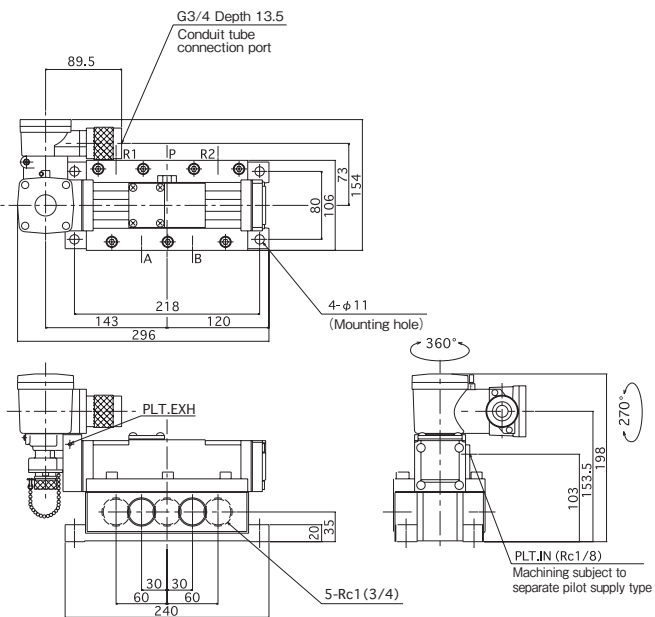
MVS2F-03-E2K (Return)
MVS2F-03-E2E



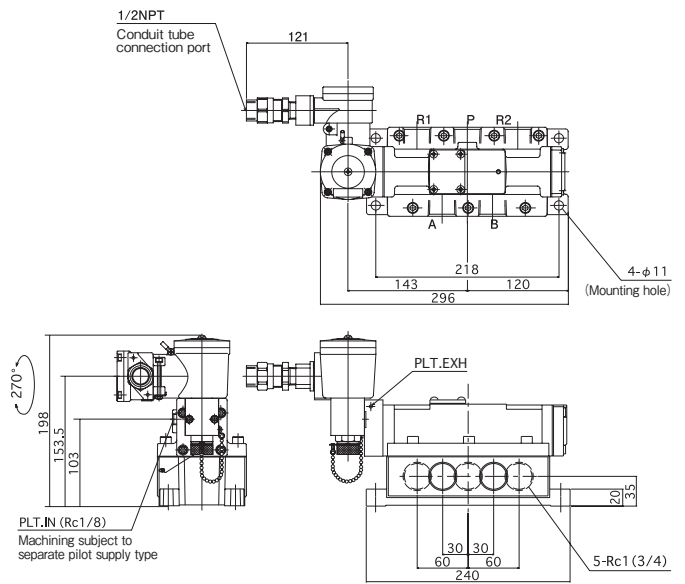
MVS2F-03-E2Y (Return)



MVS2N-08-E2K (Return)
MVS2N-08-E2E

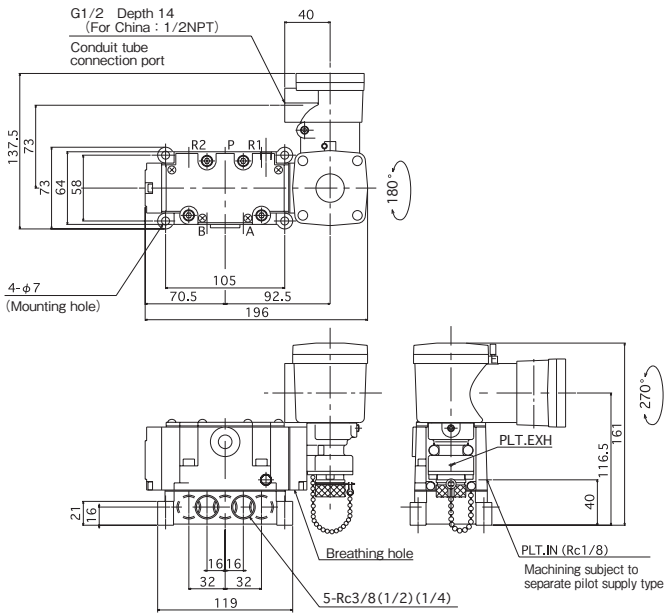


MVS2N-08-E2Y (Return)



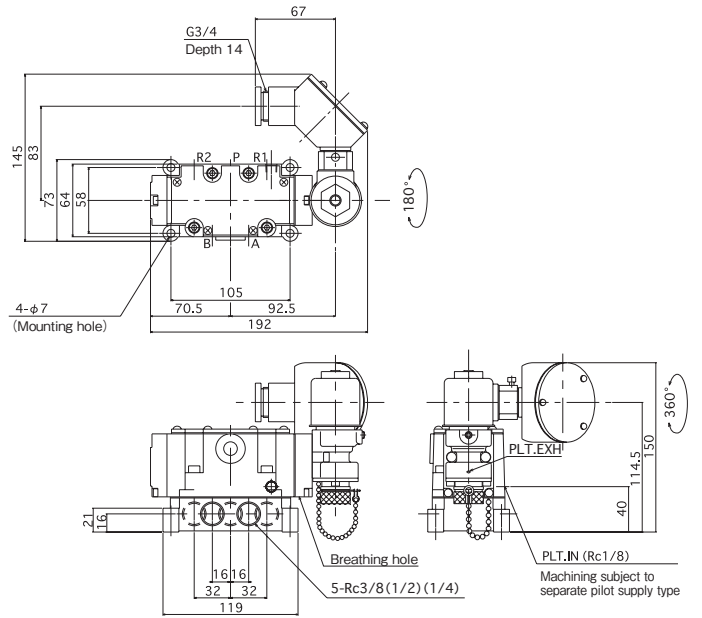
[Conduit tube]

MVS2F-03-E1K (Return)
MVS2F-03-E1E

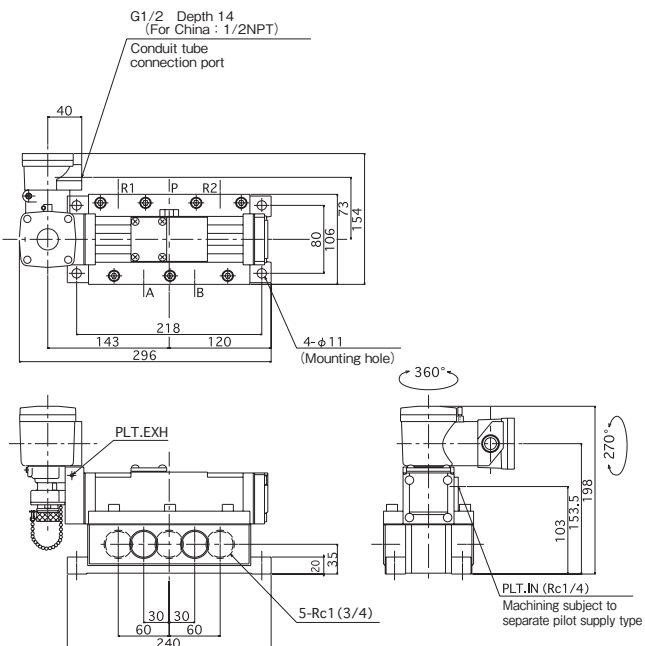


[Drip-proof type]

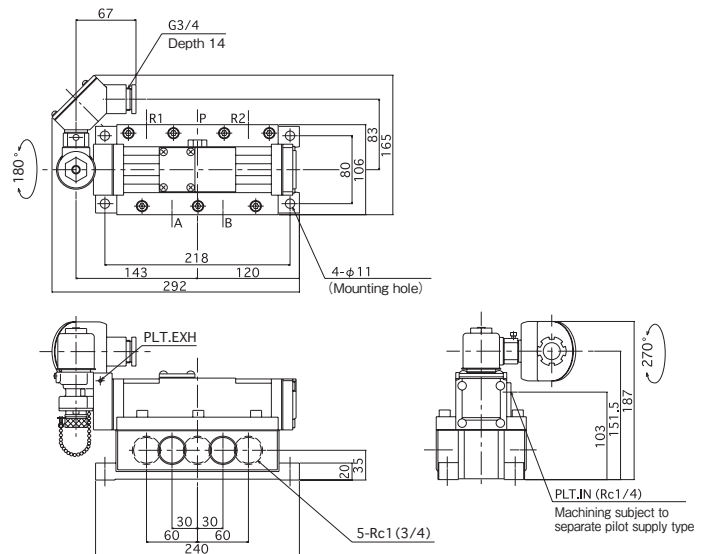
MVS2F-03-E3K (Return)



MVS2N-08-E1K (Return)
MVS2N-08-E1E



MVS2N-08-E3K (Return)

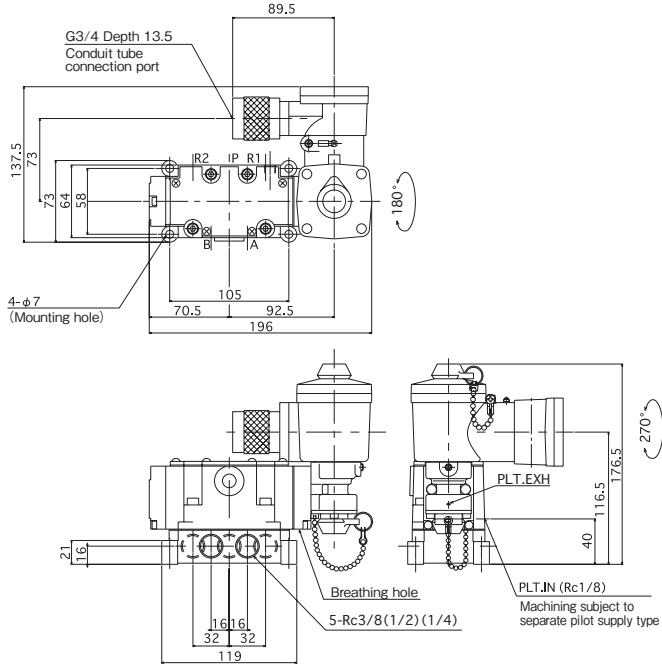


Outside Dimensions

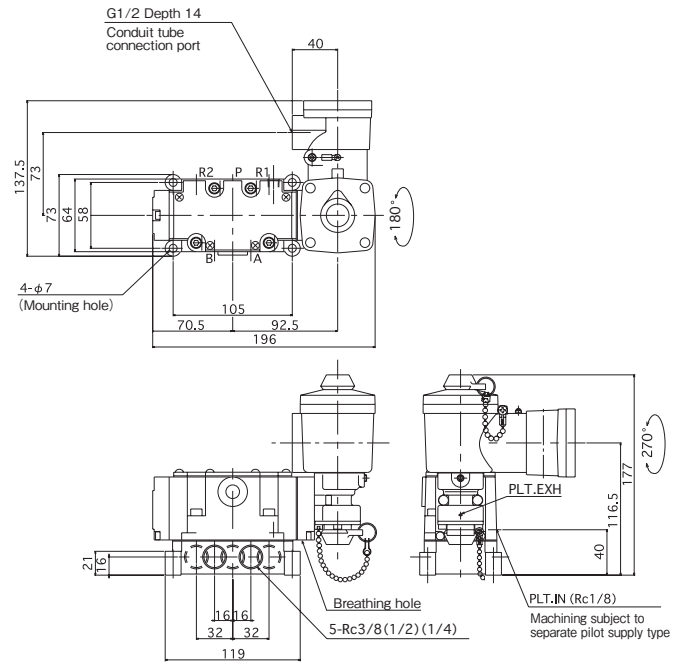
[Pressure-resistant packing]

[Conduit tube]

MVD2F-03-E2K (Hold)
MVD2F-03-E2E

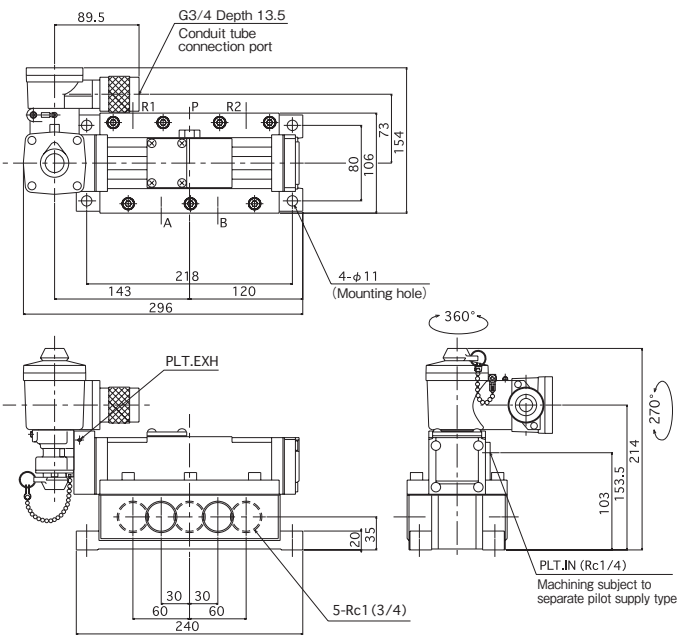


MVD2F-03-E1K (Hold)
MVD2F-03-E1E

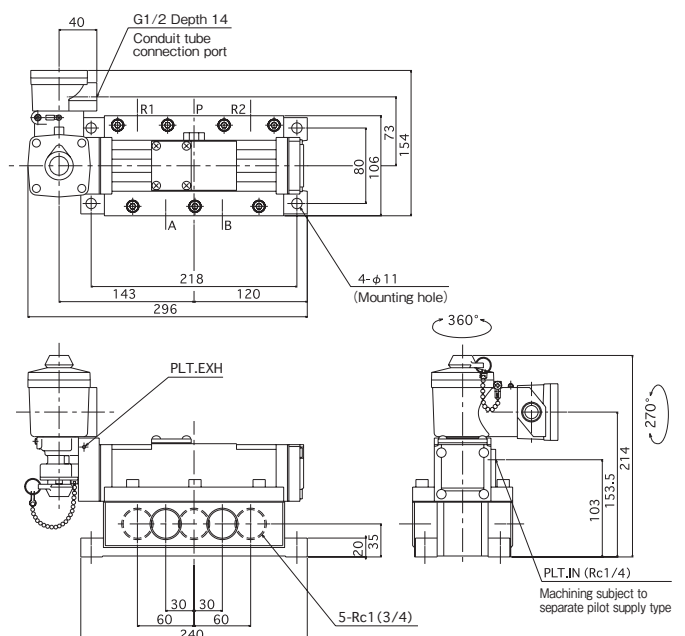


MVD2F-03-E2E-C/H (Hold) :
MVD2F-03-E2Y (Hold) :
 (The same as A-31 page "MVPCF-03-E2Y")

MVD2N-08-E2K (Hold)
MVD2N-08-E2E



MVD2N-08-E1K (Hold)
MVD2N-08-E1E (Hold)

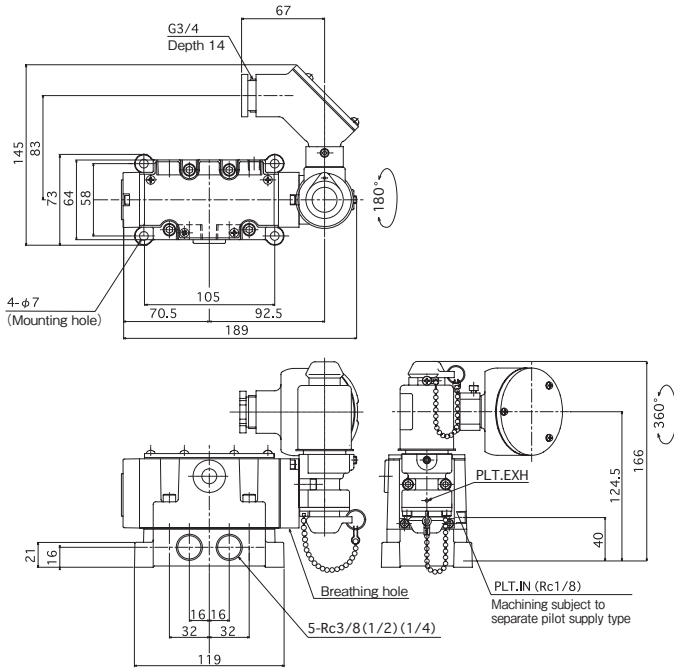


MVD2N-08-E2E-C/H (Hold) :
MVD2N-08-E2Y (Hold) :
 (The same as A-31 page "MVPCN-08-E2Y")

Precautions in operation circuit design

[Drip-proof type]

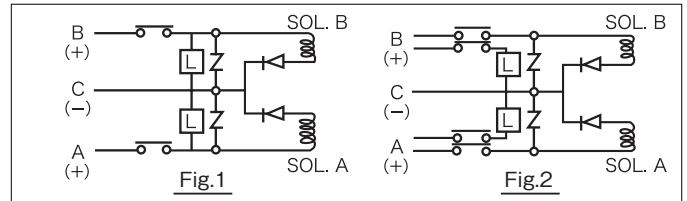
MVD2F-03-E3K (Hold)



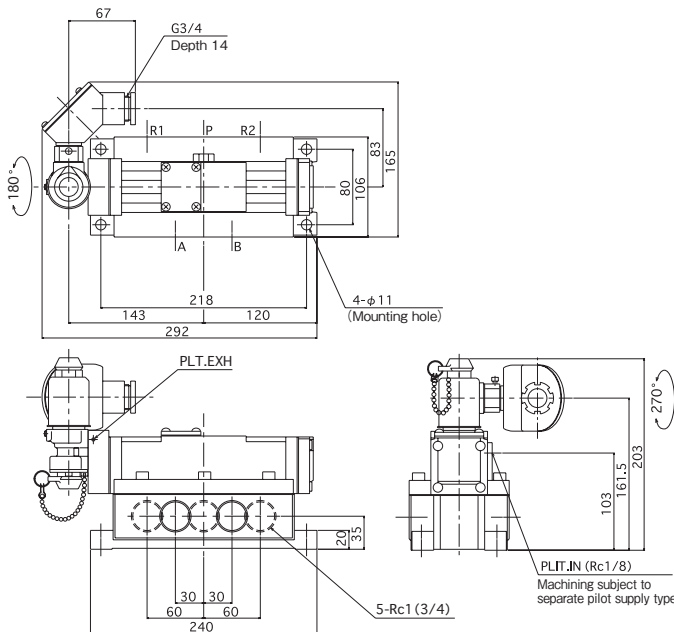
< Cause of magnet-latched system > (Hold)

If the load L such as relay, lamp or the like is connected in parallel with coil as shown in Fig.1, a voltage induced in SOL B when SOL A is ON (or in SOL A when SOL B is ON) may lead malfunction of the load L.

To prevent this, individual contacts should be provided as shown in Fig.2.



MVD2N-08-E3K (Hold)



MVPCF/EF/OF · MVPCN/EN/ON Series

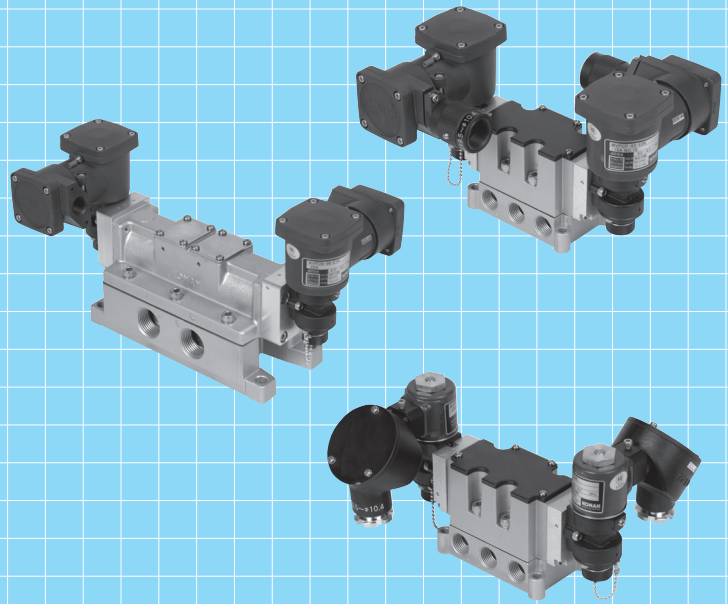
5-Port Solenoid Valves

Explosion-proof, Drip-proof

Spool valve system, Pilot type

Gasket connection type Rc1/4 · 3/8 · 1/2 · 3/4 · 1

3 positions (Closed center / Pressure center / Exhaust center)



Specifications

			Closed center	Pressure center	Exhaust center	Closed center	Pressure center	Exhaust center
Type	Explosion-proof type	Pressure-resistant packing	MVPCF-03-E2K MVPCF-03-E2E MVPCF-03-E2Y	MVPEF-03-E2K MVPEF-03-E2E MVPEF-03-E2Y	MVPOF-03-E2K MVPOF-03-E2E MVPOF-03-E2Y	MVPCN-08-E2K MVPCN-08-E2E MVPCN-08-E2Y	MVPEN-08-E2K MVPEN-08-E2E MVPEN-08-E2Y	MVPON-08-E2K MVPON-08-E2E MVPON-08-E2Y
		Conduit tube	MVPCF-03-E1K MVPCF-03-E1E	MVPEF-03-E1K MVPEF-03-E1E	MVPOF-03-E1K MVPOF-03-E1E	MVPCN-08-E1K MVPCN-08-E1E	MVPEN-08-E1K MVPEN-08-E1E	MVPON-08-E1K MVPON-08-E1E
	Drip-proof type		MVPCF-03-E3K	MVPEF-03-E3K	MVPOF-03-E3K	MVPCN-08-E3K	MVPEN-08-E3K	MVPON-08-E3K
Port size (Rc)			1/4 · 3/8 · 1/2			3/4 · 1		
Effective sectional area (CV value)			40mm ² (2.2) · 55mm ² (3.0) · 70mm ² (3.8)			175mm ² (9.5) · 185mm ² (10.0)		
Operating pressure			0.2 ~ 0.7MPa			0.12 ~ 0.7MPa		
			In case of separate pilot supply type Pilot operating pressure ≥ Operating pressure					
Pressure resistance			1.05MPa					
Operating temperature			- 5 ~ 60°C			- 20 ~ 50°C		
Operating frequency			1 cycle / s max.			/ 1 cycle / 6 months min.		
Operation (response) time			0.1 s max.			0.5 s max.		
Solenoid	Rated voltage		Refer to Model Code					
	Voltage fluctuation tolerance		- 15% ~ 10% of rated voltage					
	Temperature rise		80 deg max.					
	Insulation class		Class H					
	Insulation resistance		10MΩ min.					
	Rated current		Refer to Rated current data on page A-39					
	Explosion-proof standard		Flame-proof enclosure construction d2G4 / Exd II BT4					
Mass			Approx. 3.5kg			Approx. 5.5kg		

● At the operating temperature of 5°C or below, use extreme care for protection against frosting by removing the water contained in the fluid for use.

【Explosion-proof verification approval No.】

■ d2G4

No. T47926

■ Exd II BT4 (Europe)

TÜV.11.ATEX7945X

■ Exd II BT4 Gb (China)

A number changes at every official approval.

■ Exd II BT4

No. TC16744

■ Exd II BT4 (Korea)

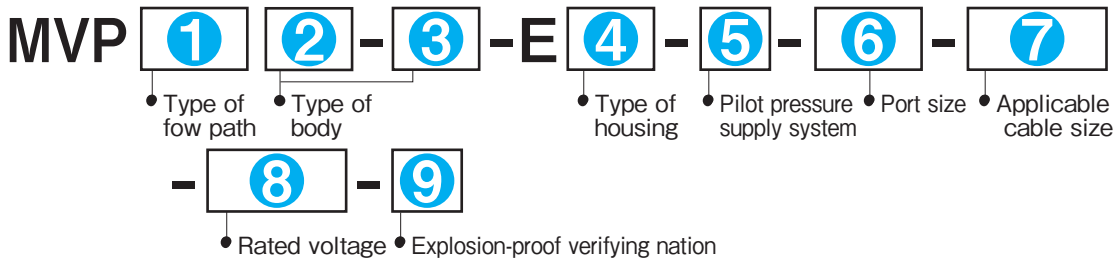
11 - AV4BO - 0196

■ Exd II BT4 Gb · Return (Taiwan)

A number changes at every official approval.

Model Code

When ordering, specify the model as follows:



1 Type of flow path

Type of valve	JIS symbol	Designation
3 position	Closed center 	CF
		CN
	Pressure center 	EF
		EN
	Exhaust center 	OF
		ON

5 Pilot pressure supply system

Type	Designation
Internal pilot type (Standard)	No entry
Separate pilot supply type	P

◆ **2, 3** and **6** is ordering In three items set.

2 3 Type of body

6 Port size

Type of body	Port size	2 Designation	3 Designation	Designation
03	Rc1/4	F	03	8A
	Rc3/8			10A
	Rc1/2			15A
08	Rc3/4	N	08	20A
	Rc1			25A

7 Applicable cable size (when housing is 2K* or 3K* or 2E*)

Wire size ϕd *	Applicable cable size	Designation
$\phi 8.5$	$\phi 7.5 \sim 8.4$	No.8
$\phi 9.5$	$\phi 8.5 \sim 9.4$	No.9
$\phi 10.5$	$\phi 9.5 \sim 10.4$	No.10
$\phi 11.5$	$\phi 10.5 \sim 11.4$	No.11
$\phi 12.5$	$\phi 11.5 \sim 12.4$	No.12
$\phi 13.5$	$\phi 12.5 \sim 13.4$	No.13

* For size ϕd , refer to page A-35 from A-38

◆ **4** and **9** is ordering in the pair.

4 Type of housing

9 Explosion-proof verifying nation

Type of housing (External wire connection system)	Designation	Verifying nation	Designation
JIS explosion-proof d2G4	Pressure resistant packing system	Japan	No entry
	Conduit tube system		
EX: Explosion-proof	Exd II BT4 (Japan) Exd II BT4 Gb (China) Exd II BT4 (Korea)	Japan	No entry
		China	C
	II 2G Exd II BT4 Gb (Europe) Exd II BT4 Gb (Taiwan)	Korea	H
		Europe	No entry
	Taiwan	W	
Drip-proof type			
	3K*		

* In the case of pressure resistant packing system, drip-proof type please enter the

7 applicable cable size.

In the case of conduit tube system, no need to fill out the 7 applicable cable size.

8 Rated voltage

Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 50/60Hz	AC120
AC125V 50/60Hz	AC125 ¹⁾
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220

Rated voltage	Designation
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

1) In Ex. Explosion-proof type return valve, AC125 is not applicable.

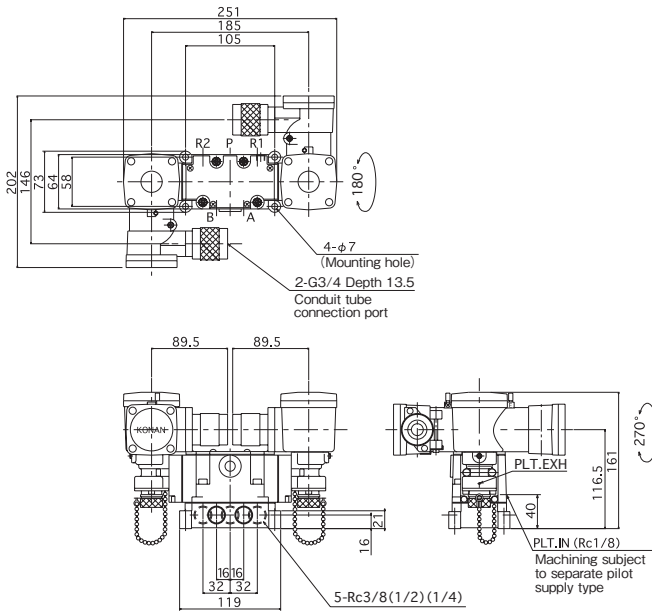
* When ordering, specify the frequency 50 Hz or 60 Hz.

Outside Dimensions

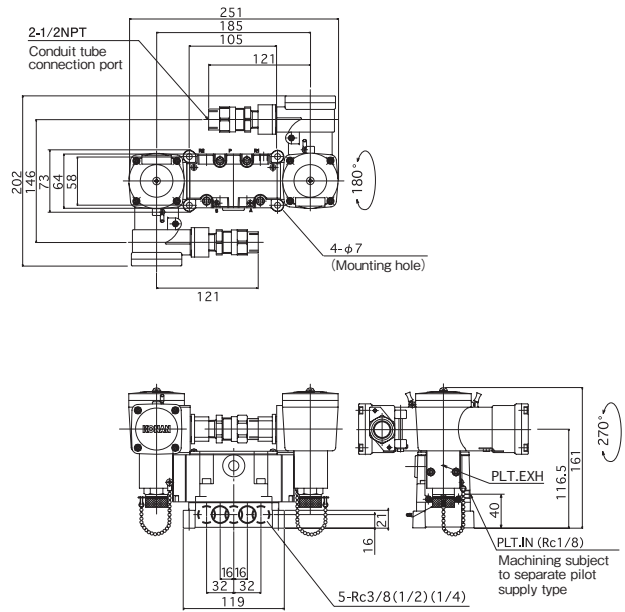
(Pressure-resistant packing)

Note) Each of closed center, pressure center and exhaust center is designed to the same outside dimensions.

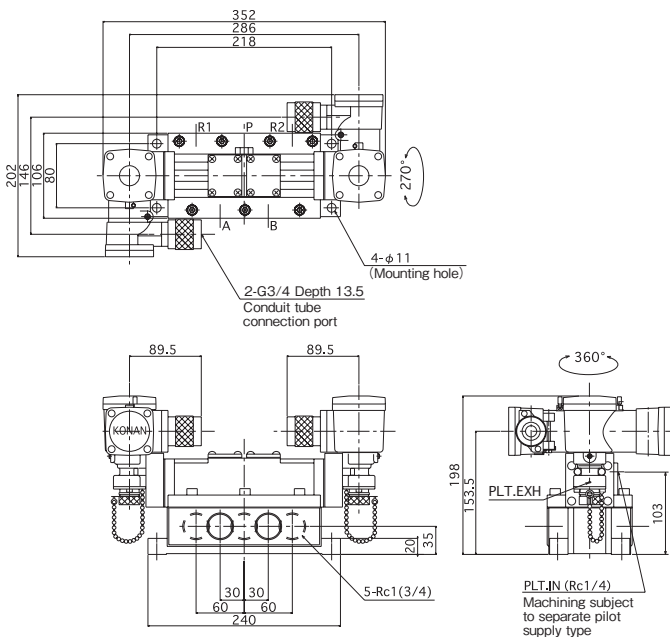
MVPCF-03-E2K · MVPCF-03-E2E (Closed center)
 MVPEF-03-E2K · MVPEF-03-E2E (Pressure center)
 MVPOF-03-E2K · MVPOF-03-E2E (Exhaust center)



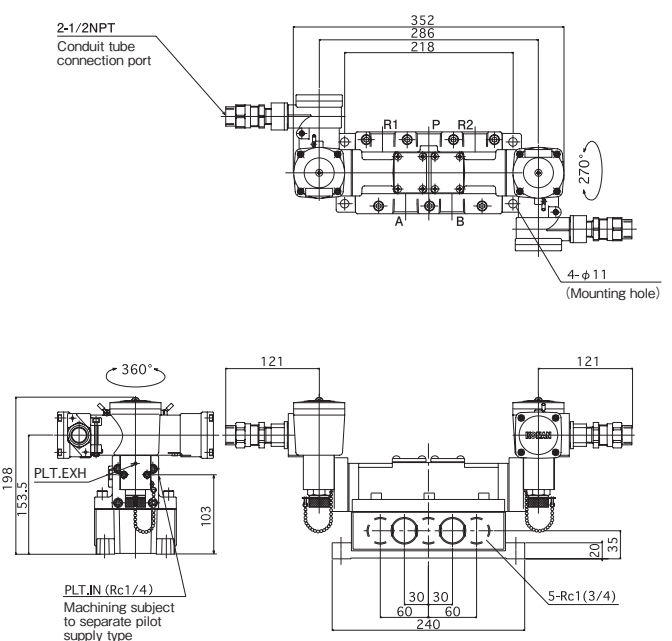
MVPCF-03-E2Y (Closed center)
 MVPEF-03-E2Y (Pressure center)
 MVPOF-03-E2Y (Exhaust center)



MVPCN-08-E2K · MVPCN-08-E2E (Closed center)
 MVPEN-08-E2K · MVPEN-08-E2E (Pressure center)
 MVPON-08-E2K · MVPON-08-E2E (Exhaust center)

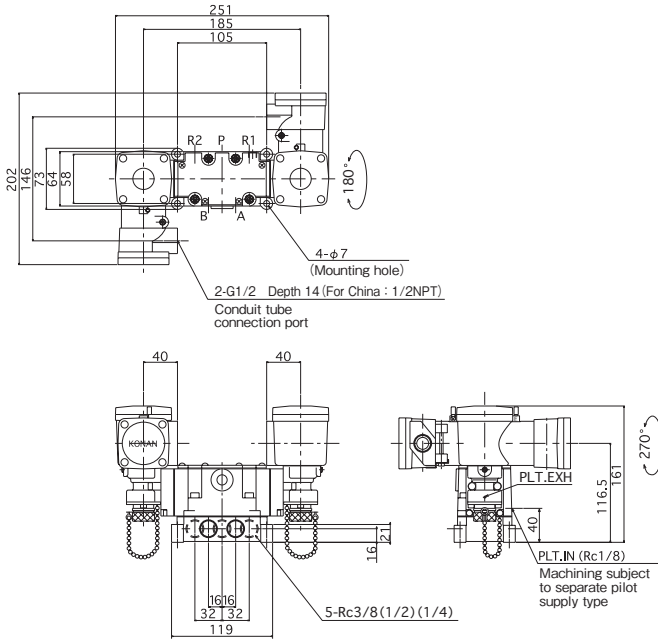


MVPCN-08-E2Y (Closed center)
 MVPEN-08-E2Y (Pressure center)
 MVPON-08-E2Y (Exhaust center)



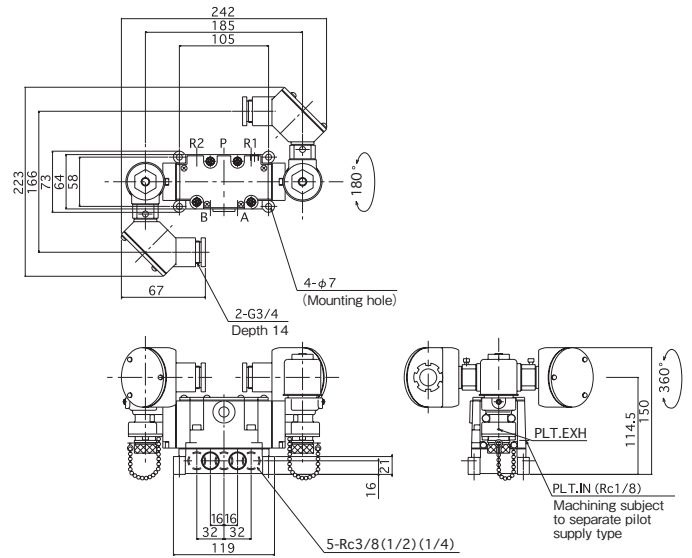
【Conduit tube】

MVPCF-03-E1K • MVPCF-03-E1E (Closed center)
 MVPEF-03-E1K • MVPEF-03-E1E (Pressure center)
 MVPOF-03-E1K • MVPOF-03-E1E (Exhaust center)

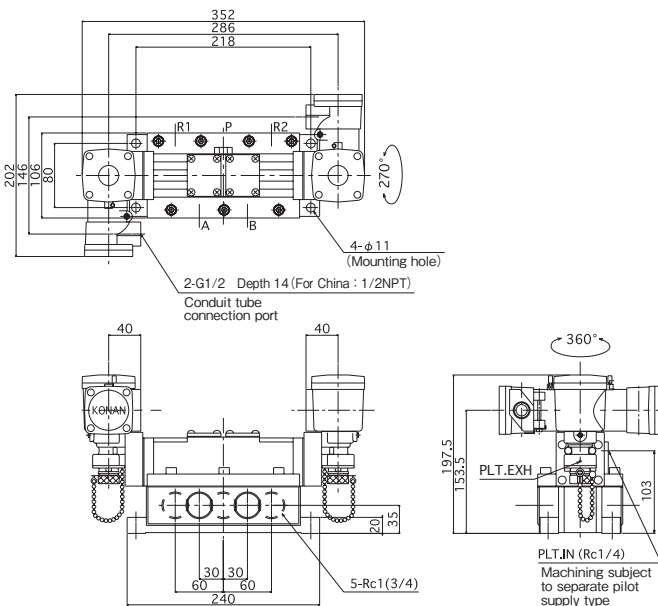


【Drip-proof type】

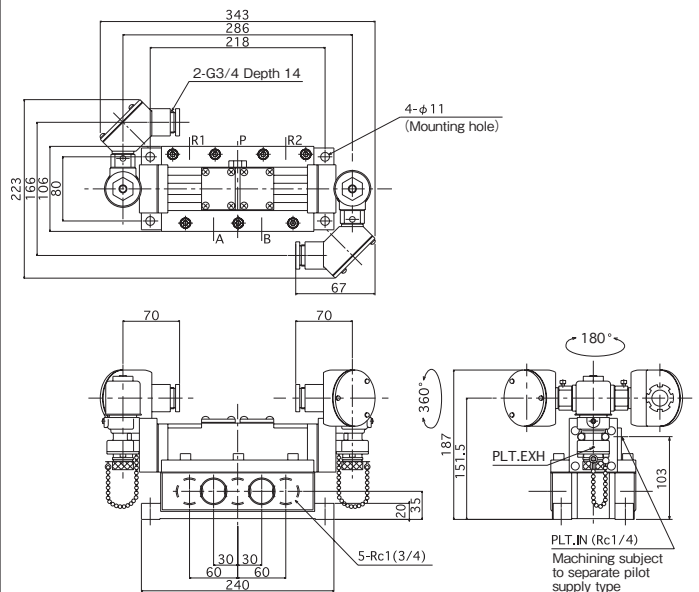
MVPCF-03-E3K (Closed center)
 MVPEF-03-E3K (Pressure center)
 MVPOF-03-E3K (Exhaust center)



MVPCN-08-E1K • MVPCN-08-E1E (Closed center)
 MVPEN-08-E1K • MVPEN-08-E1E (Pressure center)
 MVPON-08-E1K • MVPON-08-E1E (Exhaust center)



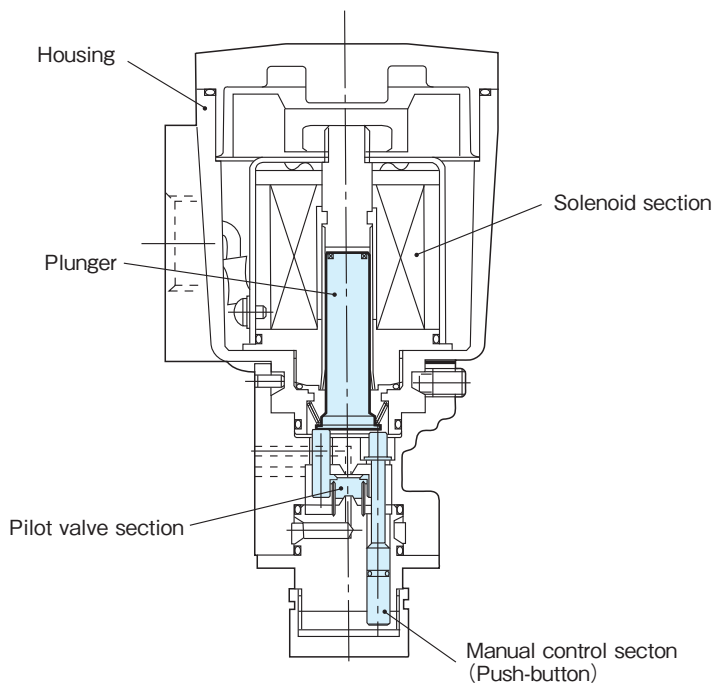
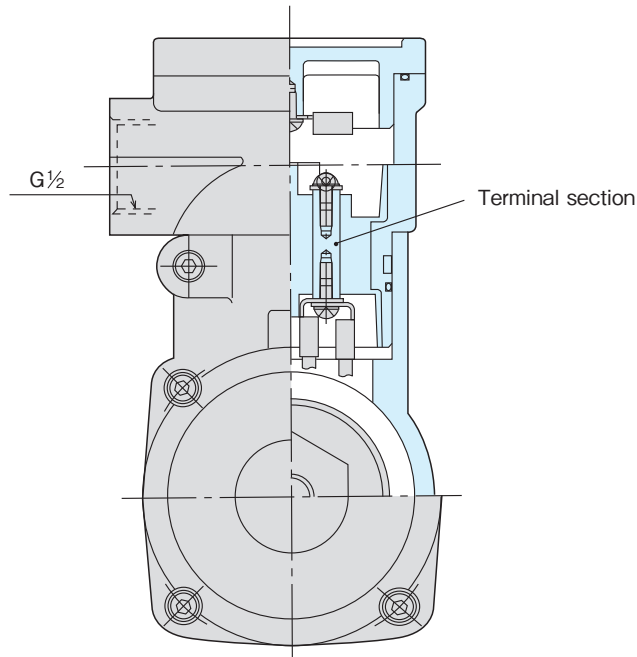
MVPCN-08-E3K (Closed center)
 MVPEN-08-E3K (Pressure center)
 MVPON-08-E3K (Exhaust center)



Type of proofness and construction 1

ME3S · ME33S

Composition and Construction



Verification approval No. []

No. T47926

Applicable Model

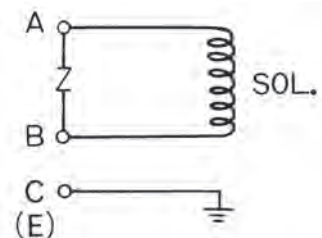
<ME3S>

- 3-Port
 - MVS303K-02
- 4-Port
 - MVS813K-02
 - MVS803K-03
- 5-Port
 - 453S202C-E1K
 - 453S203C-E1K
 - 453S403C-E1K
 - 453S404C-E1K
 - MVS2F-03-E1K
 - MVS2N-08-E1K
 - MVPCF-03-E1K
 - MVPEF-03-E1K
 - MVPOF-03-E1K
 - MVPCN-08-E1K
 - MVPEN-08-E1K
 - MVPON-08-E1K

<ME33S>

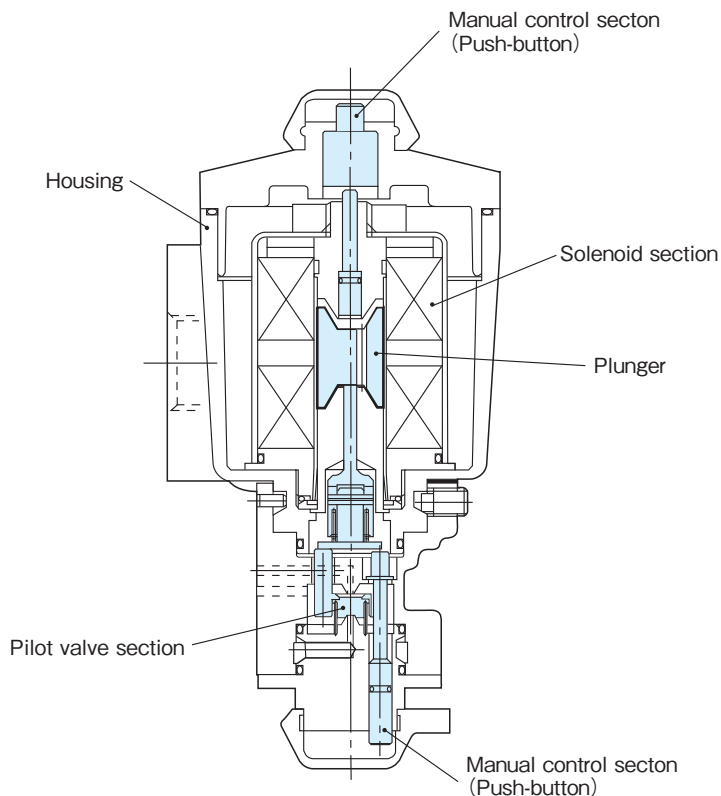
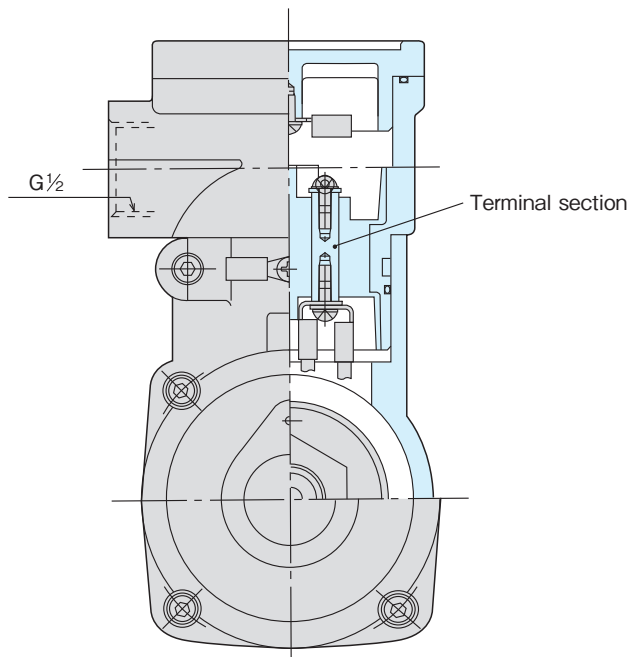
- 3-Port
 - MVS313K-02

Wire connection diagram



■ ME9D-K • ME99D-K

Composition and Construction



Verification approval No.

No. T34655

Applicable Model

<ME9D-K>

3-Port ● MVD303K-02

4-Port ● MVD813K-02

● MVD803K-03

5-Port ● 453D202C-E1K

● 453D203C-E1K

● 453D403C-E1K

● 453D404C-E1K

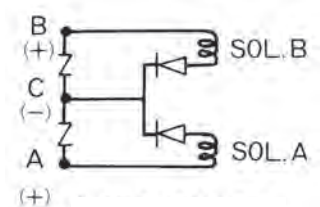
● MVD2F-03-E1K

● MVD2N-08-E1K

<ME99D-K>

3-Port ● MVD313K-02

Wire connection diagram

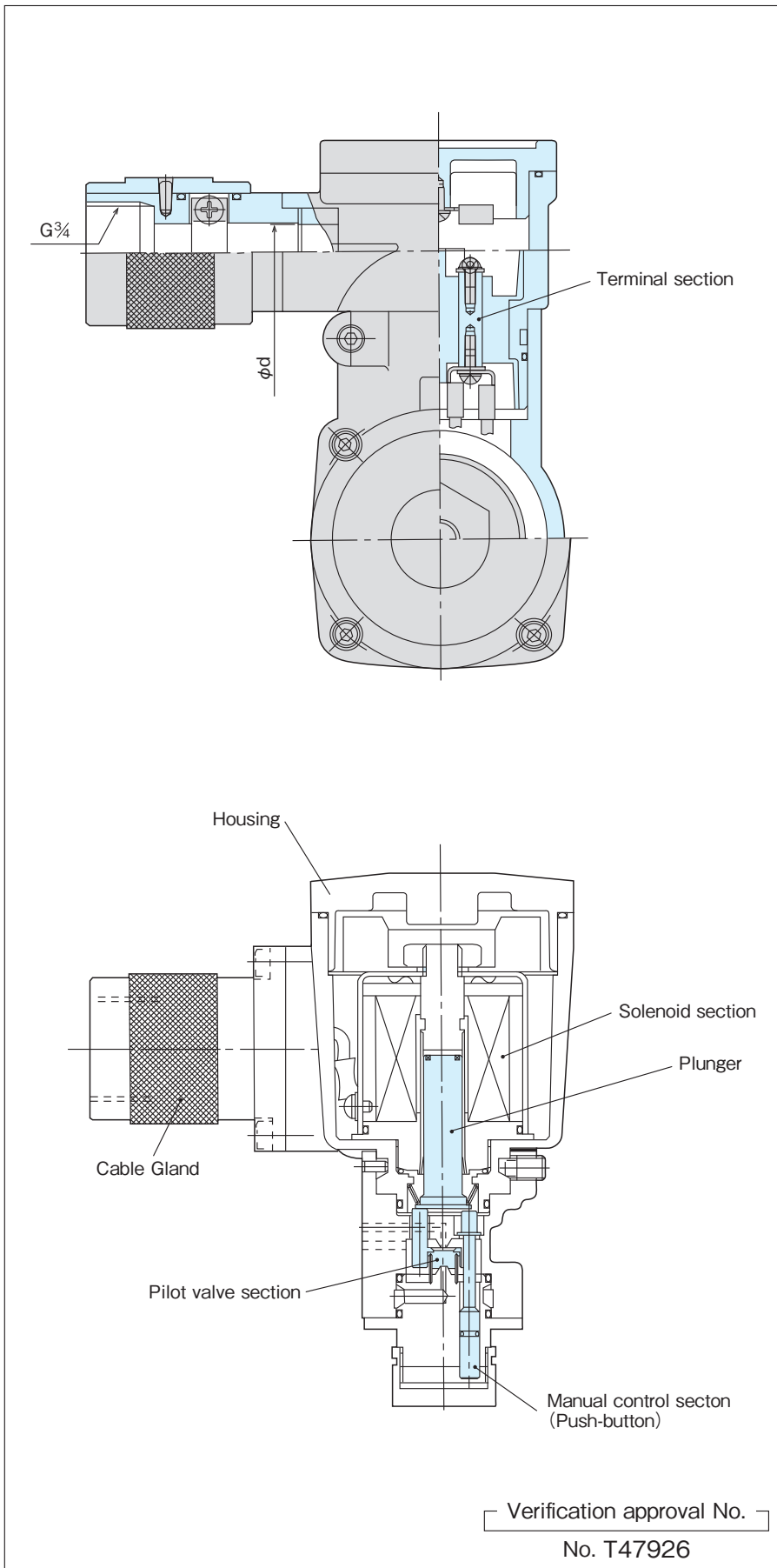


() shows DC polarity.

Type of proofness and construction 2

ME32S · ME332S

Composition and Construction



Applicable Model

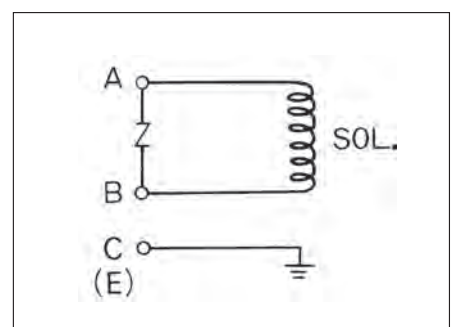
<ME32S>

- | | |
|--------|--|
| 3-Port | ● MVS302K-02 |
| 4-Port | ● MVS812K-02
● MVS802K-03 |
| 5-Port | ● 453S202C-E2K
● 453S203C-E2K
● 453S403C-E2K
● 453S404C-E2K
● MVS2F-03-E2K
● MVS2N-08-E2K
● MVPCF-03-E2K
● MVPEF-03-E2K
● MVPOF-03-E2K
● MVPCN-08-E2K
● MVPEN-08-E2K
● MVPON-08-E2K |

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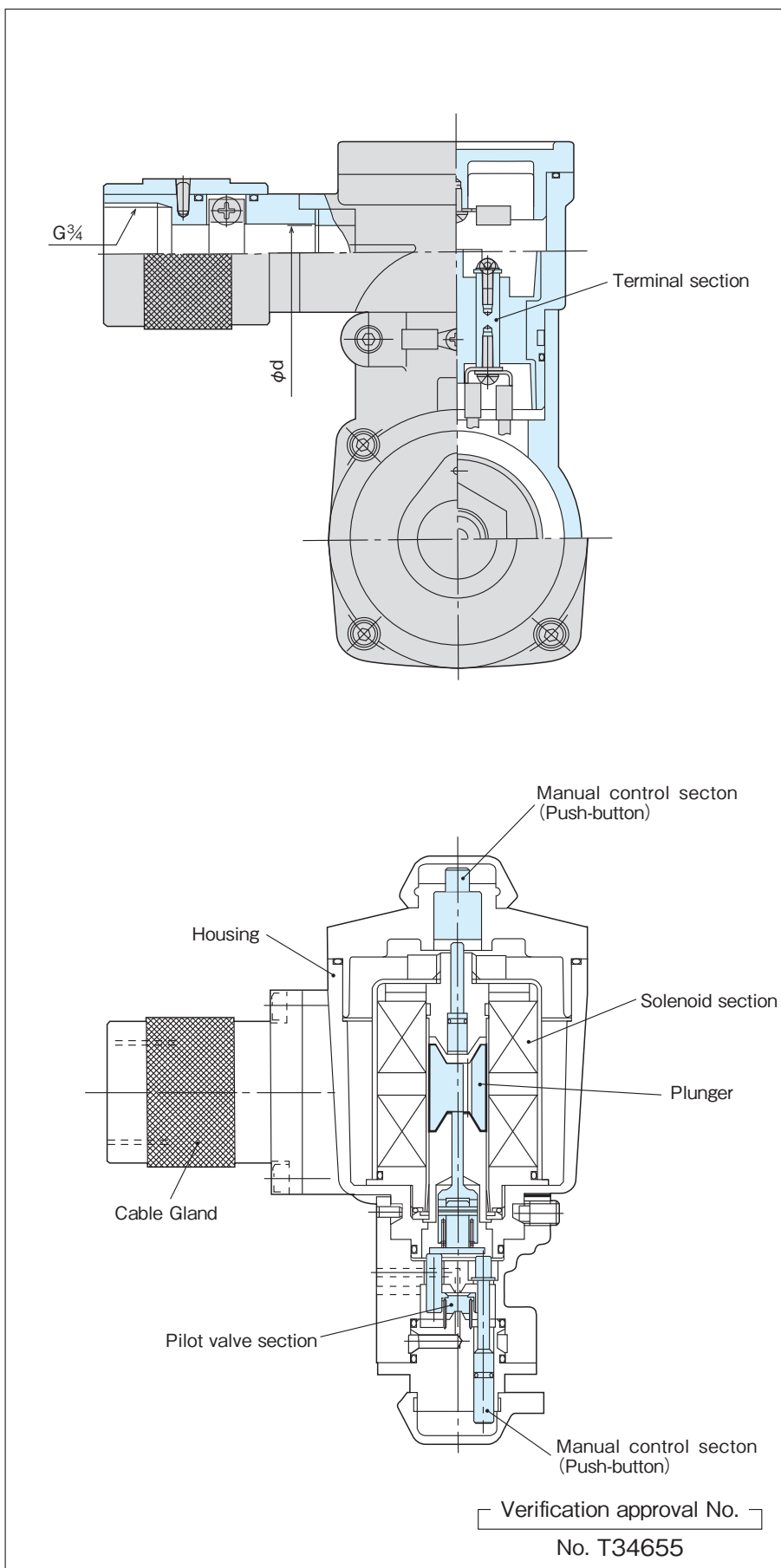
- | | |
|--------|--------------|
| 3-Port | ● MVS312K-02 |
|--------|--------------|

Wire connection diagram



ME92D-K • ME992D-K

Composition and Construction



Applicable Model

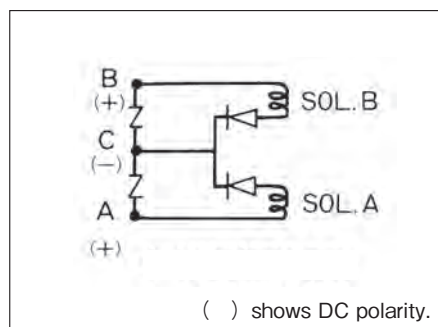
<ME92D-K>

- | | | |
|--------|---|--------------|
| 3-Port | ● | MVD302K-02 |
| 4-Port | ● | MVD812K-02 |
| | ● | MVD802K-03 |
| 5-Port | ● | 453D202C-E2K |
| | ● | 453D203C-E2K |
| | ● | 453D403C-E2K |
| | ● | 453D404C-E2K |
| | ● | MVD2F-03-E2K |
| | ● | MVD2N-08-E2K |

<ME992D-K>

- | | | |
|--------|---|------------|
| 3-Port | ● | MVD312K-02 |
|--------|---|------------|

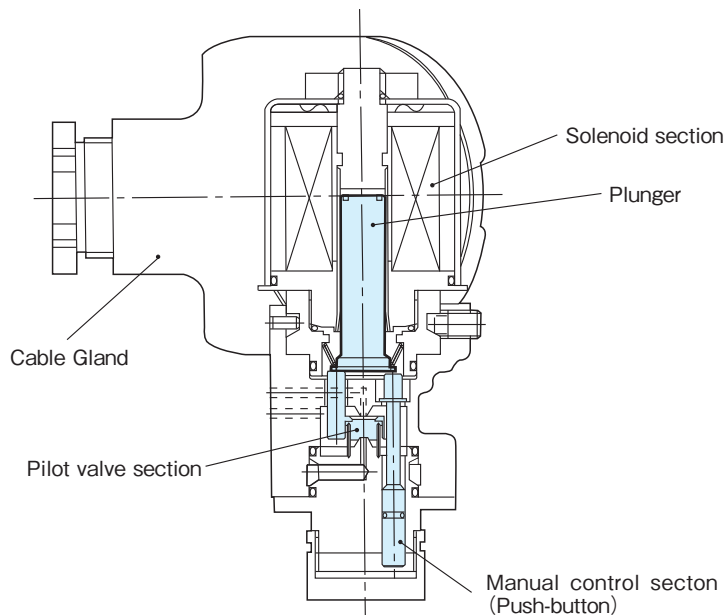
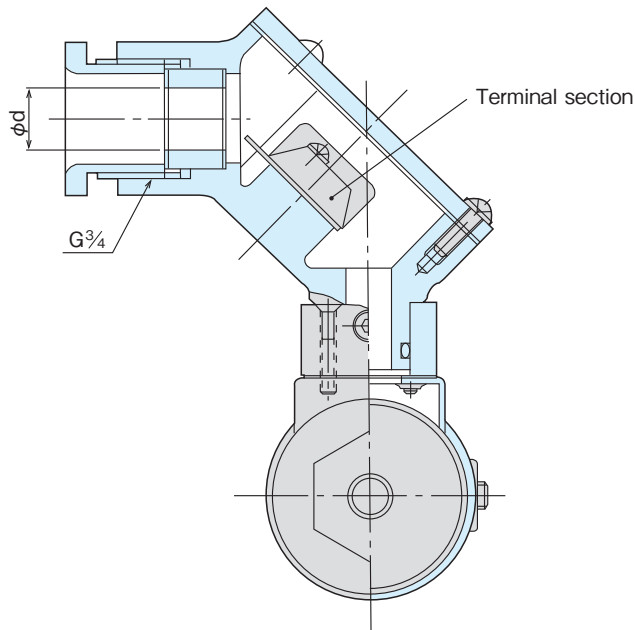
Wire connection diagram



Type of proofness and construction 3

■ M3S · M33S

Composition and Construction



Applicable Model

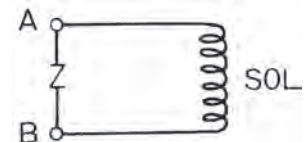
<M3S>

- 3-Port ● MVS301K-02
- 4-Port ● MVS811K-02
● MVS801K-03
- 5-Port ● MVS2F-03-E3K
● MVS2N-08-E3K
● MVPCF-03-E3K
● MVPEF-03-E3K
● MVPOF-03-E3K
● MVPCN-08-E3K
● MVPEN-08-E3K
● MVPON-08-E3K

<M33S>

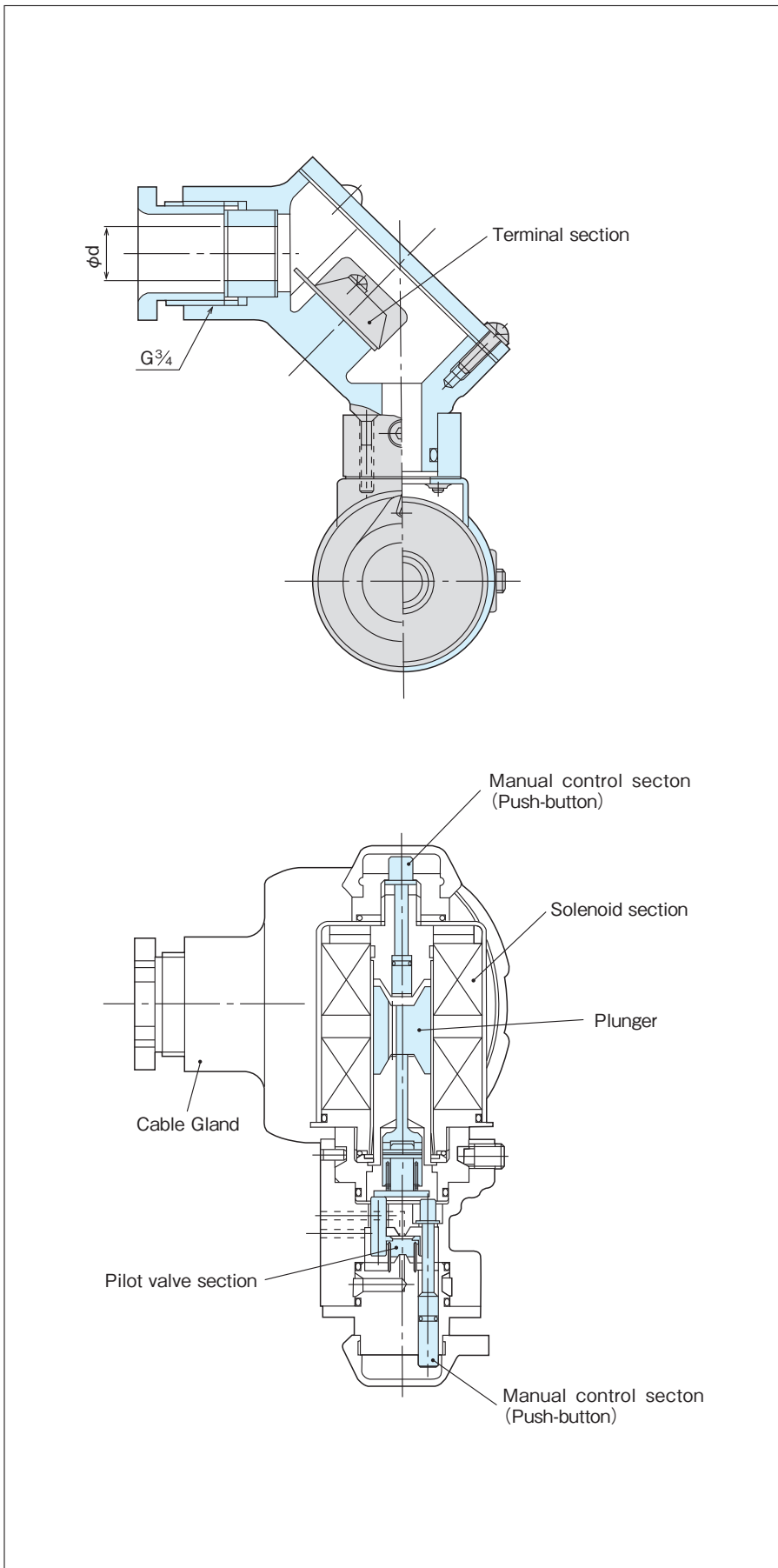
- 3-Port ● MVS311K-02

Wire connection diagram



■ M9D-K • M99D-K

Composition and Construction



Applicable Model

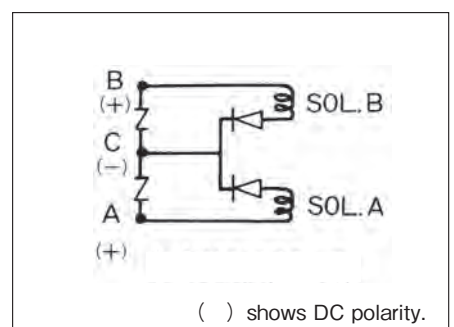
<M9D-K>

- 3-Port ● MVD301K-02
- 4-Port ● MVD811K-02
● MVD801K-03
- 5-Port ● MVD2F-03-E3K
● MVD2N-08-E3K

<M99D-K>

- 3-Port ● MVD311K-02

Wire connection diagram



Rated current data

● Type of valve : Return type and 3-port valves (Single solenoid) In case of EX. explosion-proof, consult separately.

Rated voltage	Rated current (mA)	
AC100V 50/60Hz	159	106
AC110V 50/60Hz	116	82
AC115V 50/60Hz	129	86
AC120V 50/60Hz	115	80
AC125V 50/60Hz	128	82
AC200V 50/60Hz	78	51
AC220V 50/60Hz	68	45
DC 24V	192	
DC 48V	95	
DC100V	49	
DC110V	50	
DC120V	45	
DC125V	46	

● The above amperage table, left shows 50Hz AC and right shows 60Hz AC.

● Type of valve : Hold type (Magnet-latched type)

Rated voltage	Rated current (mA)	
AC100V 50/60Hz	55	50
AC110V 50/60Hz	60	55
AC115V 50/60Hz	47	43
AC120V 50/60Hz	50	45
AC125V 50/60Hz	52	47
AC200V 50/60Hz	26	24
AC220V 50/60Hz	30	26
DC 24V	210	
DC 48V	105	
DC100V	55	
DC110V	60	
DC120V	40	
DC125V	42	

● The above amperage table, left shows 50Hz AC and right shows 60Hz AC.

Explosion-proof
solenoid valve lineup

vol.2

d2G4

Explosion-proof construction
standard for electric equipment

Exd IIBT4

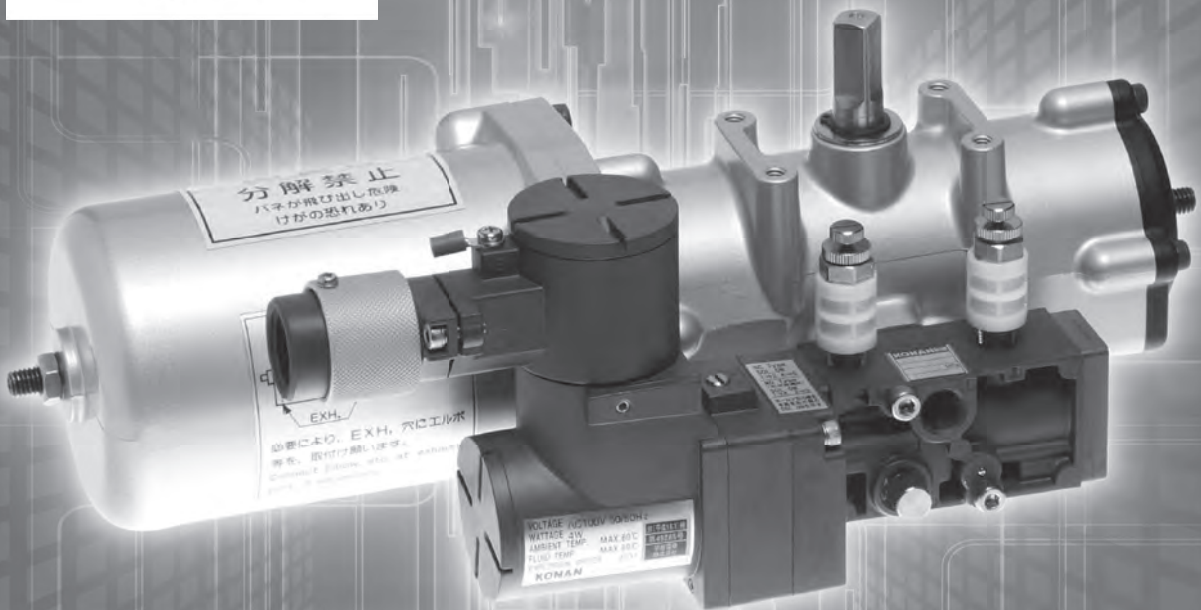
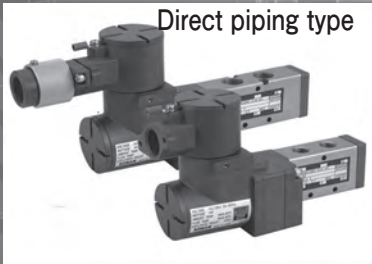
Technical standards conforming
to the international standards

For pneumatic
control

5 Port

**Compact explosion proof
solenoid valve**

Direct piping type



NAMUR standard model



Model List (Compact explosion-proof solenoid valves)

Pilot valve

- This is a poppet structure few in sliding parts.
A stable operation free from sticking phenomenon for a long time is promised.
- A push button (manual operation mechanism) capable of locking is equipped as standard.

Main valve

- In spite of small size, a large flow rate is realized by the main valve. A simple spool valve using an I-type ring in a narrow main body is disposed rationally.
- Connection interface of the main body is available in two types. The actuator can be mounted or mounted in a most suited manner.

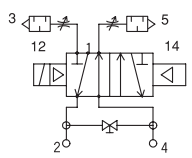
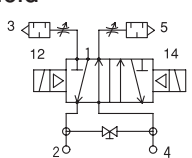
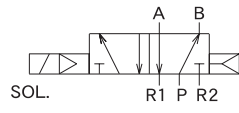
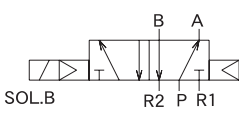
(1) NAMUR standard model

This is a five-port solenoid valve for rotary actuator operation adopting the mounting interface specified in NAMUR standard.

(2) Direct piping type

This is a five-port solenoid valve for connecting to the actuator by piping connection. Single installation at a remote position, or coupling type by manifold structure may be realized.

5
Port

Type & Composition of Valve	Port size						Type of Flow Path in Valve
	Rc 1/8	1/8 NPT	Rc 1/4	1/4 NPT	Rc 3/8	3/8 NPT	
Spool valve system Pilot type NAMUR standard model Pilot solenoid valve + Valve disk	—	—	●	●	—	—	● Return  ● Hold 
Spool valve system Pilot type direct piping type Pilot solenoid valve + Valve disk	●	●	●	●	●	●	● Return  ● Hold 

Explosion-proof housing (terminal box)

- In spite of compact shape, the effective layout of the terminal contributes to ease of wiring work.
- In case of explosion-proof construction standard for electric equipment
The cover of the terminal box is opened or closed by using a special tool. It cannot be opened by general tools. (The special cover opening tool is attached to the product.)
- In case of EX. Explosion-proof
The cover of the terminal box is opened or closed by using a spanner or the like.
- During power supply, do not open or close the cover of the terminal box.



Type of Construction for Explosion-proof and Drip-proof

INDEX



Flame-proof enclosure construction

: d2G4
Exd II BT4

Conduit tube system

Drip-proof protection class : IP66

Pressure-resistant packing system

Drip-proof protection class : IP66

Can be used outdoors



4N4 Series 5-Port Solenoid valves NAMUR standard model	B-3
4N4S102 (B) K-E (NAMUR standard model • Return type)	B-5
4N4D102 (B) K-E (NAMUR standard model • Hold type)	B-6
454Series 5-Port Solenoid valves Direct piping type	B-7
454S (D) Series (Direct piping type • Return & Hold type)	B-9
454S Series Manifold-type 5-port solenoid valve	B-11
454S (D) Series Compound-type 5 port solenoid valve	B-13
454S (D) Series Compound-type 5 port solenoid valve with p-port stop valve	B-15

Technical data	B-17
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4N4 Series

5-Port Solenoid Valves

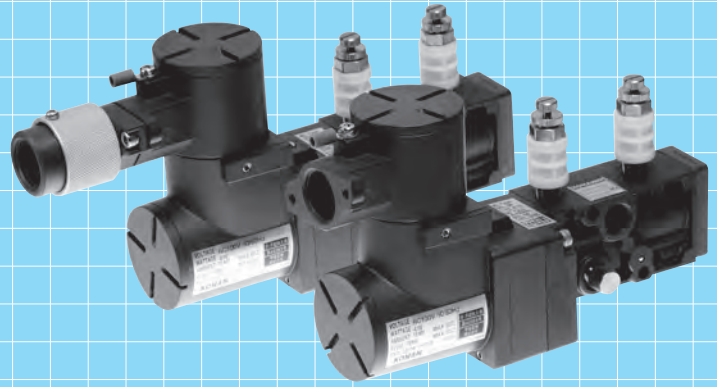
Explosion-proof

Spool valve system, Pilot type

NAMUR standard compliant type Rc1/4,1/4NPT

Return / Hold

This is a five-port solenoid valve for changeover of operation of rotary actuator. A by-pass valve is built in the valve main body, and a speed controller for adjusting the exhaust amount is included in the standard equipment.



Specifications

Model code	Return	4N4S102K	4N4S10BK
	Hold	4N4D102K	4N4D10BK
Port size		Rc1/4	1/4NPT
Applicable fluid		Compressed air	
Operating pressure		0.15 ~ 0.7MPa	
Ambient temperature	Structural standard	- 5 ~ 60°C	
	Exd II BT4	- 5 ~ 40°C	
Fluid temperature		- 5 to 60° C (between - 5 and 5° C, remove the moisture in the working fluid, and be careful not to allow freezing.)	
Operating frequency		2 cycle / s max. / 1 cycle / 6 months min.	
Lubricated		Unnecessary	
Mass		Return : 0.8kg Hold : 1.4kg	
Valve section	Effective sectional area	10mm ² (only in solenoid valve main body excluding silencer provided with throttle valve)	
	Operation (response) time	0.05s max.	
	Allowable air leakage	Below a specified value in JIS B8373 - 1993	
	Pressure resistance	1.2MPa	
Solenoid section	Flame-proof enclosure construction	Flame-proof enclosure construction d2G4 and Exd II BT4	
	Rating	Continuous	
	Voltage fluctuation tolerance	- 15% ~ 10%	
	Apparent power (AC)	Energized 7.5 VA (50 Hz), 5.5 VA (60 Hz) or less Starting 3 times or less of excitation electric power.	
	Power consumption (DC)	4 W or less	
	Insulation class	Class H	
	Temperature rise (resistance method)	60° C or less (at rating)	
	Insulation resistance	10 M Ω or less (DC 500 V megger)	
withstand voltage	AC1500V / min.		
Accessory		Mounting bolts, Packing and Silencer with throttle valves.	

※ The type in brackets [] refers to the piping thread of NPT.

【Explosion-proof verification approval No.】

■ d2G4

No. T49285

■ Exd II BT4

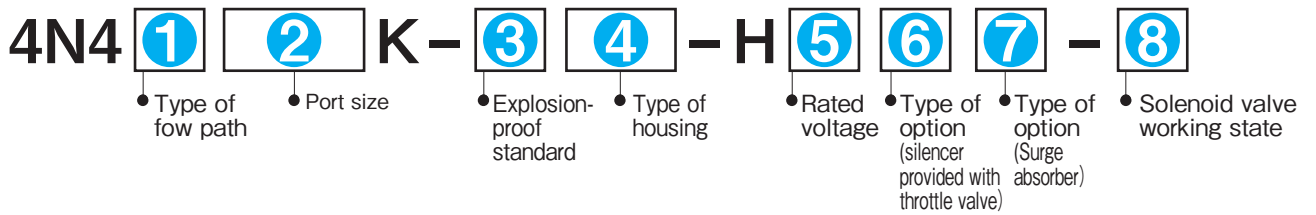
No. TC13728

■ Exd II BT4 (Korea)

13 - AV4BO - 0493

Model Code

When ordering, specify the model as follows:



1 Type of flow path	
Type of valve	Designation
Return	S
Hold	D

2 Port size	
Port size	Designation
Rc1/4	102
1/4NPT	10B

3 Explosion-proof standard		
Standard	Designation	
Structural standard	d2G4	E
EX. Explosion-proof	Exd II BT4	P
	Exd II BT4 (for Korea)	H

Type of housing (External wire connection system)

4 Type of housing		
Type of housing (External wire connection system)	Designation	
Conduit tube system (G 1/2)	01	
Pressure resistant packing system (applicable cable size)	φ 7.5 ~ 8.4	08
	φ 8.5 ~ 9.4	09
	φ 9.5 ~ 10.4	10
	φ 10.5 ~ 11.4	11
	φ 11.5 ~ 12.0	12

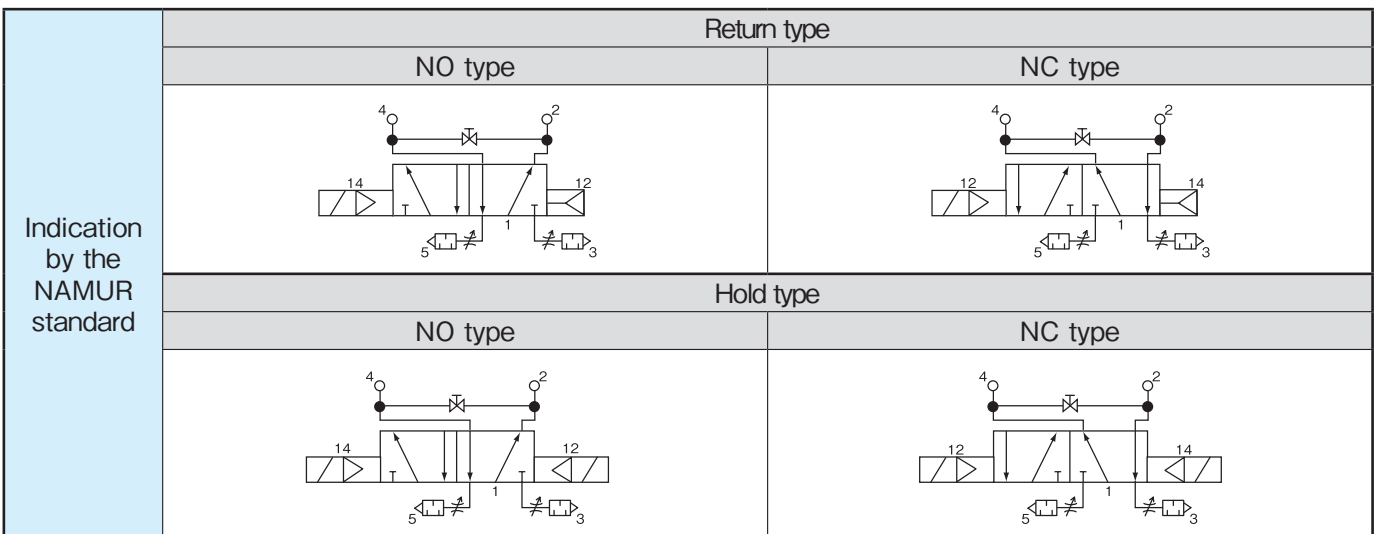
5 Rated voltage	
Rated voltage	Designation
AC100V 50/60Hz, AC110V 60Hz	1
(AC110V 50Hz, AC120V 60Hz)	2
AC200V 50/60Hz, AC220V 60Hz	3
(AC220V 50Hz, AC240V 60Hz)	4
(DC12V)	8
DC24V	5
(DC48V)	6
DC100V	7
(DC110V)	9
(DC125V)	A

6 Type of option (silencer provided with throttle valve)	
Type of option	Designation
Without	Y
With two	B
Port 5 : With one Port 3 : With Plug	X

7 Type of option (Surge absorber)	
Type of option	Designation
Without	0 (Zero)
With surge absorber	Z

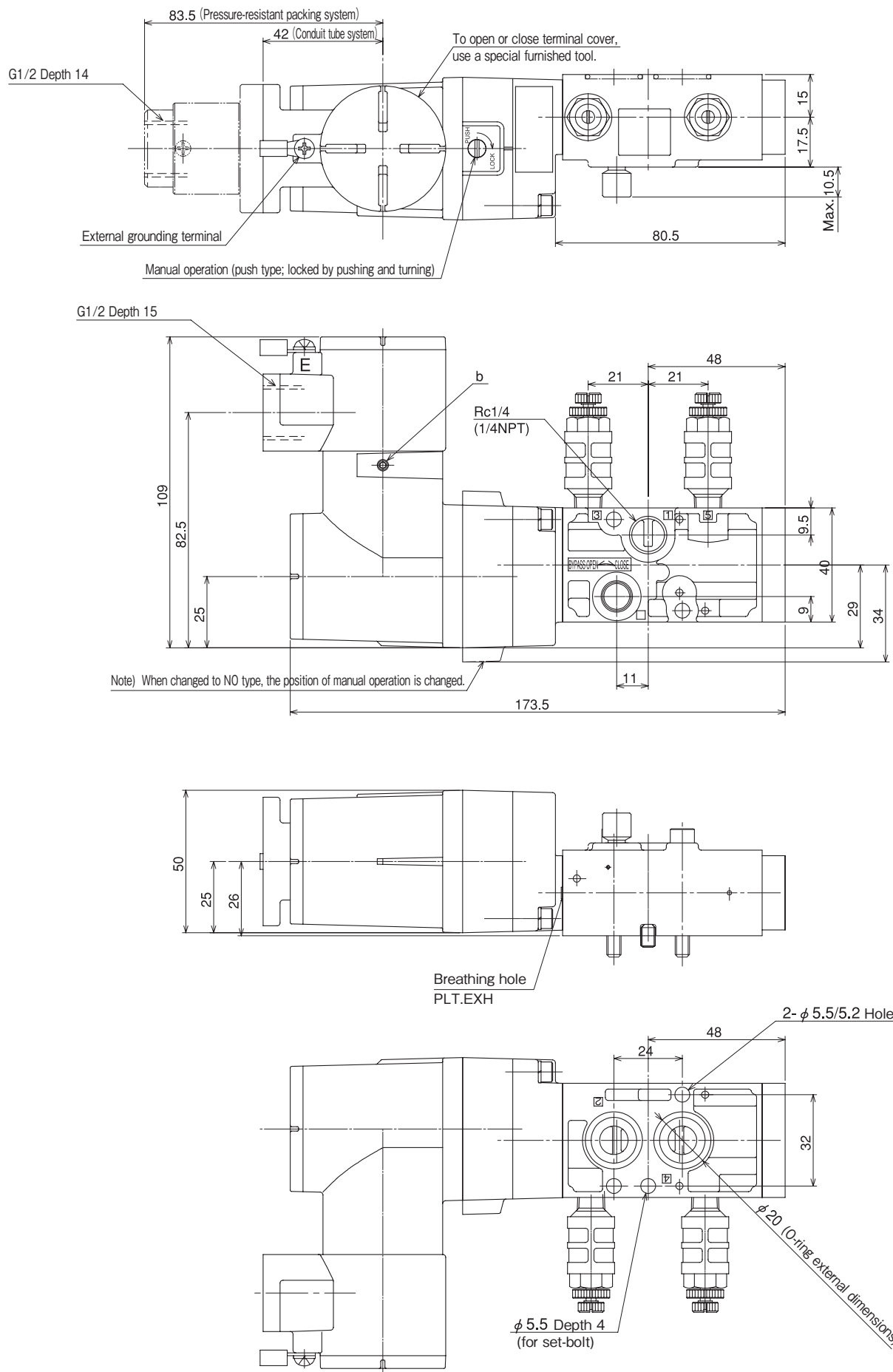
8 Solenoid valve working state	
Solenoid valve working state	Designation
Normally closed before shipment	No entry
Normally open before shipment	R

● () denotes semi-standard voltage.



Outside Dimensions

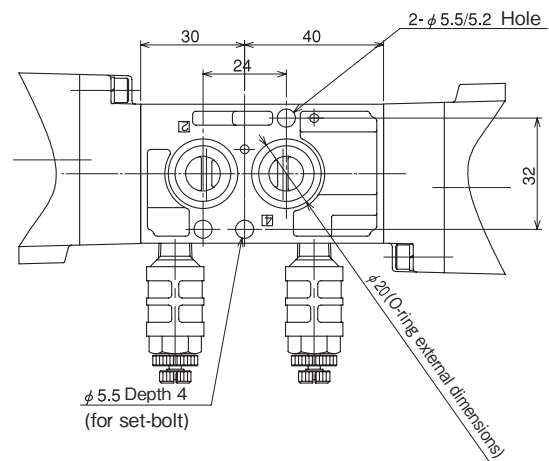
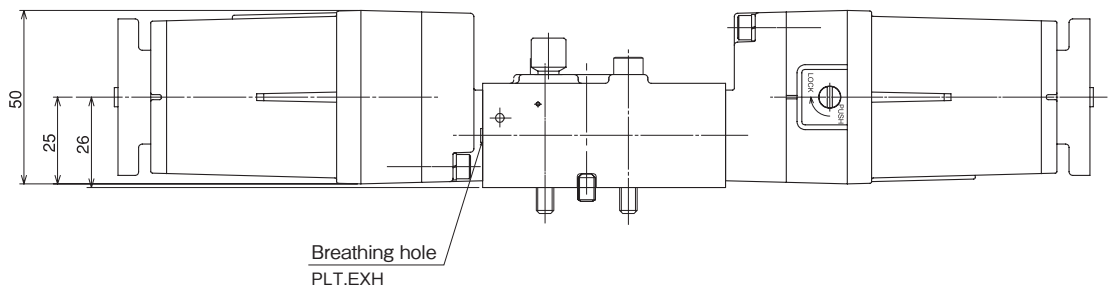
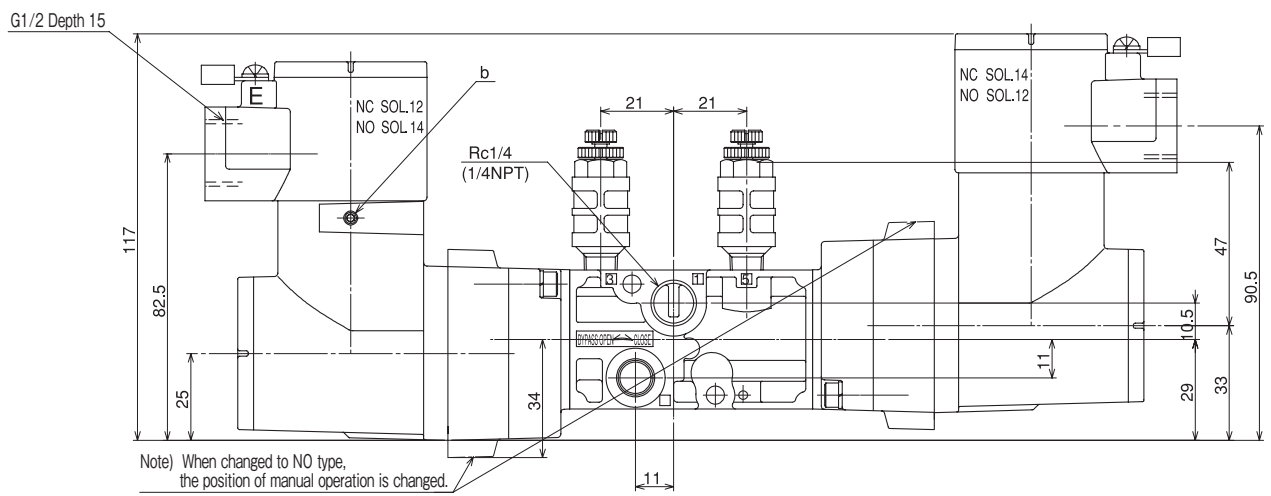
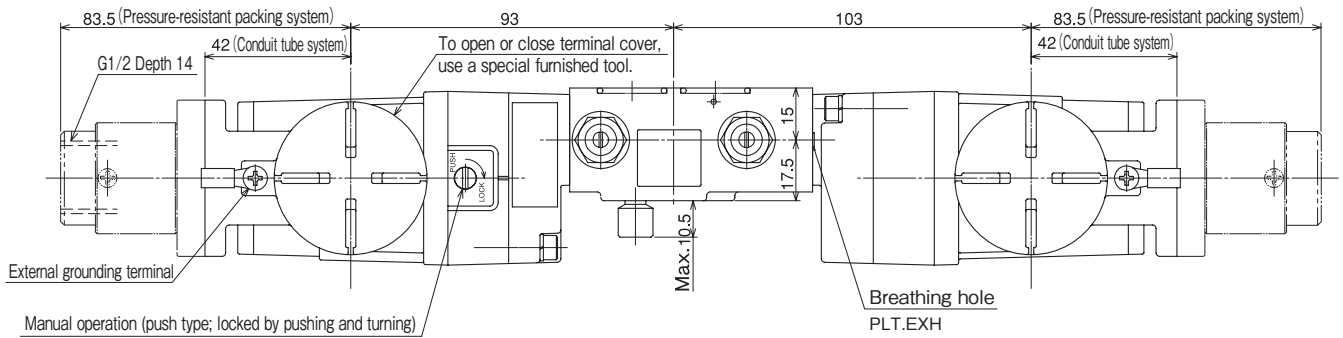
4N4S102 (B) K-E (structural standard · NAMUR standard compliant type · Return type)



(Request separately for Ex. Explosion-proof external dimension drawings.)

Outside Dimensions

4N4D102 (B) K-E (structural standard · NAMUR standard compliant type · Hold type)



(Request separately for Ex. Explosion-proof external dimension drawings.)

454 Series

5-Port Solenoid Valves

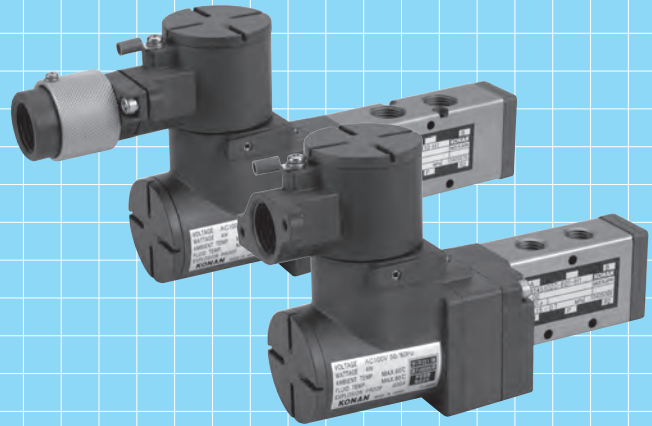
Explosion-proof

Spool valve system, Pilot type

Direct piping type Rc1/8,1/4,1/8NPT,1/4NPT

Return / Hold

By effective layout of terminal box, ease of piping works is assured in this compact type pressure-proof explosion-proof direct piping type solenoid valve.



仕様

Model code	Return	454S101C	454S10AC	454S102C	454S10BC	454S202C	454S20BC	454S203C	454S20CC
	Hold	454D101C	454D10AC	454D102C	454D10BC	454D202C	454D20BC	454D203C	454D20CC
Port size		Rc1/8	1/8NPT	Rc1/4	1/4NPT	Rc1/4	1/4NPT	Rc3/8	3/8NPT
Applicable fluid		Compressed air							
Operating pressure		0.15 ~ 0.7MPa							
Ambient temperature	Structural standard	- 5 ~ 60°C							
	Exd II BT4	- 5 ~ 40°C							
Fluid temperature		- 5 to 60° C (between - 5 and 5° C, remove the moisture in the working fluid, and be careful not to allow freezing.)							
Operating frequency		2 cycle / s max. / 1 cycle / 6 months min.							
Lubricated		Unnecessary (oilless enclosed)							
Mass		Return : 0.85kg Hold : 1.55kg				Return : 0.9kg Hold : 1.6kg			
Valve section	Effective sectional area	10mm ²				22mm ²			
	Operation (response) time	0.05s max.							
	Allowable air leakage	Below a specified value in JIS B8373 - 2015							
	Pressure resistance	1.2MPa							
Solenoid section	Flame-proof enclosure construction	Flame-proof enclosure construction d2G4 and Exd II BT4							
	Rating	Continuous							
	Voltage fluctuation tolerance	- 15% ~ 10%							
	Apparent power (AC)	Energized 7.5 VA (50 Hz), 5.5 VA (60 Hz) or less Starting 3 times or less of excitation electric power.							
	Power consumption (DC)	4 W or less							
	Insulation class	Class H							
	Temperature rise (resistance method)	60° C or less (at rating)							
	Insulation resistance	10 M Ω or less (DC 500 V megger)							
withstand voltage	AC1500V / min.								

※ The type in brackets [] refers to the piping thread of NPT.

【Explosion-proof verification approval No.】

■ d2G4

No. T49285

■ Exd II BT4

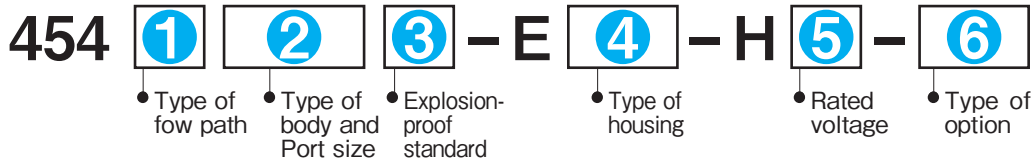
No. TC13728

■ Exd II BT4 (Korea)

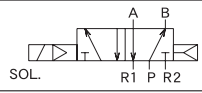
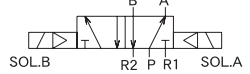
13 - AV4BO - 0493

Model Code

When ordering, specify the model as follows:



1 Type of flow path

Type of valve	JIS symbol	Designation
Return		S
Hold		D

2 Type of body and Port size

Type of body	Port size	Designation
B10	Rc1/8	101
	Rc1/4	102
	1/8NPT	10A
	1/4NPT	10B
B20	Rc1/4	202
	Rc3/8	203
	1/4NPT	20B
	3/8NPT	20C

3 Explosion-proof standard

Standard		Designation
Structural standard	d2G4	C
EX. Explosion-proof	Exd II BT4	E
	Exd II BT4 (for Korea)	H

4 Type of housing

Type of housing (External wire connection system)	Designation	
Conduit tube system (G 1 / 2)	01	
Pressure resistant packing system (applicable cable size)	φ 7.5 ~ 8.4	08
	φ 8.5 ~ 9.4	09
	φ 9.5 ~ 10.4	10
	φ 10.5 ~ 11.4	11
	φ 11.5 ~ 12.0	12

5 Rated voltage

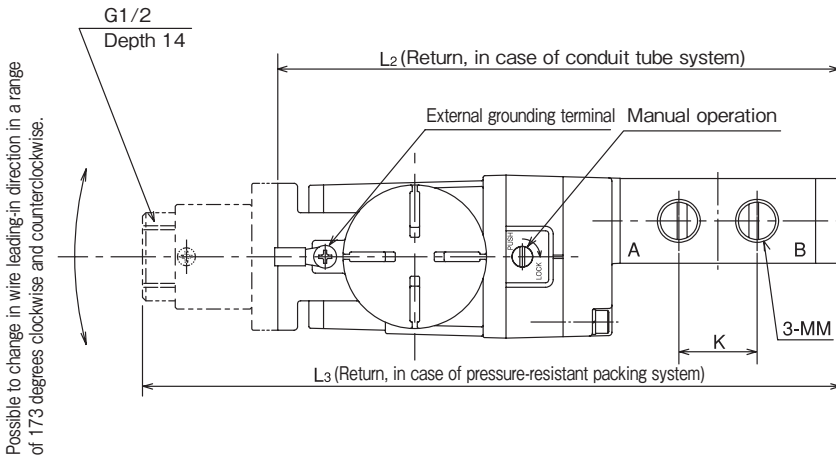
Rated voltage	Designation
AC100V 50/60Hz, AC110V 60Hz	1
(AC110V 50Hz, AC120V 60Hz)	2
AC200V 50/60Hz, AC220V 60Hz	3
(AC220V 50Hz, AC240V 60Hz)	4
(DC12V)	8
DC24V	5
(DC48V)	6
DC100V	7
(DC110V)	9
(DC125V)	A

6 Type of option

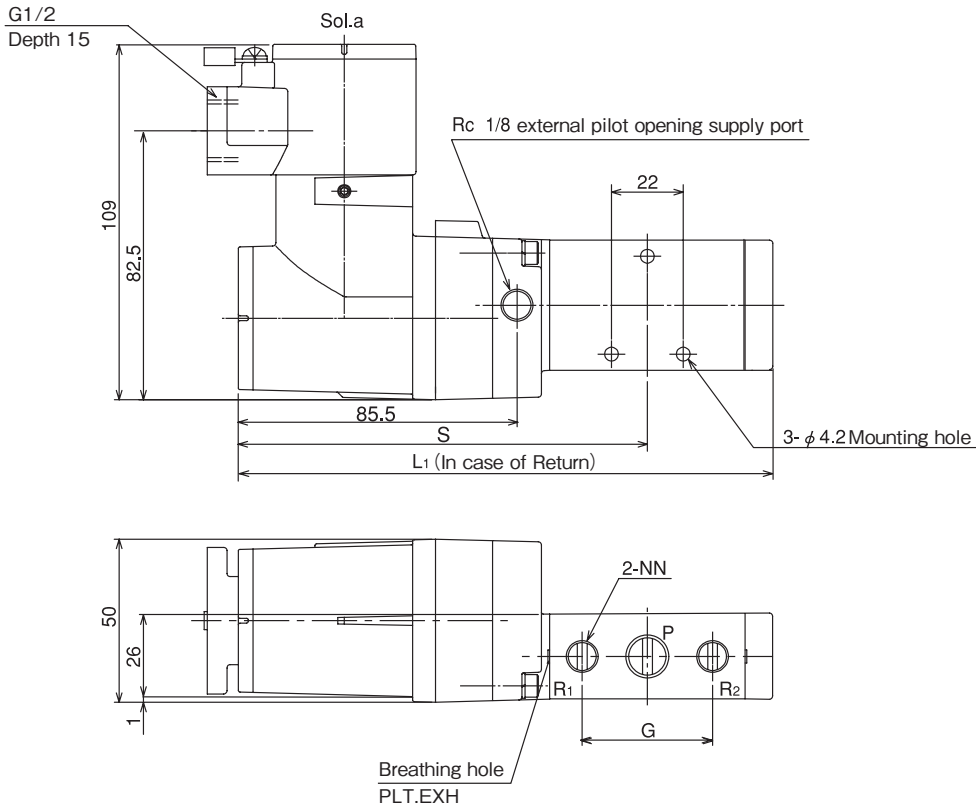
Type of option	Designation
With surge absorber	Z0
External pilot type	P0
External pilot type and with surge absorber	PZ
Not needed	00

● () denotes semi-standard voltage.

【Pressure-resistant packing】



【Conduit tube】

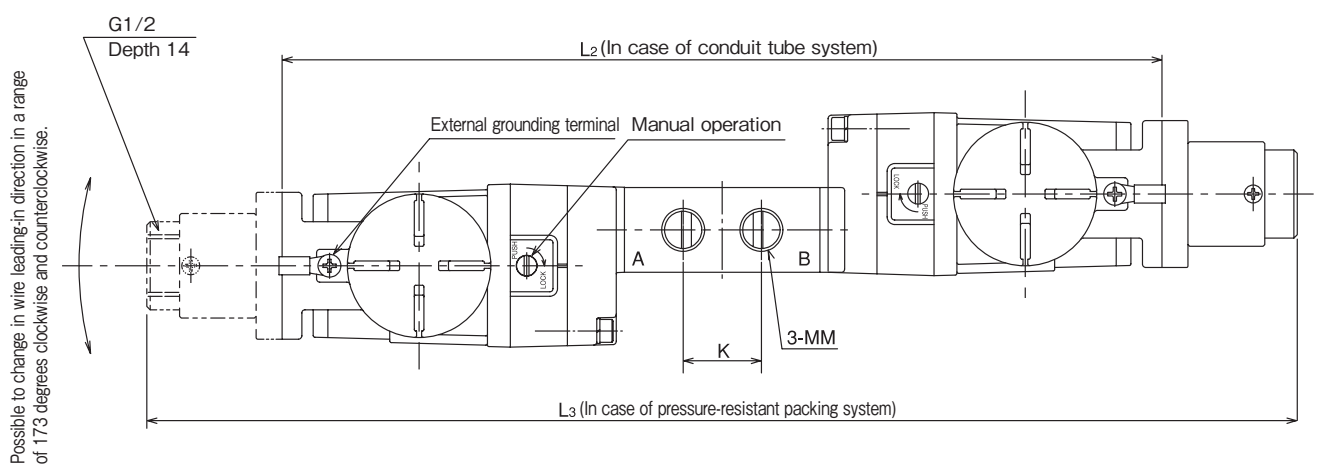


Model code	L1	L2	L3	S	G	K	MM	NN
454S101C	163.5	173	214.5	125.5	40	24	Rc1/8	Rc1/8
454S102C							Rc1/4	
454S10AC							1/8NPT	
454S10BC	183.5	193	234.5	135.5	48	28	1/4NPT	1/8NPT
454S202C							Rc1/4	
454S203C							Rc3/8	
454S20BC	251	270	353	125.5	40	24	1/4NPT	1/4NPT
454S20CC							3/8NPT	
454D101C							Rc1/8	
454D102C	271	290	373	135.5	48	28	Rc1/4	Rc1/4
454D10AC							Rc3/8	
454D10BC							1/4NPT	
454D202C	271	290	373	135.5	48	28	1/4NPT	1/4NPT
454D203C							3/8NPT	
454D20BC							1/4NPT	
454D20CC							3/8NPT	

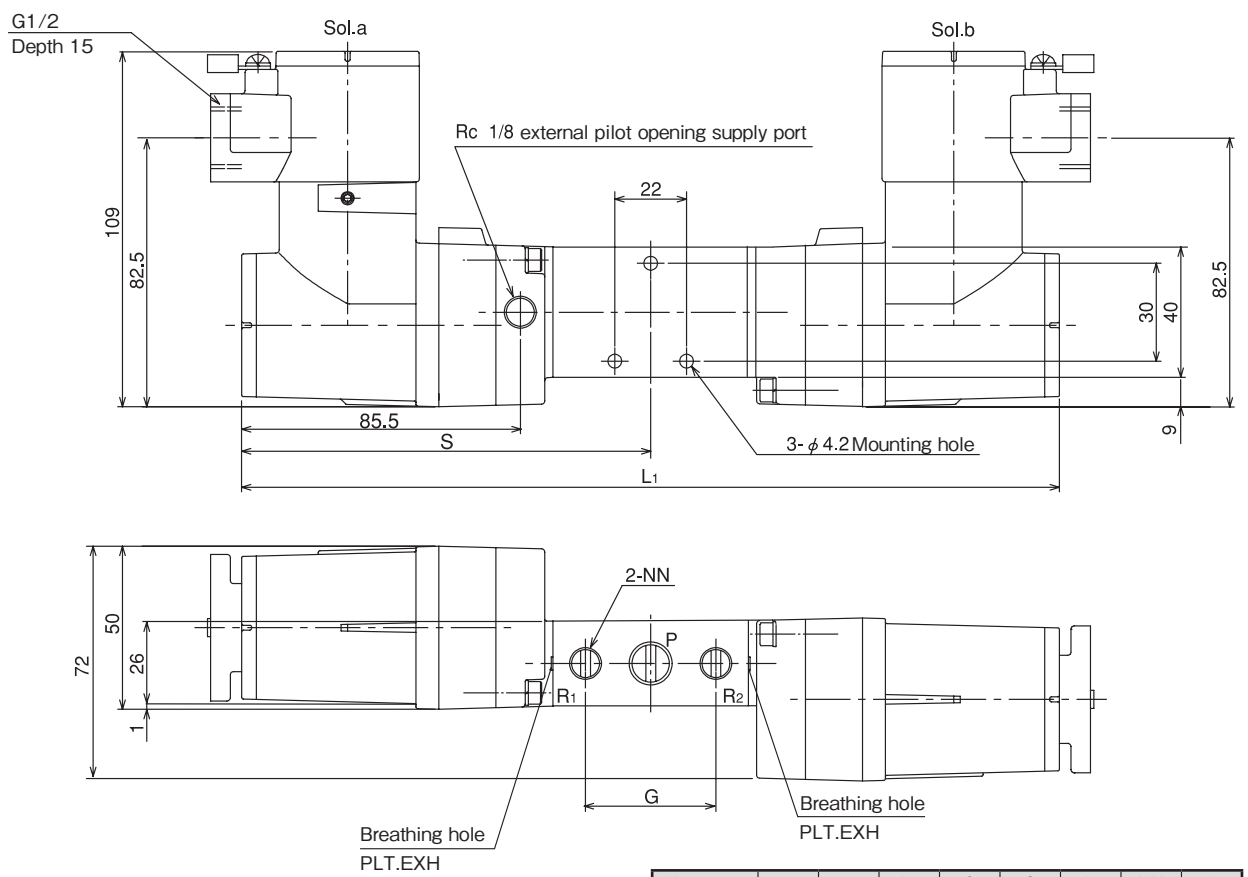
(Request separately for Ex. Explosion-proof external dimension drawings.)

Outside Dimensions 454D series (Direct piping type • Hold type)

【Pressure-resistant packing】



【Conduit tube】

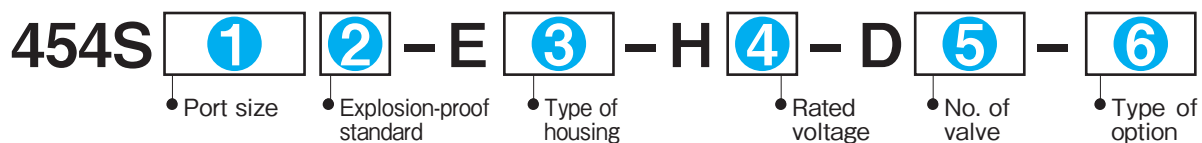


Model code	L1	L2	L3	S	G	K	MM	NN
454S101C	163.5	173	214.5	125.5	40	24	Rc1/8	Rc1/8
454S102C							Rc1/4	
454S10AC							1/8NPT	
454S10BC	183.5	193	234.5	135.5	48	28	1/4NPT	Rc1/4
454S202C							Rc1/4	
454S203C							Rc3/8	
454S20BC	251	270	353	125.5	40	24	1/4NPT	1/8NPT
454S20CC							3/8NPT	
454D101C							Rc1/8	
454D102C	271	290	373	135.5	48	28	Rc1/4	Rc1/4
454D10AC							1/8NPT	
454D10BC							1/4NPT	
454D202C	271	290	373	135.5	48	28	Rc1/4	Rc1/4
454D203C							Rc3/8	
454D20BC							1/4NPT	
454D20CC							3/8NPT	1/4NPT

(Request separately for Ex. Explosion-proof external dimension drawings.)

Model Code

When ordering, specify the model as follows:



● Only return, type of short overall length

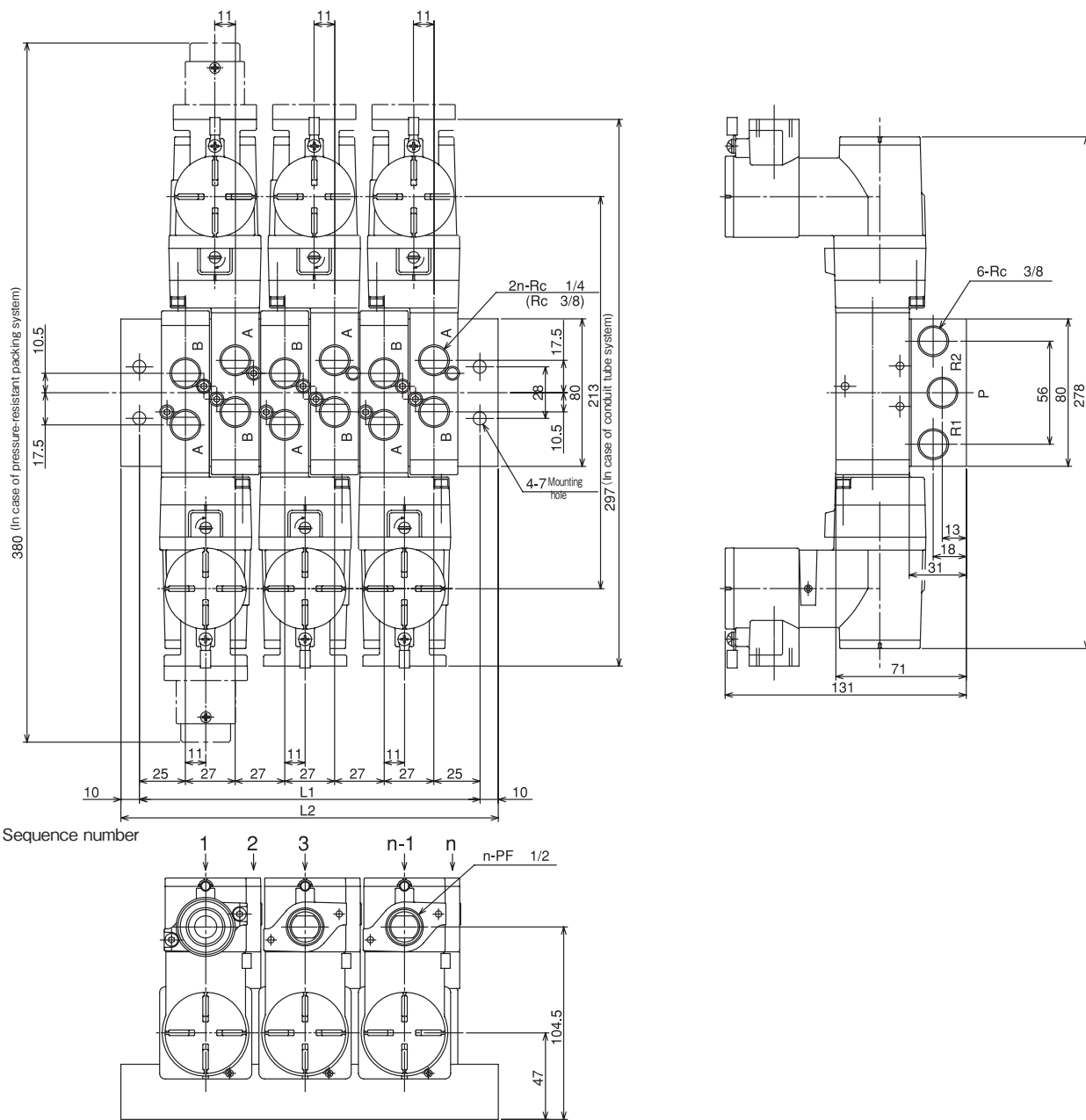
1 Port size		2 Explosion-proof standard			3 Type of housing			
Port size	Designation	Standard		Designation		Type of housing (External wire connection system)		Designation
Rc1/4	202	Structural standard	d2G4	C		Conduit tube system (G 1 / 2)		01
Rc3/8	203			E		Pressure resistant packing system (applicable cable size)	φ 7.5 ~ 8.4	08
		EX. Explosion-proof	Exd II BT4 Exd II BT4 (for Korea)	H			φ 8.5 ~ 9.4	09
							φ 9.5 ~ 10.4	10
							φ 10.5 ~ 11.4	11
						φ 11.5 ~ 12.0	12	

4 Rated voltage		5 No. of valve		6 Type of option	
Rated voltage	Designation	No. of valve	Designation	Type of option	
AC100V 50/60Hz, AC110V 60Hz (AC110V 50Hz, AC120V 60Hz)	1	2	02	With surge absorber	
AC200V 50/60Hz, AC220V 60Hz (AC220V 50Hz, AC240V 60Hz)	2	3	03	Not needed	
(DC12V)	3	⋮	⋮		
DC24V	4	9	09		
(DC48V)	5	10	10		
DC100V	6				
(DC110V)	7				
DC125V	8				
(DC125V)	9				
	A				

● () denotes semi-standard voltage.

Outside Dimensions

454S series • Return type • Manifold-type 5-port solenoid valve

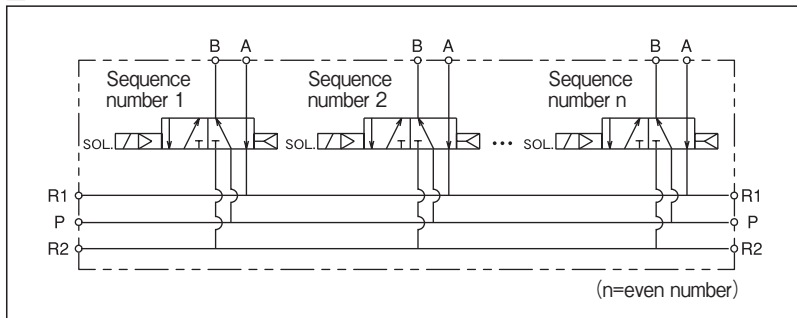


(Request separately for Ex. Explosion-proof external dimension drawings.)

Dimension Table

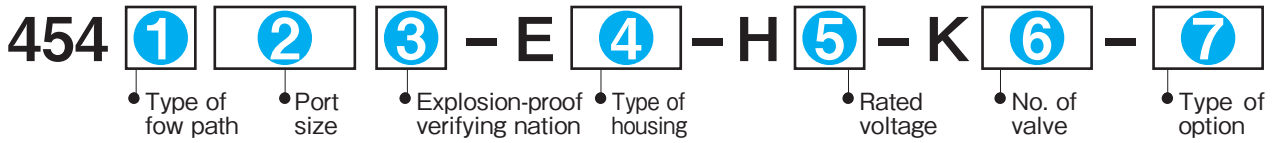
No. of valve (n)	2	3	4	5	6	7	8	9	10
L1	77	104	131	158	185	212	239	266	293
L2	97	124	151	179	205	232	259	286	313
Mass (kg)	2.4	3.5	4.5	5.6	6.6	7.6	8.7	9.7	10.7

JIS symbol



Model Code

When ordering, specify the model as follows:



Standard type

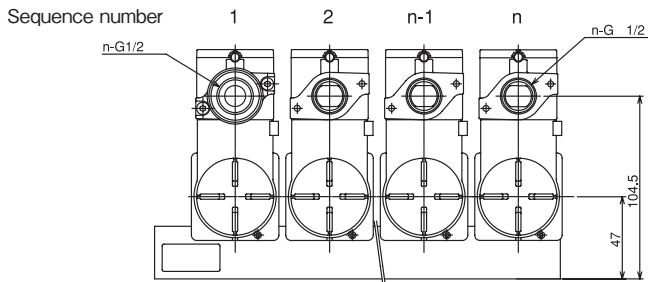
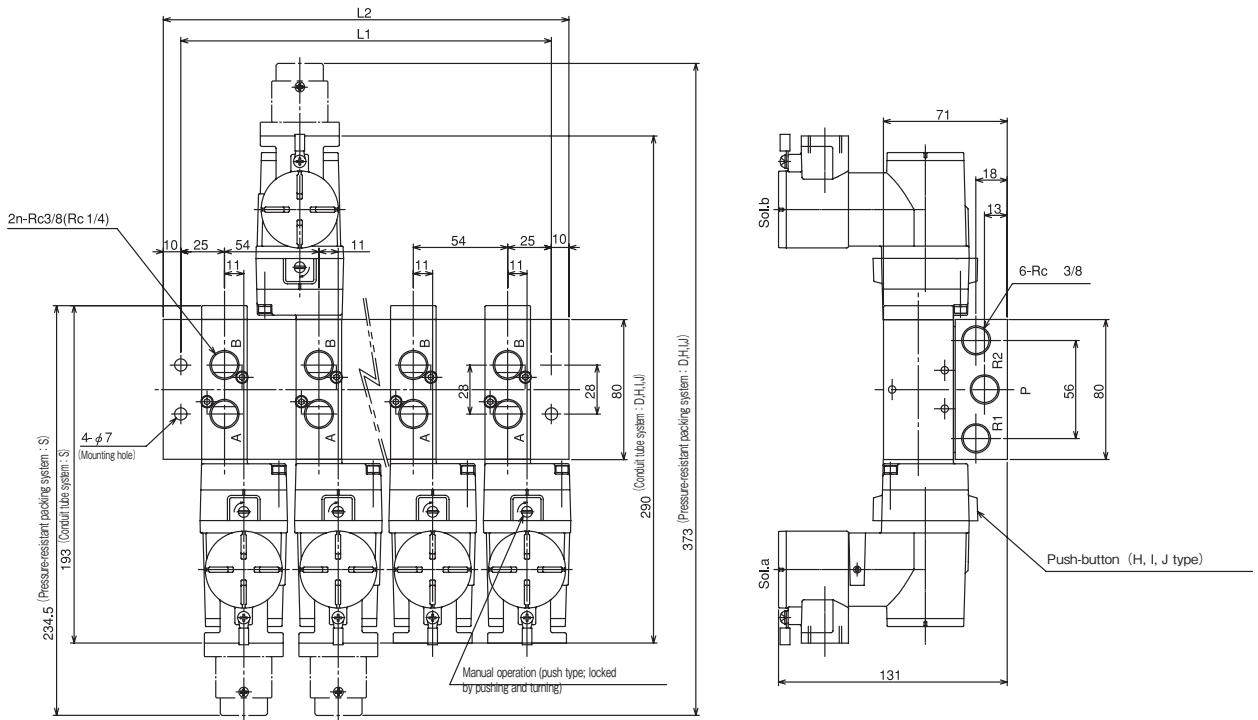
1 Type of flow path			4 Type of housing			6 No. of valve	
Type of valve	JIS symbol	Designation	Type of housing (External wire connection system)	Designation		No. of valve	Designation
Return		S	Conduit tube system (G 1/2)	01		2	02
Hold		D	Pressure resistant packing system	φ 7.5 ~ 8.4	08	3	03
In case of compound-type		Z	(applicable cable size)	φ 8.5 ~ 9.4	09	⋮	⋮
				φ 9.5 ~ 10.4	10	9	09
				φ 10.5 ~ 11.4	11	10	10
				φ 11.5 ~ 12.0	12		

2 Port size		5 Rated voltage		7 Type of option	
Port size	Designation	Rated voltage	Designation	Type of option	Designation
Rc1/4	202	AC100V 50/60Hz, AC110V 60Hz	1	With surge absorber	Z0
Rc3/8	203	(AC110V 50Hz, AC120V 60Hz)	2	Not needed	00
		AC200V 50/60Hz, AC220V 60Hz	3		
		(AC220V 50Hz, AC240V 60Hz)	4		
		(DC12V)	8		
		DC24V	5		
		(DC48V)	6		
		DC100V	7		
		(DC110V)	9		
		(DC125V)	A		

3 Explosion-proof standard		
Standard	Designation	
Structural standard	d2G4	C
EX. Explosion-proof	Exd II BT4	E
	Exd II BT4 (for Korea)	H

• () denotes semi-standard voltage.

Outside Dimensions 454S (D) series • Compound-type 5 port solenoid valve

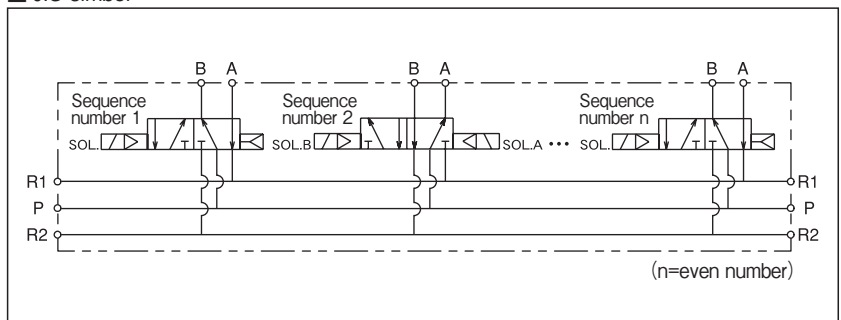


(Request separately for Ex. Explosion-proof external dimension drawings.)

Dimension Table

No. of valve (n)	2	3	4	5	6	7	8	9	10
L1	104	158	212	266	320	374	428	482	536
L2	124	178	232	286	340	394	448	502	556

JIS simbol



Model Code

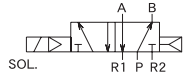
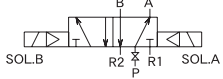
When ordering, specify the model as follows:

454 **①** **②** **③** - **E** **④** - **H** **⑤** - **D** **⑥** - **⑦** **SV**

• Type of flow path • Port size • Explosion-proof verifying nation • Type of housing • Rated voltage • No. of valve • Type of option

● Stop valve is provided in P-port supply line.

① Type of flow path

Type of valve	JIS symbol	Designation
Return		S
Hold		D
In case of mixing ream-type		Z

④ Type of housing

Type of housing (External wire connection system)	Designation	
Conduit tube system (G 1/2)	01	
Pressure resistant packing system (applicable cable size)	φ 7.5 ~ 8.4	08
	φ 8.5 ~ 9.4	09
	φ 9.5 ~ 10.4	10
	φ 10.5 ~ 11.4	11
	φ 11.5 ~ 12.0	12

⑥ No. of valve

No. of valve	Designation
2	02
3	03
⋮	⋮
9	09
10	10

● In case of 00, only item ① is supplied.

② Port size

Port size	Designation
Rc1/4	202
Rc3/8	203

⑤ Rated voltage

Rated voltage	Designation
AC100V 50/60Hz, AC110V 60Hz	1
(AC110V 50Hz, AC120V 60Hz)	2
AC200V 50/60Hz, AC220V 60Hz	3
(AC220V 50Hz, AC240V 60Hz)	4
(DC12V)	8
DC24V	5
(DC48V)	6
DC100V	7
(DC110V)	9
(DC125V)	A

⑦ Type of option

Type of option	Designation
With surge absorber	Z0
With surge absorber + Pilot Direction "B"	ZB
Not needed	00
With surge absorber + Pilot Direction "B"	0B

● Option of pilot direction is applicable in return type only.

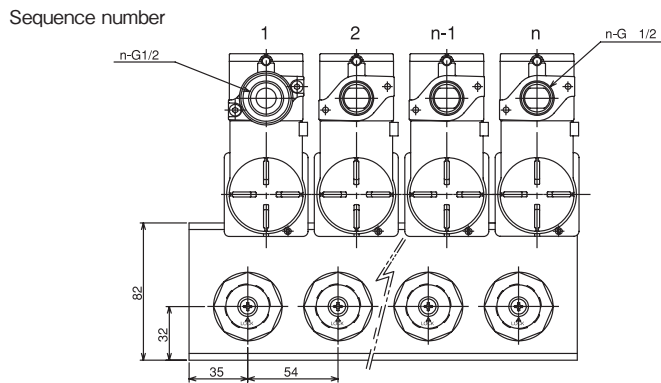
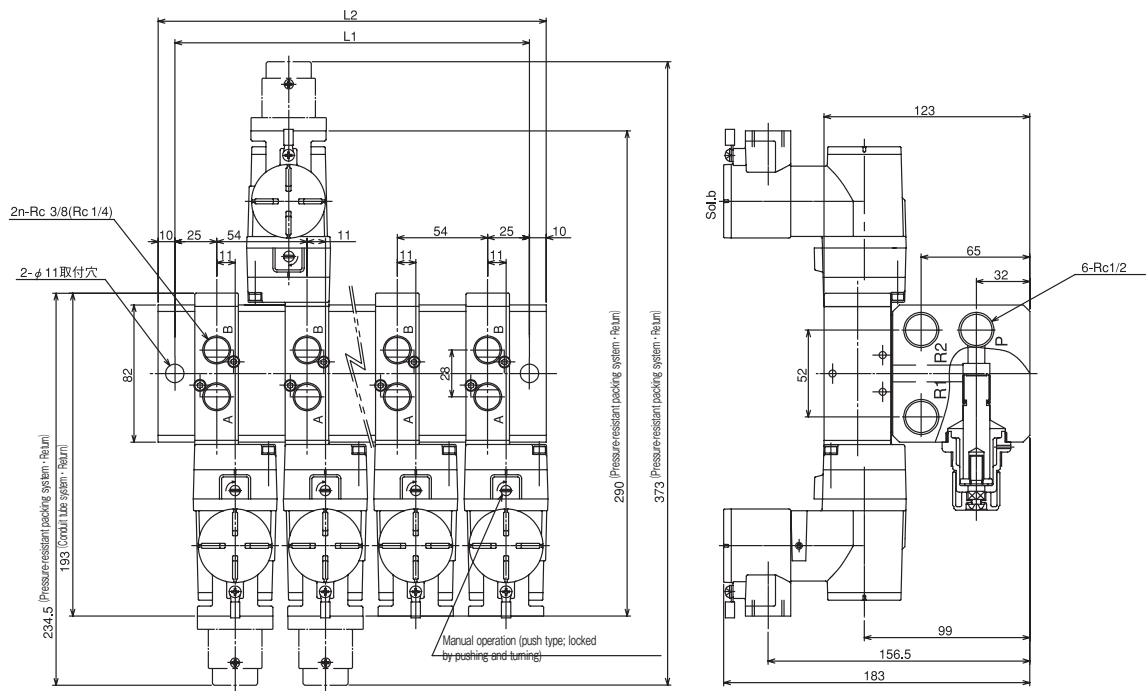
③ Explosion-proof standard

Standard	Designation	
Structural standard	d2G4	
EX. Explosion-proof	Exd II BT4	E
	Exd II BT4 (for Korea)	H

● () denotes semi-standard voltage.

Outside Dimensions

454S (D) series • Compound-type 5 port solenoid valve with P-port stop valve

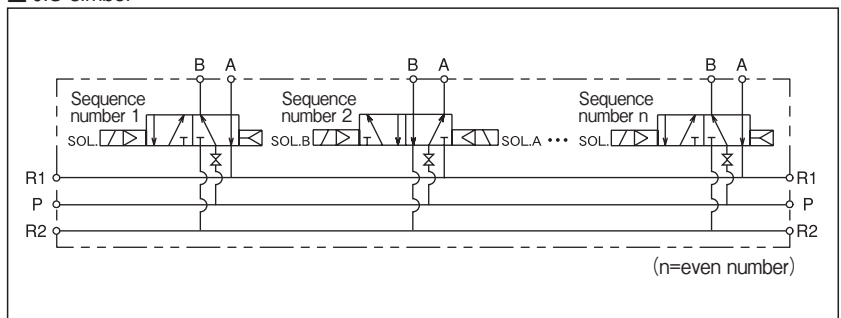


(Request separately for Ex. Explosion-proof external dimension drawings.)

Dimension Table

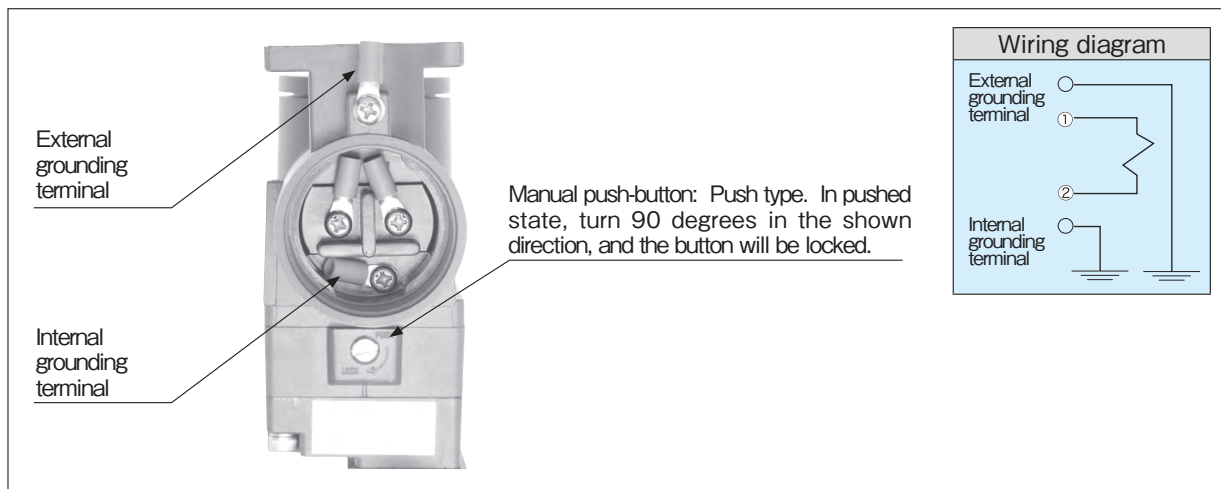
No. of valve (n)	2	3	4	5	6	7	8	9	10
L1	104	158	212	266	320	374	428	482	536
L2	124	178	232	286	340	394	448	502	556

JIS symbol





5-port solenoid valve wiring procedure



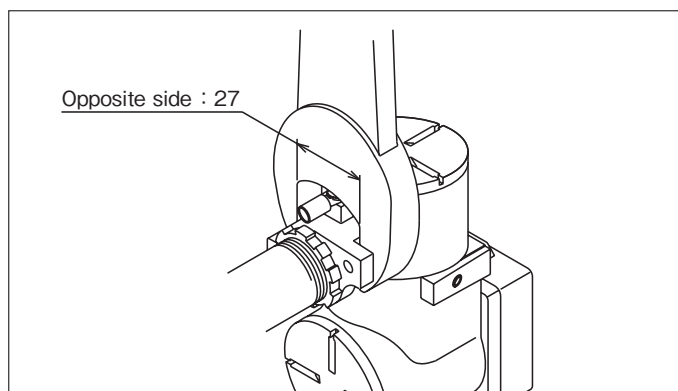
5-port explosion-proof type solenoid valve wiring procedure

Leading-in method of external conductor to terminal box

Conduit tube system

Using threaded thick steel conduit tube specified in JIS C8305 (Steel conduit tube), bond by five threads or more in complete thread parallel pipe threads (JIS B0202).

For detail of the piping procedure, refer to "Factory explosion-proof electric facility guide for users" (Gas explosion-proof 1994). In case of possibly exposed to corrosive gas or invasion of water or moisture through threaded parts, apply liquid gasket, or other non-curable waterproof or rust preventive material to threaded parts, and then bind the threads.

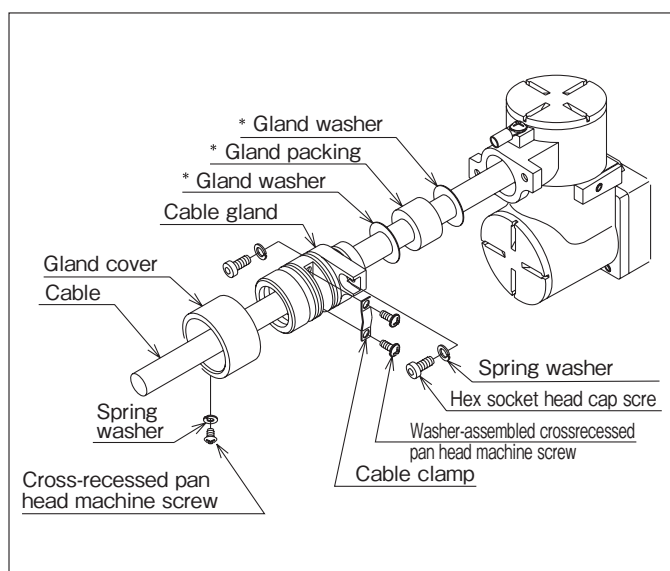


Warning

When connecting thick steel conduit tube or thick steel conduit tube and others, as shown in the drawing, apply a spanner, so that excessive force may not be applied to the terminal box. If excessive force is applied, the explosion-proof performance may be destroyed.

Pressure-resistant packing system

According to the drawing, connect the cables by pressure-proof packing type. Note that the dimension varies with the cable size in the * asterisked parts.



[Assembling procedure]

- ① Pass the cable in the sequence of gland washer, gland packing, gland washer, cable gland, and gland cover.
- ② Fit the cable clamp to the cable gland, and fix the cable.
- ③ Tighten two hex socket head cap screw uniformly, with care not to tighten unevenly, and connect the cable gland to the terminal box.
- ④ Insert the cable cover into the cable gland, fit the cross-recessed pan head machine screw, and fix the cable cover.

Compact explosion-proof solenoid valves

Conduit tube system ▶

(Bore : G1/2)



Pressure-resistant packing system ▶

(Applicable cable size : ϕ 7.5 ~ 12.0)



Electrical connection

Crimp and connect by using furnished crimped terminal (V2-M4 manufactured by Japan Solderless Terminal Co.) and specified YKT-1614 (manufactured by the same). Use conduits in a size of 1.04 to 2.63 mm ϕ .

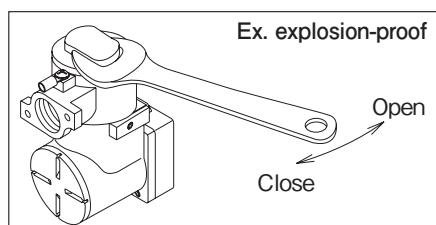
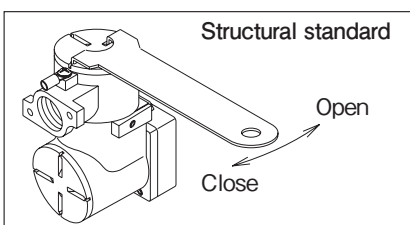
Electrical connection

Structural standard :

The cover of the terminal box is built in a locking system to be opened or closed by a special tool. When opening or closing, use the special tool furnished to the product, and fit the end of the tool tightly to the groove of the cover, and turn in the opening or closing direction as shown in the drawing.

Ex. explosion-proof:

The cover of the terminal box can be opened or closed by spanner or the like.



⚠ Warning

Before opening or closing the terminal box or when detaching or attaching the electrical terminals, be sure to turn off the power source in advance.

- When connecting wires outdoors or in a place where water may intrude, take protective measures properly to prevent rainwater or the like intruding into the terminal box.

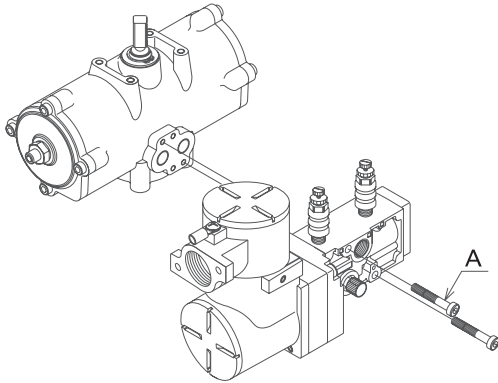
3

Operation changing method of return type solenoid valve (S)

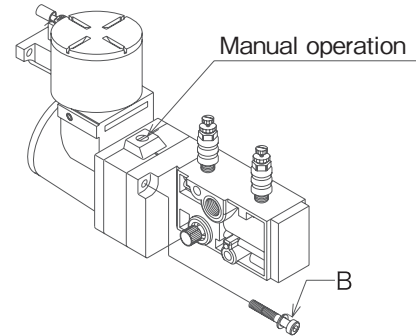
When the return type solenoid valve (S) is mounted on the double-acting type (D) actuator, the standard is “left rotation by solenoid energizing,” but reverse operation of “right rotation by solenoid energizing” is possible in the following procedure.

Operation changing method of 5-port explosion-proof type solenoid valve

- 1 Dismount the solenoid valve from the actuator or the mounting surface (remove two socket head bolts A).

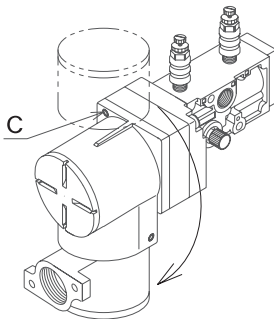


- 2 Dismount the pilot solenoid valve from the solenoid valve main body (remove two socket head bolts B).

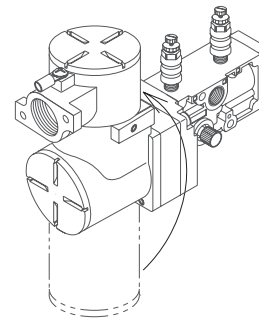


(Note) When the manual operation is at the upper side, energized causes 1 → 2
When the manual operation is at the lower side, energized causes 1 → 4.

- 3 Rotate the dismantled pilot solenoid valve by 180 degrees, and mount again on the main body (attach two socket head bolts B).



- 4 Loosen set-screw C (5 to 6 turns), and rotate the terminal box by 180 degrees, and tighten the set-screw and fix the terminal box, and mount the solenoid valve on the actuator or the like in the reverse manner of step 1.



Explosion-proof
solenoid valve lineup

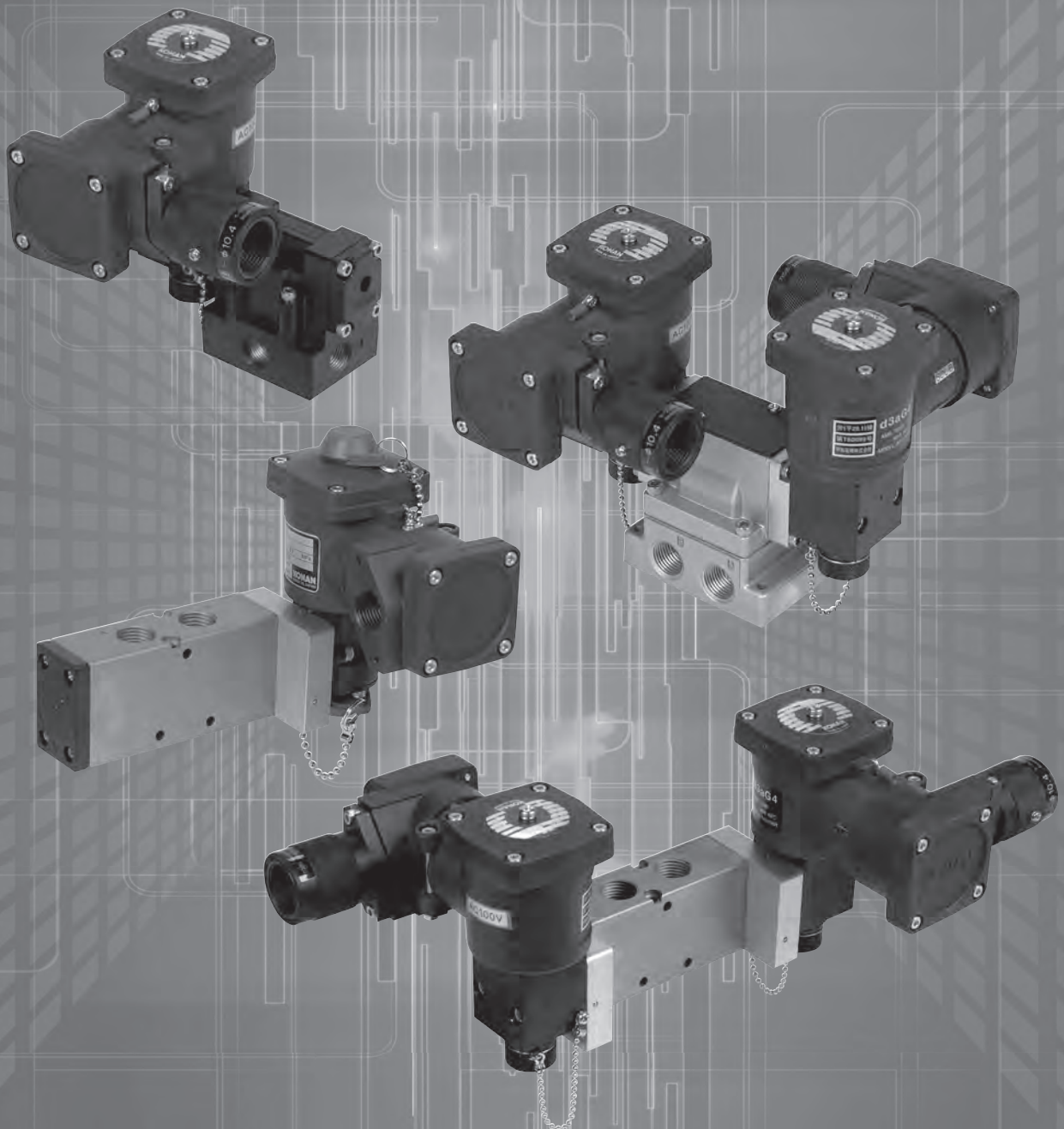
vol.3

d3aG4

Explosion-proof construction
standard for electric equipment

For pneumatic
control

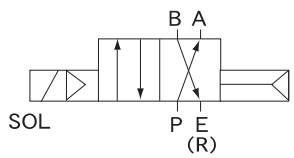
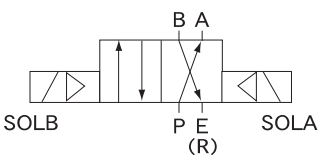
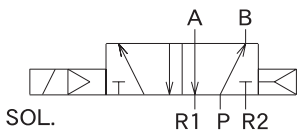
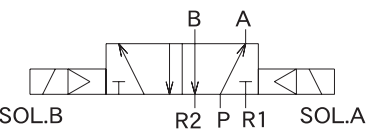
4/5 Port Explosion-proof solenoid valves for hydrogen



Model List (Explosion-proof solenoid valves for hydrogen)

High safety
and high reliability guaranteed.

- 1** Usable at explosion class 3a level.
- 2** The housing of the electromagnetic unit is equal in size to the conventional d2G4 type.
- 3** Surge absorber is included in standard equipment as measures against surge.

	● Type & Composition of Valve	● Port size				● Type of Flow Path in Valve
		Rc 1/8	Rc 1/4	Rc 3/8	Rc 1/2	
4 Port	Ceramic slide valve system Pilot type Gasket connection type Pilot solenoid valve + Valve disk+subplate	—	●	●	●	● Return  ● Hold 
5 Port	Spool valve system Pilot type Direct piping type Pilot solenoid valve + Valve disk	●	●	●	—	● Return  ● Hold 

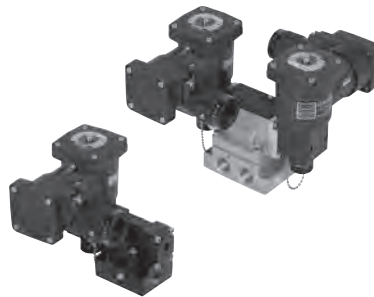
Explosion-proof solenoid valves for hydrogen of KONAN

● Type of Construction for Explosion-proof

● INDEX

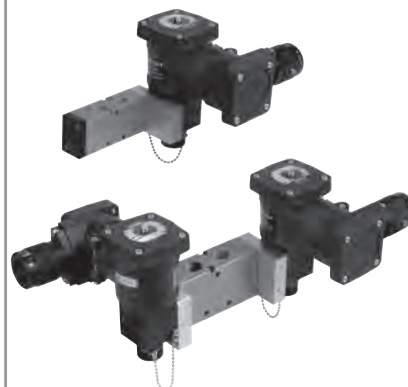
Flame-proof enclosure construction : d3aG4

■ Pressure-resistant packing system



MVS812H / MVS802H
MVD8-E2H

Specification C-3
Model Code C-4
Dimensions C-5



453SE2H
453DE2H

Specification C-7
Model Code C-8
Dimensions C-9

MVS800K/MVD800K Series

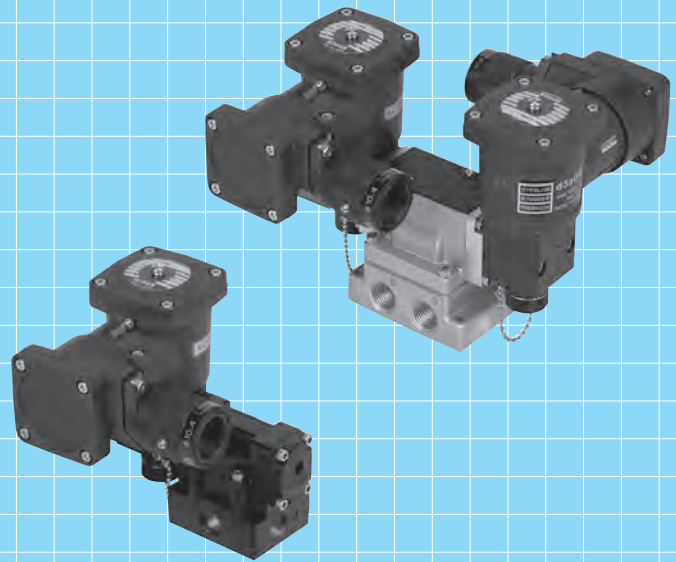
4-Port Solenoid Valves

Explosion-proof

Ceramic slide valve system, Pilot type

Gasket connection type Rc1/4 · 3/8 · 1/2

Return / Hold



Specifications

Type of valve		Return				Hold			
Type	Pressure-resistant packing	MVS812H - 02		MVS802H - 03		MVD8 - 02 - E2H		MVD8 - 03 - E2H	
Port size (Rc)		1/4	3/8	3/8	1/2	1/4	3/8	3/8	1/2
Effective sectional area (CV value)		16mm ² (0.9)	18mm ² (1.0)	55mm ² (3.0)	60mm ² (3.3)	16mm ² (0.9)	18mm ² (1.0)	55mm ² (3.0)	60mm ² (3.3)
Operating pressure		0.12 ~ 0.7MPa							
Pressure resistance		1.05MPa							
Operating temperature		- 10 ~ 60°C							
Operating frequency		1 cycle / s max.				/ 1 cycle / 6 months min.			
Operation (response) time		0.1s max.							
Solenoid	Rated voltage	Refer to Model Code							
	Voltage fluctuation tolerance	- 15% ~ 10% of rated voltage							
	Temperature rise	80 deg max.							
	Insulation class	Class H							
	Insulation resistance	10MΩ min.							
	Rated current	Refer to Rated current data on page C-11							
	Explosion-proof standard	Flame-proof enclosure construction d3aG4							
Mass		Approx. 2.0kg							

● At the operating temperature of 5°C or below, use extreme care for protection against frosting by removing the water contained in the fluid for use.

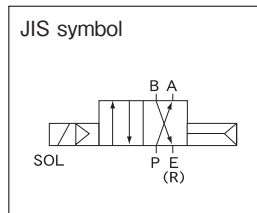
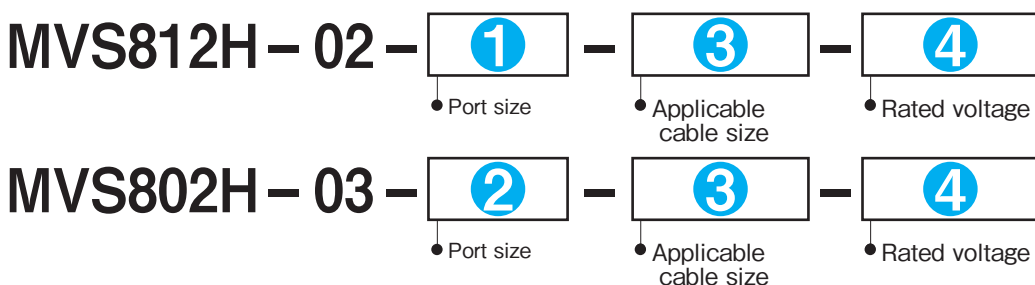
■ Explosion-proof verification approval No.

No. T60099

Model Code

When ordering, specify the model as follows:

[1] Type of valve passage: 2 positions, return.



1 Port size	
Port size	Designation
Rc1/4	8A
Rc3/8	10A

2 Port size	
Port size	Designation
Rc3/8	10A
Rc1/2	15A

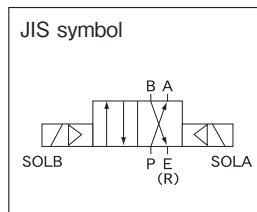
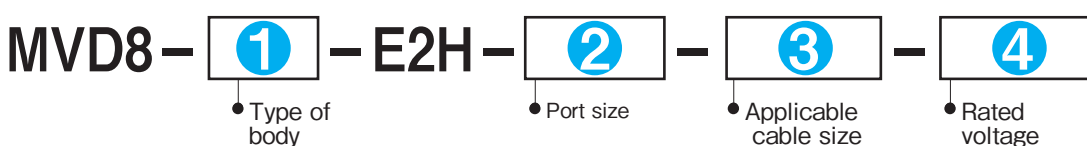
3 Applicable cable size		
Wire size ϕ d ※	Applicable cable size	Designation
ϕ 8.5	ϕ 7.5 ~ 8.4	No.8
ϕ 9.5	ϕ 8.5 ~ 9.4	No.9
ϕ 10.5	ϕ 9.5 ~ 10.4	No.10
ϕ 11.5	ϕ 10.5 ~ 11.4	No.11
ϕ 12.5	ϕ 11.5 ~ 12.4	No.12
ϕ 13.5	ϕ 12.5 ~ 13.4	No.13

※ For size ϕ d, refer to page A-33 from A-36

4 Rated voltage	
Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 60Hz	AC120 ※
AC125V 50/60Hz	AC125
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

※ When ordering, specify either applicable frequency 50 Hz or 60 Hz.

[2] Type of valve passage: 2 positions, hold.



1 Type of body		
Type of body	Port size	Designation
02	Rc1/4, Rc3/8	02
03	Rc3/8, Rc1/2	03

2 Port size		
Port size	Type of body	Designation
Rc1/4	02	8A
Rc3/8	02,03	10A
Rc1/2	03	15A

3 Applicable cable size		
Wire size ϕ d ※	Applicable cable size	Designation
ϕ 8.5	ϕ 7.5 ~ 8.4	No.8
ϕ 9.5	ϕ 8.5 ~ 9.4	No.9
ϕ 10.5	ϕ 9.5 ~ 10.4	No.10
ϕ 11.5	ϕ 10.5 ~ 11.4	No.11
ϕ 12.5	ϕ 11.5 ~ 12.4	No.12
ϕ 13.5	ϕ 12.5 ~ 13.4	No.13

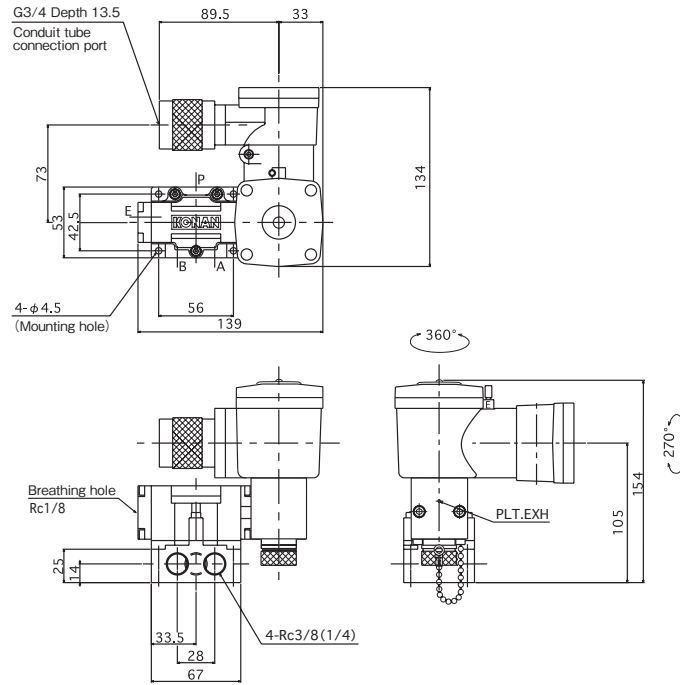
※ For size ϕ d, refer to page A-33 from A-36

4 Rated voltage	
Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 60Hz	AC120 ※
AC125V 50/60Hz	AC125
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

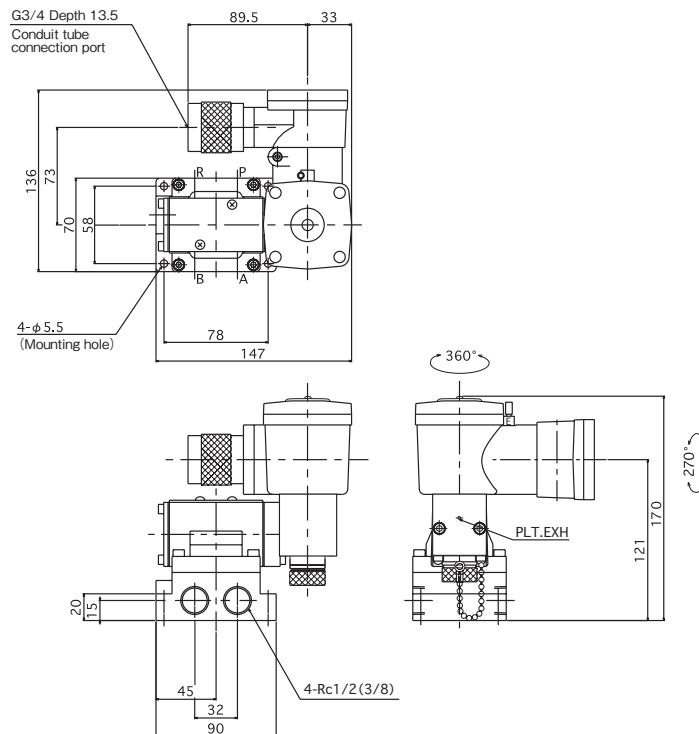
※ When ordering, specify either applicable frequency 50 Hz or 60 Hz.

Outside Dimensions

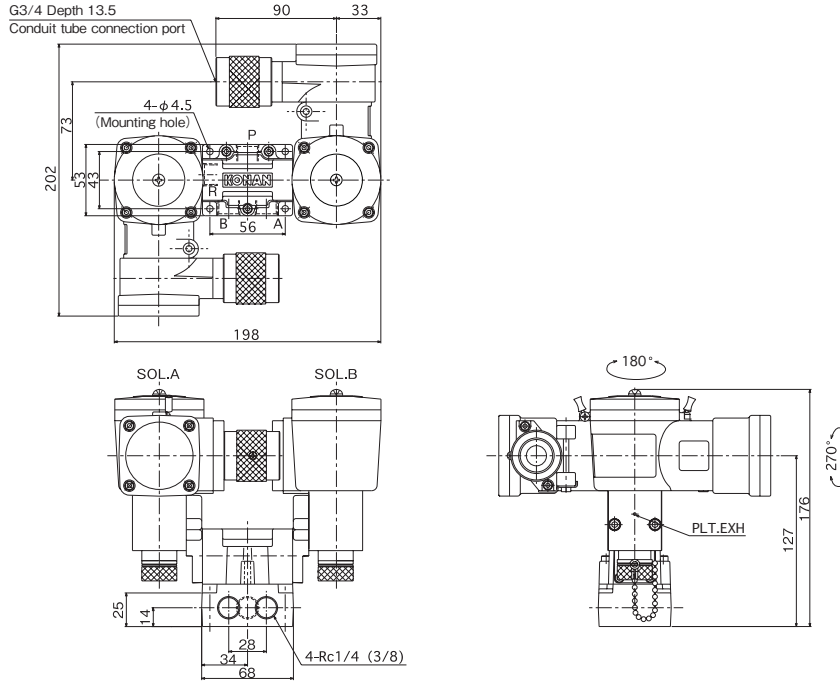
MVS812H-02 (Return)



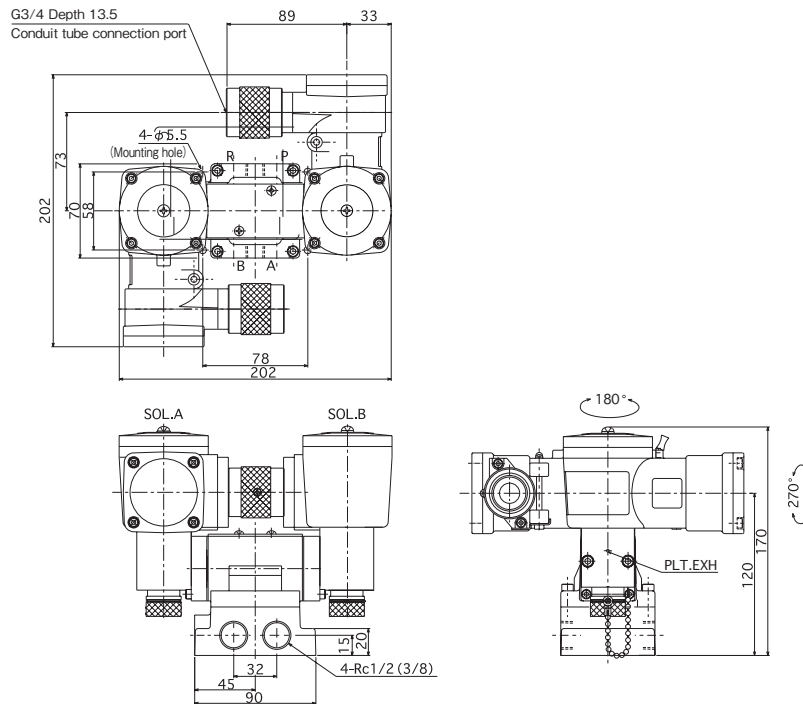
MVS802H-03 (Return)



MVD8-02-E2H (Hold)



MVD8-03-E2H (Hold)



453S/453D Series

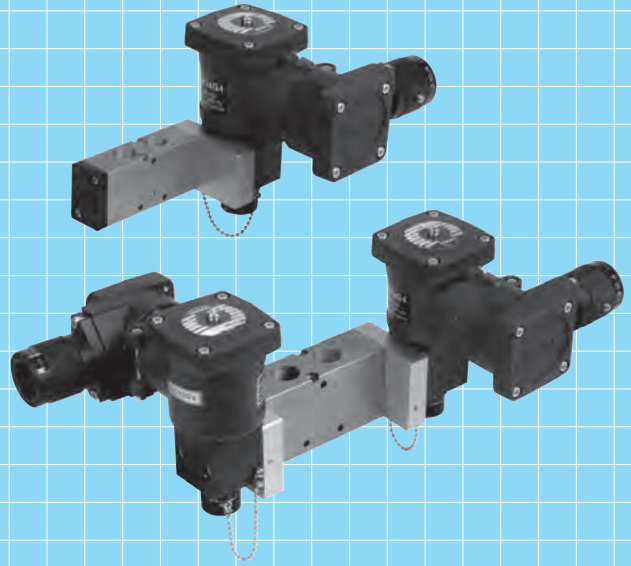
5-Port Solenoid Valves

Explosion-proof

Spool valve system, Pilot type

Direct piping type Rc1/4 · 3/8 · 1/2

Return / Hold



Specifications

Type of valve	Return			Hold		
Type	453S101C-E2H	453S202K-E2H	453S403C-E2H	453D101C-E2H	453D202K-E2H	453D403C-E2H
	453S102C-E2H	453S203K-E2H	453S404C-E2H	453D102C-E2H	453D203K-E2H	453D404C-E2H
Port size (Rc)	1/8	1/4	3/8	1/8	1/4	3/8
	1/4	3/8	1/2	1/4	3/8	1/2
Effective sectional area (CV value)	10mm ² (0.5)	22mm ² (1.2)	40mm ² (2.2)	10mm ² (0.5)	22mm ² (1.2)	40mm ² (2.2)
Operating pressure	0.2 ~ 0.7MPa					
Pressure resistance	1.05MPa					
Operating temperature	- 5 ~ 50°C					
Operating frequency	1 cycle / s max. / 1 cycle / 6 months min.					
Operation (response) time	0.05 s max.					
Solenoid	Rated voltage	Refer to Model Code				
	Voltage fluctuation tolerance	- 15% ~ 10% of rated voltage				
	Temperature rise	61.4 deg max.				
	Insulation class	Class H				
	Insulation resistance	10MΩ min.				
	Rated current	Refer to Rated current data on page C-11				
	Explosion-proof standard	Flame-proof enclosure construction d3aG4				
Mass	Approx.1.7kg		Approx.2.0kg	Approx.3.0kg		Approx.3.5kg

● At the operating temperature of 5°C or below, use extreme care for protection against frosting by removing the water contained in the fluid for use.

■ Explosion-proof verification approval No.

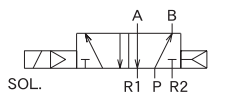
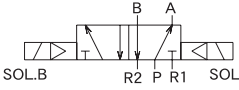
No. T60099

Model Code

When ordering, specify the model as follows:



1 Type of flow path

Type of valve	JIS symbol	Designation
2 position	Return 	S
	Hold 	D

2 Type of body, port size

Type of body	Port size	Designation
B10	Rc1/8	101C
	Rc1/4	102C
B20	Rc1/4	202K
	Rc3/8	203K
B40	Rc3/8	403C
	Rc1/2	404C

3 Applicable cable size

Wire size ϕ d ※	Applicable cable size	Designation
ϕ 8.5	ϕ 7.5 ~ 8.4	No.8
ϕ 9.5	ϕ 8.5 ~ 9.4	No.9
ϕ 10.5	ϕ 9.5 ~ 10.4	No.10
ϕ 11.5	ϕ 10.5 ~ 11.4	No.11
ϕ 12.5	ϕ 11.5 ~ 12.4	No.12
ϕ 13.5	ϕ 12.5 ~ 13.4	No.13

※ For size ϕ d, refer to page A-33 from A-36

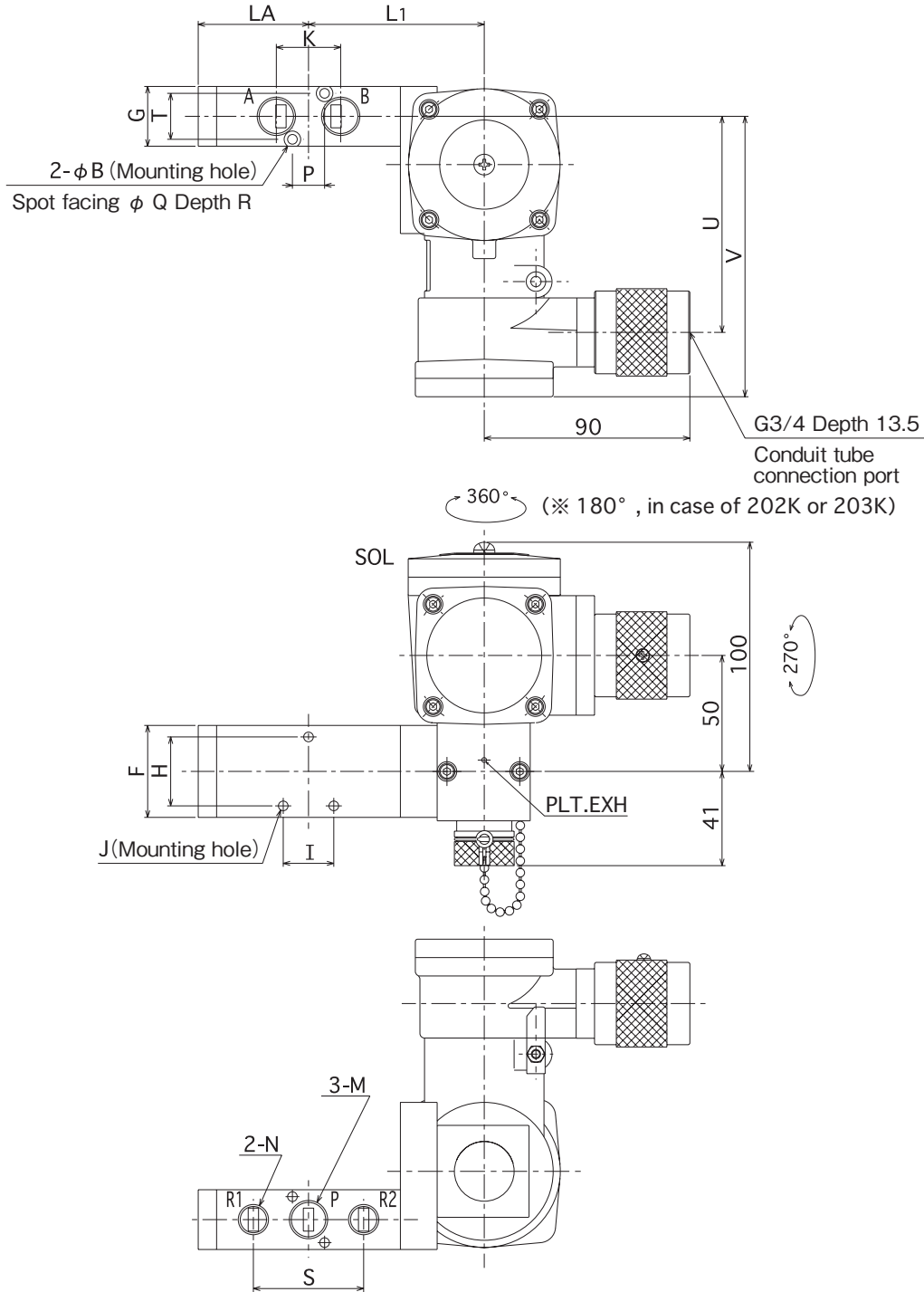
4 Rated voltage

Rated voltage	Designation
AC100V 50/60Hz	AC100
AC110V 50/60Hz	AC110
AC115V 50/60Hz	AC115
AC120V 60Hz	AC120 ※
AC125V 50/60Hz	AC125
AC200V 50/60Hz	AC200
AC220V 50/60Hz	AC220
DC 24V	DC 24V
DC 48V	DC 48V
DC100V	DC100V
DC110V	DC110V
DC120V	DC120V
DC125V	DC125V

※ When ordering, specify either applicable frequency 50 Hz or 60 Hz.

Outside Dimensions

453S101C-E2H • 453S102C-E2H
 453S202K-E2H • 453S203K-E2H (Return)
 453S403C-E2H • 453S404C-E2H

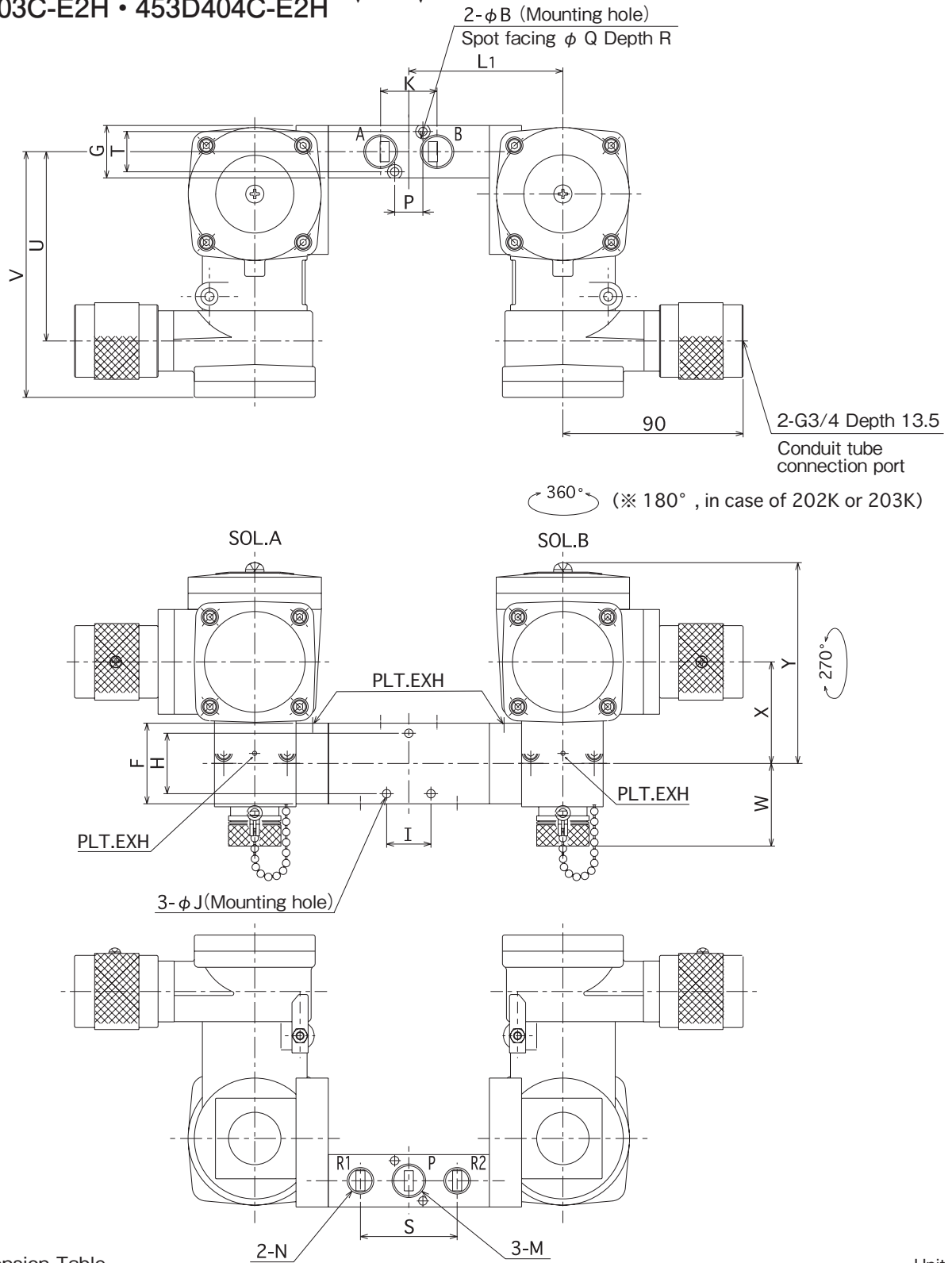


Dimension Table

Unit : mm

Type code	Sign	M (Rc)	N (Rc)	LA	L1	F	G	H	I	K	S	B	Q	R	P	T	U	V
453S101C-E2H		1/8	1/8	38	67	40	26	30	22	24	40	4.2	7.2	3	14	20	94	122
453S102C-E2H		1/4																
453S202K-E2H		1/4	1/4	48	95	50	36	40	30	28	48	5.3	9.5	4		28	96	124
453S203K-E2H		3/8																
453S403C-E2H		3/8	3/8	63	92	56	36	40	30	36	68	5.3	9.5	4	28	96	124	
453S404C-E2H		1/2	1/2															

453D101C-E2H • 453D102C-E2H
 453D202K-E2H • 453D203K-E2H (Hold)
 453D403C-E2H • 453D404C-E2H



Dimension Table

Unit : mm

Type code	Sign	M (Rc)	N (Rc)	F	G	H	I	K	S	B	Q	R	P	T	U	V	W	X	Y	L1	J
453D101C-E2H		1/8	1/8	40	26	30	22	24	40	4.2	7.2	3	14	20	94	122	41	50	100	66.5	4.2
453D102C-E2H		1/4																			
453D202K-E2H		1/4	1/4	50				28	48								42	51	100	95	4.2
453D203K-E2H		3/8																			
453D403C-E2H		3/8	3/8	56	36	40	30	36	68	5.3	9.5	4		28	96	124	32	59	109	92	5.3
453D404C-E2H		1/2																			

Rated current data

Rated voltage	Rated current (mA)	
AC100V 50/60Hz	192	127
AC110V 50/60Hz	183	159
AC115V 50/60Hz	146	124
AC120V 60Hz		146
AC200V 50/60Hz	96	62
AC220V 50/60Hz	91	80
DC 24V	303	
DC 48V	154	
DC100V	75	
DC110V	55	
DC120V	59	
DC125V	60	

● The above amperage table, left shows 50Hz AC and right shows 60Hz AC.

Explosion-proof
solenoid valve lineup

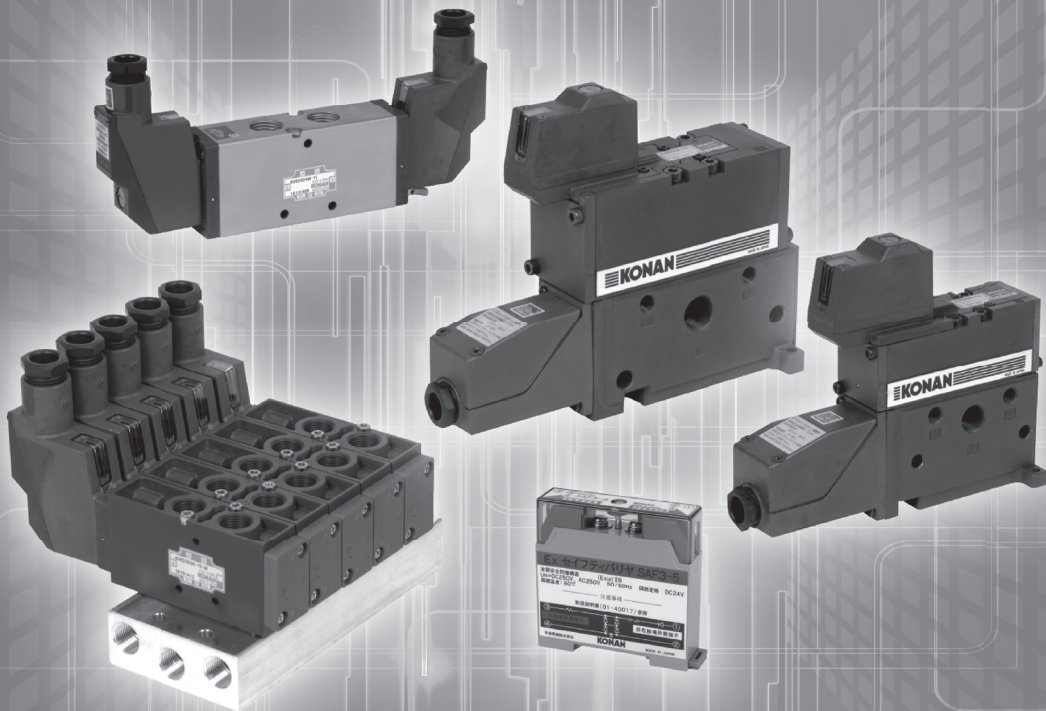
vol.4

ExdIBT4

Technical standards conforming
to the international standards

For pneumatic
control

5 Port Intrinsic safety solenoid valves



Model List (Intrinsic safety solenoid valves)

Exia II BT5

- This is the intrinsic safety construction usable at the same explosion class, and same degree of ignition as the Exd II BT5 (Flame-proof enclosure construction).
- Applicable to all explosive gases and dangerous places, except for hydrogen, acetylene, and carbon disulfide.

Type of Construction for Explosion-proof

Barrier

Intrinsic safety construction : Exia II BX

Intrinsic safety construction : Exia II C

Type & Composition of Valve

Port size

Rc1/4 Rc3/8 Rc1/2

Type of Flow Path in Valve

Solenoid valve

5 Port

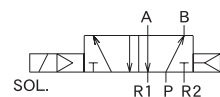
Spool valve system
Pilot type

Direct piping type

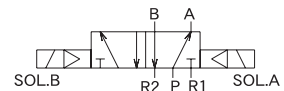
Pilot solenoid valve
+
Valve body

● ● ●

● Return



● Hold



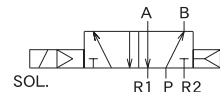
Spool valve system
Pilot type

Gasket connection type

Pilot solenoid valve
+
Valve body+subplate

● ● ●

● Return



Manifold type

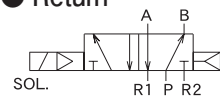
Spool valve system
Pilot type

Direct piping type

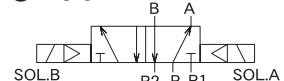
Pilot solenoid valve
+
Valve body

● ● ●

● Return



● Hold



Substantial cost saving in wiring works

- Not requiring expensive wiring devices or complicated works conventionally needed for Explosion-proof enclosure construction.
- Highly reliable explosion-proof performance is realized at low wiring work cost as in the ordinary control line.

Power consumption: 0.4 W

- The solenoid valve installed in a dangerous place consumes very low electric power of only 0.4 W, while satisfying the intrinsic safety explosion-proof level.
- This is a 5-port pneumatic solenoid valve of high reliability, based on our New MAGSTAR series.
- An excellent space factor is obtained by using the manifold type solenoid valves.

INDEX

Precautions for use D-3

SAF3-5

Specification D-5

Dimensions D-6

SAF100-5

Specification D-7

Dimensions D-8



Type of Construction for Explosion-proof



454S/454D

Specification D-9

Model Code D-10

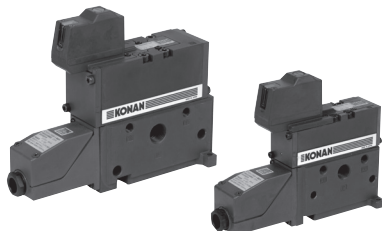
Dimensions D-10

414S/416S-Yi

Specification D-11

Model Code D-12

Dimensions D-12



intrinsic safety construction

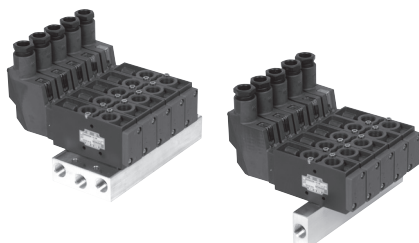
: Exia II BT5

414S/416S-YAi

Specification D-13

Model Code D-14

Dimensions D-14



454S/454D

Body to apply D-15

Model Code D-16

Dimensions D-17

Cautions for use

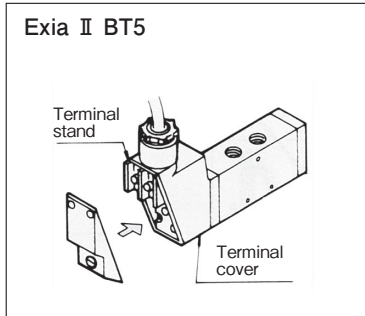
1

In both solenoid valve and explosion-proof barrier, strictly observe the conditions of use specified in the specification column of each manufacturer.

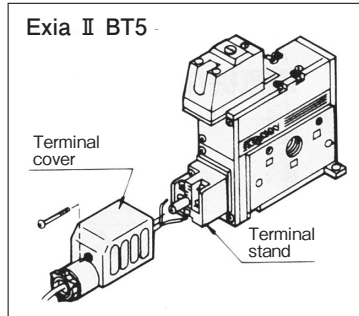
2

Solenoid valve wiring method

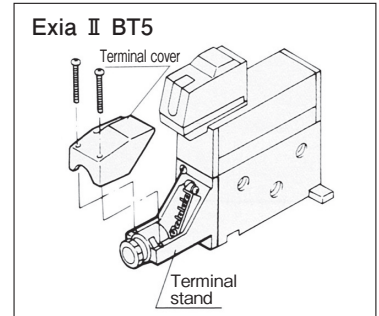
454S/D series



414S/416S series



414S/416S series ZA type



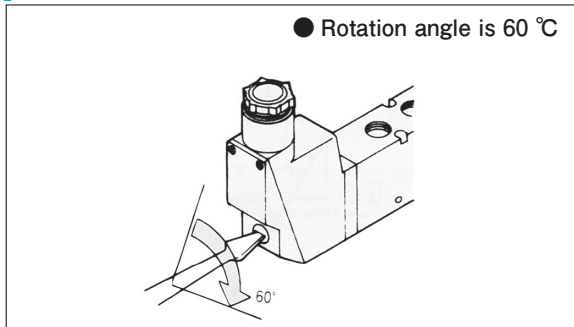
- When connecting wires to the solenoid valve, be careful not to mistake the polarity.

3

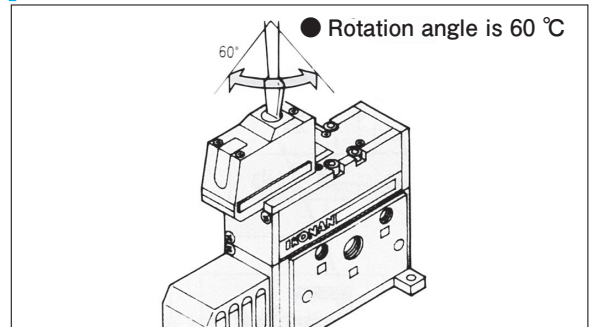
Push-button (manual operation mechanism)

- By pushing the push-button (red), the solenoid valve is actuated, and when released, it is returned to the original state.
- When locking the push-button, use the blade of a screwdriver or the like, and turn the push-button to the right, and it will be locked. When turned to the left, it will be unlocked.
- When the push-button is locked, after operation, turn to the left to unlock.
(If turned while pushing the push-button, the same action takes place, and there is no problem.)

454S/D series



414S/416S series



4

In principle, use the solenoid valve without lubrication. For working fluid, use fresh air, and do not mix with deteriorated compressor oil or the like.

5

At the inlet side (P-port) upstream of the solenoid valve, install an air filter (filtration degree: 5 μ or less), and remove dust and drain.

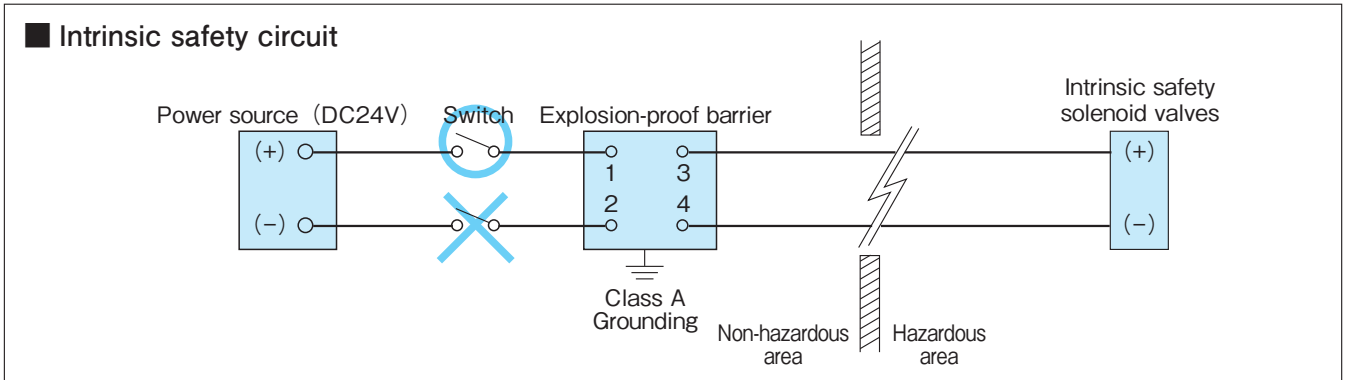
6

If leaving it behind without use for 1 year or longer, check it before use.

Installation of Intrinsic safety solenoid valves

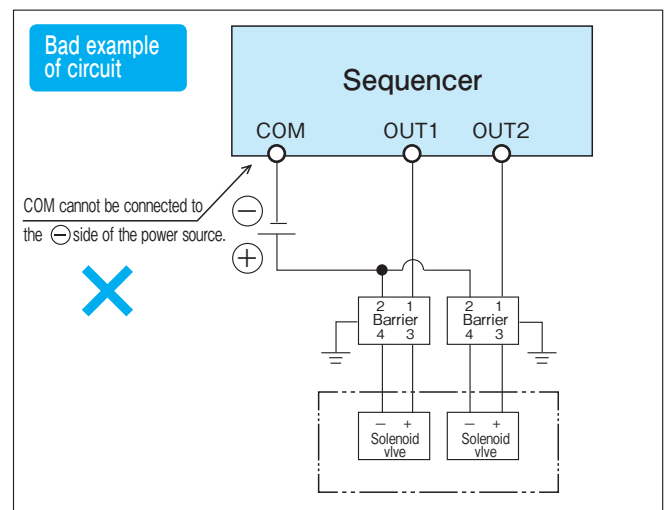
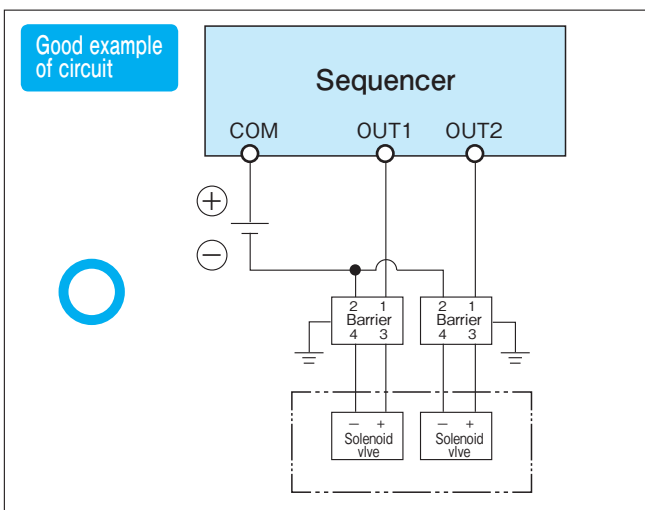
1. Hazardous area non-hazardous area

To install the Intrinsic safety solenoid valves, as shown in the drawing below, place the switch and the explosion-proof barrier in non-hazardous area, and place only the solenoid valve in hazardous area.



Caution

In the above intrinsic safety circuit, **install the switch or the contact to be placed in non-hazardous area always at the (+) side of the power source.** If installed at the (-) side, depending on the circumstances, the solenoid valve may malfunction. In particular, when controlled by the sequencer or the like, it cannot be used if the common side of the sequencer output circuit is connected to the minus side of the power source.



2. Combination of explosion-proof solenoid valves and explosion-proof barrier

The explosion-proof barrier should be always used in the intrinsic safety construction. In combination with the solenoid valve, use one explosion-proof barrier alone for one solenoid valve.

Caution

In case of the hold type solenoid valve (double solenoid), it must be noted that two explosion-proof barriers are needed.

SAF3-5 (Exia II BT5)

Explosion-proof barrier (safety barrier)

Intrinsic safety construction

The intrinsic safety explosion-proof barrier is a one-channel explosion-proof device of shunt diode type for direct-current use, for passing electrical signals in both directions without short-circuiting, while limiting the energy transmission to the level not to ignite the explosive atmosphere.

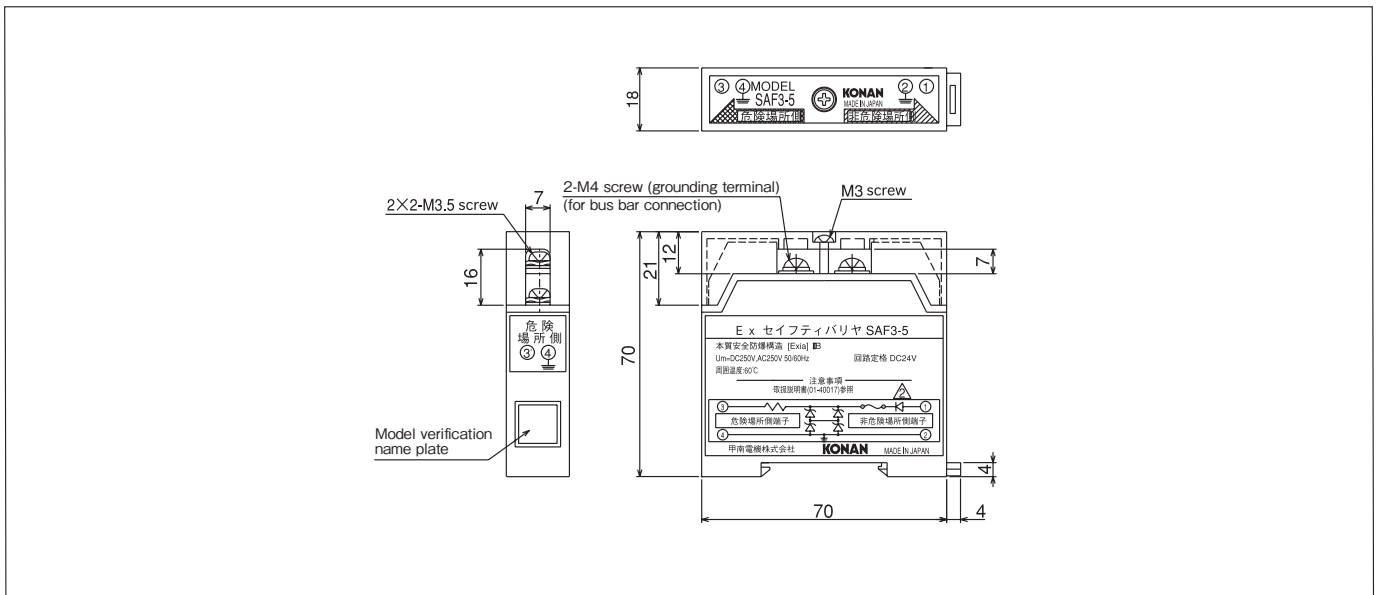


1. Applicable to class 0 hazardous area.
2. Only by connecting in series to the transmission circuit, the line and the device in the hazardous area can be protected from accidents in non-hazardous area.
3. The conventional wiring system can be used in the hazardous area.
4. The intrinsic safety of control operation signal can be realized easily and at low cost.
5. SAF3-5 safety barrier is provided with a protective circuit at the input side, and if connected in wrong polarity by mistake, the circuit will not be broken.
6. SAF3-5 safety barrier is designed in wiring and connection system by crimped terminal.
7. Explosion-proof standard: If selecting an solenoid valve of Exia II BT5, use the explosion-proof barrier in combination with the SAF3-5, SAF100-5, or the barrier satisfying the condition specified in page D-6 [When selecting other explosion-proof barriers].

Specifications

Type code	SAF3-5
Explosion-proof structure	Intrinsic safety construction (Exia II B)
Rated voltage	DC24V ± 5%
Max. operating voltage	—
Max. allowable voltage	—
Safety holding rating	AC/DC 250V
Fuse rating	50mA
ambient temperature	− 20 ~ 60°C
Basic circuit diagram	
Option	<ul style="list-style-type: none"> ● DIN rail for mounting ● Earth busbar ● Others
Conditions of use	<ol style="list-style-type: none"> (1) Install at non-hazardous area side. (2) Ground independently, and use in class A grounding. (3) The parts and the wiring cannot be changed. (4) Use in combination with specified solenoid valve. (5) Allowable in external wiring, inductance : 10 mH · capacitance : 0.5 μF.
Remarks	—

Outside Dimensions



Caution

1. Safety holding rating

- Devices (power switch and others) connected to the explosion-proof barrier in the non-hazardous area should be free from parts composing voltage wires exceeding 250 V (RMS) or 250 V (DC) in the ground potential in usual time or in the event of accident, or parts supplied from such voltage wires.
- If power is supplied from the main bus, isolation from the main bus is required by means of double winding transformer, and the primary winding should be protected by a fuse having a conforming interrupting capacity (rating).

2. Inductance and capacitance of external wiring

- The wiring length (between barrier and solenoid valve) is limited by the inductance and capacitance of the wiring. General parameters are as follows.

	SAF3-5
In case of capacitance: 100 pF/m Maximum wiring length to stay below the capacitance allowable in external wiring	5000m
In case of inductance : 25 μ H Ω / DC resistance : 40 Ω /km Maximum wiring length to stay below the inductance allowable in external wiring in both directions	5000m

3. General handling of explosion-proof barrier

- Refer to the general handling cautions of Intrinsic safety solenoid valves and explosion-proof barrier mentioned in page D-4.

[When selecting other explosion-proof barriers]

KONAN Intrinsic safety solenoid valves [454], [414], and [416] series are approved by the device verification of intrinsic safety explosion-proof of solenoid valve own body. **They can be used also in combination with the barrier satisfying the following conditions.** (Also possible to combine with the insulation barrier not requiring class A grounding.)

* However, limited only to barriers approved by device verification as a single body, and satisfying the following conditions.

< Safety holding rating >

- Intrinsic safety circuit max. voltage : 29.4 V or less
- Intrinsic safety circuit max. current : 93.8 mA or less
- Intrinsic safety circuit max. power : 0.689 W or less

< Performance division and group >

- Performance division : ia
- Group: IIB or IC

< Relation between intrinsic safety circuit allowable inductance (Lo) and capacitance (Co), and intrinsic safety circuit external wiring inductance (Lw) and capacitance Cw >

- Intrinsic safety circuit allowable inductance : $L_o \geq L_i + L_w$ (mH)
- Intrinsic safety circuit allowable capacitance : $C_o \geq C_i + C_w$ (μ F)

SAF100-5 (Exia II C)

Explosion-proof Insulation barrier (safety barrier)

Intrinsic safety construction

The intrinsic safety explosion-proof barrier is a one-channel explosion-proof device of Zener diode type for direct-current use, for passing electrical signals in both directions without short-circuiting, while limiting the energy transmission to a degree not igniting the explosive atmosphere.

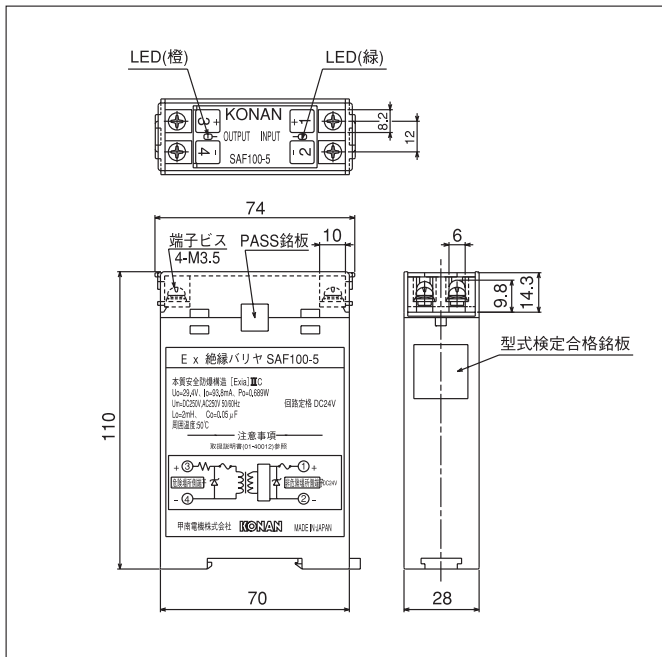


1. Applicable to class 0 dangerous zone.
2. No grounding is required between the input and the output are insulated.
3. Only by connecting in series to the transmission circuit, the line and the device in the hazardous area can be protected from accidents in non-hazardous area.
4. The conventional wiring system can be used in the hazardous area.
5. The intrinsic safety of control operation signal can be realized easily and at low cost.
6. Wiring and connection system realized by crimped terminal.
7. The input side is provided with a protective circuit, and is not broken if connected in wrong polarity by mistake.
8. The presence or absence of input and output can be confirmed by lighting of LED.

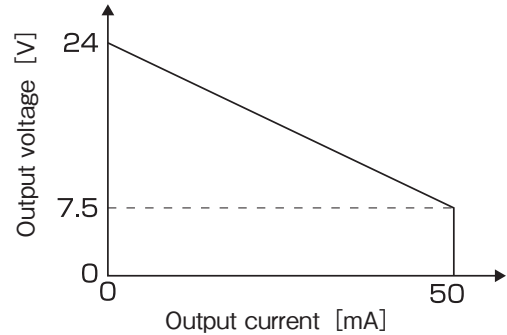
Specifications

Type code	SAF100-5
Explosion-proof structure	Intrinsic safety construction (Exia II C)
Operating voltage	DC24V ± 10%
Intrinsic safety circuit max.	DC29.4V
Intrinsic safety circuit max. current	93.8mA
Intrinsic safety circuit max. power	0.689W
ambient temperature	- 20 ~ 50°C
Basic circuit diagram	<p>● Grounding not required.</p> <p>● Grounding not required.</p>
Conditions of use	<ul style="list-style-type: none"> ● DIN rail for mounting ● Others
Remarks	<p>(1) Install at non-hazardous area side.</p> <p>(2) The parts and the wiring cannot be changed.</p> <p>(3) Use in combination with specified solenoid valve. μF</p> <p>(4) Allowable in external wiring, inductance: 2 mH, capacitance: 0.05 μF.</p>

Outside Dimensions



Output characteristic graph



Caution

1. Safety holding rating

- Devices (power switch and others) connected to the explosion-proof barrier in the non-hazardous area should be free from parts composing voltage wires exceeding 250 V (RMS) or 250 V (DC) in the ground potential in usual time or in the event of accident, or parts supplied from such voltage wires.
- If power is supplied from the main bus, isolation from the main bus is required by means of double winding transformer, and the primary winding should be protected by a fuse having a conforming interrupting capacity (rating).

2. Inductance and capacitance of external wiring

- The wiring length (between barrier and solenoid valve) is limited by the inductance and capacitance of the wiring. General parameters are as follows.
 - Supposing the capacitance: 100 pF/m, the maximum length is 500 m.
 - Supposing the inductance: 25 μH Ω, the resistance value is 80 Ω approximately. When the DC resistance value is 40 Ω /km, it is 80 Ω or less in both directions. The maximum length is 1000 m.

3. General handling of explosion-proof barrier

- Refer to the general handling cautions of Intrinsic safety solenoid valves and explosion-proof barrier mentioned in page D-4.

【When selecting other explosion-proof barriers】

KONAN Intrinsic safety solenoid valves [454], [414], and [416] series are approved by the device verification of intrinsic safety explosion-proof of solenoid valve own body. **They can be used also in combination with the barrier satisfying the following conditions.** (Also possible to combine with the insulation barrier not requiring class A grounding.)

* However, limited only to barriers approved by device verification as a single body, and satisfying the following conditions.

< Safety holding rating >

Intrinsic safety circuit max. voltage : 29.4 V or less

Intrinsic safety circuit max. current : 93.8 mA or less

Intrinsic safety circuit max. power : 0.689 W or less

< Performance division and group >

Performance division : ia

Group : IIB or IIC

< Relation between intrinsic safety circuit allowable inductance (L_o) and capacitance (C_o), and intrinsic safety circuit external wiring inductance (L_w) and capacitance C_w >

Intrinsic safety circuit allowable inductance : $L_o \geq L_i + L_w$ (mH)

Intrinsic safety circuit allowable capacitance : $C_o \geq C_i + C_w$ (μF)

454S/454D Series (Exia II BT5)

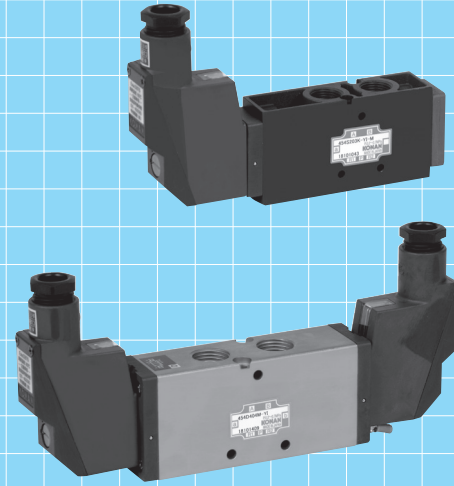
5-Port Solenoid Valves

Intrinsic safety construction

Spool valve system, Pilot type

Direct piping type Rc1/4 · 3/8 · 1/2

Return / Hold



Specifications

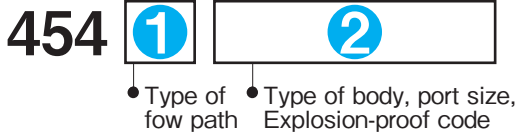
		Return			Hold		
Type		454S20 □ K-YI-M	454S40 □ M-YI		454D20 □ K-YI-M	454D40 □ M-YI	
Port size (Rc)		1/4	3/8	1/2	1/4	3/8	1/2
Effective sectional area (mm ²)		22		40	22		40
Operating pressure		0.2 ~ 0.7MPa					
Pressure resistance		1.05MPa					
Operating temperature		- 5 ~ 50°C					
Operating frequency		1 cycle / s max.					
Operation (response) time		0.11 s max.	0.11 s max.		0.11 s max.	0.11 s max.	
Solenoid	Rated voltage	DC12V · 34mA — (Intrinsic safety Circuit Rating)					
	Temperature rise	12 deg max.					
	Insulation class	Class B					
	Insulation resistance	10MΩ min. (DC500V)					
	Power consumption	0.4W					
Explosion-proof standard	Intrinsic safety construction : i2G4 / Exia II BT5						
Mass (kg)		Approx. 0.4	Approx.0.7		Approx.0.5	Approx.0.9	
Explosion-proof verification approval No.		When combined with explosion-proof barriers satisfying the conditions mentioned in page D-6,D-8: No. TC14813					
Use conditions		(1) Use in combination with specified safety barrier. Use the explosion-proof barrier in combination with the SAF3-5, SAF100-5 or the barrier satisfying the condition specified in page D-6,D-8 [When selecting other explosion-proof barriers]. (2) The parts and the wiring cannot be changed. (3) In combination with one electromagnetic valve, use one explosion-proof barrier alone.					

※ If the ambient temperature is less than 5°C , remove the moisture in the working fluid, and be careful not to allow freezing.

※ Consult our company if exchanging the solenoid valve (F/G type) used in combination with the specified barrier SAF1-5/SAF2-5 of former type.

Model Code

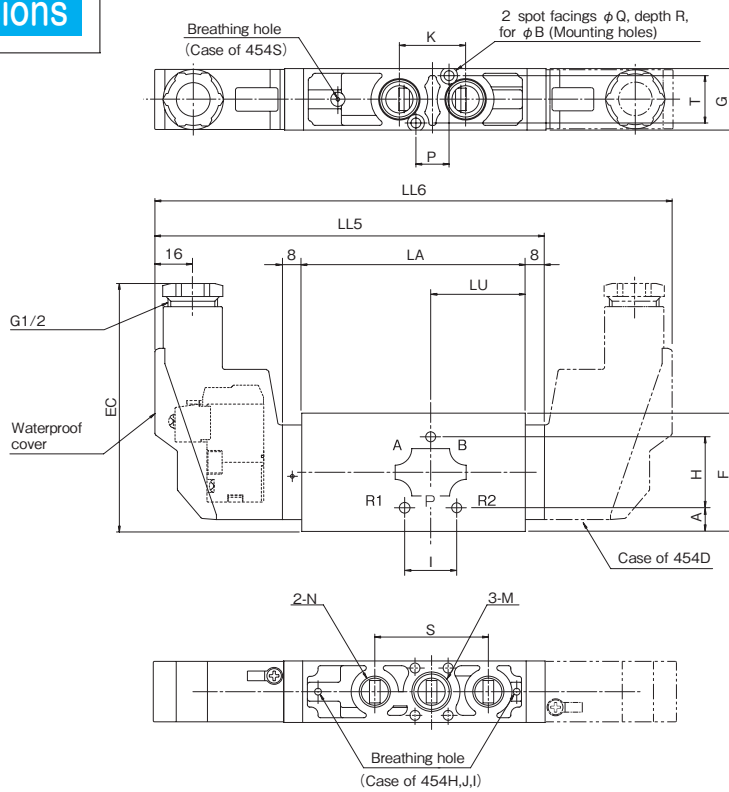
When ordering, specify the model as follows:



1 Type of flow path		
Type of valve	JIS symbol	Designation
Return		S
Hold		D

2 Type of body, port size, Explosion-proof code		
Type of body	Port size	Designation
B20	Rc1/4	202K - YI - M
	Rc3/8	203K - YI - M
B40	Rc3/8	403M - YI
	Rc1/2	404M - YI

Outside Dimensions

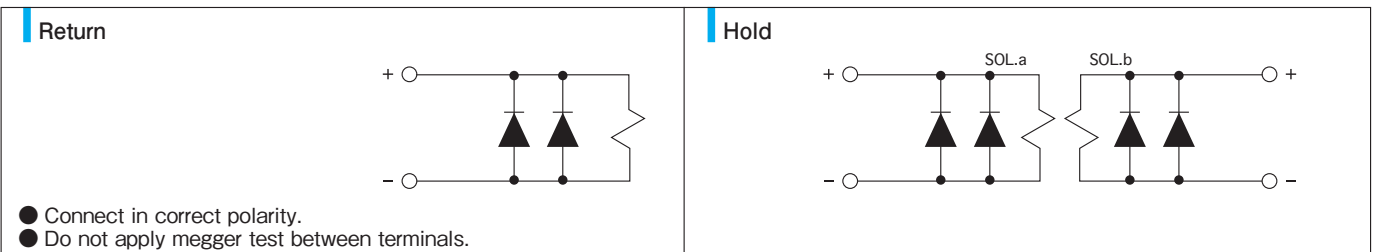


Dimension Table

Unit : mm

Type code	Sign	M	N	LA	LL5	LL6	F	EC	G	H	I	J	K	S	LU	B	Q	R	P	A	T	Mass (kg)
454S202K-YI-M	Rc1/4	94.5	Rc1/4	164.5	-	50	105	26	30	22	4.2	28	48	40	4.2	7.2	3	14	10	20	0.4	
454S203K-YI-M	Rc3/8																					
454D202K-YI-M	Rc1/4																					
454D203K-YI-M	Rc3/8																					
454S403M-YI	Rc3/8	110	Rc3/8	180	-	56	107	36	40	30	5.3	36	68	55	5.3	9.5	4	8	28	0.75		
454S404M-YI	Rc1/2																					
454D403M-YI	Rc3/8																					
454D404M-YI	Rc1/2																					

Wire connection diagram



414S/416S Series (Exia II BT5)

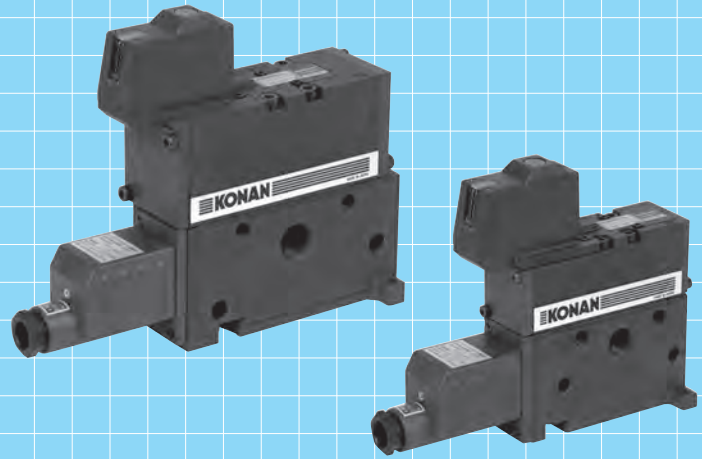
5-Port Solenoid Valves

Intrinsic safety construction

Spool valve system Pilot type
 Ceramic slide valve system

Gasket connection type Rc1/4 · 3/8 · 1/2

Return



Specifications

[5-port, sub-plate type]

		Return							
Type		414S30 □ M		414S60 □ M		416S30 □ M		416S60 □ M	
Port size (Rc)		1/4	3/8		1/2	1/4	3/8		1/2
Effective sectional area (mm ²)		25	30	51	60	24	28	51	60
Operating pressure		0.2 ~ 0.7MPa				0.12 ~ 0.7MPa			
Pressure resistance		1.05MPa							
Operating temperature		- 5 ~ 50°C				- 10 ~ 60°C			
Operating frequency		1 cycle / s max.							
Operation (response) time		0.14 s max.		0.16 s max.		0.14 s max.		0.16 s max.	
Solenoid	Rated voltage	DC12V · 34mA — (Intrinsic safety Circuit Rating)							
	Temperature rise	12 deg max.							
	Insulation class	Class B							
	Insulation resistance	10MΩ min. (DC500V)							
	Power consumption	0.4W							
Explosion-proof standard		Intrinsic safety construction : Exia II BT5							
Mass (kg)		Approx.1.3		Approx.2.2		Approx.1.3		Approx.2.2	
Explosion-proof verification approval No.		When combined with explosion-proof barriers satisfying the conditions mentioned in page D-6,D-8: No. TC14814 When combined with safety barrier, MTL728+: No. T42154							
Use conditions		(1) Use in combination with specified safety barrier. Use the explosion-proof barrier in combination with the SAF3-5,SAF100-5 or the barrier satisfying the condition specified in page D-6,D-8 [When selecting other explosion-proof barriers]. (2) The parts and the wiring cannot be changed. (3) In combination with one electromagnetic valve, use one explosion-proof barrier alone.							

※ If the ambient temperature is less than 5°C, remove the moisture in the working fluid, and be careful not to allow freezing.

※ Consult our company if exchanging the solenoid valve (F/G type) used in combination with the specified barrier SAF1-5/SAF2-5 of former type.

Model Code

When ordering, specify the model as follows:

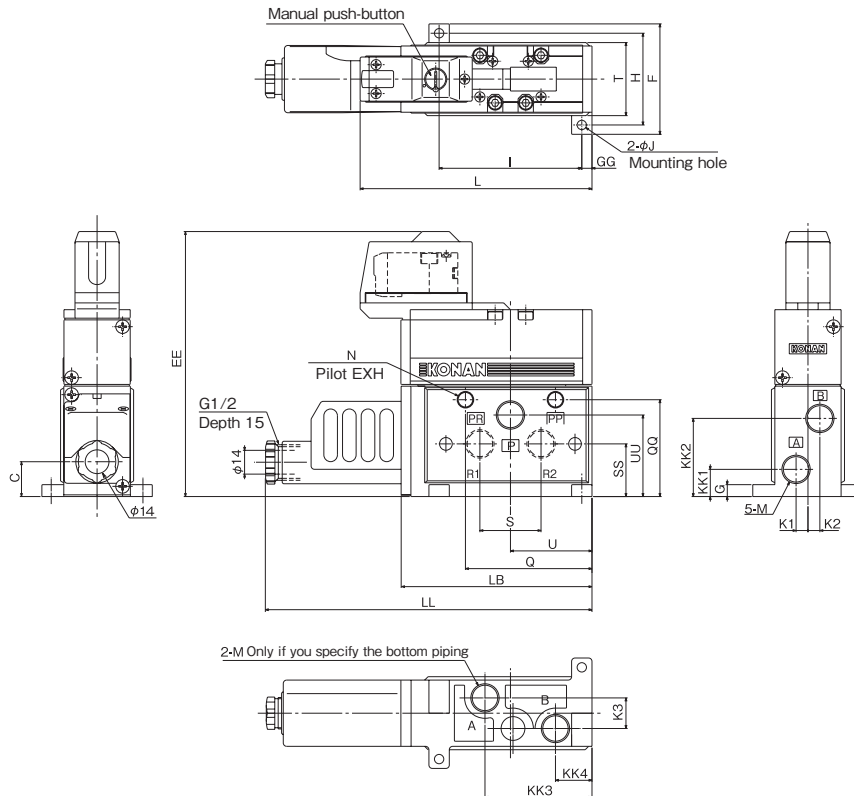
41 **1** S **2** M - YI

- Type of main valve
- Type of body, port size

1 Type of main valve	
Type of main valve	Designation
Spool valve system	4
Ceramic slide valve system	6

2 Type of body, port size		
Type of body	Port size	Designation
B30	Rc1/4	302
	Rc3/8	303
B60	Rc3/8	603
	Rc1/2	604

Outside Dimensions

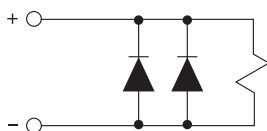


Dimension Table

Unit : mm

Type code	Sign	M (Rc)	N (Rc)	L	LB	LL	EE	F	G	GG	H	I	J	K1	K2	KK1	KK2	Q	QQ	S	SS	U	UU	T	C
41 □ S302M-YI		1/4	1/8	137	115	195	156	65	7	6	54	84	5.5	7	7	16	46	74.5	56	36	31	48	48	43	20.5
41 □ S303M-YI		3/8		167	145	225	174	78	12	10	67	100		8	14	17	49	104	61	48	30	70	47	56	24.5
41 □ S603M-YI		3/8																							
41 □ S604M-YI		1/2																							

Wire connection diagram



- Connect in correct polarity.
- Do not apply megger test between terminals.

414S/416S Series (Exia II BT5)

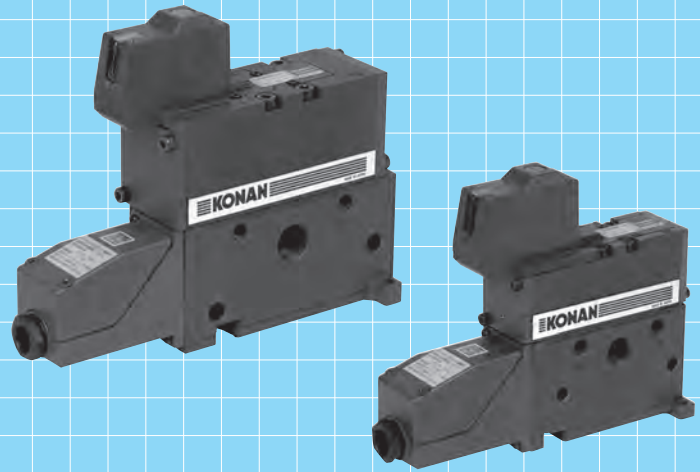
5-Port Solenoid Valves

Intrinsic safety construction

Spool valve system — Pilot type
 Ceramic slide valve system

Gasket connection type Rc1/4 · 3/8 · 1/2

Return



Specifications

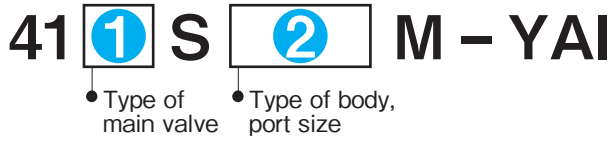
[5-port, sub-plate type]

		Return					
Type		414S30 □ M	414S60 □ M		416S30 □ M	416S60 □ M	
Port size (Rc)		1/4	3/8		1/2	1/4	
Effective sectional area (mm ²)		25	30	51	60	24	28
Operating pressure		0.2 ~ 0.7MPa			0.12 ~ 0.7MPa		
Pressure resistance		1.05MPa					
Operating temperature		- 5 ~ 50°C			- 10 ~ 60°C		
Operating frequency		1 cycle / s max.					
Operation (response) time		0.14 s max.	0.16 s max.		0.14 s max.	0.16 s max.	
Solenoid	Rated voltage	DC12V · 34mA — (Intrinsic safety Circuit Rating)					
	Temperature rise	12 deg max.					
	Insulation class	Class B					
	Insulation resistance	10MΩ min. (DC500V)					
	Power consumption	0.4W					
Explosion-proof standard	Intrinsic safety construction : iExia II BT5						
Mass (kg)		Approx.1.3	Approx.2.2		Approx.1.3	Approx.2.2	
Explosion-proof verification approval No.		When combined with explosion-proof barriers satisfying the conditions mentioned in page D-6,D-8: No. TC14814					
Use conditions		(1) Use in combination with specified safety barrier. Use the explosion-proof barrier in combination with the SAF3-5,SAF100-5 or the barrier satisfying the condition specified in page D-6,D-8 [When selecting other explosion-proof barriers]. (2) The parts and the wiring cannot be changed. (3) In combination with one electromagnetic valve, use one explosion-proof barrier alone.					

※ If the ambient temperature is less than 5°C, remove the moisture in the working fluid, and be careful not to allow freezing.

Model Code

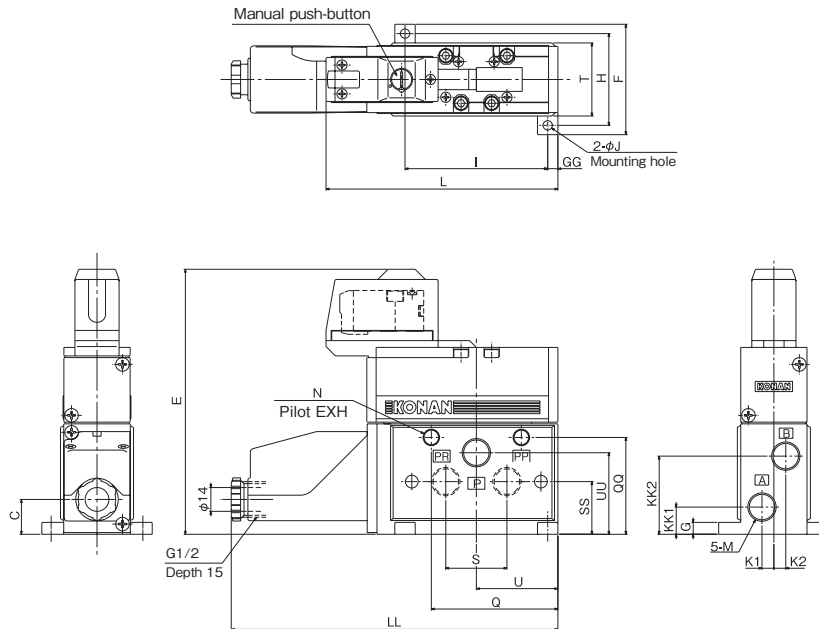
When ordering, specify the model as follows:



1 Type of main valve	
Type of main valve	Designation
Spool valve system	4
Ceramic slide valve system	6

2 Type of body, port size		
Type of body	Port size	Designation
B30	Rc1/4	302
	Rc3/8	303
B60	Rc3/8	603
	Rc1/2	604

Outside Dimensions

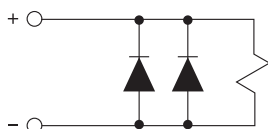


Dimension Table

Unit : mm

Type code	Sign	M (Rc)	N (Rc)	L	L2	LL	E	F	G	GG	H	I	J	K1	K2	KK1	KK2	Q	QQ	S	SS	U	UU	T	C
41 □ S302M-YAI		1/4	1/8	137	154	195	156	65	7	6	54	84	5.5	7	7	16	46	74.5	56	36	31	48	48	43	20.5
41 □ S303M-YAI		3/8		167	176	225	174	78		10	67	100		8	14	17	49	104	61	48	30	70	47	56	24.5
41 □ S603M-YAI		3/8																							
41 □ S604M-YAI		1/2																							

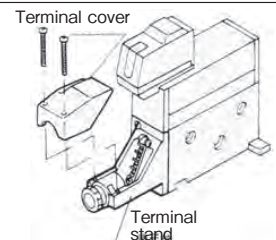
Wire connection diagram



- Connect in correct polarity.
- Do not apply megger test between terminals.

YA terminal block

- KONAN's original wiring system resistant to vibration. Optimum wiring method for wiring by using external wiring, or wiring requiring a long lead wire.
- The standard equipment includes a rigid terminal cover made of aluminum die-casting.



454S/454D Series

5-Port Solenoid Valves

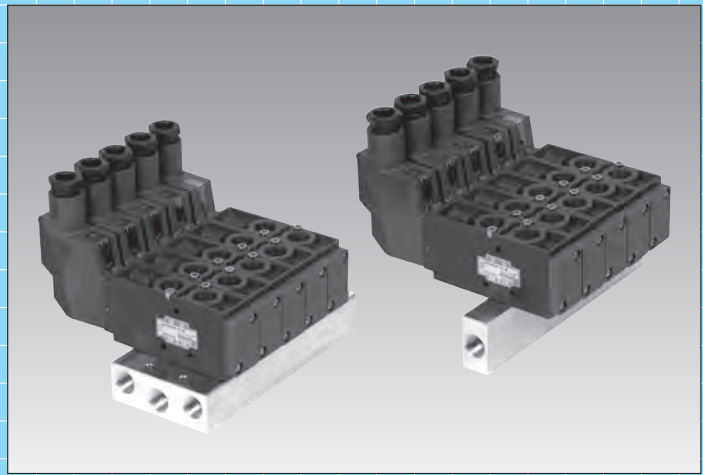
Intrinsic safety construction

Manifold Type

Exia II BT5

Spool valve system, Pilot type

Return / Hold



Individual exhaust : C

This is the quick mounting manifold type solenoid valve in which R1 and R2 (exhaust) ports can be individually taken out together with the solenoid valve. This type is optimum in case when to control connected load (air cylinder)'s speed with the exhaust valve (exhaust throttling valve).

Applicable types of the main body

B20,B40

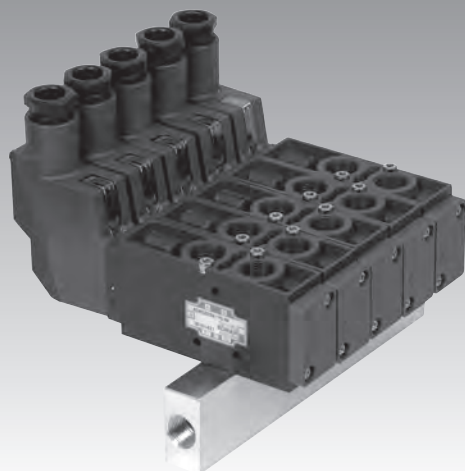


Concentrated exhaust : D

This is the quick mounting manifold type solenoid valve in which R1 and R2 (exhaust) ports of the mounted solenoid valves are made common. Making exhaust ports common and collective facilitates line control.

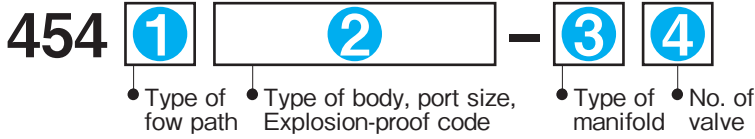
Applicable types of the main body

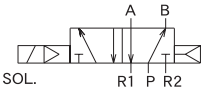
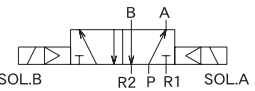
B20,B40



Model Code

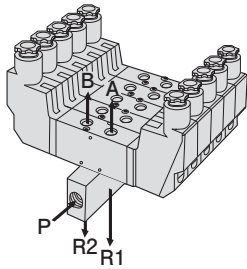
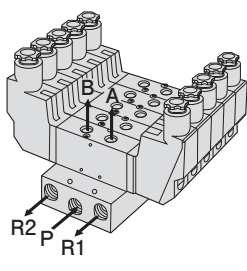
When ordering, specify the model as follows:



1 Type of flow path		
Type of valve	JIS symbol	Designation
Return		S
Hold		D

● We can manufacture mixed manifolds of both S: return and D: hold type. Enquire when ordering.

2 Type of body, port size, Explosion-proof code		
Type of body	Port size	Designation
B20	Rc1/4	202K - YI - M
	Rc3/8	203K - YI - M
B40	Rc3/8	403M - YI
	Rc1/2	404M - YI

3 Type of manifold	
Type of manifold	Designation
Individual exhaust 	C
Concentrated exhaust 	D

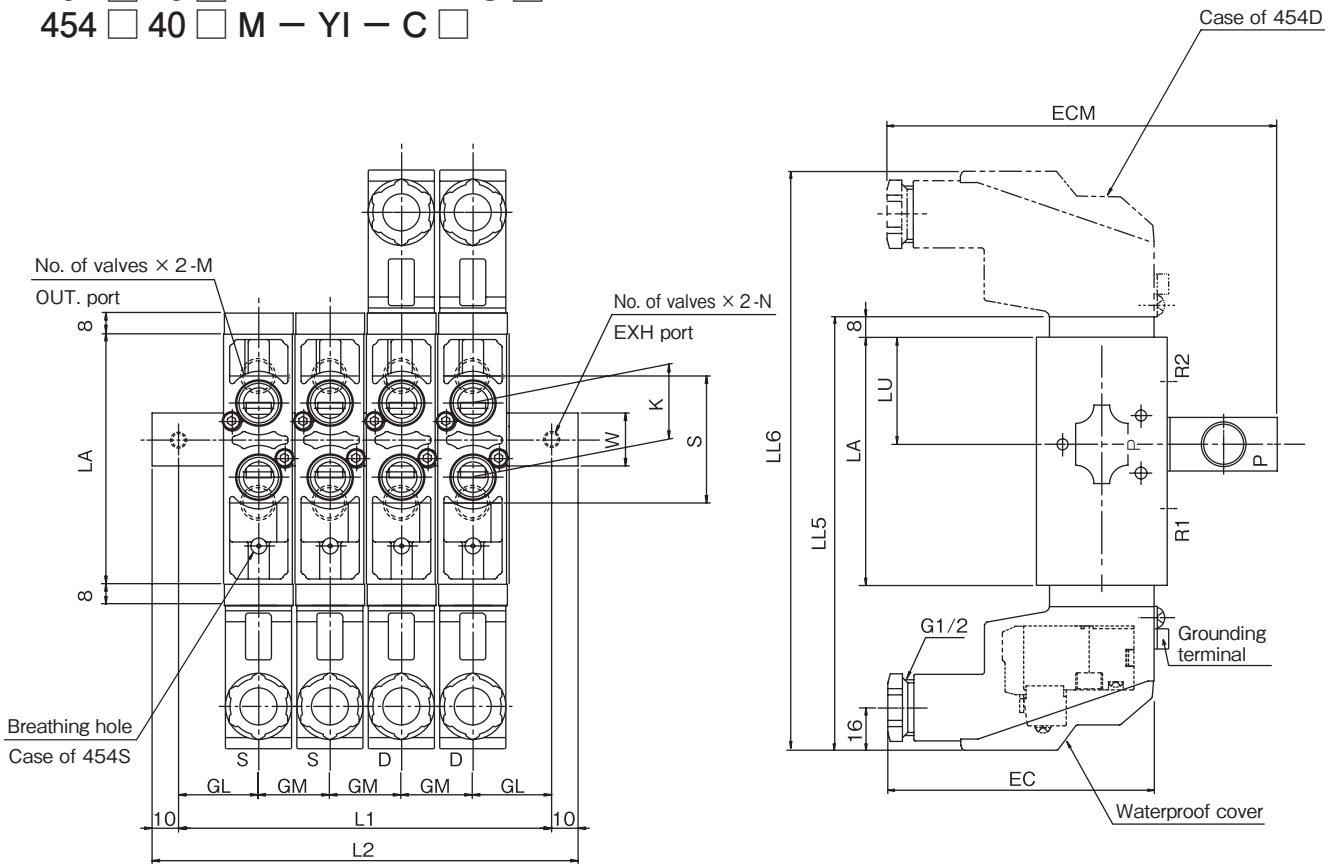
4 No. of valve	
No. of valve	Designation
2	02
3	03
⋮	⋮
19	19
20	20
※ Spare solenoid valve Specify "00" when ordering the double acting solenoid valve main body <without coupling base> of spare parts or the like.	00

Explosion-proof verification approval No.	When combined with explosion-proof barriers satisfying the conditions mentioned in page D-6, D-8: No. TC14813
Use conditions	<p>(1) Use in combination with specified safety barrier. Use the explosion-proof barrier in combination with the SAF3-5, SAF100-5 or the barrier satisfying the condition specified in page D-6, D-8 [When selecting other explosion-proof barriers].</p> <p>(2) The parts and the wiring cannot be changed.</p> <p>(3) In combination with one electromagnetic valve, use one explosion-proof barrier alone.</p>

Outside Dimensions

Individual exhausting

454 20 K - YI - M - C
 454 40 M - YI - C



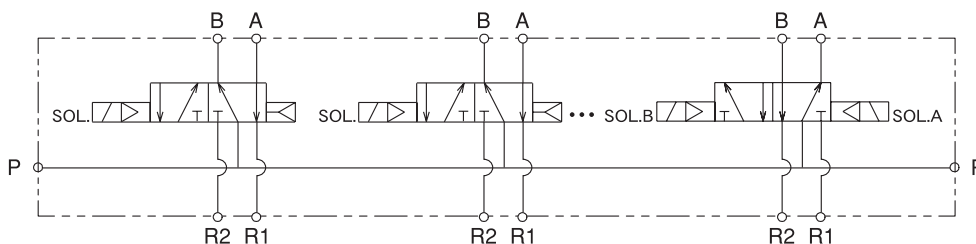
Dimension Table

Unit : mm

Type code	M	N	PM	LA	LU	ECM	EP	EW	GM	GL	JM	K	S	W
454S202K-YI-M-C <input type="checkbox"/>	Rc1/4	Rc1/4	Rc3/8	94.5	40	146	20	40	27	30	M6 Depth 8	28	48	20
454S203K-YI-M-C <input type="checkbox"/>	Rc3/8													
454D202K-YI-M-C <input type="checkbox"/>	Rc1/4													
454D203K-YI-M-C <input type="checkbox"/>	Rc3/8													
454S403M-YI-C <input type="checkbox"/>	Rc3/8	Rc3/8	Rc1/2	110	55	147	50	50	37	40	M8 Depth 11	36	68	30
454S404M-YI-C <input type="checkbox"/>	Rc1/2	Rc1/2												
454D403M-YI-C <input type="checkbox"/>	Rc3/8	Rc3/8												
454D404M-YI-C <input type="checkbox"/>	Rc1/2	Rc1/2												

Type code	No. of valve	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		454 <input type="checkbox"/> 202K/203K-YI-M-C <input type="checkbox"/>	L1	87	114	141	168	195	222	249	276	303	330	357	384	411	438	465	492	519
L2	107		134	161	188	215	242	269	296	323	350	377	404	431	458	485	512	539	566	593
454 <input type="checkbox"/> 403M/404M-YI-C <input type="checkbox"/>	L1	117	154	191	228	265	302	339	376	413	450	487	524	561	598	635	672	709	746	783
	L2	137	174	201	248	285	322	359	396	433	470	507	544	581	618	655	692	729	766	803

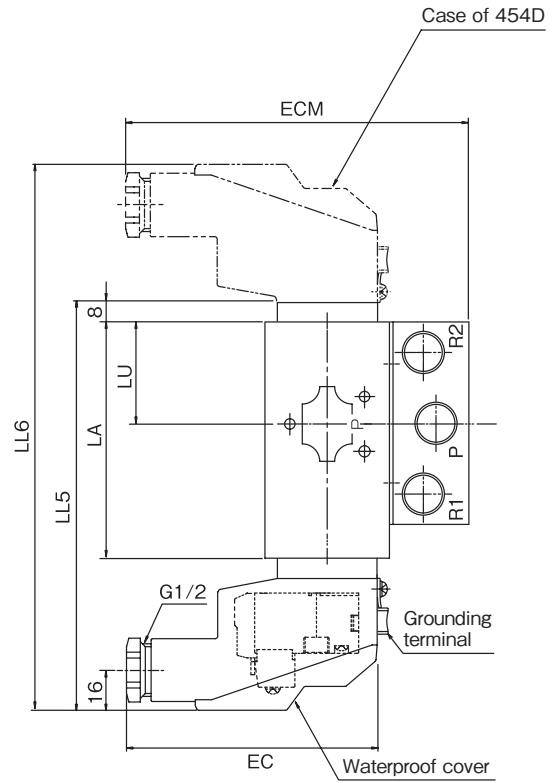
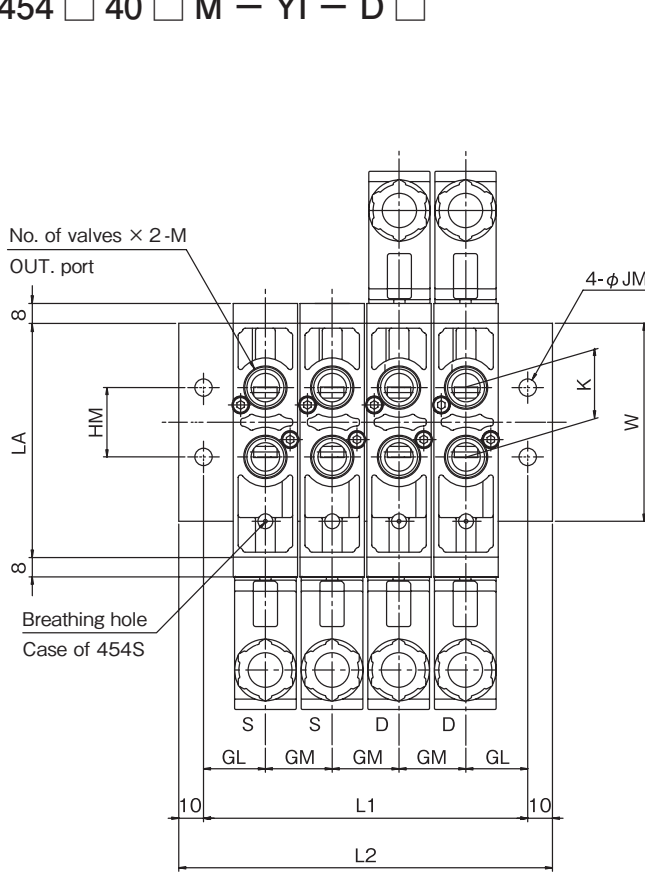
JIS symbol



Outside Dimensions

Concentrated exhaust

454 □ 20 □ K - YI - M - D □
 454 □ 40 □ M - YI - D □



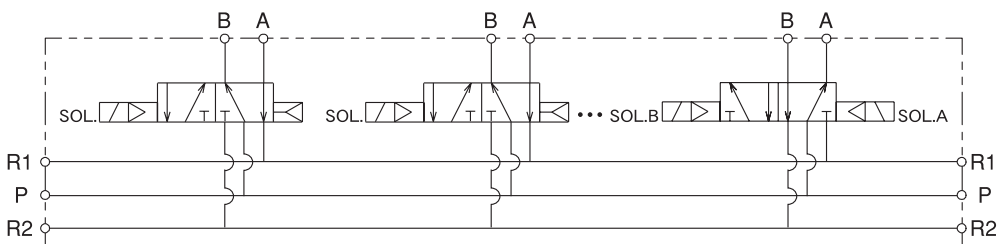
Dimension Table

Unit : mm

Type code	M	NM	PM	LA	LU	ECM	EM	EP	EW	GM	GL	JM	K	LL2	SN	W
454S202K-YI-M-D □	Rc1/4	Rc1/4	Rc3/8	94.5	40	136	18	13	31	27	25	7	28	219	28	80
454S203K-YI-M-D □	Rc3/8															
454D202K-YI-M-D □	Rc1/4															
454D203K-YI-M-D □	Rc3/8															
454S403M-YI-D □	Rc3/8	Rc1/2	Rc1/2	110	55	137	23	18	40	37	30	9	36	234	38	110
454S404M-YI-D □	Rc1/2															
454D403M-YI-D □	Rc3/8															
454D404M-YI-D □	Rc1/2															

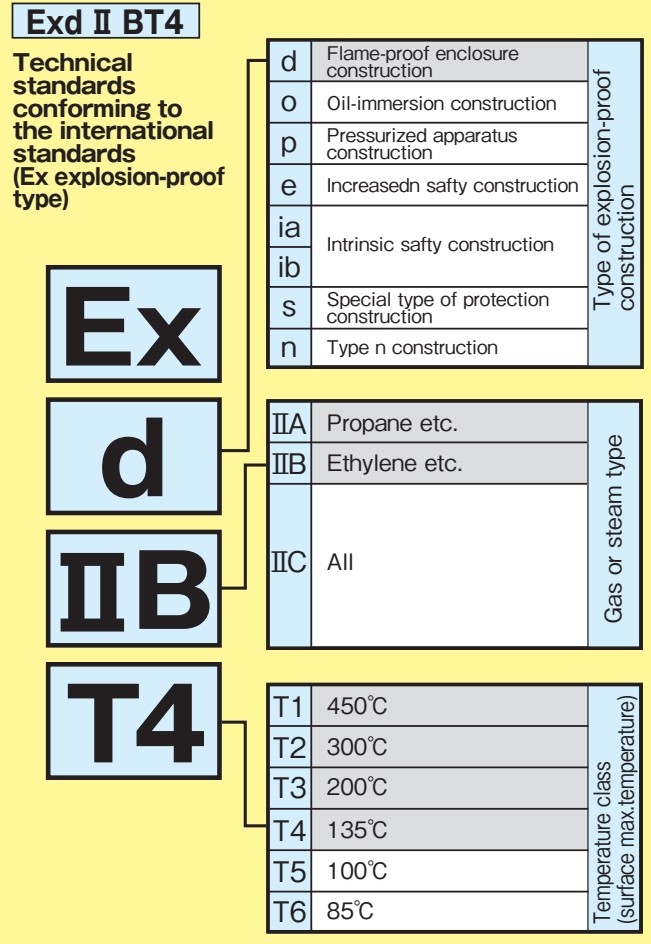
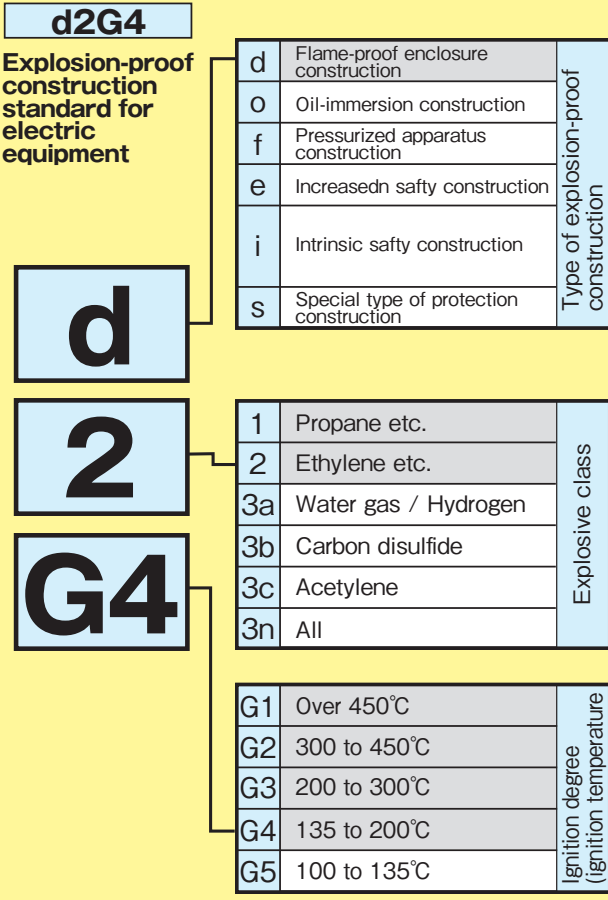
Type code	No. of valve																			
	L1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
454 □ 202K/203K-YI-M-D □	L1	77	104	131	158	185	212	239	266	293	320	347	374	401	428	455	482	509	536	563
	L2	97	124	151	178	205	232	259	286	313	340	367	394	421	448	475	502	529	556	583
454 □ 403M/404M-YI-D □	L1	97	134	171	208	245	282	319	356	393	430	467	504	541	578	615	652	689	726	763
	L2	117	154	191	228	265	302	339	376	413	450	487	524	561	598	635	672	709	746	783

JIS symbol



What's d2G4 / Exd II BT4?

For explosion-proof construction of electric equipment, the construction standards and technical standards, specifying 6 explosion-proof constructions each, are established according to the application, type of explosive gas used, or location of the equipment. Such specifications are expressed in codes such as "d2G4" and "Exd II BT4." Each of the codes has the following meanings.



Explosive gas classification according to explosive class and ignition degree (construction standard)

Ignition degree	G1	G2	G3	G4	G5
1	Acrylonitrile Acetone Ammonia Carbon monoxide Ethane Acetic acid	Ethyl acetate Toluene Propane Benzene Methanol Methane	Ethanol Isopentyl acetate 1-Butanol Butane	Gasoline Dimethyl ether Hexane	Acetaldehyde Diethyl ether
2		Ethylene Ethylene oxide			
3	a	Water gas Hydrogen			
	b				Carbon disulfide
	c		Acetylene		
	n	Water gas / Hydrogen / Acetylene / Carbon disulfide			

Note) gray marked are applicable range of d2G4.

Explosive gas classification according to gas or steam type and temperature class (Ex explosion-proof type)

Temperature class	T1	T2	T3	T4	T5	T6
II A	Acetone Ammonia Ethane Acetic acid Ethyl acetate Toluene	Benzene Methane	1-Butanol Butane Propane Methanol	Hexane	Acetaldehyde Trimethylamine	
II B	Acrylonitrile Carbon monoxide	Ethanol Ethylene Ethylene oxide	Dimethyl ether	Diethyl ether		
II C	Water gas Hydrogen	Acetylene				Carbon disulfide

Note) gray marked are applicable range of Exd II BT4.



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Please note that this catalog is subject to revision without notice.

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