PILOT OPERATED SOLENOID VALVES PC/RC2,5,13 Series Rubber Seal, Sub-base/In-line Mounting



Notice :

PC/RC5, 13 series

- We will stop supplying the wiring type "L" (Lead Wire Type) as order basis on June 30th, 2010. As replacement, please use the wiring type "SP" or "UP" (Connector with Lead Wire Type).
- We will stop supplying the latching type as order basis on September 30th, 2011 or parts stock consumption period. As replacement, please use the double solenoid type.



ENGINEERING YOUR SUCCESS.

www.comoso.com

PC series/Rubber seal, Sub-base mounting type RC series/Rubber seal, In-line mounting type

Standardized series featuring low power consumption 0.5W Minimized heat generation of solenoid valve and saving energy.

Electrical connection

Plug-in & lead wire as standard plug-in with cabtyre cable option.

Vacuum and Dual supply available

External pilot valve type.

Captured pilot exhaust as standard

Manual override standard

Non-lock type (Standard), Lock type (Option)

Effective area : 2mm², 4mm² and 12mm²

Latch type solenoid version

Serves as double solenoid valve with single solenoid dimensions.

PC • RC2 series Width : 10mm, Effective area : 2mm²

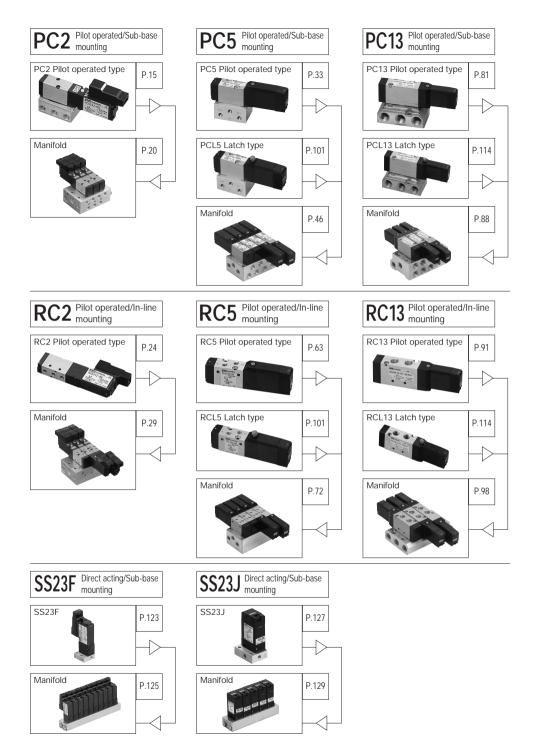


PC • RC5 series Width : 15mm, Effective area : 4mm²









Latch Type Solenoid Valve PCL5, 13 series/Rubber seal, Sub-base mounting type RCL5, 13 series/Rubber seal, In-line mounting type

Space-saving Functions of double solenoid are available on oneend solenoid. Compact design equal to single solenoid.

(PCL5 and 13 series are of the same configuration.)

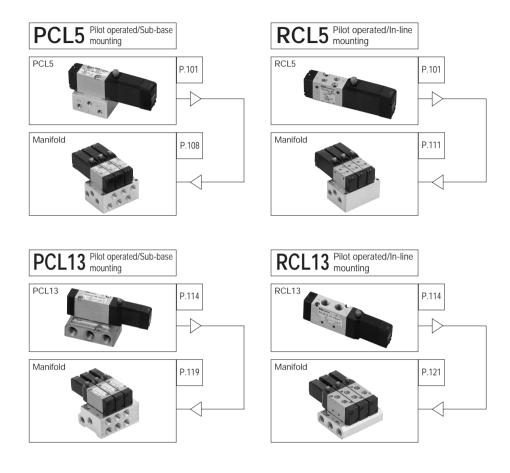
Wire-saving

All the wires are one-side. 3-wire specifications of "+", "-" and "Common". Lead wire and plug-in connector with lead wire.





Latch Type Solenoid Valve





FOR SAFETY USE

Be sure to read the following instructions before use.

For common and individual instructions, refer to the text of this catalog.

The following safety precautions are provided to prevent damage and danger to personnel and to provide instructions on the correct usage of this product. These precautions are classified into 3 categories "CAUTION", "WARNING" and "DANGER" according to the degree of possible injury or damage and the degree of impendence of such injury or damage.

Be sure to comply with all precautions along with JIS B8370 $^{(-1)}$ and ISO 4414 $^{(-2)}$, as they include important content regarding safety.

only accidents.

Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in personal injury or property-damageserious p

Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.

WARNING :



Indicates an impending hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.

(1) JIS B8370 : General Rules for Pneumatic Systems

(2) ISO 4414 : Pneumatic fluid power-General rules relating to systems



The applicability of pneumatic equipment to the intended system should be judged by the pneumatic system designer or the personnel who determined specifications for such system. As operating conditions for products contained in this catalog are diversified, the applicability of pneumatic equipment to the intened system should be determined by the pneumatic system designer or the personnel who determined specifications for such system after conducting an analysis or testing as necessary.

The system designer shall be responsible for assuring the intended system performance and safety.

Before making a system, the system designer should thoroughly examine all specifications for such a system and also take into consideration the possibility of any trouble with the equipment.

• The pneumatic equipment should be handled by persons who have sufficient knowledge and rich experience.

Inproper handling of compressed air will result in danger.

Assembling, operation and maintenance of machinery using pneumatic equipment should be performed by persons who have sufficient knowledge and rich experience.

• Never operate machinery nor remove the equipment until safety is assured.

- Before checking or servicing machinery and equipment, be sure to check that steps for prevention of dropping or runaway of the driven component have been completely taken.
- When removing the equipment, make sure that the above-mentioned safety measures have been done beforehand. Then turn off air supply and power to the system and purge compressed air in the system.
- When restarting machinery and equipment, check that proper prevention of malfunction has been provided for and then restart carefully.
- When using the pneuatic equipment in he following conditions or environments, take the proper safety measures and consult KURODA beforehand.
- Conditions and environments other than specified and outdoor use.
- Applications to nuclear power equipment, railroads, aircraft, vehicles, medical equipment, equipment connected with food and drink, amusement facilities and safety devices such as emergency interruption devices, clutch/brake circuits for a press and the likes.
- Applications which require extreme safety and will also greatly affect men and property.



SOLENOID VALVES/COMMON INSTRUCTIONS ①

Be sure to read them before use. Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

DESIGN

🄨 WARNING

Stopping actuator at intermediate position

When stopping the actuator at an intermediate position using a solenoid valve listed in this catalog, it is difficult to stop it accurately because of the compressibility of air, unlike a hydraulic cylinder can dose.

In addition, as the solenoid valve and air cylinder allow a certain degree of air leak, they cannot stop at the fixed position for a long period of time according to circumstances.

When it is required to stop them at the fixed position for a long period of time, contact KURODA.

• Influence of back pressure when using at manifold.

For example, when a solenoid valve of 3-position exhaust center type is used at the manifold, the back pressure comes from the exhaust side of the solenoid valve into the actuator, sometimes causing a trouble.

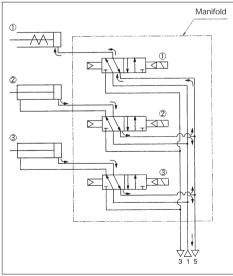
So, take proper countermeasures by using an individual exhaust type manifold etc.

[Example of phenomenon]

When solenoid valves and switch simultaneously in the following case (see Fig. below), the exhaust air of double-acting cylinders and passes through the exhaust port of the manifold, and it is applied from solenoid valve to single-acting cylinder as a back pressure.

When the exhaust flow of the double-acting cylinder is large and the exhaust capacity from the exhaust port is not sufficient, the back pressure may sometimes exceed the minimum operating pressure of single-acting cylinder , resulting in the mechanical error of the cylinder.

It can be solved by using an individual exhaust system for solenoid valve .



DESIGN

🕂 WARNING

Keeping pressure (including vacuum)

As the solenoid valve is designed to allow a certain degree of air leak, it cannot be used to keep pressure (including vacuum) in a pressure vessel etc.

•Do not use for emergency shutoff valves.

Solenoid valves listed in this catalog are not designed for use in emergency shutoff valves and other safety applications. When using the solenoid valve for such applications, provide an independent means to assure safety.

Exhausting residual air

Provide a residual air exhausting function in due consideration of maintenance and inspection. Doing maintenance and inspection without exhausting residual air may sometimes malfunction the actuator.

When using a 3-position closed center type solenoid valve, compressed air is shut in between solenoid valve and actuator even if residual air from the air supply side to the solenoid valve is exhausted.

Therefore, provide a means to exhaust the residual air pressure separately.

Use in vacuum

When using a solenoid valve for diverting vacuum and other applications, check specifications for the valve and select a proper one that can be used in vacuum.

In order to prevent sucking foreign matters from the suction pad and exhaust port, provide an inline filter between the suction pad and solenoid valve and at the exhaust port.

Applying current continuously for long time

When using a solenoid valve while applying current to it continuously for a long period of time, contact KURODA beforehand.

Avoid applying current simultaneously.

When using a double-solenoid valve while applying current to it continuously for a long period of time, do not apply current to both solenoids simultaneously; otherwise the coil may be burnt out or the main valve may malfunction.

•Remodeling the solenoid valve

Do not remodel the solenoid valve.



SOLENOID VALVES/COMMON INSTRUCTIONS ③

Be sure to read them before use. Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

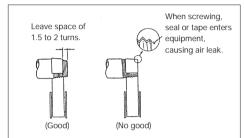
PIPING

Before piping

Thoroughly flush the inside of each pipe to remove chips, coolant, dust, etc. before piping.

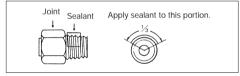
· How to wind a seal tape

When winding a seal tape around the threaded portion, leave space of 1.5 to 2 thread turns.



· How to apply liquid sealant

When applying liquid sealant to the threaded portion, apply a proper amount to about 1/3 of the periphery of the threaded portion and then screw it.



Screw of pipe and joint

When screwing the pipe and joint, use care to prevent chips and sealant from entering the pipe and joint.

Tighten them within a proper range of tightening torque.

Port size	Tightening torque (N+m)
M3	0.3~ 0.5
M5	1.5~ 2.0
R , Rc 1/8	7.0~ 9.0
R , Rc 1/4	12 ~14
R , Rc 3/8	22 ~24
R , Rc 1/2	28 ~30
R , Rc 3/4	28 ~30
R , Rc1	36 ~38
R , Rc1 1/4	40 ~42
R , Rc1 1/2	48 ~50

PIPING

• Avoid wrong piping.

When connecting a pipe to a solenoid valve, be careful not to mistake the supply port by referring to the nameplate affixed to the product or the product catalog.

When using a 3-position closed center type solenoid valve :

Thoroughly check the piping between solenoid valve and actuator for air leak.

USABLE TUBE

• Use KURODA nylon tubes and polyurethane tubes for instant fittings.

When using tubes made by other company, be careful of diametral accuracy.

There are some commercially available tubes which do not satisfy the diametral accuracy.

• When using a tube, do not bend it extremely near the fitting.

There is a possibility of breaking the tube (buckling).

When using a tube by bending, use it at the minimum bending radius or more.

• When using with any other fluid than air, consult KURODA.

FITTING AND DETACHING A TUBE

Fitting a tube

- When using a tube, cut it at right angles axially by using the special tool (tube cutter/TC-16). If the tube is deformed by cutting with scissors, nipper, etc., it will become the cause of air leak or deflation.
- Fully insert the tube up to the tube end.
- Pull the tube lightly to check that it does not come off from the fitting.

Detaching the tube

- Draw out the tube, while pushing in the release ring in parallel. Be sure to remove the residual pressure before drawing out the tube.
- When reusing the detached tube, cut off the bitten portion.



SOLENOID VALVES/COMMON INSTRUCTIONS (2)

Be sure to read them before use. Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

DESIGN

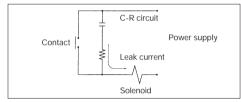
Applying current momentarily

When using a double-solenoid type valve, apply current for the prescribed period of time (0.1 sec.). If current is not applied for the prescribed period of time, the solenoid valve may not perform the diverting action acording to circumstances.

Leak current

When a C-R element is used in the contact protective circuit (surge voltage protection), leak current will flow through the C-R element.

If thid leak current becomes large, a malfunction will occur. Therefore, reduce leak current to less than 1 mA.



• Use at low temperature

When using a solenoid valve at 5 or below, provide an air dryer or other proper means to prevent moisture from solidifying or freezing.

• Use with air blow

When using a solenoid valve with air blow, select a directoperated type or external pilot type solenoid valve.

When an internal pilot type solenoid valve is used, it may not perform the diverting action due to a pressure drop at the time of air blow.

When an external pilot type solenoid valve is used, supply compressed air within the specified pressure range to the pilot port.

Mounting position and direction

A solenoid valve can be mounted in any position and direction as a general.

However, a metal seal type double-solenoid valve and a 3position solenoid valve should be mounted so that the spool may be horizontal.

Shock and vibration

Reduce shocks and vibrations applied to the solenoid valve to less than the prescribed value. (refer to specifications.)

Applying shocks and vibrations exceeding the prescribed value may rsult in a malfunction of the solenoid valve.

SELECTION

🕂 WARNING

• Refer to specifications.

Solenoid valves listed in this catalog are designed for compressed air.

When using other fluid than compressed air, contact KURODA beforehand.

Do not use a solenoid valve at pressure and temperature outside the range of specifications, otherwise resulting in a breakdown or malfunction.

MOUNTING

🕂 WARNING

• When mounting the solenoid valve, firmly fix it while using care to prevent the stationary part and joint from loosening.

If the solenoid valve is mounted with insufficient strength, it may sometimes come off.

 Do not start the system until it is ensured that equipment works properly.

After mounting the solenoid valve, connect power supply and then perform a functional test and a leak test. Check that it has been correctly mounted and works properly, before starting the system.

· Coating with paint

When coating the resin portion with paint, it may be adversely affected by paint and solvent. For the propriety of painting, contact KURODA beforehand.

Do not peel off the nameplate affixed on the solenoid valve and do not erase or smear out the letter on it.

• Provide space for maintenance and inspection.

• Fit an air muffler to the exhaust port of the solenoid valve.

Dust or foreign matter that enters it may cause a malfunction of the solenoid valve.

• Do not wipe off the model name inscribed on a nameplate etc. with organic solvent. The inscribed indication may be erased.



SOLENOID VALVES/COMMON INSTRUCTIONS ④

Be sure to read them before use. Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

WIRING

 When doing wiring work, be sure to turn off compressed air and power supplies beforehand.

Wiring work without turning off air and power supplies may cause an electric shock or malfunction; this sometimes results in an injury to the human body or a damage to property.

· Avoid mis-wiring.

Some solenoid valves have polarity : Those operating on DC with built-in indicator light and those equipped with surge protective circuit.

When wiring to a solenoid valve, check whether or not it has polarity.

For a solenoid valve having polarity, check the lead wire color and symbol of the polarity by the catalog or actual article beforehand and then make correct wiring.

Mis-wiring will result in the following problems :

<Where no polarity protective diode is incorporated :>

Wiring to the wrong polarity will burn out the diode in the solenoid valve, the switching element on the control unit side or the power supply unit.

<Where a polarity protective diode is provided :>

Wiring to the wrong polarity will not cause the solenoid valve to perform a diverting action.

Avoid applying stress and tensile force to lead wire repeatedly.

Wiring made in such a manner that stress and tensile force are repeatedly applied to the lead wire will result in the breaking of wire. Provide some degree of margin for wiring.

• Check that there is no insulation failure.

If an insulation failure occurs in the lead wire connection, extension cable and terminal base, an excess flows to the switching element of the solenoid valve or control unit, sometimes resulting in a damage.

• Do not mistake applied voltage.

Mistake in applied voltage in case of wiring to a solenoid valve will cause an operation failure or burn out the coil.

• After completion of wiring, check for wrong connection before turning on power.

OPERATING ENVIRONMENTS

🕂 DANGER

• Do not use solenoid valve in a explosive environment.

🕂 WARNING

- Do not use a solenoid valve in atmospheres containing corrosive gases, chemicals, seawater, water and vapor and in places where a solenoid valve contacts these matters.
- Do not use a solenoid valve in a place where vibrations or shocks are directly applied to it.
- When a solenoid valve is exposed to the direct sunlight, fit a protective cover to the solenoid valve.
- When a solenoid valve is located around a heat source, shut off the radiant heat.
- When installing a solenoid valve in the control panel, take proper heat-radiating measures so that the inside temperature may be kept within the specified temperature range.
- When using a solenoid valve in a place where it is exposed to welding spatters, provide a protective cover or other proper prevention.

Welding spaters may burn out the plastic parts of the solenoid valve, sometimes resulting in a fire.



SOLENOID VALVES/COMMON INSTRUCTIONS (5)

Be sure to read them before use. Also refer to Par. "For Safety Use" and instructions mentioned for each series of solenoid valves.

QUALITY OF AIR

WARNING

• Use pure air.

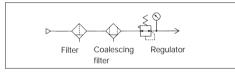
Compressed air containing corrosive gases, chemicals, salt, etc. causes a breakdown or operation failure. So do not use such air.

- Fit an air filter with filtration of 5 μ m or fine.
- Install an air dryer.

Compressed air containing much drainage causes the operation failure of pneumatic equipment. Install an air dryer, lower the temperature and reduce drainage.

• Take proper countermeasures against sludge.

If sludge produced in compressor oil enters pneumatic equipment, it will cause the operation failure of pneumatic equipment. It is recommendable to use compressor oil (NISSEKI FAIR-CALL A28, IDEMITSU DAPHUNY SUPER CS68) featuring minimized sludge production or use a coalescing filter to prevent sludge from entering the pneumatic equipment.



LUBRICATION

 Solenoid valves listed in this catalog are non-lubrication.

The non-lubricated solenoid valve can be used without lubrication, but can be used with lubrication.

When using it with lubrication, do not discontinue supplying oil. Otherwise, the applied lubricant may run off, sometimes resulting in an operation failure.

When using a lubricant, Class 1 turbine oil ISO VG 32 (containning additive) is recommended.

Do not use other oils (spindle oil, machine oil, etc.), otherwise causing a damage to the sealed part.

MAINTENANCE AND INSPECTION

🕂 WARNING

Inspection before maintenance

First check that load drop prevention has been provided. Then shut off air and power supplies to the system and exhaust residual air in the system beforehand.

For a 3-position closed center type solenoid valve, compressed air is sealed between solenoid valve and cylinder. Exhaust this residual compressed air.

Inspection after maintenance

When restarting the system, check that preventive measures against flying-out of the actuator have been taken. Then connect compressed air supply to the pneumatic system, and perform a proper functional test and a leak test to check that it works safely without fail, before starting the system.

Operation at low frequency

To prevent an operation failure, perform the switching action of the solenoid valve once per 30 days. (Be careful of air supply.)

Manual operation

When the solenoid valve is manually operated, the system connected to it is also operated. Make sure safety before operation. When the solenoid valve is operated by means of the locking button, be sure to release the button.

If the solenoid valve is operated without releasing the locking button, the solenoid valve is held to ON status. As a result, the system dose not normally operate, sometimes causing a danger.

Disassembly of solenoid valve

When disassembling the solenoid valve, contact KURODA beforehand.

Draining

To keep the quality of air to a certain level, drain the air filter at periodical intervals.



PC·RC2, 5, 13 SERIES/INDIVIDUAL INSTRUCTIONS (1)

Be sure to read them before use. Also refer to Par. "For Safety Use" and common instructions.

WIRING SPECIFICATIONS

L type

Lead wire

AWG26 length 300 mm : PC · RC2

AWG22 length 300 mm : PC • RC5 , PC • RC13 , PCL • RCL5 , PCL • RCL13 ,



SP type

Connector with lead wire (with indicator light & surge suppressor) AWG26 length 500 mm : PC • RC2

AWG22 length 500 mm : PC • RC5 , PC • RC13 , PCL • RCL5 , PCL • RCL13



UP type

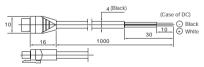
Connector with lead wire (with indicator light & surge suppressor) (AWG26 length 500 mm : PC • RC2 (AWG22 length 500 mm : PC • RC5 , PC • RC13 , PCL • RCL5 , PCL • RCL3)



Connector with cabtyre cable (Option)

Available only for SP type and UP type valves. This connector is used in common with the PC·RC2, 5 and 13. Length : 1000 mm

Model No. PC5-CB10



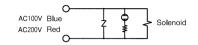
Lead wire color

Wiring type	AC100/110V	AC200/220V	DC
L	Blue	Red	Black
SP, UP	Blue	Red	+ : Red, - : Black
SP, UP (For PCL & RCL)	—	-	-a : Yellow, +COM : Red, -b : Black
SP, UP (With cabtyre cable)	White, Black	White, Black	+ : White, - : Black
LK	-	-	+ : Red, - : Black

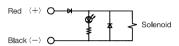
INTERNAL CIRCUIT OF SP & UP TYPE



PC·RC2, 5, 13
 Case of AC



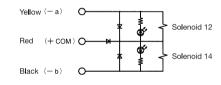
Case of DC



For DC power supply, make correct connection in accordance with polarity mark $\bigoplus \bigcirc$ on lamp cover.

Since the HW type valves are not provided with the diode or preventing reversed connection, do not mistake polarity $\bigoplus \bigcirc$ when marking connections.

• PCL • RCL5, 13



SPECIAL WIRING TYPE



Downward wiring type (PC • RC2)

Wiring can also be taken out from the base side. Consult KURODA.

• Wiring type on port 2 • 4 side with manifold mounted (PC • RC2, 5)

Wiring (solenoid) with manifold mounted can also be set to port 2 • 4 side. (Except MFX-PV2 and MFX-RV2) For MF-TCF, wiring can be set to the opposite side of pot 2. consult KURODA.



PC·RC2, 5, 13 SERIES/INDIVIDUAL INSTRUCTIONS ②

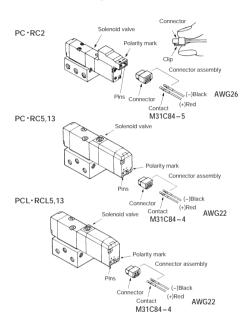
Be sure to read them before use. Also refer to Par. "For Safety Use" and common instructions.

HOW TO USE CONNECTORS

CAUTION

· How to attach and detach a connector

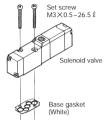
When attaching a connector, pinch the clip with your finger and insert the connector into the pin straight to the end. When detaching a connector, pinch the clip with your finger and pull out the connector straight.



COMBINATION OF SOLENOID VALVE AND BASE GASKET



Individual pilot air exhaust (Standard)



• PCL • RCL 5

(Standard)

Individual pilot air exhaust

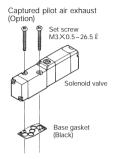
Set screw

M3×0.5-26.5ℓ

Base gasket

(White)

Solenoid valve



Captured pilot air exhaust (Option) Set screw M3X0.5-26.5 l Solenoid valve Base gasket (Black)

ASSEMBLY OF VALVES TO SUB-BASE OR MANIFOLD

When assemble valves to the sub-base or manifold, do so with appropriate tightening torque is shown below.

Valve	Screw size	Bit No.	Tightening torque (N+m)
PC2 RC2 series	Cross-recessed head machine screw M1.7×17ℓ	# O	0.1 ~ 0.12
PC5 series RC5	Cross-recessed head machine screw M3X22 l	# 2	0.6 ~ 0.7
PC13 series RC13	Cross-recessed head machine screw M3×30ℓ	# 2	0.6 ~ 0.7
SS23F	Cross-recessed head machine screw M2×38ℓ×3s	# 0	0.08 ~ 0.1
SS23J	Cross-recessed head machine screw M2.6×37 ℓ×5s	# 1	0.25 ~ 0.3

Draining

To keep the quality of air to a certain level, drain the air filter at periodical intervals.



PC·RC2, 5, 13 SERIES/INDIVIDUAL INSTRUCTIONS ③

Be sure to read them before use. Also refer to Par. "For Safety Use" and common instructions.

MANUAL OVERRIDE

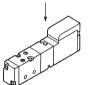
•PC·RC2, 5, 13

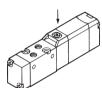
Non-lock type

Push the manual override with a sharp-pointed tool and the valve will shift to energized position.

PC·RC2



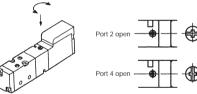




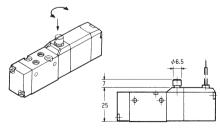
Lock type

Push the manual override with a slotted screwdriver, and the valve will shift to energized position. Rotating the manual override keeping push by 90 degree clockwise will lock the valve, at energized position.





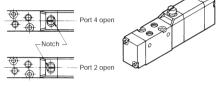




MANUAL OVERRIDE

PCL·RCL5,13
 PCL·RCL5,13

Rotate the manual override by 180 degree with your finger tip or a slotted screwdriver and then push it, and the following state will be obtained according to the position of the notch on the manual override.





PC·RC2, 5, 13 SERIES/INDIVIDUAL INSTRUCTIONS ④

Be sure to read them before use. Also refer to Par. "For Safety Use" and common instructions.

CAPTURED PILOT AIR EXHAUST THROUGH MANIFOLD

• Connect the manifold so that pilot air exhaust port (port Y) pressure may be lower than permissible back pressure.

Supply pressure (Port 1)	Permissible back pressure (port Y)
0.2MPa	0.04MPa
0.3	0.07
0.4	0.1
0.5	0.13
0.6	0.16
0.7	0.19
0.8	0.22

 When operating five or more solenoid valves simultaneously on a manifold of 10 or more stations, pipe them in such a manner that air is suplied from ports 1 and 3/5 on both sides of the manifold.

EXTERNAL PILOT PRESSURE

 When using with an external pilot, be sure to supply the external pilot pressure at the same pressure or more as the main valve pressure.

Using at lower pressure than the main valve pressure causes an operation failure.

• When supplying pressure, first supply to the external pilot pressure and then to the main valve pressure.

When shutting off pressure and exhaust air, first shut off the main valve pressure and then the external pilot pressure to exhaust air.

Reversing this order results in a mechanical error.

FLOW RATE

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Flow rate can be calculated from the following formula ; For values in the sonic velocity zone, find out from the attached table.

 $P_{H} \leq 2P_{L}$ (Subsonic velocity zone)

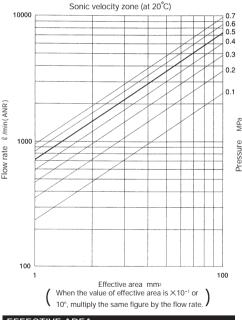
= 240 × S × √	P⊾×(P _H -P _L)× \	<u>293</u> Тн
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- $P_{H} \ge 2P_{L}$ (Sonic velocity zone)
- $Q = 120 \times S \times P_H \times \sqrt{\frac{273}{T_H}}$

Q	:	Flow rate	ℓ /min (ANR)

- S : Effective area of orifice mm^2 P_H : Pressure on upper stream MPa abs
- P₁ : Pressure on down stream MPa abs
- T_H : Absolute temperature on upper stream K

(Note) Absolute pressure (MPa) = Supply pressure + 0.100 (MPa)



EFFECTIVE AREA

Effective areas mentioned in this catalog are measured between ports $1 \rightarrow 2$ or 4 in accordance with JIS (JAPANESE INDUSTRIAL STANDARD) B8374/8375.

PILOT OPERATED SOLENOID VALVE **PC2 Series** Rubber Seal/Sub-base Mounting type

2-position Single solenoid Normal close
2-position Single solenoid Normal open
2-position Single solenoid
2-position Double solenoid
3-position Closed center
3-position Exhaust center
3-position Pressure center



SPECIFICATIONS

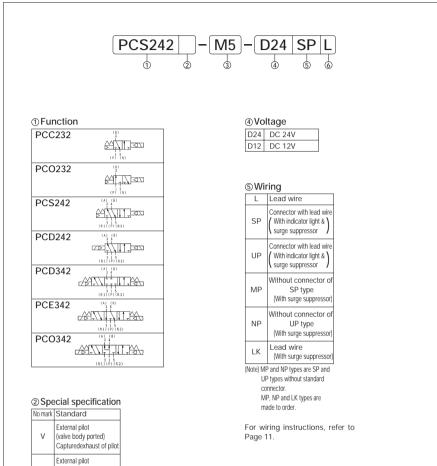
Model No.	Unit	PCC232 PCO232	PCS242	PCE	0242	PCD342 PCE342	PCO342
Fluid		Non-lubricated/ lubricated air					
Port size				N	15		
Effective area (Cv)	mm ²		1.8 (0.1)			0.8 (0.044)	0.4 (0.022)
Ambient temperature	°C			- 5	~ 50		
Operating pressure range	MPa	0.2 ~ 0.7 (- 0.1 ~ 0.7)					
Maximum frequency	Cycle/min	600 300					
Response time		ON	0.010	ON	0.008	ON	0.008
at 0.5MPa	S	OFF	0.018	UN	0.006	OFF	0.028
Rated voltage	V		DC24,12				
Permissible voltage fluctuation	%		+10, -15				
Grade of insulation		JIS grade B					
Power consumption	W	L type : 0.5 SP,UP type : 0.55					
Wiring		Lead wire (L), Connector with lead wire (SP, UP)					
Mass	g	50 46 66 68			8		

(Note) • () shows the pressure range of main spool with external pilot range 0.2 to 0.7 MPa. External pilot pressure should be higher than main supply. • Add 0.02 second to OFF time when using SP or UP, LK type.

Response time data obtained and presented in accordance with JIS B8375.

• When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

ORDERING INSTRUCTIONS



⑥Manual override

No mark	Standard (Non-lock)		
L	With locking button		
(Note) L : Made to order			

③Port	size

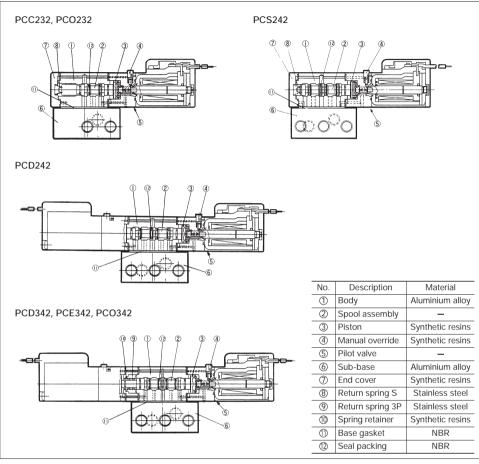
7

~	
M5	M5×0.8
NB	Without sub-base

(sub-base ported)

Capturedexhaust of pilot (Note) Z : PCC232 and PCO232 only

CONSTRUCTIONS AND MAIN COMPONENTS



OPTIONAL PARTS AND SPARE PARTS

Connector with lead wire

PC2-D24-CL5 1 2 1 Voltage D24 : DC24V,12V

②Lead wire length CL5 : 500mm (Standard) CL10 : 1000mm CL20 : 2000mm CL30 : 3000mm Sub-base

(2) Special specification
 No mark : Individual exhaust
 X : Individual exhaust, external pilot
 (For PCC232Z and PCO232Z)

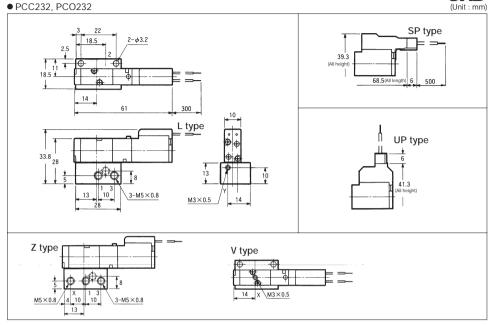
③Port size M5 : M5 × 0.8 01 : Rc 1/8

PC2 Series

 (\overline{n})

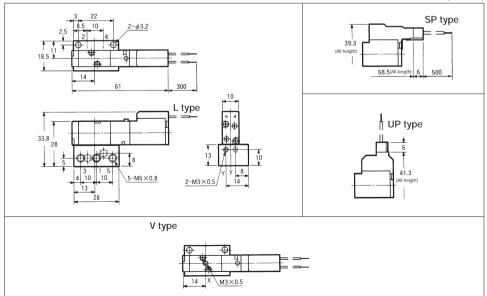
DIMENSIONS





• PCS242

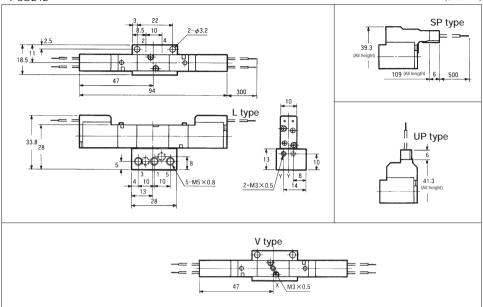




PC2 Series

DIMENSIONS

• PCD242



(Unit : mm)

(Unit : mm)

• PCD342, PCE342, PCO342

SP type 22 10 8.5 2-\$3.2 = = \$ 2.5 11 7 39.3 Ŧ σ ¢ (All heigt 18.5 5 ę = 1 Ð = 114.5 (All length) 6 500 52.5 99.5 300 L type UP type 33.8 28 ₩₽ 13 10 8 14 14 10 5-M5×0.8 10 2-M3×0.5/ 41.3 (All height) V type Φ U O _ þ -52.5 X M3×0.5

INDIVIDUAL WIRING TYPE MANIFOLD MF - PV2 Bar type

MFSD-PV2	
MFXD-PV2	

Captured exhaust of pilot Common SUP, Captured EXH Ports 1 & 3/5 on both sides Captured exhaust of pilot Common SUP, Common EXH Common external pilot Ports 1 & 3 on both sides



MANIFOLD SPECIFICATIONS

Type of manifold		MFS PV2	MFX - PV2
		Captured exhaust of pilot Common SUP, Captured EXH (Ports 1 & 3/5 on both sides)	Captured exhaust of pilot Common SUP, Common EXH Common external pilot (Ports 1 & 3 on both sides)
	Port 1	Rc ¹ ∕₀ (Both sides)	Rc ¼ (Both sides)
	Port 3/5	Rc ¼ (Both sides)	Rc ¼ (Both sides)
Port size	Port 2 & 4	M5	M5
	Port X	_	M5
	Port Y	M5	M5
Number of stations		2 ~ 20	2 ~ 20
Mountable solenoid valve		PCC232 - NB - * PC0232 - NB - * PCS242 * - NB - * PCD242 * - NB - * PCD342 * - NB - * PCC342 * - NB - * PCC342 * - NB - *	PCC232Z-NB- * PCO232Z-NB- *
Blank plate			– BP

PIPING

- Connect the exhaust so that pilot air exhaust port (Port Y) pressure may be lower than permissible back pressure.
- When operating five or more solenoid valves simultaneously on a manifold of 10 or more stations, pipe them in such a manner that air is supplied from port 1 on both sides of the manifold and air is drawn off from ports 3/5 and Y on both sides of the manifold.

Permissible back pressure of port Y

(Unit : MPa)

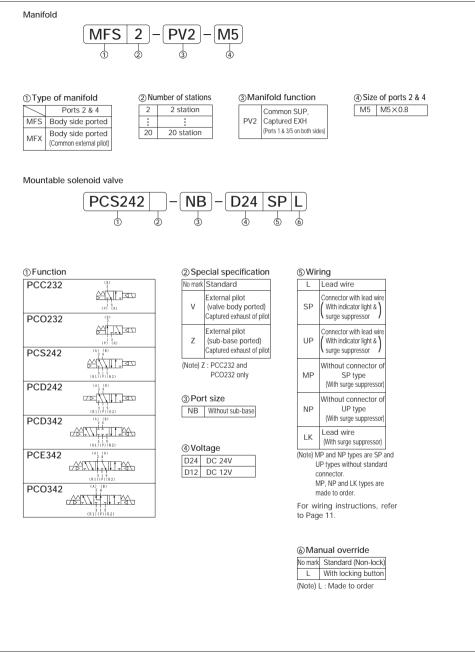
Supply pressure (port 1)	Permissible back pressure (port Y)
0.2	0.04
0.3	0.07
0.4	0.1
0.5	0.13
0.6	0.16
0.7	0.19
0.8	0.22

OPTIONAL PARTS & SPARE PARTS

Parts name	Model No.
Blank plate	PC2-BP

PC2 Series

ORDERING INSTRUCTIONS

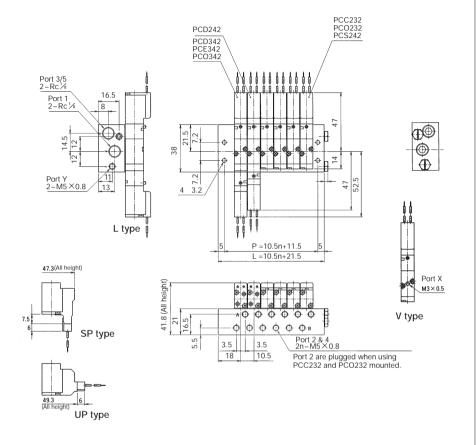


DIMENSIONS

PC2 Series



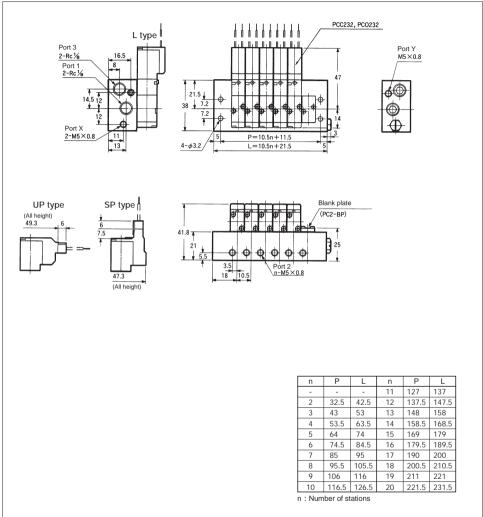
●MFS□-PV2



n	Р	L	n	Р	L
-	-	-	11	127	137
2	32.5	42.5	12	137.5	147.5
3	43	53	13	148	158
4	53.5	63.5	14	158.5	168.5
5	64	74	15	169	179
6	74.5	84.5	16	179.5	189.5
7	85	95	17	190	200
8	95.5	105.5	18	200.5	210.5
9	106	116	19	211	221
10	116.5	126.5	20	221.5	231.5
n : Number of stations					

• MFX -PV-2





PILOT OPERATED SOLENOID VALVE RC2 Series Rubber Seal/In-line Mounting type

RCC232	2-position Single solenoid Normal close
RCO232	2-position Single solenoid Normal open
RCS242	2-position Single solenoid
RCD242	2-position Double solenoid
RCD342	3-position Closed center
RCE342	3-position Exhaust center
RCO342	3-position Pressure center



SPECIFICATIONS

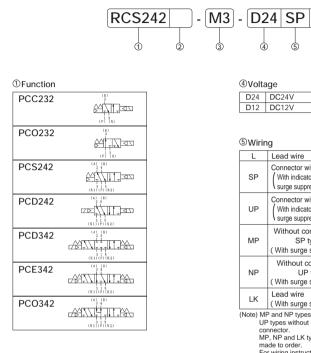
Model No.	Unit	RCC232 RCO232	RCS242	RCD242	RCD342 RCE342	RCO342
Fluid		Non-lubricated/ lubricated air				
Port size				M3		
Effective area (Cv)	mm²		2 (0.11)		0.8 (0.044)	0.4 (0.022)
Ambient temperature		- 5 ~ 50				
Operating pressure range	MPa	0.2 ~ 0.7(- 0.1 ~ 0.7)				
Maximum frequency	Cycle/min	600			300	
Response time at 0.5MPa	s	ON 0.010 OFF 0.018		ON 0.008	-	0.008 0.028
Rated voltage	V	·		DC24 , 12		
Permissible voltage fluctuation	%	+ 10 , - 15				
Grade of insulation		JIS grade B				
Power consumption	ower consumption W		L type : 0.5 SP, U		UP type : 0.55	
Wiring		Lead wire (L), Connector with lead wire (SP, UP)				
Mass	g	30 30		50	5	2

(Note) • () shows the pressure range of main spool with external pilot range 0.2 to 0.7 MPa. External pilot pressure should be higher than main supply. • Add 0.02 second to OFF time when using SP or UP, LK type.

Response time data obtained and presented in accordance with JIS B8375.

• When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

ORDERING INSTRUCTIONS



②Special specification

No mark	o mark Standard	
External pilot V (valve body ported) Captured exhaust of pilot		
(Note) Z : RCC232 and RCO232 only		

③Port size

D24	DC24V
D12	DC12V

L

6

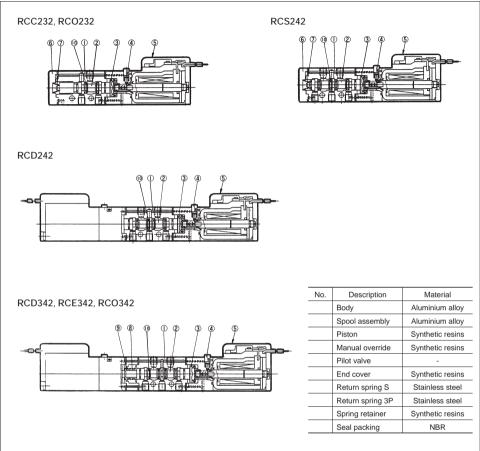
e minig			
L	Lead wire		
SP	Connector with lead wire (With indicator light & surge suppressor)		
UP	Connector with lead wire (With indicator light &) surge suppressor		
MP	Without connector of SP type (With surge suppressor)		
NP	Without connector of UP type (With surge suppressor)		
LK	Lead wire (With surge suppressor)		

(Note) MP and NP types are SP and UP types without standard MP, NP and LK types are made to order. For wing instructions, refer to Page 11.

6 Manual override

No mark	Standard (Non-lock)		
L	With locking button		
(Note) L : Made to order			

CONSTRUCTIONS AND MAIN COMPONENTS



OPTIONAL PARTS AND SPARE PARTS

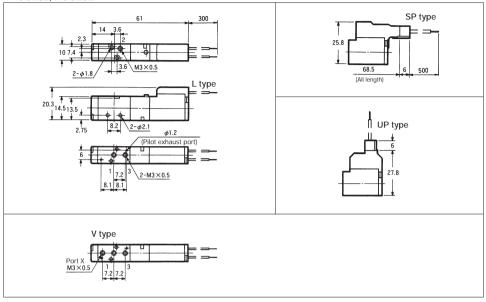
Connector with lead wire

PC2-D24)-CL5 1 2 (1) 2 (2) Voltage (2) Lead wire length D24 : DC24V, 12V CL5 : 500mm (Standard) CL10 : 1000mm CL20 : 2000mm CL30 : 3000mm

DIMENSIONS

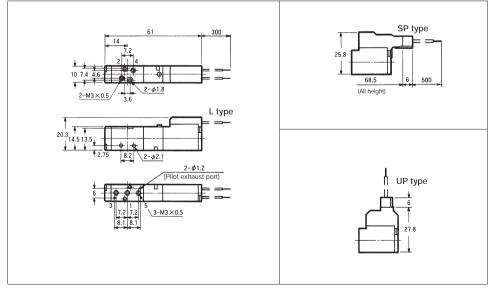


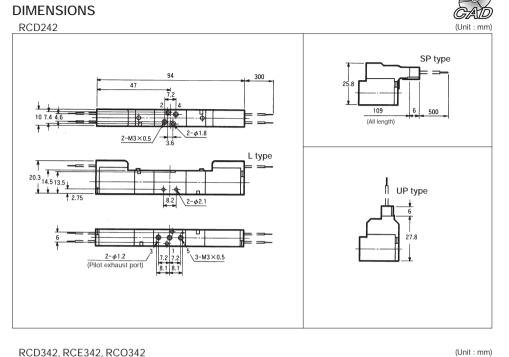
RCC232, RCO232



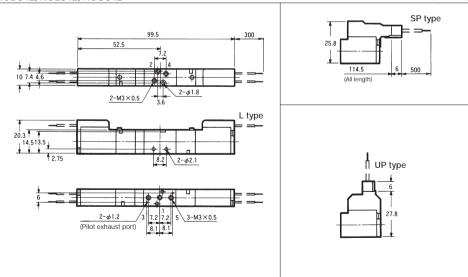
RCS242







RCD342, RCE342, RCO342



INDIVIDUAL WIRING TYPE MANIFOLD MF Bar type -RV2

MFU		Captured exhaust of pilot Common SUP, Captured EXH Ports 1 & 3/5 on both sides
MFX	-RV2 (Captured exhaust of pilot Common SUP, Common EXH Common external pilot Ports 1 & 3 on both sides	



MANIFOLD SPECIFICATIONS

		MFU -RV2	MFX -RV2		
Type of manifold		Captured exhaust of pilot	Captured exhaust of pilot		
		Common SUP, Captured EXH	Common SUP, Common EXH Common external pilot		
		(Ports 1 & 3/5 on both sides)	(Ports 1 & 3 on both sides)		
	Port 1	Rc ¹ / ₈ (Both sides)	Rc ¼ (Both sides)		
	Port 3/5	Rc 1/8 (Both sides)	Rc ¹ / ₈ (Both sides)		
Port size	Port 2 & 4	M3	M3 M5		
	Port X	-			
	Port Y	M5	M5		
Number of st	ations	2 ~ 20	2 ~ 20		
		RCC232MF	RCC232VMF		
		RCO232MF	RCO232VMF		
		RCS242MF			
Mountable solenoid valve		RCD242MF			
		RCD342MF			
		RCE342MF			
		RCO342MF			
Blank plate		PC	2-BP		

PIPING

- Connect the exhaust so that pilot air exhaust port (Port Y) pressure may be lower than permissible back pressure.
- When operating five or more solenoid valves simultaneously on a manifold of 10 or more stations, pipe them in such a manner that air is supplied from port 1 on both sides of the manifold and air is drawn off from ports 3/5 and Y on both sides of the manifold.

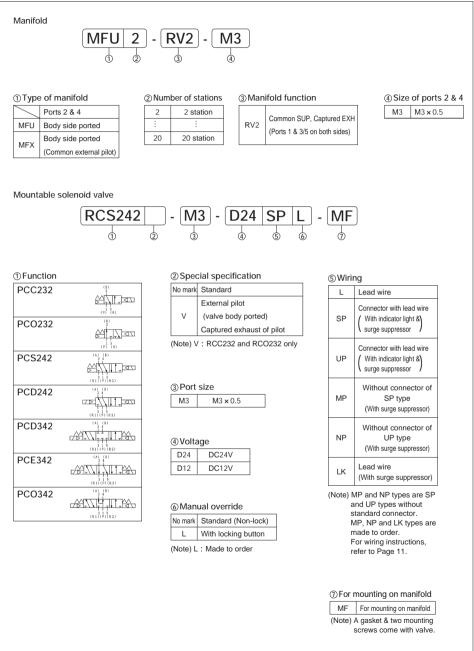
Permissible back	ck pressure of port Y
	(Unit : MPa)

Supply pressure (port 1)	Permissible back pressure (port Y)
0.2	0.04
0.3	0.07
0.4	0.1
0.5	0.13
0.6	0.16
0.7	0.19
0.8	0.22

OPTIONAL PARTS & SPARE PARTS

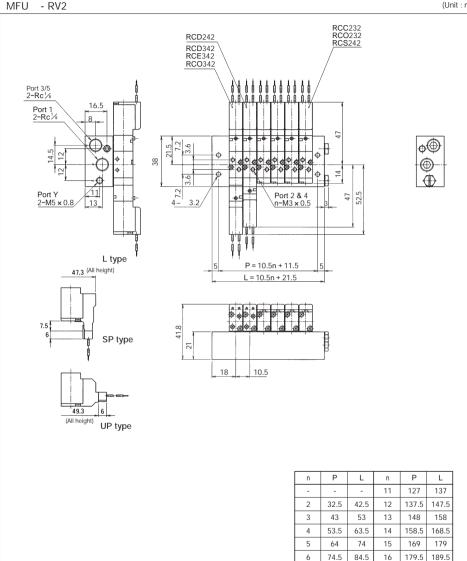
Parts name	Model No.
Blank plate	PC2-BP

ORDERING INSTRUCTIONS



DIMENSIONS

(Unit : mm)



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7

8

9

10 n : Number of stations

85

95.5 105.5

106

116.5 126.5

95

116

17 190

18

19 211

20 221.5 231.5

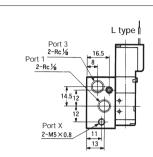
200

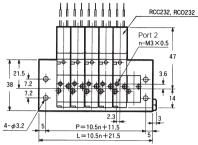
221

200.5 210.5

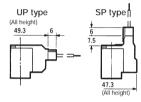
DIMENSIONS MFX - RV2

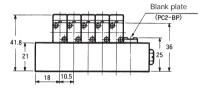












n	Р	L	n	Р	L
-	-	-	11	127	137
2	32.5	42.5	12	137.5	147.5
3	43	53	13	148	158
4	53.5	63.5	14	158.5	168.5
5	64	74	15	169	179
6	74.5	84.5	16	179.5	189.5
7	85	95	17	190	200
8	95.5	105.5	18	200.5	210.5
9	106	116	19	211	221
10	116.5	126.5	20	221.5	231.5

n : Number of stations

PILOT OPERATED SOLENOID VALVE **PC5 Series** Rubber Seal/Sub-base Mounting type

PCC235	2-position Single solenoid Normal close
PCO235	2-position Single solenoid Normal open
PCS245	2-position Single solenoid
PCD245	2-position Double solenoid
PCD345	3-position Closed center
PCE345	3-position Exhaust center
PCO345	3-position Pressure center
Latch type	
PCL245	2-position Latching solenoid



For latch type see Page 101.

SPECIFICATIONS 0.5W type

	51									
Model No	D.		Unit	PCC235	PCO235	PCS245	PCD245	PCD345	PCE345	PCO345
Fluid				Non-lubricated/ lubricated air						
Port size							M5, Rc 1/8			
Effective	area (Cv)		mm ²		3.7 (0.2) : M5	4 (0.22) : Rc	1/8	2.2 (0.12	2) : M5 2.5 (0	.14) : Rc1⁄8
Ambient	temperatu	re					- 5 ~ 50			
Minimum	operating pi	essure	MPa		0.15		0.1		0.15	
Operating	g pressure	range	MPa				0.2 ~ 0.7			
Maximun	n frequenc	y	Cycle/min			900 (L typ	e)720(SP8	& UP type)		
Response time	Ltune	ON		0.	02	0.02	0.015		0.02	
	L type	OFF	s	0.	025	0.025	-	0.03		
	SP & UP	ON		0.	02	0.02	0.015	0.02		
	type	OFF		0.	04	0.04	-	0.045		
Rated vo	Itage		V	DC24						
Permissible	e voltage fluo	ctuation	%	+ 10, - 15						
Power co	onsumptior	n	W	0.5						
Grade of	insulation			JIS grade B						
Wiring				Lead wire (L), Connector with lead wire (SP, UP)						
		NB		(62	62	94		103	
	L type	M5		1(06	106	138		147	
Mass		Rc⅓	2	1	18	118	150		159	
		NB	g	(62	62	94		103	
	SP & UP type	M5		10	06	106	138		147	
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rc⅓		1	18	118	150		159	

(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

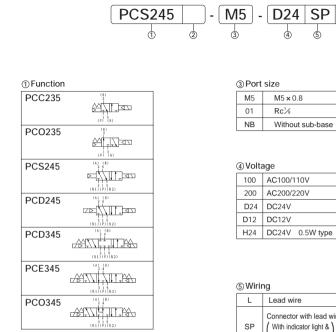
SPECIFICATIONS Standard type

Mode	l No.			Unit	PCC235	PCO235	PCS245	PCD245	PCD345	PCE345	PCO345
Fluid				Non-lubricated/ lubricated air							
Port size				M5 , Rc 1⁄8							
Effect	tive are	ea (Cv)		mm ²		3.7 (0.2) : M5	4 (0.22) : Rc	1/8	2.2 (0.1	2) : M5 2.5 (0	0.14) : Rc 1/8
Ambie	ent ter	nperatu	re					- 5 ~ 50			
Minim	um ope	erating p	ressure	MPa		0.15		0.1		0.15	
Opera	ating p	ressure	range	MPa				0.2 ~ 0.8			
Maxin	num fr	equenc	у	Cycle/min		AC :	900 DC:12	00 (L type) 9	00 (SP & UP	type)	
		L type	ON		0.0)16	0.016	0.012		0.012	
	DC	с туре	OFF		0.0)20	0.020	-		0.022	
Response time	DC	SP & UP	ON		0.0)16	0.016	0.012		0.012	
Ise t		type	OFF		0.0)35	0.03	-		0.04	
bor	AC	50Hz	ON	s	0.0)1	0.014	0.008		0.008	
Res	L	SUHZ	OFF		0.0)37	0.037	-	0.047		
	SP	col 1-	ON		0.0)1	0.014	0.008	0.008		
	UP	60Hz	OFF		0.03 0.03 - 0.04		0.04				
Rated voltage V			V	AC100 / 110 , 200 / 220 DC24 DC12							
Permis	sible vo	oltage fluo	ctuation	%	AC ± 10 DC ⁺¹⁰ ₋₁₅						
Rated	l frequ	ency		Hz	50 / 60						
ion		Holding	50Hz			2.5 (100 / 200)					
consumption	AC	riolulity	60Hz	VA	2.0 (100 / 200)						
nsul	AC	Inlush	50Hz	VA			2	2.9 (100 / 200)			
S		musn	60Hz		2.5 (100 / 200)						
Powe	r cons	umptior	n DC	W	1.8						
Grade	e of ins	sulation			JIS grade B						
Wiring						Le	ad wire (L), Co	nnector with le	ad wire (SP, l	JP)	
			NB		(52	62	94		103	
	1	L type	M5		10	06	106	138		147	
Mass			Rc 1/8	g	1	18	118	150		159	
111655			NB	э	(52	62	94		103	
	S	P & UP type	M5		1	06	106	138		147	
		21.5	Rc 1/8		1	18	118	150		159	

(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

PC5 Series

ORDERING INSTRUCTIONS



② Special specification

No mark	Standard (Individual exhaust of pilot)		
Y	Captured exhaust of pilot		
U	External pilot (valve body ported) Individual exhaust of pilot		
V	External pilot (valve body ported) Captured exhaust of pilot		
x	External pilot (sub-base ported) Individual exhaust of pilot		
z	External pilot (sub-base ported) Captured exhaust of pilot		
(Note) X & Z : PCC235 and PCO235 only			

Ν	И5	M5 × 0.8
(01	Rc ¹ ∕ ⁸
١	١B	Without sub-base

LB

0						
100	AC100/110V					
200	AC200/220V					
D24	DC24V					
D12	DC12V					
H24	DC24V 0.5W type					

<u> </u>	5
L	Lead wire
SP	Connector with lead wire (With indicator light & surge suppressor
UP	Connector with lead wire (With indicator light & surge suppressor
MP	Without connector of SP type (With surge suppressor)
NP	Without connector of UP type (With surge suppressor)

(Note) MP and NP types are SP and UP types without standard connector. MP, NP and LK types are made to order. For wiring instructions, refer to Page 11.

6 Manual override

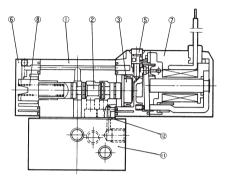
No mark	Standard (Non-lock)
LB	With locking button
(Note) I B : Made to order	

(Note) LB : Made to order

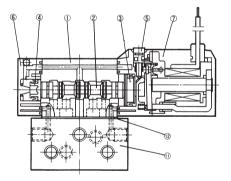
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CONSTRUCTIONS AND MAIN COMPONENTS



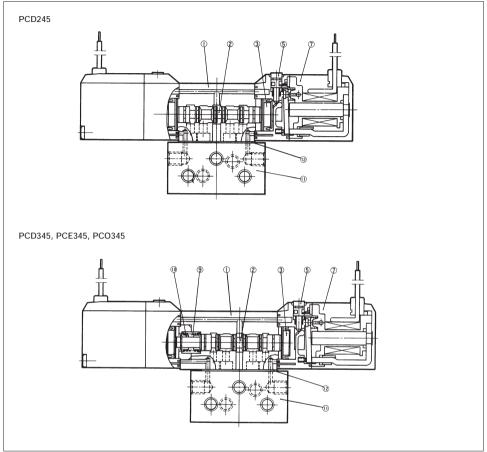


PCS245



No.	Description	Material		
	Body	Aluminium alloy		
	Spool assembly	-		
	Piston D	Synthetic resins		
	Piston S	Synthetic resins		
	Manual override	Synthetic resins		
	End cover	Synthetic resins		
	Pilot valve	-		
	Return spring S	Stainless steel		
	Return spring 3P	Stainless steel		
	Spring retainer	Synthetic resins		
	Sub-base	Aluminium alloy		
	Base gasket	NBR		

CONSTRUCTIONS



OPTIONAL PARTS AND SPARE PARTS

Connector with lead wire

PC5-D24-CL5

1 2	
 Voltage 	②Lead wire length
100 : AC100/110V 200 : AC200/220V D24 : DC24V, 12V	CL5 : 500mm(Standard) CL10 : 1000mm CL20 : 2000mm CL30 : 3000mm CL50 : 5000mm

Sub-base

②Special specification No mark : Individual exhaust

3:3-port 5:5-port

③Port size

- : Individual exhaust, external pilot (For PCC235X and PCO235X) Х
 - Y : Captured exhaust
 - Z : Captured exhaust, external pilot (For PCC235Z and PCO235Z)

Connector with cabtyre cable

PC5 - CB10 Cable length 1000mm

KURODA

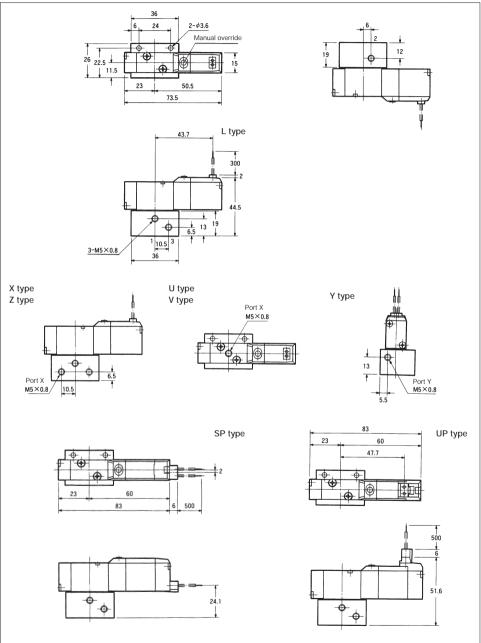
M5: M5 × 0.8

01 : Rc 1/8

DIMENSIONS



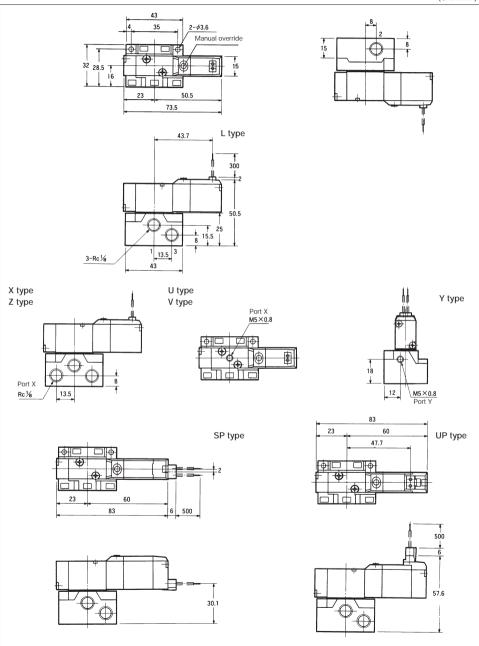
PCC235 -M5, PCO235 -M5



DIMENSIONS

PCC235 -01, PCO235 -01

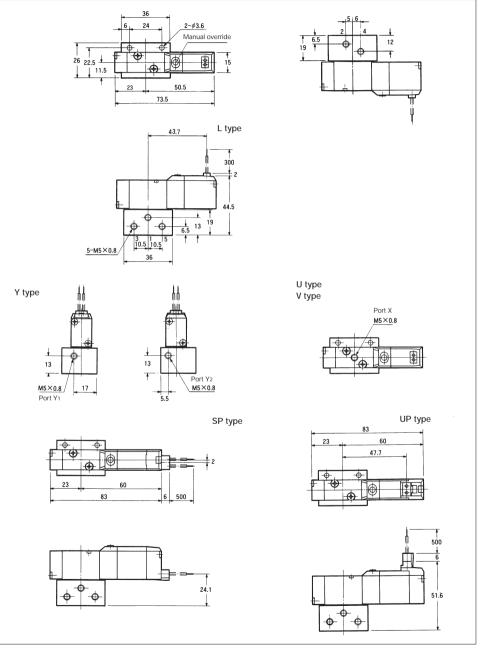




(Unit : mm)

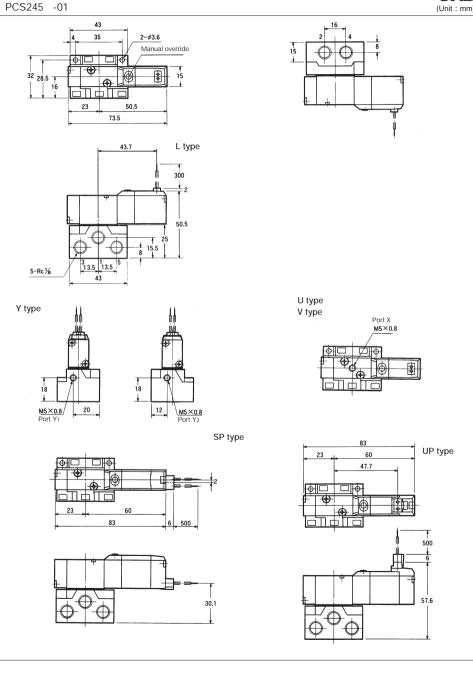
DIMENSIONS

PCS245 -M5



DIMENSIONS

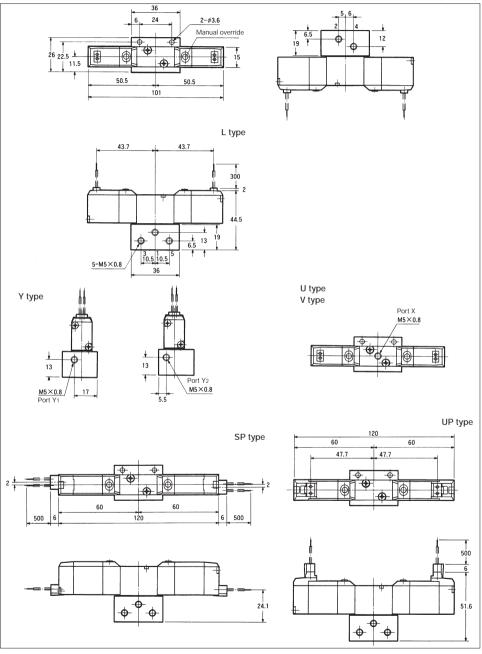




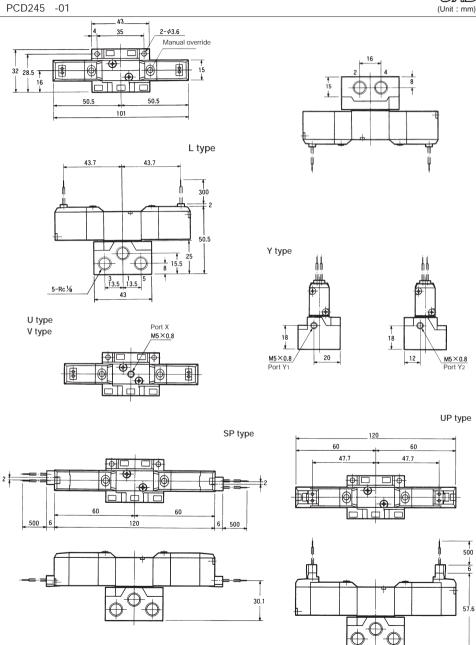


DIMENSIONS

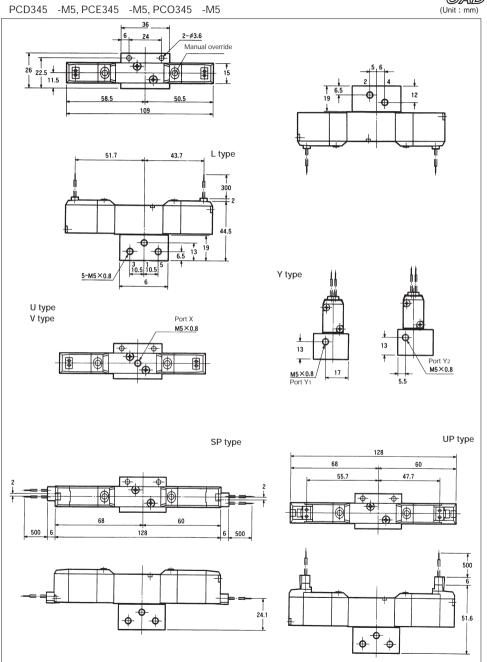




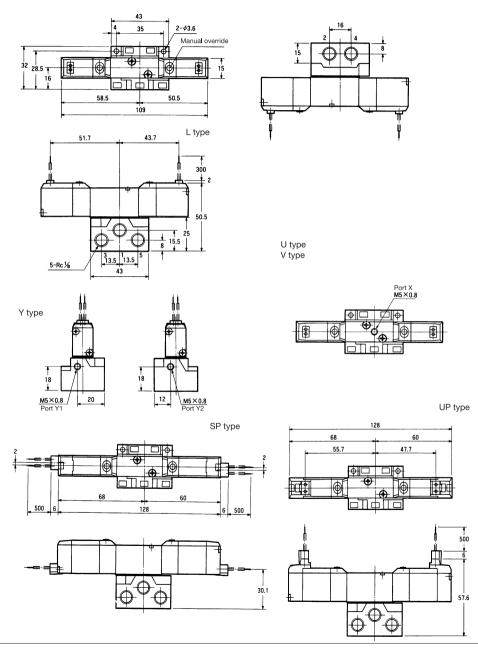
DIMENSIONS



DIMENSIONS



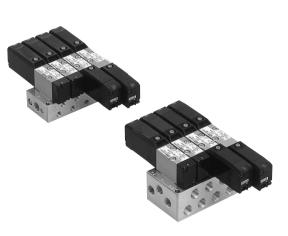
PCD345 -01, PCE345 -01, PCO345 -01



(Unit:mm)

INDIVIDUAL WIRING TYPE MANIFOLD MF -P 5

MFS	-PC5	Common SUP, Common EXH Ports 1, 3 & 5 on both sides)
MFS	-PD5	Common SUP, Common EXH Ports 1, 3 & 5 on one side)
MFS	-PI5	Common SUP, Individual EXH Ports 1 on one side)
MFX	-PC5	Common SUP, Common EXH Common external pilot Ports 1 & 3 on both sides)
MFX	-PD5	Common SUP, Common EXH Common external pilot Ports 1 & 3 on one side)
Capture	ed exhaust o	f pilot type manifold	
MFS	- PY5	Common SUP, Common EXH Ports 1, 3 & 5 on both sides)
MFS	-PV5	Common SUP, Captured EXH Ports 1 & 3/5 on both sides)
MFX	-PY5	Common SUP, Common EXH Common external pilot Ports 1 & 3 on both sides)



MANIFOLD SPECIFICATIONS

Type of manifold		MFS -PC5	MFS -PD5	MFS -PI5	MFS -PY5	MFS -PV5
		Common SUP Common EXH	Common SUP Common EXH	Common SUP, Individual EXH	Captured exhaust of pilot	Captured exhaust of pilot
		(Ports 1, 3 & 5 on both sides)	(Ports 1, 3 & 5 on one side)	(Port 1 on one side)	Common SUP, Common EXH	Common SUP, Captured EXH
		(POILS 1, 3 & 5 OII DOLIT SIDES)	(Poits 1, 5 & 5 off offe side)	(Port 1 on one side)	(Ports 1, 3 & 5 on both sides)	(Ports 1 & 3/5 on both sides)
	Port 1	Rc 1/2 (Both sides)	Rc 1/8 (One side)	Rc 1/8 (One side)	Rc 1/8 (Both sides)	Rc $^{1}\!\!\!/_{\!\!8}$ (Both sides)
	Port 3 & 5	Rc ¹ / ₈ (Both sides)	Rc ¹ / ₈ (One side)	M5 (Valve body ported)	Rc 1/8 (Both sides)	Rc $\frac{1}{8}$ (Both sides)
Port size	Port 2 & 4	Rc 1/8 , C4, C6	M5	M5	M5, Rc	C4, C6
	Port X	-	-	-	-	-
	Port Y	-	-	-	M5 (Both sides)	Rc 1/8 (Both sides)
Number of sta	ations	2 ~ 20	2 ~ 20	2 ~ 20	2 ~ 20	2 ~ 20
		PCC235(U)-NB-		PCC235-R5-	PCC235Y(V)-NB-	
		PCO235	(U)-NB-	PCO235-R5-	PCO235Y	(V)-NB-
		PCS245(U)-NB-		PCS245-R5-	PCS245Y(V)-NB-	
Mountable so	lenoid valve	PCD245(U)-NB-		PCD245-R5-	PCD245Y(V)-NB-	
		PCD345(U)-NB-	PCD345-R5-	PCD345Y(V)-NB-	
		PCE345(U)-NB-	PCE345-R5-	PCE345Y(V)-NB-	
		PCO345(U)-NB-		PCO345-R5-	PCO345Y(V)-NB-	
Blank plate			PC5-BP		PY5-BP	

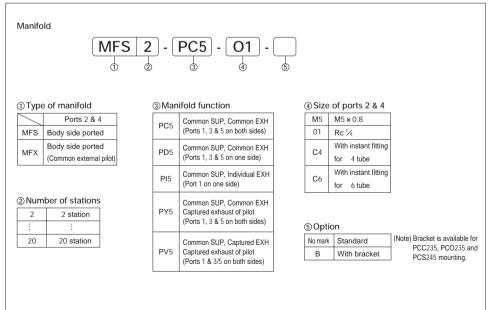
MANIFOLD SPECIFICATIONS

Type of manifold		MFX -PC5	MFX -PD5	MFX -PY5
		Common SUP, Common EXH Common external pilot	Common SUP, Common EXH Common external pilot	Captured exhaust of pilot Common SUP, Common EXH
		(Ports 1 & 3 on both sides)	(Ports 1 & 3 on one side)	(Ports 1 & 3 on both sides)
	Port 1	Rc 1/8 (Both sides)	Rc ¹ /8 (Both sides)	Rc 1/8 (Both sides)
	Port 3	Rc $^1\!\!\!/_8$ (Both sides)	$\text{Rc}{}^1\!\!\!/_8$ (Both sides)	Rc 1/8 (Both sides)
Port size	Port 2	Rc ¹ ⁄ ⁸	M5	M5, Rc 1/8
	Port X	Rc ¹ / ₈ (Both sides) Rc ¹ / ₈ (Both sides)		Rc $\frac{1}{8}$ (Both sides)
	Port Y	-	-	M5 (Both sides)
Number of stations		2~20	2 ~ 20	2~20
Mountable solenoid valve		PCC235X-NB-		PCC235Z-NB-
		PCO235X-NB-		PCO235Z-NB-
Blank plate		PC5-BP		PY5-BP

OPTIONAL PARTS AND SPARE PARTS

	Part name	Model No.
Blank plate	For individual exhaust of pilot	PC5-BP
	For captured exhaust of pilot	PY5-BP

ORDERING INSTRUCTIONS



ORDERING INSTRUCTIONS

Mountable solenoid valve					
	245 - C	NB - D24	SP LB		
① Function	② Spe	cial specification	(5) Wiri	ng
PCC235	No mark	Standard (Individual exhaust of pilot)		L	Lead wire
	Y	Captured exhaust of pilot		SP	With indicator light &
PC0235	U	External pilot (valve body ported) Individual exhaust of pilot	=	UP	Connector with lead
	v	External pilot (valve body ported) Captured exhaust of	_		Surge suppressor
		pilot External pilot		MP	SP type (With surge suppres
(R1) ^(b) (R2) PCD345	X	(sub-base ported) Individual exhaust of pilot		NP	Without connector UP type
PCE345	z	External pilot (sub-base ported) Captured exhaust of pilot	(1	é	(With surge suppresent of the supervised of the
	(Note) 2	K & Z : PCC235 and PCO235 only	-	standard connector. MP and NP types are made to order. For wiring instruction refer to Page 11.	

	NB	3 Without sub-base			
	R5	Ports 3 & 5 valve			
		body ported (M5)			

(Note) A gasket & two mounting screws come with valve.

④Voltage

③Port size

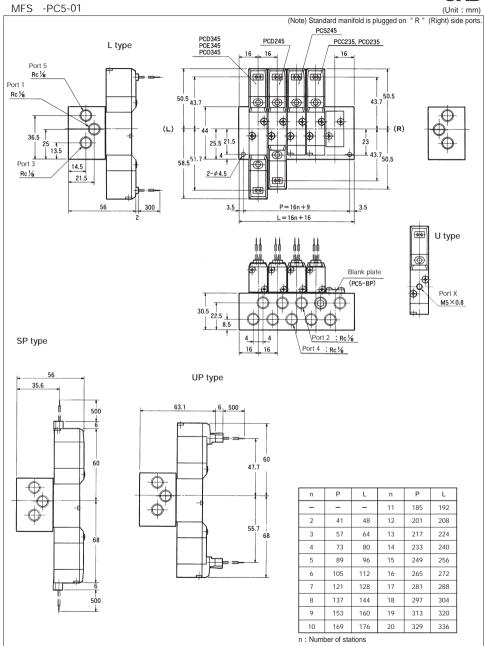
	•
100	AC100/110V
200	AC200/220V
D24	DC24V
D12	DC12V
H24	DC24V 0.5W type

6 Manual override

No mark Standard (Standard (Non-lock)			
	LB	With locking button			
1	AL				

(Note) LB : Made to order

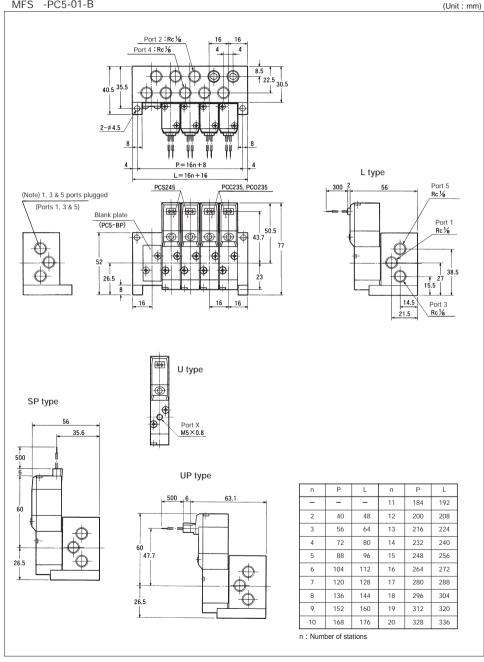




DIMENSIONS



MFS -PC5-01-B

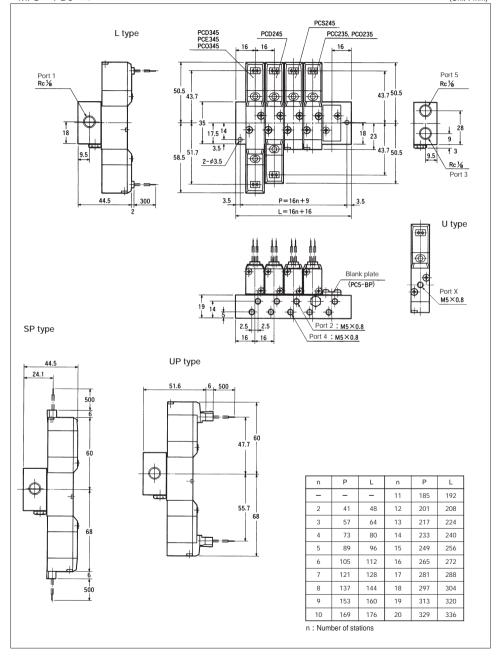


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DIMENSIONS



MFS -PD5-M5

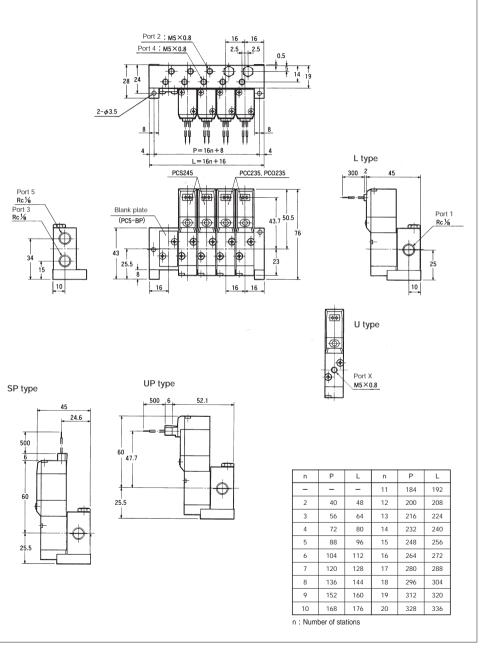


DIMENSIONS



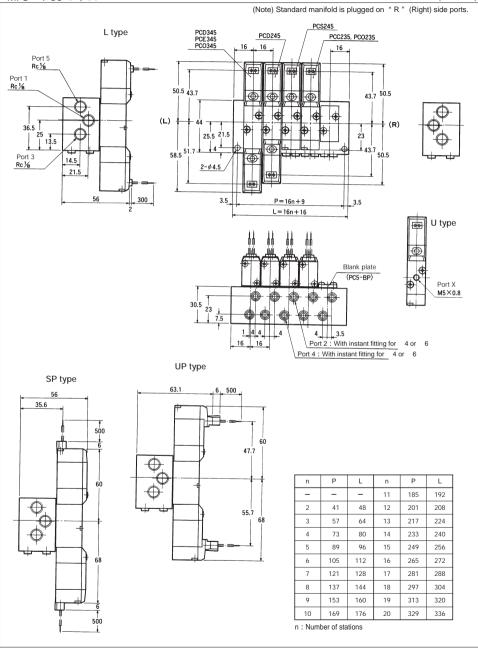
(Unit : mm)

MFS -PD5-M5-B



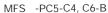


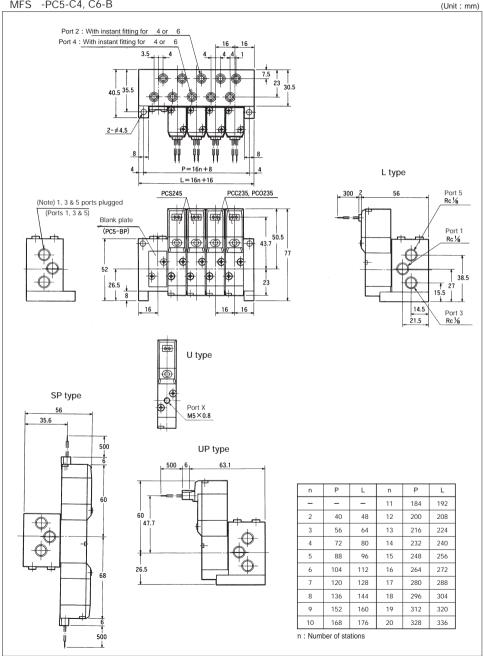
MFS -PC5-C4, C6



DIMENSIONS







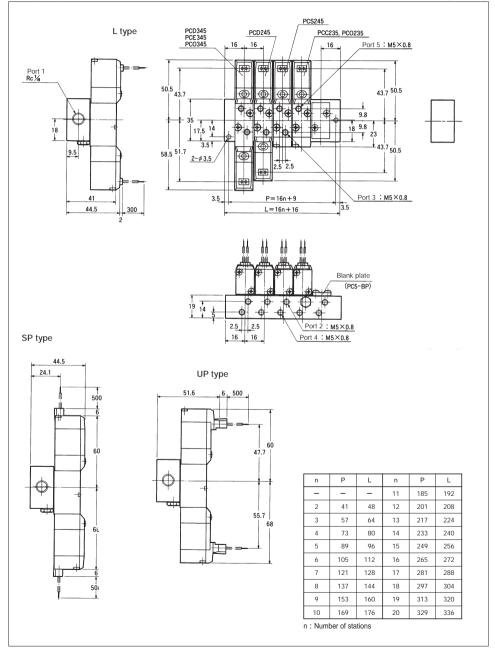
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DIMENSIONS



(Unit : mm)

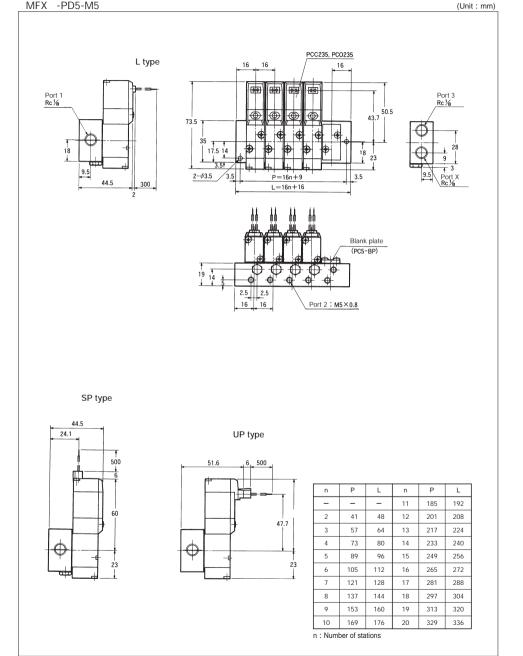
MFS -PI5-M5







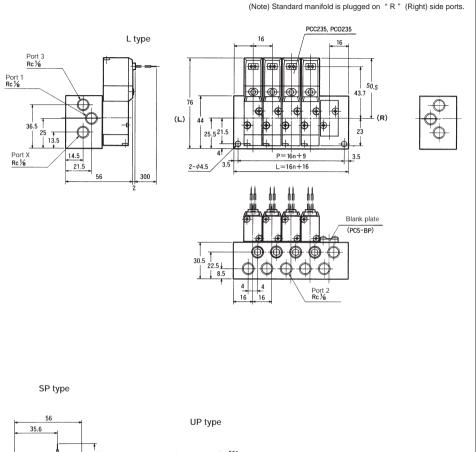
MFX -PD5-M5

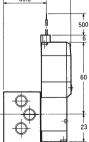


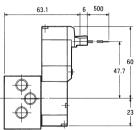
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MFX -PC5-01







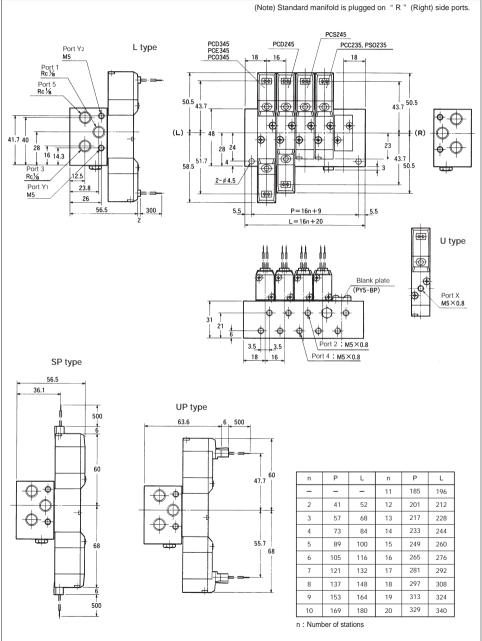
n	Р	L	n	Р	L
-	-	-	11	185	192
2	41	48	12	201	208
3	57	64	13	217	224
4	73	80	14	233	240
5	89	96	15	249	256
6	105	112	16	265	272
7	121	128	17	281	288
8	137	144	18	297	304
9	153	160	19	313	320
10	169	176	20	329	336
a i bliand					

n : Number of stations

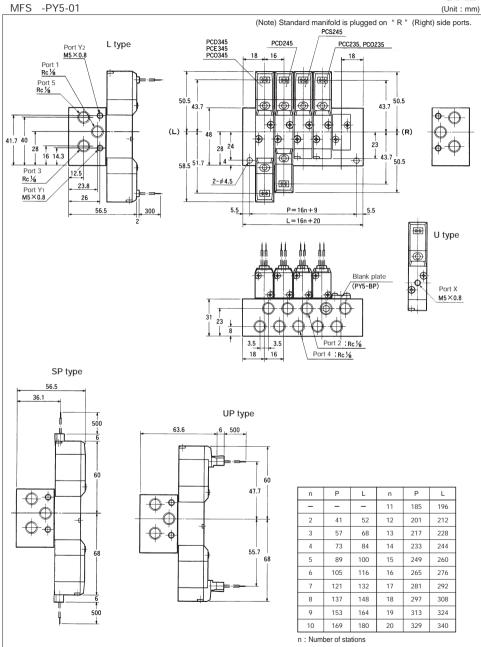
DIMENSIONS MFS -PY5-M5



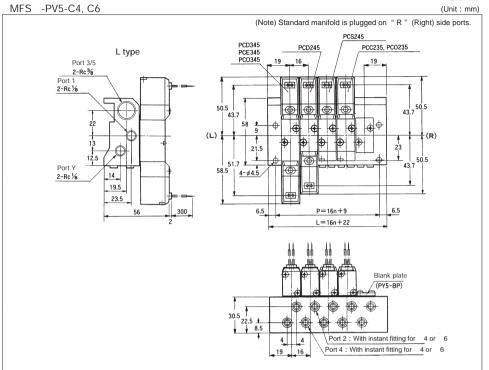
(Unit : mm)



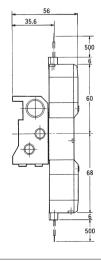




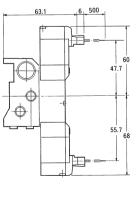
DIMENSIONS



SP type



UP type



n	Р	L	n	Р	L
-	-	-	11	185	198
2	41	54	12	201	214
3	57	70	13	217	230
4	73	86	14	233	246
5	89	102	15	249	262
6	105	118	16	265	278
7	121	134	17	281	294
8	137	150	18	297	310
9	153	166	19	313	326
10	169	182	20	329	342

n : Number of stations

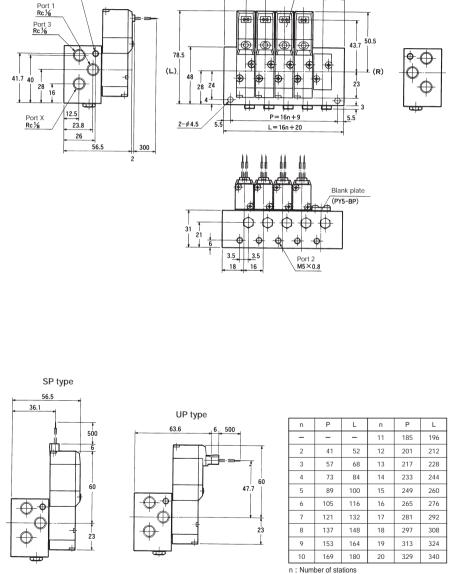
DIMENSIONS



MFX -PY5-M5

Port Y M5×0.8 L type

(Note) Standard manifold is plugged on "R" (Right) side ports.

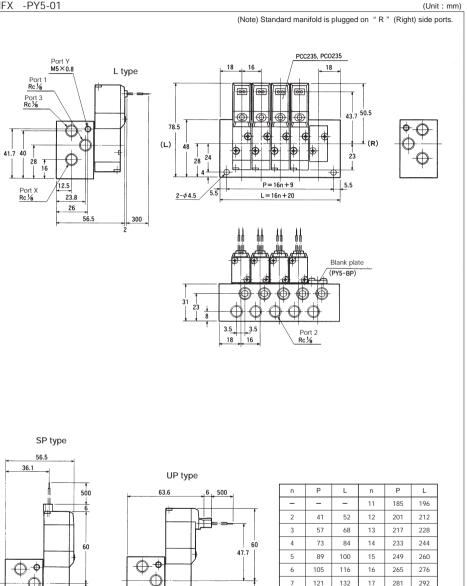


DIMENSIONS



MFX -PY5-01

⊕



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n : Number of stations

PILOT OPERATED SOLENOID VALVE **RC5 Series** Rubber Seal/In-line Mounting type

RCC235	2-position Single solenoid Normal close
RCO235	2-position Single solenoid Normal open
RCS245	2-position Single solenoid
RCD245	2-position Double solenoid
RCD345	3-position Closed center
RCE345	3-position Exhaust center
RCO345	3-position Pressure center
Latch type	
RCL245	2-position Latching solenoid
Ear lateb type and Dage 101	



For latch type see Page 101.

SPECIFICATIONS 0.5W type

Model	No.		Unit	RCC235	RCO235	RCS245	RCD245	RCD345	RCE345	RCO345
Fluid			Non-lubricated/ lubricated air							
Port size				M5						
Effective area (Cv) m			mm ²	4 (0.22) 2.2 (0.1			2.2 (0.12)			
Ambier	nt tempe	rature		- 5~50						
Minimum	operating	pressure	MPa	0.15 0.1				0.15		
Operating pressure range			MPa				0.2 ~ 0.7			
Maximum frequency		lency	Cycle/min			900(L ty	pe) 720(SP &	UP type)		
me	L type SP & UP type	ON	- <u>s</u>	0.0)2	0.02	0.015		0.02	
se ti		OFF		0.0)25	0.025	-		0.03	
Response time		ON		0.0)2	0.02	0.015		0.02	
Ree		OFF		0.0)4	0.04	-		0.045	
Rated voltage			V				DC24			
Permissible voltage fluctuation			%	+ 10, - 15						
Power consumption V		W	0.5							
Grade of insulation			JIS grade B							
Wiring				Lead wire (L), Connector with lead wire (SP, UP)						
Mass	L ty	/pe	a	6	2	62	94		103	
ivia55	SP & U	P type	g	6	2	62	94		103	

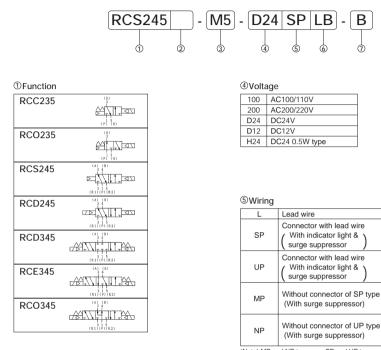
(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

SPECIFICATIONS Standard type

			900								
Mode	I No.			Unit	RCC235	RCO235	RCS245	RCD245	RCD345	RCE345	RCO345
Fluid				Non-lubricated/ lubricated air							
Port s	ize							M5			
Effect	ive a	irea (0	Cv)	mm ²	4 (0.22)				2.2 (0.12)		
Ambie	ent te	empe	rature			- 5 ~ 50					
Minimun	n opera	ating pr	essure	MPa	0.15 0.1			0.1	0.15		
Operati	ing pre	essure	range	MPa		0.2 ~ 0.8					
Maxin	num	frequ	ency	Cycle/min		AC :	: 900 DC :	1200(Ltype)	900(SP & UP t	ype)	
		L	ON		0.0)16	0.016	0.012		0.012	
	t	type	OFF		0.0)20	0.020	-		0.022	
	DC SP & ON 0.016		0.016	0.012		0.012					
Response time		UP type	OFF		0.035		0.03	-	0.04		
	_		ON	s	0.01		0.014	0.008	0.008		
Ses		50Hz	OFF		0.037		0.037	-	0.047		
-	SP [ON		0.0)1	0.014	0.008		0.008	
U	JP 6	60Hz	OFF		0.0)3	0.03	-		0.04	
Rated voltage		V			AC100/110), 200/220 DC	24 DC12				
Permissible voltage fluctuation		%		AC ± 10 DC ⁺¹⁰ ₋₁₅							
Rated frequency 50Hz		Hz	50/60								
			2.5(100/200)								
duns .	Holding 60Hz		2.0(100/200)								
Power consumption			50Hz	VA	2.9(100/200)						
Powe	li	nlush	60Hz		2.5(100/200)						
Power consumption DC W			W	1.8							
Grade of insulation						JIS grade B					
Wiring	3					Le	ead wire (L), Co	onnector with le	ad wire (SP, U	P)	
		L ty	pe		6	2	62	94		103	
Mass	SP & UF		P type	g	6	2	62	94		103	

(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

ORDERING INSTRUCTIONS



②Special specification

No mark	Standard (Individual exhaust of pilot)		
U	External pilot (valve body ported) Individual exhaust of pilot		
(Note) U : PCC235 and PCO235 only			

③Port size

M5 M5 × 0.8

(Note) MP and NP types are SP and UP types without standard connector. MP and NP types are made to order. For wiring instructions, refer to Page 11.

6 Manual override

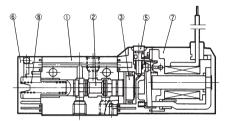
No mark	Standard (Non-lock)		
LB	With locking button		
(Note) LB : Made to order			

⑦Option

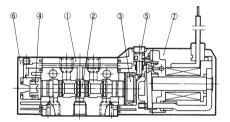
•	
В	With bracket
(Note) B : RO	CC235, RCO235 and RCS245 only

CONSTRUCTIONS AND MAIN COMPONENTS

RCC235, RCO235

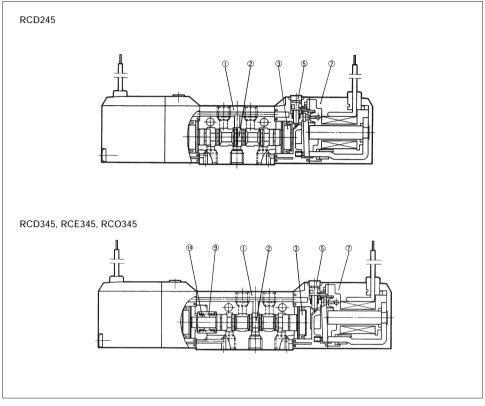


RCS245



No.	Description	Material
	Body	Aluminium alloy
	Spool assembly	
	Piston D	Synthetic resins
	Piston S	Synthetic resins
	Manual override	Synthetic resins
	End cover	Synthetic resins
	Pilot valve	-
	Return spring S	Stainless steel
	Return spring 3P	Stainless steel
	Spring retainer	Synthetic resins

CONSTRUCTIONS



OPTIONAL PARTS AND SPARE PARTS

Connector with lead wire

100 : AC100/110V

200 : AC200/220V

D24 : DC24V, 12V

PC5-	D24	-	CL5
	1		

Voltage

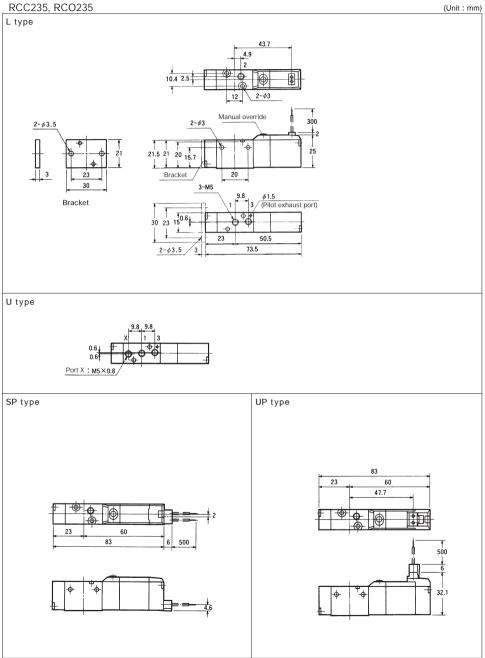
②Lead wire length CL5 : 500mm (Standard) CL10 : 1000mm CL20 : 2000mm CL30 : 3000mm CL50 : 5000mm Bracket

Parts name	Model No.
Bracket	PC5-B

Connector with cabtyre cable PC5-CB10 Cable length 1000mm

DIMENSIONS

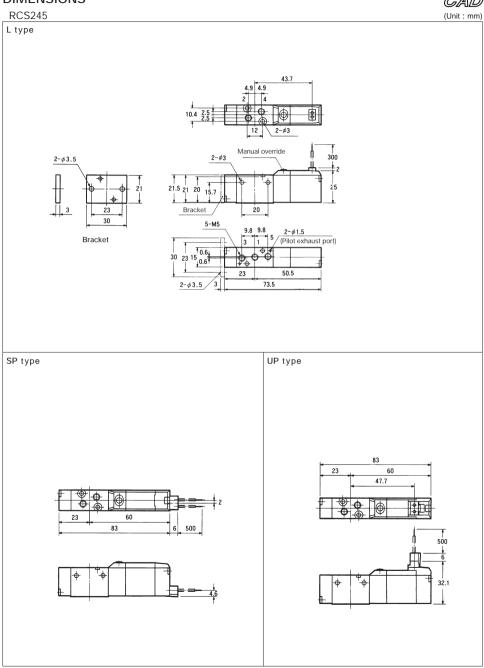




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DIMENSIONS





RCD245





RC5 Series

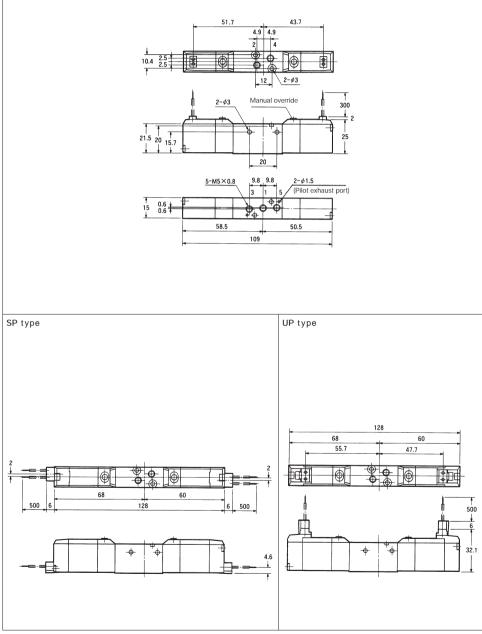
(Unit : mm) L type 43.7 43.7 4.9 4.9 2 4 8 10.4 2.5 6 6 Ŧ 12 2-\$3 2-ø3 Manual override 300 **‡**2 . 21.5 20 15.7 25 20 5-M5×0.8 9.8 9.8 2-ø1.5 3 1 5 (Pilot exhaust port) 15 0.6 0.6 50.5 50.5 101 UP type SP type 120 60 60 47.7 47.7 ଡ଼ୗୄୢୢ \odot 44 2‡ \bigcirc **@** 0 ‡2 Ф Å 60 60 500 6 120 500 6 500 6 Ē ¢ -\$ 32.1 φ-, ф 4.6

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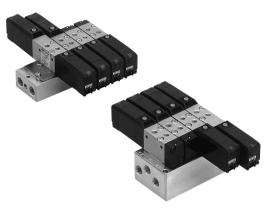
RCD345, RCE345, RCO345





INDIVIDUAL WIRING TYPE MANIFOLD MF - R 5 Bar type

MFU	-RC5 (Common SUP, Common EXH Ports 1, 3 & 5 on both sides)
MFU	- RD5 (Common SUP, Common EXH Ports 1, 3 & 5 on one side)
MFX	-RC5 (Common SUP, Common EXH Common external pilot Ports 1 & 3 on both sides
MFX	-RD5 (Common SUP, Common EXH Common external pilot Ports 1 & 3 on one side
Capture	d exhaust of pi	lot type manifold
MFU	- RY5 (Common SUP, Common EXH Ports 1, 3 & 5 on both sides
MFX	-RY5 (Common SUP, Common EXH Common external pilot Ports 1 & 3 on both sides



MANIFOLD SPECIFICATIONS

Type of manifold		MFU -RC5	MFU -RD5	MFU-RY5	
		Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)	Common SUP, Common EXH (Ports 1, 3 & 5 on one side)	Captured exhaust of pilot Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)	
	Port 1	Rc 1/8 (Both sides)	Rc 1/8 (One side)	Rc 1/8 (Both sides)	
	Port 3 & 5	Rc1/8 (Both sides)	Rc 1/8 (One side)	Rc 1/8 (Both sides)	
Port size	Port 2 & 4	M5	M5	M5	
	Port X	-	-	-	
	Port Y	-	-	M5	
Number of s	ber of stations 2 ~ 20 2 ~ 20 2		2 ~ 20		
Mountable s	olenoid valve	RC0235- RCS245- RCD245- RCD345- RCD345- RCE345-	MF MF MF MF MF MF MF	RCC235YMF RCO235YMF RCS245YMF RCD245YMF RCD345YMF RCE345YMF RC0345YMF	
Blank plate		PC5	-BP	RC5-BP	

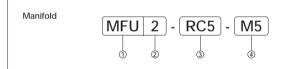
MANIFOLD SPECIFICATIONS

		MFX -RC5	MFX -RD5	MFX -RY5	
Type of manifold		Common SUP, Common EXH Common external pilot (Ports 1 & 3 on both sides)	Common SUP, Common EXH Common external pilot (Ports 1 & 3 on one side)	Captured exhaust of pilot Common SUP, Common EXH Common external pilot (Ports 1 & 3 on both sides)	
	Port 1	Rc 1/8 (Both sides)	Rc 1/8 (One side)	Rc 1/8 (Both sides)	
	Port 3	Rc 1/8 (Both sides)	Rc 1/8 (One side)	Rc 1/8 (Both sides)	
Port size	Port 2	M5	M5	M5	
	Port X	Rc 1/8 (Both sides)	Rc 1/8 (One side)	Rc 1/8 (Both sides)	
	Port Y	-	-	M5 (Both sides)	
Number of sta	ations	2 ~ 20	2 ~ 20	2 ~ 20	
Mountable solenoid valve		RCC235UMF RCO235UMF		RCC235VMF RCO235VMF	
Blank plate		PC5-BP		PY5-BP	

OPTIONAL PARTS AND SPARE PARTS

	Part name	Model No.
Diani: plate	For individual exhaust of pilot	PC5-BP
Blank plate	For captured exhaust of pilot	PY5-BP

ORDERING INSTRUCTIONS



①Type of manifold

\sim	Ports 2 & 4
MFU	Body side ported
MFX	Body side ported (Common external pilot)

②Number of stations

2	2 station
:	:
20	20 station

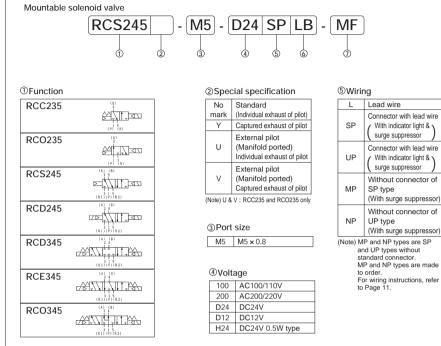
③Manifold function

RC5	Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)
RD5	Common SUP, Common EXH (Ports 1, 3 & 5 on one side)
RY5	Common SUP, Common EXH Captured exhaust of pilot (Ports 1, 3 & 5 on both sides)

④Size of ports 2 & 4

M5 M5 × 0.8

ORDERING INSTRUCTIONS



⑥Manual override

No mark Standard (Non-lock) LB With locking button (Note) LB : Made to order

⑦For mounting on manifold

MF For mounting on manifold (Note) A gasket & two mounting screws come with valve.

DIMENSIONS

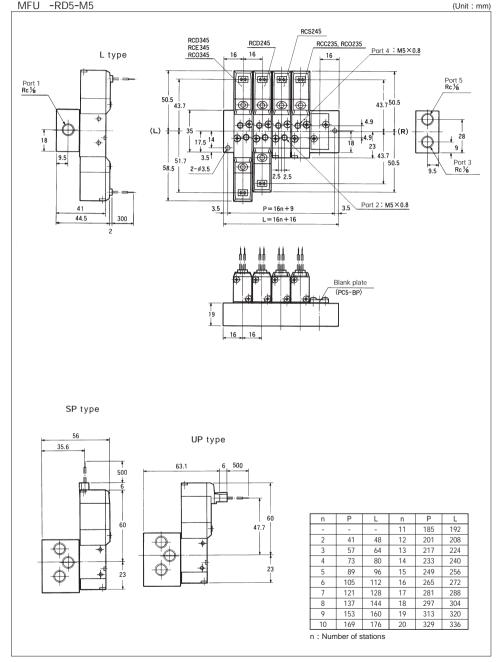


MFU -RC5-M5 (Unit : mm) (Note) Standard manifold is plugged on "R" (Right) side ports. RCS245 RCD345 RCD245 RCC235, RCO235 RCE 345 RCO 345 16 L type 16 16 ၂ Port 4 : M5×0.8 Port 5 Rc 1⁄8 Port 1 Rc 1/2 50.5 ۲ \odot ۲ 50.5 43 7 43.7 **delde** o¢ d€ 4.9 (R) (L) 25.521.5 4.9 **DO** 36.5 23 2 13.5 50.5 51.7 € 43 7 58.5 Port 3 Rc 1/8 14.5 Œ 2-ø4.5 21.5 Port 2: M5×0.8 3.5 3.5 56 300 P=16n+9 L=16n+16 Blank plate (PC5-BP) 30.5 16 16 SP type 56 35.6 UP type 500 63.1 6 500 60 60 47.7 --• n Ρ L n Ρ L 4 185 192 41 48 201 208 2 12 68 55.7 68 3 57 64 13 217 224 4 73 80 14 233 240 15 5 89 96 249 256 105 6 112 16 265 272 17 7 121 128 281 288 500 8 137 144 18 297 304 U 9 19 320 153 160 313 10 169 176 20 329 336 n : Number of stations

DIMENSIONS



MFU -RD5-M5



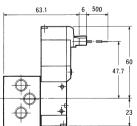
KURODA www.comoso.com

DIMENSIONS



MFX -RC5-M5 (Unit : mm) (Note) Standard manifold is plugged on "R" (Right) side ports. RCC235, RCO235 Port 2: M5×0.8 16 16 16 L type Port 3 Rc 1/8 . 66 Port 1 Rc 1⁄8 50.5 43.7 ¢ ⊕ ¢ ¢ 76 + de đ ф ф ф 4.9 (L) (R) 36.5 | | 25 + | 13.5 + 44 ŧ 25.5 21.5 23 4 41 Port X Rc 1/8 P=16n+9+12.5 3.5 14.5 2-*¢*4.5 3.5 L=16n+16 21.5 300 56 Blank plate (PC5-BP) 30.5 16 16 SP type



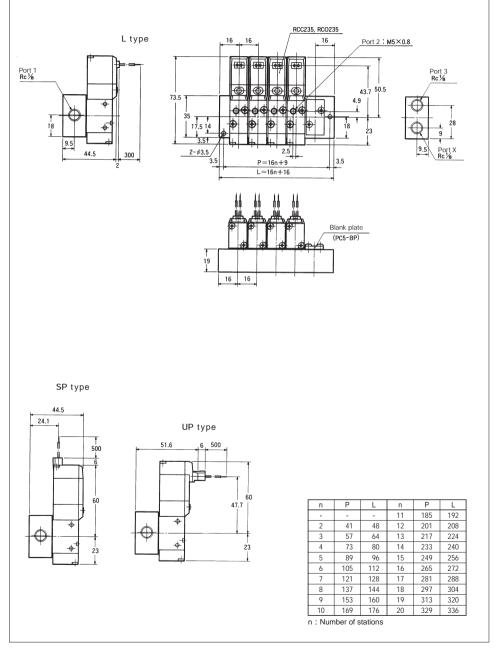


n	Р	L	n	Р	L		
-	-	-	11	185	192		
2	41	48	12	201	208		
3	57	64	13	217	224		
4	73	80	14	233	240		
5	89	96	15	249	256		
6	105	112	16	265	272		
7	121	128	17	281	288		
8	137	144	18	297	304		
9	153	160	19	313	320		
10	169	176	20	329	336		
n : Num	n : Number of stations						

DIMENSIONS



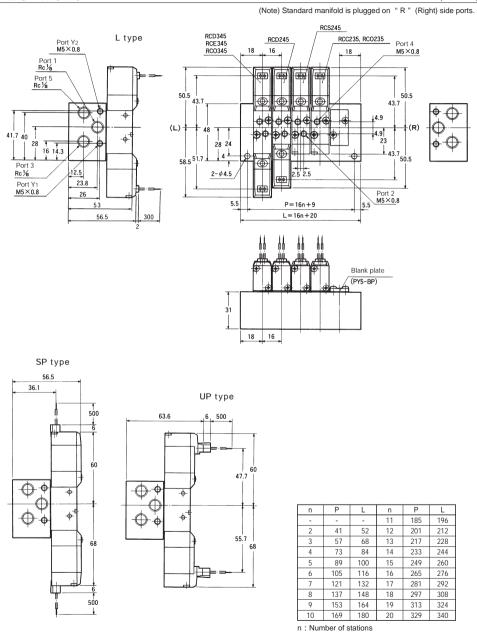
MFX -RD5-M5



DIMENSIONS



MFU -RY5-M5

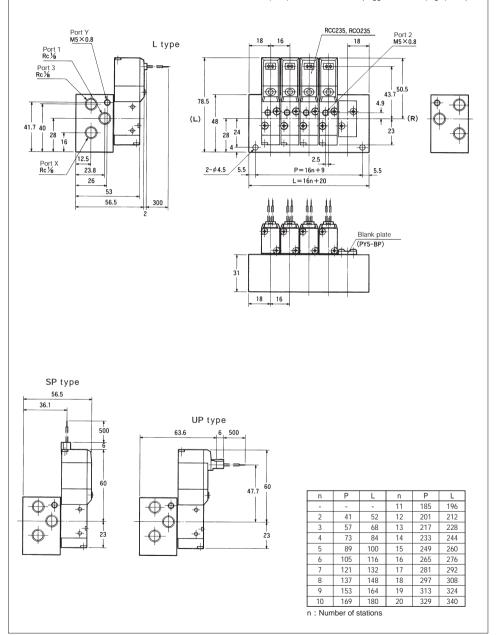




DIMENSIONS

MFX -RY5-M5

(Note) Standard manifold is plugged on "R" (Right) side ports.



PILOT OPERATED SOLENOID VALVE **PC13 Series** Rubber Seal/Sub-base Mounting type

PCS2413	2-position Single solenoid
PCD2413	2-position Double solenoid
PCD3413	3-position Closed center
PCE3413	3-position Exhaust center
PCO3413	3-position Pressure center
Latch type	
PCL2413	2-position Latching solenoid
For latch type see Page 114.	



SPECIFICATIONS

0.5W type

Model N	0		Unit	PCS2413	PCD2413	PCD3413	PCE3413	PCO3413
Fluid			- Crite	Non-lubricated/lubricated air				
Port size				Rc ¹ /4				
	area (Cv)		mm ²	12 (0.66) 7.5 (0.41) 5 (0.28				
	temperatu		11111	- 5 ~ 50			3 (0.20)	
			ND.	0.15	0.1	- 5~ 50	0.15	
	operating pr		MPa	0.15	0.1		0.15	
Operatin	g pressure	range	MPa			0.2 ~ 0.7		
Maximur	m frequenc	у	Cycle/min			240		
Ð	Ltune	ON		0.035	0.020		0.025	
spons	L type	OFF		0.025	-	0.035		
Response time	SP & UP	ON	S	0.035	0.020	0.025		
R	type	OFF		0.040	-	0.050		
Rated voltage V			V	DC24				
Permissibl	e voltage fluc	tuation	%			+ 10, - 15		
Power c	onsumptior	ı	W			0.5		
Grade of	insulation					JIS grade B		
Wiring				Lead wire (L), Connector with lead wire (SP, UP)				
		NB		95	127		144	
	L type	Rc1⁄4		179	211		228	
Mass	SP & UP	NB	g	95	127		144	
	type	Rc1⁄4		179	211		228	

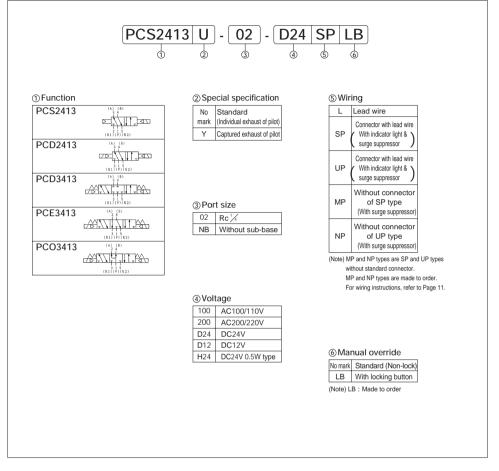
(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

SPECIFICATIONS Standard type

Model No.		Unit	PCS2413	PCD2413	PCD3413	PCE3413	PCO3413		
Fluid					Non-lubricated/ lubricated air				
Port s	Port size Rc ¹ /4								
Effec	tive ar	ea (Cv)		mm ²	12 (0.66)	7.5 (0.41)	5 (0.28)
Ambi	ent ter	nperatu	re				- 5 ~ 50		
Minim	um op	erating p	ressure	MPa	0.15 0.1 0.15				
Opera	ating p	ressure	range	MPa			0.2 ~ 0.8		
Maxir	num f	requenc	у	Cycle/min			240		
		L type	ON		0.020	0.015		0.015	
	DC	с туре	OFF		0.022	—		0.032	
Response time	DC	SP & UP	ON		0.020	0.015		0.015	
se t		type	OFF		0.037	-		0.047	
hon	AC 50	50Hz	ON	s	0.020	0.015	0.015		
Res		SUHZ	OFF		0.022	-		0.032	
	SP	60Hz	ON		0.020	0.015		0.015	
	UP	60HZ	OFF		0.022	-		0.032	
Rateo	d volta	ge		V	AC100 / 110 200 / 220 DC24 DC12				
Permis	ssible v	oltage flu	ctuation	%	AC ± 10 DC ⁺¹⁰ ₋₁₅				
Rated	d frequ	iency		Hz	50 / 60				
ч		Holding	50Hz				2.5 (100/200)		
Power consumption	AC	Holding	60Hz	VA		2.0 (100 / 200)			
Nor Insu	AC	Inlush	50Hz	VA			2.9 (100 / 200)		
00		musn	60Hz				2.5 (100 / 200)		
Powe	r cons	umption	n DC	W	1.8				
Grade of insulation			JIS grade B						
Wirin	g					Lead wire (L),	Connector with lead	l wire (SP, UP)	
		tupo	NB		95	127		144	
Mass		L type	Rc1/4	a	179	211		228	
wass		P & UP	NB	g	95	127		144	
		type	Rc ¹ / ₄		179	211		228	

(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

ORDERING INSTRUCTIONS



OPTIONAL PARTS AND SPARE PARTS

Connector with lead wire



Voltage

- 100 : AC100/110V 200 : AC200/220V D24 : DC24V, 12V
- ②Lead wire length CL5 : 500mm(Standard) CL10 : 1000mm CL20 : 2000mm CL30 : 3000mm CL50 : 5000mm

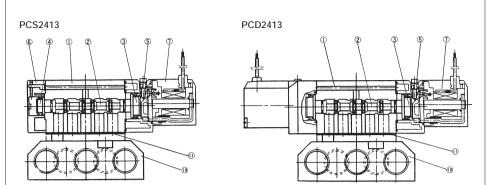
Connector with cabtyre cable

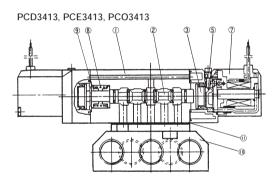
PC5 - CB10 Cable length 1000mm

Sub-base

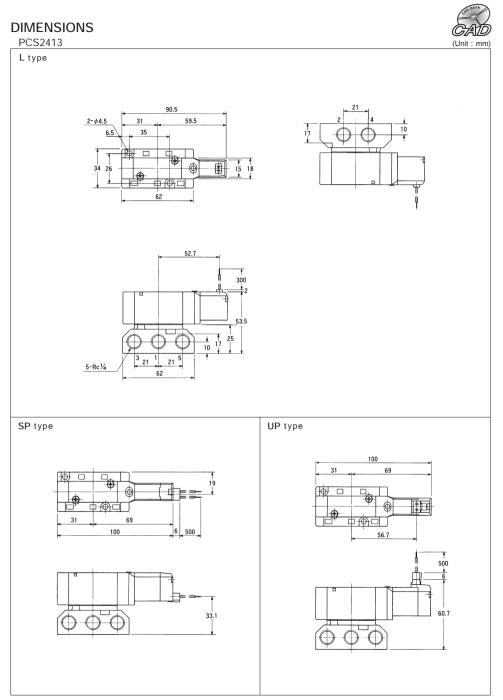
Part name	Model No.
Sub-base	PC13-SB-502

CONSTRUCTIONS AND MAIN COMPONENTS



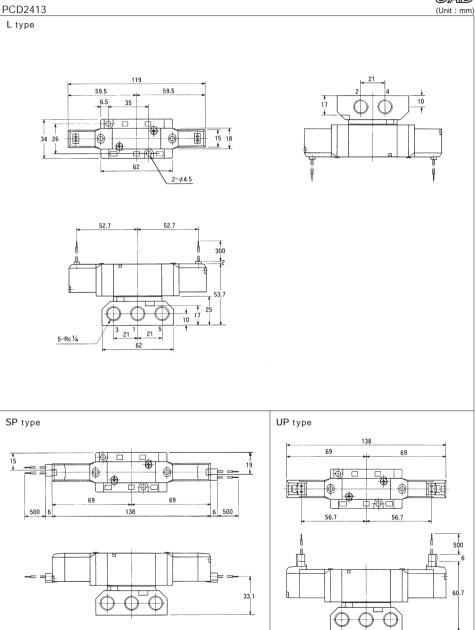


No.	Description	Material
	Body	Aluminium alloy
	Spool assembly	
	Piston D	Synthetic resins
	Piston S	Synthetic resins
	Manual override	Synthetic resins
	End cover	Synthetic resins
	Pilot valve	
	Return spring 3P	Stainless steel
	Spring retainer	Synthetic resins
	Sub-base	Aluminium alloy
	Base gasket	NBR



DIMENSIONS



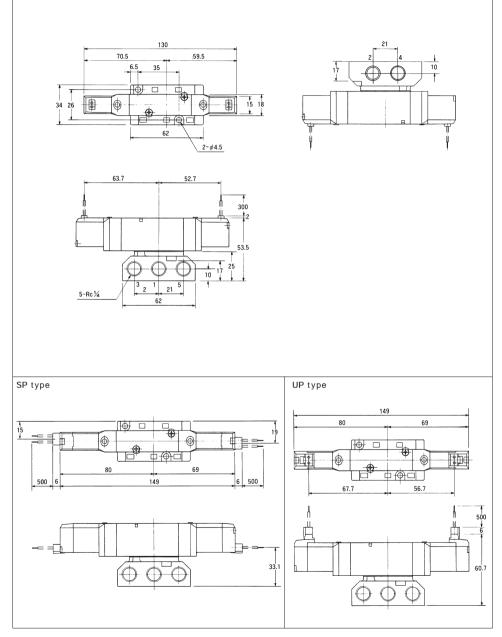


PC13 Series

DIMENSIONS

PCD3413, PCE3413, PCO3413

L type





INDIVIDUAL WIRING TYPE MANIFOLD **MFS** -P13 Bar type

Common SUP, Captured EXH Ports 1 & 3/5 on both sides MFS -PS13 Captured exhaust of pliot Common SUP, Captured EXH

MFS -PV13

MANIFOLD SPECIFICATIONS

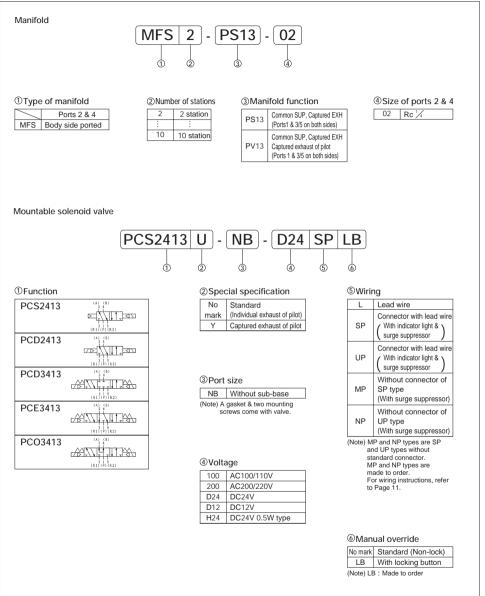
		MFS -PS13	MFS -PV13
Type of manifold		Common SUP, Captured EXF (Ports 1 & 3/5 on both sides)	Captured exhaust of pilot Common SUP, Captured EXH (Ports 1 & 3/5 on both sides)
	Port 1	Rc 1/4 (Both sides)	Rc 1/4 (Both sides)
Port size	Port 3/5	Rc1/4 (Both sides)	Rc1/4 (Both sides)
	Port 2 & 4	Rc ¹ /4	Rc 1/4
Number of sta	ations	2~10	2 ~ 10
		PCS2413 -NB	PCS2413Y-NB
		PCD2413 -NB	PCD2413Y-NB
Mountable solenoid valve		PCD3413 -NB	PCD3413Y-NB
		PCE3413 -NB	PCE3413Y-NB
		PCO3413 -NB	PCO3413Y-NB
Blank plate		PC	13-BP

Ports 1 & 3/5 on both sides

OPTIONAL PARTS AND SPARE PARTS

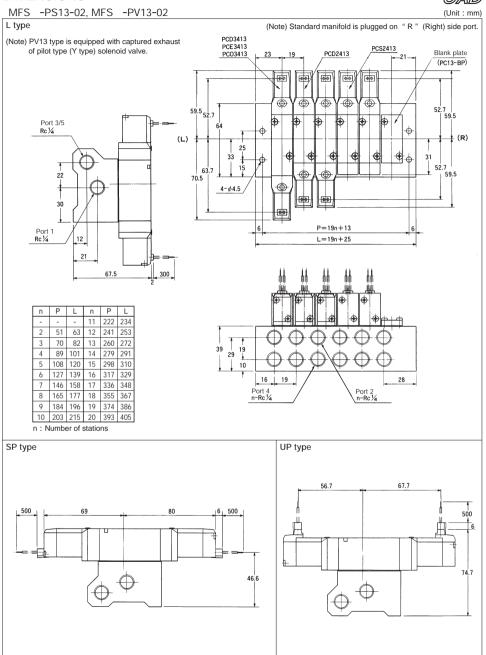
Part name	Model No.	
Blank plate	PC13-BP	

ORDERING INSTRUCTIONS



DIMENSIONS





PILOT OPERATED SOLENOID VALVE **RC13 Series** Rubber Seal/In-line Mounting type

RCS2413	2-position Single solenoid
RCD2413	2-position Double solenoid
RCD3413	3-position Closed center
RCE3413	3-position Exhaust center
RCO3413	3-position Pressure center
Latch type	
RCL2413	2-position Latching solenoid
For latch type see Page 114.	



For latch type see Page 114.

SPECIFICATIONS 0.5W type

	71							
Model	No.		Unit	RCS2413	RCD2413	RCD3413	RCE3413	RCO3413
Fluid				Non-lubricated/ lubricated air				
Port si	ize			Rc ½				
Effecti	ive area	(Cv)	mm ²	12.5 (0.69) 8 (0.44) 5 (0.28)				
Ambie	nt tempe	erature		- 5 ~ 50				
Minimum	n operating	pressure	MPa	0.15	0.1		0.15	
Operati	ng pressu	re range	MPa	0.2~0.7				
Maxim	num frea	quency	Cycle/min	240				
e	0	ON		0.035	0.020	0.025		
spons time	L type	OFF		0.025	-		0.035	
Response time	SP & ON	ON	S	0.035	0.020		0.025	
£	type	OFF		0.040	-		0.050	
Rated voltage V			V	DC24				
Permissib	ole voltage f	luctuation	%			+ 10, - 15		
Power consumption W				0.5				
Grade of insulation JIS grade B								
Wiring			Lead wire (L), Connector with lead wire (SP, UP)					
Mass	Lt	ype	a	90	122		137	
wass	SP & L	JP type	g	90	122		137	

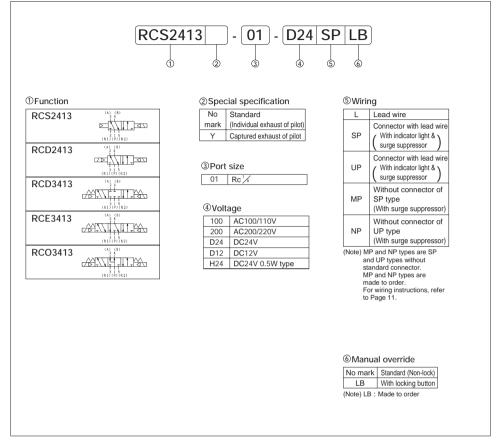
(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

SPECIFICATIONS Standard type

Model	No.		Unit	RCS2413	RCD2413	RCD3413	RCE3413	RCO3413
Fluid				Non-lubricated/ lubricated air				
Port s	ize			Rc 1/8				
Effect	ive area	(Cv)	mm ²	12.5	12.5 (0.69) 8 (0.44)		5 (0.28)	
Ambie	nt tempe	erature				- 5 ~ 50		
Minimum	operating	pressure	MPa	0.15	0.1		0.15	
Operati	ng pressu	re range	MPa			0.2 ~ 0.8		
Maxim	num frec	quency	Cycle/min			240		
	L	ON		0.020	0.015		0.015	
	type	OFF		0.022	-		0.032	
	SP & UP	ON		0.020	0.015		0.015	
T D D D D D D D D D D D D D D D D D D D	type OFF		0.037	-	0.047			
AC	50Hz	ON	S	0.020	0.015	0.015		
L Res			0.022	-	0.032			
SF		ON		0.020	0.015		0.015	
UF	00112	OFF		0.022	-		0.032	
Rated voltage V			V	AC100/110 200/220 DC24 DC12				
Permissit	ole voltage f	luctuation	%			AC ± 10, DC ⁺¹⁰ ₋₁₅		
Rated	frequer	ncy	Hz	50/60				
otion	Holding	50Hz		2.5(100/200)				
	-	60Hz	VA			2.0(100/200)		
Power consumption	Inlush	50Hz	VA.			2.9(100/200)		
8 100/200)								
Power	consump	tion DC	W	1.8				
Grade	of insul	ation		JIS grade B				
Wiring					Lead wire (L),	Connector with lead	wire (SP, UP)	
Mass	L ty	уре	g	90	122		137	
111033	SP & L	JP type	9	90	122		137	

(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

ORDERING INSTRUCTIONS



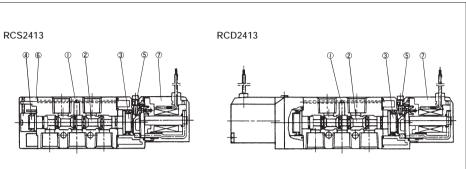
OPTIONAL PARTS AND SPARE PARTS

Connector with lead wire

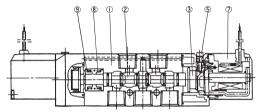
②Lead wire length CL5 : 500mm (Standard) CL10 : 1000mm CL20 : 2000mm CL30 : 3000mm CL50 : 5000mm Connector with cabtyre cable

PC5-CB10 Cable length 1000mm

CONSTRUCTIONS AND MAIN COMPONENTS



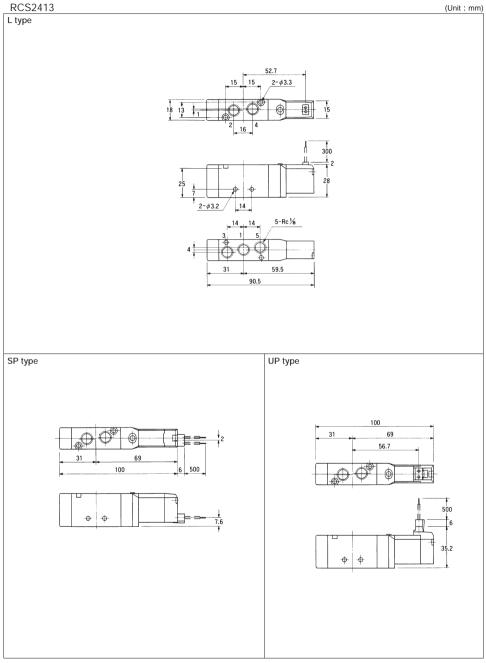
RCD3413, RCE3413, RCO3413



No.	Description	Material	
	Body	Aluminium alloy	
	Spool assembly		
	Piston D	Synthetic resins	
	Piston S	Synthetic resins	
	Manual override	Synthetic resins	
	End cover	Synthetic resins	
	Pilot valve	-	
	Return spring 3P	Stainless steel	
	Spring retainer	Synthetic resins	

DIMENSIONS



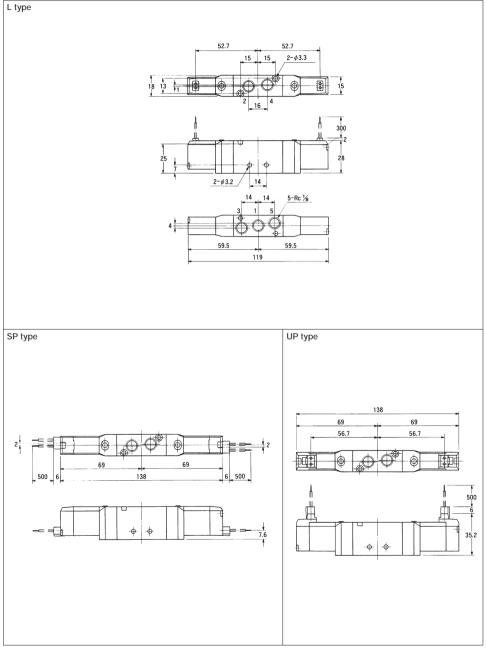


DIMENSIONS





(Unit : mm)

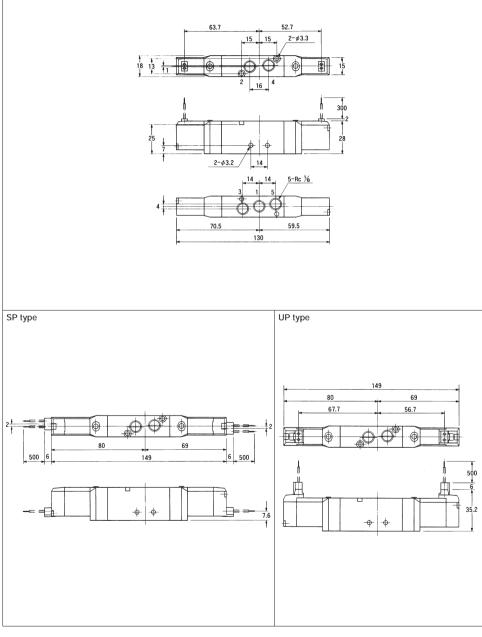


DIMENSIONS



RCD3413, RCE3413, RCO3413





INDIVIDUAL WIRING TYPE MANIFOLD MFU -R13 Bar type

MFU -RC13 (Common SUP, Common EXH Ports 1, 3 & 5 on both sides MFU -RY13 (Captured exhaust of pliot Common SUP, Captured EXH Ports 1, 3 & 5 on both sides

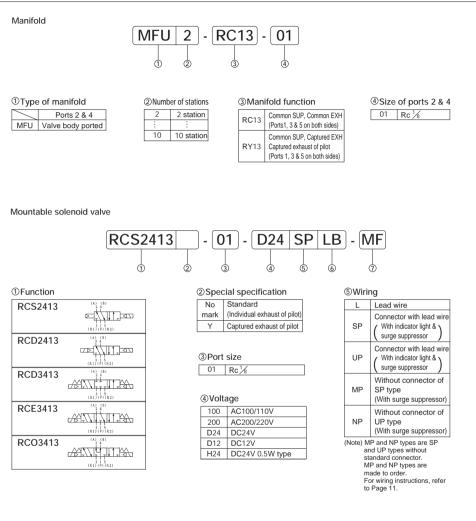


		MFU -RC13	MFU -RY13	
Type of manifold		Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)	Captured exhaust of pilot Common SUP, Captured EXH (Ports 1, 3 & 5 on both sides)	
	Port 1	Rc 1/4 (Both sides)	Rc 1/4 (Both sides)	
Port size	Port 3 & 5	Rc 1/4 (Both sides)	Rc 1/4(Both sides)	
	Port 2 & 4	Rc 1/8 (Vave body ported)	Rc ¹ / ₈ (Vave body ported)	
Number of sta	tions	2~10	2 ~ 10	
		RCS2413 -01MF	RCS2413Y-01MF	
		RCD2413 -01MF	RCD2413Y-01MF	
Mountable solenoid valve		RCD3413 -01MF	RCD3413Y-01MF	
		RCE3413 -01MF	RCE3413Y-01MF	
		RCO3413 -01MF	RCO3413Y-01MF	
Blank plate		RC1	3-BP	

OPTIONAL PARTS AND SPARE PARTS

Part name	Model No.	
Blank plate	RC13-BP	

ORDERING INSTRUCTIONS



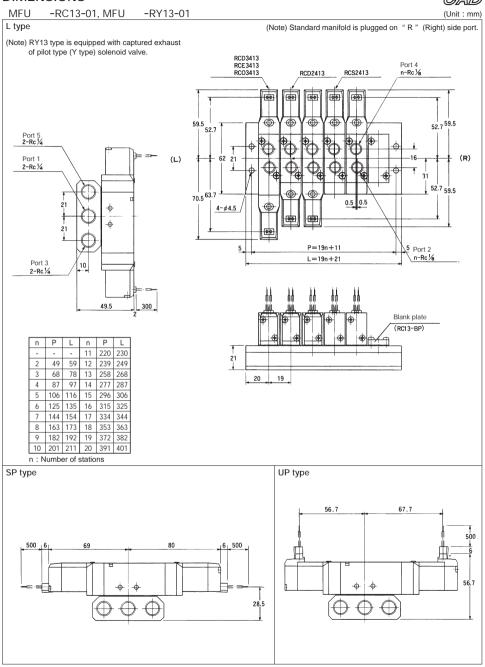
⑥Manual override

No mark	Standard (Non-lock)
LB	With locking button
(Note) LB :	Made to order

⑦For mounting on manifold

MF For mounting on manifold (Note) A gasket & two mounting screws come with valve.

DIMENSIONS



PILOT OPERATED LATCHING SOLENOID VALVE **PCL5, RCL5 Series** Rubber Seal/Sub-base, In-line Mounting type

PCL245	2-position Latching solenoid
RCL245	2-position Latching solenoid

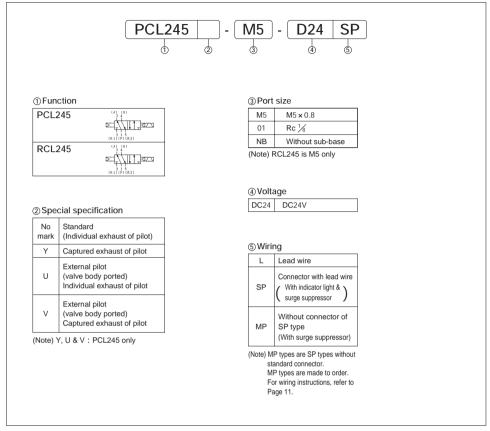


SPECIFICATIONS

Model No.			Unit	PCL245	RCL245
Fluid				Non-lubricated/ lubricated air	
Port size				M5, Rc ¹ ⁄ ₈	M5
Effective area (Cv)			mm²	3.5 (0.19) : M5 3.8 (0.21) : Rc 1/8	3.7 (0.20)
Ambient temperature				- 5 ~ 50	
Minimum operating pressure			MPa	0.15	
Operating pressure range			MPa	0.2 ~ 0.7	
Maximum frequency			Cycle/min	600	
Ð		ON	- S	0.02	
Response time	L type	OFF		0.02	
	SP type	ON		0.02	
		OFF		0.02	
Min. energizing time			S	0.05	
Rated voltage			V	DC24	
Permissible voltage fluctuation			%	+ 10, - 15	
Power consumption			W	1.8	
Grade of insulation				JIS grade B	
Wiring				Lead wire (L), Connector with lead wire (SP)	
Mass	L & SP type	NB		62	-
		M5	g	106	62
		Rc 1/8		118	_

(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

ORDERING INSTRUCTIONS



OPTIONAL PARTS AND SPARE PARTS

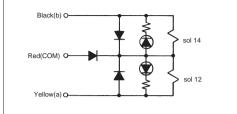
Sub-base

It is also used for PC5 in common. Refer to page 37.

Connector with lead wire

Part name	Length	Model No.
Connector with lead wire	500	PCL5-D24-CL5 (Standard)

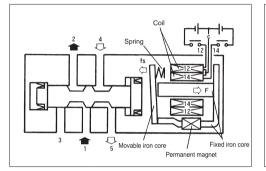
ELECTRICAL CONNECTION OF SOLENOID



OPERATING PRINCIPLE

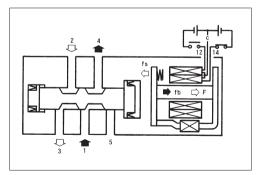
sol 12 OFF (sol 12, sol 14 OFF)

The movable iron core keeps its position because the spring force (fs) is stronger than the permanent magnetic force (F).



sol 14 OFF

The movable iron core is left attracted to the fixed iro core even if power to sol 14 is off, because the workholding force (Fo) of the permanent magnet is stronger than the movable iron core spring force(fs).



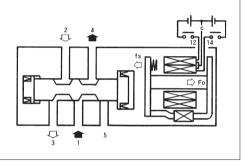
Port 4 opens when power is applied between + COM (red) and - sol 14 (black).

Port 2 opens when power is applied between + COM (red) and - sol 12 (yellow).

sol 14 ON

When power is applied to sol 14, the attractive force (fb) of sol 14 is added to the permanent magnetic force (F).

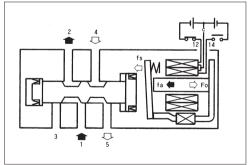
So, when it is larger than the movable iron core spring force (fs), the movable iron core is attracted.



sol 12 ON

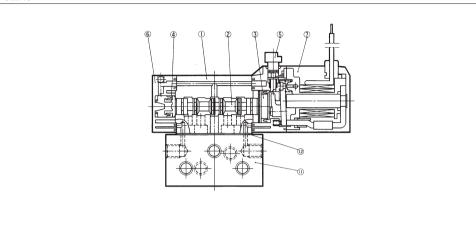
When power is applied to sol 12, the attractive force (fa) of sol 12 acts to offset the workholding force of the permanent magnet.

As a result, the movable iron core returns to its original position by the spring force (fs).

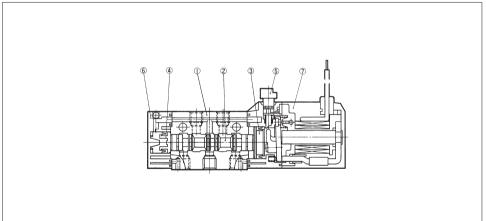


CONSTRUCTIONS





RCL245



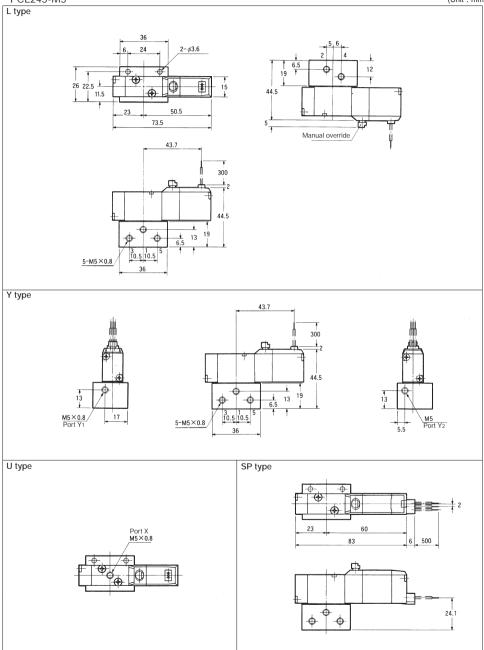
MAIN COMPONENTS

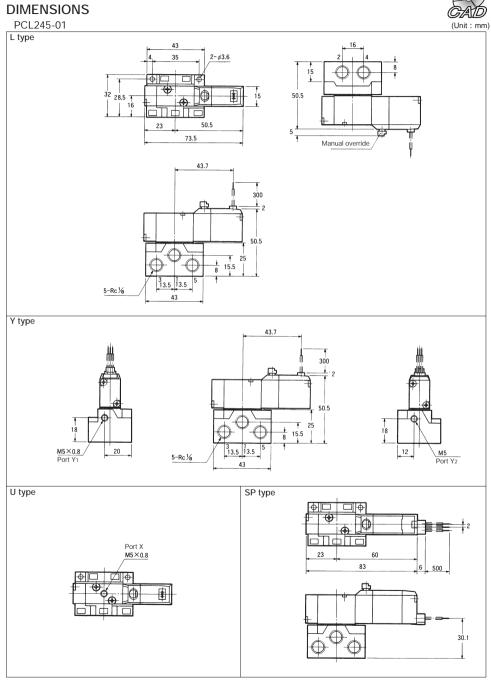
No.	Description	Material
	Body	Aluminium alloy
	Spool assembly	-
	Piston D	Synthetic resins
	Piston S	Synthetic resins
	Manual override	Synthetic resins
	End cover	Synthetic resins
	Pilot valve	-
	Sub-base	Aluminium alloy
	Base gasket	NBR

DIMENSIONS



PCL245-M5

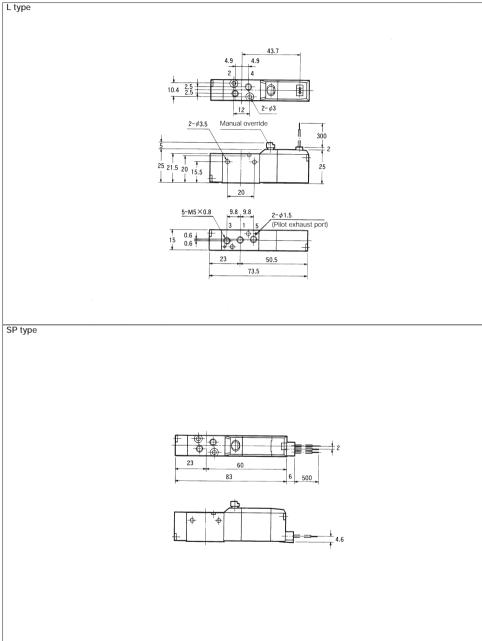




DIMENSIONS



RCL245-M5



INDIVIDUAL WIRING TYPE MANIFOLD Bar type 5

MFS	-PC5	Common SUP, Common EXH Ports 1, 3 & 5 on both sides
MFS	-PD5	Common SUP, Common EXH Ports 1, 3 & 5 on one side
MFS	-PI5	Common SUP, Individual EXH Ports 1 on one side
Captur	ed exhaust o	f pilot type manifold
_{Captur} MFS	red exhaust o	f pilot type manifold Common SUP, Common EXH Ports 1, 3 & 5 on both sides

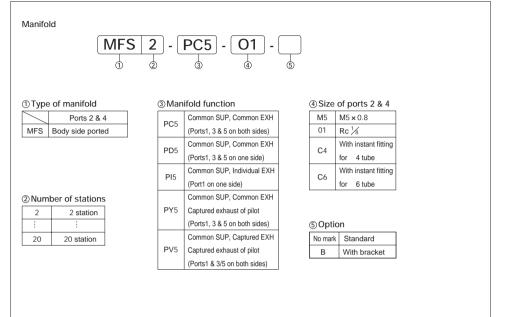


MANIFOLD SPECIFICATIONS

		MFS -PC5	MFS -PD5	MFS -PI5	MFS -PY5	MFS -PV5
Type of manifold				Common SUP, Individual EXH	Captured exhaust of pilot Common SUP, Common EXH	Captured exhaust of pilot Common SUP, Captured EXH
		(Ports 1, 3 & 5 on both sides)	(Ports 1, 3 & 5 on one side)	(Port 1 on one side)	(Ports 1, 3 & 5 on both sides)	(Ports 1 & 3/5 on both sides)
	Port 1	Rc 1/8 (Both sides)	Rc ¹ / ₈ (One side)	Rc ¹ / ₈ (One side)	Rc 1/8 (Both sides)	$Rc\frac{1}{8}$ (Both sides)
Port size	Port 3 & 5	Rc 1/8 (Both sides)	Rc ¹ / ₈ (One side)	M5 (Valve body ported)	Rc 1/8 (Both sides)	Rc 3/8 (Both sides)
Port size	Port 2 & 4	Rc ¹ / ₈ , C4, C6	M5	M5	M5, Rc 1/8	C4, C6
	Port Y	-	-	-	M5 (Both sides)	Rc 1/8 (Both sides)
Number of sta	tions	2 ~ 20	2 ~ 20	2 ~ 20	2 ~ 20	2 ~ 20
		PCL245	-NB-D24	PCL245 -R5-D24	PCL245	-NB-D24
		PCC235	-NB	PCC235 -R5	PCC235	-NB
		PCO235	-NB	PCO235 -R5	PCO235	-NB
		PCS245	-NB	PCS245 -R5	PCS245	-NB
Mountable sol	enoid valve	PCD245	-NB	PCD245 -R5	PCD245	-NB
		PCD345	-NB	PCD345 -R5	PCD345	-NB
		PCE345	-NB	PCE345 -R5	PCE345	-NB
		PCO345	-NB	PCO345 -R5	PCO345	-NB
Blank plate			PC5-BP		PY5	-BP

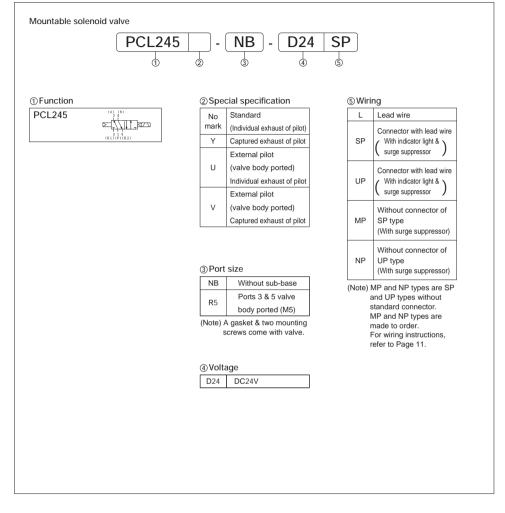
PCL5, RCL5 Series

ORDERING INSTRUCTIONS



DIMENSIONS

MFS	-PD5-M5	Ŧ	P51	
MFS	-PD5-M5-B	Ŧ	P52	
MFS	-PC5-01	Ŧ	P49	
MFS	-PC5-01-B	Ŧ	P50	The manifolds are common to those
MFS	-PC5-C4、C6	æ	P53	shown on the left.
MFS	-PC5-C4、C6-B	Ŧ	P54	The solenoid valves PCL245 and PCS245
MFS	-PI 5-M5	Ŧ	P55	have the same configuration except that
MFS	-PY5-M5	Ŧ	P58	they are different in the manual override.
MFS	-PY5-01	Ŧ	P59	,
MFS	-PV5-C4、C6	æ.	P60	



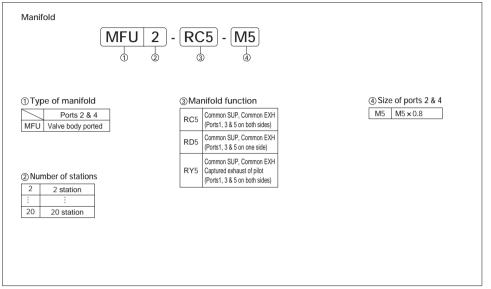
INDIVIDUAL WIRING TYPE MANIFOLD Bar type - R 5

MFU	-RC5	Common SUP, Common EXH Ports 1, 3 & 5 on both sides
MFU	-RD5	Common SUP, Common EXH Ports 1, 3 & 5 on one side
Captur	ed exhaust of	pilot type manifold
MFU	-RY5	Common SUP, Common EXH Ports 1, 3 & 5 on both sides



MANIFOLD SPECIFICATIONS

Type of manifold		MFU -RC5	MFU -RD5	MFU -RY5
		Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)	Common SUP, Common EXH (Ports 1, 3 & 5 on one side)	Captured exhaust of pilot Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)
	Port 1	Rc ¹ / ₈ (Both sides)	Rc 1/8 (One side)	Rc 1/8 (Both sides)
D	Port 3 & 5	Rc 1/8 (Both sides)	Rc ¹ / ₈ (One side)	Rc 1/8(Both sides)
Port size	Port 2 & 4	M5	M5	M5
F	Port Y	_	-	M5
Number of stations		2 ~ 20	2~20	2 ~ 20
Mountable solenoid valve			RCL245 - - -MF RCC235 - - -MF RCS245 - - -MF RCD245 - - -MF RCD345 - - -MF RCD345 - - -MF RCB345 - - -MF RCB345 - - -MF	
Blank plate		PC5	j-BP	PY5-BP

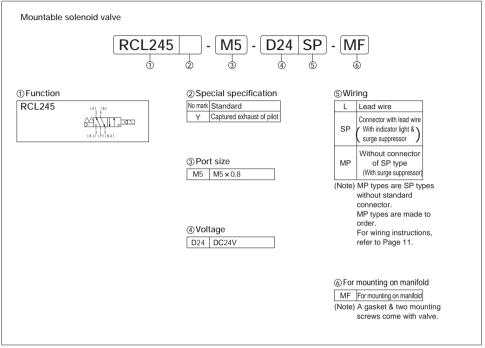


For dimensions,	refer to t	the following	pages.
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		The manifolds are common to those shown
MFU -RC5-M5	☞ P75	on the left.
MFU -RD5-M5	☞ P76	The solenoid valves RCL245 and RCS245 have the same configuration except that they
MFU -RY5-M5	☞ P79	are different in the manual override.

PCL5, RCL5 Series

ORDERING INSTRUCTIONS



PILOT OPERATED LATCHING SOLENOID VALVE **PCL13, RCL13 Series** Rubber Seal/Sub-base, In-line Mounting type

PCL2413	2-position
	Latching solenoid
RCL2413	2-position Latching solenoid

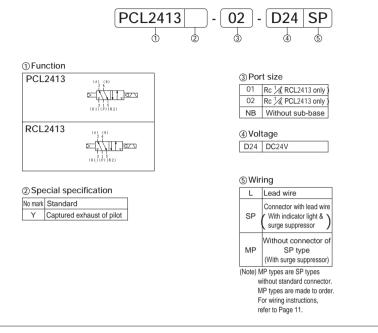


SPECIFICATIONS

Model No	D.		Unit	PCL2413 RCL2413			
Fluid				Non-lubricated/ lubricated air			
Port size				Rc 1/4 Rc 1/8			
Effective	area (Cv)		mm ²	12 (0.66) 12.5 (0.69)			
Ambient	temperatu	re		- 5 ~ 50			
Minimum	operating p	ressure	MPa	0.	15		
Operatin	g pressure	range	MPa	0.2 ~	- 0.7		
Maximur	n frequenc	у	Cycle/min	24	10		
Θ	Lture	ON		N 0.025		25	
Response time	L type	OFF	-	0.025			
esp tin	OD to me	ON	S	0.025			
£	SP type	OFF		0.025			
Min. energizing time		s	0.05				
Rated voltage V		V	DC24				
Permissibl	e voltage flu	ctuation	%	+ 10, - 15			
Power co	onsumption	ı	W	1.8			
Grade of insulation			JIS grade B				
Wiring			Lead wire (L), Connector with lead wire (SP)				
		NB		95	_		
Mass	L & SP type	Rc 1/8	g	-	90		
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rc 1/4		179	_		

(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

ORDERING INSTRUCTIONS

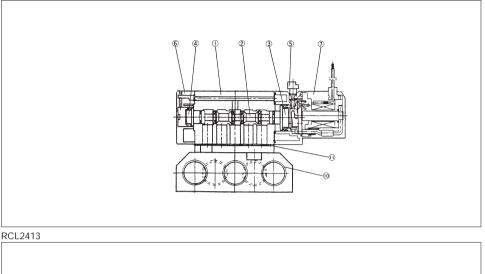


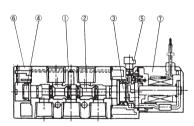
OPTIONAL PARTS AND SPARE PARTS

Part name	Model No.
Sub-base	PC13-SB-502
Connector with lead wire (length 500mm)	PCL5-D24-CL5(Standard)

CONSTRUCTIONS

PCL2413



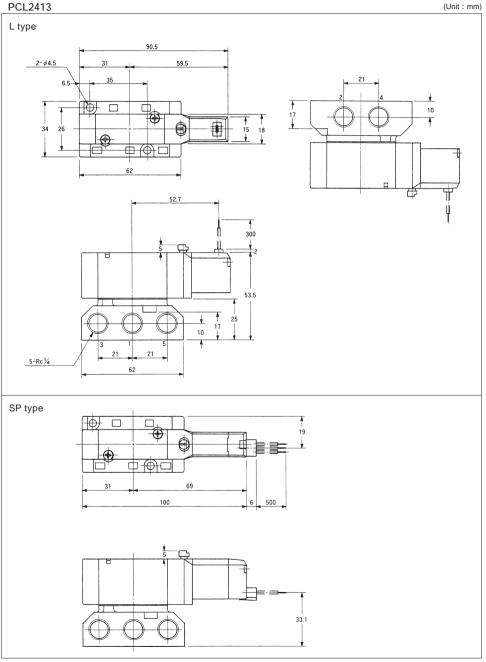


MAIN COMPONENTS

No.	Description	Material
	Body	Aluminium alloy
	Spool assembly	
	Piston D	Synthetic resins
	Piston S	Synthetic resins
	Manual override	Synthetic resins
	End cover	Synthetic resins
	Pilot valve	
	Sub-base	Aluminium alloy
	Base gasket	NBR

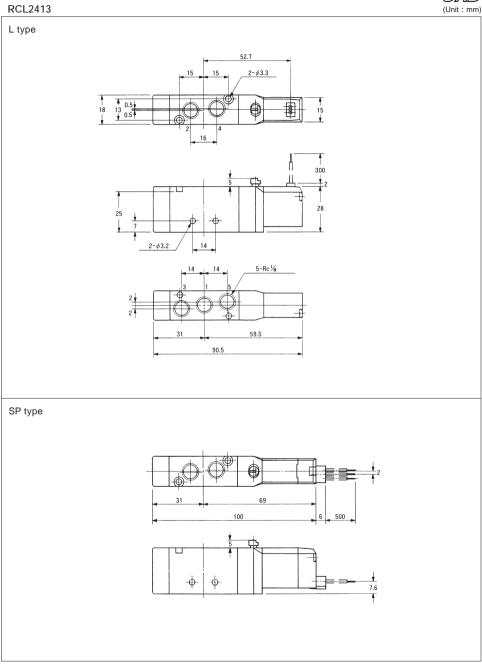
DIMENSIONS





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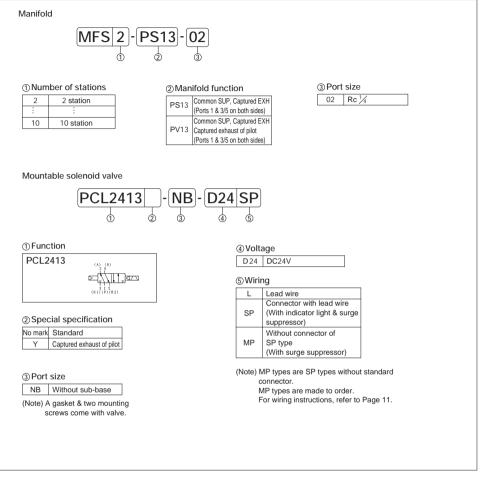
INDIVIDUAL WIRING TYPE MANIFOLD MFS-P 13 Bar type

MFS	-PS13	Common SUP, Captured EXH Ports 1 & 3/5 on both sides
MFS	-PV13	Captured exhaust of pilot Common SUP, Captured EXH Ports 1 & 3/5 on both sides



MANIFOLD SPECIFICATIONS

Type of manifold		MFS -PS13	MFS -PV13
		Common SUP, Captured EXH (Ports 1 & 3/5 on both sides)	Common SUP, Captured EXH Captured exhaust of pilot
		(1 010 1 0 010 01 2011 01000)	(Ports 1 & 3/5 on both sides)
	Port 1	Rc 1/4(Both sides)	Rc 1/4(Both sides)
Port size	Port 3 / 5	Rc 1/4(Both sides)	Rc 1/4(Both sides)
	Port 2 & 4	Rc 1/4	Rc 1/4
Number of st	ations	2~10	2 ~ 10
		PCL2413	PCL2413Y
		PCS2413	PCS2413Y
M	PCD2413		PCD2413Y
Mountable solenoid valve		PCD3413	PCD3413Y
		PCE3413	PCE3413Y
		PCO3413	PCO3413Y
Blank plate		PC13-BP	PC13-BP



		The manifolds are common to those shown on	
MFS -PS13-02	☞ P90	the left.	
MFS -PV13-02	@ P90	The solenoid valves PCL2413 and PCS2413	
		have the same configuration except that they	
		are different in the manual override.	

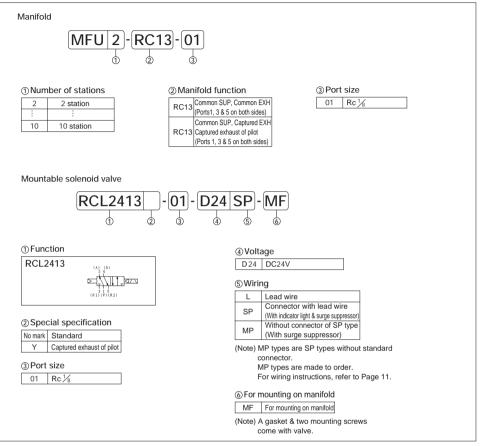
INDIVIDUAL WIRING TYPE MANIFOLD MFU-R 13 Bar type

MFU	-RC13	Common SUP, Common EXH Ports 1, 3 & 5 on both sides
MFU	-RY13	Captured exhaust of pliot Common SUP, Common EXH Ports 1, 3 & 5 on both sides



MANIFOLD SPECIFICATIONS

Type of manifold		MFU -RC13	MFU -RY13
		Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)	Captured exhaust of pilot Common SUP, Common EXH (Ports 1, 3 & 5 on both sides)
	Port 1	Rc 1/4(Both sides)	Rc 1/4(Both sides)
Port size	Port 3 & 5	Rc 1/4(Both sides)	Rc 1/4(Both sides)
	Port 2 & 4	Rc ¹ / ₈ (Vave body ported)	Rc ¹ / ₈ (Vave body ported)
Number of st	ations	2~10	2~10
		RCL2413	RCL2413Y
		RCS2413	RCS2413Y
M	RCD2413		RCD2413Y
Mountable solenoid valve		RCD3413	RCD3413Y
		RCE3413	RCE3413Y
		RCO3413	RCO3413Y
Blank plate		RC13-BP	RC13-BP



For dimensions, refer	to the following pag	The manifolds are common to those shown	
MFU -RC13-01	D 407	on the left.	
MFU -RY13-01	☞ P407	The solenoid valves RCL2413 and RCS2413	
	have the same configuration		
		except that they are different in the manual	
		override.	

3-PORT DIRECT ACTING SOLENOID VALVE **SS23F** Poppet Seal/Sub-base Mounting type

SS23F

2-position Single solenoid



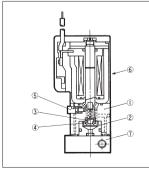
SPECIFICATIONS

Model No.	Unit	SS23F
Fluid		Non-lubricated/ lubricated air
Port size		M3
Effective area (Cv)	mm ²	0.1 (0.006)
Ambient temperature		- 5 ~ 50
Operating pressure range	MPa	0~0.7
Maximum frequency	Cycle/min	1200
Response time	s	ON 0.005
at 0.5MPa	5	OFF 0.005
Rated voltage	V	DC24, 12
Permissible voltage fluctuation	%	+ 10, - 15
Grade of insulation		JIS grade B
Power consumption	W	L type: 0.5 SP, UP type: 0.55
Wiring		Lead wire (L), Connector with lead wire (SP, UP)
Mass	g	25

(Note) • Apply - 0.1 to 0.6 MPa when supplying positive pressure to port 1 and vacuum to port 3. • Add 0.02 second to OFF time when using SP or UP, LK type.

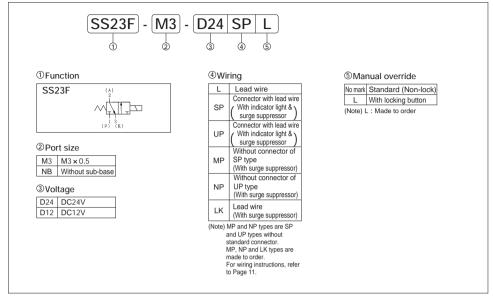
Response time data obtained and presented in accordance with JIS B8375. • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

CONSTRUCTIONS

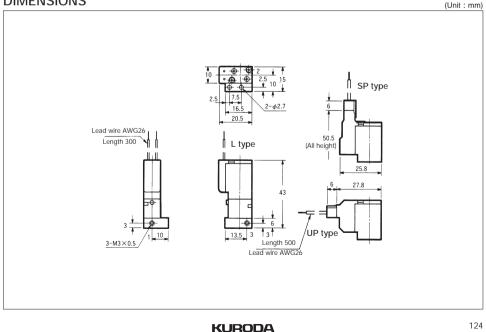


MAIN COMPONENTS

No.	Description	Material
	Pilot base	Synthetic resins
	Body	Synthetic resins
	Valve	NBR
	Spring	Stainless steel
	Manual override	Synthetic resins
	Solenoid	-
	Sub-base	Aluminium alloy



DIMENSIONS



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INDIVIDUAL WIRING TYPE MANIFOLD MFS-TCF Bar type

MFS -TCF

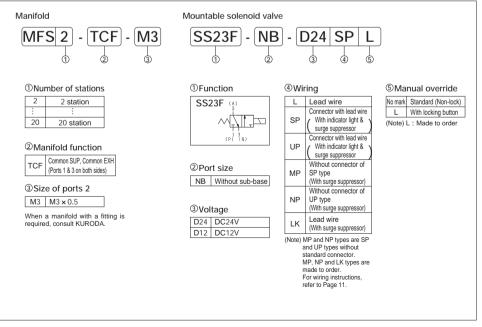
Common SUP, Commom EXH Ports 1 & 3 on both sides



MANIFOLD SPECIFICATIONS

		MFS -TCF
Type of manifo	bld	Common SUP, Common EXH
		(Ports 1 & 3 on both sides)
Port size	Port 1 & 3	M5(Both sides)
Port size	Port 2	M3
Number of stations		2 ~ 20
Mountable sol	enoid valve	SS23F-NB
Blank plate		TCF-BP

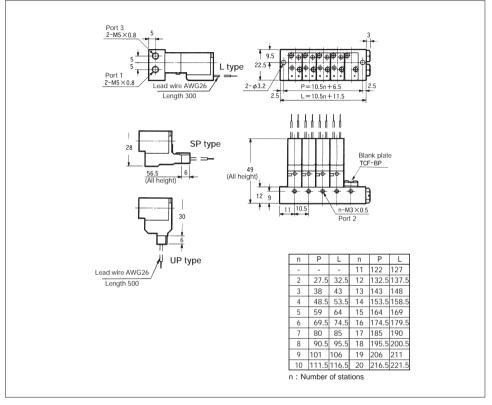
ORDERING INSTRUCTIONS



DIMENSIONS



MFS -TCF



3-PORT DIRECT ACTING SOLENOID VALVE **SS23J** Poppet Seal/Sub-base Mounting type

SS23J

2-position Single solenoid

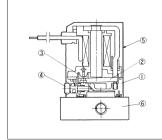


SPECIFICATIONS

Model No.		Unit	SS23J	SS23J(0.5W type)	
Fluid			Non-lubricated/ lubricated air		
Port size				M5	
Effective area	a (Cv)	mm ²	0.35(0.019)	0.2(0.011)
Ambient tem	perat	ure		- 5 ~ 50	
Operating pr	essui	e range	MPa	0~0.8	0~0.7
Maximum frequency		Cycle/min	AC:900 DC:3000(L) 1500(SP,UP)	DC: 2000(L) 1000(SP, UP)	
		ON		0.006(0.006)	0.010(0.010)
Response time	DC	OFF		0.002(0.015)	0.002(0.021)
(SP, UP type) at 0.5MPa	AC	ON	S	0.004 : 50Hz 0.004 : 60Hz	
at blottin a		OFF		0.021:50Hz 0.014:60Hz	
Rated voltage		V	AC100/110, 200/220, DC24 DC12	DC24 DC12	
Permissible voltage fluctuation		%	AC ± 10 DC + 10, - 15	DC + 10, - 15	
Rated freque	ncy		Hz	50/60	
Power consump	otion	Holding	VA	2.9:50Hz 2.4:60Hz	-
(AC100/200))	Inlush	VA	3.2 : 50Hz 2.9 : 60Hz	-
Power consumption DC			JIS grade B		
Grade of insulation		W	1.8	0.5	
Wiring			Lead wire (L), Connector with lead wire (SP, UP)		
Mass		g	NB: 35 M5: 50		
				1	

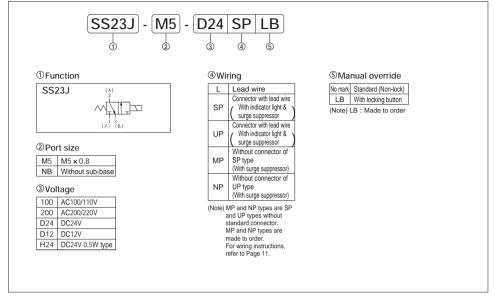
(Note) • When using it at temperature of 5 or below, use dry air that has passed through an air dryer to prevent condensation, freeze, etc.

CONSTRUCTIONS



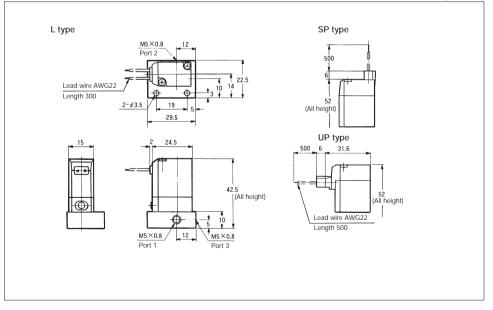
MAIN COMPONENTS

No.	Description	Material
	Pilot base	Synthetic resins
	Plunger assembly	-
	Return spring	Stainless steel
	Manual override	Synthetic resins
	Solenoid	-
	Sub-base	Aluminium alloy





DIMENSIONS



INDIVIDUAL WIRING TYPE MANIFOLD MFS-TCJ Bar type

MFS -TCJ

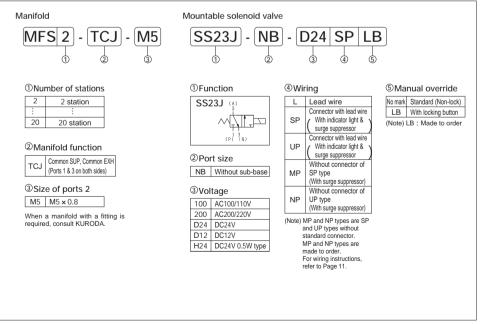
Common SUP, Common EXH Ports 1 & 3 on both sides



MANIFOLD SPECIFICATIONS

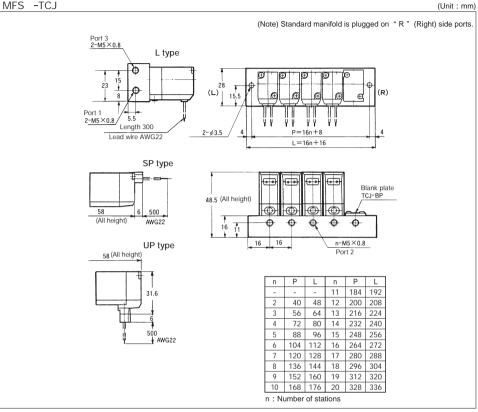
		MFS -TCJ
Type of manifo	bld	Common SUP, Common EXH
		(Ports 1 & 3 on both sides)
Port size	Port 1 & 3	M5(Both sides)
Port size	Port 2	M5
Number of stations		2 ~ 20
Mountable sol	lenoid valve	SS23J
Blank plate		TCJ-BP

ORDERING INSTRUCTIONS



SS23J





∆ WARNING

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