DIRECT OPERATED SOLENOID VALVES

A Series

Metal Seal, In-line Mounting/Sub-base Mounting

TÜV CERT
ISO 9001
Cert. No. 09 100 5769
ISO 14001
Cert. No. 01 104 010775

Parker KURODA

ENGINEERING YOUR SUCCESS.

LAPPED SPOOL & SLEEVE, DIRECT OPERATED SOLENOID VALVES

A Series

The solenoid-operated air valves of this series are types metal seal and a spool valve. This provides a choice of 3-way (3 ports), 4-way (5 ports), 3-position with single or double solenoid, and 3-position with closed center or exhaust center models, in conformity with customer's requirements.

High Strength

Body, solenoid cover and sub-base are of aluminum alloy castings of high strength.

Simple Construction

Extreme simplification in construction design assures trouble-free valves and easy maintenance.

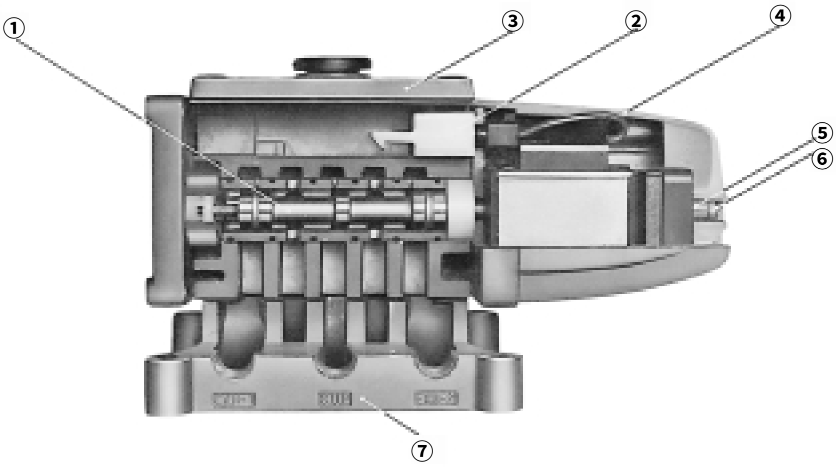
Small Size, light Weight

Light weight and compact type makes installation easy.

Easy Maintenance

KURODA air valves are mounted on base, facilitating parts interchangeability without disturbing mounting or piping connections.

- By plugging the unused ports, these valves can be utilized as normally open or normally closed 3-way or 2-way valves.
- Also usable as dual-pressure, 4-way or 3-way valves by piping two pressures into the exhaust ports, thus rendering the center port as a common exhaust.
  Different pressures have no effect on the operation of this balanced spool valves.



①Precision Lapped Spool and Sleeve

Precision lapped spool and sleeve are made of special heat-treated stainless steel, offering wear-resistance, corrosion-resistance and the longest life guarantee.

②Large-sized Terminal

The terminal with spring washer is large enough to make wiring easier and prevent unsatisfactory contact. The clamping plate moves up and down with the screw movement to speed wiring.

③Indicator Light (Optional)

Indicator light can be incorporated upon request. The light gives visual indication of solenoid energization.

④Easily Replaceable Solenoid Unit

The solenoid and its cover are unified. Easily installed or replaced by loosening four captive screws. The highly dependable solenoid is rated for continuous duty.

⑤Manual Piston Switch

Manual piston switch permits manual operation of the valve with electrical power off.

⑥Locking button (Optional)

Locking button can be mounted

⑦Bottom porting, Manifold Mounting are Available

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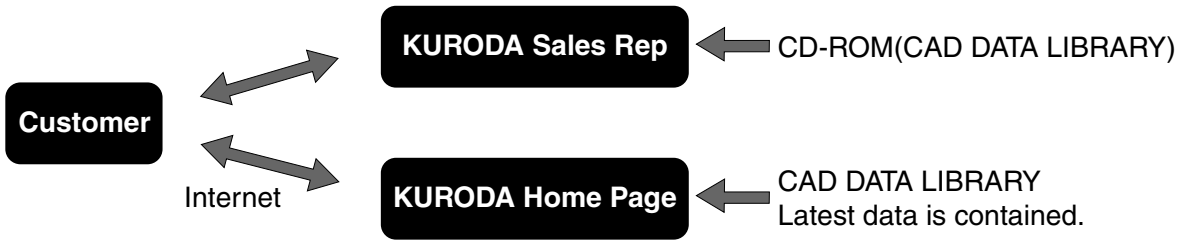
INTRODUCTION OF KURODA CAD DATA LIBRARY

KURODA CAD DATA LIBRARY contains CAD data of pneumatic equipment, ball screws, support units and single-axis modules.
In addition, various tools for selecting pneumatic equipment and ball screws are listed in it. Please use this library to improve the design performance of your FA related equipment.

How to Obtain CAD Data Library

CAD Data Library is available from CD-ROM supplied by our company or our company's Home Page via Internet. For a CD-ROM, please ask KURODA sales representative in charge of your company.



http://www.kuroda-precision.co.jp/e-top

Kind of CAD data

Type of data		CD-ROM	Home Page
DXF	r12	○	○
DWG(AUTO CAD)＊1	r12	○	○＊2

※1：Name of CAD software is our company's registered trademark.
※2：Some of DWG type product data are not contained

How to Download from Home Page

Access KURODA Home Page
http://www.kuroda-precision.co.jp/e-top
↓
FA Internet Service
↓
Download Service
↓
User Registration
↓
Download

(Note) CAD data is classified by each product and contained in a self-extracting exectable file format (.exe).

CAD Data of Main Pneumatic Equipment

①Pneumatic Actuators
Series of air cylinders and rotary actuators are listed in CAD DATA LIBRARY.

②Pneumatic Grippers/Vacuum Equipment
Series of parallel grippers, rotary opening/closing grippers, vacuum units and pads are listed in it.

③Control Valves
Series of solenoid valves such as ADEX VALVEs are listed in it.

④Other Equipment
Series of speed controllers, joints, etc. are listed in it.

⑤Air Cleaning Equipment
Series of FRL combination QUBE are listed in it.

FOR SAFETY USE

Be sure to read the following instructions before use.
For common and individual instructions, refer to the text of this catalogue.

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.

⚠CAUTION	: Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in personal injury or property-damage-only accidents.
⚠WARNING	: Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.
⚠DANGER	: 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

⚠WARNING

●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 catalogue are diversified, the applicability of pneumatic equipment to the intended 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 pneumatic equipment in the 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

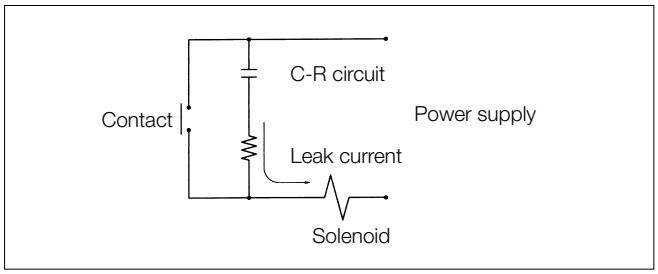
⚠ WARNING

- **Stopping actuator at intermediate position**
  When stopping the actuator at an intermediate position using a solenoid valve listed in this catalogue, 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.
- **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 catalogue 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.

DESIGN

⚠ CAUTION

- **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 this 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 direct-operated 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 3-position 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 result in a malfunction of the solenoid valve.

SOLENOID VALVES/COMMON INSTRUCTIONS ②

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

SELECTION

WARNING

- **Refer to specifications.**
  Solenoid valves listed in this catalogue 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.**

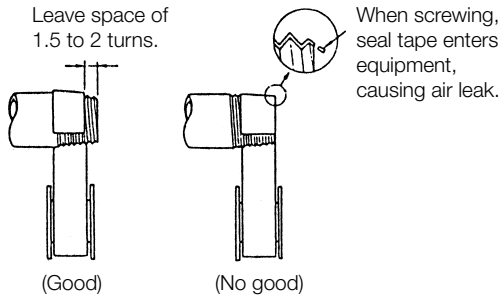
CAUTION

- **Fit an air muffler to the exhaust port (ports 3, 5) 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.

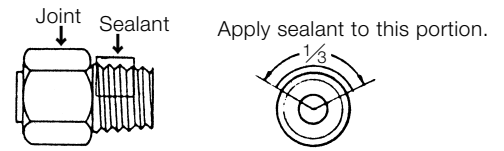
PIPING

CAUTION

- **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 clamping torque.

Port size	Clamping torque (N·m)
M3	0.3〜 0.5
M5	1.5〜 2.0
R, Rc1/8	7.0〜 9.0
R, Rc1/4	12 〜14
R, Rc3/8	2 〜24
R, Rc1/2	28 〜30
R, Rc3/4	28 〜30
R, Rc1	36 〜38
R, Rc1 1/4	40 〜42
R, Rc1 1/2	48 〜50

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

CAUTION

- **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 catalogue.
- **When using a 3-position closed center type solenoid valve :**
  Thoroughly check the piping between solenoid valve and actuator for air leak.

WIRING

WARNING

- **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 catalogue 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.

LUBRICATION

CAUTION

- **Solenoid valves listed in this catalogue 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 (contaiinning additive) is recommended.

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.

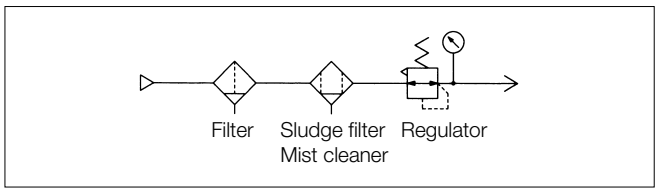
QUALITY OF AIR

⚠ WARNING

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

⚠ CAUTION

- **Fit an air filter with filtration of 5 μm 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 FAIRCALL A68, IDEMITSU DAPHUNY SUPER CS68) featuring minimized sludge production or use a sludge filter or mist cleaner to prevent sludge from entering the pneumatic equipment.



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.
- **Disassembly of solenoid valve**
  When disassembling the solenoid valve, contact KURODA beforehand.

⚠ CAUTION

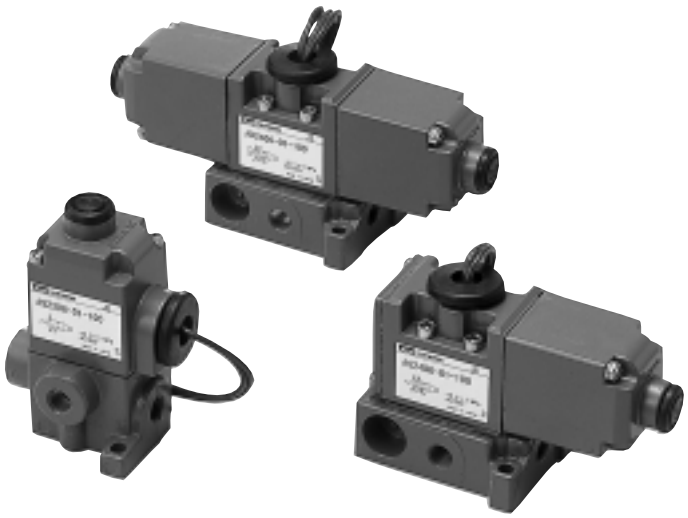
- **Draining**
  To keep the quality of air to a certain level, drain the air filter at periodical intervals.

3/5-PORT DIRECT OPERATED SOLENOID VALVES

A06 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2306	2-position Single solenoid
AS2406	2-position Single solenoid
AD2406	2-position Double solenoid
AD3406	3-position Closed center
ADE3406	3-position Exhaust center



SPECIFICATIONS

Model No.			Unit	AS2306	AS2406	AD2406	AD3406	ADE3406
Fluid				Non-lubricated/lubricated air				
Port size				Rc1/8、1/4				
Effective area			mm²	9	10	10	9	9
Cv value				0.49	0.54	0.54	0.49	0.49
Operating ambient temperature			℃	−5〜60				
Operating pressure range			MPa	−0.1〜1				
Maximum frequency			Cycle/min	600	600	600	360	360
Response time (at 0.5MPa)			s (Average)	0.012	0.013	0.012	0.015	0.015
Rated voltage			V	AC100、200、110、220				
Grade of insulation				JIS grade B				
Permissible voltage fluctuation			%	±10				
Rated frequency			Hz	50/60				
Power consumption	Holding	50Hz	VA	13			13	
		60Hz	VA	8.5			8.5	
	Inlush	50Hz	VA	37			43	
		60Hz	VA	32			39.5	
Mass			kg	0.34	0.47	0.66	0.68	0.68

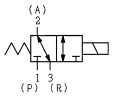
(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

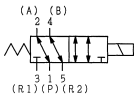
AS2406 – 02 – 100
① ② ③

①Function

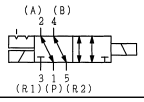
AS2306



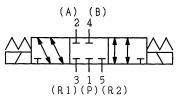
AS2406



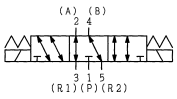
AD2406



AD3406



ADE3406



②Port size

01	Rc1/8
02	Rc1/4

③Voltage

100	AC100V
110	AC110V
200	AC200V
220	AC220V

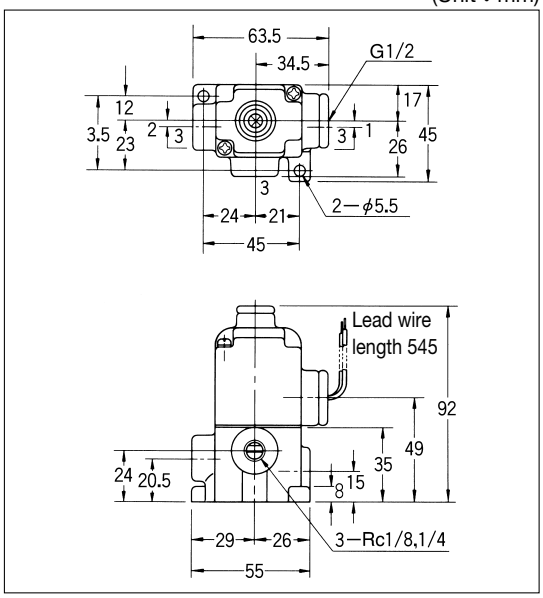
OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Solenoid	AC 100V	A06-103
	AC 110V	A06-10310
	AC 200V	A06-203
	AC 220V	A06-20320
Sub-base	Rc1/8	A06-SB-01
	Rc1/4	A06-SB-02
Base gasket		A06-G
Spring	For 2-position	A06-SS
	For 3-position	A06-3S

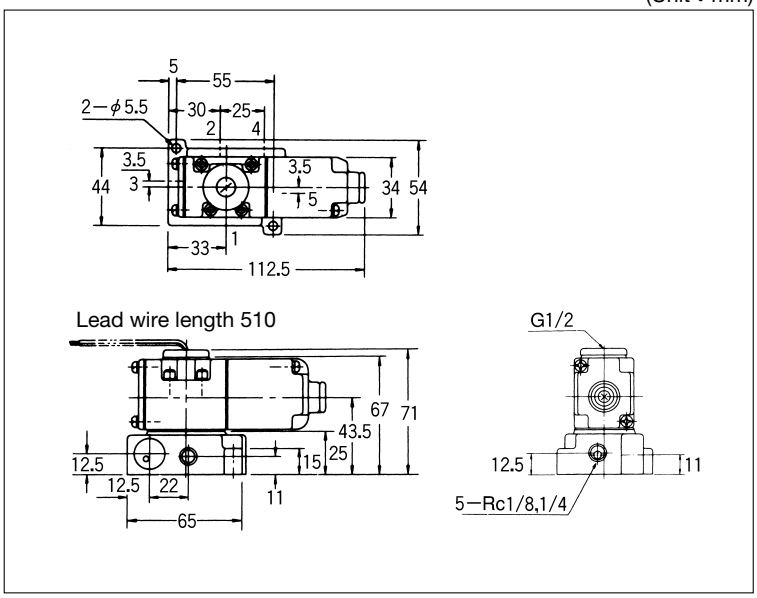
A06 Series

DIMENSIONS

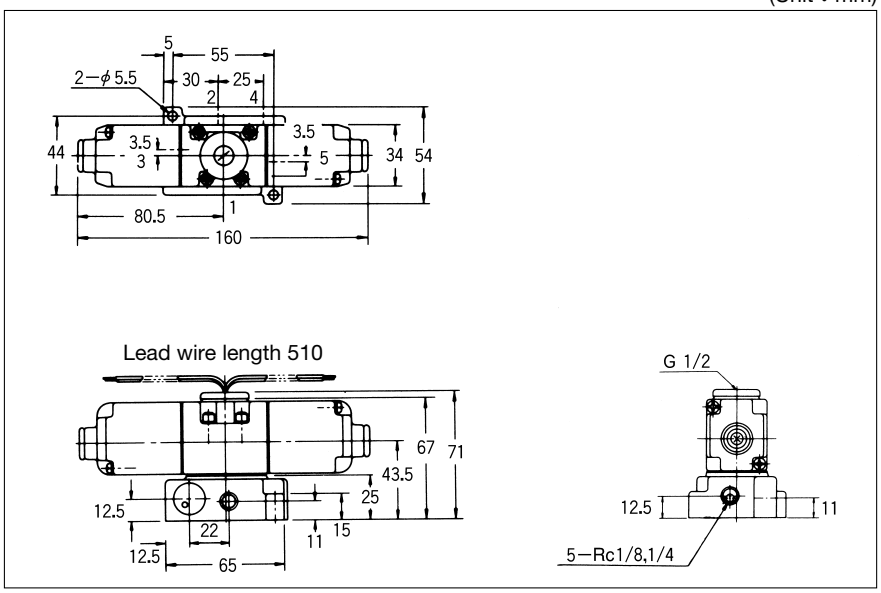
AS2306 (Unit：mm)



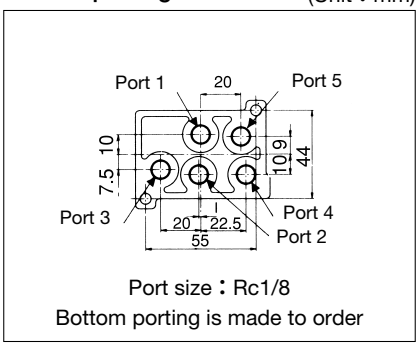
AS2406 (Unit：mm)



AD2406 (Unit：mm)

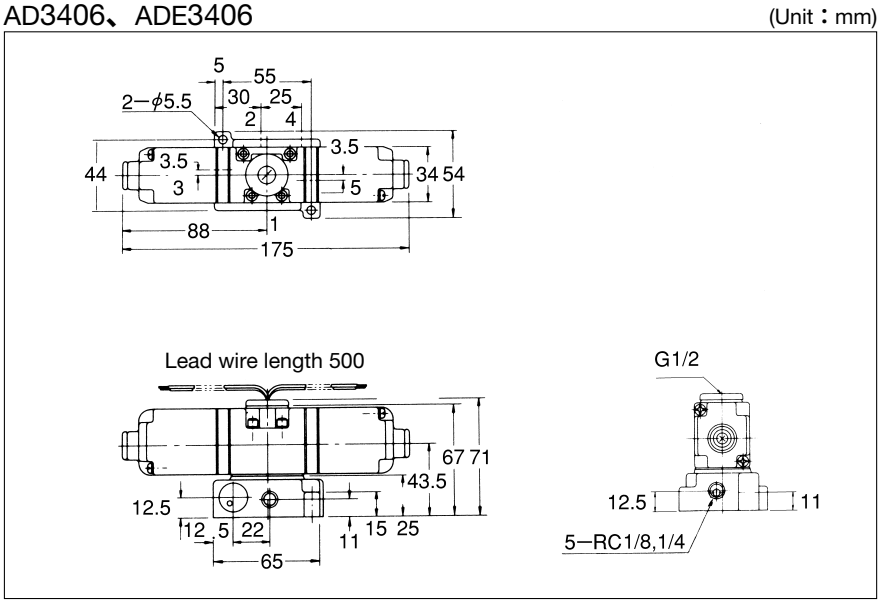


Bottom porting (Unit：mm)



Port size：Rc1/8
Bottom porting is made to order

AD3406、ADE3406 (Unit：mm)



3/5-PORT DIRECT OPERATED SOLENOID VALVES

A08 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2308	2-position Single solenoid
AS2408	2-position Single solenoid
AD2408	2-position Double solenoid
AD3408	3-position Closed center
ADE3408	3-position Exhaust center

SPECIFICATIONS

Model No.			Unit	AS2308	AS2408	AD2408	AD3408	ADE3408
Fluid				Non-lubricated/lubricated air				
Port size				Rc1/4、3/8				
Effective area			mm²	22	30	30	25	25
Cv value				1.19	1.63	1.63	1.36	1.36
Operating ambient temperature			℃	−5〜60				
Operating pressure range			MPa	−0.1〜1				
Maximum frequency			Cycle/min	400	400	400	250	250
Response time (at 0.5MPa)			s (Average)	0.013	0.015	0.01	0.015	0.015
Rated voltage			V	AC100、200、110、220				
Grade of insulation				JIS grade B				
Permissible voltage fluctuation			%	±10				
Rated frequency			Hz	50/60				
Power consumption	Holding	50Hz	VA	25			25	
		60Hz	VA	14			14	
	Inlush	50Hz	VA	130			170	
		60Hz	VA	110			140	
Mass			kg	0.7	1.0	1.4	1.5	1.5

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

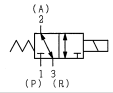
A08 Series

ORDERING INSTRUCTION

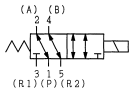
AS2408 – 02 – 100 P
① ② ③ ④

①Function

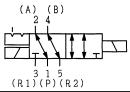
AS2308



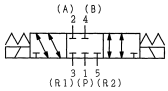
AS2408



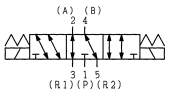
AD2408



AD3408



ADE3408



②Port size

02	Rc1/4
03	Rc3/8

③Voltage

100	AC100V
110	AC110V
200	AC200V
220	AC220V

④Versions

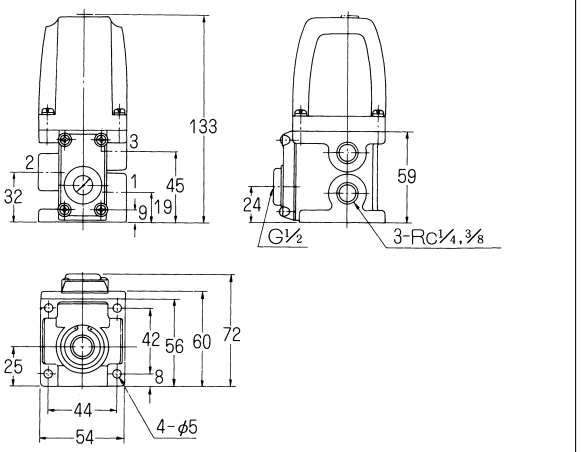
No mark	Standard
I	With indicator light
K	With surge suppressor
P	With indicator light & surge suppressor

OPTIONAL PARTS AND SPARE PARTS

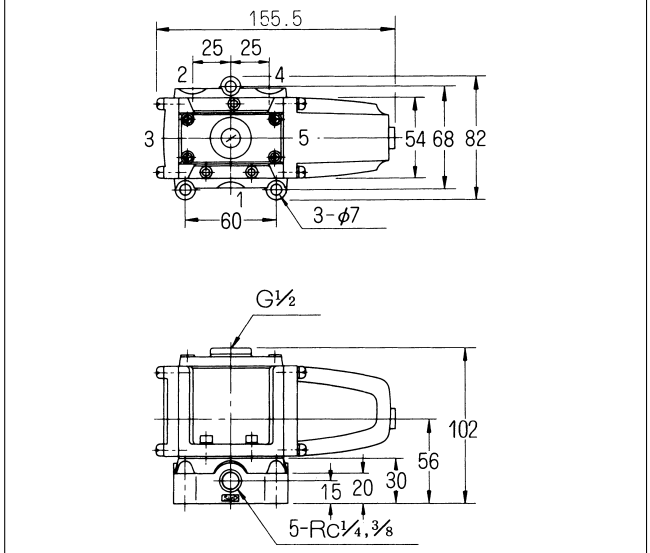
Parts Name		Model No.
Solenoid unit for 2-position	AC 100V	A08-105
	AC 110V	A08-10510
	AC 200V	A08-205
	AC 220V	A08-20520
Solenoid unit for 3-position	AC 100V	A08-109
	AC 110V	A08-10910
	AC 200V	A08-209
	AC 220V	A08-20920
Sub-base	Rc1/4	A08-SB-02
	Rc3/8	A08-SB-03
Base gasket		A08-G
Spring	For 2-position	A08-SS
	For 3-position	A08-3S

DIMENSIONS

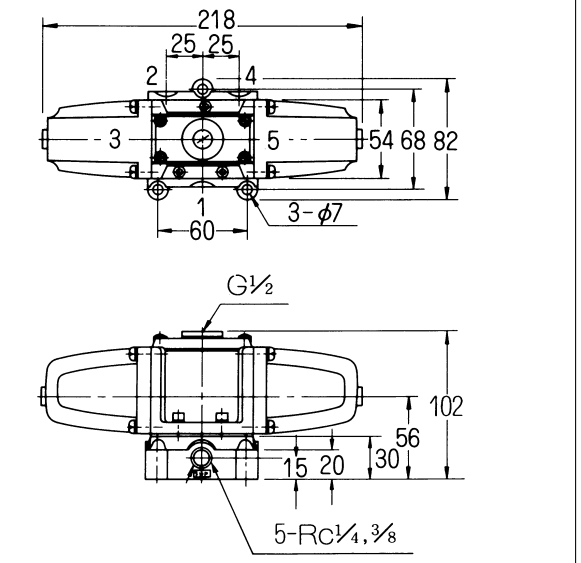
AS2308 (Unit：mm)



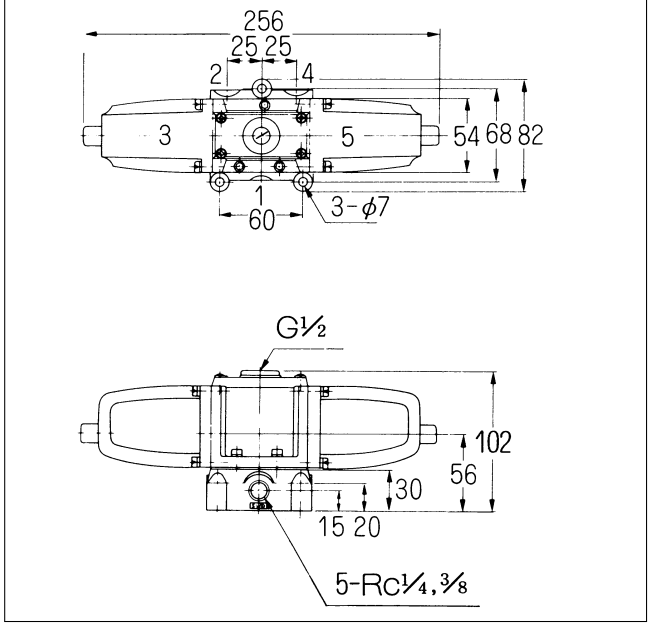
AS2408 (Unit：mm)



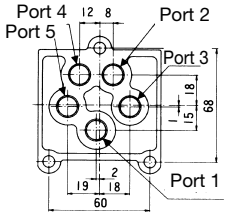
AD2408 (Unit：mm)



AD3408、ADE3408 (Unit：mm)



Bottom porting (Unit：mm)



Port size：**Rc**$^{1}/_{4}$

※Bottom porting is made to order

3/5-PORT DIRECT OPERATED SOLENOID VALVES

A10 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2310	2-position Single solenoid
AS2410	2-position Single solenoid
AD2410	2-position Double solenoid
AD3410	3-position Closed center
ADE3410	3-position Exhaust center

SPECIFICATIONS

Model No.			Unit	AS2310	AS2410	AD2410	AD3410	ADE3410
Fluid				Non-lubricated/lubricated air				
Port size				Rc3/8、1/2	Rc1/4、3/8、1/2			
Effective area			mm²	38	50	50	50	50
Cv value				2.06	2.71	2.71	2.71	2.71
Operating ambient temperature			℃	−5〜60				
Operating pressure range			MPa	−0.1〜1				
Maximum frequency			Cycle/min	350	350	350	200	200
Response time (at 0.5MPa)			s (Average)	0.016	0.02	0.015	0.015	0.015
Rated voltage			V	AC100、200、110、220				
Grade of insulation				JIS grade B				
Permissible voltage fluctuation			%	±10				
Rated frequency			Hz	50/60				
Power consumption	Holding	50Hz	VA	36			36	
		60Hz	VA	27			27	
	Inlush	50Hz	VA	290			430	
		60Hz	VA	250			360	
Mass			kg	1.3	1.9	2.7	2.9	2.9

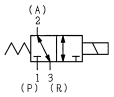
(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

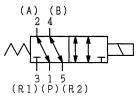
AS2410 – 03 – 100 P
① ② ③ ④

①Function

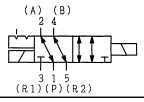
AS2310



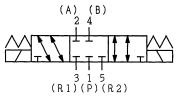
AS2410



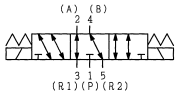
AD2410



AD3410



ADE3410



②Port size

02	Rc1/4
03	Rc3/8
04	Rc1/2

③Voltage

100	AC100V
110	AC110V
200	AC200V
220	AC220V

④Versions

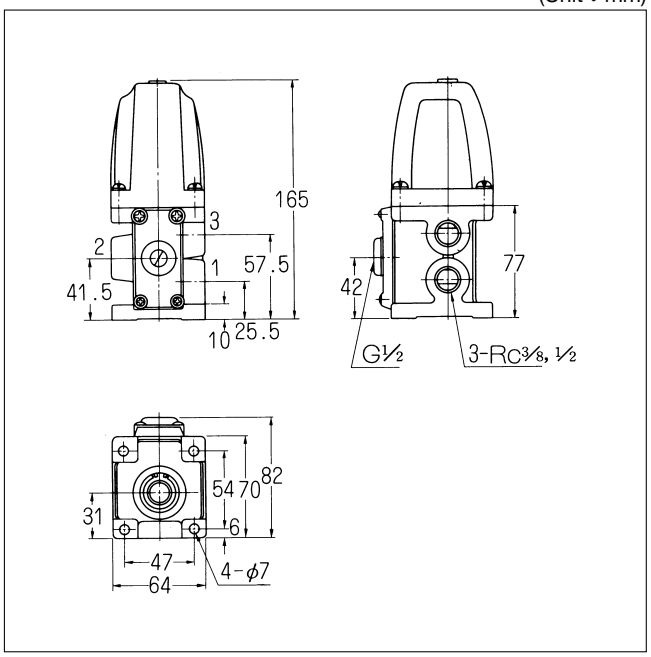
No mark	Standard
I	With indicator light
K	With surge suppressor
P	With indicator light & surge suppressor

OPTIONAL PARTS AND SPARE PARTS

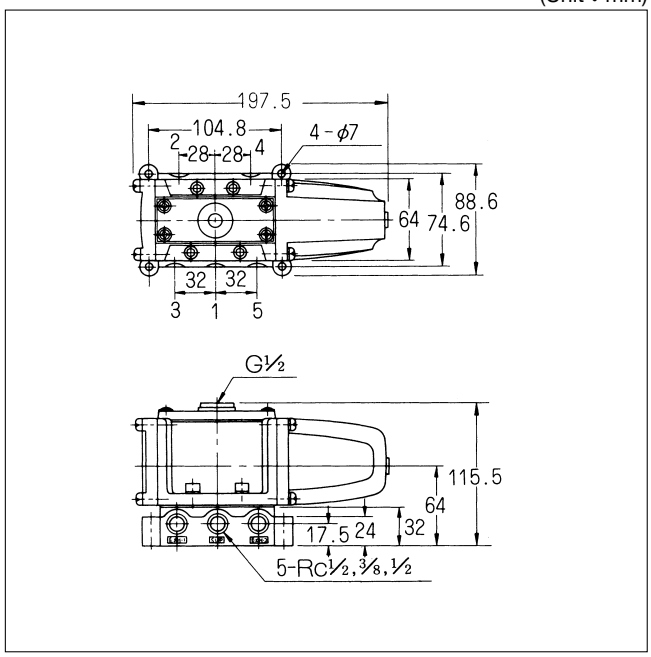
Parts Name		Model No.
Solenoid unit for 2-position	AC 100V	**A**10-106
	AC 110V	**A**10-10610
	AC 200V	**A**10-206
	AC 220V	**A**10-20620
Solenoid unit for 3-position	AC 100V	**A**10-113
	AC 110V	**A**10-11310
	AC 200V	**A**10-213
	AC 220V	**A**10-21320
Sub-base	**Rc1/4**	**A**10-**SB**-02
	Rc3/8	**A**10-**SB**-03
	Rc1/2	**A**10-**SB**-04
Base gasket		**A**10-**G**
Spring	For 2-position	**A**10-**SS**
	For 3-position	**A**10-3**S**

DIMENSIONS

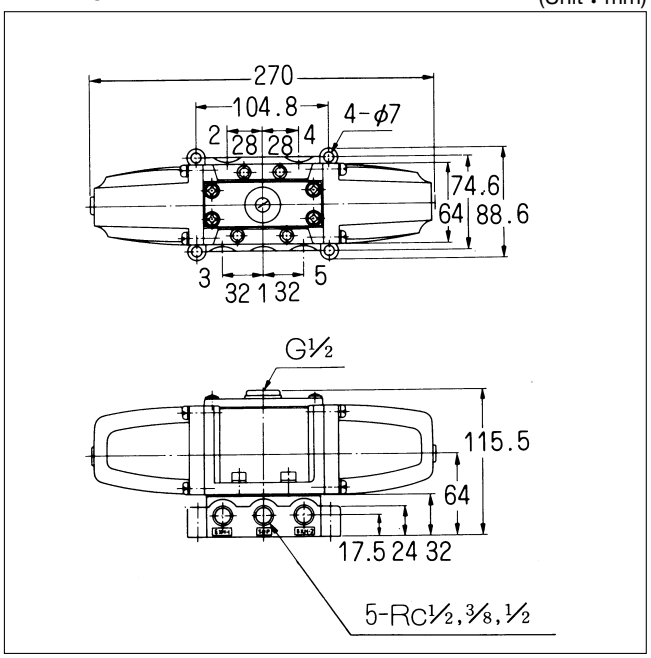
AS2310 (Unit：mm)



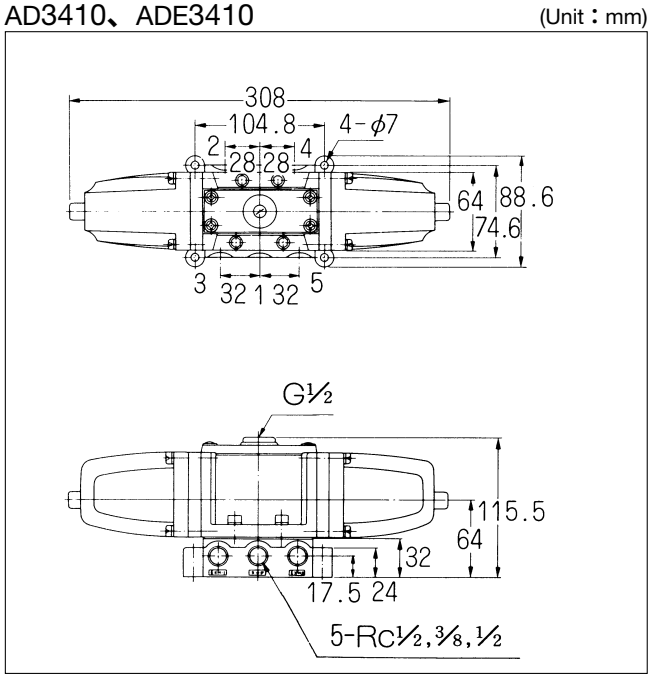
AS2410 (Unit：mm)



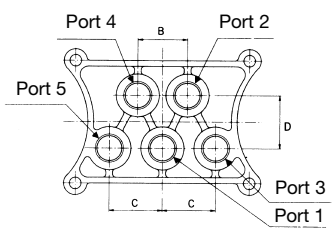
AD2410 (Unit：mm)



AD3410、ADE3410 (Unit：mm)



Bottom porting (Unit：mm)



Port size：**Rc**$\frac{1}{4}$、$\frac{3}{8}$

※Bottom porting is made to order

3/5-PORT DIRECT OPERATED SOLENOID VALVES

A15 Series

Metal Seal, In-line mounting/Sub-base Mounting type

AS2315	2-position Single solenoid
AS2415	2-position Single solenoid
AD2415	2-position Double solenoid
AD3415	3-position Closed center
ADE3415	3-position Exhaust center

SPECIFICATIONS

Model No.			Unit	AS2315	AS2415	AD2415	AD3415	ADE3415
Fluid				Non-lubricated/lubricated air				
Port size				Rc1/2、3/4				
Effective area			mm²	80	75	75	75	75
Cv value				4.34	4.07	4.07	4.07	4.07
Operating ambient temperature			℃	−5〜60				
Operating pressure range			MPa	−0.1〜1				
Maximum frequency			Cycle/min	150	150	150	150	150
Response time (at 0.5MPa)			s (Average)	0.018	0.035	0.025	0.020	0.020
Rated voltage			V	AC100、200、110、220				
Grade of insulation				JIS grade B				
Permissible voltage fluctuation			%	±10				
Rated frequency			Hz	50/60				
Power consumption	Holding	50Hz	VA	38			38	
		60Hz	VA	28			28	
	Inlush	50Hz	VA	370			520	
		60Hz	VA	320			480	
Mass			kg	1.8	2.8（3.2）	3.6（4.0）	3.8（4.2）	3.8（4.2）

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.
• Mass in bracket（ ）shown with Rc3/4 ported sub-base.

A15 Series

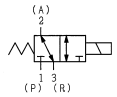
ORDERING INSTRUCTION

AS2415 – 04 – 100 P

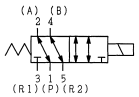
① ② ③ ④

①Function

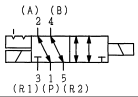
AS2315



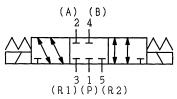
AS2415



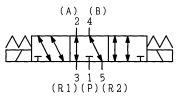
AD2415



AD3415



ADE3415



②Port size

04	Rc1/2
06	Rc3/4

③Voltage

100	AC100V
110	AC110V
200	AC200V
220	AC220V

④Versions

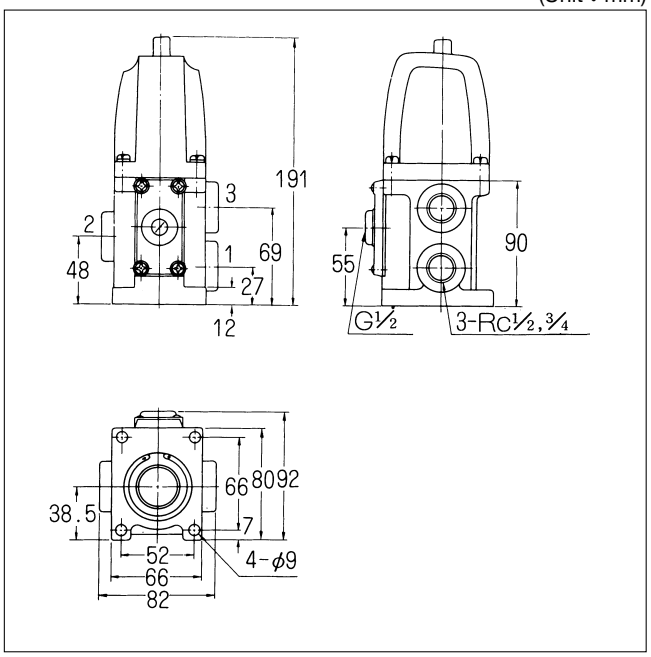
No mark	Standard
I	With indicator light
K	With surge suppressor
P	With indicator light & surge suppressor

OPTIONAL PARTS AND SPARE PARTS

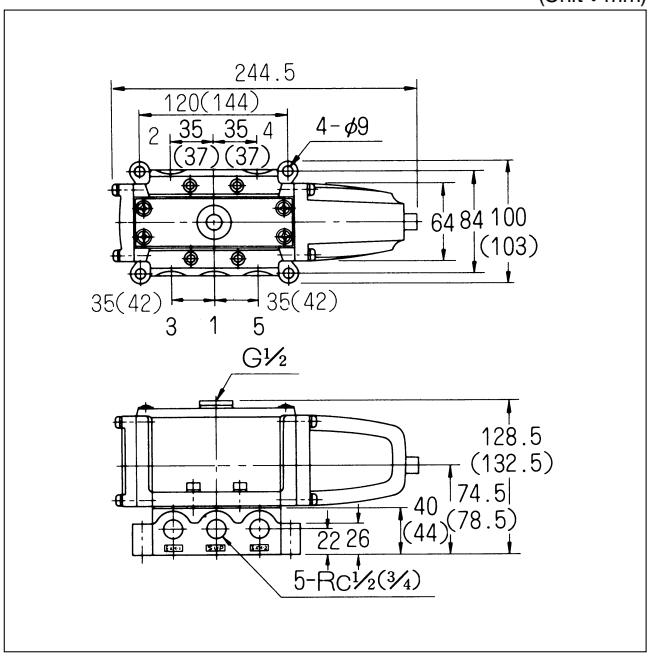
Parts Name		Model No.
Solenoid unit for 2-position	AC 100V	**A15-107**
	AC 110V	**A15-10710**
	AC 200V	**A15-207**
	AC 220V	**A15-20720**
Solenoid unit for 3-position	AC 100V	**A15-115**
	AC 110V	**A15-11510**
	AC 200V	**A15-215**
	AC 220V	**A15-21520**
Sub-base	Rc1/2	**A15-SB-04**
	Rc3/4	**A15-SB-06**
Base gasket		**A15-G**
Spring	For 2-position	**A15-SS**
	For 3-position	**A15-3S**

DIMENSIONS

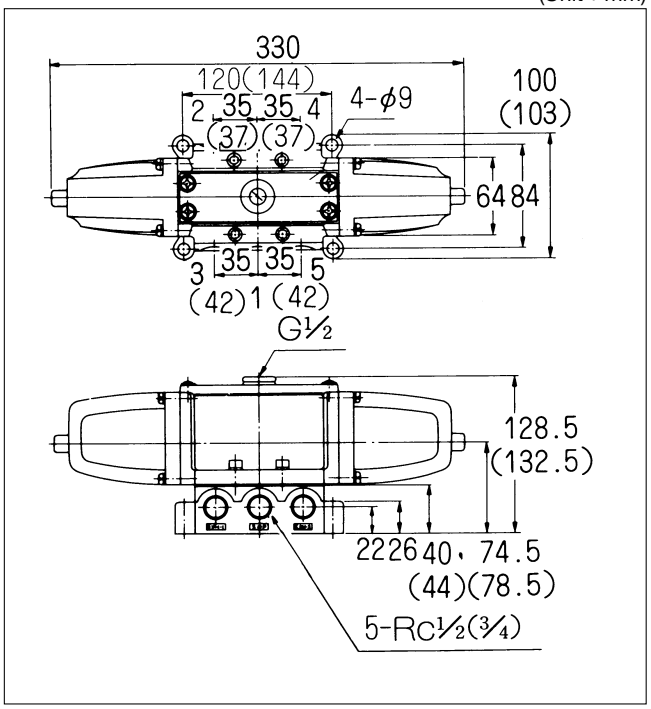
AS2315 (Unit：mm)



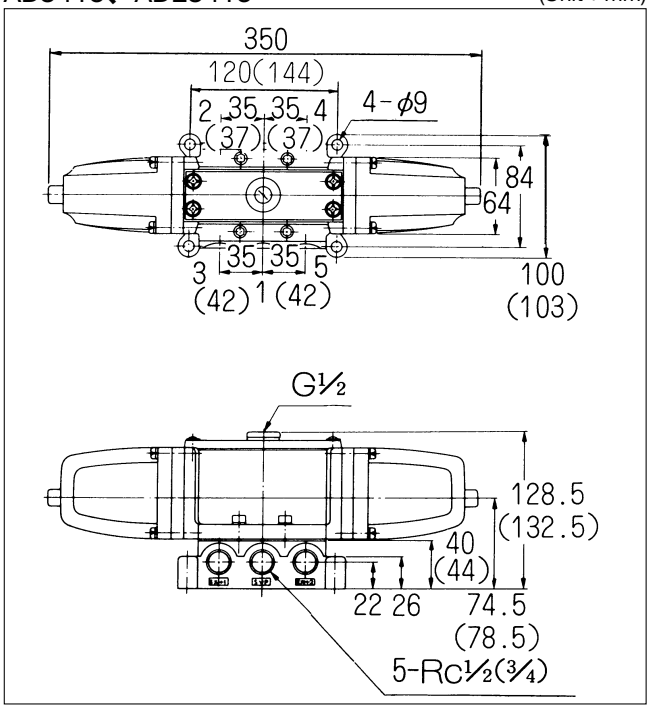
AS2415 (Unit：mm)



AD2415 (Unit：mm)

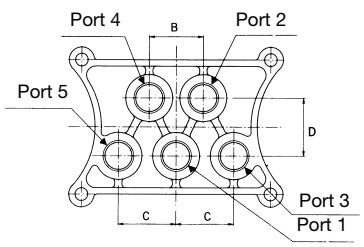


AD3415、ADE3415 (Unit：mm)



(Note) Dimensions in bracket （ ） shown with Rc¾ ported sub-base.

Bottom porting (Unit：mm)



Port size：**Rc**½

※Bottom porting is made to order

INDIVIDUAL WIRING TYPE MANIFOLD

MF○-C

Separate type

MF□-CC	Common SUP, Common EXH Ports 2 & 4 on side
MF□-CI	Common SUP, Individual EXH Ports 2 & 4 on side

MANIFOLD SPECIFICATIONS

Type of manifold		MF□-CC06	MF□-CC08	MF□-CC10	MF□-CC15
		Common SUP, common EXH	Common SUP, common EXH	Common SUP, common EXH	Common SUP, common EXH
Port size	Port 1	Rc1/4	Rc3/8	Rc1/2	Rc3/4
	Port 3, 5	Rc1/4	Rc3/8	Rc1/2	Rc3/4
	Port 2, 4	Rc1/8、1/4	Rc1/4、3/8	Rc3/8、1/2	Rc1/2
Number of stations		2～20	2～20	2～20	2～20
Mountable solenoid valve		AS2406-NB AD2406-NB AD3406-NB ADE3406-NB	AS2408-NB AD2408-NB AD3408-NB ADE3408-NB	AS2410-NB AD2410-NB AD3410-NB ADE3410-NB	AS2415-NB AD2415-NB AD3415-NB ADE3415-NB
Blank plate		CC06-BP	CC08-BP	CC10-BP	CC15-BP

Type of manifold		MF□-CI06	MF□-CI08	MF□-CI10	MF□-CI15
		Common SUP, individual EXH	Common SUP, individual EXH	Common SUP, individual EXH	Common SUP, cindividual EXH
Port size	Port 1	Rc1/4	Rc3/8	Rc1/2	Rc3/4
	Port 3, 5	Rc1/8	Rc1/4、3/8	Rc3/8、1/2	Rc1/2
	Port 2, 4	Rc1/8、1/4	Rc1/4、3/8	Rc3/8、1/2	Rc1/2
Number of stations		2～20	2～20	2～20	2～20
Mountable solenoid valve		AS2406-NB AD2406-NB AD3406-NB ADE3406-NB	AS2408-NB AD2408-NB AD3408-NB ADE3408-NB	AS2410-NB AD2410-NB AD3410-NB ADE3410-NB	AS2415-NB AD2415-NB AD3415-NB ADE3415-NB
Blank plate		CC06-BP	CC08-BP	CC10-BP	CC15-BP

ORDERING INSTRUCTION

Manifold

MF 5 – CC 08 – 02
① ② ③ ④

①Number of stations

2	2 station
:	:
20	20station

②Type of manifold

CC	Common SUP, common EXH
CI	Common SUP, individual EXH

③Mountable solenoid valve

06	A06 series
08	A08 series
10	A10 series
15	A15 series

④Size of ports 2 and 4

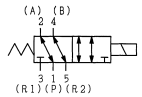
01	Rc1/8
02	Rc1/4
03	Rc3/8
04	Rc1/2

Mountable solenoid valve (For details refer to Pages 9 to 20.)

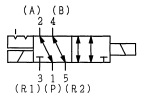
AS2408 – NB – 100 P
① ② ③ ④

①Function

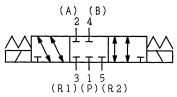
AS24



AD24



AD34



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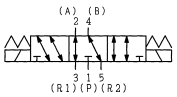


②Port size

NB	Without sub-base

③Voltage

100	AC100V
110	AC110V
200	AC200V
220	AC220V

④Versions

No mark	Standard
I	With indicator light
K	With surge suppressor
P	With indicator light & surge suppressor

HOW TO ORDER

- List solenoid valves to be mounted.
- When mounting solenoid valves of different type, specify the type and quantity of solenoid valves from port 1 side.
- When ordering a solenoid valve of special specifications, refer to " Specification for Manifold " which is separately available.

(Example)

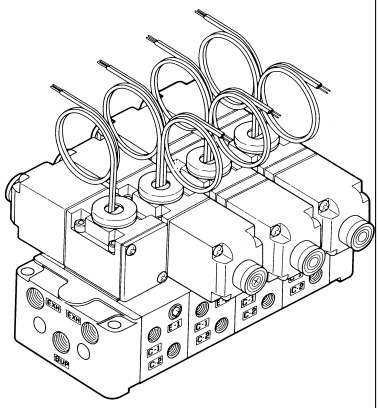
MF5-CC08-02	1 pc.
AS2408-NB-100	2 pcs.
AD2408-NB-100	2 pcs.
CC08-BP	1 pc.

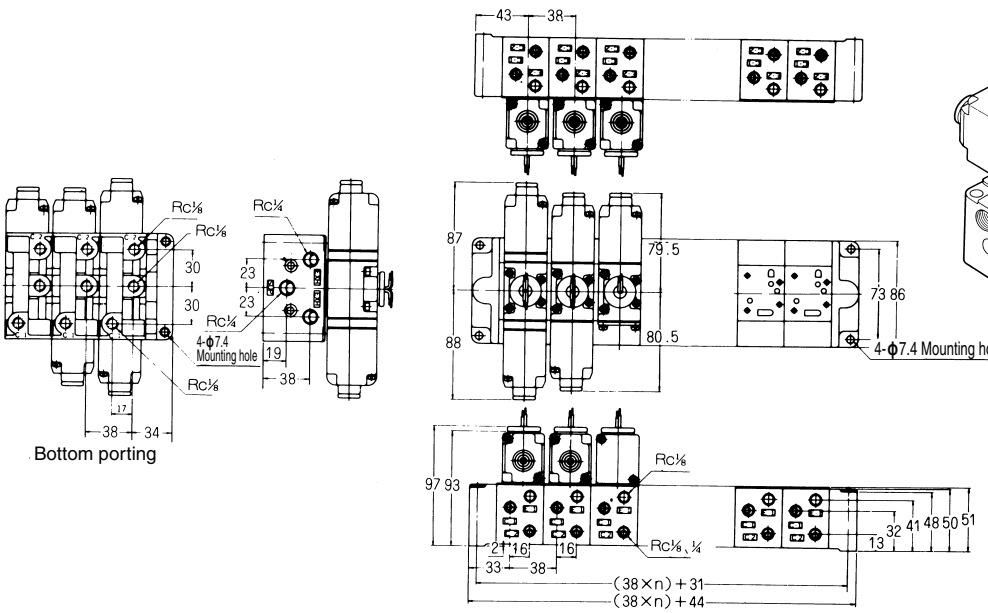
DIMENSIONS

MF □-CC06

(Unit : mm)

Specifications for connection

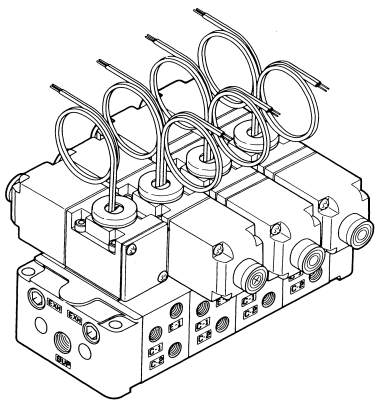


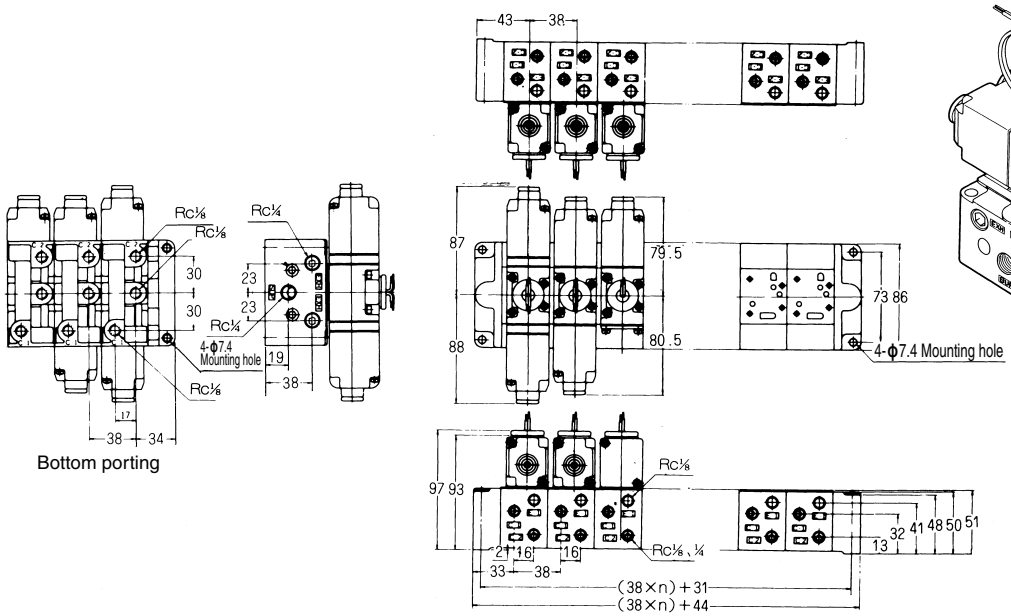


MF □-CI06

(Unit : mm)

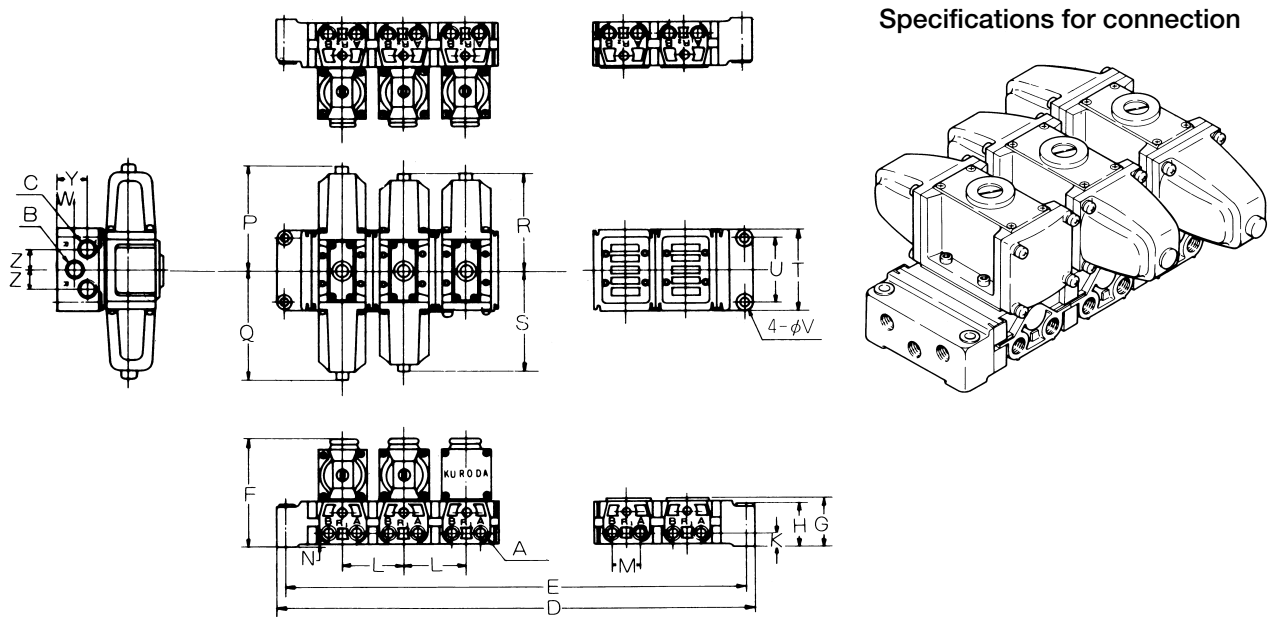
Specifications for connection



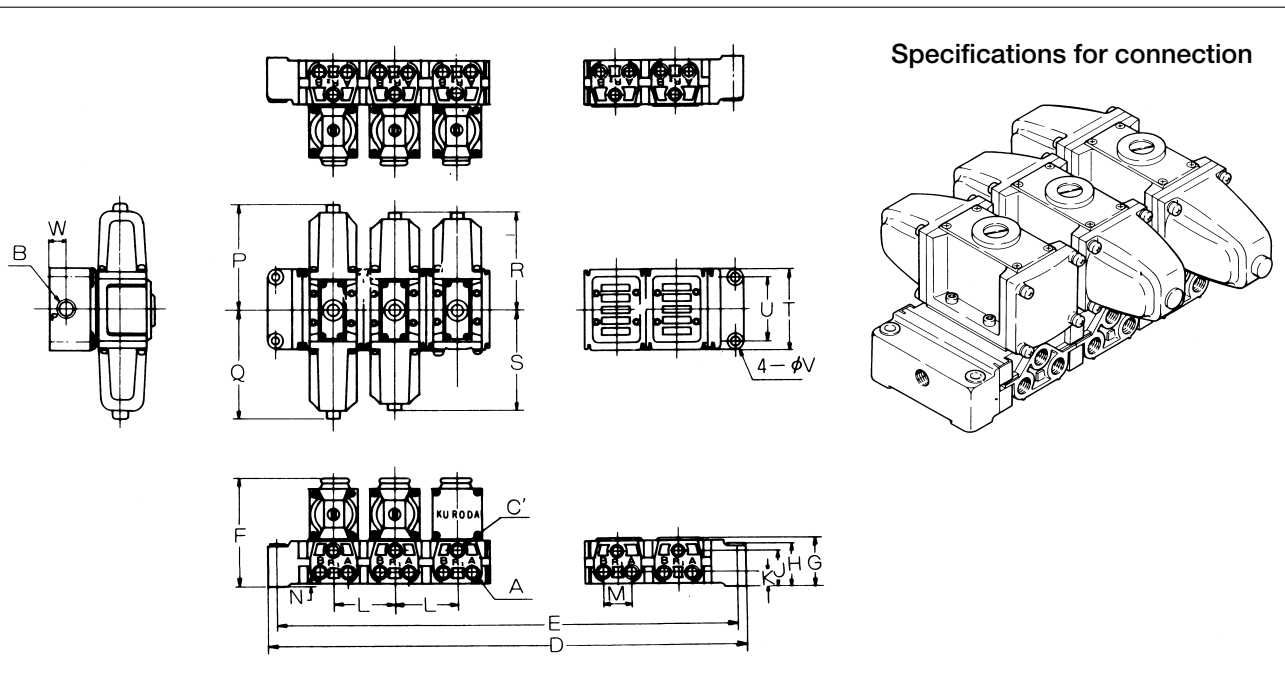


DIMENSIONS

MF□-CC08～15



MF□-CI08～15

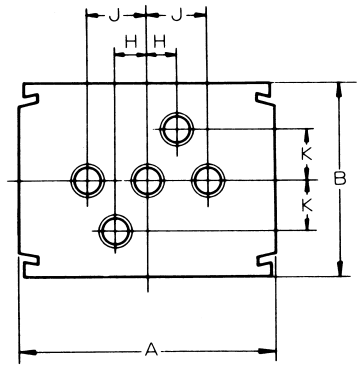


(Unit：mm)

Model No.	A(Rc)	B(Rc)	C(Rc)	C'(Rc)	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	Y	Z
MF-CC08	1/4	3/8	3/8	—	(70×n)	(70×n)	124.5	52	51	—	16.5	70	32	4	126	130	107	111	90	74	8.5	19	35	22
MF- CI 08	(3/8)		—	1/4(3/8)	+80	+64				39.5													—	—
MF-CC10	3/8	1/2	1/2	—	(90×n)	(90×n)	137.4	54	48	—	18.5	90	43	4	154	154	135	135	120	100	10.5	30	30	32
MF- CI 10	(1/2)		—	3/8(1/2)	+90	+60				39.5													—	—
MF-CC15	1/2	3/4	3/4	—	(110×n)	(110×n)	157.5	69	60	—	23	110	52	4	175	175	165	165	144	120	12.5	35	35	37
MF- CI 15			—	1/2	+110	+80				49													—	—

(Note) • " n " in Table means the number of stations of manifold.
• Port size in parentheses is made to order.

BOTTOM OF MANIFOLD PORTED (Custom-made)

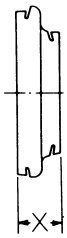


(Unit : mm)

Model No.	Port size	A	B	K	J	H
MF□-CC/C I08	Rc1/4、3/8	90	70	20	28	12
MF□-CC/C I10	Rc3/8、1/2	120	90	25	34	17
MF□-CC/C I15	Rc1/2、3/4	144	110	30	45	22.5

ADAPTOR

Used to connect a manifold of different size.



(Unit : mm)

Model No.	MFA-C0608	MFA-C0810	MFA-C1015
Applicable manifold	MF-C□06 MF-C□08	MF-C□08 MF-C□10	MF-C□10 MF-C□15
X	24	30	40

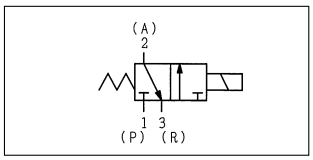
3-PORT DIRECT OPERATED SOLENOID VALVES

SS231

Poppet Seal/Sub-base Mounting type

SS231	2-position Single solenoid

JIS Symbol



ORDERING INSTRUCTION

SS231 – M5 – 100 | G | L

① ② ③ ④

①Port size

NB	Without sub-base
M5	M5×**0.8**
01	Rc1/8

②Voltage

100	AC100V/110V
200	AC200V/220V
D24	DC24V

③Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
*GK	Grommet with surge suppressor
*CK	Conduit with surge suppressor
D	DIN connector

*：Made to order

④Option

No mark	Without option (Standard)
L	With locking button

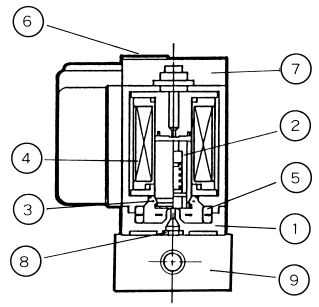
SPECIFICATIONS

Model No.				Unit	SS231
Fluid					Non-lubricated/lubricated air
Port size					M5、Rc1/8
Effective area				mm²	0.6
Cv value					0.03
Operating ambient temperature				℃	−5〜60
Operating pressure range				MPa	0〜1
Maximum frequency				Cycle/min	1200
Response time（at 0.5MPa）				s	ON 0.006、OFF0.008
Rated voltage				V	AC100/110、200/220、DC24
Grade of insulation					JIS grade B
Permissible voltage fluctuation				%	±10（DC +10 −15）
Rated frequency				Hz	50/60
Power consumption	AC	Holding	50Hz	VA	3.2
			60Hz	VA	2.6
		Inlush	50Hz	VA	5
			60Hz	VA	4.5
Power consumption DC				W	2
Mass				kg	0.08

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2.
• Response time shown above is in accordance with JIS B 8375.

SS231

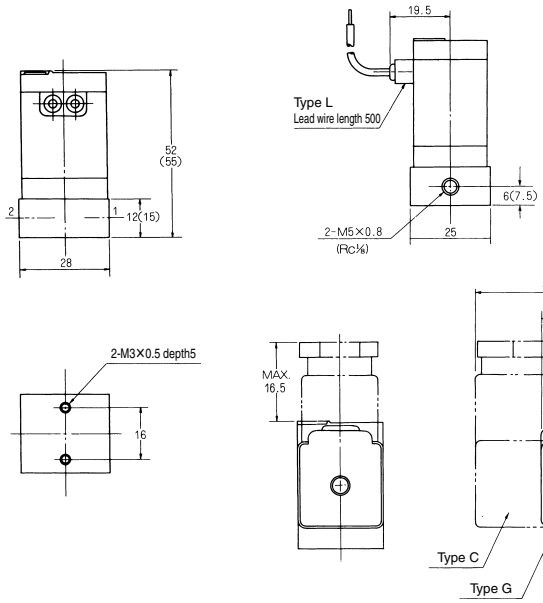
CONSTRUCTION AND MAIN PARTS



No.	Description
①	Body
②	Plunger
③	Spring
④	Coil
⑤	Manual ring
⑥	Manual override
⑦	Cover
⑧	O-ring
⑨	Sub-base

DIMENSIONS

(Unit : mm)



INDIVIDUAL WIRING TYPE MANIFOLD

MF○-TI/TC 1

Bar type

MF□-TI1	Common SUP, Indvidual EXH Port 2 on side
MF□-TC1	Common SUP, Common EXH Port 2 on side

MANIFOLD SPECIFICATIONS

Type of manifold		MF□-TI1-M5	MF□-TI1-01	MF□-TC1-M5	MF□-TC1-01
		Common SUP, Indvidual EXH	Common SUP, Indvidual EXH	Common SUP, Common EXH	Common SUP, Common EXH
Port size	Port 1	M5	Rc1/8	M5	Rc1/8
	Port 3	—	—	M5	Rc1/8
	Port 2	M5	Rc1/8	M5	Rc1/8
Number of stations		2〜10	2〜10	2〜10	2〜10
Mountable solenoid valve		SS231-NB		SS231-MF	

ORDERING INSTRUCTIONS

Manifold

MF 5 – TI 1 – M5

① ② ③

①Number of stations

2	2 station
:	:
10	10 station

②Type of manifold

TI	Common SUP, Indvidual EXH
TC	Common SUP, Common EXH

③Size of port 2

M5	M5×0.8
01	Rc1/8

Mountable solenoid valve

SS231 – MF – 100 G – L

① ② ③ ④

①Type of solenoid valve

NB	For TI
MF	For TC

②Voltage

100	AC100V/110V
200	AC200V/220V
D24	DC24V

③Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
*GK	Grommet with surge suppressor
*CK	Conduit with surge suppressor
D	DIN connector

*：Made to order

④Option

No mark	Without option (Standard)
L	With locking button

HOW TO ORDER

List solenoid valves to be mounted.

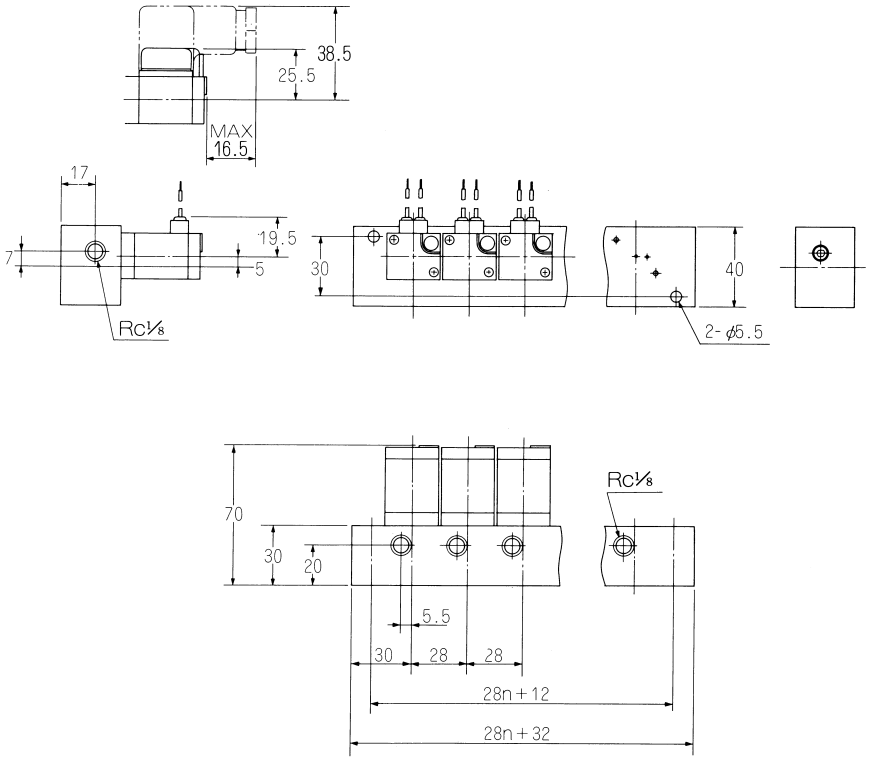
(Example)

MF5-TC1-M5 1 pc.
SS231-MF-100G 5 pcs.

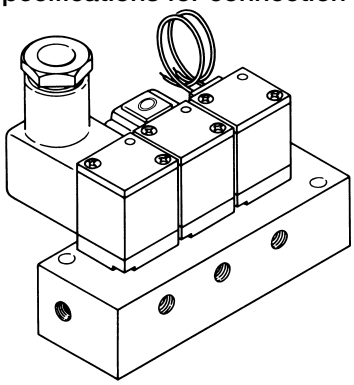
DMENSIONS

MF□-TI1-01

(Unit：mm)



Specifications for connection



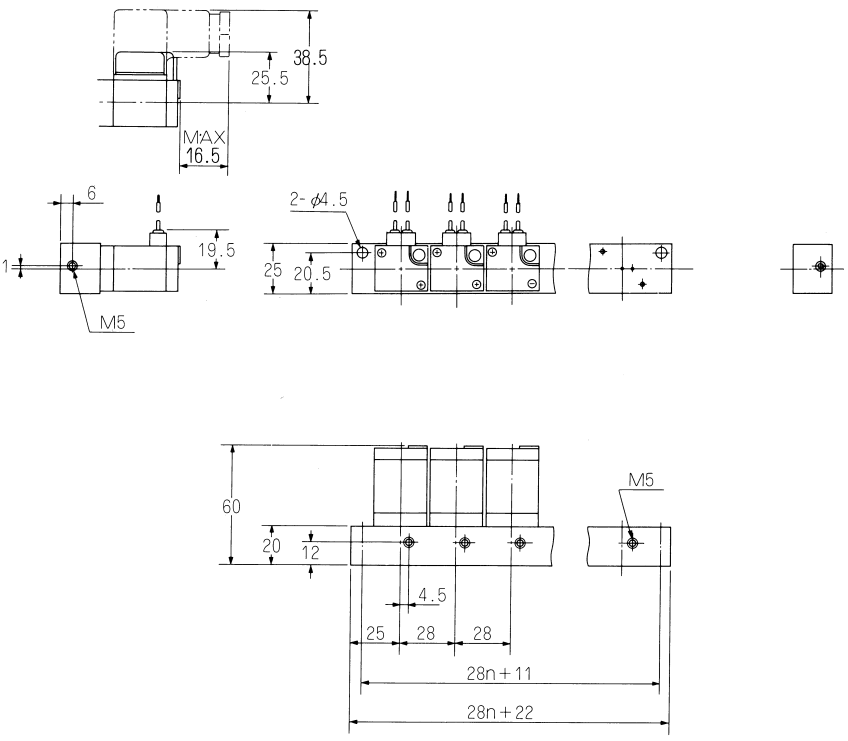
●Port 1：Left side on dimensional drawing
Port size Rc1/8

●Port 2：Front side on dimensional drawing
Port size Rc1/8

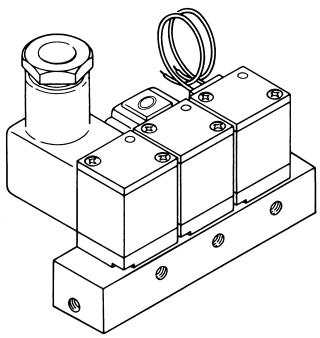
n：Number of stations

MF□-TI1-M5

(Unit：mm)



Specifications for connection



●Port 1：Left side on dimensional drawing
Port size M5

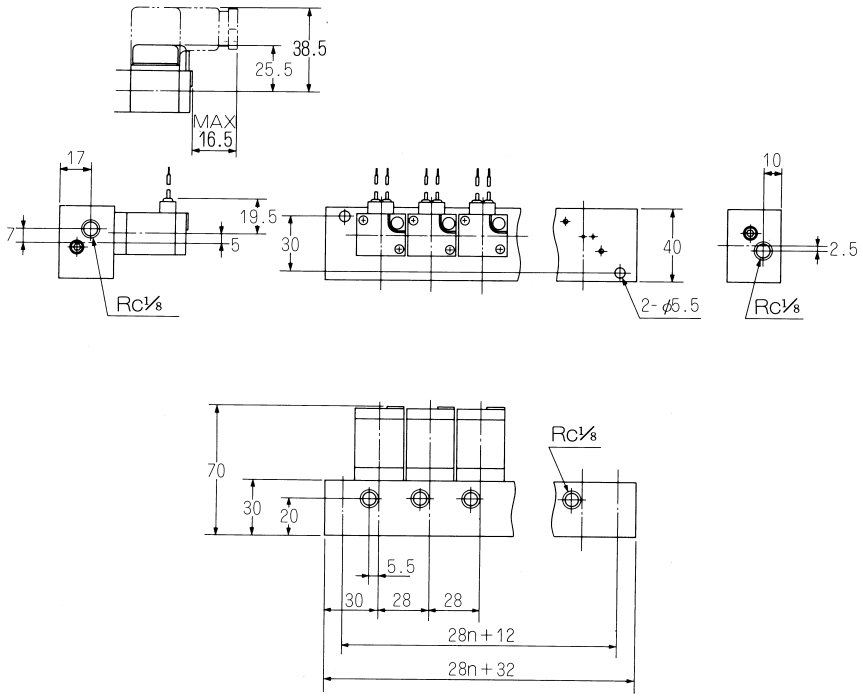
●Port 2：Front side on dimensional drawing
Port size M5

n：Number of stations

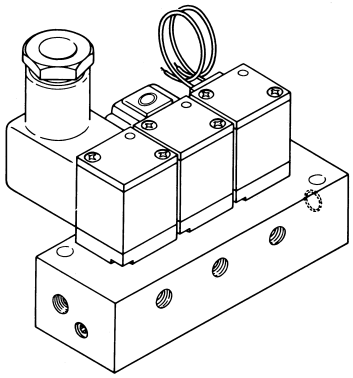
DMENSIONS

MF□-TC1-01 (Made to order)

(Unit : mm)



Specifications for connection

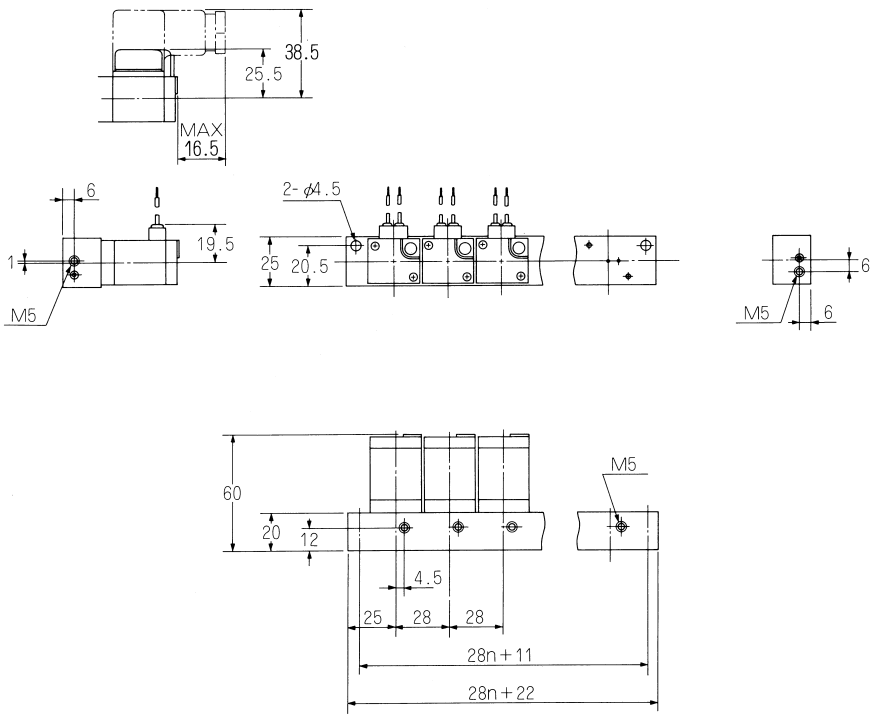


●Port 1 : Left side on dimensional drawing
Port size Rc1/8
●Port 2 : Front side on dimensional drawing
Port size Rc1/8
●Port 3 : Right side on dimensional drawing
Port size Rc1/8

n : Number of stations

MF□-TC1-M5 (Made to order)

(Unit : mm)



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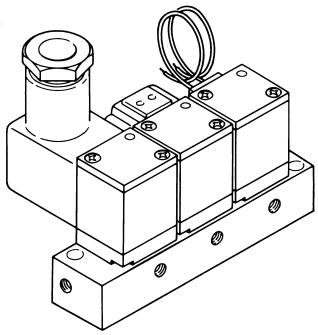

●Port 1 : Left side on dimensional drawing
Port size M5
●Port 2 : Front side on dimensional drawing
Port size M5
●Port 3 : Right side on dimensional drawing
Port size M5

n : Number of stations

⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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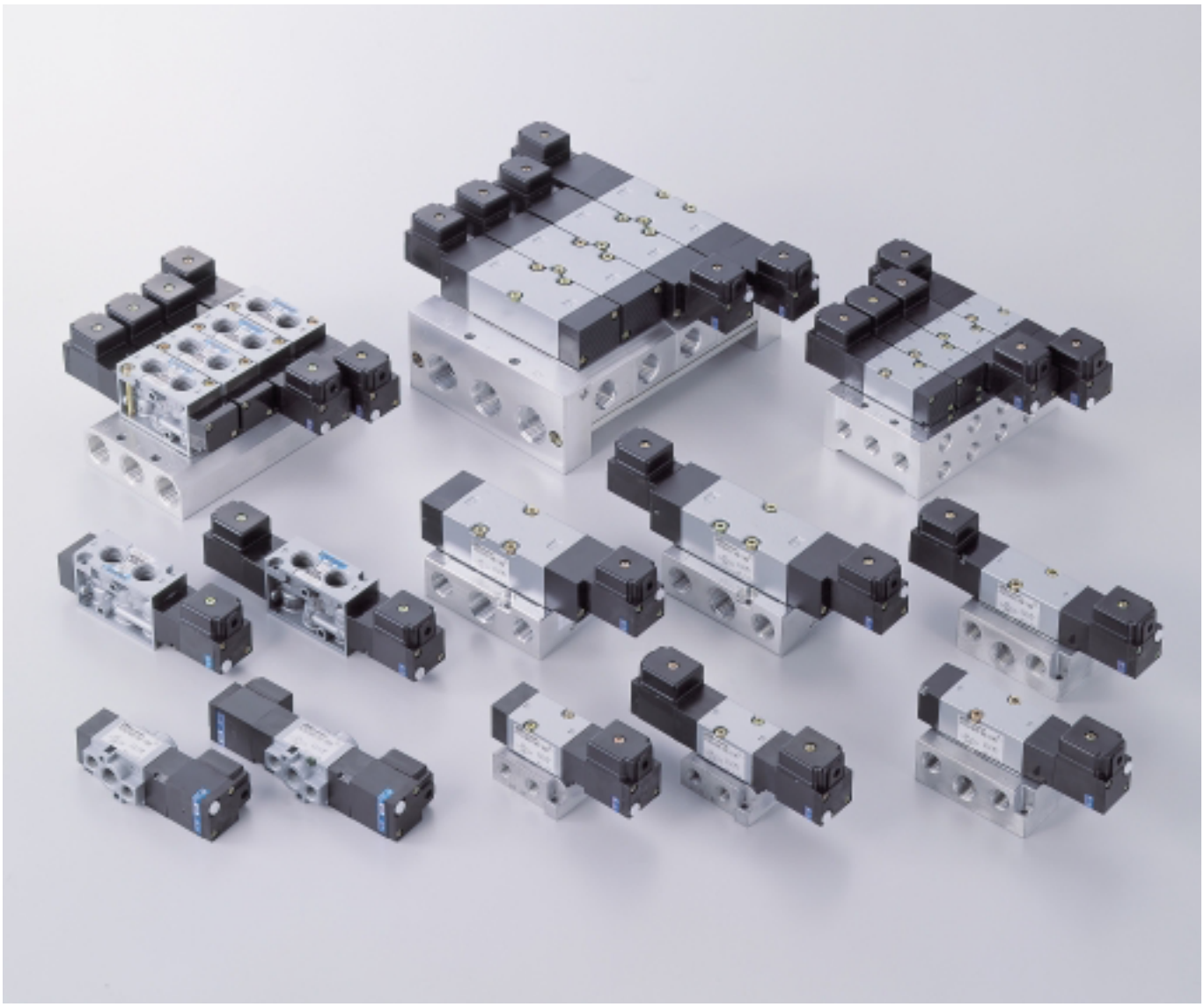
PILOT OPERATED SOLENOID VALVES

PC /RC06,08,15 Series

Rubber Seal, Sub-base Mounting



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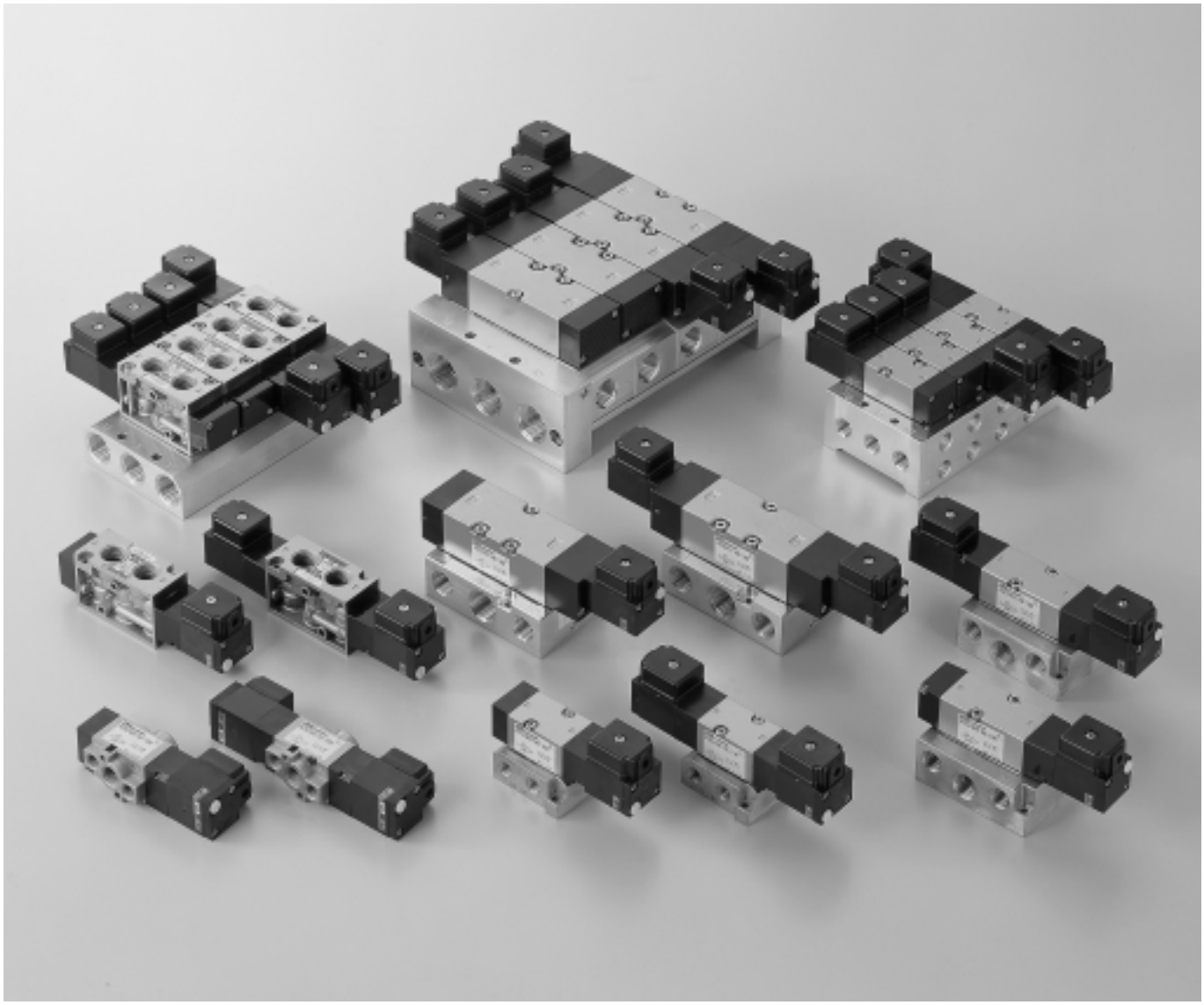
ENGINEERING YOUR SUCCESS.

RUBBER SEAL, PILOT OPERATED SOLENOID VALVES

PC/RC06, 08, 15 series

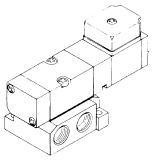
- High flow from compact die casted body.
- Single piece spool with patented TS seal rings featuring wear compensation design for long life.
- Unique solenoid design minimizes burn-out and power consumption.
- 4-way, 4/5-port, 2/3-position valves, In-line, Sub-base and manifold.
- Manual override (None locking type) is standard on all PC/RC series. Locking type is available on request.



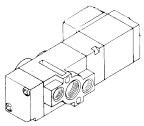
VARIATIONS

Mounting

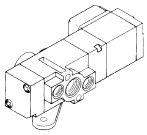
●Sub-base type



●In-line type

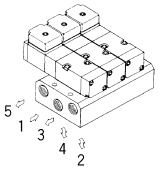


●With mounting bracket

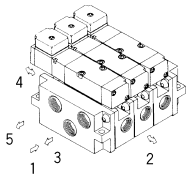


Manifold

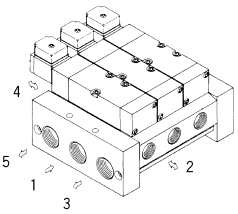
●MFB□□-PC06



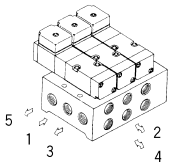
●MF□□-PC08



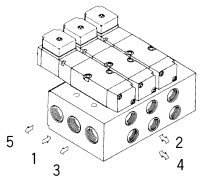
●MF□□-PC15



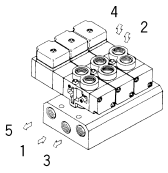
●MFS□□-PC06



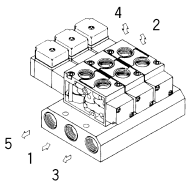
●MFS□□-PC08



●MFU□□-RC06

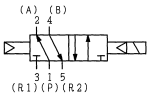


●MFU□□-RC08

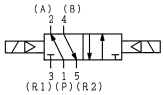


Model No.

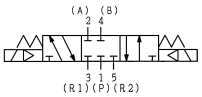
PCS24※ ※　RCS24※ ※



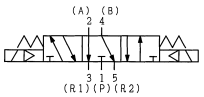
PCD24※ ※　RCD24※ ※



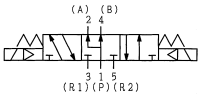
PCD34※ ※　RCD34※ ※



PCE34※ ※　RCE34※

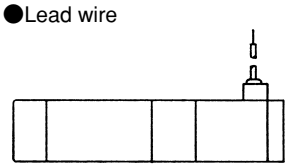


PCO34※ ※　RCO34※ ※

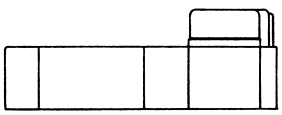


Wiring

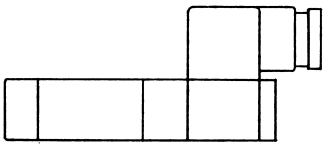
●Lead wire



●Grommet with terminal



●Conduit with terminal
●DIN connector



Voltage

●AC100/110V

●AC200/220V

●DC24V

Option & Special specifications

●With surge suppressor

●With locking override

●External pilot

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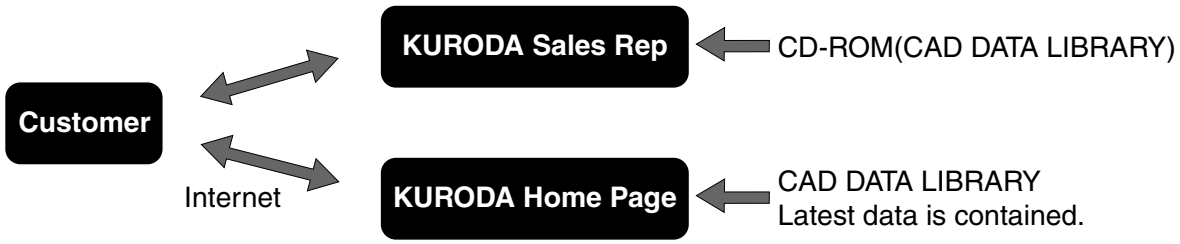
INTRODUCTION OF KURODA CAD DATA LIBRARY

KURODA CAD DATA LIBRARY contains CAD data of pneumatic equipment, ball screws, support units and single-axis modules.
In addition, various tools for selecting pneumatic equipment and ball screws are listed in it. Please use this library to improve the design performance of your FA related equipment.

How to Obtain CAD Data Library

CAD Data Library is available from CD-ROM supplied by our company or our company's Home Page via Internet. For a CD-ROM, please ask KURODA sales representative in charge of your company.



http://www.kuroda-precision.co.jp/e-top

Kind of CAD data

Type of data		CD-ROM	Home Page
DXF	r12	○	○
DWG(AUTO CAD)＊1	r12	○	○＊2

※1：Name of CAD software is our company's registered trademark.
※2：Some of DWG type product data are not contained

How to Download from Home Page

Access KURODA Home Page
http://www.kuroda-precision.co.jp/e-top
↓
FA Internet Service
↓
Download Service
↓
User Registration
↓
Download

(Note) CAD data is classified by each product and contained in a self-extracting exectable file format (.exe).

CAD Data of Main Pneumatic Equipment

①Pneumatic Actuators
Series of air cylinders and rotary actuators are listed in CAD DATA LIBRARY.

②Pneumatic Grippers/Vacuum Equipment
Series of parallel grippers, rotary opening/closing grippers, vacuum units and pads are listed in it.

③Control Valves
Series of solenoid valves such as ADEX VALVEs are listed in it.

④Other Equipment
Series of speed controllers, joints, etc. are listed in it.

⑤Air Cleaning Equipment
Series of FRL combination QUBE are listed in it.

FOR SAFETY USE

Be sure to read the following instructions before use.
For common and individual instructions, refer to the text of this catalogue.

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.

⚠CAUTION	: Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in personal injury or property-damage-only accidents.
⚠WARNING	: Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.
⚠DANGER	: 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

⚠WARNING

●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 catalogue are diversified, the applicability of pneumatic equipment to the intended 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 pneumatic equipment in the 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

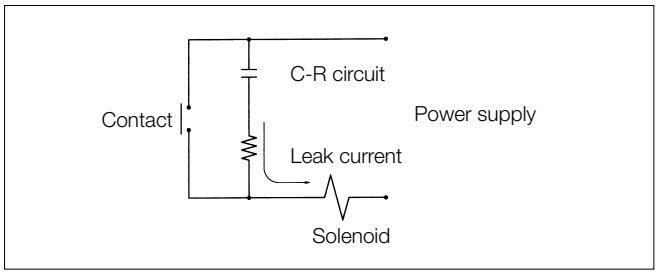
⚠ WARNING

- **Stopping actuator at intermediate position**
  When stopping the actuator at an intermediate position using a solenoid valve listed in this catalogue, 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.
- **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 catalogue 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.

DESIGN

⚠ CAUTION

- **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 this 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 direct-operated 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 3-position 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 result in a malfunction of the solenoid valve.

SOLENOID VALVES/COMMON INSTRUCTIONS ②

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

SELECTION

WARNING

- **Refer to specifications.**
  Solenoid valves listed in this catalogue 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.**

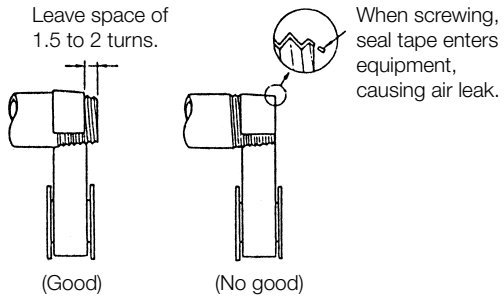
CAUTION

- **Fit an air muffler to the exhaust port (ports 3, 5) 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.

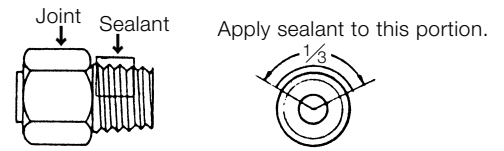
PIPING

CAUTION

- **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 clamping torque.

Port size	Clamping torque (N·m)
M3	0.3〜 0.5
M5	1.5〜 2.0
R, Rc1/8	7.0〜 9.0
R, Rc1/4	12 〜14
R, Rc3/8	2 〜24
R, Rc1/2	28 〜30
R, Rc3/4	28 〜30
R, Rc1	36 〜38
R, Rc1 1/4	40 〜42
R, Rc1 1/2	48 〜50

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

CAUTION

- **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 catalogue.
- **When using a 3-position closed center type solenoid valve :**
  Thoroughly check the piping between solenoid valve and actuator for air leak.

WIRING

WARNING

- **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 catalogue 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.

LUBRICATION

CAUTION

- **Solenoid valves listed in this catalogue 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 (contaiinning additive) is recommended.

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.

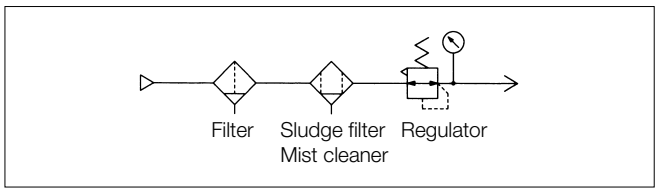
QUALITY OF AIR

WARNING

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

CAUTION

- **Fit an air filter with filtration of 5 μm 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 FAIRCALL A68, IDEMITSU DAPHUNY SUPER CS68) featuring minimized sludge production or use a sludge filter or mist cleaner to prevent sludge from entering the pneumatic equipment.



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.
- **Disassembly of solenoid valve**
  When disassembling the solenoid valve, contact KURODA beforehand.

CAUTION

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

PC/RC06, 08, 15 SERIES/INDIVIDUAL INSTRUCTIONS①

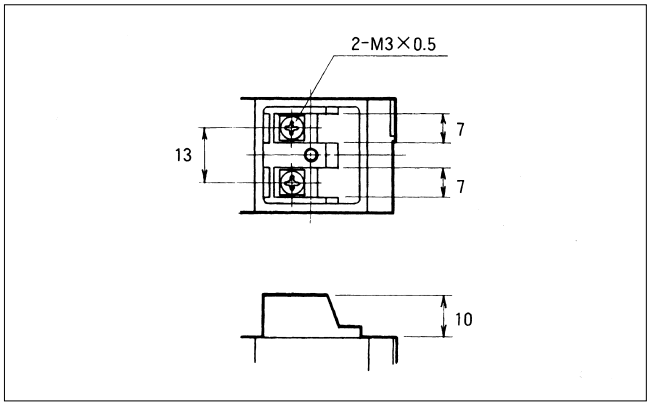
Be sure to read them before use.

Also refer to Par.“ For Safety Use ”and common instructions.

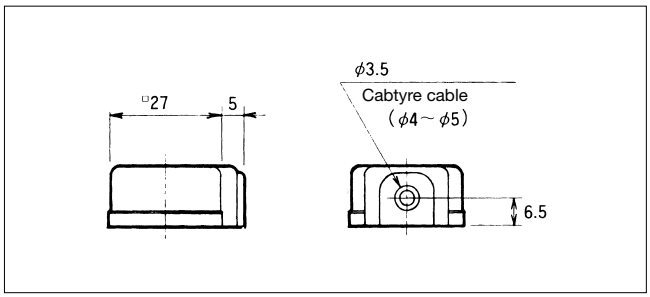
WIRING SPECIFICATIONS

CAUTION

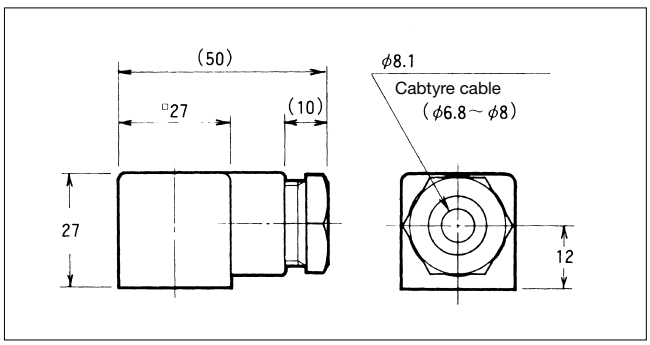
●Terminal of grommet and conduit



●Grommet cover



●Conduit cover



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LEAD WIRE SPECIFICATIONS

CAUTION

0.3mm²×500ℓ (O.D.ϕ1.7)
AWG22 (UL1007)

WITH SURGE SUPPRESSORE

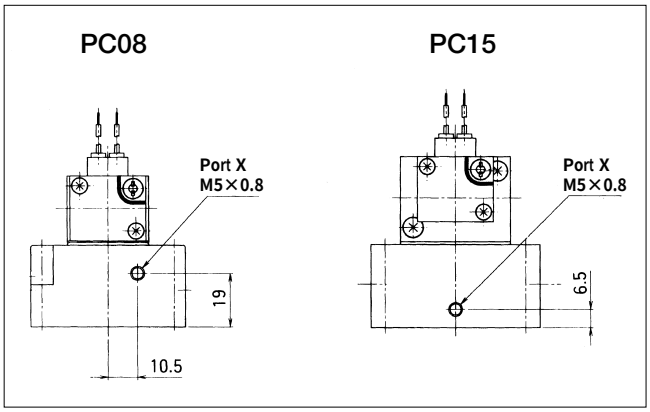
CAUTION

The following varistor type surge suppressor
AC100V TNR9G271K or equivalent of Z7D271
AC200V TNR9G471K or equivalent of Z7D471
DC24V TNR9G470K or equivalent ofZ7D470

EXTERNAL PILOT TYPE (Made to order)

CAUTION

●External pilot port position



PC/RC06, 08, 15 SERIES/INDIVIDUAL INSTRUCTIONS②

Be sure to read them before use.

Also refer to Par.“ For Safety Use ”and common instructions.

FLOW RATE

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

①$P_H \leqq 1.89P_L$ (Subsonic velocity zone)

$$Q = 240 \times S \times \sqrt{P_L \times (P_H - P_L)} \times \sqrt{\frac{293}{T_H}}$$

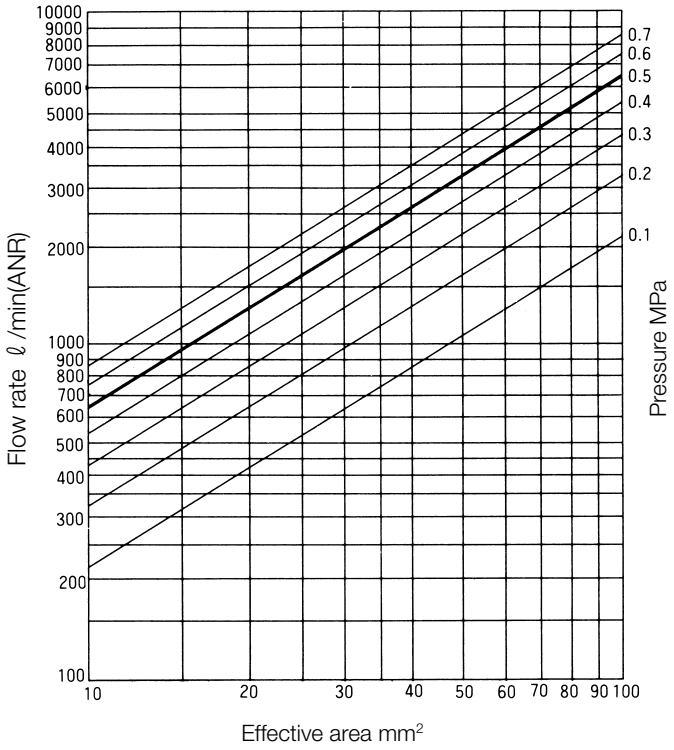
②$P_H \geqq 1.89P_L$ (Sonic velocity zone)

$$Q = 120 \times S \times P_H \times \sqrt{\frac{273}{T_H}}$$

Q	: Flow rate	ℓ /min(ANR)
S	: Effective area of orifice	mm^2
P_H	: Pressure on upper stream	MPa abs
P_L	: Pressure on down stream	MPa abs
T_H	: Absolute temperature on upper stream	K

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

Sonic velocity zone (at 20℃)



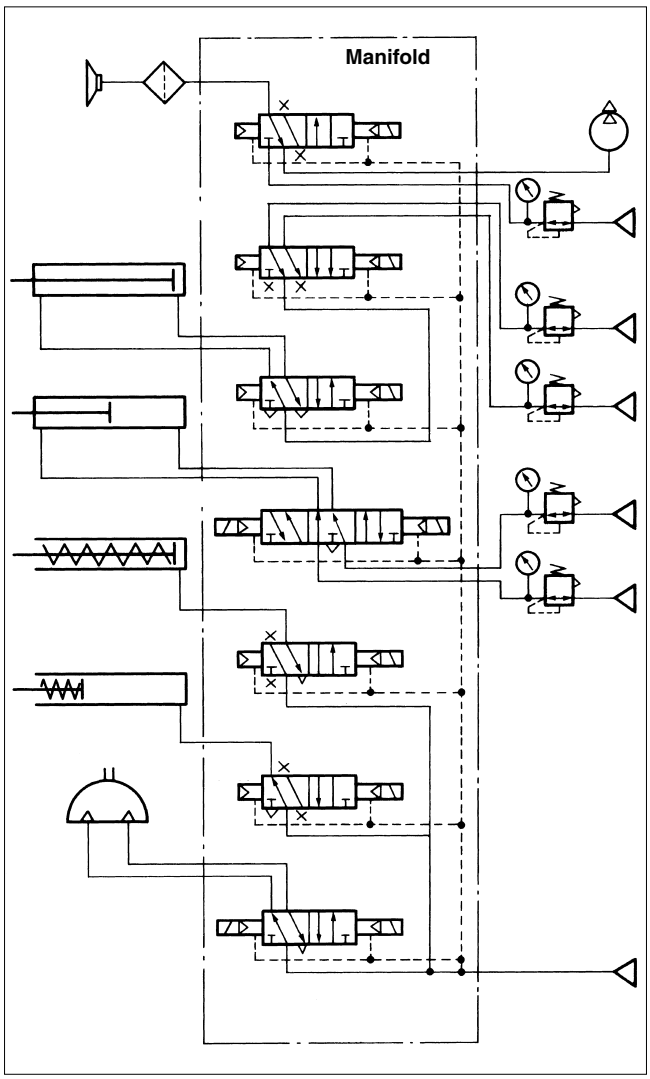
(When the value of effective area is × 10^{-1} or × 10^{n}, multiply the same figure by the flow rate.)

EFFECTIVE AREA

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

MULTI-PURPOSE FUNCTION

Solenoid valve designed with a balanced spool works as (common) external pilot system so that compressed air can be supplied from any port to provide multi-purpose functions.

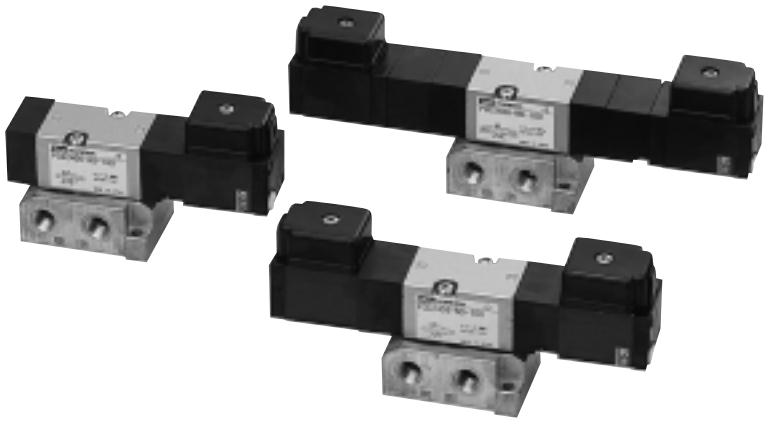


5-PORT PILOT OPERATED SOLENOID VALVES

PC06 Series

Rubber Seal, Sub-base Mounting type

PCS2406	2-position Single solenoid
PCD2406	2-position Double solenoid
PCD3406	3-position Closed center
PCE3406	3-position Exhaust center
PCO3406	3-position Pressure center



SPECIFICATIONS

Model No.	Unit	PCS2406	PCD2406	PCD3406 PCE3406	PCO3406
Fluid		Non-lubricated/lubricated air			
Port size		Rc1/4			
Effective area	mm²	10		9	
Cv value		0.54		0.49	
Operating ambient temperature	℃	−5〜50			
Operating pressure range	MPa	0.2〜0.8			
Maximum frequency	Cycle/min	240		180	
Response time at 0.5MPa	s	ON 0.021 OFF 0.021	ON 0.015	ON 0.025 OFF 0.035	
Rated voltage	V	AC100/110、200/220、DC24			
Grade of insulation		JIS grade B			
Permissible voltage fluctuation	%	AC±10、DC $^{+10}_{-15}$			
Rated frequency	Hz	50/60			
Power consumption AC Holding 50Hz	VA	(100/200) 3.2			
Power consumption AC Holding 60Hz	VA	(100/200) 2.6			
Power consumption AC Inlush 50Hz	VA	(100/200) 5			
Power consumption AC Inlush 60Hz	VA	(100/200) 4.5			
Power consumption DC	W	2			
Wiring		Lead wire, Grommet with terminal, Conduit with terminal, DIN connector			
Mass	kg	0.2	0.27	0.36	0.36

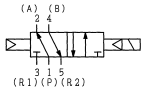
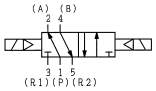
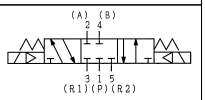
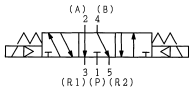
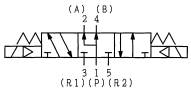
(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

PCS2406 – 01 – 100 L

① ② ③ ④ ⑤

①Model No.

PCS2406	
PCD2406	
PCD3406	
PCE3406	
PCO3406	

②Port size

02	Rc1/4
NB	Without sub-base

③Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

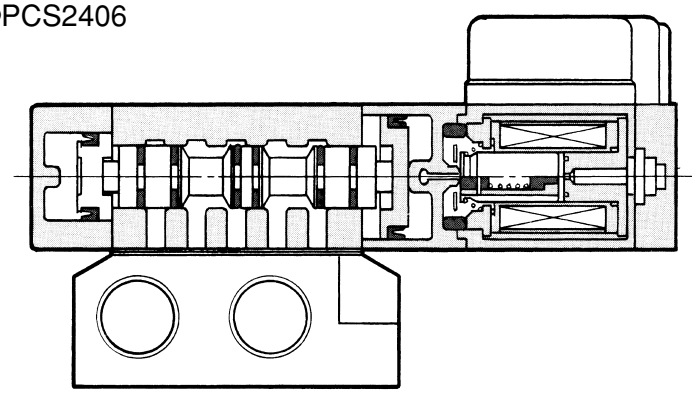
⑤Manual override

No mark	Standard (None locking)
※L	With locking button

※：Made to order

CONSTRUCTION

●PCS2406



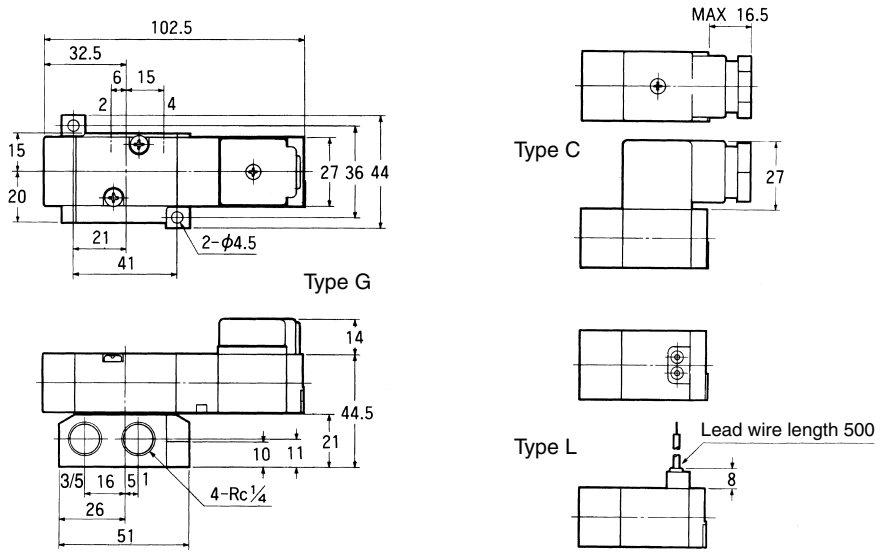
SPARE PARTS

Sub-base

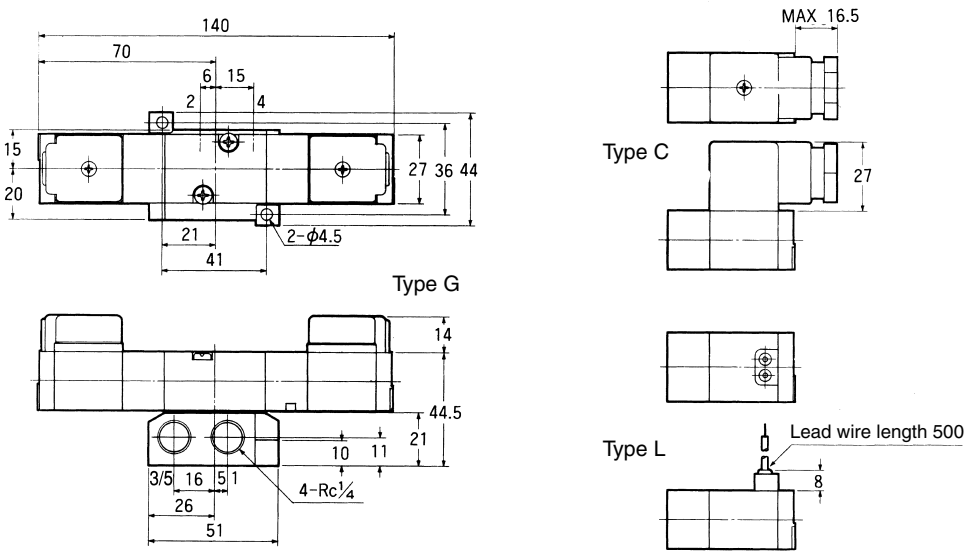
Port size	Model No.
Rc1/4	**PC06-SB-02**

DIMENSIONS

●PCS2406 (Unit：mm)

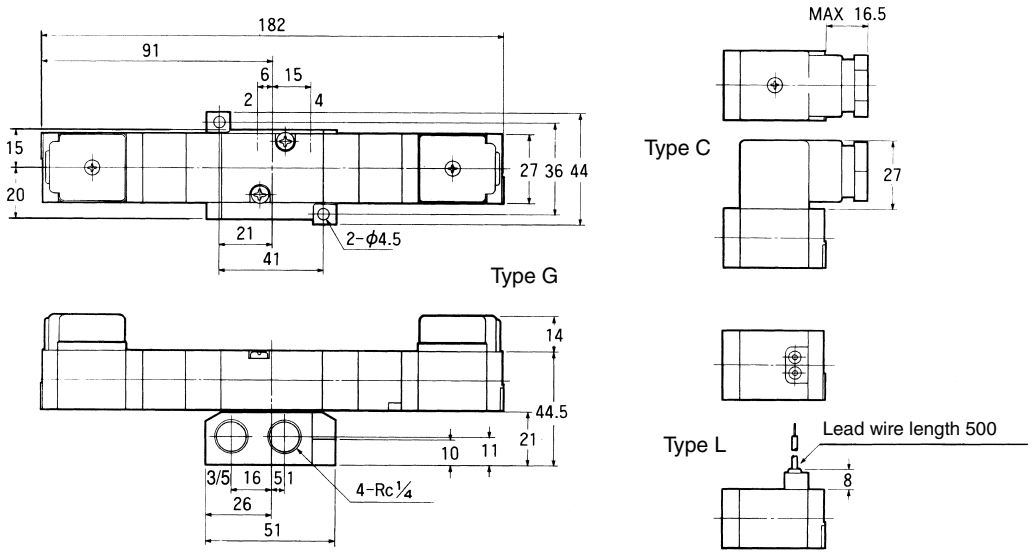


●PCD2406 (Unit：mm)



DIMENSIONS

●PCD3406、PCE3406、PCO3406 (Unit：mm)

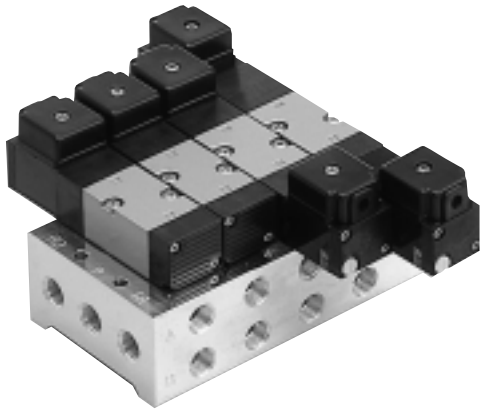


INDIVIDUAL WIRING TYPE MANIFOLD

MF○-PC06

Bar type

MFS□-PC06	Common SUP, Common EXH Ports 2 & 4 on side
MFB□-PC06	Common SUP, Common EXH Ports 2 & 4 on bottom



MANIFOLD SPECIFICATIONS

Type of manifold		MFS□□-PC06 Common SUP, common EXH Ports 2 & 4 on side	MFB□□-PC06 Common SUP, common EXH Ports 2 & 4 on bottom
Port size	Port 1	Rc1/4 (Both sides)	Rc1/4 (Both sides)
	Port 3, 5	Rc1/4 (Both sides)	Rc1/4 (Both sides)
	Port 2, 4	Rc1/4 (Side)	Rc1/4 (Bottom side)
Number of stations		2〜10	
Mountable solenoid valve		PCS2406-NB-※ PCD2406-NB-※ PCD3406-NB-※ PCE3406-NB-※ PCO3406-NB-※	
Blank plate		PC06-BP	

HOW TO ORDER

Specify the type and quantity of Manifold and Solenoid Valve to be mounted, and the quantity of Blank Plate (PC06-BP) in accordance with the following example of description.

(Example) **MFS8-PC06-02**

PCS2406-NB-100G	4 pcs.
PCD2406-NB-100G	2 pcs.
PCD3406-NB-100G	1 pc.
PC06-BP	1 pc.

ORDERING INSTRUCTION

Manifold

MFS | 2 | – | PC06 | – | 02

① ② ③ ④

①Type of manifold

MFS	Common SUP, common EXH Ports 2 & 4 on side
MFB	Common SUP, Common EXH Ports 2 & 4 on bottom

②Number of stations

2	2 station
⋮	⋮
10	10station

③Mountable solenoid valve

PC06	PC06 series

④Size of ports 2 and 4

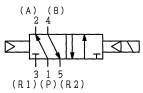
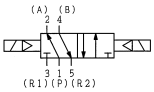
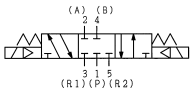
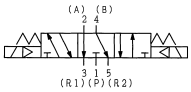
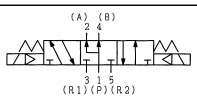
02	Rc1/4

Mountable solenoid valve (For details refer to Pages 11 to 14.)

PCS2406 | – | NB | – | 100 | L | |

① ② ③ ④ ⑤

①Model No.

PCS2406	
PCD2406	
PCD3406	
PCE3406	
PCO3406	

②Port size

NB	Without sub-base

③Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

⑤Manual override

No mark	Standard (None locking)
※L	With locking button

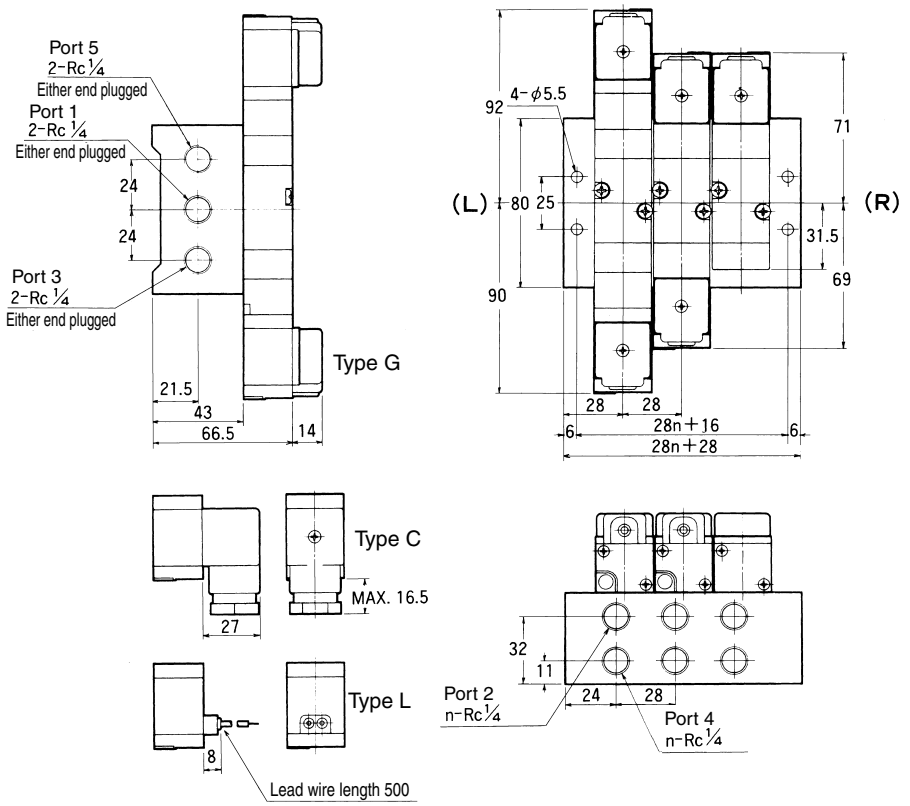
※：Made to order

DIMENSIONS

●MFS□-PC06-02

(Unit：mm)

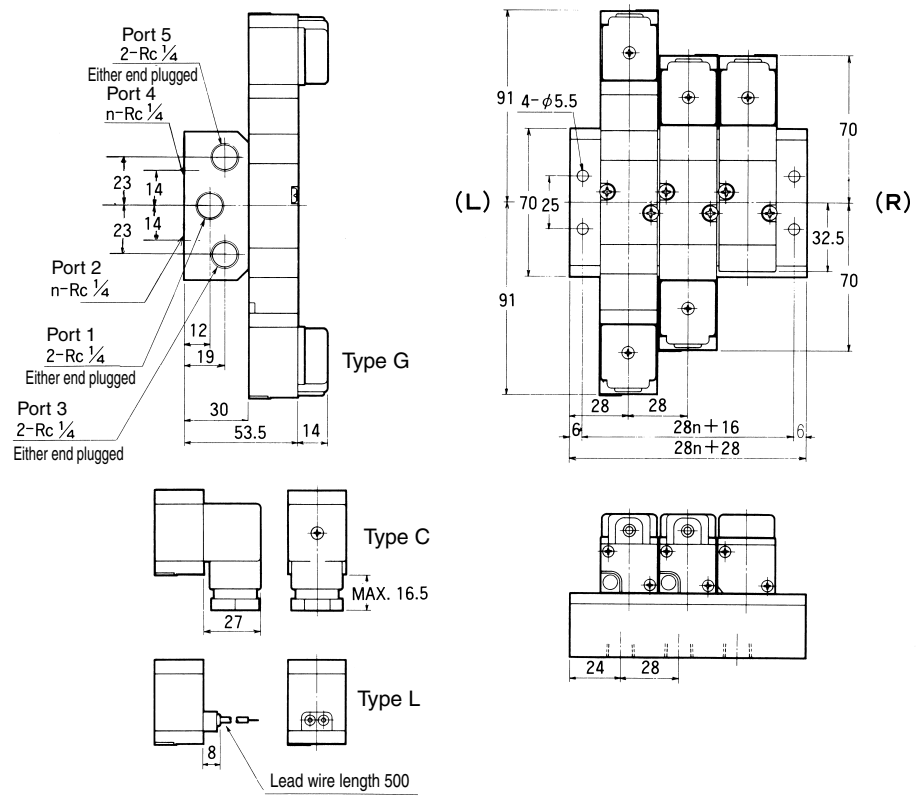
(Note) Standard manifold is plugged on " R " (Right) side ports.



●MFB□-PC06-02

(Unit：mm)

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



5-PORT PILOT OPERATED SOLENOID VALVES

PC08 Series

Rubber Seal, Sub-base Mounting type

PCS2408	2-position Single solenoid
PCD2408	2-position Double solenoid
PCD3408	3-position Closed center
PCE3408	3-position Exhaust center
PCO3408	3-position Pressure center

SPECIFICATIONS

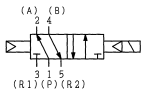
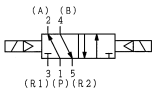
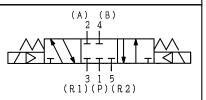
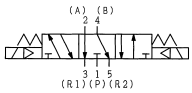
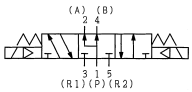
Model No.	Unit	PCS2408	PCD2408	PCD3408 PCE3408	PCO3408
Fluid		Non-lubricated/lubricated air			
Port size		Ports 1, 2&4 : Rc3/8 Ports 3 & 5 : Rc1/4			
Effective area	mm²	30		25	14
Cv value		1.63		1.36	0.76
Operating ambient temperature	℃	−5〜50			
Operating pressure range	MPa	0.2〜0.8			
Maximum frequency	Cycle/min	180			
Response time at 0.5MPa	s	ON 0.035 OFF 0.045	ON 0.02	ON 0.025 OFF 0.035	
Rated voltage	V	AC100/110、200/220、DC24			
Grade of insulation		JIS grade B			
Permissible voltage fluctuation	%	AC±10、DC +10 −15			
Rated frequency	Hz	50/60			
Power consumption AC Holding 50Hz	VA	(100/200) 3.2			
Power consumption AC Holding 60Hz	VA	(100/200) 2.6			
Power consumption AC Inlush 50Hz	VA	(100/200) 5			
Power consumption AC Inlush 60Hz	VA	(100/200) 4.5			
Power consumption DC	W	2			
Wiring		Lead wire, Grommet with terminal, Conduit with terminal, DIN connector			
Mass	kg	0.35	0.42	0.58	0.58

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

PCS2408 ① – 03 ② – 100 ③ L ④ L ⑤ ⑥

①Model No.

PCS2408	
PCD2408	
PCD3408	
PCE3408	
PCO3408	

②Special specifications

No mark	Standard (Internal pilot)
X	External pilot (Pilot port on sub-base)

③Port size

03	Rc3/8
NB	Without sub-base

④Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

⑤Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

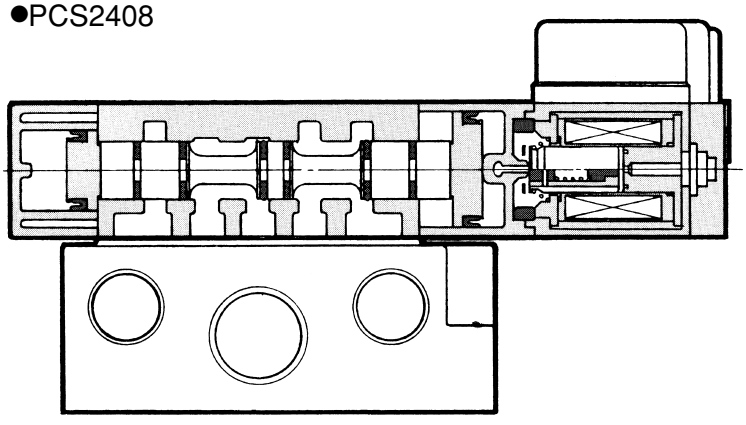
⑥Manual override

No mark	Standard (None locking)
※L	With locking button

※ : Made to order

CONSTRUCTION

●PCS2408



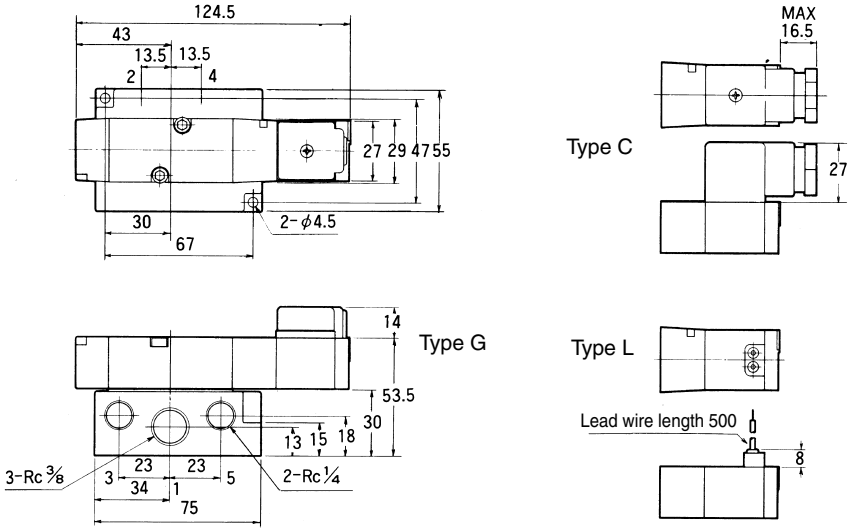
SPARE PARTS

Sub-base

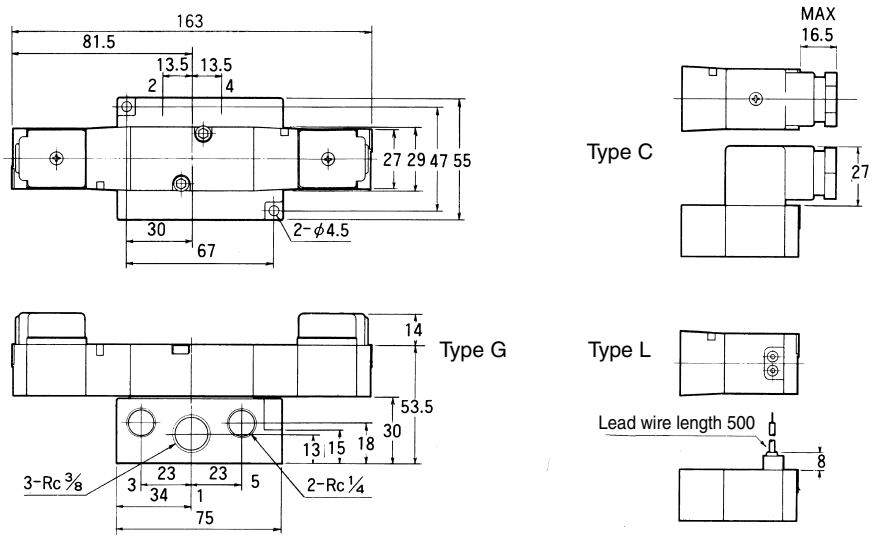
Port size	Model No.
Rc3/8	**PC08-SB-03**
Rc3/8 (For external pilot)	**PC08-SB-X03**

DIMENSIONS

●PCS2408 (Unit：mm)

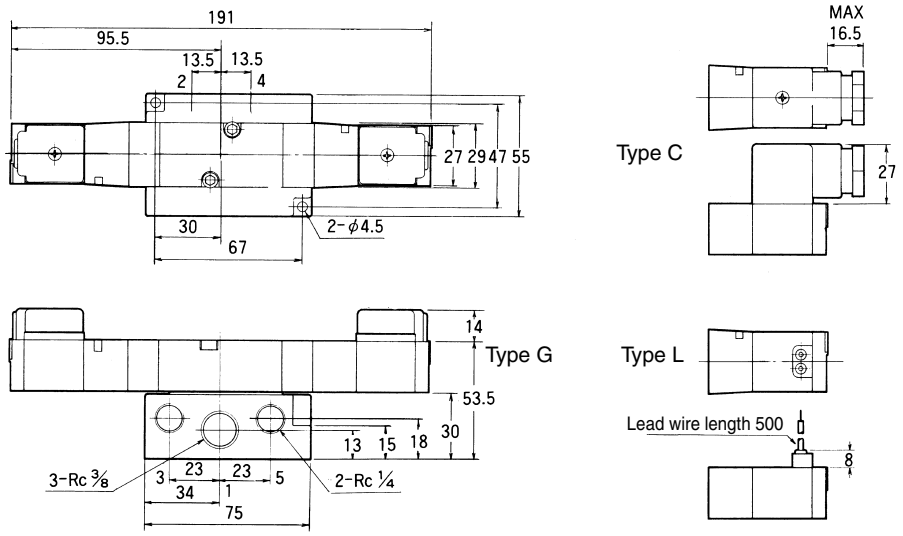


●PCD2408 (Unit：mm)



DIMENSIONS

●PCD3408、PCE3408、PCO3408 (Unit：mm)

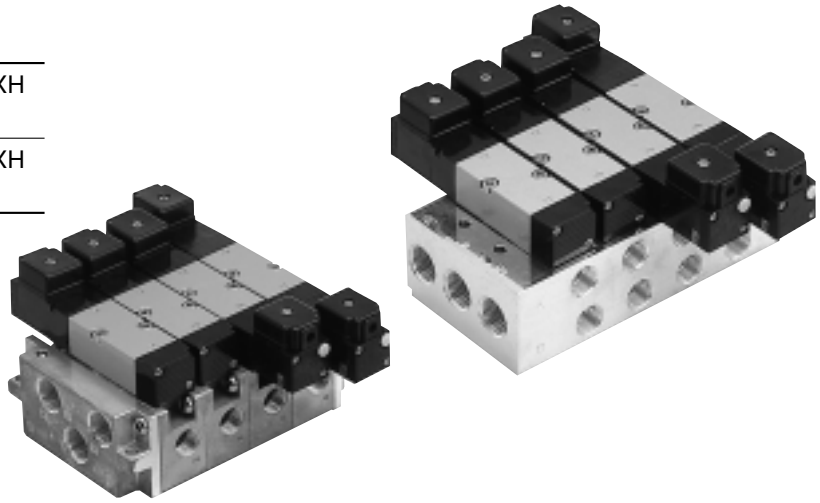


INDIVIDUAL WIRING TYPE MANIFOLD

MF○-PC08

Separate type/Bar type

MF□-PC08 Separate type	Common SUP, Common EXH Ports 2 & 4 on both sides
MFS□-PC08 Bar type	Common SUP, Common EXH Ports 2 & 4 on side



Available for multipurpose

As pilot air supply is branched in manifold, it can be used for special purposes such as double supply, low pressure, vacuum, etc. (Refer to Page 10)

MANIFOLD SPECIFICATIONS

Type of manifold		MF□-PC08 Common SUP, common EXH Ports 2 & 4 on both sides	MFS□-PC08 Common SUP, common EXH Ports 2 & 4 on side
Port size	Port 1	Rc1/2 (Both sides)	Rc1/2 (Both sides)
	Port 3, 5	Rc1/2 (Both sides)	Rc1/2 (Both sides)
	Port 2, 4	Rc3/8 (Both sides)	Rc3/8 (Side)
Number of stations		2～10	
Mountable solenoid valve		PCS2408-NB-※ PCD2408-NB-※ PCD3408-NB-※ PCE3408-NB-※ PCO3408-NB-※	
Blank plate		PC08–BP	

HOW TO ORDER

Specifi the type and quantity of Manifold and Solenoid Valve to be mounted, and the quantity of Blank Plate (PC08-BP) in accordance with the following example of description.

(Example) **MFS8-PC08-03**

PCS2408-NB-100G	4 pcs.
PCD2408-NB-100G	2 pcs.
PCD3408-NB-100G	1 pc.
PC08-BP	1 pc.

Parts of Separate type Manifold

Patrs Name	Parts No.
End block set	**MF-PC08-MB**
Manifold block	**MF-PC08-BD**

(Note) Mounting screws & O-ring are supplied

⚠ CAUTION

- When mounting a solenoid valve to be used at different pressure on the same manifold, mount a solenoid valve intended to be used by supplying the highest pressure (0.8MPa maximum) from port 1 on one of the right end or left end.
- Manifold of MF□-PC08 used a coupling method for single-station type manifold.
- For special circuits, use "Specification for Manifold".

ORDERING INSTRUCTION

Manifold

MFS | 2 | – | PC08 | – | 03 | – | ⑤

① ② ③ ④ ⑤

① Type of manifold

MF	Separate type Common SUP, common EXH Ports 2 & 4 on both sides
MFS	Bar type Common SUP, Common EXH Ports 2 & 4 on side

② Number of stations

2	2 station
⋮	⋮
10	10station

③ Mountable solenoid valve

PC08	PC08 series

④ Size of ports 2 and 4

03	Rc$^{3}/_{8}$

⑤ Special specifications

No mark	Standard
A	Bottom ported

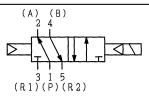
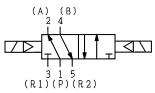
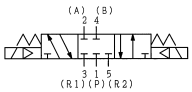
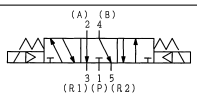
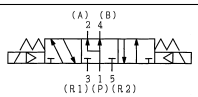
(Note) A : MF only

Mountable solenoid valve (For details refer to Pages 18 to 21.)

PCS2408 | – | NB | – | 100 | L | ⑤

① ② ③ ④ ⑤

① Model No.

PCS2408	
PCD2408	
PCD3408	
PCE3408	
PCO3408	

② Port size

NB	Without sub-base

③ Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④ Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

⑤ Manual override

No mark	Standard (None locking)
※L	With locking button

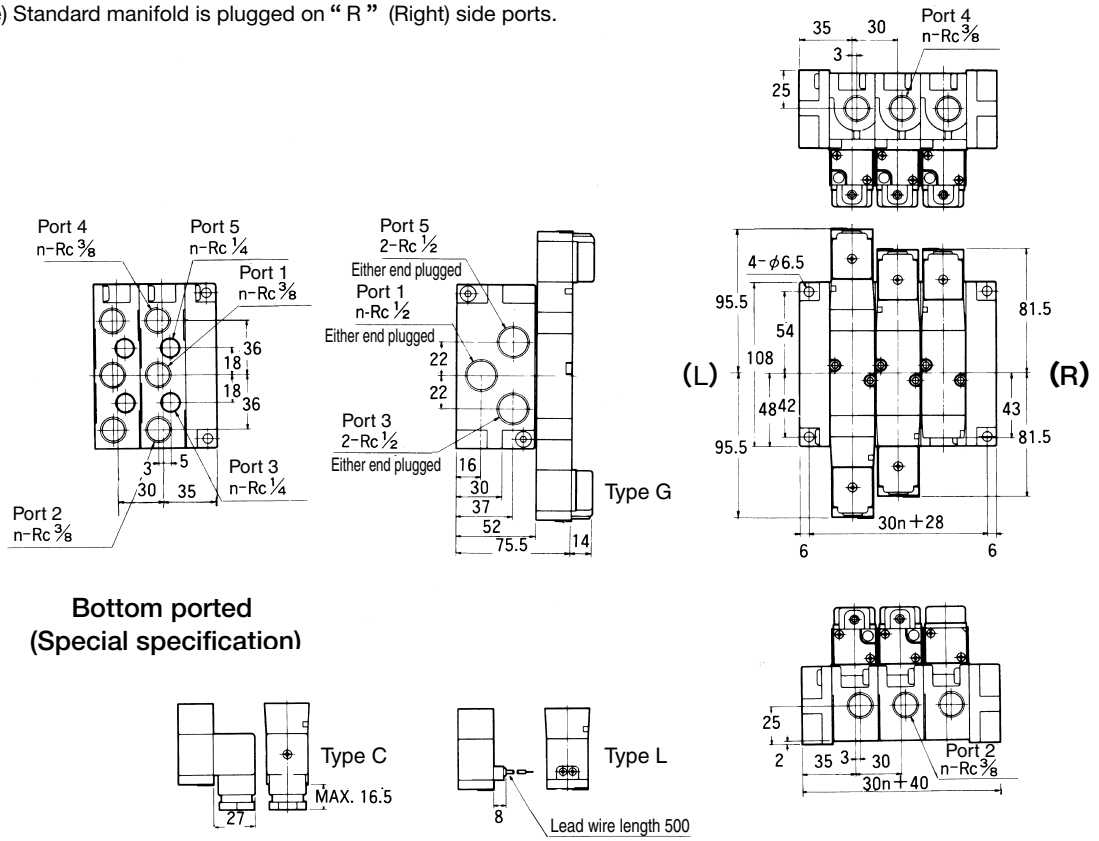
※ : Made to order

DIMENSIONS

●MF□－PC08

(Unit：mm)

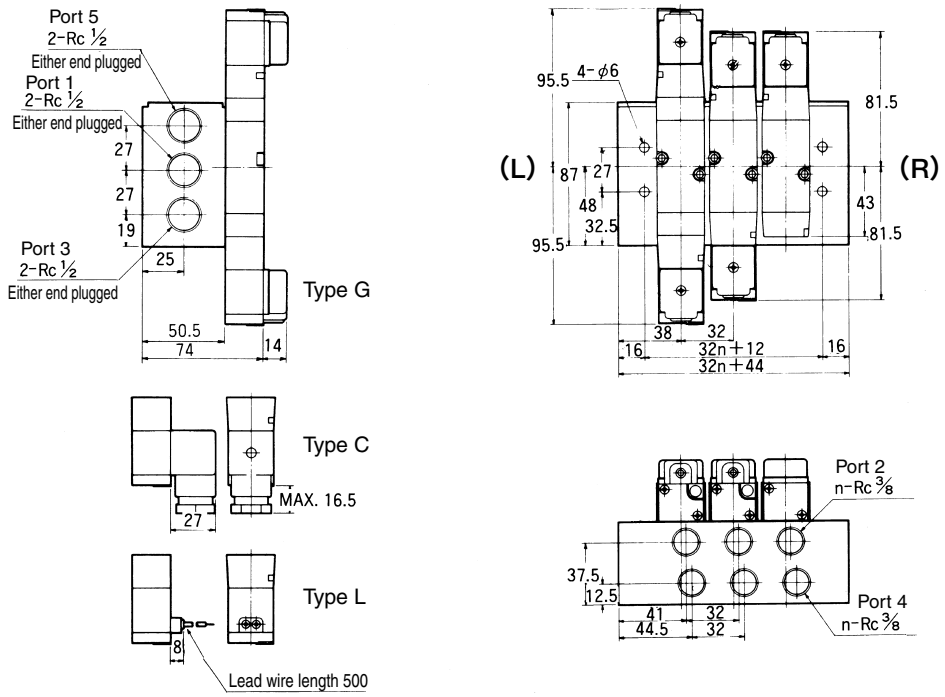
(Note) Standard manifold is plugged on " R " (Right) side ports.



●MFS□－PC08

(Unit：mm)

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

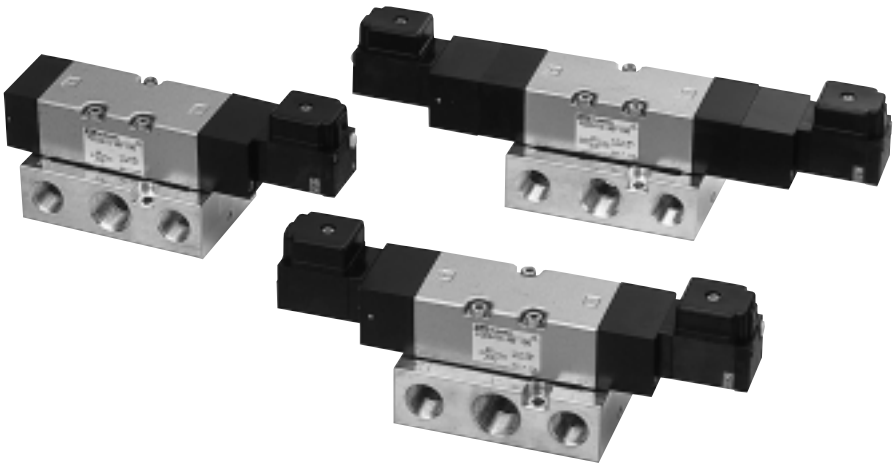


5-PORT PILOT OPERATED SOLENOID VALVES

PC15 Series

Rubber Seal, Sub-base Mounting type

PCS2415	2-position Single solenoid
PCD2415	2-position Double solenoid
PCD3415	3-position Closed center
PCE3415	3-position Exhaust center
PCO3415	3-position Pressure center



SPECIFICATIONS

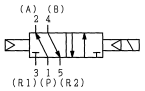
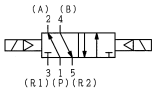
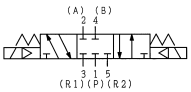
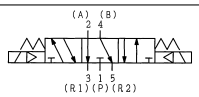
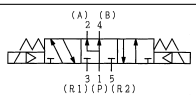
Model No.	Unit	PCS2415	PCD2415	PCD3415 PCE3415	PCO3415
Fluid		Non-lubricated/lubricated air			
Port size		Ports 1, 2 & 4 : Rc1/2 Ports 3 & 5 : Rc3/8			
Effective area	mm²	70		60	
Cv value		3.80		3.25	
Operating ambient temperature	℃	−5〜50			
Operating pressure range	MPa	0.2〜0.8		0.25〜0.8	
Maximum frequency	Cycle/min	120			
Response time at 0.5MPa	s	ON 0.035 OFF 0.060	ON 0.02	ON 0.025 OFF 0.110	
Rated voltage	V	AC100/110、200/220、DC24			
Grade of insulation		JIS grade B			
Permissible voltage fluctuation	%	AC±10、DC $^{+10}_{-15}$			
Rated frequency	Hz	50/60			
Power consumption AC Holding 50Hz	VA	(100/200) 3.2			
Power consumption AC Holding 60Hz	VA	(100/200) 2.6			
Power consumption AC Inlush 50Hz	VA	(100/200) 5			
Power consumption AC Inlush 60Hz	VA	(100/200) 4.5			
Power consumption DC	W	2			
Wiring		Lead wire, Grommet with terminal, Conduit with terminal, DIN connector			
Mass	kg	0.73	0.81	0.94	0.94

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

PCS2415 □ – 04 – 100 L □
① ② ③ ④ ⑤ ⑥

① Model No.

PCS2415	
PCD2415	
PCD3415	
PCE3415	
PCO3415	

② Special specifications

No mark	Standard (Internal pilot)
X	External pilot (Pilot port on sub-base)

③ Port size

04	Rc ½
NB	Without sub-base

④ Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

⑤ Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

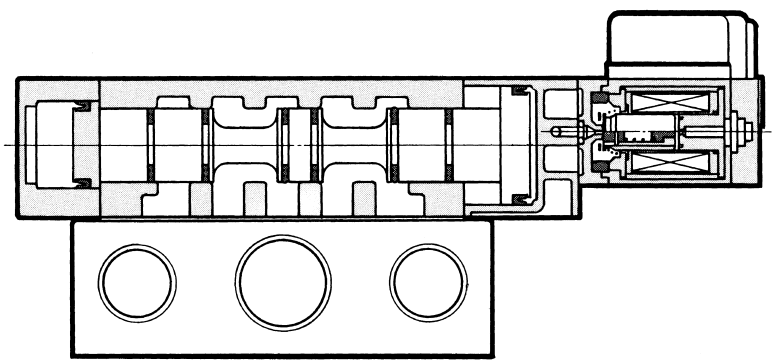
⑥ Manual override

No mark	Standard (None locking)
※L	With locking button

※ : Made to order

CONSTRUCTION

●PCS2415



SPARE PARTS

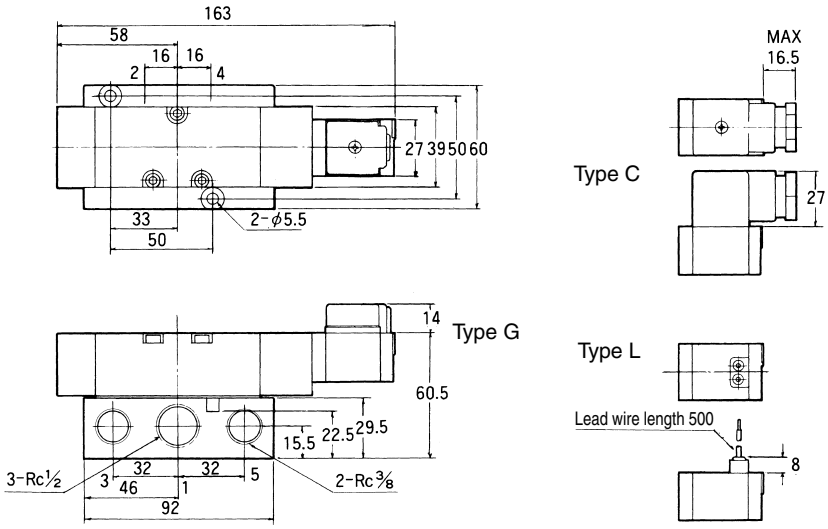
Sub-base

Port size	Model No.
RcRc½	**PC15-SB-04**
Rc½ (For external pilot)	**PC15-SB-X04**

DIMENSIONS

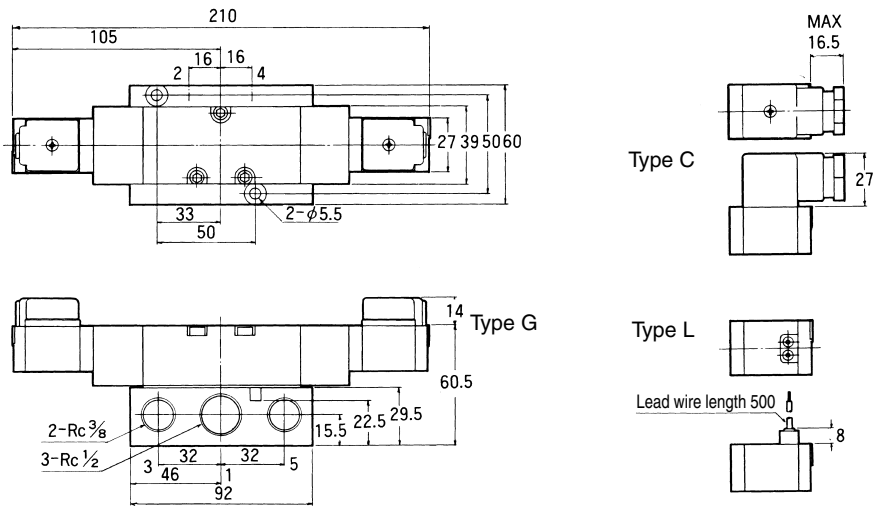
●PCS2415

(Unit : mm)



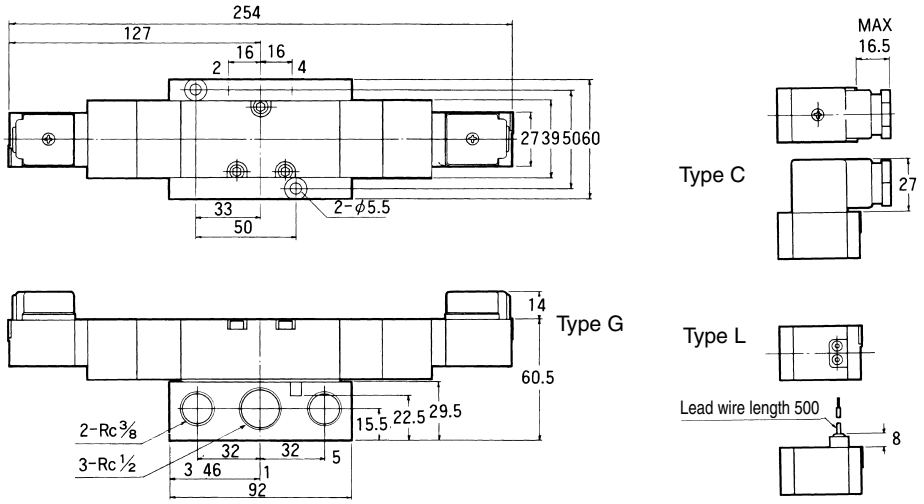
●PCD2415

(Unit : mm)



DIMENSIONS

●PCD3415、PCE3415、PCO3415 (Unit：mm)

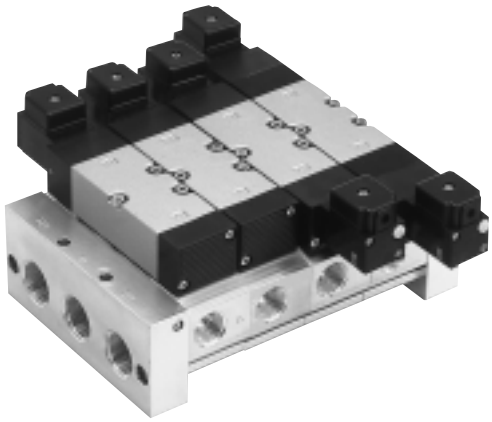


INDIVIDUAL WIRING TYPE MANIFOLD

MF○-PC15

Bar type

MF□-PC15 Common SUP, Common EXH
Ports 2 & 4 on both sides



Available for multipurpose

As pilot air supply is branched in manifold, it can be used for special purpose such as double supply, low pressure, vacuum, etc. (Refer to Page 10.)

MANIFOLD SPECIFICATIONS

		MF□-PC15 Common SUP, common EXH Ports 2 & 4 on both sides
Type of manifold		
Port size	Port 1	Rc3/4 (Both sides)
	Port 3, 5	Rc3/4 (Both sides)
	Port 2, 4	Rc1/2 (Both sides)
Number of stations		2～10
Mountable solenoid valve		PCS2415-NB-※ PCD2415-NB-※ PCD3415-NB-※ PCE3415-NB-※ PCO3415-NB-※
Blank plate		PC15-BP

HOW TO ORDER

Specify the type and quantity of Manifold and Solenoid valve to be mounted, and the quantity of Blank Plate (PC08-BP) in accordance with the following example of description.

(Example) **MF8-PC15-04**

PCS2415-NB-100G	4pcs.
PCD2415-NB-100G	2pcs.
PCD3415-NB-100G	1pc.
PC15-BP	1pc.

Parts of Separate type Manifold

Patrs Name	Parts No.
End block set	**MF-PC15-MB**
Manifold block	**MF1-PC15-BD**

(Note) Mounting screws & O-ring are supplied

⚠ CAUTION

- When mounting a solenoid valve to be used at different pressure on the same manifold, mount a solenoid valve intended to be used by supplying the highest pressure (0.8MPa maximum) from port 1 on one of the right end or left end.
- For special circuits, use " Specification for Manifold ".

ORDERING INSTRUCTION

Manifold

MF 2 – PC15 – 04 – ☐
① ② ③ ④ ⑤

①Type of manifold

MF	Common SUP, common EXH Ports 2 & 4 on both sides

②Number of stations

2	2 station
⋮	⋮
10	10station

③Mountable solenoid valve

PC15	PC15 series

④Size of ports 2 and 4

04	Rc$\frac{1}{2}$

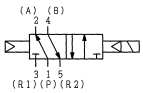
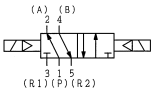
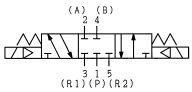
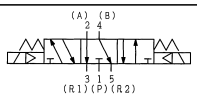
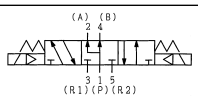
⑤Special specifications

No mark	Standard
A	Bottom ported

Mountable solenoid valve (For details refer to Pages 25 to 28.)

PCS2415 – NB – 100 L ☐
① ② ③ ④ ⑤

①Model No.

PCS2415	
PCD2415	
PCD3415	
PCE3415	
PCO3415	

②Port size

NB	Without sub-base

③Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

⑤Manual override

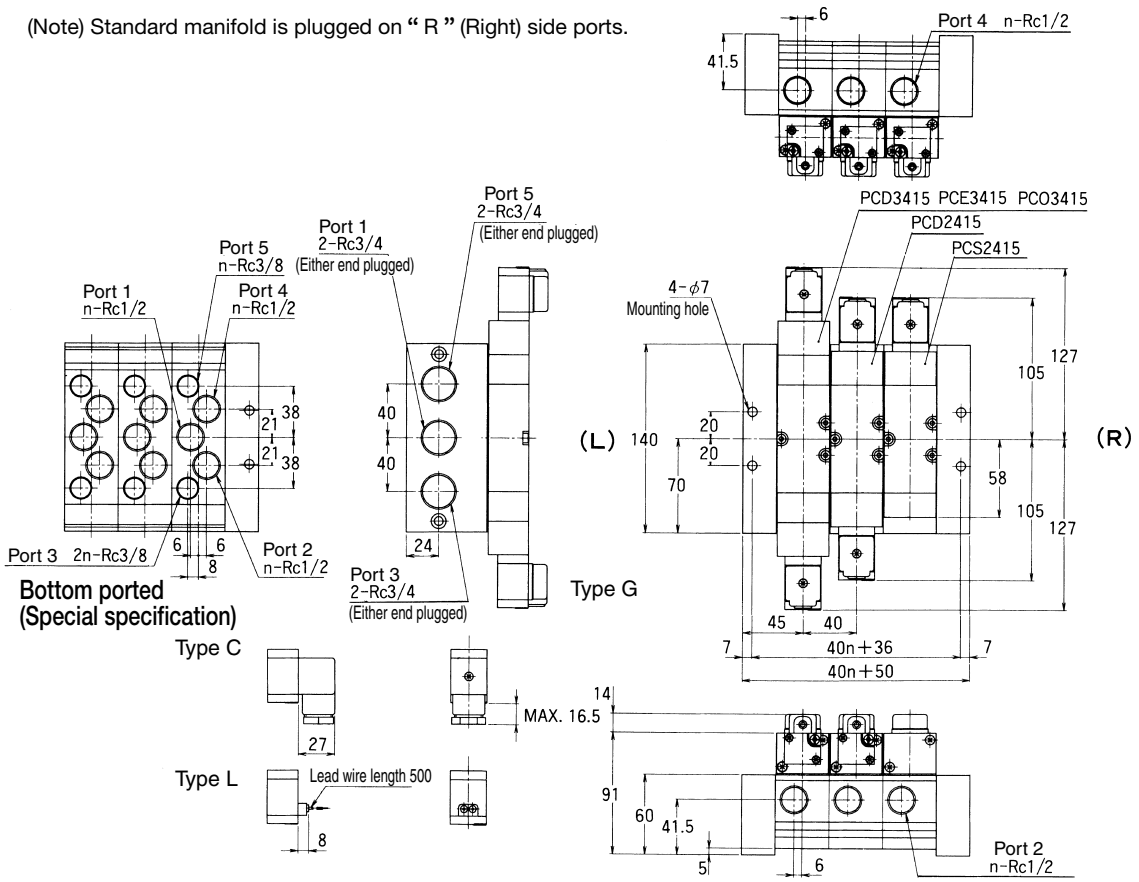
No mark	Standard (None locking)
※L	With locking button

※：Made to order

DIMENSIONS

●MF□-PC15 (Unit：mm)

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



5-PORT PILOT OPERATED SOLENOID VALVES

RC06 Series

Rubber Seal, In-line Mounting type

RCS2406	2-position Single solenoid
RCD2406	2-position Double solenoid
RCD3406	3-position Closed center
RCE3406	3-position Exhaust center
RCO3406	3-position Pressure center

SPECIFICATIONS

Model No.	Unit	RCS2406	RCD2406	RCD3406 RCE3406	RCO3406
Fluid		Non-lubricated/lubricated air			
Port size		Ports 1, 2 & 4 : Rc1/4		Ports 3 & 5 : Rc1/8	
Effective area	mm²	12		11	
Cv value		0.65		0.60	
Operating ambient temperature	℃	−5〜50			
Operating pressure range	MPa	0.2〜0.8			
Maximum frequency	Cycle/min	240		180	
Response time at 0.5MPa	s	ON 0.021 OFF 0.021	ON 0.015	ON 0.025 OFF 0.035	
Rated voltage	V	AC100/110、200/220、DC24			
Grade of insulation		JIS grade B			
Permissible voltage fluctuation	%	AC±10、DC $^{+10}_{-15}$			
Rated frequency	Hz	50/60			
Power consumption AC Holding 50Hz	VA	(100/200) 3.2			
Power consumption AC Holding 60Hz	VA	(100/200) 2.6			
Power consumption AC Inlush 50Hz	VA	(100/200) 5			
Power consumption AC Inlush 60Hz	VA	(100/200) 4.5			
Power consumption DC	W	2			
Wiring		Lead wire, Grommet with terminal, Conduit with terminal, DIN connector			
Mass	kg	0.14	0.21	0.3	0.3

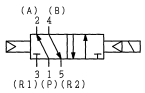
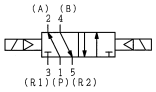
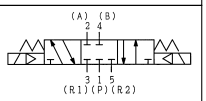
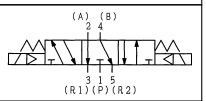
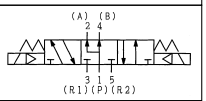
(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

RCS2406 – 02 – 100 L ( ) ( )

① ② ③ ④ ⑤ ⑥

①Model No.

RCS2406	
RCD2406	
RCD3406	
RCE3406	
RCO3406	

②Port size

02	Rc1/4

③Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

⑤Manual override

No mark	Standard (None locking)
※L	With locking button

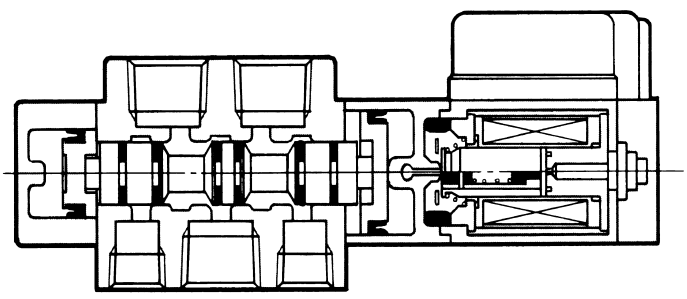
⑥Special specifications

No mark	Standard
B	With mounting bracket

※：Made to order

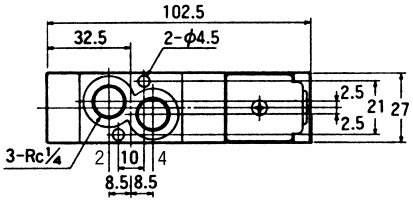
CONSTRUCTION

●RCS2406

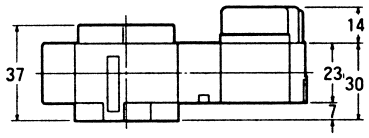


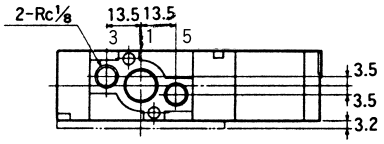
DIMENSIONS

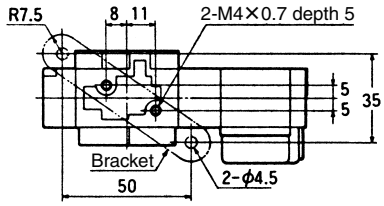
●RCS2406 (Unit：mm)

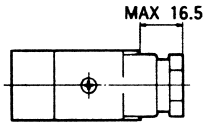


Type G

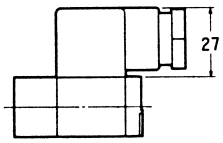


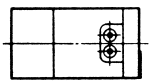




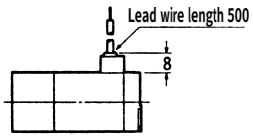


Type C

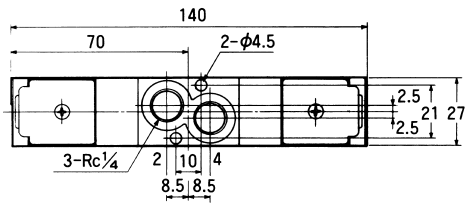




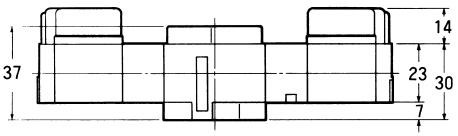
Type L

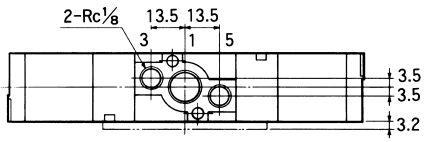


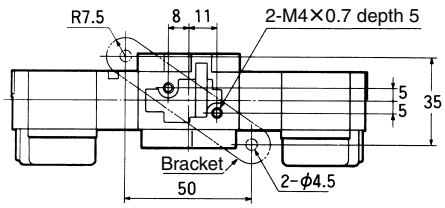
●RCD2406 (Unit：mm)

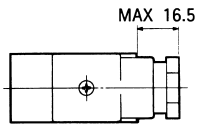


Type G

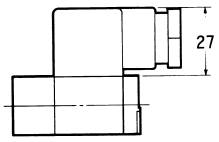


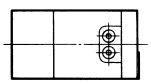




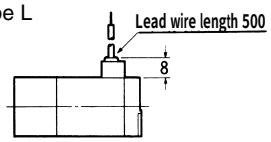


Type C



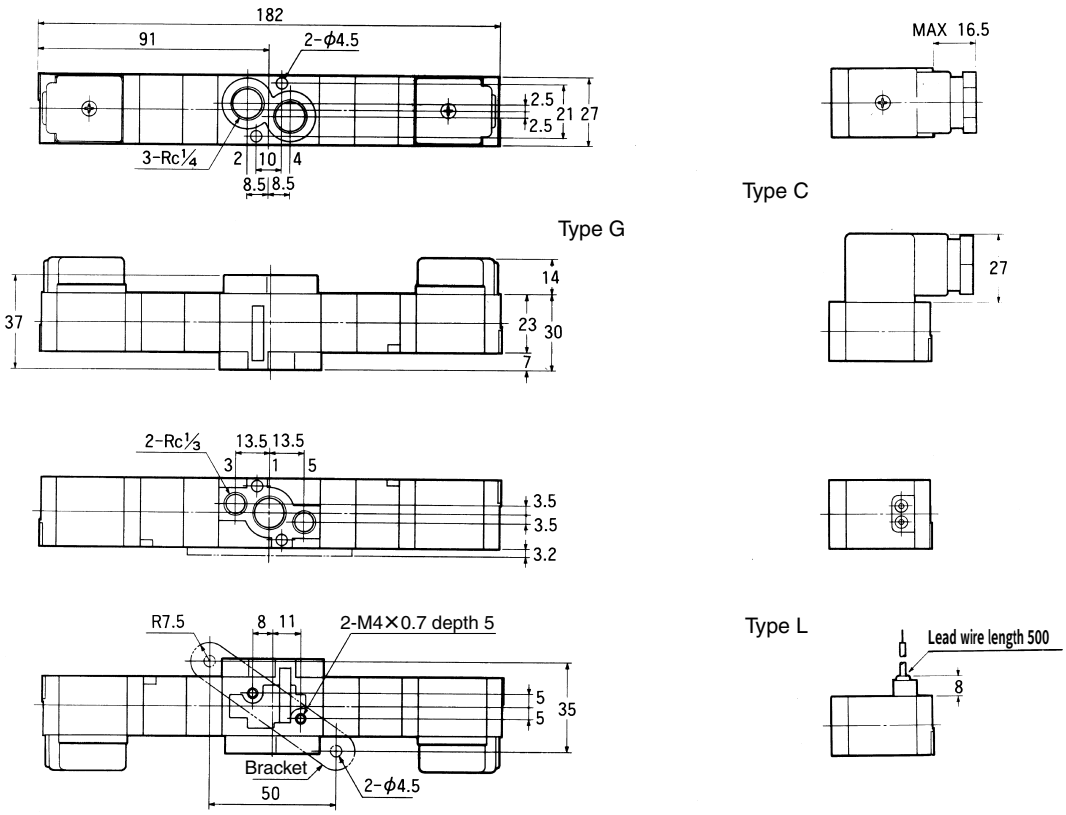


Type L



DIMENSIONS

●RCD3406、RCE3406、RCO3406 (Unit：mm)

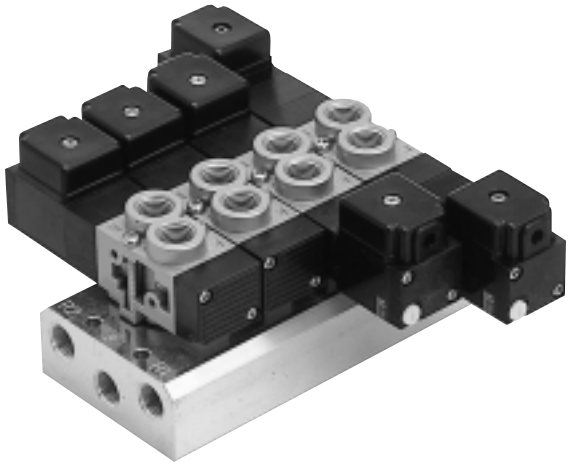


INDIVIDUAL WIRING TYPE MANIFOLD

MF○-RC06

Bar type

MFU□-RC06 Common SUP, Common EXH
Ports 2 & 4 on valve body



MANIFOLD SPECIFICATIONS

		MFU□-RC06 Common SUP, common EXH Ports 2 & 4 on valve body
Type of manifold		
Port size	Port 1	Rc1/4 (Both sides)
	Port 3, 5	Rc1/4 (Both sides)
	Port 2, 4	Rc1/4 (Valve body)
Number of stations		2～10
Mountable solenoid valve		RCS2406-※-※-MF RCD2406-※-※-MF RCD3406-※-※-MF RCE3406-※-※-MF RCO3406-※-※-MF
Blank plate		RC06-BP

HOW TO ORDER

Specify the type and quantity of Manifold and Solenoid Valve to be mounted, and the quantity of Blank Plate (RC06-BP) in accordance with the following example of description.

(Example) **MFU8-RC06-02**

RCS2406-02-100G-MF	4 pcs.
RCD2406-02-100G-MF	2 pcs.
RCD3406-02-100G-MF	1 pc.
RC06-BP	1 pc.

ORDERING INSTRUCTION

Manifold

MFU | 2 – RC06 – 02

① ② ③ ④

①Type of manifold

MFU	Common SUP, common EXH Ports 2 & 4 on valve body

②Number of stations

2	2 station
⋮	⋮
10	10station

③Mountable solenoid valve

RC06	RC06 series

④Size of ports 2 and 4

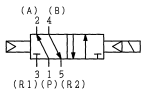
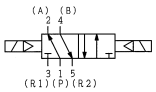
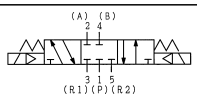
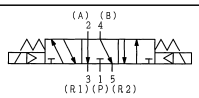
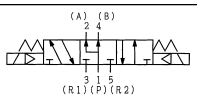
02	Rc1/4

Mountable solenoid valve (For details refer to Pages 32 to 35.)

RCS2406 – 02 – 100 | L | | – MF

① ② ③ ④ ⑤ For manifold

①Model No.

RCS2406	
RCD2406	
RCD3406	
RCE3406	
RCO3406	

②Port size

02	Rc1/4

③Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

⑤Manual override

No mark	Standard (None locking)
※L	With locking button

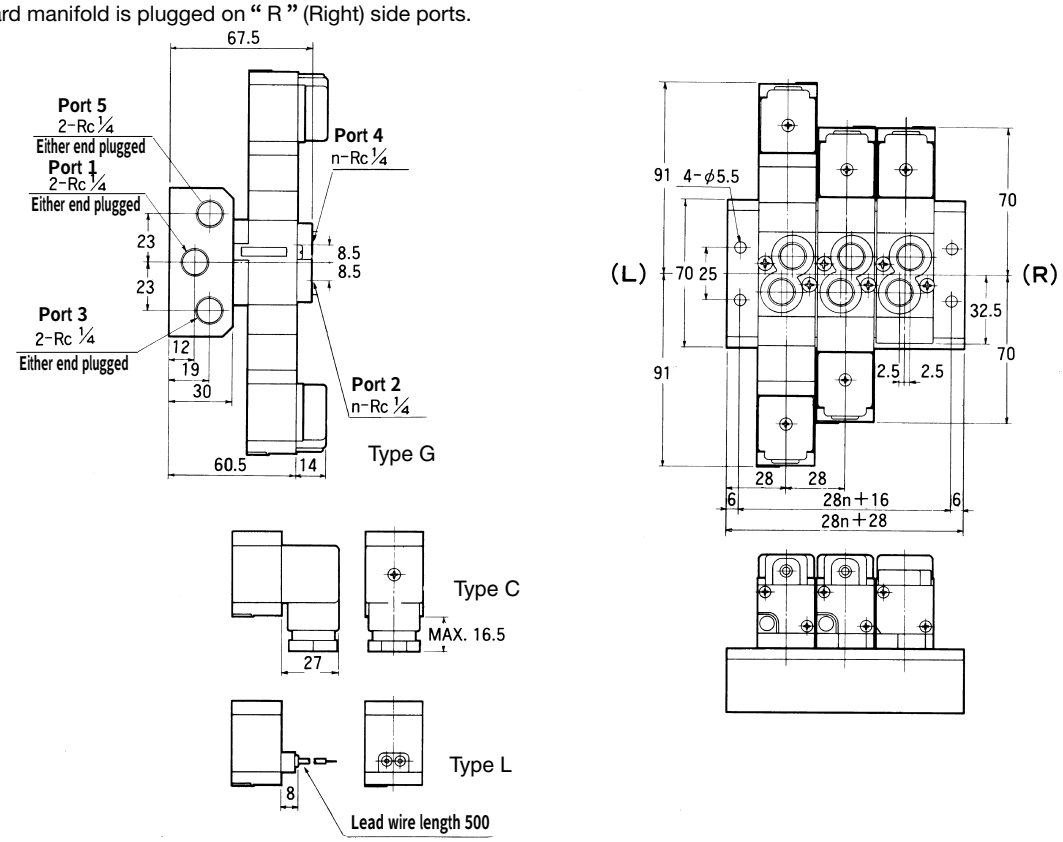
※ : Made to order

DIMENSIONS

●MFU□-RC06-02

(Unit：mm)

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

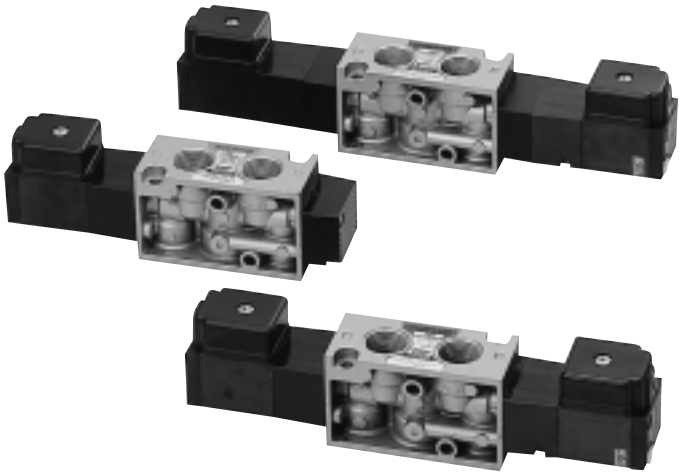


5-PORT PILOT OPERATED SOLENOID VALVES

RC08 Series

Rubber Seal, In-line Mounting type

PCS2408	2-position Single solenoid
RCD2408	2-position Double solenoid
RCD3408	3-position Closed center
RCE3408	3-position Exhaust center
RCO3408	3-position Pressure center



SPECIFICATIONS

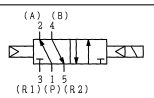
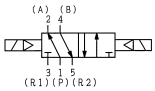
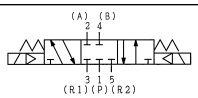
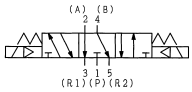
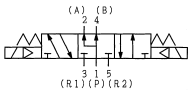
Model No.	Unit	RCS2408	RCD2408	RCD3408 RCE3408	RCO3408
Fluid		Non-lubricated/lubricated air			
Port size		Ports 1, 2 & 4 : Rc3/8 Ports 3 & 5 : Rc1/4			
Effective area	mm²	30		25	14
Cv value		1.63		1.36	0.76
Operating ambient temperature	℃	−5〜50			
Operating pressure range	MPa	0.2〜0.8			
Maximum frequency	Cycle/min	180			
Response time at 0.5MPa	s	ON 0.035 OFF 0.045	ON 0.02	ON 0.025 OFF 0.035	
Rated voltage	V	AC100/110、200/220、DC24			
Grade of insulation		JIS grade B			
Permissible voltage fluctuation	%	AC±10、DC +10 −15			
Rated frequency	Hz	50/60			
Power consumption AC Holding 50Hz	VA	(100/200) 3.2			
Power consumption AC Holding 60Hz	VA	(100/200) 2.6			
Power consumption AC Inlush 50Hz	VA	(100/200) 5			
Power consumption AC Inlush 60Hz	VA	(100/200) 4.5			
Power consumption DC	W	2			
Wiring		Lead wire, Grommet with terminal, Conduit with terminal, DIN connector			
Mass	kg	0.16	0.23	0.29	0.29

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

RCS2408 – 03 – 100 L
① ② ③ ④ ⑤

①Model No.

RCS2408	
RCD2408	
RCD3408	
RCE3408	
RCO3408	

②Port size

03	Rc$^{3}/_{8}$

③Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

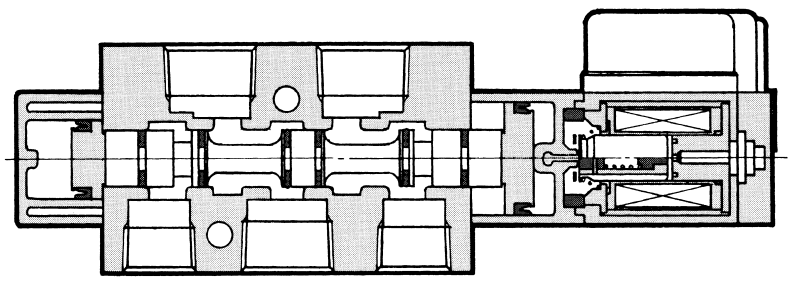
⑤Manual override

No mark	Standard (None locking)
※L	With locking button

※：Made to order

CONSTRUCTION

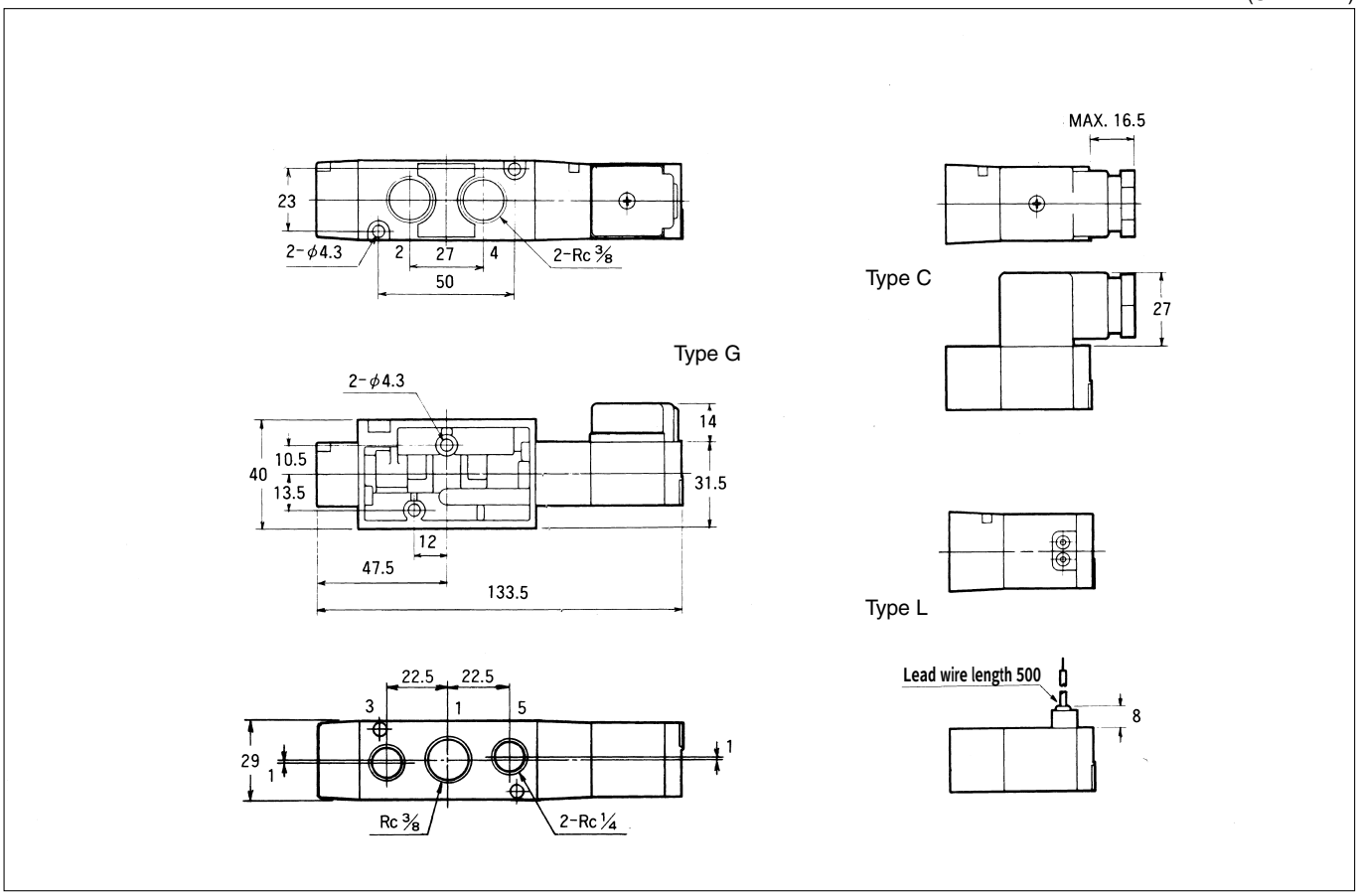
●RCS2408



DIMENSIONS

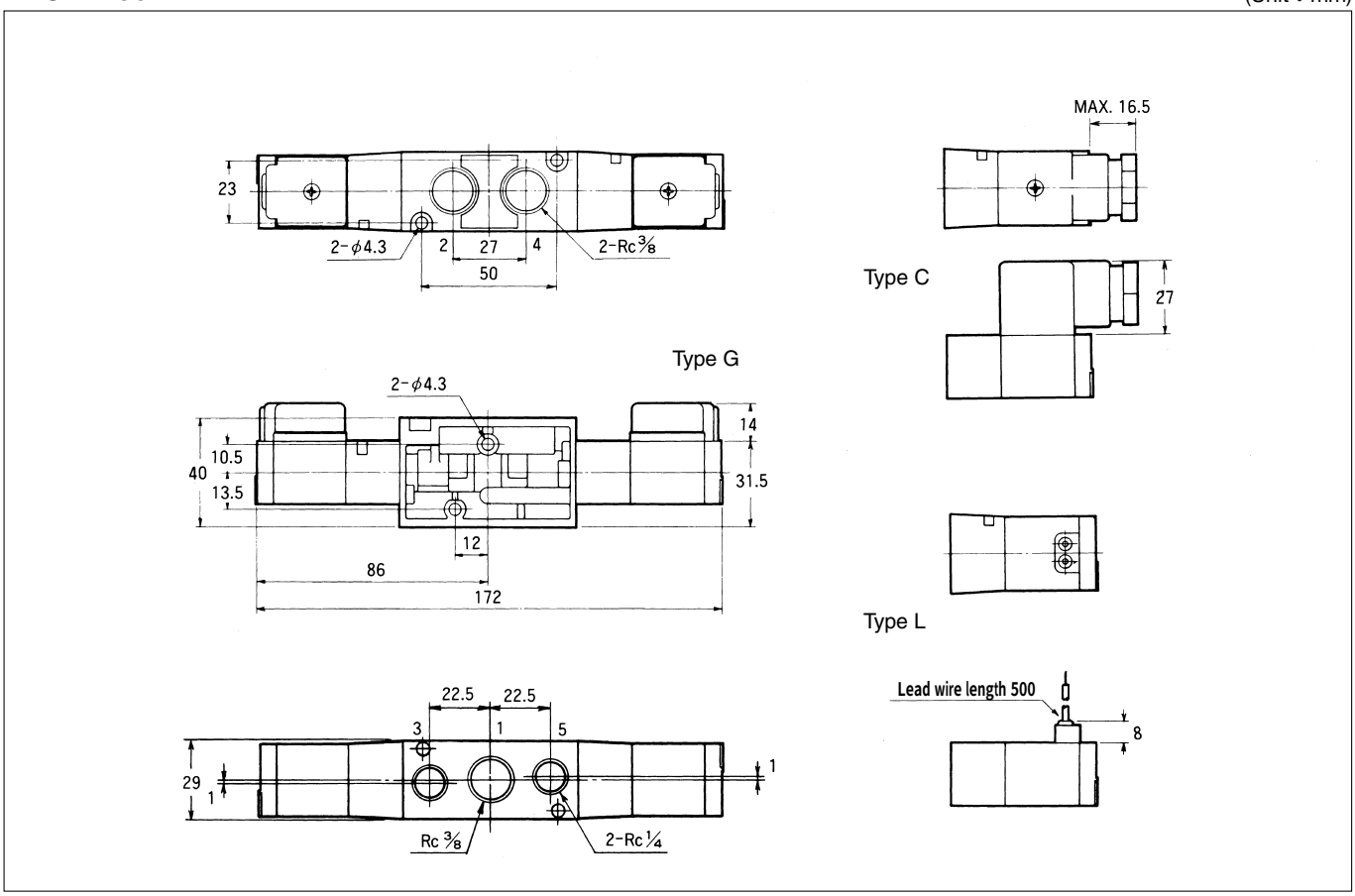
●RCS2408

(Unit：mm)



●RCD2408

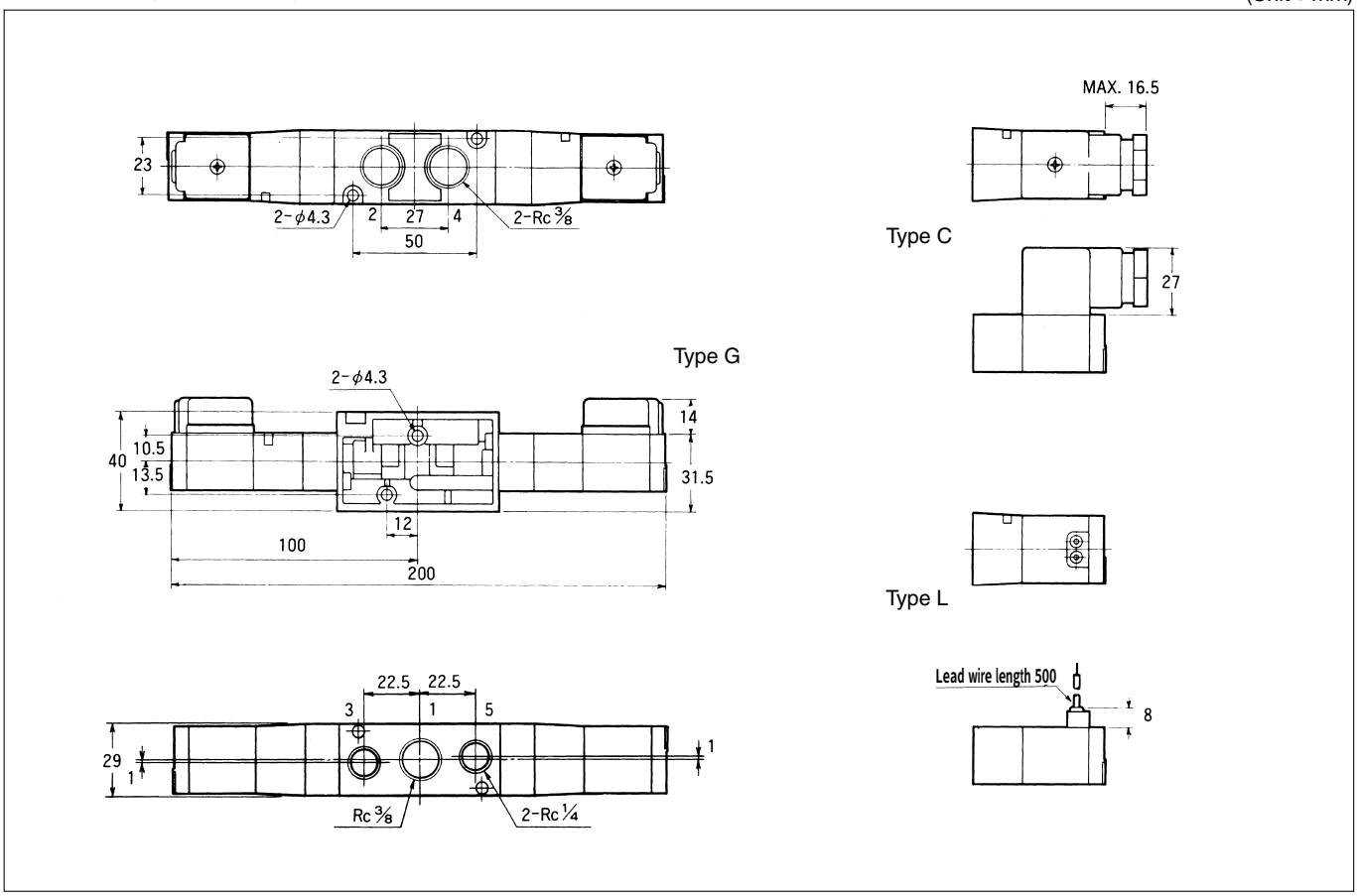
(Unit：mm)



DIMENSIONS

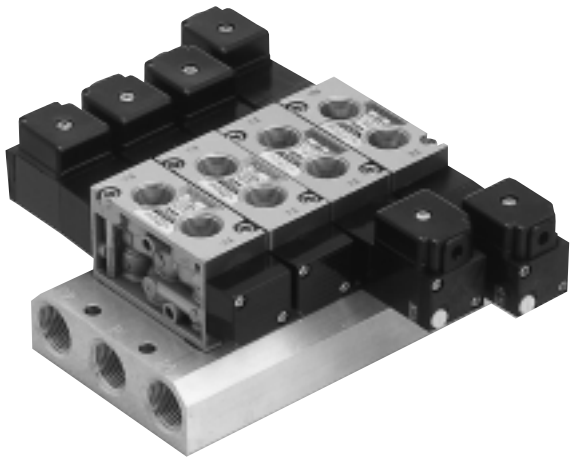
●RCD3408、RCE3408、RCO3408

(Unit：mm)



INDIVIDUAL WIRING TYPE MANIFOLD
MF○-RC08
Bar type

MFU□-RC08 Common SUP, Common EXH
Ports 2 & 4 on valve body



MANIFOLD SPECIFICATIONS

		MFU□-RC08
Type of manifold		Common SUP, common EXH Ports 2 & 4 on valve body
Port size	Port 1	Rc1/2 (Both sides)
	Port 3, 5	Rc1/2 (Both sides)
	Port 2, 4	Rc3/8 (Valve body)
Number of stations		2～10
Mountable solenoid valve		RCS2408-※-※-MF RCD2408-※-※-MF RCD3408-※-※-MF RCE3408-※-※-MF RCO3408-※-※-MF
Blank plate		RC08-BP

HOW TO ORDER

Specify the type and quantity of Manifold and Solenoid Valve to be mounted, and the quantity of Blank Plate (RC08-BP) in accordance with the following example of description.

(Example) **MFU8-RC08-03**

RCS2408-03-100G-MF	4 pcs.
RCD2408-03-100G-MF	2 pcs.
RCD3408-03-100G-MF	1 pc.
RC08-BP	1 pc.

ORDERING INSTRUCTION

Manifold

MFU | 2 – RC08 – 03
① ② ③ ④

①Type of manifold

MFU	Common SUP, common EXH Ports 2 & 4 on valve body

②Number of stations

2	2 station
⋮	⋮
20	10station

③Mountable solenoid valve

RC08	RC08 series

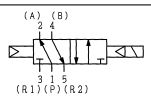
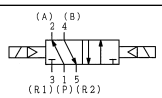
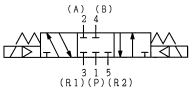
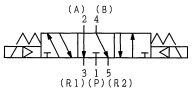
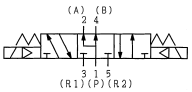
④Size of ports 2 and 4

03	Rc3/8

Mountable solenoid valve (For details refer to Pages 39 to 42.)

RCS2408 – 03 – 100 | L | | – MF
① ② ③ ④ ⑤ For manifold

①Model No.

RCS2408	
RCD2408	
RCD3408	
RCE3408	
RCO3408	

②Port size

03	Rc3/8

③Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

④Wiring

L	Lead wire
G	Grommet with terminal
C	Conduit with terminal
※GK	Grommet with surge suppressor
※CK	Conduit with surge suppressor
D	DIN connector

⑤Manual override

No mark	Standard (None locking)
※L	With locking button

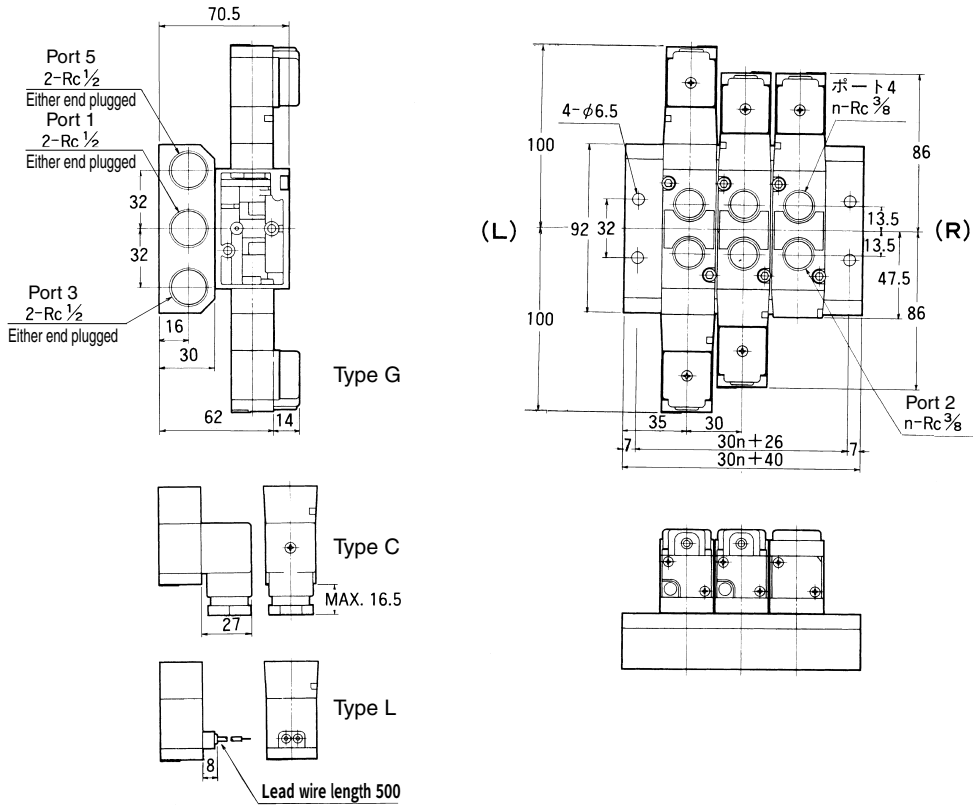
※：Made to order

DIMENSIONS

●MFU□-RC08

(Unit：mm)

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



⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from KURODA PRECISION INDUSTRIES LTD. and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by KURODA PRECISION INDUSTRIES LTD. at any time without notice.

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PILOT OPERATED SOLENOID VALVES

PM Series

Metal Seal, In-line Mounting/Sub-base Mounting

TÜV CERT
ISO 9001
Cert. No. 09 100 5769
ISO 14001
Cert. No. 01 104 010775

Parker KURODA

ENGINEERING YOUR SUCCESS.

LAPPED SPOOL & SLEEVE, PILOT OPERATED SOLENOID VALVES

PM Series

The solenoid operated air valves of this series are types with an internal-pilot-type metal seal and a spool valve.
This provides a choice of 3-way (3 ports), 4-way (5 ports), 2-position with single or double solenoid, and 3-position with closed center or exhaust center models, in conformity with customer's requirements.

FEATURES

Small, Light and High Flow Rate

The compact size is achieved by the well-designed flow path construction and aluminum-alloy bases and small pilot solenoid valves, and a larger Cv Factor as well as a light weight are being accomplished for its sizes.

Long Service Life

The valve incorporates a metal seal system composed of a sleeve and a spool on which KURODA's super precision machining technique in making various kinds of gauges are embodied. The sleeve and spool assembly is made of special stainless steel that provides anti-corrosion and is being hardened at Rockwell C60 for anti-weariness. Besides the assemblies being made to fit with a several micron clearance one another results slightest air leak and allow the spool to float in the sleeve. Accordingly this not only can be used under without lubrication but also assures a long service life for its small friction that affects a minimum wear and high sealing effects.

No Coil Burn Out

These valves are operated by pneumatic power to shift the spool to obtain greater shifting force. And because of its small resin-molded solenoid coil a low power consumption is expected.
This coil will not burn out in cases of sleeve or spool malfunction which would be typical causes for failure by presence of deteriorated compressor oil, pipe scale, sand or unnecessary viscous oil in the lubricator if a direct operated valve was used.

Quick Response and Positive Shifting

Minimized internal volume of the pilot portion provides short response time though a pilot type. Pneumatic power gives a greater shifting power for positive switching of the spool.

Plug-in Connector

A plug-in connector (DIN43650) is used in the electric joint portion for the ease of connection.
The conduit opening of the connector can be directed in any direction.

Locking Manual override

To enable manual operation, a locking button of KURODA's unique design comes as option.
(None lock manual override is standard)

Flow Pattern

As the standard solenoid valves are internal pilot type, air pressure must be fed from its port 1. But by plugging other ports these can be used as 2-way, 3-way, or 4-way valves.

Mounting

These solenoid valves are sub-base mounting types in discrete use but manifold mounting isavailable for the demand of combination use (except for 3-way model).
The same interface is being placed between the valve body and sub-base as used with KURODA's direct operated solenoid valves so that these valve bodies are interchangeable with the direct types.

VARIATION

Model No.	Port	Solenoid	Positions	Port size	Effective area (mm^2)	Cv value	Refer to Page :
PMS246	5	Single	2	Rc1/8	6.5	0.35	11
PMD246		Double					
PMD346			3-Closed center				
PME346			3-Exhaust center				
PMS2306	3	Single	2	Rc1/8, 1/4	11	0.60	14
PMS2406	5				12.5	0.68	
PMD2406		Double					
PMD3406			3-Closed center		12	0.65	
PME3406			3-Exhaust center				
PMS2308	3	Single	2	Rc1/4, 3/8	22	1.19	17
PMS2408	5				30	1.63	
PMD2408		Double					
PMD3408			3-Closed center		25	1.35	
PME3408			3-Exhaust center				
PMS2310	3	Single	2	Rc3/8, 1/2	38	2.06	20
PMS2410	5				50	2.71	
PMD2410		Double					
PMD3410			3-Closed center				
PME3410			3-Exhaust center				
PMS2315	3	Single	2	Rc1/2, 3/4	80	4.34	23
PMS2415	5				75	4.07	
PMD2415		Double					
PMD3415			3-Closed center				
PME3415			3-Exhaust center				
PMS2325	3	Single	2	Rc3/4, 1	190	10.3	26
PMS2425	5			Rc3/4, 1, 1 1/4	170 (Rc3/4) 200 (Rc1) 210 (Rc1 1/4)	9.22 (Rc3/4) 10.84 (Rc1) 11.39 (Rc1 1/4)	
PMD2425		Double					
PMD3425			3-Closed center		165 (Rc3/4) 190 (Rc1) 195 (Rc1 1/4)	8.94 (Rc3/4) 10.29 (Rc1) 10.57 (Rc1 1/4)	
PME3425			3-Exhaust center				

CONTENTS

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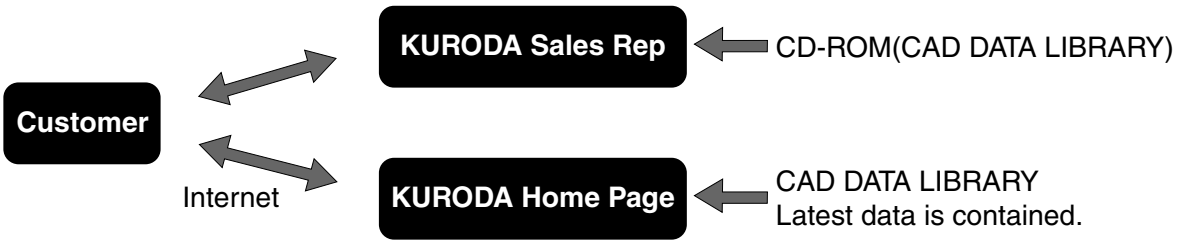
INTRODUCTION OF KURODA CAD DATA LIBRARY

KURODA CAD DATA LIBRARY contains CAD data of pneumatic equipment, ball screws, support units and single-axis modules.
In addition, various tools for selecting pneumatic equipment and ball screws are listed in it. Please use this library to improve the design performance of your FA related equipment.

How to Obtain CAD Data Library

CAD Data Library is available from CD-ROM supplied by our company or our company's Home Page via Internet. For a CD-ROM, please ask KURODA sales representative in charge of your company.



http://www.kuroda-precision.co.jp/e-top

Kind of CAD data

Type of data		CD-ROM	Home Page
DXF	r12	○	○
DWG(AUTO CAD)∗1	r12	○	○∗2

※1：Name of CAD software is our company's registered trademark.
※2：Some of DWG type product data are not contained

How to Download from Home Page

Access KURODA Home Page
http://www.kuroda-precision.co.jp/e-top
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FA Internet Service
↓
Download Service
↓
User Registration
↓
Download

(Note) CAD data is classified by each product and contained in a self-extracting exectable file format (.exe).

CAD Data of Main Pneumatic Equipment

①Pneumatic Actuators
Series of air cylinders and rotary actuators are listed in CAD DATA LIBRARY.

②Pneumatic Grippers/Vacuum Equipment
Series of parallel grippers, rotary opening/closing grippers, vacuum units and pads are listed in it.

③Control Valves
Series of solenoid valves such as ADEX VALVEs are listed in it.

④Other Equipment
Series of speed controllers, joints, etc. are listed in it.

⑤Air Cleaning Equipment
Series of FRL combination QUBE are listed in it.

FOR SAFETY USE

Be sure to read the following instructions before use.
For common and individual instructions, refer to the text of this catalogue.

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.

⚠CAUTION	Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in personal injury or property-damage-only accidents.
⚠WARNING	Indicates a potentially hazardous situation which may arise due to improper handling or operation and could result in serious personal injury or death.
⚠DANGER	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

⚠WARNING

●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 catalogue are diversified, the applicability of pneumatic equipment to the intended 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 pneumatic equipment in the 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

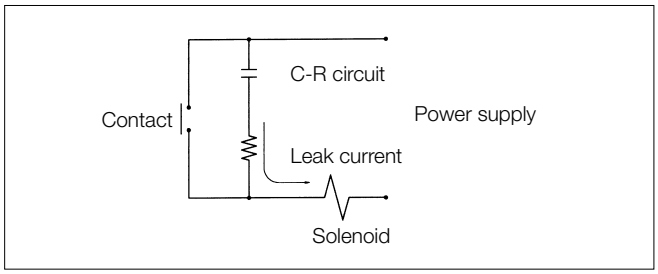
⚠ WARNING

- **Stopping actuator at intermediate position**
  When stopping the actuator at an intermediate position using a solenoid valve listed in this catalogue, 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.
- **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 catalogue 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.

DESIGN

⚠ CAUTION

- **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 this 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 direct-operated 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 3-position 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 result in a malfunction of the solenoid valve.

SOLENOID VALVES/COMMON INSTRUCTIONS ②

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

SELECTION

⚠ WARNING

- **Refer to specifications.**
  Solenoid valves listed in this catalogue 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.**

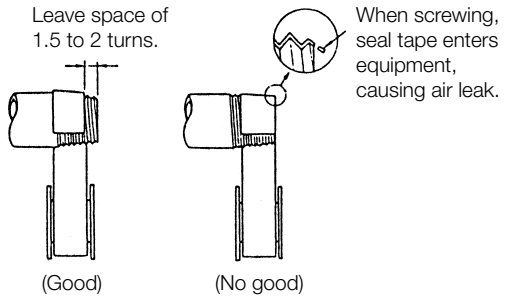
⚠ CAUTION

- **Fit an air muffler to the exhaust port (ports 3, 5) 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.

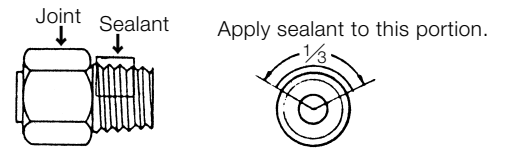
PIPING

⚠ CAUTION

- **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 clamping torque.

Port size	Clamping torque (N·m)
M3	0.3～ 0.5
M5	1.5～ 2.0
R, Rc1/8	7.0～ 9.0
R, Rc1/4	12 ～14
R, Rc3/8	2 ～24
R, Rc1/2	28 ～30
R, Rc3/4	28 ～30
R, Rc1	36 ～38
R, Rc1 1/4	40 ～42
R, Rc1 1/2	48 ～50

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

CAUTION

- **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 catalogue.
- **When using a 3-position closed center type solenoid valve :**
  Thoroughly check the piping between solenoid valve and actuator for air leak.

WIRING

WARNING

- **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 catalogue 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.

LUBRICATION

CAUTION

- **Solenoid valves listed in this catalogue 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.

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.

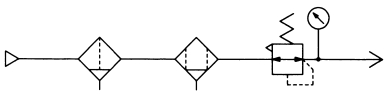
QUALITY OF AIR

⚠ WARNING

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

⚠ CAUTION

- **Fit an air filter with filtration of 5 μm 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 FAIRCALL A68, IDEMITSU DAPHUNY SUPER CS68) featuring minimized sludge production or use a sludge filter or mist cleaner to prevent sludge from entering the pneumatic equipment.



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.
- **Disassembly of solenoid valve**
  When disassembling the solenoid valve, contact KURODA beforehand.

⚠ CAUTION

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

PM SERIES/INDIVIDUAL INSTRUCTIONS

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

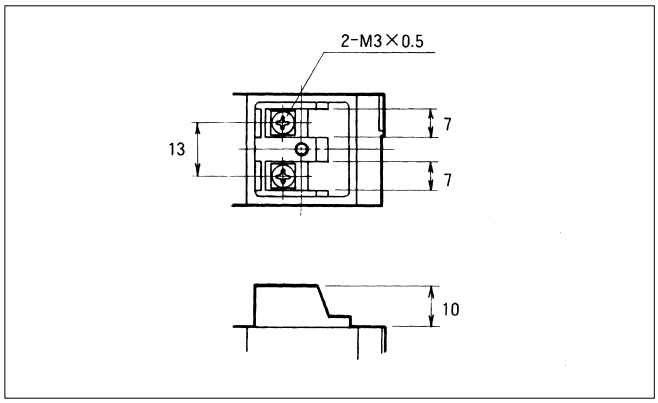
WIRING SPECIFICATIONS

CAUTION

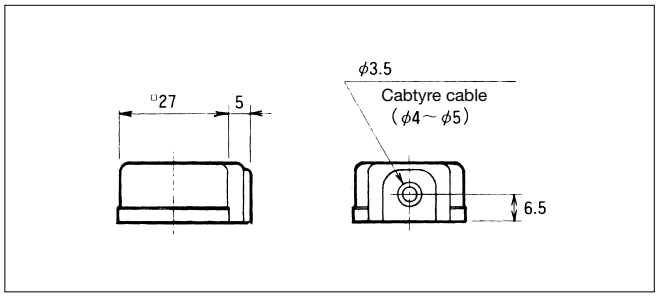
●Lead wire

0.3mm² × 500 ℓ (O.D. ϕ1.7)
AWG22(UL1007)

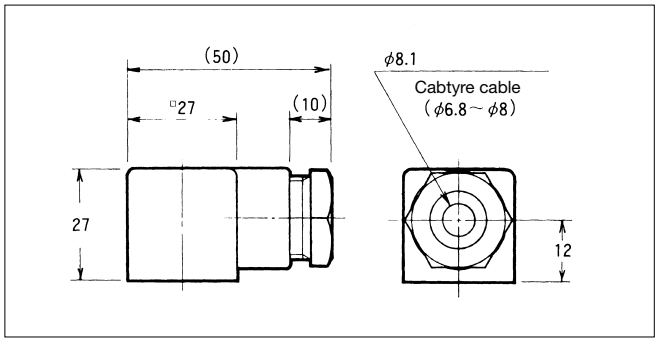
●Terminal of grommet and conduit



●Grommet cover



●Conduit cover



●With surge suppressor

The following varistor type surge suppressor
AC100V : TNR9G271K or equivalent of Z7D271
AC200V : TNR9G471K or equivalent of Z7D471
DC24V : TNR9G470K or equivalent ofZ7D470

.

FLOW RATE

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

①$P_H \leqq 1.89P_L$ (Subsonic velocity zone)

$$Q = 240 \times S \times \sqrt{P_L \times (P_H - P_L)} \times \sqrt{\frac{293}{T_H}}$$

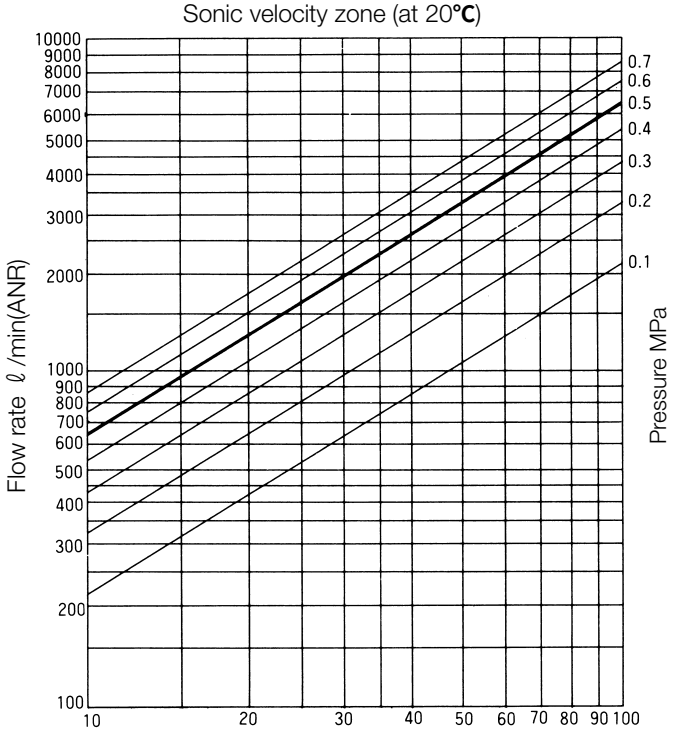
②$P_H \geqq 1.89P_L$ (Sonic velocity zone)

$$Q = 120 \times S \times P_H \times \sqrt{\frac{273}{T_H}}$$

Q	: Flow rate	ℓ /min(ANR)
S	: Effective area of orifice	mm²
P_H	: Pressure on upper stream	MPa abs
P_L	: Pressure on down stream	MPa abs
T_H	: Absolute temperature on upper stream	K

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

Sonic velocity zone (at 20**℃**)



(When the value of effective area is × 10⁻¹ or × 10ⁿ, multiply the same figure by the flow rate.)

EFFECTIVE AREA

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

5-PORT PILOT OPERATED SOLENOID VALVES

PM6 Series

Metal Seal, Sub-base Mounting type

PMS246	2-position Single solenoid
PMD246	2-position Double solenoid
PMD346	3-position Closed center
PME346	3-position Exhaust center

SPECIFICATIONS

Model No	Unit	PMS246	PMD246	PMD346	PME346
Fluid		Non-lubricated/lubricated air			
Port size		$Rc\frac{1}{8}$			
Effective area	mm^2	6.5			
Cv value		0.35			
Operating ambient temperature	℃	−5〜60			
Operating pressure range	MPa	0.15〜1		0.2〜1	
Maximum frequency	Cycle/min	360			
Response time (at 0.5MPa)	s (Average)	ON 0.022 OFF 0.012	**ON** 0.010	**ON** 0.015 **OFF** 0.015	
Rated voltage	V	AC100/110、200/220 DC24			
Grade of insulation		JIS grade B			
Permissible voltage fluctuation	%	AC±10 DC $^{+10}_{-15}$			
Rated frequency	Hz	50/60			
Power consumption AC Holding 50Hz	VA	3.2（100/200）			
Power consumption AC Holding 60Hz	VA	2.6（100/200）			
Power consumption AC Inlush 50Hz	VA	5 （100/200）			
Power consumption AC Inlush 60Hz	VA	4.5（100/200）			
Power consumption DC	W	2			
Wiring		Lead wire, Grommet with terminal, Conduit with terminal, DIN connector			
Mass	kg	0.16	0.24	0.26	0.26

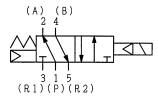
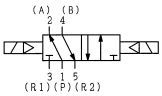
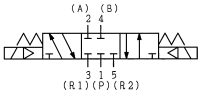
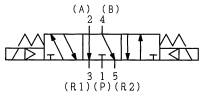
(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

ORDERING INSTRUCTION

PMS246 [ ] – M5 – 100 | L | L

① ② ③ ④ ⑤ ⑥

①Model No.

PMS246 
PMD246 
PMD346 
PME346 

②Special specification

No mark	Standard (Internal pilot)
X	External pilot (Pilot port on sub-base)

③Port size

NB	Without sub-base
01	Rc1/8

④**Voltage**

100	AC100/110V
200	AC200/220V
D24	DC24V

⑤**Wiring**

L	Lead wire
G	Grommet with terminal
※GK	Grommet with surge suppressor
C	Conduit with terminal
※CK	Conduit with surge suppressor
D	DIN connector

⑥**Option**

No mark	Without option (Standard)
※L	With locking button

※：Made to order

OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Sub-base	Rc1/8	PM6-SB-01
	Rc1/8 (For external pilot)	PM6-SB-X01
Base gasket		PM6-G
Spring	For 2-position	PM6-SS
	For 3-position	

• **Pilot valve**

PM26 – 100 | L | L

① ② ③ ④

①Model

PM26	For 2-position
PM36	For 3-position

②Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

③Wiring

L	Lead wire
G	Grommet with terminal
※GK	Grommet with surge suppressor
C	Conduit with terminal
※CK	Conduit with surge suppressor
D	DIN connector

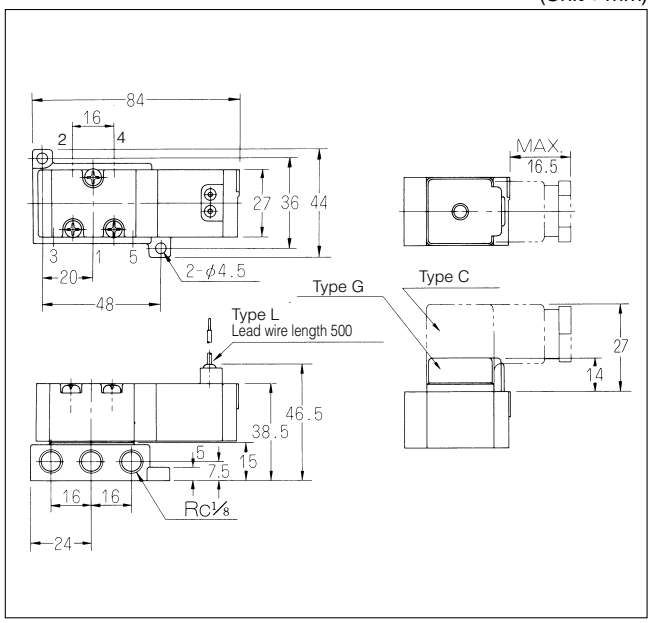
④**Option**

No mark	Without option (Standard)
※L	With locking button

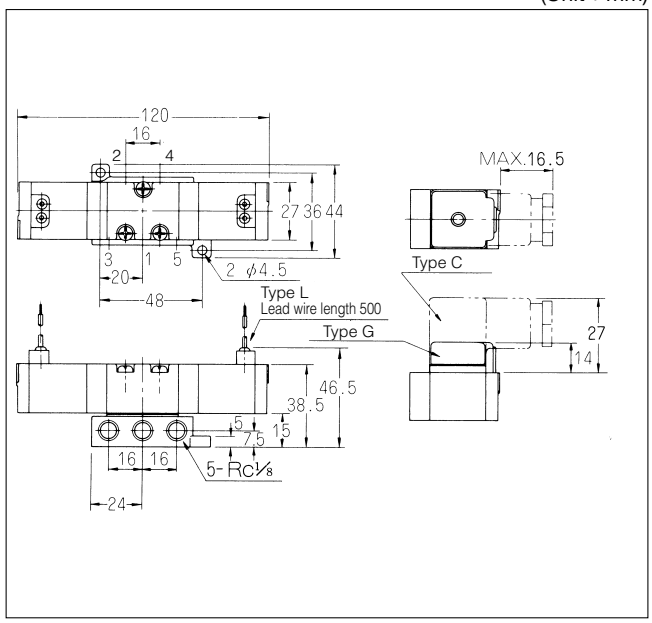
※：Made to order

DIMENSIONS

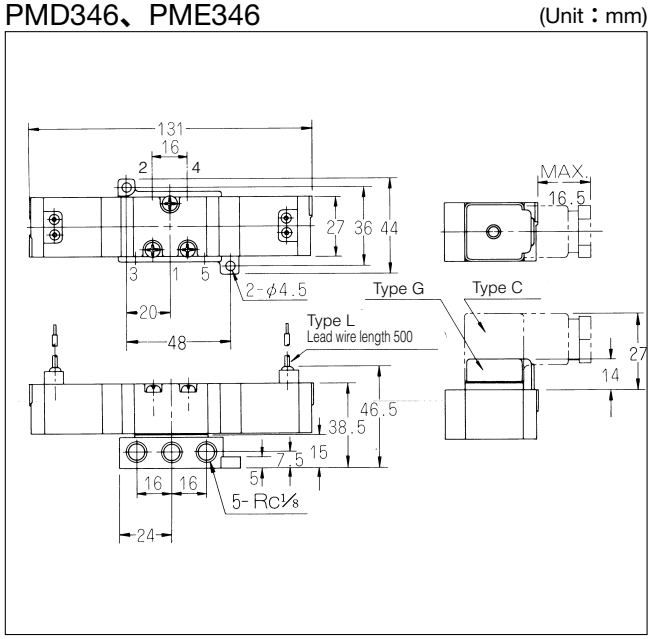
PMS246 (Unit：mm)



PMD246 (Unit：mm)



PMD346、PME346 (Unit：mm)

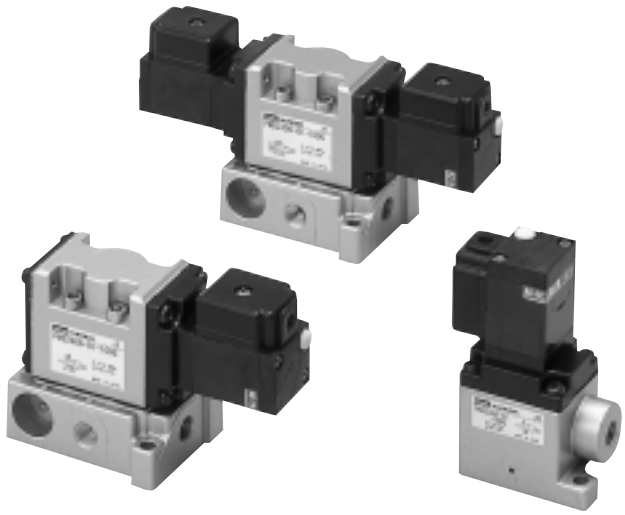


3/5-PORT PILOT OPERATED SOLENOID VALVES

PM06 Series

Metal Seal, In-line Mounting/Sub-base Mounting type

PMS2306	2-position Single solenoid
PMS2406	2-position Single solenoid
PMD2406	2-position Double solenoid
PMD3406	3-position Closed center
PME3406	3-position Exhaust center



SPECIFICATIONS

Model No				Unit	PMS2306	PMS2406	PMD2406	PMD3406	PME3406
Fluid					Non-lubricated/lubricated air				
Port size					Rc1/8、1/4				
Effective area				mm²	11	12.5		12	
Cv value					0.60	0.68		0.65	
Operating ambient temperature				℃	−5〜60				
Operating pressure range				MPa	0.2〜0.7	0.2〜0.8			
Maximum frequency				Cycle/min	360				
Response time (at 0.5MPa)				s (Average)	ON 0.010 OFF 0.020	ON 0.010 OFF 0.020	ON 0.010	ON 0.015 OFF 0.030	
Rated voltage				V	AC100/110、200/220 DC24				
Grade of insulation					JIS grade B				
Permissible voltage fluctuation				%	AC±10 DC $^{+10}_{-15}$				
Rated frequency				Hz	50/60				
Power consumption	AC	Holding	50Hz	VA	3.2（100/200）				
			60Hz	VA	2.6（100/200）				
		Inlush	50Hz	VA	5 （100/200）				
			60Hz	VA	4.5（100/200）				
Power consumption DC				W	2				
Wiring					Grommet with terminal, Conduit with terminal, DIN connector				
Mass				kg	0.3	0.4	0.5	0.5	0.5

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

PM06 Series

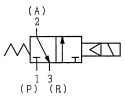
ORDERING INSTRUCTION

PMS2406 [ ] – 02 – 100 G L

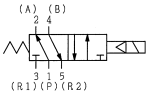
① ② ③ ④ ⑤ ⑥

①Model No.

PMS2306



PMS2406



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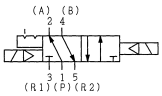

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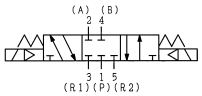

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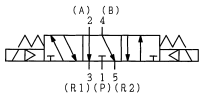


②Special specification

No mark	**Standard (Internal pilot)**
U	**External pilot (Pilot port on valve body)**

③Port size

NB	**Without sub-base**
01	**Rc**1/8
02	**Rc**1/4

④Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

⑤Wiring

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

⑥Option

No mark	**Without option (Standard)**
※**L**	**With locking button**

※：Made to order

OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Sub-base	**Rc**1/8	**PM**06-**SB**-01
	Rc1/4	**PM**06-**SB**-02
Base gasket		**A**06-**G**
Spring	**For** 2-**position**	**PM**06-**SS**
	For 3-**position**	**PM**06-3**S**

• **Pilot valve**

SS231 – NB – 100 G L

① ② ③

①Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

②Wiring

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

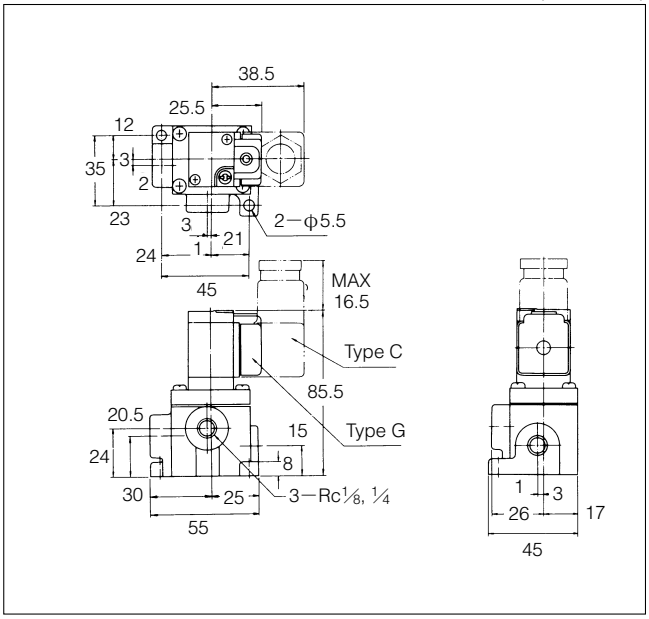
③Option

No mark	**Without option (Standard)**
※**L**	**With locking button**

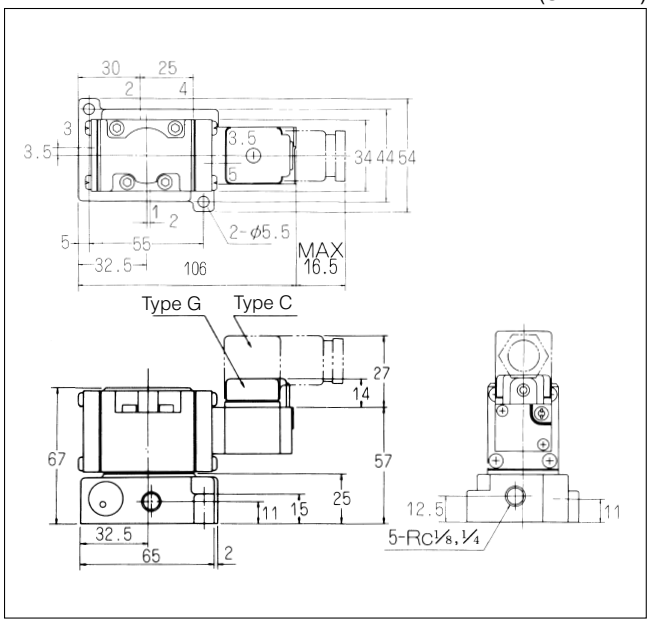
※：Made to order

DIMENSIONS

PMS2306 (Unit：mm)



PMS2406 (Unit：mm)



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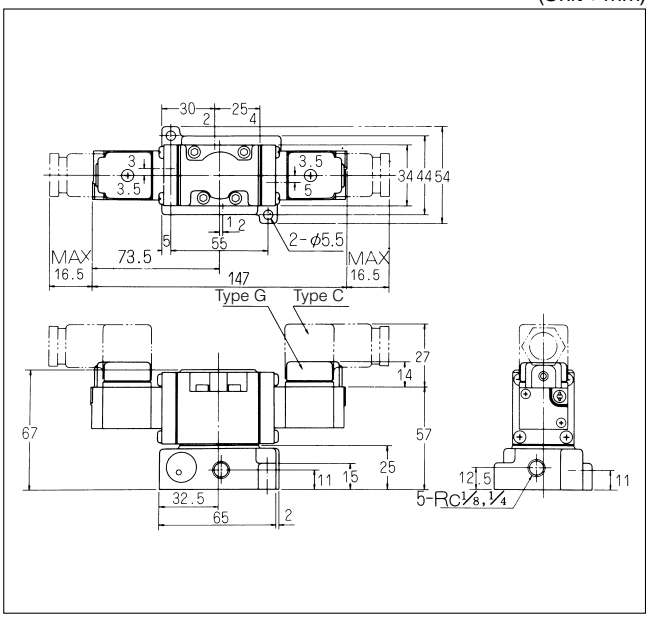
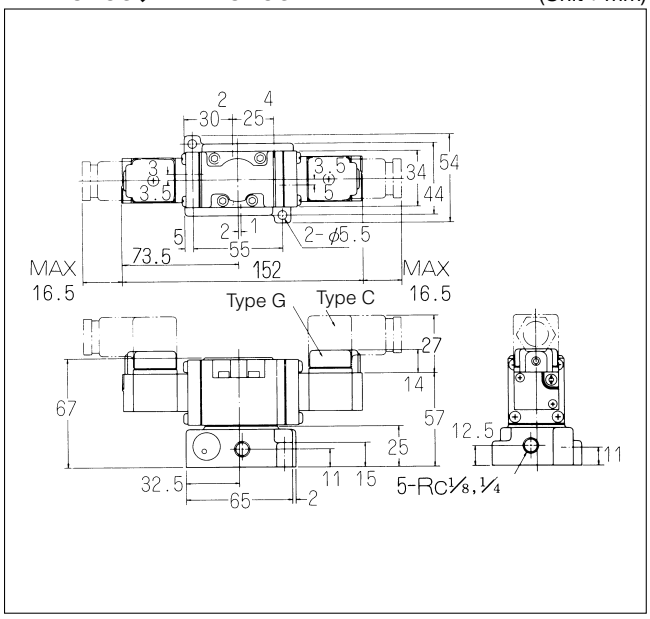


PMD3406、PME3406 (Unit：mm)

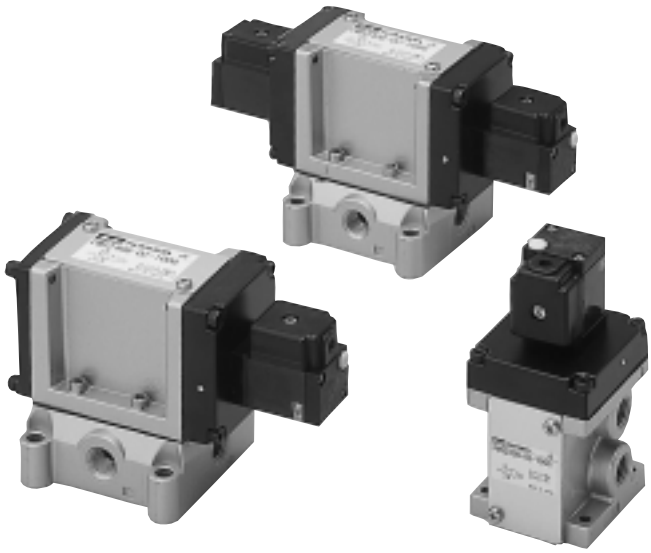


3/5-PORT PILOT OPERATED SOLENOID VALVES

PM08 Series

Metal Seal, In-line Mounting/Sub-base Mounting type

PMS2308	2-position Single solenoid
PMS2408	2-position Single solenoid
PMD2408	2-position Double solenoid
PMD3408	3-position Closed center
PME3408	3-position Exhaust center



SPECIFICATIONS

Model No	Unit	PMS2308	PMS2408	PMD2408	PMD3408	PME3408
Fluid		Non-lubricated/lubricated air				
Port size		Rc1/4、3/8				
Effective area	mm²	22	30		25	
Cv value		1.19	1.63		1.35	
Operating ambient temperature	℃	−5〜60				
Operating pressure range	MPa	0.2〜0.7	0.2〜0.8			
Maximum frequency	Cycle/min	360			300	
Response time (at 0.5MPa)	s (Average)	ON 0.010 OFF 0.030	ON 0.010 OFF 0.030	ON 0.010	ON 0.015 OFF 0.040	
Rated voltage	V	AC100/110、200/220 DC24				
Grade of insulation		JIS grade B				
Permissible voltage fluctuation	%	AC±10 DC +10 −15				
Rated frequency	Hz	50/60				
Power consumption AC Holding 50Hz	VA	3.2 (100/200)				
Power consumption AC Holding 60Hz	VA	2.6 (100/200)				
Power consumption AC Inlush 50Hz	VA	5 (100/200)				
Power consumption AC Inlush 60Hz	VA	4.5 (100/200)				
Power consumption DC	W	2				
Wiring		Grommet with terminal, Conduit with terminal, DIN connector				
Mass	kg	0.5	0.9	1.1	1.2	1.2

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

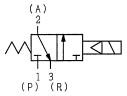
ORDERING INSTRUCTION

PMS2408 [ ] – 02 – 100 G L

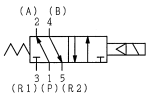
① ② ③ ④ ⑤ ⑥

①Model No.

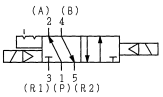
PMS2308



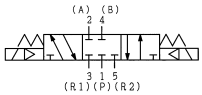
PMS2408



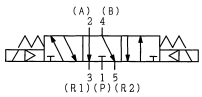
PMD2408



PMD3408



PME3408



②Special specification

No mark	**Standard (Internal pilot)**
U	**External pilot (Pilot port on valve body)**

③Port size

NB	**Without sub-base**
02	**Rc**1/4
03	**Rc**3/8

④**Voltage**

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

⑤**Wiring**

G	**Grommet with terminal**
※GK	**Grommet with surge suppressor**
C	**Conduit with terminal**
※CK	**Conduit with surge suppressor**
D	**DIN connector**

⑥**Option**

No mark	**Without option (Standard)**
※L	**With locking button**

※：Made to order

OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Sub-base	**Rc**1/8	**PM**08-**SB**-02
	Rc1/4	**PM**08-**SB**-03
Base gasket		**A**08-**G**
Spring	**For** 2-**position**	**PM**08-**SS**
	For 3-**position**	**PM**08-3**S**

• **Pilot valve**

SS231 – NB – 100 G L

① ② ③

①Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

②**Wiring**

G	**Grommet with terminal**
※GK	**Grommet with surge suppressor**
C	**Conduit with terminal**
※CK	**Conduit with surge suppressor**
D	**DIN connector**

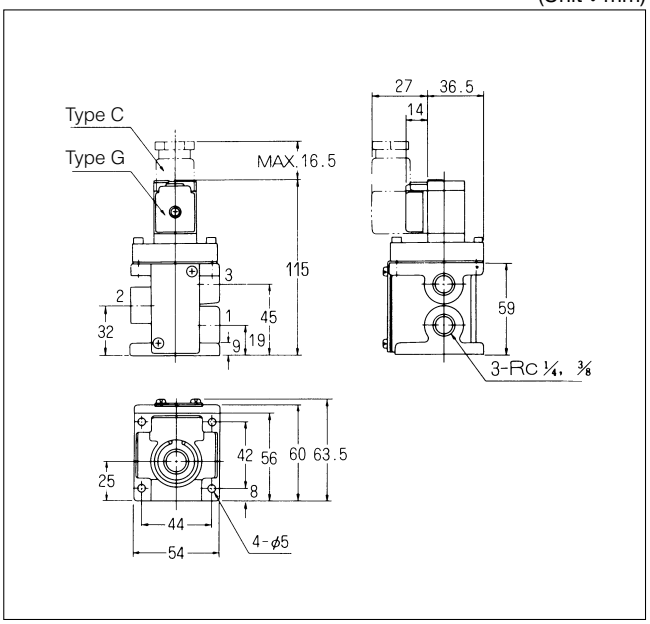
③**Option**

No mark	**Without option (Standard)**
※L	**With locking button**

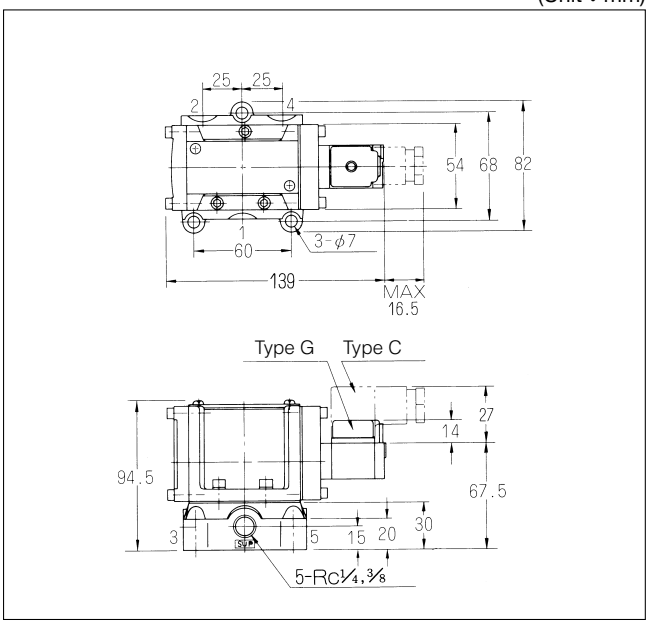
※：Made to order

DIMENSIONS

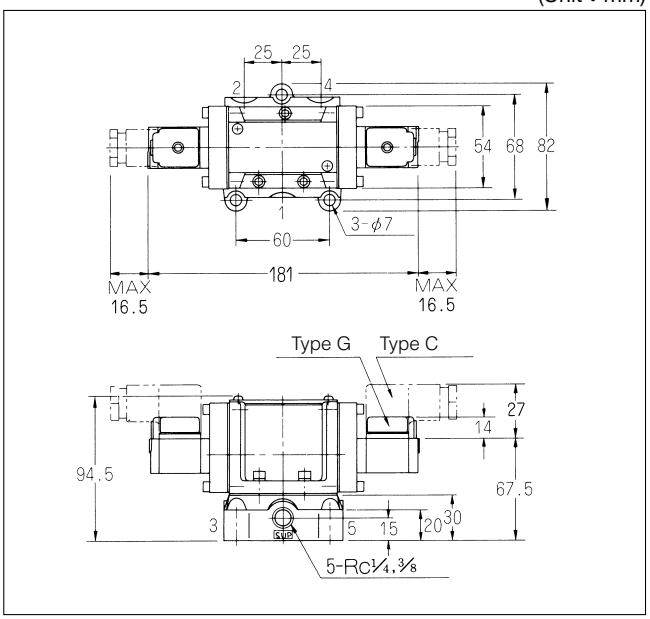
PMS2308 (Unit：mm)



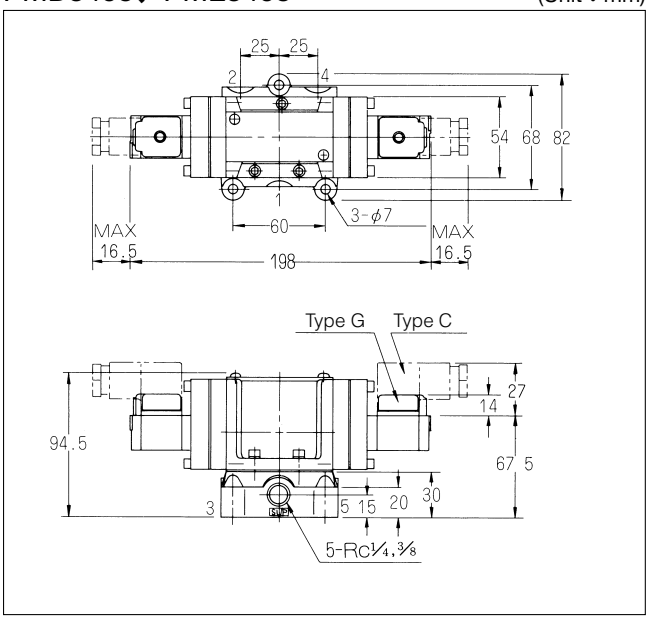
PMS2408 (Unit：mm)



PMD2408 (Unit：mm)



PMD3408、PME3408 (Unit：mm)



3/5-PORT PILOT OPERATED SOLENOID VALVES

PM10 Series

Metal Seal, In-line Mounting/Sub-base Mounting type

PMS2310	2-position Single solenoid
PMS2410	2-position Single solenoid
PMD2410	2-position Double solenoid
PMD3410	3-position Closed center
PME3410	3-position Exhaust center

SPECIFICATIONS

Model No				Unit	PMS2310	PMS2410	PMD2410	PMD3410	PME3410
Fluid					Non-lubricated/lubricated air				
Port size					Rc3/8、1/2				
Effective area				mm²	38	50			
Cv value					2.06	2.71			
Operating ambient temperature				℃	−5〜60				
Operating pressure range				MPa	0.2〜0.7	0.2〜0.8			
Maximum frequency				Cycle/min	300			240	
Response time (at 0.5MPa)				s (Average)	ON 0.015 OFF 0.035	ON 0.015 OFF 0.035	ON 0.015	ON 0.020 OFF 0.060	
Rated voltage				V	AC100/110、200/220 DC24				
Grade of insulation					JIS grade B				
Permissible voltage fluctuation				%	AC±10 DC $^{+10}_{-15}$				
Rated frequency				Hz	50/60				
Power consumption	AC	Holding	50Hz	VA	3.2 (100/200)				
			60Hz	VA	2.6 (100/200)				
		Inlush	50Hz	VA	5 (100/200)				
			60Hz	VA	4.5 (100/200)				
Power consumption DC				W	2				
Wiring					Grommet with terminal, Conduit with terminal, DIN connector				
Mass				kg	0.8	1.5	1.6	1.9	1.9

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

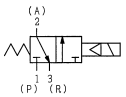
ORDERING INSTRUCTION

PMS2410 [ ] – 03 – 100 G L

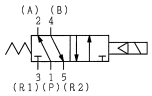
① ② ③ ④ ⑤ ⑥

①Model No.

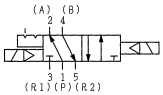
PMS2310



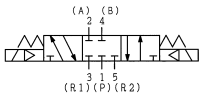
PMS2410



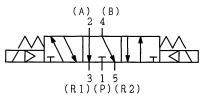
PMD2410



PMD3410



PME3410



②Special specification

No mark	**Standard (Internal pilot)**
U	**External pilot (Pilot port on valve body)**

③Port size

NB	**Without sub-base**
03	**Rc**3/8
04	**Rc**1/2

④Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

⑤Wiring

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

⑥Option

No mark	**Without option (Standard)**
※**L**	**With locking button**

※：Made to order

OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Sub-base	**Rc**3/8	**PM**10-**SB**-03
	Rc1/2	**PM**10-**SB**-04
Base gasket		**A**10-**G**
Spring	For 2-position	**PM**10-**SS**
	For 3-position	**PM**10-3**S**

• Pilot valve

SS231 – NB – 100 G L

① ② ③

①Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

②Wiring

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

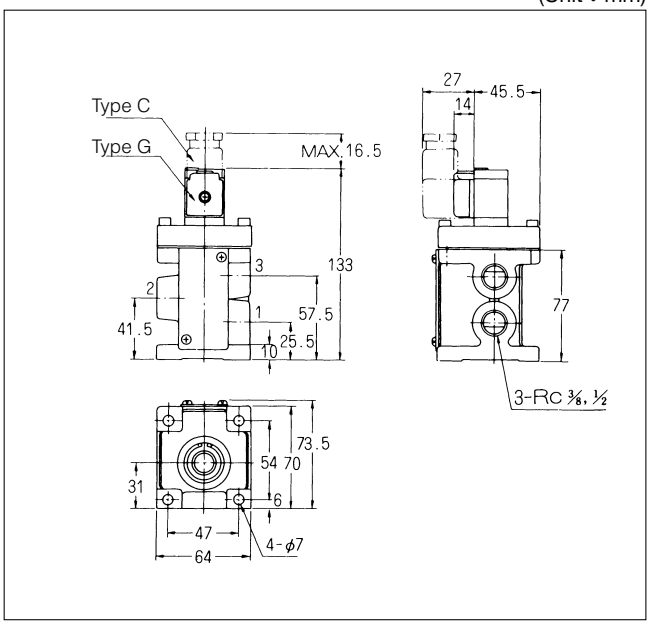
③Option

No mark	**Without option (Standard)**
※**L**	**With locking button**

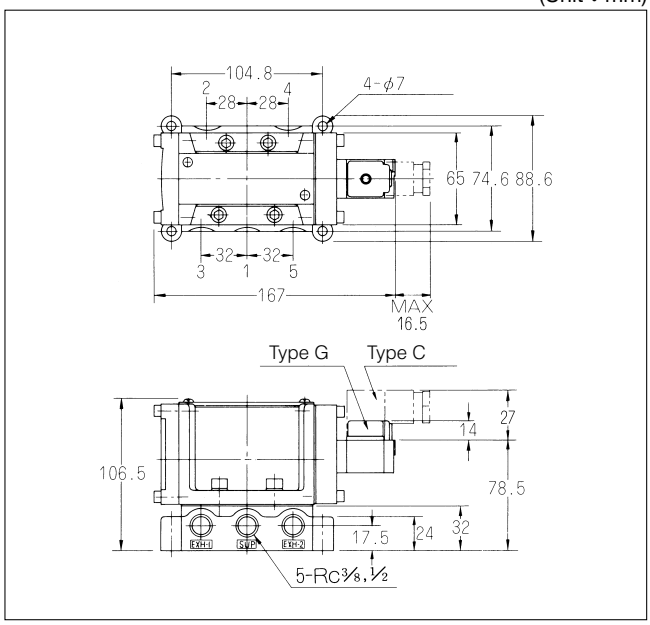
※：Made to order

DIMENSIONS

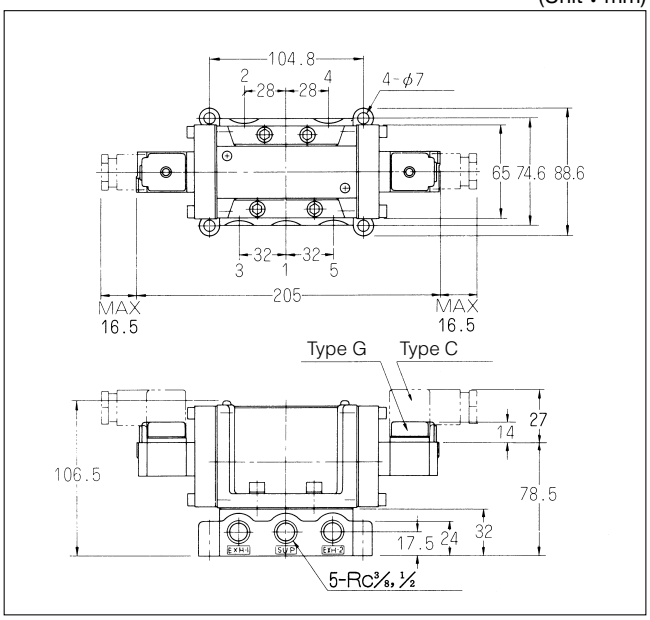
PMS2310 (Unit：mm)



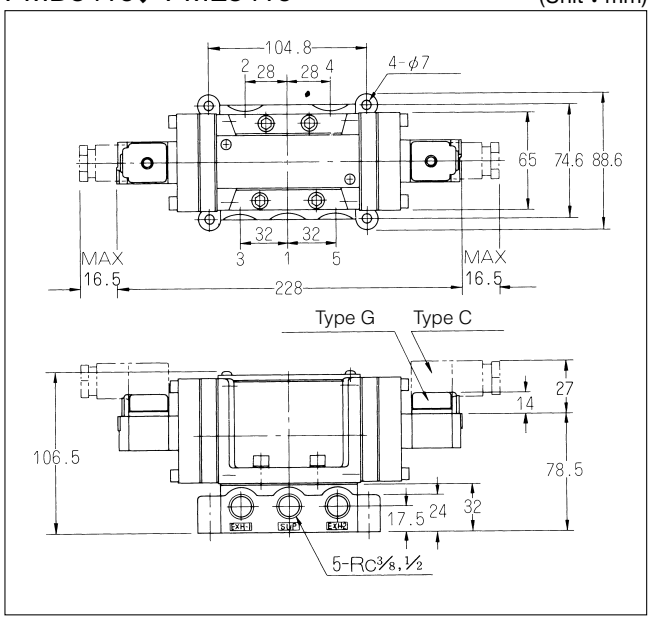
PMS2410 (Unit：mm)



PMD2410 (Unit：mm)



PMD3410、PME3410 (Unit：mm)



3/5-PORT PILOT OPERATED SOLENOID VALVES

PM15 Series

Metal Seal, In-line Mounting /Sub-base Mounting type

PMS2315	2-position Single solenoid
PMS2415	2-position Single solenoid
PMD2415	2-position Double solenoid
PMD3415	3-position Closed center
PME3415	3-position Exhaust center

SPECIFICATIONS

Model No				Unit	PMS2315	PMS2415	PMD2415	PMD3415	PME3415
Fluid					Non-lubricated/lubricated air				
Port size					Rc 1/2、3/4				
Effective area				mm²	80	75			
Cv value					4.34	4.07			
Operating ambient temperature				℃	−5〜60				
Operating pressure range				MPa	0.2〜0.7	0.2〜0.8			
Maximum frequency				Cycle/min	120				
Response time (at 0.5MPa)				s (Average)	ON 0.020 OFF 0.055	ON 0.022 OFF 0.055	ON 0.020	ON 0.030 OFF 0.100	
Rated voltage				V	AC100/110、200/220 DC24				
Grade of insulation					JIS grade B				
Permissible voltage fluctuation				%	AC±10 DC +10 −15				
Rated frequency				Hz	50/60				
Power consumption	AC	Holding	50Hz	VA	3.2 (100/200)				
			60Hz	VA	2.6 (100/200)				
		Inlush	50Hz	VA	5 (100/200)				
			60Hz	VA	4.5 (100/200)				
Power consumption DC				W	2				
Wiring					Grommet with terminal, Conduit with terminal, DIN connector				
Mass				kg	1.2	2.3	2.4	2.7	2.7

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.

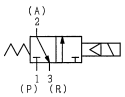
ORDERING INSTRUCTION

PMS2415 [ ] – 04 – 100 G L

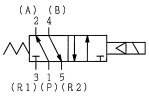
① ② ③ ④ ⑤ ⑥

①Model No.

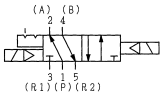
PMS2315



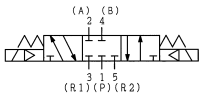
PMS2415



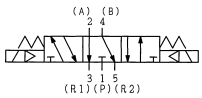
PMD2415



PMD3415



PME3415



②Special specification

No mark	**Standard (Internal pilot)**
U	**External pilot (Pilot port on valve body)**

③Port size

NB	**Without sub-base**
04	**Rc**1/2
06	**Rc**3/4

④**Voltage**

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

⑤**Wiring**

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

⑥**Option**

No mark	**Without option (Standard)**
※**L**	**With locking button**

※：Made to order

OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Sub-base	**Rc**1/2	**PM**15-**SB**-04
	Rc3/4	**PM**15-**SB**-06
Base gasket		**A**15-**G**
Spring	For 2-position	**PM**15-**SS**
	For 3-position	**PM**15-3**S**

• **Pilot valve**

SS231 – NB – 100 G L

① ② ③

①Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

②**Wiring**

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

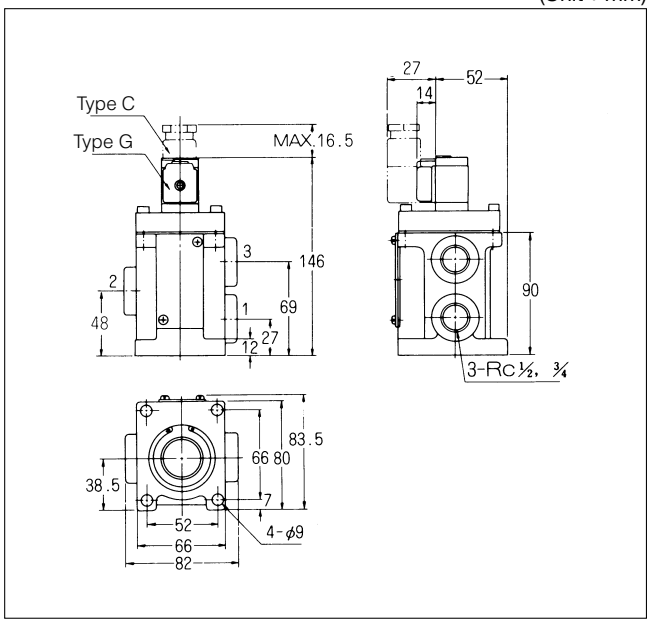
③**Option**

No mark	**Without option (Standard)**
※**L**	**With locking button**

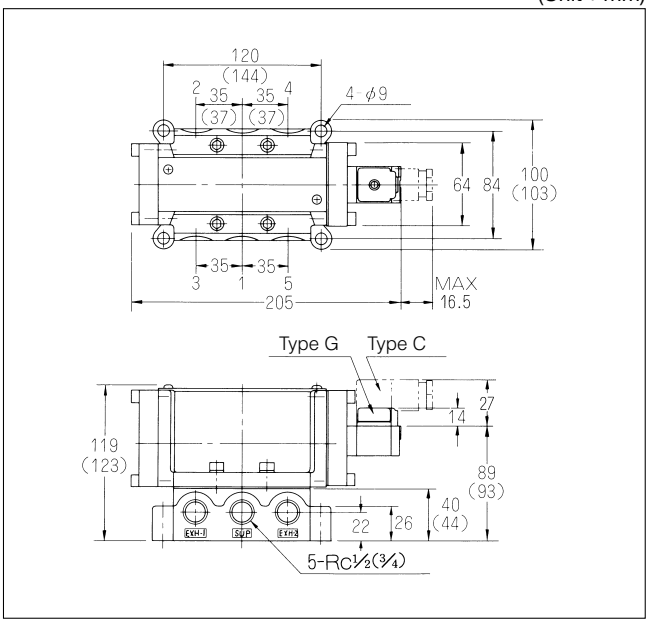
※：Made to order

DIMENSIONS

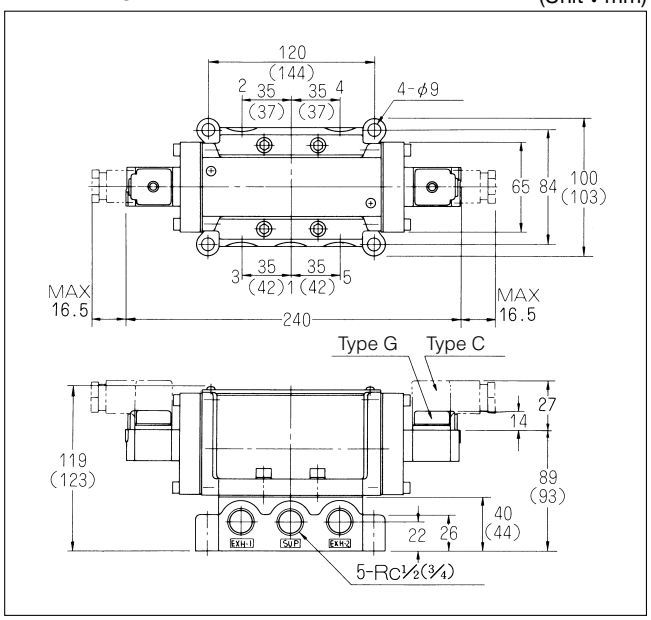
PMS2315 (Unit : mm)



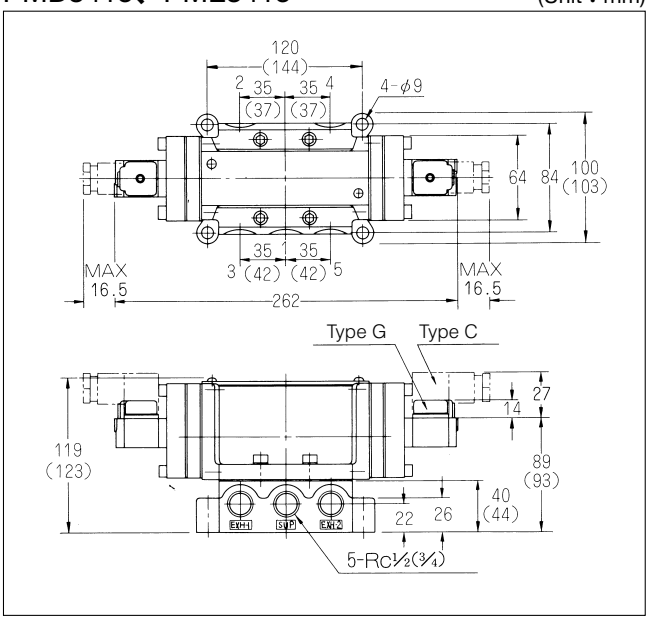
PMS2415 (Unit : mm)



PMD2415 (Unit : mm)



PMD3415、PME3415 (Unit : mm)



(Note) Dimensions in bracket ( ) shown with Rc¾ ported sub-base.

3/5-PORT PILOT OPERATED SOLENOID VALVES

PM25 Series

Metal Seal, In-line Mounting/Sub-base Mounting type

PMS2325	2-position Single solenoid
PMS2425	2-position Single solenoid
PMD2425	2-position Double solenoid
PMD3425	3-position Closed center
PME3425	3-position Exhaust center

SPECIFICATIONS

Model No				Unit	PMS2325	PMS2425	PMD2425	PMD3425	PME3425
Fluid					Non-lubricated/lubricated air				
Port size					Rc3/4、1	Rc3/4、1、1 1/4			
Effective area				mm²	190	170(Rc3/4)、200(Rc1)、210(Rc1 1/4)		165(Rc3/4)、190(Rc1)、195(Rc1 1/4)	
Cv value					10.3	9.22(Rc3/4)、10.84(Rc1)、11.39(Rc1 1/4)		8.94(Rc3/4)、10.29(Rc1)、10.57(Rc1 1/4)	
Operating ambient temperature				℃	−5〜60				
Operating pressure range				MPa	0.2〜0.7	0.2〜0.8			
Maximum frequency				Cycle/min	60				
Response time (at 0.5MPa)				s (Average)	ON 0.040 (0.050) OFF 0.220 (0.300)		ON 0.060 (0.070)	ON 0.060 (0.070) OFF 0.290 (0.300)	
Rated voltage				V	AC100/110、200/220 DC24				
Grade of insulation					JIS grade B				
Permissible voltage fluctuation				%	AC±10 DC +10 −15				
Rated frequency				Hz	50/60				
Power consumption	AC	Holding	50Hz	VA	3.2 (100/200)				
			60Hz	VA	2.6 (100/200)				
		Inlush	50Hz	VA	5 (100/200)				
			60Hz	VA	4.5 (100/200)				
Power consumption DC				W	2 (100/200)				
Wiring					Grommet with terminal, Conduit with terminal, DIN connector				
Mass				kg	3	6.1	6.3	6.9	6.9

(Note) • When temperature of valve site gose down below 5 ℃, complete dry air shall be supplied to prevent from freezing.
• Effective area shown above is value between ports 1 and 2, 4.
• Response time shown above is in accordance with JIS B 8375.
• Response time in bracket ( ) shown with DC24V.

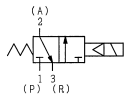
ORDERING INSTRUCTION

PMS2425 [ ] – 06 – 100 G L

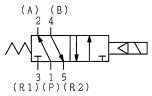
① ② ③ ④ ⑤ ⑥

①Model No.

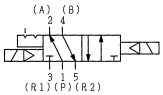
PMS2325



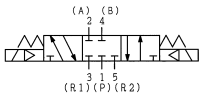
PMS2425



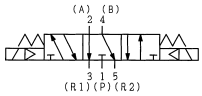
PMD2425



PMD3425



PME3425



②パイロット仕様

No mark	**Standard (Internal pilot)**
U	**External pilot (Pilot port on valve body)**

③Port size

NB	**Without sub-base**
06	**Rc**$^{3}/_{4}$
08	**Rc**1
10	**Rc**1$^{1}/_{4}$

④Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

⑤Wiring

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

⑥Option

No mark	**Without option (Standard)**
※**L**	**With locking button**

※：Made to order

OPTIONAL PARTS AND SPARE PARTS

Parts Name		Model No.
Sub-base	Rc$^{3}/_{4}$	**PM**25-**SB**-06
	Rc1	**PM**25-**SB**-08
	Rc1$^{1}/_{4}$	**PM**25-**SB**-10
Base gasket		**A**25-**G**
Spring	For 2-position	**PM**25-**SS**
	For 3-position	**PM**25-3**S**

• Pilot valve

SS231 – NB – 100 G L

① ② ③

①Voltage

100	**AC**100/110**V**
200	**AC**200/220**V**
D24	**DC**24**V**

②Wiring

G	**Grommet with terminal**
※**GK**	**Grommet with surge suppressor**
C	**Conduit with terminal**
※**CK**	**Conduit with surge suppressor**
D	**DIN connector**

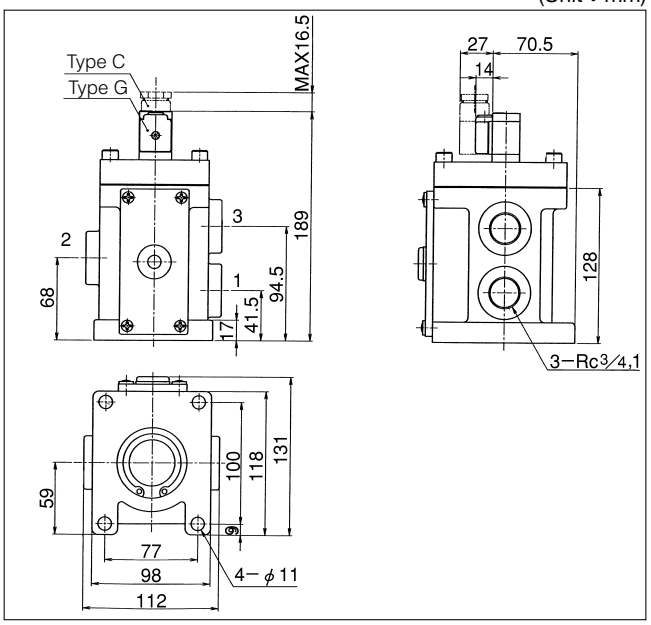
③Option

No mark	**Without option (Standard)**
※**L**	**With locking button**

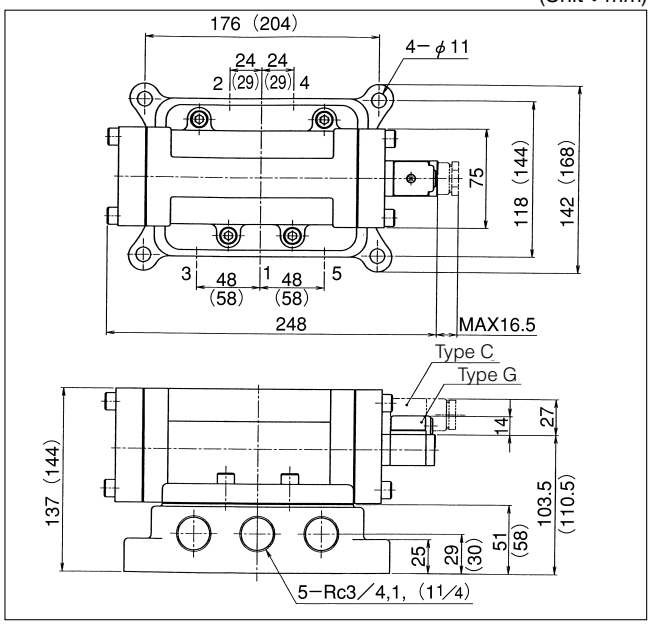
※：Made to order

DIMENSIONS

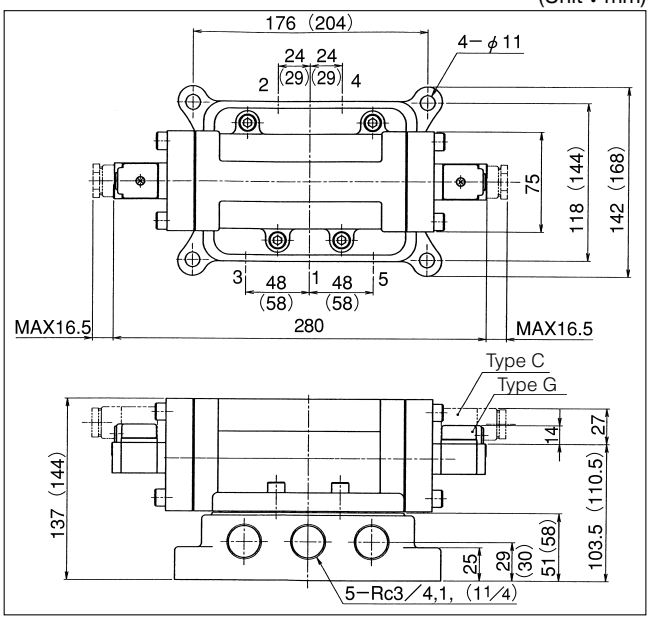
PMS2325 (Unit：mm)



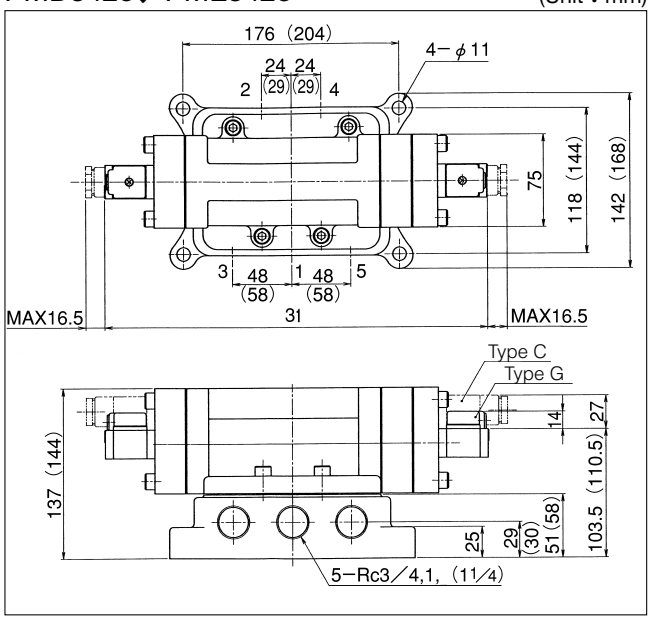
PMS2425 (Unit：mm)



PMD2425 (Unit：mm)



PMD3425、PME3425 (Unit：mm)



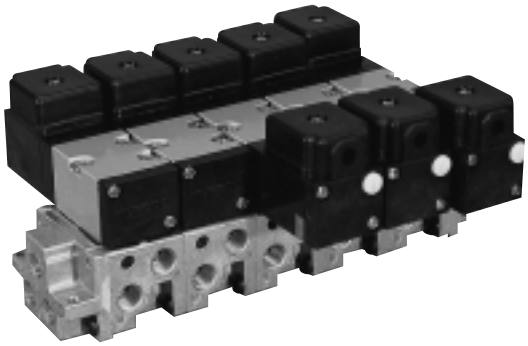
(Note)Dimensions in bracket ( ) shown with Rc11/4 ported sub-base

INDIVIDUAL WIRING TYPE MANIFOLD

MF○-C

Separate type

MF□-CC	Common SUP, Common EXH Ports 2 & 4 on side
MF□-CI	Common SUP, Individual EXH Ports 2 & 4 on side
MF□-CS	Comon SUP, Captured EXH Ports 2 & 4 on side



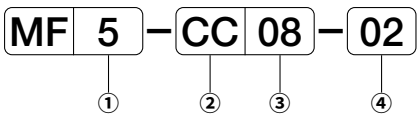
MANIFOLD SPECIFICATIONS

Type of manifold		MF□-CC6	MF□-CS6	MF□-CC06	MF□-CC08	MF□-CC10	MF□-CC15	MF□-CC25
		Common SUP, common EXH	Common SUP, captured EXH	Common SUP, common EXH	Common SUP, common EXH	Common SUP, common EXH	Common SUP, common EXH	Common SUP, common EXH
Port size	Port 1	Rc1/8、1/4	Rc1/8、1/4	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1
	Port 3, 5	Rc1/8	Rc1/4 (1 place)	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1
	Port 2, 4	Rc1/8	Rc1/8	Rc1/8、1/4	Rc1/4、3/8	Rc3/8、1/2	Rc1/2	Rc3/4、1
Number of stations		2～10						
Mountable solenoid valve		PMS246-NB PMD246-NB PMD346-NB PME346-NB		PMS2406-NB PMD2406-NB PMD3406-NB PME3406-NB	PMS2408-NB PMD2408-NB PMD3408-NB PME3408-NB	PMS2410-NB PMD2410-NB PMD3410-NB PME3410-NB	PMS2415-NB PMD2415-NB PMD3415-NB PME3415-NB	PMS2425-NB PMD2425-NB PMD3425-NB PME3425-NB
Blank plate		CC6-BP		CC06-BP	CC08-BP	CC10-BP	CC15-BP	CC25-BP

Type of manifold		MF□-CI6	MF□-CI06	MF□-CI08	MF□-CI10	MF□-CI15	MF□-CI25
		Common SUP, individual EXH	Common SUP, individual EXH	Common SUP, individual EXH	Common SUP, individual EXH	Common SUP, individual EXH	Common SUP, individual EXH
Port size	Port 1	Rc1/8、1/4	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1
	Port 3, 5	Rc1/8	Rc1/8	Rc1/4、3/8	Rc1/2	Rc3/4	Rc1
	Port 2, 4	Rc1/8	Rc1/8、1/4	Rc1/4、3/8	Rc3/8、1/2	Rc1/2	Rc3/4、1
Number of stations		2～10					
Mountable solenoid valve		PMS246-NB PMD246-NB PMD346-NB PME346-NB	PMS2406-NB PMD2406-NB PMD3406-NB PME3406-NB	PMS2408-NB PMD2408-NB PMD3408-NB PME3408-NB	PMS2410-NB PMD2410-NB PMD3410-NB PME3410-NB	PMS2415-NB PMD2415-NB PMD3415-NB PME3415-NB	PMS2425-NB PMD2425-NB PMD3425-NB PME3425-NB
Blank plate		CC6-BP	CC06-BP	CC08-BP	CC10-BP	CC15-BP	CC25-BP

ORDERING INSTRUCTION

Manifold



①Number of stations

2	2 station
:	:
10	10 station

②Type of manifold

CC	Common SUP, common EXH
CI	Common SUP, individual EXH
CS	Common SUP, captured EXH

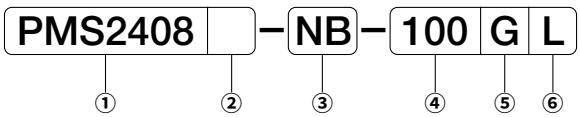
③Mountable solenoid valve

6	PM6 series
06	PM06 series
08	PM08 series
10	PM10 series
15	PM15 series
25	PM25 series

④Size of ports 2 and 4

01	Rc1/8
02	Rc1/4
03	Rc3/8
04	Rc1/2
06	Rc3/4
08	Rc1

Mountable solenoid valve (For details refer to Pages 11 to 28.)



①Model No.

②Special specification

No mark	Standard (Internal pilot)
U	External pilot (Pilot port on valve body)

③Port size

NB	Without sub-base

④Voltage

100	AC100/110V
200	AC200/220V
D24	DC24V

⑤Wiring

L	Lead wire
G	Grommet with terminal
※GK	Grommet with surge suppressor
C	Conduit with terminal
※CK	Conduit with surge suppressor
D	DIN connector

(Note) L：PM6 series only

⑥Option

No mark	Without option (Standard)
※L	With locking button

※：Made to order

HOW TO ORDER

- List solenoid valves to be mounted.
- When mounting solenoid valves of different type, specify the type and quantity of solenoid valves from port 1 side.
- When ordering a solenoid valve of special specifications, refer to " Specification for Manifold " which is separately available.

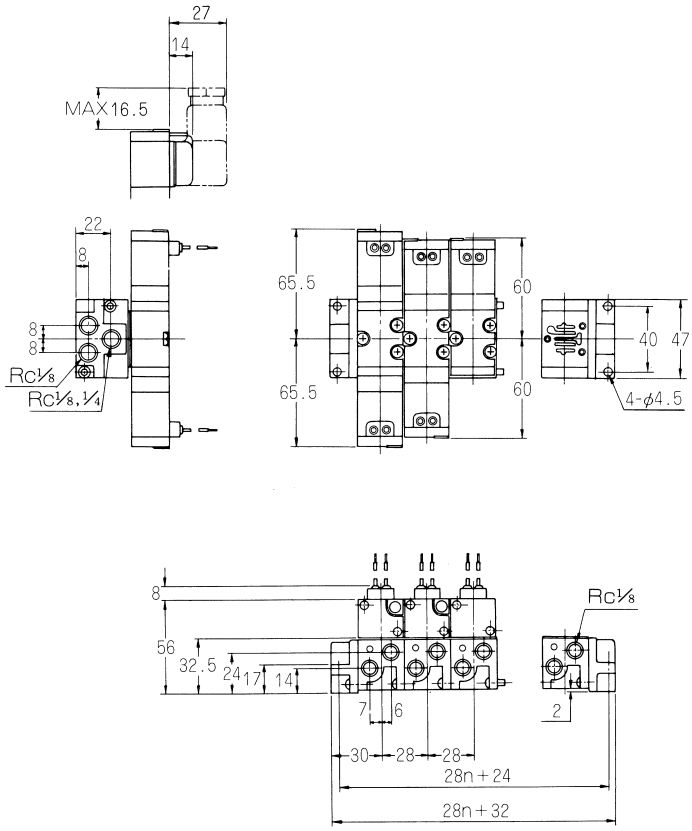
(Example)

MF5-CC08-02 1 pc.
PMS2408-NB-100 2 pcs.
PMD2408-NB-100 2 pcs.
CC08-BP 1 pc.

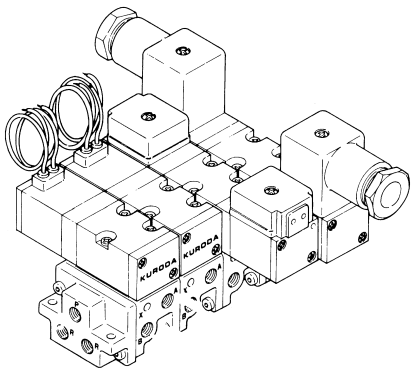
DIMENSIONS

MF□-CC6

(Unit : mm)



Specifications for connection

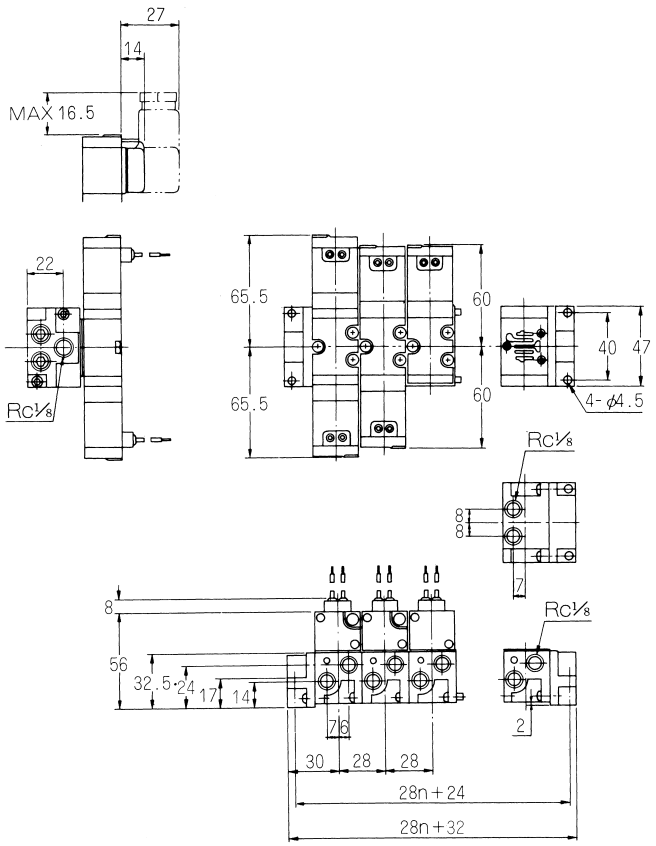


- **Port 1 : Left side on dimensional drawing**
  Port size Rc1/8 (Rc1/4)
- **Port 2 & 4 : Front side on dimensional drawing**
  Port size Rc1/8
- **Port 3 & 5 : Left side on dimensional drawing**
  Port size Rc1/8

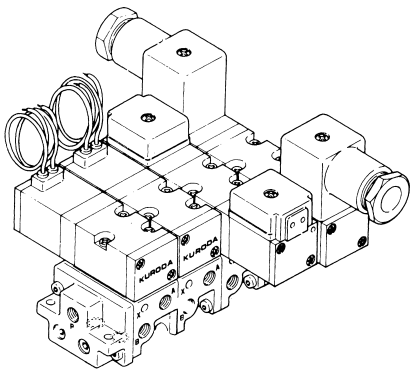
n : Number of stations

MF□-CI6

(Unit : mm)



Specifications for connection



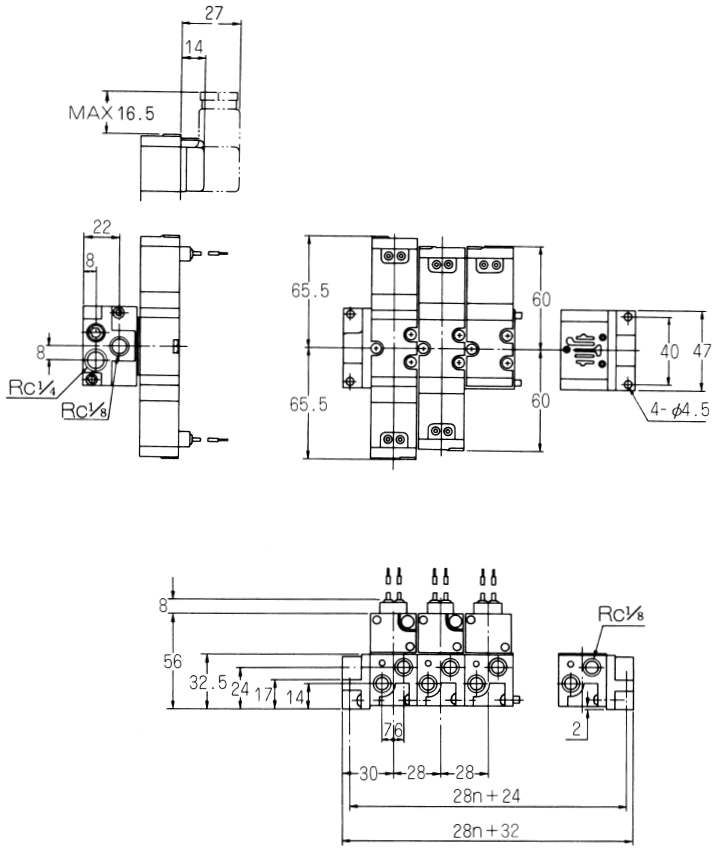
- **Port 1 : Left side on dimensional drawing**
  Port size Rc1/8 (Rc1/4)
- **Port 2 & 4 : Front side on dimensional drawing**
  Port size Rc1/8
- **Port 3 & 5 : Left side on dimensional drawing**
  Port size Rc1/8

n : Number of stations

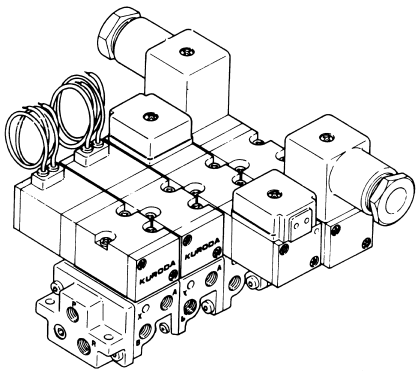
DIMENSIONS

MF□-CS6

(Unit：mm)



Specifications for connection

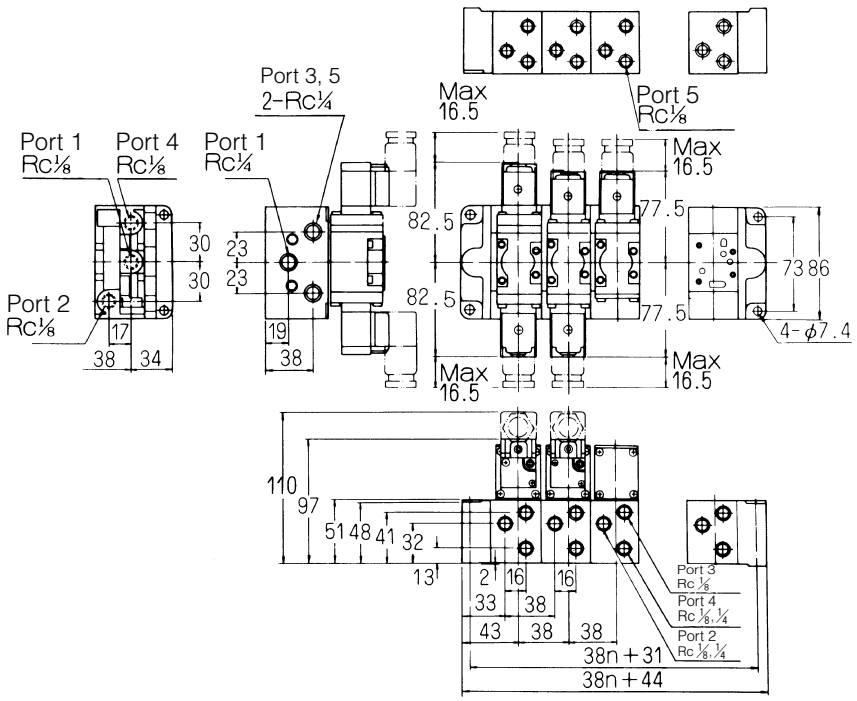


●**Port 1：Left side on dimensional drawing**
Port size Rc1/8 (Rc1/4)
●**Port 2 & 4：Front side on dimensional drawing**
Port size Rc1/8
●**Port 3 & 5：Left side on dimensional drawing**
Port size Rc1/8

n：Number of stations

MF□-CC06、MF□-CI06

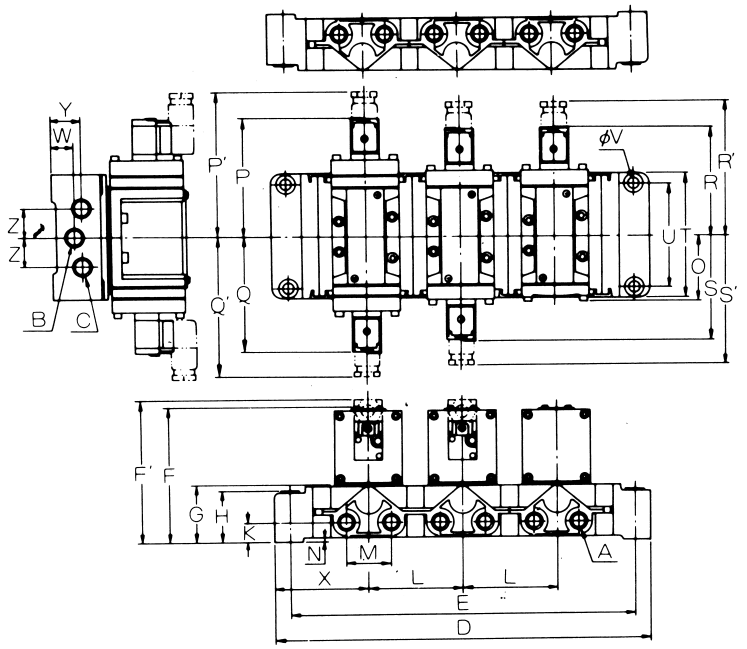
(Unit：mm)



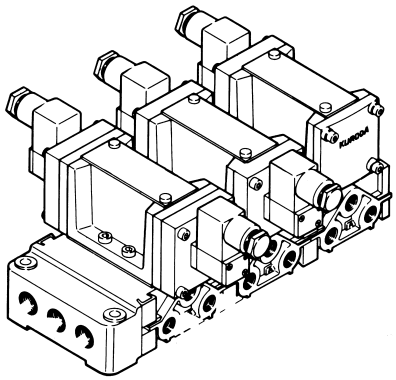
n：Number of stations

DIMENSIONS

MF□-CC08～25

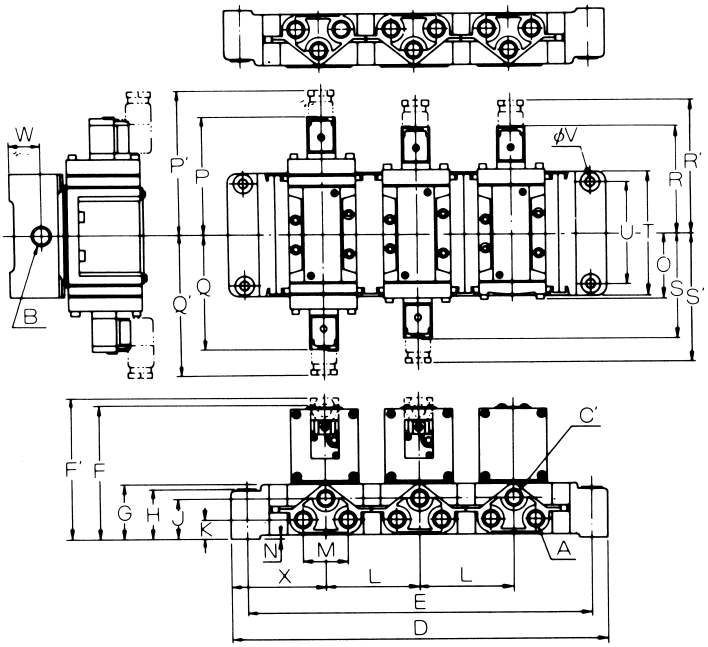


specifications for connection

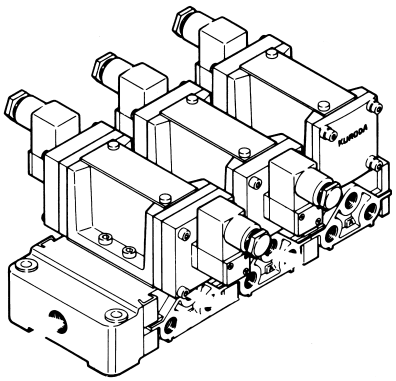


●Port 1：Left side on dimensional drawing
●Port 2 & 4：Front side on dimensional drawing
●Port 3 & 5：Left side on dimensional drawing

MF□-CI08～25



specifications for connection



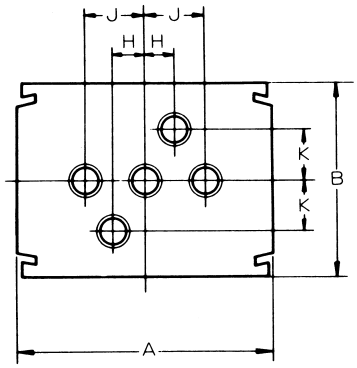
●Port 1：Left side on dimensional drawing
●Port 2 & 4：Front side on dimensional drawing
●Port 3：Front side on dimensional drawing
●Port 5：Back side on dimensional drawing

(Unit：mm)

Model No.	A	B	C	C'	D	E	F	F'	G	H	J	K	L	M	N	O	P	P'	Q	Q'	R	R'	S	S'	T	U	V	W	X	Y	Z
MF-CC08	1/4	3/8	3/8	—	70n	70n	117	116.5	52	51	—	16.	23	110	52	4	84	122	94	118	88	112	87	111	90	74	8.5	5	35	35	22
MF- CI 08	(3/8)		—	1/4(3/8)	+80	+64					39.																			—	—
MF-CC10	3/8	1/2	1/2	—	90n	90n	129	127.5	54	48	5	5	29	150	72	4	115	138	114	138	103	127	102	126	120	100	10.	15	50	30	32
MF- CI 10	(1/2)		—	3/8(1/2)	+90	+60					—																			—	—
MF-CC15	1/2	3/4	3/4	—	110n	110n	149	145	69	60	39.	18.	70	32	4	48	98	155	131	155	120	144	120	144	144	120	5	19	75	35	37
MF- CI 15			—	1/2	+110	+80					5																			—	—
MF-CC25	3/4	1	1	—	150n	150n	187	200	85	80	—	5	90	43	4	64	114	182	159	175	140	156	159	175	200	170	12.	30	90	50	54
MF- CI 25	(1)		—	3/4(1)	+140	+110					49																			—	—

(Note) • " n " in Table means the number of stations of manifold.
• Port size in parentheses is made to order.

BOTTOM OF MANIFOLD PORTED (Custom-made)

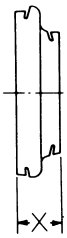


(Unit : mm)

Model No.	Port size	A	B	K	J	H
MF□-$^{CC}_{CI}$08	Rc1/4、3/8	90	70	20	28	12
MF□-$^{CC}_{CI}$10	Rc3/8、1/2	120	90	25	34	17
MF□-$^{CC}_{CI}$15	Rc1/2、3/4	144	110	30	45	22.5
MF□-$^{CC}_{CI}$25	Rc3/4、1	200	150	45	60	30

ADAPTOR

Used to connect a manifold of different size.



(Unit : mm)

Model No.	MFA-C0608	MFA-C0810	MFA-C1015	MFA-C1525
Applicable manifold	MF-C□06 MF-C□08	MF-C□08 MF-C□10	MF-C□10 MF-C□15	MF-C□15 MF-C□25
X	24	30	40	50

⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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