RK, PK

Series

5 Port Pilot Operated Solenoid Valve
Rubber Seal, Sub-base/In-line Mounting

Pilot Operated Solenoid Valve

5-port, rubber seal

RK20 Series

- Width: 26mm
- Large flow capacity: Cv 1.0
- Effective area: 18mm^2
- Low power consumption: 1.8W(DC)
- Various electrical entries

RK50 Series

- Width: 32mm
- Large flow capacity: Cv 2.5
- Effective area: 45mm^2
- Low power consumption: 1.8W(DC)
- Various electrical entries

PK80 Series

- Large flow capacity: Cv 4.4(Rc½), 5.0(Rc¾)
- Effective area: 18mm^2(Rc½), 90mm^2(Rc¾)
- Low power consumption: 1.8W(DC)
- Various electrical entrie

Contents

RK20, 50 & PK80 Series introduction 1

Be sure to read the following before use.

With regard to common and specific instructions, please refer to the content within the catalog.

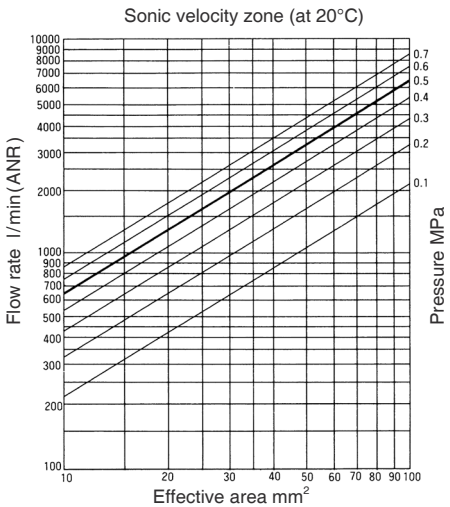
Flow rate

Flow speed can be calculated by the following formula:

Values in the sonic velocity zone can be observed from the following graph.

1. $P_H \leq 1.89P_L$ (Subsonic velocity zone)
   $Q=240 \times S \times [\sqrt{P_L(P_H-P_L)}] \times (\sqrt{293/T_H})$
2. $P_H \geq 1.89P_L$ (Sonic velocity zone)
   $Q=120 \times S \times P_H \times P_H \times (\sqrt{273/T_H})$

Q : Flow rate (Liter/min) (ANR)
S : Effective area (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)



(When the value of effective area equals X 10^{-1} or X 10^n, multiply the same value by the flow rate)

Effective Area

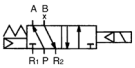
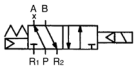
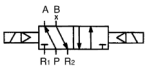
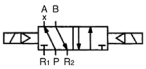
Effective area described in this catalog are measured between ports 1 → 2, 4, in accordance with JIS (Japanese Industrial Standard).

Using 5-port valve as 3-port valve

⚠ Caution

RK20, 50, and PK80 series are all designed with compatibility to be used as 3-port with normal close (NC) or normal open (NO) function under the condition that port R must be open.

The function is useful when 3-port double solenoid valve is required.

Plug position		Port A	Port B
Function		NO	NC
Number of solenoid	Single solenoid		
	Double solenoid		

RK, PK

RK20, 50 & PK80 Series introduction 2

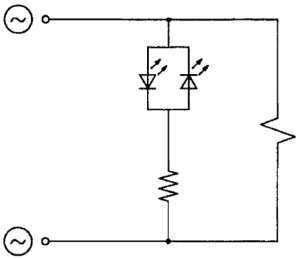
Be sure to read the following before use.

With regard to common and specific instructions, please refer to the content within the catalog.

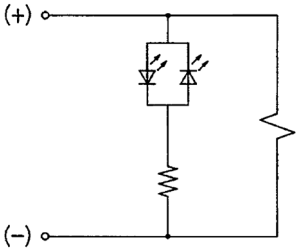
Internal electromagnetic coil loop

⚠ Caution

- **For AC110, 220V:**
  DIN Terminal (with indicator)



- **For DC24, 12V:**
  DIN Terminal (with indicator)



When do wiring works, be aware of the positive and negative mark.
Reverse-blocking diode does not support voltages other than DC24V and 12V.
Therefore, please avoid reverse wiring.

DIN Terminal

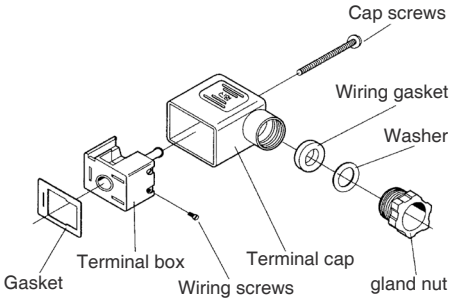
⚠ Caution

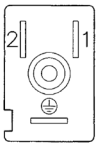
Wiring procedure

1. Take out the cap screw and use proper tools to open the terminal box from the terminal cap.
2. Connect the rubber, soft wire and from gland nut to terminal box, and then insert wiring to the terminal box. Finally, lock up the wiring screws to fix the wiring.

Applicable rubber, soft wire

Applicable external diameter for the wire: select wire size with from ∅6 to ∅7mm.





Electromagnetic coil terminal
1: +
2: -

RK20 Series

5-Port Pilot Operated Solenoid Valve
Rubber Seal/In-line Mounting type

RKS2420
2-position, single solenoid
RKD2420
2-position, double solenoid
RKD3420
3-position, closed center
RKE3420
3-position, ABR connect
RKO3420
3-position, PAB connect

Specificiations

Model No.		Unit	RKS2420	RKD2420	RKD3420	RKE3420	RKO3420
Fluid			Non-lubricated/lubricated air				
Port size	P,A,B		RC¼				
	R1,R2		RC⅛				
Effective area		mm²	18		14.4		
Cv value			1.0		0.8		
Operating ambient temperature		℃	-5~50				
Pressure range		MPa	0.15~1.0	0.1~1.0	0.15~1.0		
Maximum frequency		cycle/min	300		180		
Response time		s	0.030		0.050		
Pilot air exhaust			Individual exhaust				
Manual override			Non-locking push button				
Mounting position			Free				
Shock resistance/ Vibration resistance		m/s²	150/30				
Weight		g	220	300	350	350	350

- Supply complete-dry air to avoid freezing when temperature of valve site falls below 5℃

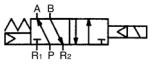
Electrical Specifications

Rated voltage			V	AC110, 220(50/60Hz), DC24
Permissible voltage fluctuation			%	-15 ~ +10
Power consumption	AC	Holding	VA	4.5(50Hz), 3.8(60Hz)
		Inrush	VA	5.6(50Hz), 5.0(60Hz)
	DC		W	1.8
Grade of insulation				JIS grade E
Wiring				Lead wire, DIN connector
Surge suppressor				Varistor(AC), Diode(DC)
Indicator light				LED

RK **S24** 20 — **02** — **D24** **L**

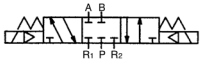
Model No.

S24
2-position, single solenoid

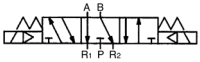


D24
2-position, double solenoid

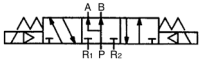
D34
3-position, closed center



E34
3-position, ABR connect



O34
3-position, PAB connect



Wiring
- L : Lead wire
- D : DIN connector
- DK: DIN connector with indicator light

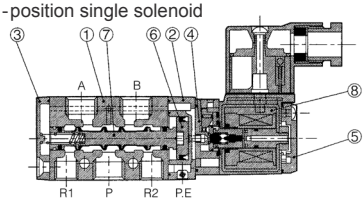
Voltage
- 110: AC110V
- 220: AC220V
- D24: DC24V

Port size
(Port P)
02: RC¼

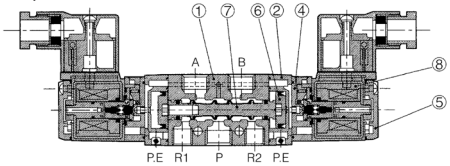
※: Made to order

Construction

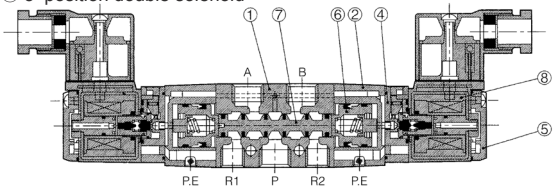
◎ 2-position single solenoid



◎ 2-position double solenoid



◎ 3-position double solenoid

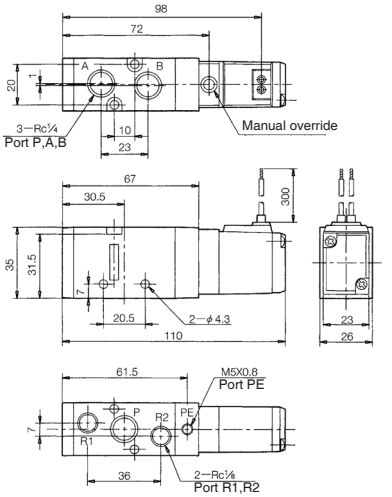


No.	Description	Material
1	Body	Aluminium die casting
2	Adapter	Aluminium die casting
3	End cover	Aluminium die casting
4	Pilot body	Polyacetal
5	Pilot cover	Plastic
6	Piston	Polyacetal
7	Spool	Aluminium • NBR
8	Coil ass'y	

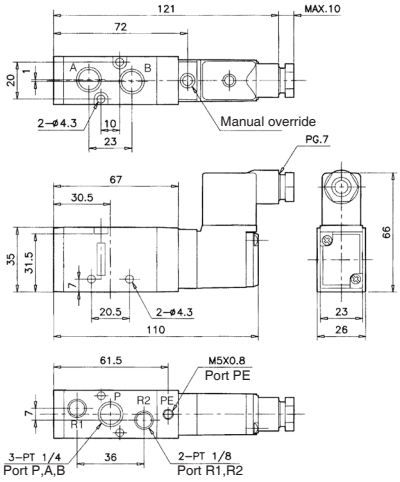
RKS2420

(Unit: mm)

Lead wire type



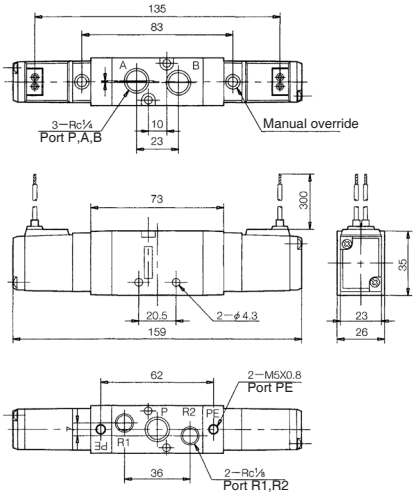
DIN connector type



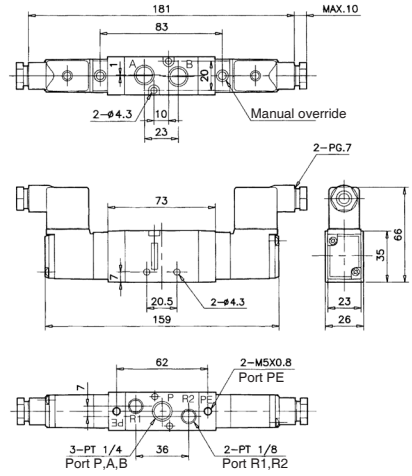
RKD2420

(Unit: mm)

Lead wire type



DIN connector type

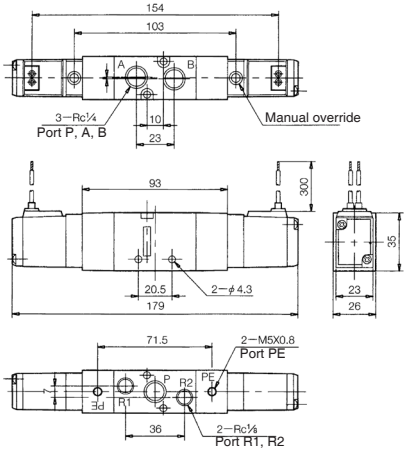


RK, PK

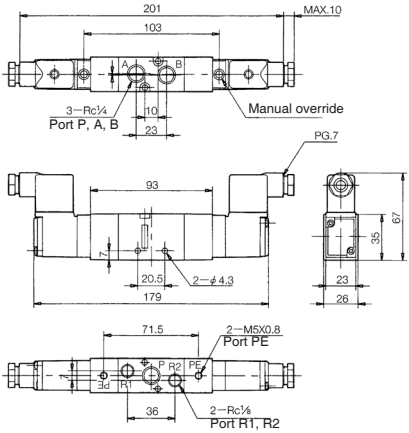
RKD3420, RKE3420, RKO3420

(Unit: mm)

Lead wire type



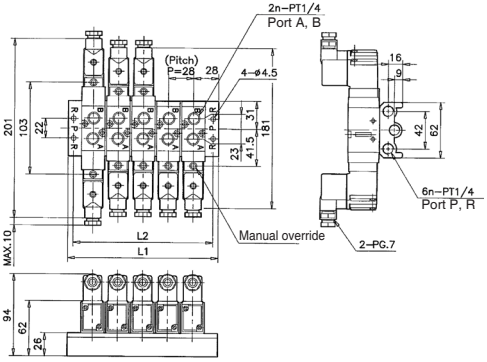
DIN connector type



MFU□ - RK20

(Unit: mm)

◎ When the amount of manifolds is greater than 8 rows, supply air from hole P on both sides, and discharge air from hole R on both sides.



N / L	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	84	112	140	168	196	224	252	280	308	336	364	392	420	448	476	504	532	560	588
L_2	72	100	128	156	184	212	240	268	296	324	352	380	408	436	464	492	520	548	576

RK50 Series

5-Port Pilot Operated Solenoid Valve
Rubber Seal/In-line Mounting type

RKS2450
2-position, single solenoid
RKD2450
2-position, double solenoid
RKD3450
3-position, closed center
RKE3450
3-position, ABR connect
RKO3450
3-position, PAB connect

Specificiations

Model No.	Unit	RKS2450	RKD2450	RKD3450	RKE3450	RKO3450
Fluid		Non-lubricated/lubricated air				
Port size		RC⅜				
Effective area	mm^2	45		36		
Cv value		2.5		2.0		
Operating ambient temperature	℃	-5~50				
Pressure range	MPa	0.15~1.0	0.1~1.0	0.15~1.0		
Maximum frequency	cycle/min	300		180		
Response time	s	0.030		0.050		
Pilot air exhaust		Individual exhaust				
Manual override		Non-locking push button				
Mounting position		Free				
Shock resistance/Vibration resistance	m/s^2	150/30				
Weight	g	350	450	550	550	550

- Supply complete-dry air to avoid freezing when temperature of valve site falls below 5℃

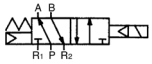
Electrical Specifications

Rated voltage			V	AC110, 220(50/60Hz), DC24
Permissible voltage fluctuation			%	-15 ~ +10
Power consumption	AC	Holding	VA	4.5(50Hz), 3.8(60Hz)
		Inrush	VA	5.6(50Hz), 5.0(60Hz)
	DC		W	1.8
Grade of insulation				JIS grade E
Wiring				Lead wire, DIN connector
Indicator light				LED

RK S24 50 — 03 — D24 L

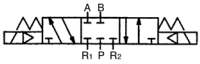
Model No.

S24
2-position, single solenoid

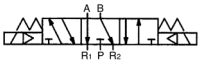


D24
2-position, double solenoid

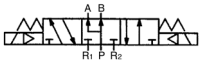
D34
3-position, closed center



E34
3-position, ABR connect



O34
3-position, PAB connect



Wiring
L : Lead wire
D : DIN connector
DK: DIN connector with indicator light

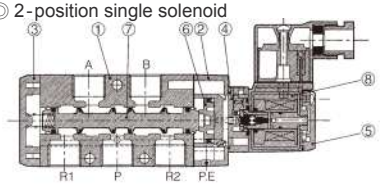
Voltage
110: AC110V
220: AC220V
D24: DC24V

Port size
(Port P)
03: RC⅜

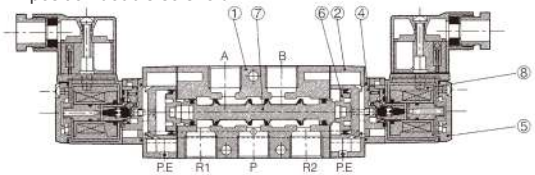
※: Made to order

Construction

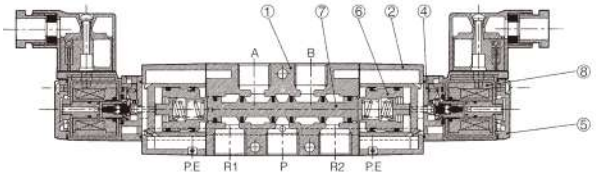
◎ 2-position single solenoid



◎ 2-position double solenoid



◎ 3-position double solenoid

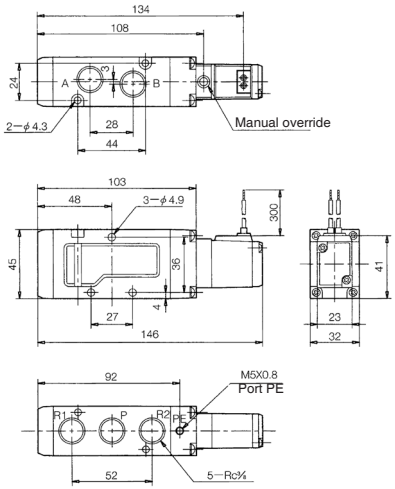


No.	Description	Material
1	Body	Aluminium die casting
2	Adapter	Aluminium die casting
3	End cover	Aluminium die casting
4	Pilot body	Polyacetal
5	Pilot cover	Plastic
6	Piston	Polyacetal
7	Spool	Aluminium • NBR
8	Coil ass'y	

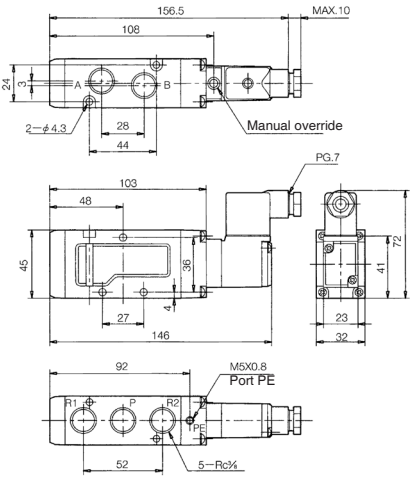
RKS2450

(Unit: mm)

Lead wire type



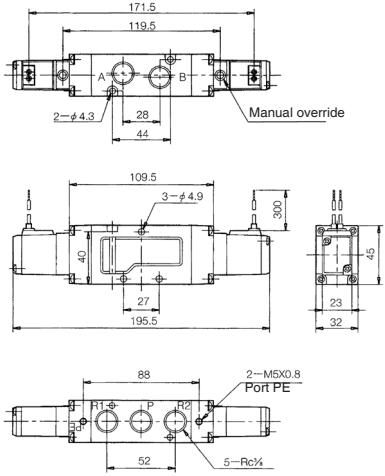
DIN connector type



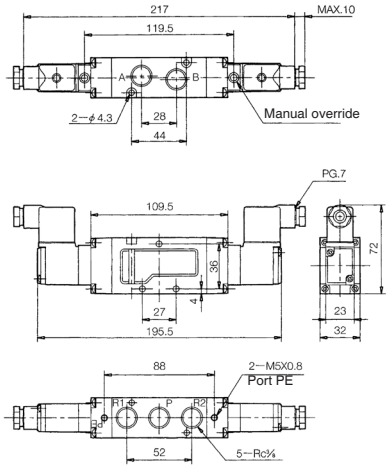
RKD2450

(Unit: mm)

Lead wire type



DIN connector type

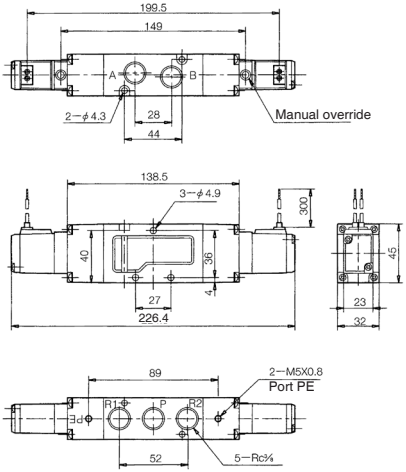


RK, PK

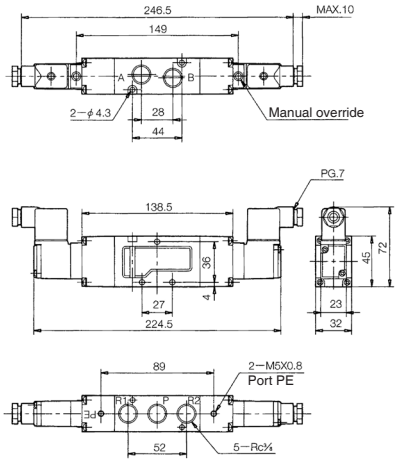
RKD3450, RKE3450, RKO3450

(Unit: mm)

Lead wire type



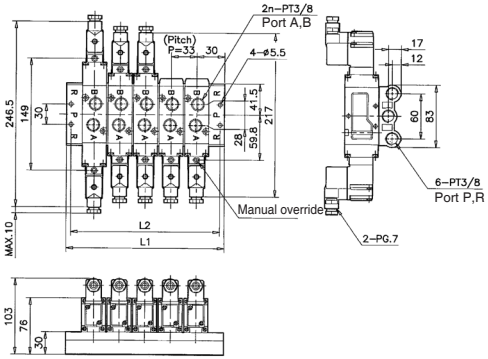
DIN connector type



MFU□ - RK50

(Unit: mm)

◎ When the amount of manifolds is greater than 8 rows, supply air from hole P on both sides, and discharge air from hole R on both sides.



L \ N	2	3	4	5	6	7	8	9	10
L_1	93	126	159	192	225	258	291	324	357
L_2	80	113	146	179	212	245	278	311	344

PK80 Series

5-Port Pilot Operated Solenoid Valve
Rubber Seal/Sub-base Mounting type

PKS2480
2-position, single solenoid
PKD2480
2-position, double solenoid
PKD3480
3-position, closed center
PKE3480
3-position, ABR connect
PKO3480
3-position, PAB connect

Specificiations

Model No.	Unit	PKS2480	PKD2480	PKD3480	PKE3480	PKO3480
Fluid		Non-lubricated/lubricated air				
Port size		RC½, ¾				
Effective area	mm^2	80(RC½), 90(RC¾)		70(RC½), 70(RC¾)		
Cv value		4.44(RC½), 5.0(RC¾)		3.89(RC½), 3.89(RC¾)		
Operating ambient temperature	℃	-5~50				
Pressure range	MPa	0.15~1.0	0.1~1.0	0.15~1.0		
Maximum frequency	cycle/min	300		180		
Response time	s	0.040		0.060		
Pilot air exhaust		Individual exhaust				
Manual override		Non-locking push button				
Mounting position		Free				
Shock resistance Vibration resistance	m/s^2	150/30				
Weight	g	830 (1170)	870 (1200)	880 (1220)	880 (1220)	880 (1220)

- Supply complete-dry air to avoid freezing when temperature of valve site falls below 5℃

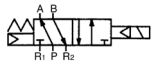
Electrical Specifications

Rated voltage			V	AC110, 220(50/60Hz), DC24
Permissible voltage fluctuation			%	-15 ~ +10
Power consumption	AC	Holding	VA	4.5(50Hz), 3.8(60Hz)
		Inrush	VA	5.6(50Hz), 5.0(60Hz)
	DC		W	1.8
Grade of insulation				JIS grade E
Wiring				Lead wire, DIN connector
Indicator light				LED

PK S24 80 — 04 — D24 L

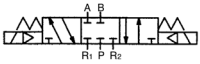
Model No.

S24
2-position, single solenoid

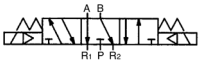


D24
2-position, double solenoid

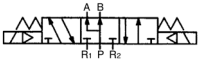
D34
3-position, closed center



E34
3-position, ABR connect



O34
3-position, PAB connect



Wiring
L : Lead wire
D : DIN connector
DK: DIN connector with indicator light

Voltage
110: AC110V
220: AC220V
D24: DC24V

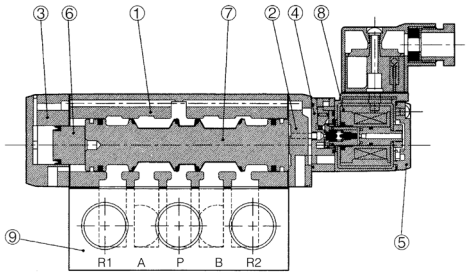
Port size
04: RC½
06: RC¾

※: Made to order

RK, PK

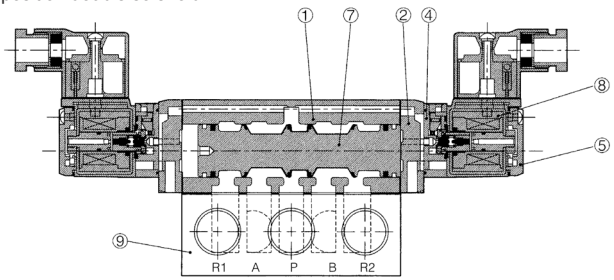
Construction

◎ 2-position single solenoid



No.	Description	Material
1	Body	Aluminium die casting
2	Adapter	Aluminium die casting
3	End cover	Aluminium die casting
4	Pilot body	Polyacetal
5	Pilot cover	Plastic
6	Piston	Polyacetal
7	Spool	Aluminium • NBR
8	Coil ass'y	—
9	Sub-base	Aluminium die casting

◎ 2-position double solenoid

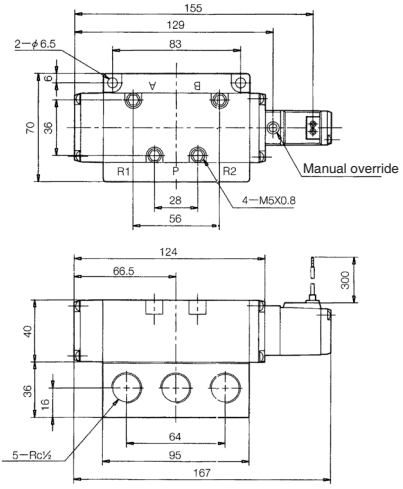


RK, PK

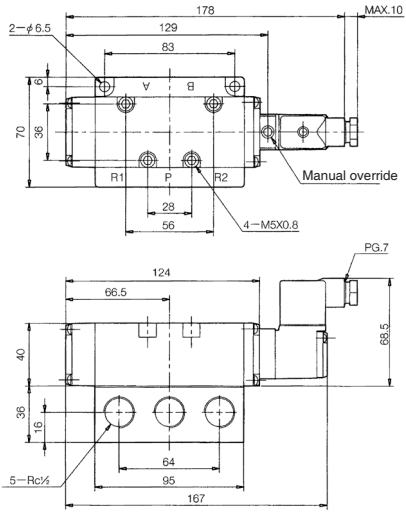
PKS2480-04

(Unit: mm)

Lead wire type



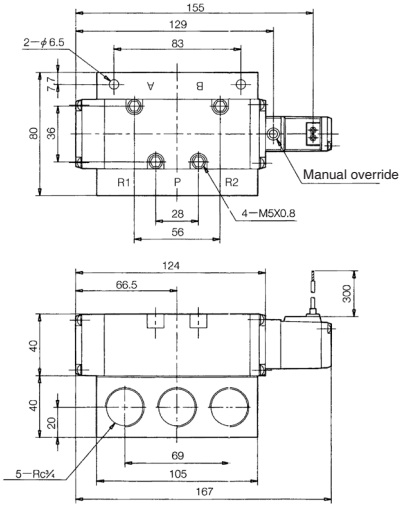
DIN connector type



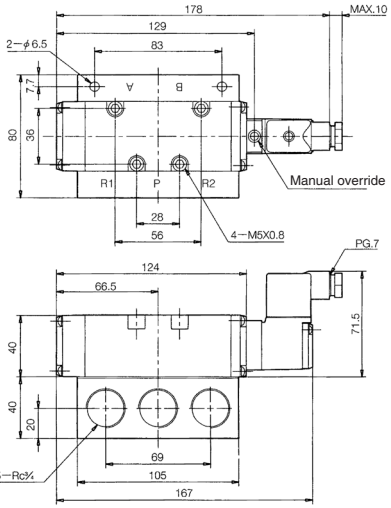
PKS2480-06

(Unit: mm)

Lead wire type



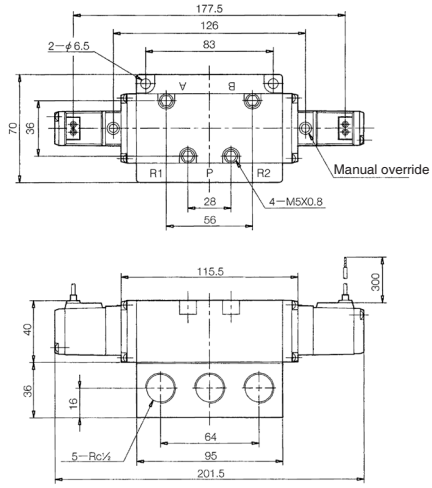
DIN connector type



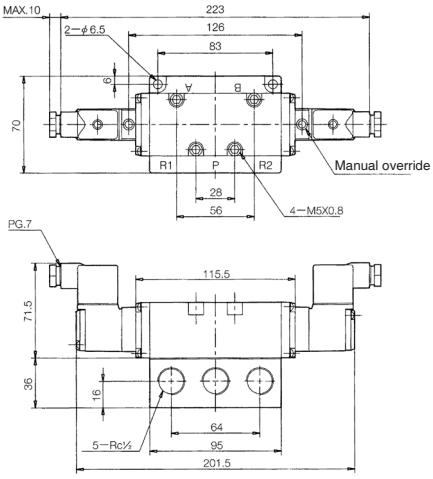
PKD2480-04

(Unit: mm)

Lead wire type



DIN connector type



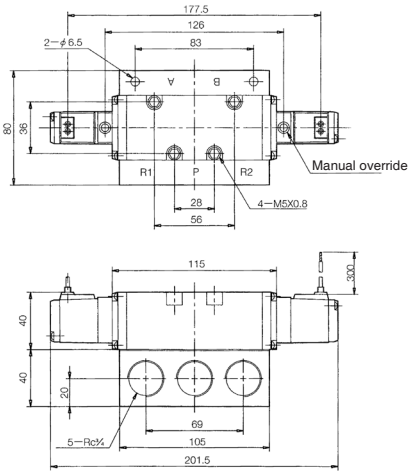
RK, PK

FONTAL

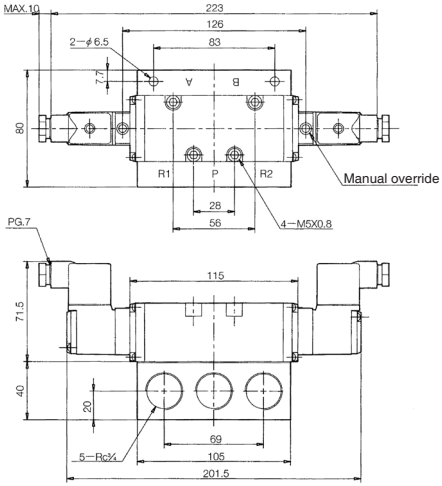
PKD2480-06

(Unit: mm)

Lead wire type



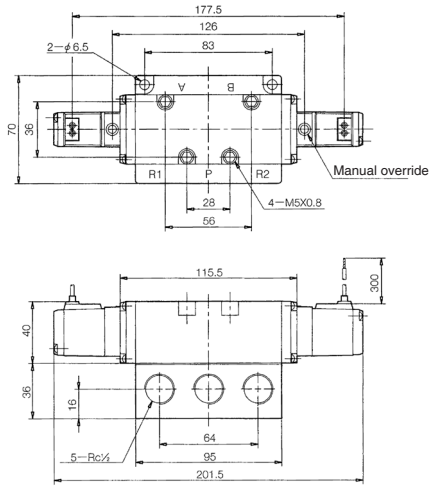
DIN connector type



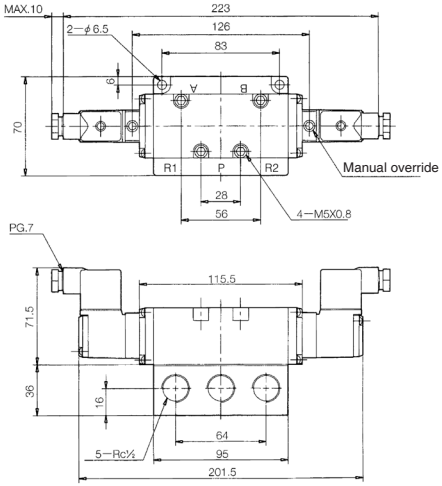
PKD3480-04, PKE3480-04, PKO3480-04

(Unit: mm)

Lead wire type



DIN connector type

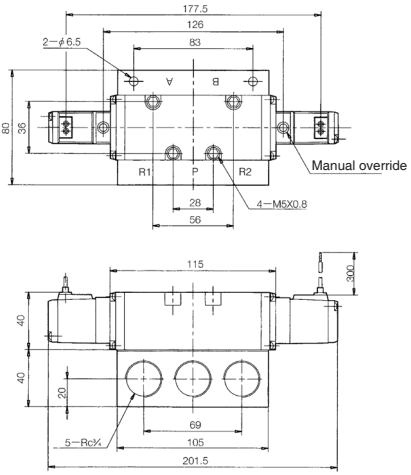


RK, PK

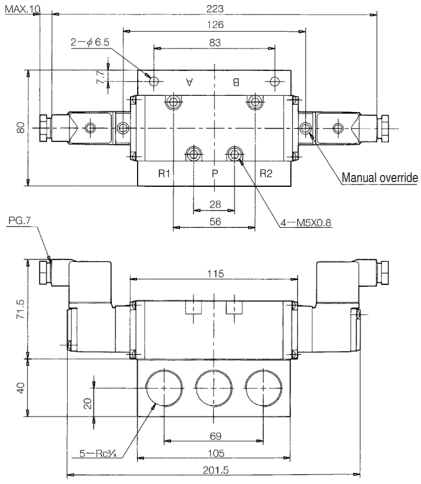
PKD3480-06, PKE3480-06, PKO3480-06

(Unit: mm)

Lead wire type

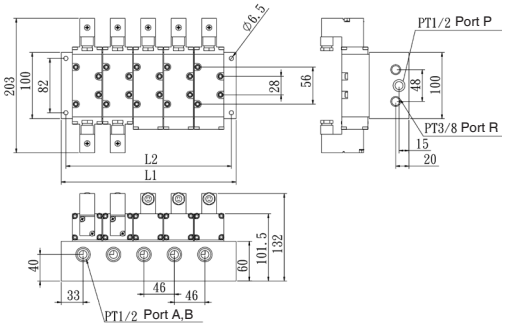


DIN connector type



MFS□ - PK80

(Unit: mm)



◎ When the amount of manifolds is greater than 8 rows, supply air from hole P on both sides, and discharge air from hole R on both sides.

N / L	2	3	4	5	6	7	8
L_1	124	170	216	262	308	354	400
L_2	112	158	204	250	296	342	388