

# Discrete master valve / manifold

## 5 port pilot operated valve pneumatic valve

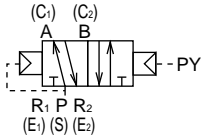
# 4F Series

● Applicable cylinder bore size:  $\varnothing 10$  to  $\varnothing 250$

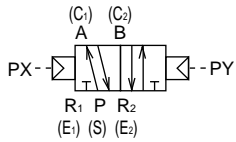


● JIS symbol

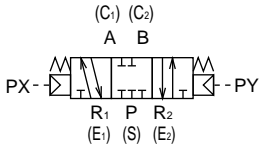
2-position single solenoid



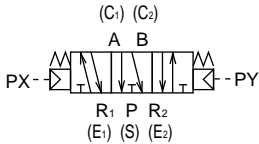
2-position double solenoid



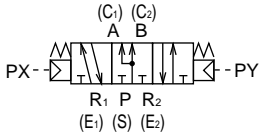
3-position all ports closed



3-position A/B/R connection



3-position P/A/B connection



Common specifications

Descriptions	
Valve type / operation method	Pilot operated soft spool
Working fluid	Compressed air
Max. working pressure MPa	1.0
Min. working pressure MPa	Refer to the main pressure on the table below.
Ambient temperature °C	-10 to 60 (no freezing)
Fluid temperature °C	5 to 60
Lubrication	Not required (when lubricating, use turbine oil ISO VG32.)
Vibration/impact m/s <sup>2</sup>	50 or less / 300 or less
Working environment	Corrosion-free environment

Note 1: Ambient temperature refers to the temperature for storage and installation, and differs from fluid temperature, which applies during operation.

Individual specifications (discrete valve, manifold)

Pos. / No. of solenoid	Model no.	Specifications						
		Note 1 Port size				Main pressure MPa	Pilot signal pressure MPa	
		Supply port S	Cylinder port C	Exhaust port E Pilot exhaust port PE	Pilot port			
2-position single solenoid	Series model no.							
2-position double solenoid								
3-position all ports closed								
3-position A/B/R connection								
3-position P/A/B connection								
●	4F0 Series	A4F011 4F021	M5, Rp1/8	M5, Rp1/8	M5	Rc1/8	0.15 to 1.0 0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$
●	4F1 Series	4F111 4F121 4F131 4F141	Rp1/8 Rp1/4	Rp1/8 Rp1/4	Rp1/8	Rc1/8	0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$ $P \geq 0.2$
●	4F2 Series	4F211 4F221 4F231 4F241	Rp1/4	Rp1/4	E: Rp1/4 PE: Rp1/8	Rc1/8	0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$ $P \geq 0.2$
●	4F3 Series	4F311 4F321 4F331 4F341 4F351	Rp1/4 Rp3/8	Rp1/4 Rp3/8	E: Rp1/4 Rp3/8 PE: Rp1/8	Rc1/8	0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$ $P \geq 0.2$
●	4F4 Series	4F411 4F421 4F431 4F441 4F451	Rc1/4 Rc3/8	Rc1/4 Rc3/8	E: Rp1/4 Rc3/8 PE: Rc1/8	Rc1/8	0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$ $P \geq 0.2$
●	4F5 Series	4F511 4F521 4F531 4F541 4F551	Rc3/8 Rc1/2	Rc3/8 Rc1/2	E: Rc3/8 Rc1/2 PE: Rc1/8	Rc1/8	0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$ $P \geq 0.2$
●	4F6 Series	4F611 4F621 4F631 4F641 4F651	Rc1/2 Rc3/4	Rc1/2 Rc3/4	E: Rc1/2 Rc3/4 PE: Rc1/4	Rc1/8	0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$ $P \geq 0.2$
●	4F7 Series	4F711 4F721 4F731 4F741 4F751	Rc3/4 Rc1	Rc3/4 Rc1	E: Rc3/4 Rc1 PE: Rc1/4	Rc1/8	0 to 1.0	$P \geq 0.6 \times \text{main pressure} + 0.06$ $P \geq 0.15$ $P \geq 0.2$

Note 1: Other port size options are available in addition to those in the above table. Refer to the How to order on page 964.

## Flow characteristics

Series	Model no.	Port size	C (dm <sup>3</sup> /(s·bar))	b	S (mm <sup>2</sup> )
4F0	A4F011	M5	0.61	0.35	-
	4F021				
	A4F011	Rp1/8	0.74	0.27	-
	4F021				
4F1	4F111	Rp1/8	2.0	0.33	-
	4F121				
	4F131	Rp1/4	1.5	0.31	
	4F141				
4F2	4F211	Rp1/4	3.0	0.33	-
	4F221				
	4F231		2.5	0.43	
	4F241				
4F3	4F311	Rp1/4	3.9	0.42	-
	4F321				
	4F331		4.0	0.35	
	4F341				
	4F351	Rp3/8	5.8	0.30	
	4F311				
	4F321		4.4	0.42	
	4F331				
4F4	4F411	Rc1/4 Rc3/8	5.0	0.21	-
	4F421				
	4F431		4.7	0.24	
	4F441				
	4F451		5.3	0.29	
4F5	4F511	Rc3/8 Rc1/2	10	0.32	-
	4F521				
	4F531		9.7	0.28	
	4F541				
	4F551		9.8	0.25	
4F6	4F611	Rc1/2 Rc3/4	18	0.31	-
	4F621				
	4F631		15	0.23	
	4F641				
	4F651				
4F7	4F711	Rc3/4 Rc1	-	-	160
	4F721				
	4F731				
	4F741				
	4F751				

Note 1: Effective sectional area S and sonic conductance C are converted as  $S \cong 5.0 \times C$ .

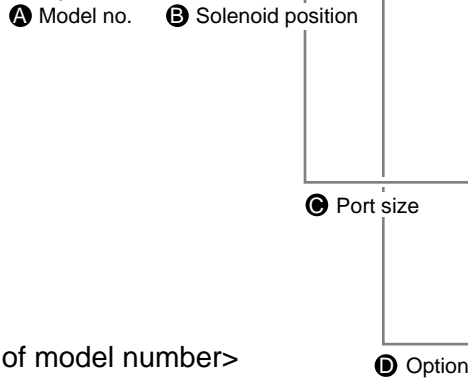
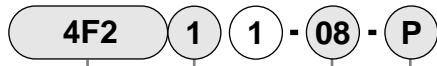
MN3E0
MN4E0
4GA/B
M4GA/B
MN4GA/B
4GA/B (Master)
W4GA/B2
W4GB4
MN3S0
MN4S0
4TB
4L2-4/LMF0
4SA/B0
4SA/B1
4KA/B
<b>4F</b>
PV5G/CMF
PV5/CMF
3MA/B0
3PA/B
P/M/B
NP/NAP/NVP
4F*0E
HMV
HSV
2QV
3QV
SKH
PCD/FS/FD
Ending

Master valve  
5 port pilot operated valve

# 4F Series

## Master valve: Discrete manifold

### How to order discrete valve, body porting



### <Example of model number>

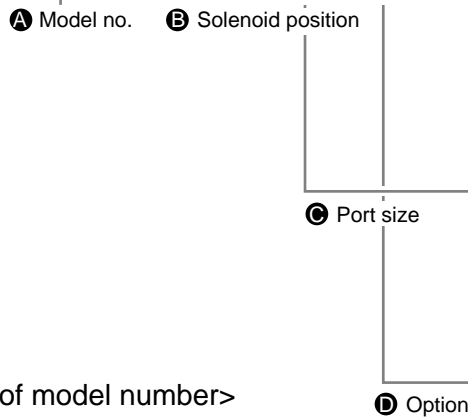
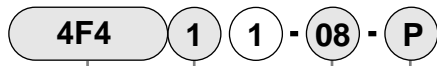
#### 4F111-06-P

- A** Model: 4F1
- B** Solenoid position : 2-position single solenoid
- C** Port size : Rp1/8
- D** Option : With P type mounting bracket

A Model no.			
Body porting			
4	4	4	4
F	F	F	F
0	1	2	3

Symbol	Descriptions	4	4	4	4
<b>B Solenoid position</b>					
1	2-position single solenoid	●	●	●	●
2	2-position double solenoid	●	●	●	●
3	3-position all ports closed		●	●	●
4	3-position A/B/R connection		●	●	●
5	3-position P/A/B connection				●
<b>C Port size</b>					
M5	M5	●			
06	Rp 1/8	●	●		
08	Rp 1/4		●	●	●
10	Rp 3/8				●
<b>D Option</b>					
Blank	None	●	●	●	●
P	Mounting bracket (2-position single solenoid)	●	●	●	●
P1	Mounting bracket	●	●	●	●
N	Plug attached (3 port valve)	●	●	●	●
H	Check valve attached (only for 3-position all ports closed)			●	●
NC	3 way valve plug assembly (C1: A, E1: R1)	●	●	●	●
NO	3 way valve plug assembly (C2: B, E2: R2)	●	●	●	●

### How to order discrete valve, sub-plate porting



### <Example of model number>

#### 4F411-08-P

- A** Model: 4F4
- B** Solenoid position : 2-position single solenoid
- C** Port size : Rp1/4
- D** Option : With P type mounting bracket

A Model no.			
Sub-plate porting			
4	4	4	4
F	F	F	F
4	5	6	7

Symbol	Descriptions	4	4	4	4
<b>B Solenoid position</b>					
1	2-position single solenoid	●	●	●	●
2	2-position double solenoid	●	●	●	●
3	3-position all ports closed	●	●	●	●
4	3-position A/B/R connection	●	●	●	●
5	3-position P/A/B connection	●	●	●	●
<b>C Port size</b>					
08	Rc 1/4	●			
10	Rc 3/8	●	●		
15	Rc 1/2			●	
20	Rc 3/4				●
25	Rc 1				●
<b>D Option</b>					
Blank	None	●	●	●	●
P	Mounting bracket	●	●	●	●
N	Plug attached (3 port valve)	●	●	●	●
H	Check valve attached (3-position all ports closed)	●	●	●	●
NC	3 way valve plug assembly (C1: A, E1: R1)	●	●	●	●
NO	3 way valve plug assembly (C2: B, E2: R2)	●	●	●	●

### How to order manifold, body porting

#### ● Master valve for manifold

4F2 (1) (1) - 08 - ( )

4F3 (1) (8) - 08 - ( )

Refer to cautions below.

#### ● Manifold

M 4F3 (1) (1) - 08 - ( ) - 3 - CU - S<sub>1</sub> S<sub>2</sub> S<sub>3</sub> S<sub>4</sub> S<sub>5</sub> MP

4F3: Up to S5  
4F1/2: Up to S4  
4F0: Up to S2

Indicate the quantity and display position of each valve function for the mixed manifold. Refer to page 922.

**A Model no.**  
Body porting

4	4	4	4
F	F	F	F
0	1	2	3

Symbol	Descriptions				
<b>B Solenoid position</b>					
1	2-position single solenoid	●	●	●	●
2	2-position double solenoid	●	●	●	●
3	3-position all ports closed		●	●	●
4	3-position A/B/R connection		●	●	●
5	3-position P/A/B connection				●
8	Mix manifold	●	●	●	●
<b>C Port size</b>					
M5	M5	●			
06	Rp 1/8	●	●		
08	Rp 1/4		●	●	●
10	Rp 3/8				●
<b>D Other options</b>					
Blank	No option	●	●	●	●
NC	3 way valve plug assembly (C1: A, E1: R1)	●	●	●	●
NO	3 way valve plug assembly (C2: B, E2: R2)	●	●	●	●
<b>E Station number</b>					
2	2 stations				
to	to	●	●	●	●
10	10 stations				
<b>F Exhaust mounting style</b>					
CL	Common exhaust / L bracket (2-position single solenoid)	●	●	●	●
CU	Common exhaust / U bracket	●	●	●	●
IL	Individual exhaust / L bracket (2-position single solenoid)	●	●	●	●
IU	Individual exhaust / U bracket	●	●	●	●
C	Common exhaust			●	●
I	Individual exhaust		●	●	●

**A Model no.**

**B Solenoid position**

**C Port size**

**D Other options**

**E Station number**

**F Exhaust mounting**

### ⚠ Note on model no. selection

Use the discrete master valve for manifolds as shown below depending on the model.

■ For 4F0 to 4F1

4F1 (B) (1) - (C)

When used as repair parts, purchase the optional gasket kit based on the model below.

- M4F0-GASKET-KIT
- M4F1-GASKET-KIT
- M4F1-I-GASKET-KIT

■ For 4F2/4F3

Exhaust mounting CL, CU, IL, IU

4F3 (B) (1) - (C)

When used as repair parts, purchase the optional gasket kit based on the model below.

- M4F2-GASKET-KIT
- M4F3-GASKET-KIT

For exhaust mounting method C, I

4F3 (B) (8) - (C) - (F)

(If C is selected for item "F", indicate no symbol, and if I is selected, indicate "I".)

The gasket kit is included.

### <Example of model number>

#### M4F341-08-NO-5-C

- A** Model: M4F3
- B** Solenoid position : 3-position A/B/R connection
- C** Port size : Rp1/4
- D** Other options : 3 way valve plug assembly (C2: B, E2: R2)
- E** Station number : 5 station
- F** Exhaust method : Common exhaust

MN3E0  
MN4E0

4GA/B

M4GA/B

MN4GA/B

4GA/B  
(Master)

W4GA/B2

W4GB4

MN3S0  
MN4S0

4TB

4L2-4/  
LMF0

4SA/B0

4SA/B1

4KA/B

**4F**

PV5G/  
CMF

PV5/  
CMF

3MA/B0

3PA/B

P/M/B

NP/NAP/  
NVP

4F\*OE

HMV  
HSV

2QV  
3QV

SKH

PCD/  
FS/FD

Ending

Master valve  
5 port pilot operated valve

# 4F Series

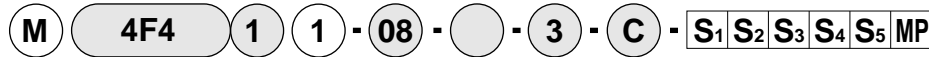
Master valve: Discrete manifold

## How to order manifold, sub-plate porting

● Master valve for manifold



● Manifold



Ⓐ Model no.

Indicate the quantity and display position of each valve function for the mixed manifold. Refer to page 949.

Ⓐ Model no.			
Sub-plate porting			
4	4	4	4
F	F	F	F
4	5	6	7

Symbol Descriptions

Ⓑ Solenoid position			
1	2-position single solenoid	●	●
2	2-position double solenoid	●	●
3	3-position all ports closed	●	●
4	3-position A/B/R connection	●	●
5	3-position P/A/B connection	●	●
8	Mix manifold	●	●

Ⓒ Port size			
08	Rc 1/4	●	
08Y	Rp 1/4 (cylinder port rear side)	●	
10	Rc 3/8		●
10Y	Rc 3/8 (cylinder port rear side)		●
D15	Rc 1/2		●
E20	Rc 3/4		●

Ⓓ Other options			
Blank	No option	●	●
NC	3 way valve plug assembly (C1: A, E1: R1)	●	●
NO	3 way valve plug assembly (C2: B, E2: R2)	●	●

Ⓔ Station number			
2	2 stations		
to	to	●	●
10	10 stations		

Ⓕ Exhaust mounting style			
C	Common exhaust	●	●

Ⓑ Solenoid position

Ⓒ Port size

Ⓓ Other options

Ⓔ Station number

Ⓕ Exhaust mounting method

<Example of model number>

**M4F441-08-NC-5-C**

- Ⓐ Model: M4F4
- Ⓑ Solenoid position : 3-position A/B/R connection
- Ⓒ Port size : Rp1/4
- Ⓓ Other options : 3 way valve plug assembly (C1: A, E1: R1)
- Ⓔ Station number : 5 station
- Ⓕ Exhaust method : Common exhaust

- MN3E0
- MN4E0
- 4GA/B
- M4GA/B
- MN4GA/B
- 4GA/B (Master)
- W4GA/B2
- W4GB4
- MN3S0
- MN4S0
- 4TB
- 4L2-4/LMFO
- 4SA/B0
- 4SA/B1
- 4KA/B
- 4F**
- PV5G/CMF
- PV5/CMF
- 3MA/B0
- 3PA/B
- P/M/B
- NP/NAP/NVP
- 4F\*0E
- HMV
- HSV
- 2QV
- 3QV
- SKH
- PCD/FS/FD
- Ending

# 4F0 to 4F1 Series

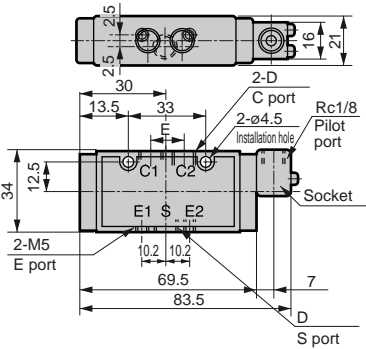
## Master valve: Body porting

### Dimensions

MN3E0  
MN4E0  
4GA/B  
M4GA/B  
MN4GA/B  
4GA/B (Master)  
W4GA/B2  
W4GB4  
MN3S0  
MN4S0  
4TB  
4L2-4/LMFO  
4SA/B0  
4SA/B1  
4KA/B  
**4F**  
PV5G/CMF  
PV5/CMF  
3MA/B0  
3PA/B  
P/M/B  
NP/NAP/NVP  
4F\*0E  
HMV  
HSV  
2QV  
3QV  
SKH  
PCD/FS/FD  
Ending

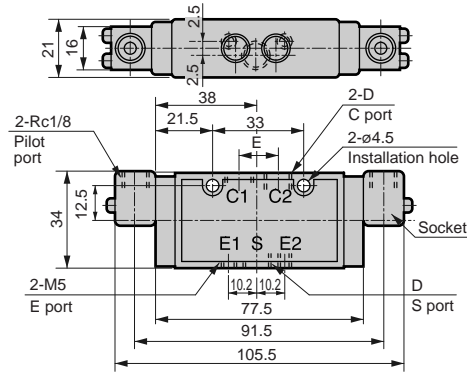
#### A4F011

● 2-position single solenoid



#### 4F021

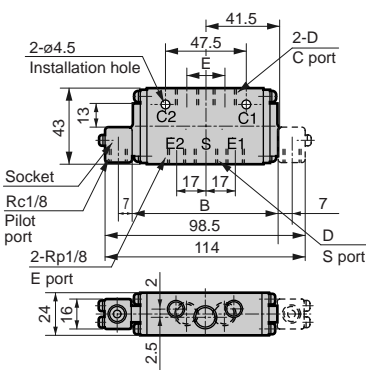
● 2-position double solenoid



Symbol	D	E
Port size		
<b>M5</b>	M5 x 0.8	10.4
<b>06</b>	Rp 1/8	15

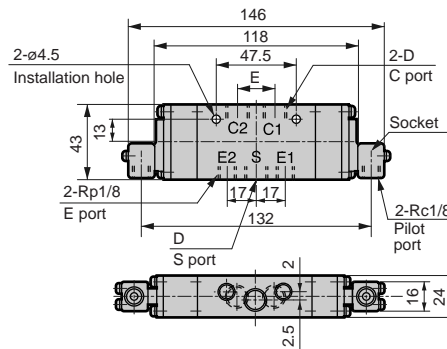
#### 4F111/4F121

● 2-position single, double



#### 4F131/4F141

● 3-position all ports closed, A/B/R connection



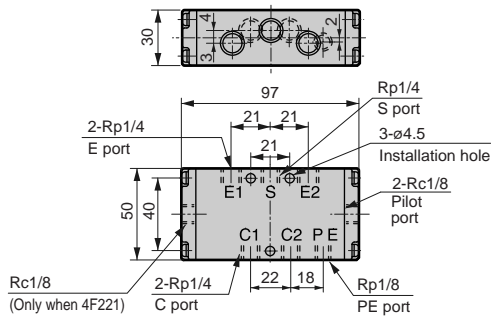
Symbol	B
Port size	
<b>4F111</b>	84.5
<b>4F121</b>	86

Symbol	D	E
Port size		
<b>06</b>	Rp1/8	20
<b>08</b>	Rp1/4	22

### Dimensions

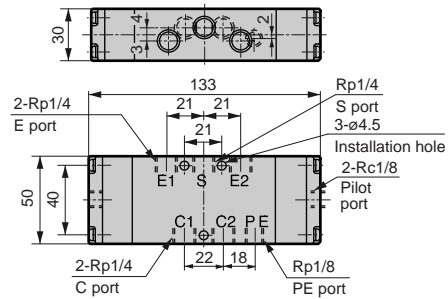
#### 4F211/4F221

- 2-position single, double



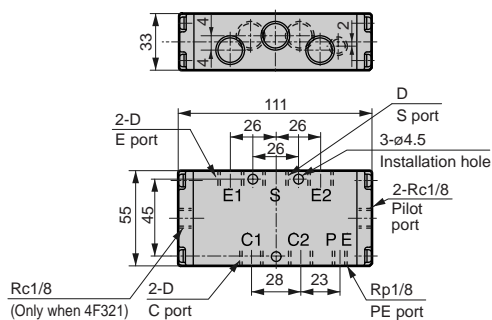
#### 4F231/4F241

- 3-position all ports closed, A/B/R connection



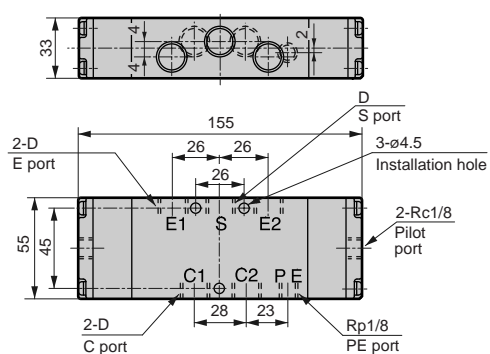
#### 4F311/4F321

- 2-position single, double



#### 4F331/4F341

- 3-position all ports closed, A/B/R connection



Symbol	D
Port size	
08	Rp 1/4
10	Rp 3/8

MN3E0  
MN4E0

4GA/B

M4GA/B

MN4GA/B

4GA/B  
(Master)

W4GA/B2

W4GB4

MN3S0  
MN4S0

4TB

4L2-4/  
LMF0

4SA/B0

4SA/B1

4KA/B

**4F**

PV5G/  
CMF

PV5/  
CMF

3MA/B0

3PA/B

P/M/B

NP/NAP/  
NVP

4F\*OE

HMV  
HSV

2QV  
3QV

SKH

PCD/  
FS/FD

Ending

Master valve  
5 port pilot operated valve

# 4F4 to 4F5 Series

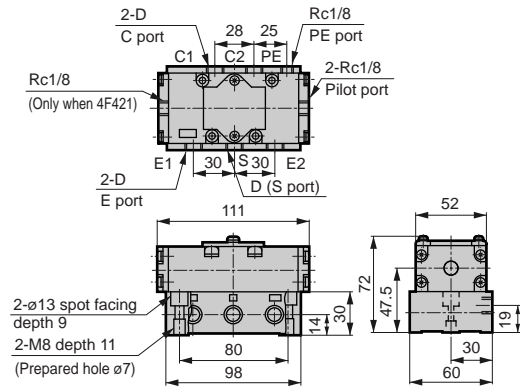
## Master valve: Sub-plate porting

### Dimensions

- MN3E0
- MN4E0
- 4GA/B
- M4GA/B
- MN4GA/B
- 4GA/B (Master)
- W4GA/B2
- W4GB4
- MN3S0
- MN4S0
- 4TB
- 4L2-4/LMFO
- 4SA/B0
- 4SA/B1
- 4KA/B
- 4F**
- PV5G/CMF
- PV5/CMF
- 3MA/B0
- 3PA/B
- P/M/B
- NP/NAP/NVP
- 4F\*0E
- HMV
- HSV
- 2QV
- 3QV
- SKH
- PCD/FS/FD
- Ending

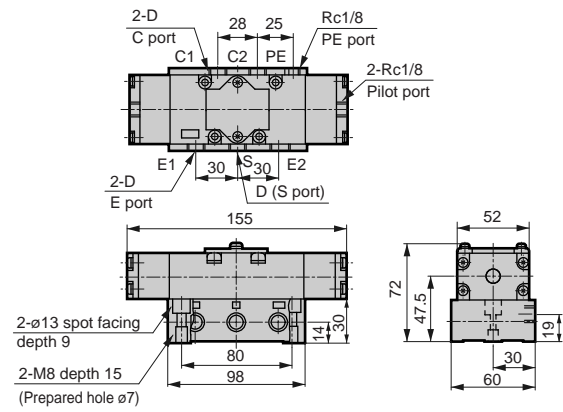
#### 4F411/4F421

● 2-position single solenoid



#### 4F431/4F441/4F451

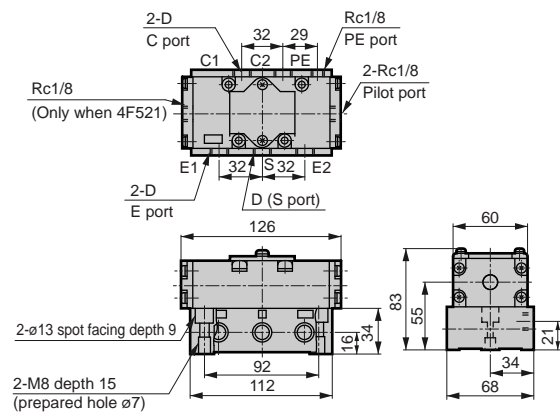
● 3-position all ports closed, A/B/R connection



Symbol	D
Port size	
08	Rc 1/4
10	Rc 3/8

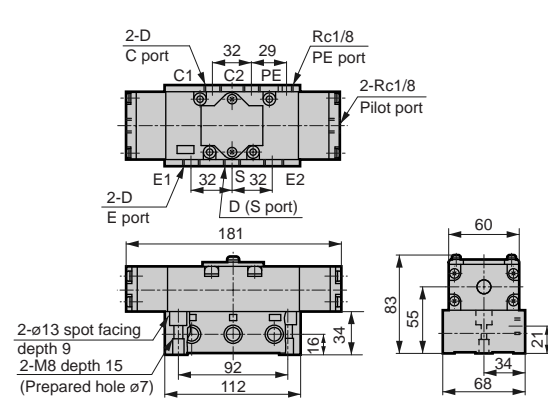
#### 4F511/4F521

● 2-position single, double



#### 4F531/4F541/4F551

● 3-position all ports closed, A/B/R connection



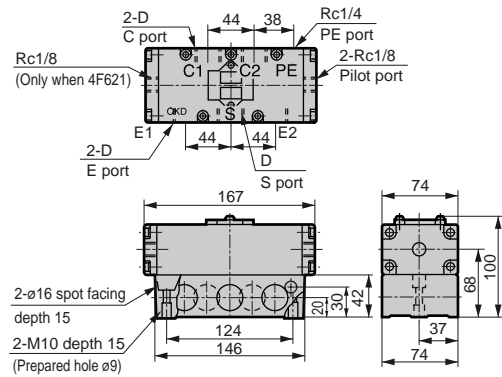
Symbol	D
Port size	
10	Rc 3/8
15	Rc 1/2



### Dimensions

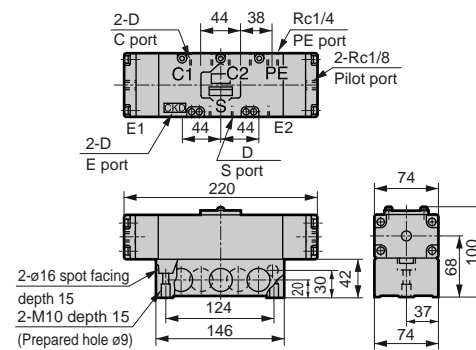
#### 4F611/4F621

● 2-position single, double



#### 4F631/4F641/4F651

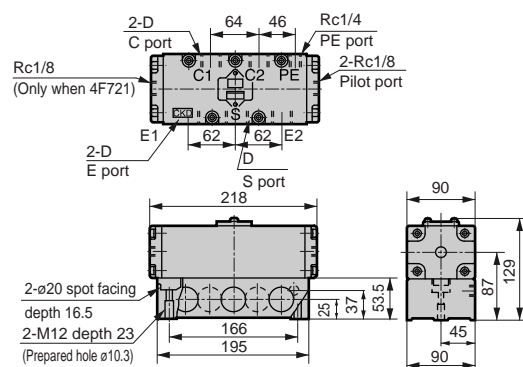
● 3-position all ports closed, A/B/R connection



Symbol	D
Port size	
15	Rc 1/2
20	Rc 3/4

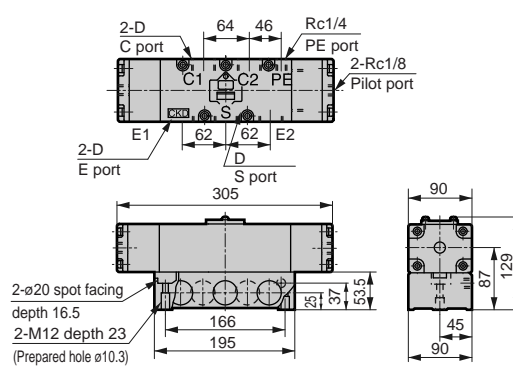
#### 4F711/4F721

● 2-position single, double



#### 4F731/4F741/4F751

● 3-position all ports closed, A/B/R connection



Symbol	D
Port size	
20	Rc 3/4
25	Rc 1

MN3E0
MN4E0
4GA/B
M4GA/B
MN4GA/B
4GA/B (Master)
W4GA/B2
W4GB4
MN3S0
MN4S0
4TB
4L2-4/LMF0
4SA/B0
4SA/B1
4KA/B
<b>4F</b>
PV5G/CMF
PV5/CMF
3MA/B0
3PA/B
P/M/B
NP/NAP/NVP
4F*OE
HMV
HSV
2QV
3QV
SKH
PCD/FS/FD
Ending

Master valve  
5 port pilot operated valve