

Discrete valve

Explosion proof 5 port pilot operated

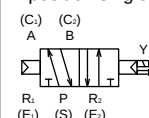
4F**0E Series

● Applicable cylinder bore size: ø63 to ø250

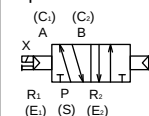


JIS symbol

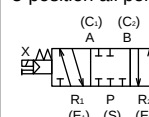
2-position single



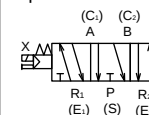
2-position double solenoid



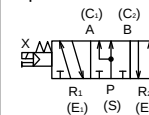
3-position all ports closed



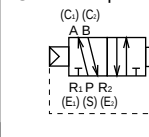
3-position A/B/R connection



3-position P/A/B connection



● External pilot



(Symbol shows 2 position single)

Common specifications

Descriptions	
Valve type / operation method	Pilot operated spool valve
Working fluid	Compressed air
Max. working pressure MPa	1.0
Min. working pressure MPa	Refer to the individual specifications below.
Withstanding pressure MPa	1.5
Ambient temperature °C (Note 1)	-10 to 60 (no freezing)
Fluid temperature °C	5 to 60
Lubrication	Not required (when lubricating, use turbine oil ISO VG32.)
Explosion proof performance	d2G4
Manual override	Locking
Vibration/impact m/s ²	50 or less / 300 or less
Working environment	Containing corrosive gas is impermissible.

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

Note 2: The working pressure range is 0 to 1.0 MPa when the external pilot (option symbol: K) is selected. Set the external pilot pressure between 0.15 and 1.0 MPa.

Electric specifications

Descriptions			
Rated voltage	AC	100 V, 200 V (50/60Hz)	
	Note 1	DC	24 V
Rated voltage fluctuation range			±10%
Starting current	AC	100 V	0.186/0.135
		200 V	0.093/0.068
A	DC	24 V	0.166
Holding current	AC	100 V	0.06/0.05
		200 V	0.03/0.025
A	DC	24 V	0.166
Power consumption	AC	100 V	4.5/4
		200 V	4.5/4
W	DC	24 V	4
Heat proof class			A (Note 2, H)

Note 1: The 100 VAC 50/60Hz rated voltage can be used at 110 VAC 60Hz, and 200 VAC 50/60Hz can be used at 220 VAC 60Hz.

Note 2: Heat proof class H is as an option. Dimensions are same as A.

Individual specifications

Descriptions			4F3	4F4	4F5	4F6	4F7
Min. working pressure MPa	2-position	Single solenoid	0.1	0.1	0.1	0.15	0.15
		Double solenoid					
	3-position	All ports closed	0.15	0.15	0.15		
		A/B/R connection					
		P/A/B connection					
Port size Note 1	Supply port S, cylinder port C		Rp1/4, Rp3/8	Rc1/4, Rc3/8	Rc3/8, Rc1/2	Rc1/2, Rc3/4	Rc3/4, Rc1
	Exhaust port E		Rp1/4, Rp3/8	Rc1/4, Rc3/8	Rc3/8, Rc1/2	Rc1/2, Rc3/4	Rc3/4, Rc1
	Pilot exhaust port (PE)		(Rp1/8)	(Rc1/8)	(Rc1/8)	(Rc1/4)	(Rc1/4)
Response time Note 2 ms			100	120	140	400	600
Weight kg	2-position	Single solenoid	0.80	1.18	1.62	2.42	4.32
		Double solenoid	1.20	1.60	2.00	2.90	4.80
	3-position		1.66	2.00	2.30	3.40	5.90

Note 1: NPT threads are available for 4F4 to 7 piping ports threads. Contact CKD for details. (Note that the external lead wire inlet is G1/2.)

Note 2: Response time is the value when supply pressure 0.5 MPa, not lubricated and ON. The value varies depending on pressure and quality of lubricant.

Flow characteristics

Model no.	Solenoid position		Port size	C (dm ³ / (s·bar))	b	S (mm ²)
4F3	2-position	Single solenoid	Rp1/4	3.9	0.42	-
		Double solenoid				
	3-position	All ports closed		4.0	0.35	
		A/B/R connection		4.5	0.42	
		P/A/B connection		4.0	0.35	
	2-position	Single solenoid	Rp3/8	5.8	0.42	
		Double solenoid				
	3-position	All ports closed		4.4	0.42	
A/B/R connection		5.1		0.46		
P/A/B connection		4.4		0.42		
4F4	2-position	Single solenoid	Rc1/4 Rc3/8	5.0	0.21	-
		Double solenoid				
	3-position	All ports closed		4.7	0.24	
		A/B/R connection		5.3	0.29	
		P/A/B connection		5.3	0.29	
4F5	2-position	Single solenoid	Rc3/8 Rc1/2	10	0.32	-
		Double solenoid				
	3-position	All ports closed		9.7	0.28	
		A/B/R connection		9.8	0.25	
		P/A/B connection				
4F6	2-position	Single solenoid	Rc1/2 Rc3/4	18	0.31	-
		Double solenoid				
	3-position	All ports closed		15	0.23	
		A/B/R connection				
		P/A/B connection				
4F7	2-position	Single solenoid	Rc3/4 Rc1	-	-	160
		Double solenoid				
	3-position	All ports closed				
		A/B/R connection				
		P/A/B connection				

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

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
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

Discrete
Explosion proof 5 port pilot operated valve

Discrete valve

How to order

● Explosion proof 5 port valve

A Model no. **4F3** **1** **0 E** **08** **T** **P** **P** **X** **AC100V**

B Solenoid position

C Port size

D Junction box

E Option

F Heat proof class

G Voltage

Note 1

		A Model no.				
		4 F 3	4 F 4	4 F 5	4 F 6	4 F 7
Symbol	Descriptions					
B 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	●	●	●	●	●
C Port size						
08	Rp1/4 (4F3), Rc1/4	●	●			
10	Rp3/8 (4F3), Rc3/8	●	●	●		
15	Rc1/2			●	●	
20	Rc3/4				●	●
25	Rc1					●
D Junction box						
T	Conduit screw connection method (standard)	●	●	●	●	●
G	Pressure proof packing protective tube screw-in type (option) Note 3	●	●	●	●	●
E Option						
Blank	No option	●	●	●	●	●
K	External pilot Note 4		●	●	●	●
P	Mounting bracket L (4F3 2-position single solenoid) Mounting bracket U (4F4 to 4F7)	●	●	●	●	●
P1	Mounting bracket U (2-position double solenoid and 3-position)	●				
H	Check valve attached (3-position all ports closed dedicated)	●	●	●	●	●
N	Plug attached (3 port valve)	●	●	●	●	●
R	Manual override position change	●				
NC	Plug assembly (C1: A, E1: R1)	●	●	●	●	●
NO	Plug assembly (C2: B, E2: R2)	●	●	●	●	●
F Heat proof class						
Blank	A (standard products)	●	●	●	●	●
X	H (option)	●	●	●	●	●
G Voltage						
AC100V	100 VAC (50/60Hz), 110 VAC 60Hz	●	●	●	●	●
AC200V	200 VAC (50/60Hz), 220 VAC 60Hz	●	●	●	●	●
DC24V	24 VDC	●	●	●	●	●
DC12V	12 VDC	●	●	●	●	●
AC110V	110 VAC (50/60Hz)	●	●	●	●	●
AC220V	220 VAC (50/60Hz)	●	●	●	●	●



Note on model no. selection

Note 1: Following voltage products are available as custom order.
(Voltage not listed is not available.)

Voltage	AC (V) (50/60Hz)	12, 24, 48, 115, 120, 125, 127, 210, 230, 240, 250, 380
	[VDC]	45, 48, 80, 100, 110, 125

Note 2: Order the coil as the pilot actuator assembly.

Note 3: Select the cable for the G type from the cables below to ensure explosion-proof performance.

Type of cable	Conductor number	Nominal section area	Strand description	Finish diameter
Polyethylene cable (EV)	2-conductor	2 mm ²	7/0.6	ø10.5
600V vinyl insulated vinyl sheath cable (VV)	2-conductor	2 mm ²	7/0.6	ø10.5
Control vinyl insulated vinyl sheath cable (CVV)	2-conductor	2 mm ²	7/0.6	ø10.5

Note 4: Consult with CKD when using for external pilot (K) vacuum pressure, cylinder port pressure, or exhaust pressure.

<Example of model number>

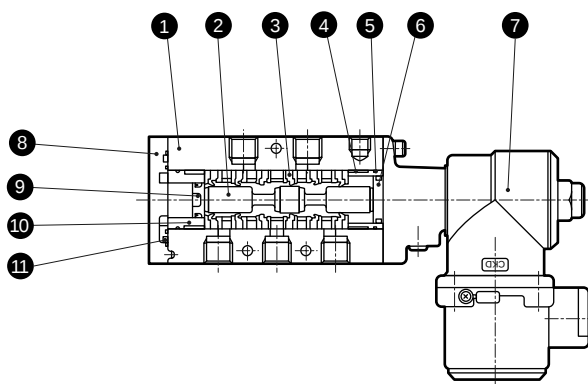
4F410E-10-GP-P-X-AC100V

- A** Model : Explosion proof 5 port pilot operated valve
B Solenoid position: 2-position single solenoid
C Port size : Rc3/8
D Junction box : Pressure proof packing protective tube screw-in type
E Option : Mounting bracket U
F Heat proof class : H
G Voltage : 100 VAC

Internal structure and parts list

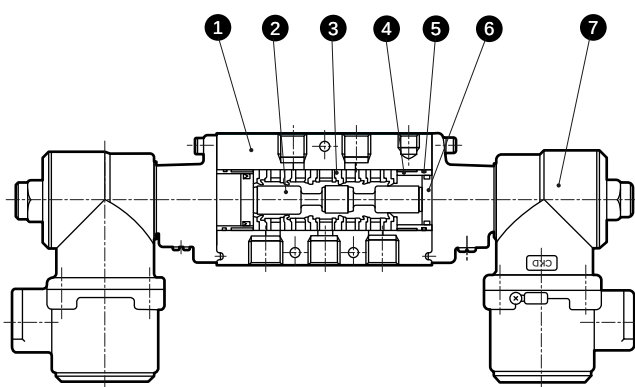
4F310E

● 2-position single solenoid



4F320E

● 2-position double solenoid



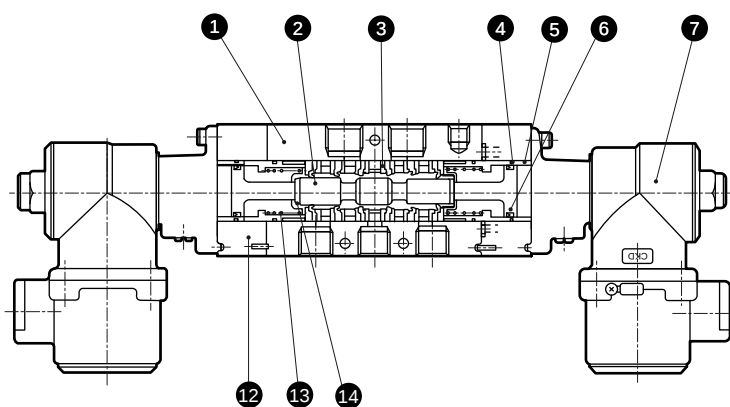
4F330E/4F340E/4F350E

● 3-position

All ports closed

A/B/R connection

P/A/B connection



Main parts list

No.	Parts name	Material
1	Body	Aluminum alloy die-casting
2	Spool	Aluminum alloy
3	Sealant assembly	-
4	Cylinder (A)	Aluminum alloy
5	O ring	Nitrile rubber
6	Piston assembly (A)	-
7	Actuator assembly	Note 1
8	Cap	Aluminum alloy die-casting
9	Piston assembly (B)	-
10	Cylinder (B)	Aluminum alloy
11	Gasket	Nitrile rubber
12	Body block	Aluminum alloy die-casting
13	Spring	Piano wire
14	Spring retainer	Stainless steel

Repair parts list

No. / parts name	3	6	9
Model no.	Sealant assembly	Piston assembly (A)	Piston assembly (B)
4F310E	4F9-106	4F9-104	4F9-103
4F320E			-
4F330E		4F9-114	-
4F340E			-
4F350E			-

Note 1 (actuator assembly model no.)

4F310E-① P-② -③

Select from how to order on page 1162.

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*0E
HMV
HSV
2QV
3QV
SKH
PCD/ FS/FD
Ending

Discrete
Explosion proof 5 port pilot operated valve

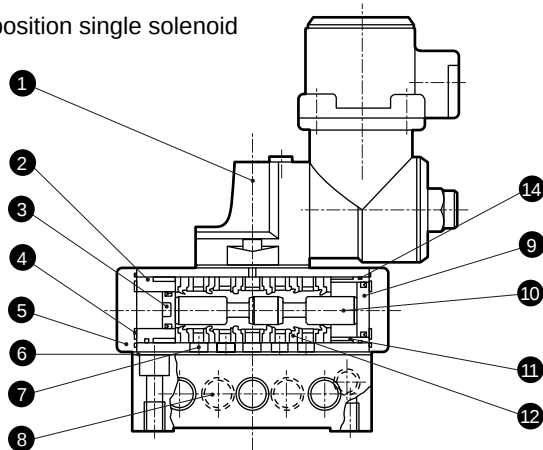
4F4*0E/4F5*0E Series

Discrete valve: Sub-plate porting

Internal structure and parts list

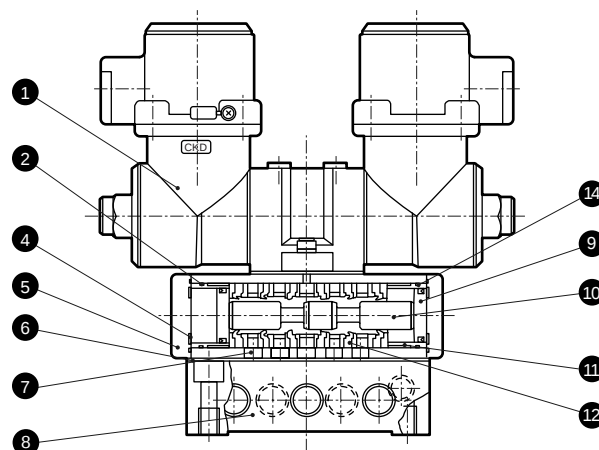
4F410E 4F510E

● 2-position single solenoid



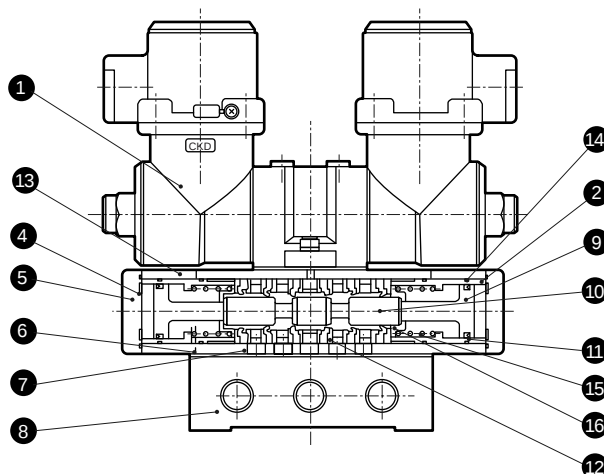
4F420E 4F520E

● 2-position double solenoid



4F430E/4F530E 4F440E/4F540E 4F450E/4F550E

● 3-position
All ports closed
A/B/R connection
P/A/B connection



Main parts list

No.	Parts name	Material
1	Actuator assembly	Note 1
2	Cylinder (B)	Aluminum alloy
3	Piston assembly (B)	-
4	Gasket	Nitrile rubber
5	Cap	Aluminum alloy die-casting
6	Sub-plate gasket	Nitrile rubber
7	Body	Aluminum alloy die-casting
8	Sub-plate	Aluminum alloy die-casting
9	Piston assembly (A)	-
10	Spool	Aluminum alloy
11	Cylinder (A)	Aluminum alloy
12	Sealant assembly	-
13	Body block	Aluminum alloy die-casting
14	O ring	Nitrile rubber
15	Spring	Piano wire
16	Spring retainer	Stainless steel

Repair parts list

No. / parts name Model no.	9 Piston assembly (A)	12 Sealant assembly	3 Piston assembly (B)
4F410E	4F9-104	4F9-106	4F9-103
4F420E			-
4F430E	4F9-114		-
4F440E		4F9-107	-
4F450E	4F9-108		4F9-109
4F510E			-
4F520E	4F9-115		-
4F530E			-
4F540E			-
4F550E			-

Note 1 (actuator assembly)

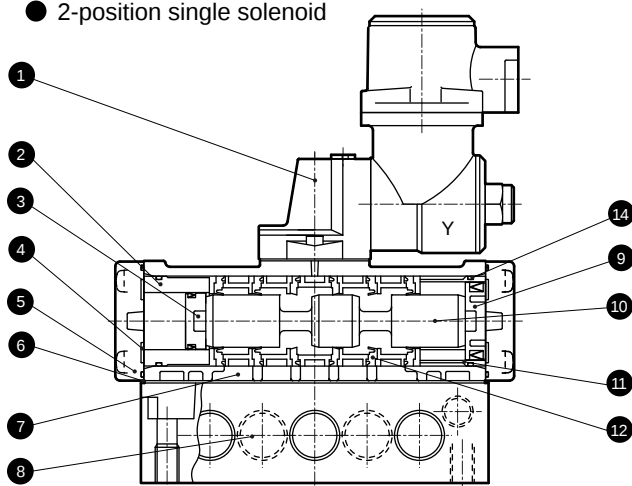
4F**0E- (D) P- (F) - (G)

Select from how to order on page 1162.

Internal structure and parts list

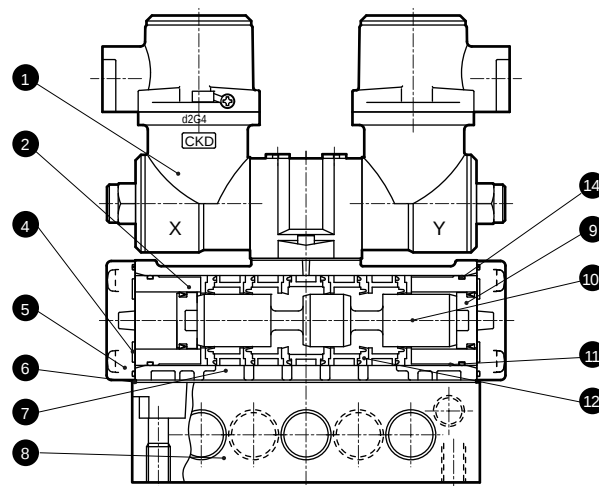
4F610E 4F710E

● 2-position single solenoid



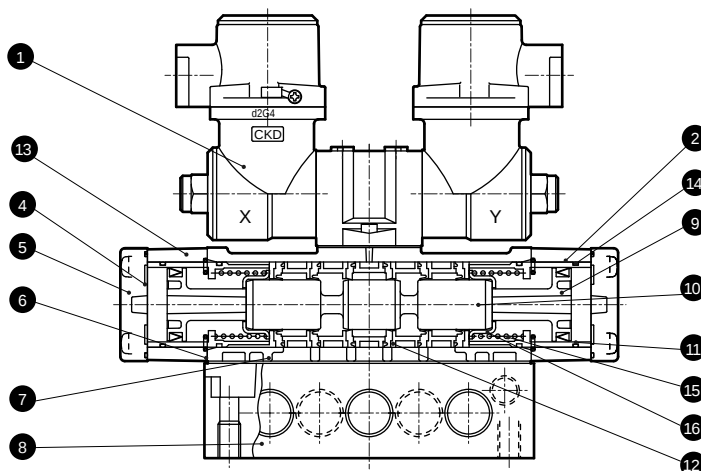
4F620E 4F720E

● 2-position double solenoid



4F630E/4F730E 4F640E/4F740E 4F650E/4F750E

● 3-position
All ports closed
A/B/R connection
P/A/B connection



Main parts list

No.	Parts name	Material
1	Actuator assembly	Note 1
2	Cylinder (B)	Aluminum alloy
3	Piston assembly (B)	-
4	Gasket	Nitrile rubber
5	Cap	Aluminum alloy die-casting
6	Sub-plate gasket	Nitrile rubber
7	Body	Aluminum alloy die-casting
8	Sub-plate	Aluminum alloy die-casting
9	Piston assembly (A)	-
10	Spool	Aluminum alloy
11	Cylinder (A)	Aluminum alloy
12	Sealant assembly	-
13	Body block	Aluminum alloy die-casting
14	O ring	Nitrile rubber
15	Spring	Piano wire
16	Spring retainer	Stainless steel

Repair parts list

No. / parts name	9	12	3
Model no.	Piston assembly (A)	Sealant assembly	Piston assembly (B)
4F610E	4F9-117	4F9-118	4F9-116
4F620E	-		-
4F630E	4F9-122		-
4F640E	4F9-121		-
4F650E	-	4F9-119	4F9-120
4F710E	4F9-123		-
4F720E	-		-
4F730E	4F9-123		-
4F740E	-	-	-
4F750E	-	-	-

Note 1 (actuator assembly)

4F**0E- (D) P- (F) - (G)

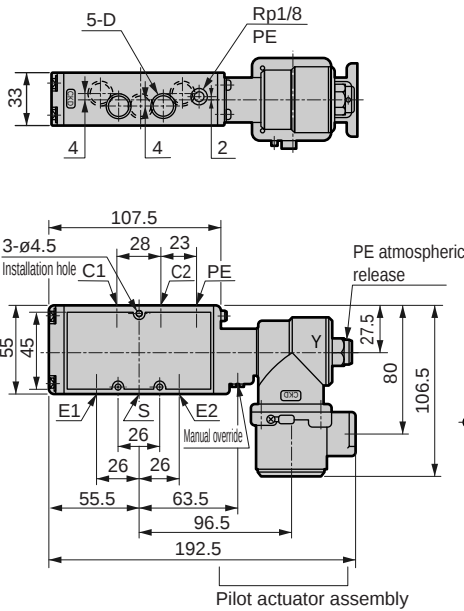
Select from how to order on page 1162.

Dimensions



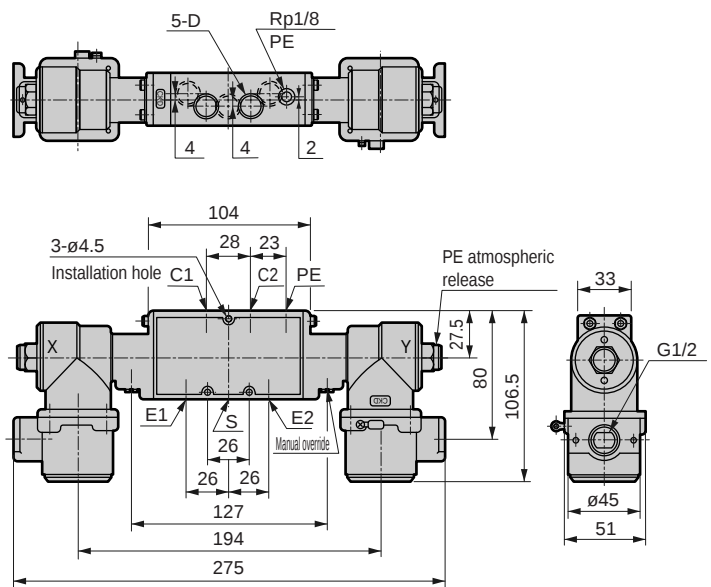
4F310E

- 2-position single solenoid



4F320E

- 2-position double solenoid



4F330E

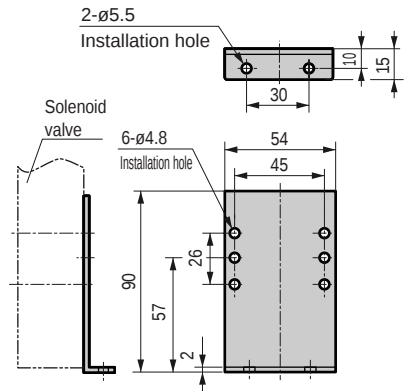
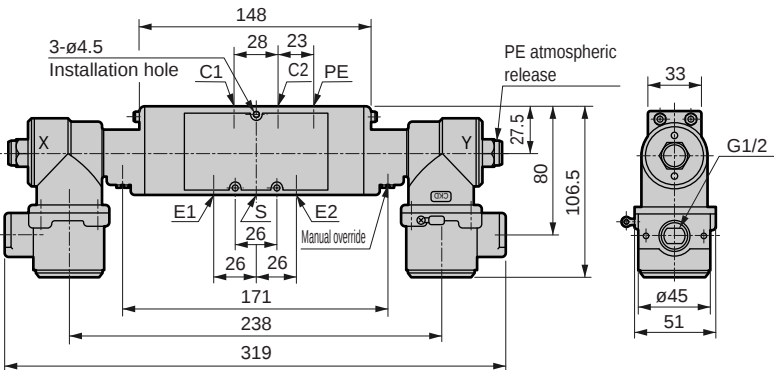
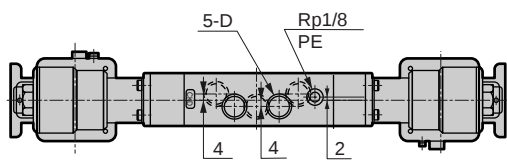
- 3-position all ports closed

4F340E

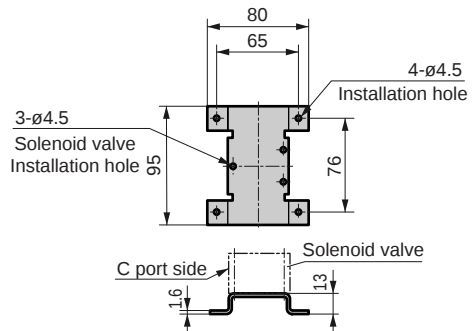
- 3-position A/B/R connection

4F350E

- 3-position P/A/B connection



● U type mounting bracket (P1)



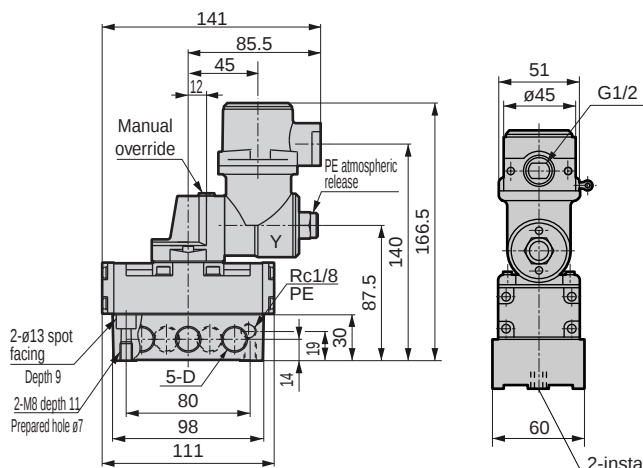
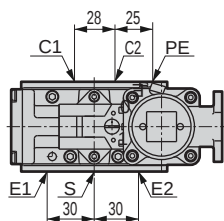
Model no.	D
*-08	Rp1/4
*-10	Rp3/8

Dimensions



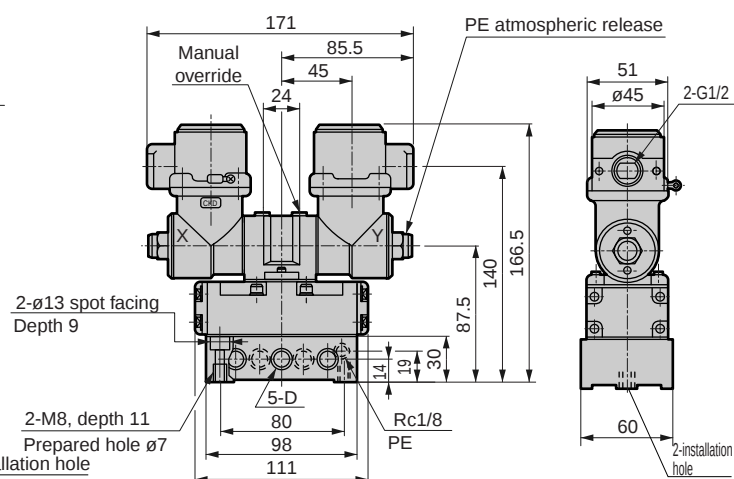
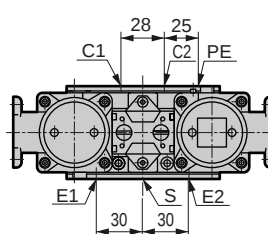
4F410E

- 2-position single solenoid



4F420E

- 2-position double solenoid



4F430E

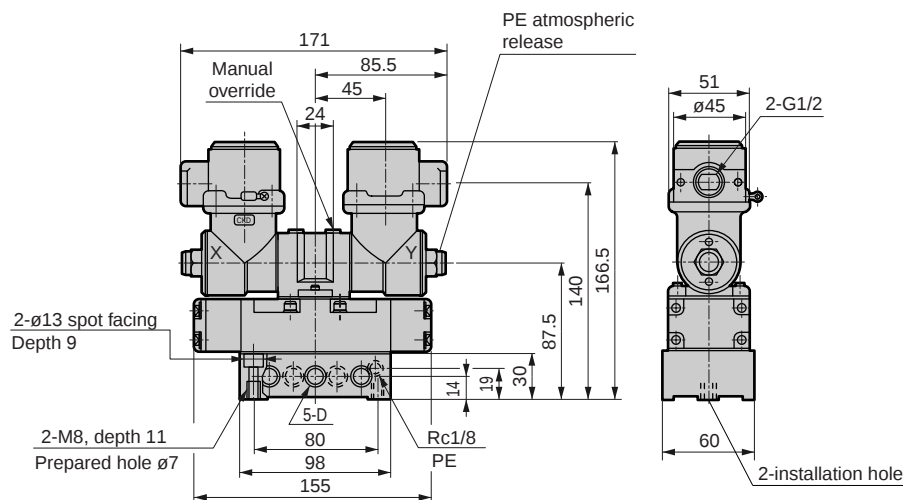
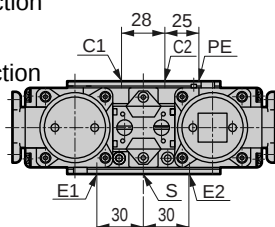
- 3-position all ports closed

4F440E

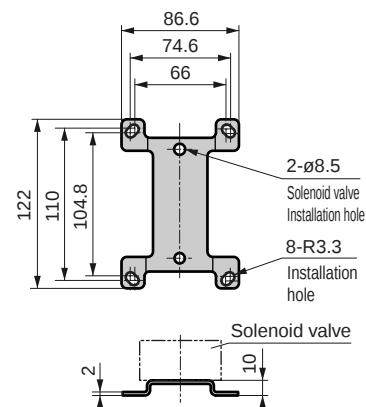
- 3-position A/B/R connection

4F450E

- 3-position P/A/B connection



- U type mounting bracket (P)



Model no.	D
*-08	Rc1/4
*-10	Rc3/8

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*0E
HMV
HSV
2QV
3QV
SKH
PCD/ FS/FD
Ending

4F5*0E Series

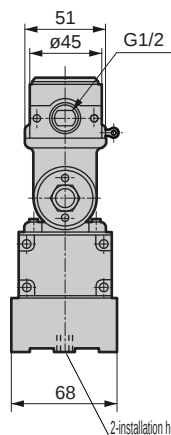
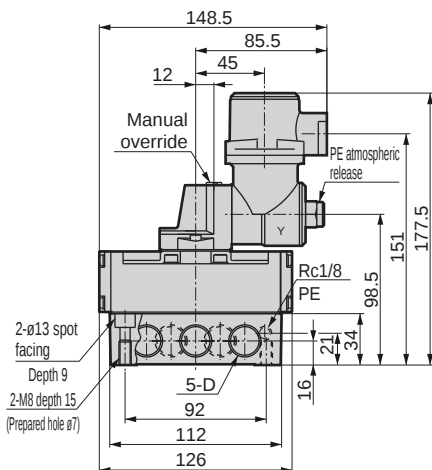
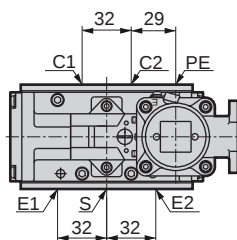
Discrete valve: Sub-plate porting

Dimensions



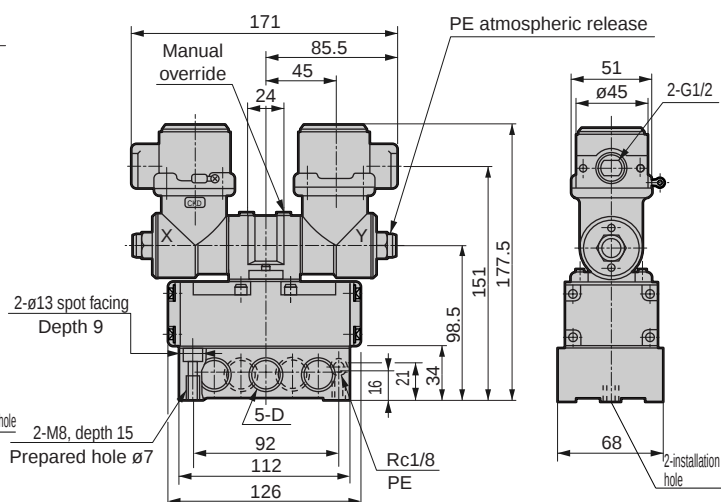
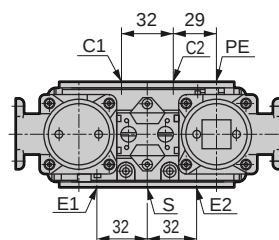
4F510E

● 2-position single solenoid



4F520E

● 2-position double solenoid



4F530E

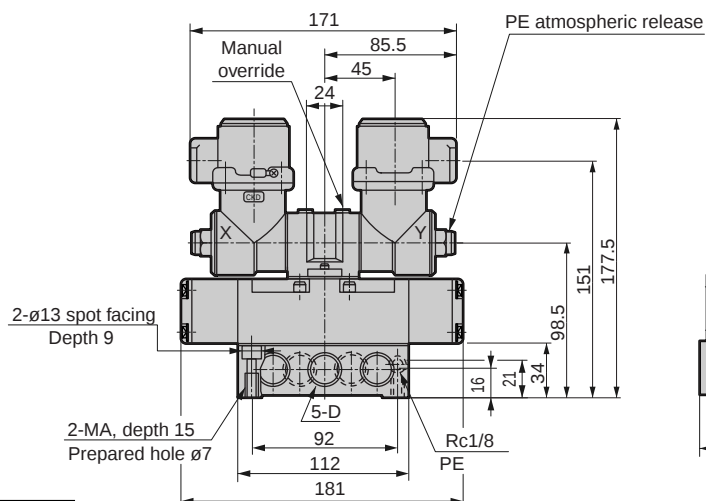
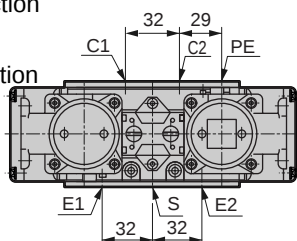
● 3-position all ports closed

4F540E

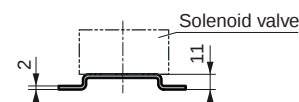
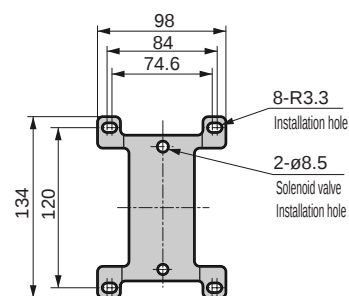
● 3-position A/B/R connection

4F550E

● 3-position P/A/B connection



● U type mounting bracket (P)



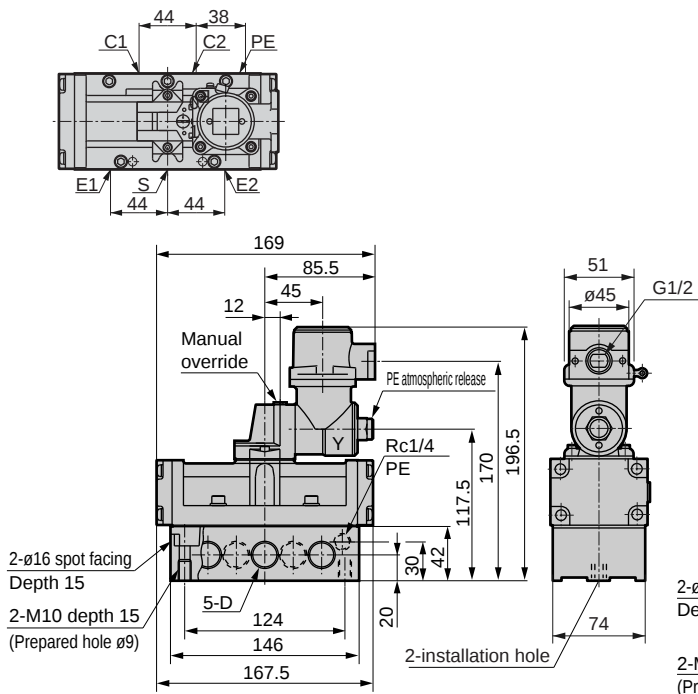
Model no.	D
*-10	Rc3/8
*-15	Rc1/2

Dimensions



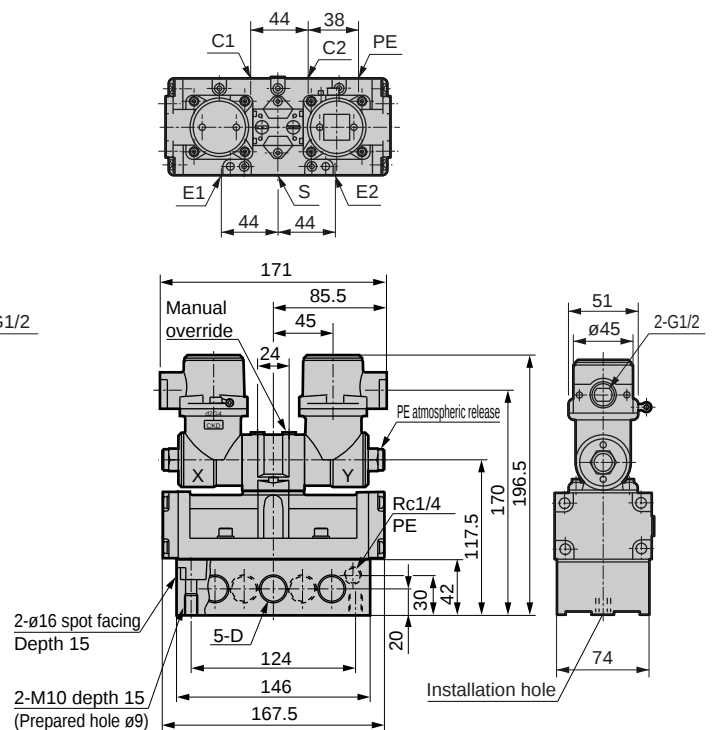
4F610E

- 2-position single solenoid



4F620E

- 2-position double solenoid



4F630E

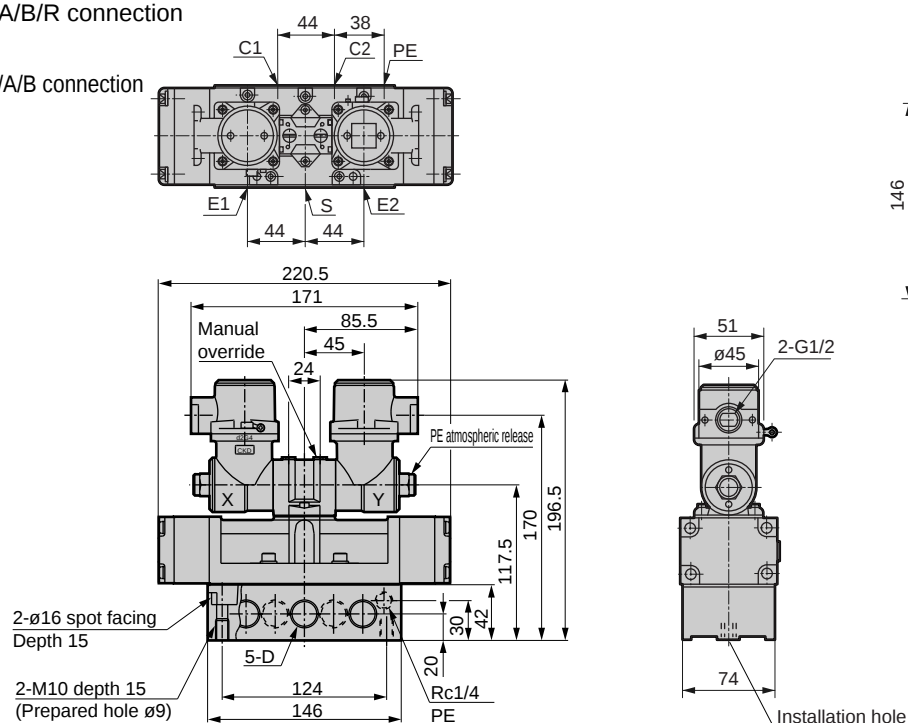
- 3-position all ports closed

4F640E

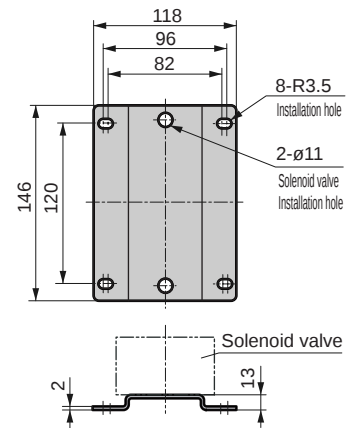
- 3-position A/B/R connection

4F650E

- 3-position P/A/B connection



- U type mounting bracket (P)



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*0E
HMV HSV
2QV 3QV
SKH
PCD/ FS/FD
Ending

Model no.	D
*-15	Rc1/2
*-20	Rc3/4

4F7*0E Series

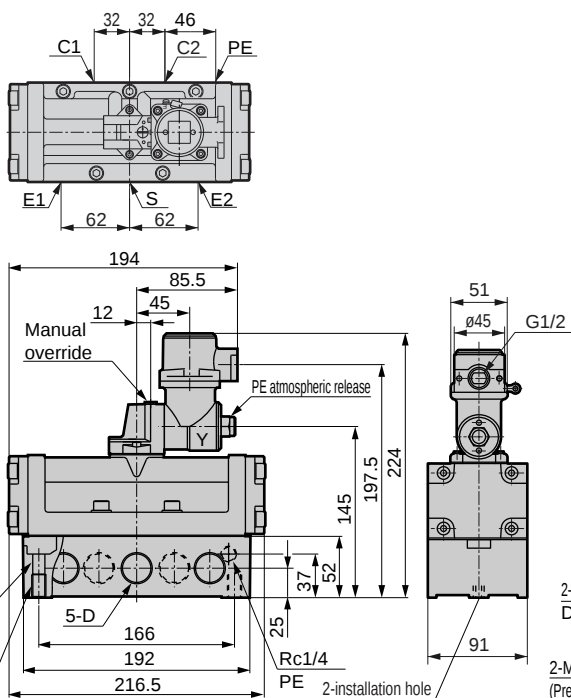
Discrete valve: Sub-plate porting

Dimensions



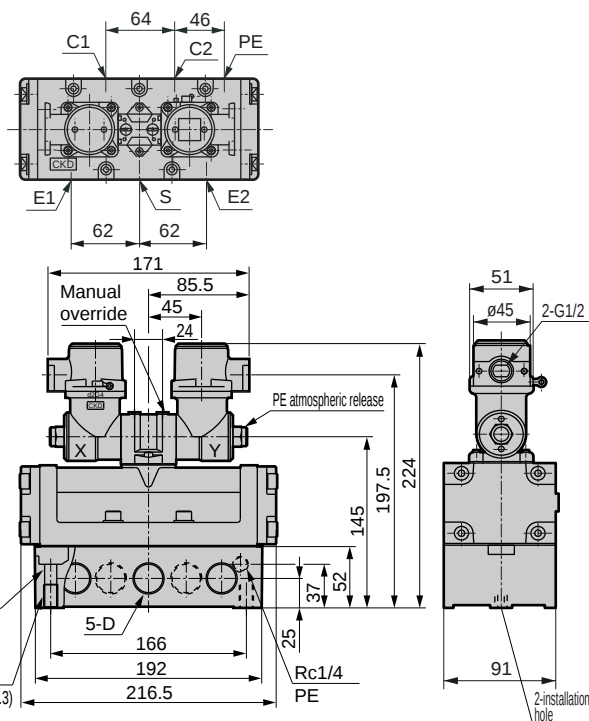
4F710E

● 2-position single solenoid



4F720E

● 2-position double solenoid



4F730E

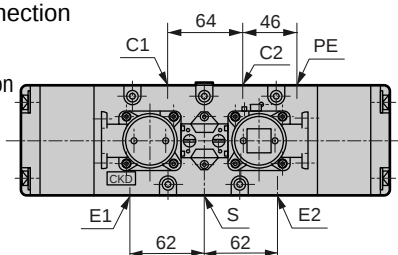
● 3-position all ports closed

4F740E

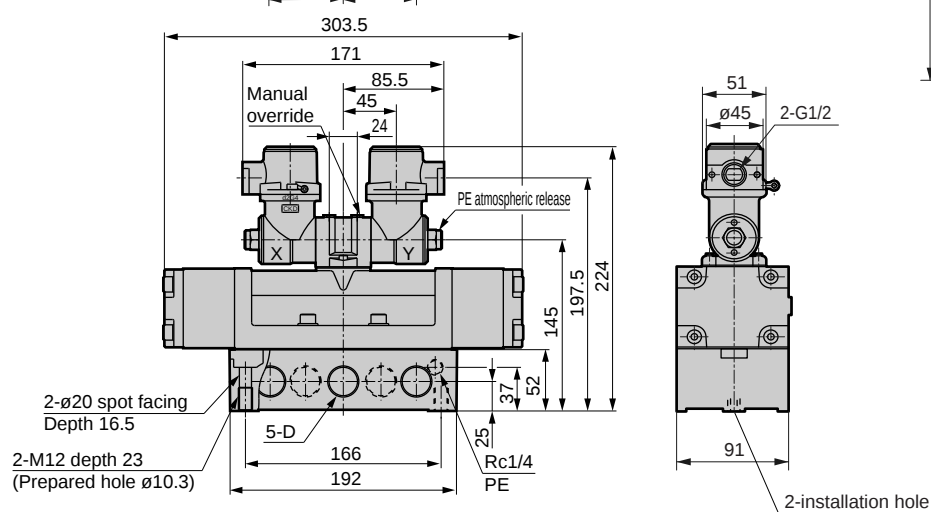
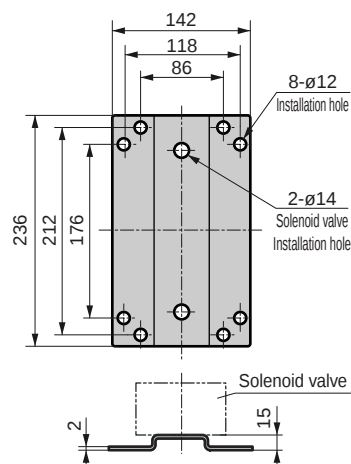
● 3-position A/B/R connection

4F750E

● 3-position P/A/B connection



● U type mounting bracket (P)

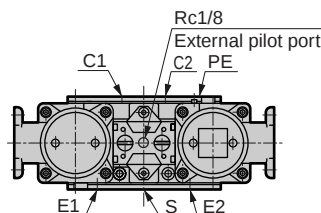
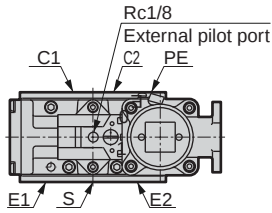


Model no.	D
*-20	Rc3/4
*-25	Rc 1

Dimensions

4F4 to 4F7

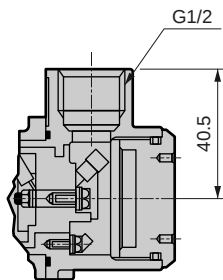
● External pilot port: (K)



*The external pilot port position is common for 4F4 to 4F7.

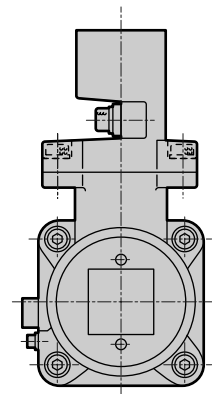
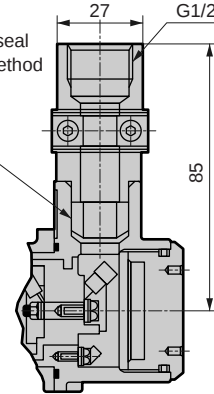
Junction box

T type (standard)
Conduit screw connection method



G type (option)
Pressure proof packing seal
Protective tube screw method

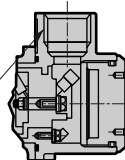
Pressure proof packing seal



<Safety precautions>

T type (standard)
Conduit screw connection method

When using outdoors, use a thick steel conduit so that water does not enter from threads, and check seals, etc.

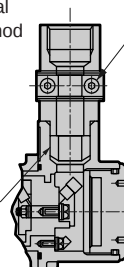


After piping outdoors, check that water will not enter even if left outside without electrical piping.
(Water could enter into the wiring box.)

G type (option)
Pressure proof packing seal
Protective tube screw method

This is an indoor dedicated type.

Pressure proof packing seal



The structure prevents the entry of water into the valve, but water could enter into the cable between the valve and terminal box.
When used for a long time, the pressure resistant packing could deteriorate and cause water to enter the valve. This type is designated for indoor use.

Select the cable for the G type from the cables below to ensure explosion-proof performance.

Type of cable	Conductor number	Nominal section area	Strand description	Finish diameter
Polyethylene cable (EV)	2-conductor	2 mm ²	7/0.6	ø10.5
600V vinyl insulated vinyl sheath cable (VV)	2-conductor	2 mm ²	7/0.6	ø10.5
Control vinyl insulated vinyl sheath cable (CVV)	2-conductor	2 mm ²	7/0.6	ø10.5

Manual override

The manual override is provided with a lock. Turn it off when not in use. Turn the lock with a flat tip screwdriver to enable manual override.

- 4F3 C: OFF Align characters with arrow
O: ON Turn in the direction of the arrow until the lock stops.
(The arrow and "O" may not necessarily be aligned.)

● 4F4/5/6/7

- ... OFF Align • with numbers
1 ... ON Turn in the direction of 1 until the dial lock stops.
(The • mark and 1 may not necessarily be aligned)

