

Discrete valve
Pilot operated explosion-proof 5-port valve pneumatic valve

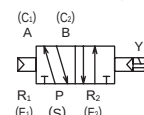
4F**0EX Series

- Pressure and explosion proof construction ExdIIBT4 (group IIB/temperature class T4)
- Japan Conformity Certificate No. TC20523
- Korea Conformity Certificate No. 15-AV4BO-0389
- Taiwan Conformity Certificate No. ITRI (2015) No. 00216X
- China Conformity Certificate No. (CCC) 2020322307002070
- China explosion-proof type (NEPSI) GYB20.2251X
- Cylinder bore size: ø63 to ø250

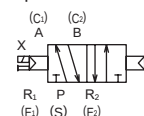


JIS symbol

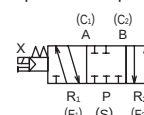
2-position/single



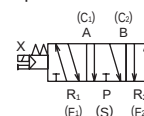
2-position/double



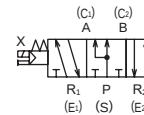
3-position/all ports closed



3-position/ABR connection



3-position/PAB connection



Common specifications

Item	Description
Valve and operation	Pilot operated soft spool valve
Working fluid	Compressed air
Max. working pressureMPa	1.0
Min. working pressureMPa	Refer to Individual specifications listed below
Proof pressure MPa	1.5
Ambient temperature°C (*1)	-10 to 60(no freezing)
Fluid temperature °C	5 to 60
Lubrication	Not required (use turbine oil ISO VG32 if necessary for lubrication)
Explosion-proof performance (*2)	ExdIIBT4X
Manual override	Locking
Vibration resistancecm/s ²	50 or less
Shock resistancecm/s ²	300 or less
Atmosphere	Cannot be used in corrosive gas environment.

*1:The ambient temperature indicates the temperature for storage and upon installation, which will differ from the fluid temperature during operation.

*2:The display of "X" for explosion-proof performance Exd IIB T4X, with "A2-70 bolt strength category (bolts used in actuator assembly only)" and "allowable cable temperature of 85°C or more" has been omitted.

*X is not indicated on the certification by regulations.

Electrical specifications

Item	Description
Rated voltage	AC 100V,200V,110V,220V(50/60Hz)
DC	24V,12V
Rated voltage fluctuation range	±10%
Starting current	AC 100V 0.186/0.135
200V	0.093/0.068
110V	0.169/0.123
220V	0.085/0.061
A DC	24V 0.166
12V	0.332
Holding current	AC 100V 0.06/0.05
200V	0.03/0.025
110V	0.055/0.045
220V	0.027/0.023
A DC	24V 0.166
12V	0.332
Power consumption W	AC 100V 4.5/4
200V	4.5/4
110V	4.5/4
220V	4.5/4
DC	24V 4
12V	4
Thermal class	H

Individual specifications

Item			4F3	4F4	4F5	4F6	4F7
Min. working pressure MPa	2-position	Single	0.1	0.1	0.1	0.15	0.15
		Double					
	3-position	All ports closed	0.15	0.15	0.15		
		A/B/R connection					
		P/A/B connection					
Port size *1	Air 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)

*1: NPT threads can also be used for 4F3 to 7 piping ports. Contact CKD for details.
(However, the external wire inlet is G1/2. Consult with CKD regarding NPT threads.)

Performance/characteristics by model

Item	4F3	4F4	4F5	4F6	4F7
Response time *1 ms	100	120	140	400	600

*1 : The response time is the value at 0.5 MPa working pressure, with no lubrication, and with the power ON. It depends on the pressure and the lubricant quality.

Weight

Item	4F3	4F4	4F5	4F6	4F7
Weight kg	0.92	1.27	1.53	2.20	3.74
2-position	Single				
Double	1.48	1.85	2.14	2.82	4.34
3-position	1.69	2.02	2.40	3.20	5.36

Flow characteristics

Model No.	Solenoid position		Port size	C[dm³/(s·bar)]	b	S(mm²)
4F3	2-position	Single	Rp1/4	3.9	0.42	-
		Double				
	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	Rp3/8	5.8	0.42	
		Double				
	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		Rc1/4 Rc3/8	5.0	0.21
		Double				
	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	Rc3/8 Rc1/2	10.0
Double						
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	Rc1/2 Rc3/4	18.0	0.31	-
		Double				
	3-position	All ports closed		15.0	0.23	
		A/B/R connection				
		P/A/B connection				
4F7	2-position	Single	Rc3/4 Rc1	-	-	160
		Double				
	3-position	All ports closed				
		A/B/R connection				
		P/A/B connection				

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

Specifications for rechargeable battery

- For use in the rechargeable battery manufacturing process, materials used for air path and sliding section are limited; inquire with CKD for model numbers.

4GA/B
M4GA/B
MN4GA/B
4GA/B (master)
4GB With sensor
4GD/E
M4GD/E
MN4GD/E
4GA4/B4
MN3E
MN4E
W4GA/B2
W4GB4
MN3S0
MN4S0
4SA/B0
4KA/B
4KA/B (master)
4F
4F (master)
PV5G
GMF
PV5
GMF
PV5S-0
3Q
MV3QR
3MA/B0
3PA/B
P/M/B
NP/NAP
NVP
4G*0EJ
4F*0EX
4F*0E
HMV
HSV
2QV
3QV
SKH
Silencer
TotAirSys (Total Air)
TotAirSys (Gamma)
Ending

4F**0EX Series

Discrete valve

How to order

- Pilot operated explosion-proof 5-port valve



A Model No.

B Solenoid position

C Port size

D Applicable cable diameter (*1)

E Option

F Voltage (*2)

! Precautions for model No. selection

- *1: **G** For Explosion-proof certification institution "K R" and "T W", "9" is ø8. 5 to ø9. 5. Also, "13" cannot be selected.
- *2: Any explosion-proof certified voltage other than the listed voltage 220 VDC is a made to order supported.
- *3: Order coils as a pilot actuator assembly.
- *4: Consult with CKD when using vacuum with the external pilot (K), cylinder pressurizing and exhaust pressurizing.

[Example of model No.]

4F410EX-10-G10-P-AC100V

- A Model No. : Pilot operated explosion-proof 5-port valve
- B Solenoid position : 2-position single
- C Port size : Rc3/8
- D Applicable cable O.D. : ø9.5 to 10.5
- E Option : Installation feet U-bracket
- F Voltage : 100 VAC

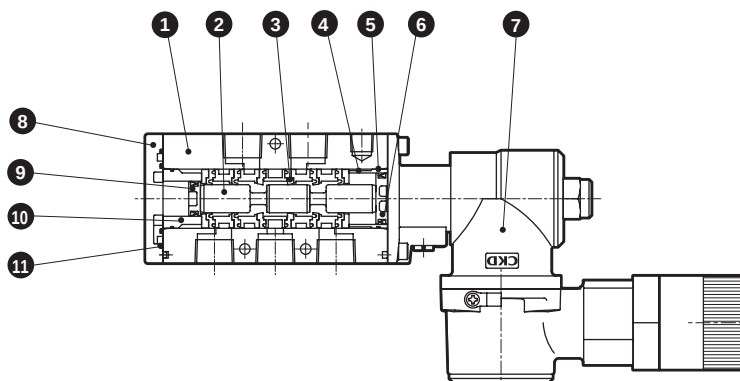
G Organizations for explosive-proof certification

Code	Description					
B Solenoid position						
1	2 position single	●	●	●	●	●
2	2-position double	●	●	●	●	●
3	3-position all ports closed	●	●	●	●	●
4	3-position ABR connection	●	●	●	●	●
5	3-position PAB connection	●	●	●	●	●
C Port size						
08	Rp1/4 (for 4F3), Rc1/4	●	●			
10	Rp3/8 (for 4F3), Rc3/8	●	●	●		
15	Rc1/2			●	●	
20	Rc3/4				●	●
25	Rc1					●
08N	NPT1/4	●	●			
10N	NPT3/8	●	●	●		
15N	NPT1/2			●	●	
20N	Rc3/4				●	●
25N	NPT1					●
08G	G1/4	●	●			
10G	G3/8	●	●	●		
15G	G1/2			●	●	
20G	G3/4				●	●
25G	G1					●
D Applicable cable O.D.						
9	ø7.5 to ø9.5	●	●	●	●	●
10	ø9.5 to ø10.5	●	●	●	●	●
11	ø10.5 to ø11.5	●	●	●	●	●
13	ø11.5 to ø13.5	●	●	●	●	●
E Option						
Blank	No option	●	●	●	●	●
P	Installation feet L-bracket (for 4F3 2-position single) Installation feet U-bracket (for 4F4 to 7)	●	●	●	●	●
P1	Installation feet U-bracket (for 2-position double solenoid/3-position)	●				
H	Check valve attached (only applicable to 3-position all ports closed)	●	●	●	●	●
N	Plug included (for 3-port valve)	●	●	●	●	●
R	Position change of manual override	●				
NC	3-port valve specifications plug assembly (C1:A, E1:R1 assembly)	●	●	●	●	●
NO	3-port valve specifications plug assembly (C2:B, E2:R2 assembly)	●	●	●	●	●
F Voltage						
AC100V	100 VAC (50/60 Hz)	●	●	●	●	●
AC200V	200 VAC (50/60 Hz)	●	●	●	●	●
DC24V	24 VDC	●	●	●	●	●
DC12V	12 VDC	●	●	●	●	●
AC110V	110 VAC (50/60Hz)	●	●	●	●	●
AC220V	220 VAC (50/60 Hz)	●	●	●	●	●
* Other made-to-order products						
[AC voltage]						
12V,24V,48V,115V,120V,125V		●	●	●	●	●
127V,210V,230V,240V,250V,380V						
[DC voltage]						
45V,48V,80V,100V,110V,125V		●	●	●	●	●
G Organizations for explosive-proof certification						
Blank	Japan certification (TIIS)	●	●	●	●	●
KR	Korea certification (KOSHA)	●	●	●	●	●
TW	Taiwan certification (ITRI)	●	●	●	●	●
CN	China certification (CCC)	●	●	●	●	●

Internal structure and parts list

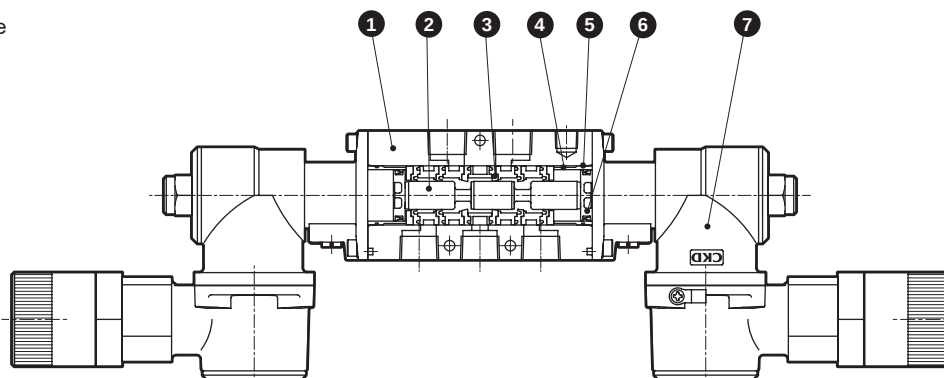
4F310EX

● 2-position single



4F320EX

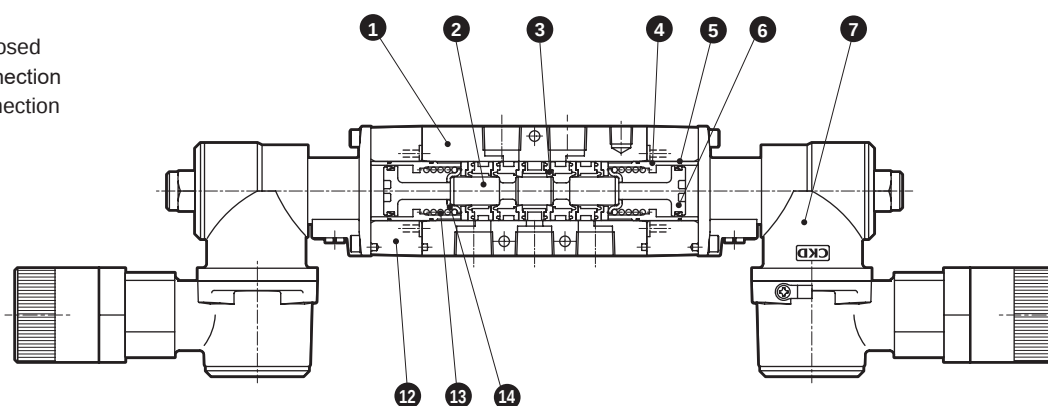
● 2-position double



4F330EX/4F340EX/4F350EX

● 3-position

All ports closed
A/B/R connection
P/A/B connection



Main parts list

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

Repair parts list

No./part name	3 6 9	3	6	9
Model No.	Repair parts kit	Sealant Assy	Piston Assy (A) (L)	Piston Assy (B) (S)
4F310EX	4F310-K	4F9-106	4F9-104	4F9-103
4F320EX	4F320-K		-	
4F330EX	4F330-K		4F9-114	-
4F340EX				-
4F350EX				-

*1 (Actuator assembly model No.)
4F330EX-G(D)-F
Select from How to order on page 1784.

4GA/B
M4GA/B
MN4GA/B
4GA/B (master)
4GB With sensor
4GD/E
M4GD/E
MN4GD/E
4GA4/B4
MN3E
MN4E
W4GA/B2
W4GB4
MN3S0
MN4S0
4SA/B0
4KA/B
4KA/B (master)
4F
4F (master)
PV5G
GMF
PV5
GMF
PV5S-0
3Q
MV3QR
3MA/B0
3PA/B
P/M/B
NP/NAP
NVP
4G*0EJ
4F*0EX
4F*0E
HMV
HSV
2QV
3QV
SKH
Silencer
TotAirSys (Total Air)
TotAirSys (Gamma)
Ending

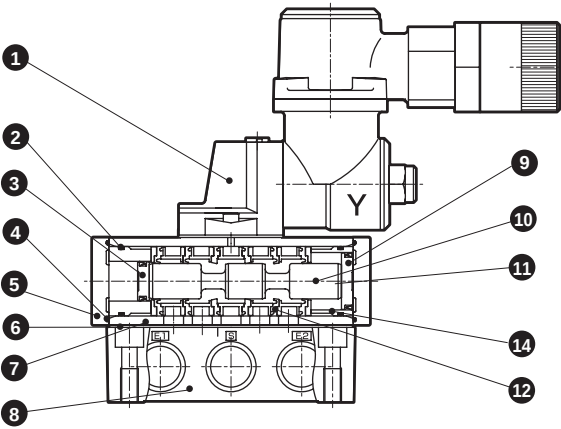
45674F0EX Series

Discrete valve; sub-plate piping

Internal structure and parts list

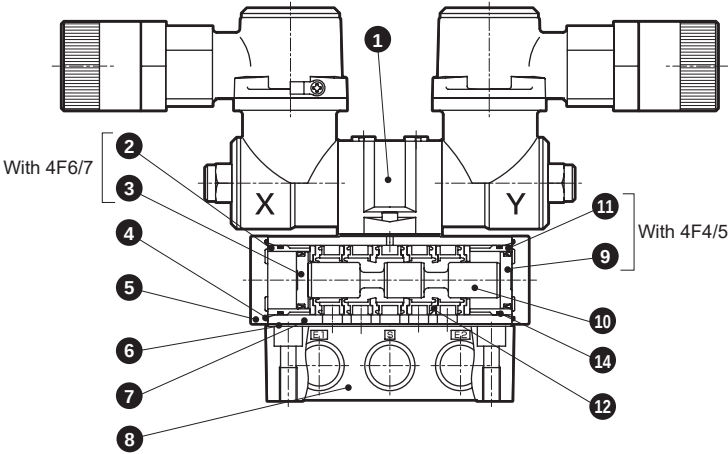
4F10EX

● 2-position single



4F20EX

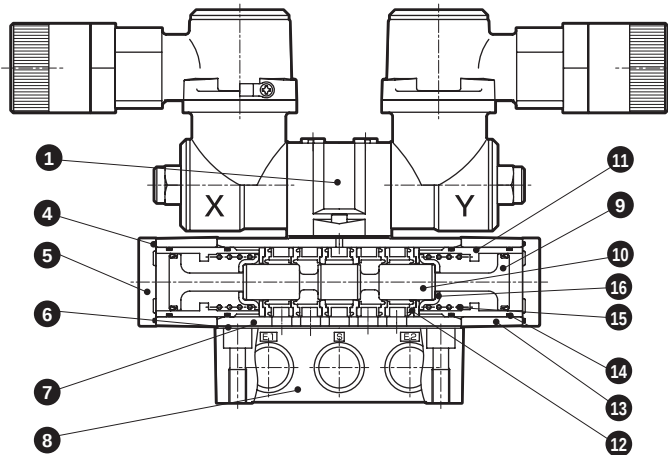
● 2-position double



4F30EX/4F40EX

4F50EX

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



Main parts list

No.	Part name	Material
1	Actuator assembly	(*1)
2	Cylinder (B) (small)	Aluminum alloy
3	Piston assembly (B) (small)	-
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) (large)	-
10	Spool	Aluminum alloy
11	Cylinder (A) (large)	Aluminum alloy
12	Sealant assembly	-
13	Body block	Aluminum alloy die-casting
14	O-ring	Nitrile rubber
15	Spring	Piano wire
16	Spring seat	Stainless steel

*1 (Actuator assembly)
4F420EX-G (D) - (F)
Select from How to order on page 1784.

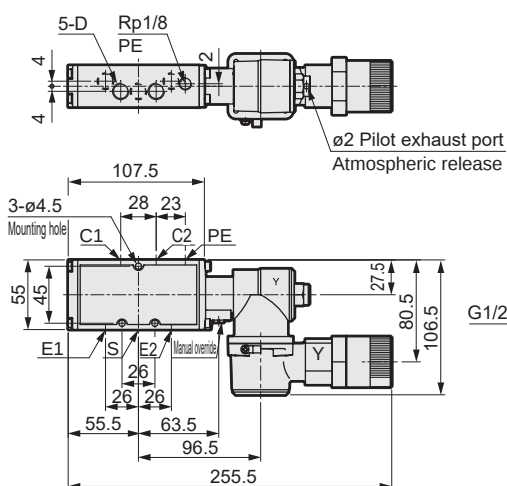
Repair parts list

No./part name	9 12 3	9	12	3
Model No.	Repair parts kit	Piston Assy (A) (L)	Sealant Assy	Piston Assy (B) (S)
4F410EX	4F410-K	4F9-104	4F9-106	4F9-103
4F420EX	4F420-K			-
4F430EX	4F430-K	4F9-114		-
4F440EX				-
4F450EX			4F9-107	4F9-109
4F510EX	4F510-K	4F9-108		-
4F520EX	4F520-K			-
4F530EX				-
4F540EX	4F530-K	4F9-115	4F9-118	-
4F550EX				-
4F610EX	4F610-K	4F9-117		4F9-116
4F620EX	4F620-K	-		-
4F630EX			4F9-119	-
4F640EX	4F630-K	4F9-122		-
4F650EX				-
4F710EX	4F710-K	4F9-121		4F9-120
4F720EX	4F720-K	-		-
4F730EX				-
4F740EX	4F730-K	4F9-123		-
4F750EX				-

Dimensions

4F310EX

- 2-position single



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

4F330EX

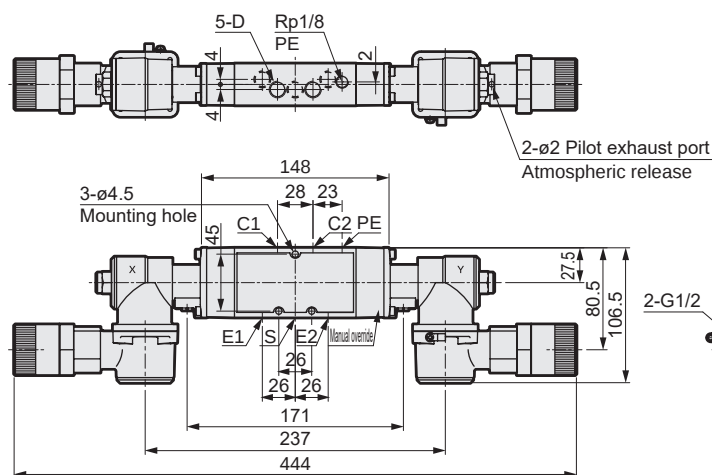
- 3-position all ports closed

4F340EX

- 3-position A/B/R connection

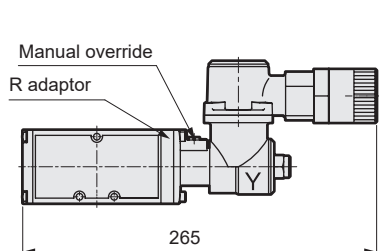
4F350EX

- 3-position P/A/B connection



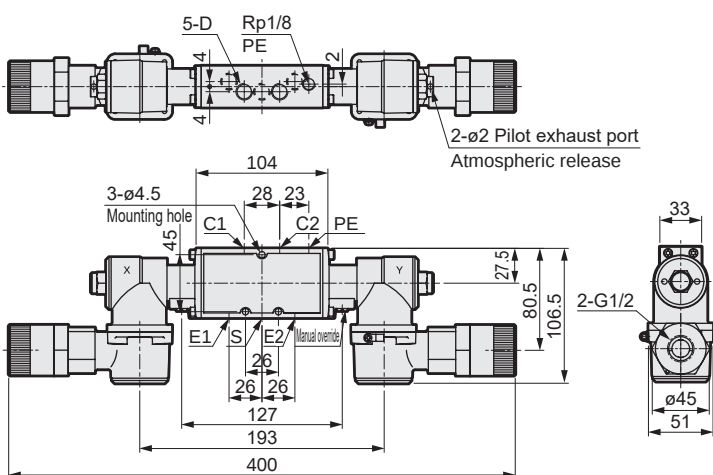
Model No.	D
*-08	Rp1/4
*-10	Rp3/8

- Position change of manual operating device (R)



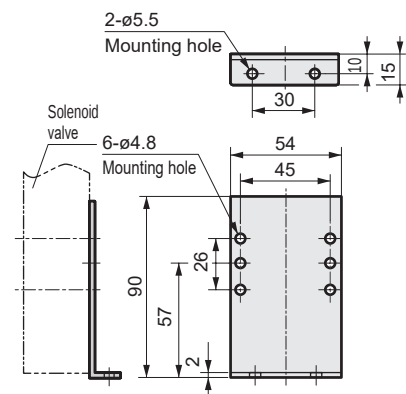
4F320EX

- 2-position double



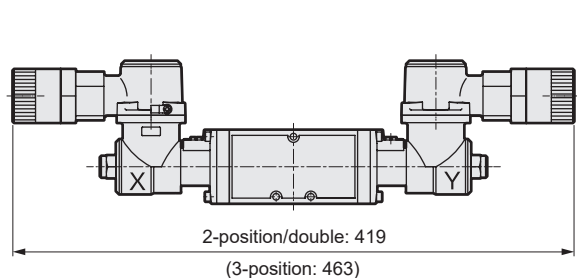
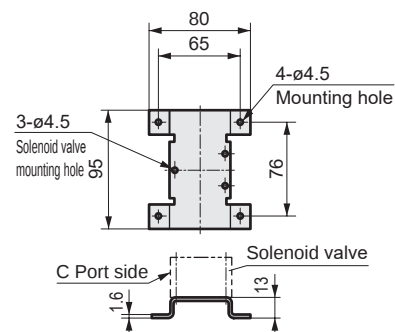
- L type installation feet (P) dedicated for single

Material: Cold-rolled steel plates
Zinc plated



- U type installation feet (P1)

Material: Cold-rolled steel plates
Zinc plated



4GA/B	
M4GA/B	
MN4GA/B	
4GA/B (master)	4GB With sensor
4GD/E	
M4GD/E	
MN4GD/E	
4GA4/B4	
MN3E MN4E	
W4GA/B2	
W4GB4	
MN3S0 MN4S0	
4SA/B0	
4KA/B	
4KA/B (master)	
4F	
4F (master)	
PV5G GMF	
PV5 GMF	
PV5S-0	
3Q	
MV3QR	
3MA/B0	
3PA/B	
P/M/B	
NP/NAP NVP	
4G*0EJ	
4F*0EX	
4F*0E	
HMV HSV	
2QV 3QV	
SKH	
Silencer	
TotalAirSys (Total Air)	
TotalAirSys (Gamma)	
Ending	

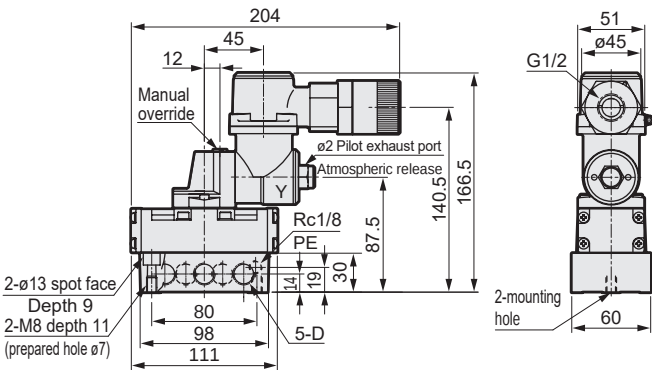
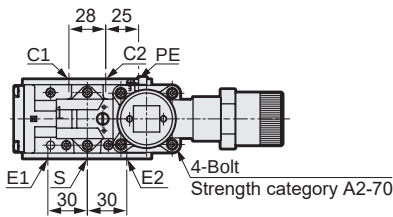
4F4*0EX Series

Discrete valve; sub-plate piping

Dimensions

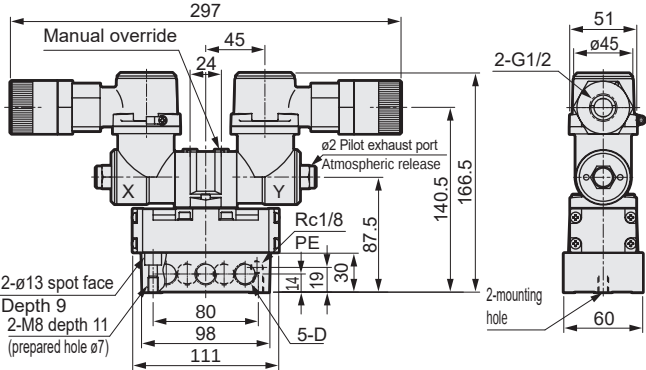
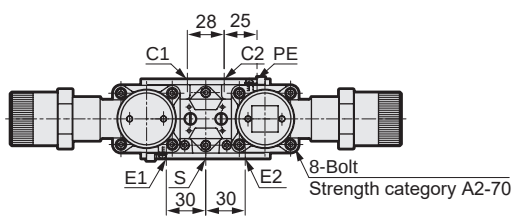
4F410EX

● 2-position single



4F420EX

● 2-position double



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

4F430EX

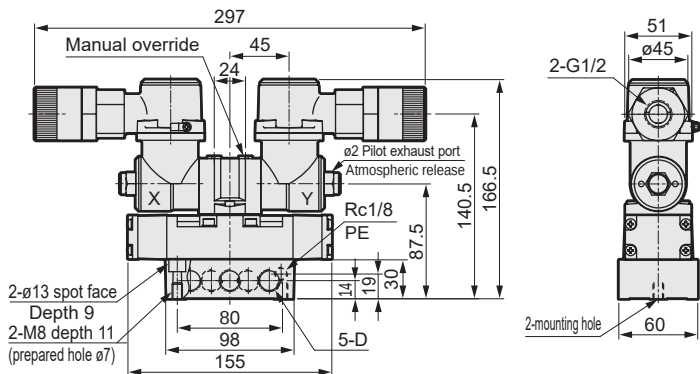
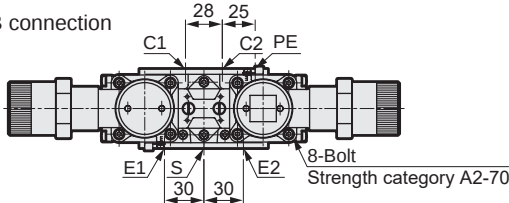
● 3-position all ports closed

4F440EX

● 3-position A/B/R connection

4F450EX

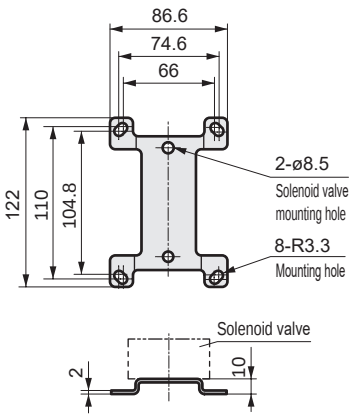
● 3-position P/A/B connection



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

● U type installation feet (P)

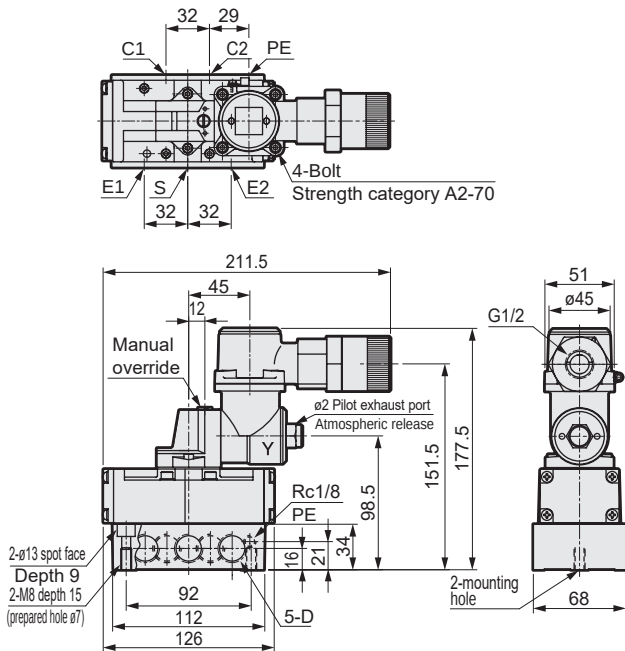
Material: Hot-rolled steel plates
Zinc plated



Dimensions

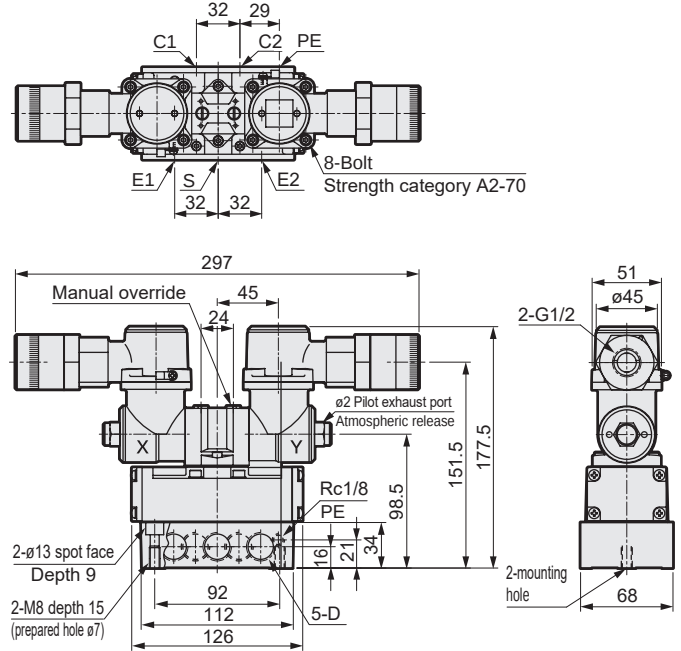
4F510EX

- 2-position single



4F520EX

- 2-position double



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

4F530EX

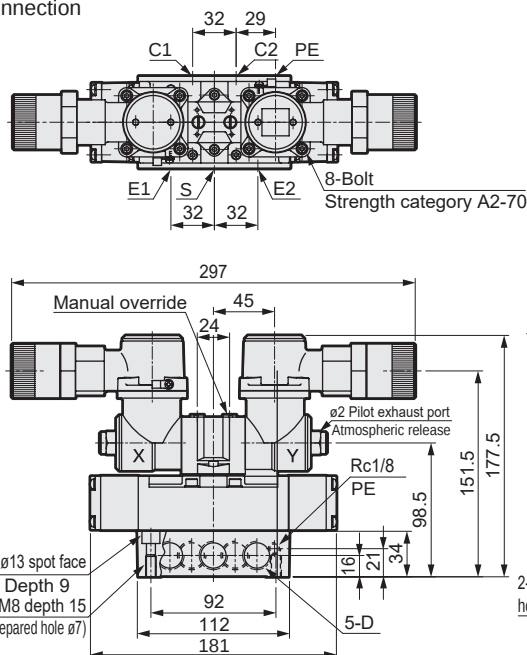
- 3-position all ports closed

4F540EX

- 3-position A/B/R connection

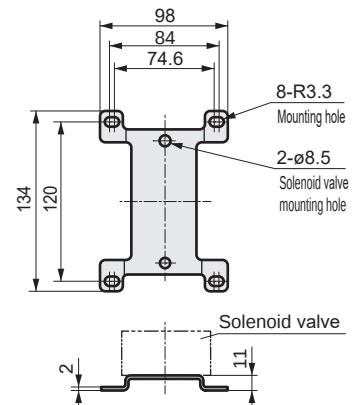
4F550EX

- 3-position P/A/B connection



- U type installation feet (P)

Material: Hot-rolled steel plates
Zinc plated



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

4GA/B
M4GA/B
MN4GA/B
4GA/B (master)
4GB With sensor
4GD/E
M4GD/E
MN4GD/E
4GA4/B4
MN3E MN4E
W4GA/B2
W4GB4
MN3S0 MN4S0
4SA/B0
4KA/B
4KA/B (master)
4F
4F (master)
PV5G GMF
PV5 GMF
PV5S-0
3Q
MV3QR
3MA/B0
3PA/B
P/M/B
NP/NAP NVP
4G*0EJ
4F*0EX
4F*0E
HMV HSV
2QV 3QV
SKH
Silencer
TotAirSys (Total Air)
TotAirSys (Gamma)
Ending

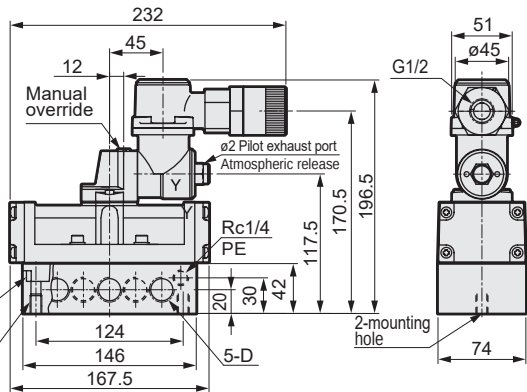
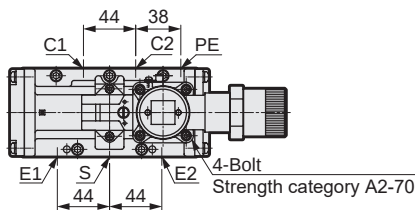
4F6*0EX Series

Discrete valve; sub-plate piping

Dimensions

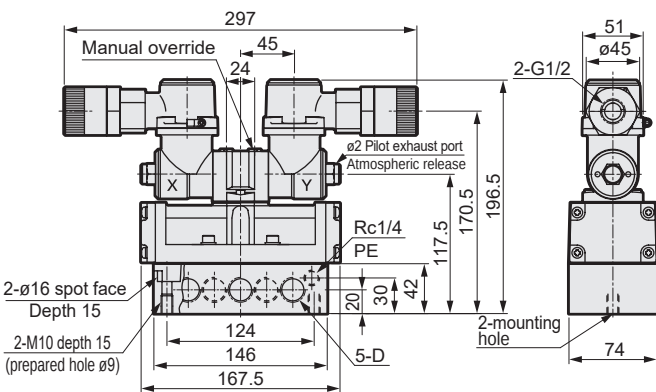
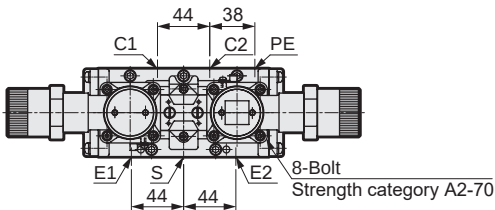
4F610EX

● 2-position single



4F620EX

● 2-position double



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

4F630EX

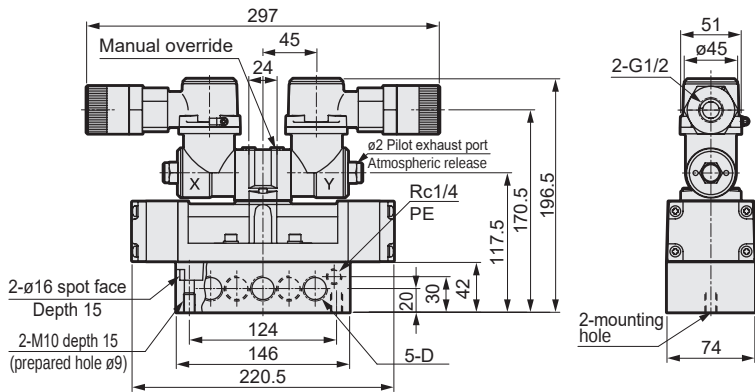
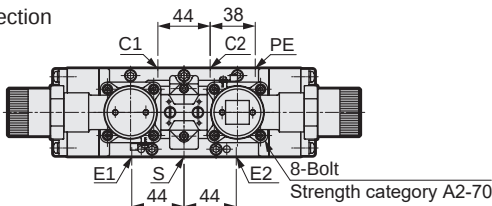
● 3-position all ports closed

4F640EX

● 3-position A/B/R connection

4F650EX

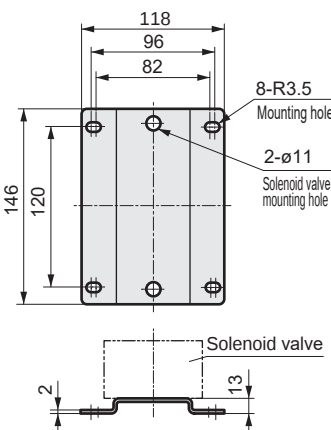
● 3-position P/A/B connection



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

● U type installation feet (P)

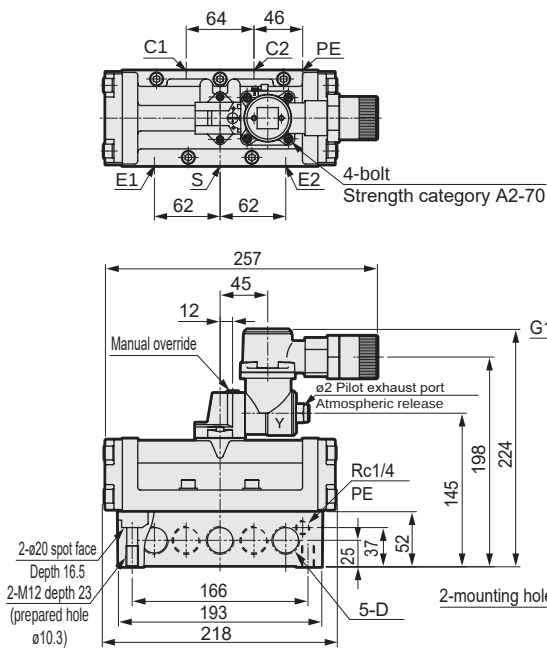
Material: Cold-rolled steel plates
Zinc plated



Dimensions

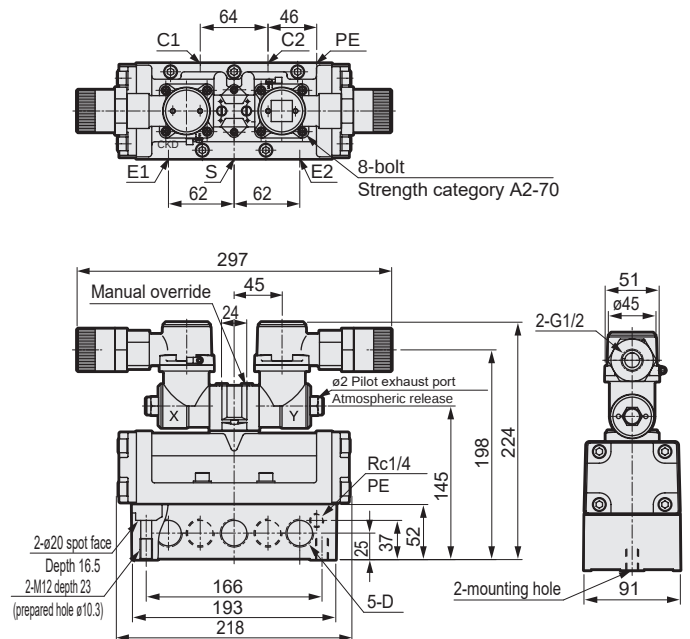
4F710EX

● 2-position single



4F720EX

● 2-position double



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

4F730EX

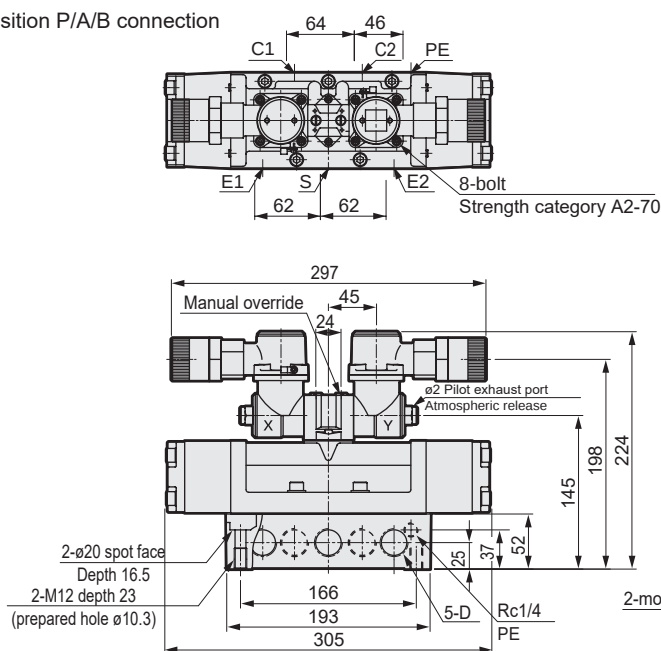
● 3-position all ports closed

4F740EX

● 3-position A/B/R connection

4F750EX

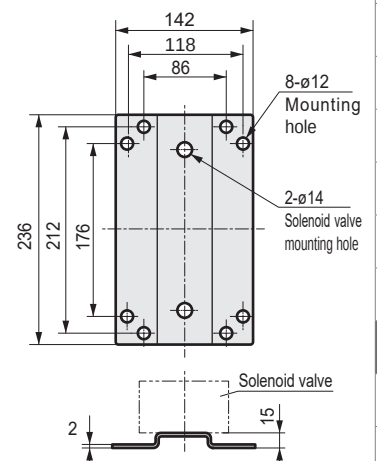
● 3-position P/A/B connection



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

● U type installation feet (P)

Material: Cold-rolled steel plates Zinc plated



4GA/B
M4GA/B
MN4GA/B
4GA/B (master)
4GB With sensor
4GD/E
M4GD/E
MN4GD/E
4GA4/B4
MN3E MN4E
W4GA/B2
W4GB4
MN3S0 MN4S0
4SA/B0
4KA/B
4KA/B (master)
4F
4F (master)
PV5G GMF
PV5 GMF
PV5S-0
3Q
MV3QR
3MA/B0
3PA/B
P/M/B
NP/INP NVP
4G*0EJ
4F*0EX
4F*0E
HMV HSV
2QV 3QV
SKH
Silencer
TotAirSys (Total Air)
TotAirSys (Gamma)
Ending