



Discrete valve: Sub-plate porting

5 port pilot operated pneumatic valve

4F4/5/6/7 Series

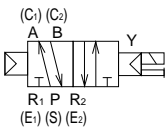
● Applicable cylinder bore size: $\varnothing 63$ to $\varnothing 250$

Refer to Intro 17 for details.

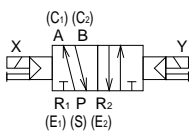


JIS symbol

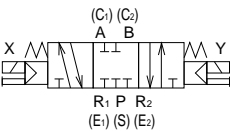
- 5 port valve
- 2-position single solenoid



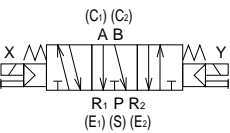
- 2-position double solenoid



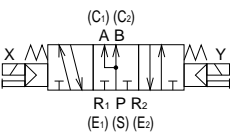
- 3-position
- all ports closed



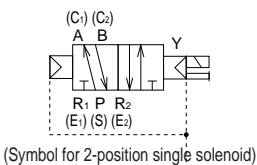
- 3-position A/B/R connection



- 3-position P/A/B connection



- External pilot



Common specifications

Descriptions	
Valve and operation type	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	-10 to 60 (no freezing)
Fluid temperature °C	5 to 60
Lubrication	Not required (when lubricating, use turbine oil ISO VG32.)
Protective structure	Dust proof
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		4F4 to 7		
Rated voltage	AC	100, 200 (50 / 60Hz)		
	V	DC		
Rated voltage fluctuation range		±10%		
Starting current	AC	100 V	0.170 / 0.140	
		200 V	0.090 / 0.070	
	A	DC	12 V	0.500
		24 V	0.250	
Holding current	AC	100 V	0.100 / 0.080	
		200 V	0.050 / 0.040	
	A	DC	12 V	0.500
		24 V	0.250	
Power consumption	AC	100 V	5.0 / 4.0	
		200 V	5.0 / 4.0	
	W	DC	12 V	6
		24 V	6	
Heat proof class		B (molded coil)		

Note1: The 100 VAC 50/60 Hz rated voltage can be used at 110 VAC 60 Hz, and 200 VAC 50/60 Hz can be used at 220 VAC 60 Hz.

Individual specifications

Descriptions		4F4		4F5		4F6		4F7	
Min. working pressure MPa	2-position	Single solenoid		0.10	0.10	0.15		0.15	
		Double solenoid							
	3-position	All ports closed		0.15	0.15	0.15		0.15	
		A/B/R connection							
		P/A/B connection							
Port size	Note 1		Rc 1/4	Rc 3/8	Rc 3/8	Rc 1/2	Rc 1/2	Rc 3/4	Rc 3/4
Response time	Note 2		ms		60	70	200		300
Weight kg	2-position	Single solenoid		1.06	1.50	2.30		4.20	
		Double solenoid		1.30	1.70	2.60		4.50	
	3-position				1.70	2.00	3.10		5.60

Note 1: G threads and NPT threads are available for the piping port threads. Contact CKD for information.

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)	
4F4	2-position	Rc1/4 Rc3/8	Single solenoid	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	Rc3/8 Rc1/2	Single solenoid	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	Rc1/2 Rc3/4	Single solenoid	18	0.31	-
			Double solenoid			
	3-position		All ports closed	15	0.23	
			A/B/R connection			
			P/A/B connection			
4F7	2-position	Rc3/4 Rc1	Single solenoid	-	-	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 $S \cong 5.0 \times C$.

Copper and PTFE free

- Flow path free of copper-based and PTFE-based materials

** - Voltage - **P6**

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 5 port pilot operated valve

4F4 to 7 Series

Discrete valve: Sub-plate porting

- 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

Discrete valve: How to order sub-plate porting



A Model no.

B Solenoid position

C Port size

D Manual override

E Electric connection

Note 1: The DC type with DIN terminal box with light (L) has a built-in surge suppressor. (Refer to page 887 for the circuit diagram of the type with a surge suppressor and light.)

F Other options

G Voltage

⚠ Note on model no. selection

- Note 2: Consult CKD for details on using vacuum with the external pilot (K) and exhaust pressurizing.
- Note 3: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
- Note 4: When selecting the DIN terminal box for the lock type with a manual lever, the terminal box must face outward during use.
- Note 5: BL and GL 12VDC are not available.

<Example of model number>

4F440-08-M2P-AC100V

- A** Model: 4F4
- B** Solenoid position : 3-position A/B/R connection
- C** Port size : Rc1/4
- D** Manual override : Non-locking
- E** Electric connection: Blank for DIN terminal box (Pg11)
- F** Other options : Mounting bracket
- G** Voltage : 100 VAC

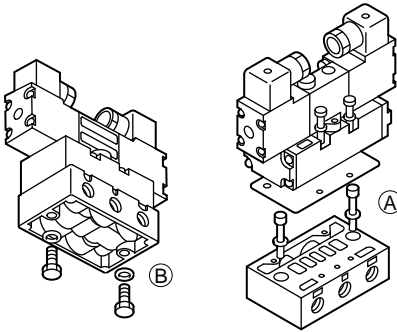
A Model no.

4F4	4F5	4F6	4F7
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Symbol	Descriptions	4F4	4F5	4F6	4F7
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 Note 3					
08	Rc1/4	●			
10	Rc3/8	●	●		
15	Rc1/2		●	●	
20	Rc3/4			●	●
25	Rc 1				●
D Manual override					
Blank	Locking	●	●	●	●
M2	Non-locking	●	●	●	●
M3	Locking with manual lever Note 4	●	●	●	●
E Electric connection					
Blank	DIN terminal box (Pg11)	●	●	●	●
L	DIN terminal box (Pg11) with light Note 1	●	●	●	●
F	DIN terminal box (G1/2)	●	●	●	●
E	Grommet lead wire	●	●	●	●
E1	Conduit lead wire (CTC19)	●	●	●	●
E2	Conduit lead wire (G1/2)	●	●	●	●
B1	Round terminal box (G3/4)	●	●	●	●
B	Round terminal box (G1/2)	●	●	●	●
BL	Round terminal box (G1/2) with light Note 5	●	●	●	●
G	Round terminal box with gland (A-15a)	●	●	●	●
GL	Round terminal box with gland (A-15a), light Note 5	●	●	●	●
Assemble to conduit lead wire (E1).					
F Other options					
Blank	No option	●	●	●	●
K	External pilot Note 2	●	●	●	●
P	Mounting bracket (U bracket)	●	●	●	●
S	Surge suppressor (variable resistor) attached	●	●	●	●
H	Check valve attached (only for 3-position all ports closed)	●	●	●	●
N	Plug attached (3 port valve)	●	●	●	●
NC	3 way valve with plug assembly (C1: A. E1: R1)	●	●	●	●
NO	3 way valve with plug assembly (C2: B. E2: R2)	●	●	●	●
G Voltage					
AC100V	100 VAC 50/60Hz	●	●	●	●
AC200V	200 VAC 50/60Hz	●	●	●	●
DC12V	12 VDC	●	●	●	●
DC24V	24 VDC	●	●	●	●
AC110V	110 VAC 50/60Hz	●	●	●	●
AC220V	220 VAC 50/60Hz	●	●	●	●

How to install discrete 4F4 to 7

● Installation



	For B	For A
4F4	M 8	M 6
4F5	M 8	M 6
4F6	M10	M 8
4F7	M12	M10

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 5 port pilot operated valve

4F4 Series

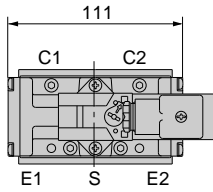
Discrete valve: Sub-plate porting

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

Dimensions

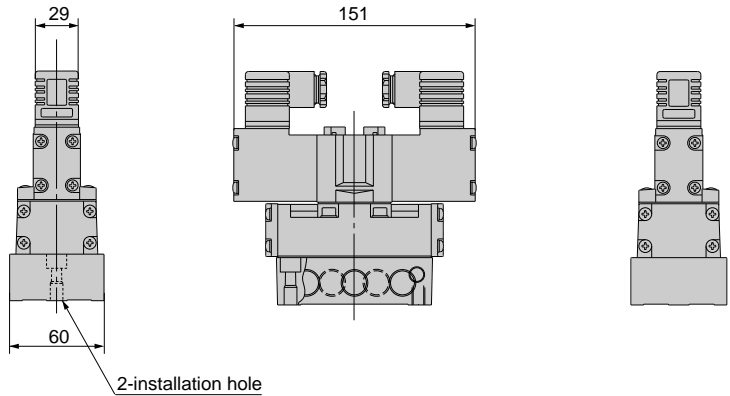
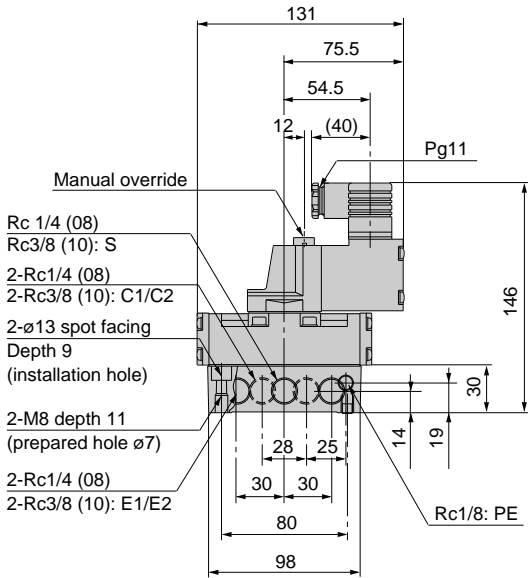
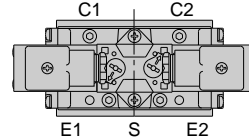
4F410

● 2-position single solenoid: DIN terminal box



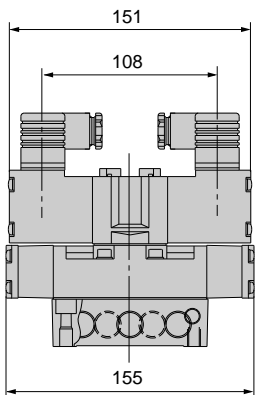
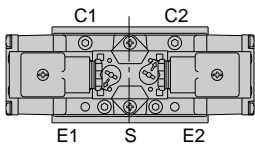
4F420

● 2-position double solenoid: DIN terminal box

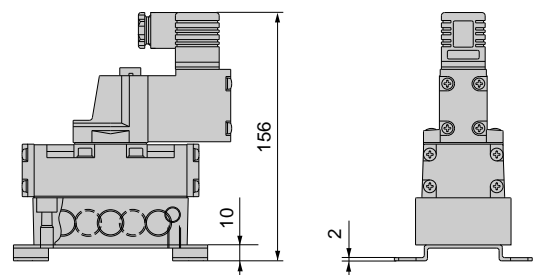
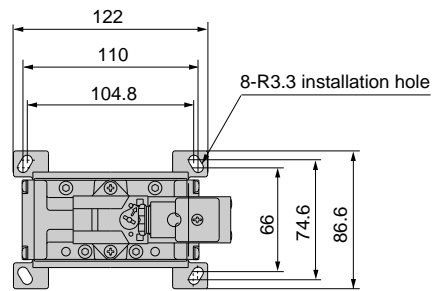


4F4³/₅0

● 3-position: DIN terminal box



● Mounting bracket: (P)



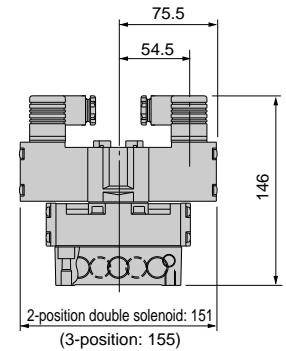
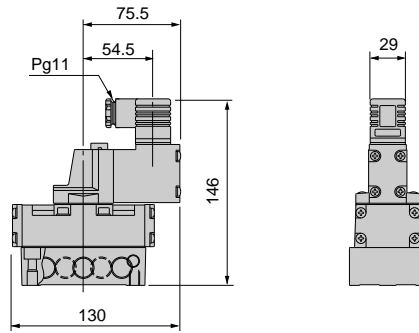
* Refer to page 954 for a check valve.

Dimensions

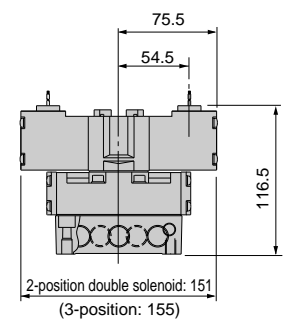
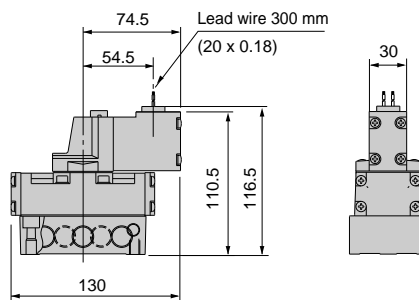
Ⓣ 2-position single solenoid

Ⓣ 2-position double solenoid, 3-position
* The drawing shows 2-position double solenoid.

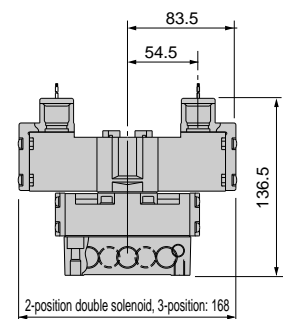
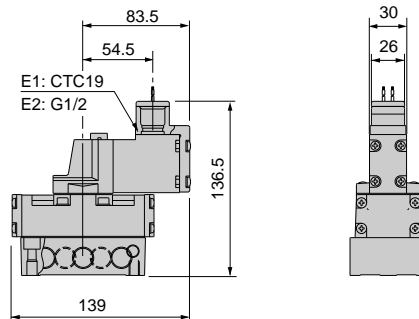
● DIN terminal box with indicator light: (L)



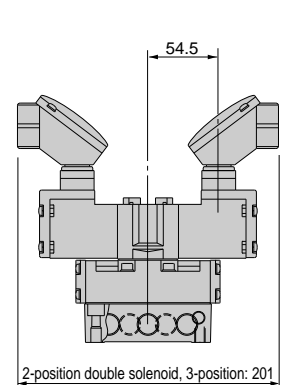
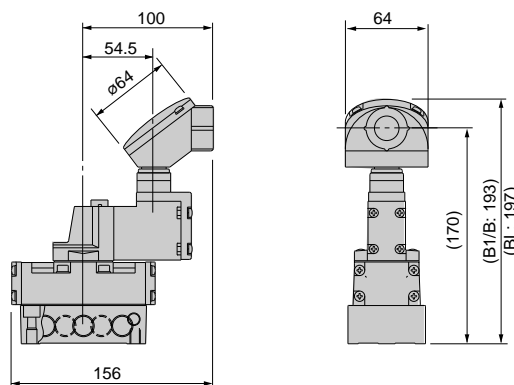
● Grommet lead wire: (E)



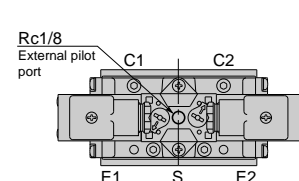
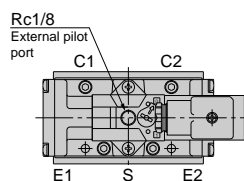
● Conduit lead wire: (E1/E2)



● Round terminal box: (B1/B/BL)



● External pilot port: (K)



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

Discrete 5 port pilot operated valve

4F5 Series

Discrete valve: Sub-plate porting

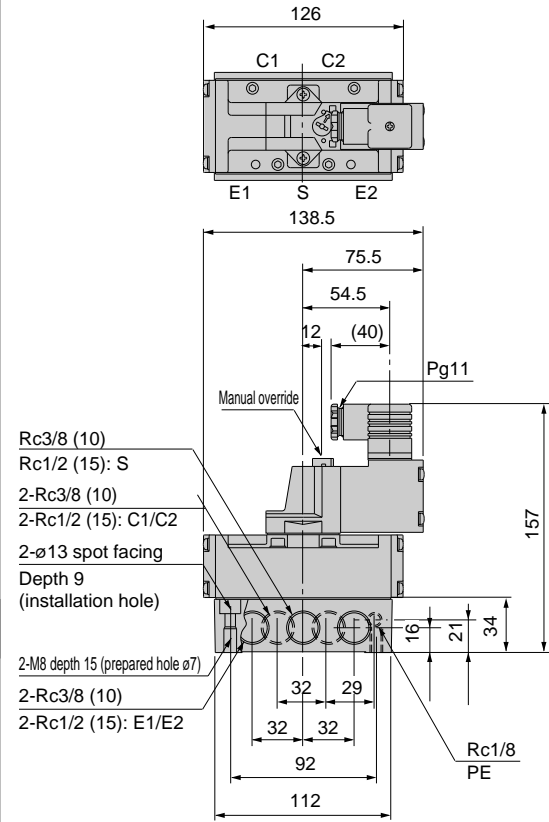
MN3E0
MN4E0
4GA/B
M4GA/B
MN4GA/B
4GA/B (Master)
W4GA/B2
W4GB4
MN3S0
MN4S0
4TB
4L2-4/LMFO
4SA/B0
4SA/B1
4KA/B
4F
PV5G/CMF
PV5/CMF
3MA/B0
3PA/B
P/MB
NP/NA/NVP
4F*0E
HMV
HSV
2QV
3QV
SKH
PCD/FS/FD
Ending

Dimensions

4F510



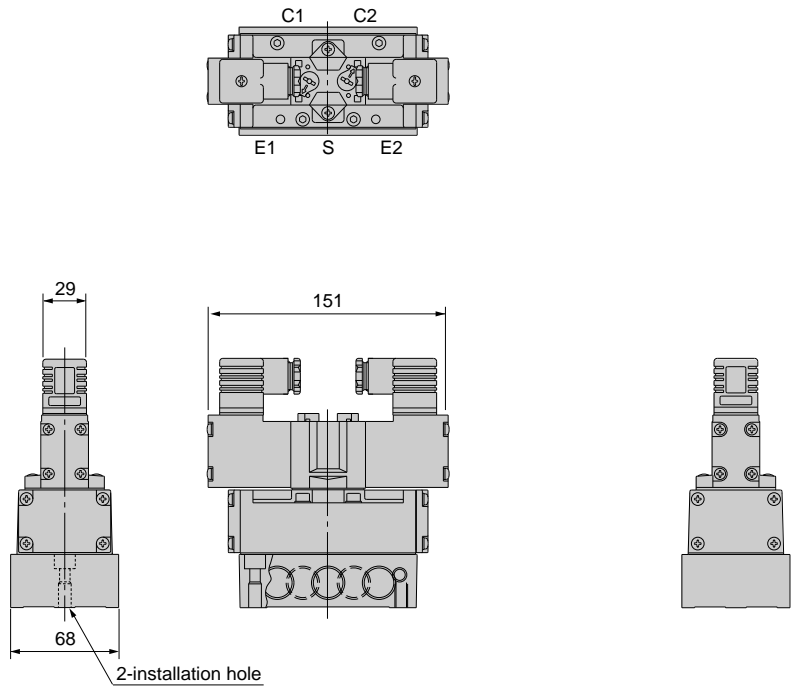
● 2-position single solenoid: DIN terminal box



4F520



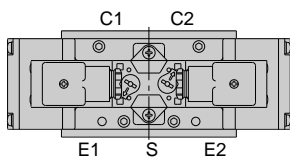
● 2-position double solenoid: DIN terminal box



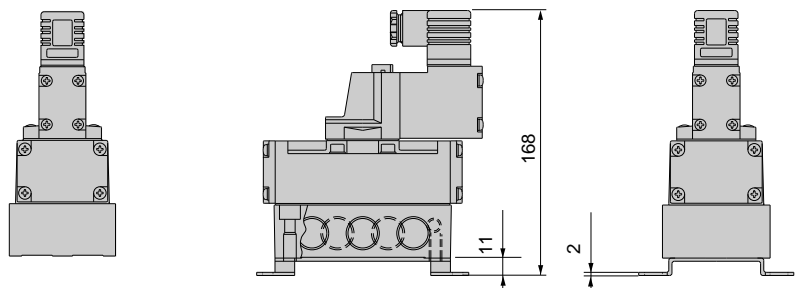
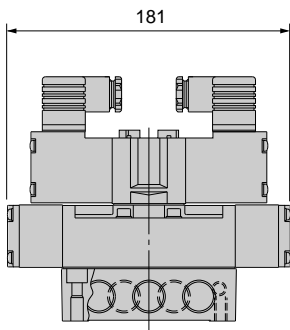
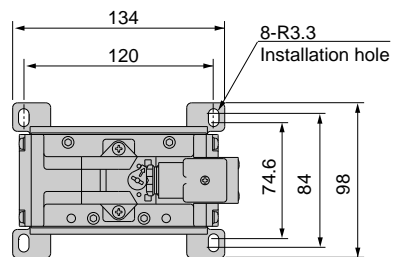
4F5 4/5 0



● 3-position: DIN terminal box



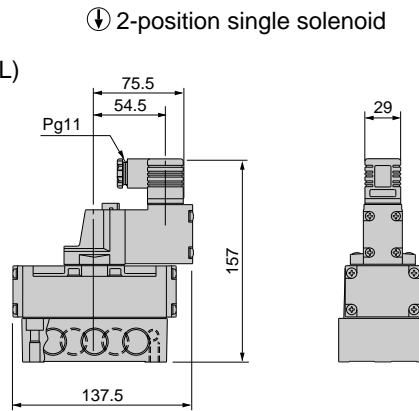
● Mounting bracket: (P)



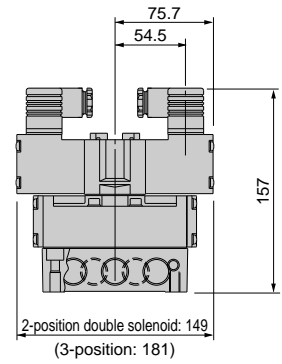
* Refer to page 954 for a check valve.

Dimensions

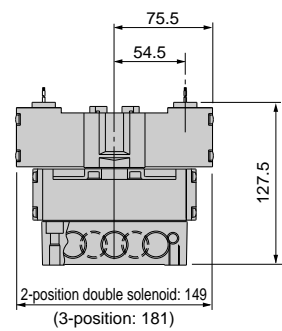
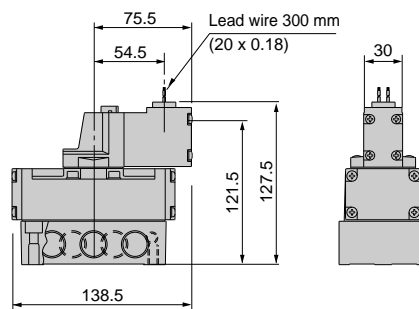
- DIN terminal box with indicator light: (L)



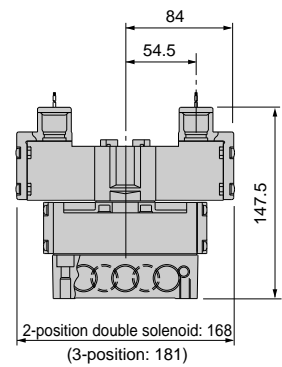
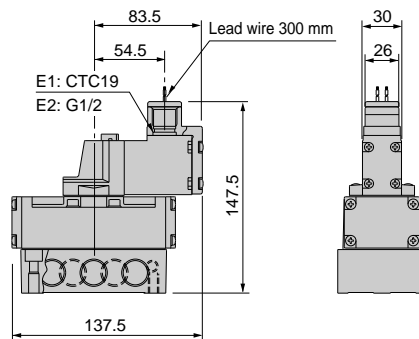
- ⬇ 2-position double solenoid, 3-position
* The drawing shows 2-position double solenoid.



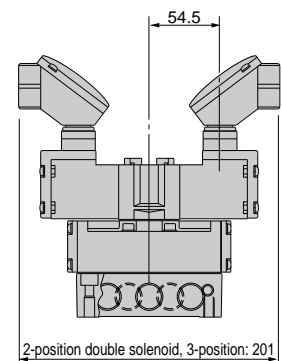
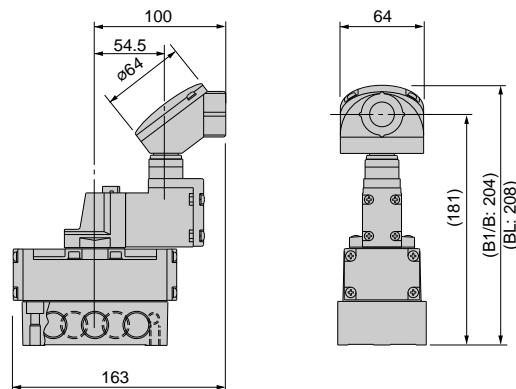
- Grommet lead wire: (E)



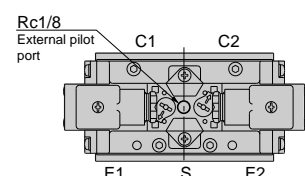
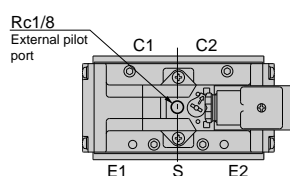
- Conduit lead wire: (E1/E2)



- Round terminal box: (B1/B/BL)



- External pilot port: (K)



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

Discrete 5 port pilot operated valve

4F6 Series

Discrete valve: Sub-plate porting

Dimensions

4F610

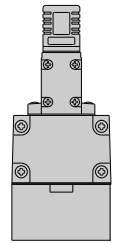
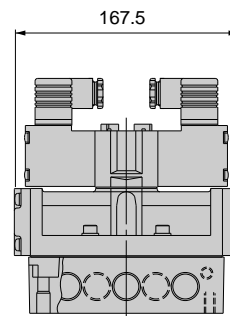
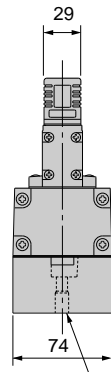
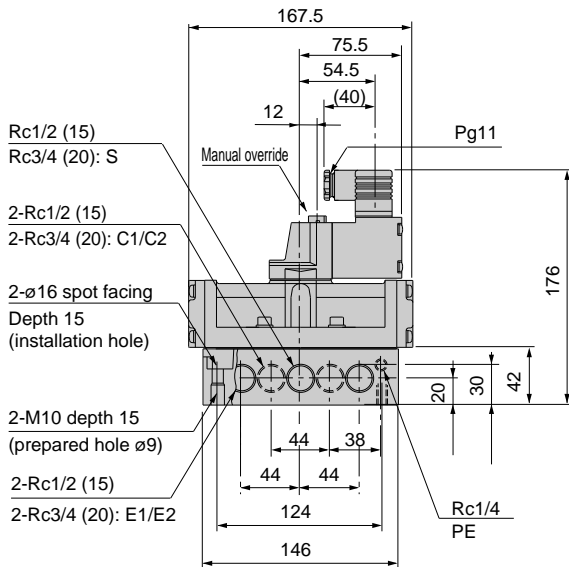
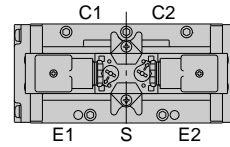
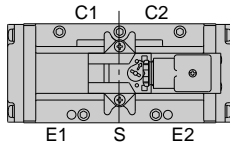


● 2-position single solenoid: DIN terminal box

4F620



● 2-position double solenoid: DIN terminal box

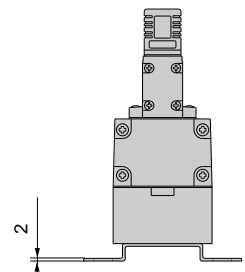
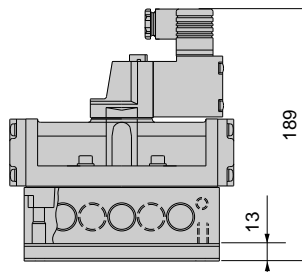
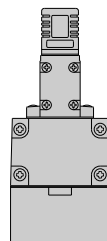
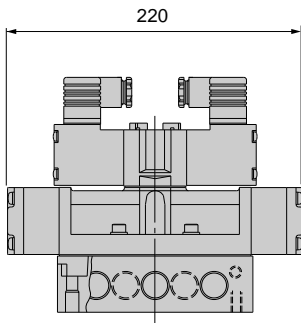
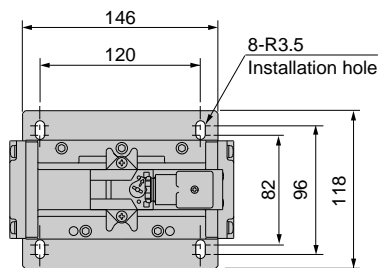
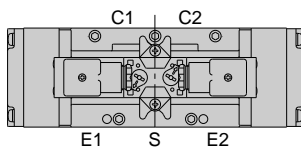


4F6 3/5 0



● 3-position: DIN terminal box

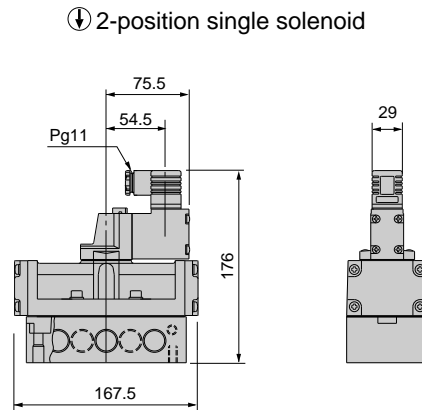
● Mounting bracket: (P)



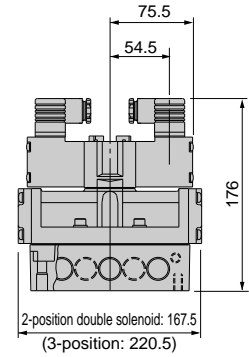
* Refer to page 954 for a check valve.

Dimensions

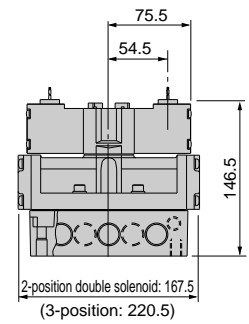
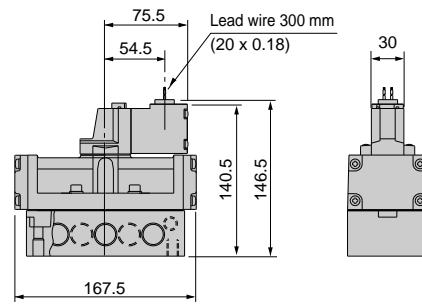
- DIN terminal box with indicator light: (L)



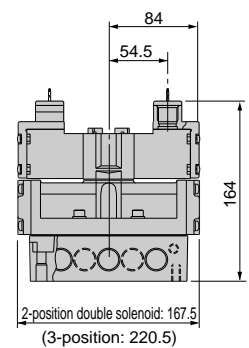
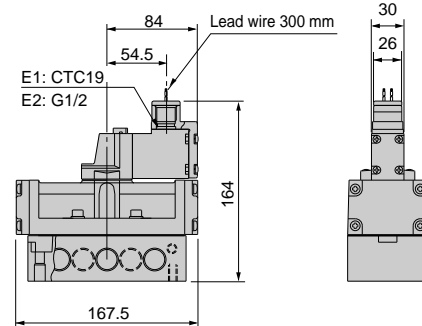
- ⌚ 2-position double solenoid, 3-position
* The drawing shows 2-position double solenoid.



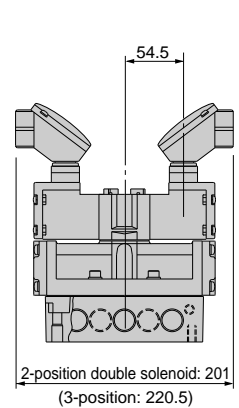
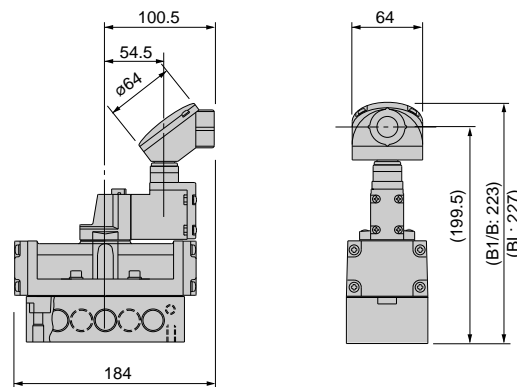
- Grommet lead wire: (E)



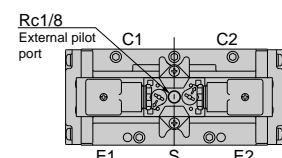
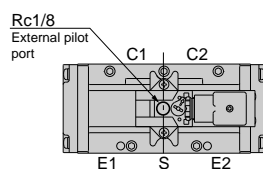
- Conduit lead wire: (E1/E2)



- Round terminal box: (B1/B/BL)



- External pilot port: (K)



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 5 port pilot operated valve

4F7 Series

Discrete valve: Sub-plate porting

Dimensions

4F710

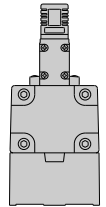
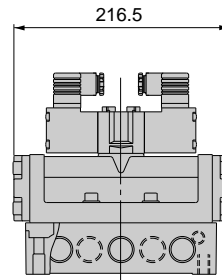
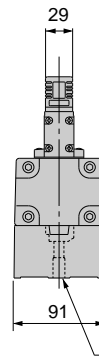
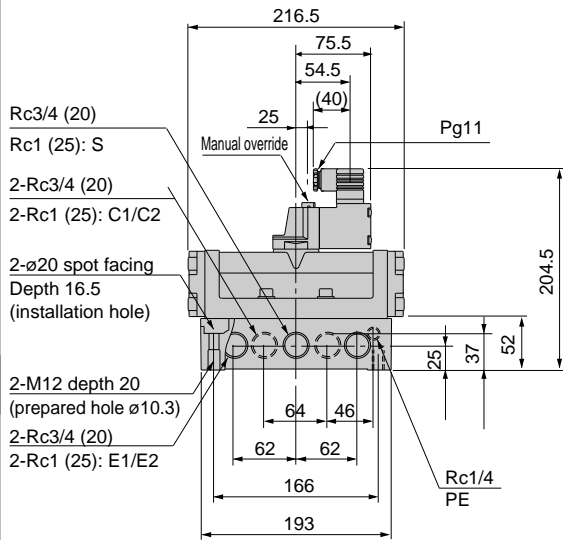
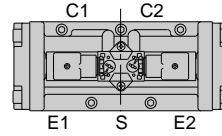
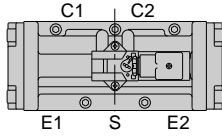


● 2-position single solenoid: DIN terminal box

4F720



● 2-position double solenoid: DIN terminal box

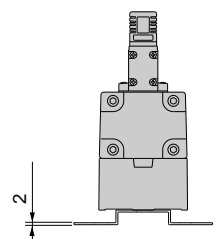
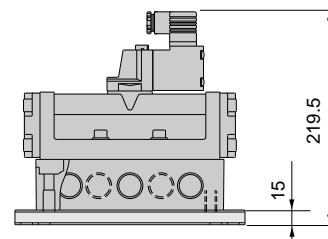
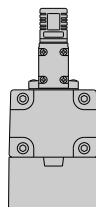
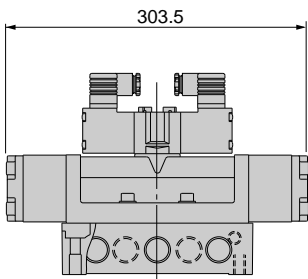
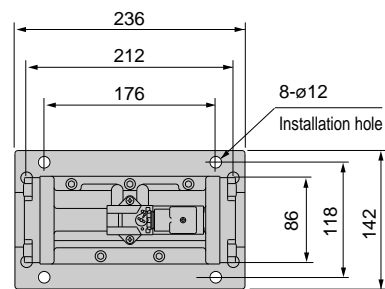
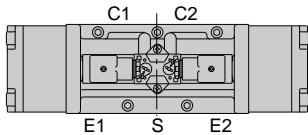


4F7³/₄0



● 3-position: DIN terminal box

● Mounting bracket: (P)



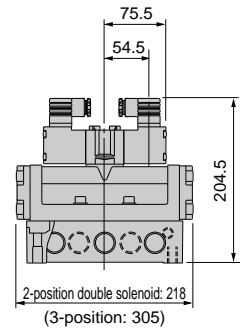
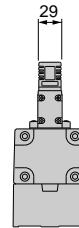
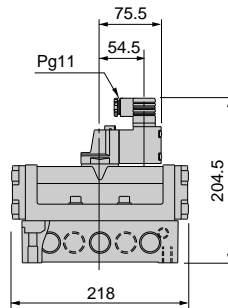
* Refer to page 954 for a check valve.

Dimensions

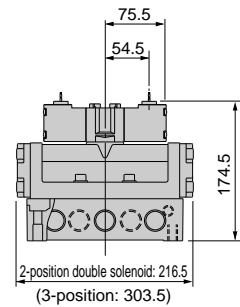
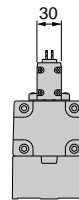
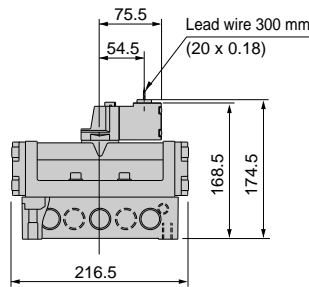
① 2-position single solenoid

② 2-position double solenoid, 3-position
* The drawing shows 2-position double solenoid.

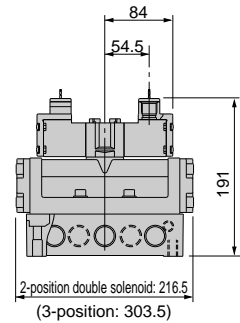
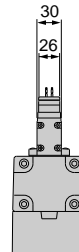
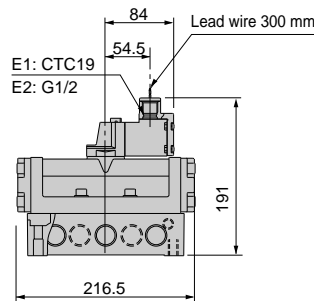
● DIN terminal box with indicator light: (L)



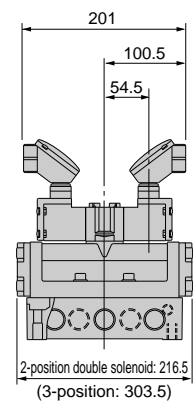
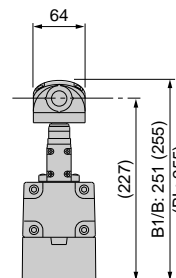
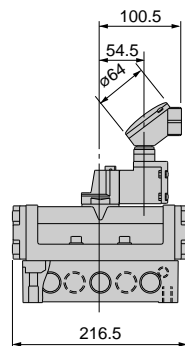
● Grommet lead wire: (E)



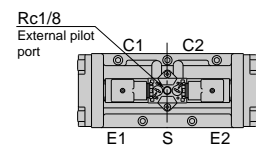
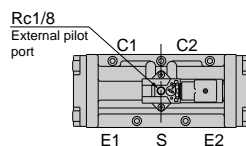
● Conduit lead wire: (E1/E2)



● Round terminal box: (B1/B/BL)



● External pilot port: (K)



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 5 port pilot operated valve

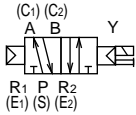
4F4/4F5 Series

Discrete valve: Sub-plate porting
Internal structure and parts list

- 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

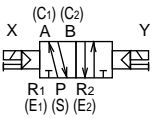
4F410/4F510

● 2-position single solenoid



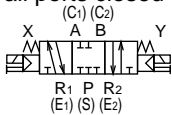
4F420/4F520

● 2-position double solenoid



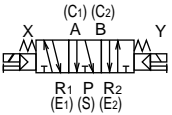
4F430/4F530

● 3-position
all ports closed



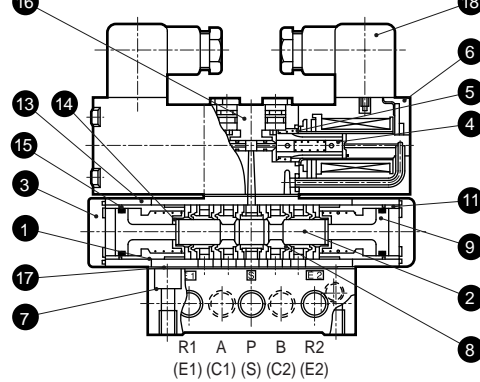
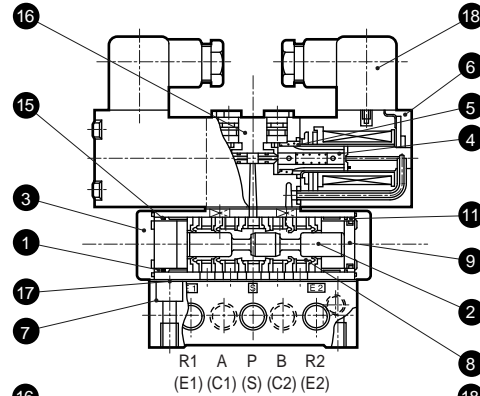
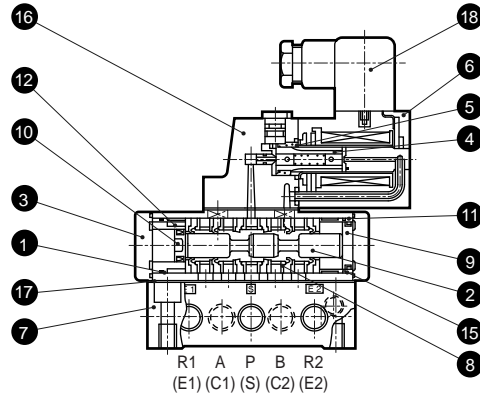
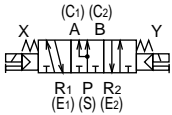
4F440/4F540

A/B/R connection



4F450/4F550

P/A/B connection



Main parts list

No.	Parts name	Material	No. / parts name							
			8	9	10	8	9	10	6	
			Model no.	Repair kit	Seal assembly	Piston (A) assembly	Piston (B) assembly	Coil assembly *		
1	Body	Aluminum alloy die-casting	4F410	4F410-K	4F9-106	4F9-104	4F9-103	4F4*0-		
2	Valving element (spool)	Aluminum	4F420	4F420-K			-		[Electric connection]-	
3	Cap	Aluminum alloy die-casting	4F430	4F430-K	4F9-107	4F9-108	-	[Electric connection]-		
4	Plunger	-	4F440				-		-	COIL-[Voltage]
5	Plunger spring	-	4F450	-	-	-	-			
6	Coil assembly	-	4F510	4F510-K	4F9-107	4F9-108	4F9-109	4F5*0-		
7	Sub-plate	Aluminum alloy die-casting	4F520	4F520-K			-		[Electric connection]-	
8	Seal assembly	-	4F530	4F530-K	4F9-115	4F9-115	-	[Electric connection]-		
9	Piston (A) assembly	-	4F540				-		-	COIL-[Voltage]
10	Piston (B) assembly	-	4F550				-		-	-
11	Cylinder A	Aluminum								
12	Cylinder B	Aluminum								
13	Body block	Aluminum alloy die-casting								
14	Spring retainer	Stainless steel								
15	O ring	Nitrile rubber								
16	Pilot valve body assembly	-								
17	Sub-plate gasket	Nitrile rubber								
18	DIN terminal box	-								

Repair parts list

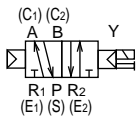
*: Consumables are stocked as a kit, and cannot be purchased individually. (The kit consists of the seal assembly and piston (A) and (B) assemblies. The coil assembly is not included.)

*: Plunger assembly is included with a coil assembly.

Internal structure and parts list

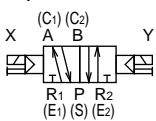
4F610/4F710

● 2-position single solenoid



4F620/4F720

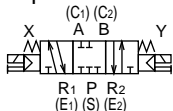
● 2-position double solenoid



4F630/4F730

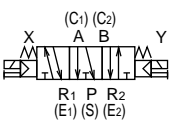
● 3-position

all ports closed



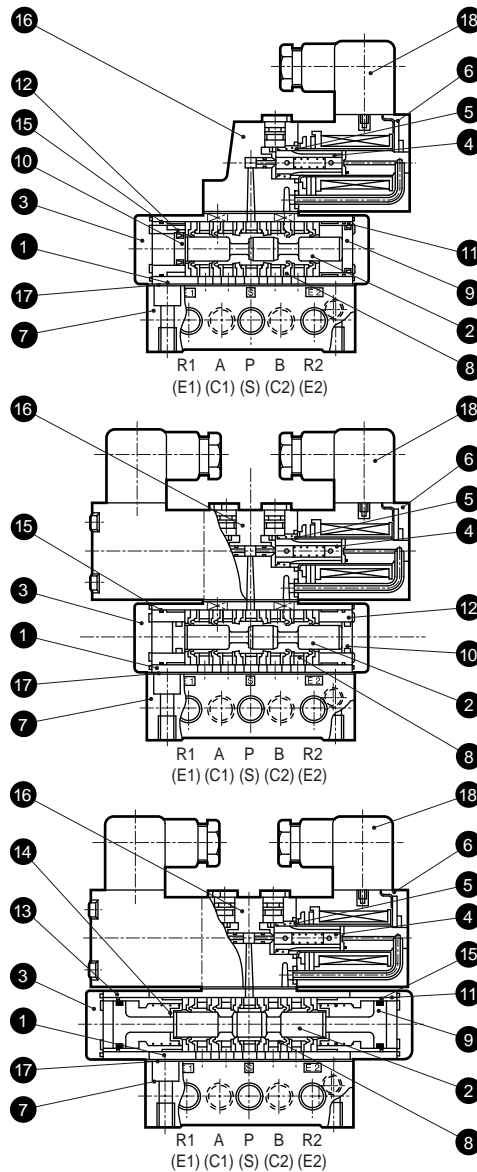
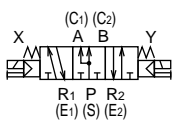
4F640/4F740

A/B/R connection



4F650/4F750

P/A/B connection



Main parts list

No.	Parts name	Material	No. / parts name		8	9	10	6	
			Model no.	Repair kits					Seal assembly
1	Body	Aluminum alloy die-casting	4F610	4F610-K	4F9-118	4F9-117	4F9-116	4F6*0- [Electric connection]- COIL-[Voltage]	
2	Valving element (spool)	Aluminum	4F620	4F620-K		-			
3	Cap	Aluminum alloy die-casting	4F630	4F630-K		-			
4	Plunger	-	4F640	4F640-K	4F9-119	4F9-122	4F9-120	4F7*0- [Electric connection]- COIL-[Voltage]	
5	Plunger spring	-	4F650	4F650-K		-			
6	Coil assembly	-	4F710	4F710-K		4F9-121			4F9-120
7	Sub-plate	Aluminum alloy die-casting	4F720	4F720-K	4F9-119	-	-	-	
8	Seal assembly	-	4F730	4F730-K		4F9-123			-
9	Piston (A) assembly	-	4F740	4F740-K		-			-
10	Piston (B) assembly	-	4F750	4F750-K	-	-	-		
11	Cylinder A	Aluminum							
12	Cylinder B	Aluminum							
13	Body block	Aluminum alloy die-casting							
14	Spring retainer	Stainless steel							
15	O ring	Nitrile rubber							
16	Pilot valve body assembly								
17	Sub-plate gasket	Nitrile rubber							
18	DIN terminal box	-							

Repair parts list

*: Consumables are stocked as a kit, and cannot be purchased individually. (The kit consists of the seal assembly and piston (A) and (B) assemblies. The coil assembly is not included.)

*: Plunger assembly is included with a coil assembly.

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
HNV
HSV
2QV
3QV
SKH
PCD/
FS/FD
Ending
Discrete
5 port pilot operated valve