Discrete valve / body porting
5 port pilot operated pneumatic valve
4F0/1/2/3 Series

● Applicable cylinder bore size: ø16 to ø100 mm

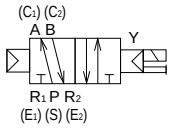
CE Refer to Intro 17 for details.

RoHS CAD

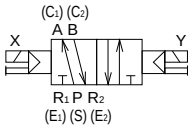
JIS symbol

● 5 port valve

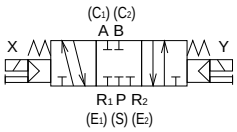
2-position single solenoid



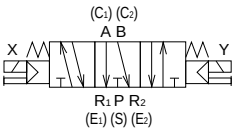
2-position double solenoid



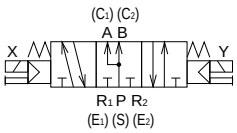
3-position
all ports closed



3-position A/B/R connection



3-position P/A/B connection



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/s²	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.

Electric specifications

Descriptions			(A)4F0 to 1	4F2/3
Rated voltage V	AC		100, 200 (50 / 60Hz)	
	DC		12, 24	
Rated voltage fluctuation range			±10%	
Starting current A	AC	100 V	0.056 / 0.044	0.170 / 0.140
		200 V	0.034 / 0.026	0.090 / 0.070
	DC	12 V	0.150	0.500
		24 V	0.075	0.250
Holding current A	AC	100 V	0.028 / 0.022	0.100 / 0.080
		200 V	0.017 / 0.013	0.050 / 0.040
	DC	12 V	0.150	0.500
		24 V	0.075	0.250
Power consumption W	AC	100 V	1.8 / 1.4	5.0 / 4.0
		200 V	2.1 / 1.6	5.0 / 4.0
	DC	12 V	1.8	6
		24 V	1.8	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			(A)4F0 Note 1		4F1		4F2	4F3	
Min. working pressure MPa	2-position	Single solenoid	0.15		0.15		0.10	0.10	
		Double solenoid			0.10				
	3-position	All ports closed	-		0.20		0.15	0.15	
		A/B/R connection							
		P/A/B connection			-		-		
Port size Note 2			M5	Rp 1/8	Rp 1/8	Rp 1/4	Rp 1/4	Rp 1/4	Rp 3/8
Response time Note 3 ms			30		30		50	50	
Weight kg	2-position	Single solenoid	0.13		0.18		0.56	0.66	
		Double solenoid	0.18		0.22		0.86	0.94	
	3-position		-		0.32		1.10	1.40	

Note 1: (A) is A4F010 for the single type.
Note 2: G and NPT threads are usable for the (A) 4F0, 4F1, 4F2, and 4F3 piping port threads. Contact CKD for details.
Note 3: 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 (dm³/ (s·bar))	b
(A) 4F0 Note 2	2-position	Single solenoid	M5	0.61	0.35
		Double solenoid			
		Single solenoid	Rp1/8	0.74	0.27
		Double solenoid			
4F1	2-position	Single solenoid	Rp1/8	2.0	0.33
		Double solenoid			
	3-position	All ports closed	Rp1/4	1.5	0.31
		A/B/R connection		1.6	0.29
4F2	2-position	Single solenoid	Rp1/4	3.0	0.33
		Double solenoid			
	3-position	All ports closed		2.5	0.43
		A/B/R connection			
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

Note 1: Effective sectional area S and sonic conductance C are converted as S ≒ 5.0 x C.
Note 2: (A) is A4F010 for the single type.

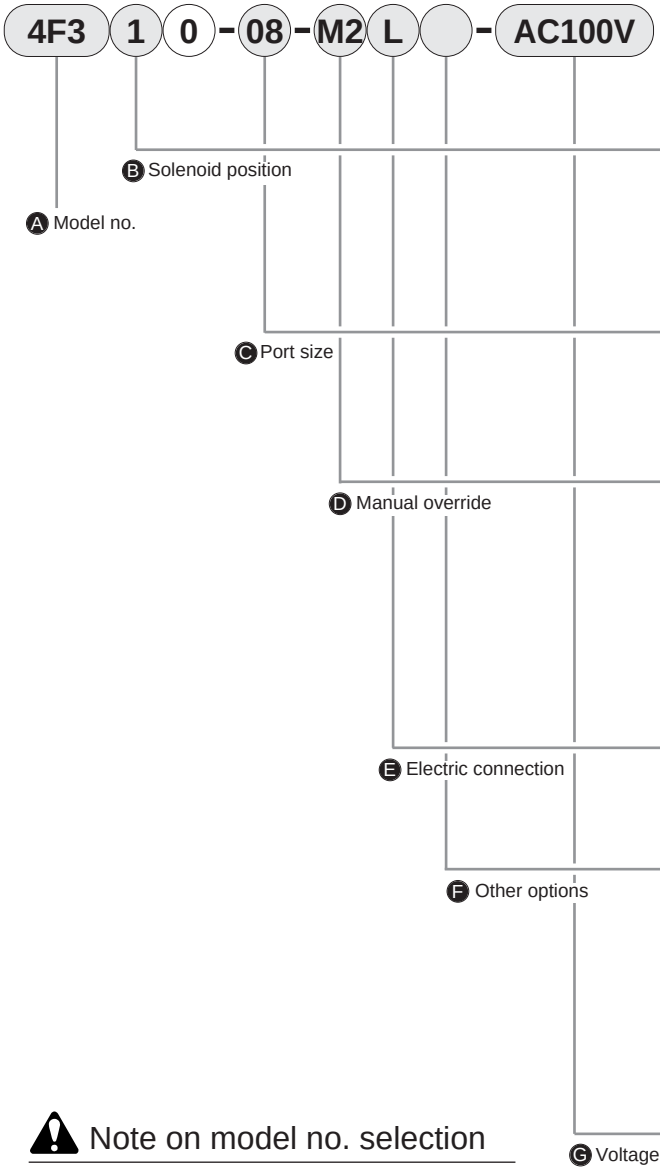
Copper and PTFE free

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

** - Voltage - P6

(4F0 not available)

Discrete valve: How to order body porting



Symbol	Descriptions	A Model no. 4F0	4F1	4F2	4F3
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					
M5	M5	●			
06	Rp1/8 Note 1	●	●		
08	Rp1/4 Note 2		●	●	●
10	Rp3/8				●
D Manual override					
M1	Locking	●	●		
Blank	Locking			●	●
Blank	Non-locking	●	●		
M2	Non-locking			●	●
M3	Locking with manual lever Note 4			●	●
M4	Non-locking with dust proof cover	●	●		
M6	Non-locking upward	●	●		
R	Manual override position change	●	●	●	●
E Electric connection					
	Refer to the next page for wire connections.				
F Other options					
Blank	No option	●	●	●	●
P	Mounting bracket (L shaped bracket) (2-position single solenoid)	●	●	●	●
P1	Mounting bracket (U shaped bracket)	●	●	●	●
S	Surge suppressor (variable resistor) attached	●	●	●	●
H	Check valve attached (Applicable to only 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	●	●	●	●

Note on model no. selection

Note 1: R1 and R2 for 4F0 are M5.
Note 2: R1 and R2 for 4F1 are Rp1/8.
Note 3: Rc 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.

<Example of model number>

4F340-08-M2P1-AC100V

- A Model: 4F3
- B Solenoid position : 3-position A/B/R connection
- C Port size : Rp1/4
- D Manual override : Non-locking
- E Electric connection : Blank, DIN terminal box (Pg11)
- F Other options : Mounting bracket
- G Voltage : 100 VAC

(Electric connection list)

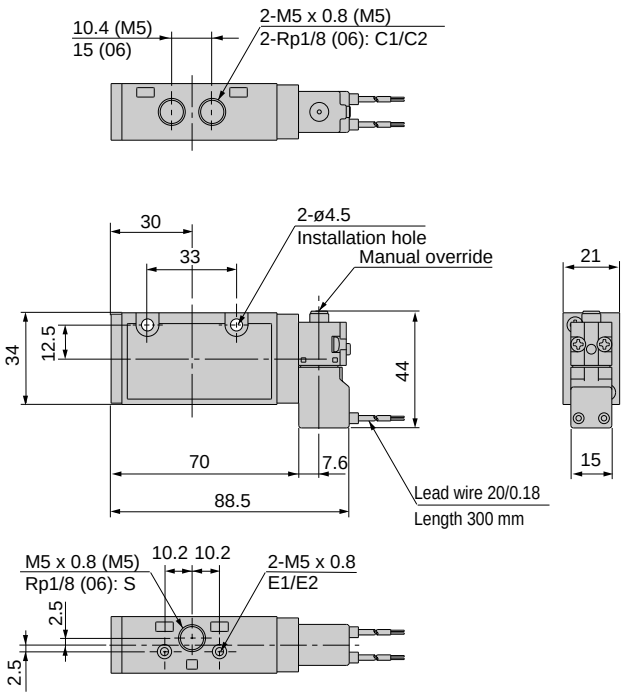
Ⓔ Electric connection		Ⓐ Model no. 4F0	4F1	4F2	4F3
Small terminal box					
B	No lead wire	●			
Blank	No lead wire		●		
L	No lead wire with light Note 3	●	●		
L2	Lead wire length (300 mm) with light Note 3	●	●		
DIN terminal box					
Blank	DIN terminal box (Pg11)			●	●
L	DIN terminal box (Pg11) with light Note 4			●	●
F	DIN terminal box (G1/2)			●	●
C-connector (lead wire lateral)					
C	Lead wire length (300 mm)	●	●		
C00	Lead wire length (500 mm)	●	●		
C01	Lead wire length (1000 mm)	●	●		
C02	Lead wire length (2000 mm)	●	●		
C03	Lead wire length (3000 mm)	●	●		
C1	No lead wire	●	●		
C2	Lead wire length (300 mm) with surge suppressor / light	●	●		
C20	Lead wire length (500 mm) with surge suppressor / light	●	●		
C21	Lead wire length (1000 mm) with surge suppressor / light	●	●		
C22	Lead wire length (2000 mm) with surge suppressor / light	●	●		
C23	Lead wire length (3000 mm) with surge suppressor / light	●	●		
C3	No lead wire with surge suppressor / light	●	●		
D-connector (lead wire upward)					
D	Lead wire length (300 mm)	●	●		
D00	Lead wire length (500 mm)	●	●		
D01	Lead wire length (1000 mm)	●	●		
D02	Lead wire length (2000 mm)	●	●		
D03	Lead wire length (3000 mm)	●	●		
D1	No lead wire	●	●		
D2	Lead wire length (300 mm) with surge suppressor / light	●	●		
D20	Lead wire length (500 mm) with surge suppressor / light	●	●		
D21	Lead wire length (1000 mm) with surge suppressor / light	●	●		
D22	Lead wire length (2000 mm) with surge suppressor / light	●	●		
D23	Lead wire length (3000 mm) with surge suppressor / light	●	●		
D3	No lead wire with surge suppressor / light	●	●		
Grommet lead wire					
Blank	Grommet lead wire	●			
E	Grommet lead wire		●	●	●
E1	Conduit lead wire (CTC19)			●	●
E2	Conduit lead wire (G1/2)			●	●
B1	Conduit lead wire round terminal box (G3/4)			●	●
B	Conduit lead wire round terminal box (G1/2)			●	●
BL	Conduit lead wire round terminal box (G1/2) with light Note 5			●	●
G	Conduit lead wire round terminal box gland (A-15a)			●	●
GL	Conduit lead wire round terminal box gland (A-15a) with light Note 5			●	●

Note 4: The L and L2 DC type have a built-in surge suppressor.
(Refer to page 887 for the circuit drawings with light and surge suppressor.)
Note 5: BL/GL 12VDC are not available.

Dimensions

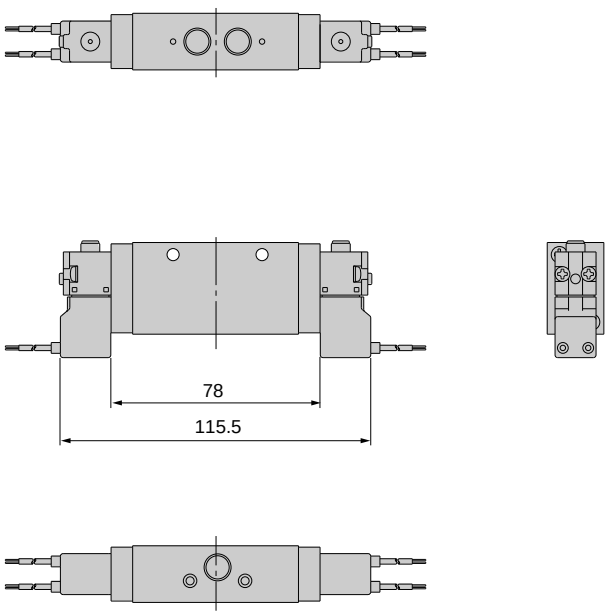
A4F010 CAD

● 2-position single solenoid: (grommet lead wire)

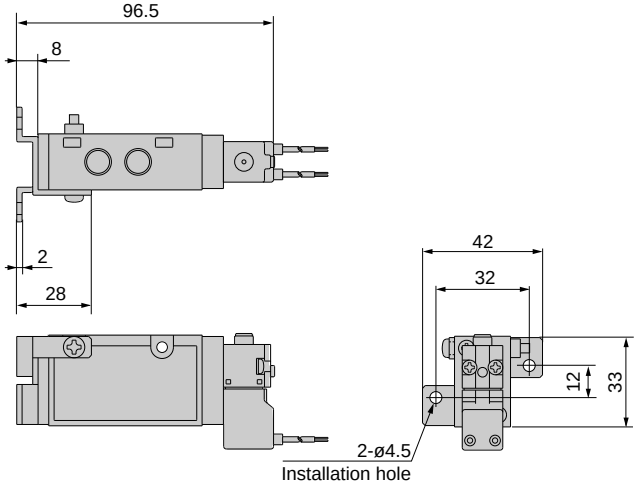


4F020 CAD

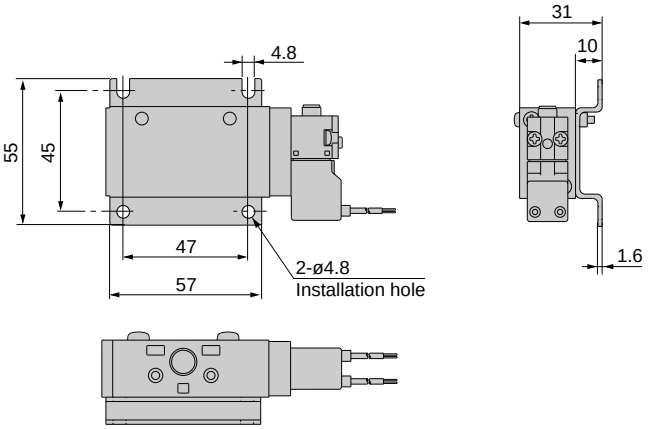
● 2-position double solenoid: (grommet lead wire)



● Mounting bracket: (P: 2-position single solenoid only)



● Mounting bracket: (P1)

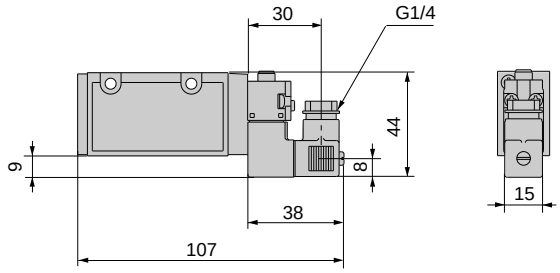


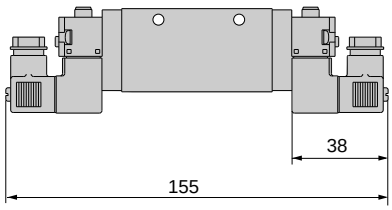
Dimensions

2-position single solenoid

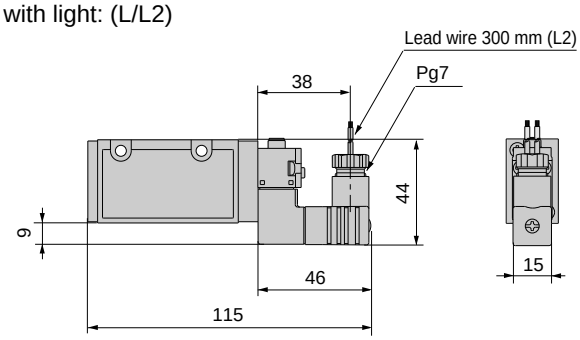
2-position double solenoid

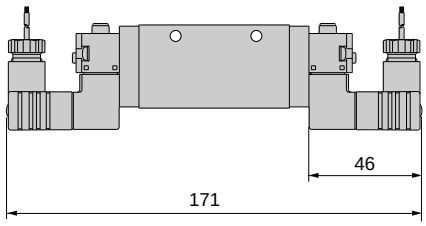
● Small terminal box: (B)



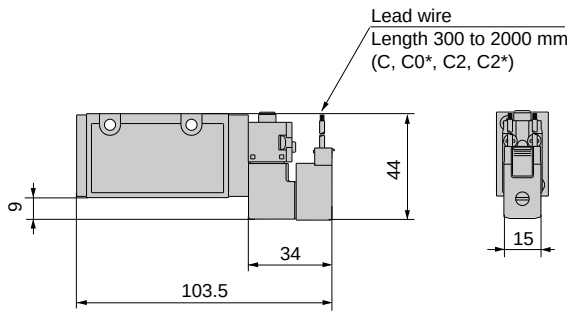


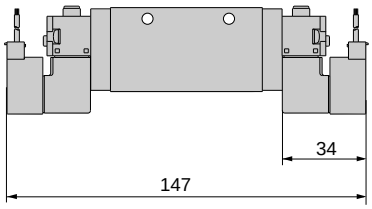
● Small terminal box with light: (L/L2)



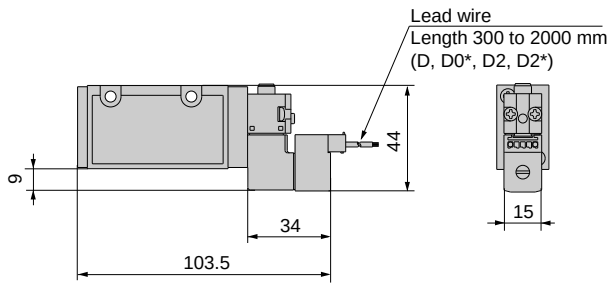


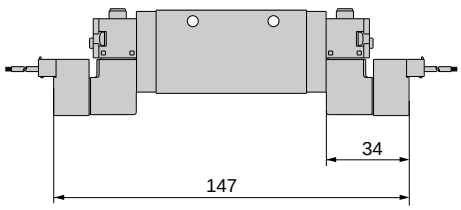
● C-connector: (C, C0*, C1, C2, C2*, C3)



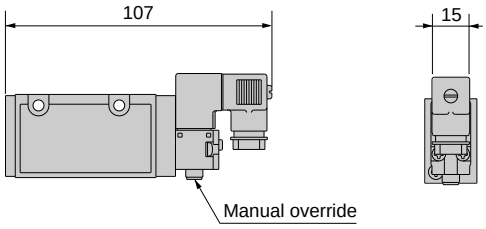


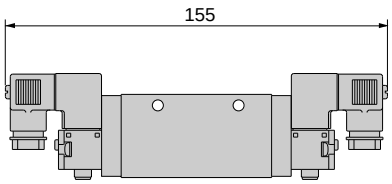
● D-connector: (D, D0*, D1, D2, D2*, D3)





● Manual override position change: (R)

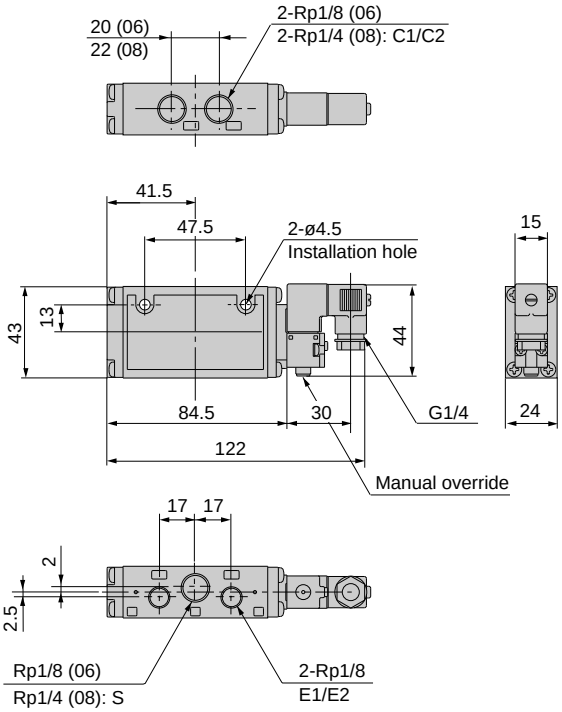




Dimensions

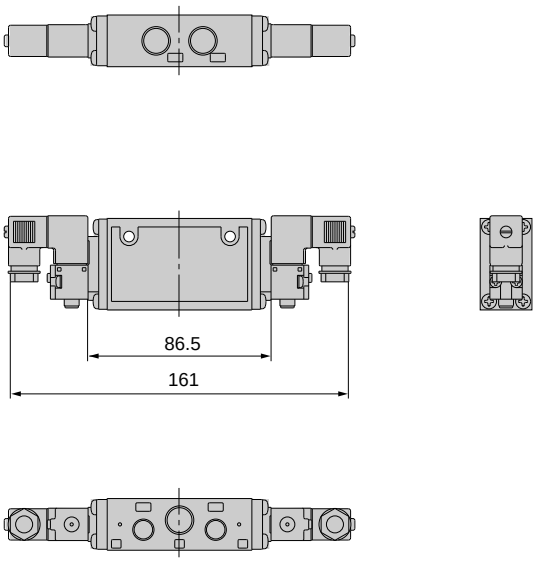
4F110 CAD

● 2-position single solenoid: Small terminal box



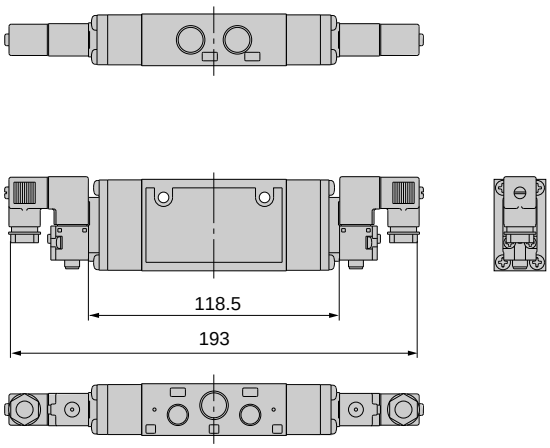
4F120 CAD

● 2-position double solenoid: Small terminal box

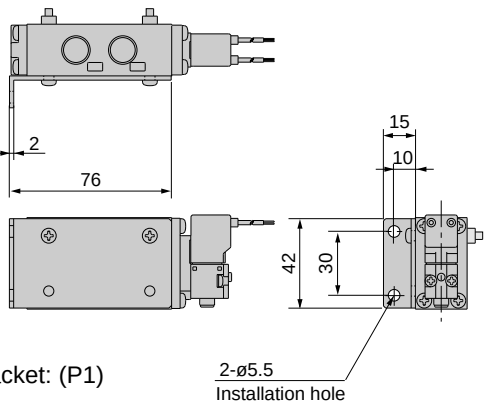


4F1$^{3}_{4}$0 CAD

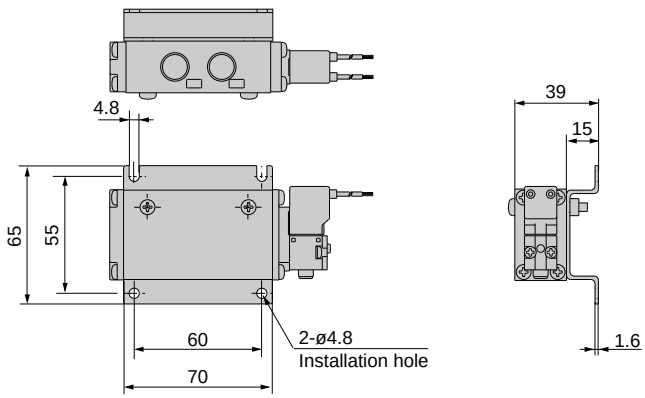
● 3-position: Small terminal box



● Mounting bracket: (P: 2-position single solenoid dedicated)



● Mounting bracket: (P1)

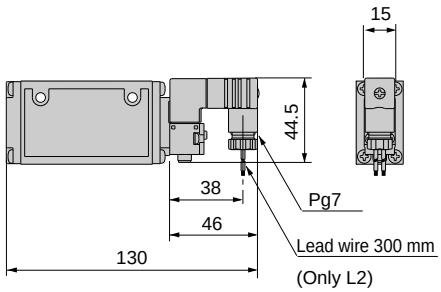


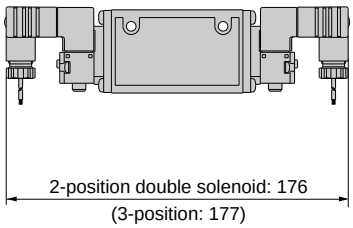
Dimensions

2-position single solenoid

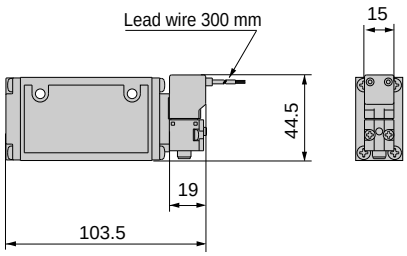
2-position double solenoid, 3-position
* The drawing shows 2-position double solenoid.

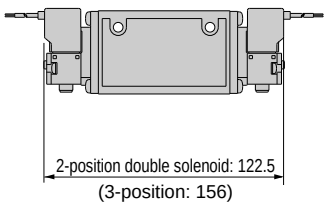
● Small terminal box with light: (L/L2)



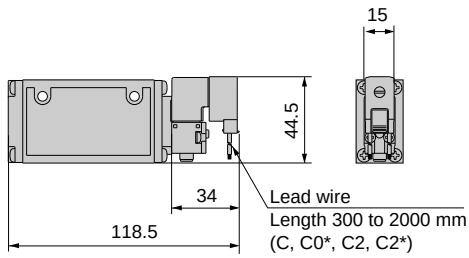


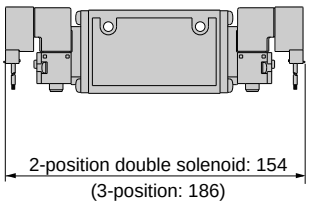
● Grommet lead wire: (E)



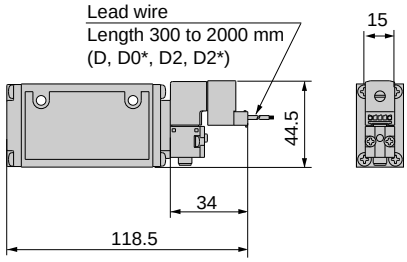


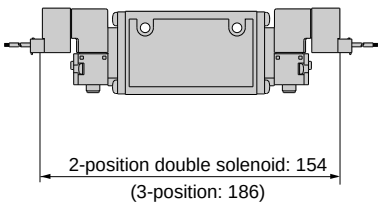
● C-connector: (C, C0*, C1, C2, C2*, C3)



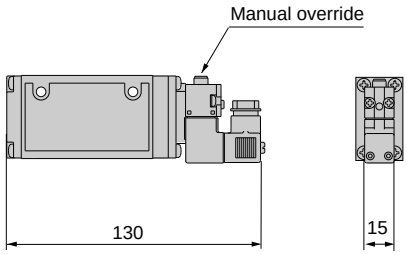


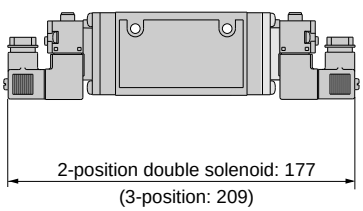
● D-connector: (D, D0*, D1, D2, D2*, D3)





● Manual override position change: (R)

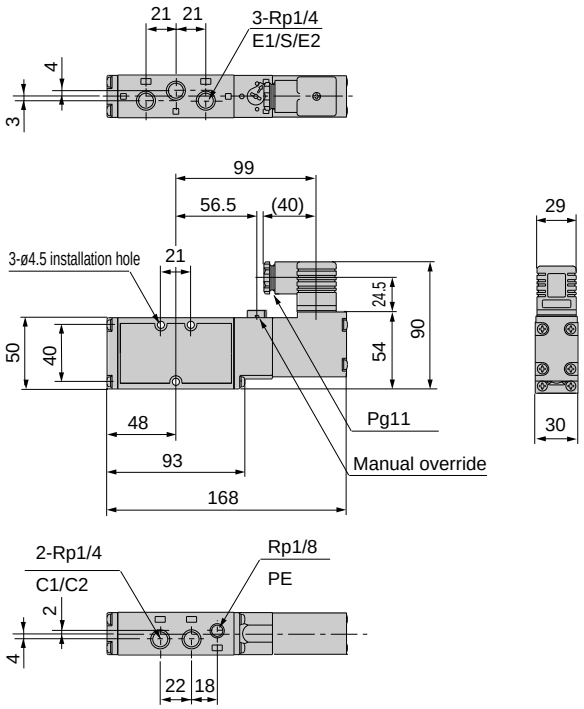




Dimensions

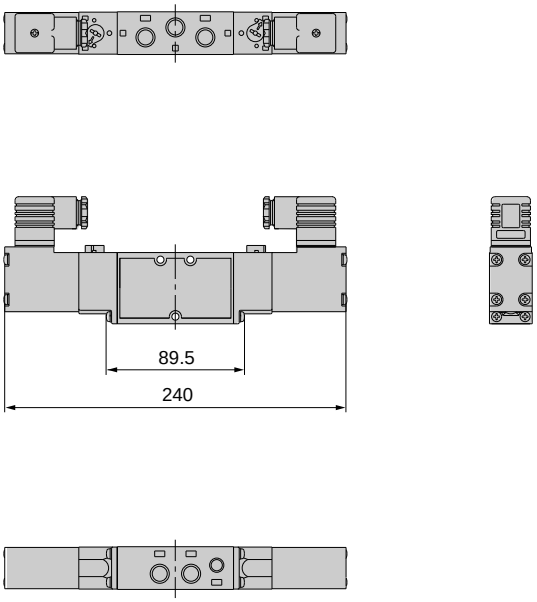
4F210 CAD

● 2-position single solenoid: DIN terminal box



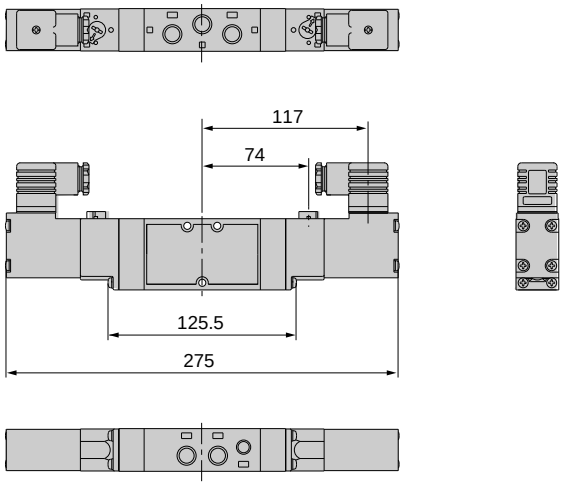
4F220 CAD

● 2-position double solenoid: DIN terminal box

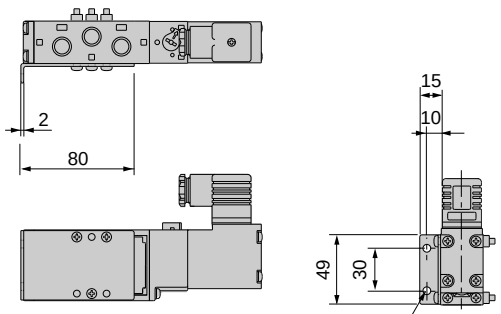


4F2 3/4 0 CAD

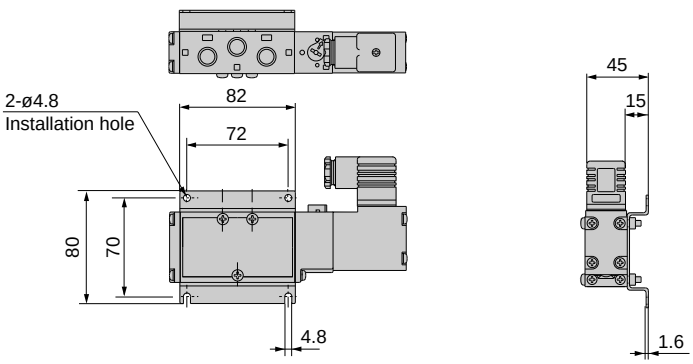
● 3-position: DIN terminal box



● Mounting bracket: (P: 2-position single solenoid dedicated)



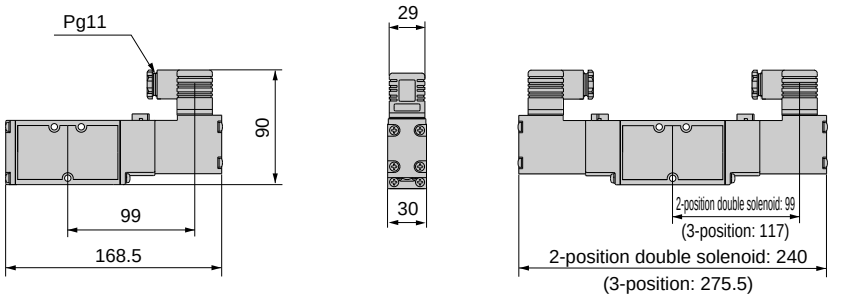
● Mounting bracket: (P1)



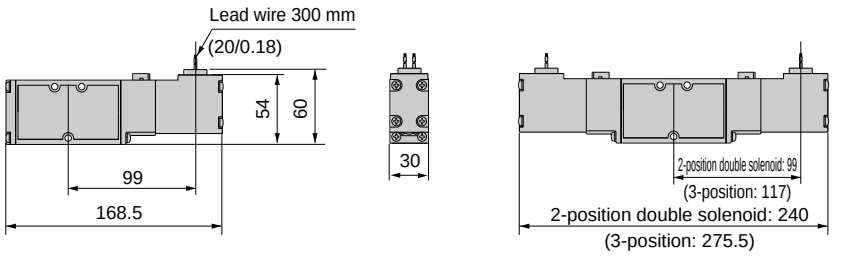
* Refer to page 954 for a check valve.

Dimensions

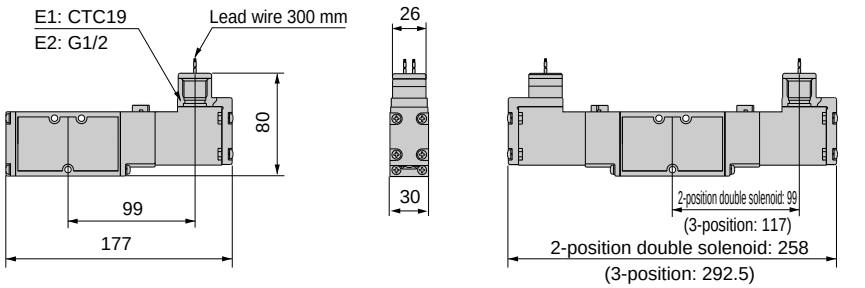
● DIN terminal box with indicator light: (L)



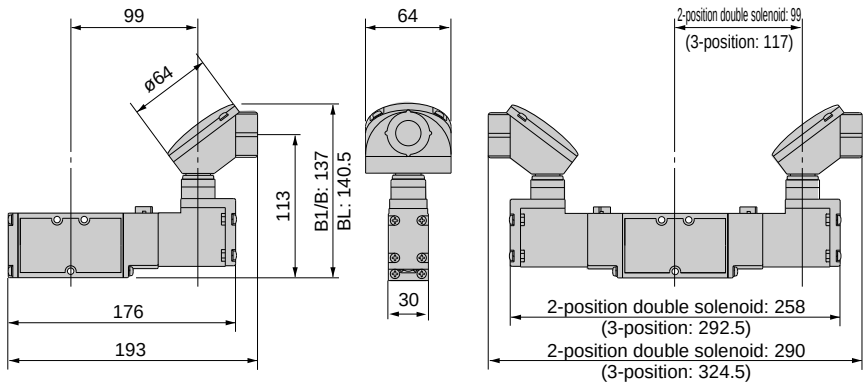
● Grommet lead wire: (E)



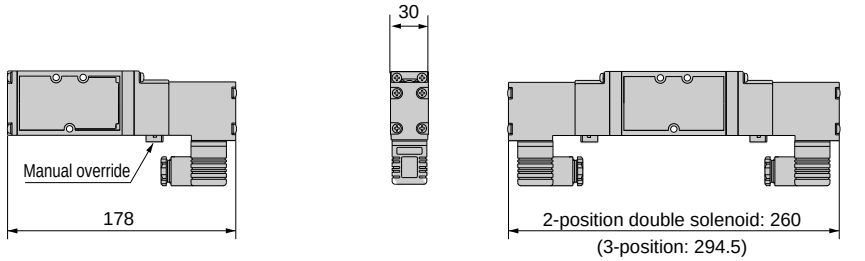
● Conduit lead wire: (E1/E2)



● Round terminal box: (B1/B/BL)



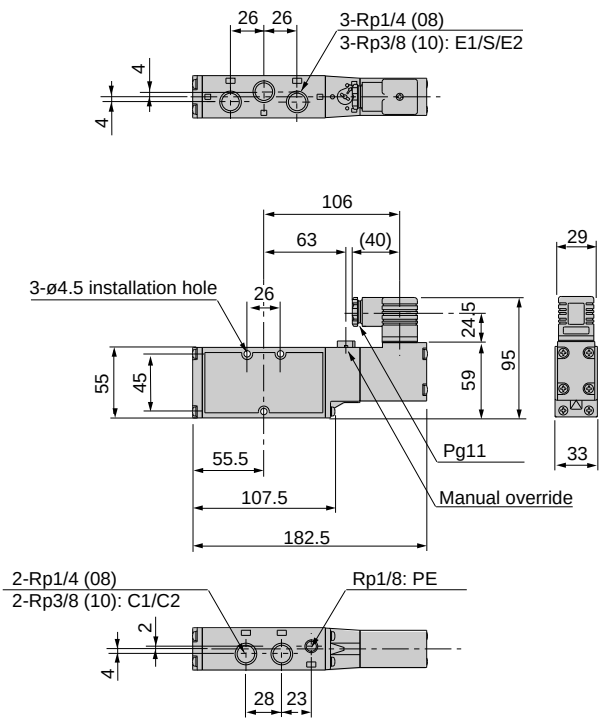
● Manual override position change: (R)



Dimensions

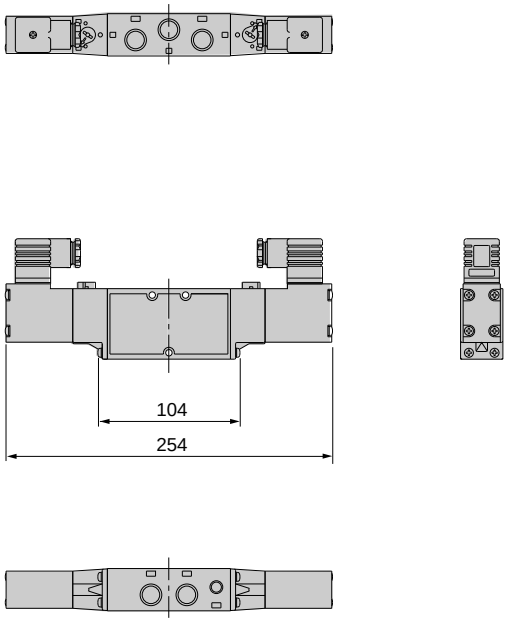
4F310

● 2-position single solenoid: DIN terminal box



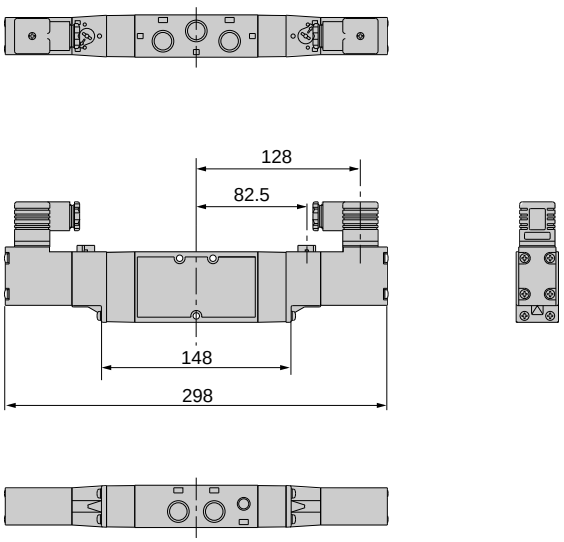
4F320

● 2-position double solenoid: DIN terminal box

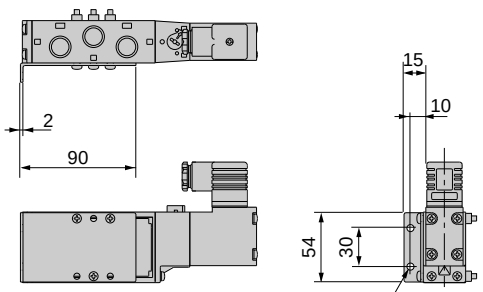


4F3 3/4/5 0

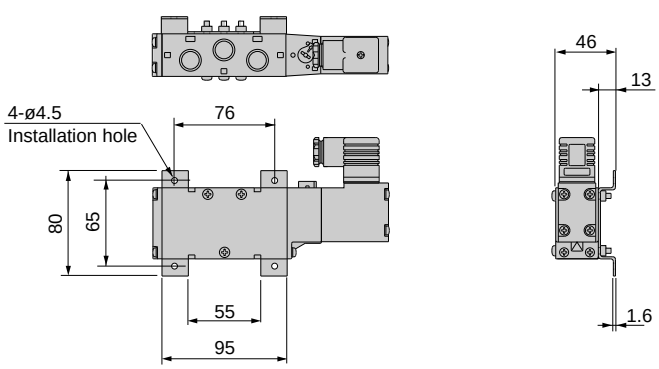
● 3-position: DIN terminal box



● Mounting bracket: (P: 2-position single solenoid dedicated)



● Mounting bracket: (P1)



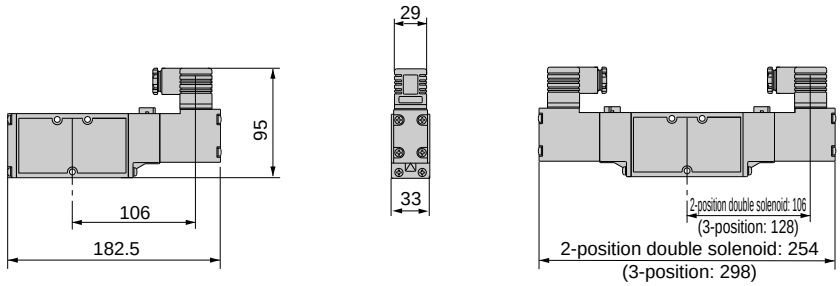
* Refer to page 954 for a check valve.

Dimensions

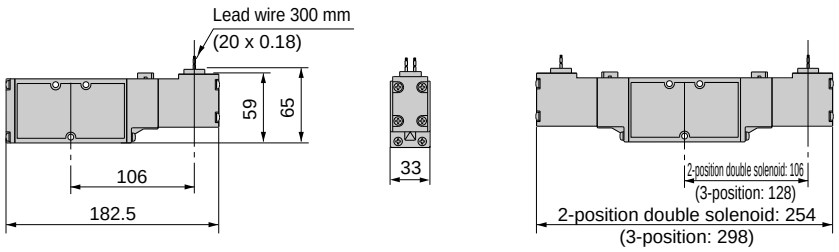
2-position single solenoid

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

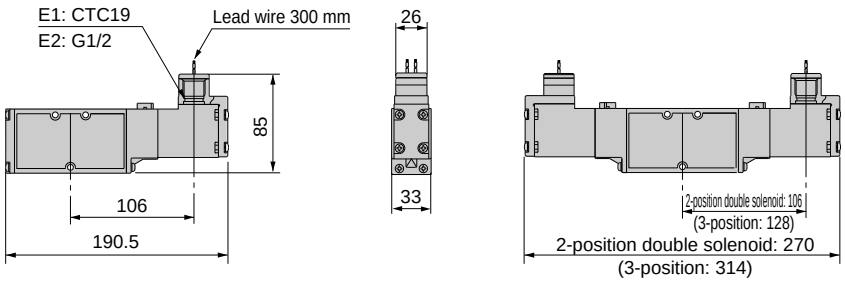
● DIN terminal box with indicator light: (L)



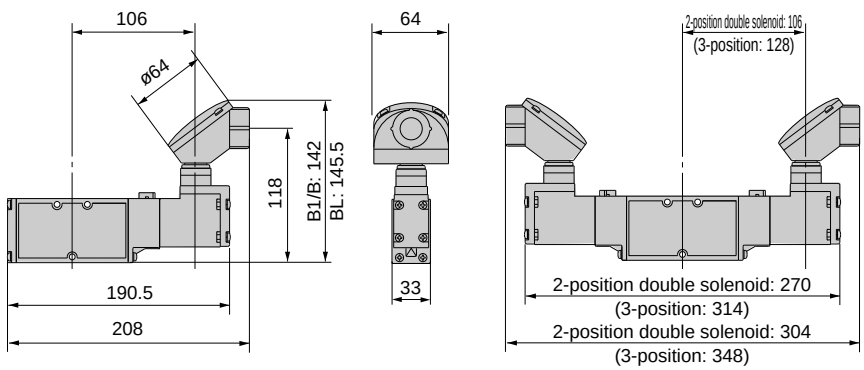
● Grommet lead wire: (E)



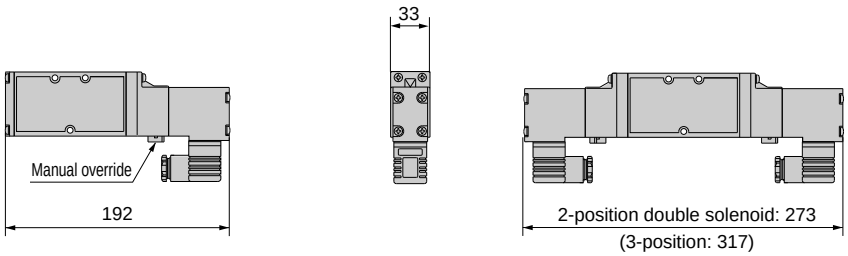
● Conduit lead wire: (E1/E2)



● Round terminal box: (B1/B/BL)



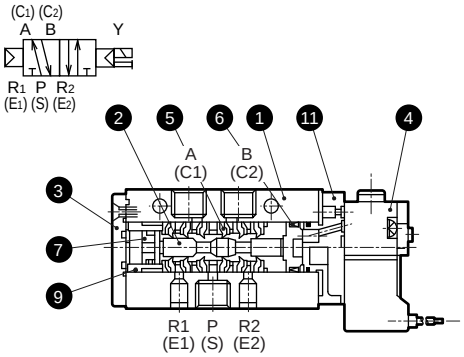
● Manual override position change: (R)



Internal structure and parts list

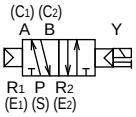
A4F010

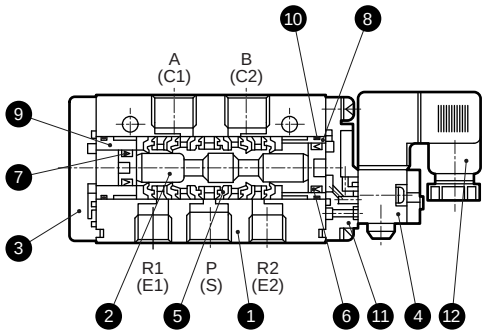
● 2-position single solenoid



4F110

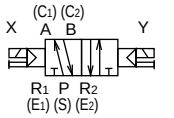
● 2-position single solenoid

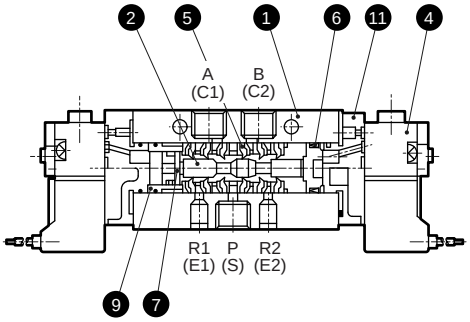




4F020

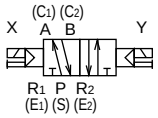
● 2-position double solenoid

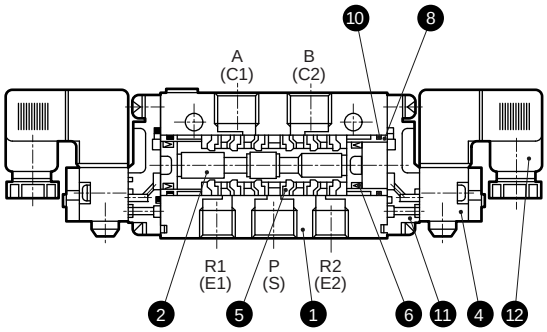




4F120

● 2-position double solenoid

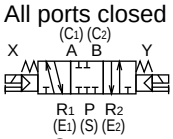




4F130

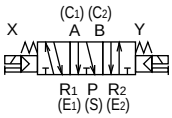
● 3-position

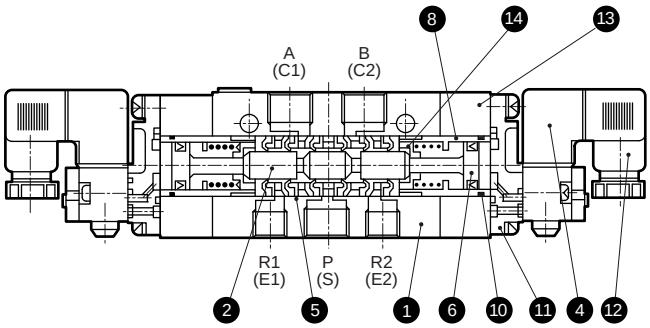
All ports closed



4F140

A/B/R connection





Main parts list

No.	Parts name	Material
1	Body	Aluminum alloy die-casting
2	Valving element (spool)	Aluminum
3	Cap	Aluminum alloy die-casting
4	Coil assembly (solenoid valve)	-
5	Seal assembly	-
6	Piston (A) assembly	-
7	Piston (B) assembly	-
8	Cylinder A	Aluminum
9	Cylinder B	Aluminum
10	O ring	Nitrile rubber
11	Pilot valve body	Aluminum alloy die-casting
12	Small terminal box	-
13	Body block	Aluminum alloy die-casting
14	Spring retainer	Stainless steel

Repair parts list

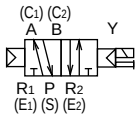
No. / parts name	5 6 7	5	6	7	4
Model no.	Repair kit	Seal assembly	Piston (A) assembly	Piston (B) assembly	Coil assembly *
A4F010	A4F010-K	4F9-126	4F9-124	4F9-125	Discrete 4F9-miniature pneumatic valve model no. (Basic 4F9-P5132-MOE-[Voltage])
4F020	4F020-K				
4F110	4F110-K	4F9-112	4F9-110	4F9-111	Discrete 4F9-miniature pneumatic valve model no. (Basic P5132-MOB-[Voltage])
4F120	4F120-K			-	
4F130	4F130-K		4F9-159	-	
4F140				-	

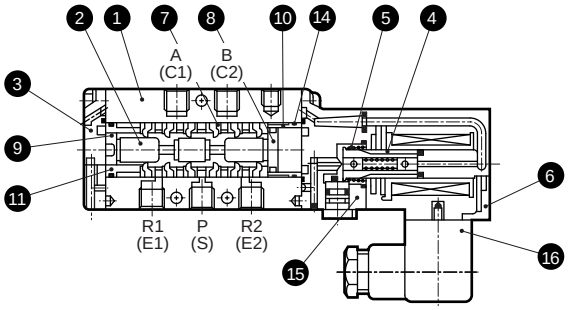
*: Consumables are stocked as a kit, and cannot be purchased individually. (The kit consists of the seal assembly and piston (A) and (B) assemblies. The coil assembly is not included.)

Internal structure and parts list

4F210/4F310

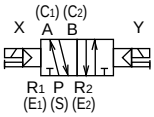
● 2-position single solenoid

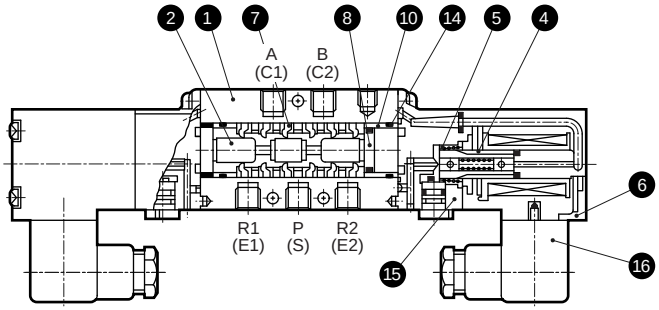




4F220/4F320

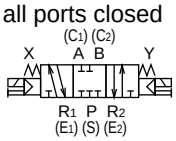
● 2-position double solenoid





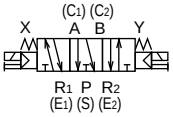
4F230/4F330

● 3-position all ports closed



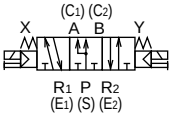
4F240/4F340

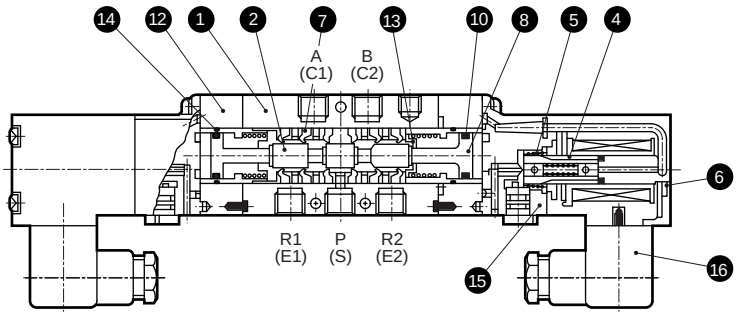
A/B/R connection



4F350

P/A/B connection





Main parts list

No.	Parts name	Material
1	Body	Aluminum alloy die-casting
2	Valving element (spool)	Aluminum
3	Cap	Aluminum alloy die-casting
4	Plunger	-
5	Plunger spring	-
6	Coil assembly	-
7	Seal assembly	-
8	Piston (A) assembly	-
9	Piston (B) assembly	-
10	Cylinder A	Aluminum
11	Cylinder B	Aluminum
12	Body block	Aluminum alloy die-casting
13	Spring retainer	Stainless steel
14	O ring	Nitrile rubber
15	Pilot valve body	Aluminum alloy die-casting
16	DIN terminal box	-

Repair parts list

No. / parts name	7 8 9	7	8	9	6
Model no.	Repair kit	Seal assembly	Piston (A) assembly	Piston (B) assembly	Coil assembly *
4F210	4F210-K	4F9-105	4F9-101	4F9-102	4F2*0-[Electric connection]-COIL-[Voltage]
4F220	4F220-K			-	
4F230	4F230-K		4F9-113	-	
4F240				-	
4F310	4F310-K	4F9-106	4F9-104	4F9-103	4F3*0-[Electric connection]-COIL-[Voltage]
4F320	4F320-K			-	
4F330	4F330-K		4F9-114	-	
4F340				-	
4F350				-	

*: 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.