

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

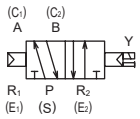
4F**0EX Series

- 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

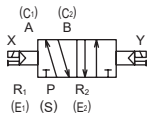
RoHS CAD

JIS symbol

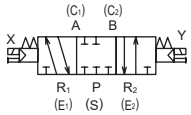
2-position/single



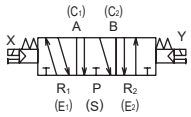
2-position/double



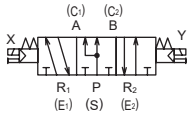
3-position/all ports closed



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 pressure MPa	1.0
Min. working pressure MPa	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 resistance m/s^2	50 or less
Shock resistance m/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 A	AC	100V	0.186/0.135
		200V	0.093/0.068
		110V	0.169/0.123
		220V	0.085/0.061
	DC	24V	0.166
		12V	0.332
Holding current A	AC	100V	0.06/0.05
		200V	0.03/0.025
		110V	0.055/0.045
		220V	0.027/0.023
	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	2-position	Single	0.92	1.27	1.53	2.20	3.74
		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	0.32	-
		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 ≈ 5.0 x 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.

How to order

● Pilot operated explosion-proof 5-port valve

4F3 1 0EX - 08 - G 10 - P - AC100V - ( )

Ⓐ Model No. | Ⓑ Solenoid position | Ⓒ Port size | Ⓓ Applicable cable diameter (*1) | Ⓔ Option | Ⓕ Voltage (*2) | Ⓖ Organizations for explosive-proof certification

Code	Description	Ⓐ Model No. 4F3	4F4	4F5	4F6	4F7
Ⓑ 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	●	●	●	●	●
Ⓒ 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					●
Ⓓ 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	●	●	●	●	●
Ⓔ 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)	●	●	●	●	●
Ⓕ 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		●	●	●	●	●
Ⓖ Organizations for explosive-proof certification						
Blank	Japan certification (TIIS)	●	●	●	●	●
KR	Korea certification (KOSHA)	●	●	●	●	●
TW	Taiwan certification (ITRI)	●	●	●	●	●
CN	China certification (CCC)	●	●	●	●	●

⚠ Precautions for model No. selection

*1: Ⓖ 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

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