



Direct Acting 2-Port Solenoid Valve

FFB Series

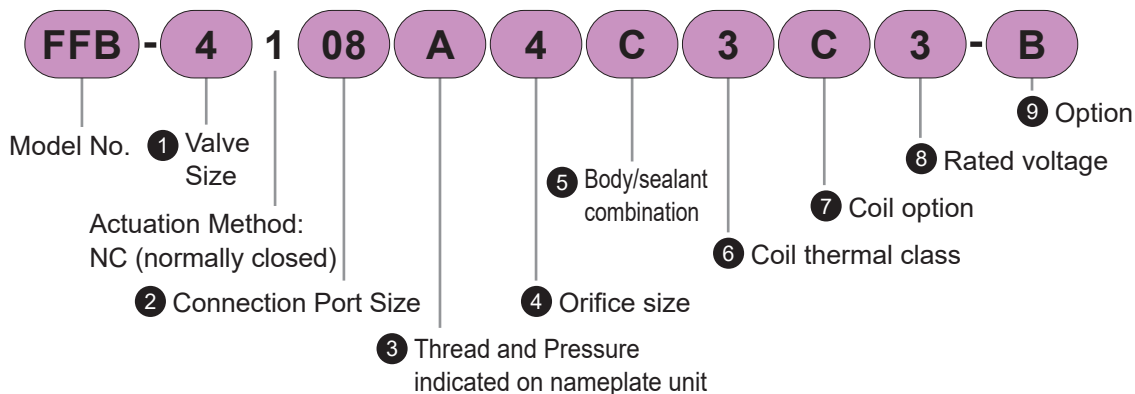
● NC, NO

● Connection Port Size: Rc/G/NPT 1/8 to 1/2



For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method NC FFB-□1 Series



1 Valve size

Code	Content
2	Width 24 mm
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

2 Connection Port Size

		1 Valve size			
Code	Content	2	3	4	5
06	1/8	●	●		
08	1/4		●	●	●
10	3/8			●	●
15	1/2				●

3 Thread and pressure unit indicated on nameplate

Code	Content	
	Thread	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT Thread	psi *1
D	G thread	MPa *2
E	NPT Thread	MPa *2

*1: In compliance with the Measurement Act, the psi display cannot be used in Japan.

*2: "D" and "E" are selections primarily for indicating the pressure display unit as MPa in Japan even for G and NPT threads.

4 Orifice size

		1 Valve size			
Code	Content	2	3	4	5
S	ø1.5	●			
2	ø2	●	●		
3	ø3		●		
4	ø4			●	
5	ø5		●		● *1
7	ø7			●	●
X	ø10				● *2

*1: Not available for 2 port size "15".

*2: Not available for 2 port size "08".

5 Body/sealant combination

Body	Seal	Treatment	Code	Compressed Air	Dry air Inert gas	Water (up to 60°C)	Oil	Low vacuum (*1)	Medium Vacuum
Aluminum	NBR	-	A	●	●				
Brass	NBR		C	●	●	●	●	●	
	FKM		D	●	●	●	●	●	
Stainless Steel	FKM	Vacuum inspection (*2)	G	●	●				●
	NBR	-	H	●	●	●	●	●	
	FKM		J	●	●	●	●	●	
Brass	FKM	Vacuum inspection (*2)	M	●	●				●
	NBR	Oil-prohibited	N	●	●	●	●	●	
	FKM		P	●	●	●	●	●	
Stainless Steel	EPDM		Q			●			
	NBR		S	●	●	●	●	●	
	FKM		T	●	●	●	●	●	
	EPDM		U			●			

*1: This can be used with aow vacuum of $[1.33 \times 10^2 \text{ Pa (abs)}]$, but valve seat leakage is $0.2 \text{ cm}^3/\text{min}$ (ANR) or less. (Valve seat leakage at positive pressure)
When used in a low vacuum, the lower limit of operating pressure is $1.33 \times 10^2 \text{ Pa (abs)}$, so the upper limit is 0.1 MPa lower.

*2: Cannot be selected for 4 orifice size "X".

6 Coil thermal class

Code	Content
3	Class 130 (B)

⑦ Coil option

		① Valve size				Voltage	
Code	Content	2	3	4	5	DC	AC
A	Lead wire (300 mm)	●	●	●	●	●	●
B	With DIN terminal box (G1/2)	*1	●	●	●	●	●
C	With DIN terminal box (Pg11)	●*2	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)	●*2	●	●	●	*3	●
E	Conduit (G1/2)		●	●	●	●	●
F	Conduit (CTC19)		●	●	●	●	●
G	HP terminal box (G1/2)		●	●	●	●	●
H	HP terminal box with lamp (G1/2)		●	●	●	●	●*5
J	Lead wire (300 mm)	●	●	●	●	●*4	*6
K	With DIN terminal box (Pg11)	●*2	●	●	●	●	
L	DIN terminal box with lamp (Pg11)	●*2	●	●	●	●	
M	Conduit (G1/2)		●	●	●	●	
P	Conduit (CTC19)		●	●	●	●	
Q	HP terminal box (G1/2)		●	●	●	●	
R	HP terminal box with lamp (G1/2)		●	●	●	●	
S	DIN coil without terminal box	●	●	●	●	●*7	●*6

*1: When the ① valve size is "2", the coil option "B" cannot be selected.

*2: When the ① valve size is "2", the DIN terminal box thread size is Pg9.

*3: Use "L" DIN terminal box with lamp/surge suppressor.

*4: DC voltage coil option "J" surge suppressor is attached.

*5: When the coil option "H" is selected, the ③ rated voltage "K" (230 VAC) cannot be selected.

*6: All AC voltages have a full-wave rectifier circuit. Significant surges generated in the coil by the action of this diode are almost eliminated. For this reason, a surge suppressor is not available.

*7: Surge suppressor is not available. Use the terminal box with surge suppressor.

⑧ Rated voltage

Code	Content
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

⑨ Option

*1

Code	Content
Blank	None
B	① Mounting plate *2
M	② Mounting plate *3, *4
P	Panel mounting plate

*1: Mounting plate and panel mounting plate are included with the product.

Tightening torque is CKD components Product Website

(*<https://www.ckd.co.jp/kiki/en/>) → "Model No. → Instruction Manuals" for details.

*2: ① The mounting plate is compatible with CKD product FAB, FGB, FVB, FWB, or FLB Series.

*3: Cannot be selected when the ① valve size is "2".

*4: ② The mounting plate is compatible with CKD product AB Series.

Model No. Notion Method mounting plate

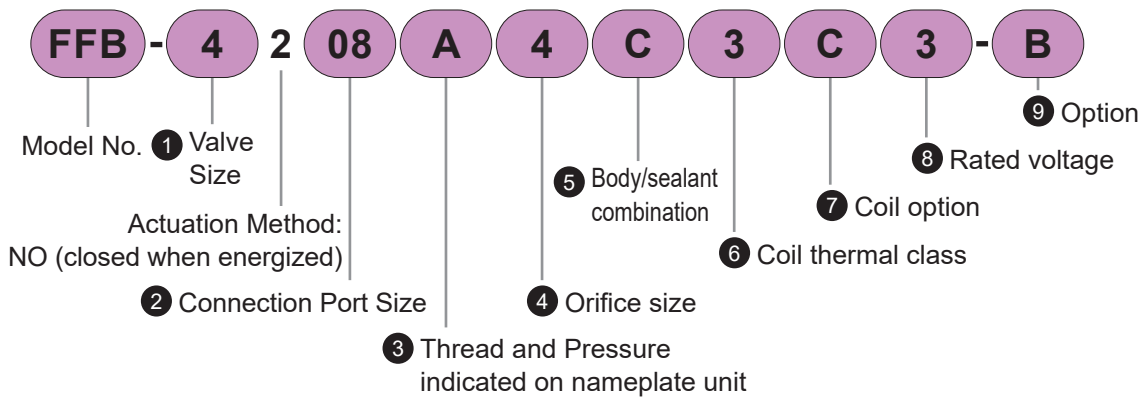
With body mounting screw

Model No.	Mounting plate code: B	Mounting plate code: M	Mounting plate code: P
FFB-21	FFB-21-B-MOUNT-PLATE-KIT	No setting	FFB-21-P-MOUNT-PLATE-KIT
FFB-31	FFB-31-B-MOUNT-PLATE-KIT	FFB-31-M-MOUNT-PLATE-KIT	FFB-31-P-MOUNT-PLATE-KIT
FFB-41	FFB-41-B-MOUNT-PLATE-KIT	FFB-31-M-MOUNT-PLATE-KIT	FFB-31-P-MOUNT-PLATE-KIT
FFB-51	FFB-51-B-MOUNT-PLATE-KIT (Aluminum body) FFB-41-B-MOUNT-PLATE-KIT (brass, stainless steel body)	FFB-51-M-MOUNT-PLATE-KIT	FFB-51-P-MOUNT-PLATE-KIT

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm/ With surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B	DIN terminal box
	C	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box/lamp/ With surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box/lamp/ With surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor
	S	DIN coil without terminal box

Model No. Notation Method NO FFB-□2 Series



1 Valve size

Code	Content
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

2 Connection Port Size

Code	Content	1 Valve size
		3 4 5
06	1/8	●
08	1/4	● ● ●
10	3/8	● ● ●

3 Thread and pressure unit indicated on nameplate

Code	Thread	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT Thread	psi *1
D	G thread	MPa *2
E	NPT Thread	MPa *2

4 Orifice size

Code	Content	1 Valve size
		3 4 5
2	ø2	●
3	ø3	● ● ●
4	ø4	● ● ●
5	ø5	● ● ●
7	ø7	● ● ●

*1: In compliance with the Measurement Act, the psi display cannot be used in Japan.

*2: "D" and "E" are selections primarily for indicating the pressure display unit as MPa in Japan even for G and NPT threads.

5 Body/sealant combination

Body	Seal	Treatment	Code	Operating Fluid				
				Compressed Air	Dry air Inert gas	Water (up to 60°C)	Oil	Low vacuum (*1)
Aluminum	NBR	-	A	●	●	●	●	●
Brass	NBR		C	●	●	●	●	●
Brass	FKM		D	●	●	●	●	●
Stainless Steel	NBR	Oil-prohibited	H	●	●	●	●	●
Stainless Steel	FKM		J	●	●	●	●	●
Brass	NBR		N	●	●	●	●	●
Brass	FKM		P	●	●	●	●	●
Brass	EPDM		Q	●	●	●	●	●
Stainless Steel	NBR		S	●	●	●	●	●
Stainless Steel	FKM		T	●	●	●	●	●
Stainless Steel	EPDM		U	●	●	●	●	●

*1: This can be used with low vacuum of $[1.33 \times 10^2 \text{ Pa (abs)}]$, but valve seat leakage is $0.2 \text{ cm}^3/\text{min}$ (ANR) or less. (Valve seat leakage at positive pressure)
When used in a low vacuum, the lower limit of operating pressure is $1.33 \times 10^2 \text{ Pa (abs)}$, so the upper limit is 0.1 MPa lower.

6 Coil thermal class

Code	Content
3	Class 130 (B)

7 Coil option

Code	Content	1 Valve size			Voltage	
		3	4	5	DC	AC
A	Lead wire (300 mm)	●	●	●	●	●
B	With DIN terminal box (G1/2)	●	●	●	●	●
C	With DIN terminal box (Pg11)	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)	●	●	●	*1	●
E	Conduit (G1/2)	●	●	●	●	●
F	Conduit (CTC19)	●	●	●	●	●
G	HP terminal box (G1/2)	●	●	●	●	●
H	HP terminal box with lamp (G1/2)	●	●	●	●	●*3
J	Lead wire (300 mm)	●	●	●	●*2	*4
K	With DIN terminal box (Pg11)	●	●	●	●	
L	DIN terminal box with lamp (Pg11)	●	●	●	●	
M	Conduit (G1/2)	●	●	●	●	
P	Conduit (CTC19)	●	●	●	●	
Q	HP terminal box (G1/2)	●	●	●	●	
R	HP terminal box with lamp (G1/2)	●	●	●	●	
S	DIN coil without terminal box	●	●	●	●*5	●*4

*1: Use "L" DIN terminal box with lamp/surge suppressor.

*2: DC voltage coil option "J" surge suppressor is attached.

*3: When the coil option "H" is selected, the rated voltage "K" (230 VAC) cannot be selected.

*4: All AC voltages have a full-wave rectifier circuit. Significant surges generated in the coil by the action of this diode are almost eliminated. For this reason, a surge suppressor is not available.

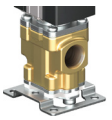
*5: Surge suppressor is not available. Use the terminal box with surge suppressor.

8 Rated voltage

Code	Content
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

9 Option

*1

Code	Content		
Blank	None		
B	Mounting plate①	Aluminum body	Brass/Stainless steel body
			

1: Mounting plate is included with the product. Tightening torque isCKD components Product Website (<https://www.ckd.co.jp/kiki/en/>) → "Model No. → Instruction Manuals for details.

*2: ①The mounting plate is compatible with CKD product FAB or FWB Series.

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm/ With surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B	DIN terminal box
	C	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box/lamp/ With surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box/lamp/ With surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor
	S	DIN coil without terminal box

Model No. Notion Method mounting plate

With body mounting screw

Model No.	Mounting plate code: B	
	Aluminum body	Brass, stainless steel body
FFB-32	FFB-31-B-MOUNT-PLATE-KIT	FFG-31-B-MOUNT-PLATE-KIT
FFB-42	FFB-41-B-MOUNT-PLATE-KIT	FFG-41-B-MOUNT-PLATE-KIT
FFB-52	FFB-51-B-MOUNT-PLATE-KIT	

Common Specifications

Item	FFB
Operating Fluid	Compressed air/dry air/inert gas/water/oil (50mm ² /s or less)/medium vacuum *1, *2
Maximum Operating Pressure MPa	1.4 (refer to working pressure in individual specifications.)
Proof pressure (water pressure) MPa	2.1 (NC), 1.5 (NO)
Fluid Temperature °C	−10 to 60 (no freezing)
Ambient Temperature °C	−10 to 60 (DC), −10 to 55 (AC)
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve Structure	Direct acting poppet structure
Valve seat leakage cm ³ /min (ANR)	0.2 or less (air)
Valve seat leakage *3 Pa·m ³ /sHe	1.33 × 10 ^{−6} or less
Mounting Orientation	Unrestricted
Protection Structure	IP65

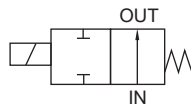
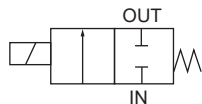
*1: When using in vacuum, vacuum the OUT port side.

*2: When using at medium vacuum, select the "G" and "M" material options.

*3: Amount of leakage at medium vacuum. (FFB Series NC only)

Circuit Diagram Symbol

● FFB-□1:NC (open when energized) type ● FFB-□2:NO (closed when energized) type



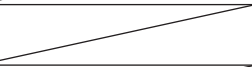
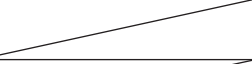
Electrical specifications

Item	FFB-2							FFB-3						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	3.5	3.5	—	—	—	—	—	4.5	4.5	—	—	—	—	—
Apparent power VA	—	—	5.1	5.7	6.0	5.3	5.7	—	—	6.2	6.1	6.2	6.2	6.5
Item	FFB-4							FFB-5						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	7	7	—	—	—	—	—	10.5	10.5	—	—	—	—	—
Apparent power VA	—	—	8.6	10	9.6	9.5	9.4	—	—	13	13	14	14	13

The leakage current must be less than or equal to the values shown below.

Voltage	AC					DC	
	100 V	110 V	200 V	220 V	230 V	12 V	24 V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Individual specifications

Item	Connection Port Size Rc/G/NPT	Orifice size (mm)	Operating Pressure (MPa) *1	Operating Pressure Pa (abs) *2, *3	Flow Characteristics				Weight (kg) *5	
Model No.					C [dm3/ (s·bar)]	b	Cv	Kv value *4		
NC (normally closed)										
FFB-21 06 * S	1/8	1.5	0 to 1.0	1.3 x 10 ⁻² to 1 x 10 ⁶	0.31	0.42	0.085	0.074	0.21	
2		2	0 to 0.6	1.3 x 10 ⁻² to 0.6 x 10 ⁶	0.53	0.34	0.13	0.11		
FFB-31 06 08 * 2	1/8 1/4	2	0 to 1.4	1.3 x 10 ⁻² to 1.4 x 10 ⁶	0.56	0.50	0.15	0.13	0.36	
3		3	0 to 0.6	1.3 x 10 ⁻² to 0.6 x 10 ⁶	1.2	0.45	0.31	0.27		
5		5	0 to 0.2	1.3 x 10 ⁻² to 0.2 x 10 ⁶	2.4	0.43	0.63	0.55		
FFB-41 08 10 * 4	1/4 3/8	4	0 to 1.0	1.3 x 10 ⁻² to 1 x 10 ⁶	1.8	0.52	0.43	0.37	0.55	
7		7	0 to 0.15	1.3 x 10 ⁻² to 0.15 x 10 ⁶	4.7	0.43	1.15	1.00		
FFB-51 08 10 15 * 5	1/4 3/8 1/2	5	0 to 0.8	1.3 x 10 ⁻² to 0.8 x 10 ⁶	2.7	0.45	0.72	0.62	0.85	
7		7	0 to 0.3	1.3 x 10 ⁻² to 0.3 x 10 ⁶	4.7	0.38	1.2	1.04		
X		10	0 to 0.1	1.3 x 10 ⁻² to 0.1 x 10 ⁶	6.9	0.41	2.0	1.74		
NO (closed when energized)										
FFB-32 06 08 * 2	1/8 1/4	2	0 to 0.9		0.53	0.46	0.13	0.11	0.46	
3		3	0 to 0.5		0.77	0.54	0.19	0.16		
5		5	0 to 0.15		1.4	0.56	0.37	0.32		
FFB-42 08 10 * 3	1/4 3/8	3	0 to 0.8		1.2	0.45	0.31	0.27	0.71	
4		4	0 to 0.4		1.8	0.38	0.56	0.49		
7		7	0 to 0.12		3.5	0.36	0.95	0.82		
FFB-52 08 10 * 4	1/4 3/8	4	0 to 0.8		1.8	0.38	0.56	0.49	0.9	
5		5	0 to 0.5		2.8	0.31	0.72	0.62		
7		7	0 to 0.25		3.5	0.36	0.95	0.82		

*1: This can be used with low vacuum of [1.33×10^2 Pa (abs)], but valve seat leakage is 0.2 cm³/min (ANR) or less. (Valve seat leakage at positive pressure)
When using at low vacuum, the lower limit of the working pressure is 1.33×10^2 Pa (abs), so the upper limit is 0.1 MPa lower.

*2: Working pressure at medium vacuum.

*3: When using in vacuum, vacuum the OUT port side.

*4: Kv value refer to page 53.

*5: Weight of brass body with DC lead wire.



Direct Acting 2-Port Solenoid Valve

FFB Series

For high temperature fluids

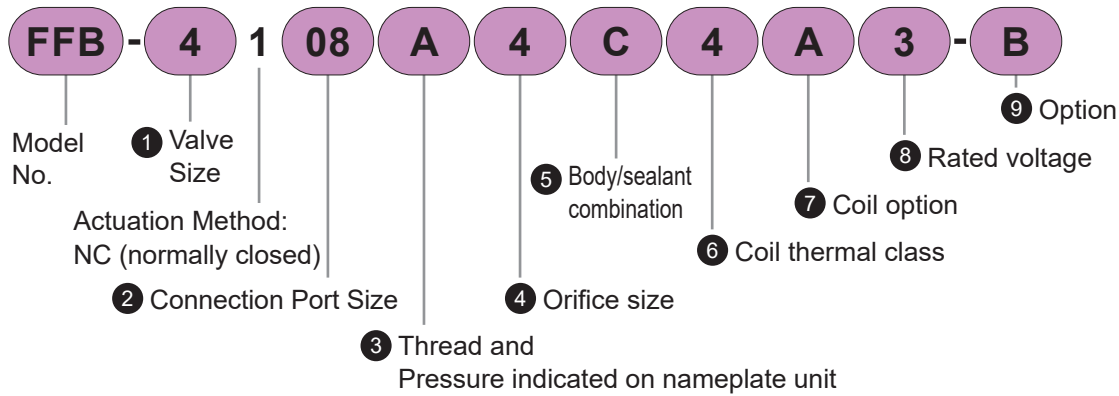
● NC (normally closed)

● Connection Port Size: Rc/G/NPT 1/8 to 1/2



For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method NC FFB-* 1 Series For high temperature fluid



1 Valve size

Code	Content
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

2 Connection Port Size

Code	Content	1 Valve size
		3 4 5
06	1/8	●
08	1/4	● ● ●
10	3/8	● ● ●
15	1/2	● ● ●

3 Thread and pressure unit indicated on nameplate

Code	Content	
	Thread	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT Thread	psi *1
D	G thread	MPa *2
E	NPT Thread	MPa *2

*1: In compliance with the Measurement Act, the psi display cannot be used in Japan.

*2: "D" and "E" are selections primarily for indicating the pressure display unit as MPa in Japan even for G and NPT threads.

4 Orifice size

Code	Content	1 Valve size
		3 4 5
3	ø3	●
4	ø4	●
5	ø5	● ● *1
7	ø7	● ● ●
X	ø10	● *2

*1: Not available for 2 port size "15".

*2: Not available for 2 port size "08".

5 Body/sealant combination

Body	Seal	Treatment	Code	Compressed Air	Dry air Inert gas	Water/hot water (up to 90°C)	Oil	Low vacuum (*1)	Steam (up to 143°C)
Brass	FKM	-	D	●	●	●	●	●	●
Bronze			E	●	●	●	●	●	●
Stainless Steel			J	●	●	●	●	●	●
Brass	FKM	Oil-prohibited	P	●	●	●	●	●	●
	EPDM		Q	●	●	●	●	●	●
Bronze	FKM		F	●	●	●	●	●	●
	EPDM		K	●	●	●	●	●	●
Stainless Steel	FKM		T	●	●	●	●	●	●
	EPDM		U	●	●	●	●	●	●

*1: This can be used with low vacuum of $[1.33 \times 10^2 \text{ Pa (abs)}]$, but valve seat leakage is $0.2 \text{ cm}^3/\text{min (ANR)}$ or less. (Valve seat leakage at positive pressure)
When used in a low vacuum, the lower limit of operating pressure is $1.33 \times 10^2 \text{ Pa (abs)}$, so the upper limit is 0.1 MPa lower.

6 Coil thermal class

Code	Content
4	Class 180 (H)

7 Coil option

Code	Content	1 Valve size			Voltage	
		3	4	5	DC	AC
A	Lead wire (300 mm)	●	●	●	●	●
J	Lead wire (300 mm) With surge suppressor	●	●	●	●*1	●*2

*1: DC voltage coil option "J" surge suppressor is attached.

*2: All AC voltages have a full-wave rectifier circuit. Significant surges generated in the coil by the action of this diode are almost eliminated. For this reason, a surge suppressor is not available.

Coil option code

	A	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm/ With surge suppressor

8 Rated voltage

Code	Content
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

9 Option

*1

Code	Content
Blank	None
B	①Mounting plate *2 
M	②Mounting plate *3 
P	Panel mounting plate 

1: Mounting plate and panel mounting plate are included with the product. Tightening torque is CKD components Product Website (<https://www.ckd.co.jp/kiki/en/>) → "Model No. → [Instruction Manuals](#) details.

*2: ①The mounting plate is compatible with our product FAB, FGB, FVB, FWB, FHB, FLB Series.

*3: ②The mounting plate is compatible with CKD product AB Series.

Model No. Notion Method mounting plate

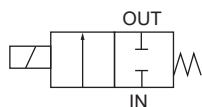
With body mounting screw

Model No.	Mounting plate code: B	Mounting plate code: M	Mounting plate code: P
FFB-31	FFB-31-B-MOUNT-PLATE-KIT	FFB-31-M-MOUNT-PLATE-KIT	FFB-31-P-MOUNT-PLATE-KIT
FFB-41	FFB-41-B-MOUNT-PLATE-KIT	FFB-31-M-MOUNT-PLATE-KIT	FFB-31-P-MOUNT-PLATE-KIT
FFB-51	FFB-51-B-MOUNT-PLATE-KIT (Aluminum body) FFB-41-B-MOUNT-PLATE-KIT (brass, stainless steel, bronze body)	FFB-51-M-MOUNT-PLATE-KIT	FFB-51-P-MOUNT-PLATE-KIT

Common Specifications

Item	FFB
Operating Fluid	Compressed air/dry air/inert gas/steam/water/hot water/oil (50mm ² /s or less)
Maximum Operating Pressure MPa	0.8 (refer to working pressure in individual specifications.)
Proof pressure (water pressure) MPa	1.2
Fluid Temperature °C	Other than steam: -10 to 90 Steam: -10 to 143
Ambient Temperature °C	-10 to 60
Thermal class	Class 180 (H)
Atmosphere	Place free of corrosive gas and explosive gas
Valve Structure	Direct acting poppet structure
Valve seat leakage cm ³ /min (ANR)	0.2 or less (air)
Mounting Orientation	Unrestricted
Protection Structure	IP65

Circuit Diagram Symbol



Electrical specifications

Item	FFB-3							FFB-4						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	9	9	—	—	—	—	—	7	7	—	—	—	—	—
Apparent power VA	—	—	10.2	10.2	10.7	10.3	11.2	—	—	8.6	10	9.6	9.5	9.4

Item	FFB-5						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%						
Power Consumption W	10.5	10.5	—	—	—	—	—
Apparent power VA	—	—	13	13	14	14	13

The leakage current must be less than or equal to the values shown below.

Voltage	AC					DC	
	100V	110V	200V	220V	230V	12V	24V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Individual specifications

Item	Connection Port Size Rc/G/NPT	Orifice size (mm)	Working pressure (MPa) *1		Flow Characteristics				Weight (kg) *3	
Model No.			Fluid: Except steam	Fluid: Steam	C [dm3/ (s·bar)]	b	Cv	Kv value *2		
NC (normally closed)										
FFB-31 06 08 * 3	1/8 1/4	3	0 to 0.45	0 to 0.3	1.2	0.45	0.31	0.27	0.36	
5		5	0 to 0.3	0 to 0.3	2.4	0.43	0.63	0.55		
FFB-41 08 10 * 4	1/4 3/8	4	0 to 0.8	0 to 0.3	1.8	0.52	0.43	0.37	0.55	
7		7	0 to 0.1		4.7	0.43	1.15	1.00		
FFB-51 08 10 15 * 5	1/4 3/8 1/2	5	0 to 0.65	0 to 0.3	2.7	0.45	0.72	0.62	0.85	
7		7	0 to 0.25	0 to 0.15	4.7	0.38	1.2	1.04		
X		10	0 to 0.07		6.9	0.41	2.0	1.74		

*1: This can be used with low vacuum of [1.33×10^2 Pa (abs)], but valve seat leakage is 0.2cm³/min (ANR) or less. (Valve seat leakage at positive pressure)
When using at low vacuum, the lower limit of the working pressure is 1.33×10^2 Pa (abs), so the upper limit is 0.1 MPa lower.

*2: Kv value refer to page 53.

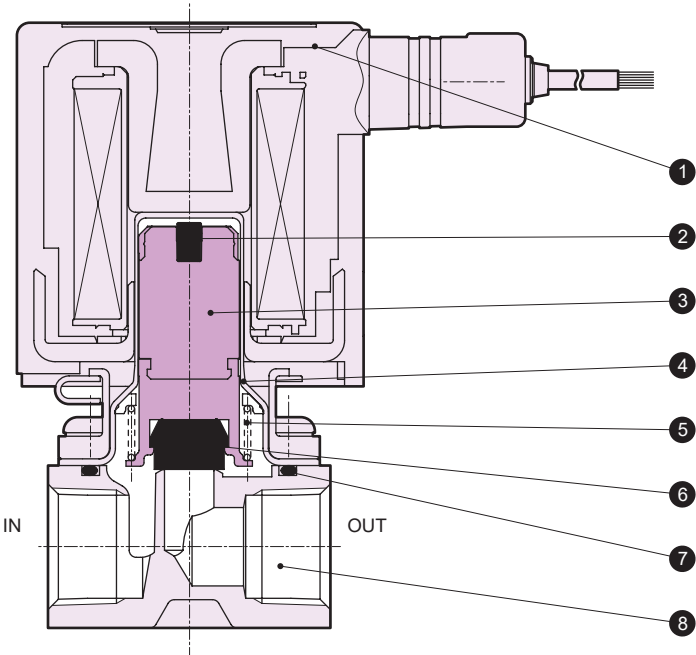
*3: Weight of brass body with DC lead wire.

Standard model No./specifications	High temperature model No./specifications	Internal structure/ Dimensions	Model No./ Specifications	Internal structure/ Dimensions	Model No./ Specifications	Internal structure/ Dimensions	Model No./ Specifications	Internal structure/ Dimensions	Working fluid check list	Flow rate calculation formula	Precautions for Use

Precautions for Use	Flow rate calculation formula	Working fluid check list	FFGM		FFG		FFBM		FFB	
			Internal structure/ Dimensions	Model No./ Specifications	Internal structure/ Dimensions	Model No./ Specifications	Internal structure/ Dimensions	Model No./ Specifications	Internal structure/ Dimensions	High temperature model No./specifications

Internal Structure Diagram/Materials

● FFB-* 1 Series: NC (normally closed)

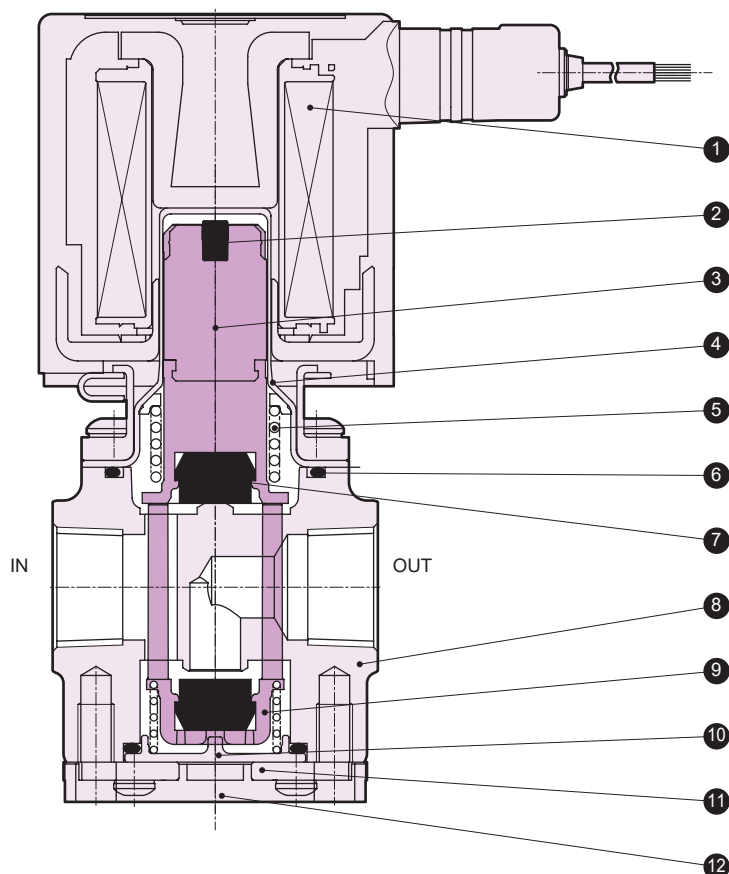


Part No.	Name	Material	
1	Coil assembly	-	
2	Noise dampening rubber	HNBR(FKM,EPDM)	Hydrogenated nitrile rubber (fluoro rubber, ethylene propylene rubber)
3	Plunger	SUS,PPS	Stainless steel, polyphenylene sulfide
4	Flare pipe assembly	SUS,PPS	Stainless steel, polyphenylene sulfide
5	Plunger spring	SUS304	Stainless Steel
6	Seal	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
7	O-ring	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
8	Body	Brass (ADC, SCS13, CAC408)	Brass (aluminum die-casting, stainless steel, bronze)

() shows options.

Internal Structure Diagram/Materials

● FFB-* 2 Series: NO (closed when energized)



Part No.	Name	Material	
1	Coil assembly	-	
2	Noise dampening rubber	HNBR(FKM,EPDM)	Hydrogenated nitrile rubber (fluoro rubber, ethylene propylene rubber)
3	Plunger	SUS,PPS	Stainless steel, polyphenylene sulfide
4	Flare pipe assembly	SUS,PPS	Stainless steel, polyphenylene sulfide
5	Plunger spring	SUS304	Stainless Steel
6	O-ring	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
7	Seal	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
8	Body	Brass (ADC, SCS13)	Brass (aluminum die-casting, stainless steel)
9	Valve Body Guide	PPS	Polyphenylene sulfide
10	NO cover	PPS	Polyphenylene sulfide
11	Covers A, B *1	SUS304	Stainless Steel
12	Cover A lid *2	POM	Polyacetal

() shows options.

*1: brass body, stainless steel cover A, aluminum cover B

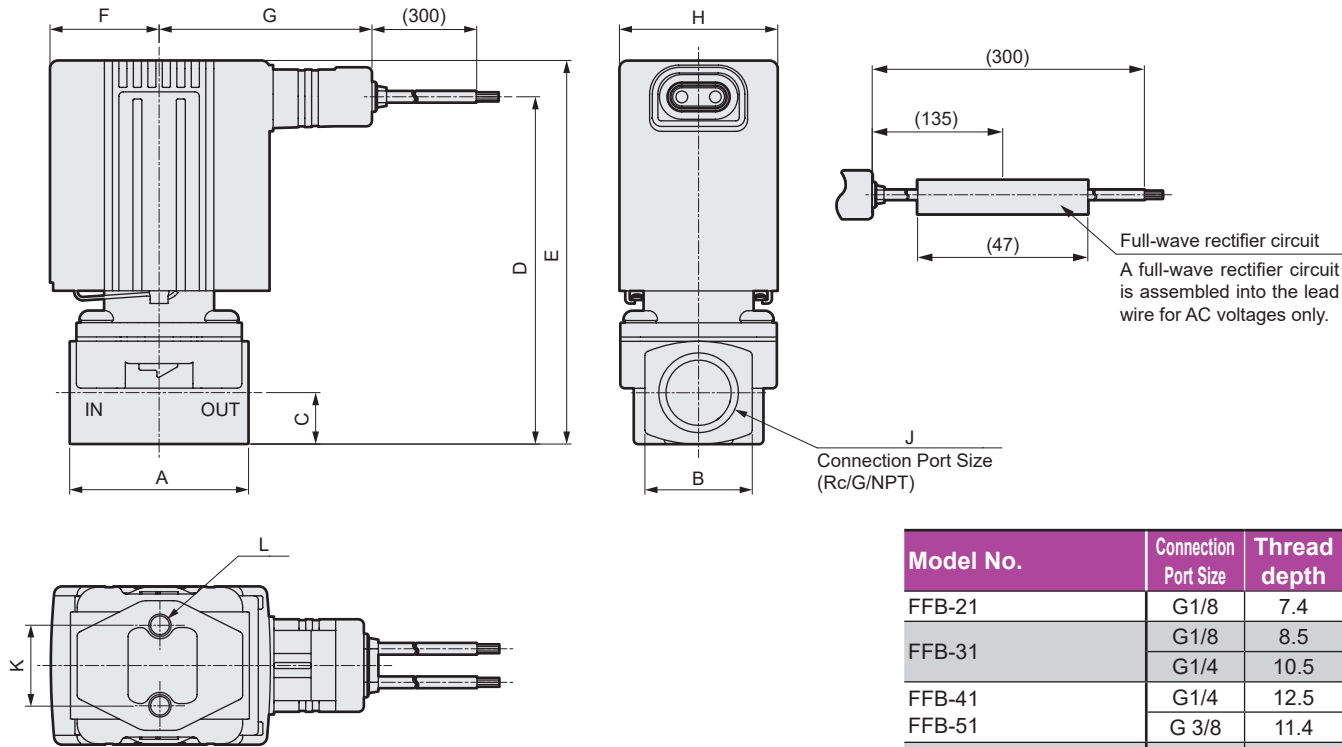
*2: Only for body material of brass/stainless steel

For maintenance parts, refer to the CKD component product site

(*<https://www.ckd.co.jp/kiki/en/>) → Refer to "Model No." → Maintenance parts .

Dimensions diagram FFB-* 1 Series: NC (normally closed)

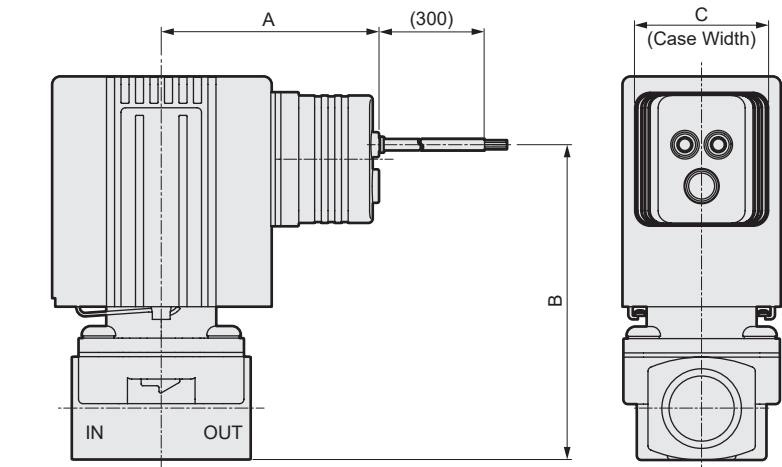
- Lead wire/DC voltage Coil option code: A / J
- Lead wire/AC voltage + class 180(H) Coil option code: A/J, coil thermal class code: 4



Model No.	Connection Port Size	Thread depth
FFB-21	G1/8	7.4
FFB-31	G1/8	8.5
	G1/4	10.5
FFB-41	G1/4	12.5
FFB-51	G 3/8	11.4
FFB-5110 * X (ø 10)	G 3/8	12.5
FFB-5115	G 1/2	15

Model No.	A	B	C	D	E	F	G	H	J	K	L
FFB-21	32	17	7.5	54.5	62.5	18.5	42	24	1/8	15	M4 depth 6
FFB-31	36	19	9.5	66.5	74	22	45	30	1/8, 1/4	18	M5 depth 6
FFB-41	40	24	11.5	77.5	86	24.5	47.5	35	1/4, 3/8	18	M5 depth 8
FFB-51	40	24	11.5	86.5	95	27.5	50	40	1/4, 3/8	18	M5 depth 8
FFB-5110 * X (ø 10)	50	27	13.5	94.5	102.5	27.5	50	40	3/8, 1/2	18	M5 depth 8
FFB-5115(15A)											

- Lead wire/AC voltage + class 130 (B) Coil option code: A/J, coil thermal class code: 3

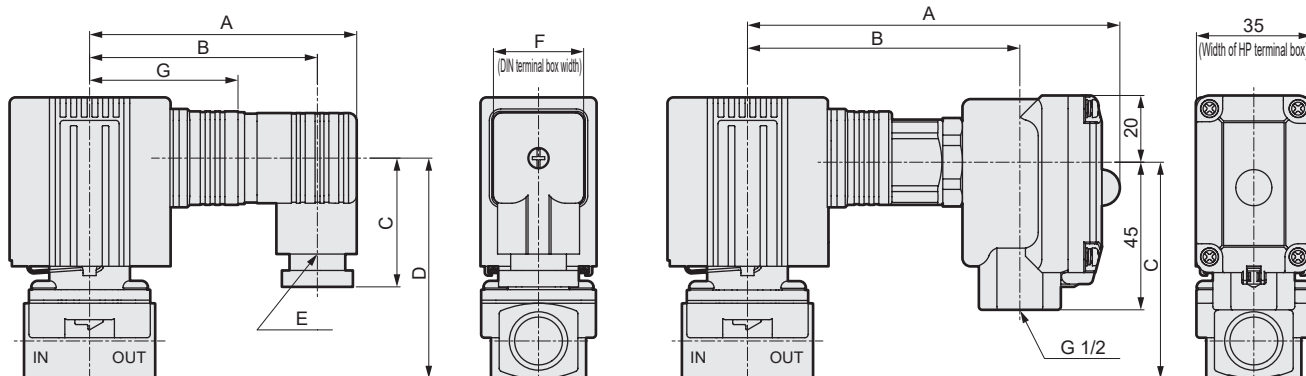


Model No.	A	B	C
FFB-21	43	50.5	24
FFB-31	46	59.5	30
FFB-41	48.5	70.5	30
FFB-51	51	79.5	30
FFB-5110 * X (ø 10)	51	87.5	30
FFB-5115(15A)			

Optional Dimensions diagram FFB-□1 Series: NC (normally closed)

- Coil option codewith DIN terminal box: B/C/D/K/L/S
- DIN coil without terminal box

- With HP terminal boxCoil option code: G/H/Q/R

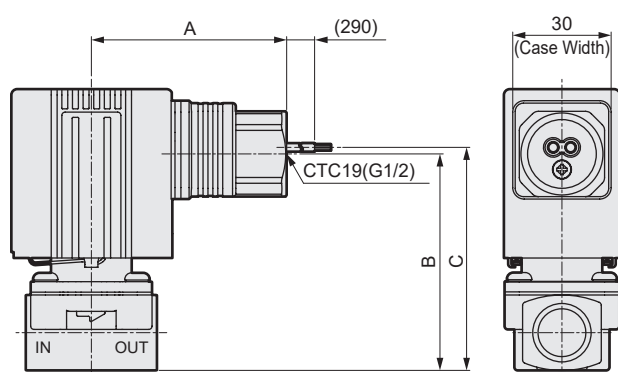


Dimensions shown in () are for G1/2.

Model No.	A	B	C	D	E	F	G
FFB-21	73	64	36	47.5	Pg9	21	39
FFB-31	78.5	66.5 (65)	39.5 (41.5)	56	Pg11 (G 1/2)	27.5	42
FFB-41	81	69 (67.5)	39.5 (41.5)	67.5	Pg11 (G 1/2)	27.5	44.5
FFB-51	83.5	71.5 (70)	39.5 (41.5)	76.5	Pg11 (G 1/2)	27.5	47
FFB-5110 * X (ø 10)	83.5	71.5 (70)	39.5 (41.5)	84	Pg11 (G 1/2)	27.5	47

Model No.	A	B	C
FFB-21	-	-	-
FFB-31	113	82	55
FFB-41	115	85	66
FFB-51	118	87	75
FFB-5110 * X (ø 10)	118	87	83
FFB-5115(15A)			

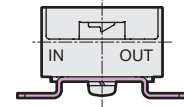
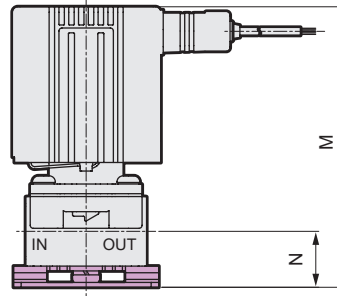
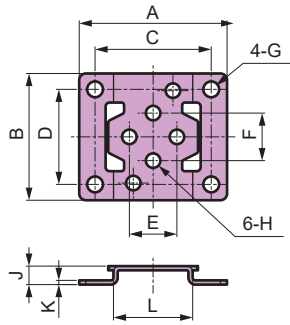
- Conduit Coil option code: E/F/M/P



Model No.	A	B	C
FFB-21	-	-	-
FFB-31	56.5	55	57
FFB-41	59	66	68
FFB-51	61.5	75	77
FFB-5110 * X (ø 10)	61.5	83	85
FFB-5115(15A)			

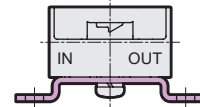
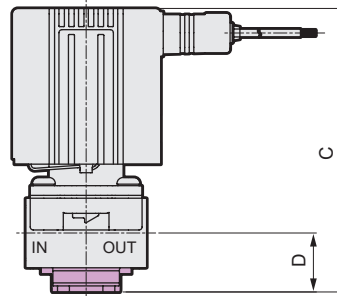
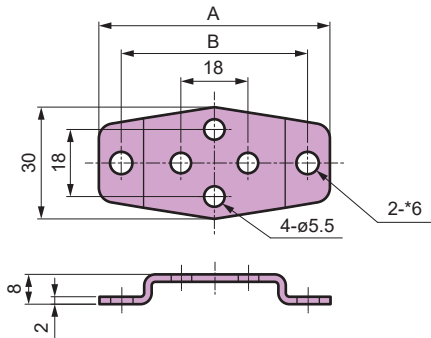
Optional Dimensions diagram FFB-□1 Series: NC (normally closed)

● Mounting plate① Option code: B



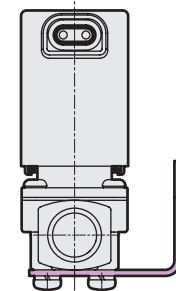
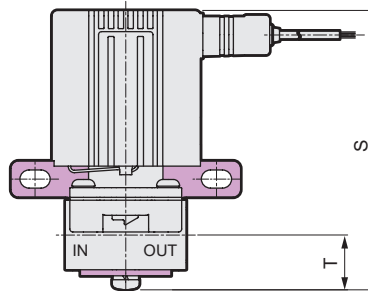
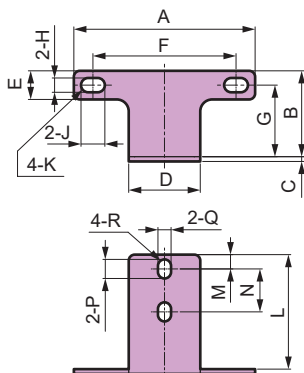
Model No.		A	B	C	D	E	F	G	H	J	K	L	M	N
FFB-21		40	34	30	25	15	15	ø5	ø4.5	6	1.2	20	68.5	13.5
FFB-31		52	42	40	30	18	18	ø6	ø5.5	7	1.6	25	81	16.5
FFB-41		56	48	44	36	18	18	ø6	ø5.5	7	1.6	30	93	18.5
FFB-51	Aluminum body	62	50	50	38	18	18	ø6	ø5.5	7	1.6	36	102	18.5
FFB-5110 * X (ø 10) FFB-5115(15A)													109.5	20.5
FFB-51	Brass/SUS/ bronze body	56	48	44	36	18	18	ø6	ø5.5	7	1.6	30	102	18.5
FFB-5110 * X (ø 10) FFB-5115(15A)													109.5	20.5

● Mounting plate② Option code: M



Model No.	A	B	C	D
FFB-31	62	50	82	17.5
FFB-41	62	50	94	19.5
FFB-51	70	58	103	19.5
FFB-5110 * X (ø 10) FFB-5115(15A)			110.5	21.5

● Panel mounting plate Option code: P

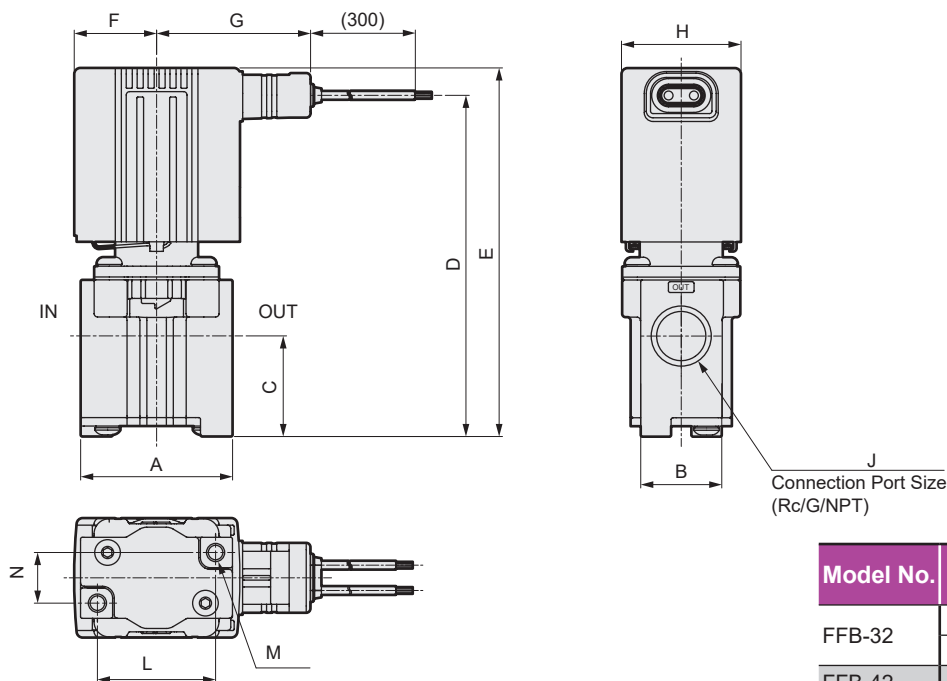


Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
FFB-21	57	25	1.6	25	10	45	20	5	8	R 2.5	35.4	4.5	15	6	4.5	R 2.25	67.5	12.5
FFB-31	66	31	2	30	12	50	25	6	10	R3	43	6	18	8	5.5	R 2.75	80.5	16
FFB-41	66	31	2	30	12	50	25	6	10	R3	43	6	18	8	5.5	R 2.75	92.5	18
FFB-51	76	36	2	30	12	60	30	6	10	R3	48	6	18	8	5.5	R 2.75	101.5	18
FFB-5110 * X (ø 10) FFB-5115(15A)																	109	20

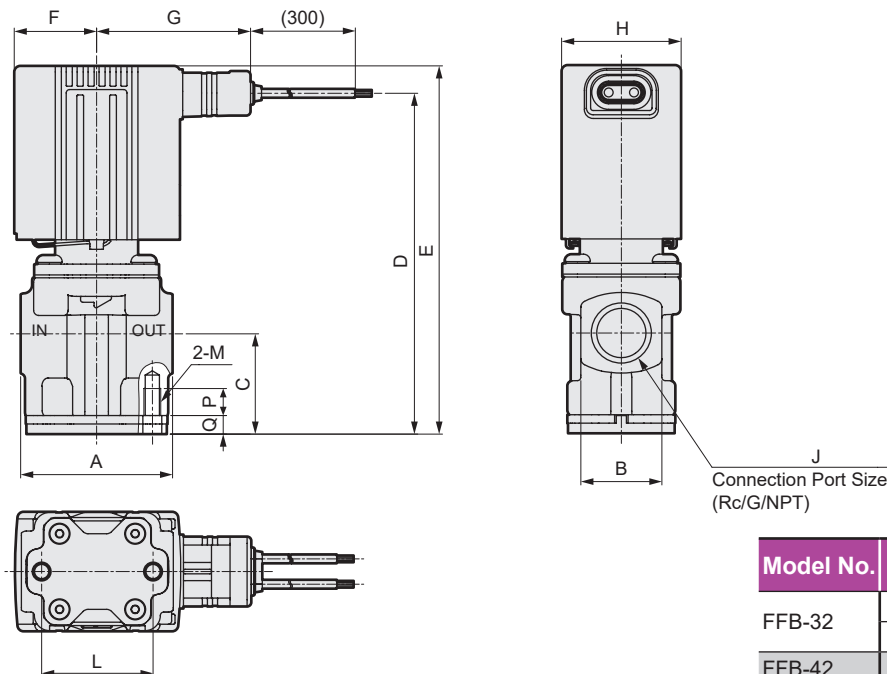
External Dimension Drawings: NO (closed when energized)

Dimensions diagram FFB-□2 Series: NO (closed when energized)

● Lead wire/DC voltage (aluminum body) Coil option code: A/J



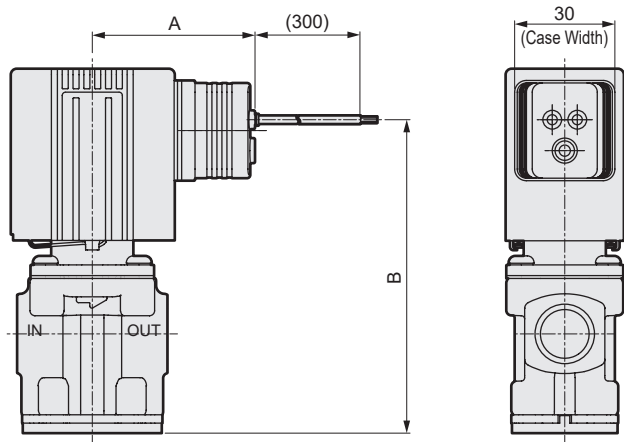
● Lead wire/DC voltage (brass body/stainless steel body) Coil option code: A/J



Model No.		A	B	C	D	E	F	G	H	J	L	M	N	P	Q
FFB-32	Aluminum body	40	19	26.5	86.5	94	22	45	30	1/8 1/4	32	M5 depth 8	11	-	-
	Brass/SUS body			26	86	93.5					29	M5	-	6	4.5
FFB-42	Aluminum body	45	24	30	101	109	24.5	47.5	35	1/4 3/8	35	M5 depth 8	15	-	-
	Brass/SUS body										33	M5	-	8	5.5
FFB-52	Aluminum body	45	24	30	110	118	27.5	50	40	1/4 3/8	35	M5 depth 8	15	-	-
	Brass/SUS body										33	M5	-	8	5.5

Dimensions diagram FFB-□2 Series: NO (closed when energized)

● Lead wire/AC voltage Coil option code: A/J

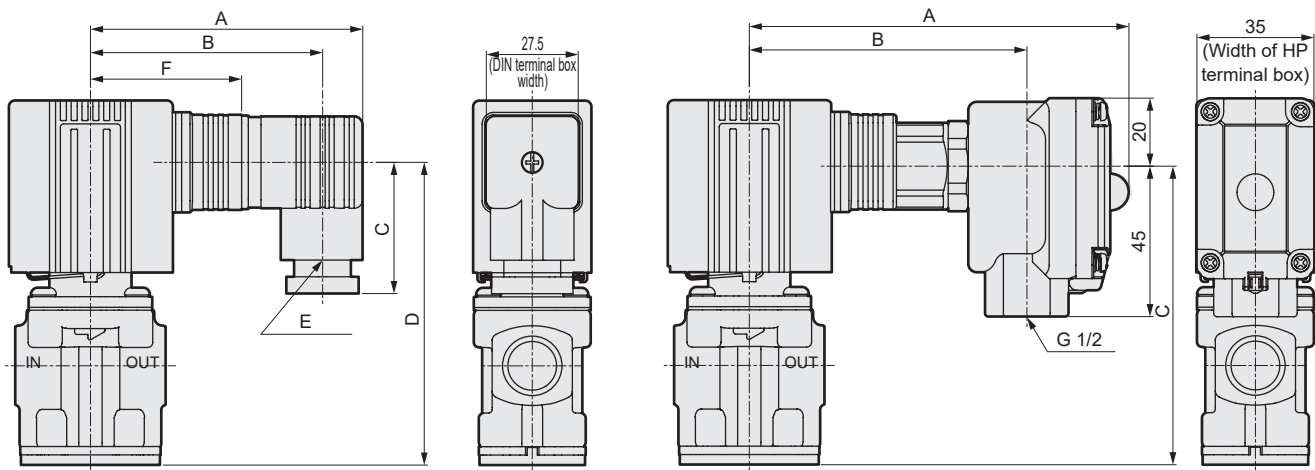


Model No.		A	B
FFB-32	Aluminum body	46	79
	Brass/SUS body		78.5
FFB-42	Aluminum body	48.5	94
	Brass/SUS body		
FFB-52	Aluminum body	51	103
	Brass/SUS body		

Optional Dimensions diagram FFB-□2 Series: NO (closed when energized)

● With DIN terminal box Coil option code: B/C/D/K/L/S ● With HP terminal box Coil option code: G/H/Q/R

● DIN coil without terminal box



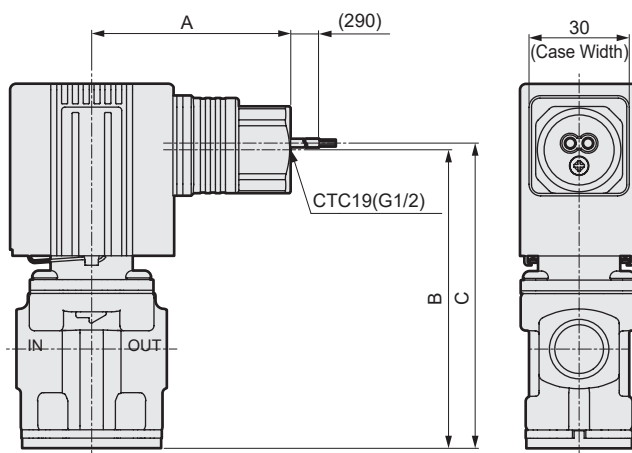
Dimensions shown in () are for G1/2.

Model No.		A	B	C	D	E	F
FFB-32	Aluminum body	78.5	66.5	39.5	76	Pg11	42
	Brass/SUS body		(65)	(41.5)	75.5	(G 1/2)	
FFB-42	Aluminum body	81	69	39.5	90.5	Pg11	44.5
	Brass/SUS body		(67.5)	(41.5)		(G 1/2)	
FFB-52	Aluminum body	83.5	71.5	39.5	99.5	Pg11	47
	Brass/SUS body		(70)	(41.5)		(G 1/2)	

Model No.		A	B	C
FFB-32	Aluminum body	113	82	74.5
	Brass/SUS body			74
FFB-42	Aluminum body	115	85	89.5
	Brass/SUS body			
FFB-52	Aluminum body	118	87	98.5
	Brass/SUS body			

Optional Dimensions diagram FFB-□2 Series: NO (closed when energized)

● Conduit Coil option code: E/F/M/P

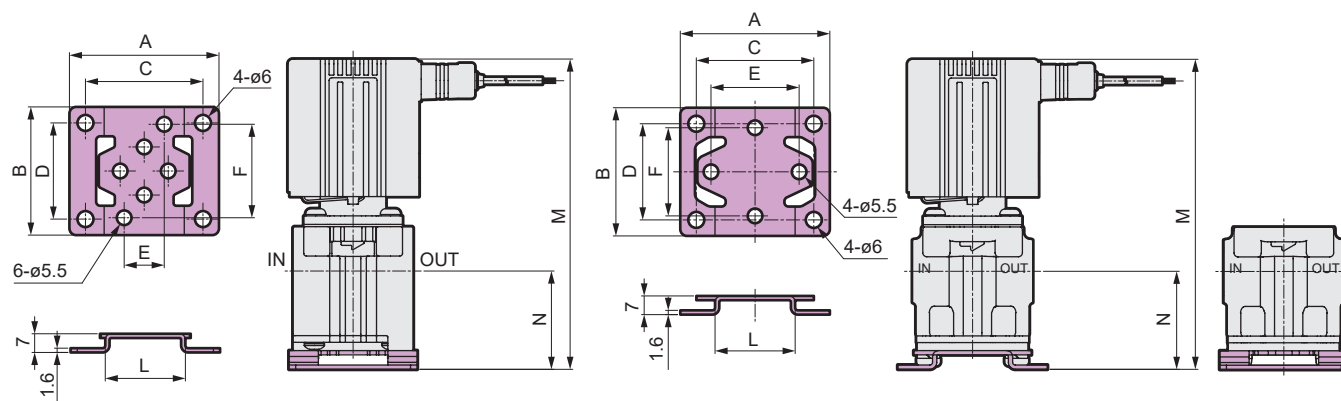


Model No.		A	B	C
FFB-32	Aluminum body	56.5	74.5	76.5
	Brass/SUS body		74	76
FFB-42	Aluminum body	59	89.5	91.5
	Brass/SUS body			
FFB-52	Aluminum body	61.5	98.5	100.5
	Brass/SUS body			

● Mounting plate① Option code: B

Aluminum body

Brass/SUS body



Model No.		A	B	C	D	E	F	L	M	N
FFB-32	Aluminum body	52	42	40	30	11	32	25	101	33.5
	Brass/SUS body					29	29	26	100.5	33
FFB-42	Aluminum body	56	48	44	36	15	35	30	116	37
	Brass/SUS body					33	33			
FFB-52	Aluminum body	62	50	50	38	15	35	36	125	37
	Brass/SUS body									



Port 2-Port Solenoid Valves Manifold

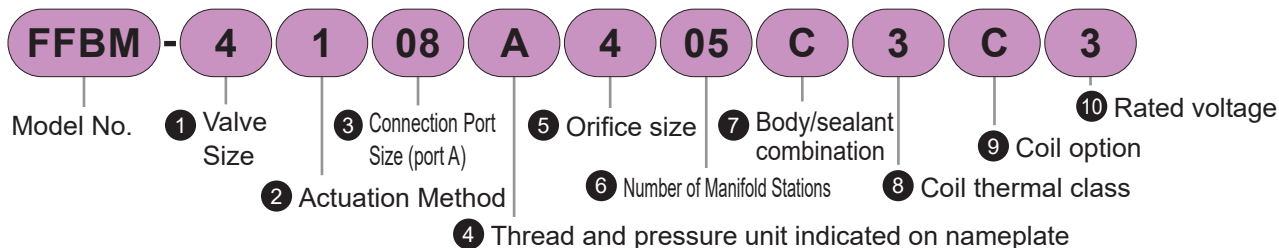
FFBM Series

- NC (normally closed)
- Connection Port Size: Rc/G/NPT 1/8, 1/4



For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method



1 Valve size

Code	Content
2	Width 24 mm
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

2 Actuation Method

Code	Content
1	NC common supply *1
5	NC (open when energized) individual supply

*1: When using in avacuum, this will be "5".
"1" cannot be selected.

3 Port size (port A)

Code	Content	1 Valve size
06	1/8	2 3 4 5
08	1/4	2 3 4 5
00	Actuator only	2 3 4 5

4 Thread and pressure unit indicated on nameplate

Code	Thread	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT Thread	psi *2
D	G thread	MPa *3
E	NPT Thread	MPa *3

*1: If the 3 port size is only for "00" actuator, there is no thread, so select either "A" (MPa), "B" (bar), or "C" (psi) pressure display unit.

*2: In compliance with the Measurement Act, the psi display cannot be used in Japan.

*3: "D" and "E" are selections primarily for indicating MPa as the pressure display unit in Japan even for G and NPT threads.

5 Orifice size

Code	Content	1 Valve size
S	ø1.5	2 3 4 5
2	ø2	2 3 4 5
3	ø3	2 3 4 5
4	ø4	2 3 4 5
5	ø5	2 3 4 5
7	ø7	2 3 4 5

6 Number of Manifold Stations

Code	Content
02 to 09	2 stations to 9 stations
10	10 stations
00	Actuator only

7 Body/sealant combination

Body	Seal	Treatment	Code	Compressed Air	Dry air Inert gas	Water	Oil	Low vacuum (*1)	Medium Vacuum
Aluminum	NBR	-	A	●	●	●	●	●	●
Brass	NBR	-	C	●	●	●	●	●	●
	FKM	-	D	●	●	●	●	●	●
	FKM	Vacuum inspection	G	●	●	●	●	●	●
Stainless Steel	NBR	-	H	●	●	●	●	●	●
	FKM	-	J	●	●	●	●	●	●
	FKM	Vacuum inspection	M	●	●	●	●	●	●
Brass	NBR	-	N	●	●	●	●	●	●
	FKM	-	P	●	●	●	●	●	●
	EPDM	-	Q	●	●	●	●	●	●
	EPDM	Oil-prohibited	S	●	●	●	●	●	●
Stainless Steel	NBR	-	T	●	●	●	●	●	●
	FKM	-	U	●	●	●	●	●	●
	EPDM	-	U	●	●	●	●	●	●

*1: This can be used with alow vacuum of [1.33 × 10² Pa (abs)], but valve seat leakage is 0.2 cm³/min (ANR) or less. (Valve seat leakage at positive pressure)
When used in a low vacuum, the lower limit of operating pressure is 1.33 x 10² Pa (abs), so the upper limit is 0.1 MPa lower.

8 Coil thermal class

Code	Content
3	Class 130 (B)

9 Coil option

Code	Content	1 Valve size				Voltage	
		2	3	4	5	DC	AC
A	Lead wire (300 mm)	●	●	●	●	●	●
B	With DIN terminal box (G1/2)	*1	●	●	●	●	●
C	With DIN terminal box (Pg11)	● *2	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)	● *2	●	●	●	*4	●
E	Conduit (G1/2)		●	●	●	●	●
F	Conduit (CTC19)		●	●	●	●	●
G	HP terminal box (G1/2)		● *3	●	●	●	●
H	HP terminal box with lamp (G1/2)		● *3	●	●	●	● *6
J	Lead wire (300 mm)	●	●	●	●	● *5	
K	With DIN terminal box (Pg11)	● *2	●	●	●	●	*7
L	DIN terminal box with lamp (Pg11)	● *2	●	●	●	●	
M	Conduit (G1/2)		●	●	●	●	
P	Conduit (CTC19)		●	●	●	●	
Q	HP terminal box (G1/2)		● *3	●	●	●	
R	HP terminal box with lamp (G1/2)		● *3	●	●	●	
S	DIN coil without terminal box	●	●	●	●	● *8	● *7

*1: When the ① valve size is "2", the coil option "B" cannot be selected.

*2: When the ① valve size is "2", the DIN terminal box thread size is Pg9.

*3: When the ⑦ body/sealant combination is "A" aluminum body, the HP terminal box cannot be selected.

*4: Use "L" DIN terminal box with lamp/surge suppressor.

*5: DC voltage coil option "J" surge suppressor is attached.

*6: When the coil option "H" is selected, the ⑩ rated voltage "K" (230 VAC) cannot be selected.

*7: All AC voltages have a full-wave rectifier circuit. Significant surges generated in the coil by the action of this diode are almost eliminated. For this reason, a surge suppressor is not available.

*8: Surge suppressor is not available. Use the terminal box with surge suppressor.

10 Rated voltage

Code	Content
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

Model No. Notion Method

Masking plate orders are also available. Refer to Model No. Notion Method on pages 25 and 29.

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm/ With surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B	DIN terminal box
	C	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box/lamp/ With surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box/lamp/ With surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor
	S	DIN coil without terminal box

Common Specifications

Item	FFBM
Operating Fluid	Compressed air/dry air/inert gas/water/oil (50 mm ² /s or less)/medium vacuum *1, *2
Maximum Operating Pressure MPa	1.4 (refer to working pressure in individual specifications.)
Proof pressure (water pressure) MPa	2.1(NC)
Fluid Temperature °C	-10 to 40 (no freezing)
Ambient Temperature °C	-10 to 40
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve Structure	Direct acting poppet structure
Valve seat leakage cm ³ /min (ANR)	0.2 or less (air)
Valve seat leakage *3 Pa·m ³ /sHe	1.33 × 10 ⁻⁶ or less
Mounting Orientation	Unrestricted
Protection Structure	IP65

*1: When using in vacuum, vacuum the OUT port side.

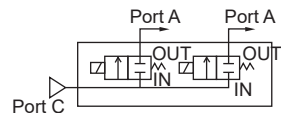
*2: When using at medium vacuum, select the "G" and "M" material options.

*3: Amount of leakage at medium vacuum.

Circuit Diagram Symbol

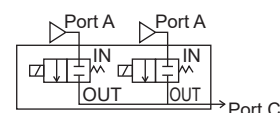
● FFBM-□1

(Common supply/port C pressurization)



● FFBM-□5

(Individual supply/port A pressurization)



Electrical specifications

Item	FFBM-2							FFBM-3						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	3.5	3.5	-	-	-	-	-	4.5	4.5	-	-	-	-	-
Apparent power VA	-	-	5.1	5.7	6.0	5.3	5.7	-	-	6.2	6.1	6.2	6.2	6.5
Item	FFBM-4							FFBM-5						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	7	7	-	-	-	-	-	10.5	10.5	-	-	-	-	-
Apparent power VA	-	-	8.6	10	9.6	9.5	9.4	-	-	13	13	14	14	13

The leakage current must be less than or equal to the values shown below.

Voltage	AC					DC	
	100V	110V	200V	220V	230V	12V	24V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Individual specifications

Item	Connection Port Size Rc/G/NPT		Orifice size (mm)	Operating Pressure (MPa) *1	Operating Pressure Pa (abs) *2	Flow Characteristics			
Model No.	Port A	Port C				C [dm3/ (s·bar)]	b	Cv	Kv value *4
NC (normally closed)									
FFBM-2 ¹ ₅ 06 * S	1/8	1/4 (1/8) *3	1.5	0 to 1.0	1.3 x 10 ⁻² to 1 x 10 ⁶	0.30	0.48	0.085	0.074
			2	0 to 0.6	1.3 x 10 ⁻² to 0.6 x 10 ⁶	0.52	0.39	0.12	0.10
FFBM-3 ¹ ₅ 08 * 2	1/4	3/8	2	0 to 1.4	1.3 x 10 ⁻² to 1.4 x 10 ⁶	0.55	0.42	0.12	0.10
			3	0 to 0.6	1.3 x 10 ⁻² to 0.6 x 10 ⁶	1.1	0.25	0.23	0.20
			5	0 to 0.2	1.3 x 10 ⁻² to 0.2 x 10 ⁶	1.8	0.11	0.45	0.39
FFBM-4 ¹ ₅ 08 * 4	1/4	3/8	4	0 to 1.0	1.3 x 10 ⁻² to 1 x 10 ⁶	1.7	0.11	0.42	0.36
			7	0 to 0.15	1.3 x 10 ⁻² to 0.15 x 10 ⁶	3.3	0.11	0.73	0.63
FFBM-5 ¹ ₅ 08 * 5	1/4	3/8	5	0 to 0.8	1.3 x 10 ⁻² to 0.8 x 10 ⁶	2.3	0.10	0.55	0.48
			7	0 to 0.3	1.3 x 10 ⁻² to 0.3 x 10 ⁶	3.3	0.11	0.73	0.63

*1: This can be used with low vacuum of [1.33×10^2 Pa (abs)], but valve seat leakage is 0.2cm³/min (ANR) or less. (Valve seat leakage at positive pressure)
When using at low vacuum, the lower limit of the working pressure is 1.33×10^2 Pa (abs), so the upper limit is 0.1 MPa lower.

*2: Working pressure at medium vacuum.

*3: 1/8 for aluminum body.

*Refer to page 53 for 4:Kv value.

Weight

●Body material: Aluminum

Model No.	Mass (kg)									
	Actuator only	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
FFBM-2	0.16	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.8
FFBM-3	0.27	0.7	1.0	1.3	1.7	2.0	2.3	2.6	3.0	3.3
FFBM-4	0.41	1.0	1.5	2.0	2.5	3.0	3.5	3.9	4.4	4.9
FFBM-5	0.60	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0

*: Weight of aluminum sub-plate with 24 VDC lead wire.

●Body material: Brass/stainless steel

Model No.	Mass (kg)									
	Actuator only	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
FFBM-2	0.2	0.9	1.3	1.8	2.0	2.5	2.9	3.3	3.8	4.0
FFBM-3	0.35	1.4	2.0	2.9	3.2	4.1	4.7	5.3	6.2	6.5
FFBM-4	0.5	2.0	2.8	4.0	4.5	5.7	6.5	7.4	8.6	9.1
FFBM-5	0.7	2.5	3.5	5.0	5.7	7.1	8.2	9.3	10.7	11.5

*: Weight of brass sub-plate with 24 VDC lead wire.

FFB

FFBM

FFG

FFGM

Working fluid check list

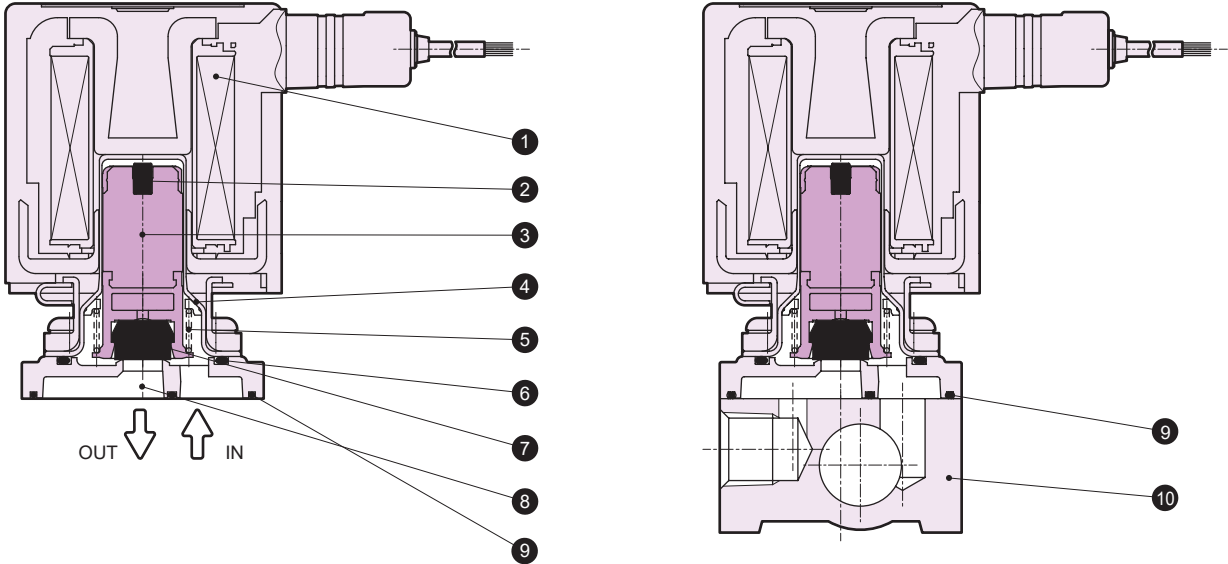
Flow rate calculation formula

Precautions for Use

Internal structure/material Aluminum body

● FFBM actuator

● FFBM manifold

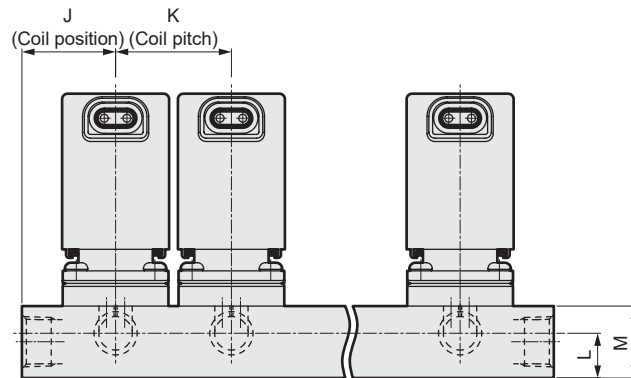
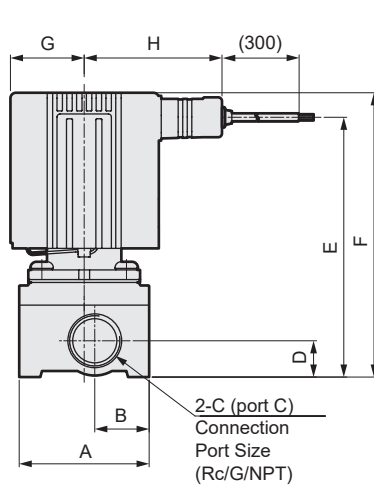


Part No.	Name	Material	
1	Coil assembly	-	
2	Noise dampening rubber	HNBR	Hydrogenated nitrile rubber
3	Plunger	SUS,PPS	Stainless steel, polyphenylene sulfide
4	Flare pipe assembly	SUS,PPS	Stainless steel, polyphenylene sulfide
5	Plunger spring	SUS304	Stainless Steel
6	O-ring	NBR	Nitrile rubber
7	Seal	NBR	Nitrile rubber
8	Body	ADC	Aluminum die-casting
9	Gasket	NBR	Nitrile rubber
10	Sub-plate	A6063	Aluminum

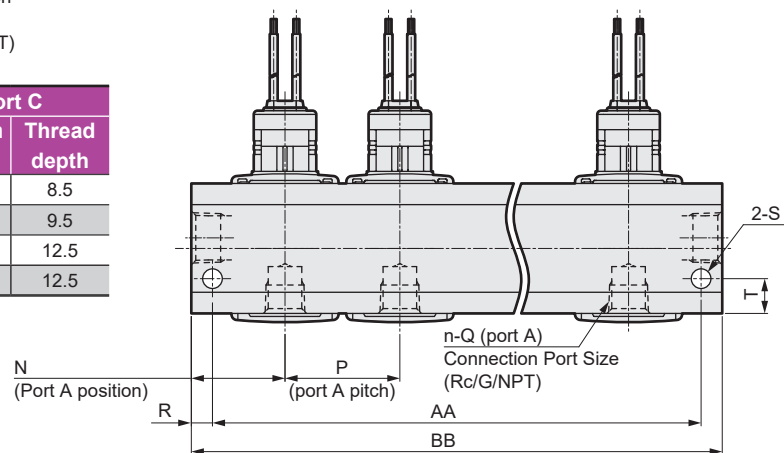
For maintenance parts, refer to the CKD component product site
(<https://www.ckd.co.jp/kiki/en/>) → Refer to "Model No." → Maintenance parts .

Dimensions diagram aluminum body

● Manifold lead wire/DC voltage Coil option code: A/J



Model No.	Port A		Port C	
	Connection Port Size	Thread depth	Connection Port Size	Thread depth
FFBM-2	G1/8	8.5	G1/8	8.5
FFBM-3	G1/4	11	G 3/8	9.5
FFBM-4	G1/4	12.5	G 3/8	12.5
FFBM-5	G1/4	12.5	G 3/8	12.5

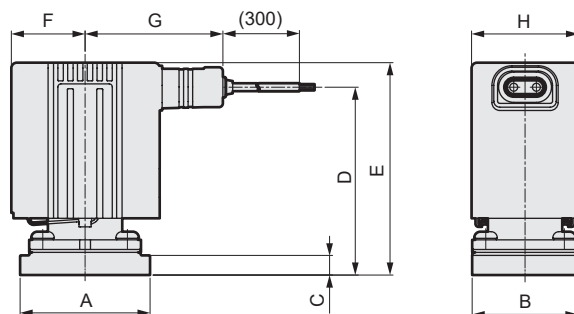


Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
FFBM-2	30	12	1/8	8	64.5	72.5	18.5	42	21	26	8	16	25	26	1/8	5	ø4.5	9
FFBM-3	36	13	3/8	12	79	87	22	45	28	32	15	24	34.5	32	1/4	7	ø6.5	10
FFBM-4	43	18	3/8	12	86	94	24.5	47.5	31	38	15	24	31	38	1/4	7	ø6.5	11.5
FFBM-5	43	18	3/8	12	95	103	27.5	50	34	46	15	24	34	46	1/4	7	ø6.5	11.5

Model No.	Station No. Code	2	3	4	5	6	7	8	9	10
FFBM-2	AA	58	84	110	136	162	188	214	240	266
	BB	68	94	120	146	172	198	224	250	276
FFBM-3	AA	74	106	138	170	202	234	266	298	330
	BB	88	120	152	184	216	248	280	312	344
FFBM-4	AA	86	124	162	200	238	276	314	352	390
	BB	100	138	176	214	252	290	328	366	404
FFBM-5	AA	100	146	192	238	284	330	376	422	468
	BB	114	160	206	252	298	344	390	436	482

Dimensions diagram aluminum body

● Actuator lead wire/DC voltage Coil option code: A/J

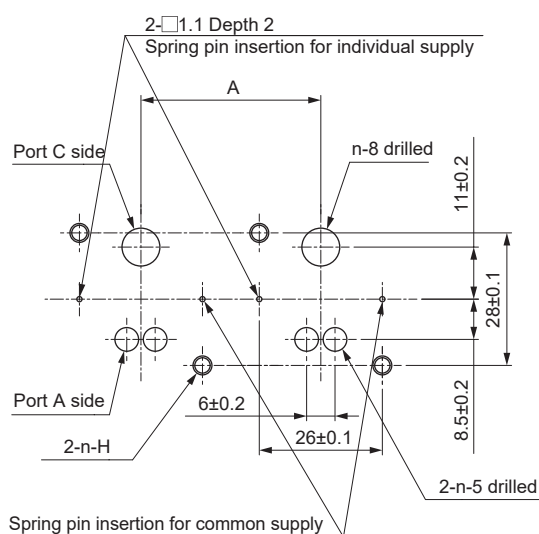
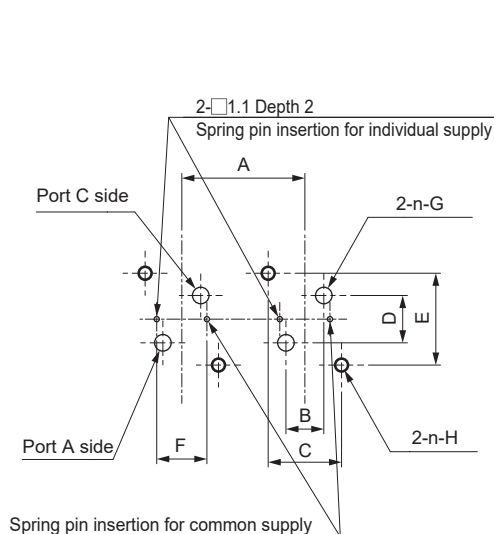


Model No.	A	B	C	D	E	F	G	H
FFBM-2	28	22.5	2.5	48.5	57	18.5	42	24
FFBM-3	32.5	29.5	2.5	55.5	63	22	45	30
FFBM-4	43	35	6.5	62	70.5	24.5	47.5	35
FFBM-5	43	35	6.5	71	79.5	27.5	50	40

● Actuator installation dimensions

FFBM-2□/3-□

FFBM-4□/5-□



*: Machining diagram when using 2 actuators.

Model No.	A	B	C	D	E	F	G	H
FFBM-2	26 or more	8±0.15	15.5±0.1	10±0.15	19.4±0.1	10.6±0.1	ø3.5	M3 depth 6 or more
FFBM-3	32 or more	13±0.1	22.4±0.1	11.4±0.1	22.4±0.1	17±0.1	ø5.5	M3 depth 7 or more
FFBM-4	38 or more	-	-	-	-	-	-	M4 depth 7 or more
FFBM-5	46 or more	-	-	-	-	-	-	M4 depth 7 or more

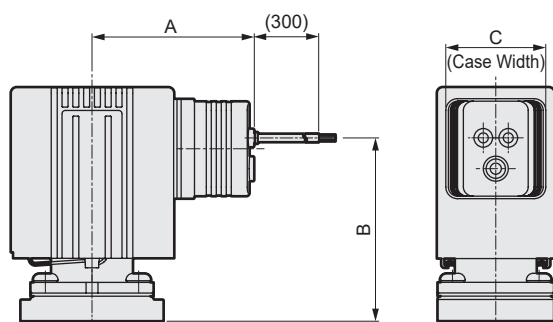
Model No. Notion Method discrete masking plate

O-ring, with mounting screw

Model No.	Aluminum body
FFBM-2	FFBM-21A-MP-KIT
FFBM-3	FFBM-31A-MP-KIT
FFBM-4	FFBM-41A-MP-KIT
FFBM-5	FFBM-41A-MP-KIT

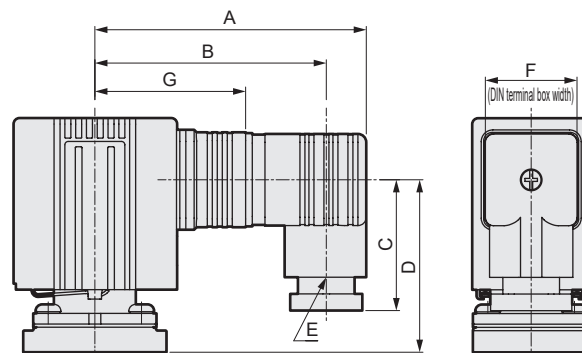
Dimensions diagram aluminum body

● Actuator lead wire/AC voltage Coil option code: A/J



Model No.	A	B	C
FFBM-2	43	45	24
FFBM-3	46	48.5	30
FFBM-4	48.5	55	30
FFBM-5	51	64	30

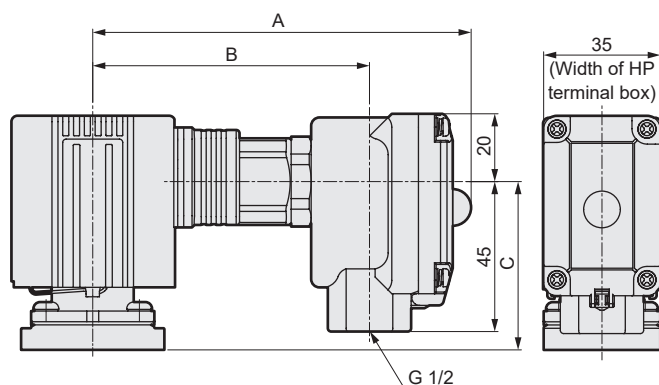
● Actuator with DIN terminal box Coil option code: B/C/D/K/L/S
● Actuator without DIN coil/terminal box



Dimensions shown in () are for G1/2.

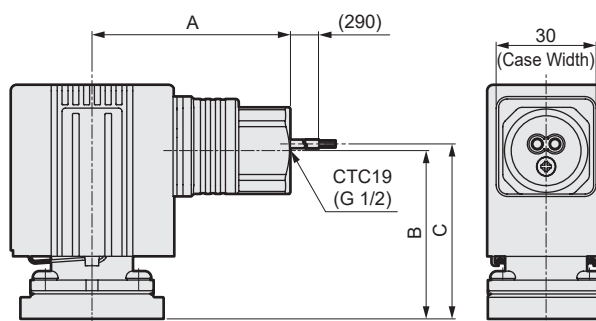
Model No.	A	B	C	D	E	F	G
FFBM-2	73	64	36	41.5	Pg9	21	39
FFBM-3	78.5	66.5 (65)	39.5 (41.5)	45	Pg11 (G 1/2)	27.5	42
FFBM-4	81	69 (67.5)	39.5 (41.5)	52	Pg11 (G 1/2)	27.5	44.5
FFBM-5	83.5	71.5 (70)	39.5 (41.5)	61	Pg11 (G 1/2)	27.5	47

● Actuator HP terminal box Coil option code: G/H/Q/R



Model No.	A	B	C
FFBM-2	-	-	-
FFBM-3	113	82	44
FFBM-4	115	85	50.5
FFBM-5	118	87	59.5

● Conduit Coil option code: E/F/M/P

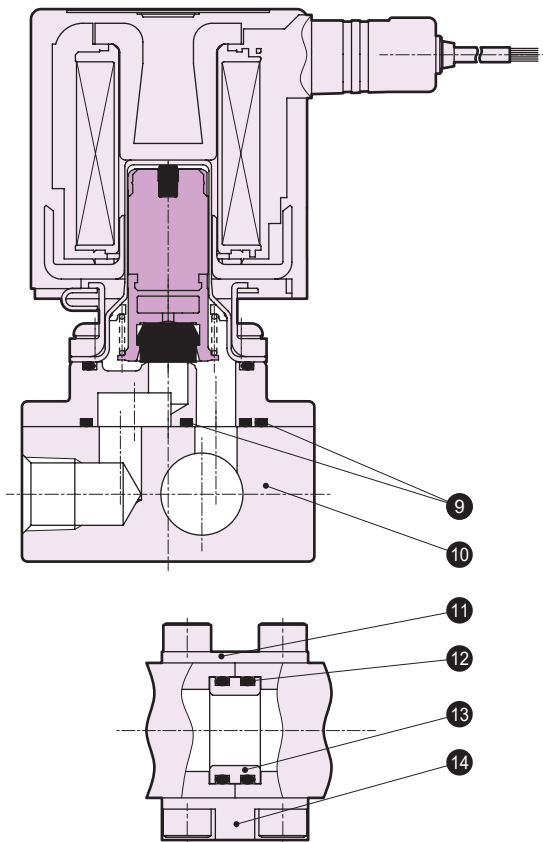
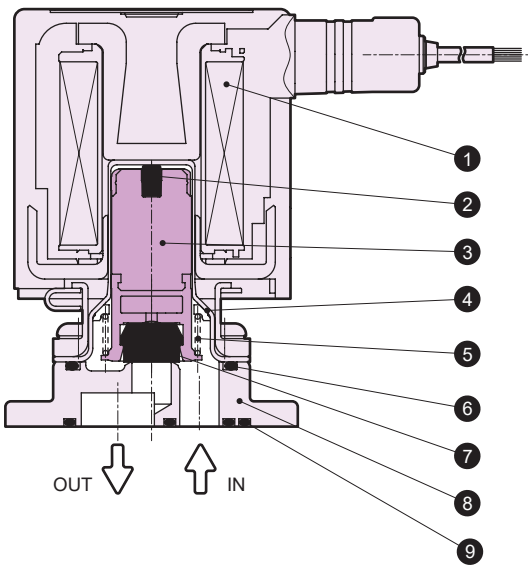


Model No.	A	B	C
FFBM-2	-	-	-
FFBM-3	56.5	44	46
FFBM-4	59	50.5	52.5
FFBM-5	61.5	59.5	61.5

Internal structure/Material brass body/Stainless steel body

● FFBM actuator

● FFBM manifold



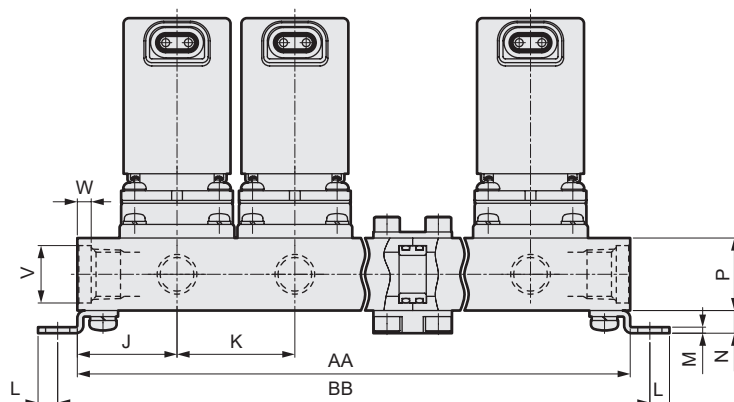
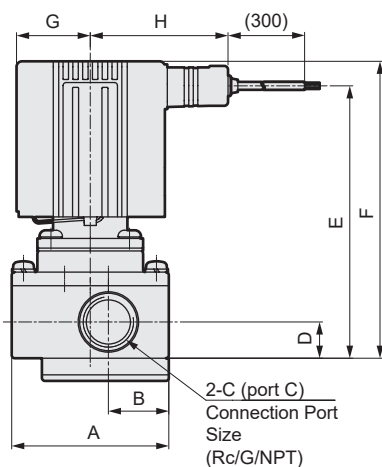
Part No.	Name	Material	
1	Coil assembly	-	
2	Noise dampening rubber	HNBR(FKM,EPDM)	Hydrogenated nitrile rubber (fluoro rubber, ethylene propylene rubber)
3	Plunger	SUS,PPS	Stainless steel, polyphenylene sulfide
4	Flare pipe assembly	SUS,PPS	Stainless steel, polyphenylene sulfide
5	Plunger spring	SUS304	Stainless Steel
6	O-ring	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
7	Seal	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
8	Body	Brass (SCS13)	Brass (stainless steel)
9	O-ring	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
10	Sub-plate	C3604(SUS304)	Brass (stainless steel) Same material as * body
11	Connecting plate	SPCC	Steel
12	O-ring	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
13	Connector	C3604(SUS)	Brass (stainless steel)
14	Connecting plate (bottom)	SS400	Steel

() shows options.

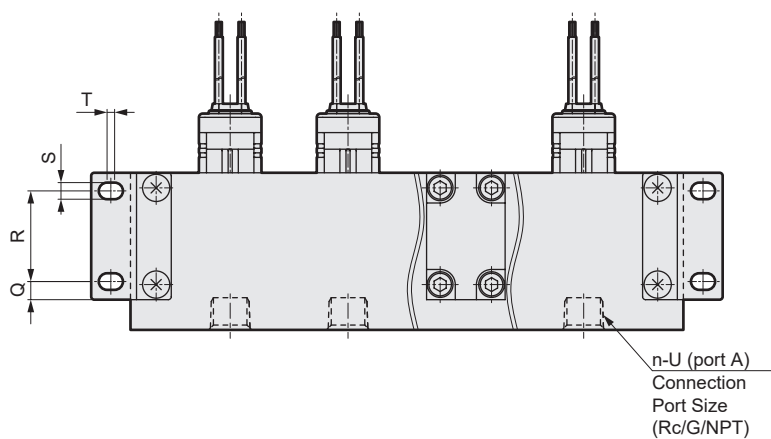
Refer to CKD Components Product Site (<https://www.ckd.co.jp/kiki/en/>) → "Model No." → Maintenance parts

Dimensions diagram brass body/stainless steel body

● Manifold lead wire/DC voltage Coil option code: A/J



Model No.	Port A		Port C	
	Connection Port Size	Thread depth	Connection Port Size	Thread depth
FFBM-2	G1/8	8.5	G1/4	12.5
FFBM-3	G1/4	12.5	G 3/8	12.5
FFBM-4	G1/4	12.5	G 3/8	12.5
FFBM-5	G1/4	12.5	G 3/8	12.5



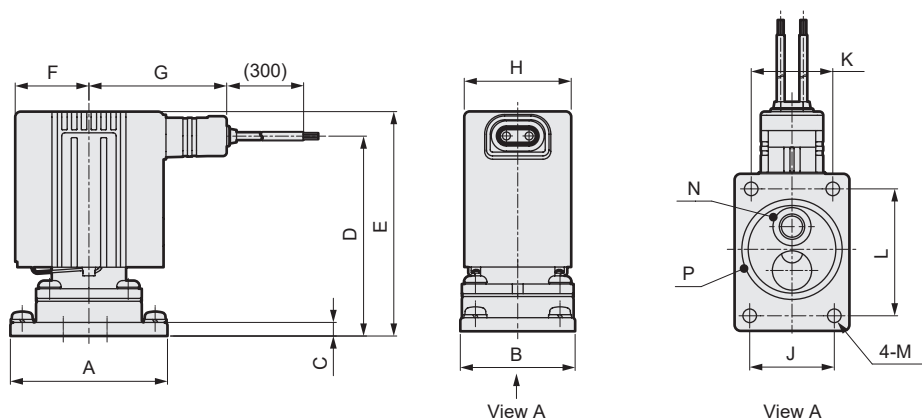
Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
FFBM-2	38	14	1/4	11	71	79.5	18.5	42	26	28	6	1.6	6.5	21	5	22	4.5	2.5	1/8	ø17.3	4
FFBM-3	46	17.5	3/8	12	81	88.5	22	45	30	36	6	2	6.5	24	5	28	4.5	2.5	1/4	ø19	4.6
FFBM-4	52	20	3/8	12	90	98.5	24.5	47.5	33	39	6.5	2	7.5	24	6	30	5.5	2.5	1/4	ø19	4.6
FFBM-5	52	20	3/8	12	99	107.5	27.5	50	36	45	6.5	2	7.5	24	6	30	5.5	2.5	1/4	ø19	4.6

Model No.	Station No. Code	2	3	4	5	6	7	8	9	10
FFBM-2	AA	81	109	161	165	218	246	274	327	330
	BB	93	121	173	177	230	258	286	339	342
FFBM-3	AA	97	133	193	205	266	302	338	399	410
	BB	109	145	205	217	278	314	350	411	422
FFBM-4	AA	106	145	211	223	290	329	368	435	446
	BB	119	158	224	236	303	342	381	448	459
FFBM-5	AA	118	163	235	253	326	371	416	489	506
	BB	131	176	247	266	339	384	429	502	519
Manifold configuration		2 stations x 1	3 stations x 1	4 stations x 1	5 stations x 1	3 stations x 2	5 stations + 2 stations	5 stations + 3 stations	3 stations x 3	5 stations x 2

*: Manifold configuration combines 2-station, 3-station, 4-station and 5-station units.

Dimensions diagram brass body/stainless steel body

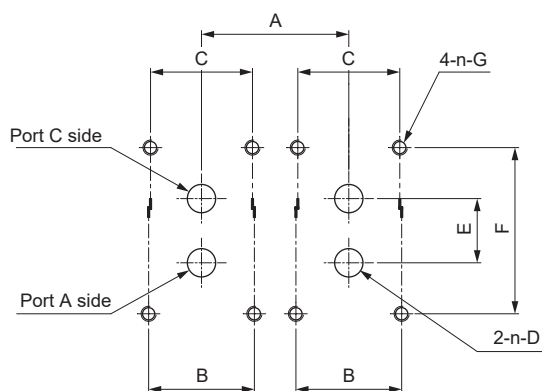
● Actuator lead wire/DC voltage Coil option code: A/J



Model No.	A	B	C	D	E	F	G	H	J	K	L	M	Applicable O-ring	
													N	P
FFBM-2	38	27	4.5	50	58.5	18.5	42	24	19(18)	18 (19)	30	ø3.5	AS568-009	AS568-018
FFBM-3	46	34	4.5	57	64.5	22	45	30	24(23)	23 (24)	38	ø4.5	AS568-011	AS568-022
FFBM-4	52	38	4.5	66	74.5	24.5	47.5	35	28(27)	27 (28)	44	ø4.5	AS568-012	AS568-025
FFBM-5	52	38	4.5	75	83.5	27.5	50	40	28(27)	27 (28)	44	ø4.5	AS568-012	AS568-025

Dimensions shown in () are for individual supply (FFBM-*5).

● Actuator installation dimensions



*: Machining diagram when using 2 actuators.

Model No.	A	B	C	D	E	F	G
FFBM-2	28 or more	19±0.1	18±0.1	ø3.5	10.6±0.1	30±0.1	M3 depth 6 or more
FFBM-3	36 or more	24±0.1	23±0.1	ø5.5	13.8±0.1	38±0.1	M4 depth 6 or more
FFBM-4	39 or more	28±0.1	27±0.1	ø7.5	17±0.1	44±0.1	M4 depth 6 or more
FFBM-5	45 or more	28±0.1	27±0.1	ø7.5	17±0.1	44±0.1	M4 depth 6 or more

Model No. Notion Method discrete masking plate

O-ring, with mounting screw

Model No.	Brass body			Stainless steel body		
Seal	NBR	FKM	EPDM	NBR	FKM	EPDM
FFBM-2	FFBM-21C-MP-KIT	FFBM-21D-MP-KIT	FFBM-21Q-MP-KIT	FFBM-21H-MP-KIT	FFBM-21J-MP-KIT	FFBM-21U-MP-KIT
FFBM-3	FFBM-31C-MP-KIT	FFBM-31D-MP-KIT	FFBM-31Q-MP-KIT	FFBM-31H-MP-KIT	FFBM-31J-MP-KIT	FFBM-31U-MP-KIT
FFBM-4	FFBM-41C-MP-KIT	FFBM-41D-MP-KIT	FFBM-41Q-MP-KIT	FFBM-41H-MP-KIT	FFBM-41J-MP-KIT	FFBM-41U-MP-KIT
FFBM-5	FFBM-41C-MP-KIT	FFBM-41D-MP-KIT	FFBM-41Q-MP-KIT	FFBM-41H-MP-KIT	FFBM-41J-MP-KIT	FFBM-41U-MP-KIT

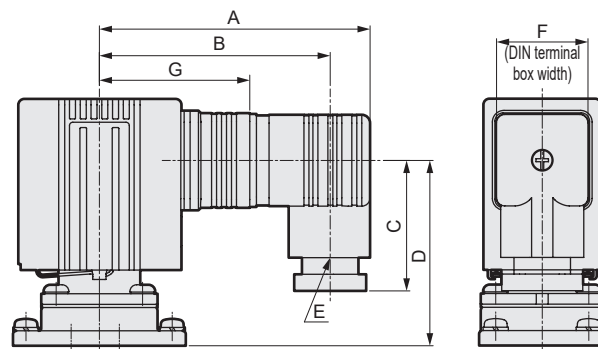
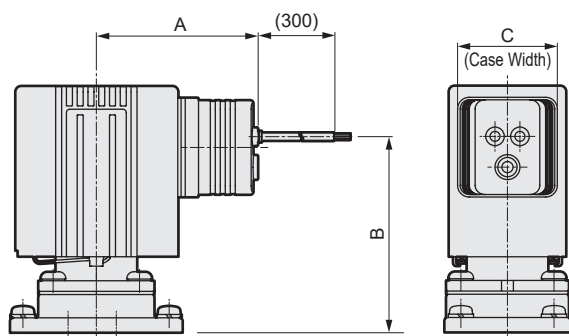
External Dimension Drawings: Brass body/stainless steel body

Dimensions diagram brass body/stainless steel body

● Actuator lead wire/AC voltage Coil option code: A/J

● Actuator with DIN terminal box Coil option code: B/C/D/K/L/S

● Actuator without DIN coil/terminal box



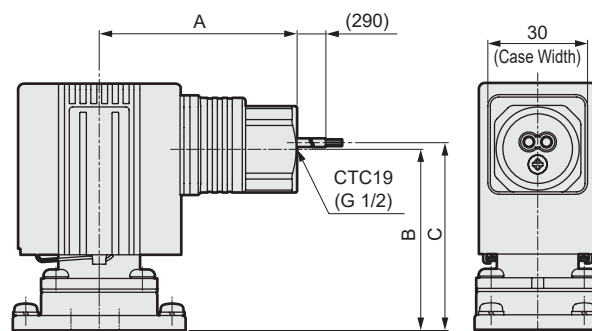
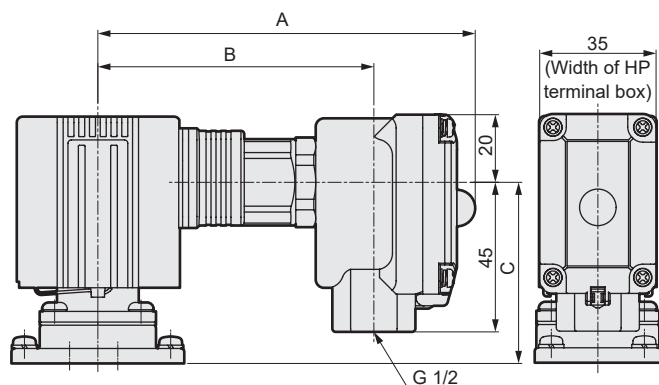
Model No.	A	B	C
FFBM-2	43	46.5	24
FFBM-3	46	50	30
FFBM-4	48.5	59	30
FFBM-5	51	68	30

Dimensions shown in () are for G1/2.

Model No.	A	B	C	D	E	F	G
FFBM-2	73	64	36	43	Pg9	21	39
FFBM-3	78.5	66.5 (65)	39.5 (41.5)	46.5	Pg11 (G 1/2)	27.5	42
FFBM-4	81	69 (67.5)	39.5 (41.5)	56	Pg11 (G 1/2)	27.5	44.5
FFBM-5	83.5	71.5 (70)	39.5 (41.5)	65	Pg11 (G 1/2)	27.5	47

● Actuator HP terminal box Coil option code: G/H/Q/R

● Conduit Coil option code: E/F/M/P



Model No.	A	B	C
FFBM-2	-	-	-
FFBM-3	113	82	45.5
FFBM-4	115	85	54.5
FFBM-5	118	87	63.5

Model No.	A	B	C
FFBM-2	-	-	-
FFBM-3	56.5	45.5	47.5
FFBM-4	59	54.5	56.5
FFBM-5	61.5	63.5	65.5



Direct Acting 3-Port Solenoid Valve

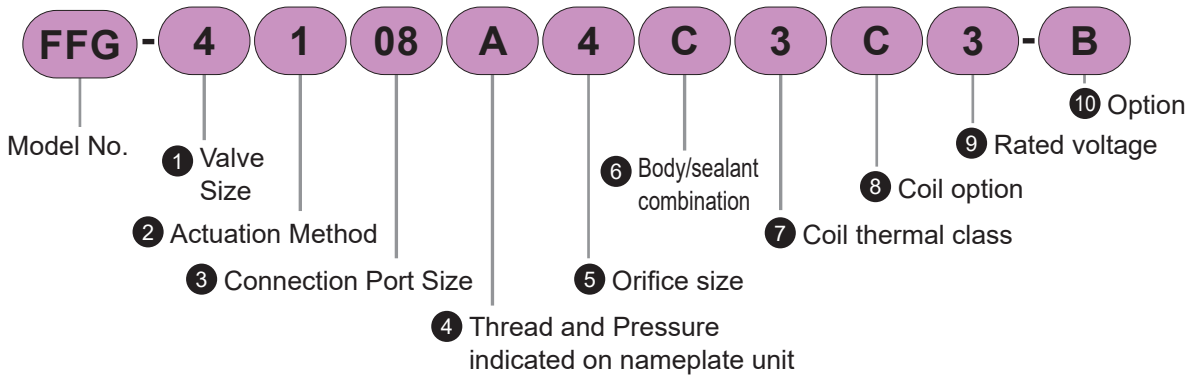
FFG Series

- Universal, NC pressurization
- Connection Port Size: Rc/G/NPT 1/8 to 3/8



For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method



1 Valve size

Code	Content
2	Width 24 mm
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

2 Actuation Method

		1 Valve size			
Code	Content	2	3	4	5
1	Universal	●	●	●	●
3	NC pressurization		●	●	

3 Connection Port Size

		1 Valve size			
Code	Content	2	3	4	5
06	1/8	●	●		
08	1/4		●	●	●
10	3/8			●	●

4 Thread and pressure unit indicated on nameplate

Code	Content	
	Thread	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT Thread	psi *1
D	G thread	MPa *2
E	NPT Thread	MPa *2

*1: In compliance with the Measurement Act, the psi display cannot be used in Japan.

*2: "D" and "E" are selections primarily for indicating the pressure display unit as MPa in Japan even for G and NPT threads.

5 Orifice size

		1 Valve size			
Code	Content	2	3	4	5
1	ø1	●			
S	ø1.5		●		
2	ø2	●	●	●	●
3	ø3		●	●	●
4	ø4			●	●

6 Body/sealant combination

Body	Seal	Treatment	Code	Operating Fluid				
				Compressed Air	Dry air Inert gas	Water	Oil	Low vacuum *1
Aluminum	NBR	-	A	●	●			
Brass	NBR		C	●	●	●	●	●
	FKM		D	●	●	●	●	●
Stainless Steel	NBR		H	●	●	●	●	●
Brass	FKM	Oil-prohibited	J	●	●	●	●	●
	NBR		N	●	●	●	●	●
	FKM		P	●	●	●	●	●
	EPDM		Q			●		
Stainless Steel	NBR		S	●	●	●	●	●
	FKM		T	●	●	●	●	●
	EPDM		U			●		

*1: This can be used with low vacuum of $[1.33 \times 10^2 \text{ Pa (abs)}]$, but valve seat leakage is $0.2 \text{ cm}^3/\text{min (ANR)}$ or less. (Valve seat leakage at positive pressure)
When used in a low vacuum, the lower limit of operating pressure is $1.33 \times 10^2 \text{ Pa (abs)}$, so the upper limit is 0.1 MPa lower.

7 Coil thermal class

Code	Content
3	Class 130 (B)

8 Coil option

		1 Valve size				Voltage	
Code	Content	2	3	4	5	DC	AC
A	Lead wire (300 mm)	●	●	●	●	●	●
B	With DIN terminal box (G1/2)	*1	●	●	●	●	●
C	With DIN terminal box (Pg11)	●*2	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)	●*2	●	●	●	*3	●
E	Conduit (G1/2)		●	●	●	●	●
F	Conduit (CTC19)		●	●	●	●	●
G	HP terminal box (G1/2)		●	●	●	●	●
H	HP terminal box with lamp (G1/2)		●	●	●	●	●*5
J	Lead wire (300 mm)	●	●	●	●	●*4	*6
K	With DIN terminal box (Pg11)	●*2	●	●	●	●	
L	DIN terminal box with lamp (Pg11)	●*2	●	●	●	●	
M	Conduit (G1/2)		●	●	●	●	
P	Conduit (CTC19)		●	●	●	●	
Q	HP terminal box (G1/2)		●	●	●	●	
R	HP terminal box with lamp (G1/2)		●	●	●	●	
S	DIN coil without terminal box	●	●	●	●	●*7	●*6

*1: When the 1 valve size is "2", the coil option "B" cannot be selected.

*2: When the 1 valve size is "2", the DIN terminal box thread size is Pg9.

*3: Use "L" DIN terminal box with lamp/surge suppressor.

*4: DC voltage coil option "J" surge suppressor is attached.

*5: When the coil option "H" is selected, the 1 rated voltage "K" (230 VAC) cannot be selected.

*6: All AC voltages have a full-wave rectifier circuit. Significant surges generated in the coil by the action of this diode are almost eliminated. For this reason, a surge suppressor is not available.

*7: Surge suppressor is not available. Use the terminal box with surge suppressor.

9 Rated voltage

Code	Content
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

10 Option

*1

Code	Content
Blank	None
B	Aluminum body
	Brass/ Stainless steel body
B	Mounting plate①

*1: Mounting plate is included with the product. For tightening torque see CKD Components Product Website (<https://www.ckd.co.jp/kiki/en/>) → "Model No. → Instruction Manuals"

*2: ①The mounting plate is compatible with CKD product FAG, FGG, or FWG Series.

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300 mm/ With surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B	DIN terminal box
	C	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box/lamp/ With surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box/lamp/ With surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor
	S	DIN coil without terminal box

Model No. Notion Method mounting plate

With body mounting screw

Model No.	Mounting plate code: B	
	Aluminum body	Brass, stainless steel body
FFG-2	FFB-21-B-MOUNT-PLATE-KIT	FFG-21-B-MOUNT-PLATE-KIT
FFG-3	FFB-31-B-MOUNT-PLATE-KIT	FFG-31-B-MOUNT-PLATE-KIT
FFG-4	FFB-41-B-MOUNT-PLATE-KIT	FFG-41-B-MOUNT-PLATE-KIT
FFG-5	FFB-51-B-MOUNT-PLATE-KIT	

Common Specifications

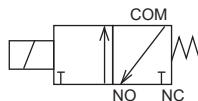
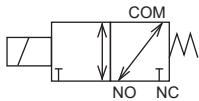
Item	FFG
Operating Fluid	Compressed air/dry air/inert gas/water/oil (50mm ² /s or less)/low vacuum [1.33×10^2 Pa (abs)] *1
Max. working pressure MPa	1.2 (refer to working pressure in individual specifications.)
Proof pressure (water pressure) MPa	1.8
Fluid temperature °C	-10 to 60 (no freezing)
Ambient Temperature °C	-10 to 60(DC), -10 to 55(AC)
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve Structure	Direct acting poppet structure
Valve seat leakage cm ³ /min (ANR)	0.2 or less (air)
Mounting Orientation	Unrestricted
Protection Structure	IP65

*1: When using at low vacuum, vacuum the NC/NO port side for the universal, and the NO port for the NC pressurization.

Circuit Diagram Symbol

● FFG-□1: Universal

● FFG-□3:NC pressurization



Electrical specifications

Item	FFG-2							FFG-3						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	3.5	3.5	-	-	-	-	-	4.5	4.5	-	-	-	-	-
Apparent power VA	-	-	5.1	5.7	6.0	5.3	5.7	-	-	6.2	6.1	6.2	6.2	6.5
Item	FFG-4							FFG-5						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	7	7	-	-	-	-	-	10.5	10.5	-	-	-	-	-
Apparent power VA	-	-	8.6	10	9.6	9.5	9.4	-	-	13	13	14	14	13

The leakage current must be less than or equal to the values shown below.

Voltage	AC					DC	
	100 V	110 V	200 V	220 V	230 V	12 V	24 V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Individual specifications

Item	Model No.	Connection Port Size Rc/G/NPT	Orifice size (mm)	Use Pressure (MPa) *1/2	Flow Characteristics															
					COM→NC				COM→NO				NC→COM				NO→COM			
					C[dm ³ / (s·bar)]	b	Cv	Kv value *3	C[dm ³ / (s·bar)]	b	Cv	Kv value *3	C[dm ³ / (s·bar)]	b	Cv	Kv value *3	C[dm ³ / (s·bar)]	b	Cv	Kv value *3
Universal																				
FFG-21	06 * 1	1/8	1	0 to 0.7	0.12	0.47	0.036	0.031	0.11	0.54	0.030	0.026	0.12	0.50	0.032	0.028	0.11	0.37	0.028	0.024
			2	0 to 0.15	0.53	0.49	0.13	0.11	0.35	0.64	0.10	0.087	0.48	0.27	0.10	0.087	0.32	0.24	0.085	0.074
FFG-31	06 * S 08	1/8 1/4	1.5	0 to 0.7	0.30	0.49	0.080	0.069	0.30	0.48	0.080	0.069	0.27	0.46	0.080	0.069	0.27	0.42	0.075	0.065
			2	0 to 0.4	0.55	0.46	0.15	0.13	0.49	0.47	0.13	0.11	0.49	0.38	0.13	0.11	0.49	0.30	0.10	0.087
			3	0 to 0.15	1.1	0.37	0.27	0.23	0.95	0.46	0.20	0.17	1.1	0.14	0.24	0.21	0.9	0.17	0.17	0.15
FFG-41	08 * 2 10	1/4 3/8	2	0 to 0.7 (0.6)	0.55	0.49	0.16	0.14	0.55	0.49	0.15	0.13	0.49	0.44	0.14	0.12	0.49	0.45	0.13	0.11
			3	0 to 0.3	1.2	0.40	0.32	0.28	1.2	0.39	0.30	0.26	1.1	0.29	0.30	0.26	1.1	0.22	0.25	0.22
			4	0 to 0.15	1.9	0.40	0.47	0.41	1.8	0.37	0.41	0.36	1.9	0.21	0.41	0.36	1.8	0.19	0.32	0.28
FFG-51	08 * 2 10	1/4 3/8	2	0 to 1.2 (0.6)	0.55	0.49	0.16	0.14	0.55	0.49	0.15	0.13	0.49	0.44	0.14	0.12	0.49	0.45	0.13	0.11
			3	0 to 0.6 (0.3)	1.2	0.40	0.32	0.28	1.2	0.39	0.30	0.26	1.1	0.29	0.30	0.26	1.1	0.22	0.25	0.22
			4	0 to 0.3 (0.15)	1.9	0.40	0.47	0.41	1.8	0.37	0.41	0.36	1.9	0.21	0.41	0.36	1.8	0.19	0.32	0.28
NC pressurization																				
FFG-33	06 * S 08	1/8 1/4	1.5	0 to 1.0					0.30	0.48	0.080	0.069	0.27	0.46	0.080	0.069				
			2	0 to 0.7					0.49	0.47	0.13	0.11	0.49	0.38	0.13	0.11				
			3	0 to 0.3					0.95	0.46	0.20	0.17	1.1	0.14	0.24	0.21				
FFG-43	08 * 2 10	1/4 3/8	2	0 to 1.2					0.55	0.49	0.15	0.13	0.49	0.44	0.14	0.12				
			3	0 to 0.6					1.2	0.39	0.30	0.26	1.1	0.29	0.30	0.26				
			4	0 to 0.3					1.8	0.37	0.41	0.36	1.9	0.21	0.41	0.35				

*1: Values in () are for NO pressurization.

*2: When using at low vacuum, the lower limit of the working pressure is 1.33×10^2 Pa (abs), so the upper limit is 0.1 MPa lower.

*Refer to page 53 for 3:Kv value.

Weight

●Universal

Model No.	Mass (kg)
FFG-21	0.27
FFG-31	0.48
FFG-41	0.74
FFG-51	0.93

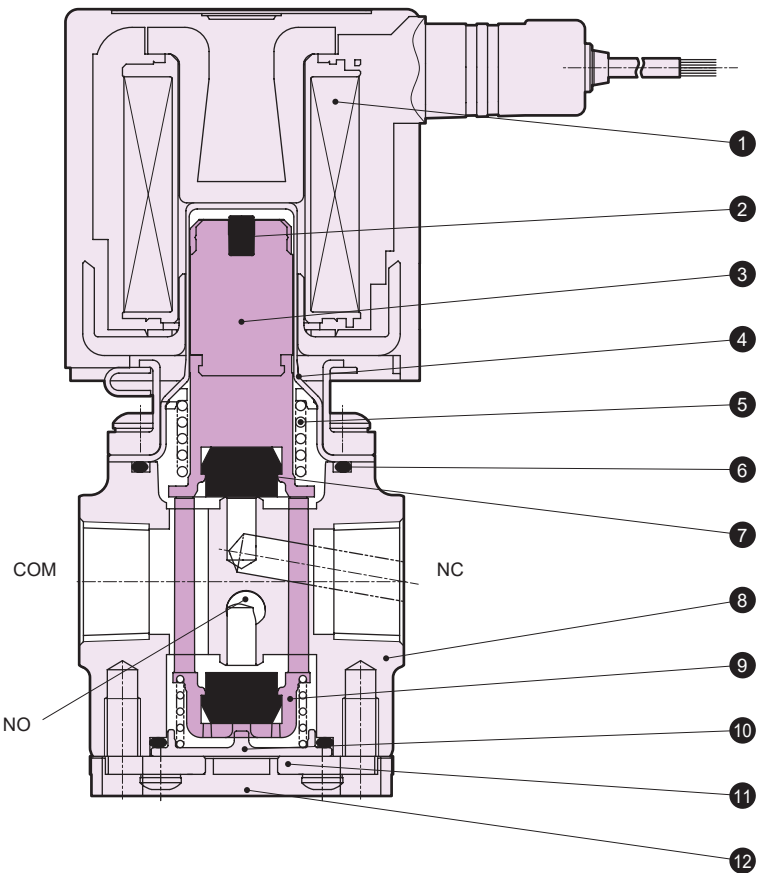
*: Weight of brass body with DC lead wire.

●NC pressurization

Model No.	Mass (kg)
FFG-33	0.48
FFG-43	0.74

*: Weight of brass body with DC lead wire.

Internal Structure Diagram/Materials



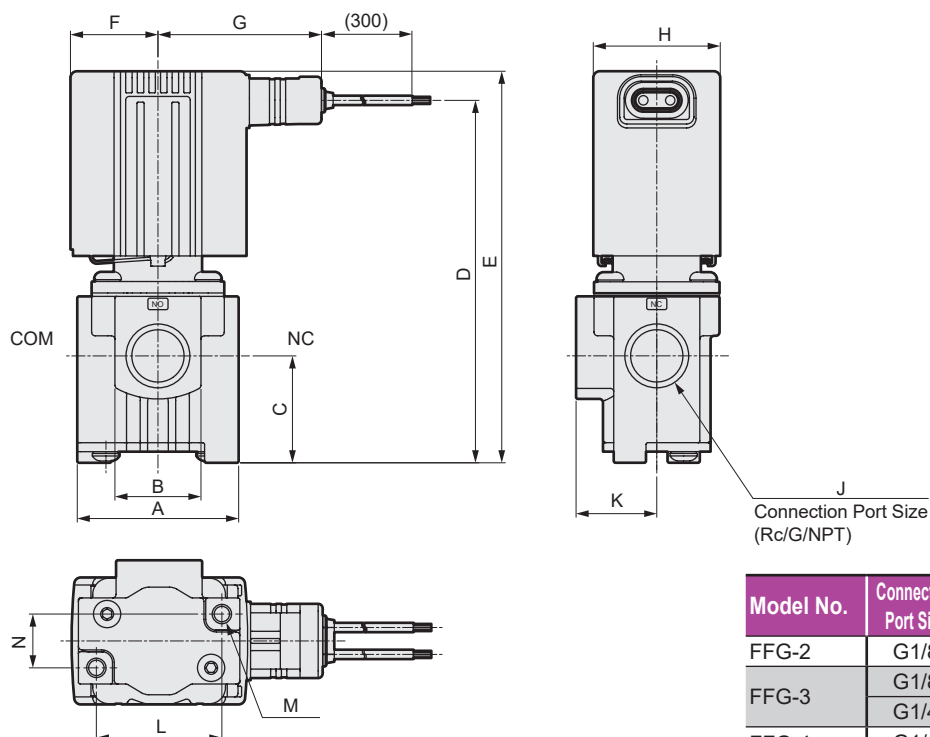
Part No.	Name	Material	
1	Coil assembly	-	
2	Noise dampening rubber	HNBR(FKM,EPDM)	Hydrogenated nitrile rubber (fluoro rubber, ethylene propylene rubber)
3	Plunger	SUS,PPS	Stainless steel, polyphenylene sulfide
4	Flare pipe assembly	SUS,PPS	Stainless steel, polyphenylene sulfide
5	Plunger spring	SUS304	Stainless Steel
6	O-ring	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
7	Seal	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
8	Body	Brass (ADC, SCS13)	Brass (aluminum die-casting, stainless steel)
9	Valve Body Guide	PPS	Polyphenylene sulfide
10	NO cover	PPS	Polyphenylene sulfide
11	Covers A, B *1	SUS304	Stainless Steel
12	Cover cover *2	POM	Polyacetal

() shows options.
*1: brass body, stainless steel cover A, aluminum cover B
*2: Only for body material of brass/stainless steel

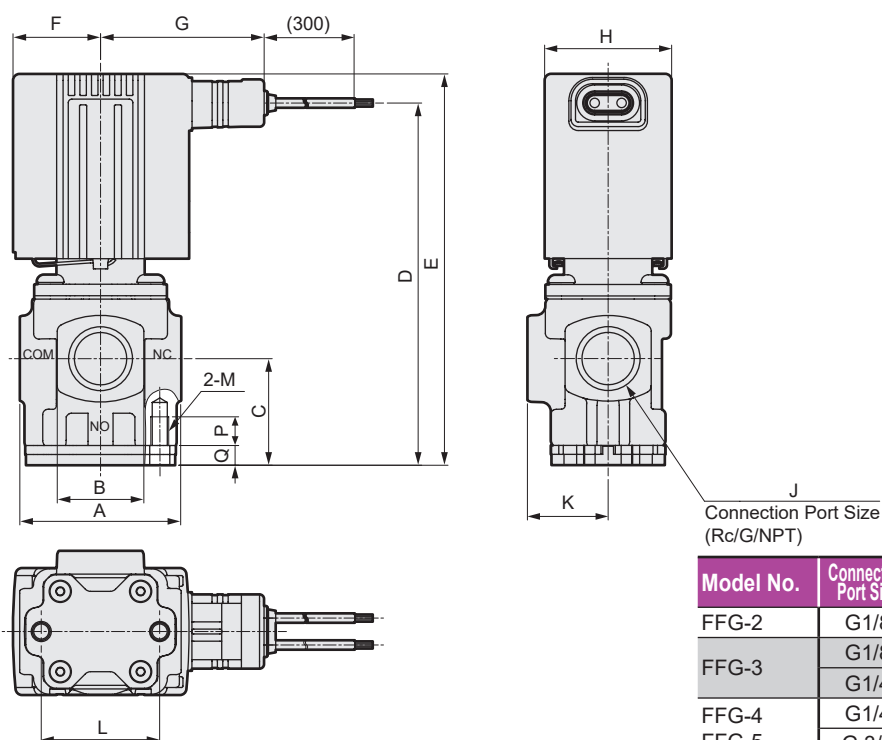
For maintenance parts refer to CKD Components Product Site (<https://www.ckd.co.jp/kiki/en/>) → "Model No." → Maintenance parts

External Dimension Drawings

- Lead wire/DC voltage Coil option code: A/J
- Aluminum body



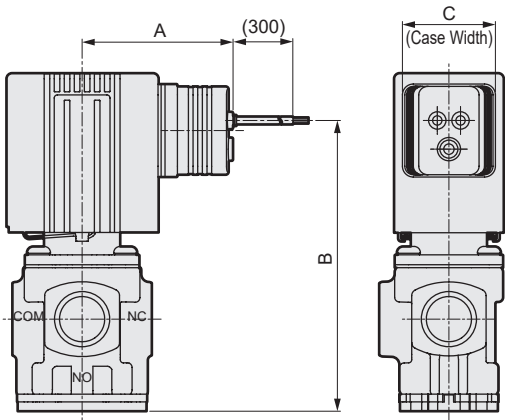
Brass body/stainless steel body



Model No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
FFG-2	32	17	21	69.5	78	18.5	42	24	1/8	16	25	M4 depth 6	8	-	-
Brass/SUS body											23.8	M4	-	6	4.5
FFG-3	40	19	26.5	86.5	94	22	45	30	1/8	20	32	M5 depth 8	11	-	-
Brass/SUS body			26	86	93.5						29	M5	-	6	4.5
FFG-4	45	24	30	101	109	24.5	47.5	35	1/4	22.5	35	M5 depth 8	15	-	-
Brass/SUS body											33	M5	-	8	5.5
FFG-5	45	24	30	110	118	27.5	50	40	1/4	22.5	35	M5 depth 8	15	-	-
Brass/SUS body											33	M5	-	8	5.5

External Dimension Drawings

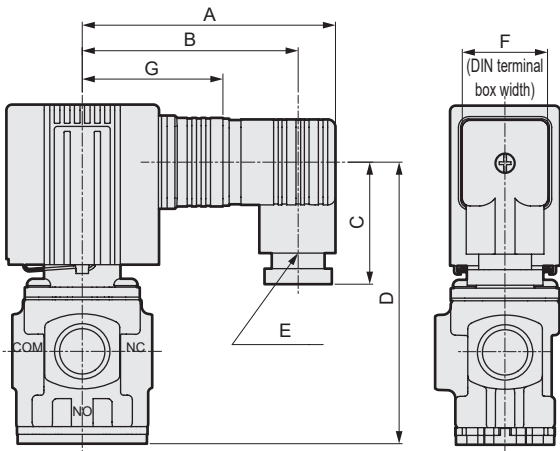
● Lead wire/AC voltage Coil option code: A



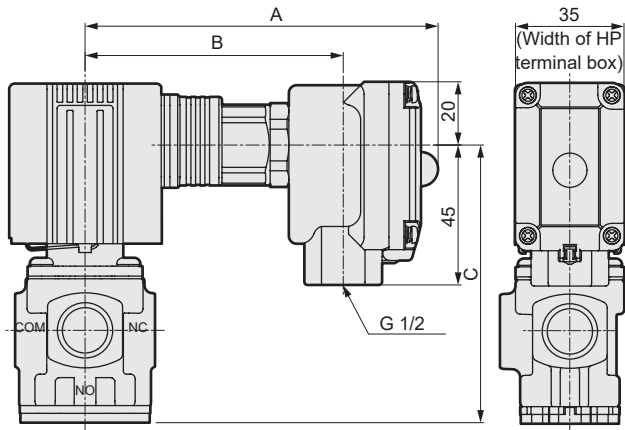
Model No.		A	B	C
FFG-2	Aluminum body	43	66	24
	Brass/SUS body			
FFG-3	Aluminum body	46	79	30
	Brass/SUS body		78.5	
FFG-4	Aluminum body	48.5	94	30
	Brass/SUS body			
FFG-5	Aluminum body	51	103	30
	Brass/SUS body			

Optional dimensions

● With DIN terminal box Coil option code: B/C/D/K/L/S
● DIN coil without terminal box



● With HP terminal box Coil option code: G/H/Q/R



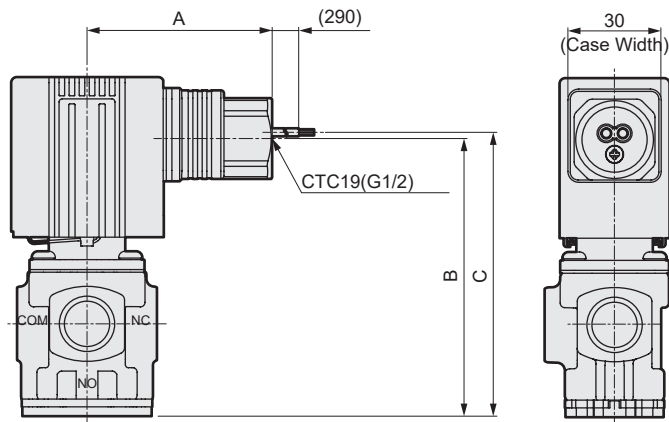
Dimensions shown in () are for G1/2.

Model No.		A	B	C	D	E	F	G
FFG-2	Aluminum body	73	64	36	62.5	Pg9	21	39
	Brass/SUS body							
FFG-3	Aluminum body	78.5	66.5	39.5	76	Pg11 (G 1/2)	27.5	42
	Brass/SUS body		(65.5)	(41.5)	75.5			
FFG-4	Aluminum body	81	69	39.5	90.5	Pg11 (G 1/2)	27.5	44.5
	Brass/SUS body		(67.5)	(41.5)				
FFG-5	Aluminum body	83.5	71.5	39.5	99.5	Pg11 (G 1/2)	27.5	47
	Brass/SUS body		(70)	(41.5)				

Model No.		A	B	C
FFG-2	Aluminum body	-	-	-
	Brass/SUS body	-	-	-
FFG-3	Aluminum body	113	82	74.5
	Brass/SUS body			74
FFG-4	Aluminum body	115	85	89.5
	Brass/SUS body			
FFG-5	Aluminum body	118	87	98.5
	Brass/SUS body			

Optional dimensions

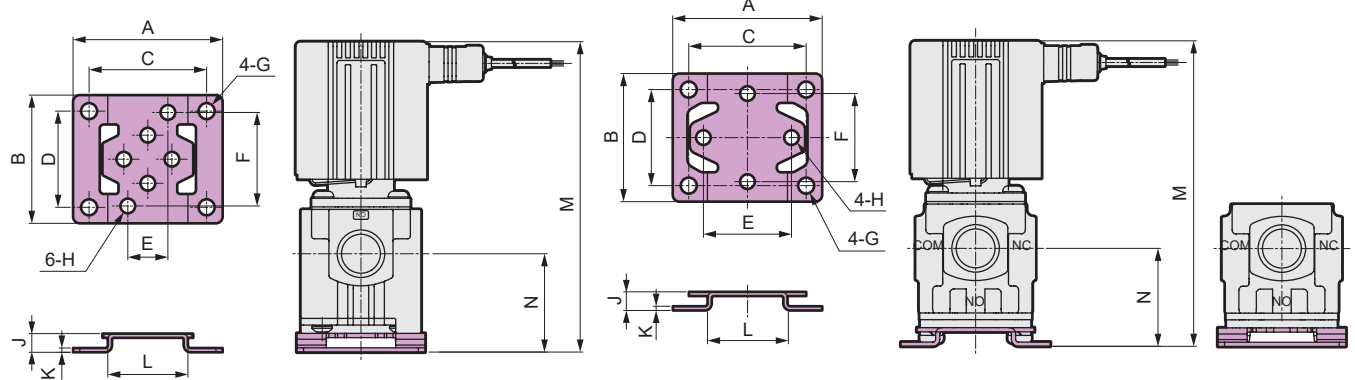
● Conduit Coil option code: E/F/M/P



Model No.		A	B	C
FFG-2	Aluminum body	-	-	-
	Brass/SUS body	-	-	-
FFG-3	Aluminum body	56.5	74.5	76.5
	Brass/SUS body		74	76
FFG-4	Aluminum body	59	89.5	91.5
	Brass/SUS body			
FFG-5	Aluminum body	61.5	98.5	100.5
	Brass/SUS body			

● Mounting plate① Option code: B
Aluminum body

Brass/stainless steel body



Model No.		A	B	C	D	E	F	G	H	J	K	L	M	N
FFG-2	Aluminum body	40	34	30	25	8	25	ø5	ø4.5	6	1.2	20	84	27
	Brass/SUS body					23.8	23.8					19		
FFG-3	Aluminum body	52	42	40	30	11	32	ø6	ø5.5	7	1.6	25	101	33.5
	Brass/SUS body					29	29					26		
FFG-4	Aluminum body	56	48	44	36	15	35	ø6	ø5.5	7	1.6	30	116	37
	Brass/SUS body					33	33					30		
FFG-5	Aluminum body	62	50	50	38	15	35	ø6	ø5.5	7	1.6	36	125	37
	Brass/SUS body					33	33					30		



Direct acting 3-port solenoid valve, manifold

FFGM Series

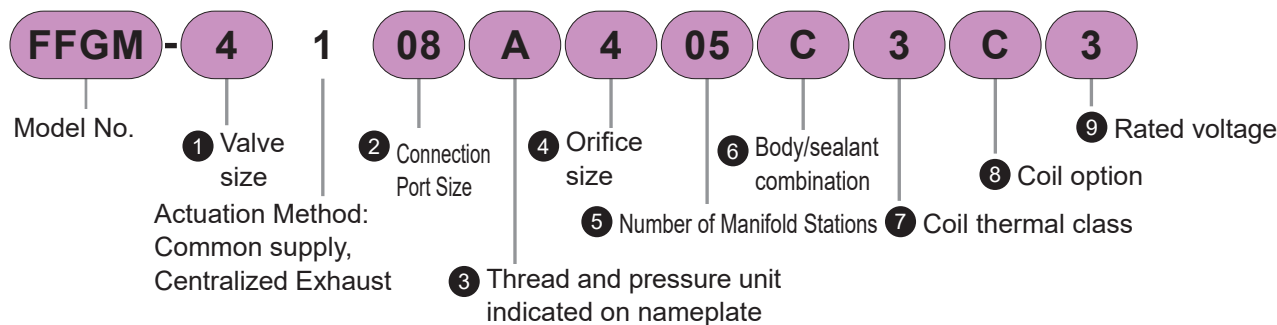
● Universal

● Connection Port Size: Rc/G/NPT 1/8, 1/4



For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method



1 Valve size

Code	Content
3	Width 30 mm
4	Width 35 mm
5	Width 40 mm

2 Connection Port Size

Code	Content
08	1/4
00	Actuator only

3 Thread and pressure unit indicated on nameplate

Code	Content	
	Thread	Pressure display unit
A	Rc thread	MPa
B	G thread	bar
C	NPT Thread	psi *2
D	G thread	MPa *3
E	NPT Thread	MPa *3

4 Orifice size

Code	Content	1 Valve size		
		3	4	5
S	ø1.5	●		
2	ø2	●	●	●
3	ø3	●	●	●
4	ø4		●	●

*1: If the 2port size is only for "00" actuator, there is no thread, so select either "A" (MPa), "B" (bar), or "C" (psi) pressure display unit.

*2: In compliance with the Measurement Act, the psi display cannot be used in Japan.

*3: "D" and "E" are selections primarily for indicating MPa as the pressure display unit in Japan even for G and NPT threads.

5 Number of Manifold Stations

Code	Content
02	2 stations
to	to
09	9 stations
10	10 stations
00	Actuator only

*: For brass or stainless steel body, the manifold station No. is from 2 to 5 stations.

6 Body/sealant combination

Body	Seal	Treatment	Code	Operating Fluid				
				Compressed Air	Dry air Inert gas	Water	Oil	Low vacuum (*1)
Aluminum	NBR	-	A	●	●			
Brass	NBR		C	●	●	●	●	●
	FKM		D	●	●	●	●	●
	NBR		H	●	●	●	●	●
Stainless Steel	FKM		J	●	●	●	●	●
Brass	NBR	Oil-prohibited	N	●	●	●	●	●
	FKM		P	●	●	●	●	●
	NBR		S	●	●	●	●	●
	FKM		T	●	●	●	●	●

*1: This can be used with low vacuum of $[1.33 \times 10^2 \text{ Pa (abs)}]$, but valve seat leakage is $0.2\text{cm}^3/\text{min}$ (ANR) or less. (Valve seat leakage at positive pressure)
When using at low vacuum, the lower limit of the working pressure is $1.33 \times 10^2 \text{ Pa (abs)}$, so the upper limit is 0.1 MPa lower.

7 Coil thermal class

Code	Content
3	Class 130 (B)

8 Coil option

Code	Content	1 Valve size			Voltage	
		3	4	5	DC	AC
A	Lead wire (300 mm)	●	●	●	●	●
B	With DIN terminal box (G1/2)	●	●	●	●	●
C	With DIN terminal box (Pg11)	●	●	●	●	●
D	DIN terminal box with lamp (Pg11)	●	●	●	*1	●
E	Conduit (G1/2)	●	●	●	●	●
F	Conduit (CTC19)	●	●	●	●	●
G	HP terminal box (G1/2)	●	●	●	●	●
H	HP terminal box with lamp (G1/2)	●	●	●	●	●*3
J	Lead wire (300 mm)	●	●	●	●*2	*4
K	With DIN terminal box (Pg11)	●	●	●	●	
L	DIN terminal box with lamp (Pg11)	●	●	●	●	
M	Conduit (G1/2)	●	●	●	●	
P	Conduit (CTC19)	●	●	●	●	
Q	HP terminal box (G1/2)	●	●	●	●	
R	HP terminal box with lamp (G1/2)	●	●	●	●	
S	DIN coil without terminal box	●	●	●	●*5	●*4

*1: Use "L" DIN terminal box with lamp/surge suppressor.

*2: DC voltage coil option "J" surge suppressor is attached.

*3: When the coil option "H" is selected, the rated voltage "K" (230 VAC) cannot be selected.

*4: All AC voltages have a full-wave rectifier circuit. Significant surges generated in the coil by the action of this diode are almost eliminated. For this reason, a surge suppressor is not available.

*5: Surge suppressor is not available. Use the terminal box with surge suppressor.

9 Rated voltage

Code	Content
1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	24 VDC
4	12 VDC
5	110 VAC 50/60 Hz
6	220 VAC 50/60 Hz
K	230 VAC 50/60 Hz

Model No. Notion Method

Masking plate orders are also available. Refer to Model No. Notion Method on page 45.

Coil option code

	A(DC)	Grommet lead wire 300 mm
	J	Grommet lead wire 300mm with surge suppressor
	A(AC)	Grommet lead wire 300 mm
	B	DIN terminal box
	K	DIN terminal box with surge suppressor
	D	DIN terminal box with lamp
	L	DIN terminal box/lamp/ With surge suppressor
	G	HP terminal box
	Q	HP terminal box with surge suppressor
	H	HP terminal box with lamp
	R	HP terminal box with lamp/ surge suppressor
	E	Conduit (G1/2)
	F	Conduit (CTC19)
	M	Conduit (G1/2) with surge suppressor
	P	Conduit (CTC19) with surge suppressor
	S	DIN coil without terminal box

Standard model No./Specifications	High temperature model No./Specifications	Internal structure/Dimensions	Model No./Specifications	Internal structure/Dimensions	Model No./Specifications	Internal structure/Dimensions	Model No./Specifications	Internal structure/Dimensions	Working fluid check list	Flow rate calculation formula	Precautions for Use
FFB			FFBM		FFG		FFGM				

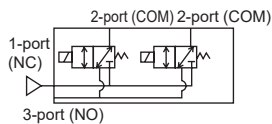
Common Specifications

Item	FFGM
Operating Fluid	Compressed air/dry air/inert gas/water/oil (50mm ² /s or less)/low vacuum [1.33×10^2 Pa (abs)] *1
Max. working pressure MPa	1.2 (refer to working pressure in individual specifications.)
Proof pressure (water pressure) MPa	1.8
Fluid temperature °C	-10 to 40 (no freezing)
Ambient Temperature °C	-10 to 40
Thermal class	Class 130 (B)
Atmosphere	Place free of corrosive gas and explosive gas
Valve Structure	Direct acting poppet structure
Valve seat leakage cm ³ /min (ANR)	0.2 or less (air)
Mounting Orientation	Unrestricted
Protection Structure	IP65

*1: When using at low vacuum, vacuum the NC/NO port sides.

Circuit Diagram Symbol

● Common supply/common exhaust



Electrical specifications

Item	FFGM-3						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%						
Power Consumption W	4.5	4.5	-	-	-	-	-
Apparent power VA	-	-	6.2	6.1	6.2	6.2	6.5

Item	FFGM-4							FFGM-5						
Rated voltage V	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz	24 VDC	12 VDC	100 VAC 50/60Hz	110 VAC 50/60Hz	200 VAC 50/60Hz	220 VAC 50/60Hz	230 VAC 50/60Hz
Voltage Fluctuation Range	±10%							±10%						
Power Consumption W	7	7	-	-	-	-	-	10.5	10.5	-	-	-	-	-
Apparent power VA	-	-	8.6	10	9.6	9.5	9.4	-	-	13	13	14	14	13

The leakage current must be less than or equal to the values shown below.

Voltage	AC					DC	
	100 V	110 V	200 V	220 V	230 V	12 V	24 V
Leakage current	2 mA or less		1 mA or less			5 mA or less	

Individual specifications

Item	Connection Port Size Rc/G/NPT		Orifice size (mm)	Working pressure (MPa) ^{*1,2}	Flow Characteristics																
Model No.	2-port	1-port 3-port			COM→NC				COM→NO				NC→COM				NO→COM				
					C [dm ³ /(s·bar)]	b	Cv	Kv value ^{*3}	C [dm ³ /(s·bar)]	b	Cv	Kv value ^{*3}	C [dm ³ /(s·bar)]	b	Cv	Kv value ^{*3}	C [dm ³ /(s·bar)]	b	Cv	Kv value ^{*3}	
Universal																					
FFGM-31	08 * S	1/4	1/4	1.5	0 to 0.7	0.31	0.41	0.089	0.077	0.31	0.26	0.079	0.069	0.28	0.33	0.070	0.061	0.27	0.32	0.073	0.063
	2			2	0 to 0.4	0.54	0.42	0.15	0.13	0.52	0.10	0.12	0.10	0.49	0.19	0.12	0.10	0.48	0.25	0.12	0.10
	3			3	0 to 0.15	0.92	0.26	0.22	0.19	0.85	0.090	0.19	0.16	0.86	0.11	0.20	0.17	0.88	0.15	0.20	0.17
FFGM-41	08 * 2	1/4	1/4	2	0 to 0.7 (0.6)	0.56	0.46	0.16	0.14	0.56	0.29	0.15	0.13	0.52	0.32	0.14	0.12	0.50	0.31	0.12	0.10
	3			3	0 to 0.3	1.2	0.40	0.33	0.29	1.1	0.060	0.26	0.23	1.1	0.16	0.27	0.23	1.1	0.17	0.26	0.23
	4			4	0 to 0.15	1.8	0.27	0.42	0.36	1.3	0.15	0.36	0.31	1.6	0.090	0.36	0.31	1.5	0.13	0.37	0.32
FFGM-51	08 * 2	1/4	1/4	2	0 to 1.2 (0.6)	0.56	0.46	0.16	0.14	0.56	0.29	0.15	0.13	0.52	0.32	0.14	0.12	0.50	0.31	0.12	0.10
	3			3	0 to 0.6 (0.3)	1.2	0.40	0.33	0.29	1.1	0.060	0.26	0.23	1.1	0.16	0.27	0.23	1.1	0.17	0.26	0.23
	4			4	0 to 0.3 (0.15)	1.8	0.27	0.42	0.36	1.3	0.15	0.36	0.31	1.6	0.09	0.36	0.31	1.5	0.13	0.37	0.32

*1: Values in () are for NO pressurization.

*2: When using at low vacuum, the lower limit of the working pressure is 1.33×10^2 Pa (abs), so the upper limit is 0.1 MPa lower.

*Refer to page 53 for 3:Kv value.

Weight

●Body material: Aluminum

Model No.	Mass (kg)									
	Actuator only	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
FFGM-3	0.34	1.0	1.5	2.0	2.5	2.9	3.4	3.9	4.4	4.8
FFGM-4	0.53	1.4	2.1	2.8	3.5	4.2	4.8	5.5	6.2	6.9
FFGM-5	0.72	1.8	2.7	3.6	4.6	5.5	6.4	7.3	8.2	9.1

*: Weight of aluminum sub-plate with 24 VDC lead wire.

●Body material: Brass/stainless steel

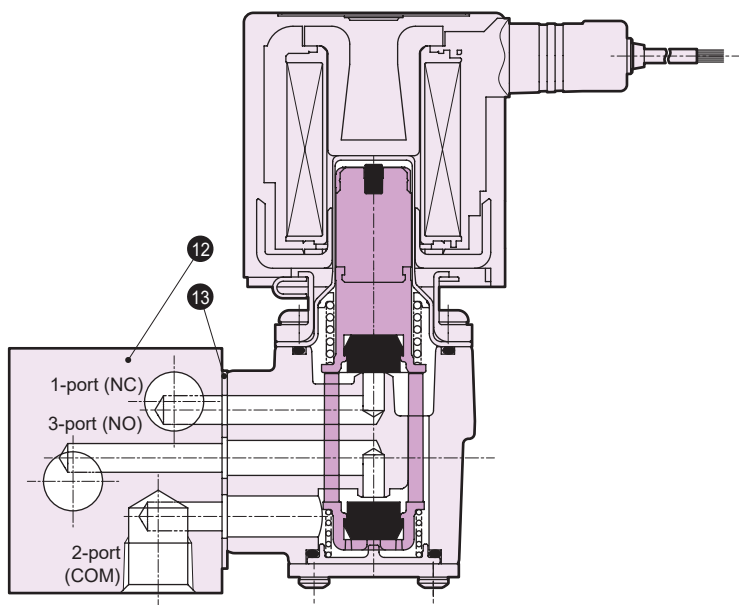
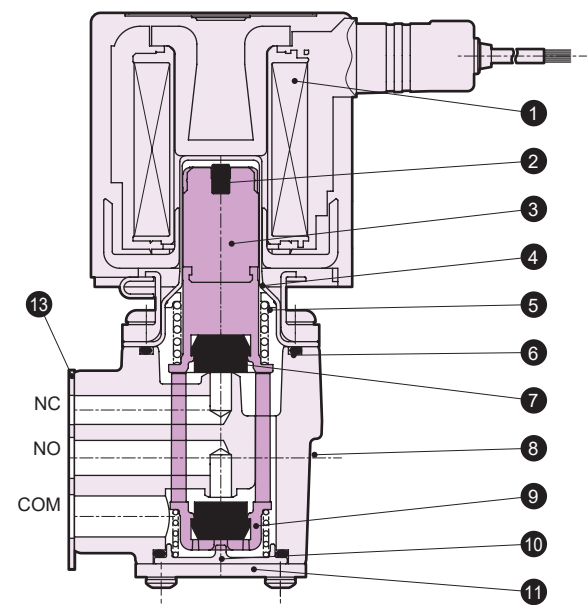
Model No.	Mass (kg)				
	Actuator only	2 stations	3 stations	4 stations	5 stations
FFGM-3	0.49	2.2	3.1	4.1	5.0
FFGM-4	0.78	2.8	4.1	5.4	6.6
FFGM-5	0.97	3.3	4.8	6.4	7.9

*: Weight of brass body, stainless steel sub-plate 24 VDC lead wire.

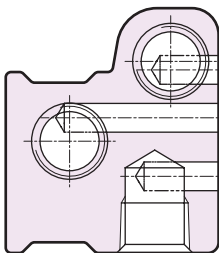
Internal Structure Diagram/Materials

● FFGM actuator

● FFGM manifold



Body material: For brass and SUS



Body material: For aluminum

Part No.	Name	Material	
1	Coil assembly	-	
2	Noise dampening rubber	HNBR(FKM,EPDM)	Hydrogenated nitrile rubber (fluoro rubber, ethylene propylene rubber)
3	Plunger	SUS,PPS	Stainless steel, polyphenylene sulfide
4	Flare pipe assembly	SUS,PPS	Stainless steel, polyphenylene sulfide
5	Plunger spring	SUS304	Stainless Steel
6	O-ring	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
7	Seal	NBR(FKM,EPDM)	Nitrile rubber (fluoro rubber, ethylene propylene rubber)
8	Body	Brass (aluminum, SCS13)	Brass (aluminum, stainless steel)
9	Valve Body Guide	PPS	Polyphenylene sulfide
10	NO cover	PPS	Polyphenylene sulfide
11	Cover M	SUS304	Stainless Steel
12	Sub-plate	SUS304 (aluminum)	Stainless steel (aluminum) *1
13	Gasket	NBR (FKM)	Nitrile rubber (fluoro rubber)

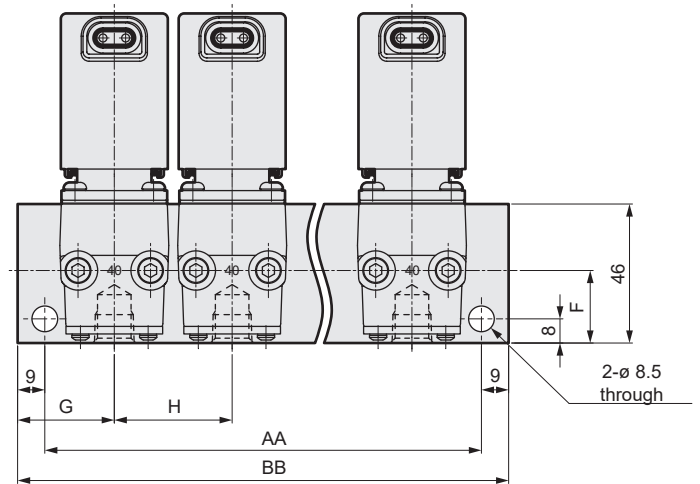
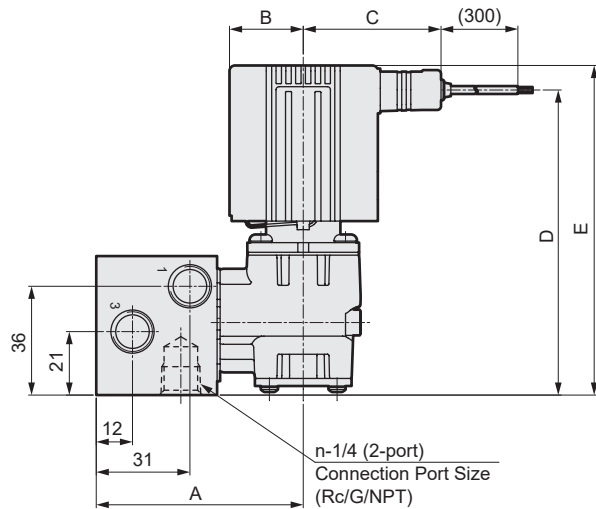
() shows options.

*1: Body material: For brass, the sub-plate material is stainless steel.

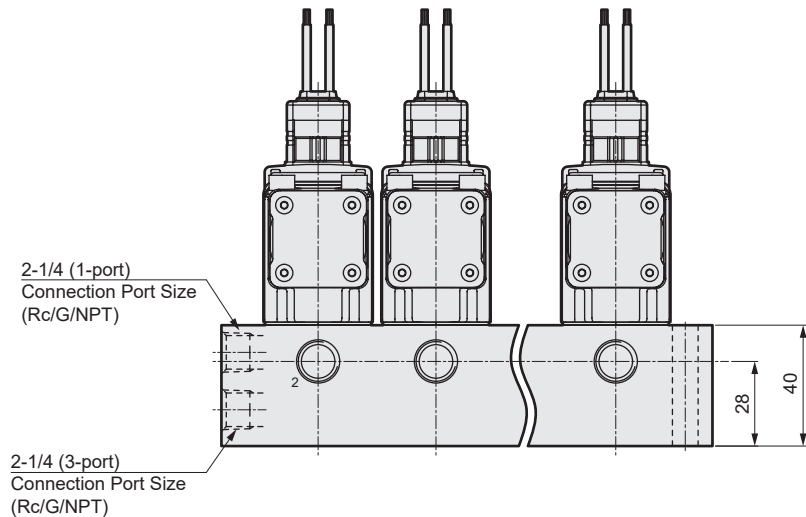
For maintenance parts refer to CKD Components Product Site (<https://www.ckd.co.jp/kiki/en/>) → "Model No." → Maintenance parts

External Dimension Drawings

● Manifold lead wire/DC voltage Coil option code: A/J



Model No.	Connection Port Size	Thread depth
FFGM-3	G1/4	12.5
FFGM-4	G1/4	12.5
FFGM-5	G1/4	12.5

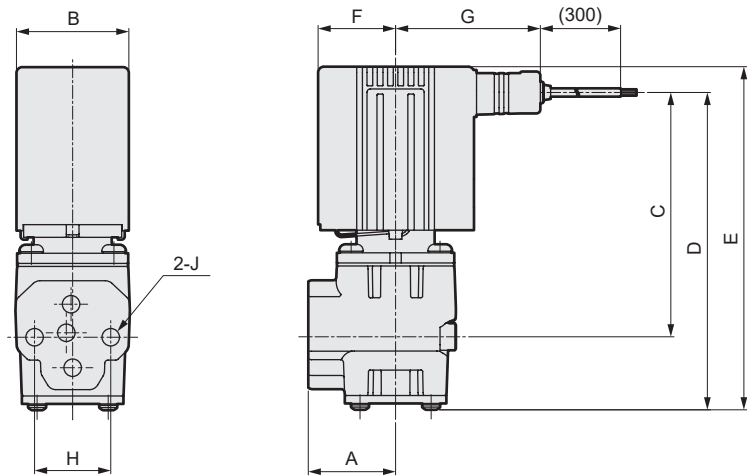


Model No.		A	B	C	D	E	F	G	H
FFGM-3	Aluminum body	63.5	22	45	88	95.5	25	32	36
	Brass/SUS body								36
FFGM-4	Aluminum body	68.5	24.5	47.5	101	109	24	32	38
	Brass/SUS body								39
FFGM-5	Aluminum body	68.5	27.5	50	110	118.5	24	32	46
	Brass/SUS body								45

Model No.		Station No. Code	2	3	4	5	6	7	8	9	10
FFGM-3	Aluminum body	AA	82	118	154	190	226	262	298	334	370
		BB	100	136	172	208	244	280	316	352	388
	Brass/SUS body	AA	82	118	154	190	—	—	—	—	—
		BB	100	136	172	208	—	—	—	—	—
FFGM-4	Aluminum body	AA	84	122	160	198	236	274	312	350	388
		BB	102	140	178	216	254	292	330	368	406
	Brass/SUS body	AA	85	124	163	202	—	—	—	—	—
		BB	103	142	181	220	—	—	—	—	—
FFGM-5	Aluminum body	AA	92	138	184	230	276	322	368	414	460
		BB	110	156	202	248	294	340	386	432	478
	Brass/SUS body	AA	91	136	181	226	—	—	—	—	—
		BB	109	154	199	244	—	—	—	—	—

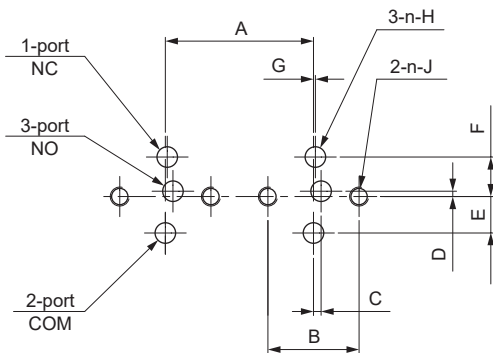
External Dimension Drawings

● Actuator lead wire/DC voltage Coil option code: A/J



Model No.	A	B	C	D	E	F	G	H	J
FFGM-3	23	30	63	85.5	93	22	45	20	ø4.5
FFGM-4	27.5	35	77	100	108	24.5	47.5	24	ø5.5
FFGM-5	27.5	40	86	109	117	27.5	50	24	ø5.5

● Actuator installation dimensions



* Machining diagram when using 2 actuators.

Model No.		A	B	C	D	E	F	G	H	J
FFGM-3	Aluminum body	36 or more	20±0.1	1.5±0.1	±0	9±0.2	7.5±0.2	0.5	ø4	M4 depth of 10 or more
	Brass/SUS body	36 or more								
FFGM-4	Aluminum body	38 or more	24±0.1	2±0.1	1.4±0.1	9.6±0.2	10.4±0.2	0.5	*5.4	M5 depth of 10 or more
	Brass/SUS body	39 or more								
FFGM-5	Aluminum body	46 or more	24±0.1	2±0.1	1.4±0.1	9.6±0.2	10.4±0.2	0.5	*5.4	M5 depth of 10 or more
	Brass/SUS body	45 or more								

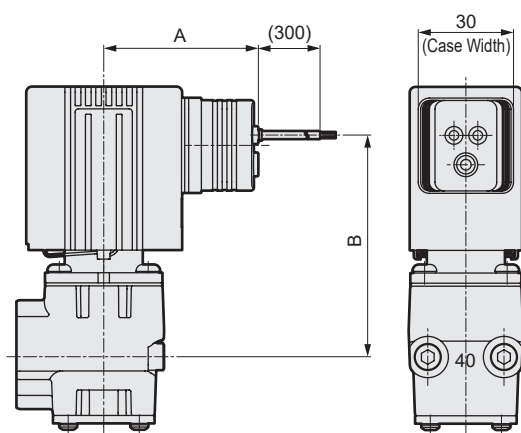
Model No. Notion Method discrete masking plate

With gasket and mounting screws

	Aluminum body	Brass, stainless steel body	
Seal	NBR	NBR	FKM
FFGM-3	FFGM-31A-MP-KIT	FFGM-31H-MP-KIT	FFGM-31J-MP-KIT
FFGM-4	FFGM-41A-MP-KIT	FFGM-41H-MP-KIT	FFGM-41J-MP-KIT
FFGM-5	FFGM-41A-MP-KIT	FFGM-41H-MP-KIT	FFGM-41J-MP-KIT

External Dimension Drawings

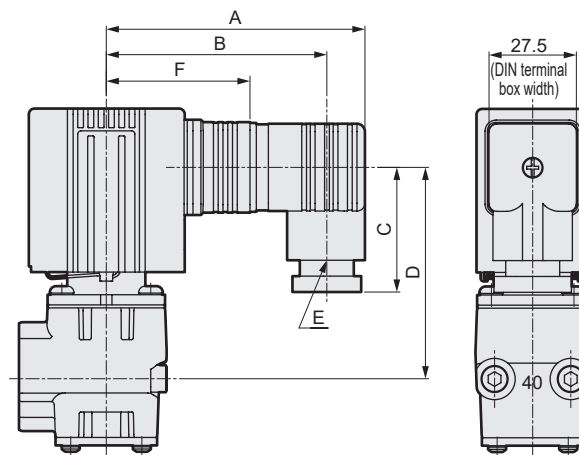
● Actuator lead wire/AC voltage Coil option code: A/J



Model No.	A	B
FFGM-3	46	55.5
FFGM-4	48.5	70
FFGM-5	51	79

● Actuator with DIN terminal box Coil option code: B/C/D/K/L/S

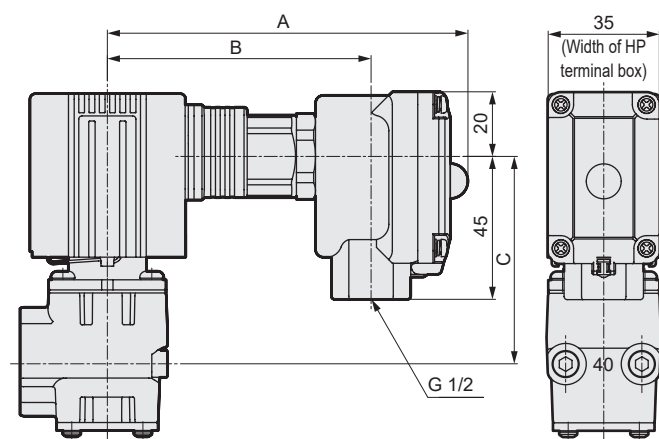
● Actuator without DIN coil/terminal box



Dimensions shown in () are for G1/2.

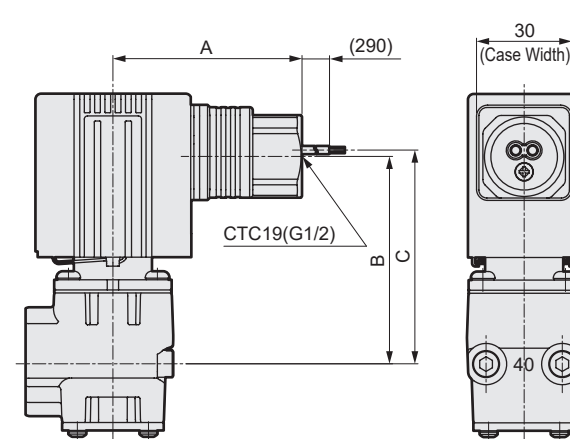
Model No.	A	B	C	D	E	F
FFGM-3	78.5	66.5 (65.5)	39.5 (41.5)	52.5	Pg11 (G 1/2)	42
FFGM-4	81	69 (67.5)	39.5 (41.5)	66.5	Pg11 (G 1/2)	44.5
FFGM-5	83.5	71.5 (70)	39.5 (41.5)	75.5	Pg11 (G 1/2)	47

● Actuator HP terminal box Coil option code: G/H/Q/R



Model No.	A	B	C
FFGM-3	113	82	51
FFGM-4	115	85	65.5
FFGM-5	118	87	74.5

● Actuator conduit Coil option code: E/F/M/P



Model No.	A	B	C
FFGM-3	56.5	51	53
FFGM-4	59	65.5	67.5
FFGM-5	61.5	74.5	76.5