

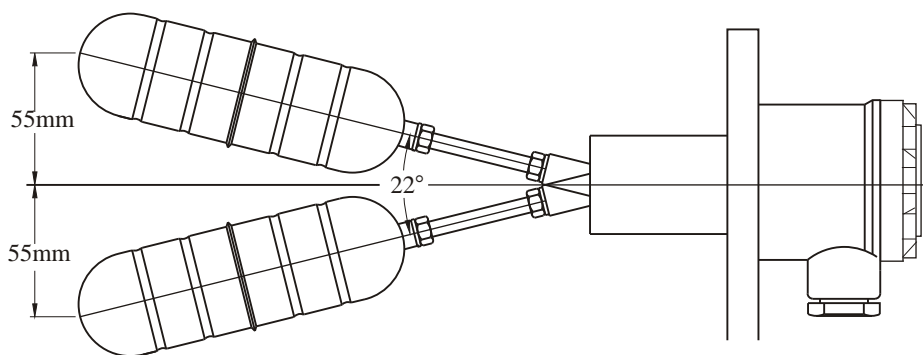
Principle

Simple theory as liquid buoyancy is utilized for the main principle of this "FF" series. A change of liquid level correspondingly travels the float to extreme levels up and down. The reed switch is thus "NC" and "NO" exchanged as well as the permanent magnet on pivot will have mutual repulsion to the other one inside the housing for like poles, which the micro switch is button-pushed by magnet to states "NO" and "NC" exchanging likewise.

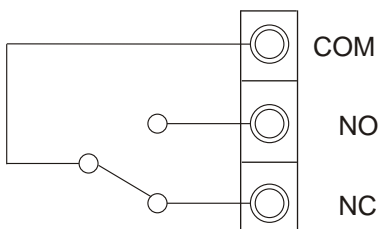
Features

The side mounted float level sensor (FF series) are manufactured specifically for horizontal mounting in a tank or vessel. They work well as high or low level control.

1. Both Micro-Switch type and Reed Switch are available. The Micro-Switch type is usable even at ambient temp. of 100°C max.
2. Mounting flanges are custom-specifiable. (JIS, DIN, ANSI).
3. A rich variety of floats can suit different specific gravity (S.G.) of liquid.(Custom-made)
4. Liquid-wetted material can be selected for SUS304 or SUS316 as well as explosion proof model.

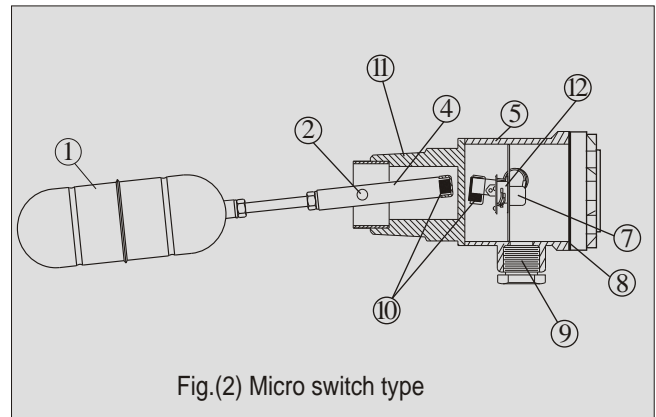
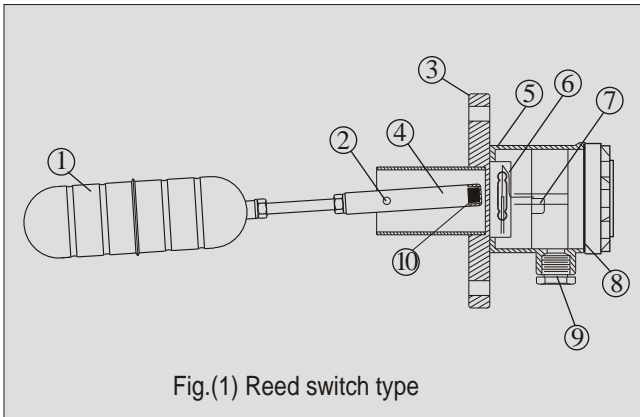


Wiring



REED SWITCH ---- 30W 220VAC/200VDC (FF20, 45, 55, 8□)
MICRO SWITCH ---- 5A/250VAC

CONFIGURATION CUTTING DRAWINGS

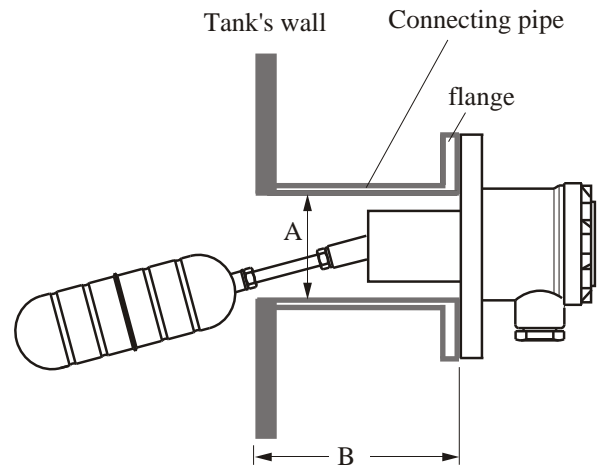


- | | | | |
|-----------|----------------|-------------|------------------|
| 1. Float | 4. Pivot | 7. Terminal | 10. Magnet |
| 2. Shaft | 5. Housing | 8. O-ring | 11. Screw |
| 3. Flange | 6. Reed Switch | 9. Conduit | 12. Micro Switch |

- The diameter and length of the connecting pipe (of a tank) are in a direct ratio.

UNIT: mm

Pipe dia. (A)	45-50	50-55	55-60	60-65	65-70
Length (B) (Max.)	130	140	150	160	170



SPECIFICATION

SPEC. MODEL	Operating Temp.	Electrical Contact	Contact Capacity	Contact Element	Housing Spec.	Applicable S.G.
FF10BHM	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.25
FF10CEM	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.65
FF10CEM....SA	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.65
FF10CEQ	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.65
FF10CEQ....SA	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.65
FF10CLO	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.65
FF10CLO....SA	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.65
FF10DFM	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.55
FF10DFM....SA	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.55
FF10DFQ	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.55
FF10DFQ....SA	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.55
FF20BHM	-25°C~200°C	SPDT(1C)	30W 220VAC/200VDC	Reed Switch	Aluminum Alloy IP65	0.25
FF20CEM	-25°C~200°C	SPDT(1C)	30W 220VAC/200VDC	Reed Switch	Aluminum Alloy IP65	0.65
FF20CEQ	-25°C~200°C	SPDT(1C)	30W 220VAC/200VDC	Reed Switch	Aluminum Alloy IP65	0.65
FF20DFM	-25°C~200°C	SPDT(1C)	30W 220VAC/200VDC	Reed Switch	Aluminum Alloy IP65	0.55
FF20DFQ	-25°C~200°C	SPDT(1C)	30W 220VAC/200VDC	Reed Switch	Aluminum Alloy IP65	0.55
FF20DLO	-25°C~200°C	SPDT(1C)	30W 220VAC/200VDC	Reed Switch	Aluminum Alloy IP65	0.55
FF62DFM	-10°C~350°C	SPDT(1C)	5A/250VAC	Micro Switch	Aluminum Alloy IP65	0.55

※ Model no. with "....SA"certified by Germany GL, USA ABS marine grade, the prices are subject to be different.
Please notify when placing an order if necessary.

SPECIFICATION

SPEC. MODEL	Operating Temp.	Electrical Contact	Contact Capacity	Contact Element	Housing Spec.	Applicable S.G.
FF40DFM	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro switch	Aluminum Alloy IP65	0.55
FF45DFM	-25°C~200°C	SPDT(1C)	30W/200VDC	Reed switch	Aluminum Alloy IP65	0.55
FF50DFM	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro switch	Aluminum Alloy IP65	0.55
FF50DFM....SA	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro switch	Aluminum Alloy IP65	0.55
FF55DFM	-25°C~200°C	SPDT(1C)	30W 220VAC/200VDC	Reed switch	Aluminum Alloy IP65	0.55
FF70/71BHM	-10°C~100°C	SPDT(1C)	3A/250VAC	Micro switch	Aluminum Alloy IP65	0.25
FF70/71CFM	-10°C~100°C	SPDT(1C)	3A/250VAC	Micro switch	SUS304 Ex d IIB T3~T6	0.65
FF70/71DFM	-10°C~100°C	SPDT(1C)	3A/250VAC	Micro switch	SUS304 Ex d IIB T3~T6	0.55
FF73GLO	-10°C~100°C	SPDT (1C)	3A/250VAC	Micro switch	SUS304 Ex d IIB T3~T6	0.7
FF75DFM	-10°C~100°C	SPDT (1C)	3A/250VAC	Micro switch	SUS304 Ex d IIB T3~T6	0.55
FF80EFM	0°C~60°C	SPDT(1C)	30W 220VAC/200VDC	Reed switch	PC IP65	0.60
FF81EFM	0°C~60°C	SPDT(1C)	30W 220VAC/200VDC	Reed switch	—	0.60
FF90GLO	-10°C~100°C	SPDT(1C)	5A/250VAC	Micro switch	Aluminum Alloy IP65	0.7

※ Model no. with "....SA"certified by Germany GL, USA ABS marine grade, the prices are subject to be different.
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STANDARD

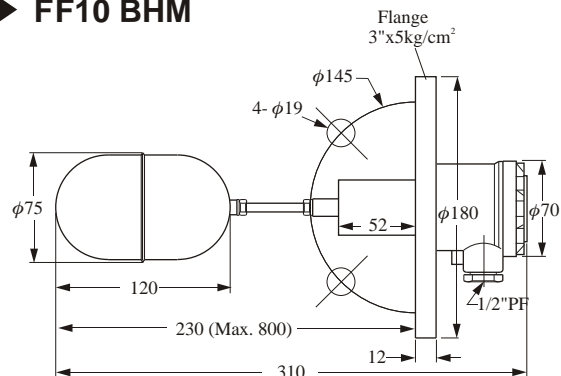
MODEL : F F10



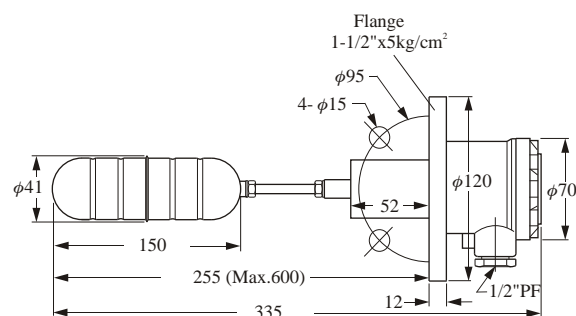
Connecting Type
(Refer to page 12)
Float Type



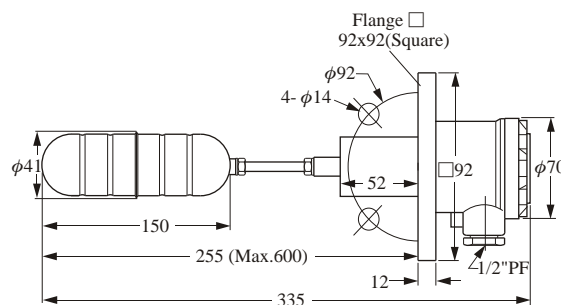
► FF10 BHM



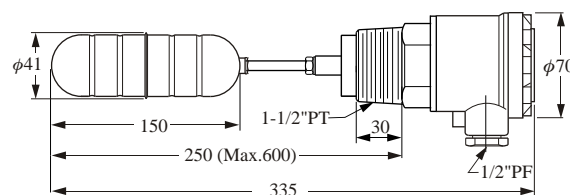
► FF10 CEM



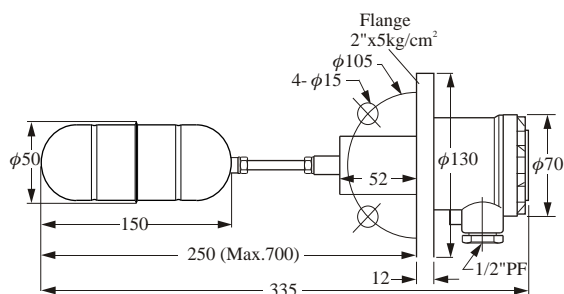
► FF10 CLO



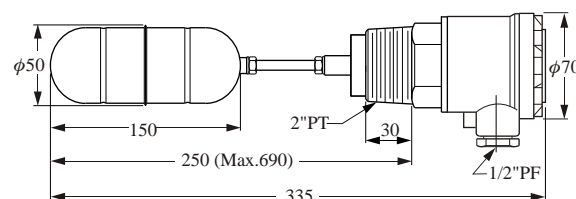
► FF10 CEQ



► FF10 DFM



► FF10 DFQ



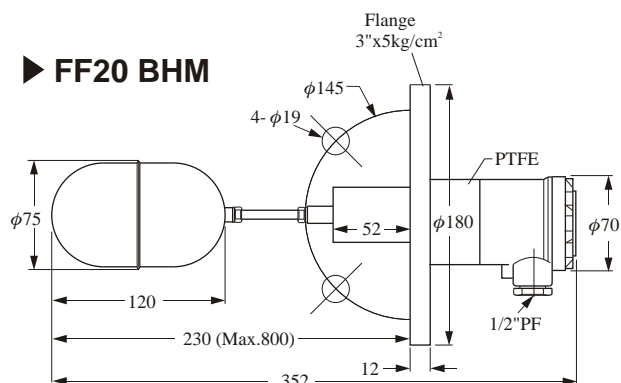
HIGH TEMP.

MODEL : FF20 ☐ ☐

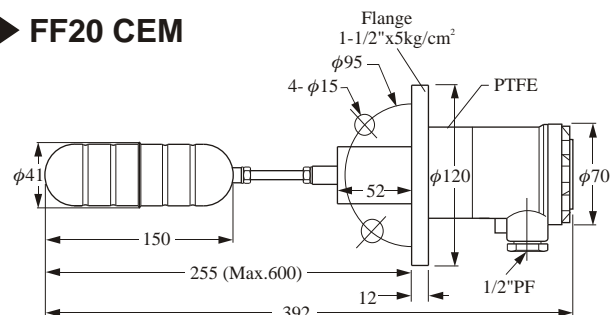
Connecting Type
(Refer to page 12)
Float Type



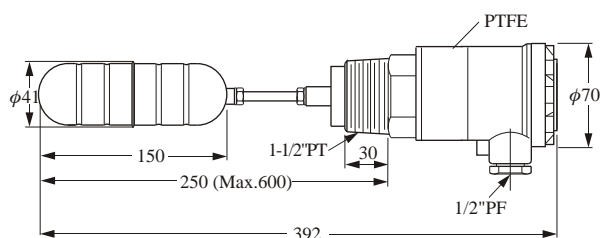
► FF20 BHM



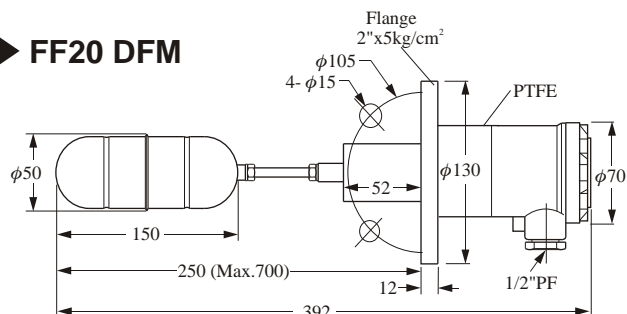
► FF20 CEM



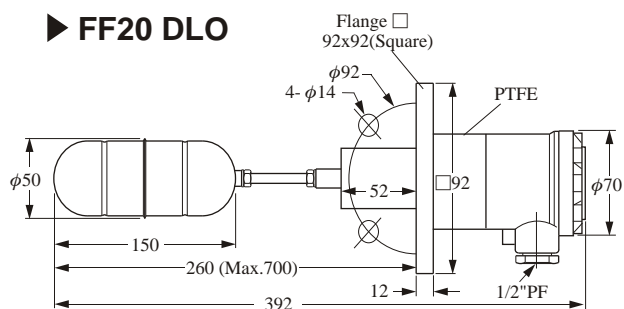
► FF20 CEQ



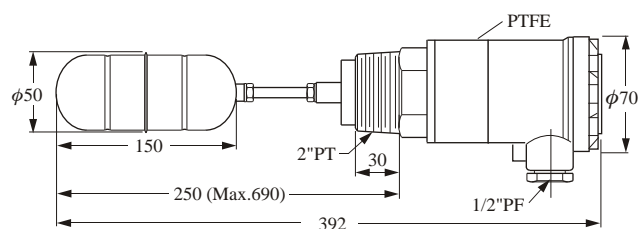
► FF20 DFM



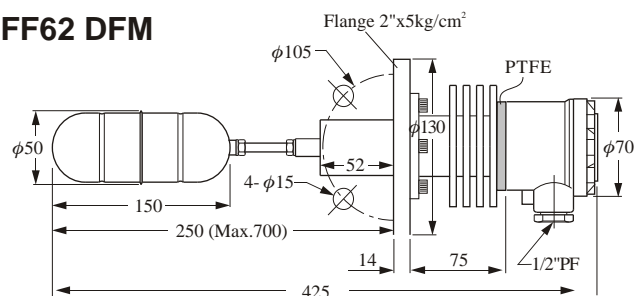
► FF20 DLO



► FF20 DFQ



► FF62 DFM



MODEL: F F ☐ ☐ ☐ ☐

Connecting Type (Refer to page 12)

Float Type

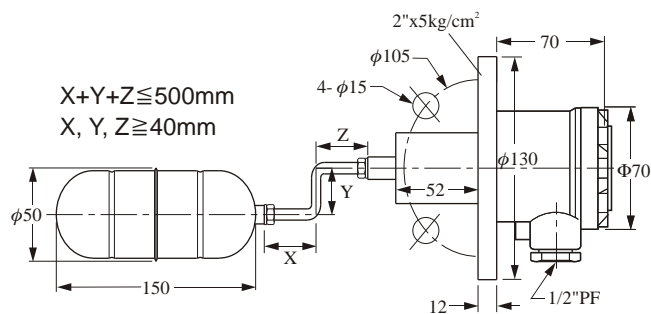
40: Double Angle Standard

45: Double Angle High Temp.

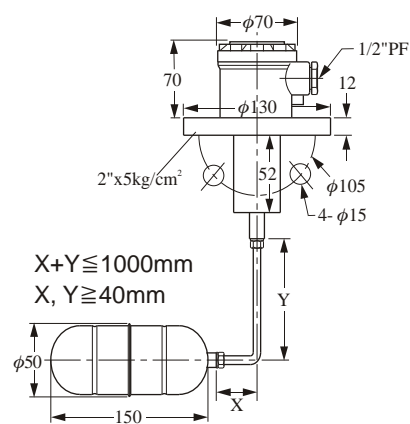
50: Vertical Standard

55: Vertical High Temp.

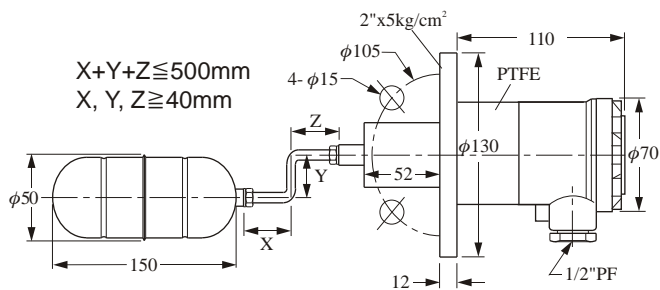
► FF40DFM



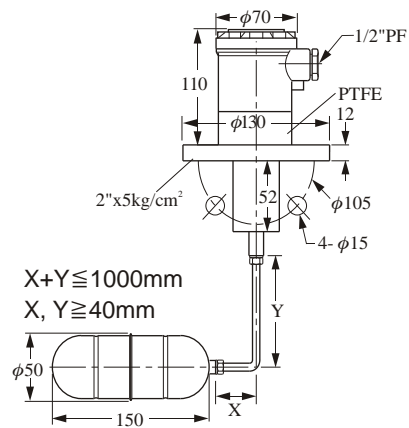
► FF50DFM



► FF45DFM



► FF55DFM



ANTI-ACID / ALKALINE

Principle

When the solid polypropylene float is flooded by a liquid, its weight is reduced by the buoyancy of the liquid and the float moves upward. Thus, a permanent magnet that built in the float actuates the reed switch in the sensor body to work the "NO" and "NC" exchanges.

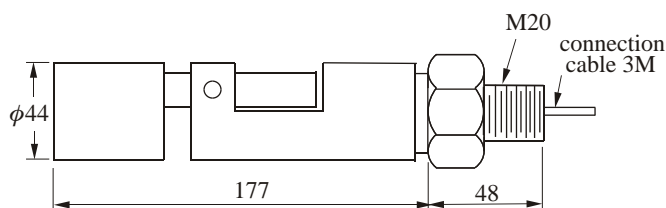
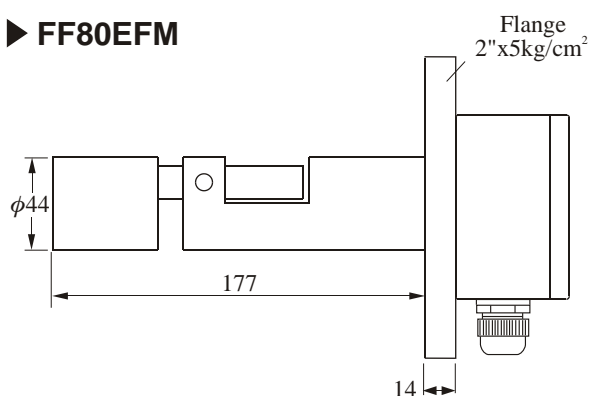
FF80EFM --- PC Housing

FF81EFM --- Without Housing

Wetted parts : P.P.

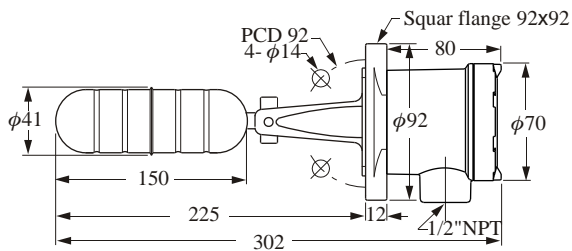
Cable spec. : PVC 3x0.75 mm²

► FF80EFM



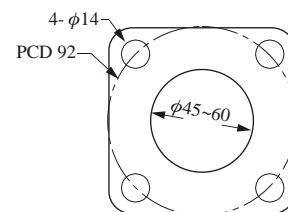
SQUARE FLANGE & TEST ACCESSORY

► FF90GLO



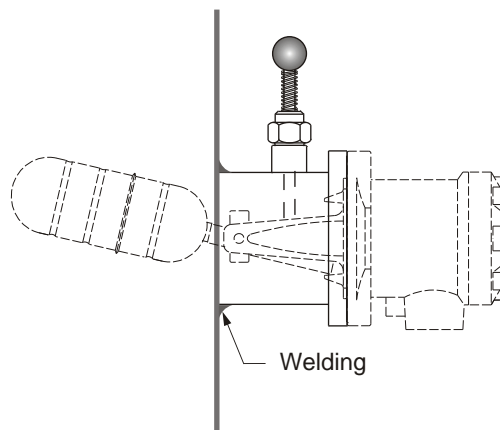
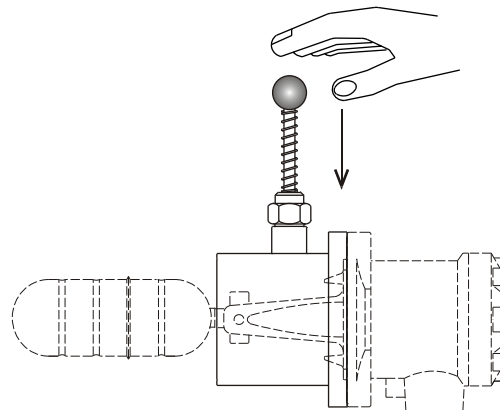
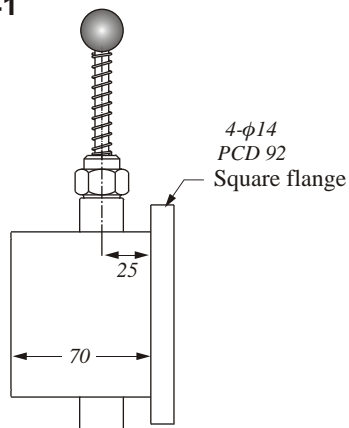
1. Housing material: Aluminum (IP65)
2. Suitable S.G.: >0.7
3. Operation temp.: -10~100°C
4. Contact form: SPDT(1C)
5. Contact rating: 5A/250VAC
6. Operation pressure: 15kg/cm²
7. Wetted parts: SUS304
8. Weight: approx. 1.2 kg

Drill Hole



Test Accesory (Optional)

Material: SS41



MARINE ASSOCIATION APPROVALS

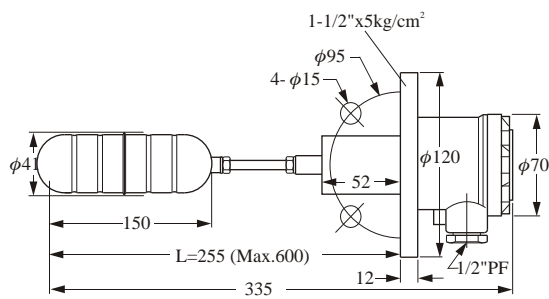


Germanischer Lloyd
(Germany)

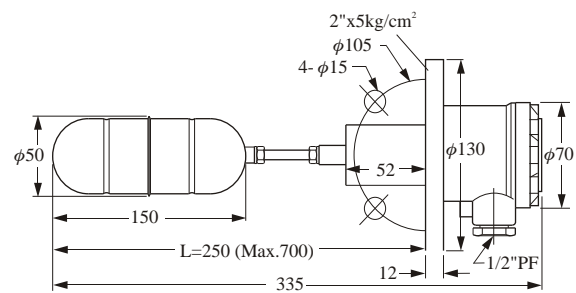


American Bureau of
Shipping (USA)

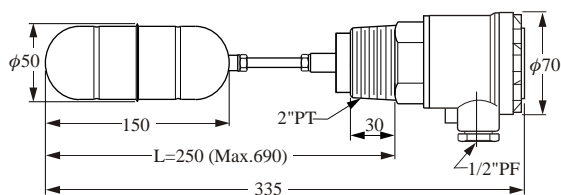
► FF10CEM....SA



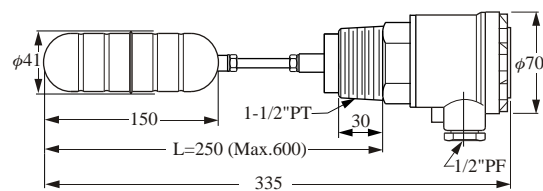
► FF10DFM....SA



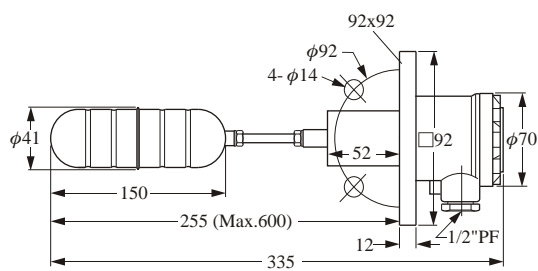
► FF10DFQ....SA



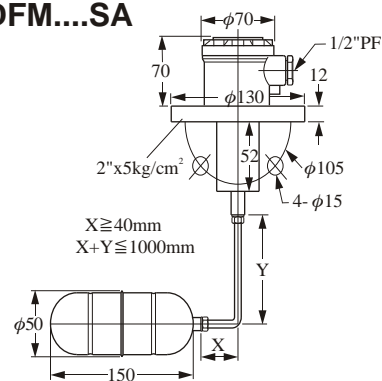
► FF10CEQ....SA



► FF10CLO....SA



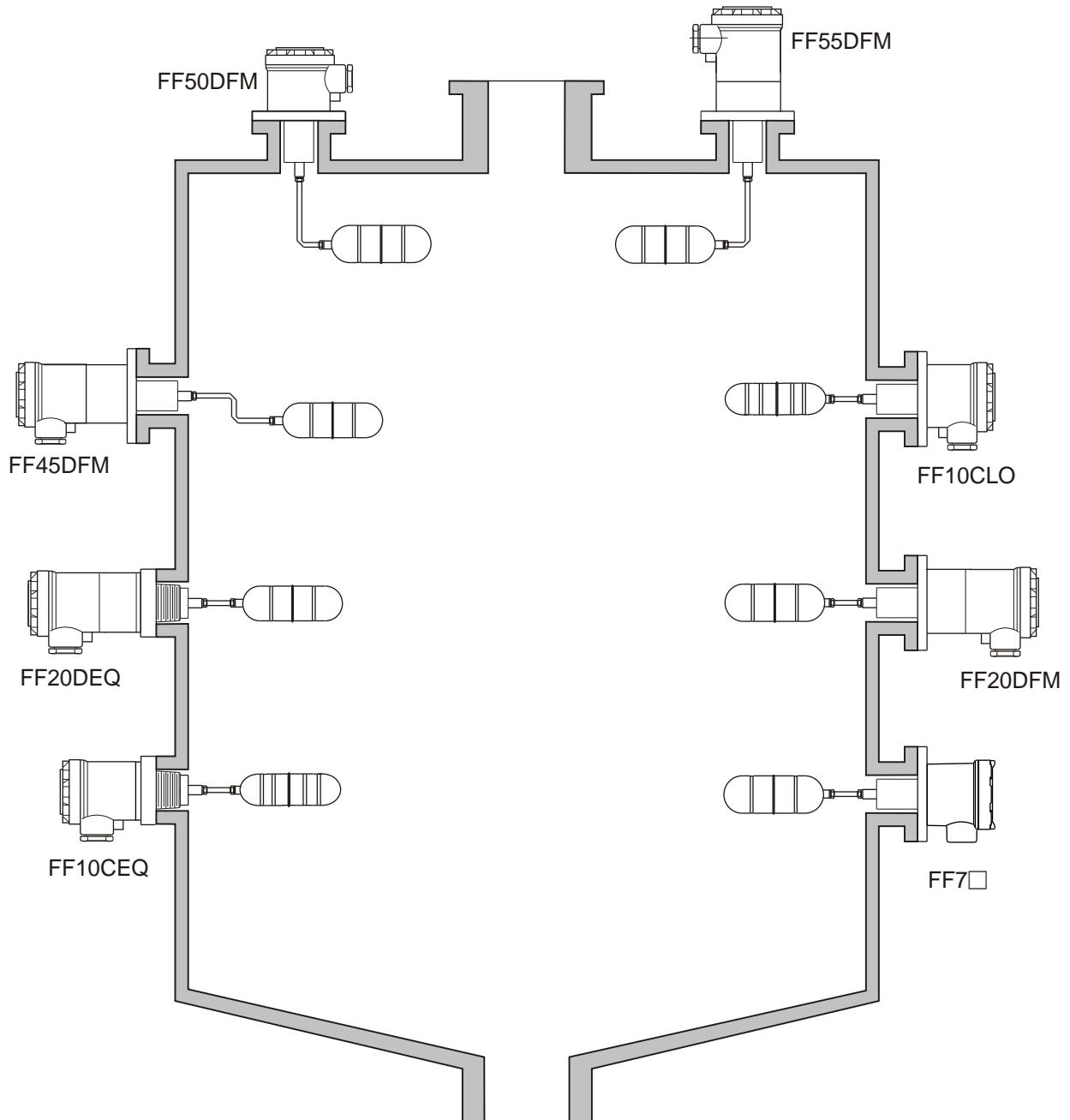
► FF50DFM....SA



IMPORTANCE FOR INSTALLATION

1. SUS304/SUS316 materials is not available for corrosive application.
2. The cable duct(s) must face downward to prevent moisture sipping in.
3. The float and extension rod must be inserted into a bin completely.
4. Be sure the liquid object's S.G. before installation.
5. The mounting hole must be larger than the external diameter of float.
6. Don't mount the devices near the bin's inlet or outlet.

Typical Positioning



HOW TO MAKE YOUR ORDER

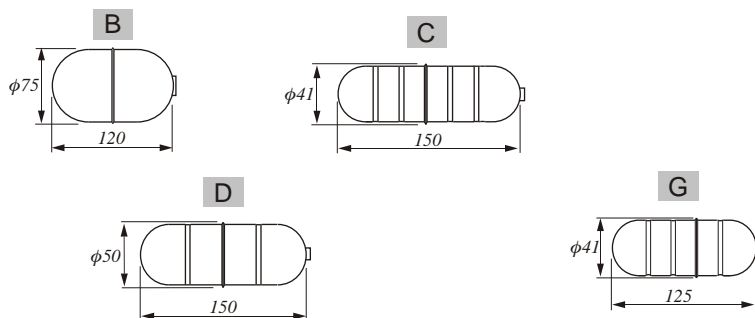
FF **10** **C** **EM** **0270**

MODEL

10: STANDARD
 20: HIGH TEMP.
 40: DOUBLE ANGLE STANDARD
 45: DOUBLE ANGLE HIGH TEMP.
 50: VERTICAL STANDARD
 55: VERTICAL HIGH TEMP.
 62: HIGH TEMP RADIATOR
 80: ANTI-ACID/ALKALINE
 81: ANTI-ACID/ALKALINE
 90: SQUARE FLANGE

FLOAT TYPE

B: $\phi 75 \times 120$ (OPERATION PRESSURE 10 kg/cm^2 S.G. 0.25)
 C: $\phi 41 \times 150$ (OPERATION PRESSURE 15 kg/cm^2 S.G. 0.65)
 D: $\phi 50 \times 150$ (OPERATION PRESSURE 30 kg/cm^2 S.G. 0.55)
 G: $\phi 41 \times 125$ (OPERATION PRESSURE 15 kg/cm^2 S.G. 0.7)



CONNECTING TYPE

E: 1-1/2" (40A)	M: 5 kg/cm^2	W: PN10 (10Bar)
F: 2" (50A)	N: 10 kg/cm^2	X: PN16 (16Bar)
G: 2-1/2" (65A)	O: 150 Lbs	Y: PN25 (25Bar)
H: 3" (80A)	P: 300 Lbs	Z: PN40 (40Bar)
I: 4" (100A)	Q: PT	
J: 5" (125A)	T: BSP	
K: 6" (150A)	U: NPT	
L: 92x92	S: Others	

※ Flanges are in thickness of factory standard 12mm.

LENGTH(L) (UNIT: mm)

EX: FF 10C EM 0270

- ※ Tolerance of the total product length is $\pm 5 \text{ mm}$
- ※ Characteristics, specifications and dimensions are subject to change without notice.
- ※ Please contact your nearest distributor office for further information.

EXPLOSION PROOF

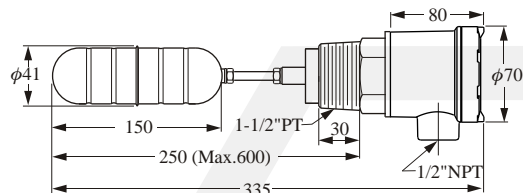
MODEL : F ☐ ☐ ☐ ☐

Connecting Type
(Refer to page 14)

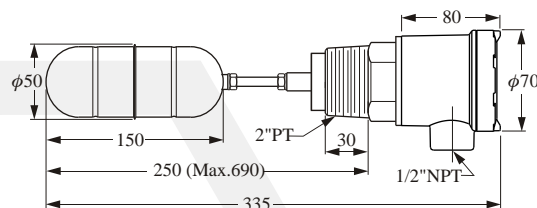
Float Type

7 ☐ : Explosion Proof (EX d IIB T4)

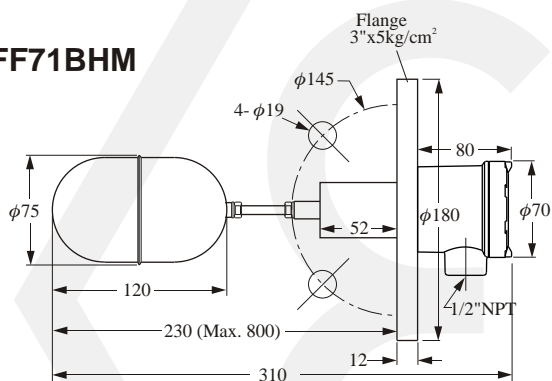
► FF70CEQ



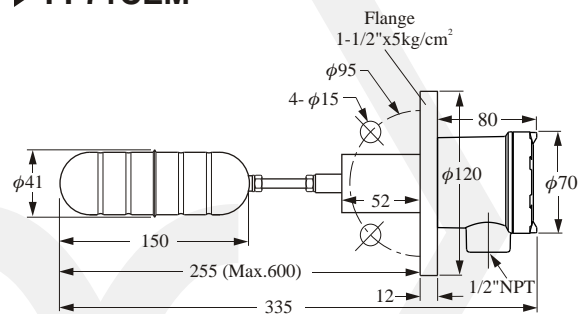
► FF70DFQ



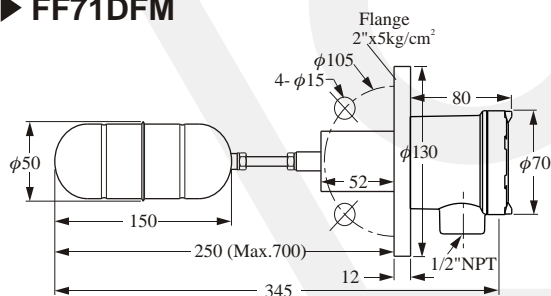
► FF71BHM



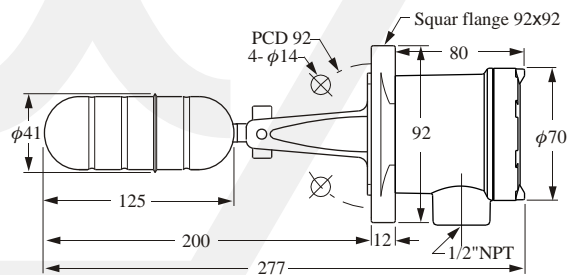
► FF71CEM



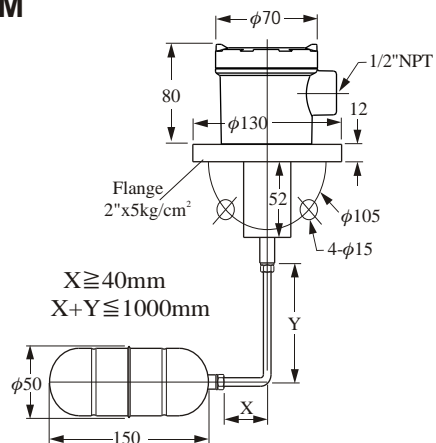
► FF71DFM



► FF73GLO



► FF75DFM



HOW TO MAKE YOUR ORDER

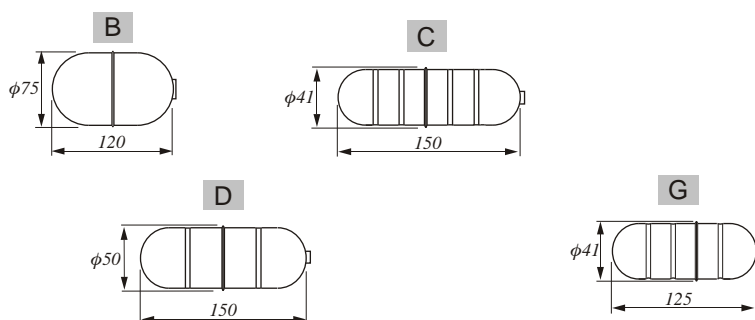
FF **7** **0** **C** **E** **M** **0** **2** **7** **0**

MODEL

70: LF70EXPLOSION PROOF (Ex d IIB T3~T6)
 71: LF71EXPLOSION PROOF (Ex d IIB T3~T6)
 73: LF73EXPLOSION PROOF (Ex d IIB T3~T6)
 75: LF75EXPLOSION PROOF (Ex d IIB T3~T6)

FLOAT TYPE

B: $\phi 75 \times 120$ (OPERATION PRESSURE 10kg/cm² S.G. 0.25)
 C: $\phi 41 \times 150$ (OPERATION PRESSURE 15kg/cm² S.G. 0.65)
 D: $\phi 50 \times 150$ (OPERATION PRESSURE 30kg/cm² S.G. 0.55)
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G: 2-1/2" (65A)	O: 150 Lbs	Y: PN25 (25Bar)
H: 3" (80A)	P: 300 Lbs	Z: PN40 (40Bar)
I: 4" (100A)	Q: PT	
J: 5" (125A)	T: BSP	
K: 6" (150A)	U: NPT	
L: 92x92	S: Others	

※ Flanges are in thickness of factory standard 12mm.

LENGTH(L) (UNIT: mm)

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