

Side Mounting Float Switch

INTRODUCTION

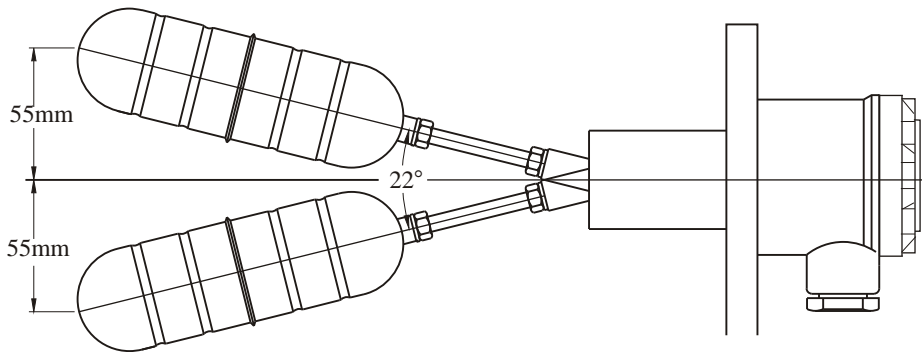
PRINCIPLE

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 on the housing for like poles, which the Microswitch is button-pushed by magnet to states "NO" and "NC" exchanging likewise.

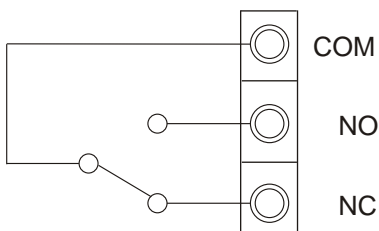
FEATURES

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



WIRING



REED SWITCH ---- 1A, 30W 220Vac/200Vdc (FF20, 45, 55, 8□)

MICRO SWITCH ---- 5A/250Vac

CONFIGURATION CUTTING DRAWINGS

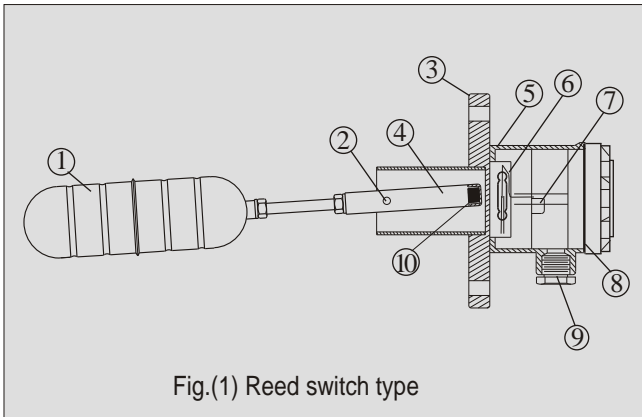


Fig.(1) Reed switch type

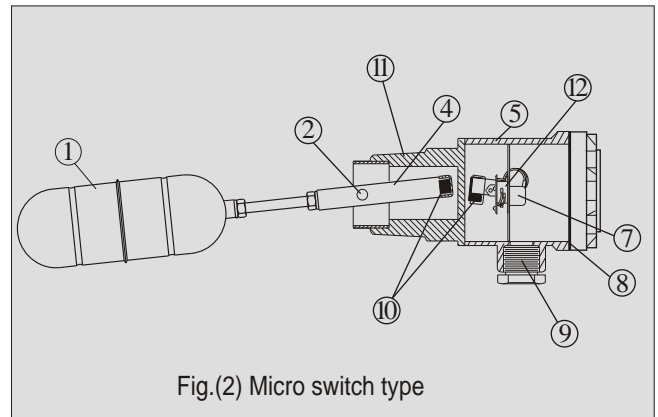


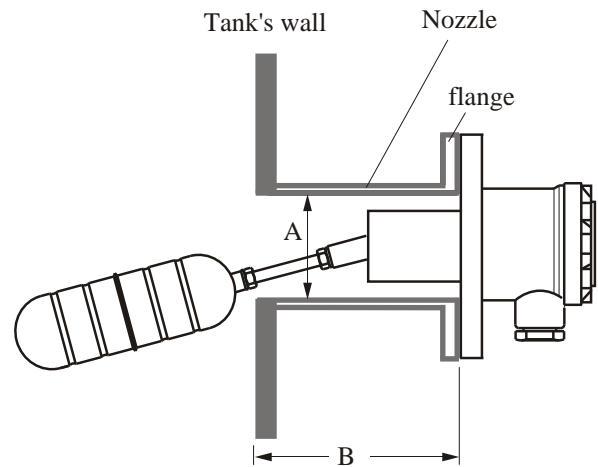
Fig.(2) Micro switch type

- | | | | |
|-----------|----------------|-------------|-----------------|
| 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. Microswitch |

► 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



MODEL \ SPEC.	Operating Temp.	Electrical Contact	Contact Capacity	Contact Element	Housing Spec.	Applicable S.G.
FF10BHM	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.25
FF10CEM	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
FF10CEQ	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
FF10CLO	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
FF10DFM	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
FF10DFQ	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
FF10HEQ	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	SUS304 IP65	0.8
FF12CEM	-40°C~100°C	SPDT(1C)X2	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
FF20BHM	-40°C~200°C	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.25
FF20CEM	-40°C~200°C	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.65
FF20CEQ	-40°C~200°C	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.65
FF20DFM	-40°C~200°C	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55
FF20DFQ	-40°C~200°C	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55
FF20DLO	-40°C~200°C	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55

※ Above-mentioned models are approved by marine grade : DNV 、 LR 、 GL 、 BV 、 ABS 。

SPECIFICATION



MODEL \ SPEC.	Operating Temp.	Electrical Contact	Contact Capacity	Contact Element	Housing Spec.	Applicable S.G.
FF30A3Q	-20°C~100°C	SPST(1A)	1A, 50W 240Vac/200Vdc	Reed Switch	SUS304 IP65	0.65
FF40DFM	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
FF45DFM	-40°C~200°C	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55
FF50DFM	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
FF55DFM	-40°C~200°C	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed switch	Aluminum Alloy IP65	0.55
FF62DFM	-40°C~350°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
FF70/71BHM	-20°C~100°C	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIB T3~T6	0.25
FF70/71CFM	-20°C~100°C	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIB T3~T6	0.65
FF70/71DFM	-20°C~100°C	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIB T3~T6	0.55
FF73GLO	-20°C~100°C	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIB T3~T6	0.7
FF75DFM	-20°C~100°C	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIB T3~T6	0.55
FF80EFM	-20°C~80°C	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed switch	PC IP65	0.60
FF81EFM	-20°C~80°C	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed switch	—	0.60
FF90GLO	-20°C~100°C	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65

※ Above-mentioned models are approved by marine grade : DNV 、 LR 、 GL 、 BV 、 ABS 。

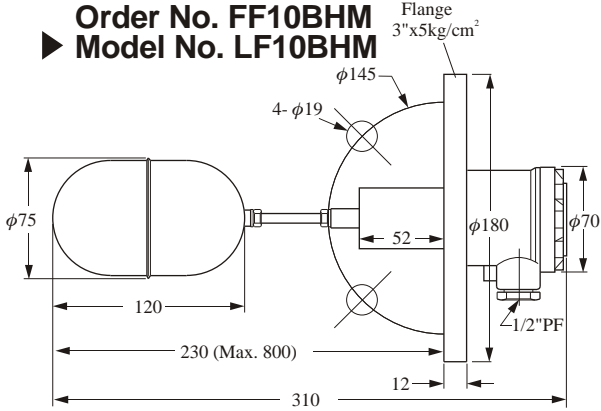
STANDARD

Order No. FF

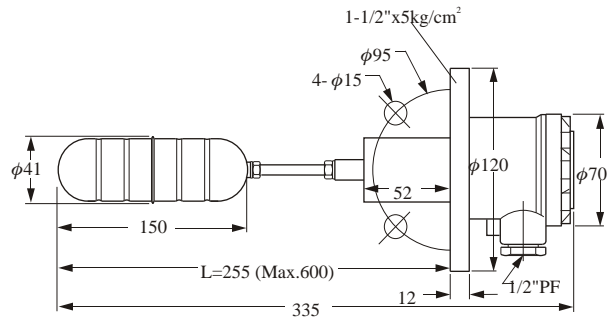
Connecting Type (Refer to page 12)
 Float Type
 10: Single Switch
 12: Dual Switch



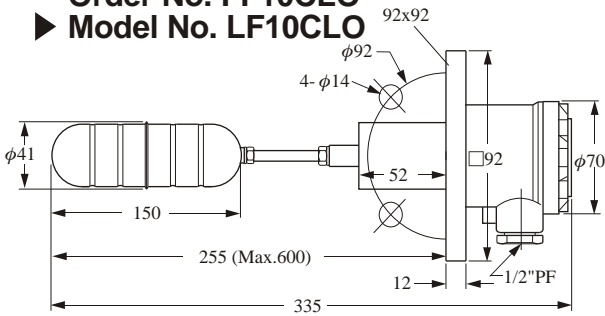
Order No. FF10BHM
Model No. LF10BHM



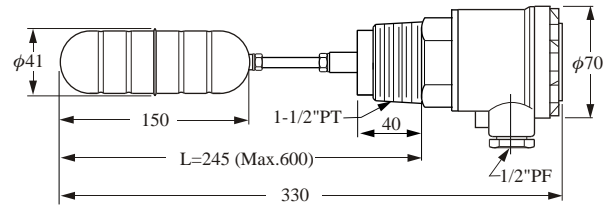
Order No. FF10CEM
Model No. LF10CEM



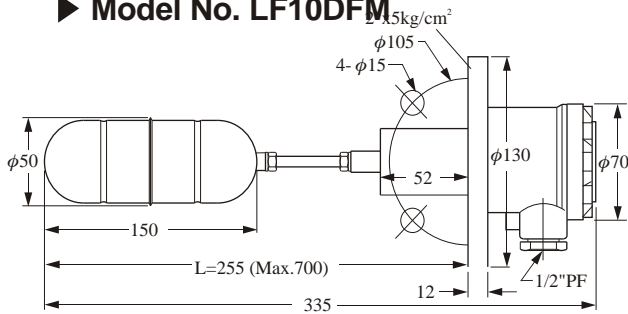
Order No. FF10CLO
Model No. LF10CLO



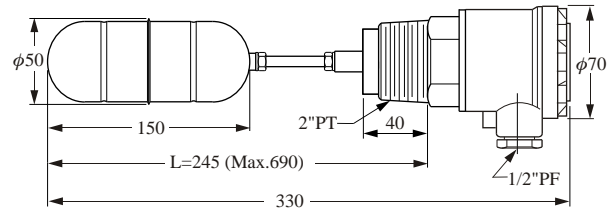
Order No. FF10CEQ
Model No. LF10CEQ



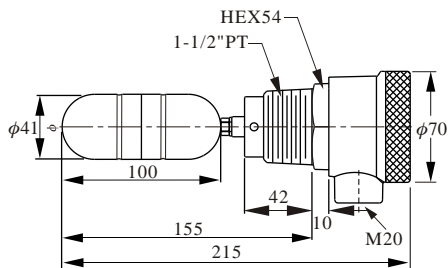
Order No. FF10DFM
Model No. LF10DFM



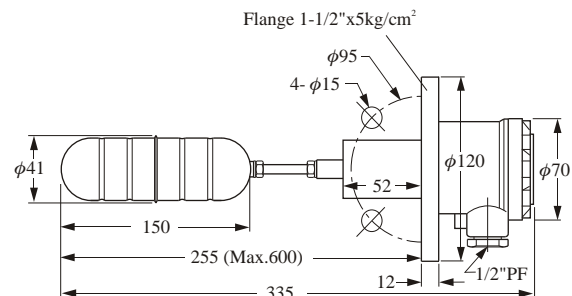
Order No. FF10DFQ
Model No. LF10DFQ



Order No. FF10HEQ
Model No. LF10HEQ



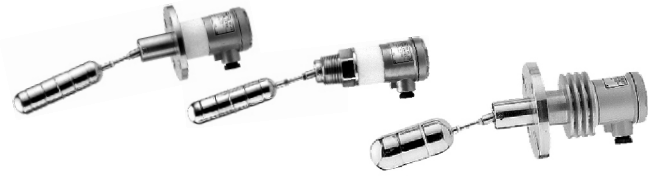
Order No. FF12CEM
Model No. LF12CEM



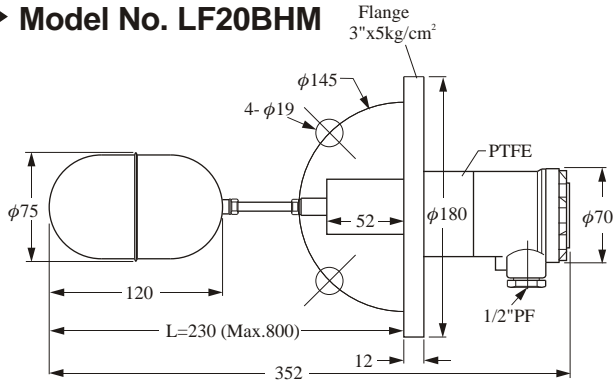
HIGH TEMP.

Order No. FF20

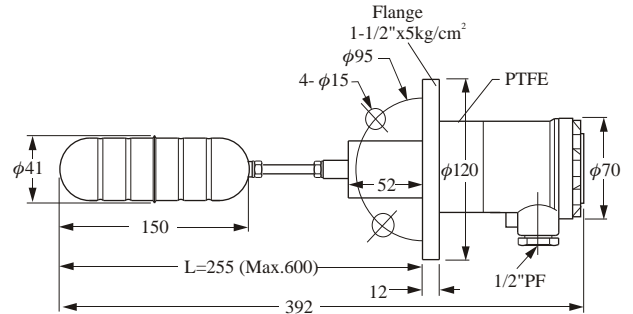
Connecting Type
(Refer to page 12)
Float Type



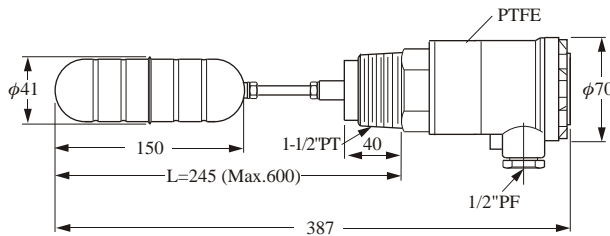
Order No. FF20BHM
Model No. LF20BHM



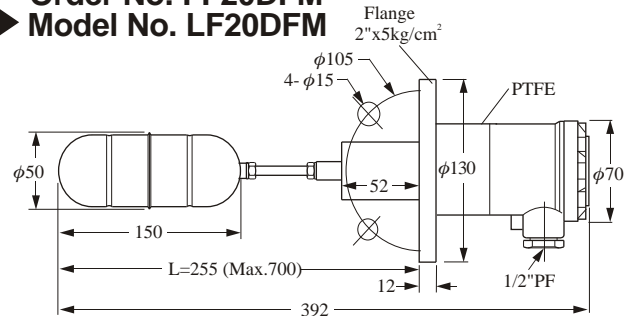
Order No. FF20CEM
Model No. LF20CEM



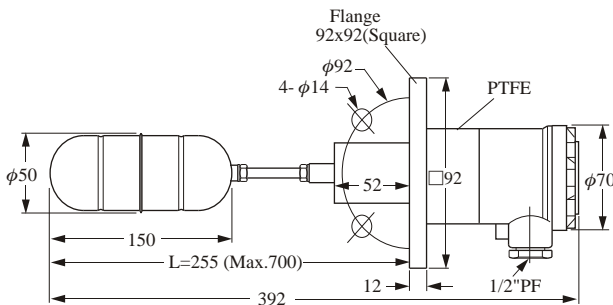
Order No. FF20CEQ
Model No. LF20CEQ



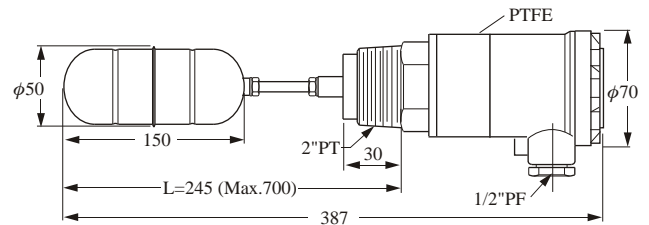
Order No. FF20DFM
Model No. LF20DFM



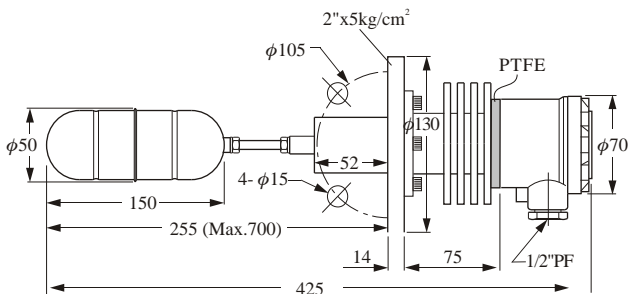
Order No. FF20DLO
Model No. LF20DLO



Order No. FF20DFQ
Model No. LF20DFQ



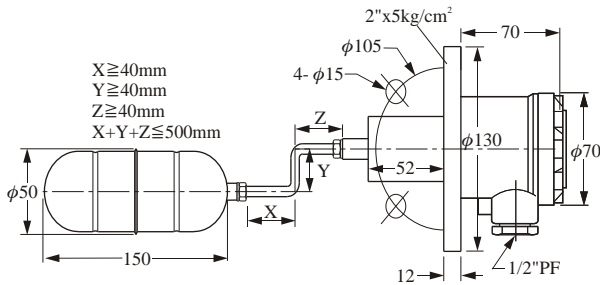
Order No. FF62DFM
Model No. LF62DFM



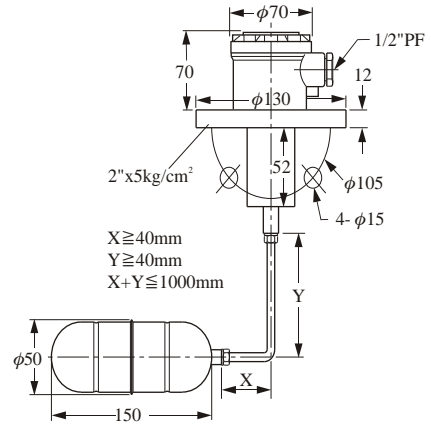
Order No. FF

- Connecting Type (Refer to page 12)
- Float Type
- 30: Mini Type
- 40: Double Angle Standard
- 45: Double Angle High Temp.
- 50: Vertical Standard
- 55: Vertical High Temp.

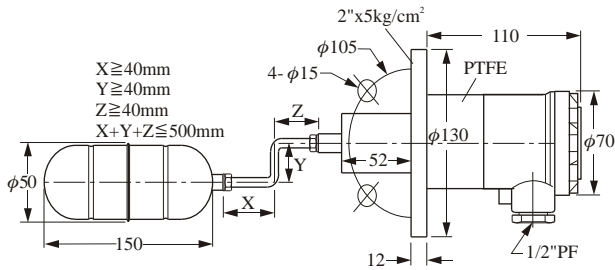
► Order No. FF40DFM
Model No. LF40DFM



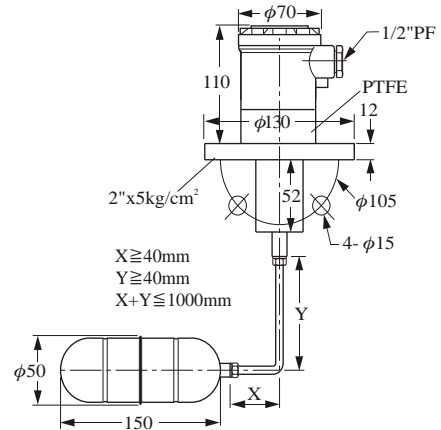
► Order No. FF50DFM
Model No. LF50DFM



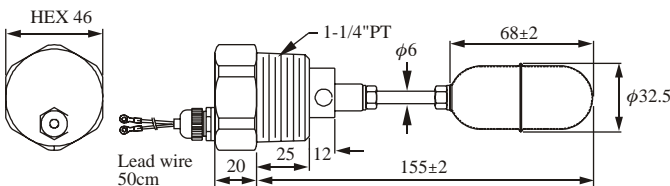
► Order No. FF45DFM
Model No. LF45DFM



► Order No. FF55DFM
Model No. LF55DFM



► Order No. FF30A3Q
Model No. LF30A3Q



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.

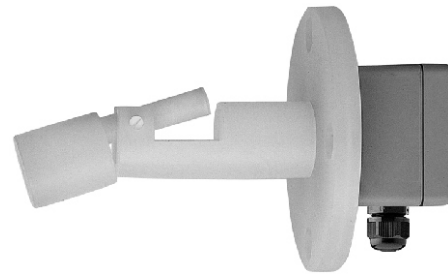
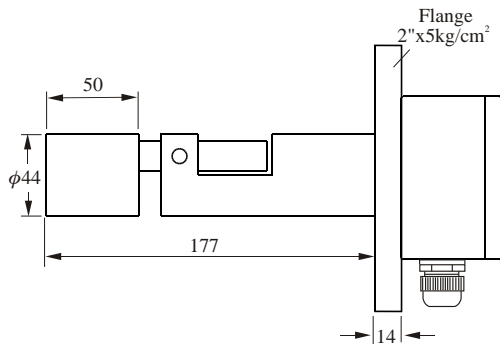
FF80EFM --- PC Housing
FF81E --- Without Housing

Wetted parts : P.P.

Cable spec. : PVC 3x0.75 mm²

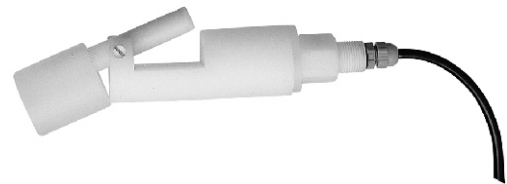
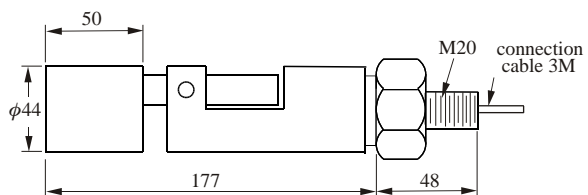
Order No. FF80EFM

► **Model No. LF80EFM**



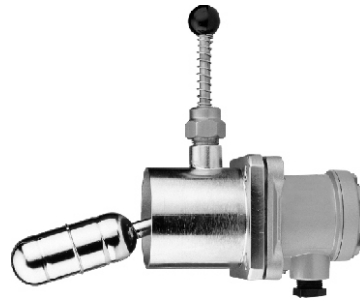
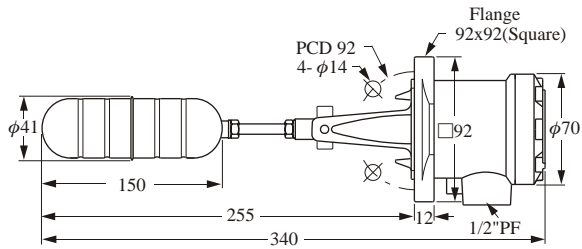
Order No. FF81E

► **Model No. LF81E**



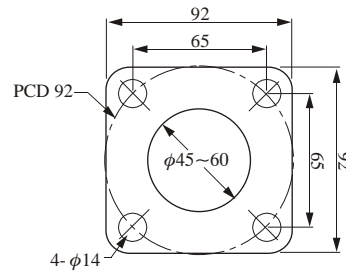
SQUARE FLANGE & TEST ACCESSORY

Order No. FF90CLO
 Model No. LF90CLO



1. Housing material: Aluminum (IP65)
2. Suitable S.G.: >0.65
3. Operation temp.: -20~100°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



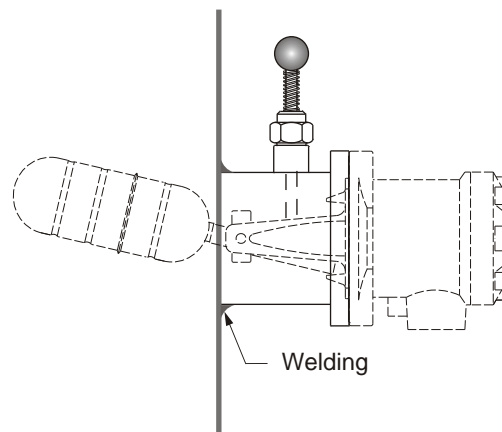
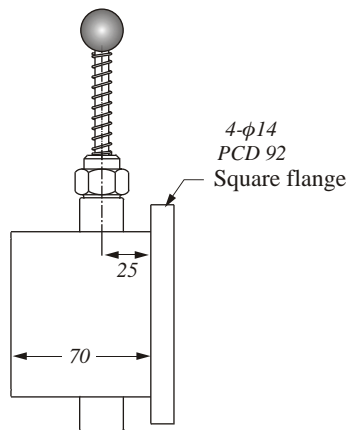
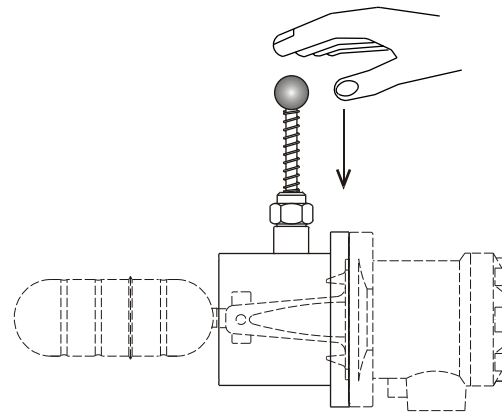
Test Board (Optional)

Material: SS41

Please weld test board with level instrument.
 Without level dropping, level instrument can be checked regularly if functions well.

Check list

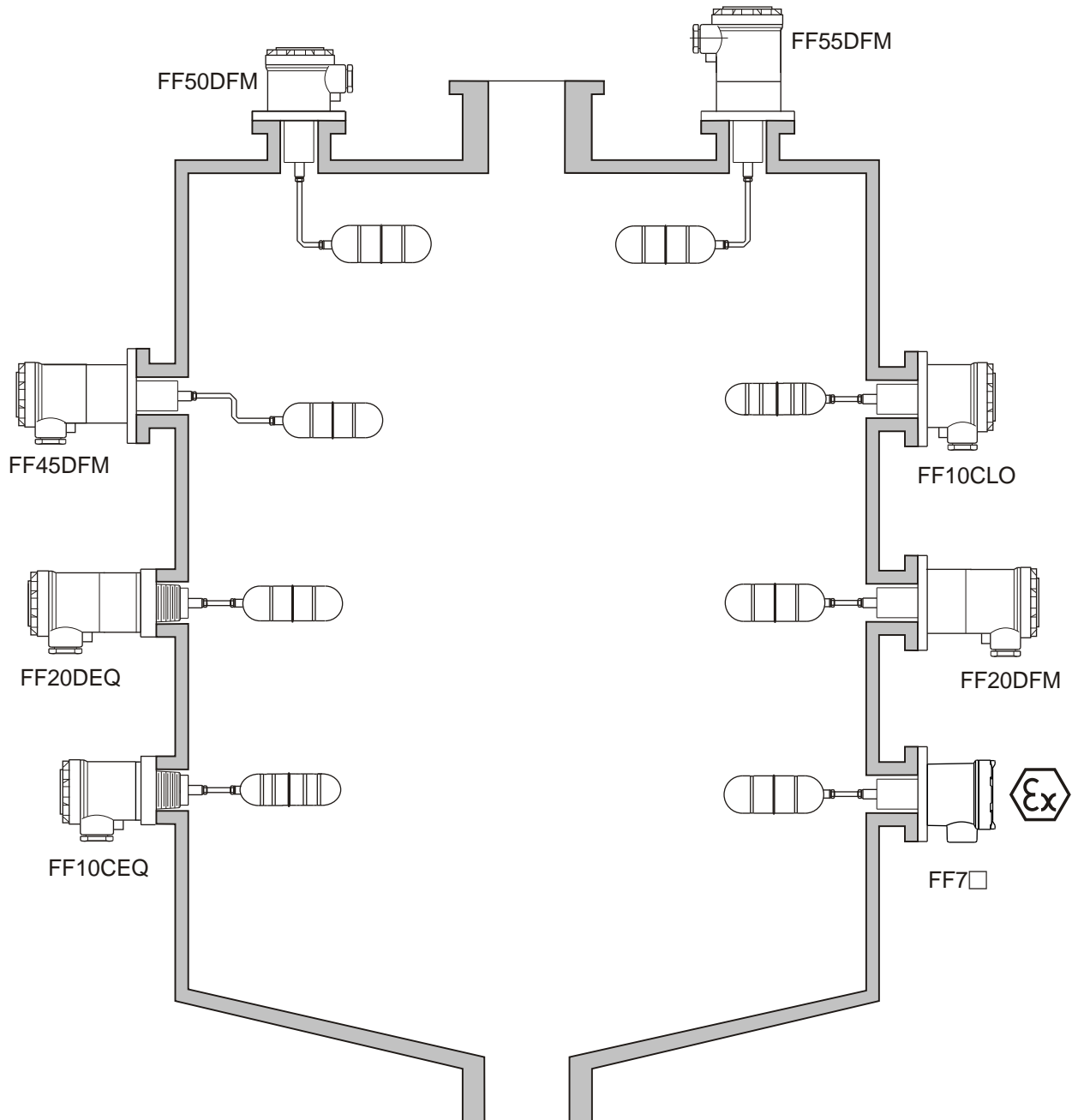
- Check if mechanical parts of level switch function well?
- Check if float functions well?



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.(Please refer to page 2)
6. Don't mount the devices near the bin's inlet or outlet.

Typical Positioning



HOW TO MAKE YOUR ORDER

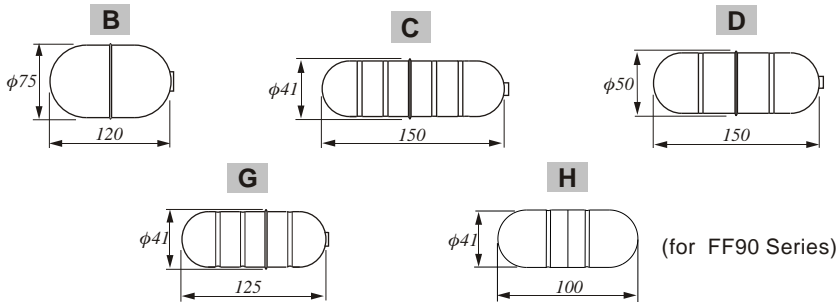
Order No. **FF** **10** **C** **EM** **(S)** **(T)**

ORDER NO. _____

- | | |
|---|------------------------|
| 10/12: STANDARD | 80: ANTI-ACID/ALKALINE |
| 20/26: HIGH TEMP. | 81: ANTI-ACID/ALKALINE |
| 40: DOUBLE ANGLE STANDARD | 90/96: SQUARE FLANGE |
| 45: DOUBLE ANGLE HIGH TEMP. | |
| 50: VERTICAL STANDARD | |
| 55: VERTICAL HIGH TEMP. | |
| 62/66: HIGH TEMP RADIATOR | |
| 70: LF70 Screw Type (Ex d II C T3~T6) | |
| 71: LF71 Flange Type (Ex d II C T3~T6) | |
| 73: LF73 Square Flange Type (Ex d II C T3~T6) | |
| 75: LF75 Top Mounting Type (Ex d II C 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)
 G: $\phi 41 \times 125$ (OPERATION PRESSURE 15kg/cm² S.G. 0.7)
 H: $\phi 41 \times 100$ (OPERATION PRESSURE 15kg/cm² S.G. 0.8)



CONNECTING TYPE _____

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

CUSTOM LENGTH(L) (UNIT: mm) _____

TEST BOARD _____

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

ENCLOSURE EXPLOSION PROOF

NEPSI PROOF No. GYJ06235 Ex d IIC T3~T6

PTB PROOF No. 05 ATEX 1025 Ex II 2G EEx d IIB T3~T6

Ex II 2D IP65 T3~T6

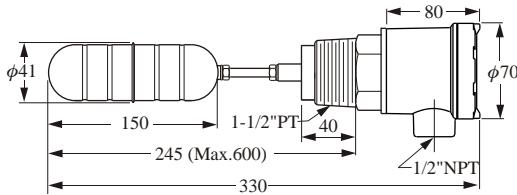
Order No. FF

Connecting Type
(Refer to page 14)

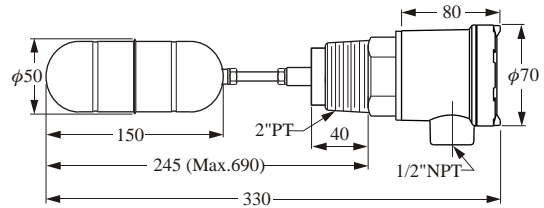
Float Type

7 : Explosion Proof (EX d IIB T4)

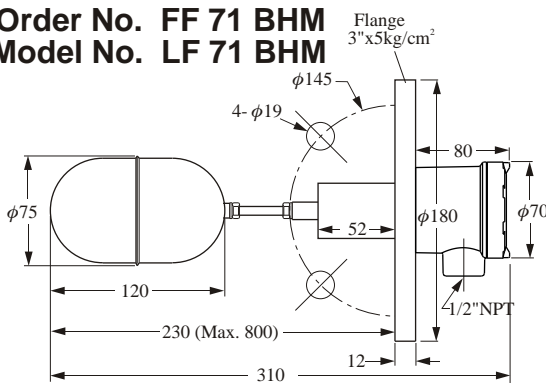
▶ Order No. FF 70 CEQ
Model No. LF 70 CEQ



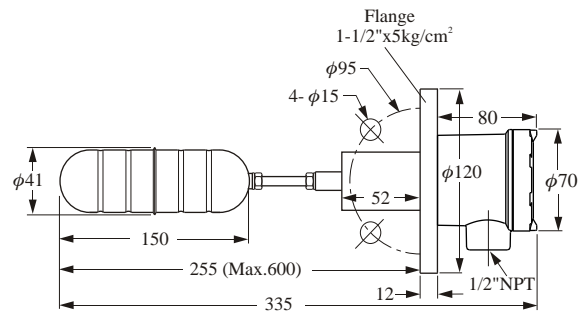
▶ Order No. FF 70 DFQ
Model No. LF 70 DFQ



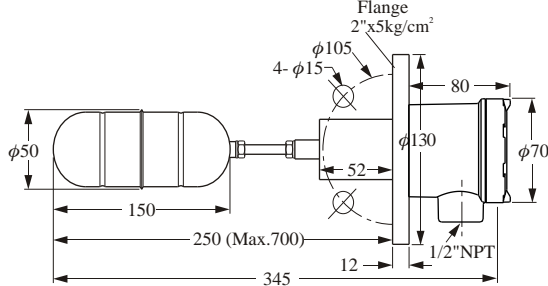
▶ Order No. FF 71 BHM
Model No. LF 71 BHM



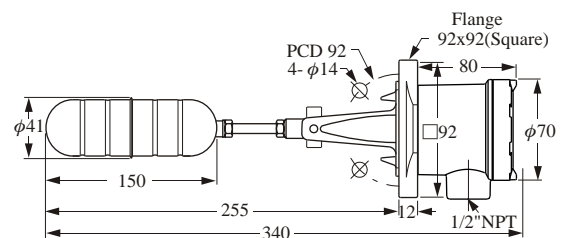
▶ Order No. FF 71 CEM
Model No. LF 71 CEM



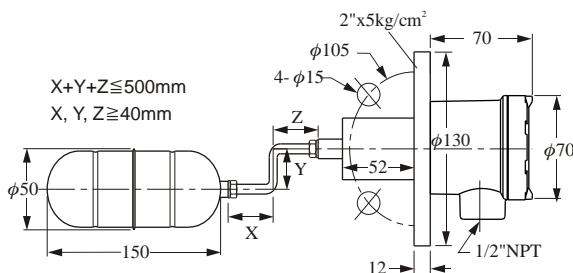
▶ Order No. FF 71 DFM
Model No. LF 71 DFM



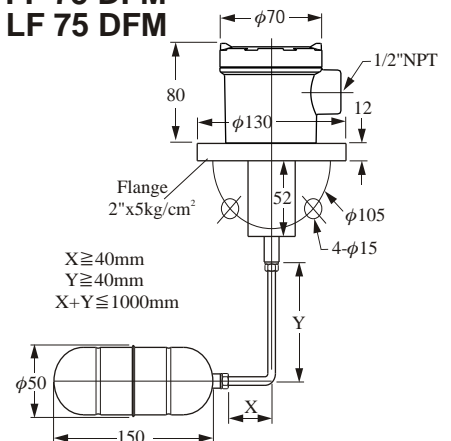
▶ Order No. FF 73 CLO
Model No. LF 73 CLO



▶ Order No. FF 74 DFM
Model No. LF 74 DFM



▶ Order No. FF 75 DFM
Model No. LF 75 DFM



HOW TO MAKE YOUR ORDER

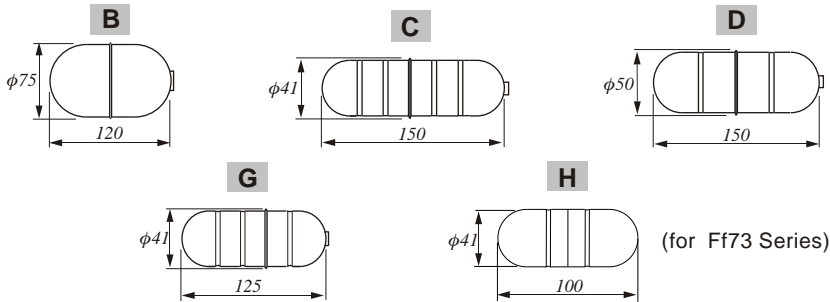
Order No. **FF** **70** **C** **E** **M** **S** **T**
 Model No. **LF** **70** **C** **E** **M** **S** **T**

ORDER NO. _____

- 70: LF70 ENCLOSURE EXPLOSION PROOF (Ex d IIC T3~T6)
- 71: LF71 ENCLOSURE EXPLOSION PROOF (Ex d IIC T3~T6)
- 73: LF73 ENCLOSURE EXPLOSION PROOF (Ex d IIC T3~T6)
- 74: LF74 ENCLOSURE EXPLOSION PROOF (Ex d IIC T3~T6)
- 75: LF75 ENCLOSURE EXPLOSION PROOF (Ex d IIC 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)
- G: $\phi 41 \times 125$ (OPERATION PRESSURE 15kg/cm² S.G. 0.7)
- H: $\phi 41 \times 100$ (OPERATION PRESSURE 15kg/cm² S.G. 0.8)



CONNECTING TYPE _____

- | | | |
|-----------------|-------------------------|-----------------|
| E: 1-1/2" (40A) | M: 5 kg/cm ² | W: PN10 (10Bar) |
| F: 2" (50A) | N: 10kg/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 | S: Others |
| J: 5" (125A) | R: PF(G) | |
| K: 6" (150A) | T: BSP | |
| L: 92x92 | U: NPT | |

CUSTOM LENGTH(L) (UNIT: mm) _____

TEST ACCESSORY _____

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