HYCONTROL
LEVEL MEASUREMENT SOLUTIONS

FLOAT LEVEL SWITCHES FOR LIQUIDS

LF SERIES INTRODUCTION

OPERATING PRINCIPLE

The reed switch in the Hycontrol LF Series switch relies on two basic scientific principles, namely buoyancy and magnetism. Buoyancy causes the float (which contains a magnet) to rise with the liquid and magnetism helps open and close the switch.

A change in liquid levels raises or lowers the float up or down. The end of the pivot arm (non-float side) contains a permanent magnet that can repel the switch magnet (inside the stationary 'stem').

When the float magnet moves close to the switch's stationary stem, the float magnet repel the switch magnet which either opens or closes the electrical circuit.

FEATURES

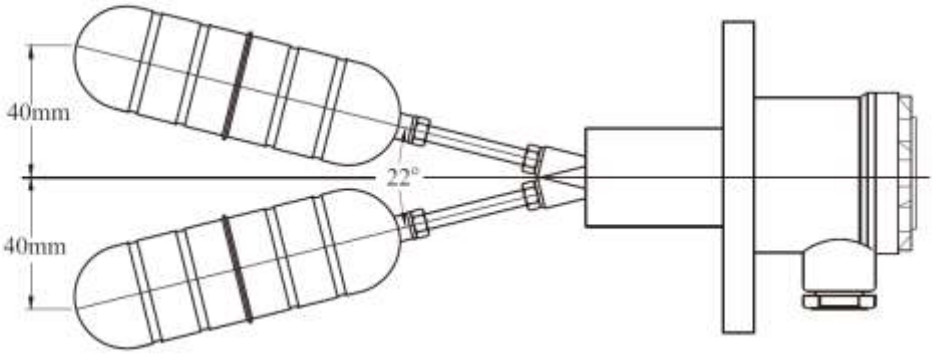
The side mounted float level sensor (LF Series) are manufactured specifically for horizontal mounting on tanks or vessels. They work well as high or low level controls.

1. Both Microswitch types and Reed Switches are available. The Microswitch type is usable even at ambient temperatures of 100° C maximum.

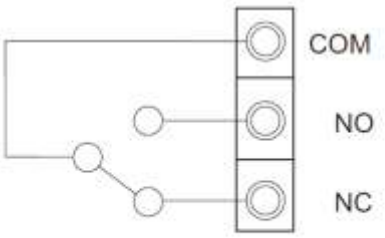
2. Mounting flanges are custom-made. (JIS, DIN,ANSI).

3. A wide variety of floats for different specific gravities (S.G.) are available.

4. Wetted parts material ranges from plastics, stainless steel, anti-corrosive and explosion proof types.



WIRING



REED SWITCH ---- 1A, 30W 220Vac/200Vdc (FF20, 45, 55, 8□)
MICRO SWITCH ---- 5A/250Vac

THE LF SERIES

Operating on the simple principle of liquid buoyancy, Hycontrol's LF Series of liquid level switches is available with a wide range of options to suit the specific requirements of your application. The range offers accurate measurement with simple installation and commissioning, as well as low maintenance requirements. It is a simple solution for a wide variety of needs.

CONFIGURATION DIAGRAMS

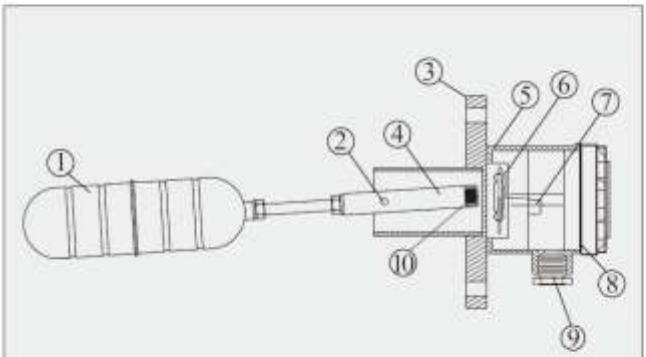


Fig.(1) Reed switch type

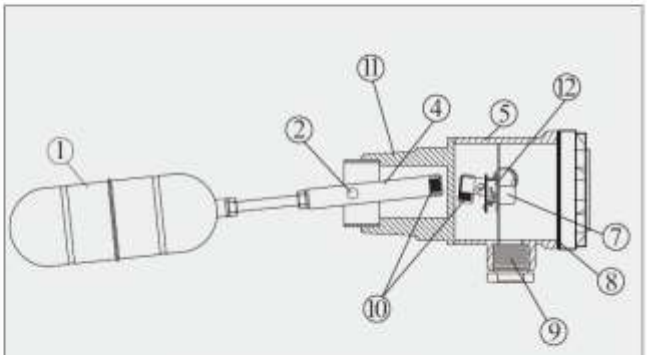


Fig.(2) Micro switch type

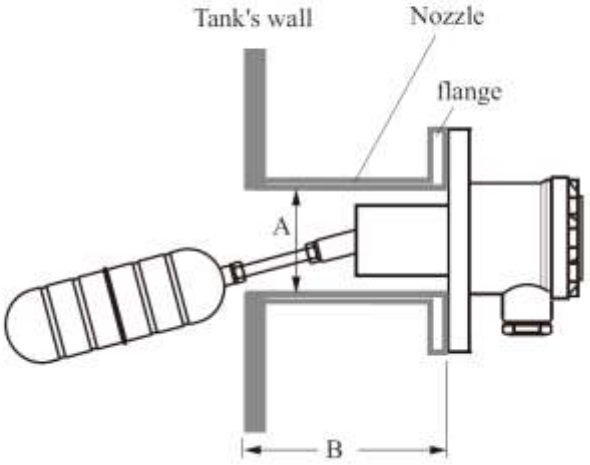
1. Float
2. Shaft
3. Flange
4. Pivot
5. Housing
6. Reed Switch
7. Terminal
8. O-ring
9. Conduit
10. Magnet
11. Screw
12. Microswitch

Conduit/Connection

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

UNIT: mm

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



SPECIFICATIONS

SPEC. / MODEL	Operating Temp.	Electrical Contact	Contact Capacity	Contact Element	Housing Spec.	Applicable S.G.
LF10BHM	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.25
LF10CEM	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
LF10CEQ	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
LF10CLO	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
LF10DFM	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
LF10DFQ	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
LF15HEQ	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	SUS304 IP65	0.8
LF12CEM	-40℃~100℃	SPDT(1C)X2	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65
LF20BHM	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.25
LF20CEM	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.65
LF20CEQ	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.65
LF20DFM	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55
LF20DFQ	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55
LF20DLO	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55

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

SPECIFICATIONS

SPEC. / MODEL	Operating Temp.	Electrical Contact	Contact Capacity	Contact Element	Housing Spec.	Applicable S.G.
LF40DFM	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
LF45DFM	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed Switch	Aluminum Alloy IP65	0.55
LF50DFM	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
LF55DFM	-40℃~200℃	SPDT(1C)	1A, 60W 220Vac/200Vdc	Reed switch	Aluminum Alloy IP65	0.55
LF70/71BHM	-20℃~100℃	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIC T3~T6	0.25
LF70/71CFM	-20℃~100℃	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIC T3~T6	0.65
LF70/71DFM	-20℃~100℃	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIC T3~T6	0.55
LF73GLO	-20℃~100℃	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIC T3~T6	0.7
LF75DFM	-20℃~100℃	SPDT(1C)	3A/250Vac	Microswitch	SUS316 Ex d IIC T3~T6	0.55
LF90CLO	-20℃~100℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.65

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

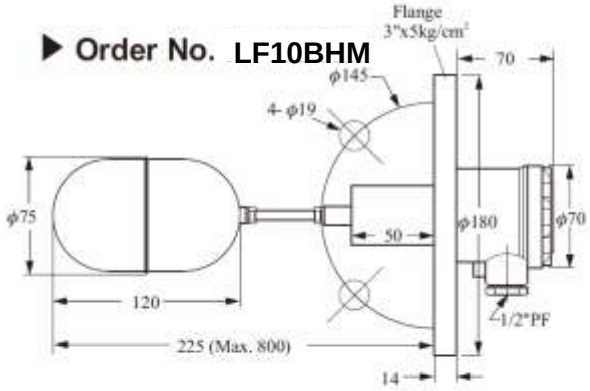
SPEC. / MODEL	Operating Temp.	Electrical Contact	Contact Capacity	Contact Element	Housing Spec.	Applicable S.G.
LF30A3Q	-20℃~100℃	SPST(1A)	1A, 50W 240Vac/200Vdc	Reed Switch	SUS304 IP65	0.65
LF62DFM	-40℃~350℃	SPDT(1C)	5A/250Vac	Microswitch	Aluminum Alloy IP65	0.55
LF80EFM	-20℃~80℃	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed switch	PC IP65	0.60
LF81E	-20℃~80℃	SPDT(1C)	1A, 30W 220Vac/200Vdc	Reed switch	——	0.60

MODELS

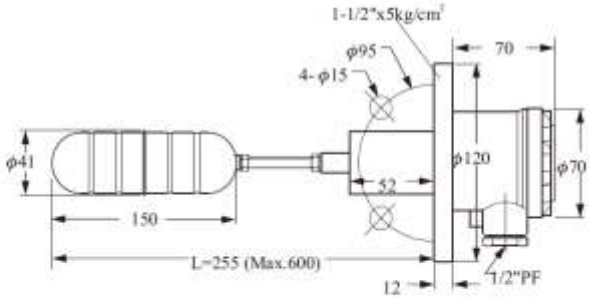
Order No. LF □□ □ □□

- Connecting (Refer to p11)
- Float
- 10: Single Switch
- 12: Dual Switch

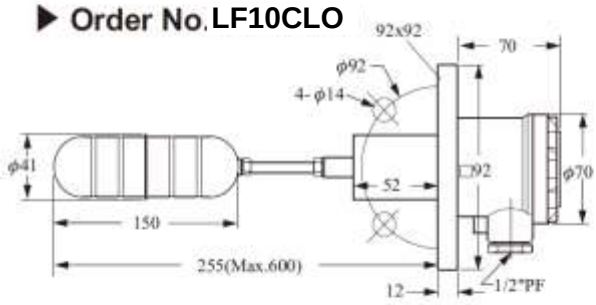
▶ Order No. LF10BHM



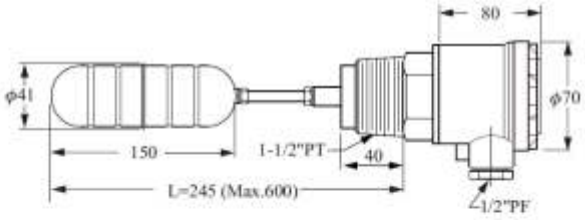
▶ Order No. LF10CEM



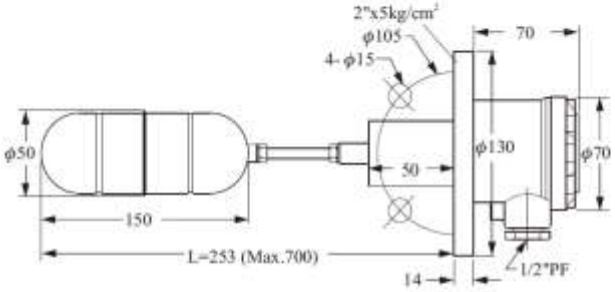
▶ Order No. LF10CLO



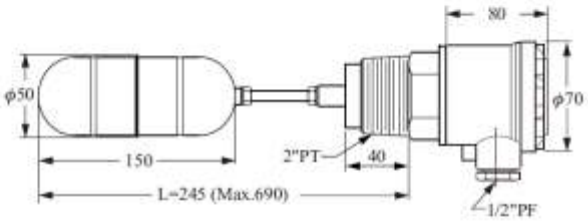
▶ Order No. LF10CEQ



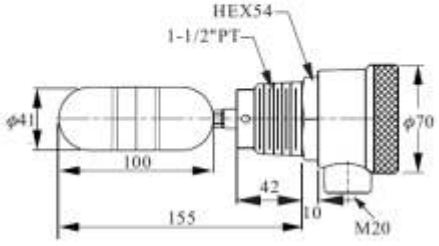
▶ Order No. LF10DFM



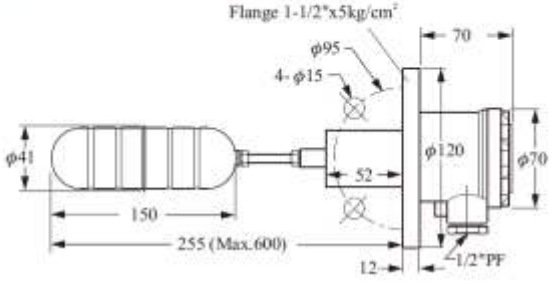
▶ Order No. LF10DFQ



▶ Order No. LF15HEQ



▶ Order No. LF12CEM

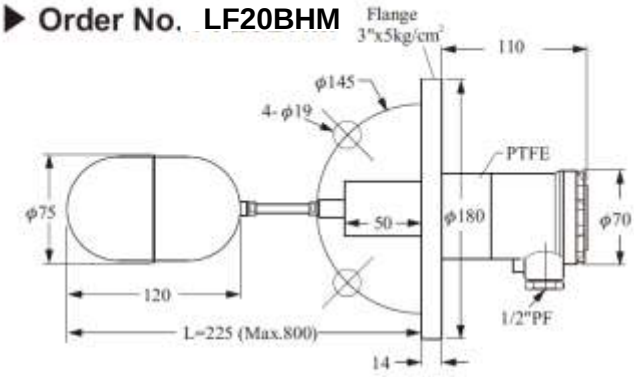


HIGH TEMPERATURE MODELS

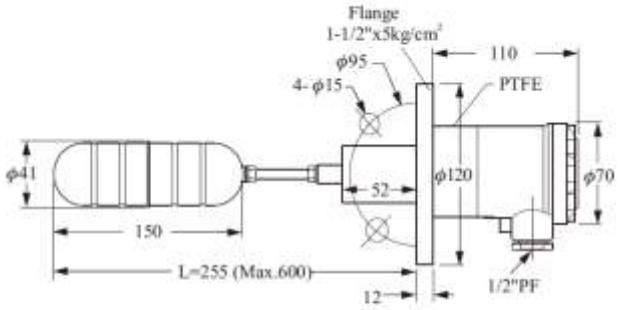
Order No. LF20 □□□

- Connection (Refer to p11)
- Float

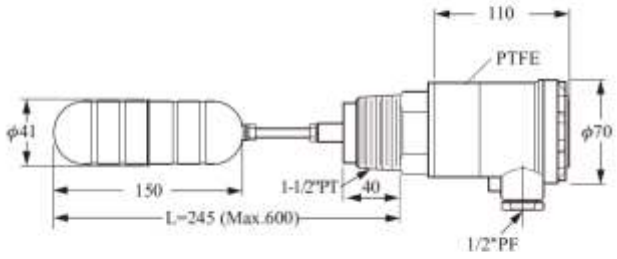
▶ Order No. LF20BHM



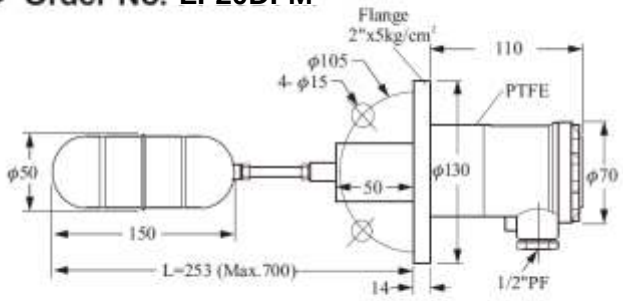
▶ Order No. LF20CEM



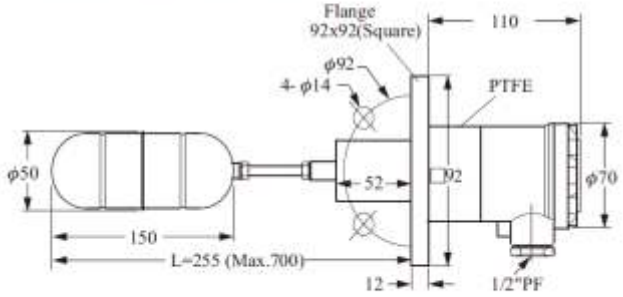
▶ Order No. LF20CEQ



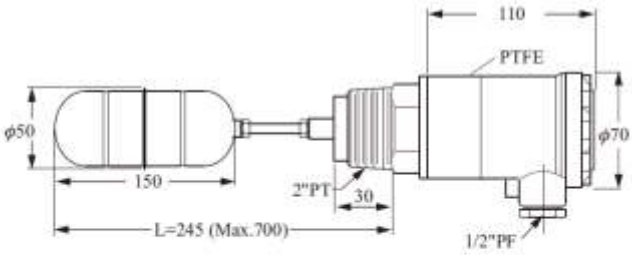
▶ Order No. LF20DFM



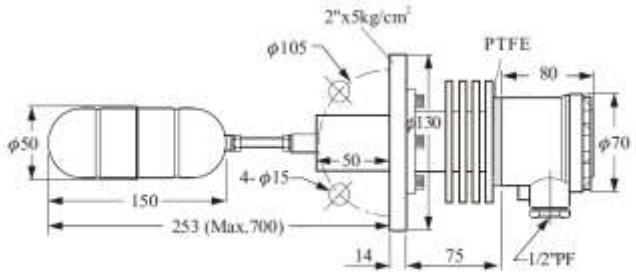
▶ Order No. LF20DLO



▶ Order No. LF20DFQ



▶ Order No. LF62DFM

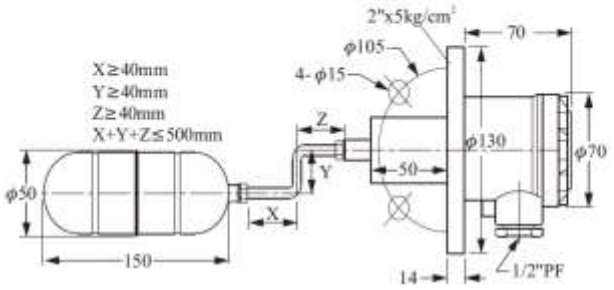


MODELS

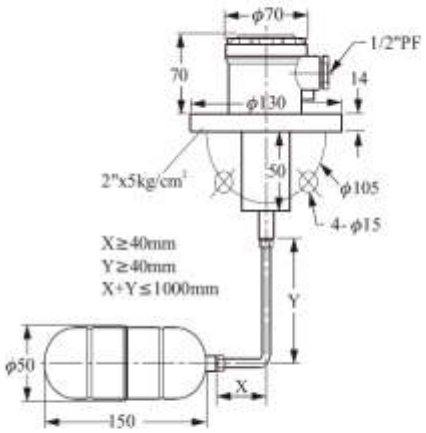
Order No. LF □□ □ □□

- Connecting (Refer to page 11)
- Float
- 30: Mini Type
- 40: Double Angle Standard
- 45: Double Angle High Temperature
- 50: Vertical Standard
- 55: Vertical High Temperature

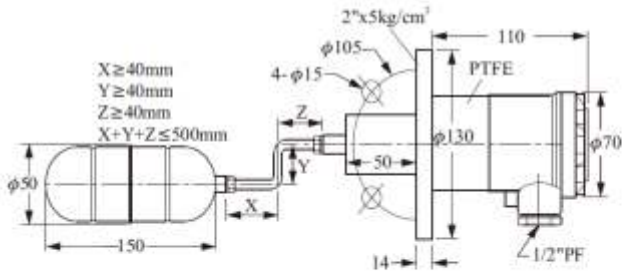
▶ Order No. LF40DFM



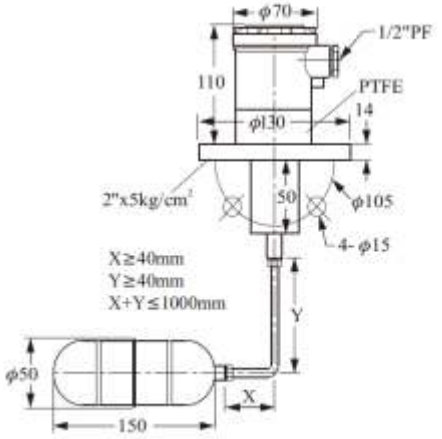
▶ Order No. LF50DFM



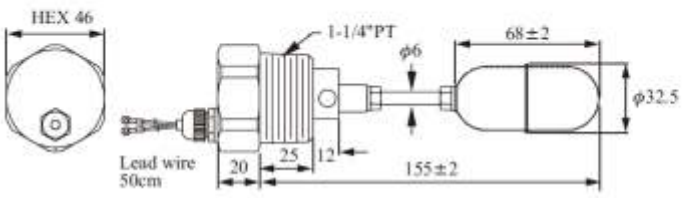
▶ Order No. LF45DFM



▶ Order No. LF55DFM



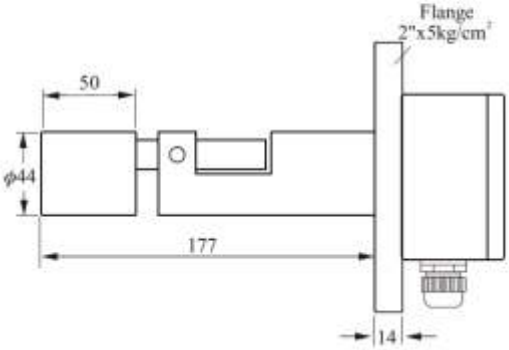
▶ Order No. LF30A3Q



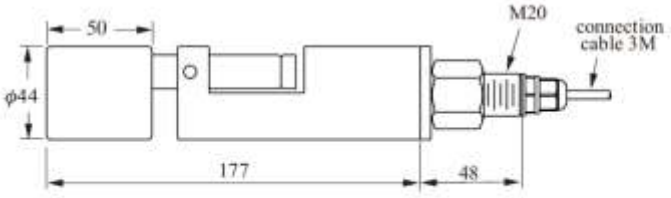
ANTI-CORROSIVE MODELS

LF80EFM - PC Housing
LF81E - Without Housing
Wetted Parts: PP
Cable: PVC 3x0.75mm²

▶ Order No. LF80EFM

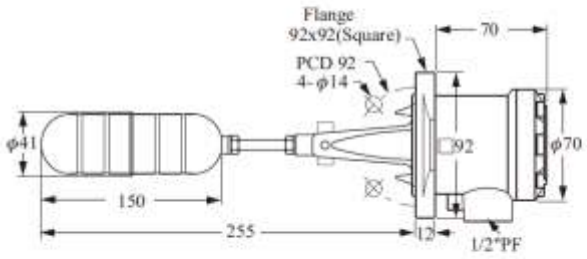


▶ Order No. LF81E



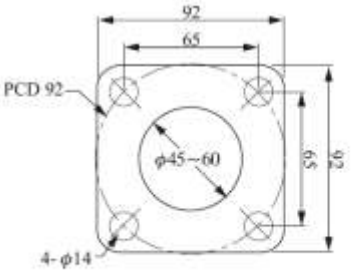
SQUARE FLANGE & TEST ACCESSORIES

▶ Order No. LF90CLO



1. Housing material: Aluminum (IP65)
2. Suitable S.G.: >0.65
3. Operation temp.: -20~100°C
4. Contact mode: SPDT(1C)
5. Contact rating: 5A/250Vac
6. Operation pressure: 15kg/cm^2
7. Wetted parts: SUS304
8. Weight: (approx.) 1.2 kg

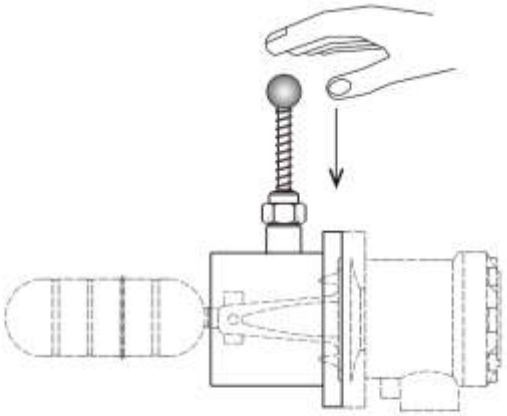
Drill Hole

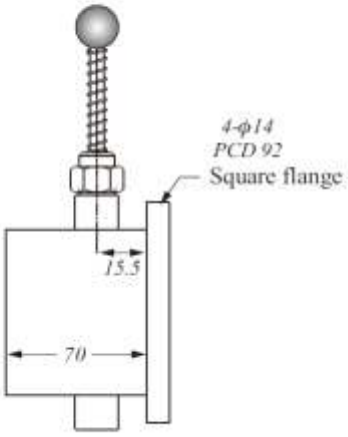


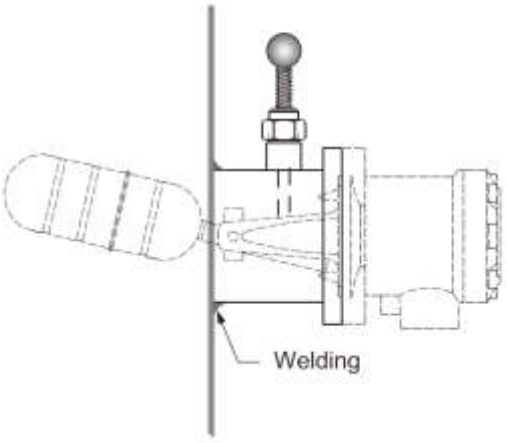
Test Board (Optional)

Material: SS41

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



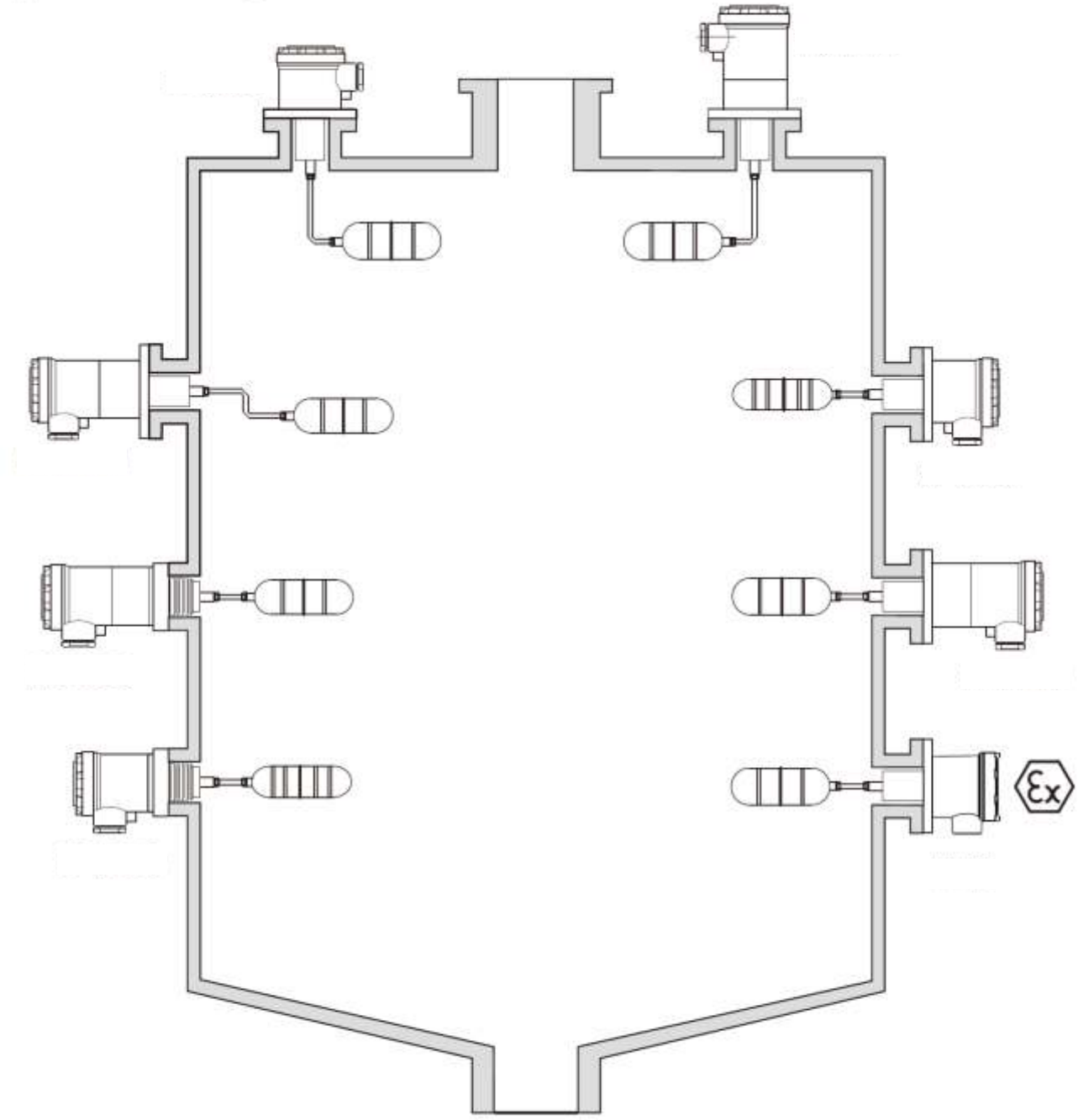




INSTALLATION INFORMATION

1. SUS304/SUS316 materials are not available for corrosive application.
2. The cable duct(s) must face downward to prevent moisture seeping in.
3. The float and extension rod must be inserted into the bin completely.
4. Check the liquid's S.G. level before installation.
5. The mounting hole must be larger than the external diameter of the float. (Please refer to p2)
6. Don't mount the devices near the bin's inlet or outlet.

Typical Positioning



ORDER INFORMATION

Order No. LF 1 0 C E M (S) (T) - 6

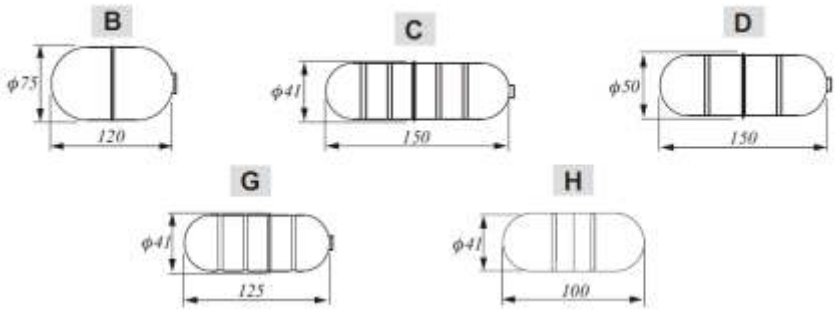
ORDER NO.

10/12: Standard
15: Mini
20/26: High Temp.
40: Double Angle Standard
45: Double Angle High Temp.
50: Vertical Standard
55: Vertical High Temp.
62/66: High Temp Radiator
80: Anti-acid/alkaline
81: Without Housing
Only FF81E
90/96: Square Flange

※ Mini type only available float type(C.G.H)

FLOAT TYPE

B: ϕ75x120 (Operation Pressure 10kg/cm^2 S.G. 0.25)
C: ϕ41x150 (Operation Pressure 15kg/cm^2 S.G. 0.65)
D: ϕ50x150 (Operation Pressure 30kg/cm^2 S.G. 0.55)
G: ϕ41x125 (Operation Pressure 15kg/cm^2 S.G. 0.7)
H: ϕ41x100 (Operation Pressure 15kg/cm^2 S.G. 0.8)



CONNECTING TYPE

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

CUSTOM LENGTH(L) (UNIT: mm)

TEST BOARD

MATERIAL

Without:SUS304 -6:SUS316 -9:SUS316L

※ Total product length margin of error is ±5mm
※ Characteristics, specifications and dimensions are subject to change without notice.
※ Please contact your nearest distributor for further information.

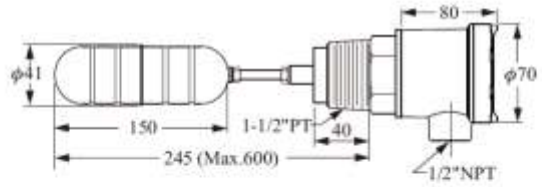
EXPLOSION PROOF MODELS

Order No. LF □□ □ □□

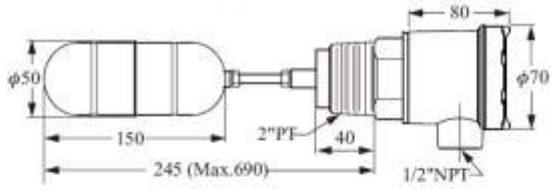
- Connecting Type (Refer to page 13)
- Float Type
- 7□: Explosion Proof (EX d IIC T3~T6)

NEPSI PROOF No.GYJ111213 Ex d IIC T3~T6
PTB PROOF No. 05 ATEX 1025 ⓔ II 2G Ex d IIB T6~T4 Gb
ⓔ II 2D Ex tb IIIC T85°C~T135°C
Db IP65

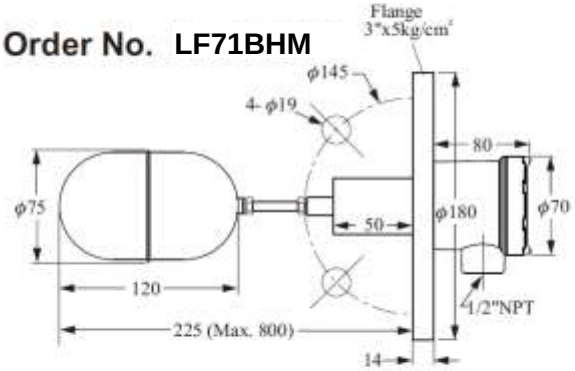
▶ Order No. LF70CEQ



▶ Order No. LF70DFQ



▶ Order No. LF71BHM



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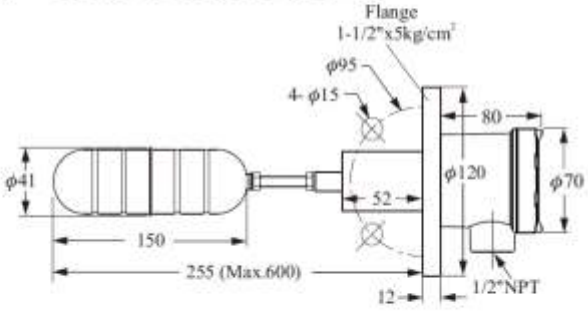
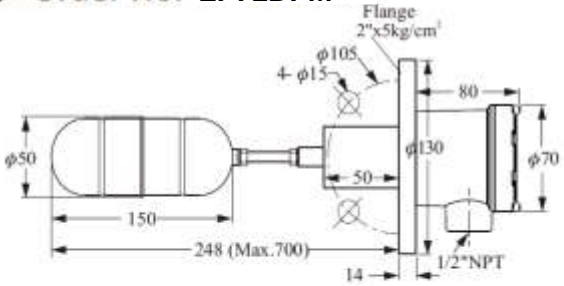
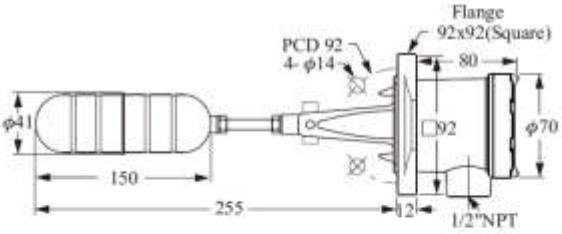


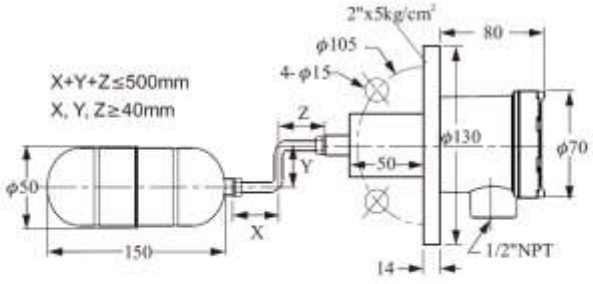
▶ Order No. LF71DFM



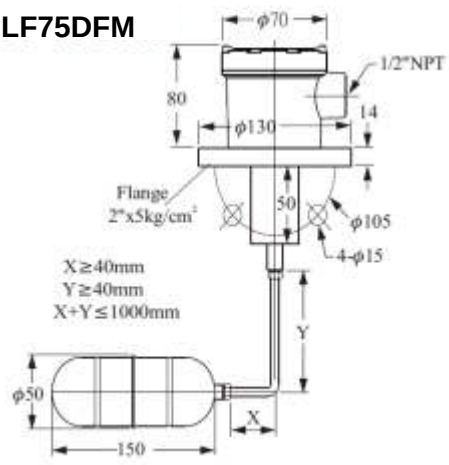
▶ Order No. LF73CLO



▶ Order No. LF74DFM



▶ Order No. LF75DFM



ORDER INFORMATION

NEPSI PROOF No.GYJ111213 Ex d IIC T3~T6
PTB PROOF No. 05 ATEX 1025 ⓔ II 2G Ex d IIB T6~T4 Gb
ⓔ II 2D Ex tb IIIC T85°C~T135°C
Db IP65

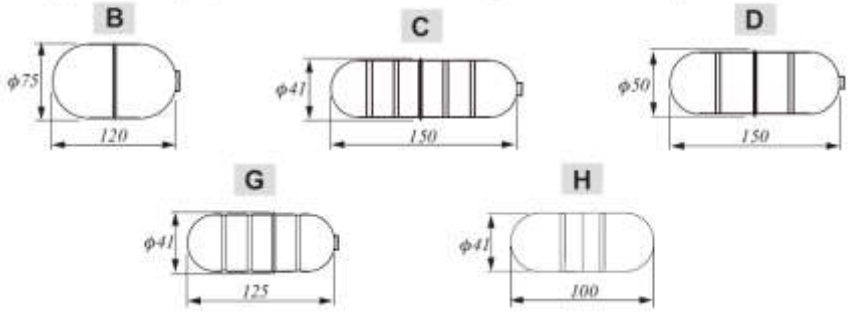
Order No. LF 7 0 C E M S T - 6

ORDER NO.

70: LF70 Explosion Proof
71: LF71 Explosion Proof
73: LF73 Explosion Proof
74: LF74 Explosion Proof
75: LF75 Explosion Proof

FLOAT TYPE

B: ϕ75x120 (Operation Pressure 10kg/cm^2 S.G. 0.25)
C: ϕ41x150 (Operation Pressure 15kg/cm^2 S.G. 0.65)
D: ϕ50x150 (Operation Pressure 30kg/cm^2 S.G. 0.55)
G: ϕ41x125 (Operation Pressure 15kg/cm^2 S.G. 0.7)
H: ϕ41x100 (Operation Pressure 15kg/cm^2 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 ACCESORY

MATERIAL

Without:SUS304 -6:SUS316 -9:SUS316L

※ Total product length margin of error is ±5mm
※ Characteristics, specifications and dimensions are subject to change without notice.
※ Please contact your nearest distributor for further information.

HYCONTROL LEVEL TECHNOLOGIES

Product Range For Solids :-

(1) TDR Radar For Solids

(2) Ultrasonic, ‘Through Air’

(2) 2 Wire Ultrasonic Transmitter

(3) FMCW 2 Wire Radar

(4) Continuous ‘Servo’ Level Indicator

(5) FMCW 2 Wire Radar

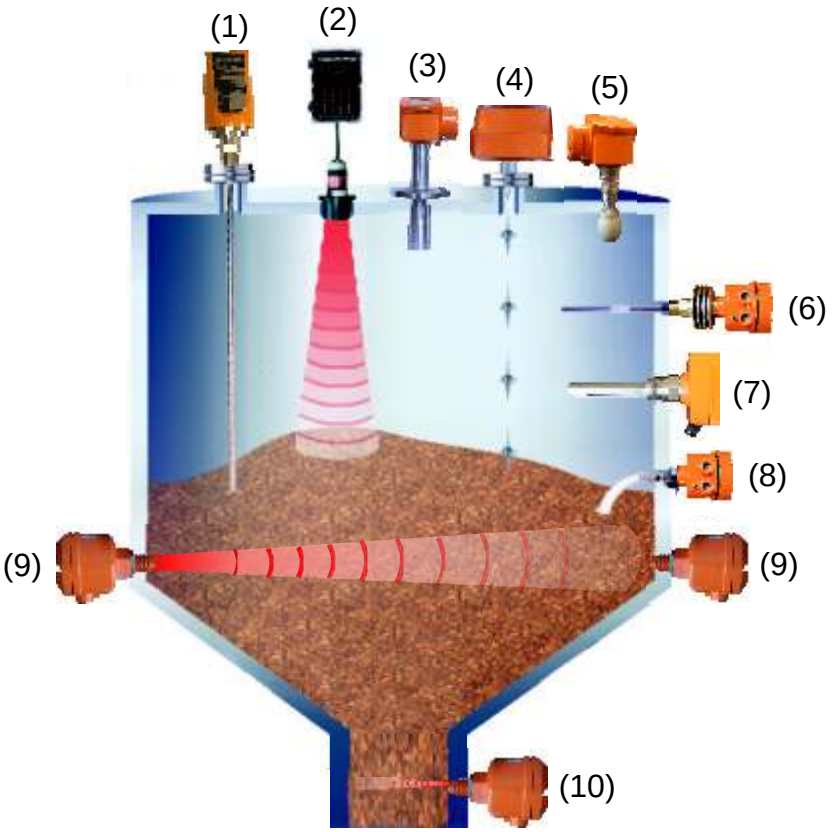
(6) Capacitance Level Switch

(7) Vibrating Probe Level Switch

(8) Rotating Paddle Level switch

(9) Microwave Level Switch

(10) Doppler Flow Switch



Product Range For Liquids :-

(1) By-Pass Level Indicator With Radar

(2) TDR Radar For Liquids

(3) 2 Wire Ultrasonic Transmitter

(4) FMCW ‘Horn’ Radar 2 Wire

(5) Magnetic Float Switches

(6) FMCW 2 Wire Radar

(7) Capacitance Level Switch

(8) RF Admittance Level Switch

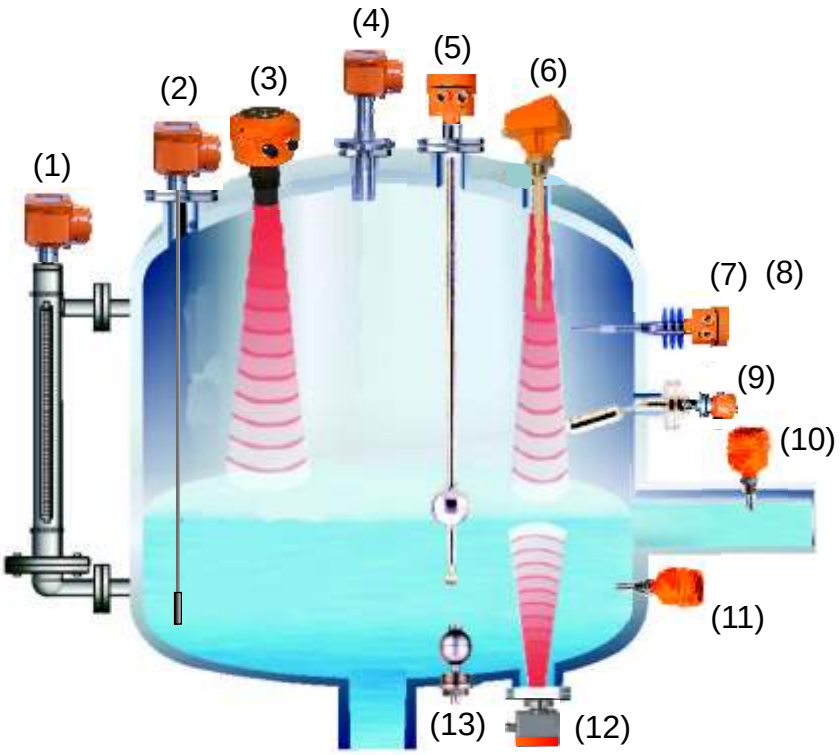
(9) Side Mounting 316 SS Float Switch

(10) Tuning Fork Level Switch

(11) Tuning Fork Level Switch

(12) Ultrasonics ‘Through Wall’

(13) Mini Magnetic Float Level Switch



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