



## Mini Float Level Switch



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# PRODUCT INTRODUCTION

## ■ INTRODUCTION

The reed 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.

Since this product's this product has been introduced to the market, it has seen significant improvement and advances with regards to convenience, safety and lowering costs.

The float switches are extremely compact, simple and are easy to install on any small locations.

These switches are not affected by electrical interference and can withstand chemicals, high temperatures and pressures if the correct material of float switch is selected.

## ■ LIQUID PROPERTIES AND FLOATS

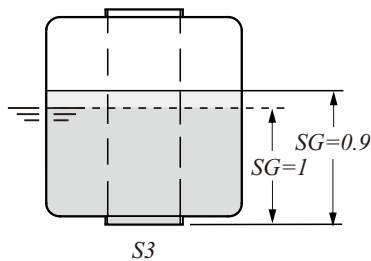
The switch's float should always have a specific gravity (SG) less than the liquid that holds the float.

(SG float < SG liquid)

When the liquid level rises the float will rise up due to its buoyancy. The float's upward movement will actuate the switch and close the circuit.

Different float materials can be used to ensure the float's SG level is less than the liquid. (Water's SG level is 1 while gasoline SG levels tend to be less than 1).

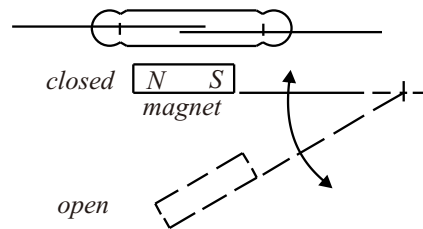
Because the float switches are activated by the magnetic field inside the float, make sure the liquid contains no iron traces or substances that can induce magnetic interference.



(Fig. 3)

## ■ WORKING PRINCIPLE

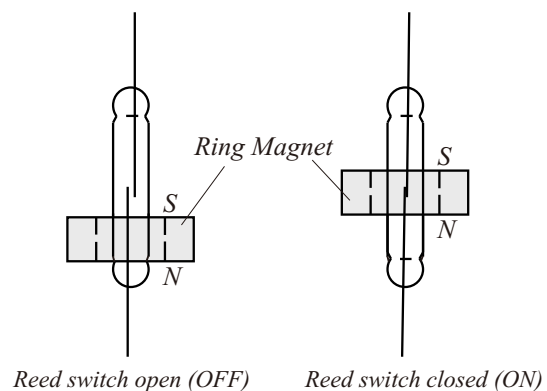
Fig. 1 illustrates the pivot activation (FCH Type reed switch). When float's magnet is moved close to the switch's stationary stem, the float magnet pushes the stem's switch circuit together and closes the electrical circuit. When the float magnet is moved away from the stem, the switch circuit separates and the circuit is opened.



(Fig. 1)

Fig. 2 illustrates perpendicular activation (FC V TYPE float reed switches). When the liquid level rises and pushes the float up, the float's ring magnet (sealed in the float) moves close to the switch's stationary stem.

The magnet pushes the circuit together and when it makes contact, it closes the electrical circuit. When the float magnet moves away from the switch, the circuit contact is released and the switch is opened.



(Fig. 2)

# CHEMICAL RESISTANCE

● Excellent ○ Good △ Fair × Corroded

Chemical	Concentration %	Temp		Plastic				Rubber		Stainless	
		°C	°F	PVC	PP	PVDF	PTFE	NBR	304	316	
Ammonia Water NH <sub>4</sub> OH	10	40	104	●	●	●	●	○			
	10	80	176		○	●	●				
Aque Regia 3HCl+HNO <sub>3</sub>	10	40	104	△	△	●	●				
	10	80	176			●	●				
Benzene C <sub>6</sub> H <sub>6</sub>	Pure	40	104	×	△	○	●				
		80	176			△	●				
Bleaching Liquor Ca(ClO) <sub>2</sub>	5	40	104	●		●	●				
	5	80	176			●	●				
	20	40	104	●		●	●				
	20	80	176			●	●				
Boric Acid H <sub>3</sub> BO <sub>3</sub>	Satu	40	104	●	●	●	●	●			
		80	176		●	●	●	○			
Brine		40	104	●	●	●	●	●			
		80	176		●	●	●				
Butadiene CH <sub>2</sub> =CH=CH=CH <sub>2</sub>	Gas	40	104	●		●	●				
		80	176			●	●				
Butane CH <sub>3</sub> (CH <sub>2</sub> ) <sub>2</sub> CH <sub>3</sub>	Gas	40	104	●	●	●	●				
		80	176		●	●	●				
Nitric Acid HNO <sub>3</sub>	10	40	104	●	●	●	●	●	●	●	
	10	80	176	×	○	●	●		●	●	
	30	40	104	●	●	●	●		●	●	
	30	80	176	×	○	●	●		●	●	
	50	40	104	○	○	●	●		●	●	
	50	80	176	×	×	○	●				
	70	40	104	○	×	●	●		○	●	
	70	80	176	×		○	●				
	98	40	104			○	○				
	98	80	176				△				
Oxalic Acid HOOC-COOH	20	40	104	●	●	●	●	●		△	
	20	80	176		●	●	●				
	50	40	104	●	●	●	●			△	
	50	80	176		●	●	●				
Phosphoric Acid H <sub>3</sub> PO <sub>4</sub>	10	40	104	●	●	●	●	●	●	●	
	10	80	176		○	●	●	△	●	●	
	50	40	104	●	●	●	●	●	●	●	
	50	80	176		△	●	●	×	●	●	
	80	40	104	●	●	●	●	○	●	●	
	80	80	176		△	●	●		●	●	
Sodium Hydroxide NaOH	15	40	104	●	●	●	●	●	●	●	
	15	80	176		○	△	●	△	×	×	
	30	40	104	●	●	●	●	●	●	●	
	30	80	176		○	△	●	●	×	×	
	50	40	104	●	●	○	●	●	●	●	
	50	80	176		○	×	●	●	×	×	
	70	40	104	○	○	○	●				
70	80	176		○	×	●					

Chemical	Concentration %	Temp		Plastic				Rubber		Stainless	
		°C	°F	PVC	PP	PVDF	PTFE	NBR	304	316	
Sodium Hypochlorite NaClO	3	40	104	●	○	●	●			△	○
	3	80	176								
	5	40	104	●	○	●	●			△	○
	5	80	176								
	7	40	104	●	△	○	●			×	×
	7	80	176								
	10	40	104	●	△	●	●			×	×
10	80	176									
13	40	104	●	△	●	●			×	×	
13	80	176									
Sulfuric Acid H <sub>2</sub> SO <sub>4</sub>	10	40	104	●	●	●	●	●	●	●	●
	10	80	176		●	●	●	○	○	○	
	30	40	104	●	●	●	●	●	×	×	
	30	80	176		●	●	●	○	×	×	
	50	40	104	●	●	●	●	○	×	×	
	50	80	176		●	●	●	△	×	×	
	60	40	104	●	●	●	●	●	×	×	
	60	80	176		○	●	●	○	×	×	
	70	40	104	●	●	●	●	○	×	×	
	70	80	176		○	●	●	△	×	×	
	80	40	104	●	●	●	●	●	×	×	
80	80	176		○	●	●	△				
90	40	104	○	●	●	●	△	×	×		
90	80	176		○	●	●	△				
98	40	104	△		●	○		○	○		
98	80	176			△	○					
Toluene C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>		40	104		△	△	●				
		80	176				○				
Chlorine Gas Cl <sub>2</sub>	Wet	40	104	○		●	●				
	Wet	80	176			△	●				
	Dry	40	104	●		●	●				
	Dry	80	176			●	●				
Chromic Acid H <sub>2</sub> CrO <sub>4</sub>	10	40	104	●		●	●				
	10	80	176			●	●				
	20	40	104	△		●	●				
	20	80	176			●	●				
	40	40	104	△		●	●				
	40	80	176			●	●				
	50	40	104	×		●	●				
50	80	176			△	●					
Hydrochloric Acid HCl	15	40	104	●	●	●	●			○	
	15	80	176		●	●	●				
	25	40	104	●	●	●	●			×	
	25	80	176		●	●	●				
	35	40	104	●	●	●	●			×	
	35	80	176		○	●	●				
	38	40	104	●	●	●	●			×	
	38	80	176		○	●	○				

● Excellent ○ Good △ Fair × Corroded

Chemical	Concentration %	Temp		Plastic				Rubber	Stainless	
		°C	°F	PVC	PP	PVDF	PTFE	NBR	304	316
Citric Acid $C_6H_8O_7$	10	40	104	●	●	●	●	●	●	●
	10	80	176		○	●	●	●		
Gasoline	10	40	104	●		●	●			
	10	80	176			●	●			
Diesel Fuels		40	104			●	●		●	●
		80	176			●	●		●	●
Ethyl Alcohol $C_2H_5OH$	Pure	40	104	●	●	●	●	●	○	○
		80	176		○	●	●	○		
Formic Acid $HCOOH$	90	40	104	○	○	●	●			
		80	176			●	●			
Hydrofluoric Acid HF	Dilute	40	104	●	○	●	●			
		80	176		○	●	●			
	30	40	104	○	○	●	●			
		80	176	×	○	●	●			
		40	104	△	○	●	●			
		80	176		○	●	●			
		40	104	△	○	●	●			
		80	176		○	●	●			
Hydrogen peroxide $H_2O_2$	5	40	104	●	●	●	●		○	●
	5	80	176		○	●	●			
	20	40	104	●	●	●	●			
	20	80	176		○	●	●			
	30	40	104	○	○	●	●			
	30	80	176		△	●	●			
	50	40	104	△	×	●	●			
	50	80	176			●	●			
Isopropyl Alcohol $(CH_3)_2CHOH$	Pure	40	104	●	●	●	●	○		
		80	176			●	●			
Kerosene		40	104	●	○	●	●			
		80	176			●	●			
Methyl Alcohol $CH_3OH$		40	104	○	●	●	●	△		
		80	176		○	●	●			
Methyl Ethyl Ketone $CH_3COC_2H_5$		40	104		△		●			
		80	176				●			
Potassium Chromate $K_2CrO_4$		40	104	●	●	●	●	●		
		80	176		○	●	●	○		

# REED SWITCH PROTECTION

## ■ INDUCTIVE LOADS

When using reed switches for inductive loads such as motors, relay coil, solenoids, etc., the contact points will sometimes be subjected to high voltages. Such high induced voltages may damage the reed switch or significantly reduce its life.

Therefore, circuit protectors such as: RC snubbers, varistors or clamping diodes are recommended. (see Fig. 4a, Fig. 4b, Fig. 4c)

- Do not directly connect the solenoid valve, motor or magnetic switch.

$$C = \frac{I^2}{10} \text{ (uF)}$$

$$R = \frac{E}{10I(1 + \frac{E}{50})}$$

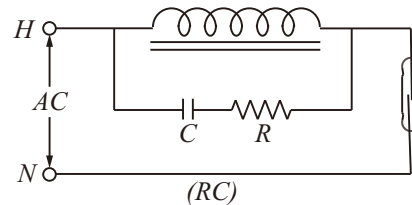


Fig. 4 (a)

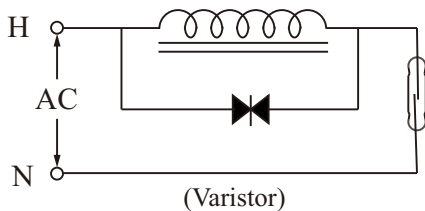


Fig. 4 (b)

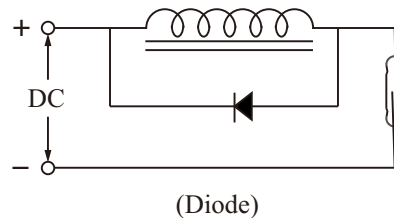


Fig. 4 (c)

## ■ CAPACITIVE LOADS

When using reed switches for capacitive loads such as capacitors, incandescent lamps or long cables, the contact points will be subjected to electrical surges. Therefore, protective circuits such as: surge suppressors or current limiting resistors are recommended. (Fig. 5a, Fig. 5b)

Therefore, circuit protectors such as: RC snubbers, varistors or clamping diodes are recommended (Fig. 5a, Fig. 5b)

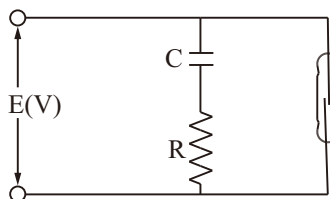


Fig. 5 (a)

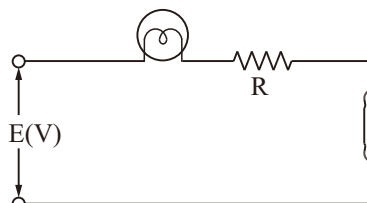
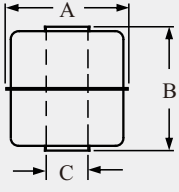
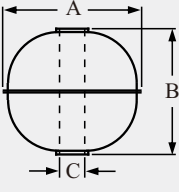
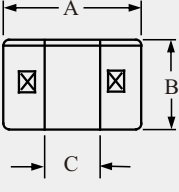
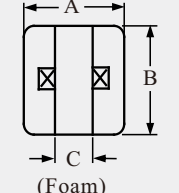
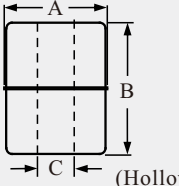


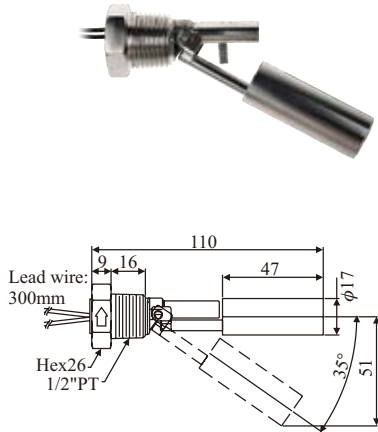
Fig. 5 (b)

# FLOAT SPECIFICATIONS

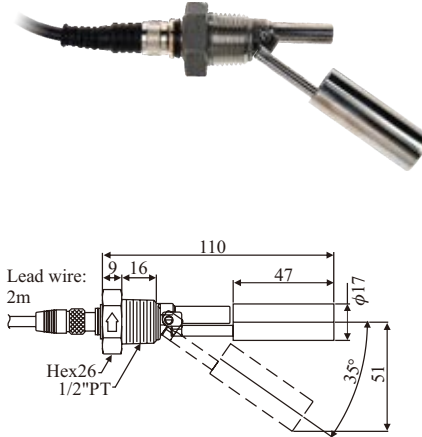
MODEL	TYPE	$\phi$ AxBx $\phi$ C	S.G.	Max. Pressure (kg/cm <sup>2</sup> )	Weight (g)	Material/Color	Max. Temp. (°C)
	S1	28x28x9.5	E>0.7	10	8	SUS 316 / 316L	200
	S3	45x55x15	E>0.65	12	37.6	SUS 316	200
	S6	75x108x20	E>0.5	10	165	SUS 316	200
	S13	38x50x15	E>0.62	12	22.9	SUS 316L	200
	S2	41x38x11	E>0.7	35	19.5	SUS 316	200
	S4	52x52x15	E>0.55	30	33.4	SUS 316	200
	S5	75x73x20	E>0.65	30	102.4	SUS 316	200
	S7	30x28x9.5	E>0.82	25	8	SUS 316 / 316L	200
	S8	100x100x20	E>0.5	15	249.7	SUS 304	200
	S9	150x150x30	E>0.45	15	534	SUS 304	200
	S11	28x32x9.5	E>0.82	30	8.1	SUS 316	200
 <p>(Hollow)</p>	P1	25x15x10	E>0.65	4	3.5	PP / white black	80
	P2	25x25x10	E>0.7	4	5	PP / white black	80
	P3	48x45x18.5	E>0.6	5	35.5	PP / black	80
	P4	20x25x10	E>0.7	4	3.7	PP / white black	80
	P5	20x20x8.1	E>0.75	4	4	PP / white	80
	P8	18.2x15.3x7.2	E>0.8	4	1.82	PP / black	80
 <p>(Foam)</p>	Q6	20x20x7.5	E>0.75	ATM	3.5	PP / white	80
	Q7	25x25x8.8	E>0.7	ATM	6.7	PP / white	80
	N1	25x15x10	E>0.5	ATM	2.7	NBR / black	100
	N2	18.5x26x10	E>0.7	ATM	3.3	NBR / black	100
	N3	19x20x10	E>0.55	ATM	2.4	NBR / black	100
	N4	17.5x25x10	E>0.65	ATM	2.5	NBR / black	100
	N5	30x45x12.8	E>0.5	ATM	11.5	NBR / black	100
 <p>(Hollow)</p>	F2	42x44x14	E>0.63	5	18.5	PP	80
	F3	45x45x20	E>0.65	5	35.7	PP	80
	F4	48x62x18	E>0.85	5	65.3	PVDF	120

# STAINLESS STEEL SWITCHES

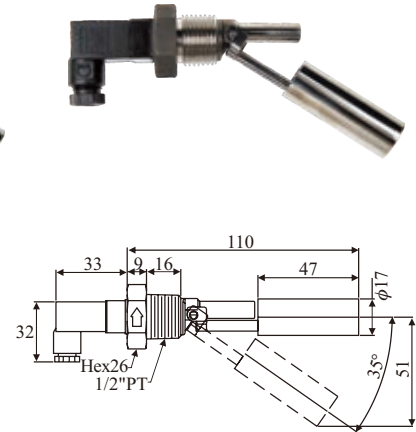
► FD MH50/ 56



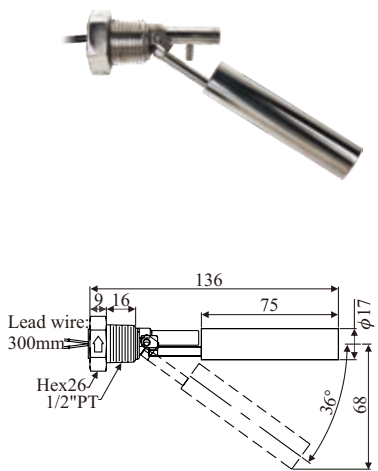
► FD MH50A /56A



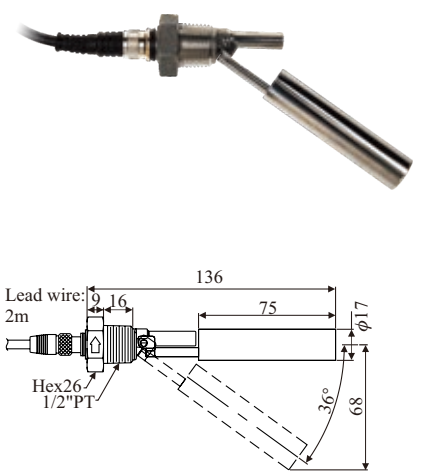
► FD MH50C /56C



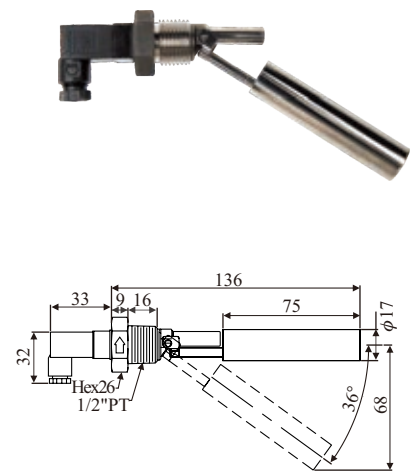
► FD MH60/ 66



► FD MH60A/ 66A



► FD MH60C/ 66C



## ■ SPECIFICATIONS

Type	Material	Switching Capacity Max.	Switching Voltage Max.	Switching Current Max.	Carry Current Max.	Lead Wire	Max. Pressure	Operating Temp.	Suitable Sp. Gr.
FDMH50/56 FDMH60/66	SUS 304 SUS 316L	50W/SPST	240Vac 200Vdc	0.5A	1A	XLPE or TEFLON	5 kg/cm <sup>2</sup>	-20~120°C (Max.200°C)	FDMH5:0.92 FDMH6:0.75
FDMH50A/56A FDMH60A/66A	SUS 304 SUS 316L	50W/SPST	240Vac 200Vdc	0.5A	1A	PVC or PUR	5 kg/cm <sup>2</sup>	80°C	FDMH5:0.92 FDMH6:0.75
FDMH50C/56C FDMH60C/66C	SUS 304 SUS 316L	50W/SPST	240Vac 200Vdc	0.5A	1A	NA	5 kg/cm <sup>2</sup>	-20~120°C	FDMH5:0.92 FDMH6:0.75

# HOW TO ORDER SINGLE SWITCHES

FDMH **5** **0** **A** **B** **R** ( **0** **5** **F** )

**Type** \_\_\_\_\_

5:  $\phi$ 17x47L (SG: 0.92)    6:  $\phi$ 17x75L (SG: 0.75)

**Material** \_\_\_\_\_

0: SUS304    6: SUS316L

**Connection** \_\_\_\_\_

- : without    A: M12    C: DIN

- ※ Connector M12 whose standard wire length is 2M
- ※ Connector M12 whose wire is endurable with oil and made of PVC / PUR, Max.Temp: 80°C

**Connecting Type** \_\_\_\_\_

BR:1/2"PF    BQ: 1/2"PT    BU: 1/2"NPT    BT: 1/2"BSP

**Lead wire Length (Unit=100mm)** \_\_\_\_\_

- 05: 500mm (below 500mm)    ※ 500mm per Unit
- 10: 1000mm (501~1000mm)    ※ 300mm (Standard length)
- 15: 1500mm (1001~1500mm)
- ⋮

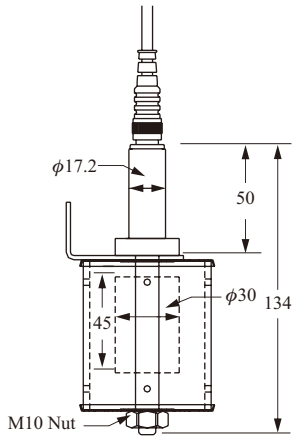
**Material of Lead wire** \_\_\_\_\_

- F: SILICON (150°C)    AWG24 X  $\phi$ 4
- T: TEFLON (200°C)    AWG24
- X: XLPE (125°C)    AWG22    (Standard)
- ※ Material of Wetted parts"SUS304" ◦

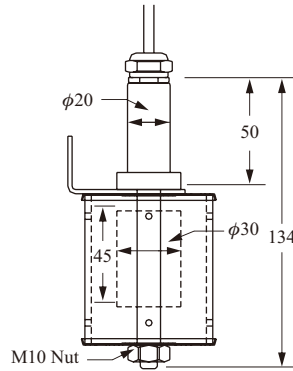


# MARINE LEVEL SWITCHES

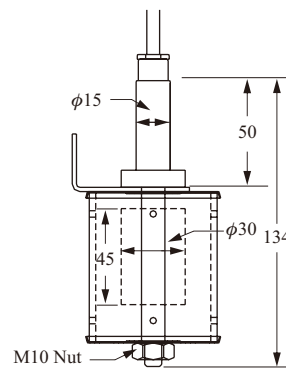
## ► FDMRN5A0B



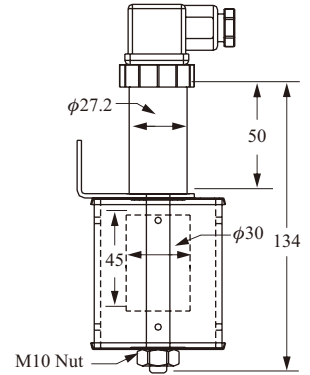
## ► FDMRN5B0B



## ► FDMRN5C0B



## ► FDMRN5D0B

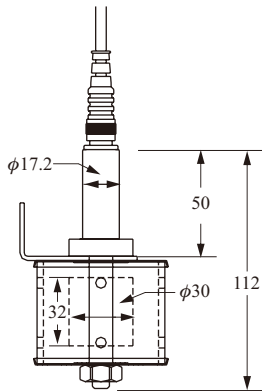


## ■ SPECIFICATIONS

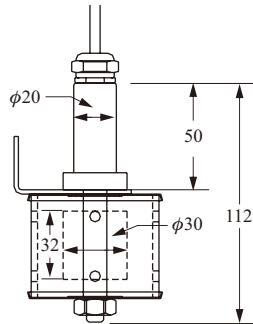
Type	Material	Switching Capacity Max.	Switching Voltage Max.	Switching Current Max.	Carry Current Max.	Lead Wire	Max. Pressure	Operating Temp.	Suitable Sp. Gr.
FDMRN5A0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	M12, 2 meter	ATM	Max. 80°C	0.5
FDMRN5B0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	PVC,22 AWG	ATM	Max. 80°C	0.5
FDMRN5C0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	Silicon	ATM	Max. 100°C	0.5
FDMRN5D0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	DIN 43650	ATM	Max. 80°C	0.5

# MARINE LEVEL SWITCHES

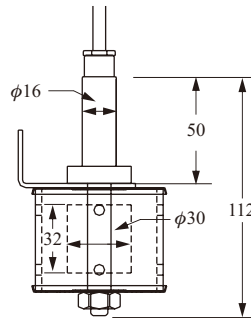
## ► FDMRN8A0B



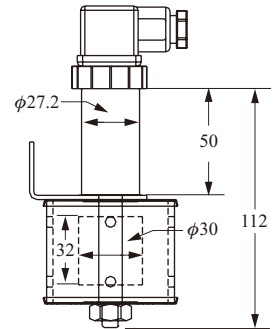
## ► FDMRN8B0B



## ► FDMRN8C0B



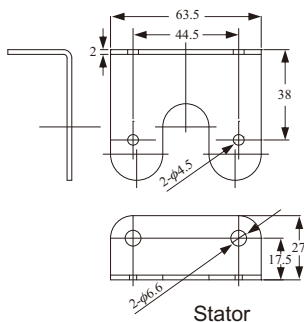
## ► FDMRN8D0B



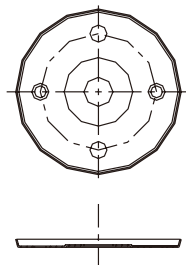
## ■ SPECIFICATIONS

Type	Material	Switching Capacity Max.	Switching Voltage Max.	Switching Current Max.	Carry Current Max.	Lead Wire	Max. Pressure	Operating Temp.	Suitable Sp. Gr.
FDMRN8A0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	M12, 2 meter	ATM	Max. 80°C	0.7
FDMRN8B0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	PVC,22 AWG	ATM	Max. 80°C	0.7
FDMRN8C0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	Silicon	ATM	Max. 100°C	0.7
FDMRN8D0B	SUS 304 (Float:NBR)	50W/SPST	240Vac 200Vdc	0.5A	1A	DIN 43650	ATM	Max. 80°C	0.7

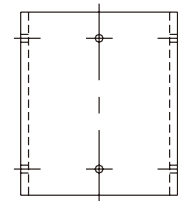
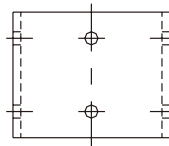
## ■ FDB-0450 PARTS OF SLOSH SHIELD



Stator



Acrylic for case Upper/Lower



Acrylic cover

# HOW TO ORDER MARINE LEVEL SWITCHES

**FDMR** N 5 A 0 B (05)

**Float Type** \_\_\_\_\_

N5:  $\phi 30 \times 45L$  (NBR)    N8:  $\phi 30 \times 32L$  (NBR)

**Connection Type** \_\_\_\_\_

A: M12    B,C: Cable    D: DIN Connection

- ※ Connector M12 whose standard wire length is 2M
- ※ Connector M12 whose wire is endurable with oil and made of PVC / PUR, Max.Temp: 80°C

**Tube Material** \_\_\_\_\_

0: SUS304,    6: SUS316L

**Contact Form** \_\_\_\_\_

A: Normal open(N.O.)    B: Normally closed(N.C.)

**Lead wire Length (L)** \_\_\_\_\_

- 05: 500mm (01~500mm)    ※ 500mm per Unit
- 10: 1m (501mm~1m)    ※ 300mm (Standard length)
- 15: 1.5m (1.01~1.5)    ※ 2M is standard length of lead wire for ASI connection
- ⋮

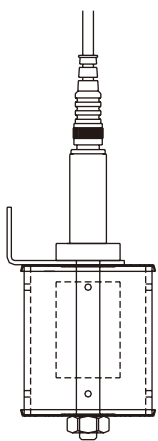
**FDMRN5A**

**FDMRN5B**

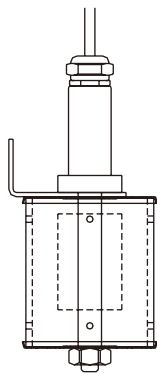
**FDMRN5C**

**FDMRN5D**

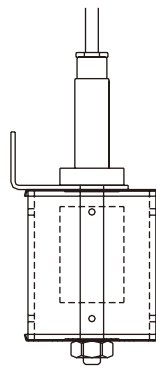
**FDMRN8C**



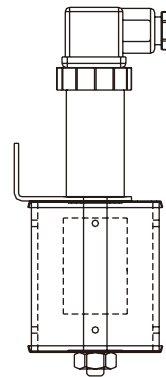
A TYPE



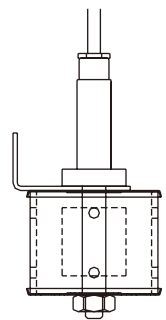
B TYPE



C TYPE



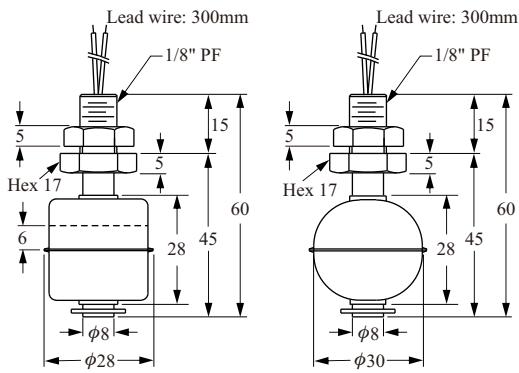
D TYPE



C TYPE

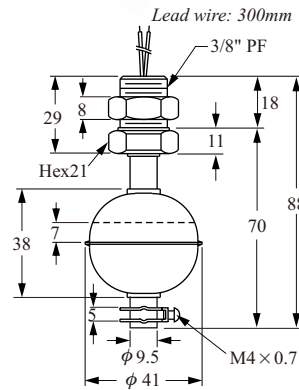
# STAINLESS STEEL MODELS

► FD 30□1/ FD 35□1



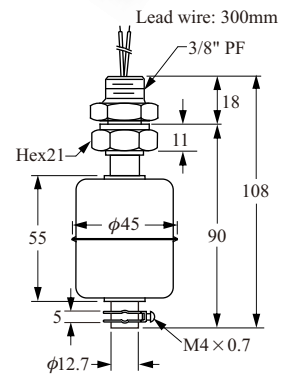
Washer: NBR  
Drill hole  $\phi 10\text{mm}$

► FD 40□1



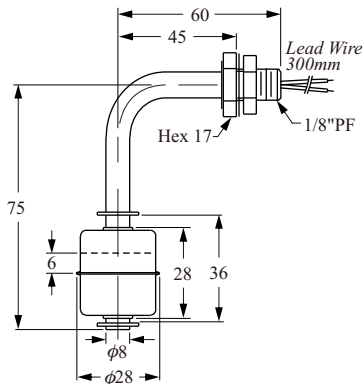
Washer: NBR  
Drill hole  $\phi 17\text{mm}$

► FD 45□1



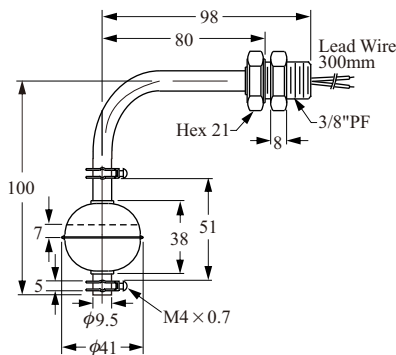
Washer: NBR  
Drill hole  $\phi 17\text{mm}$

► FD 30□2



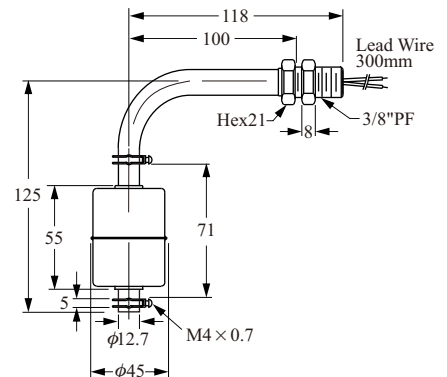
Washer: NBR  
Drill hole  $\phi 10\text{mm}$

► FD 40□2



Washer: NBR  
Drill hole  $\phi 17\text{mm}$

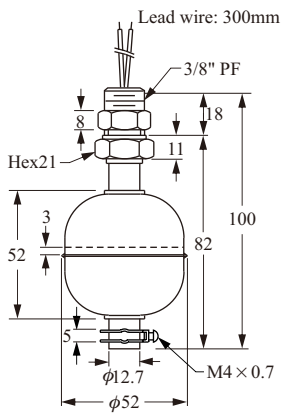
► FD 45□2



Washer: NBR  
Drill hole  $\phi 17\text{mm}$

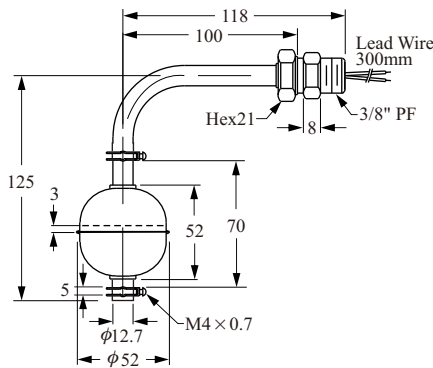
# METAL TYPES

► FD 50□1



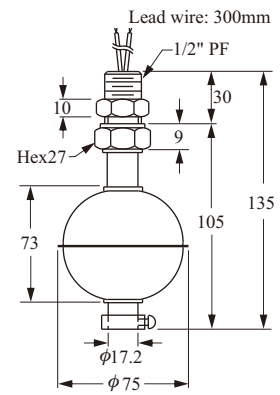
Washer: NBR  
 Drill hole  $\phi$ 17mm

► FD 50□2



Washer: NBR  
 Drill hole  $\phi$ 17mm

► FD 75□1



Washer: NBR  
 Drill hole  $\phi$ 21mm

## ■ SPECIFICATIONS

Description	Type	FD30□1D FD30□2D	FD40□1D FD40□2D	FD45□1D FD45□2D	FD50□1D FD50□2D	FD75□1G	FD10□1G
Material		Stainless Steel SUS304, 316					
Switching Capacity Max.		50W SPST	50W SPST	50W SPST	50W SPST	60W SPDT	
Switching Voltage Max.		240Vac/200Vdc				220Vac	
Switching Current Max. (A)		0.5A	0.5A	0.5A	0.5A	1A	
Carry Current Max. (A)		1A	1A	1A	1A	2A	
Lead Wire		XLPE (UL3266, AWG22)					
Reversible Switch Action		YES / below 80°C, NO / UP 80°C				NO	NO
Max. Pressure (Kg/cm <sup>2</sup> )		10	30	12	30	30	10
Operating Temperature		-20~120°C (OPTION 200°C)					
Suitable Specific Gravity		0.7	0.7	0.65	0.55	0.65	0.5

# ORDERING METAL SWITCHES

FD **30** **6** **2** **D** **A** **(10)** **H**

**Order No./ Model**

- 10 Float :  $\phi$ 75x108, Screw : 1/2"PF
- 30 Float :  $\phi$ 28x28, Screw : 1/8"PF
- 31 Float :  $\phi$ 28x28, Screw : 1/8"NPT
- 35 Float :  $\phi$ 30x28, Screw : 1/8"PF
- 36 Float :  $\phi$ 30x28, Screw : 1/8"NPT
- 40 Float :  $\phi$ 41x38, Screw : 3/8"PF
- 45 Float :  $\phi$ 45x55, Screw : 3/8"PF
- 50 Float :  $\phi$ 52x52, Screw : 3/8"PF
- 75 Float :  $\phi$ 75x70, Screw : 1/2"PF


**Material of Wetted parts**

- 0 : SUS304
- 6 : SUS316

**Mounting**

- 1 : Top or Bottom Mounting
- 2 : Side Mounting

**Switching Capacity Max.**

- D: 50W 240Vac /200Vdc SPST 
- F: 10W 125Vac SPST
- G: 60W 220Vac SPDT (only use for tube  $\phi$ 12.7)
- S: Others

**Contact Mode**

- A: Normally Open (N.O.) SPST ※ High Temperature only available for A or B Type
- B: Normally Closed (N.C.) SPST
- C: 1C SPDT
- D: N.C. Reversible
- E: N.O. Reversible

**Lead wire Length (Unit=100mm)**

- 05: 500mm (below 500mm) ※ 500mm per Unit
- 10: 1000mm (501~1000mm) ※ 300mm (Standard length)
- 15: 1500mm (1001~1500mm)

⋮

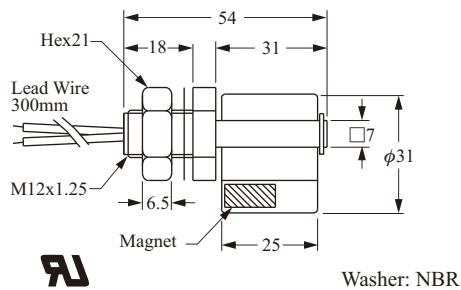
**Material of Lead wire**

- B: PVC cable (80°C) ---- AWG24
- C: PVC cable (80°C) ---- AWG22 X  $\phi$ 4 ※  $\phi$ 8 Stem is not suitable.
- D: XLPVC (105°C) ---- AWG22
- F: SILICON cable (150°C) ---- AWG24 X  $\phi$ 4
- P: PVC (80°C) ---- AWG22
- T: TEFLON (200°C) ---- AWG24
- X: XLPE (125°C) ---- AWG22 (Standard)

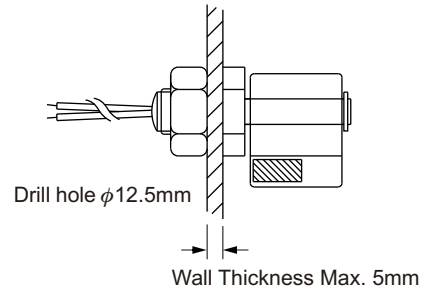
**High Temp. (200°C)**

# PLASTIC OH MODELS

## ► FCH11QD

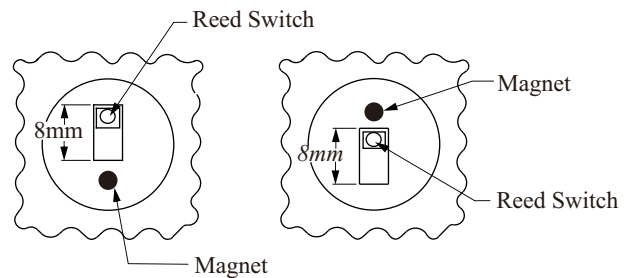


## ■ Installation / N.C./ N.O. Action Position



Normally open  
N.O.

Normally closed  
N.C.



- All the products in this range come with UL E161587 approval.
- All the products in this range are designed to be side mounted.
- Water's specific gravity is used as the reference point for calculations.

## ■ SPECIFICATIONS

Description \ Type	FCH11QD	FCH21PD FCH31PD	FCH23FD FCH33FD	FCH25GD FCH35GD
Switching Capacity Max.	50W SPST			
Switching Voltage Max.	240VAC / 200Vdc			
Switching Current Max. (A)	0.5A			
Carry Current Max. (A)	1A			
Lead Wire	PVC AWG22	XLPE AWG22		
Max. Pressure (Kg/cm <sup>2</sup> )	ATM	4 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	
Operating Temperature	-20~80°C		-20~120°C	
Material	PP		PVDF	Polysulfone
Suitable Specific Gravity	0.6	0.65	0.85	0.85
Weight	25 g	H21: 22 g H31: 21 g	25 g	25.4 g

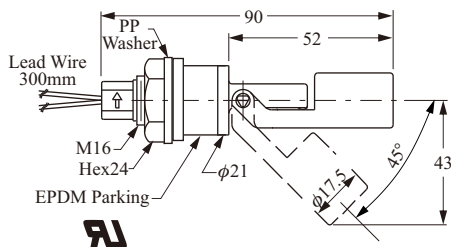
# PLASTIC OH MODELS

## ► FC H21PD / H31PD



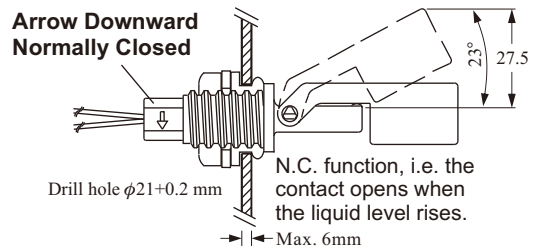
- FCH2 and FCH3 models are available in PP and PVDF.
- Special lead wire/cable are available on request.
- Different reed switches are available for selection.
- For standard design specifications see catalog (p14).
- OEM designs are welcome.

### ■ Optional FC H21PDO(Round)

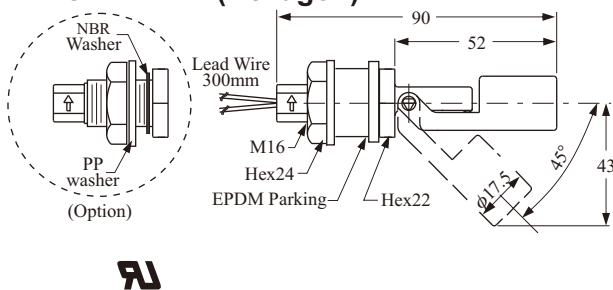


### ■ Installation / N.C. / N.O. Action Position

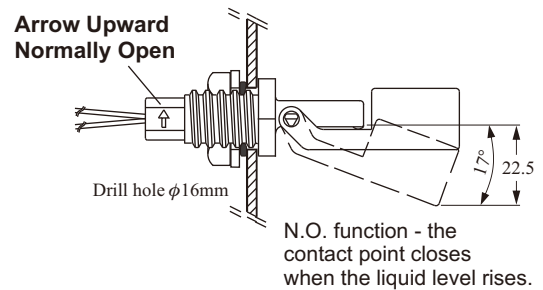
#### [ External mounting ]



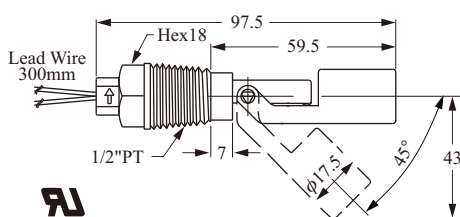
### ■ Standard FC H21PDD (Hexagon)



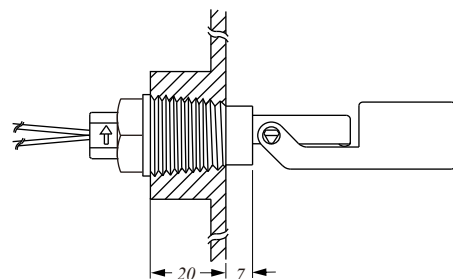
#### [ Internal mounting ]



### ■ FC H31PD



#### [ External mounting ]



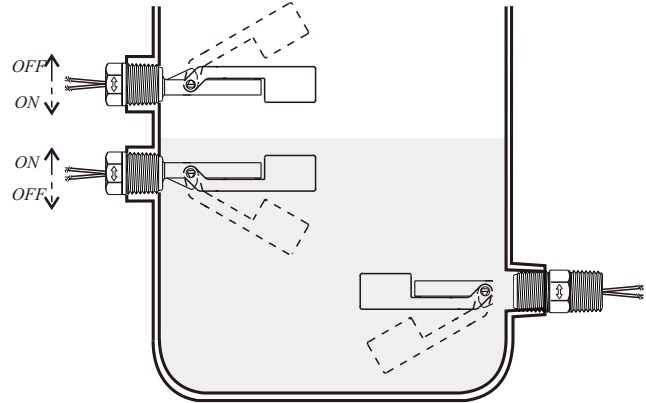


# PLASTIC OH MODELS

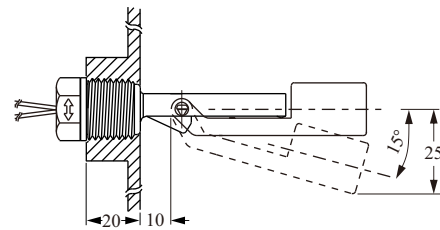
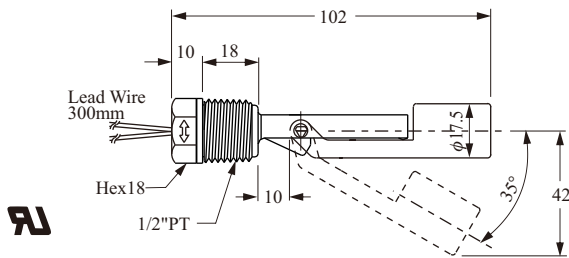
## ► FC H41PD / H51PD



## ■ Installation / N.C. / N.O. Action Position

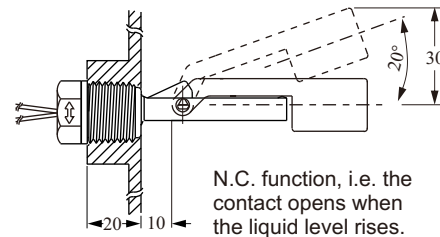
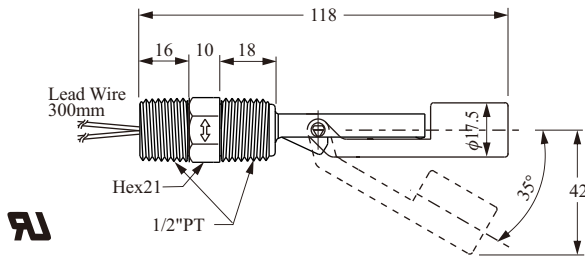


## ■ FC H41PD



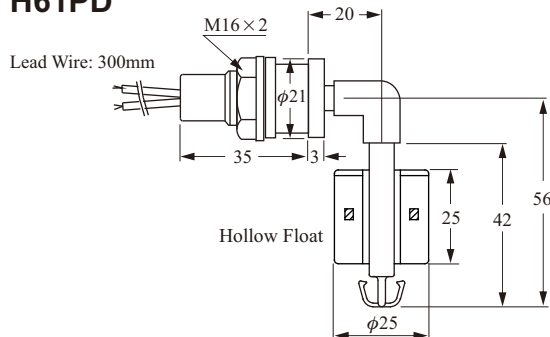
N.O. function, i.e. the contact closes when the liquid level rises.

## ■ FC H51PD



N.C. function, i.e. the contact opens when the liquid level rises.

## ■ FC H61PD



## ■ SPECIFICATIONS

Type	Material	Switching Capacity Max.	Switching Voltage Max.	Switching Current Max.	Carry Current Max.	Lead Wire	Max. Pressure	Operating Temp.	Suitable Sp. Gr.	Weight
FCH41PD	PP	50W/SPST	240Vac 200Vdc	0.5A	1A	XLPE	4 kg/cm <sup>2</sup>	-20~80°C	0.55	20g
FCH51PD						PVC				25g
FCH61PD										31g

# PLASTIC OV MODELS

▶ FC V11QF



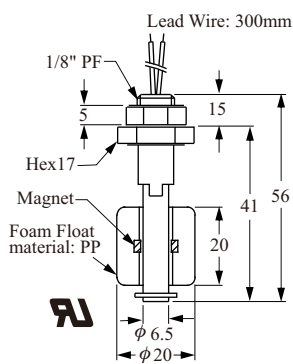
▶ FC V21QD



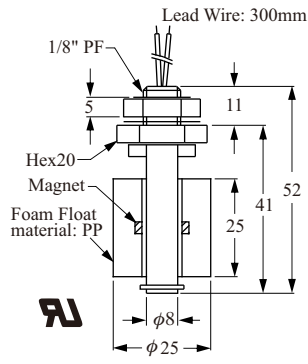
▶ FC V31PD



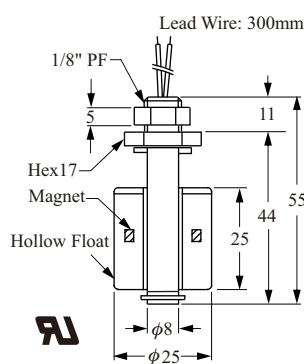
▶ FC V33FD, 35GD



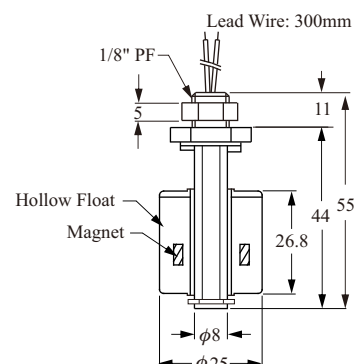
Washer: NBR  
Drill hole φ10mm



Washer: NBR  
Drill hole φ10mm



O-ring: VITON  
Drill hole φ10mm



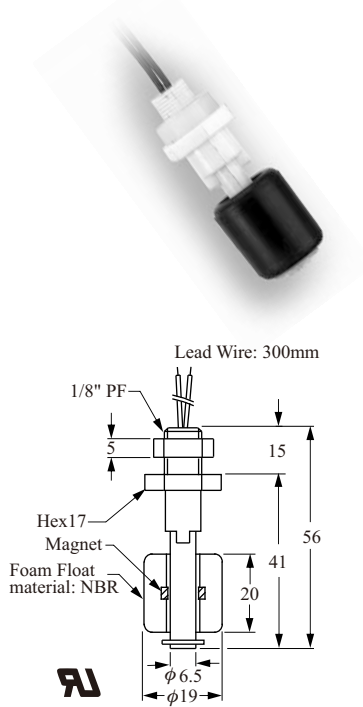
O-ring: VITON  
Drill hole φ10mm

## ■ SPECIFICATIONS

Description \ Type	FC V11QF	FC V21QD	FC V31PD	FC V33FD	FC V35GD
Switching Capacity Max.	10W SPST	50W SPST	50W SPST		
Switching Voltage Max.	125Vac	240Vac / 200Vdc	240Vac / 200Vdc		
Switching Current Max. (A)	0.5A		0.5A		
Carry Current Max. (A)	1A		1A		
Lead Wire	UL 1007 AWG22 PVC		UL 1007 AWG22 PVC	XLPE AWG22	
Reversible Switch Action	YES	NO	YES/ 80°C down		
Max. Pressure (Kg/cm <sup>2</sup> )	ATM		4 kg/cm <sup>2</sup>	2 kg/cm <sup>2</sup>	
Operating Temperature	-20~80°C		-20~80°C	-20~120°C	
Material	PP		PP	PVDF	Polysulfone
Suitable Specific Gravity	0.75	0.7	0.7	0.85	0.75
Weight (g)	12 g	18 g	12.8 g	18 g	18 g

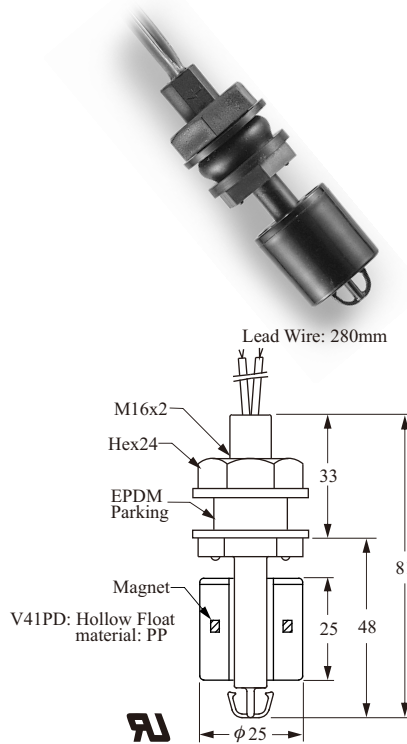
# PLASTIC OV MODELS

## ▶ FC V11NF



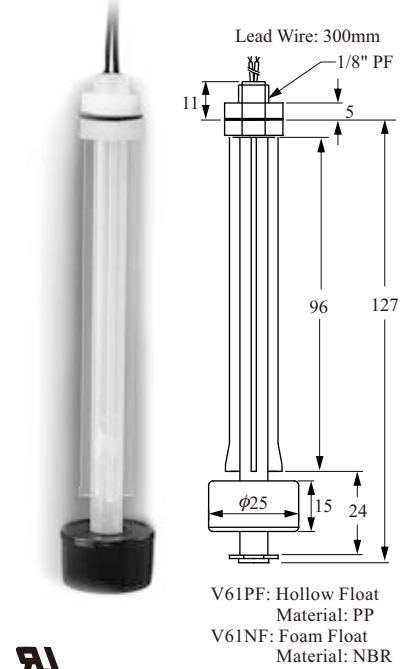
Washer: NBR  
Drill hole  $\phi 10\text{mm}$

## ▶ FC V41PD



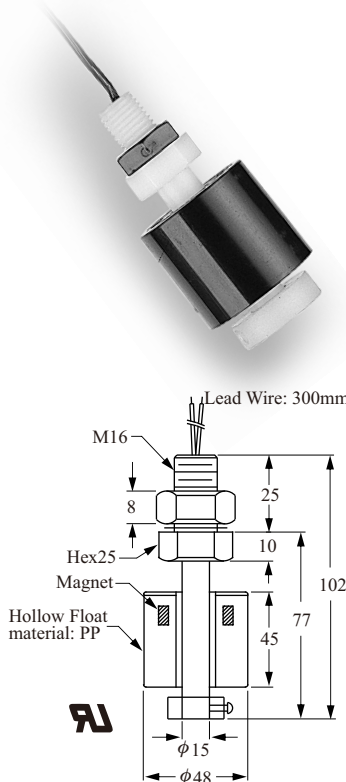
Washer: NBR  
Drill hole  $\phi 16\text{mm}$

## ▶ FC V61PF, V61NF



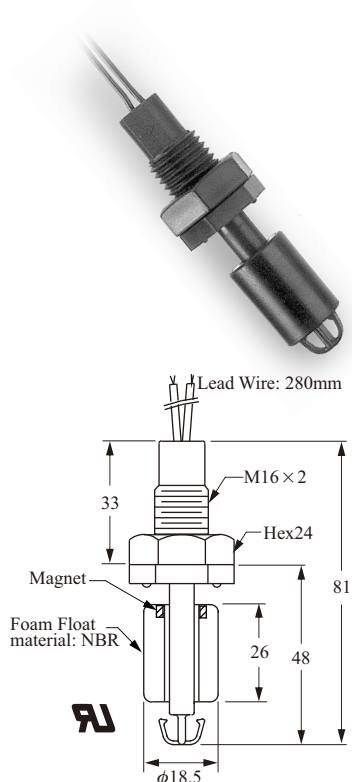
Washer: NBR  
Drill hole  $\phi 10\text{mm}$

## ▶ FC V81PD



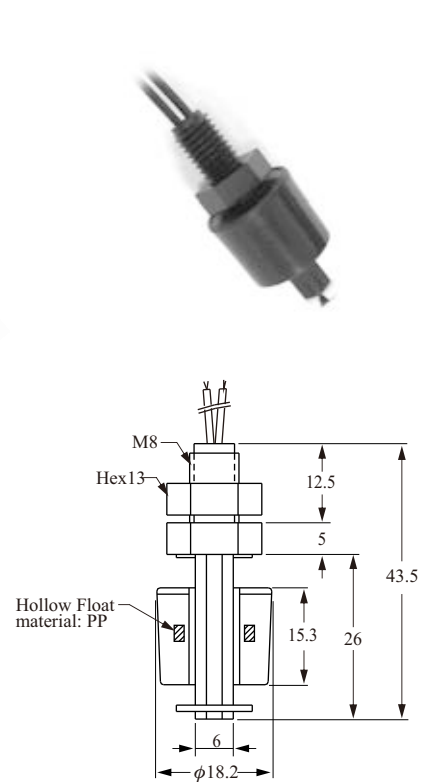
Washer: NBR  
Drill hole  $\phi 16\text{mm}$

## ▶ FC V41ND



Washer: NBR  
Drill hole  $\phi 16\text{mm}$

## ▶ FC V51PD

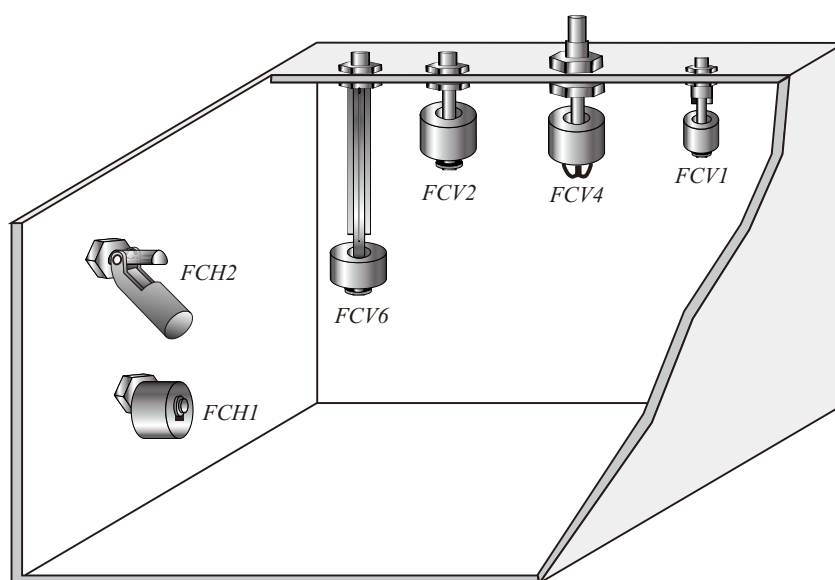


O-Ring: VITON  
Drill hole  $\phi 8.5\text{mm}$

# PLASTIC OV MODELS

## ■ SPECIFICATIONS

Description \ Type	FC V11NF	FC V61PF FC V61NF	FC V41PD	FC V81PD	FC V41ND	FC V51PD
Switching Capacity Max.	10W SPST		50W SPST			
Switching Voltage Max.	125Vac (Break Down 250Vac)		240Vac / 200Vdc			
Switching Current Max. (A)	0.5A					
Carry Current Max. (A)	1A					
Lead Wire	XLPE AWG22	UL 1007 AWG22 PVC				
Reversible Switch Action	NO	NO	YES	NO	NO	NO
Max. Pressure (kg/cm <sup>2</sup> )	ATM	V61P: 4kg/cm <sup>2</sup> V61N: ATM	4kg/cm <sup>2</sup>	4 kg/cm <sup>2</sup>	ATM	4 kg/cm <sup>2</sup>
Operating Temperature	-20~80°C					80°C
Material	PP (except V11N, V61N, V41N: NBR float)					
Suitable Specific Gravity	0.55	0.65 0.5	0.55	0.6	0.7	0.8
Weight (g)	11 g	16 g	23 g	180 g	17 g	8.2 g



# HOW TO ORDER PLASTIC OH/OV MODELS

FC **V2** **3** **F** **D** **A** ( **05** **P** )

**Order No./ Model** \_\_\_\_\_

**FC H1~H6** Side Mounting  
**FC V1~V9** Top or bottom Mounting


**Material of Wetted parts** \_\_\_\_\_

**1** : PP                      **5** : Polysulfone  
**3** : PVDF                **6** : PPS

**Material of Float** \_\_\_\_\_

**F** :PVDF            **P** :PP (hollow)    **K** :PPS  
**N** :NBR            **Q** :PP (foam)  
**G** :Polysulfone

**Switching Capacity Max.** \_\_\_\_\_

**D** : 50W 240Vac /200Vdc SPST   
**F** : 10W 125Vac SPST  
**K** : 20W 150Vac/200Vdc SPDT

**Contact mode** \_\_\_\_\_

**A** : Normally Open (N.O.) SPST  
**B** : Normally Closed (N.C.) SPST  
**D** : NC Reversible  
**E** : NO Reversible

※FCV11/21□DD & FCV11/21□DE are unavailable for reversible option.  
 ※Side mounted types are only available with D mode.

**Lead wire Length (Unit=100mm)** \_\_\_\_\_

**05**: 500mm (below 500mm)      ※ 500mm per Unit  
**10**: 1000mm (501~1000)        ※ 300mm (Standard length)  
**15**: 1500mm (1001~1500)  
 ⋮  
 ⋮

**Material of Lead wire** \_\_\_\_\_

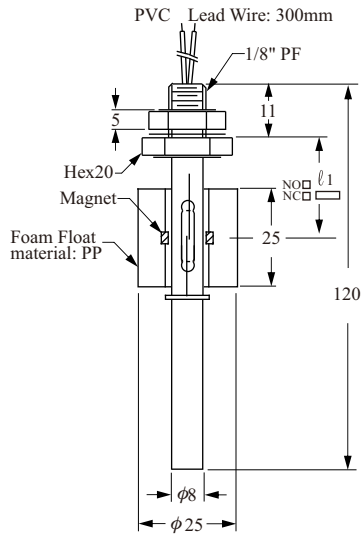
**B** : PVC (80°C)                    ---- AWG24  
**C** : PVC cable (80°C)          ---- AWG22 X ϕ4  
**D** : XLPVC (105°C)                ---- AWG24  
**F** : SILICON cable (150°C) ---- AWG24 X ϕ4  
**P** : PVC (80°C)                    ---- AWG22  
**T** : TEFLON (200°C)              ---- AWG24  
**X** : XLPE (125°C)                 ---- AWG22

**S** : Others                              ※ For FCH61, cable length could be selected, but material can't.

※ "A" (Normally Open, SPST) is our standard specified switch. For further details about the lead wire please refer pages 6, 7, 9, 10 and 12.

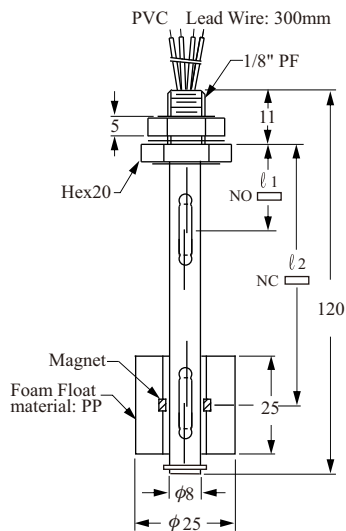
# CUSTOMIZED PLASTIC MODELS

▶ FC PV1



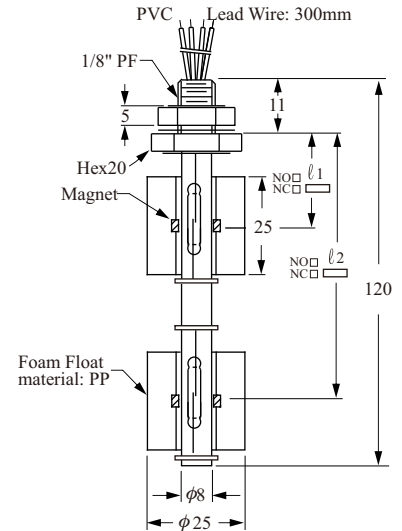
O-Ring: VITON

▶ FC PV2



O-Ring: VITON

▶ FC PV3



O-Ring: VITON

● NOTE: Float material's are optional.

The above items are custom-built when client demands are unique. The benefits are listed below:

- FCPV1 One float for one level activation.
- FCPV2 One float with 2 reed switches.
- Applicable for conditions where 1 float can actuate switches at high and low levels.
- FCPV3 Two floats actuate two independent reed switches: Each float unit's default setting can be either N.O. or N.C. as per cus

# HOW TO ORDER PLASTIC SWITCHES

FC **PV1** **2** **D** **A** (**05** **P**)

**Order No./ Model** \_\_\_\_\_

**PV1:** Vertical Mounting, Single Float Single Switch

**PV2:** Vertical Mounting, Single Float Dual Switch

**PV3:** Vertical Mounting, Dual Float Dual Switch

**Material of Wetted parts** \_\_\_\_\_

**1:** PP; Lead wire---PVC---Temp. 80°C

**2:** NBR (only float); Lead wire---PVC---Temp. 60°C  
 Lead wire---XLPE---Temp. 100°C

**3:** PVDF; Lead wire---XLPE---Temp. 125°C

**Switching Capacity Max.** \_\_\_\_\_

**D:** 50W 240Vac /200Vdc SPST 

**F:** 10W 125Vac SPST

**K:** 20W 150Vac/200Vdc SPDT

**Contact Mode** \_\_\_\_\_

**A:** Normally Open (N.O.) SPST

**B:** Normally Closed (N.C.) SPST

**C:** SPDT

**F:** 1 float 2 points.

**H:** 1-N.O.,1-N.C.(2 floats)

**Lead wire Length (Unit=100mm)** \_\_\_\_\_

**05:** 500mm (below 500mm) ※ 500mm per Unit

**10:** 1000mm (501~1000mm) ※ 300mm (Standard length)

**15:** 1500mm (1001~1500mm)

⋮

**Material of Lead wire** \_\_\_\_\_

**C:** PVC cable (80°C) ---- AWG22 X φ4

**P:** PVC (80°C) ---- AWG22 (Standard)

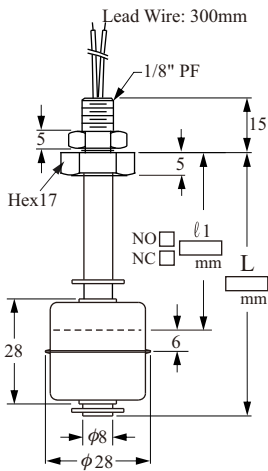
**X:** XLPE (125°C) ---- AWG22

# CUSTOMIZED PLASTIC MODELS

Items below are custom-built models for special applications or placement on existing facilities. Their unique characteristics are as follows:

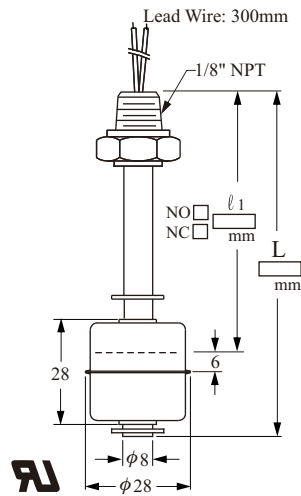
- Any size measuring range, but  $\phi 8\text{mm}$  stem Max. 500mm.
- Customized mounting thread specifications are acceptable.
- Single or multiple contact points are workable.
- Switch activation N.O. or N.C. choices are available.

## ► FDSA□11



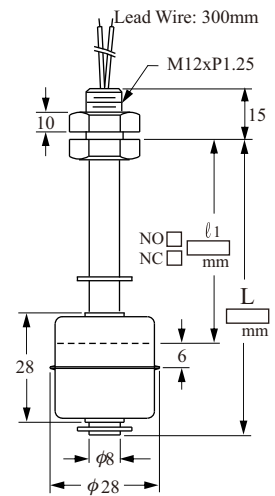
Washer: NBR

## ► FDSB□11



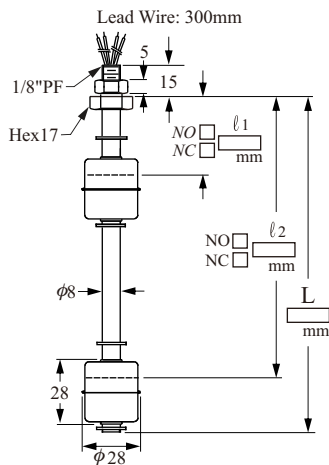
Washer: NBR

## ► FDSC□11



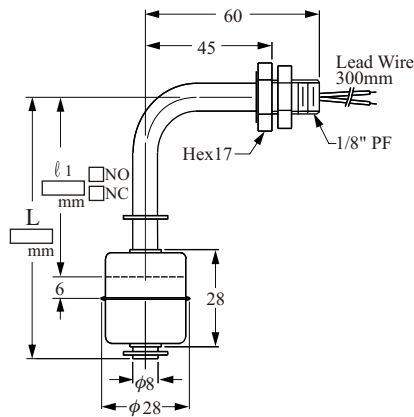
Washer: NBR

## ► FDSA□12



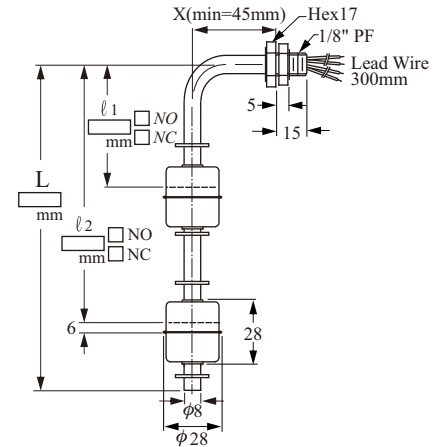
Washer: NBR

## ► FDSA□21



Washer: NBR

## ► FDSA□22



Washer: NBR



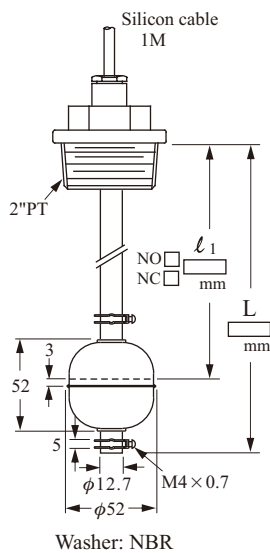
# CUSTOMIZED STAINLESS STEEL MODELS

Items below are custom-built models for special application and location on existing equipment facilities. Their unique characteristics are as follows:

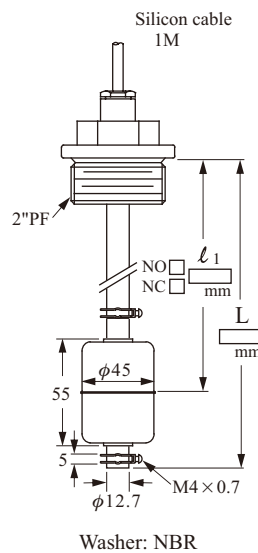
- Any size measurement range available.

- Customized mounting thread specification are acceptable.
- Single or multiple contact form (point) are workable.
- Switch activation N.O. or N.C. are available.

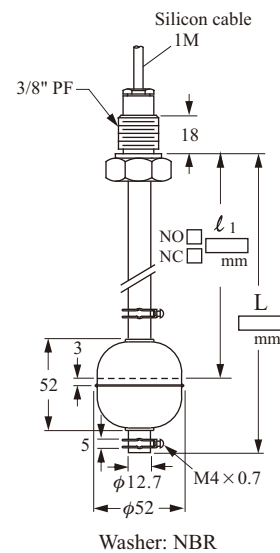
## ► FDSD□11



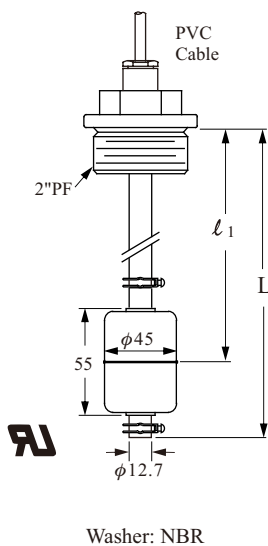
## ► FDSE□11



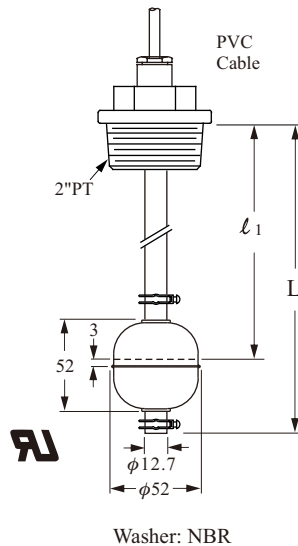
## ► FDSF□11



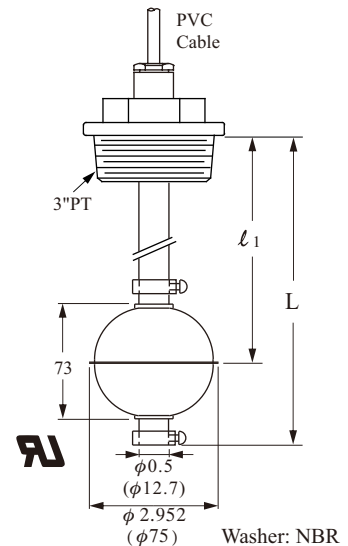
## ► FD4503D



## ► FD5003G



## ► FD7503G



# HOW TO ORDER CUSTOMIZED STAINLESS STEEL MODELS

FD **S** **A** **6** **1** **2** **D** **A** **05**

**Type** \_\_\_\_\_

- FDSA** Float : **RF-SA**  $\phi$ 28x28, Screw : 1/8"PF
- FDSB** Float : **RF-SB**  $\phi$ 28x28, Screw : 1/8"NPT
- FDSC** Float : **RF-SC**  $\phi$ 28x28, Screw : M12
- FDSD** Float : **RF-SD**  $\phi$ 52x52, Screw : 2"PT
- FDSE** Float : **RF-SE**  $\phi$ 45x55, Screw : 2"PF
- FDSF** Float : **RF-SF**  $\phi$ 52x52, Screw : 3/8"PF

**Material of Wetted parts** \_\_\_\_\_

- 0** : SUS304
- 6** : SUS316

**Mounting** \_\_\_\_\_

- 1** : Top or Bottom Mourting
- 2** : Side Mounting

**Float Number** \_\_\_\_\_

1~4 floats

**Switching Capacity Max.** \_\_\_\_\_

- D**: 50W 240Vac /200Vdc, SPST
- G**: 60W 220Vac, SPDT (only use for tube  $\phi$ 12.7)
- K**: 20W 150Vac /200Vdc, SPDT

**Contact Form** \_\_\_\_\_

- A**: Normal Open (N.O.) SPST    **F** : 1 float 2 points
- B**: Normal Close (N.C.) SPST    **H**: 1-N.O., 1-N.C.(2 floats)
- C**: 1AB SPDT

**Lead wire Length (Unit=100mm)** \_\_\_\_\_

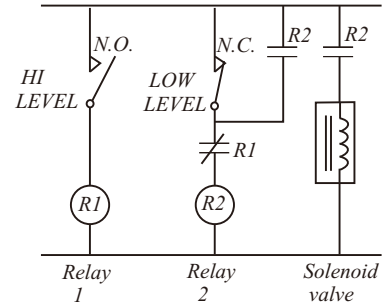
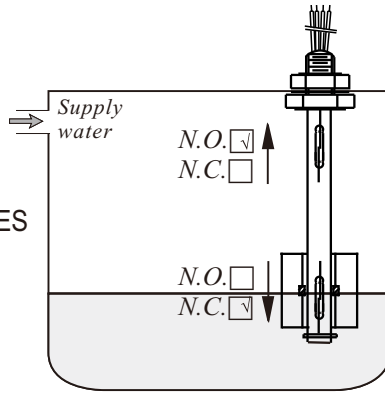
- 03**: 300mm (SA, SB, SC, Standard length)                      ※ 500mm per Unit
- 05**: 500mm (below 500mm)
- 10**: 1000mm (SD, SE, SF, Standard length)
- 15**: 1500mm (1001~1500mm)

**Material of Lead wire** \_\_\_\_\_

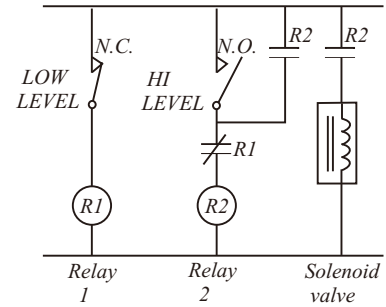
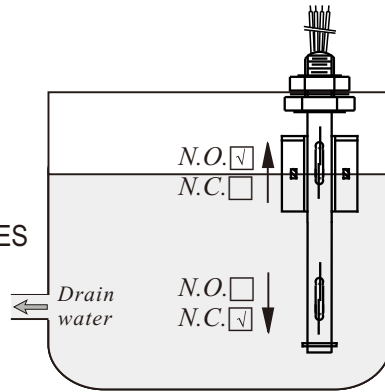
- C**: PVC cable (80°C)                      ---- AWG22 X 2C X  $\phi$ 4
  - F**: SILICON cable (150°C) ---- AWG24 X 2C X  $\phi$ 4
  - P**: PVC (80°C)                                ---- AWG22
  - T**: TEFLON (200°C)                      ---- AWG24
  - X**: XLPE (125°C)                          ---- AWG22 (Standard)
- For SA, SB, SC Type

# TYPICAL WIRING DIAGRAMS

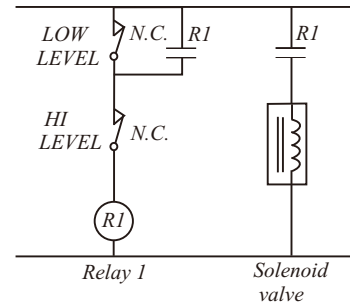
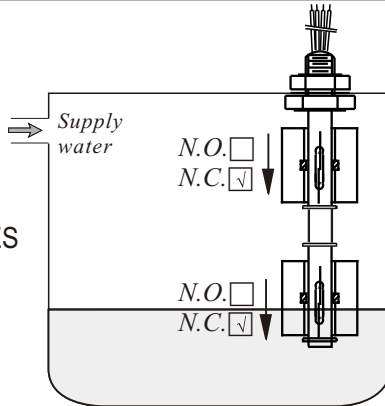
\* AUTO SUPPLY CASE:  
SINGLE FLOAT DUAL SWITCHES



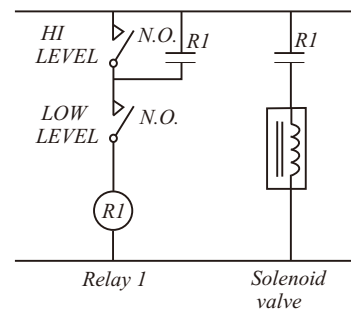
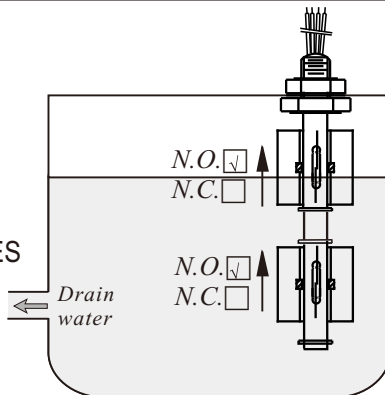
\* AUTO DRAIN CASE:  
SINGLE FLOAT DUAL SWITCHES



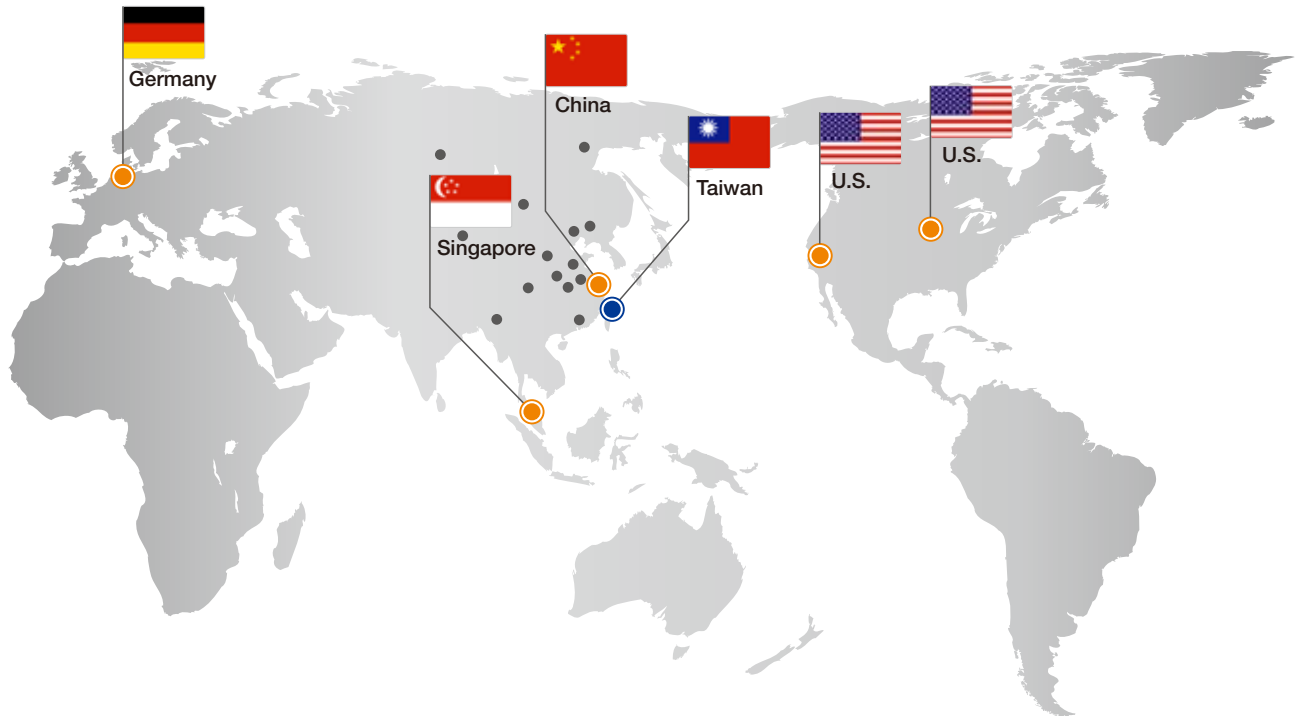
\* AUTO SUPPLY CASE:  
DUAL FLOATS DUAL SWITCHES



\* AUTO DRAIN CASE:  
DUAL FLOATS DUAL SWITCHES



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