Ziasiot

Instructions

FQ20/21 Link-type float ball liquid-level switch

Please read this instruction manual carefully before installation

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Introduction

The link - type float ball liquid - level switch is a liquid - level controller with safety, reliability, convenience for use and simple structure. One product can achieve multi - point control. It is characterized by long service life, fast speed and strong anti - load impact ability.

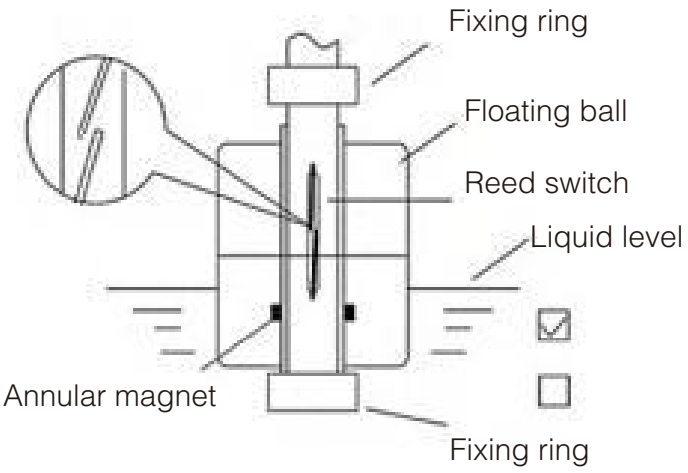
The link - type float ball liquid - level switch is applicable to controlling the operation of pumps to maintain liquid levels, controlling the automatic loading and unloading of tanks, and controlling liquid levels or providing signals, such as in oil tanks, automatic cleaning systems, hydraulic tanks, low - pressure boilers and sewage treatment systems.

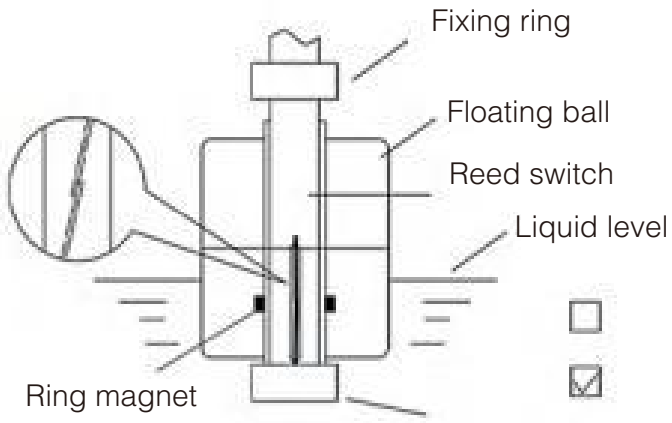
Application

- Multi - point control can be achieved. The position of the control switch can be customized according to the user's requirements.
- Using a magnetic switch does not require a power supply, and the contact life can reach 2 million times.
- All switch output wires are in the same junction box, and the cost of external construction wiring is low.
- Compared with other forms of liquid - level switches with multiple switch control points, the unit price of the RF type is low.
- The protection level of the junction box is above IP65.
- There are PP and SUS316 metal materials, so suitable products can be used for any acid - base solution, solvent, or various fuel oils.
- The magnetic switch and the wire are completely isolated from the liquid, so it can also be used on high - temperature and high - pressure equipment.
- The linkage - type floating - ball liquid - level switch assembly is suitable for high - temperature and high - pressure situations.
- The 60VA dry - contact reed switch can select normally - open or normally - closed through the installation position of the floating ball.
- The 316 SS floating ball, conduit, and installation interface are suitable for harsh environments.
- With a rotatable base seat convenient for electrical alignment adjustment (NEMA 4X) and a polypropylene outer casing.
- The length of the conduit and the size of the switch setting point can be customized.

Working Principle

Inside a closed metal or plastic pipe, one or more magnetic switches are installed. Then, the pipe is threaded through one or more hollow floating balls with built - in ring - shaped magnets. Using fixing rings, the floating balls are fixed within the relevant range of the magnetic switches. When the floating balls move, the magnets inside them attract the contacts of the magnetic switches to act, thereby controlling or indicating the liquid level.





Working Principle

The lever float level switch is widely used in industries such as wastewater/water treatment, shipbuilding,generator equipment, petrochemicals, food, electronics, dyeing and finishing, chemistry, rubber and plastics, hydraulic machinery, and chemical pharmaceuticals.

Product Series

1 FQ20 Standard Junction Box with Threaded Type

2 FQ20 Flange Type

3 FQ20 Clamp Type

4 FQ20 Hirschmann Type

5 FQ20 Full Stainless Steel Type

6 FQ20 Submersible Type

7 FQ20 Basic Type

8 FQ20 Anti-corrosion

9 FQ20 Explosion-Proof Type

10 FQ20 Wire-Outlet Type

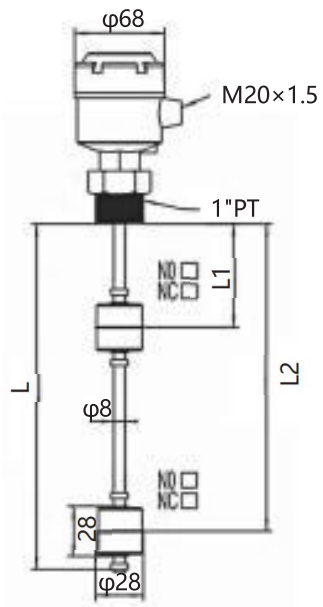
11 FQ20 Explosion-Proof and Anti-Corrosion Type

12 FQ21 Pull-Out Type Lever Float

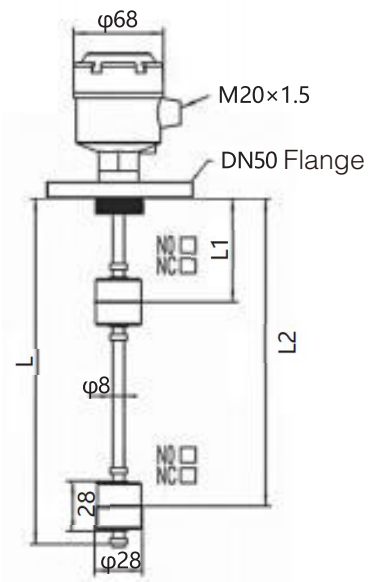
Technical Parameters

Product Material	Default: 304 stainless steel, customizable: 316L, PP, PTFE
Product Length	The switching stroke is not less than 100 mm for a single - point, and the continuous stroke is not less than 500 mm. Maximum length is 5 meters.
Contact Capacity	50W/250VAC，200VDC 40W/250VAC 10W/110VAC
Ratet	0.2A（50W）、0.16A（40W）、0.1A（10W）
Working Current	1A（50W，40W）、0.5A（10W）
Pressure Resistance	(-1.0~3.5) MPa for metal type; (0~0.5) MPa for plastic type
Temperature	-20℃~120℃（200℃ Max.）
Float Ball Size	25/28/45/50/75/110 mm, specific size depends on application parameters
Guide Rod Diameter	8/12/14/16/20 mm, specific size depends on application parameters
Connection Form	Threaded type, quick - mount chuck type, flange type, etc.

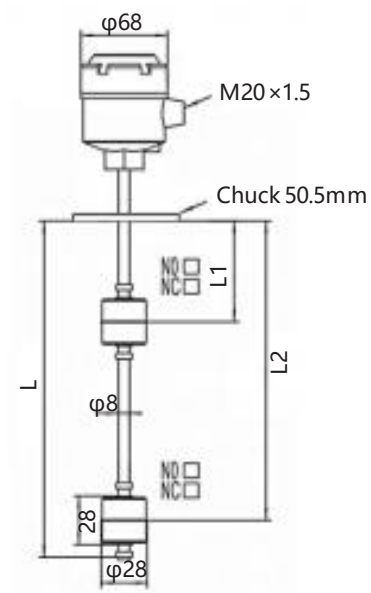
Technical Parameters and Outline Dimension (for Reference)



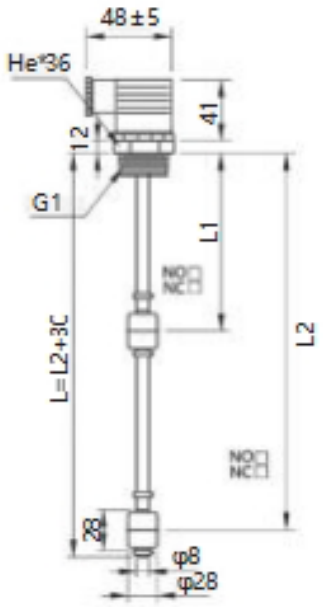
Model Name		FO20 Standard Junction Box Threaded Type				
Contact Configuration		SPDT/SPST				
Measuring Length (mm)		1000	2000	3000	4000	6000
Measuring Rod Diameter (mm)		φ8	φ12.7	φ14	φ16	φ22
Maximum Measuring Points/Po-wer	SPDT	2sets/5W	4sets/10W	4sets/10W	4sets/10W	4sets/10W
	SPST	4sets/30W	6sets/30W	6sets/30W	6sets/30W	6sets/30W
Wetted Materials		SUS304/SUS316L				
Working Pressure		-0.1MPa~2.5MPa				
Working Temperature		-20~200℃				
Thread Specification		G1" Thread (Customizable)				
Material of unction Box		Aluminum Alloy with Baking Paint				
Protection Class		IP65				



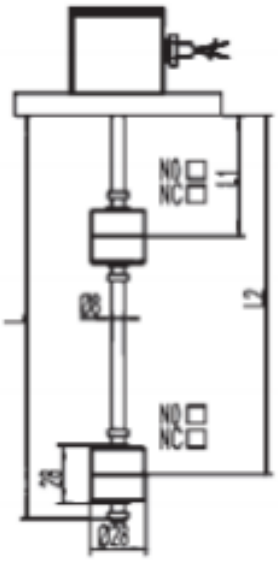
Model Name		FQ20 Standard Junction Box Flange Type				
Contact Configuration		SPDT/SPST				
Measuring Length (mm)		1000	2000	3000	4000	6000
Measuring Rod Diameter (mm)		φ8	φ12.7	φ14	φ16	φ22
Maximum Measuring Points/Po-wer	SPDT	2sets/5W	4sets/10W	4sets/10W	4sets/10W	4sets/10W
	SPST	4sets/30W	6sets/30W	6sets/30W	6sets/30W	6sets/30W
Wetted Materials		SUS304/SUS316L				
Working Pressure		-0.1MPa~2.5MPa				
Working Temperature		-20~200℃				
Thread Specification		DN50 Flange (Customizable)				
Material of unction Box		Aluminum Alloy with Baking Paint				
Protection Class		IP65				



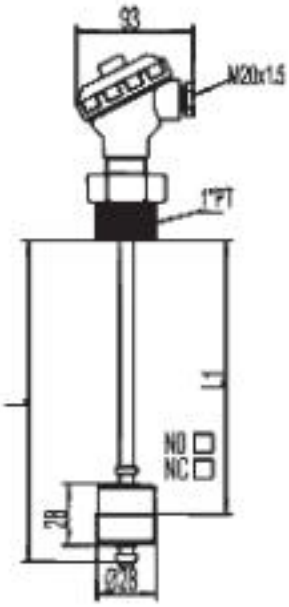
Model Name		FQ20 Standard Junction Box Clamp type				
Contact Configuration		SPDT/SPST				
Measuring Length (mm)		1000	2000	3000	4000	6000
Measuring Rod Diameter (mm)		φ8	φ12.7	φ14	φ16	φ22
Maximum Measuring Points/Po-wer	SPDT	2sets/5W	4sets/10W	4sets/10W	4sets/10W	4sets/10W
	SPST	4sets/30W	6sets/30W	6sets/30W	6sets/30W	6sets/30W
Wetted Materials		SUS304/SUS316L				
Working Pressure		-0.1MPa~2.5MPa				
Working Temperature		-20~200℃				
Thread Specification		50.5 Clamp (Customizable)				
Material of unction Box		Aluminum Alloy with Baking Paint				
Protection Class		IP65				



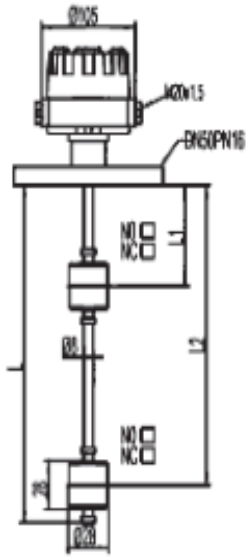
Model Name	FQ20 Hirschmann Type
Maximum Power	50VA
Maximum Switching Voltage	220VAC/DC
Maximum Switching Current	1.5A
Maximum Surge Voltage	300VAC/DC
Maximum Contact Resistance	100mΩ
Temperature Range	-30~+120℃
Float Material	SUS304
Body Material	SUS304



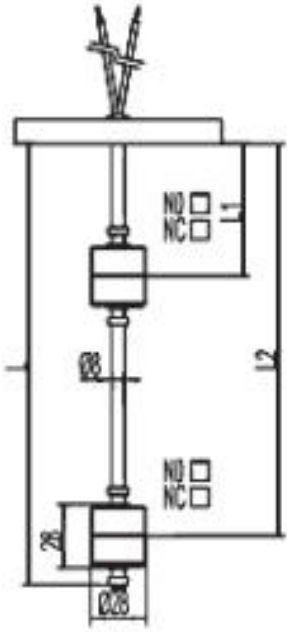
Model Name		FQ20 Submersible Type				
Contact Configuration		SPDT/SPST				
Measuring Length (mm)		1000	2000	3000	4000	6000
Measuring Rod Diameter (mm)		φ8	φ12.7	φ14	φ16	φ22
Maximum Measuring Points/Po-wer	SPDT	2sets/5W	4sets/10W	4sets/10W	4sets/10W	4sets/10W
	SPST	4sets/30W	6sets/30W	6sets/30W	6sets/30W	6sets/30W
Wetted Materials		SUS304/SUS316L				
Working Pressure		-0.1MPa~2.5MPa				
Working Temperature		-20~200℃				
Thread Specification		Thread, Flange (Customizable)				
Material of unction Box		Aluminum Alloy with Baking Paint				
Outlet Wire Length (mm)		2000 (Customizable)				
Protection Class		IP65				



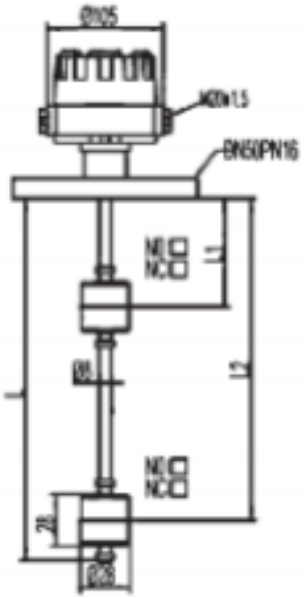
Model Name		FQ20 Basic Type				
Contact Configuration		SPDT/SPST				
Measuring Length (mm)		1000	2000	3000	4000	6000
Measuring Rod Diameter (mm)		φ8	φ12.7	φ14	φ16	φ22
Maximum Measuring Points/Po-wer	SPDT	2sets/5W	4sets/10W	4sets/10W	4sets/10W	4sets/10W
	SPST	4sets/30W	6sets/30W	6sets/30W	6sets/30W	6sets/30W
Wetted Materials		SUS304/SUS316L				
Working Pressure		-0.1MPa~2.5MPa				
Working Temperature		-20~200℃				
Thread Specification		Thread, Flange (Customizable)				
Material of unction Box		Aluminum Alloy with Baking Paint				
Protection Class		IP65				



Model Name		FQ20 Explosion-Proof Type				
Contact Configuration		SPDT/SPST				
Measuring Length (mm)		1000	2000	3000	4000	6000
Measuring Rod Diameter (mm)		φ8	φ12.7	φ14	φ16	φ22
Maximum Measuring Points/Po-wer	SPDT	2sets/5W	4sets/10W	4sets/10W	4sets/10W	4sets/10W
	SPST	4sets/30W	6sets/30W	6sets/30W	6sets/30W	6sets/30W
Wetted Materials		SUS304/SUS316L				
Working Pressure		-0.1MPa~2.5MPa				
Working Temperature		-20~200℃				
Thread Specification		Thread, Flange (Customizable)				
Material of unction Box		Aluminum Alloy with Baking Paint				
Protection Class		IP65				
Explosion-Proof Class		ExdIICT6				



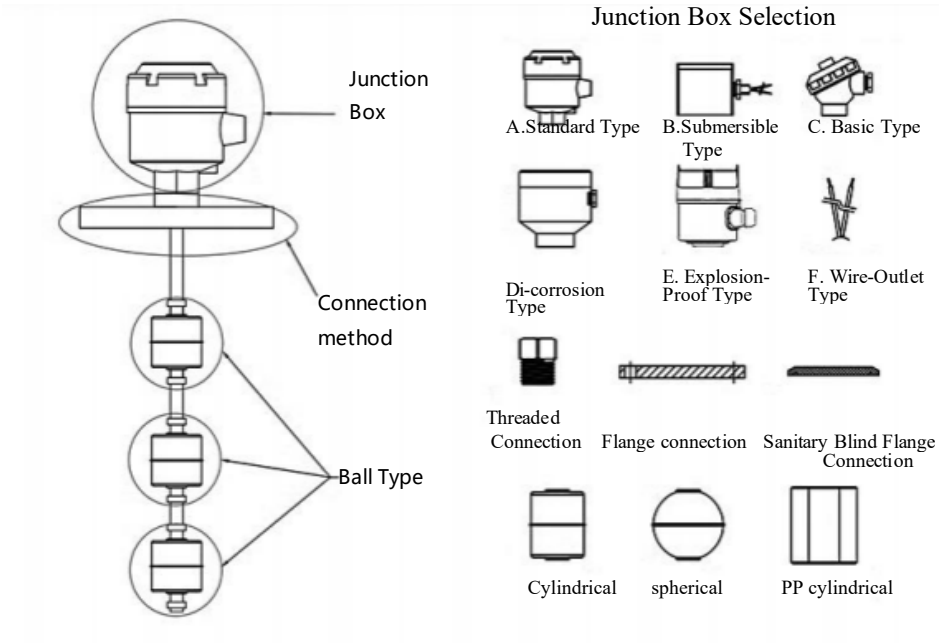
Model Name		FQ20 Wire-Outlet Type	
Contact Configuration		SPDT/SPST	
Measuring Length (mm)		1000	2000
Measuring Rod Diameter (mm)		φ8	φ12.7
Maximum Measuring Points/Po-wer	SPDT	2sets/5W	4sets/10W
	SPST	4sets/30W	6sets/30W
Wetted Materials		SUS304/SUS316L	
Working Pressure		-0.1MPa~2.5MPa	
Working Temperature		-20~200℃	
Thread Specification		Thread, Flange (Customizable)	
Protection Class		IP65	



Model Name		FQ20 Explosion-Proof Type		
Contact Configuration		SPDT/SPST		
Measuring Length (mm)		3000	4000	6000
Measuring Rod Diameter (mm)		φ16	φ20	φ25
Maximum Measuring Points/Po-wer	SPDT	4sets/10W	4sets/10W	4sets/10W
	SPST	6sets/30W	6sets/30W	6sets/30W
Wetted Materials		PP	PTFE	
Working Pressure		-0.1MPa~0.5MPa	-0.1MPa~1MPa	
Working Temperature		-20~80℃	20~200℃	
Thread Specification		Flange (customizable)		
Material of unction Box		Aluminum Alloy with Baking Paint		
Protection Class		IP65		
Explosion-Proof Class		ExdIICT6		

Structure Type

Inside a closed metal or plastic pipe, one or more magnetic switches are installed. Then, the pipe is threaded through one or more hollow floating balls with built - in ring - shaped magnets. Using fixing rings, the floating balls are fixed within the relevant range of the magnetic switches. When the floating balls move, the magnets inside them attract the contacts of the magnetic switches to act, thereby controlling or indicating the liquid level.



Installation Precautions and Installation Instructions

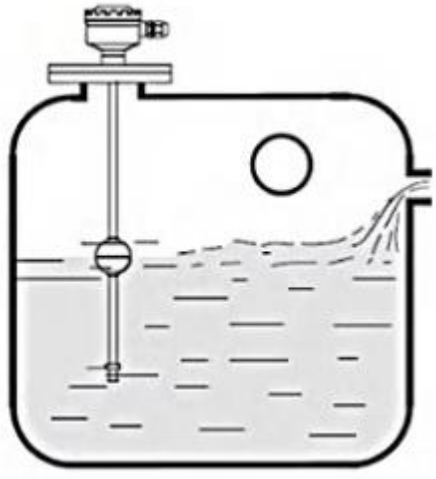
- Installation Precautions

1. The installation location should be kept away from the water inlet; otherwise, the switch may malfunction due to large fluctuations of the water inlet.
2. If the switch is installed on the concrete pool wall, an Lshaped angle iron bracket can be added.
3. If the switch is installed in the stirring area, a bellows or a wave proof baffle can be installed.
4. Select a flange - connected pipe whose inner diameter is larger than the diameter of the float ball.
5. It is recommended to use a Φ8mm multi - core cable for wiring.
6. The load of the controlled circuit must match the capacity of the switch contact.
7. The specific gravity of the liquid to be measured must be greater than that of the float ball.
8. Plastic materials are suitable for acid - base liquids, and metal materials are suitable for high - temperature liquids such as fuel oil.
9. The action point of the float ball has been adjusted according to the customer's order requirements before leaving the factory. Do not randomly adjust the fixed float ball with the loop position to avoid malfunction of the float ball switch.

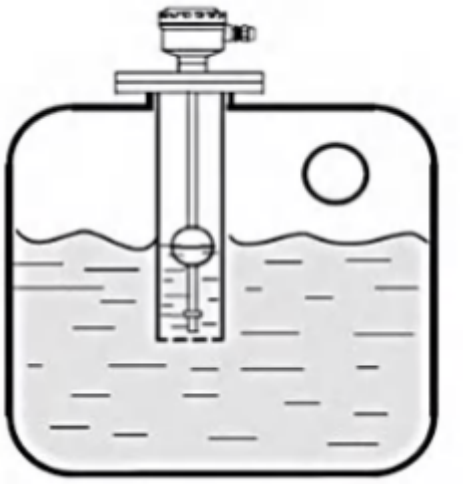
Structure Type

● Installation instructions

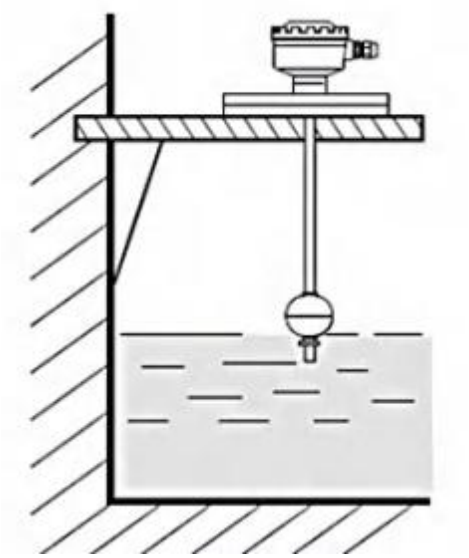
1.The installation position should be far away from the medium inlet and outlet to reduce the impact of medium fluctuations on it.



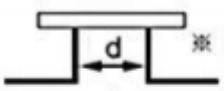
2. If the switch is installed in the stirring area, a bellows or a wave - proof baffle can be installed.



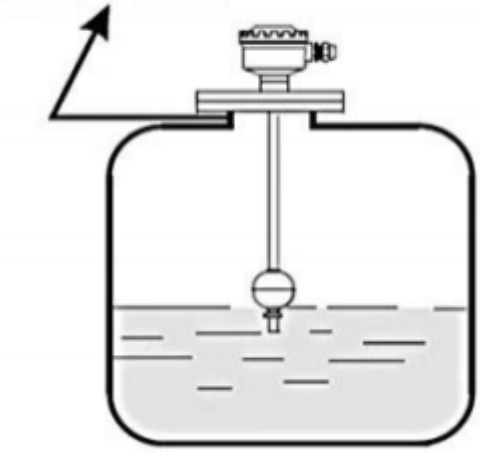
3. If the switch is installed on theconcrete pool wall, an L - shaped angle iron bracket can be added.



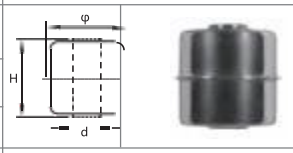
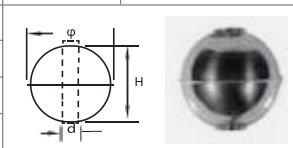
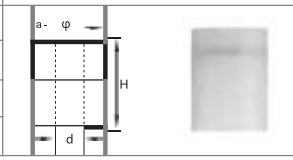
4. Select a flange - connected pipe with a diameter greater than that of the float ball for installation.



It can be installed only when d > the diameter of the float ball.



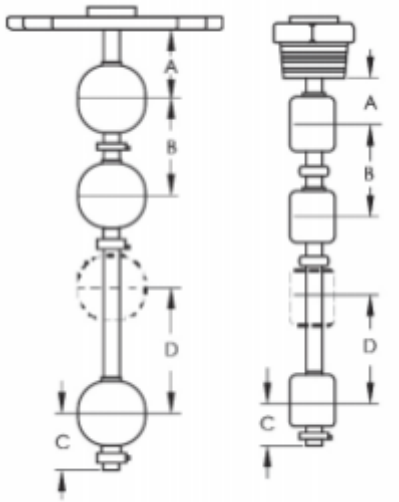
Ordering Guide for Magnetic Float Balls

Size	φ×H×d (mm)	Material	Density (g/cm3)	Temperature Resistance(℃)	Pressure Resistance (Kg/cm2)	Diagram
S1	φ28×H28×d9.5	SUS304, 316L	0.7	150	10	
S2	φ40×H50×d15.5	SUS304, 316L	0.7	150	10	
S3	φ45×H55×d15.5	SUS304, 316L	0.7	150	10	
S4	φ30×H29×d9.5	SUS304, 316L	0.65	150	25	
S5	φ52×H52×d15.5	SUS304, 316L	0.65	150	25	
S6	φ75×H75×d15.5	SUS304, 316L	0.55	150	25	
S7	φ125×H125×d15.5	SUS304, 316L	0.45	150	25	
P1	φ40×H52×d20	PP	0.65	75	5	
P2	φ48×H52×d20	PP	0.65	75	5	
F1	φ55×H70×d23	PVDF	0.85	150	5	
F2	φ40×H52×d20	PVDF	1.0	150	5	

Precautions for the ordering of magnetic float balls

1.When placing an order, the user should pay attention to the minimum distance between two floating balls and the minimum distance of the lowest point. If the distance is insufficient, production cannot be carried out. When placing an order, the user can determine these relative dimensions based on the data in the following table.

A = the minimum distance from the bottom of the connecting plate
B = the minimum distance between two adjacent floating balls
C = the minimum distance from the end of the main pipe
D = the minimum distance between two liquid levels of a floating ball



Float ball / Distance	S1	S2	S3	S4	S5	S6	S7	P1	P2	F1
A (mm)	17	19	19	18	20	30	33	14	30	40
B (mm)	44	48	48	46	50	70	76	38	70	90
C (mm)	27	29	29	28	30	40	43	24	40	50
D (mm)	34	38	38	36	40	60	66	28	60	80

2.When selecting models, users should also pay attention to the characteristic relationships between the float ball and the liquid.Users should select the corresponding standard float balls in the magnetic float ball selection table according to the characteristics of the liquid to be detected, such as its service temperature, pressure, specific gravity, and acidity - alkalinity.
Temperature: PVC max 80°C, PP max 80°C, PVDF max 150°C, SUS304/316L float balls max 200°C.
Pressure: The maximum pressure - resistance of plastic - type float balls is 5 kg/cm^2, and that of SUS304/316L float balls is 4/cm^2.Viscosity: For relatively viscous liquids, in principle, float balls with a large outer diameter and small specific gravity should be selected to overcome the liquid surface tension.Acidity and alkalinity: Polypropylene is suitable for strong acid - base environments. For strong acid - base environments with a temperature higher than 80 °C, PVDF should be selected.
Alcohol, oils, etc.: It is recommended to use stainless steel SUS. For the food industry, food - hygienic - grade SUS316L should be used.
Specific gravity:The specific gravity(S.G)of the fiot ball must be less than that of the liquid being measured,otherwise the float ball will not float.

Wiring and connection instructions

- 1. Open the junction box, insert the cable wire through the inlet, and tighten the inlet cable fixing screws. Connect the power wires and junction wires to the corresponding terminals according to the labels and the identification numbers on the terminal block terminals.
- 2. The identification numbers on the terminal block terminals correspond to the contacts of each float ball from top to bottom in ascending order.
- 3. The float ball contacts have three forms (A represents the normally - open contact, B represents the normally - closed contact, and C represents the common contact):
- ① 1A: Indicates that when the liquid level is higher than the float ball, the A - C contacts are connected.
- ② 1B: Indicates that when the liquid level is lower than the float ball, the B - C contacts are connected.
- ③ 1AB: Indicates that when the liquid level is lower than the float ball, the A - C contacts are disconnected, and the B - C contacts are connected; when the liquid level is higher than the float ball, the A - C contacts are connected, and the B - C contacts are disconnected.
- 4. After the connection is completed, tighten the box cover and fix the junction box opening to ensure that the junction box is waterproof.

Ordering Guide

Model	Product Name
ZP-FQ20/21	Linkage Float Level Switch

Code	Explosion - proof Type
P	Standard Type (Non - explosion - proof)
E	Explosion - proof Type

	Code	Measuring Range
	xxxx	( ) mm, select the range according to actual needs

	Code	Process Connection
	S1	G1 - 1/2" Threaded Installation
	S2	G1" Threaded Installation
	F1	DN50 Flange Connection
	F2	DN80 Flange Connection
	T	Clamp Connection
	Y	Customizable

	Code	Liquid - contact Material
	4	Stainless Steel SUS304
	6	Stainless Steel SUS316L
	P	Polypropylene PP
	F	Polytetrafluoroethylene PTFE

	Code	Temperature Range
	N	-20~80℃
	T	-20~200℃

		Float Ball Size
	S1~F2	Please refer to the magnetic float ball selection table for selection.

	code	Number of Float Balls
	1~8	Select the corresponding number of float balls according to the control points, with a maximum of 8 (1...8)

	code	Junction Box Type
	A	Standard type
	B	Waterproof type
	C	Simple type
	D	Anti - corrosion type
	E	Explosion - proof type
	F	Outlet type
	H	Hermetic connector

	code	Junction Box Material
	A	Aluminium
	B	PP (Polypropylene)
	C	Stainless steel SUS304
	D	Stainless steel SUS316