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INSTRUCTION MANUAL

QUICK FLOAT TYPE LEVEL SWITCH

HQ Series



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You shall be well-informed of the contents where **WARNING** is marked before carrying out the work.



You shall be careful where **CAUTION** is marked to carry out the work.

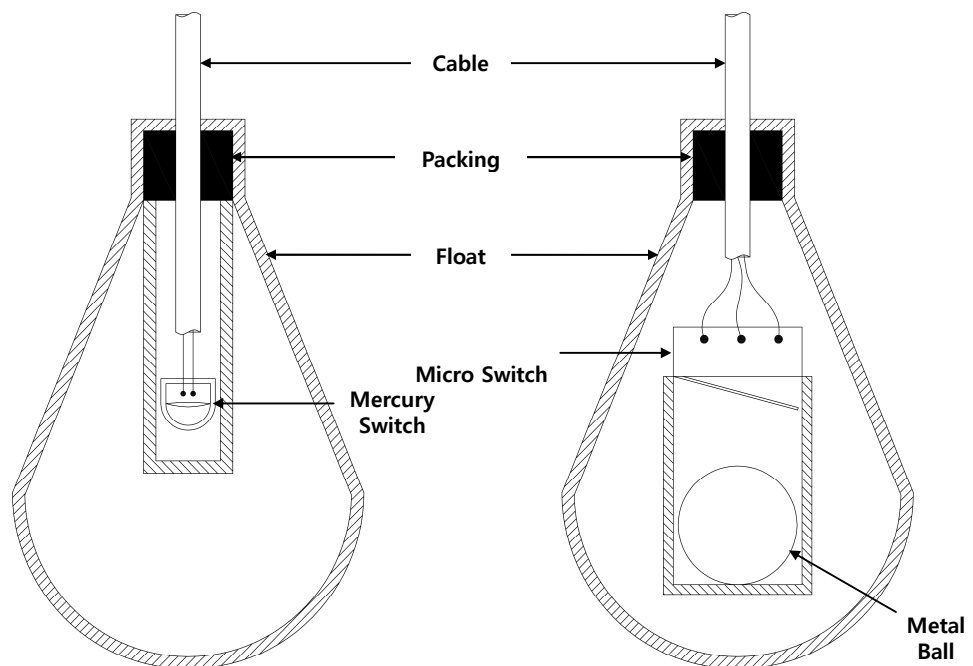


You shall be aware of where **NOTICE** is marked to carry out the work.

Overview The HQ-Series is a float-type level switch, which is solid and easy to use. It is designed to control different liquid levels in boilers as well as water treatment and other industrial facilities.

- Characteristics**
- Its simple shape and structure ensures easy installation and long service life.
 - As it is a cable type, it enables usage in wastewater with floating matters or high-density liquid.
 - It has no exposed metal part, which makes it resistant to corrosion (except for the SUS Float Type).
 - It is easy to adjust the operation switch locally.

- Operating Principles**
- **Mercury Switch**
As the liquid level rises, the float also rises because of its buoyancy thus causing it to tilt. As such, the mercury inside the float flows to the terminal to connect it as a contact.
 - **Micro Switch**
As the liquid level rises, the float also rises because of its buoyancy thus causing it to tilt. The metal ball inside presses the micro switch to make contact.



<Internal Structure of the Mercury S/W Float> <Internal Structure of the Micro S/W Float>

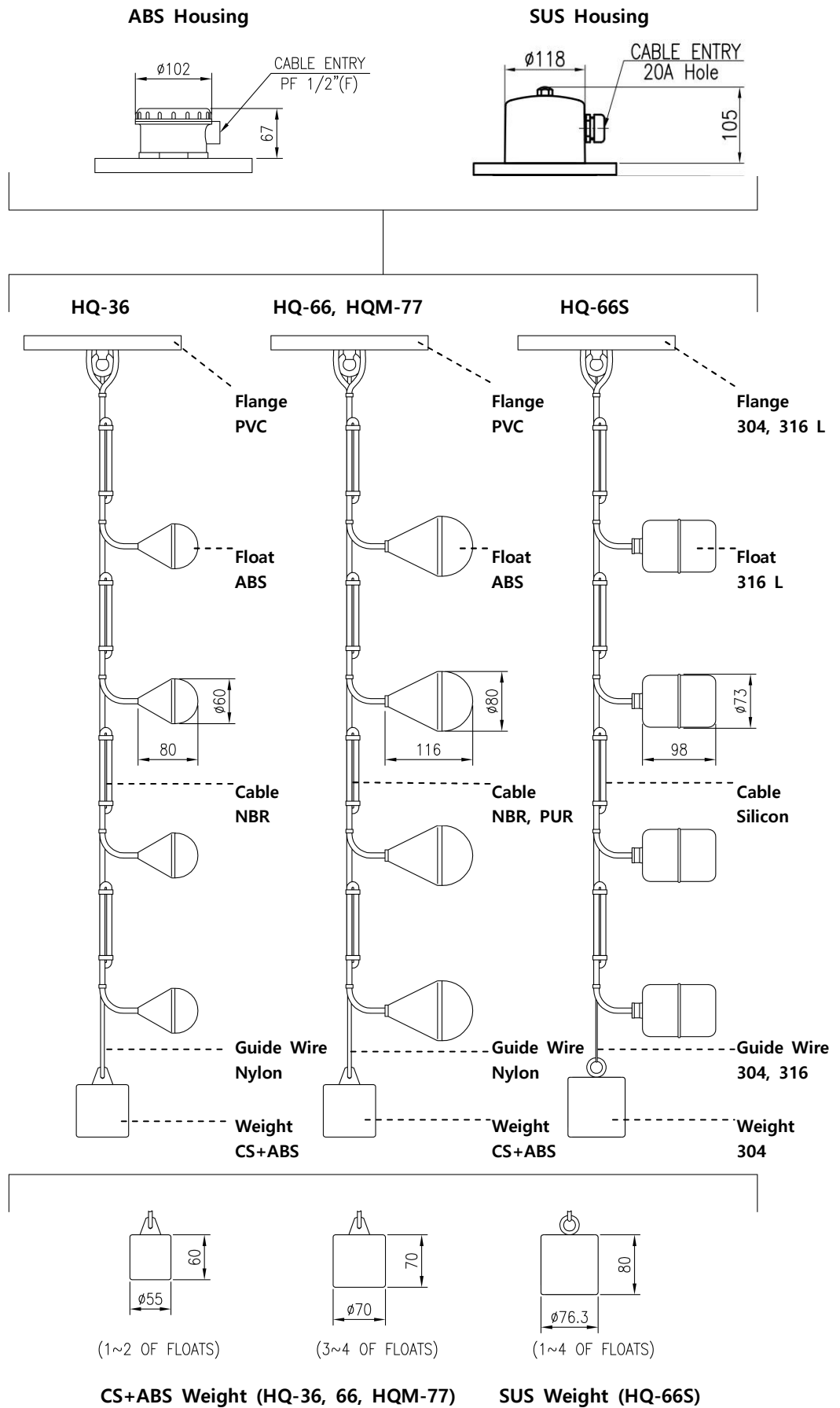
Specifications

Model	HQ-36	HQ-66	HQ-66S	HQM-77
Mounting	Flange			
Enclosure	Weatherproof, IP54			
Temperature	Max. 60°C		Max. 150°C	Max. 60°C
Process Pressure	ATM			
Switch Type	Mercury Switch			Micro Switch
Contact Rating	AC 110V, 1A / DC 24V, 0.5A			AC 250V, 3A / AC 125V, 5A Opt.:DC 30V, 0.1A
Contact Form	SPST	SPST (Std.), SPDT		SPDT
Head Material	ABS (Std.), 304 SS		304 SS	ABS (Std.), 304 SS
Cable Entry	ABS: PF 1/2" (F), 304 SS: 20A Cable Connector			
Process Connection	80A JIS 10K FF	100A JIS 10K FF	100A JIS 10K RF	100A JIS 10K FF
Flange Material	PVC		304 SS, 316L SS	PVC
Float Material	ABS		316L SS	ABS
Cable Material	NBR	NBR (Std.), PUR	Silicon	NBR (Std.), PUR
Guide Wire Material	Nylon		304 SS, 316 SS	Nylon
Weight Material	CS+ABS		304 SS	CS+ABS
Weight Size	1, 2F: Ø55 × 60L 3, 4F: Ø70 × 70L		Ø76.3 × 80L	1, 2F: Ø55 × 60L 3, 4F: Ø70 × 70L
Measuring Length	6m (Std.)			
Application	Water, wastewater	Water, wastewater (Cable: NBR) Oil, solvent (Cable: PUR)	Boiler steam cond ensate Hot wastewater	Water, wastewater (Cable: NBR) Oil, solvent (Cable: PUR)

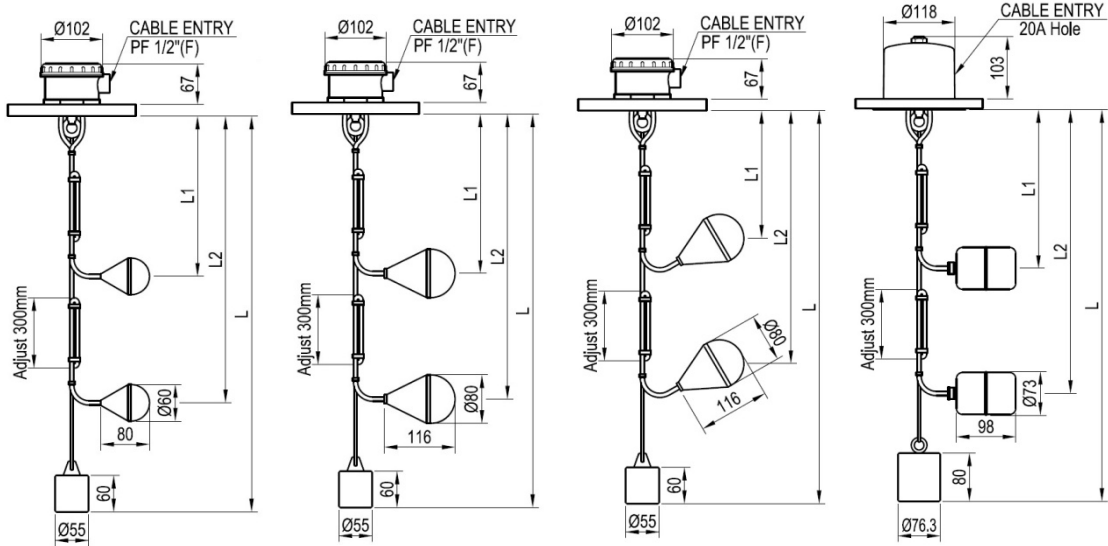


For ABS flange, the flow mark may appear in the injection process.

Product Components



Dimensions

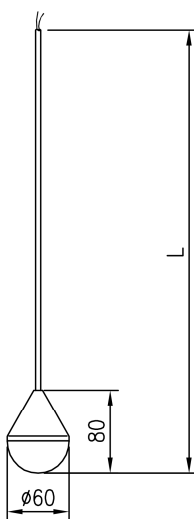


HQ-36
(ABS Housing)

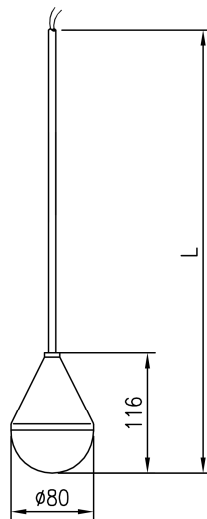
HQ-66
(ABS Housing)

HQM-77
(ABS Housing)

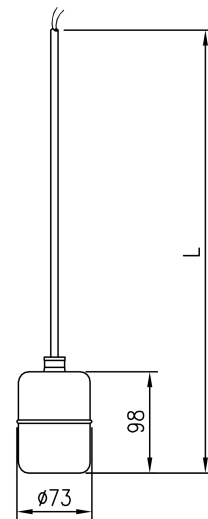
HQ-66S
(SUS Housing)



HQ-3



HQ-6, HQM-7



HQ-6 (SUS Type)



Some tolerances may occur with actual products.

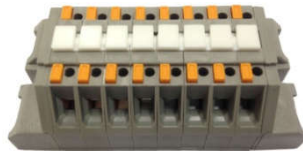
Wiring

■ Components

- Open the cover and insert the cable into the inlet.
- Find the contact cable (E1, E2 ...) that you want and connect it.
- Install an electrical spring connector and then use a tool to press it.

■ Terminal Block (Opt.)

- Open the cover and insert the cable into the inlet.
- Check the contact identification of the terminal block (E1, E2 ...) and connect it.



[Fig. 1 Terminal Block 8P]

● Wiring Diagram ex)

2-SPDT: C-1 A-1 B-1 C-2 A-2 B-2 (6P)

4-SPDT: C-1 A-1 C-2 A-2 C-3 A-3 C-4 A-4 (8P)

● Wire Color

Contact C – Black / Contact A – White / Contact B – Red



3-SPDT or more contact points are restricted for the 8P terminal block, so connect it to contact A or B according to requirements.

Operation

Position

Adjustment

- Take out the product from the container and open the cover.
- Release the cable gland and then cut the cable tie. Try not to cause damage to the cable or guide wire while cutting the cable tie.
- Adjust the cable as you want under the flange.
- Tighten the cable gland to seal the container.
- If the cable is too long, cut it appropriately and then connect it.
- Tie the cable with a guide wire using a cable tie. Keep it at about 100 mm away from the float or the float will not work.

Maintenance

The float and switches are important parts to be inspected for the HQ-Series. Their service lives depend on the user environment and they can be optimized with regular inspection. As such, users are advised to conduct regular inspection and maintenance at least every year.

Conduct a visual inspection to find any damaged float or disconnected cable. If you find a scale used to measure the subject, remove it to facilitate the floating motion. The switches can be checked using a digital multimeter as follows.

- Set the switch of digital multimeter to the buzzer. To check, connect it to a cable terminal.
- It is normal for the buzzer to make a sound when the float is tilted at 90° or more from its vertical position. (The HQM-77 need tilt about 120° to sound the buzzer.)
- To check the contact with resistance, set the digital multimeter switch to Ω . Then, tilt the float to see if it is normal: if the digital multimeter indicates a 0Ω or a ∞ with the float on or off, respectively, it means that it is working fine.



Turn off the power of the product for maintenance.

**Precautions
for
Installation**

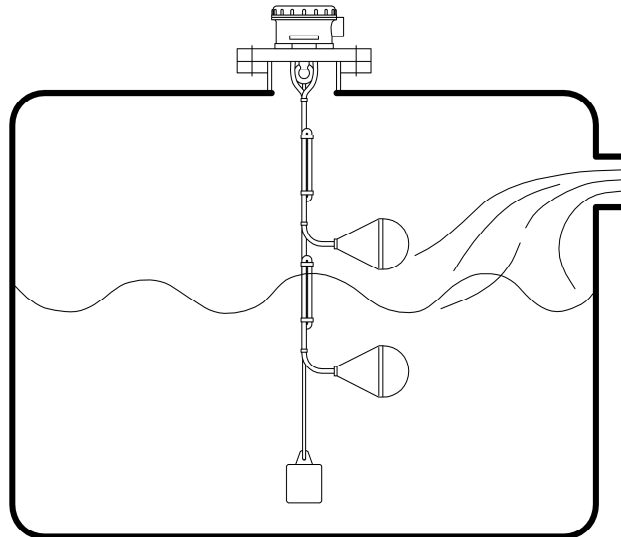
- Use the same standard flange or screws.
- Make sure washers are inserted between bolts and nuts to prevent loosening.
- Make sure gaskets are inserted between flanges.

(Select the gaskets in consideration of the temperature of the content and the pressure of the container.)

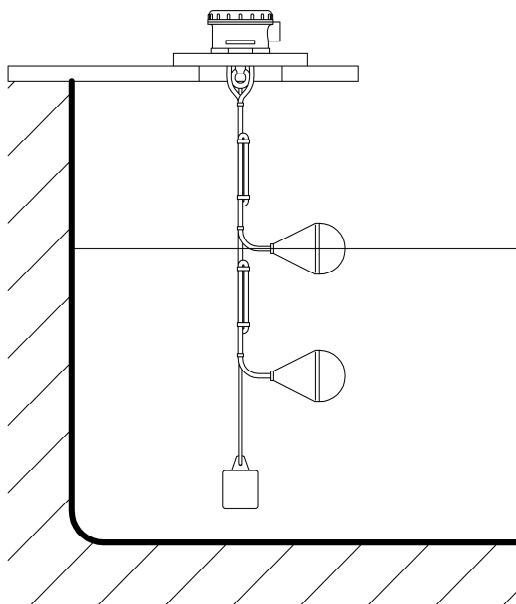
- Make sure to install the product and the cover before supplying the power.



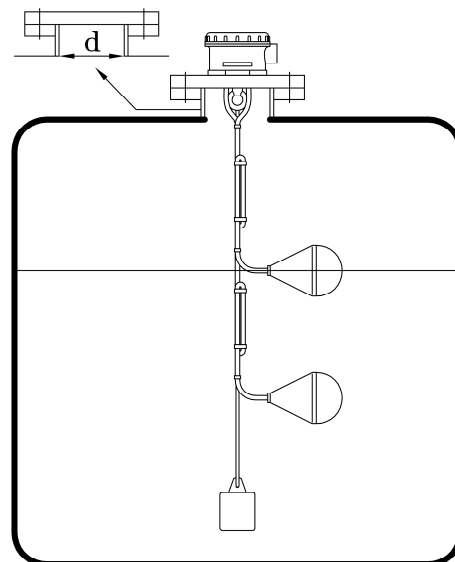
Make sure that it is not subject to any impact when moving it.



If it is installed at the inlet where the measuring subject flows into or where the subject is excessively shaken, it may malfunction.



It is advisable to install it on a concrete wall as shown in the picture.



Diameter "d" should be bigger than those of the float and weight.

- Precautions for Removal**
- Make sure to check the presence and level of the subject in the container before removing it.
 - If the temperature is high, wear gloves to prevent burns.
 - Disconnect the power first.
 - Make sure that any O-ring or gasket is not damaged while opening or closing the cover of the product.

Safety and Environment

- Cautions for Use
 - Make sure to connect the product and container using the required tools.
 - Avoid causing large impacts to the product.
- Cautions for Wiring
 - Make sure to connect contacts with the correct terminals. (Refer to Wiring.)
- Disposal
 - Make sure to separate the terminal block and the main unit from the housing before wasting it. Pay special attention to the mercury switch because it can influence the environment.

Marking

- Product Identification
 - The label is attached on top and side of the product housing. The label states the model, serial number, working temperature, working pressure, and output of the product. The serial number is a unique manufacturing number.

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MODEL

TAG NO.

SER. NO.

MAX. TEMP. °C

MAX. PRESS. kgf/cm²

CONTACT RATING

CONTACT FORM

ENCLOSURE

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Made in Korea

<Nameplate for HQ-Series>

LEVEL SWITCH

TYPE :		TAG NO. :	
SWITCH FORM : <input type="checkbox"/> SPST		<input type="checkbox"/> SPDT	<input type="checkbox"/> DPDT
SWITCH RATING :		V	A
POWER : AC		V	
MAX PRESS :		MAX TEMP :	

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MADE IN KOREA

<Sticker for HQ-Series>

User Training Make sure that the temperature of the fluid does not exceed 60°C for a normal container, or 150°C for a high-temperature container. In addition, make sure that the ambient temperature of the housing is kept at -20 – +60°C.

Warranty and Contact

■ **Warranty and Service**

This product is subject to a two-year warranty upon shipment and free service will be provided for any damage found under normal operating conditions. If troubles that occur are not due to product failure, service charge will apply.

You can request A/S from our website or by contacting our headquarters.

■ **Headquarters, Factory, and Research Center (Contacts)**

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