

General Information

HM-90(B)

Displacer Type Level Switch



HITROL CO., LTD.

General

HM-90 series L/S measures liquid level by using displacer transforming the change of liquid level into the displacement of core. Since having no part which contacts fluid flowing through device or switch compartment, HM-90

series has a high stability and good tolerance to pressure.

The material of parts is corrosive-resistant stainless steel which prevents displacer from corrosion.

Characteristics

- * ANSI, JIS, DIN general flange
- * Designed for top mounting : differential for high or low alarm, cut off or pump control
- * Electric output
- * Switch type : Micro switch
- * Contact form : SPDT

Operating Principle

This model is operated by using Archimedes principle that the weight of objects in liquid becomes lighter as the same as the weight of liquid flown over. That object is called by displacer instead of float because it's impossible to float for itself.

When the long thin displacer becomes loosened like the following figure, buoyancy force F can be shown by the following equation

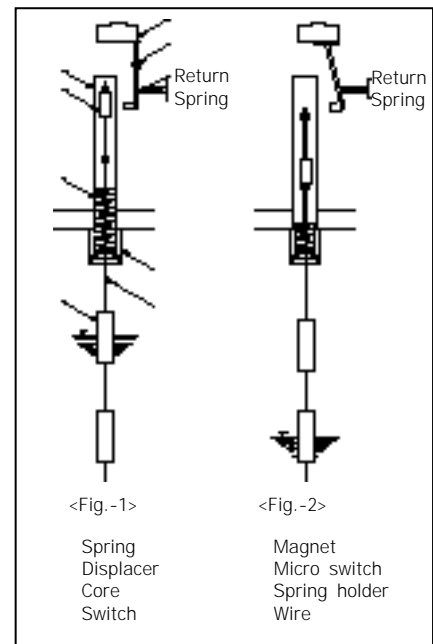
$$F = \rho g V$$

ρ = density of liquid

g = acceleration of gravity
 V = volume of displacer

Buoyancy force is increased when the liquid level is increased, and the position of displacer changes until this is added to the force of spring.

From the state of "Fig.-1" buoyancy force is increased. In the state of "Fig.-2" displacer becomes lighter due to the buoyancy force and this force is transferred to spring. While the loosened spring() is constructed due to the gained buoyancy force, rising core() causes magnet() to act and finally switch() is operated.



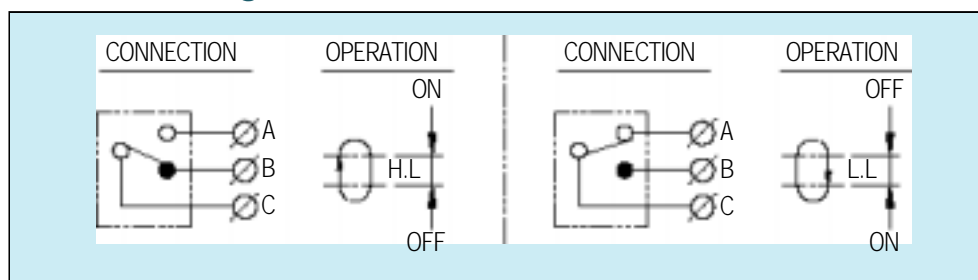
Specifications

Mounting Method	Side-Side / Side-Bottom
Mounting Size	1" S.W (Flange optional)
Working Pressure	STD. : 10 kgf/cm ²
	OPTION : 30 kgf/cm ²
Process Temp.	STD. : 120 °C
	OPTION : - 450 °C
Ambient Temp.	-20 °C to + 80 °C
Relative Humidity	5 % to 95 %
Accuracy	± 5 mm of setting point
Repeatability	within ± 5 mm
Dead Band	within ± 25 mm

Contact Rating

Type	Micro Switch
Contact Rating	AC 250 V, 15 A
	DC 125 V, 0.5 A

Connection Diagram



- * Being completely separated between tank and device, this is free from leakage and appropriate for measuring liquid surface in a pressurized vessel.
- * Usable for corrosive liquid and appropriate for measuring liquid level in various tanks in the field of chemical industry.
- * Frequently used for controlling liquid level.(controlling outlet flow by operating control valve fitted in the side of outlet of vessel)
- * Typically used for alarming liquid level.

Application

Normally it, s not necessary to maintain HM-90. However, in case of missing several parts, the specified accuracy cannot be achieved. Therefore, we recommend that this device should be checked per 3 year period.

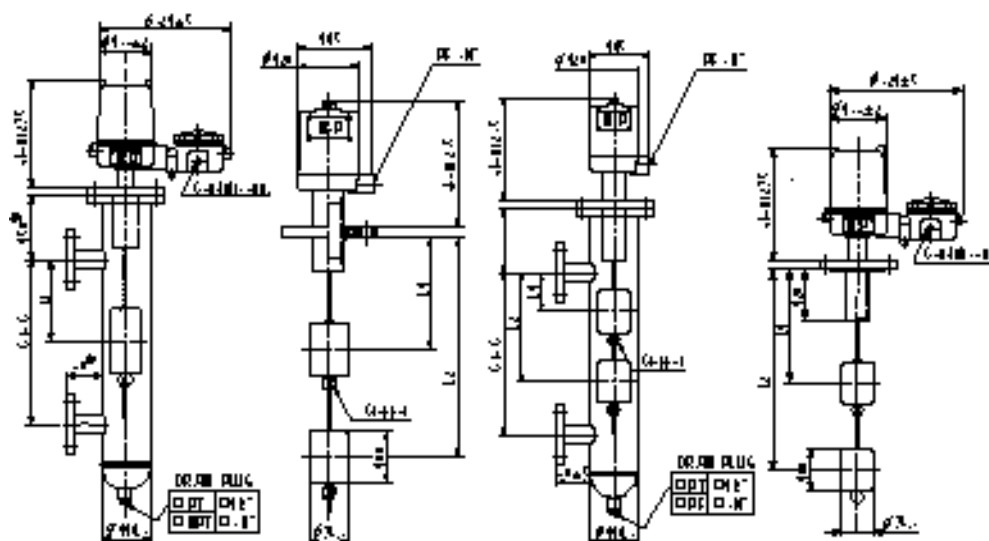
- In case that level switch should be checked annually

- 1) When using liquid containing adhesive elements
- 2) When using level switch in the very important part such as alarming urgently.

Maintenance

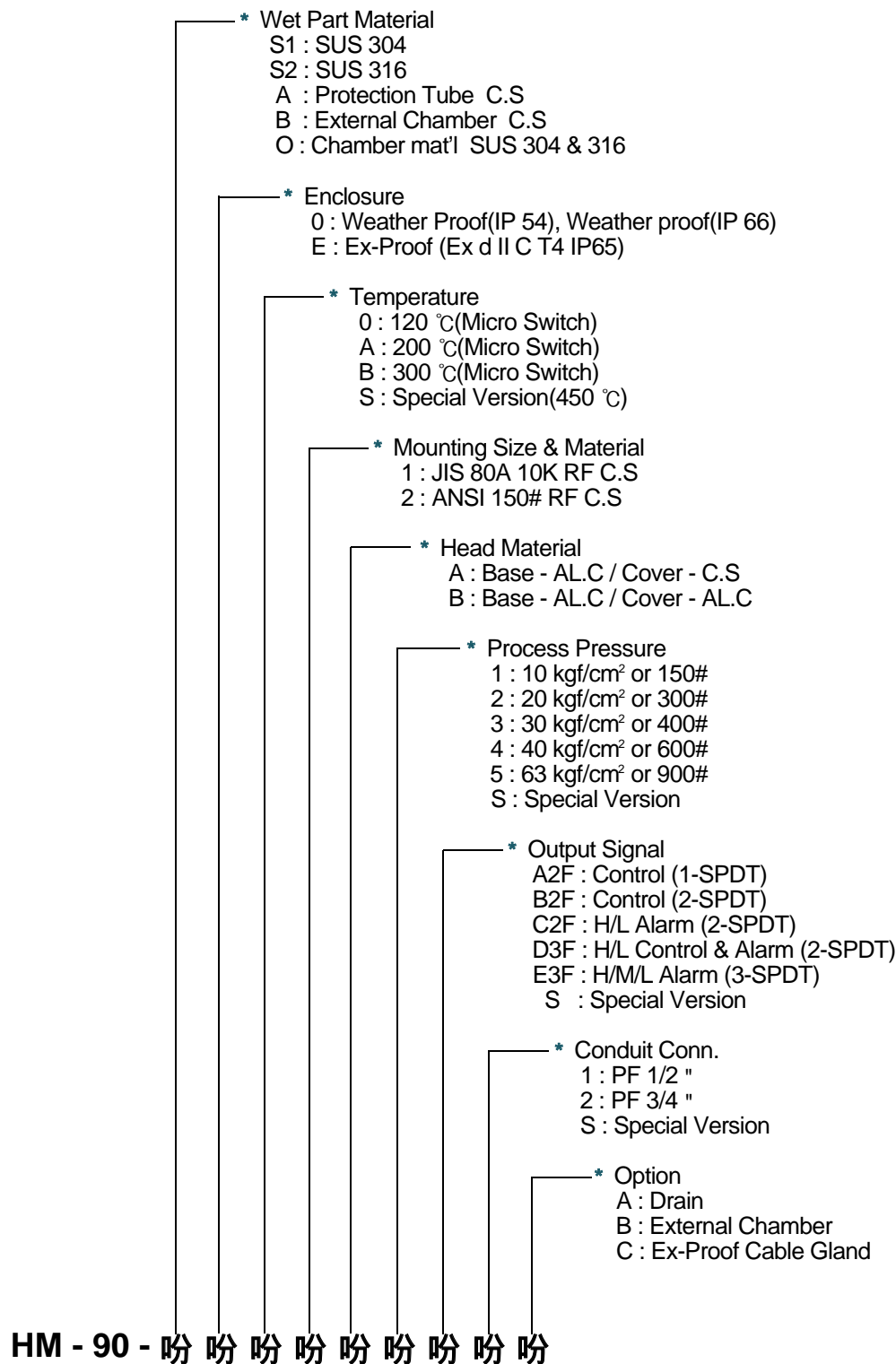
- * Movable level range is from 300 mm in a higher limit to 120 mm in a lower limit.
- * In case of measuring interface between two liquids, the differences of specific gravity must be more than 0.2
- * When the power is being supplied, repairing electronic components must be performed by a qualified personnel.
- * HM-90 must be wired according to the appropriate purpose and connection diagram.
- * Electronic components must be installed according to the local valid regulations.

Points to be considered in selecting model



Dimensions

ORDER CODES



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