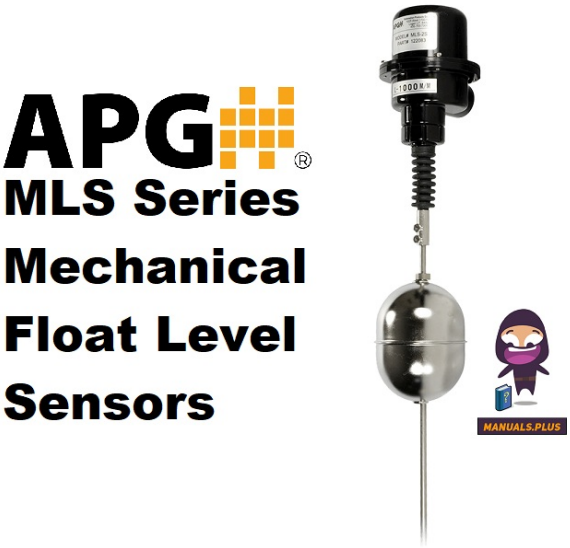


APG MLS Series Mechanical Float Level Sensors User Manual

Contents

APG MLS Series Mechanical Float Level Sensors

Product Usage Instructions

Operating Principle

The float travels between both float stops. The microswitch does not actuate until it reaches either stops. The lower level is actuated by the weight of the float. The upper level is actuated by the force against buoyancy of the float, creating hysteresis between stops.

Installation

1. Ensure the tank or vessel is open and compatible with stainless steel liquids.
2. Mount the mechanical float level sensor on the top of the tank securely.
3. Adjust the position of the sensor to control the emptying and filling of the tank effectively.

- **Wiring**
  - Follow the provided wiring diagram to connect the sensor to the electrical system. Ensure proper insulation and grounding for safety.
- **Maintenance/Inspection**
  - Regularly inspect the sensor for any signs of damage or wear. Clean the sensor as needed to ensure accurate operation.
- **Troubleshooting**
  - If the sensor malfunctions refer to the troubleshooting section in the user manual for guidance on identifying and resolving common issues.

FAQs

- **Q: What should I do if the sensor is not providing accurate level readings?**
  - A: Check for any obstructions in the tank that may be affecting the float movement. Ensure the sensor is properly calibrated and positioned.
- **Q: Can the sensor be used with corrosive liquids?**
  - A: The sensor is designed for use with liquids compatible with stainless steel. Avoid use with corrosive liquids to prevent damage to the sensor.

Introduction

The MLS series mechanical float level sensor is designed to be used in any open tank or vessel for top mounting and with all liquids compatible with stainless steel. This model is intended to provide emptying and filling control.

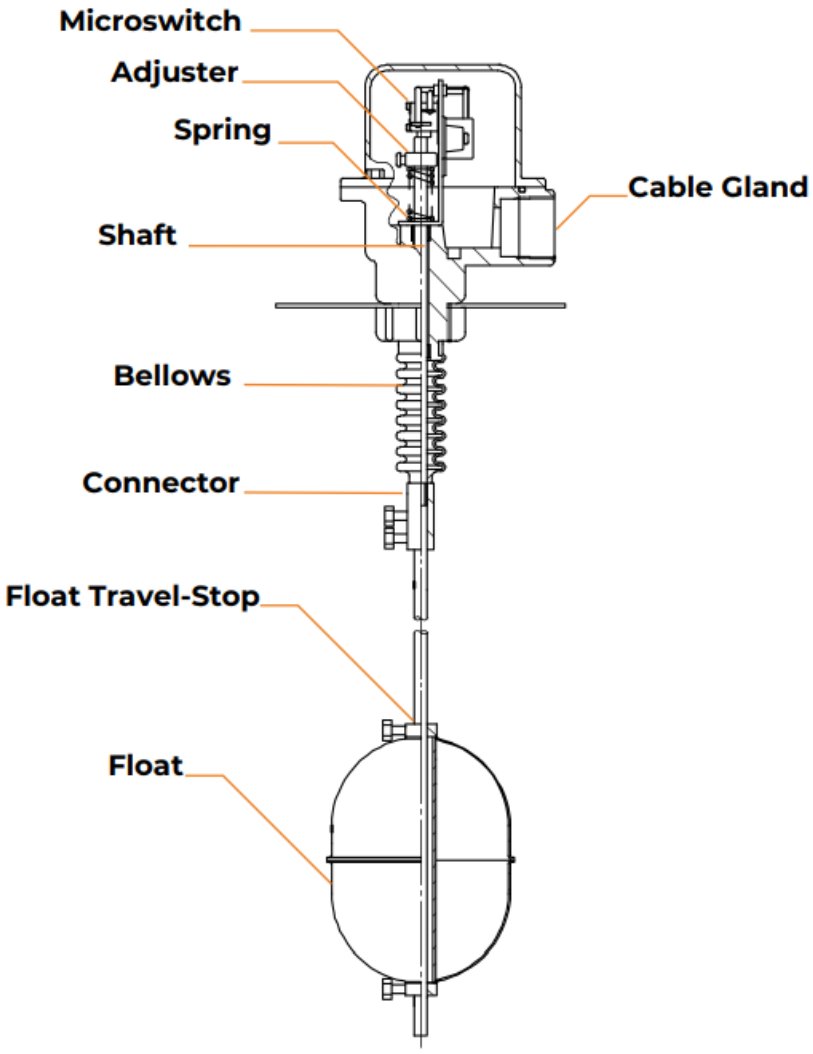
Specifications

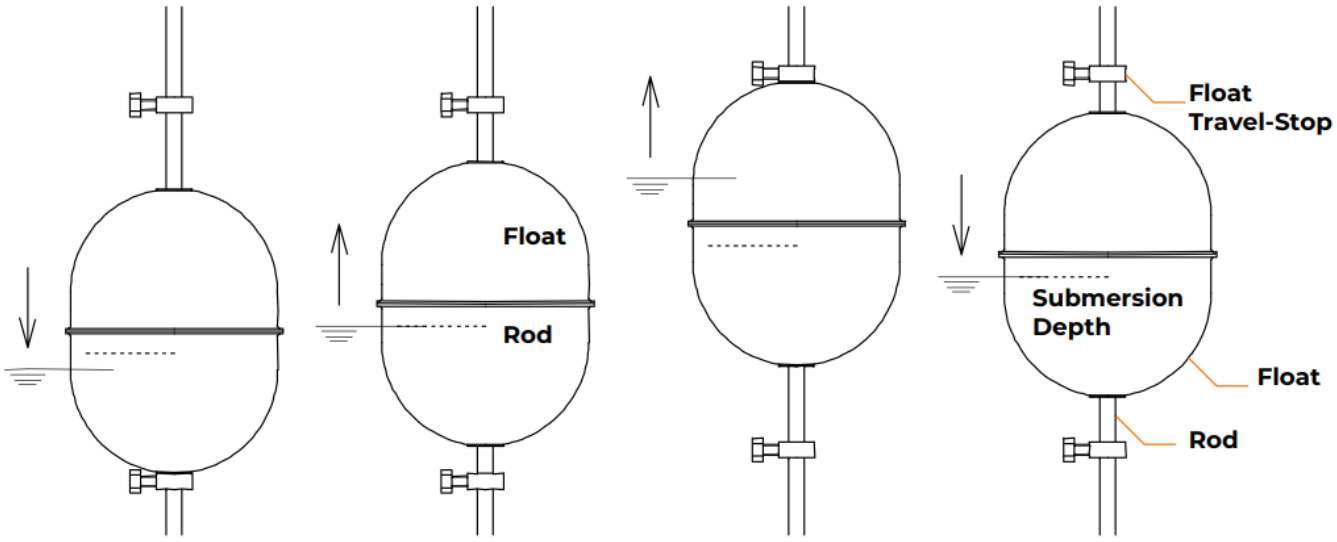
- **Electrical Characteristics**
  - Max. Contact Rating 250 V, 10 AC / 250 V, 0.3 A DC
  - Withstand Voltage 1500 VAC 1 minute or more.
    - (Between each terminal and non-charge part)
  - Insulation Resistance 100 Ω or more
    - (measured with 500 VDC megger between each terminal and non-charge part)
- **Mechanical Characteristics**
  - Buoyancy of Float Approx. 2.10 N (SG = 1)
  - Allowable Impact 100 m/s2
- **Operational Characteristics**
  - Control Width 0.6 ~ 850 mm/.02 ~ 33.46”
  - Specific Gravity 0.85 or more
  - Float Submersion 51 mm/2.16”
  - Gap Between Rod and Float 4.5 mm/.17”

- **Environment**
  - Working Temperature 0 to 80°C/176°F
  - Application Leave open tank
- **Other**
  - Construction IP42
  - Terminal Box Phenol (Cover: Polypropylene)
  - Wetted Parts 304 Stainless Steel (Bellows: Polychloroprene Rubber)
  - Cable Inlet Equivalent JIS F 20a (G 3/4)

Operating Principle

The float travels between both float stops. The microswitch does not actuate until it reaches either stop. The lower level is actuated by the weight of the float. The upper level is actuate by the force against the buoyancy of the float. Hence, the hysteresis is established between stops.





Installation

Unpacking

The MLS Series has been thoroughly inspected and carefully packed at the factory to prevent damage during shipment. When unpacking, exercise due care not to subject the instrument to mechanical shock. After unpacking, visually check the instrument exterior for damage.

Note the following points:

- Do not bend and pull the shaft extremely during installation.
- Make sure that the float type level switch is according to ordering specifications.
- A protector of metal is put between the tip of shaft and the microswitch to avoid mechanical shock during shipment. Remove the protector certainly before using.

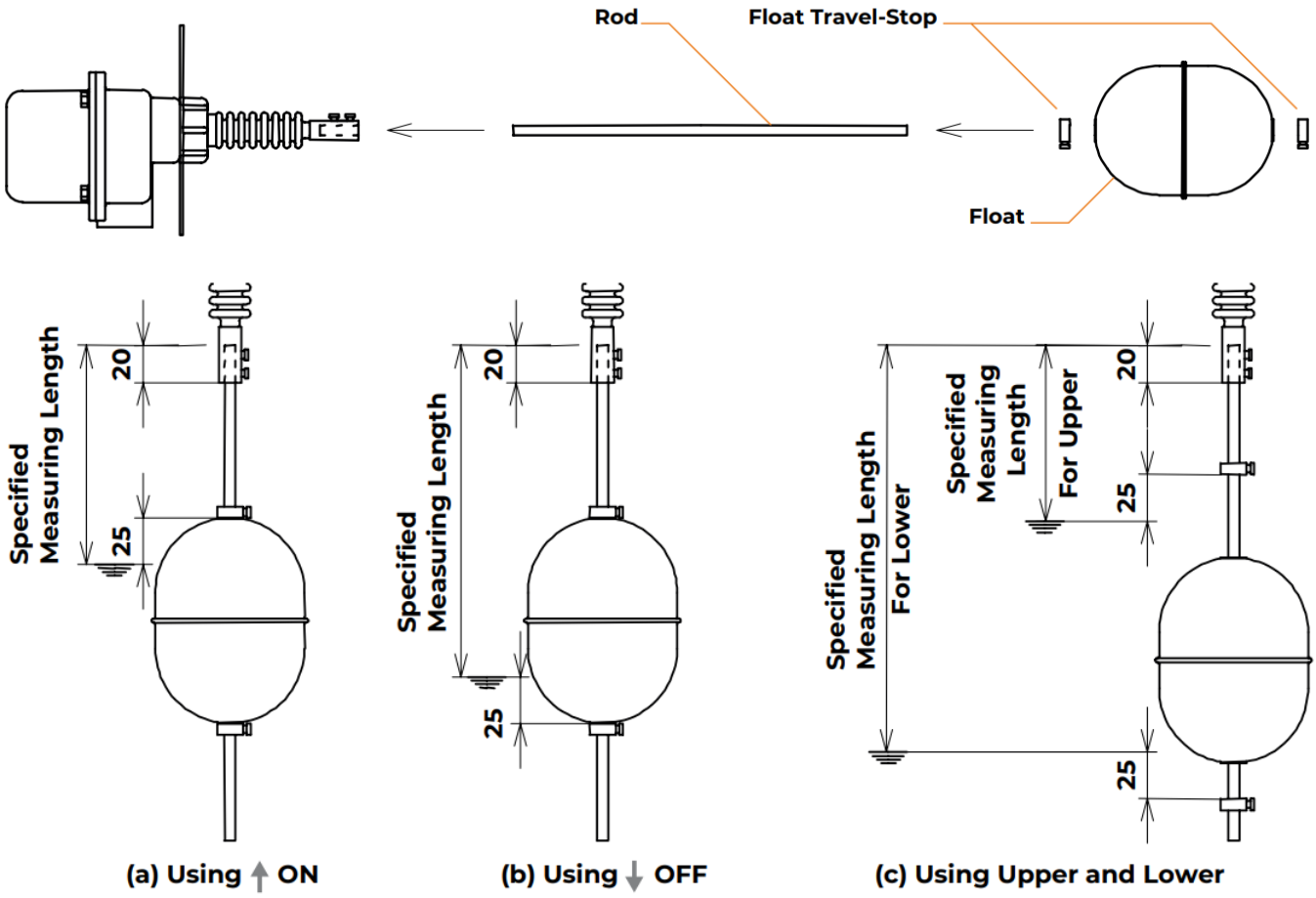
Installation Location

This switch should be installed in an area where the following conditions:

- Provide ample space for maintenance/inspection.
- Low relative humidity and no exposure to moisture.
- No corrosive gases (such as NH3, SO2, Cl2, and so on.)
- No excessive vibration

Assembly

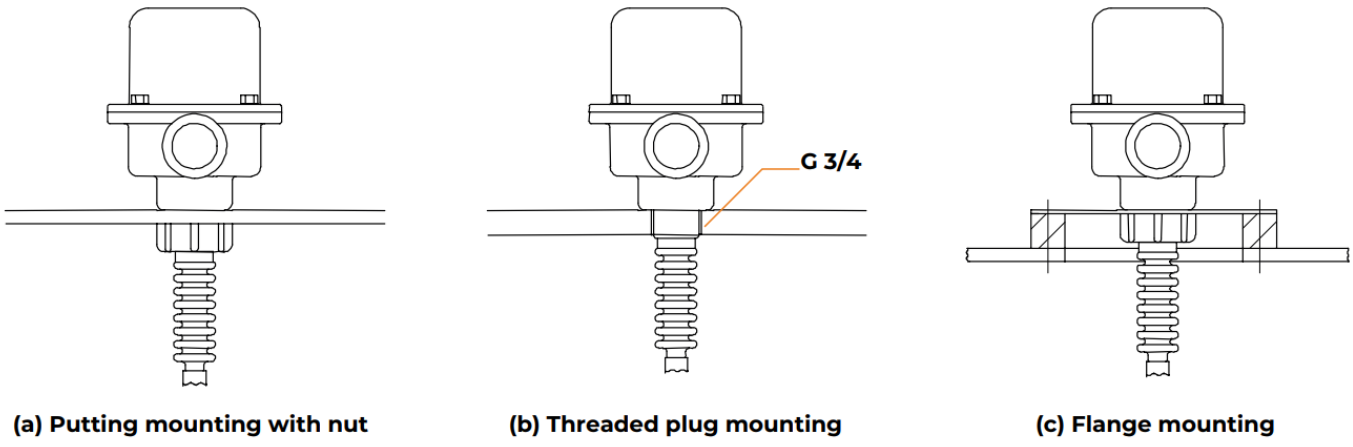
Usually, the MLS is set toa specified measuring length before shipment. When not specified, each parts are packed severally. In that case, proceed to assemble as follows.



Notes:

- Setting length is adjusted at SG = 1.
- When SG of liquid is not 1, reset both float travel-stops due to changing the actuation level according to length of the actual level.
- Do not cut and do not join the rod. Otherwise, the level switch may malfunction.

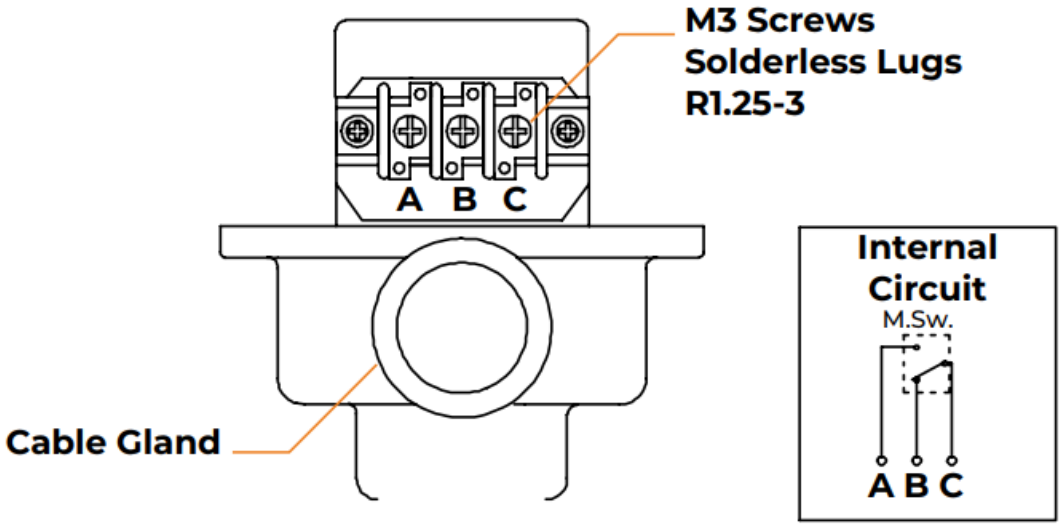
Installation Method



Wiring

Note:

- This switch contact is S.P.D.T. by microswitch.
- Do not exceed the contact ratings.
- Install solderless lugs fitted to M3



Technical Notes

- This switch shall be mounted vertically.
- When there are surface wave motion, install stilling tube.

Maintenance&Inspection

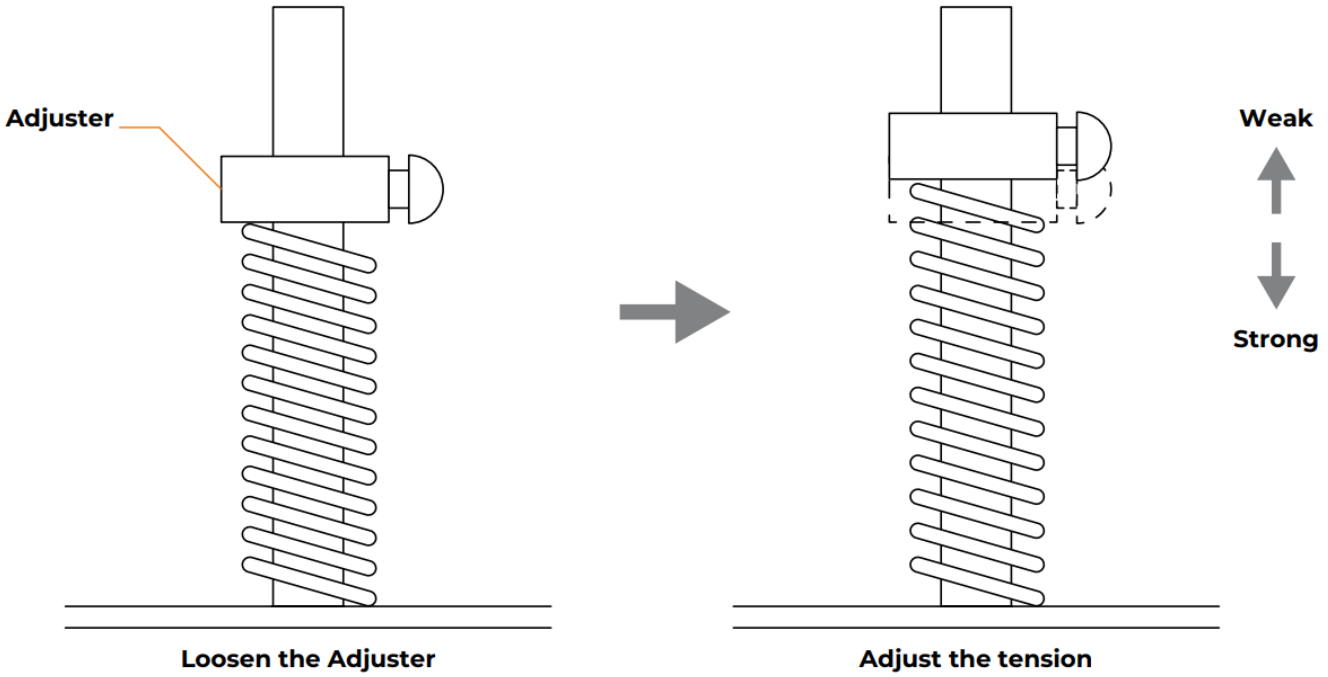
The following annual servicing tasks should be carried out on the switch:

- Visually check the switch exterior for damage.
- If sediment or other foreign matter are stained on wetted parts of the switch, keep the wetted parts of the switch clean.
- Connect the ohmmeter or electronic buzzer to terminals, check the switch actuation corresponding to float operation.
- Reinstall and rewire the switch after maintenance/inspection in accordance with the installation and wiring sections of this manual.

Adjustment Procedure

The tension adjuster is located on one end of the shaft (see the dimension drawing in this manual). The spring operating tension is factory set but may require adjustment on site, especially if the length of the operating rod is changed. The correct operation should be checked and the spring tension should be adjusted if necessary.

- If the switch operating position is higher than the desired level, lower the adjuster a litte.
- If the switch operating position is lower than the desired level, raise the adjuster a little.



Trouble Shooting

use the following information to troubleshoot the malfunctioning sensor. If the remedies are unsuccessful, ask APG for repair or replacement

Problem

Liquid exceeds the actuation level, but the switch does not activate

- Possible Causes **Remedies**
- **SG is larger than 0.85** Choose another technique
- **Miswiring** Wire correctly
- **Set for improper float travel-stop** Adjust position according to “Assembly”
- **Liquid immersed in float** Replace the switch
- **Affected by deposit** Clean the switch
- **Microswitch is damaged** Replace the microswitch

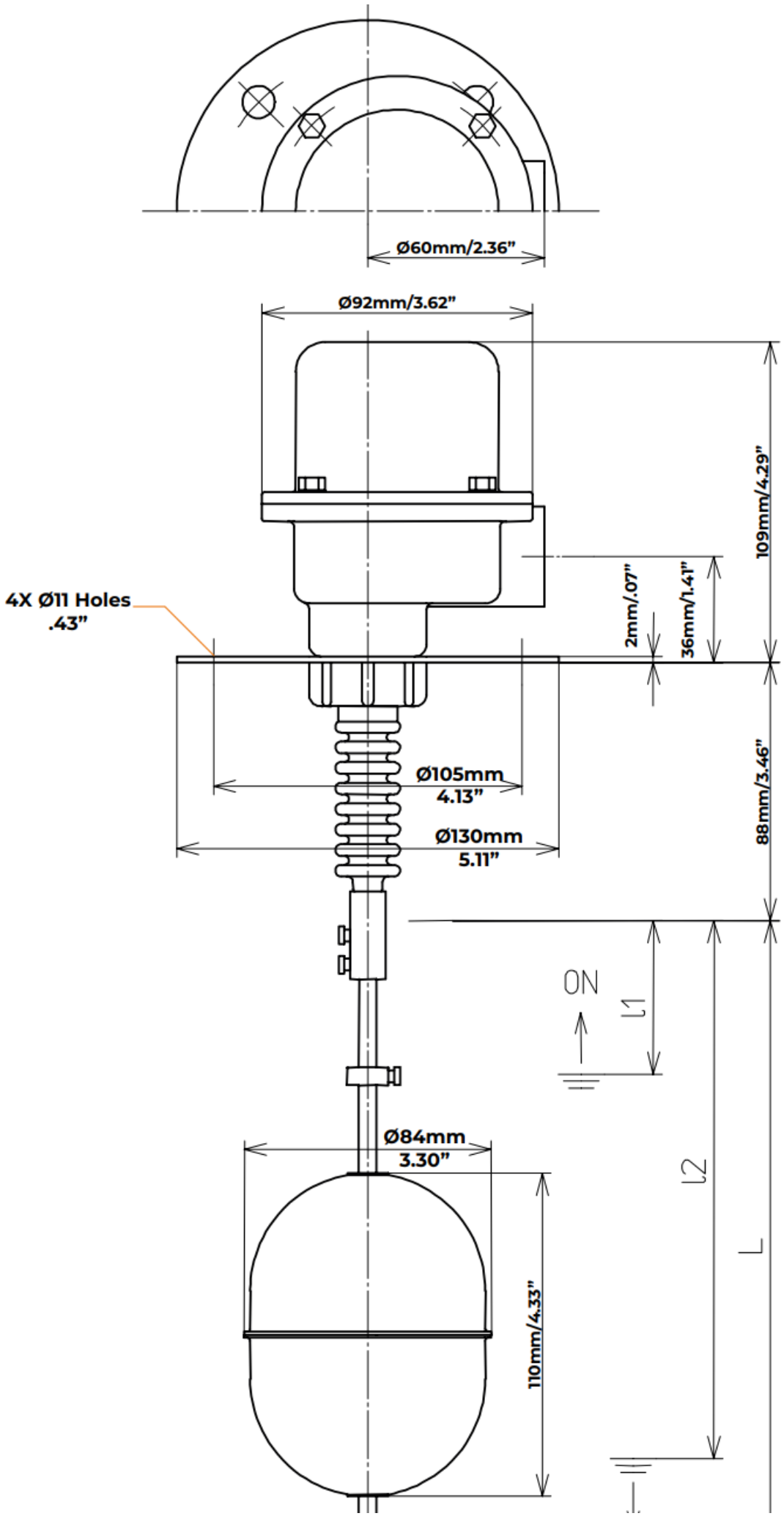
Problem

Liquid does not exceed the actuation level, but the switch activate.

- **Possible Causes** Remedies
- **Miswiring** Wire correctly
- **Set for improper float travel-stop** Adjust position according to “Assembly”
- **Affected by deposit** Clean the switch
- **Microswitch is damaged** Replace the microswitch

DIMENSION

Dimensions-in./mm



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Documents / Resources

	APG MLS Series Mechanical Float Level Sensors [pdf] User Manual MLS Series Mechanical Float Level Sensors, MLS Series, Mechanical Float Level Sensors, Float Level Sensors, Level Sensors, Sensors

References

- User Manual