

# Testing the MLS Series Liquid Level Switches

## Test Button – MLS TF Model Only



### Considerations

The tank level can affect the test results. If the tank level is above the float, the float will already be in the up position, and the test button won't have anything to move. If the float is partially floating, you might not be able to hear the float drop.

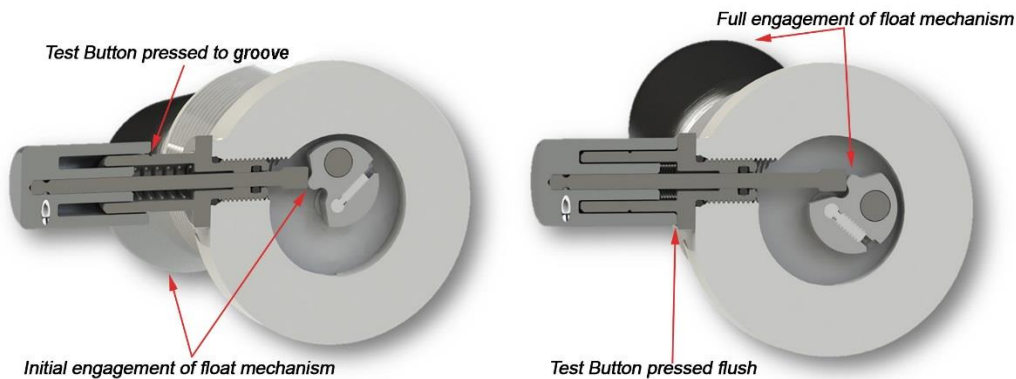
**NOTE:** With a higher tank pressure, the Test Button will be noticeably harder to push.

### Test

**IMPORTANT:** The panel should be in Test Mode if it is operating to avoid unintentional shutdowns during test.

This procedure tests for float function; the complete mechanism including the magnetic activation of the reed switch; and the wiring from the switch to the control panel.

1. If operating at time of testing, put the panel in Test Mode to avoid an unintentional shutdown.
2. Push the Test Button in while listening for the float to hit the top of the body.
3. Release the Test Button while listening for the float to hit the bottom of the body.
  - a. When you hear the float hitting the body as you press and release the button, the float is attached and working properly.



- b. If the float is gone, the counter balance will rotate to the faulted or high level position causing the switch to trip. The MLS unit will have to be removed and repaired or replaced.
- c. As the test button is being pressed, the motion should be fairly smooth and consistent through the entire travel of the button and return. If it is not, there is a problem with the float mechanism, and the MLS unit will have to be removed and repaired or replaced.

# Testing MLS Switch Manually – MLS Models

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We suggest using the FW Murphy magnetized screwdriver approach to test the micro-reed switch and float position.

**CAUTION:** Be sure to follow hazardous area electrical procedures.

## The Principle of Test Method

The reed switch in the MLS is operated by an applied magnetic field. The magnetic field is designed so that the switch will be actuated at a location further from the terminal under normal working conditions. When the float is missing, the counter balance will drop, raising the end where the float should be because of the weight of the counter balance. The movement of the counter balance will bring the magnetic field to a lower position through the mechanism. Using this approach can easily test the float status and operation of the switch.

## Considerations

- Be careful not to damage or short wires connected to the MLS either at the switch or the annunciator or controller connection point (control panel).
- Check terminal connections and wiring before replacing the cover of the MLS for proper operation.

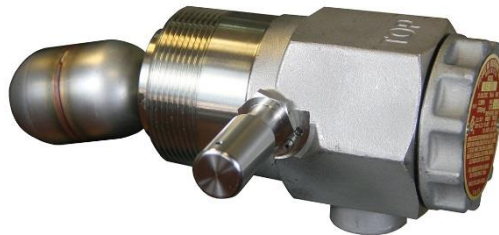
## Test Preparation

1. Check the sight glass to make sure any liquid level is below the MLS. (If the float is already raised by liquid, the test procedure may suggest the float is missing and that the counter balance has forced the assembly into the high liquid level state.)
2. Make sure the area is non-hazardous, getting a hot work permit, for instance. This only needs to be done if the circuit connected to the MLS is not intrinsically safe or non-incendive.
3. Disconnect the wiring once it is de-energized to use a meter to perform the test, or use the test function of the annunciator or controller to verify switch operation.

**NOTE:** Manual testing is always used with the standard FW Murphy MLS Series Liquid Level Switches and can be used on any MLS model.



MLS Model (standard)



MLS TF Model (Optional)

## Test Switch

1. Remove the cover of the MLS.
2. Place the FW Murphy magnetized screwdriver under the terminal block in the middle.
3. Adjust the position of the screwdriver down to the bottom of the circuit board until the switch changes state (see figure #1).
  - a. When the meter, annunciator or controller indicates a change in the state of the switch, it is confirmed that the switch is operating normally.

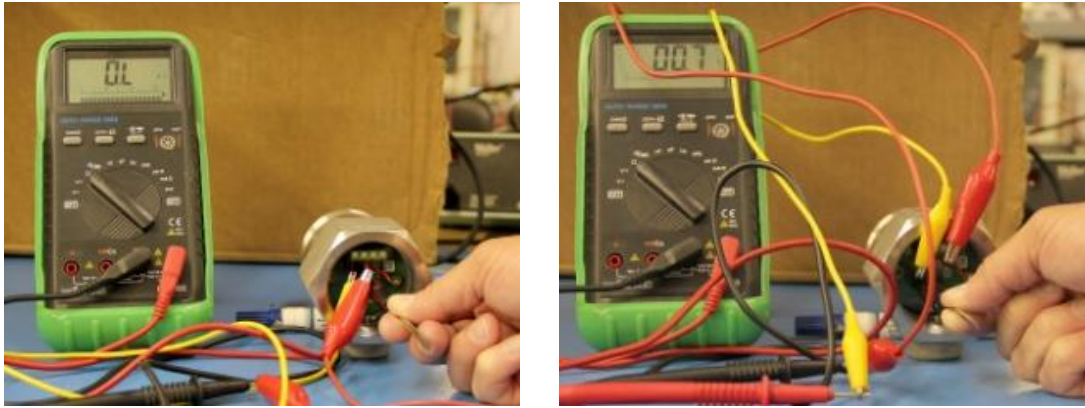


Figure #1 Switch operates normally

## Test Float

4. Place the FW Murphy magnetized screwdriver close to the terminals labeled NO and COM (see figure #2).
  - a. If the meter, annunciator or controller does not indicate a change in state of the switch, the float is attached to the unit and is in the down position.
  - b. If the meter, annunciator or controller indicates a change in state of the switch, the float is missing.



Figure #2 Float is Missing

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