

Introduction

Refrigerated trucks abound all over our roadways worldwide, many carrying 10s of thousands of dollars, Euros, etc. in fragile goods that must be kept cool, no matter what the outside temperature. Complicated coolant systems are used to keep the products cool. These systems can take a lot of abuse on the roadways, causing fractures in the system and possible coolant leaks. When this happens, the refrigeration units can shut down, potentially damaging some or all of the cargo. In the past, detection systems have been used with marginal success. MEDER has introduced a reed sensor float system that is now reliably monitoring the critical coolant levels in these systems, providing truck operators an early warning if a leak has developed.

Features

- Hermetically sealed
- Designed for SPST (Form A) switching
- Dynamically tested contacts
- Reliable switching
- Ability to activate and control switching function all in one operation
- Designed to handle high shock environments
- Ability to operate at very cold temperatures as a normal operation
- Designed to operate in dirty environments
- Millions of switching operations
- UL approved wire

Applications

- Monitoring coolant levels on board refrigerated trucks
- Monitoring any liquid levels from a side entry point

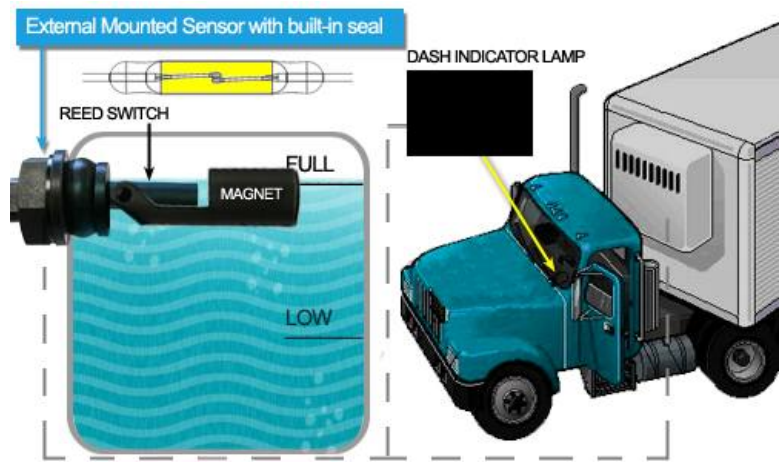


Figure 2. Coolant Tank Full- Level Sensor switch is closed

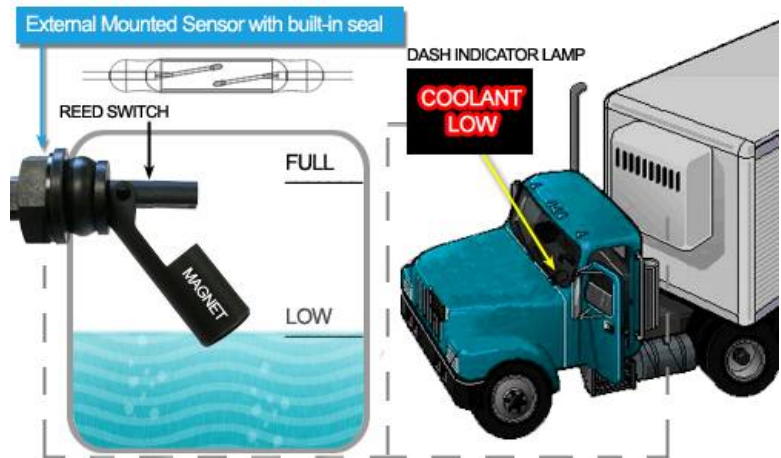


Figure 3. Coolant Tank Low- Level Sensor switch is open and dash indicator lamp is lit

MEDER's LS Series Float Level Reed Sensors Solve A Reliability Issue In Monitoring Truck Coolant Systems

MEDER has developed a one piece horizontally mounted float sensor system that mounts from outside the coolant tank. This allows for field replacements and easy conversion to MEDER's more reliable product.

Specifications (@ 20°C) LS Series

Operate specs	Min	Max	Units
Must close distance	10	15	mm
Must open distance	5		mm
Hysteresis			

Load Characteristics	Min	Max	Units
Switching voltage		200	V
Switching current		0.5	Amps
Carry current		1.25	Amps
Contact rating		10	Watts
Static Contact resistance		350	mΩ
Dynamic contact resistance		350	mΩ
Breakdown voltage	225		V
Operate time		0.5	msec
Release time		0.1	msec
Operate Temp	-20	90	°C
Storage Temp	-20	100	°C





By their very nature coolant systems exist at very low temperatures, circulating coolant through piping and coolant fins to maintain constant low temperatures, keeping heat sensitive goods safe. As the coolant circulates through the closed system, it will eventually warm up. It is then re-circulated back to the coolant reservoir where the heat is extracted and the coolant is held for later circulation. Since coolants do exist at very cold temperatures it is extremely important that coolant level sensing systems are robust enough to handle the temperature extremes seen under normal operating circumstances. The reed switch and its associated magnet activator are both designed for low temperature operation. Also, part of our design criteria is to build sufficient hysteresis into the operation of the sensor. This insures once the sensor activates, it will not go on and off with every sway of the vehicle or bump in the road.

Essentially the Reed Sensor is designed in a plastic stem with a floating hinge containing a magnet. This hinge is mounted to the end of the stem. The hermetically sealed Reed Switch is mounted internal to the stem and sealed with epoxy, allowing the electrical wires connected to the switch, to exit the end of the sensor. The wires are covered with a protective tubing to prevent damage and chafing from vibration and friction and may be terminated in the customer's choice of connector (see Figure 1). When the hinged float is even or parallel to the stem, the sensor is in the on state. When the floating hinge drops to a predetermined level, the sensor will deactivate, triggering an alarm.

This Reed Sensor is designed with a high level of hysteresis. This will prevent the sensor from tripping on and off with small variations in the coolant level. Once the sensor is tripped it will essentially not reset itself until the fluid level is restored to the normal operating level.

MEDER Reed Sensors are designed to give fault free operation for tens of millions of operations.

Consult our engineering group with your specific applications.

Liquid Level Series				
Series	Dimensions		Illustration	
	mm	inches		
LS03-BV50803	W	28.58	1.125	
	H	28.58	1.125	
	L	80	3.150	
LS01	W	19	0.748	
	H	24	0.945	
	L	42	1.654	
LS02	W	19	0.748	
	H	24	0.945	
	L	75	2.953	
LS03	W	25	0.984	
	H	25	0.984	
	L	80	3.150	

**Consult the factory for more options not listed above.