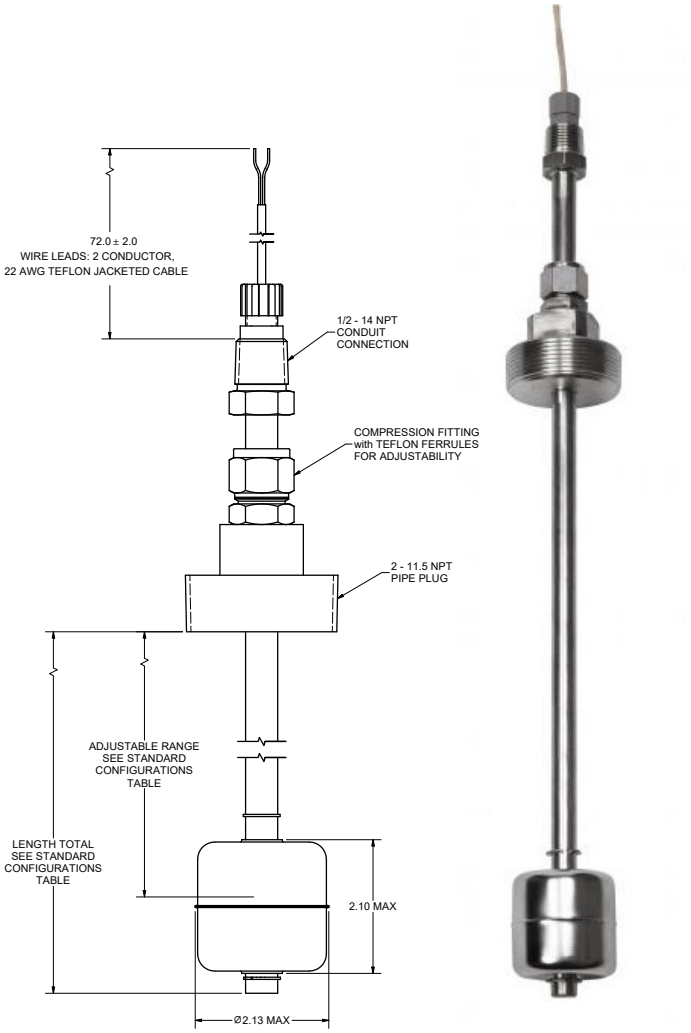
DATA SHEET

Stainless Steel Adjustable Float Switches

M5602-7808-x

Downward float switch height adjustment can be as much as 2”, and an upward adjustment can be as much as 9”. This allows for a series of tanks to use the same level switch configuration and provide easier field adjustments for low-level indication. Multi-level indications can also be provided.

The adjustment is made by loosening the compression fitting on the top of the 2” NPT pipe plug and moving the entire stem up or down as needed. The M5602-7808-x series is manufactured with nylon ferrules in a compression fitting. These types of ferrules allow the end-user to adjust the length multiple times. The retaining rings cannot be moved unless the operation needs to be changed from normally closed to normally open.



Applicable Industries

- Petroleum-based liquids, lubricating oils, gasoline and diesel fuels
- Storage tanks of vehicles, generators, transmissions, hydraulic systems
- Fluid recovery, refining and fuel processing

Features

- Allows the end-user to adjust switch depth or height
- Can overcome uneven tank stands to allow for accurate low-level indication
- Can change operation from normally closed to normally open

Operation

- Normally closed, opens on a rising level. Users can reverse operation.

Material

- Stem & Float: 316 Stainless Steel

Specifications

- Max. temperature: 392°F / 200°C
- Max. pressure: 200 psi
- Switch rating: 60 watt, 240V max. (AC/DC), SPST
- Lead wires: 72”, 22 AWG, 2 conductor, Teflon jacketed cable

Electrical Ratings

- 240V AC, 0.40A; 120V AC, 0.50A; 120V DC, 0.20A; 24V DC, 0.50A

Part Numbers	Adjustable Range	Length Total	Minimum Media SG	Approvals
M5602-7808-1	1.5- 12”	13.5”	0.69	CE UL CSA
M5602-7808-2	1.5- 24”	25.5”		
M5602-7808-3	1.5- 36”	37.5”		
M5602-7808-4	1.5- 48”	49.5”		
M5602-7808-5	1.5- 60”	61.5”		
M5602-7808-6	1.5- 72”	73.5”		

NOTE: Other fittings and voltages are available. Contact us to discuss your application.

Custom Configurations

Contact us directly for custom solutions.
Email: info@madisonco.com

Electrical Considerations

When using Madison level switches, it is important to consider the application's electrical parameters. Our level switches utilize reed switch technology, which are glass encapsulated, magnetically actuated switches. Madison generally provides electrical ratings for resistive loads; however, where the maximum current of the load permits, the switches are capable of controlling devices such as motors, solenoids or coils that produce capacitive or inductive electrical loads. Where possible, Madison recommends the use of general-purpose/isolation relays or controllers to protect the switch.

Protection Techniques and Common Failure Modes

Reed Switch protection is the most successful method of increasing the performance and life of your level sensor. Since every application varies, it is important to understand your protection options. The life of the reed switch is typically 1 million cycles, within rated load conditions. The table below is a guide to suggested protection techniques and common failure modes associated with each load type.

Load	Load Example	Protection	Diagram	Common Failure Modes	Failure Mode Description
Resistive (DC)	Indicator Lamp, Heaters	Current Limiting Resistor	A	In-rush Current (Switching)	In-rush current exceeds rating and welds switch closed
				Over-Current (Carry)	Carry-current exceeds rating and switch welds or burns open like a fuse
Inductive & Capacitative (DC)	Relay Coil, Solenoids, Motor	Reversing Diode	B	Over-Voltage (Arcing)	Voltage arcing during switching welds contacts closed
Inductive & Capacitive (AC or DC)		Resistor & Capacitor Network	C		
Resistive, Inductive & Capacitive (AC or DC)	Indicator Lamp, Heaters, Relay Coil, Solenoids, Motor	Varistor or MOV	D	Over-Voltage (Arcing)	Transients voltage spikes exceed breakdown voltage and weld switch closed

Capacitive Load

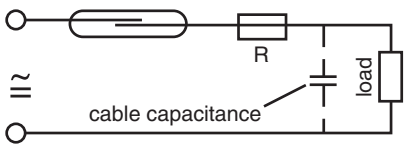


Diagram A: Current Limiting Resistor

Inductive Load

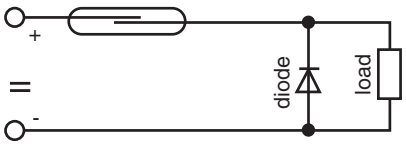


Diagram B: Reversing Diode

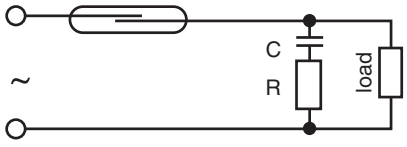


Diagram C: RC Network

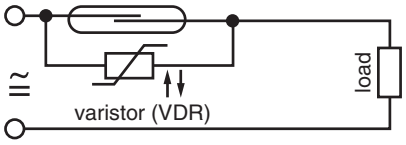


Diagram D: Varistor or MOV

For DC circuits: Insert a 1N4004 diode across the load (i.e.: relay coil) with the cathode end (marked with circular line) connected toward the positive side. This way the diode conducts only when the field collapses. General rule is to use a diode with a voltage rating at least three times the circuit voltage. A 1N4004 has a rating of 1 amp continuous, 30 amp surge, 400V max. Refer to diagram B.

For typical 120V AC circuits: Insert a 50 to 100 ohm, 1/2 watt Resistor in series with a .1 micro farad 400 to 600 volt capacitor across the switch. The capacitor is a high impedance to 60 hertz, but is essentially a short circuit to high frequencies of generated voltages. Alternately, a varistor V130LA10A by itself across the switch will also work for 120V AC. Refer to diagram D.

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