

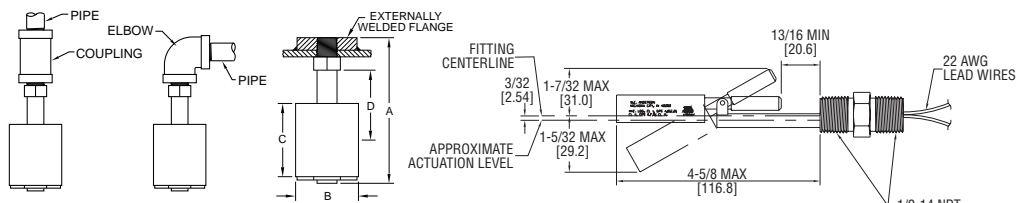


## Series F7 Liquid Level Switches

### Specifications - Installation and Operating Instructions



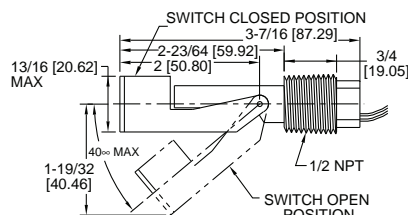
(Model F7-SB Shown)



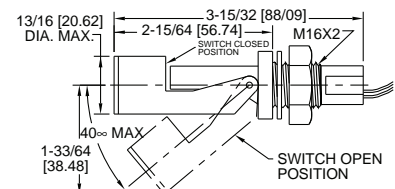
F7-HSS

#### Dimensions, Inches (mm)

Model	(A) Stem Length	(B) Float Diameter	(C) Float Height	(D) Actuation from HEX
F7-SB	2.75 (70)	1.13 (29)	1.38 (35)	1.0 (26)
F7-SS2	2.06 (52)	1.0 (25)	1.0 (25)	0.73 (19)
F7-PP	2.18 (55)	1.18 (30)	1.0 (25)	0.69 (18)
F7-BT	2.18 (55)	1.18 (30)	1.0 (25)	0.69 (18)
F7-MPP	1.63 (41)	0.63 (16)	0.63 (16)	0.47 (12)



F7-HPS-2, EXTERNAL HORIZONTAL MOUNT



F7-HPS-2, INTERNAL HORIZONTAL MOUNT

#### SWITCH ACTION (Normally open/Normally closed)

##### Vertical Models

Vertical mount models are shipped with normally open switch contacts which close as the float rises toward the mounting threads. Reverse switch action by removing the float, rotating it end-for-end and replacing it on the stem.

##### Horizontal Models

Contacts in horizontal models F7-HPS-1 (internal mount) and F7-HPS-2 (external mount), are normally open when the float is down and normally closed when the float is up. Models F7-HPS-1 and -2 also have indicating arrows on the stem end to confirm float alignment. See installation notes on reverse. Horizontal model F7-HSS is in the normally open position when the indicating arrow points up, and normally closed when the arrow points down.

#### INSTALLATION

Choose a location away from fill pipes, drains, or other areas where turbulence or wave motion might occur. Turbulence will cause false actuations and shorten contact life. Excess contaminants in fluid may inhibit float operation and occasional wipe-down may be necessary. Care should be taken that switches are always operated within electrical ratings. Read and understand all safety precautions on back of this sheet before installing.

#### MOUNTING

Install vertical mount models in an appropriate 1/8" NPT fitting. Vertical models mount internally, oriented within 30° of vertical, or select optional fittings for external mounting. Model F7-HPS-1 must be mounted internally, which means the switch must be secured to the wall of the tank or vessel from the inside. Install horizontal model F7-HPS-1 in a 5/8" (16 mm) hole and secure with nut provided. Tank wall should not exceed 1/8" (3 mm). Model F7-HPS-2 requires a horizontal 1/2" NPT(F) fitting and can be fitted to the tank or vessel from the outside. Model F7-HSS requires a horizontal 1/2" NPT(F) fitting and can be mounting from the inside or outside (internally or externally) of the tank or vessel.

#### SPECIFICATIONS

##### Electrical Rating (Maximum):

F7-SB, SS2:	AC: 25 VA, 1A @ 200 V. DC: 10W, 1A @ 200V.
F7-PP, BT, HSS:	AC: 30 VA, 0.14A @ 200V. DC: 0.28A @ 24 V, 0.07A @ 120V.
F7-MPP:	10 VA, 0.1A @ 120 VAC.
F7-MPP-NO:	50 VA, 0.2A @ 240 VAC.
F7-HPS:	15 VA, 1A @ 220 VAC/DC.

**Mounting Connections:** 1/8" NPT(M) (all vertical mount), 1/2" NPT(M) (F7-HPS-2, F7-HSS), M16 x 2 (F7-HPS-1).

**Wire Leads:** F7-SB, SS2, PP, BT: 22 AWG x 18" (46 cm); F7-MPP, HSS: 22 AWG x 24" (61 cm); F7-HPS: 22 AWG x 39" (1m).

**Enclosure Rating:** F7-HSS: Explosion-proof, Class 1, Groups A, B, C, D; Class II, Groups E, F, G; Class III.

**Weight:** F7-SB, 2 oz. (58 g); F7-SS2, 1.2 oz. (34 g); F7-PP, 0.8 oz. (23 g); F7-BT, 0.7 oz. (20 g); F7-HPS-1, 1.5 oz. (43 g); F7-HPS-2, 2 oz. (57 g); F7-HSS, 3 oz. (94 g); F7-MPP, 0.8 oz. (23 g).

Model	Material Float/Stem	Max Temp.	Max Press.	Min S.G.	Approx. Deadband
<b>Vertical Mount</b>					
F7-SB	Buna-N & Epoxy/316SS	220°F 105°C	150 psig 10 bar	0.60	1/16" 2 mm
F7-SS2	316SS (CYC)/316SS	300°F 149°C	450 psig 31 bar	0.75	1/16" 2 mm
F7-PP	Polypropylene & Epoxy/Polypropylene	220°F 105°C	100 psig 6.89 bar	0.60	1/8" 4 mm
F7-BT	Buna-N & Epoxy/PBT*	220°F 105°C	150 psig 10 bar	0.45	1/8" 4 mm
F7-MPP	Polypropylene / Polypropylene	176° F 80° C	100 psig 6.89 bar	0.90	1/8" 4 mm
<b>Horizontal Mount</b>					
F7-HPS -1, -2	Polysulfone/ Polysulfone	185°F 85°C	150 psig 10 bar	0.85	3/16" 5 mm
F7-HSS	316SS/316SS	392°F 200°C	300 psig 20.7 bar	0.60	1/8" 4 mm

\*PBT - Polybutylene Terephthalate

##### Optional Fittings (for Exterior Mounting of Vertical Models)

**A-347**, 1/8" x 1-1/4" NPT C.S. Adapter.

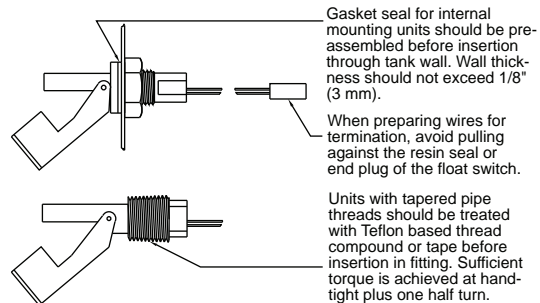
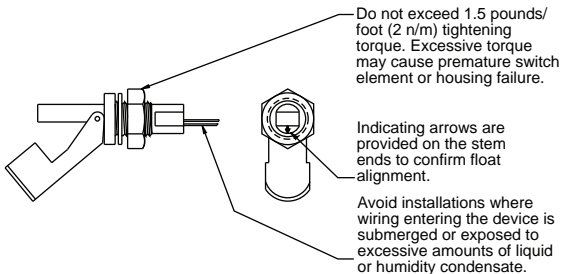
**A-347-SS**, 1/8" x 1-1/4" NPT 316SS Adapter.

**A-348**, 1/8" x 1-1/2" NPT C.S. Adapter.

**A-348-SS**, 1/8" x 1-1/2" NPT 316SS Adapter.

**Installation Notes** - Do not subject reed switch controls to excessive shock or vibration or any of the following:

- Bending or placing force loads on reed switch housing.
- Over-torquing fittings on reed switch housing.
- Placing pull-out force on lead wires.



## CIRCUIT INFORMATION FOR REED SWITCH PROTECTION

### Read information below before installing your new reed switch control!

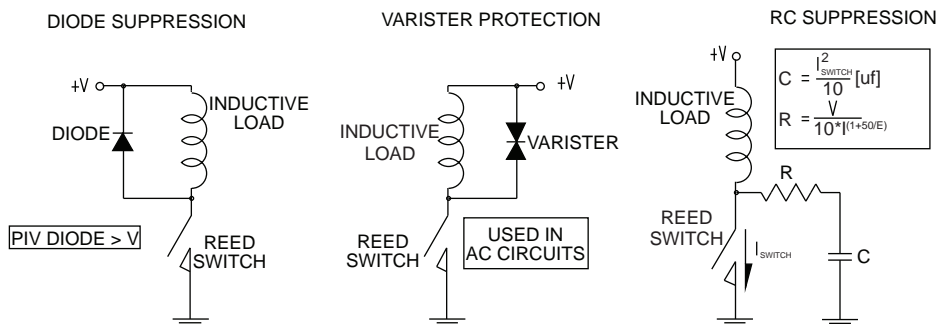
Exceeding the current capacity of this Reed Switch control may cause **FAULTY OPERATION!** Be aware of the inductive and capacitive or lamp loads you may be placing on your Reed Switch Control. The circuits below outline possible solutions to preventing overloads due to inrush or surge currents exceeding maximum or when the switch current and product of the inductive back EMF exceed the switch's power rating. Also the circuit for prevention of overload when switching filament lamps (low "cold" resistance) is outlined below. Failure to follow these measures to protect Reed Switch Contacts may cause the contacts to weld together or result in premature wear.

### Possible Circuit Solutions Indicated by Dashed Lines

#### Inductive Loads

##### Possible causes -

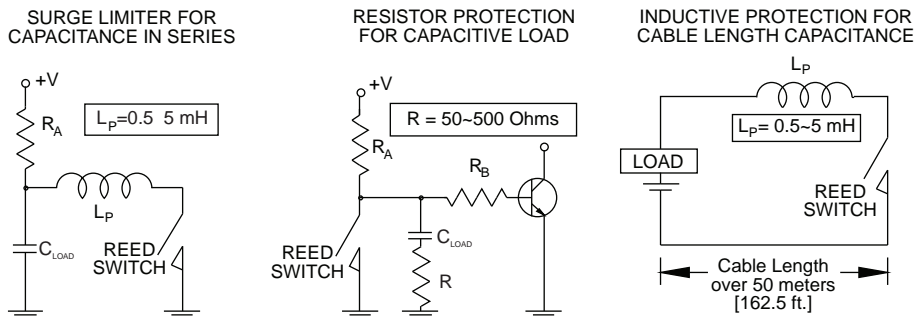
An electromagnetic relay, electromagnetic solenoid, electromagnetic counter with inductive component as circuit load.



#### Capacitive Loads

##### Possible causes -

A capacitor connected in series or parallel with Reed Switch control. In a closed circuit, a cable length (usually greater than 50m [162.5 ft.]) used to connect reed switch may also introduce static capacitance.



#### Lamp Loads

##### Possible causes -

A tungsten filament lamp load.

