/ **Marley** 5550 Vibration Switch /

User Manual 07-1274

SPX
COOLING TECHNOLOGIES

Installation

This bulletin should be used by experienced personnel as a guide to the installation of the Model 5550 vibration switch. Selection or installation of equipment should always be accompanied by competent technical assistance.

⚠ Caution

Before proceeding to install and wire the unit, read and thoroughly understand these instructions. The switch model number should be checked to confirm that you have the correct hazardous area rating for your application.

Installation

1—The sensitive axis of the vibration switch is perpendicular to the mounting base. The preferred mounting is with the sensitive axis in the horizontal plane, since most machines vibrate more in that plane. Mount the switch solidly to the frame of the machine. In most cases the switch or mounting bracket will come preinstalled.

2—Remove the cover and wire the switch(es) into the alarm or shutdown circuit. Do not exceed switch contact ratings listed in the specifications. Keep field wiring away from the moving part of the mechanism.

3—Observe all local electrical codes. Observe the following for ATEX installations:

4—All the power must be switched off before opening of the enclosure in an explosive atmosphere.

5—The Vibration Switch must be electrically connected by means of a flameproof cable gland or stopping box certified to EN 50018.

6—For ambient temperatures below -14ºF and above +140ºF use field wiring suitable for both minimum and maximum ambient temperature.

7—Reinstall the cover by first insuring the sealing gasket is in place and properly seated in the grove in the housing. Place the cover on the unit and install the four cover bolts. Torque the four bolts to 16 ft/lbs. Caution should be used to not over torque the bolts as this could damage the housing and compromise the seal.

8—The temporary conduit entry plugs are placed in the housing to provide physical protection for the treads during shipping. Once the unit is installed in the field these plugs must be replaced. These temporary plugs do not provide adequate environmental protection for the switch when installed in the field.

Installation

Setpoint Adjustment

⚠ Warning

The vibration switch is a safety circuit acting as a run permissive for the fan VFD or starter. Follow lock out tag-out procedures on the fan starting equipment.

- The trip point is factory set and may not have to be adjusted.
- To test the operation of the electrical contacts in the vibration switch please follow the procedure below. Do not strike the device to test for a trip.

  Remove the cover to expose the inside of the switch. Using a screwdriver, toggle the trip plate to force the electrical contacts open and closed. The trip plate is silver, measures 1¾" x 1" and is located towards the bottom of the switch. With the adjusting pin located to the left, the normally closed contact will be closed when the right hand side of the trip plate is depressed. Check continuity at the terminal points COMMON and NORM CLOSED or at the fan controller to confirm contacts are operational. A typical control circuit uses a closed contact to allow the fan to run. An open contact means excessive vibration has occurred shutting off the starter or VFD.

  The default trip setting should allow for a full voltage start and operation at all speeds. If the trip point is too sensitive turn the adjusting screw clockwise ⅛ of a turn increasing the g force trip point and operate fan again. ⅛ of a turn equals 1g force in change and the range is only 5gs on most switches so do not over-turn. Do not turn the adjusting screw anymore than half of a full turn in either direction from factory setting.

Installation

Turning Adjustment Screw Too Far Counter-Clockwise

- If the adjusting screw is turned too far counter-clockwise (approximately 3-4 turns) the switch will trip and will not stay in a reset position after depressing the manual reset pushbutton.
- At approximately 11 turns the switch will trip and cannot be reset because the spring and adjusting rod have dislodged out of position. There is no mechanical stop position when turning counter clockwise. Repair of the internal mechanism can be accomplished in the field by removing the internal switch mechanism from the switch body. The switch mechanism is held in with three screws. Once removed the adjusting rod and spring may be put back into operating position.

Turning Adjustment Screw Too Far Clockwise

- The adjusting rod has a nylon stop bushing preventing the rod from being over turned. Once the adjustment bottoms out, the switch is at or beyond the maximum setting and may not trip on vibration.

Getting The Adjustment Position Back To Normal

- Once an adjustment screw is out of range and the rod and spring have not been dislodged the switch may be adjusted back to normal settings. With the switch cover removed rotate the adjusting rod clockwise until it bottoms out. Push the right hand side of the trip plate down to reset the switch. At this point the NORM CLOSED CONTACT is closed. Rotate the adjusting rod approximately two turns counter-clockwise slowly or until the trip bar moves up with a click. Then rotate the adjusting rod clockwise one full turn. If tower start or run position trips the switch then rotate the adjusting rod clockwise in ⅛ increments until the trip holds in.

Installation

Electrical Reset and Startup Lockout

The optional electrical reset circuit consists of an electrical solenoid in series with a thermistor. If the rated voltage is continuously applied to the reset circuit at machine startup, the reset solenoid energizes for a fixed time interval (approximately 30 seconds), after which time the solenoid is automatically de-energized by the thermistor. This action provides a trip lockout during machine startup roughness. The voltage must be removed from the reset circuit when the machine is stopped to allow the thermistor to cool off. The switch mechanism can then be reset electrically by a momentary application of the reset voltage or it can be reset manually.

Note

If the machine is restarted immediately after a shutdown, the lockout period will be shortened because the thermistor will be hot. An increase in the ambient temperature will also shorten the lockout period.

Specifications

Function—Armature mechanism trips on high vibration and operates snap action switch(es).

Amplitude Range—See How to Order ("C").

Frequency Range—0 to 3600 RPM.

Setpoint Adjust—0 to 100% of range. External setpoint adjustment.

Reset—Local reset, plus optional remote reset electrical coil. See How to Order ("D").

Start Delay—Applying reset coil voltage at start up holds mechanism from tripping for 20-30 seconds, after which the switch is active. Requires electric reset option.

Temperature Range— -40ºF to 160ºF

Enclosure—High strength copper-free (1/10 or 1% max) aluminum alloy.

Environmental Rating—NEMA 4, IP 65 & CE Mark (NEMA 4X Optional).

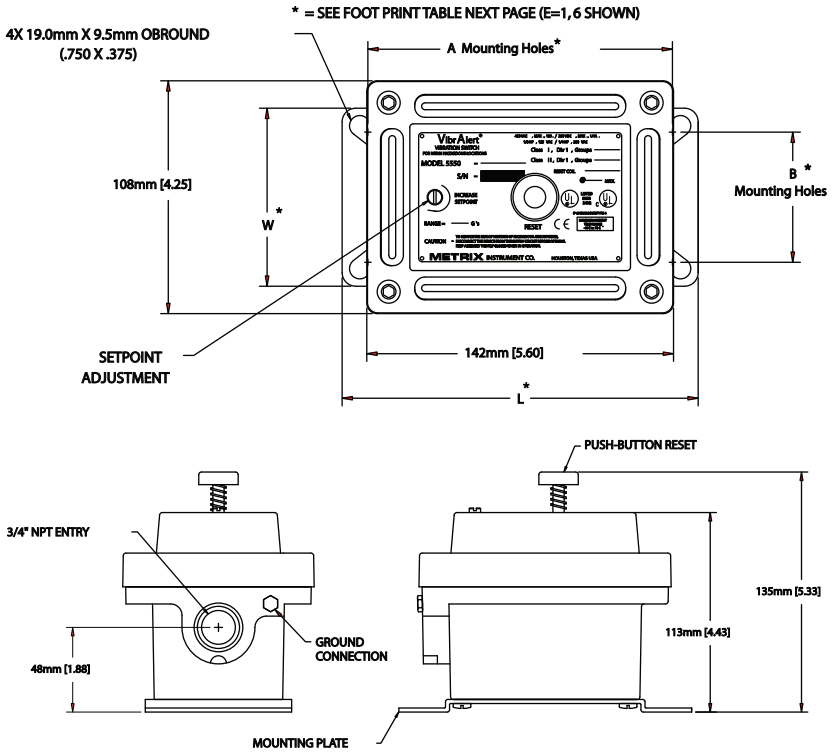
Switch Contact(s) Rating—15 amps, 125, or 480 VAC; 1/8 hp, 125 VAC; 1/4 hp, 250 VAC; 1/2 amp, 125 VDC; 1/4 amp, 250 VDC.

Hazard Rating—See How to Order ("A").

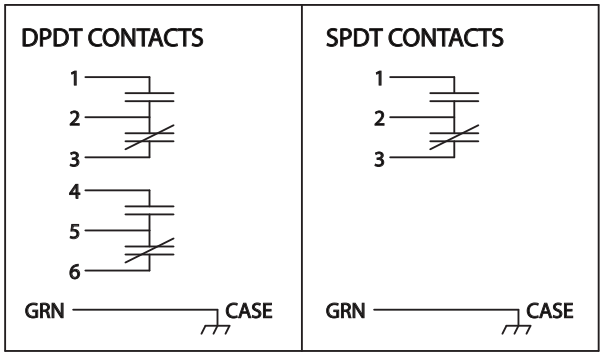
Weight—4.0 lb

Installation

Specifications Diagram



Wiring Diagram



Installation

How To Order

5550- A B C - D E F

Example: 5550- 1 1 1 - 0 2 0

A Hazard Rating
- 1= UL, cUL Explosion Proof, Class I, Div 1, Groups C & D Class II, Div 1, Groups E, F & G
- 2= UL, cUL Explosion Proof, Class I, Div 1, Groups B, C & D Class II, Div 1, Groups E, F & G
- 3= CENELEC Flameproof, EEx d IIB T6 | DEMKO 02 ATEX 0212409
- 4= CENELEC Flameproof, EEx d IIB+H T6 [2] | CE 0600 11 2 GD

B Contacts
- 1= SPDT 2= DPDT

C Full Scale Range
- 1= 5 g 2= †2 g 3= 10 g

D Reset Coil & Start Up Delay
- 0 = None 1 = 115 VAC 2 = 230 VAC 3 = 24 VDC 4 = †115 VDC

E Wiring Entry/Mounting Plate (retro fit)
- 1= 3/4" NPT/Metrix 5173 or 5175
- 2= 3/4" NPT/Metrix 5097; VS-2-EX; 366
- 3= 3/4" NPT/Metrix 5078; 365
- 4= M20 x 1.5/Metrix 5097; VS-2-EX; 366 (CENELEC ONLY)
- 5= Same as option 4 above with epoxy coated mounting plate (CENELEC ONLY)
- 6= M20 x 1.5/Metrix 5173 or 5175 (CENELEC ONLY)
- 7= 3/4" NPT/PMC/BETA 440
- 8= M20 x 1.5/Metrix 5078; 365

F Environmental Rating
- 0 (or blank) = NEMA 4, IP65, CE TESTED FOR COMPLIANCE WITH THE APPLICABL
- 1 = NEMA 4X, IP65, CE EC ELECTROMAGNETIC COMPATIBILITY REQUIRE

†WHEN OPTION C=2, OPTION D CANNOT EQUAL 3 FOR OPERATION IN THE HORIZONTAL AXIS.

FOOT PRINT TABLE

	L	W	A	B
E=1, 6	165mm [6.50]	83mm [3.25]	141mm [5.56]	59mm [2.33]
E=2, 4, 5	121mm [4.75]	152mm [6.00]	79mm [3.12]	118mm [4.63]
E=3, 8	165mm [6.50]	121mm [4.75]	136mm [5.37]	92mm [3.62]
E=7	114mm [4.50]	127mm [5.00]	71mm [2.80]	108mm [4.25]

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