

INSTRUCTION MANUAL
VIBRASWITCH
MODEL EURO 366
EXPLOSION PROOF, ATEX
⊕Ex d IIC T6 IP65 T85°C



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RECORD OF CHANGES

Revision	Design Engineer's Approval	Engineering Manager's Approval	Approval Date	COS Number	Brief Description
D	<i>P. Kronau</i>	<i>Brien Evans</i>	31JUL08	96644	Updated Model Number breakdown to agree with PS sheet, added Record of Changes, deleted Figure 3-4 & reformatted.

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SECTION I DESCRIPTION

1.1 DESCRIPTION

The Vibraswitch, Model EURO 366, is designed to protect rotating, reciprocating, or similar equipment against serious damage from malfunctions that can be detected as an increase in vibration. A reset and holding coil is provided, in the DC/AC voltage as specified so that accidental shutdowns on start can be prevented.

The Vibraswitch, Model EURO 366, may be used in conjunction with the Vibraswitch Monitor, Model 563A. The Monitor is a solid-state electronic system designed to "sort-out" false signals received by the Vibraswitch so that Alarm and/or Shutdown of the operating machine will not result from false, transient disturbances. Please note that the Model 563A does not have CE or ATEX certification at this time.

1.2 MODEL IDENTIFICATION

Specify and order instrument models in accordance with the description and variations listed in each table.

Key Model Number Example

EURO 366 - A 8 - H 1 - A - F X - X

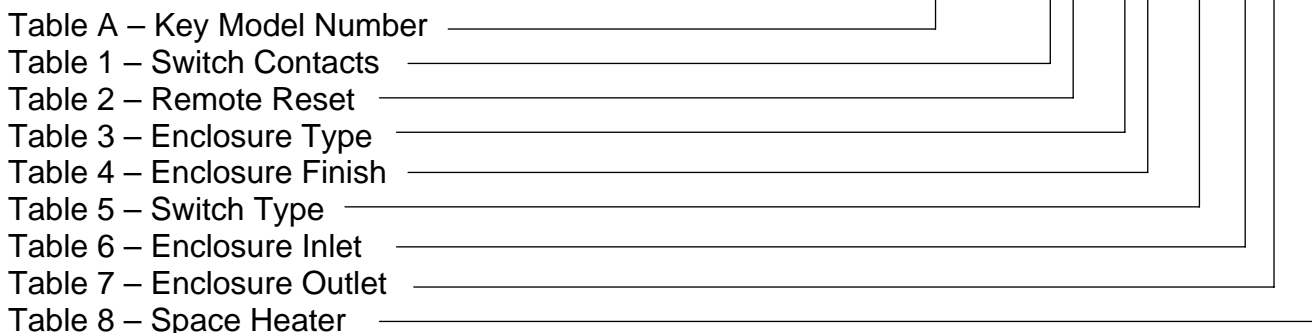


Table A - Key Model Number

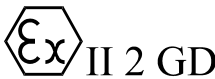
Model Number	Description
<p>EURO 366</p> 	<p>Electric Vibration Detector. Explosion Proof Atex EEx-d-IIC-T6 IP65 T85°C Contacts actuate when Setpoint is exceeded. Range: from 0 to 4,5</p>

Table 1 - Switch Contacts

Designation	Description
A	SPDT - Single Pole, Double Throw load contacts.
D	DPDT - Double Pole, Double Throw load switches.

Table 2 - Remote Option Reset

Designation	Description	
0	No Reset Coil	
2	24	Volt DC reset coil voltage
4	48	Volt DC reset coil voltage
7	120	Volt DC reset coil voltage
8	120	Volt AC reset coil voltage
9	240	Volt AC reset coil voltage

Table 3 - Enclosure Type

Designation	Description	Remarks
H	EFSRC.....T.cable 105°C & T.amb. -30 to +55°C	

Table 4 - Enclosure Finish

Designation	Description
1	Unpainted
2	Polyurethane Painted Olive Drab (Tecnocolor RAL 6003)

Table 5 – Switch Type

Designation	Description	Protection	Remarks
A	7,0 Amp max. 460 VAC max. NI 0,5 Amp at 120 VDC 1,0 Amp at 48 VDC 2,0 Amp at 24 VDC	IP50	Use with Table 1, Designation A, only
E	5,0 Amp at 250 VAC max. NI 5,0 Amp at 30 VDC max.	IP50	Use with Table 1, Designation D, only
H*	0,1 Amp max. at 250 VAC 0,1 Amp max. at 125 VAC 0,1 Amp max. at 30 VDC 5,0 mA min. 6 VDC max. 2,0 mA min. 12 VDC max. 1,0 mA min. 24 VDC max.	IP67 (Sealed)	Use with Table 1, Designation D, only

* Gold Plated Contacts, suitable for Intrinsic safety Applications

Table 6 – Enclosure Inlet

Designation	Description	Remarks
F	¾" UNI Plug	

Table 7 – Enclosure Outlet

Designation	Description	
X	Standard ¾" UNI 6125	

Table 8 - Space Heater

Designation	Description
F	24 VDC 2 Watt
G	48 VDC 2 Watt
H	120 VAC 2 Watt
L	120 VDC 2 Watt
M	240 VAC 2 Watt
X	No Space Heater

NOTE 1 – ¾" UNI OPENING WILL ALSO ACCEPT ¾" NPT FITTINGS.

NOTE 2 – PLUG MAY BE DISCARDED, IF NOT REQUIRED.

SECTION II SPECIFICATIONS

2.1 ENVIRONMENTAL

Housing	Cast Aluminum UNI 4514 Alloy
Weight Model CPSC	2.0 Kg
Weight Model EFSRC	2.2 Kg
Enclosure Classification	EEx-d-IIA/B/C-T6 IP65 T85°C
Certificate No.	INERIS 02ATEX0043
Enclosure Protection.....	IP65
Enclosure Sealing.....	Neoprene O-ring
Location: Mounting.....	Outdoors, Unprotected
External Bolts.....	Stainless Steel
Nameplate.....	Stainless Steel
Conduits.....	2 x 3/4" UNI 6125-74
Enclosure Finish	Sandblasted (Standard)
	Polyurethane painted olive drab Tecnocolor RAL 6003 (optional)
Ambient Temperature Limits.....	-30°C to +55°C
Humidity.....	To 95% Relative Humidity @ +37,7°C
Shock	40 g @ 11 ms. maximum

2.2 PERFORMANCE

Vibration Measurement Range	0 to 4,5 g from 0 to 300 Hz
Setpoint Range	0 to 4,5 g when mounted horizontal 0 to 3,5 g when mounted vertical
Setpoint Adjustment.....	1 turn per g
Accuracy.....	±5% of full range (0 to 300 Hz)
Ambient Temperature Effect.....	±10%/100°F (55,5°C) maximum

Reset Coil

Standard Voltages	24 VDC, 0,5 A
	48 VDC, 0,2 A
	120 VDC, 0,14 A
	120 VAC, 0,3 A, 50/60 Hz
	240 VAC, 0,3 A, 50/60 Hz
Duty Cycle (24 VDC, 48 VDC, 120 VDC, 120 VAC).....	4 minutes max. ON - 10 minutes min. OFF
Duty Cycle (240 VAC).....	1 minute max. ON - 10 minutes min. OFF

SECTION III INSTALLATION

3.1 GENERAL

Examine the instrument for possible shipping damages. **IMPORTANT:** If for any reason it is determined that the equipment should be returned to the factory, please notify the nearest Robertshaw Industrial Products sales representative prior to shipment. Each unit must be properly packaged to prevent damage. Robertshaw assumes no responsibility for equipment damaged in shipment due to improper packing.

Choose the location in accordance with good instrument practice, avoiding extremes of temperature, humidity and vibration. (See SPECIFICATIONS, Section II.)

The Vibraswitch, Model EURO 366, malfunction detector may be located in any outdoor or indoor area according to ATEX Classification and housing Protection information contained in Section II, Specifications. In locations where moisture condensation within junction boxes is a problem, for Vibraswitches with a SPDT switch (Table 1, Designation A) a two watt resistor may be placed across terminals 6 and 8 inside the Vibraswitch enclosure and wired to a source of continuous voltage to provide heat within the enclosure to reduce condensation effects. See Table 3-1 for Space heater value. Space heater resistors cannot be readily installed in the field in Vibraswitches with a DPDT switch (Table 1, Designation D).

3.2 MOUNTING

Figure 3-2 illustrates the methods of mounting on various pieces of equipment. Figure 3-1 shows the mounting dimensions and external wiring for the Vibraswitch Model EURO 366.

The vibration sensitive axis of the Vibraswitch is perpendicular to its mounting base. Therefore, the Vibraswitch must be mounted in a plane that will detect the vibratory motion for which protection is desired. The Vibraswitch may be mounted at any location along the length of machines containing rotating shafts that are horizontal and parallel to the base of machine: the preferable location being in line with the rotating shaft. Do not mount the Vibraswitch perpendicular to the ends of the rotating shafts unless the end-play or end-thrust measurement is desired. Normally, bent shafts, unbalances on the rotating mass of the shaft, worn bearings, and other anomalies are detected near the bearing housing and at the right angles to the shaft.

The Vibraswitch may be mounted in any position between the side (vertical) or the top (horizontal) of bearings or machine housing. It should be noted that when mounting Vibraswitches on top (horizontal position) of equipment the vibration measurement range is stated in the Specification Section. However, when the Vibraswitch is mounted on a side position (90° from horizontal), 1 g is subtracted from the measurement range of the instrument.

If mounting bracket assembly is used to mount the Vibraswitch due to an irregular mounting surface, it must be constructed of steel having sufficient thickness and properly reinforced so that mechanical resonance are not introduced; usually ½" steel plate is satisfactory if the dimensions of the bracket are not large. It is extremely important that all four corners of the Vibraswitch, as well as the mounting assembly, be rigidly secured to the machine. Exact location is not critical as the adjustment procedure of the Vibraswitch automatically accounts for the normal vibration at the location.

The Vibraswitch, when properly adjusted, trips on a relative increase in vibration.

When installing the Vibraswitch on existing equipment where several convenient mounting positions are available, it is advisable to check the existing vibration level at each possible position before permanently mounting the unit. The Vibraswitch can be used to measure existing vibration by holding or clamping it against the running machine and determining the trip point as described under "ADJUSTMENT" in this manual. Should normal vibration exceed the range of the Vibraswitch, it is recommended that consideration be given to Vibra-Tel, Model 566, Continuous Monitor Unit which is capable of monitoring higher g-levels. Please note that the Model 566 does not have CE or ATEX certification at this time.

3.3 TERMINAL BLOCK

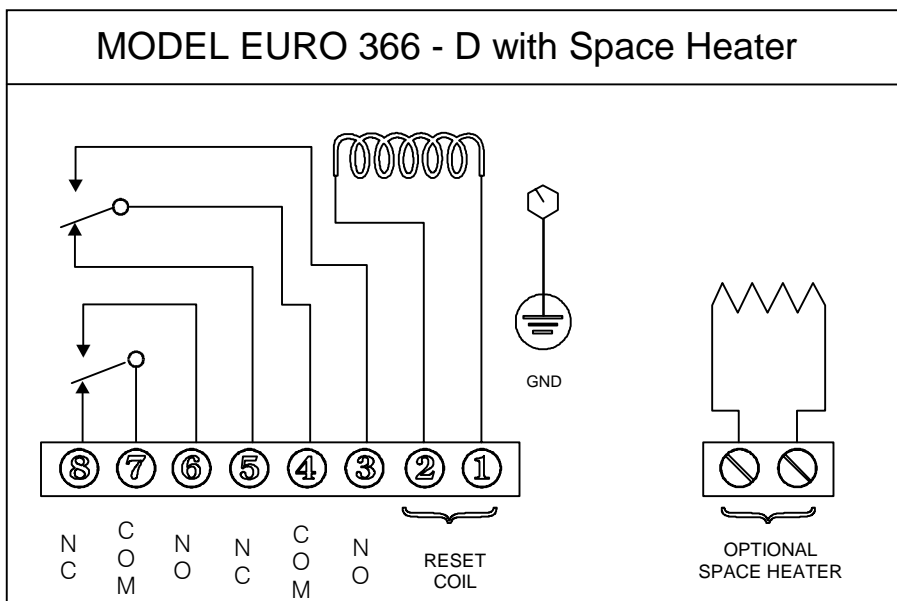
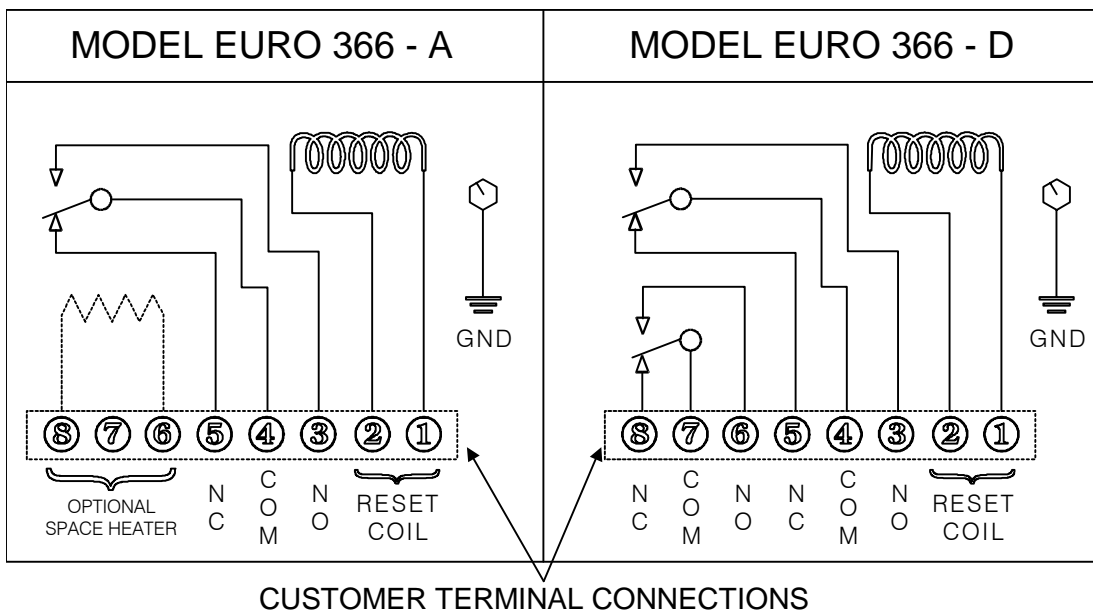


Figure 3-1. External Wiring for the Vibraswitch, Model EURO 366.

NOTES:

1. Switch shown in normal or reset position - reverses on actuation from increased vibration.
2. Standard Coil Voltages: 24 VDC, 48 VDC, 120 VDC and 120 VAC (240 VAC Optional).
3. Heater resistor installed, when required, to prevent condensation in housing where climate conditions require. (Supplied only when specified)
4. If Manual Reset Only is desired, do not apply power to the reset coil.

3.4 SPACE HEATER

In some outdoor installations, it may be necessary to install a space heater to prevent moisture condensation. For Vibraswitches with a SPDT switch (Table 1, Designation A) a small conventional carbon 2 watt resistor should be installed across terminals 6 and 8 in the detector. Proper values are shown in Table 3-1. Space heaters cannot be readily installed in the field in Vibraswitches with a DPDT switch (Table 1, Designation D).

Table 3-1. Space Heater Resistor Values

VOLTAGE (DC or AC)	SPACE HEATER RESISTOR (OHMS)
460	220.000
240	56.000
120	12.000
48	2.000
24	560

3.5 WIRING

The Vibraswitch, Model EURO 366, is equipped with two threaded hubs for 3/4" UNI-6125-74 conduit. When the vibration amplitude is large (i.e., greater than 5 mils) it is good practice to use a short length of flexible conduit to serve as an insulator between the rigid conduit and the Vibraswitch. Wiring into the unit should be done with #18 stranded wire although #14 can be used where necessary. The Vibraswitch was not designed for wiring with heavy solid wire. However, where necessary to use an heavier wire, as in low voltage DC units, a junction box near the Vibraswitch should be used.

NOTE

The instrument housing must be sealed at the conduit outlets with a suitable compound or "trap" to prevent infiltration of moisture-laden air or corrosive gases into the housing.

NOTE

All instrument installation wiring must be done in accordance with local codes and commonly accepted practices.

NOTE

a) The products installed in places with environment temperature of 40°C, must have T_{cable} 90°C indication. This means that the Buyer and/or the User must use a connection cable having maximum service temperature not lower than 90°C.

b) The products installed in places with environment temperature of 55°C, must have T_{cable} 105°C indication. This means that the Buyer and/or the User must use a connection cable having maximum service temperature not lower than 105°C.

To avoid unnecessary difficulty in wiring the unit, the following procedure should be followed in detail:

- When installing conduit and mounting the Model EURO 366, it is recommended that the cover be left on the unit.
- If the Model EURO 366 is to be mounted in unprotected or dusty areas, a dust-tight or water-tight seal should be made at the conduit entrance.

- c. With all mounting complete, remove cover and insert wires through conduit entrance with sufficient length to reach the terminal block.
- d. Strip wires back approximately 6,4 mm (1/4") and install solderless terminals.
- e. Connect wires to terminals as shown in Figure 3-1.

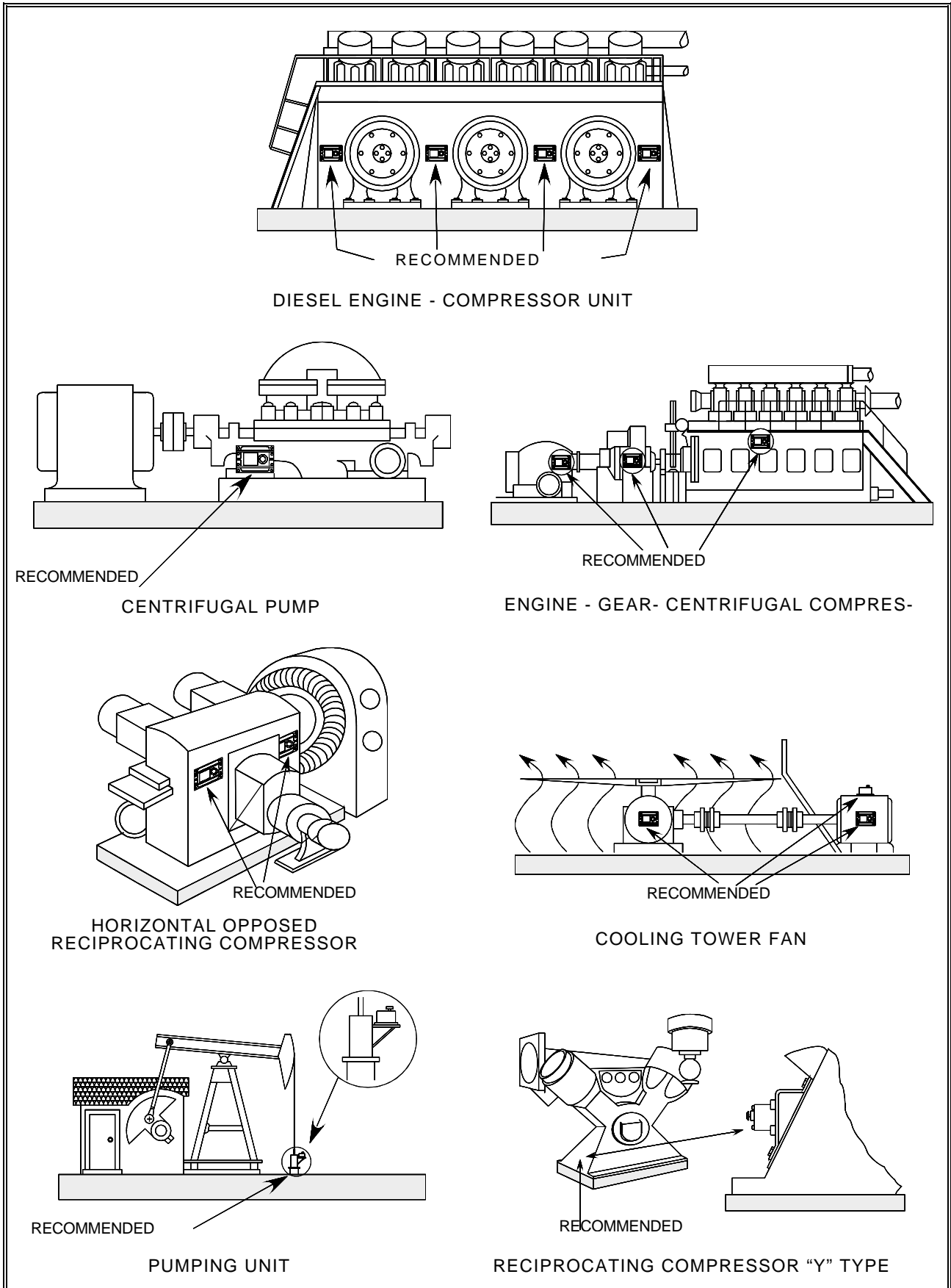


Figure 3-2 Methods of Mounting the Vibraswitch, Model EURO 366

3.6 MOUNTING DIMENSIONS

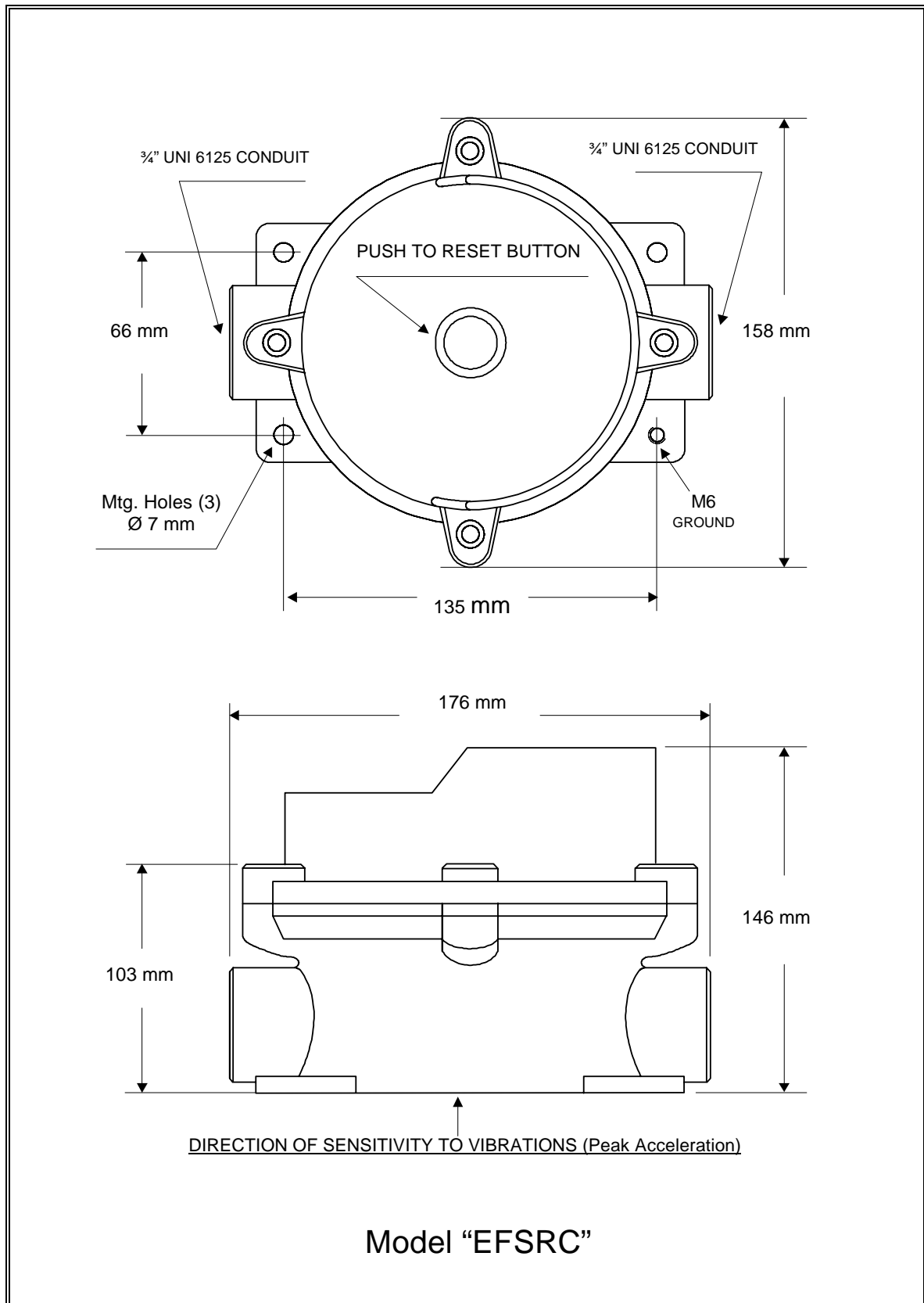


Figure 3-3 Mounting Dimensions for the Vibraswitch, Model EURO 366 Model "EFSRC" Enclosure.

SECTION IV OPERATION

4.1 OPERATION

The Vibraswitch, Model EURO 366 (Refer to Figure 4-1), is sensitive to vibration in a direction (the sensitive axis) perpendicular to its mounting base. It contains a vibration detecting mechanism, which also functions as a “mechanical amplifier”, to activate a snap-action switch when the selected level of vibration is exceeded and the detecting mechanism “trips”.

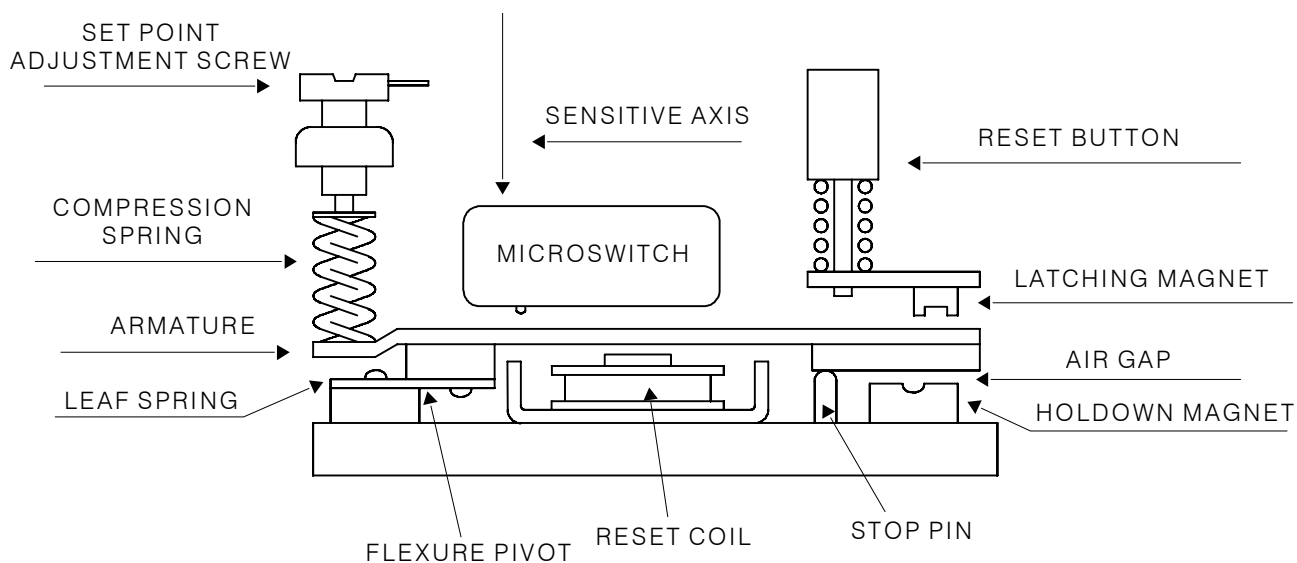


Figure 4-1 Operating Principle for the Vibraswitch, Model 366.

The detecting mechanism consists of an armature suspended on a flexure pivot which is restrained from motion by a permanent magnet (the holddown magnet). In the “armed” condition, the armature is held against the stop pin by the holddown magnet. The stop pin maintains a precise air gap between the armature and the holddown magnet. On the opposite end of the armature, the compression spring provides an adjustable force to oppose the force of the holddown magnet. Whenever the peak vibration inertial force (mass x acceleration) plus the adjustable compression spring force exceeds the force of the holding magnet, the armature is released and is pulled into the latching magnet (“tripped” position). Simultaneously, it activates the snap-action switch. This detecting mechanism has a uniform response from 0 to 300 Hz over a range of 0 to 4.5 g’s.

The mechanism may be reset to the “armed” position manually (locally) or electrically (remotely). Manually, depress the reset button to move the armature away from the latching magnet (“tripped” position) until it is held against the stop pin (“armed” position). Electrically, the reset coil may be activated to pull the armature into the “armed” position against the stop pin.

A reset and holding coil is provided, in the DC/AC voltage as specified, so that accidental shutdowns on starts can be prevented. External time-delay circuits are required to maintain voltage at the holding coil during the startup period and then release this voltage when operation is normal. At full voltage, the reset coil should not be energized for more than four minutes to prevent overheating. Then, the reset coil must be de-energized for a period of 10 minutes before re-energizing. For longer hold-in requirements the reset coil should be energized at a full voltage and then held-in at one-half the rated voltage.

The Vibraswitch, Model EURO 366, may be used in conjunction with the Vibraswitch Monitor, Model 563A. The monitor is a solid-state electronic system designed to “sort-out” false signals received by the Vibraswitch so that Alarm and/or Shutdown of the operating machine will not result from false, transient disturbances, but any continuous vibration level which exceeds the Setpoint of the Vibraswitch will cause Alarm or/and Shutdown. Examples of transient disturbances are the closing of pipeline check valves on pumping applications, the start-up of additional pumps on a line, and the initial start-up of various operating machines. These disturbances may cause the Vibraswitch to “trip-out” if the vibratory shock level is in excess of its setpoint. Please note that the Model 563A does not have CE or ATEX certification at this time.

4.2 ADJUSTMENT OF OPERATING SETPOINT

The operating setpoint for the Vibraswitch varies with the type of machine and its location (measurement point) on the machine. The setpoint adjustments suggested in this instruction manual are for machines which are functioning in a “good” or “normal” condition. This method follows the concept of vibration tolerance for the machine and in this case is dependent upon an individual who is experienced in the operation of the machine to define the vibration as “normal”, “fair”, “slightly rough”, etc. These various degrees of machine vibration are, therefore, based on individual’s physical perception between normal and abnormal roughness while the machine is operating.

It is agreed that this method can lead to differences in the classification of degree of vibration between individual observers. It is Robertshaw’s contention, and experience bears out this conclusion, that if the machine is operating satisfactorily as previously defined and the acceleration as measured by the Vibraswitch is within certain limits, the settings as outlined in the instructions will offer protection to the machine and prevent catastrophic failure.

For example, assume that a relatively new machine which, in the experience of the operator, is operating as “smooth” or “good” regarding vibration and the Vibraswitch measures this acceleration level to be 0.25 g above its static condition (zero). Experience suggests that a reasonable level for alarm conditions would be a minimum of twice this value or 0.5 g. It must be acknowledged that such a definition or upper vibration limits (alarm condition) on the machine may not have adequately defined the upper tolerance limit of the machine before major repairs or excessive machine damages occurs. It does, however, define a limit which, in our experience, has proven to be safe. As the user becomes more adept in using the Vibraswitch as a monitoring device, his experience may dictate an higher setpoint more in keeping with the experience he has gained on the particular machine.

The Model EURO 366 Vibraswitch is adjusted by a simple three-step procedure. In making these measurements the cover must be removed to gain access to the Setpoint adjusting screw. (Ref. Figure 4-2.)

a. Zero Vibration Level Measurement

With the equipment on which the Vibraswitch is mounted not operating, back off the Setpoint adjusting screw counterclockwise (CCW) two turns and press the reset button. Then turn the Setpoint adjusting screw slowly clockwise until actuation occurs (the armature assembly is against the latch magnet, Figure 4-1). This is the zero vibration point, or actuating point, with the machine not operating. A mark should be made with a lead pencil or other convenient means to permanently record this “zero vibration point”. Subsequent measurements are made relative to this point.

b. Normal G-Level Measurement

With the machine (equipment) operating, back off the Setpoint adjusting screw one turn CCW and reset. If it will not reset, back off the Setpoint adjusting screw two turns CCW, etc. Again turn the Setpoint adjusting screw slowly clockwise until actuation occurs. Mark this position with a lead pencil or other convenient means. The difference between the two actuating points in Steps a and b is the normal g-level of the operating machine, in scale divisions. One scale division is 0.1 g; one full revolution is 1.0 g.

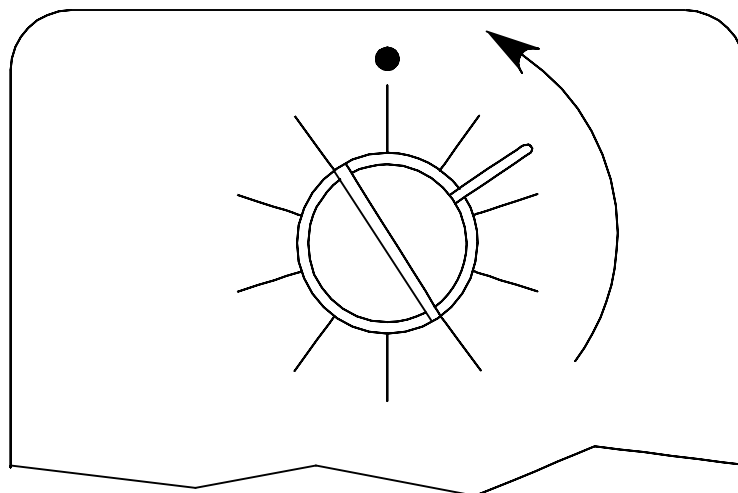


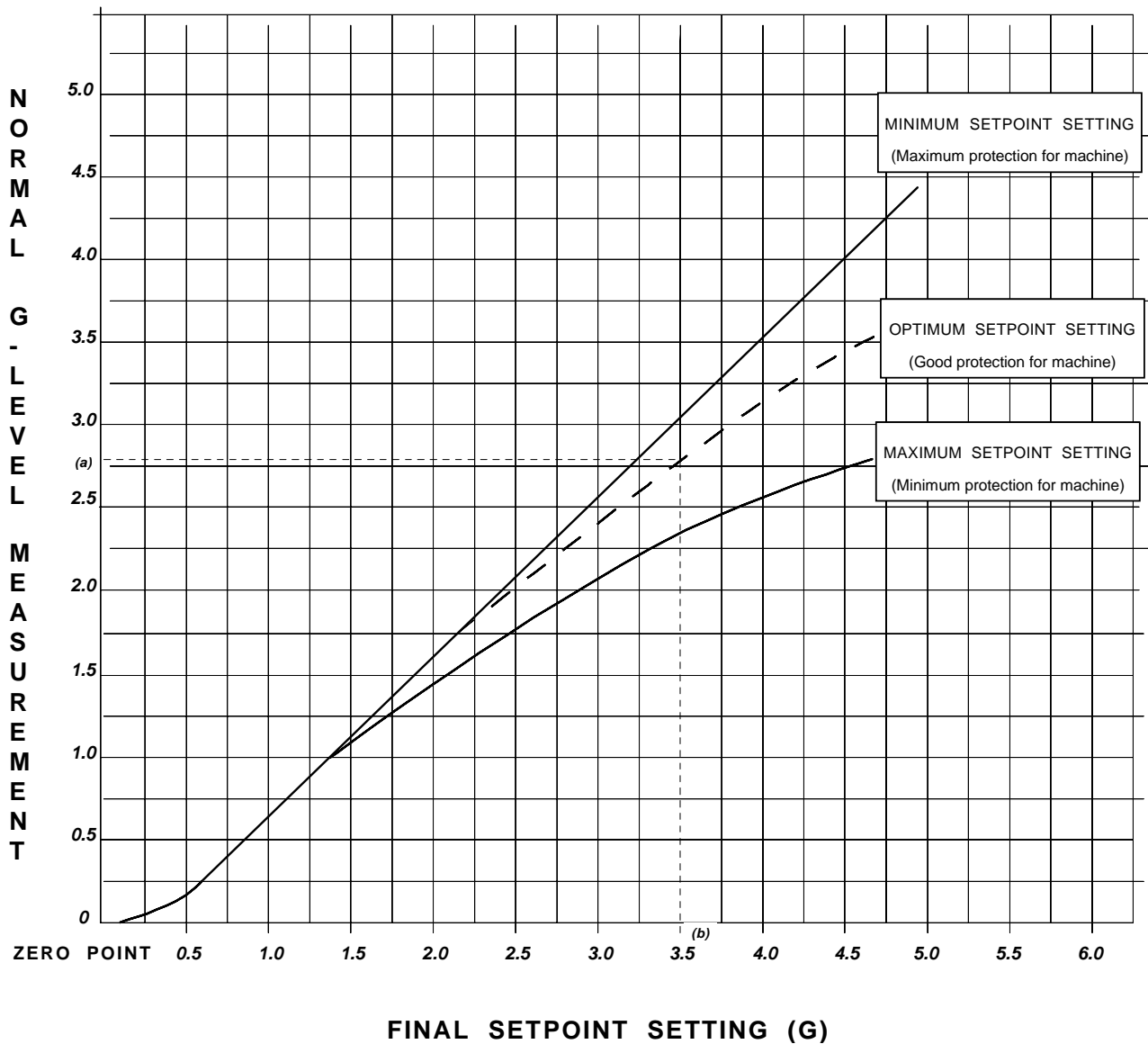
Figure 4-2 Setpoint Adjustment

c. Final Setpoint Adjustment

If the “normal” g-level is less than 1.0 g above the zero level, rotate the Setpoint adjusting screw CCW 0.5 g (five graduations) from the point where actuation occurs in Step b above. If the “normal” g-level is greater than 1.0 g refer to Figure 4-3 for the proper Final Setpoint setting with respect to the “normal g-level vibration point” obtained in Step b. See example on Figure 4-3.

NOTE

In the preceding adjustments, actuation can be heard as an audible “click”. In very noisy surroundings, it may be necessary to use an ohmmeter or wire the Vibraswitch to the control circuit to tell when actuation occurs or observe visually that the armature is in the up (latched) position.



Example: If the Normal G-Level (a) is 2.8 g above the Zero Vibration Level, the Final Setpoint Setting (b) should be set at 3.5 g above the Zero Vibration Level. Therefore, advance the Setpoint Pointer CCW 0.7 g ($3.5 \text{ g} - 2.8 \text{ g} = 0.7 \text{ g}$) or 7 divisions (one scale division is 0.1 g) from the Normal G-Level.

Figure 4-3 Setpoint Alarm settings.

SECTION V MAINTENANCE

5.1 TROUBLESHOOTING

Vibraswitches do not normally require any maintenance or repair, however, listed below are some of the possible malfunctions that may occur and their recommended solutions (Ref. Figure 4-1). Perform all tests with field wiring disconnected.

a. Functional Test - (Ref. Figure 4-1)

1. With the Vibraswitch cover removed, place Vibraswitch on a table with its mounting surface down.
2. Press reset button. If switch does not reset (armature latched on stop pin), turn set point adjustment screw CCW until switch can be manually reset.
3. Slowly turn set point adjustment screw CW until switch trips. This is the zero trip point which is the amount of spring tension required to overcome the 1 g force exerted by the earth's gravitational pull.
4. Note set point setting. One complete turn equals approximately 1 g. Set point scale is marked in 0.1 g increments. Turn set point adjustment screw 1 complete turn CCW. This is a 1 g setting above the earth's gravitational pull.
5. Manually reset the switch (press reset button).
6. With the reset button to your right and the set point adjustment screw to your left, slowly rotate the Vibraswitch toward you 90°. The switch will trip when the mounting surface is in a vertical plane and the earth's gravitational pull is not aiding the lower magnet to hold the armature against the stop pin.

b. Vibraswitch Will Not Reset

1. Dirt and/or iron metal chips on magnets.
clean magnets.
2. Broken leaf spring - (Ref. Figure 4-1).
Return the Vibraswitch to the factory for repair.
3. Open reset coil.
Check for continuity or proper coil resistance (Ref. Table 5-1).

TABLE 5-1 Coil Resistance

Nominal Voltage	Resistance (Ohms \pm 10%)
24 VDC	50
48 VDC	230
120 VDC	840
120 VAC	Check for continuity*
240 VAC	Check for continuity*

* (Diode prevents actual resistance reading)

c. Unable to Adjust Setpoint Setting to Obtain Tripping

Improper air gap between Holddown (lower) Magnet and Armature.
Return the Vibraswitch to the factory for repair.

d. Switch Does Not Actuate

Defective or improperly adjusted switch - (Ref. Figure 4-1).

Manually move the Armature between the hold down magnet (armed position) and latching magnet (latched position) and listen for an audible click of the switch. An audible click occurs when contacts change state. Verify by performing a continuity check. Return the Vibraswitch to the factory for repair.

NOTE

If the switch does not pass either of the tests above, return the Vibraswitch to the factory for repair.

SECTION VI ATEX

6.1 SPECIAL ATEX USE & MAINTENANCE

Rev.1 dtd. 2002-08-26

Vibraswitch Malfunction Detectors Series

EFSRC-366-.. ; CPSC-366-..

EFSRC-376-.. ; CPSC-376-..

ITALSMEA

Via per Cernusco, 15
20060 Bussero (MI) – Italy



Type: EFSRC-...-.. (*)

V.... Hz.... A.... W....

Serial Nr.:

Year of construction:

INERIS 02ATEX0043

 0080  II 2GD

EEx d IIC T6 / T85°C IP 65

Tcable ..°C (*)

Tamb. -.. / ..°C

DO NOT OPEN WHEN ENERGIZED

DO NOT OPEN IF AN EXPLOSIVE

ATMOSPHERE MAY BE PRESENT

ITALSMEA

Via per Cernusco, 15
20060 Bussero (MI) – Italy



Type: CPSC-...-.. (*)

V.... Hz.... A.... W....

Serial Nr.:

Year of construction:

INERIS 02ATEX0043

 0080  II 2GD

EEx d IIC T6 / T85°C IP 65

Tcable ..°C (*)

Tamb. -.. / ..°C

DO NOT OPEN WHEN ENERGIZED

DO NOT OPEN IF AN EXPLOSIVE

ATMOSPHERE MAY BE PRESENT

CENELEC

EN 50014 / EN 50018 / EN 50281-1-1

IMPORTANT – READ CAREFULLY

- a) The Vibraswitch malfunction detectors must be installed in conformity to the prescriptions of the European Rules EN 60079-14/EN 50281-1-2 (Edit in force) and the maintenance operations must be made in conformity to the prescriptions of the European Rules EN 60079-17 / EN 50281-1-2 (Edit in force). Besides the user must know about the risks due to the electric current and the chemical and physical characteristics of the gas and/or vapours and the dusts present in the plant.

The equipment purpose of this supply were produced in conformity with the “Essential Health and Safety Requirements” of the Directive 94/9/EC (ATEX).

The conformity is guaranteed from the relative “EC Type Examination Certificate” issued to Italsmea from one of the Notified Bodies officially recognized at European level and instructed of the foreseen tasks in the Article 8 of the Directive.

To further guarantee of the good quality/safety of the product, the Quality System of Italsmea was evaluated and approved by a Notified Body which makes the surveillance of the quality and the verification at every stage of manufacture.

Italsmea, assures and guarantees the correct manufacture of its products and, so that they can guarantee a safety result, it is indispensable that the Buyer and/or the User apply all the measures of security for which they are responsible for the purposes of a correct installation and a correct maintenance, according to the instructions and the suggestions of Italsmea, and according to the national and local laws in matter of installation and prevention of the accidents.

The use of a certified apparatus subjected to interventions not explicitly authorized by Italsmea, obviously excludes every responsibility of Italsmea and will cause the invalidation of the relative EC Type Examination Certificate and the contractual guarantee.

- b) Mode of protection “d” – Explosion proof enclosures
1. In this mode of protection, the electric equipment is placed in an enclosure which can withstand the pressure developed during an internal explosion and which prevents the transmission of the explosion to the explosive atmosphere surrounding the enclosure.
 2. The integrity of the enclosure must not be compromise with not authorized drillings, unused and not closed entries.
 3. Unused drillings and/or cable entries must be equipped with suitable accessories like EEx d plugs, EEx d cable glands, EEx d three pieces unions, etc. The accessories must guarantee a depth of engagement ≥ 8 mm and a number of threads engaged ≥ 5 .
 4. Verify the correct closing of body -lid coupling screws.
 5. Verify the absence of causes of stress of the enclosure different from what the enclosure was certified for (i.e. exposure to damaging for collisions, presence of corrosive agents, etc.).
 6. The pipe entries must be equipped with the necessary sealing fittings, filled correctly and installed very close to the enclosure.
 7. The cable entries must be realized with certified cable glands, making sure that they are suitable for the kind of used cable, which keep the respective mode of protection and chosen in base to the prescriptions of the European Rule EN 60079-14 (Edit in force).

(*) – See note to next page

- c) Placing in service
1. Before making the placing in service of a certified apparatus, it is necessary for the user to verify the match to the planning data and the correct installation.
 2. Verify that the certified apparatus is suitable for the dangerous place classification.
 3. Verify that the group of the certified apparatus is suitable for gases, vapours and/or dusts presents.
 4. Verify that the temperature class of the certified apparatus is suitable for gases, vapours and/or dusts presents.
 5. At the certified apparatus must be assigned the service for which was built (voltages, currents, mechanical and thermal stress within the values of project).
 6. Verify the perfect clamping of the electric and mechanical connections.
 7. Verify the integrity and the continuity of earth, protection or equipotential conductors.
 8. Verify that were not produced modifications not expressly authorized by Italsmea or those however change the electrical and/or mechanical structure and functionality of the certified apparatus (typical example the alteration of the content of certified enclosures with the inclusion of further equipment).
 9. Verify that was not excluded nor deregulated any electric protection.

Maintenance

1. The maintenance is a combination of operations executed at the purpose to keep or to restore a certified apparatus in the conditions in which it is able to meet the requirements of the relevant specification and perform its required functions. These maintenance operations must be made in conformity to the prescriptions of the European Rules EN 60079-17 / EN 50281-1-2 (Edit in force).
 2. During the time, the initial characteristics of the certified apparatus must be assured by a detailed maintenance program studied and managed by qualified technicians which keeps in debit count the kind of apparatus, their service and the ambient conditions which they work in. In every case one advises not to exceed the limit of the two years between an inspection and the other.
 3. The maintenance is called to guarantee the functionality of the certified apparatus in security terms and since the security is a such juridical obligation it is also the conservation of all the conditions that it depends on.
 4. The certified apparatus must be installed and kept so as to prevent the dangers derived from casual contacts with under voltage elements and the risks of fire and burst derived from possible abnormal conditions that happen in their exercise.
 5. The maintenance operations must be carried out only by experienced personnel, whose training has included instruction on the characteristics of the apparatus.
 6. If the operations are outside the normal maintenance (i.e. do not limited to replacement with original Italsmea spare parts) to assume the character of repairs regarding the mode of protection, must be taken opportune agreements with Italsmea on the procedure to be followed for the execution of the jobs and for mandatory verifications and individual tests prescribed from the rules.
 7. All the maintenance operations must be made with the electrical apparatus isolated by all the sources of energy.
8. When reassembling flameproof enclosures, the user must verify that the flameproof joints are not damaged, all joints must be thoroughly cleaned and lightly smeared with a suitable not hardening grease to prevent the corrosion and contribute to protect them against the bad weather. It cannot be too strongly emphasized that extreme care should be exercised in the selection and application of the grease to ensure the retention of not hardening characteristics, to allow subsequent separation of the flameproof joints. Only not metallic brushes and not corrosive cleaning fluids must be used to clean flameproof joints.
9. If the certified apparatus is subject to vibrations, verify that the clamping screws and the pipe and/or cable entries are closed well.
10. If the user must replace the body - lid closing screws, it must use exclusively screws having the same or superior mechanical characteristics.
- d) Special use conditions
1. For the use of the products in environments with explosive atmosphere for the combustible dust presence, the following precautions must be taken:
 - in the purpose to avoid the dust store on the surfaces, the user must proceed with a regular cleanliness of the products.
 - the cable entries must have IP 65 protection degree minimum.

NOTE

1. The kind of product is completed by numbers and/or letters corresponding to the execution changes.
2. The products installed in places with environment temperature of 40°C, must have T_{cab} 90°C indication. This means that the Buyer and/or the User must use a connection cable having maximum service temperature not lower than 90°C.
3. The products installed in places with environment temperature of 55°C, must have T_{cab} 105°C indication. This means that the Buyer and/or the User must use a connection cable having maximum service temperature not lower than 105°C.



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