

# VIBRASWITCH® MALFUNCTION DETECTOR Model EURO 366

## GENERAL DESCRIPTION

The Model EURO 366 **VIBRASWITCH®** is primarily intended for indoor and outdoor hazardous and non-hazardous areas in those countries requiring ATEX and CE certifications. The EURO 366 employs the same time proven switch design found in Robertshaw's family of vibration switches.

The Model EURO 366 **VIBRASWITCH®** is a vibration sensitive device that protects rotating and reciprocating machinery from extensive damage resulting from mechanical malfunction. When the vibration level of a **VIBRASWITCH®** protected machine exceeds normal by a pre-selected amount, the normally open contacts of an internal switch close and the normally closed contacts open. This can be used to actuate either an audible warning system or a shutdown circuit before costly damage occurs

Failing bearings, broken blades and similar malfunctions cause increased imbalance or high frequency vibration detectable with the **VIBRASWITCH®**. It is designed for maintenance-free service in permanent installations.

The **VIBRASWITCH®** is an acceleration sensitive instrument that measures the total acceleratory shock present on the machine. Acceleration is a vibration characteristic of prime importance in cases of mechanical failure on reciprocating or rotating machinery. Acceleration is directly related to the shock forces (impact) acting on a machine - thus the **VIBRASWITCH®** offers a valid measurement of the destructive forces acting on the machine.

Accelerator measurements made by the **VIBRASWITCH®** are the summation of all of the individual accelerations giving a **total** destructive force acting on the machine - the result is **positive** protection.



**Ex** II 2 GD

EEx d IIB/C T6 IP66 T85°C – CESI 03ATEX186

## VIBRASWITCH® MODEL EURO 366

### FEATURES AND BENEFITS

- **Flame Proof (Explosion Proof)**  
EEx d IIC T6 IP66 T85°C – CESI 03ATEX186
- **Self Powered**  
Does not require any form of external power to operate.
- **Acceleration Sensitive**  
Measures total destructive shock, not displacement.
- **Minimum Maintenance**  
No moving parts except when set-point is exceeded.
- **Continuous Protection**  
No attention required after installation.
- **Ease of Installation**  
Requires no special training.
- **Long Life**  
Instrument is rugged and durable - no wearing parts.
- **Reset**  
Manual at unit and choice of remote electrical.
- **AC or DC**  
Reset coil options.
- **IP65 Enclosure**  
For outdoor and indoor use.

## PRINCIPLE OF OPERATION

The Model EURO 366 **VIBRASWITCH**<sup>®</sup> employs a magnetic circuit opposed by inertial and adjustable spring forces in the actuating mechanism. Operation of the **VIBRASWITCH**<sup>®</sup> may be understood by reference to Figure 1.

The armature is constrained so as to respond to only one direction of movement by a frictionless flexure pivot composed of two overlapping blocks and a leaf spring loaded in one direction to hold the blocks together. The armature rotates on the pivot being forced in one direction by the adjusting spring force and the other direction by the magnetic force.

When the entire assembly is subjected to vibration perpendicular to the base, the peak acceleration times the effective mass of the armature produces an inertial force, aided by the adjustable spring tending to pull the armature away from the stop pin and the restraining force of the magnet. When peak acceleration exceeds the set-point level the armature leaves the stop pin, increasing the gap and decreasing the force with the armature continuing to move up until it reaches the latch magnet, actuating the switch during its upward travel.

The **VIBRASWITCH**<sup>®</sup> may be reset by depressing the reset button or by applying power to the electrical reset coil. The effect of temperature in the mechanism is negligible as the elastic modulus of the adjusting spring and the magnetic flux through the air gap both decrease slightly with increasing temperature thereby compensating each other.

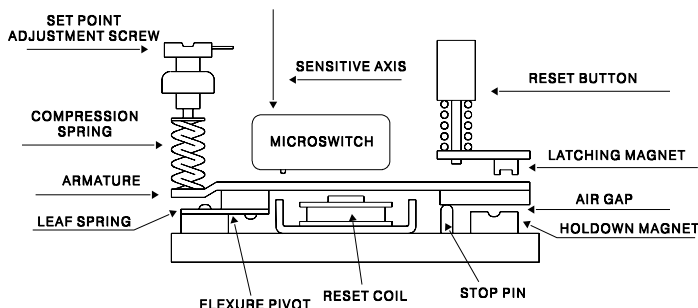


Figure 1

## SPECIFICATIONS

### ENVIRONMENTAL

<b>Enclosure</b> .....	Cast aluminum UNI 4514 alloy
<b>Weight</b> .....	2.2 kg (4.9 lb)
<b>Enclosure Classification</b> .....	Flame (Explosion) proof EEx-d-IIB/C-T6 IP66 T85° C
<b>Flame Proof Certification</b> .....	CESI 03ATEX186
<b>Enclosure Protection</b> .....	IP66 Standard
<b>Enclosure Sealing</b> .....	Neoprene o-ring
<b>Enclosure Finish</b> .....	Polyurethane painted olive drab
<b>Mounting Location</b> .....	Outdoors, unprotected
<b>External Bolts</b> .....	Stainless steel
<b>Nameplate</b> .....	Stainless steel
<b>Conduits</b> .....	2 x 3/4" NPT
<b>Ambient Temperature Limits</b> .....	-30° C to +85° C (-22° F to +185° F)
<b>Humidity</b> .....	To 95% relative humidity @ 37.7° C (100° F)
<b>Shock</b> .....	40 g @ 11 ms maximum

### ELECTRICAL

<b>Switch Configuration</b> .....	See table 1
<b>Contact Rating</b> .....	See table 5

### PERFORMANCE

<b>Vibration Measurement Range (Peak)</b>	
Mounted Horizontal....	0 to 4.5 g from 0 to 300 Hz
Mounted Vertical.....	0 to 3.5 g from 0 to 300 Hz
<b>Set Point Adjustment</b> .....	1 turn per g
<b>Accuracy</b> .....	± 5% of full range from 0 to 300 Hz
<b>Ambient Temperature Effect</b> .....	± 10%/55.5° C (132° F) maximum

### RESET COIL

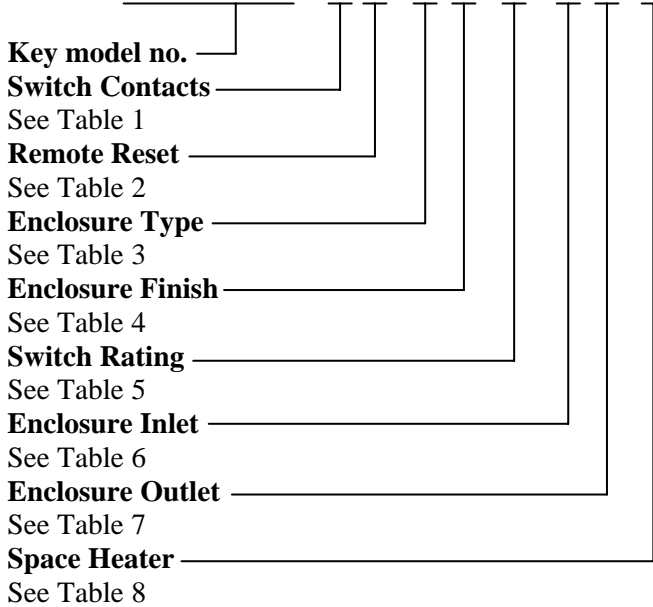
<b>Duty Cycle</b>	
All except 240 VAC coils .....	4 minutes ON max, 10 minutes OFF min
240 VAC coil .....	1 minute ON max, 10 minutes OFF min

<b>Voltage</b> .....	See Table 2
<b>Current</b> .....	See Table 2

## ORDERING INFORMATION

Specify complete model number according to the tables below.

**EURO 366 - A 8 - H 2 - A - F X - X**



### Key Model Number

Designation	Description
EURO366	Flame proof IP66 Vibraswitch®

**Table 1 - Switch Contacts**

Designation	Description
A	SPDT - single pole double throw load contacts
D	DPDT - 2 gang mounted SPDT load switches

**Table 2 - Remote Reset**

Designation	Description
0	No reset coil
2	24 VDC, 0.5 amp
4	48 VDC, 0.2 amp
7	120 VDC, 0.14 amp
8	120 VAC, 0.3 amp, 50/60 Hz
9	240 VAC, 0.3 amp, 50/60 Hz

**Table 3 - Enclosure Type**

Designation	Description
H	CS-INVR (with manual reset) T cable 105° C (-40 to +60° C)

**Table 4 - Enclosure Finish**

Designation	Description
2	Polyurethane painted olive drab (Tecnocolor RAL 6003)

**Table 5 - Switch Rating**

Designation	Description
A	Use with Table 1 designation A only. SPDT 7 amp max, 460 VAC max, NI; 0.5 amp at 120 VDC; 1 amp at 48 VDC; 2 amp at 24 VDC 5 amp at 12 VDC
E	Use with Table 1 designation D only. DPDT 5 amp max, 250 VAC max, NI; 5 amp max at 30 VDC
H	Use with Table 1, designation D only. DPDT with IP67 protection (sealed) and gold plated contacts for low voltage/current circuits. Suitable for intrinsically safe applications. 0.1 amp max at 125, 250 VAC, RES. 0.1 amp max at 30 VDC, RES. 5.0 mA min at 6 VDC, RES. 2.0 mA min at 12 VDC, RES. 1.0 mA min at 24 VDC, RES.

**Table 6 - Enclosure Inlet**

Designation	Description
A	3/4" NPT to 1/2" NPT adapter
B	3/4" NPT to 1/2" UNI adapter
C	3/4" NPT to M20 ISO adapter
D	3/4" NPT to 1" NPT adapter
E	3/4" NPT to 1" UNI adapter
F	3/4" NPT plug
X	3/4" NPT opening

**Table 7 - Enclosure Outlet**

Designation	Description
A	3/4" NPT to 1/2" NPT adapter
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D	3/4" NPT to 1" NPT adapter
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F	3/4" NPT plug
X	3/4" NPT opening

**Table 8 - Space Heater (See note 3)**

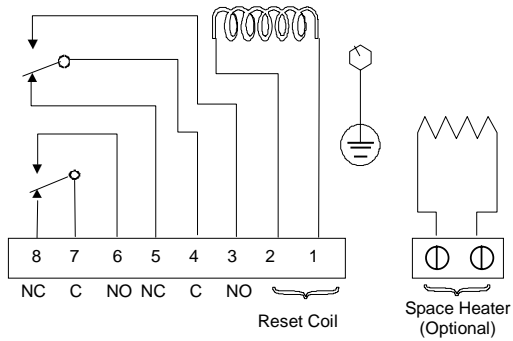
Designation	Description
F	24 VDC, 2 watt
G	48 VDC, 2 watt
H	120 VAC, 2 watt
L	120 VDC, 2 watt
M	240 VAC, 2 watt
X	No space heater

Notes:

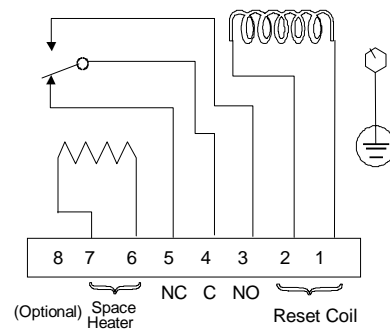
1. Plug may be discarded if not required.
3. Space heaters are intended to prevent condensation in the enclosure where climate conditions require. Space heaters are not required in most applications

**CUSTOMER ELECTRICAL CONNECTIONS**

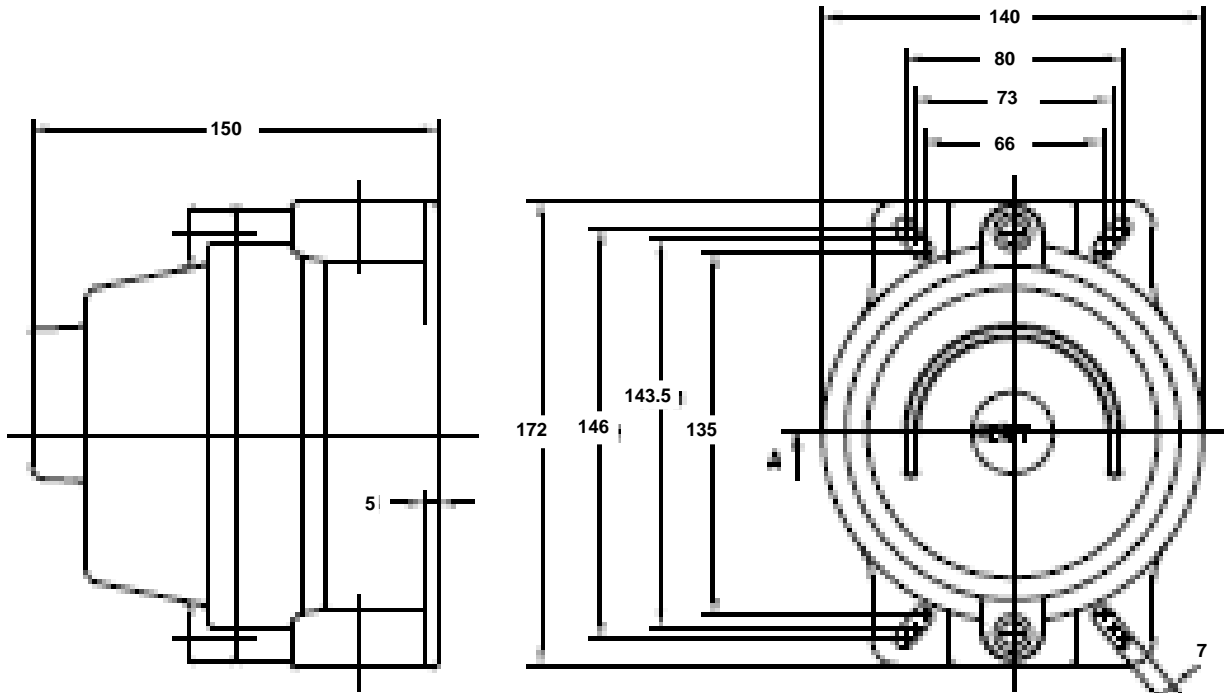
**EURO 366-D (DPDT Switch)**



**EURO 366-A (SPST Switch)**



**OUTLINE DIMENSIONS**



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