

PRODUCT SPECIFICATION SERIES EURO 366

VIBRATION SWITCH MALFUNCTION DETECTOR

Vibration Switch Detector Inside made by

Robertshaw Industrial Products Div.

GENERAL DESCRIPTION

The model EURO366 Vibration switch is primarily intended for indoor and outdoor hazardous and non-hazardous areas in those countries requiring CE/ATEX or I&C Ex certifications. The EURO366 employs the same time proven switch design found in Robertshaw's family of vibration switch.

The Model EURO 366 Vibration switch is a vibration sensitive device that protects rotating and reciprocating machinery from extensive damage resulting from mechanical malfunction. When the vibration level of a Vibration switch protected machine exceeds normal by a preselected amount, an internal switch closes, actuating 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 Vibration switch. It is designed for maintenance-free service in permanent installations.

The Vibration switch 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 Vibration switch offers a valid measurement of the destructive forces acting on the machine.

Accelerator measurements made by the Vibration switch are the summation of all of the individual accelerations giving a total destructive force acting on the machine, the result is positive protection.

PRINCIPLE OF OPERATION

The Model EURO 366 Vibration switch employs a magnetic circuit opposed by inertial and adjustable spring forces in the actuating mechanism. Operation of the Vibration switch may be understood by reference to Figure 1.

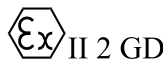
The armature is constrained so as to respond to only one direction of movement by a frictionless flexure pivot composed of two overlapping blocks and a leaf spring loaded in one direction to hold the blocks together. The armature rotates on the pivot being forced in one direction by the adjusting spring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



VIBRATION SWITCH MODEL EURO 366 - ALUMINUM enclosure



ATEX Certificate : CESI 03 ATEX 186X

Ex d IIB/IIC T6 Gb

Ex tb IIIC T85°C Db IP66

IEC Ex Certificate : CES 10.0018X

Ex d IIC T6 Gb

Ex t IIIC T85°C Db IP66

Others certifications available on request

FEATURES AND BENEFITS

- **Explosion Proof certificate compliance with**
ATEX : EN 60079-0, EN 60079-1, EN 60079-31, EN 60529
EN 61000-6-2, EN 61000-6-4, EN61326-1
IEC Ex : IEC 60079-0, IEC 60079-1, IEC 60079-31
- **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**
Choice of manual at unit and choice of remote electrical.
- **IP66 Standard**
For outdoor and indoor use

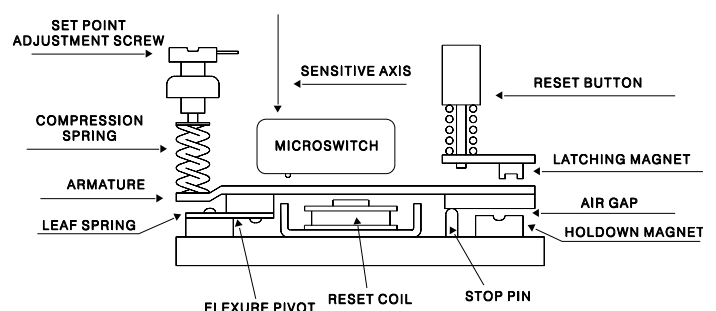


Figure No. 1

SPECIFICATIONS

ENVIRONMENTAL

Housing Cast Aluminum G-Al Si12
 Weight Model CS-INV-366..... 2,2 Kg
 Weight Model CS-INVR-366..... 2,5 Kg
 Enclosure Classification Explosion (Flame) Proof

ATEX >> **CE** (Ex) II 2 GD Ex d IIC T6 Gb – Ex tb IIIC T85°C Db IP66
IEC-Ex >> Ex d IIC T6 Gb - Ex t IIIC T85°C Db IP66

Explosion Proof Certificates.. CESI 03ATEX186X & IEC Ex CES 10.0018X
 Enclosure Protection..... IP66
 Enclosure Finish Sandblasted Outside & Inside (Standard)

Thermoset polymer powder coated RAL6003 embossed Out&Ins. (Optional)
 Mounting Location: Outdoors, Unprotected
 External Bolts Stainless Steel
 Nameplates Stainless Steel
 Conduits 2 x 3/4” NPT
 Explosion Proof certified Ambient Temperatures.. ①-40°C/+60°C (Standard)
 (Special – available on request) ② -60°C / +60°C

NOTE : ① **Operating temperature with switch “E” limited to -25°C / +60°C**
 ② **VibraSwitch limit working ambient temperature -40°C /+60°C**
 Humidity.....To 95% Relative Humidity @ +37,7°C
 Shock..... 40 g @ 11 ms. maximum

ELECTRICAL

Switch Configuration:.....See Table 1
 Contact Ratings:See Table 5

PERFORMANCE

Vibration Measurement Range (Peak) :
 Mounted Horizontal 0 ÷ 4,5 g from 0 to 300 Hz
 Mounted Vertical 0 ÷ 3,5 g from 0 to 300 Hz
 Set point Adjustment / Range 1 turn per g / from 0 to 4,5 g
 Accuracy.....±5% of full range (0÷300 Hz)
 Ambient Temperature Effect±10%/55,5°C maximum

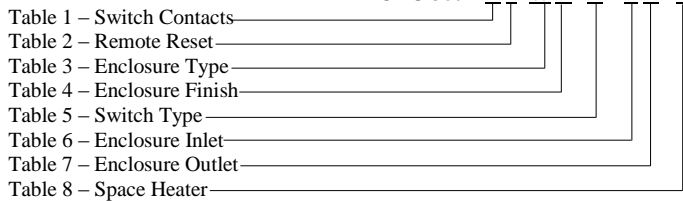
RESET COIL

Duty Cycle:
 Reset Coil 24, 48, 120 VDC, 120 VAC. 4 minutes ON max
 10 minutes OFF min
 Reset Coil 230/240 VAC 1 minute ON max
 10 minutes OFF min
 Standard Voltages and currentSee Table 2

ORDERING INFORMATION AND MODEL NUMBERS

Key Model Number Example

EURO 366 - A 2- W 2- A - F X - F



Key Model Number

Designation	Description
EURO 366	Vibraswitch® Explosion-Proof IP66

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 reset coil voltage
4	48	VDC / 0,2 Amp reset coil voltage
7	120	VDC / 0,14 Amp reset coil voltage
8	120	VAC / 0,3 Amp 50/60 Hz reset coil voltage
9	230/240	VAC / 0,3 Amp 50/60 Hz reset coil voltage

Table 3 – Enclosure Type		
Designation	Description	Approvals
J	CS_INV366L (STANDARD) T.amb. -40/+60°C	ATEX Exd & IECEx
W	CS-INVR366L(STANDARD)T.amb. -40/+60°C	ATEX Exd & IECEx
K	CS-INVR366L (SPECIAL) T.amb -60/+60°C	ATEX Exd & IECEx
NOTE: <i>Vibration switch working Tambient is limited to -40/+60°C</i>		
N	CS-INV Suitable for Intrinsic Safety Applications	NA
M	CS-INVR Suitable for Intrinsic Safety Applicat.	NA
O	CS-INV366L for not classified area	NA
R	CS_INV366L for not classified area	NA

NOTE : CS-INV > w/out Manual reset CS-INVR > with Manual reset

Table 4 – Enclosure Finish	
Designation	Description
1	Sandblasted
2	Thermoset polymer powder coated RAL6003 embossed

Table 5 – Switch Rating		
Designation	Resistive Load Ratings	Protection
A (SPDT only)	7,0 Amp max. 460 VAC max. 0,5 Amp at 120 VDC 1,0 Amp at 48 VDC 2,0 Amp at 24 VDC 5,0 Amp at 12 VDC	IP50
E [ⓐ] (Oper. temp. - 25°C only)	5,0 Amp at 125&250 VAC 3,0 Amp at 30VDC 0,4 Amp at 120VDC	IP50
G	2,0 Amp at 125 & 250 VAC 2,0 Amp at 30 VDC 0,4 Amp at 125 VDC	IP67 (Sealed)
H [ⓐ]	0,1 Amp max. at 125&250 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)

ⓐ Operating temperature for this version is limited at -25°C / + 60°C
 ⓑ Gold plated contacts, suitable for Intrinsic Safety Applications

Table 6 and 7 – Enclosure Inlet and Outlet	
Designation	Description
A	3/4”- 1/2” NPT Adapter
B	3/4”- 1/2” UNI Adapter
C	3/4”- M20 ISO Adapter
D	3/4” - 1” NPT Adapter
E	3/4” - 1” UNI Adapter
F	3/4” NPT Plug
G	E xd-IIC Cable Gland Inner 3/4” NPT for armoured cable Inner Seal kit Ø 8÷18mm – Outer Seal kit Ø 15÷24mm
H	For special customer’s adapter requirement Inlet
L	For special customer’s adapter requirement Outlet
P	3/4” - M25x1,5 Adapter
X	Standard 3/4” NPT

NOTE : Adapters and Cable Gland Inner delivered unmounted

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	230/240 VAC 2 Watt
X	No Space Heater

NOTE : to prevent condensation in the enclosure where climate conditions require

CUSTOMER ELECTRICAL CONNECTIONS

EURO 366-D (DPDT Switch)

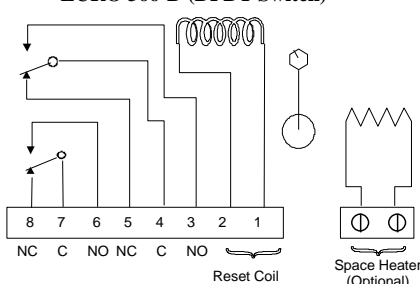


Figure No. 2

EURO 366-A (SPDT Switch)

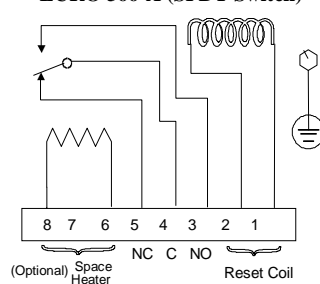


Figure No. 3

OUTLINE DIMENSIONS

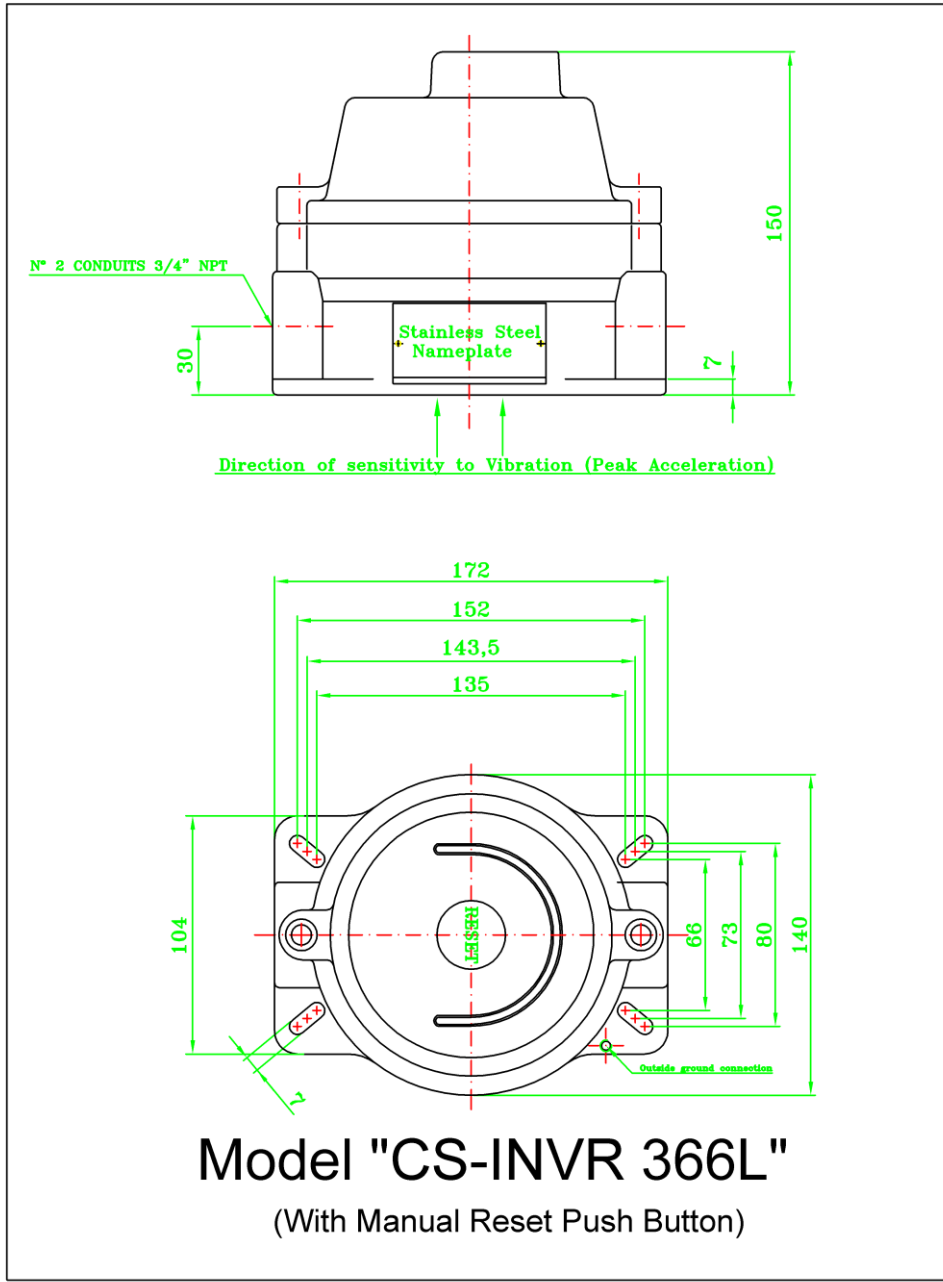


Figure No. 4

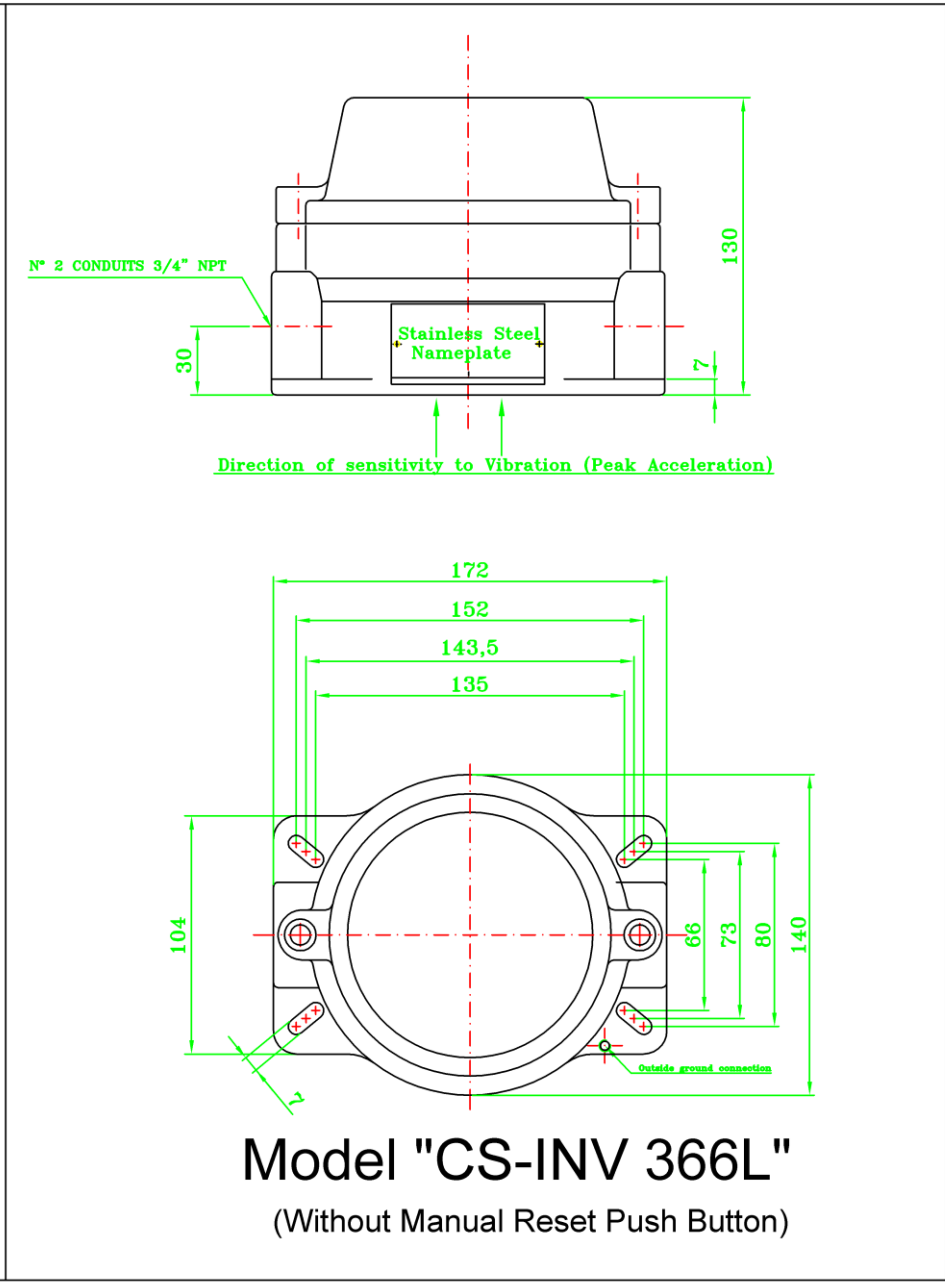
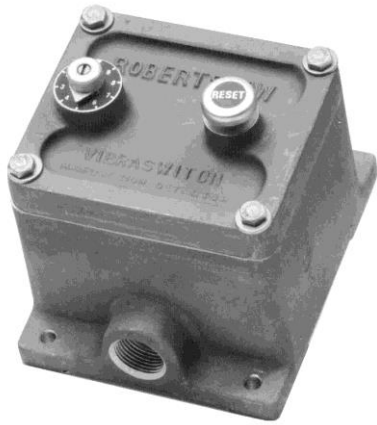


Figure No. 5

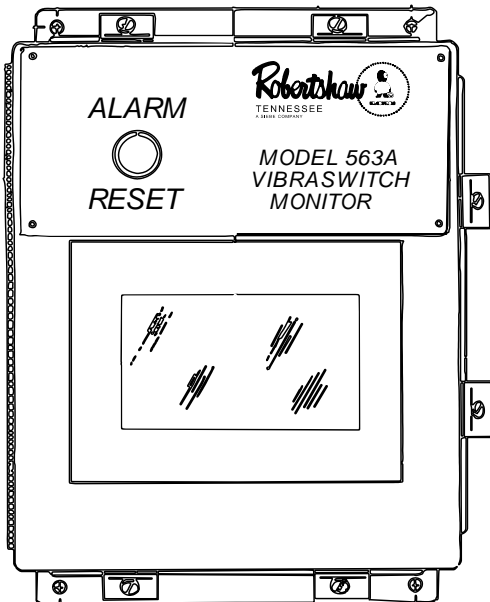
ALSO AVAILABLE



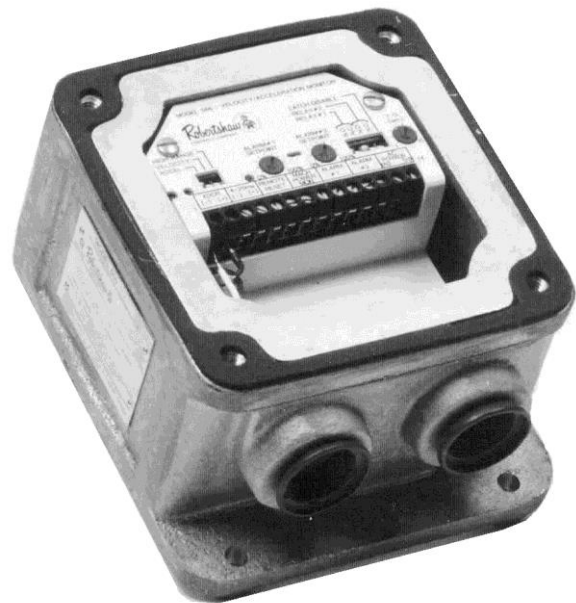
Model 365 Vibration Switch - Range 0-4,5g - Explosion Proof Class I Div. 1, Groups C & D, and Class II, Div. 1, Groups E, F & G,



Model 366 Vibration Switch – Range from 0 to 4,5 g - Enclosure NEMA 4 & 12 Equivalent to IP65



Model 563A Vibraswitch Monitors to eliminate false shut downs due to transient shocks or vibrations.(See PS-563A)



Model 566 Velocity-Acceleration Vibration Monitor. Two adjustable trip points. Analog 4-20mA output. Monitor delay on alarm #1