

Installation, Operation & Maintenance Instructions



VM Series

Models VM2, VM4 (Pressure Switches)

General

The unit is manufactured, checked and supplied in accordance with our published specification, and when installed and used in normal or prescribed applications, with the lid in place and within the parameters set for mechanical and electrical performance, will not cause danger or hazard to life or limb.



THE USERS ATTENTION IS DRAWN TO THE FACT THAT, WHEN THE UNIT IS 'LIVE' WITH RESPECT TO ELECTRICAL OR PRESSURE SUPPLIES, A HAZARD MAY EXIST IF THE UNIT IS OPENED OR DISMANTLED.



UNITS MUST BE SELECTED AND INSTALLED BY SUITABLY TRAINED AND QUALIFIED PERSONNEL IN ACCORDANCE WITH APPROPRIATE CODES OF PRACTICE SO THAT THE POSSIBILITY OF FAILURE RESULTING IN INJURY OR DAMAGE CAUSED BY MISUSE OR MISAPPLICATION IS AVOIDED.

Operating principles

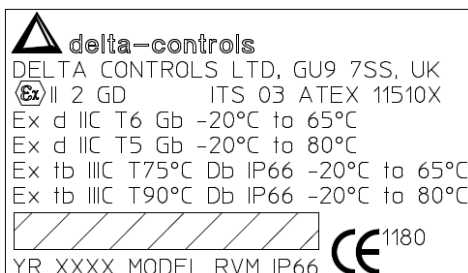
Pressure Switch models VM2 (low pressure) and VM4 (high pressure) are diaphragm operated switches.

These diaphragms generate a force proportional to the applied pressure and are balanced by a user adjustable control spring. When the force exceeds that created by the control spring, the diaphragm moves causing a push rod to actuate a snap-acting micro-switch.

CERTIFICATIONS

Flameproof Models

Flameproof models carry the following label markings:



Special Conditions of Use

The certificate number has an 'X' suffix which indicates that special conditions of installation and use apply. Those installing or inspecting this equipment must have access to the contents of the certificate or these instructions. The conditions listed in the certificate are reproduced below:



ATEX

THE CABLE ENTRY POINT MAY EXCEED 70°C. READ THE MANUAL TO DETERMINE THE CORRECT TEMPERATURE RATING FOR THE SUPPLY CABLE.

INSTALLATION

Mounting (All models)

The instruments are designed to be mounted vertically with the process connection underneath. However, mounting up to 45° from the vertical in any plane is acceptable, although a small calibration shift may occur. They can be mounted either direct to process, or to a wall or panel, using the mounting holes provided. Select the mounting point so as to avoid excessive shock, vibration or temperature fluctuation. Instruments should be mounted to avoid excessive heat transfer from the process lines or adjacent plant. To avoid undue stresses being imparted to the instrument when wall/panel mounted, it is recommended that a short length of flexible line be installed between the instrument and process line. If sudden changes of pressure (pulsations) are likely then we recommend that snubbers are fitted between the process line and instrument.



ALWAYS HOLD A WRENCH ON THE PRESSURE ENTRY HEX WHEN MAKING PRESSURE CONNECTION TO THE SWITCH. DO NOT TIGHTEN BY TURNING THE ENCLOSURE.



CHECK THE CONNECTION THREAD SIZE AND SPECIFICATION ON THE UNIT TO AVOID MIS-MATCHING WITH THE PROCESS CONNECTION ADAPTOR. SEE DIGIT 11 OF PRODUCT CODE.

Installation of electrical adaptors and cable glands to the electrical entry

One electrical entry is provided. The standard entry is a single ISO M20 x 1.5 thread. Other non-ISO and tapered threads will have their size and type stamped on the enclosure next to the entry.



ATEX

TAKE CARE TO SELECT AND INSTALL ADAPTORS THAT DO NOT REDUCE THE ENCLOSURE'S DEGREE OF PROTECTION WHEN IN USE IN ZONE 1 HAZARDOUS AREAS.



ATEX

UNUSED ENTRIES MUST BE FITTED WITH ATEX CERTIFIED FLAMEPROOF STOPPING PLUGS.



ATEX

IT IS A SAFETY REQUIREMENT THAT AT LEAST 5 FULL THREADS ARE ENGAGED BETWEEN THE ADAPTER, CABLE GLAND OR STOPPING PLUG, AND THE ELECTRICAL ENTRY WHEN THE UNIT IS IN OPERATION. NEVER OPERATE THE UNIT UNLESS THIS CONDITION IS MET.

Wiring



DISCONNECT ALL SUPPLY CIRCUITS BEFORE WIRING



ATEX

WIRE IN ACCORDANCE WITH LOCAL AND NATIONAL CODES. USE CABLES NO LARGER THAN 2.5 MM² (14 AWG)



DO NOT EXCEED ELECTRICAL RATINGS STATED IN LITERATURE AND ON NAMEPLATES.

The three switch terminals are clearly marked "NORMALLY CLOSED", "NORMALLY OPEN" and "COMMON". The following diagram (Fig. 1) can be used as a guide for wiring.

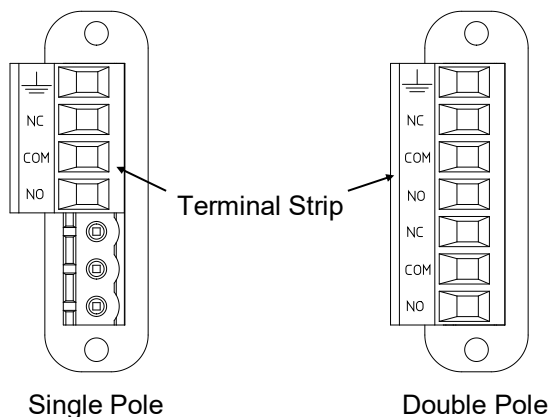


Fig. 1

Insert bare wires fully into the terminal block and tighten securely. Keep wiring tails to a minimum and check that wires do not interfere with the operating mechanism. Use the earthing / grounding points provided. The terminal strip is designed to be pulled out to assist wiring up.

End of line resistors

Some products may be supplied to order fitted with end of line resistors. Resistors in use may generate a heat source. The type, quantity, configuration, fitment method and allowable electrical loads are limited by the scope of the certification.



ATEX

NEVER FIT END OF LINE RESISTORS OR MODIFY WITHOUT REFERENCE TO DELTA CONTROLS

Replacing cover / lid on Flameproof enclosures

Before connecting to electrical power, screw on cover/lid hand tight making sure that mating surfaces of the lid and enclosure are in contact. Use the locking screw provided to prevent casual and unauthorised removal of the cover/lid.



ATEX

DO NOT USE GREASES OR LUBRICANTS WHICH ARE NOT COMPATIBLE WITH THE ENVIRONMENT AND / OR PROCESS.



ATEX

IT IS A SAFETY REQUIREMENT THAT AT LEAST 5 FULL THREADS ARE ENGAGED BETWEEN THE COVER / LID AND THE ENCLOSURE WHEN THE UNIT IS IN OPERATION. NEVER OPERATE THE UNIT UNLESS THIS CONDITION IS MET.

OPERATION

Adjustments

Switches are supplied calibrated at the midpoint of their range and to a falling pressure or temperature unless otherwise specified.

Set point adjustments (All Models):

1. Isolate the instrument from process and power.
2. Remove the lid to allow access
3. Slacken the set point lock screw.
4. Using a suitable spanner, rotate the range adjuster clockwise to increase the set point and counter-clockwise to decrease the set point.
5. Tighten the set point lock screw.

Note: For accurate setting, a suitable pressure gauge must be used in conjunction with the above procedure. Do not attempt to set the switch outside the scale limits.

Though the unit may be set anywhere within its range, for optimum performance, it is good practice to have a set point value between 25% and 75% of span.

MAINTENANCE

Inspections should be carried out at quarterly to yearly intervals depending upon operating conditions. Isolate the unit from process and power and remove the lid. Check all terminals for tightness. Check that cable tails are not fouled or chafed. Check for internal condensation. Check that the gasket is seated properly in the lid recess and is not worn. Keep the enclosure and lid clear of dust build up.

It is recommended that instruments used to provide an alarm are operated periodically to ensure they are functioning correctly.

If further maintenance is required seek advice from DELTA CONTROLS before attempting repair or replacement of parts.

Should the diaphragm fail the process will vent to atmosphere via a control orifice without pressurising the switch enclosure. Periodically ensure the vent area does not become blocked and vent plug has not degraded. Ensure that the vent area is not obstructed.

Replacement Parts

Use only factory authorised parts and the fitting instructions that are supplied.

Warranty

See Standard Conditions of Sale.

DIMENSIONS

Models V2, V4 (Pressure Switches)

