

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.

HEALTH AND SAFETY AT WORK ACT 1974

WARNINGS

1. 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.

2. 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 MIS-APPLICATION IS AVOIDED.

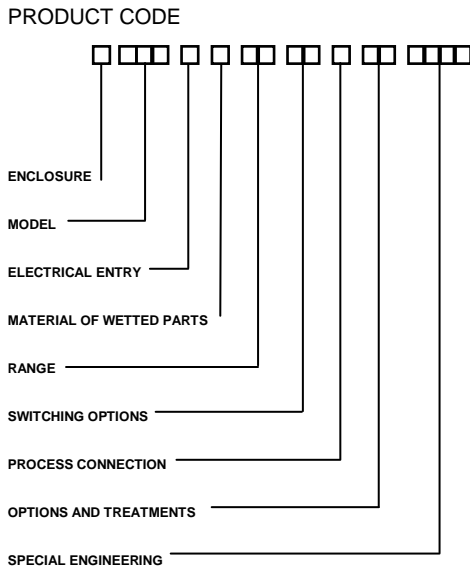
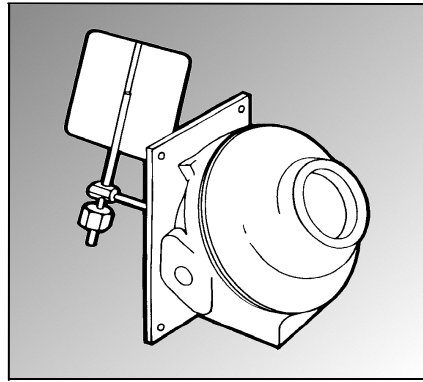
OPERATING PRINCIPLES

The sensing element is a pivoted, counter-weighted vane, which at its rest position lies at right angles to the direction of flow. The vane is mounted on a shaft, which carries two cams that operate one or two microswitches when the shaft is rotated. When the nominated flow velocity is reached the vane turns the shaft enough to operate the switch(es). When flow velocity falls the shaft position is restored and the switch(es) resets. Two springs constrain the shaft movement. One compensates for any gravitational effects on the vane and for the internal spring setting of the switch(es). The other determines the amount of flow on the vane to operate the switch(es).

REPLACEMENT PARTS

Use only factory authorised parts and procedures. The only parts normally recommended for site replacement are the microswitches. However, in some circumstances other spares kits are available. Apply for details quoting the serial number and full product code.

WARRANTIES – SEE CONDITIONS OF SALE



INSTALLATION

The instruments may be used on flow in any direction with the operating shaft horizontal or vertical. The instrument is supplied with the microswitch set to operate correctly in relation to rotation of the operating shaft. Vane and counter-weight are supplied separately. Select the mounting point so as to avoid excessive shock, vibration or temperature fluctuations. Install far enough away from bends, tees or obstructions to avoid non-steady flow. Instruments should be mounted to avoid excessive heat transfer from adjacent plant.

MOUNTING

Provide aperture in duct large enough to accept counterweight / vane (refer to fig 1). Position the vane assembly axially along the operating shaft which may be adjusted to a maximum of 100 mm from the mounting plate to the vane centre line by tightening the M3 socket set-screw provided, ensuring that the screws locate on flat of shaft.

WIRING (Fig 2)

Wire in accordance with local and National codes. Use cables no larger than 2.5 mm² (14AWG). Deliver electrical connection through a suitable cable gland, which will maintain the IP rating of the instrument. 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 points provided.

CERTIFIED ENCLOSURES

All Model 131 velocity switches are supplied with BASEEFA certified enclosures to the following standards:

Zone 1 (Div 1) IEC 79-1

BS 5501: Parts 1 and 5: EN50 014 and EN50 018 CENELEC. Codes "H" for aluminium and "K" for cast iron. EExd IIC T6.

All enclosures are suitable for outdoor use and the majority of products are rated IP66. Refer to the product label and/or leaflet. Only operation, maintenance or repair procedures either contained herein or approved by Delta Controls may be used, to avoid rendering the equipment unsafe in operation and/or nullifying the Certification.

NO MODIFICATIONS ARE PERMITTED.

Electrical Adaptors

Zone 1. Use only certified adaptors for Zone 1.

WARNING: IT IS A REQUIREMENT OF SAFETY THAT AT LEAST 5 FULL THREADS ARE ENGAGED BETWEEN THE ADAPTOR AND CONDUIT ENTRY. TAKE CARE TO SELECT AND INSTALL ADAPTORS THAT DO NOT REDUCE THE ENCLOSURE IP RATING.

References for Selection and Installation

BS 5345 Part 3 for Enclosure Codes H and K
BS 5345 Part 4 for all Enclosure Codes (Intrinsic Safety)
BS 5490 IEC 529 IP RATING (Ingress Protection)

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. Rectify as necessary.

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

CAUTION

Moving parts have been treated with a water repelling lubricant before leaving the factory. Occasional inspection and the application of a water repelling lubricant is recommended to ensure moving parts remain free under all conditions.

Zone 1 enclosures

Thread seal and contact surfaces must be lightly lubricated using a non-setting non-corrosive grease compatible with the nitrile lid seal. Do not use copper bearing grease on aluminium. Screw on lid hand tight making sure that mating surfaces of the lid and enclosure are in contact. Retighten the lid lock screw.

WARNING: IT IS A SAFETY REQUIREMENT THAT AT LEAST 5 FULL THREADS ARE ENGAGED WHEN THE UNIT IS IN OPERATION. NEVER OPERATE THE UNIT UNLESS THIS CONDITION IS MET. DO NOT USE GREASES OR LUBRICANTS NOT COMPATIBLE WITH THE ENVIRONMENT OR PROCESS.

OPERATION

Each vane assembly is supplied factory counter-weighted and requires no site adjustment. However, the vane assembly is supplied loose and will require fitting to the instrument before setting. The instrument is supplied with the microswitch(es) set to operate correctly in relation to rotation of the operating shaft and red springs fitted to give maximum sensitivity to low flow. For opening details see fig 3.

Setting Adjustment: Models 131 (Fig 6)

Fig 5 gives an indication of flow rates covered by the 2 vane sizes. Reference to this will help select which vane to fit before setting.

1. Isolate the instrument from supply.
2. Remove the instrument lid.
3. Adjust springs as required by rotating the M4 hexagon screws: turn clockwise to increase the setting and counter-clockwise to reduce setting. A 7mm A/F spanner will fit these screws
4. Alternative springs are supplied to cover the full range of operation from 2.5 to 12.5 metres/second (fig 5). These may be used singly or in pairs as the user desires, provided the lowest setting is sufficient to return the vane safely on no flow. Each spring may be adjusted via an M4 hexagon screw, rotating clockwise to increase tension and thus reducing flow sensitivity.

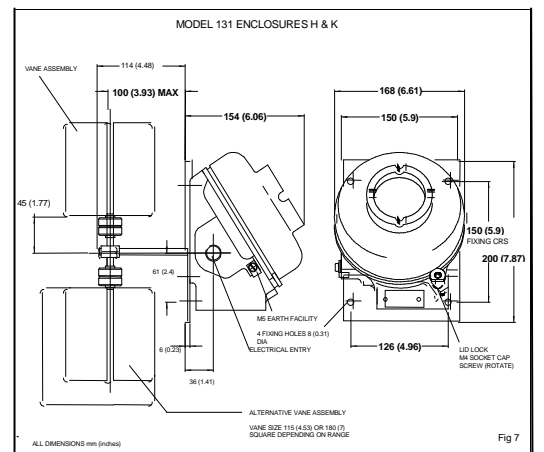
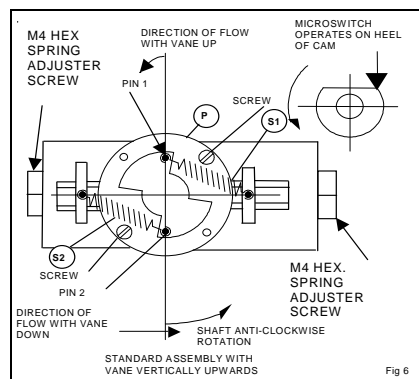
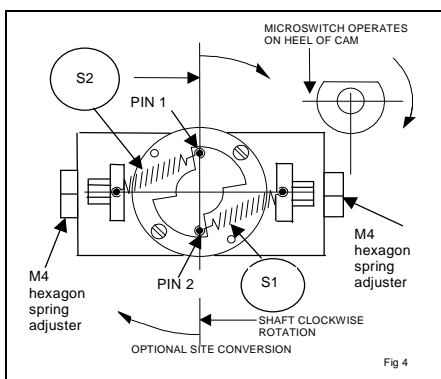
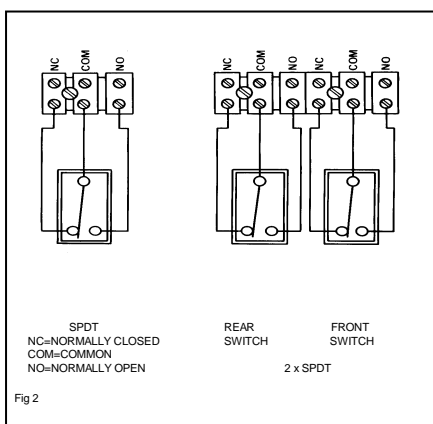
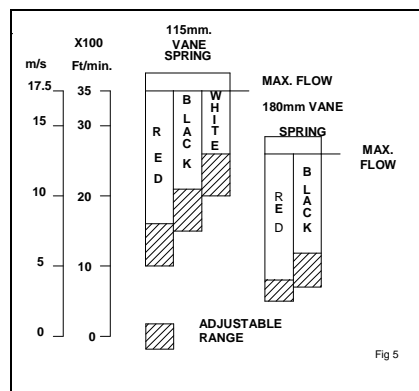
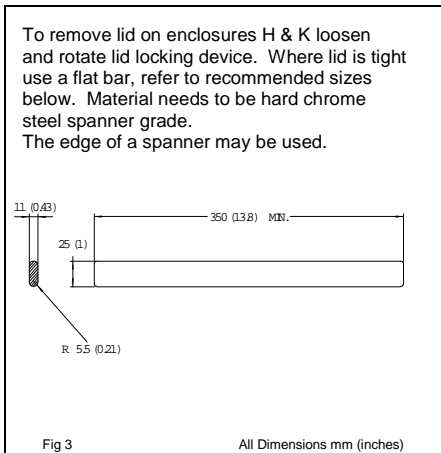
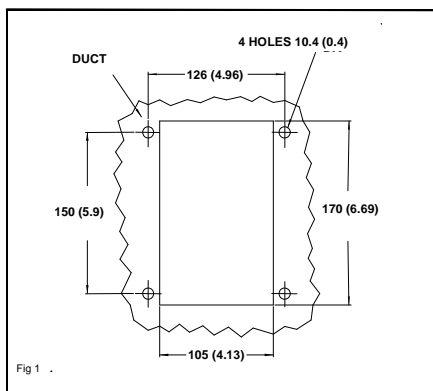
Changing direction of flow: models 131 (fig 4,6)

If when installed the direction of operation is wrong this can be reversed in situ as follows (refer to figs 4 & 6):

- a) Remove springs S1, S2
- b) Remove two M3 screws and reassemble plate P as shown in fig 4.
- c) Replace two M3 screws.
- d) Replace spring S1 on pin 2.
- e) Replace spring S2 on pin 1.

2xSPDT

Both cams are accessible with the enclosure cover removed and may be adjusted by slackening two M3 hexagon headed screws. Normally the cams are set to operate each microswitch simultaneously at approximately 15° from the vertical. This may be altered in situ if desired to offset the operation of each microswitch individually or position the operation of both microswitches for a different vane angle. However, it is recommended that at least 5° clearance between operation of microswitches and stops is allowed for safety. After changing flow direction, it may be necessary to alter the cam position, to prevent the cam adjustment screw heads from hitting the microswitch bodies before the stop pins hit the stop plate.



In the interest of development and improvement Delta Controls Ltd, reserve the right to amend without notice, details contained in this publication. No legal liability will be accepted by Delta Controls Ltd, for any errors, omissions or amendments.

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