

INSTALLATION AND OPERATING INSTRUCTIONS FOR TRAILING WIRE FLOW SWITCHES

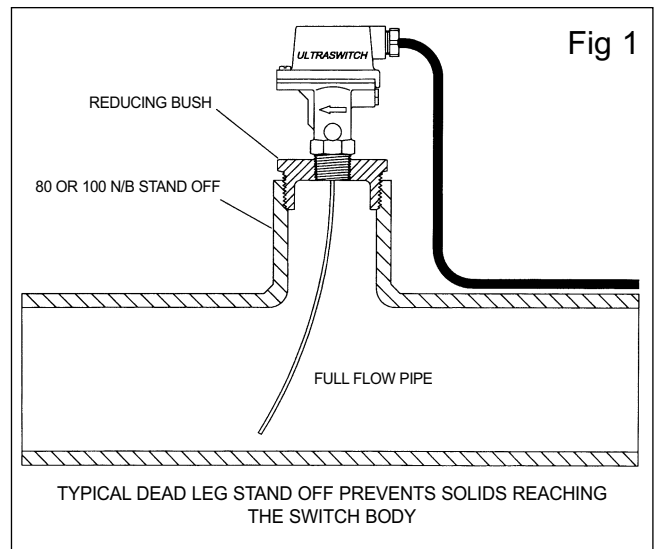
PLEASE READ THIS INSTALLATION SHEET CAREFULLY AND FULLY BEFORE ATTEMPTING TO INSTALL OR SERVICE THIS FLOW SWITCH

INTRODUCTION

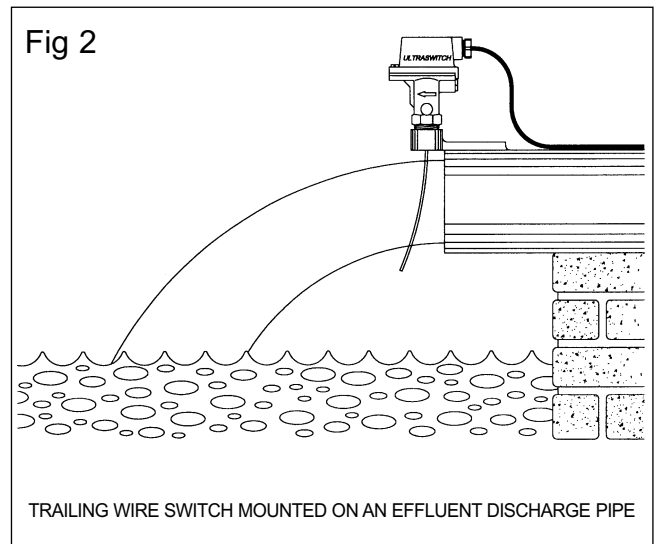
The trailing wire flow switch consists of a magnetically coupled flow switch with a flexible trailing wire sensor. Moving liquid acting against the trailing wire, and causing it to be displaced, actuates the switch. A magnetically isolated arm, attached to the top end of the trailing wire operates a reed switch inside the switch housing. Depending on which electrical module is installed in the switch, the reed switch is used to either directly provide an output, or in AC circuits, to ignite a triac, which in turn is used as the output device. Several models are also available that contain an electromechanical relay. The relay's contacts are used as the switch output. A label with the electrical rating, and type of module installed in the switch is located inside the lid.

INSTALLATION

The nature of the trailing wire switch is such that it lends itself to innovative applications. For example the switch can be used to detect solid objects moving on a conveyor belt, and as an alternative to photoelectric sensors in many dusty and dirty environments. Equally, the switch can be used to detect water flow in a river, open channel or pipe. Consider your application carefully; try to mount the switch as far above the material to be detected as possible. In liquid flow applications it will generally not be known what degree of submergence of the trailing wire will be required to work the switch. In such situations hold the switch above the moving liquid and slowly lower the end of the wire into the liquid until the switch arm swings downstream, to the on position. Observe the amount of submergence, and mount the switch accordingly. Avoid mounting the switch in situations where the trailing wire is liable to trail into valves, pumps, or any objects liable to be damaged, or to mechanically damage the wire. Avoid any location that may substantially disturb the linearity of the flow. Do not expose the switch to vibration, agitation, aeration, aspiration or cavitation. Severe stress and strain will eventually work harden the flexible trailing wire and may lead to early failure.



Where the switch is to be mounted in a full flow pipe, arrange a dead leg stand off on the top of the pipe, as depicted in Fig 1. Equally the switch could be mounted in front of an open discharge pipe, as depicted in Fig 2. The general idea is to prevent solids from entering the switch body. Any equivalent arrangement that keeps the switch body above the liquid would be equally valid.



SENSITIVITY ADJUSTMENT

There is a hexagonal plug located under the back end of the electrical housing of the switch. This plug covers an adjusting screw that allows adjustment of the amount of pre-load on the switch arm. That is, the force with which the arm attempts to return to the off position. As supplied, the adjustment screw is wound fully in. This position is the least sensitive position, as

it causes the arm, and its attached wire to be pushed toward the off position quite strongly. Using a broad bladed screwdriver, wind the adjusting screw anti-clockwise, outward, to INCREASE sensitivity to flow. As the screw is progressively wound out, its influence on the switch arm reduces. If the screw is wound fully out, it has very little or no effect on the arm, and the arm itself will increasingly behave like a pendulum, seeking its own balance point. An important point to note is that as the adjusting screw is wound out, and its influence on the arm reduces, it becomes increasingly important exactly what the orientation of the switch is. For example consider pipework that runs slightly downhill. In such a situation, the switch arm and trailing wire will automatically adopt a perpendicular position. Without the substantial repelling action of the adjustment screw, this vertical position, in relation to the slanting switch body may well hold the switch in the on position, even if the liquid being monitored is stationary.

With careful levelling of the switch, at the point where the flow switch is installed, and by judicious adjustment of the sensitivity screw, the trailing wire switch can be set to detect quite low flows.

ELECTRICAL

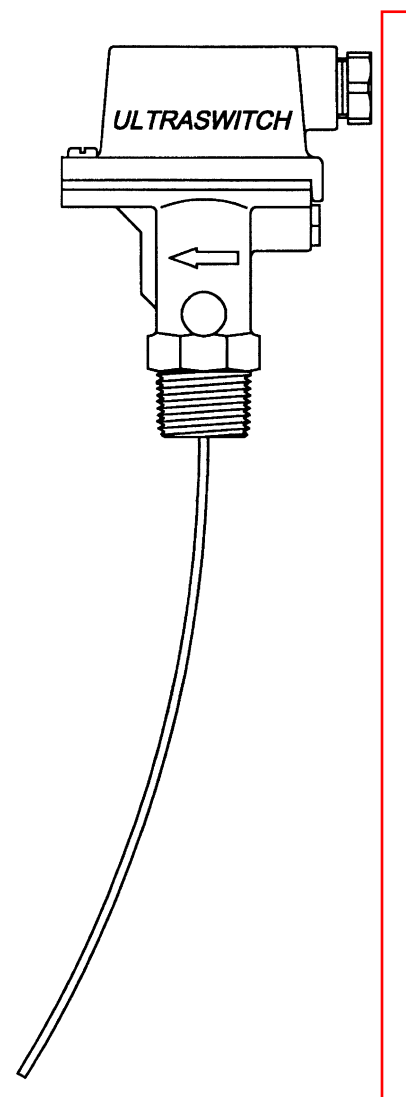
All mains voltage electrical work associated with this flow switch should be carried out by qualified persons, and must conform to relevant local codes.

The trailing wire flow switch has an M20 cable gland that accepts cable of 6 to 10mm diameter. By removing the gland nut, an M20 conduit fitting may be used. A label with the electrical rating of the specific circuit board installed in the switch is located inside the electrical enclosure lid. Where reed switches are used as the primary switch, care should be taken not to exceed their rating. Reed switches are mechanically fragile, and if exposed to inductive loads, liable to weld in the ON state. Avoid inductive or capacitive loads. Avoid laying switch cables close to other cables, in particular mains cables. If long runs of cable are involved, use either shielded wire, or select a switch

model that incorporates an inbuilt relay, and operate the control circuit at either 240 or 24V AC. Note that all single pole single throw circuit boards are reversible, to reverse the switch function, that is, convertible from normally open to normally closed, by reversing the circuit board.

HAZARDOUS LOCATIONS

Trailing wire flow switches are classed as simple devices, as such; they do not require separate certification to be used in hazardous locations. Specifically, the switches do not contain any mechanism for the storage or production of electrical energy. These sensors can be used in explosion prone environments, provided they are isolated via an intrinsically safe barrier, (a zenner barrier).



MADE IN AUSTRALIA BY

KELCO Engineering Pty Ltd

ABN 20 002 834 844

Head office and factory

9/9 Powells Road Brookvale 2100 NSW Australia

Phone: +61 2 9905 6425 Fax: +61 2 9905 6420

Email: sales@kelco.com.au Web: www.kelco.com.au

©2008 Kelco Engineering Pty Ltd

PLEASE NOTE: Kelco Engineering Pty Ltd reserves the right to change the specification of this product without notice. Kelco Engineering Pty Ltd accepts no liability for personal injury or economic loss as a consequence of the use of this product. All rights reserved copyright Kelco Engineering Pty Ltd © 2008.