

## LS Series Tip Switch

### 1. Description

Amcontrol Type LS Tip Switches are a dependable and versatile means of monitoring flow and high levels in bulk materials. The probe is completely sealed and self-contained with a built-in time delay, eliminating in most cases the need for costly external circuitry, relay amplifiers and time delay relays.

Construction is of a very robust nature and is unaffected by vibration due to the patented hydraulic dampening device. No mercury switch is used in the probe construction making it particularly safe in the food processing industries. The Tip Switches can be adapted to suit many applications and a variety of materials and are designed for the easy attachment of paddles, fins and wear plates.

### 2. Features

- Rugged, light and heavy duty probes for a wide range of applications
- Built in time delay
- Does not require costly relay amplifiers, time delay circuitry and associated wiring.
- Capable of handling up to 5 Amps at 250 volt max resistive
- Unaffected by vibration
- Contains no mercury
- Versatile, can be used with coarse or fine materials

### 3. Operation

Movement in any axis of approximately 15° initiates Tip Switch actuation. When tilted a built-in micro switch is actuated by a unique patented dampened pendulum movement. The high rating of the switch permits it to be wired directly to a conveyor/feeder starter or alarm system. Four core flexible cable is used with common, normally open, and normally closed and earth connections. Optional paddles, fins, wear plates and hanging adaptors are available on request.

### 4. General Comments

The use of a mechanical switch has advantages when used in a device with a wide application such as the LS Series Tip Switch. It can be used on AC or DC circuits and with considerable variation in voltage and current ratings.

However, it is possible to inadvertently overload the switch, particularly when used for switching AC contactors and relays. This is because of the high inrush current of modern contactors. The problem is compounded when the switch is used in an environment where it is subject to frequent operation, although it must be said that the inbuilt time delay of the Tip Switch helps in this regard. To avoid this situation refer to 'Recommended Rating and Snubber Circuits' section.



### 5. Recommended Rating and Snubber Circuits

To obtain maximum life from a Tip Switch it is suggested that certain additional precautions be adopted.

It is recommended that when used with AC contactors and relays, the maximum rating of the switch can be regarded as 3 Amps.

Contactors having a pull-in (inrush) rating of greater than 750VA should not be used without an interposing relay. It is good practice to use an interposing relay wherever the use of a large contactor is being considered.

On applications where the Tip Switch does switch a contactor or relay having a hold-in rating of greater than 50VA a snubber circuit should be connected across the appropriate Tip Switch contacts.

A suitable snubber can be either a Resistor or Capacitor connected in series or a Voltage Dependent Resistor.

- An RC-snubber can be made with typically a 100 Ohm resistor (1 watt) and 0.1  $\mu$ F capacitor. This combination can often be obtained potted in a contactor suppressor assembly. Note the capacitor voltage rating must be suitable for the AC peak applied voltage.
- Voltage dependent resistors of the "Zinc Oxide Varistor" type are also recommended, but exact ratings must be ascertained from the manufacturer's data after contact size and coil voltage are known.

When the Tip Switch is used in conjunction with Static Switching with DC voltages less than 12 Volts and current lower than 50mA, special low voltage switches fitted with gold plated contacts must be used. Refer to 'Parts List'.

## 6. Technical Specifications

### Standard Range:

MODEL LS-102: Stainless steel. Weight 900g

### Heavy Duty Range:

MODELS LS-10: Steel with zinc-plated finish. Weight 1.8kg

MODELS LS-10D: Steel with zinc-plated finish. Weight 2.7kg

Switch: Snap Action SPDT sealed. Rated at 5 Amps resistive at 250VAC

Cable: 4 Core 1mm EPR double insulated flexible. Insulation rating 750V. Standard cable length supplied 6 metres.

(Greater lengths are available on request).

Operating Angle: 15° to 20° from vertical in any axis.

Time Delay: Hydraulic, fixed at 2 seconds.

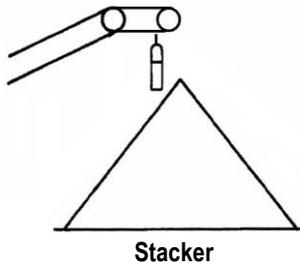
Operating Temperature: -30°C to +60°C

## 7. Parts List

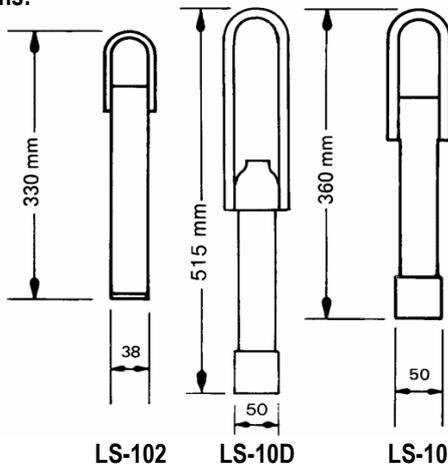
101646	TIPSWITCH LS10D/6
101647	TIPSWITCH LS102/6 S/Steel
101648	TIPSWITCH LS10/6 Z/P Steel Body
110108	TIPSWITCH LS10DG/15 (Gold Contacts)
115344	*TIPSWITCH LS10G/6 (Gold Contacts)
115363	*TIPSWITCH LS10DG/6 (Gold Contacts)
115372	TIPSWITCH LS10D/10
122627	*TIPSWITCH LS10G/6-20mm Entry (Gold Contacts)
104342	TIPSWITCH LS10/15 P/COATED STEEL BODY

\*Only these parts can be used with iMAC input modules, and if cable extension is required, an overall screened cable must be used, with the screen terminated to L1-

### Typical Applications

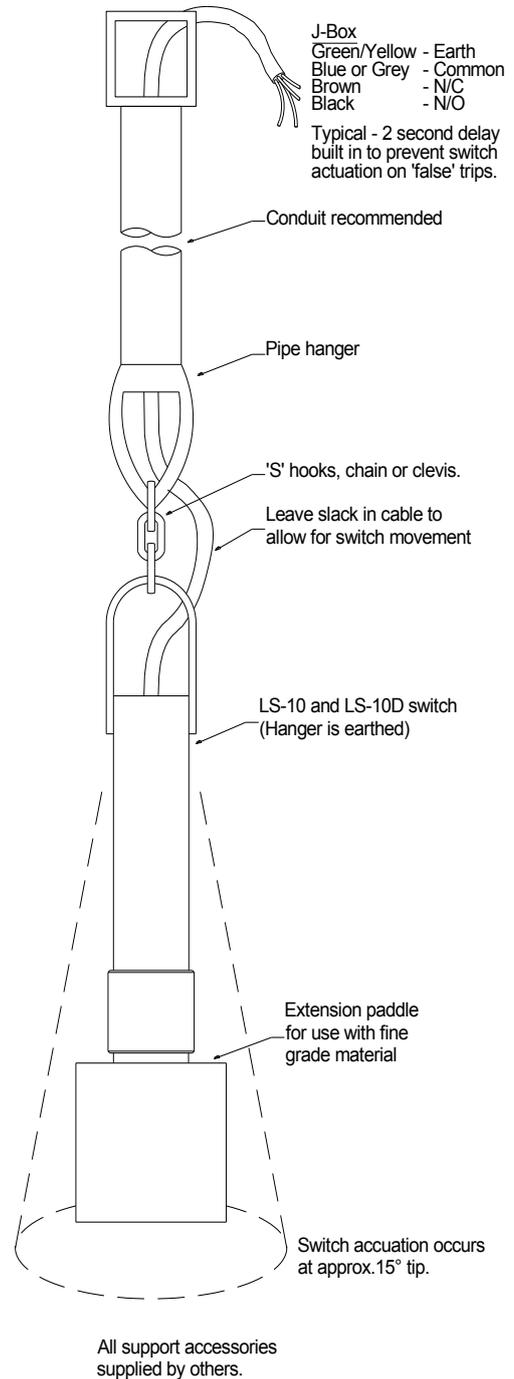


### Dimensions:



## Application and possible installation method

The Tip Switch should be hung vertically, clear of the belt or main flow of material, so that in a fault condition the unit is tilted and the contacts will change state to either alarm or cause an operational change.



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