



LEVEL INSTRUMENTATION & CONTROL SOLUTIONS

THREE POINT WEATHERPROOF DISPLACER LEVEL SWITCH , SERIES 137 - D

The 137-D is a reliable top mounted level switch for use with water and liquids of density greater than 0.9 Kg/dm^3 . It is suitable for tanks with measuring range upto 20,000 mm and pressure upto 10 kg/cm^2 . It is suited for Non corrosive duties. It is best suitable for applications which demand following features.

- Set point adjustability over entire measuring range.
- Standard model suitable for 0° to 150° C .
- Three points with fixed or Variable differential.
- Use of stilling well or external cage is recommended in case of excessive turbulence in the tank.

❖ SPECIFICATIONS:

- Measuring range : 335 mm (Min.)
20,000 mm (Max.)
- Operating differential
Std. Displacer : $25 \pm 10 \text{ mm}$ (Max.)
Split Displacer : adjustable.
- Accuracy : $\pm 10 \text{ mm}$.
- Temperature range : 0°C to 150°C (Std.)
- Output : One/Two c/o @ 5A, 230
VAC (Resistive).
- Terminals : Suitable for 2.5 mm^2 ,
conductor size.
- Working pressure : 10 kg/cm^2 (max)
- All wetted parts : SS 316.
- Density : 0.9 to 1.2 Kg/dm^3
(Mainly for water duty)
- Enclosure : Weatherproof to IP-67 as
per IS:13947-1993.

❖ OPERATING DIAGRAM:

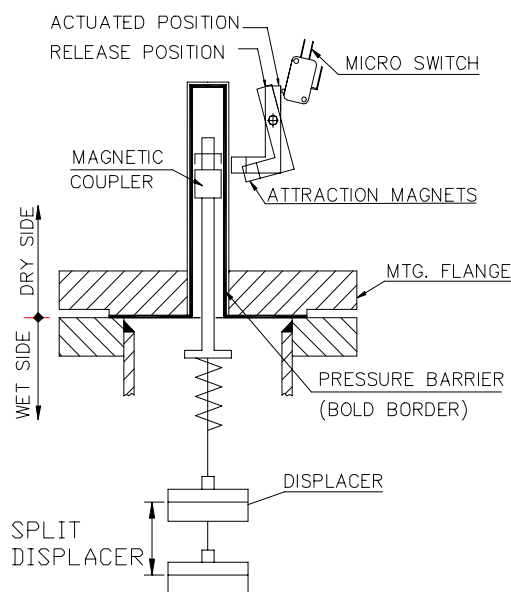


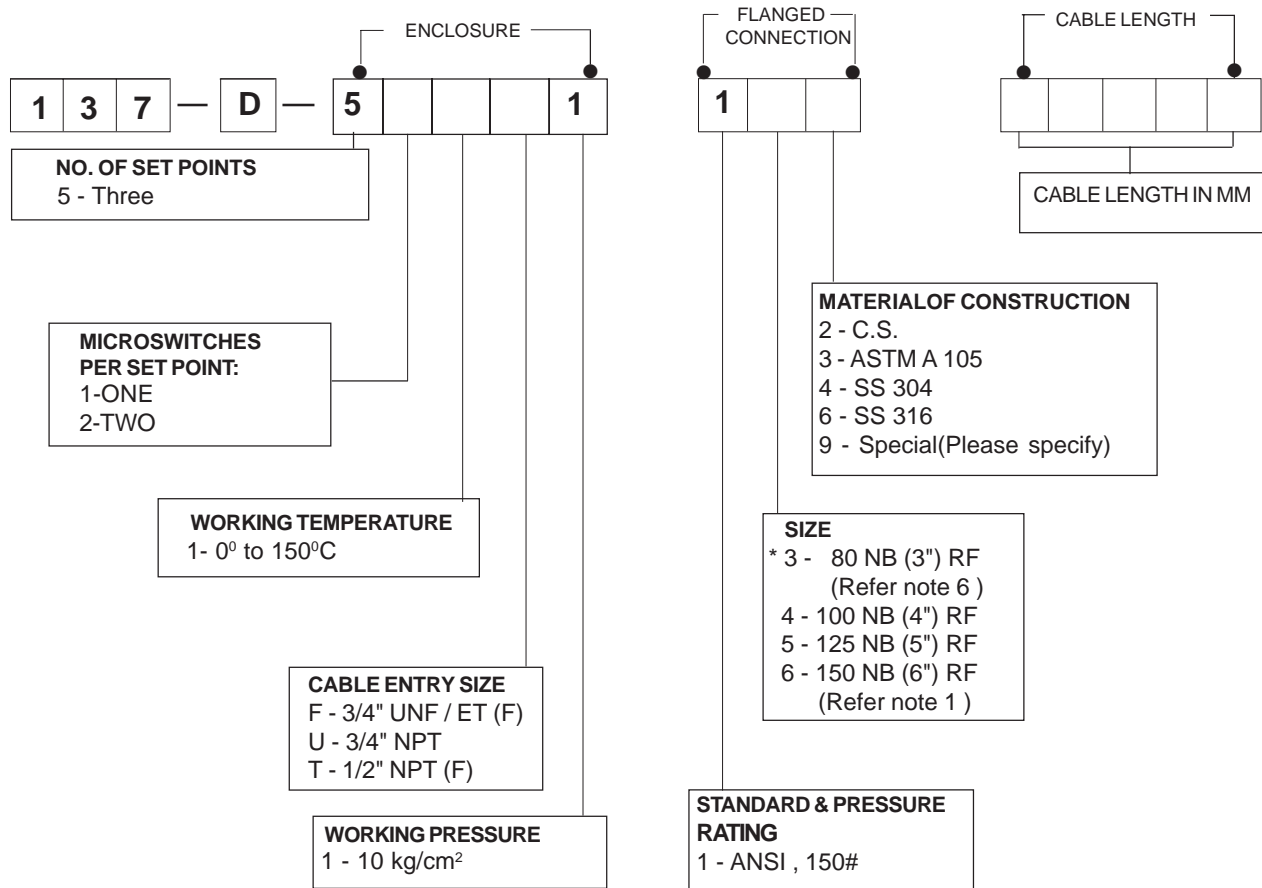
Figure 1



❖ PRINCIPLE OF OPERATION:

The displacer is attached to a coupler by a cable inside the sealing pipe which also acts as a pressure barrier. The coupler rests on the compression spring housed at the bottom of the sealing pipe. With displacer in air, entire weight of the displacer acting on the compression spring compresses the spring downwards and the coupler is out of reach of the field of attraction magnet in the carriage assembly. The rising liquid level causes weight loss in weight of displacer due to the partial or full immersion, weight loss of displacer causes the bell coupler to enter into the magnetic field. The attraction of magnet towards the coupler initiates the snap action and consequent operation microswitches. The level sensing mechanism employs attraction and repulsion properties of magnetic circuit. The attraction property senses the level change and repulsion property actuates the microswitch. This prevents contact chattering.

❖ **ORDERING CODE :**



EXAMPLE : Say typical ordering code is 137 - D - 511T1 - 153 - 01000 ...

The desired switch has following specifications : Cast Aluminium weatherproof IP-67 enclosure, no of setpoints three and one microswitch per set point temperature variation is 0° to 150°C two 1/2" NPT cable entries, Process connection 125 NB ANSI 150 # RF forged flange (ASTM A105). cable length required is 1000 mm below the nozzle face..

NOTES :

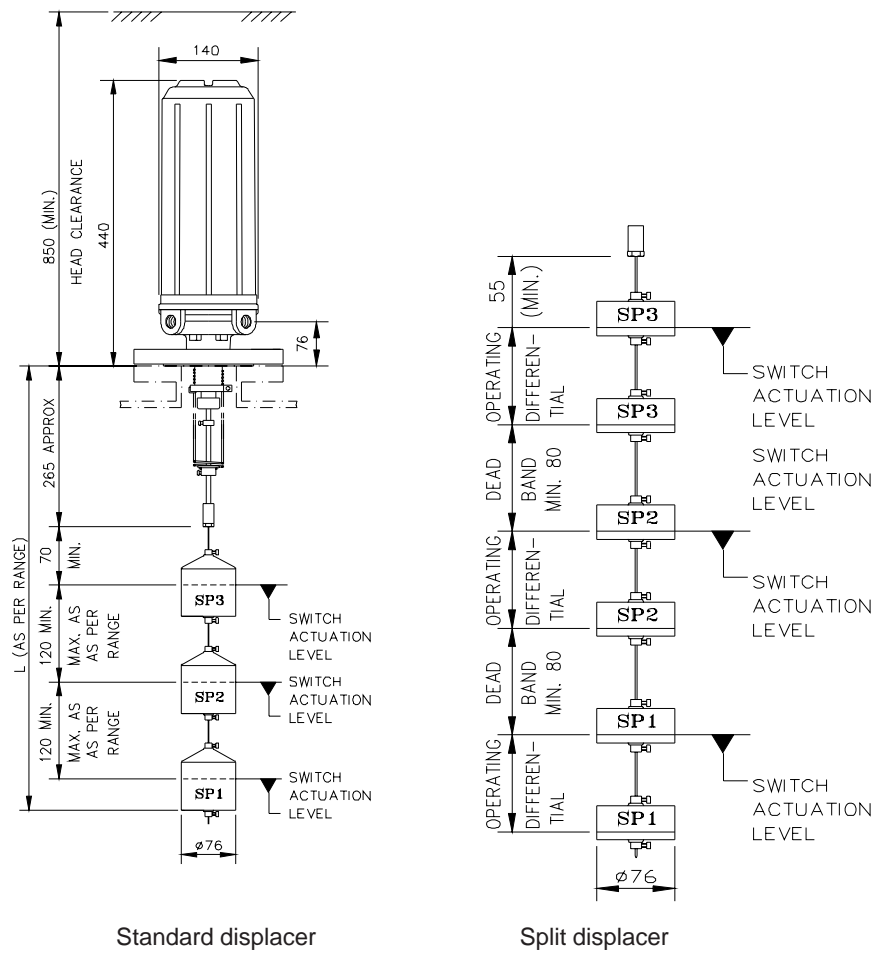
- 1) For 3 point switch with Two C/O, cable entry must be 3/4" NPT.
- 2) Number of Split Displacer to be mentioned separately.
- 2) Proces connection consists of a slip on flange : Size and flange rating to be ordered by the customer,considering working Pressure and Temperature.
- 3) Operating differential is as shown on page 3 for specific gravity 1. Variations in operating differential will be observed with change in specific gravity . Operating differential is inversely proportional to density of liquid.
- 4) Stilling pipe is to be perforated with equispaced holes.
- 5) Minimum set point position is 300 mm from bottom of the flange.
- 6) All wetted parts are made of SS 316.
- 7) For mounting the switch in the external cage, minimum flange size required is 100 NB (4"). Please note that for direct mounting 80 NB (3") flange is generally not recommended
- 8) The minimum difference between two consecutive set points is 120 mm .
- 9) Adjustable differential switch is also available with split displacer
- 10) For minimum head clearance refer fig.2.

● **Test certificates ...**

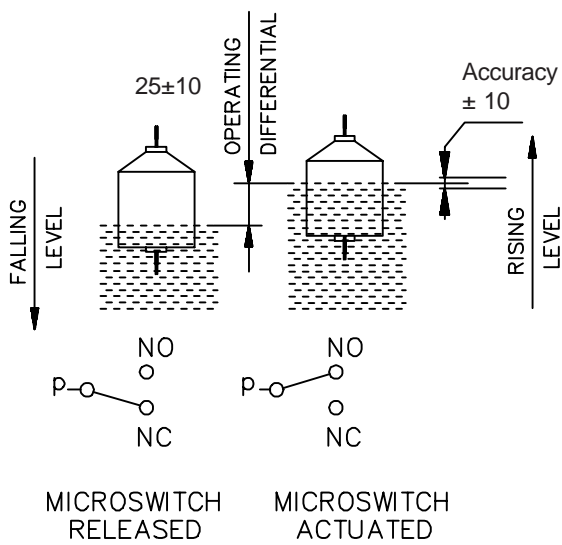
- 1) Weatherproof IP67 - From ARAI, Pune.
SHL/101/02/95/230/077 dated 08/02/1995.

DIMENSIONAL DETAILS:

Figure. 2



NOTE: x = minimum differential 50 ± 10 mm, A = upper tripping point, B = lower tripping point



| Sr. No. | No. of set points | Operating differential for | |
|---------|-------------------|----------------------------|---------------------|
| | | Standard displacer | Split displacer |
| 1 | Three | 25 ± 10 | min. 50 ± 10 mm |

Figure. 3

Schematic showing operating differential

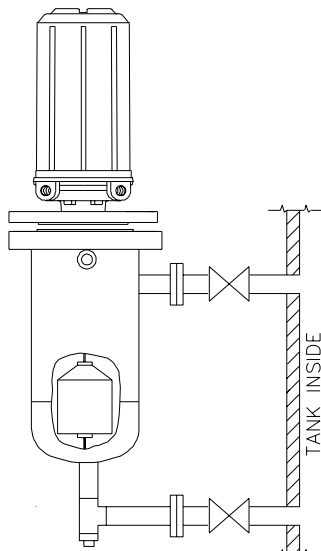
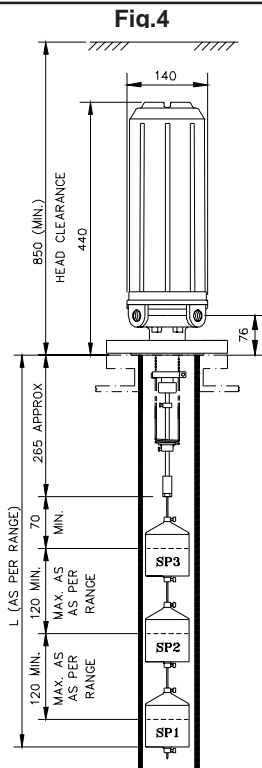
Note : All dimensions are in mm.

❖ **ACCESSORIES :**

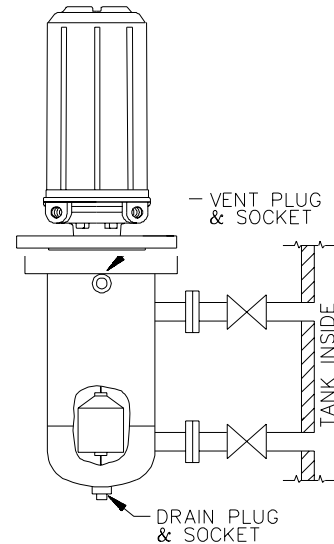
Following optional accessories can be supplied on demand ...

- (1) External cage - Type `A` & `B`. The installation in these external cages is as shown in applications drawings.
- (2) Weldable nozzle - to suit the switch mounting flange on the vessel (Please specify nozzle length).
- (3) Weldable flange - suitable flange for preparation of nozzle.
- (4) Perforated still well in CS/PVC.

❖ **APPLICATION DRAWINGS:**



Mounting in external cage type " B " (Fig.5)



Mounting in external cage type " A " (Fig.6)

*** Continuous developments may necessitate changes without notice.

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