

INSTALLING AND OPERATING INSTRUCTIONS FOR THE D50 DISPLACEMENT LEVEL SWITCH

PLEASE READ THIS INSTALLATION SHEET CAREFULLY AND FULLY BEFORE INSTALLING THIS LEVEL SWITCH

INTRODUCTION

The D50 top entry level switch is a two position level regulator capable of controlling both the high and low level switching points of a pump or contactor. It can be configured to pump liquid into or out of a pit or tank. The D50 level switch operates by Archimedes Principle. When an object is immersed in liquid its weight is reduced by an amount equal to the weight of the liquid it displaces. In the D50 switch a magnetically actuated switch detects the weight change that occurs when liquid submerges a set of solid polypropylene displacers suspended from the switch. Since it is weight change that actuates the switch, specific gravity, or weight per unit volume of the liquid medium is critical to the operation of the switch. The D50 level switch is set up to operate in water with a specific gravity of 0.95 or greater.

OPERATING ENVIRONMENT

The D50 level switch can be used to control the level of liquid in wells, tanks, pits, sumps, bores. It can be used in potable water, distilled water, seawater or water that contains solids, pulp, froth, foam, grit or waste materials.

The weatherproof electrical housing of the switch is normally mounted above the liquid to be sensed, and the displacers suspended by cord at the points where the rising or falling liquid levels are required to operate the switch.

The suspension cord and the displacers are the only components of the switch that come in contact with the liquid and these are made from inert Polypropylene.

The specific chemical resistance for Polypropylene can be found at : - <http://www.kelco.com.au/compatibility-guides>

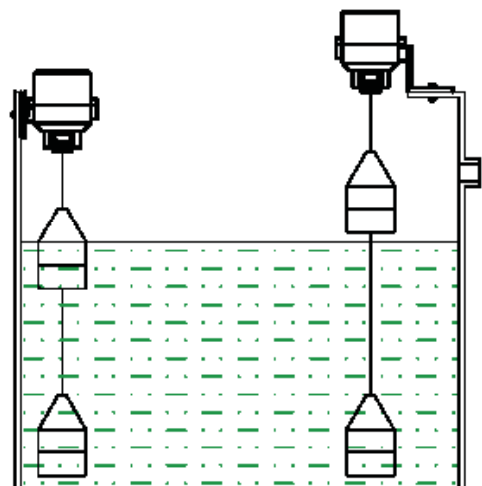
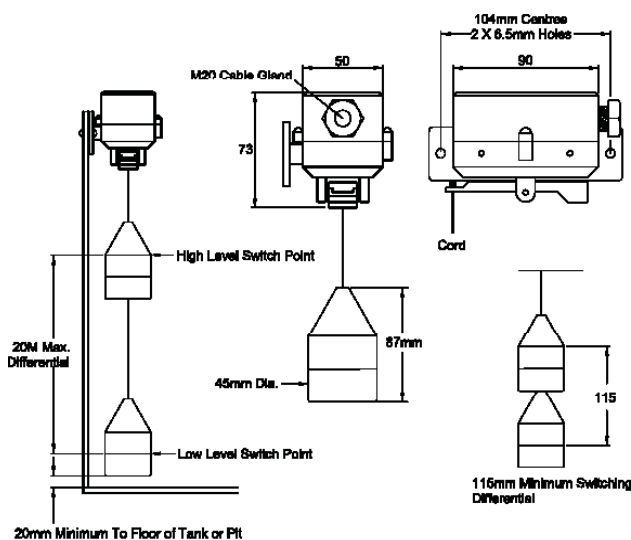
INSTALLATION

The D50 level switch is supplied with a flat mounting plate for installing the switch against the walls of pits or tanks. In addition to the flat plate, an angle bracket is also supplied. The angle bracket can be used to mount the switch on any flat horizontal surface such as tank lids or horizontal bracing. M5 threaded mounting holes are provided in the sides of the switch body so the switch can be oriented with its cable entry pointing to the right or left. Whichever mounting bracket is used, ensure that once installed, the top face of the D50's lid is perfectly horizontal. This ensures the cord and displacers hang vertically beneath the switch and apply force to the switch arm directly downwards.

Thread the supplied cord through the hole at the end of the switch actuating arm and tie a double knot in it so the cord can't pull back through the hole. Thread the free end of the cord through the various parts of the displacers as per the drawing on this sheet. Twist and lock the displacers onto the cord in appropriate positions, one at the required low level switching point and one at the top switching point. D50 level switch is supplied with 3 metres of cord. Cords up to 20 metres in length can be used with the D50 switch and are available from Kelco or your supplier if required. Tie a knot in the bottom end of the cord to prevent the displacers from slipping off during adjustment.

EXPOSED APPLICATIONS

If this switch is to be mounted in an outside location, for example on top of an open water tank, we recommend the cord and displacers as well as the electrical lead be protected from direct exposure to the sun. A simple shroud can be constructed from a length of 50mm or larger PVC pipe. Stand the pipe on end in the tank and mount the D50 so its displacers and cord sit inside the open pipe and are thus protected from the sun. The electrical lead to the switch can be protected from the sun using a length of conduit.



ELECTRICAL



WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this level switch. The D50 level switch is a mains voltage device. Death or serious injury may result if this switch is not correctly installed and operated. All electrical work on this switch must be performed by a fully qualified and licenced electrician.

The S.P.D.T. switch in the standard D50 is suitable for all general control circuit applications up to 500V AC. It is ideal for the control of pump starters, relay logic circuits, and for the direct control of contactors and timers. The standard switch can operate at ANY voltage from 5 to 500VAC. It is rated to directly control motors up to 1.5kW (2HP) at 240VAC.

RATED VOLTAGE	NON INDUCTIVE LOADS				INDUCTIVE LOADS			
	RESISTIVE LOAD		LAMP LOAD		INDUCTIVE LOAD		MOTOR LOAD	
	NO	NC	NO	NC	NO	NC	NO	NC
125 VAC	20 A		7.5 A		20 A		12.5 A	
250 VAC	20 A		7.5 A		20 A		8.3 A	
500 VAC	15 A		4 A		10 A		2 A	
8 VDC	20 A	3 A	1.5 A		20 A		12.5 A	
14 VDC	20 A	3 A	1.5 A		15 A		12.5 A	
30 VDC	6 A	3 A	1.5 A		5 A		5 A	
125 VDC	0.5 A		0.5 A		0.05 A		0.05 A	
250 VDC	0.25 A		0.25 A		0.03 A		0.05 A	

Maximum Switched Voltage	500VAC
Maximum Switched Current	15A
Minimum Switched Voltage	5VDC
Minimum Switched Current	160mA

Note: Do not apply maximum voltage at maximum current across the switch contacts. See main data table for current limits at specific voltages and for specific loads.

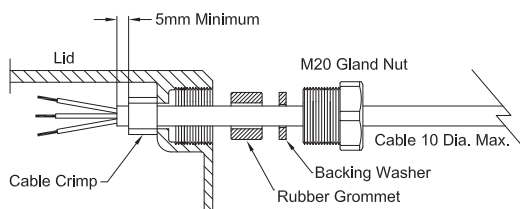
ELECTRICAL LIMITS FOR THE LOW VOLTAGE D50-L MODEL

In addition to the standard switch, a S.P.D.T. low voltage low wetting current switch with gold contacts, designated "L" is also available for Ex and signalling applications.

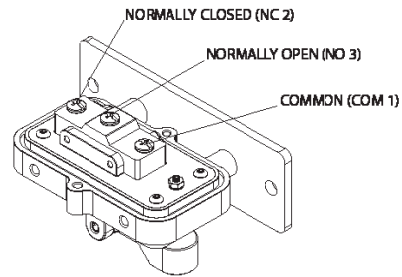
Maximum Switched Voltage	30VDC
Maximum Switched Current	26mA
Minimum Switched Voltage	5VDC
Minimum Switched Current	1mA

Note: Do not apply loads in excess of the limits in the table above. Do not apply inductive or capacitive loads to the L microswitch. The "L" microswitch will be damaged by loads in excess of the limits in the table.

CABLE GLAND ASSEMBLY



Crimp the ears using pliers so the ring is as tight as possible on the cable outer sheathing.



TERMINAL IDENTIFICATION

Note:

To pump out of a tank, use terminals 1 (COM) and 3 (NO)
To pump into a tank use terminals 1 (COM) and 2 (NC)

THE DISPLACERS

The D50 level switch is supplied with two displacers. The displacers should be assembled as shown below and positioned on the cord with their conical ends pointing upwards. Space the displacers apart and twist and lock them onto the cord. Position the displacers so one sits at the required high level switching point and one at the low level switching point. Ensure the bottom displacer sits clear of the floor of the pit or tank and ensure both displacers are well clear of any inlet or outlet pipes.



DISPLACER ASSEMBLY

- 1) Thread cord through the three components
- 2) Lay the cord in the trench in the anvil
- 3) Slide the anvil into the top body half
- 4) Screw the two body halves together
- 5) Tie a knot in the free end of the cord

EARTHING THE D50

An M4 earth screw is provided inside the lid of the D50 level switch. In the interests of safety, all applications should be properly earthed using the earth screw.

CABLE ANCHOR

Each D50 level switch is shipped with two cable crimps to suit various cable sizes. A cable crimp should be crimped onto the outer sheathing of the cable at least 5mm back from the end of the outer sheathing. The cable should then be pulled back through the cable gland until the cable crimp rests hard up against the inner wall of the cable gland. After bedding the cable crimp into position, fully tighten the cable gland.

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