



PSM INSTRUMENTATION LTD

**KD30 –9-1A-W-T**  
**Float level switch for high level alarm**  
**User Manual**

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We confirm that the products mentioned in this manual conform to the required safety standards in accordance with LVD 2006/95/EC

**PSM WEEE Producer Registration No WEE/HC0106WW**

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## Introduction

The PSM KD30 series of float switches provide alarm indication for liquid storage tanks. They are manufactured in a variety of configurations to provide either high or low level alarm indication, combined high and low indication or a dual high level indication often referred to as 95/98% switches for overflow protection onboard cargo tankers.

They can be equipped with optional test handles which permit an alarm to be simulated irrespective of the actual level of liquid within the tank.

This manual is issued to provide guidance on a specific version of the KD switch:-

Part number KD30-9-1A-W-T

Function: High level alarm indication

Fitted with test handle.

Mounting via DN100 PN6 flange. (for specifications and dimensional data refer to the included drawing S-001290-SW-GA)

## Dimensions

The above referenced drawing provides general outline dimensions for the switch. The overall length of the insertion into the tank—length L on the drawing, and the actual switch point—length L1 on the drawing will depend on the specific requirements in each case, i.e. at what level the switch point is required and the dimension of the stand off on the top of the tank where the switch is to be mounted.

## Installation.

Since switches are manufactured to specific lengths as described above, where multiple switches are being installed firstly ensure that the correct switch has been selected.

The switch is mounted to a standard DN100 PN6 tank pad. A suitable gasket material should be installed depending upon the liquid to be monitored. The gasket and all mounting studs / bolts / washers and nuts are shipyard supply.

Tighten the mounting bolts in sequence and only sufficient to ensure compression of the gasket to ensure a seal.

The instrument termination head is fitted with a cable gland suitable for cable O.D. up to 10mm. Ensure that the selected signal cable is an appropriate size for the cable gland to ensure an effective seal when the gland is tightened. The thread for the cable gland is 3/4" if an alternative gland is to be used.

Electrical connection may be either 2 core or 3 core cable depending upon what signals are required to be monitored.

Detection of the liquid level is by means of a float with an embedded magnet, when the liquid level causes the float to rise this magnet will activate a reed switch which is held captive within the switch support tube.

The reed switch has a changeover action with a common, normally open, and normally closed contact. When the liquid level is below the float (alarm off) the reed switch has the Common and Normally Open poles connected. When the switch is operated by rising liquid the Common and Normally Open contact are connected. Therefore by wiring to the Normally Closed contact tank not in alarm can be detected, and by wiring to the Normally Open contact an active alarm can be monitored.

**Note:** That the reed switch has a rating of 110/240V AC 0.5A and so connected loads should not exceed this. Attempting to put excessive power through the reed switch will damage it irreparably.

- 1. If the power rating of the switch is greatly exceeded, the contacts will become permanently welded together.**
- 2. If the switch is allowed to arc (spark) as it opens or closes the plated contacts will fail over time.**

**[ the greater the arc - the more rapidly failure will occur]**

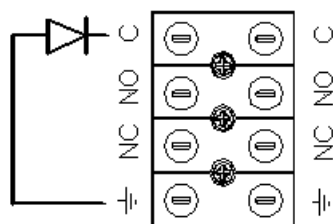
Switches ratings are quoted for a resistive load. Many applications involve inductive loads and many low wattage loads are often high inductance devices.

In these cases arc suppression is very important to protect the switch.

For example Incandescent lamp loads can be destructive to reed switch applications if not protected correctly since they typically have 6 to 10 times the normal operating current when first energised [inrush current].

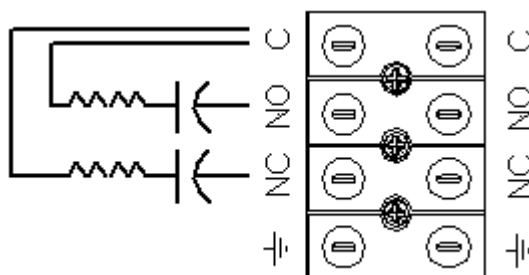
**Recommended ARC suppression**

For a DC circuit – a one amp diode placed in parallel with the load will suppress the arc. Select a diode with a voltage rating of at least circuit rating. Connect diode



three times [3x] or more of that of the cathode to positive

For an AC circuit - a capacitor and resistor fitted in parallel with the switch. Use a 50 to 100 ohm ¼ watt resistor.



Use a 0.1mf 400-600V capacitor and resistor in series with the capacitor.

**Test Handle**

A removable cap will be observed fitted direct to the mounting flange. This cap should be secured during normal operation. It incorporates an O ring seal which is compressed as the cap is tightened to prevent vapour from exiting the tank. Tightens sufficiently to ensure proper seating on the O ring.

The cap also has a retaining strap to prevent its loss.

To test operation of the switch remove this cap and lift the test rod which will be seen. The rod lifts the float within the tank triggering the alarm. Note that this test can only be undertaken when the level in the tank is below the alarm switch point.

Correct operation of the switch can be confirmed by observing the monitoring system or alternatively temporarily disconnecting the system wiring and using a continuity checker (Multi-meter), and measuring between Common and NO or NC as appropriate.

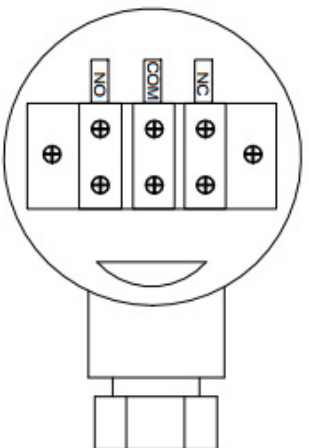
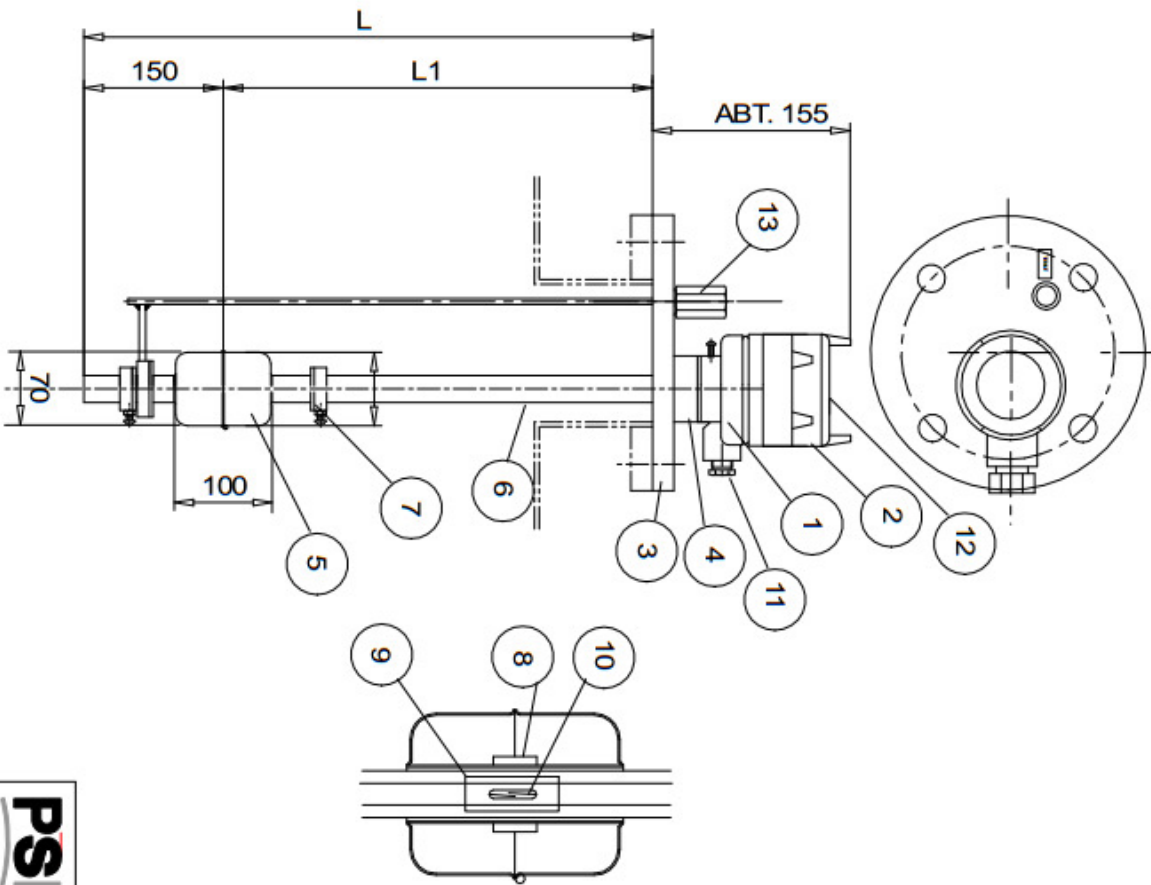
**Routine Maintenance**

The switch has no requirement for routine maintenance and has no wearing parts. Periodic checks should be made for correct operation using the test handle as described above.

# SALES DRAWING ONLY NOT TO BE USED FOR MANUFACTURE

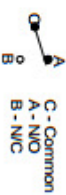
DN100 PN6 FLANGE DIMENSIONS (mm)

Flange Dimensions			Bolt Information		
OD	Thickness	PCD	No Bolts	Bolt Size	Hole Size
210	18	170	4	M16	18

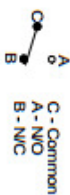


### SWITCH FUNCTION

C-A MAKES ON RISING LEVEL



C-B MAKES ON FALLING LEVEL



KEY	DESCRIPTION	MATERIAL	QTY	DETAIL
13	TEST LEVER/CAP	SUS304	1	M.O.R.
12	NAME PLATE	BC	1	MAKER
11	CABLE GLAND 3/4"	BC	1	Cable 10mm O.D.
10	REED SWITCH		2	
9	LOCATING PLATE	PCB	1	
8	MAGNET	FERRITE	4	
7	FIXED FLOAT STOP	SUS304	4	
6	SUPPORT TUBE	SUS304	1	ø21.7
5	FLOAT	SUS304	2	
4	SOCKET	SUS304	1	
3	MOUNTING FLANGE	SUS304	1	DIN100
2	TERMINAL COVER	ALC	1	
1	TERMINAL BODY	ALC	1	

### SPECIFICATION

1. MAX. PRESSURE : 10bar
  2. MAX. TEMPERATURE : 120°C
  3. MOUNTING : TOP FLANGE
  4. SWITCH : REED SWITCH TYPE
  5. VOLTAGE : 250V, 0.5A
  6. ENCLOSURE : IP56
  7. APPLICATION : WATER & OIL
- MANUFACTURED LENGTHS L & L1 ARE SPECIFIED BY CUSTOMER**



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TITLE

High Level Float Switch  
 KD30-9-1A-W-T

DRAWING NO

S-001290-SW-GA

A4

SHT 1  
 OF 1

SCALE

NTS

UNLESS OTHERWISE STATED DIMENSIONS ARE IN  
 MILLIMETRES / INCHES

ISSUE	A	B	C
DATE	18-04-07	07-01-14	23-02-17
DRAWN	JEK	SAL	MVJ
CHECKED			