



Parto Sahand Ara

# LDS

# LEVEL DISPLACER SWITCH





## LEVEL SWITCH BYPASS MODEL: LDS

### Functional principle

The level of the liquid present in a vessel is checked by one or more displacers (i.e. floats correctly ballasted) hung on a metallic rope. When level rises up to the preset height, the displacer makes the output device trip (trip on rise); when level comes down again and exceeds the preset point, the displacer makes the output device come back to the initial position (rest on fall); between the trip and reset points there is always a gap, named differential :

see below. The inverse function is available too : Trip on fall and Reset on rise. The output device can be electric or pneumatic, is snap action and is placed in the housing. All of them are mounted on top vessel.

Several types of Switches are available, with some elements in common.

- + Body and flange in the ratings ANSI 150, 300, 600psi, in carbon steel ASTM A106B (body) and ASTM 105N (flange), stainless AISI 304, or stainless AISI 316. Flange : ANSI or UNI/DIN standards
- + Displacer and rope (L=1÷10m) in stainless AISI 316. The displacer can be fixed on the rope at the desired height, decided by the user himself.
- + For liquids with specific gravity from 500kg/m<sup>3</sup> up.
- + Housing and housing-holder : as described below 110
- + Outer finish : green, for marine and tropical climates, The Switches meet the PED and ATEX standard



### Design

**DF1-** It is provided with 1 displacer and 1 output, electric or pneumatic.

The output trips when liquid rises (or falls) up to displacer and resets when falls (or rises) of 65 ±15mm (differential not changeable).

Output :- electric (1 or 2 micro switches SPDT with simultaneous action : within Ø155×200mm housing); pneumatic (1 valve ON-OFF, in Ø125×180mm housing).

Use : Alarm for Max or Min level, control of loading pump, etc.

**DF2A-** It is provided with 2 displacers and 1 output, electric or pneumatic.

The output trips when liquid rises up to the displacer A, and resets when falls up to the displacer B (or on the contrary). The differential can be decided by the same installer : he will fix the displacer A at the trip height, and B at the reset height; in this way the gap between the two displacers corresponds to the wished differential. The minimum differential is 160mm, with the 2 blocks placed under B.

Output :- electric (1 or 2 micros SPDT with simultaneous action : in Ø155×200mm housing); ...

- pneumatic (1 valve ON-OFF, in Ø125×180mm housing).

Use : Loading of vessel, to stop a loading pump when level rises up to the displacer A, and to start it again when level falls to the displacer B.



## LEVEL SWITCH BYPASS MODEL: LDS

**DF2B** - It is provided with 2 displacers and 2 electric outputs.

The output 1 is activated by displacer A placed at L1, while the output 2 is activated by displacer B placed at L2.

The two trips are independent and depend only on the heights at which the displacers are fixed. Each of them resets with differential of  $65 \pm 15\text{mm}$ .

Each output : 1 or 2 micros SPDT with simultaneous action : within  $\varnothing 155 \times 200\text{mm}$  housing.

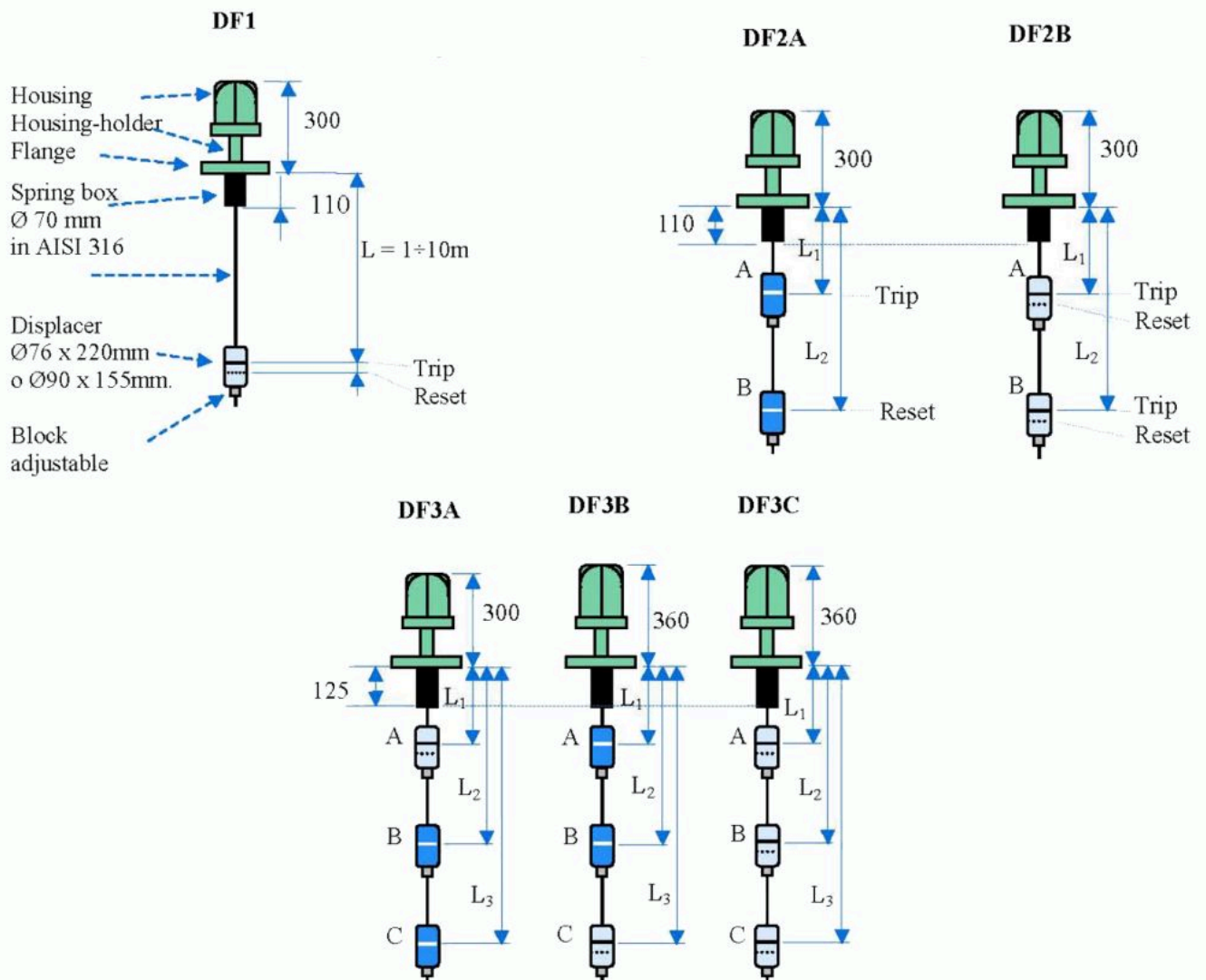
Use: Alarm for Max or Min level. It operates as composed by two DF1.

**DF3** : They are provided with 3 displacers. and various electric outputs (each output has 1 or 2 micros SPDT with simultaneous action)

**DF3A** - The output 1 is activated by the displacer A placed at L1 (can be used as Max level alarm); the output 2 is activated by the displacer B placed at L2 (trip) and by the displacer C placed at L3 (reset). It can be used to control the loading/unloading pump. In  $\varnothing 155 \times 200\text{mm}$  housing. It operates as if it were composed by one DF1 + one DF2A

**DF3B** - The output 1 is activated by displacers A placed at L1 (trip) and B placed at L2 (reset), and can be used to load/unload a vessel. The output 2 is activated by displacer C placed at L3, and can be used as Min level alarm. In  $\varnothing 155 \times 200\text{mm}$  housing. It operates as if it were composed by a DF2A + a DF1.

**DF3C** - It is provided with 3 displacers and 3 independent electric outputs. Within  $\varnothing 155 \times 250\text{mm}$  housing. It operates as if it were composed by three DF1.





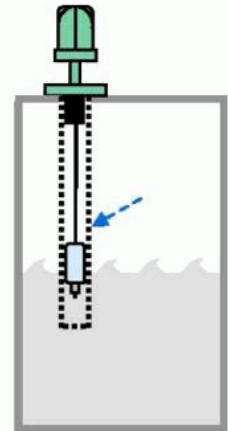
## LEVEL SWITCH BYPASS MODEL: LDS

### Special versions

#### DF1 for floating cover, in TG version

When switches are mounted on vessels in which the liquid is protected by a floating cover, displacer is replaced by a solid body with similar weight as displacer's. When body is lifted by floating cover, it makes output device trip; the output device can be electric or pneumatic, and is placed within housing.

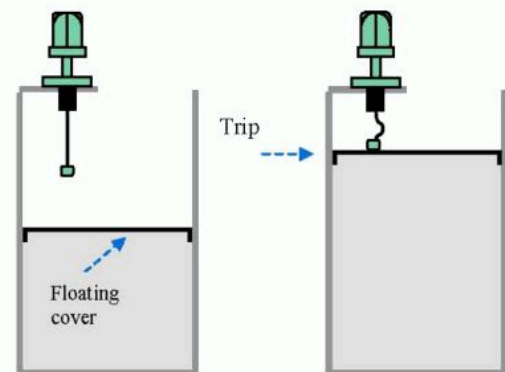
APPLICATIONS. Trip for High or Low level, with the same performances as DF1 type.



#### DF1, DF2A-DF2B, DF3A-DF3B-DF3C with damping tube, in TC version

When switches are mounted on vessels containing turbulent liquids, We recommend to protect displacers within a damping tube, to avoid untimely trips. Usually such a tube is procured and mounted by the same vessel installer, or, upon request, can be supplied by Domizi Snc already assembled on the Switch.

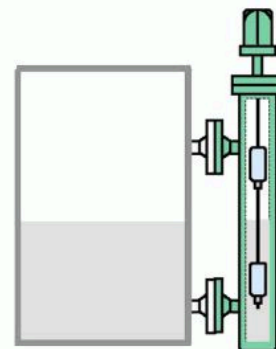
APPLICATIONS. Trip for High or Low level, pump On/Off turning, as for all the DF types.



#### DF1, DF2A-DF2B, DF3A-DF3B-DF3C in DB version

When a Switch is mounted on a side of vessels and shall carry out performances being impossible with DB Switch (e.g. pump On-Off turning with very wide differentials), We propose to use a DF Switch included within a DB body. In this way you get an instrument with performances being typical of DF and with mechanical look of DB, both as body and as connection/inspection flanges.

APPLICATIONS. Trip of High or Low level, pump On/Off turning, as for all the DF types.





## LEVEL SWITCH BYPASS MODEL: LDS

### Order Code

LDS Configuration	
1	<b>Type of level switch</b>
	DF1   Level switch with one displacer
	DF2A   Level switch with two displacers
	DF2B   Level switch with two displacers
	DF3A   Level switch with three displacers
	DF3B   Level switch with three displacers
	DF3C   Level switch with three displacers
2	<b>Vessel connection flange</b>
	DN   Flange acc. DIN
	RF   Flange acc. ANSI with RF face
	RJ   Flange acc. ANSI with RJ (ring joint) face
3	<b>Pressure rating</b>
	C1   ANSI 150 lbs
	C2   ANSI 300 lbs
	C3   ANSI 600 lbs
	P1   PN10
	P2   PN16
	P3   PN25
P4   PN40	
4	<b>Flange size</b>
	1   3" DN80
	2   4" DN100
	*   Other - please specify
5	<b>Material body and flange</b>
	C   CS
	L   304SS
	S   316SS
	*   Other - please specify
6	<b>Length (L1)</b>
	***   ***?
7	<b>Length (L2)</b>
	***   ***?
8	<b>Length (L3)</b>
	***   ***?

Additional order details \_\_\_\_\_

LDS -

1      2      3      4      5      6      7      8



Parto Sahand Ara

Unit 68, First floor, No.22  
Somayeh St., Mousavi St.  
Tehran-IRAN

[www.arainstrument.com](http://www.arainstrument.com)  
[info@arainstrument.com](mailto:info@arainstrument.com)  
+98-21-88810155-9  
+98-991-2503500