

# Liquid Flow Switches



DBSF

## DESCRIPTION

Watertight liquid flow switches.

## APPLICATION

Control and monitor liquid flow of boilers, pumps, etc., of heating, cooling, and air conditioning equipment.

## FEATURES

- NEMA 1 & 4 housing
- Stainless steel paddle
- Setpoint adjustable
- Brass material

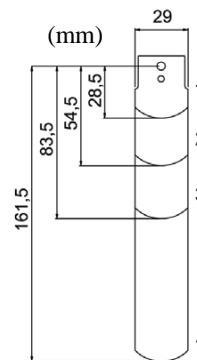
## SPECIFICATIONS

<b>Type of operation</b>	On/Off, single-stage, micro switch
<b>Output</b>	1 SPDT, or 2 SPDT, 24/250 VAC, 15 (8) A
<b>Flow rates</b>	See flow rate table
<b>Flow rate setting adjustment</b>	Internal screw
<b>Sensing element</b>	Paddle
<b>Paddle sizes</b>	- Factory mounted 3 inch for 1 to 3 inch pipes - Included 6 inch for 4 to 8 inch pipes
<b>Pipe connection</b>	NPT 1 inch
<b>Liquid applications</b>	Hot, chilled, well, pool and sea water, brine or ethylene glycol
<b>Parts material in contact with fluid</b>	Brass
<b>Paddle material</b>	Stainless steel, V4A
<b>Liquid pressure</b>	Maximum 160 PSI (1103 kPa)
<b>Liquid temperature</b>	-40°F to 248°F (-20°C to 120°C)
<b>Permissible ambient temperature</b>	-40°F to 185°F (-40°C to 85°C)
<b>Permissible ambient humidity</b>	10...90% RH, non-condensing
<b>Wire</b>	- Connection Terminal with wire retaining screws
<b>Cable entry</b>	- Size Maximum 14 AWG (2.5 mm <sup>2</sup> ) M20 fitting, replaceable by 1/2" conduit connector
<b>Housing</b>	- Material Base: Steel, galvanized Cover: ABS, fire retardant
	- Color Dark gray/blue
	- Protection NEMA 1 (IP 40), or NEMA 4 (IP 65)
	- Dimensions 4.3 x 2.8 x 2.8 in. (108 x 70 x 72 mm)
<b>Installation</b>	Pipe mounted
<b>Ship weight</b>	2.2 lb (1.0 kg)



certified ISO 9001 CE

## Paddles (models without "T" pipe fitting)



Install Paddle	
Pipe	#
1"	1
1 1/4"	1
1 1/2"	1
2"	1,2
2 1/2"	1,2
3"	1,2,3
4"	1,2,3
4" Z	1,2,3,4
5"	1,2,3
5" Z	1,2,3,4
6"	1,2,3
6" Z	1,2,3,4
8"	1,2,3
8" Z	1,2,3,4

## Part Numbers

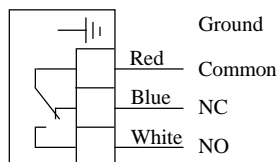
1 SPDT, NEMA 1	DBSF-1KPLN-1US
1 SPDT, NEMA 4	DBSF-1KPLN-4US
2 SPDT, NEMA 1	DBSF-1KPLNB-1US
2 SPDT, NEMA 4	DBSF-1KPLNB-4US

## WIRING DIAGRAM

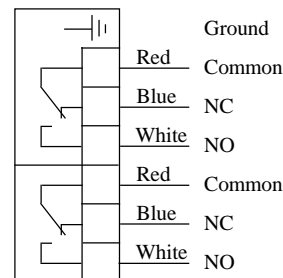
Increased flow and attained setpoint:  
Red & White connected

Decreased flow and attained setpoint:  
Red & Blue connected

### DBSF-1KPLN



### DBSF-1KPLNB



Liquid Flow Rate Table															
DBSF - 1KPLN Flow Rates: GPM (m <sup>3</sup> /hr) required to actuate switch															
Line Pipe Size (inch)		1	1-1/4	1-1/2	2	2-1/2	3	4	4Z	5	5Z	6	6Z	8	8Z
Min.*	Flow Increase Red & Wht Connected	4.2 (1.0)	5.8 (1.3)	7.5 (1.7)	13.7 (3.1)	17.6 (4.0)	27.5 (6.2)	64.7 (14.7)	35.2 (8.0)	125.0 (28.4)	57.01 (12.9)	90.0 (43.1)	74.0 (16.8)	374.7 (85.1)	204.7 (46.5)
	Flow Decrease Red & Blue Connected	2.5 (0.6)	3.7 (0.8)	5.0 (1.1)	9.5 (2.2)	11.9 (2.7)	19.0 (4.3)	50.1 (11.4)	26.9 (6.1)	101.0 (22.9)	41.0 (9.3)	158.0 (35.9)	54.0 (12.3)	319.7 (72.6)	170.0 (38.6)
Max.	Flow Increase Red & Wht Connected	9.2 (2.1)	13.3 (3.0)	17.6 (4.0)	26.9 (6.1)	30.8 (7.0)	50.2 (11.4)	127.6 (29.0)	81.0 (18.4)	245.0 (55.6)	118.0 (26.8)	374.7 (85.1)	144.0 (32.7)	759.5 (172.5)	415.0 (94.2)
	Flow Decrease Red & Blue Connected	8.1 (2.0)	12.5 (2.8)	16.3 (3.7)	25.1 (5.7)	28.6 (6.5)	47.1 (10.7)	122.0 (27.7)	76.2 (17.3)	234.7 (53.3)	111.0 (25.2)	359.7 (81.7)	134.7 (30.6)	729.6 (165.7)	400.6 (90.8)

Note: For flow rates with suffix "Z", the 6-inch paddle must be installed.

\* Factory calibrated at minimum flow level / high sensitivity.  
 To adjust for less sensitivity / higher flow rate, turn adjustment screw located below switch clockwise .

**INSTALLATION**

The flow switch can be installed in every position far from elbows or throttlings, with arrow on flow direction. If pipe is vertical, recalibrate range to balance paddle weight. If the device is downwards mounted, take care to slugs and apply it in a straight pipe that is far from filters, valves, etc., with length at least 5 times the diameter of pipe upstream and downstream the unit.

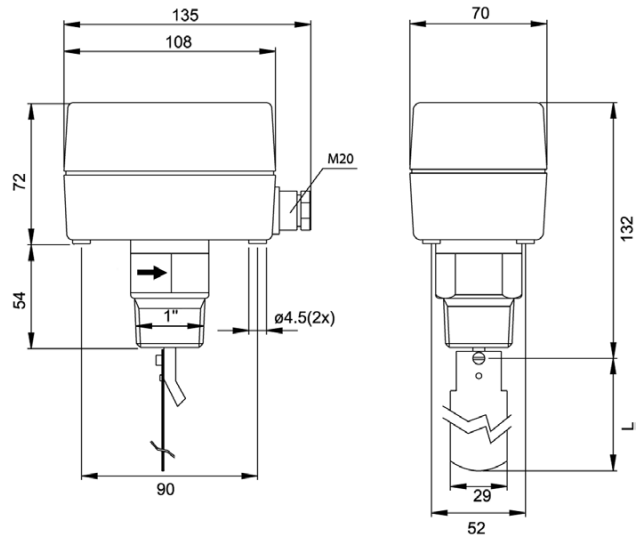
**NOTE**

The flowswitch is factory calibrated at its minimum sensitivity. To increase the set value, turn the adjustment screw clockwise. The cut-off valve must be ≥ the minimum flow necessary to guarantee the protection of the plant. Units without "T" fittings are supplied with 4 paddles, which must be cut off according to the pipe. All devices can be supplied with a "T" connection on request as schedule indicates.

**ATTENTION**

**If flowswitch is uses as a minimum flow controller, it is necessary to add another device downstream for alarm condition activation.**

**DBSF DIMENSIONS (mm)**



L changeable length (see drawing of the paddles)