

Flow Indicators Flow Monitors DUG

Operation

The flow monitors DUG operate on the principle of the float type flow indicator. The magnetic float is positioned in a cylindrical control tube with tapered metering slots.

It activates a reed switch, which is contained in an adjustable switch housing external to the flow circuit. The movement of the float is restricted by means of an end-stop to prevent it from going beyond the range of the reed switch, thus ensuring the bistable character of the flow switch.

The top edge of the float serves to indicate the flowrate on the measuring glass scale.

Switching range

The switch ranges given below refer to the limits within which the switch point may be infinitely adjusted. The actual flow throughput can, depending on the flow velocity, be much greater.

Areas of application

Monitoring of cooling circuits in welding machines, compressors, heat exchangers and centrifuges.
Monitoring of sealing media for seals and pump dry running, motor cooling systems etc.



DUG flow monitors are flow and not pressure dependent.

Switch hysteresis

Hysteresis is the difference in flow between the switch closing and opening again. The difference is the result of the movement required by the float to reclose the open contact. The shorter the distance, the smaller the hysteresis and therefore the more accurate the instrument.

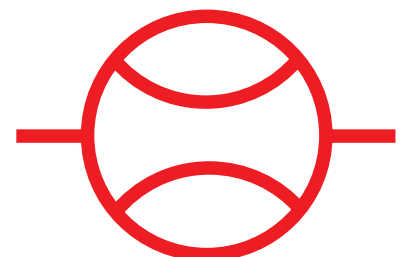
By means of the careful choice of magnets and reed switches with especially close tolerances, hysteresis is kept to an absolute minimum.

Low hysteresis is of great advantage where particular accuracy is demanded, especially in flow systems where only small increases in flow throughput above the necessary minimum can be achieved.

Universal mounting

The new DUG series is a development of our well proven DWG series, where a vertically upwards flow was requested. Due to an integral float return spring, the DUG can be mounted in any position.

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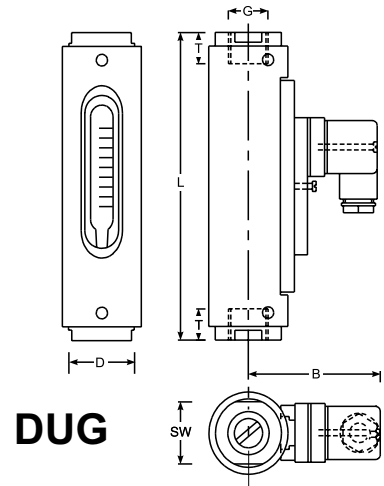
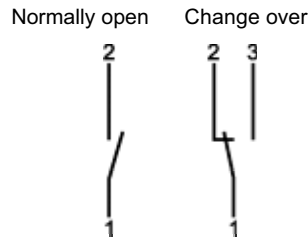


Installation:

- The installation position is freely selectable.
- Flow direction is from low to high scale value.
- Flow straightening sections of 10x DN upstream and 5x DN downstream are strongly recommended.
- The medium should not contain any solid particles. We recommend the installation of strainers, model SF, SFD or SFM.
- Do not install the equipment within inductive fields.

- Do not exceed the max.electrical ratings of the switch contact under no circumstances.
- For installation and set-up assistance please "refer" to instruction manual.

Connection Diagram:



Summary of Types DUG

Type	Switch range* l/min H ₂ O	Overall dimensions mm							Weight approx. g
		SW	D	B	G	DN	T	L	
DUG - 4	0,2 - 4	32	43	73	1/4"	8	14	132	625
DUG - 6	0,4 - 6				3/8"	10	14	132	
DUG - 8	0,5 - 8				1/2"	15	15	135	
DUG - 14	1 - 14								
DUG - 28	2 - 28	32	43	73	1/2"	15	15	135	650
DUG - 45	1 - 45	32	43	73	3/4"	20	18	167	850
DUG - 80	2 - 80	41	50	76	3/4"	20	18	164	1000
DUG - 90	6 - 90				1"	25	19	184	1000
DUG - 110	6 - 110	41	50	76	1"	25	19	184	1000
DUG - 150	15 - 150	50	55	79	1" 1 1/4"	25 32	19 21	216	1300
DUG - 220	30 - 220	46	60	81	1 1/4"	32	21	210	1400
DUG - 250	30 - 250	50	55	79	1 1/4"	32	21	222	1400

* Other switch ranges on request

Operating Data: DUG

Maximum pressure:	PN 10 bar	
Pressure drop:	0,01 - 0,8 bar depending upon type	
Maximum temperature:	100 °C (optional 160°C)	
Accuracy:	± 5% of final value	
Electrical data:	Normally open SPST N.O.	Change over SPDT
IP 65 (plug connection DIN 43650)	max. 250V • 3A • 100VA	max. 250V • 1,5A • 50VA
IP 67 (with sealed in 1m cable)		
EEx m II T6 (with sealed in 2m cable)	max. 250V • 2A • 60VA	max. 250V • 1A • 30VA
EEx ia IIC T6 (with sealed in 2m cable)	max. 45V • 1A	max. 45V • 1A
Output signal:	The contact switches off, if minimum flow is below setpoint	
Power supply:	Not necessary (reed contacts)	
Other plug types or cable lengths on request		
Materials:	brass	stainless steel
Wetted parts:	brass nickel-plated	st.st. 316 ti
Glass: (wetted parts)	Duran 50	
Spring: (wetted parts)	st.st. 316 ti	
Seals: (wetted parts)	Perbunan (optional Viton, EPDM) *	Viton (optional Perbunan, EPDM) *
Housing: (non wetted part)	aluminium	

* Other seal materials on request

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