



SW-08



Viscosity-Compensated Variable Area Flowmeter, independent of Mounting Position, High-Pressure Version

Features

- / For viscous media from
30 cSt up to 600 cSt
- / Any mounting position,
no need of recalibration
- / Compact design
- / Brass and stainless steel versions
- / Highly accurate switching
- / Very low switching hysteresis
- / Robust design without sight glass
- / Suitable for high operating pressures

Description:

The SW-08 series of flowmeters and switches operates according to a modified variable area principle. The float is introduced into a cylindrical slit nozzle. The flowing medium moves the float in the direction of flow. An externally mounted indicator instrument is magnetically coupled with the float and indicates the flowing volume on a scale. A reed contact is situated outside the device. This reed contact is infused in a stepless adjustable housing and thus protected from external influences. When the float reaches along with its integrated magnet the position of the reed contact, the contact blades get closed. If the volume of flow is higher the float continues to move maximum up to the stopper that prevents overriding of the connecting range. This ensures a bistable switching action at any time.

Application:

The spring action and magnetic float ensure absolute functional safety. Due to the spring mounted inside that presses the float in the opposite direction of flow into its initial position, the device can be deployed in any mounting position. No readjustment is required as the artificially matured spring is under pretension. The strong pretension of the spring in combination with an aperture in the float limit the effect of the medium's viscosity fluctuations to a minimum in comparison with other normal float flowmeters. The SW-08 series of variable area flowmeters and switches is intended for measuring and monitoring viscous fluids, for example, in centrally controlled lubrication systems, oil circulation lubrication systems, transformer oils and so on.



Ordering Codes:

Order number SW-08. 1. 1. 1. 06. 1. 1. 1. 1. 0

SW-08 Variable Area Flowmeter and Switch

Process connection /

- 1 = female thread G 1/4"
- 2 = female thread G 1/2"
- 3 = female thread G 3/4"
- 4 = female thread G 1"

Material /

- 1 = brass, spring stainless steel 1.4571
- 2 = stainless steel 1.4571

Scale /

- 1 = for viscous media from 30 cSt up to 600 cSt

Operating ranges / deactuation flow rates*

SW-08.2 only:

- 03 = 0.5...1.6 l/min (1/4" with adapter)
- 04 = 0.8...3 l/min
- 05 = 2...7 l/min

SW-08.4 only:

- 07 = 0.5...1.5 l/min (1/4", 1/2", 3/4" with adapter)
- 08 = 1...4 l/min (1/4", 1/2", 3/4" with adapter)
- 09 = 2...8 l/min (1/2" and 3/4" with adapter)
- 10 = 3...10 l/min (1/2" and 3/4" with adapter)
- 11 = 5...15 l/min (1/2" and 3/4" with adapter)
- 11a = 1...20 l/min (1/2" and 3/4" with adapter)
- 12 = 8...24 l/min (1/2" and 3/4" with adapter)
- 13 = 10...30 l/min (3/4" with adapter)
- 13a = 4...40 l/min (1/2" and 3/4" with adapter)
- 14 = 15...45 l/min (3/4" with adapter)
- 14a = 5...50 l/min (3/4" with adapter)
- 14b = 8...60 l/min (3/4" with adapter)
- 15 = 20...60 l/min (3/4" with adapter)
- 15a = 12...70 l/min
- 15b = 15...80 l/min
- 16 = 30...90 l/min
- 17 = 35...110 l/min
- 99 = Special operating range

Flow indicator /

- 0 = switch only, no flow indicator
- 1 = flowmeter and switch, with indicator

Number of contacts /

- 0 = none (for devices with indicator only)
- 1 = 1 contact
- 2 = 2 contacts

Contact function /

- 0 = no contacts (for devices with display only)
- 1 = NO-contact
- 2 = change-over contact
- 3 = Ex m-change-over contact (always with 2m infused cable)
- 4 = Ex m-NO-contact (always with 2m infused cable)
- 5 = change-over contact for PLC
- 6 = Ex ib-NO-contact, ranges 03...05 only
- 7 = Ex ib-change-over-contact, ranges 03...05 only

Electrical connection /

- 0 = none, if no contacts
- 1 = plug DIN43650, counter plug incl.
- 2 = plug M12x1, counter plug incl. (-20...+85°C)
- 3 = 1 m infused cable (2 m for Ex), (not for Ex ib-change-over-contact)

Special issues /

- 0 = none
- 1 = please specify in detailed text

*setpoints are valid for fluids with a specific weight of 0.9 kg/dm³

Technical Specifications:

- Protection class /** IP65: plug conn. DIN 43650
IP67 with cable connection or plug connection M12x1 (SW-08.3 and SW-08.4, else IP65)
- max. Pressure /** **Brass version:**
300 bar operating ranges 03...05,
250 bar operating ranges 07...17
Stainless steel version:
350 bar operating ranges 03...05,
300 bar operating ranges 07...17
- Pressure drop /** 0.02...0.2 bar op. ranges 03...05
0.02...0.4 bar op. ranges 07...17
- max. Temp. /** 120°C (160°C optional)
- El. connection /** device plug as per DIN 43650
- Accuracy /** ±10% of full scale value
- Ranges /** 0.5...1.5 l/min to 35...110 l/min with viscosity from 30...600 cSt

Contacts (max. V):

Element	SW-08.x.x.x.03-05	SW-08.x.x.x.07-17
NO-contact	230V, 3A, 60VA	250V, 3A, 100VA
Change-over	250V, 1.5A, 50VA ^{(2) (3)}	250V, 1.5A, 50VA ⁽²⁾
Ex m-NO ⁽¹⁾	250V, 2A, 60VA	250V, 2A, 60VA
Ex m-CO ⁽¹⁾	250V, 1A, 30VA	250V, 1A, 30VA ⁽²⁾
Change-over SPS	250V, 1A, 60VA ⁽³⁾	250V, 1A, 60VA
NO M12x1	125 V, 3 A, 60VA	250V, 3A, 100VA
Change-over M12x1	250V, 1.5A, 50VA ⁽²⁾	250V, 1.5A, 50VA ⁽²⁾

⁽¹⁾ ATEX II 2 G Ex mb IIC T6 Gb & ATEX II 2 D Ex tb IIIC T80°C Db (max. Amb.temp. 75°C)

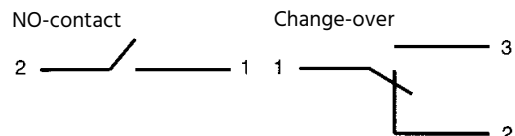
ATEX II 2 G Ex mb IIC T5 Gb & ATEX II 2 D Ex tb IIIC T100°C Db (max. Amb.temp. 90°C)

⁽²⁾ Minimum load 3VA

⁽³⁾ ranges 03-05 with plug connection only

The contact opens respectively changes, when the upcoming flow falls below the adjusted setpoint.

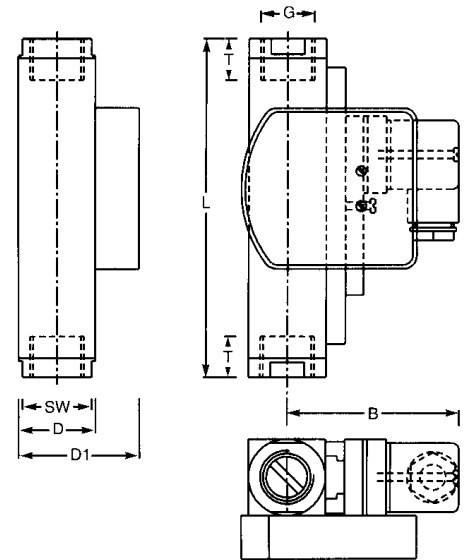
El. Connection:





Dimensions in mm:

Type	SW	D	D1	B	G	T	L	weight	with display
SW-08.1.x.x.03.0	24	27,5	47	52	1/4"	10	98	400 g	620 g
SW-08.2.x.x.03-05.0	27	31	47	52	1/2"	14	90	350 g	570 g
SW-08.1.x.x.07-08.x	34	40	57	73	1/4"	10	152	1500 g	1590 g
SW-08.2.x.x.07-12.x	34	40	57	73	1/2"	14	152	1425 g	1515 g
SW-08.3.x.x.07-15.x	34	40	57	73	3/4"	15	152	1340 g	1430 g
SW-08.4.x.x.07-17.x	40	40	57	73	1"	17	130	1160 g	1250 g



Wetted parts:

Element	brass version	st. steel version
Window	brass nickel-plated	st. steel 1.4571
Spring	st. steel 1.4571	st. steel 1.4571
Seals	FKM (optional NBR, EPDM)	FKM (optional NBR, EPDM)
Other parts	brass	st. steel 1.4571
Magnet	hard ferrite	hard ferrite
Display instrument (non-wetted)	macrolon	macrolon

EX ib NO and Change-over

Gas			Dust		
Ui	Ii	Pi	Ui	Ii	Pi
< 12.1 V	1.0 A	3.0 W	< 12.1 V	0.25 A	0.75 W
< 20 V	0.309 A	1.55 W	< 20 V	0.25 A	0.75 W
< 25 V	0.158 A	0.99 W	< 25 V	0.25 A	0.75 W
< 30 V	0.101 A	0.76 W	< 30 V	0.25 A	0.75 W

The switching units have to be connected only to intrinsically safe circuits.

Li = 0; Ci = 0

protection class with plug DIN 43650 C or plug M12: IP65

protection class with 1 m infused cable: IP67

marking: II 2G Ex ib IIC and II 2D Ex ib IIIC

operating temperature $-5^{\circ}\text{C} < T_{\text{Service}} < +45^{\circ}\text{C}$

