



Flow switch

HFS 2500

For water or water-based fluids

Float

Any installation

2 accuracy classes

Features

- Switching outputs: 1 or 2 reed contacts, change-over or N/O type
- Wide measuring range
- Robust design
- High operating pressures

Description

The HYDAC Flow Switch in the series HFS 2500 is based on the variable area float principle.

The testing fluid deflects a spring-loaded float in the direction of flow, depending on the flow rate. A reed contact is fitted outside of the device, and thus, it is separated from the flow circuit. When the magnet inside the float reaches the pre-set position, the reed contact will switch.

To protect it from external influences, the reed contact is encapsulated in a housing designed to allow steplessly variable adjustment.

The devices of the HFS 2500 series are available in two variants, one with 5 % accuracy and one with 10 % accuracy of the end value.

Application fields

Fields of application are flow rate monitoring in fluids (water / water-based) in the following areas, amongst others:

- Cooling systems and circuits
- Hydraulic systems
- Pumps
- Welding machines and laser systems
- Medical engineering
- Pharmaceutical industry
- Chemical industry
- Research and development

Technical Data

Input data					
Measuring ranges [l/min]	10 % accuracy			5 % accuracy	
	Size 1	Size 2	Size 3	Size 4	
	0.005 .. 0.06	0.02 .. 0.2	10 .. 30	0.2 .. 4.0	8 .. 90
	0.04 .. 0.13	0.2 .. 0.6	15 .. 45	0.6 .. 5.0	5 .. 110
	0.1 .. 0.6	0.4 .. 1.8	20 .. 60	0.5 .. 8.0	10 .. 150
	0.2 .. 1.2	0.8 .. 3.2	30 .. 90	1 .. 14	35 .. 220
	0.4 .. 2.0	2 .. 7	60 .. 150	1 .. 28	35 .. 250
	0.5 .. 3.0	3 .. 13		2 .. 40	
	1.0 .. 5.0	4 .. 20		4 .. 55	
		8 .. 30		1 .. 70	
Operating pressure					
Brass version [bar]	300	300	250	200	
Stainless steel version [bar]	350	350	300	300	
Pressure drop [bar]	0.02 .. 0.2	0.02 .. 0.3	0.02 .. 0.4	0.02 .. 0.8	
Mechanical connection	See device dimensions / installation dimensions				
Parts in contact with fluid	Stainless steel 1.4571; Brass; nickel-plated; Brass; Hard ferrite; Seal: NBR ¹⁾ Stainless steel 1.4571; Hard ferrite; seal: Viton ¹⁾				
Brass version					
Stainless steel version					
Housing material	Brass nickel-plated or stainless steel 1.4571 brass				
Measuring body					
Transmitter					
Output data					
Switching outputs ²⁾	1 or 2 reed contacts Change-over or N/O type				
Accuracy	≤ ± 10 % FS / ≤ ± 5 % FS (size 4)				
Repeatability	2 % FS max.				
Switching capacity					
Change-over contact ³⁾					
Connector plug EN175301-803	max. - 250 V - 1.5 A - 50 VA	max. - 150 V AC/DC - 1 A - 20 VA	max. - 250 V - 1.5 A - 50 VA	max. - 250 V - 1.5 A - 50 VA	
Connector plug M12x1	max. - 250 V - 1.5 A - 50 VA	max. - 125 V AC/DC - 1 A - 20 VA	max. - 125 V - 1.5 A - 50 VA	max. - 250 V - 1.5 A - 50 VA	
N/O contact					
Connector plug EN175301-803	max. - 250 V - 3 A - 100 VA	max. - 140 V AC - 0.7 A - 20 VA ----- - 200 V DC - 1 A - 20 VA	max. - 230 V - 3 A - 60 VA	max. - 250 V - 3 A - 100 VA	
Connector plug M12x1	max. - 250 V - 3 A - 100 VA	max. - 125 V AC - 0.7 A - 20 VA ----- - 125 V DC - 1 A - 20 VA	max. - 125 V - 3 A - 60 VA	max. - 250 V - 3 A - 100 VA	
Environmental conditions					
Operating temperature range	-20 .. +70 °C				
Fluid temperature range	-20 .. +100 °C (optional -20 to +160 °C) -20 .. +85 °C				
Connector plug EN175301-803					
Connector plug M12x1					
CE mark	Present				
Protection type according to DIN EN 60529 ⁴⁾	IP 65				
Other data					
Weight	See device dimensions / installation dimensions				

Note: FS (Full Scale) = relative to complete measuring range

¹⁾ Other seal materials on request

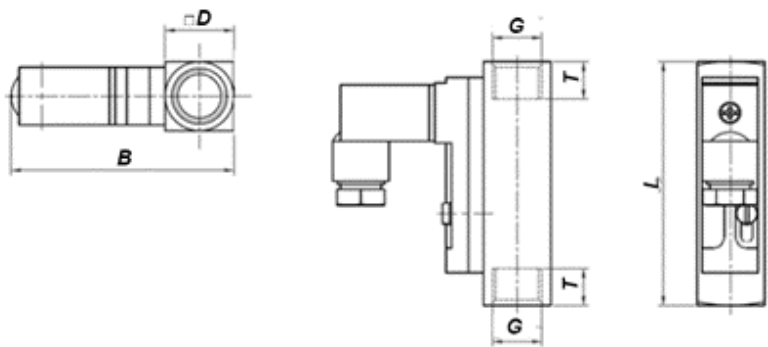
²⁾ ± 5 % possible with calibration to a certain viscosity

³⁾ Minimum load 3 VA

⁴⁾ With mounted mating connector in corresponding protection type

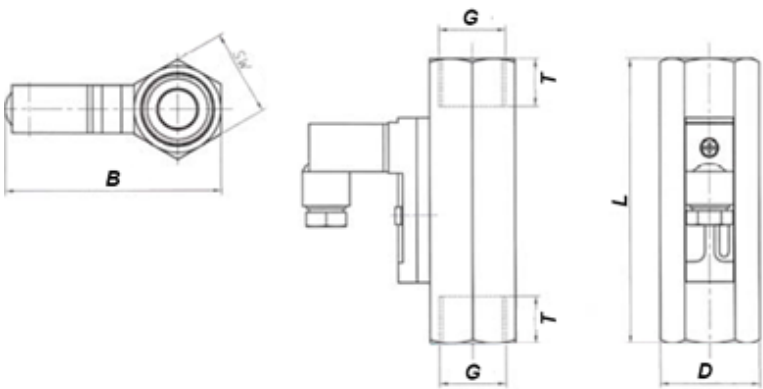
Dimensions without indicator:

Size 1



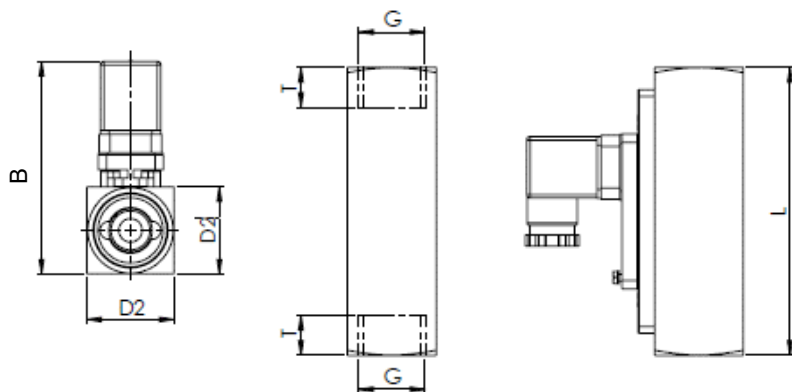
Type [l/min]	Installation dimensions [mm]							Weight, approx. [g]
	SW	E	B	G	DN	T	L	
Size 1								
0.005 .. 0.06	18	18	~58	1/4"	8	10	65	140
0.04 .. 0.13								
0.1 .. 0.6								
0.2 .. 1.2								
0.4 .. 2.0								
0.5 .. 3.0								
1.0 .. 5.0								

Size 2



Type [l/min]	Installation dimensions [mm]							Weight, approx. [g]
	SW	E	B	G	DN	T	L	
Size 2								
0.02 .. 0.2	27	31	67	1/2"	15	14	90	350
0.2 .. 0.6								
0.4 .. 1.8								
0.8 .. 3.2								
2.0 .. 7.0								
3.0 .. 13.0								
4.0 .. 20.0								
8.0 .. 30.0								

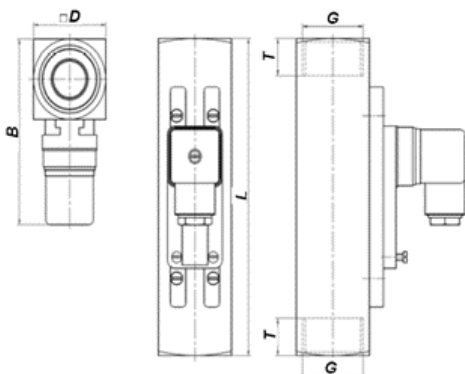
Size 3



Type [l/min]	Installation dimensions [mm]							Weight, approx. [g]
	SW	E	B	G	DN	T	L	
Size 3								
10 .. 30	34 40	40	98	3/4" 1" *	20 25	15 17	152 130	1320 1130
15 .. 45								
20 .. 60								
30 .. 90	40	40	98	1"	25	17	130	1130
60 .. 150								

* Standard

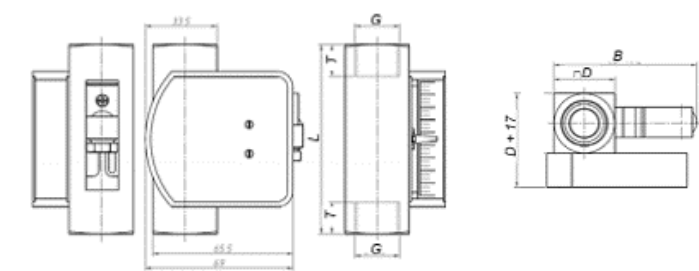
Size 4



Type [l/min]	Installation dimensions [mm]							Weight, approx. [g]
	SW	E	B	G	DN	T	L	
Size 4								
0.2 .. 4.0	27	30	~88	1/4" 3/8" 1/2"	8 10 15	10 15 14	131	850
0.6 .. 5.0								
0.5 .. 8.0								
1 .. 14								
1 .. 28	27	30	~88	1/2" 3/4"	15 20	14 15	146 174	900
2 .. 40								
4 .. 55								
1 .. 70								
8 .. 90	34	40	96	3/4"	20	15	152	1400
5 .. 110	40	40	~98	1"	25	17	156	1100
10 .. 150	50	50	~108	1 1/4"	32	20	200	2750
35 .. 220	50	50	~108	1 1/4"	32	20	200	3000
35 .. 250	60	60	~116	1 1/2"	40	20	200	3800

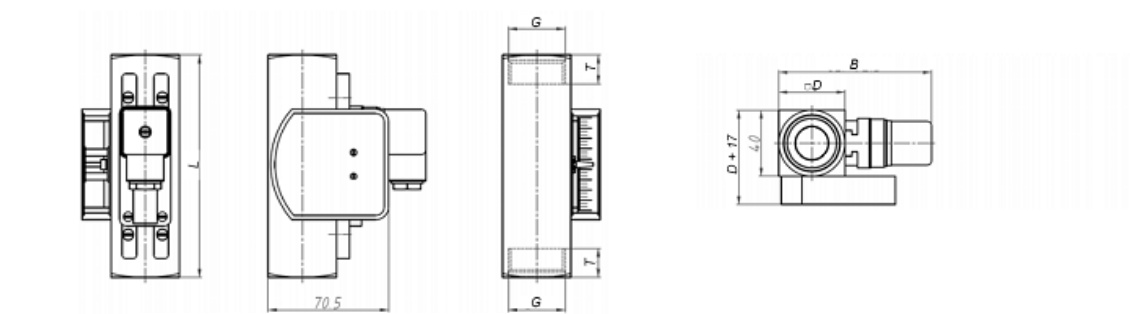
Dimensions without indicator

Size 2



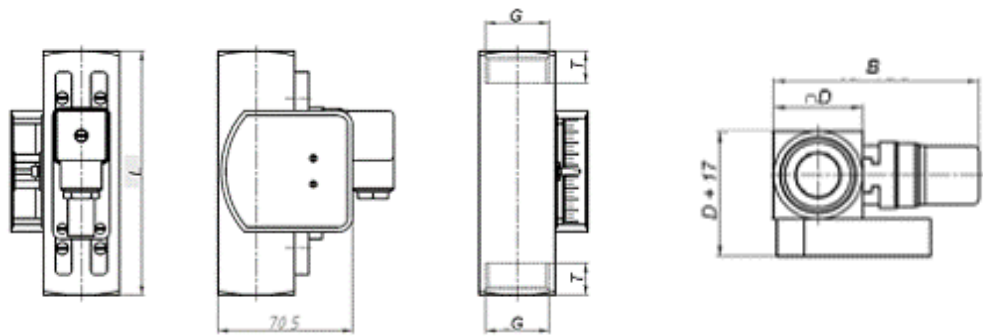
Type [l/min]	Installation dimensions [mm]							Weight, approx. [g]
	SW	E	B	G	DN	T	L	
Size 2								
0.02 .. 0.2	30	30	70	1/2"	15	14	90	570
0.2 .. 0.6								
0.4 .. 1.8								
0.8 .. 3.2								
2.0 .. 7.0								
3.0 .. 13.0								
4.0 .. 20.0								
8.0 .. 30.0								

Size 3



Type [l/min]	Installation dimensions [mm]							Weight, approx. [g]				
	SW	E	B	G	DN	T	L					
Size 3												
10 .. 30	34 40	40	98	3/4" 1" *	20	15	152	1340				
15 .. 45					25	17	130	1160				
20 .. 60					25	17	130	1160				
30 .. 90	40	40	98	1"								
60 .. 150												

* Standard



Type [l/min]	Installation dimensions [mm]							Weight, approx. [g]
	SW	E	B	G	DN	T	L	
Size 4								
0.2 .. 4.0	27	30	88	1/4" 3/8" 1/2"	8 10 15	10 15 14	131	900
0.6 .. 5.0								
0.5 .. 8.0								
1 .. 14								
1 .. 28								
2 .. 40	27	30	88	1/2"	15	14	146	950
4 .. 55	32							
1 .. 70	34 40	40 40	98 98	3/4" 1"	20 25	15 17	152 156	1450 1150
8 .. 90								
5 .. 110								
10 .. 150	50	50	108	1 1/4"	32	20	200	2800
35 .. 220	50	50	108	1 1/4"	32	20	200	3050
35 .. 250	60	60	116	1 1/2"	40	20	200	3850

Pin connections

M12x1, 4 pole	Pin	Switching contacts: XS	Switching contacts: XW
	1	Centre	Centre
	2	n.c.	N/O contact
	3	n.c.	n.c.
	4	N/O contact	N/O contact
EN 175301-803, 3 pole + PE	Pin	Switching contacts: XS	Switching contacts: XW
	1	Centre	Centre
	2	N/O contact	N/C contact
	3	n.c.	N/O contact
	⊥	n.c.	n.c.

Model code

HFS 2 5 X X - XX - XXXX-XXXX - X - X - X - 000

Measurement procedure

2 = Variable area float

Measuring fluid

5 = Water or water-based

Mechanical connection ^{1) 2)}

1 = 1/4"

2 = 3/8"

3 = 1/2"

4 = 3/4"

5 = 1"

6 = 1 1/4"

7 = 1 1/2"

Electrical connection

5 = Connector plug, EN 175301-803, 3 pole+PE (IP 67 mating connector supplied)

6 = Connector plug M12x1, 4-pol. (mating connector not supplied)

Switching contacts ³⁾

Switching contacts 7)

1S = 1 N/O contact

2S = 2 N/O contacts

1W = 1 change-over contact

2W = 2 change-over contacts

Measuring ranges l/min ²⁾

Size 1 - (only available without mech. indicator)

.005-0.06; 0.04-0.13; 0.1-0.6; 0.2-0.12; 0.4-0.20; 0.5-0.30; 0.1-0.05.0

Size 2

0.02-0.2; 0.2-0.6; 0.4-0.18; 0.8-0.32; 0.2-0.70; 0.3-0.0013;

0.4-0.0020; 0.8-0.0030

Size 3

0.01-0.030; 0.015-0.045; 0.02-0.060; 0.03-0.090; 0.06-0.150

Size 4

0.02-0.40; 0.6-0.50; 0.5-0.80; 0.1-0.0014; 0.1-0.0028; 0.2-0.0040; 0.4-0.0055;

0.1-0.0070; 0.8-0.0090; 0.005-0.110; 0.01-0.150; 0.035-0.220; 0.035-0.250

Accuracy

6 = ≤ 5.0 % FS (for size 4 only)

7 = ≤ 10.0 % FS

Housing material

B = Brass (nickel-plated)

S = stainless steel

Mechanical indicator

0 = without indicator

1 = with indicator

Modification Number

000 = Standard

¹⁾ Mechanical connection options depend on housing type (see Dimensions)

²⁾ Other models available on request

³⁾ In variants with two switching contacts the second switching contact is positioned laterally on the instrument by default.

Notes:

Special models available on request.

On instruments with a different modification number, please read the label or the technical amendment details supplied with the instrument.

Accessories:

Appropriate accessories, such as mating connectors, can be found in the Accessories brochure.

Note

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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