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Flow meter type M 123

Material	Measuring tube	PSU	PVC, transparent	PVDF
	Union nut	• PVC-U	• PP [2]	• PVDF
	Float	PVDF [1]		
Sealing material (optional)		• EPDM	• *)	
Working temperature		0 °C up to 100°C	0 °C up to 60 °C	– 20 °C up to 100 °C
Nominal size		DN 10 / 15 / 25		
Pressure class		PN 10		
Measuring ranges		min. 1,5 l/h		max. 1000 l/h
Accuracy		Accuracy class 4 as defined by VDI / VDE 3513, Page 2 (equates approximately ± 2% of scale value)		
Connection with pipe		• Cement socket / welding socket • Spigot SDR 11 • Threaded socket		
Connection with pipe		Company standard		
Accessories		Limit value contact (float with solenoid required)		

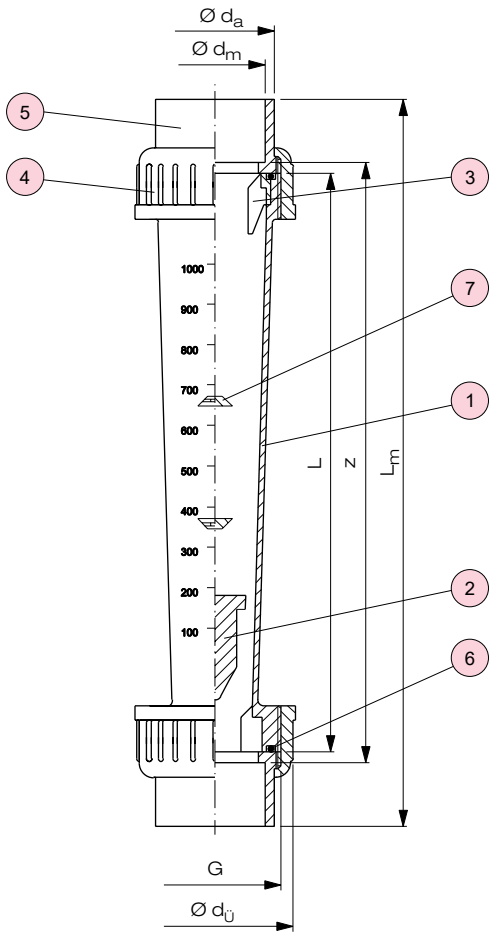
[1] Float PVDF - optionally: with or without solenoid
[2] with PP-end connector on request
*) Special version: FKM on request

Example for an invitation to tender text:
Flow meter type M 123, DN 15, PN 10, measuring tube PSU, float PVDF with solenoid, sealing material EPDM, true union with spigot PP / d 20 / SDR 11, measuring range 8,0 up to 80 l/h H_2O

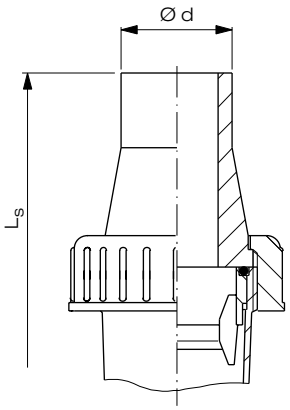
Document: *FRANK_DB_L6_Durchflussmesser Typ M 123_10-2021_EN*

Flow meter type M 123

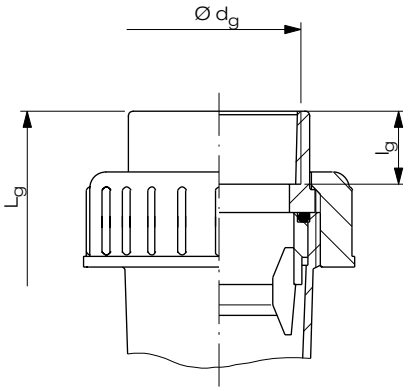
True union with socket



True union with spigot



True union with threaded socket



No.	Description	Number	Material
1	Measuring tube	1	PSU, PVC transparent, PVDF
2	Float*)	1	PVDF
3	Insert	2	PVDF
4	Union nut	2	PVC-U, PP, PVDF1)

No.	Description	Number	Material
5	Insertion part (socket, spigot)	2	PVC-U, PP, PVDF1)
6	O-ring*)	2	EPDM, FKM
7	Setpoint indicator	2	PS

*) Wearing parts
1) other material on request (e.g. malleable cast iron, stainless steel)

Description

- The flow meter type M 123 operates on the float principle and is used for flow rate measurements in pipelines. The medium flows through the vertically installed flow meter from bottom to top. This raises the float and shows the current flow rate on the scale on the measuring device. The read-off edge corresponds to the largest diameter of the float.
- Flow meters Typ M 123 come as standard with a water scale and a % scale, and two setpoint indicators.

Special features

- Break-proof and resistant against corrosion
- True union
- Special scales available for liquid and gaseous media
- Dovetail guide for mounting accessories (limit value contact)
- short installation length

Flow meter type M 123

Dimensions and weights

Measuring range l/h H2O	DN	$d_ü$	G	L	Cement socket d_m	z	L_m	Welding socket d_m	z	L_m	Spigot PP or PE d	L_s	$s^{1)}$	Spigot PVDF d	L_s	$s^{2)}$	Threaded socket d_g	L_g	l_g	Weight in kg / pc PSU
1,5 – 15 **2,5 – 25** **5,0 – 50** **10 – 100**	10	35	3/4“	165	16	171	199	15,5	175	201	-	-	-	-	-	-	3/8“	199	11	0,08
8 – 80 **15 – 150** **20 – 200**	15	43	1“	185	20	191	223	19,5	191	223	20	293	1,9	20	293	1,9	1/2“	223	13	0,13
15 – 150 **30 – 300** **50 – 500** **100 – 1000**	25	60	1 1/2“	200	32	206	250	31,5	206	246	32	320	3,0	32	320	2,4	1“	250	17	0,24

[1] SDR 11 [2] SDR 21

Pressure loss

Measuring ranges [l/h]	1,5 – 15	2,5 – 25	5 – 50	10 – 100	8 – 80	15 – 150	20 – 200	15 – 150	30 – 300	50 – 500	100 – 1000
Pressure loss [mm WS]	46,0	46,0	46,0	46,0	44,7	44,7	44,7	82,8	82,8	82,8	82,8

Available special scales

H_2O	Air (working pressure)										
	0 bar	1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar
l/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h	Nm^3/h
1,5 – 15	0,1 – 0,55	0,15 – 0,8	0,17 – 0,9	0,20 – 1,1	0,25 – 1,2	0,25 – 1,3	0,26 – 1,45	0,3 – 1,5	0,3 – 1,6	0,3 – 1,7	0,35 – 1,8
2,5 – 25	0,2 – 0,95	0,25 – 1,3	0,25 – 1,3	0,40 – 1,9	0,40 – 2,1	0,50 – 2,4	0,5 – 2,5	0,5 – 2,7	0,6 – 2,9	0,6 – 3,0	0,60 – 3,2
5 – 50	0,5 – 1,90	0,70 – 2,7	0,80 – 3,4	1,00 – 3,8	1,20 – 4,2	1,20 – 4,6	1,2 – 5,0	1,4 – 5,4	1,4 – 5,8	1,6 – 6,0	1,60 – 6,4
10 – 100	0,8 – 3,00	1,00 – 4,2	1,20 – 5,4	1,40 – 6,4	1,60 – 7,0	1,60 – 7,4	2 – 8	2,0 – 8,8	2,0 – 9,0	2 – 10	2 – 10
8 – 80	0,6 – 2,80	0,80 – 4,0	1 – 5	1,20 – 5,6	1,40 – 6,4	1,40 – 7,0	1,5 – 7,5	1,5 – 8,0	1,5 – 8,5	2 – 9	2 – 9,5
15 – 150	1,4 – 5,60	2 – 8	2 – 10	3 – 12	3 – 13	3 – 14	3,5 – 15	3,5 – 16,5	4 – 17	4 – 18	4 – 19
20 – 200	1,5 – 7,00	2 – 10	3 – 13	3 – 15	4 – 18	4 – 18	4 – 20	5 – 21	5 – 23	5 – 23	5 – 25
15 – 150	1,0 – 6,50	1 – 9	1,5 – 11	2 – 13	2 – 14,5	2 – 16	2 – 17	2,5 – 18	2,5 – 19,5	3 – 20	3 – 21
30 – 300	1,5 –11	2 – 15	2,5 – 18	3 – 22	3 – 24	4 – 26	4 – 28	4 – 30	4 – 33	5 – 34	5 – 35
50 – 500	3 – 18	4 – 25	5 – 30	5 – 35	6 – 44	6 – 44	8 – 48	8 – 50	8 – 54	8 – 56	10 – 60
100 – 1000	6 – 30	8 – 44	10 – 54	12 – 62	15 – 75	15 – 75	15 – 85	15 – 85	20 – 90	20 – 95	20 – 100

H_2O	HCl	NaOH	
l/h	30 - 33 % l/h	30 % l/h	50 % l/h
1,5 – 15	1 – 15	0,1 – 2	–
2,5 – 25	2,5 – 20	0,2 – 5	–
5 – 50	5 – 40	1 – 14	–
10 – 100	10 – 85	3 – 35	–
8 – 80	8 – 70	2 – 23	0,2 – 3,5
15 – 150	15 – 125	3 – 55	0,5 – 10
20 – 200	20 – 170	5 – 80	0,5 – 16
15 – 150	5 – 125	3 – 55	0,5 – 11
30 – 300	30 – 260	6 – 130	1 – 33
50 – 500	50 – 425	10 – 250	2 – 80
100 – 1000	100 – 850	40 – 590	10 – 220

Details required to design special scales

- Medium
- Specific gravity (g/cm^3)
- Viscosity (cP or mPas)
- Working temperature (°C)
- Working pressure (bar)
- Desired measuring range (l/h)

Notes for correct installation

- The flow meter must be installed stress-free in the pipe (plane parallelism, axial, overall length).
- Flow meters should not be installed before or behind pumps, valves and changes of directions (an inlet and outlet section must be provided. Inlet approx. Le > 10 X DN, outlet approx. La > 5 x DN).
- Socket and spigot type: Gluing and welding have to be carried out according to the relevant standards (e.g. DVS).

Flow meter type M 123

Special scales H_2O with other units of measurement

Series M 123		
l/h	USGPM	Imp. Gal/h
1,5 - 15	0,006 - 0,066	0,32 - 3,2
2,5 - 25	0,01 - 0,11	0,54 - 5,4
5 - 50	0,02 - 0,2	1,09 - 10,9
10 - 100	0,04 - 0,44	2,19 - 21,9
8 - 80	0,035 - 0,35	1,75 - 17,5
15 - 150	0,06 - 0,66	3,3 - 33
20 - 200	0,08 - 0,8	4,4 - 44
15 - 150	0,06 - 0,66	3,3 - 33
30 - 300	0,13 - 1,3	6,6 - 66
50 - 500	0,22 - 2,2	11 - 110
100 - 1000	0,44 - 4,4	22 - 220

Pressure correction table for gases: Calibration pressure 0 bar

Working pressure [bar]	Factor n	Working pressure [bar]	Factor n
0	1	**3**	2
0,2	1,095	**4**	2,24
0,4	1,184	**5**	2,45
0,6	1,265	**6**	2,65
0,8	1,34	**7**	2,83
1	1,414	**8**	3
1,5	1,58	**9**	3,165
2	1,73	**10**	3,32

This table is used to correct values displayed for gases by the flow meter if the operating pressure deviates from the pressure used as a basis for the calibration.

The values displayed on the flow meter are simply multiplied by the factor **n** corresponding to the operating pressure.

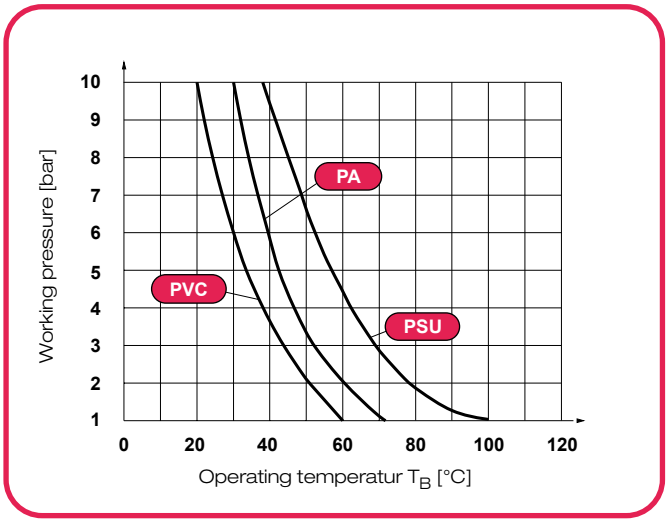
Worked sample:
M 123, DN 25
Special scales 0 bar air: 1,5-11 m^3/h
Working pressure: 0,8 bar
Display value: 5 m^3/h
Correction factor n according to table: 1,34
Flow rate value: Q = display value Q' x Correction factor n

Q = 5 m^3/h x 1,34 = 6,7 m^3/h

advice:

Measuring tube must not get in contact with solvents.

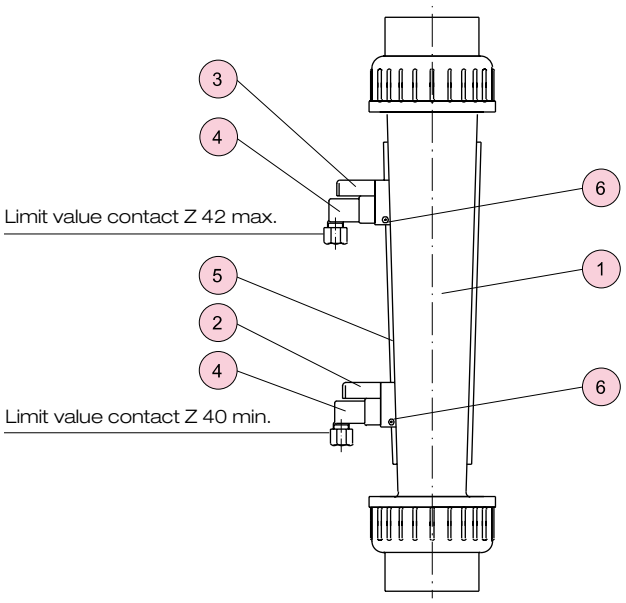
Working pressure[1] p_B in bar



[1] Definition see chapter T2 / technical information

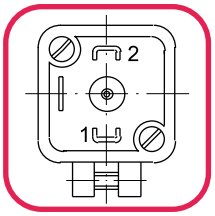
Limit value contact type Z 40 min. and type Z 42 max.
(Accessories for flow meter types M 335 / M 350, type M 123)

Functional component



No.	Description
1	Flow meter with solenoid-float
2	Limit value contact Z 40 min.
3	Limit value contact Z 42 max.
4	Angle plug for cable connection
5	Dovetail guide for mounting the Z 40 and Z 42
6	Clamping screw for fastening the limit value contact

Terminal connections



Description

Caution: *For using the limit value contacts Z 40 min. and Z 42 max. a flow meter M 335, M 350 or M 123 with solenoid-float is required.*

The limit value contacts Z 40 min. and Z 42 max. are used for external monitoring of limited flow values on our float-type flow meters. They are mounted onto the dovetail guide located on the flow measuring device and can be set to any desired value of the corresponding scale.
A solenoid installed in the float closes or opens a reed contact permanently cast in the limit value contact. The switching function is bistable. This means that the switching state is maintained even if the solenoid float moves away from the contact.

Advices

Caution: *Before starting please read the following using and mounting details.*

The limit value contacts Z 40 min. and Z 42 max. are not suitable for direct switching of larger consumers like pumps etc. In such cases you must use suitable switch components or SPS.
When retrofitting limit value contacts, ensure that the standard float is replaced with a solenoid float. The solenoid float is clearly identified by a „M“ on the top.

Installation instructions

- Put the limit value contact **2**/**3** on the dovetail guide **5**.
- Adjust the switch-point and fasten the clamping screw **6**.
- Demount the angle plug **4** and wire the cables. The seal must be insert when mounting.

Technical data

Switching voltage*):	max. 230 V
Switching rating*):	max. 10 W / 12 VA
Switching current*):	max. 0,5 A
Contact resistance:	< 200 mOhm
Leakage resistance:	> 10^{11} Ohm
Environmental temperature:	0 – 55 °C
Protection class:	in acc. with ISO 20653:2013-02 IP 65
Switching hysteresis Z 40/42:	1 – 2 mm float travel

*) Even a brief overshoot is not permitted

Order numbers

Z 40 min.	517 100 686
Z 42 max.	517 100 687

Switching status

	Float	
	above	below
Z 40 min.	open	closed
Z 42 max.	closed	open

Document: *FRANK_DB_L6_Grenzwertkontakt Typen Z 40 min. + Z 42 max._11-2020_EN*