



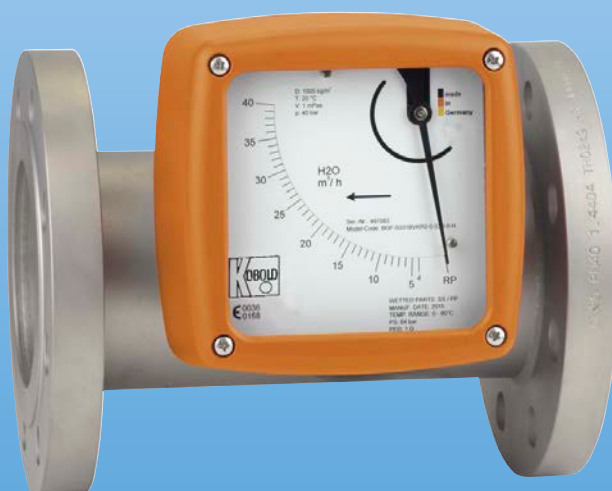
All-Metal Variable Area Flow Meter

for horizontal and vertical mounting



measuring
•
monitoring
•
analysing

BGF



Special versions up to 600 bar

- Measuring range:
10 - 100 ... 6000 - 60 000 l/h water
0.3 - 3.0 ... 170 - 1700 m³/h air
(20 °C, 1.013 bar)
- Accuracy: $\pm 2\%$ of full scale
- $p_{\max}$: PN 40 (option: PN 400);
 $t_{\max}$: -40 ... +200 °C
- Connection: flange
DN 15 ... DN 80, ANSI 1/2" ... 3"
- Material: stainless steel
1.4404/1.4571, PTFE
- Options:
Contacts, analogue output
with HART®, Profibus®-PA,
Foundation™ Fieldbus®

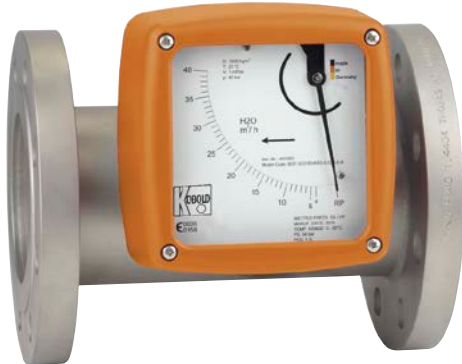


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Description

Inside the flow tube, there is a star guided float which works towards a spring. An annular gap is produced between the cone-shaped magnet system and the meter ring in case of flows other than zero. The position of the magnet system depends on the resulting force of all forces acting upon it. These forces comprise the flow force, a spring force acting opposite to the flow force, and the buoyancy and weight force significant for the measurements in case of vertical installation. Each position of the magnet holder corresponds to a flow value measured during calibration, which is transferred to a scale. The BGF flow meter consists of a meter tube with connections, a meter ring, and a conical magnet holder. By means of a magnet, the position of the magnet system is transferred to an encapsulated follow magnet, which has been fitted to a pointer axle. The position of a second annular follow magnet fitted on the pointer axle is transferred to the scale by means of the pointer.

Application

The BGF meter is suitable for flow measurement of liquid or gaseous products in pipes. The special advantage is that it can be used for all directions of flow. It shows the current flow rate in volume or mass per unit in time.

Areas of Application

Flow measurement, monitoring, adjusting and control of liquid and gaseous products. The meter's design makes it ideal for processes under difficult and adverse operating conditions. The devices are available with additional electrical equipment for process monitoring and control.

- A large spectrum of wetted materials
- Magneto-resistive signal transmission
- Special design for high-pressure and high-temperature applications
- Excellent heat tracing technology (as option)
- Double eddy current damping (as option)

Technical Details

Fitting

Wetted parts:
Measuring tube st. st.: 1.4404 (316 L)/1.4571 (316 Ti), spring st. st. 1.4571
Measuring tube PTFE: PTFE, spring Hastelloy® C-22, special materials on request

Process connection: flanges acc. to EN 1092-1 ASME B16.5, DIN 2512, JIS, NPT, screw pipe, connection, special connections on request

Nominal pressure: PN 40, ASME Cl150 / 300 (standard) (BGF-S)

PN 16, ASME Cl150 (standard) (BGF-P)

higher pressure rates on request (max. 400 bar)

Process temperature: -40°C ... +150°C (BGF-S with electrical output)
-40°C ... +200°C (BGF-S without electrical output)
-40°C ... +200°C (BGF-S with option V / H / W)
-40°C ... +125°C (BGF-P)

Ambient temperature: -40°C ... +80°C

Accuracy

Liquid/gas: ± 2 % of full scale
Additional inaccuracy by transmitter (ES): ± 0.2 %
Repeatability: ± 0.8 % of full scale

Certificate and accreditation

BGF (mechanical device): HMT21-4111X (Conformity statement)
Ex marking: II 2G Ex h IIC T1...T6 Gb
II 2D Ex h IIC T85°C/T350°C Db

Advertisement

Material: aluminium (stove-enameled)
stainless steel (optional)
Electr. outputs: inductive switch (standard)
inductive switch (safety design)
max. 2 micro changeover switches
(Reed switch U_{max} : 175 V_{DC}, I_{max} : 0.25 A, p_{max} : 5 W)
others on request



Technical Details (continued)

Ambient temperature:	-40 °C ... +80 °C (without switch) -40 °C ... +65 °C (with switch)
Protection:	IP 65 (Aluminium housing) IP 65, IP 66, IP 67 (Stainless steel housing)

Transmitter

- ES with HART®-protocol
- ES with HART®-protocol and 2 NAMUR-switches
- ES with HART®-protocol and 1 NAMUR-switch / 1 pulse output
- ES with Profibus-PA®

Power supply:	14 - 30 V _{DC}
Outputs:	passive, galvanically isolated
Currency:	4-20 mA
Binary 1 and 2:	U _i = 30 V, I _i = 20 mA, P _i = 100 mW
Ambient temperature:	-40 °C ... +70 °C

Certification and accreditation

ATEX (IECEX) Directive:	
ES:	DMT 00 ATEX E 075 / IECEX BVS 16.0072
Ex marking:	II 2G Ex ia IIC T6 Gb
SJ 3,5-N:	PTB 99 ATEX 2219X
SJ 3,5-SN:	PTB 00 ATEX 2049X
Ex marking:	II 2G Ex ia IIC T6...T1 Gb II 1D Ex ia IIIC T200 135°C Da
KCS (Korea):	
ES:	19-KA4BO-0315
Ex marking:	Ex ia IIC T6
NEPSI (China):	
ES:	GYJ22.1875
Ex marking:	Ex ia IIC T6 Gb
PESO (India):	
ES:	P568580
Ex marking:	Ex ia IIC T6 Gb

Additional options

- Other materials
- Other flange versions and sizes
- Certifications and certificates
- Display with pressure compensations against condensate build up
- Micro changeover switches
- Inductive switches in safety design



All-Metal Variable Area Flow Meter Model BGF

Order Details (example: BGF-S 15305B H K O O O S 1 0 0 K)

Model	Measuring range water at 1000 kg/m ³ , 1 mPas [l/h]	Measuring range air at 20 °C, 1013 mbar [Nm ³ /h] ²⁾	Connection size DN (ASME)	Pressure stage	Max. pressure loss [mbar]	Code ¹⁾ flange DIN EN 1092-1 Form B1	Code ¹⁾ flange ASME Class 150 RF
BGF-S = stainless steel meas. tube, st. st. spring, up to 200 °C BGF-P = st. st. meas. tube with PTFE lining, Hastelloy® spring, up to 125 °C	10 - 100	0.3 - 3.0	DN 15 (¾")	PN 40/150 lbs	on request	15305B H	15202R H
	16 - 160	0.5 - 4.6	DN 15 (¾")	PN 40/150 lbs	110	15305B I	15202R I
	25 - 250	0.7 - 7.0	DN 15 (¾")	PN 40/150 lbs	110	15305B J	15202R J
	40 - 400	1.0 - 11	DN 15 (¾")	PN 40/150 lbs	110	15305B K	15202R K
	60 - 600	1.7 - 17	DN 15 (¾")	PN 40/150 lbs	120	15305B L	15202R L
	100 - 1000	3.0 - 30	DN 25 (1")	PN 40/150 lbs	90	15309B M	15203R M
	160 - 1600	4.0 - 46	DN 25 (1")	PN 40/150 lbs	105	15309B N	15203R N
	250 - 2500	7.0 - 70	DN 25 (1")	PN 40/150 lbs	130	15309B P	15203R P
	400 - 4000	11 - 110	DN 25 (1")	PN 40/150 lbs	240	15309B Q	15203R Q
	100 - 1000	3.0 - 30	DN 25 (1")	PN 40/150 lbs	90	25309B M	25203R M
	160 - 1600	4.0 - 46	DN 25 (1")	PN 40/150 lbs	105	25309B N	25203R N
	250 - 2500	7.0 - 70	DN 25 (1")	PN 40/150 lbs	130	25309B P	25203R P
	400 - 4000	11 - 110	DN 25 (1")	PN 40/150 lbs	240	25309B Q	25203R Q
	250 - 2500	7.0 - 70	DN 40 (1 ½")	PN 40/150 lbs	75	40317B P	40205R P
	400 - 4000	11 - 110	DN 40 (1 ½")	PN 40/150 lbs	110	40317B Q	40205R Q
	600 - 6000	17 - 170	DN 40 (1 ½")	PN 40/150 lbs	130	40317B R	40205R R
	1000 - 10000	29 - 290	DN 40 (1 ½")	PN 40/150 lbs	-	40317B S	40205R S
	400 - 4000	11 - 110	DN 50 (2")	PN 40/150 lbs	100	50321B Q	50206R Q
	600 - 6000	17 - 170	DN 50 (2")	PN 40/150 lbs	110	50321B R	50206R R
	1000 - 10000	29 - 290	DN 50 (2")	PN 40/150 lbs	120	50321B S	50206R S
	1600 - 16000	46 - 460	DN 50 (2")	PN 40/150 lbs	130	50321B T	50206R T
	2500 - 25000	70 - 700	DN 50 (2")	PN 40/150 lbs	200	50321B U	50206R U
	1600 - 16000	46 - 460	DN 80 (3")	PN 40/150 lbs	110	80331B T	80208R T
	2500 - 25000	70 - 700	DN 80 (3")	PN 40/150 lbs	130	80331B U	80208R U
	4000 - 40000	110 - 1100	DN 80 (3")	PN 40/150 lbs	200	80331B V	80208R V
	6000 - 60000	170 - 1700	DN 80 (3")	PN 40/150 lbs	-	80331B W	80208R W

Reference conditions: water 20 °C, air 1.013 bar abs.

¹⁾ Other flange connections: Form C, N, D, JIS or Class 300 on request

²⁾ For gas measurements a factor of 2-3 of the inlet pressure should be considered

Continuation Order Details for Liquids (example: BGF-S 15305B H K O 0 0 S 1 0 0 K)

Magnet bearer	Flow direction	Heating ¹⁾ / Cooling	Certificates	Display	Scale	Electrical output	Accessories
K = PP ¹⁾ (to 80 °C, from DN50) P = PTFE (81...125 °C) S = st. steel ¹⁾	O = top to bottom L = left to right R = right to left U = bottom to top	0 = without 1 = with heating ermeto 12 mm 2 = with heating DIN-flange DN15/PN40 3 = with heating ANSI-flange ½" Class 150 4 = with heating NPT-flange ½"	0 = without certificate 1 = certificate of compliance with the order 2.1 2 = certificate of compliance with the order 2.2 B = inspection certificate with material certificate 3.1 C = inspection certificate with material certificate 3.2 N = material certificate NACE	S = aluminium, up to 150 °C for electrical output, up to 200 °C for local indication V = aluminium, assembled at distance, up to 200 °C E = st. steel, up to 150 °C H = st. steel, assembled at distance, up to 200 °C T = aluminium, with pressure compensation, up to 150 °C for electrical output, up to 200 °C for local indication W = aluminium, with pressure compensation, assembled at distance, up to 200 °C	Water 1 = %-scale 2 = measuring range F = double scale (acc. customer preference) Media 4 = %-scale 5 = measuring range Please specify mediadata in plain text (see below)	0 = without 1 = 1 inductive switch 2 = 2 inductive switches 3 = 1 inductive switch (safety design) ^{2) 4) 5)} 4 = 2 inductive switches (safety design) ^{2) 4) 5)} L = 1 x micro change-over switch M = 2 x micro change-over switches 6 = transmitter ES with HART®, Exia, 4-20 mA ^{2) 3) 5)} 7 = transmitter ES with HART®, Exia, 4-20 mA and 2 Namur-switches ^{2) 3) 5)} 8 = transmitter ES with HART®, Exia, 4-20 mA, 1 Namur switch and 1 pulse output ^{2) 3) 5)} 9 = electrical transmitter ES with Profibus®-PA, Exia E = 1 inductive switch (three-wire) F = 2 inductive switches (three-wire) G = 1 inductive switch NCB2-12GM40-Z0 K = electrical transmitters ES with Foundation™ Fieldbus® X = special	OK = without SK = SIL Conformity assessment by EXIDA ⁶⁾ XK = special (separate specification)

¹⁾ Not for model BGF-P (PTFE-coating)

²⁾ SIL 1 - IEC 61508-2:2010 conformity examined by EXIDA

³⁾ SIL 1 - IEC 61508-2:2000 conformity examined by EXIDA

⁴⁾ SIL 2 - IEC 61508-2:2000 conformity examined by EXIDA

⁵⁾ SIL conformity only with "Accessories" option "SK"

⁶⁾ Only in combination with "electrical output" for options "3", "4", "6", "7", "8"

For the right design of the flowmeter we need the following data:
 measuring range with unit, measured media, process temperature and pressure, viscosity,
 operating density (liquids), norm density (gases), mechanical connection.

Dimensions [mm]

DN	PN	I. W.	A (aluminium)	A (stainless steel)
15	40	26	74	100
25	40	32	77	103
40	40	46	85	110
50	40	70	98	123
80	40	102	114	140

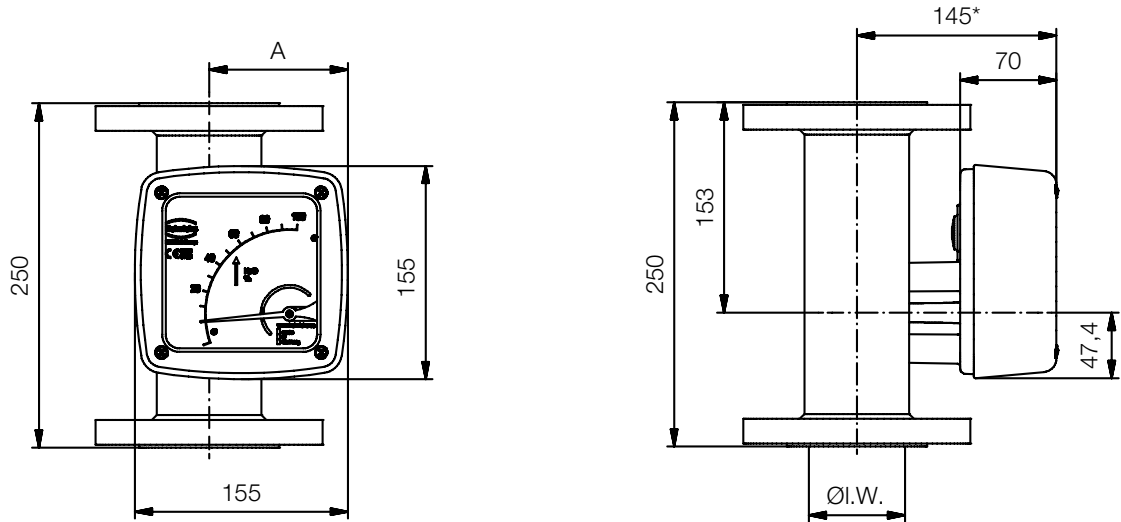
Dimensional deviations:

+100 mm with forward advanced display

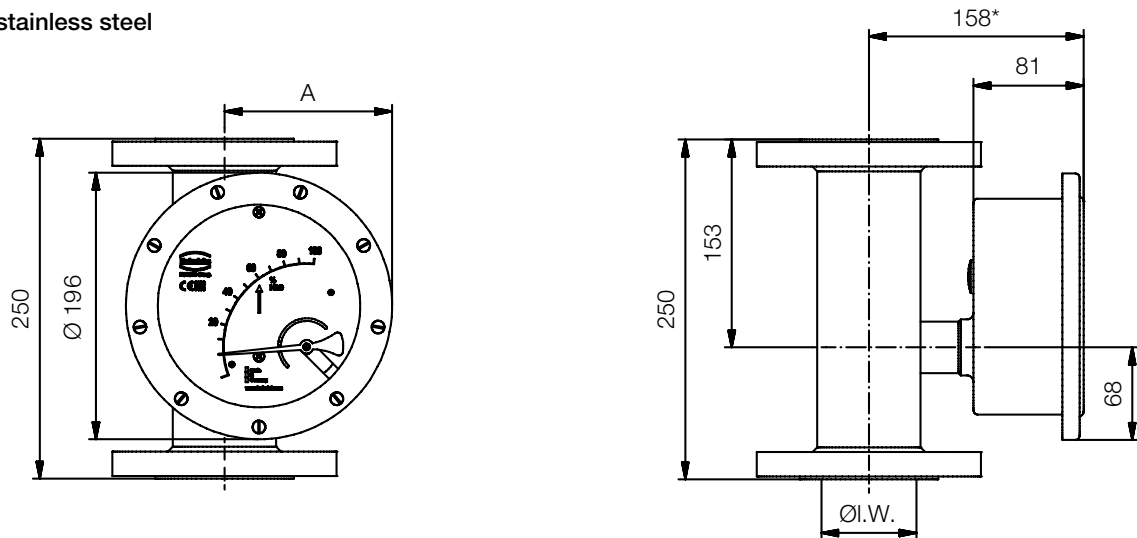
No responsibility taken for errors;
 subject to change without prior notice.

Dimensions [mm]

Display: aluminium



Display: stainless steel



* +100 mm with forward advanced display