All-Metal Armored Variable Area Flowmeter

for Horizontal or Vertical Mounting

measuring • monitoring • analyzing

BGF

- Measuring Range:
  0.044...0.44 to 26.4...264 (Water)
  0.176...1.76 to 100...1000 SCFM (Air)
- Accuracy: ±2% of Full Scale
- p_{max}: 580 PSIG
  (Option: up to 5,800 PSIG)
- t_{max}: -40 ... 390 °F
- Connection: 1/2" ... 3" ANSI,
  1/4"...2" NPT
- Material: 316L /316-Ti Stainless Steel, PTFE
- Options:
  Contacts, Analog Output with HART®, Profibus®-PA, Foundation™ Fieldbus®

KOBOLD companies worldwide:

AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHINA, CZECHIA, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, RUSSIA, SPAIN, SWITZERLAND, THAILAND, TUNISIA, TURKEY, USA, VIETNAM

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Description

The KOBOLD BGF metal-armored variable area flowmeter is ideal for difficult applications requiring high pressure, high temperature operation or low pressure loss. Its all-metal, armored design is available in stainless steel or PTFE-clad stainless steel. This flowmeter is unique in that its design employs a guided float and spring return mechanism that allows the BGF to be installed into both horizontal and vertical pipes. In standard configuration, the flowmeter is a purely mechanical meter suited for water and compressed gases in line sizes up to 3 inches. Electronic limit switches and/or an analog flow transmitter may be added if desired. Analog output is supplied standard with HART® protocol. Profibus-PA® is also available as an option. Available switches and analog outputs include those that operate via intrinsically safe methods of protection and may be used in hazardous areas where intrinsically safe installations are permitted. Foundation Fieldbus® is also available as an option. Custom designs for high pressure operation, special fittings and special materials of construction are available upon request.

Special Advantages

- Ideal for Difficult Operating Conditions
- Can be Used for All Directions of Flow
- A Large Spectrum of Wetted Materials
- Magneto-resistive Signal Transmission
- Special Design for High Pressure and High Temperature Applications

Technical Details

Sensor

Wetted Materials

SS Meas. Body:	316 L / 316-Ti Stainless Steel, 316-Ti Spring
PTFE Meas. Body:	Hastelloy C-22®, PTFE, Special Materials on Request
Process Connection:	ASME B16.5, NPT, Other Connections on Request
Nominal Pressure:	580 PSIG, ASME Cl150 / 300 (Standard) (BGF-S) 230 PSIG, ASME Cl150 (Standard) (BGF-P) Higher Pressures Upon Request (Max. 5800 PSIG)
Process Temperature:	-40...300 °F (BGF-S with Electrical Output) -40...390 °F (BGF-S without Electrical Output) -40...390 °F (BGF-S with Option V / H / W) -40...257 °F (BGF-P)
Ambient Temperature:	-40...176 °F

Accuracy

Liquid/Gas:	± 2 % of Full Scale
Additional Inaccuracy by Transmitter (ES):	± 0.2 %
Repeatability:	± 0.8 % of Full Scale

Protection:	IP 65 (Aluminum Housing) IP 67 (Stainless Steel Housing)

Certificate and Accreditation

Explosion Protection:	BVS 03 ATEX H/B 112

Display

Material:	Aluminum (Stove-Enameled) Stainless Steel (as Option)
Electrical Outputs:	Inductive Switch (Standard), Inductive Switch (Safety Design), Microswitch, Others on Request
Ambient Temperature:	-40...176 °F (without Switch) -40...150 °F (with Switch)

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®
- ES with Foundation Fieldbus®

Power Supply:	14 - 30 V_{DC}
Output:	Passive, Galvanically Isolated
Current:	4-20 mA
Binary 1 and 2:	Ui = 30 V, Ii = 20 mA, Pi = 100 mW
Ambient Temperature:	-40...158 °F

Certification and Accreditation

Explosion Protection:	DMT 00 ATEX E 075
Type of Protection:	II 2G EEx ia IIC T6

*Additional Information Required for Order:

To ensure proper operation, these products require a completed application guide form to be submitted with any order. Please refer to the end of this datasheet in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

Order Details for DN15 Models: (Example: **BGF-S15 201R H KO0 0 S1 0 0K**)

DN15 Models Measuring Ranges: 0.044...0.44 GPM to 0.264...2.64 GPM						Part Number Continued
Model	Measuring Tube Material	Connection	Measuring Range*			
			Code	Water	Air	
BGF-..	..S15.. = Stainless Steel, Process Temp. ≤ 390 °F ..P15.. = Stainless Steel Measuring Tube, PTFE-Lining, Process Temp. ≤ 257 °F, Max. Pressure 230 PSIG	..201R[2].. = 1/2" Class 150 RF ASME ..221R[2].. = 1/2" Class 300 RF ASME ..202R.. = 3/4" Class 150 RF ASME ..222R.. = 3/4" Class 300 RF ASME ..203R.. = 1" Class 150 RF ASME ..223R.. = 1" Class 300 RF ASME ..204R[2].. = 1-1/4" Class 150 RF ASME ..224R[2].. = 1-1/4" Class 300 RF ASME ..6010[1)2)].. = 1/4" NPT ..6020[1)2)].. = 3/8" NPT ..6030[1)2)].. = 1/2" NPT ..6040[1)2)].. = 3/4" NPT	..H..	0.044..0.44 GPM	0.176...1.76 SCFM	To complete part number, please go directly to order table on page 6.
			..I..	0.071...0.71 GPM	0.294...2.71 SCFM	
			..J..	0.11...1.1 GPM	0.412...4.12 SCFM	
			..K..	0.176...1.76 GPM	0.589...5.88 SCFM	
			..L..	0.264...2.64 GPM	1.0...10.0 SCFM	

*Reference Conditions: Water at 68 °F @1 mPas, Air at 68 °F @ 0 PSIG (Range Values for Other Media Upon Request)
[1)] NPT floats can not be removed
[2)] Not for BGF-P PTFE Models

Order Details for DN25 Models: (Example: **BGF-S25 202R M KO0 0 S1 0 0K**)

DN25 Models Measuring Ranges: 0.44...4.4 GPM to 1.76...17.6 GPM						Part Number Continued
Model	Measuring Tube Material	Connection	Measuring Range*			
			Code	Water	Air	
BGF-..	..S25.. = Stainless Steel, Process Temp. ≤ 390 °F ..P25.. = Stainless Steel Measuring Tube, PTFE-Lining, Process Temp. ≤ 257 °F, Max. Pressure 230 PSIG	..202R[3].. = 3/4" Class 150 RF ASME ..222R[3].. = 3/4" Class 300 RF ASME ..203R.. = 1" Class 150 RF ASME ..223R.. = 1" Class 300 RF ASME ..204R[3].. = 1-1/4" Class 150 RF ASME ..224R[3].. = 1-1/4" Class 300 RF ASME ..205R[3].. = 1-1/2" Class 150 RF ASME ..225R[3].. = 1-1/2" Class 300 RF ASME ..6010[1)3)].. = 1/4" NPT ..6020[1)3)].. = 3/8" NPT ..6030[1)3)].. = 1/2" NPT ..6040[1)3)].. = 3/4" NPT	..M..	0.44...4.4 GPM	1.76...17.6 SCFM	To complete part number, please go directly to order table on page 6.
			..N..	0.705...7.05 GPM	2.35...27.1 SCFM	
			..P..	1.1...11 GPM	4.12...41.2 SCFM	
			..Q [2]..	1.76...17.6 GPM	6.47...64.7 SCFM	

*Reference Conditions: Water at 68 °F @1 mPas, Air at 68 °F @ 0 PSIG (Range Values for Other Media Upon Request)
[1)] NPT floats can not be removed
[2)] Range not available for BGF-P (PTFE Casing), for BGF-S Only
[3)] Not Available for BGF-P with PTFE Casing

*Additional Information Required for Order:

To ensure proper operation, this product requires a completed application guide form to be submitted with any order. Please refer to the end of this datasheet in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

Order Details for DN40 Models: (Example: **BGF-S40 205R P KO0 0 S1 0 0K**)

DN40 Models Measuring Ranges: 1.1...11 GPM to 4.4...44 GPM						Part Number Continued
Model	Measuring Tube Material	Connection	Measuring Range*			
			Code	Water	Air	
BGF-..	..S40.. = Stainless Steel, Process Temp. ≤ 390 °F	..205R.. = 1-1/2" Class 150 RF ASME ..225R.. = 1-1/2" Class 300 RF ASME ..6040[1]).. = 3/4" NPT ..6050[1]).. = 1" NPT ..6060[1]).. = 1-1/4" NPT	..P..	1.1...11 GPM	4.12...41.2 SCFM	To complete part number, please go directly to order table on page 6.
			..Q..	1.76...17.6 GPM	6.47...64.7 SCFM	
			..R..	2.64...26.4 GPM	10...100 SCFM	
			..S..	4.4...44 GPM	17.0...170 SCFM	

*Reference Conditions: Water at 68 °F @1 mPas, Air at 68 °F @ 0 PSIG (Range Values for Other Media Upon Request)

[1]) NPT floats can not be removed

*Additional Information Required for Order:

To ensure proper operation, this product requires a completed application guide form to be submitted with any order. Please refer to the end of this datasheet in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

Order Details for DN50 Models: (Example: **BGF-S50 206R Q KO0 0 S1 0 0K**)

DN50 Models Measuring Ranges: 1.76...17.6 GPM to 11...110 GPM						Part Number Continued
Model	Measuring Tube Material	Connection	Measuring Range*			
			Code	Water	Air	
BGF-..	..S50.. = Stainless Steel, Process Temp. ≤ 390 °F ..P50.. = Stainless Steel Measuring Tube, PTFE-Lining, Process Temp. ≤ 257 °F, Max. Pressure 230 PSIG	..206R.. = 2" Class 150 RF ASME ..226R.. = 2" Class 300 RF ASME ..207R[2]).. = 2-1/2" Class 150 RF ASME ..227R[2]).. = 2-1/2" Class 300 RF ASME ..6060[1)2]).. = 1-1/4" NPT ..6070[1)2]).. = 1-1/2" NPT ..6080[1)2]).. = 2" NPT	..Q..	1.76...17.6 GPM	6.47...64.7 SCFM	To complete part number, please go directly to order table on page 6.
			..R..	2.64...26.4 GPM	10...100 SCFM	
			..S..	4.4...44 GPM	17.0...170 SCFM	
			..T..	7.0...70 GPM	27.0...270 SCFM	
			..U..	11...110 GPM	41...410 SCFM	

*Reference Conditions: Water at 68 °F @1 mPas, Air at 68 °F @ 0 PSIG (Range Values for Other Media Upon Request)

[1]) NPT floats can not be removed

[2]) Not Available for BGF-P with PTFE Casing

***Additional Information Required for Order:**

To ensure proper operation, this product requires a completed application guide form to be submitted with any order. Please refer to the end of this datasheet in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

Order Details for DN80 Models: (Example: **BGF-S80 208R T KO0 0 S1 0 0K**)

DN80 Models Measuring Ranges: 7.05...70.5 GPM to 26.42...264.2 GPM						Part Number Continued
Model	Measuring Tube Material	Connection	Measuring Range*			
			Code	Water	Air	
BGF-..	**..S80..** = Stainless Steel, Process Temp. ≤ 390 °F **..P80..** = Stainless Steel Measuring Tube, PTFE-Lining, Process Temp. ≤ 257 °F, Max. Pressure 230 PSIG	**..208R..** = 3" Class 150 RF ASME **..228R..** = 3" Class 300 RF ASME	**..T..**	7.0...70 GPM	27.0...270 SCFM	**To complete part number, please go directly to order table on page 6.**
			..U..	11...110 GPM	41...410 SCFM	
			..V..	17.6...176 GPM	64.7...647 SCFM	
			..W..	26.4...264.2 GPM	100...1000 SCFM	

*Reference Conditions: Water at 68 °F @1 mPas, Air at 68 °F @ 0 PSIG (Range Values for Other Media Upon Request)

***Additional Information Required for Order:**

To ensure proper operation, this product requires a completed application guide form to be submitted with any order. Please refer to the end of this datasheet in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

Continuation of Order Details (Example: **BGF-S80 208R T K O 0 0 S 1 0 0K**)

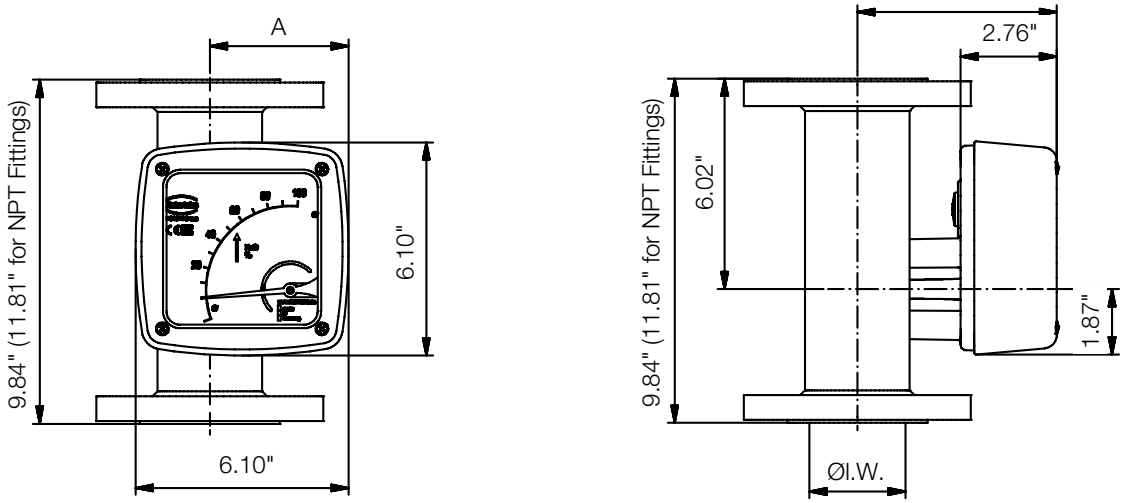
Magnet Bearer	Flow Direction	Heating[1] / Cooling	Certificates	Display	Scale	Electrical Output	Accessories
..K.. = PP[1] (to 176 °F, from DN 50) **..P..** = PTFE (BGF-S to 300 °F) (BGF-P to 257 °F) **..S..** = St. Steel[1]	**..O..** = Top to Bottom **..L..** = Left to Right **..R..** = Right to Left **..U..** = Bottom to Top	**..0..** = without **..1..** = with Heating, Ermeto 12 mm **..3..** = with Heating, ANSI-Flange ½" Class 150 **..4..** = with Heating, 1/2" NPT	**..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	**..S..** = Aluminum **..V..** = Aluminum, Assembled at Distance up to 390 °F **..E..** = St. Steel **..H..** = St. Steel, Assembled at Distance up to 390°F **..T..**= Aluminum with Pressure Comp. **..W..** = Aluminum with Pressure Comp., Assembled at Distance up to 390 °F	**Water** **..1..** = %-Scale **..2..** = Measuring Range **Media** **..4..** = %-Scale **..5..** = Measuring Range **..F[2]..** = Dual Scale **Please Specify Media Data (See Below)	**..0..** = without **..1..** = 1 Inductive Switch **..2..** = 2 Inductive Switches **..C..** = 1 × Microswitch **..D..** = 2× Microswitches **..6..** = Transmitter ES with HART®, EEx ia, 4-20 mA, SIL **..7..** = Transmitter ES with HART®, EEx ia, 4-20 mA and 2 NAMUR-Switches, SIL **..8..** = Transmitter ES with HART®, EEx ia, 4-20 mA, 1 NAMUR Switch and 1 Pulse Output **..9..** = Electrical Transmitter ES with Profibus®-PA, EEx ia **..K..** = Electrical Transmitters ES with Foundation™ Fieldbus®	**..0K** = without **..XK** = Special (Please Spec.)

[1] Not for model BGF-P (PTFE-coating)

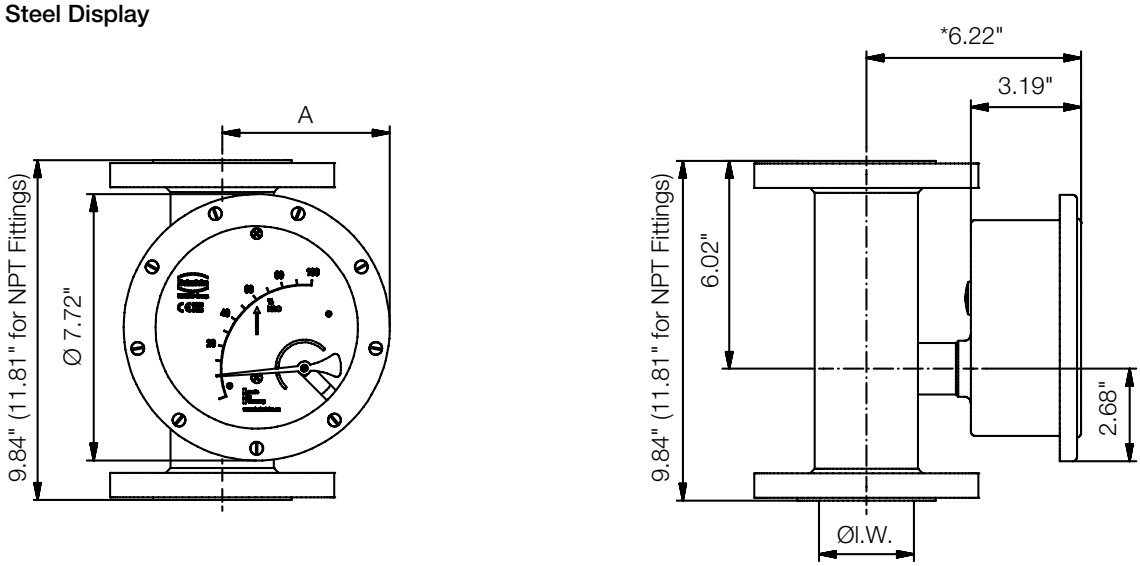
[2] Please specify ranges with units of measurement

Dimensions

Aluminum Display



Stainless Steel Display



Size	ANSI	I. W. (Inner Width)	A	
			Aluminum Display	Stainless Steel Display
1/2"	150/300	1.02"	2.91"	3.94"
1"	150/300	1.26"	3.03"	4.06"
1-1/2"	150/300	1.81"	3.35"	4.33"
2"	150/300	2.76"	3.86"	4.84"
3"	150/300	4.02"	4.49"	5.51"

Dimensional Deviations:
* + 3.94" with forward advanced display

BGF Application Guide

Rev 01/19/22

General Information

Contact Name:_____

Company Name:_____

Phone:_____

Email:_____

Quote Number (if already quoted):_____

Date:_____

Part Number:_____

Calibrated Range:_____

Number of Pieces Required:_____

☐ **This has not been quoted yet and pricing is required.**

Design Conditions

Accurate design pressure and temperature are essential to ensure the flowmeter will be built to operate without damage. Please fill out accurately and completely.

1. Pressure: Maximum _____ PSIG
2. Temperature: Maximum _____ °F

Calibration Conditions for Liquid Flow Applications

1. Type of Liquid: _____
2. Normal Operating Temperature: _____ °F
3. Viscosity at Normal Operating Temperature: _____
4. Specific Gravity (at Normal Operating Temp): _____
5. Desired Measuring Range and Units: _____

Note: Items 3 & 4 not required for water flow

Calibration Conditions for Gas Flow Applications

1. Type of Gas: _____
2. Normal Operating Temperature: _____ °F
3. Normal Pressure at Outlet Fitting: _____ PSIG
4. Viscosity at Normal Operating Temp: _____
5. Specific Gravity (required for gas mixtures): _____
6. Desired Measuring Range and Units:_____

Note: The calibration pressure required is the pressure that the meter sees at its outlet fitting.

Measuring Tube Options

1. Measuring Tube Material: ☐ 316 Stainless Steel ☐ PTFE Lined Stainless Steel
   ☐ Other (specify): _____
2. Desired Fitting Size: ☐ 1/2" ☐ 3/4" ☐ 1" ☐ 1-1/2" ☐ 2" ☐ 3"
3. Fitting Type: ☐ NPT Thread (2" max) ☐ 150 LB ANSI Flange ☐ 300 LB ANSI Flange
   ☐ Other (specify): _____
4. Magnet Bearer: ☐ PP ☐ PTFE ☐ Stainless Steel
5. Flow Direction: ☐ Top to Bottom ☐ Left to Right ☐ Right to Left ☐ Bottom to Top
6. Heating/Cooling Jacket: ☐ Without ☐ 1/2" NPT Connections ☐ 1/2" 150 lb. ANSI Connections

7. Certificates: ☐ without Cert. ☐ Cert. of Compliance 2.1 ☐ Cert. of Compliance 2.2
☐ Inspection Cert. with Material Cert. 3.1 ☐ Inspection Cert. with Material Cert. 3.2

Indicator/Electronic Options

1. Display Housing: ☐ Aluminum ☐ High Temperature Aluminum (390 °F) ☐ Stainless Steel
☐ High Temperature Stainless Steel (390 °F) ☐ Aluminum with Pressure Compenstation
☐ High Temperature Aluminum (390 °F) with Pressure Compensation

2. Scale: ☐ % Scale Water ☐ Measuring Range Water ☐ % Scale Media
☐ Measuring Range Media ☐ Dual Scale (specify): _____

3. Electrical Output: ☐ without ☐ 1x Inductive Switch ☐ 2x Inductive Switches ☐ 1x Micro-switch
☐ 2x Micro-switches ☐ 4-20mA Transmitter with HART®
☐ 4-20mA Transmitter with HART® & 2x NAMUR Switches
☐ 4-20mA Transmitter with HART® & 1x NAMUR Switch & Pulse Output
☐ 4-20mA Transmitter with Profibus® PA
☐ 4-20mA Transmitter with Fieldbus® Foundation™

Special Requirements or Additional Considerations:

**Once completed, please save and email this form to your KOBOLD contact or info@koboldusa.com, or fax to 412-788-4890.*