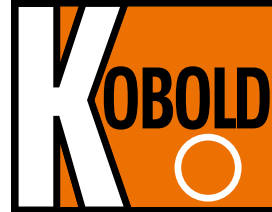


BGN/BGF

ARMORED

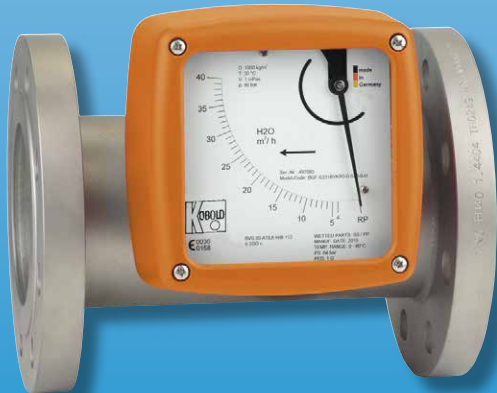
VARIABLE AREA FLOWMETERS



measuring
•
monitoring
•
analyzing



BGN: For Vertical Installation



BGF: For Vertical or Horizontal Installation

- Ideal for Difficult Operating Conditions
- Measuring Tubes: 316 Stainless Steel, PTFE-Lined Stainless Steel (Hastelloy® C-22 and Other Materials Available for BGN)
- Direct Reading Scales Calibrated for Media Viscosity, Density, Operating Pressure and Temperature
- Line Sizes: BGN up to 6", BGF up to 3"
- Connections: NPT, 150/300 ANSI Flange, Other Options Available
- Analog Output, HART®, Profibus®-PA, Foundation Fieldbus®, Totalizers
- Special Versions for High Pressure and High Temperature



KOBOLD companies worldwide:

ARGENTINA, AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHILE, CHINA, COLOMBIA, CZECH REPUBLIC, EGYPT, FRANCE, GERMANY, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, ROMANIA, SINGAPORE, SPAIN, SWITZERLAND, TAIWAN, THAILAND, TUNISIA, TURKEY, UNITED KINGDOM, USA, VIETNAM

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Model:
BGN
BGF
LIT080

REV: 11-2016



Armored Variable Area Flowmeters Models BGN/BGF

Description

KOBOLD's BGN and BGF armored variable area flowmeters are ideal for difficult applications that require high pressure capability, high temperature operation, or low pressure loss. They are well suited for water, most viscous liquids, and compressed gases. The BGF, for horizontal and vertical installations, is available in line sizes up to 3". The BGN, for vertical installations, is available in line sizes up to 6". Both have measuring tubes available in stainless steel or PTFE-clad stainless steel. The BGN is also available in Hastelloy® C-22 and other special materials like Monel® and tantalum. The direct reading scales are calibrated for media viscosity, density, operating pressure, and temperature. Electronic limit switches and an analog flow transmitter are available as options and are able to operate via intrinsically safe methods of protection and may be used in hazardous areas where intrinsically safe installations are permitted. Both models are also available with an optional totalizer. Custom designs for high pressure, high temperature, special fittings, and special materials are available.

Technical Details: Sensor

Materials:	316L SS / 316-Ti SS, Hastelloy® C-22, PTFE, Other Materials on Request
Process Connection:	ASME B16.5, NPT, Other Connections on Request
Nominal Pressure:	580 PSIG, ASME CI 150/300 (Standard) (BGN-S/H*)(BGF-S*) 230 PSIG, ASME CI 150 (Standard) (BGN-P*)(BGF-P*) Higher Pressures Upon Request (BGN Max. 8700 PSIG) (BGF Max. 5800 PSIG)
Process Temperature:	
-40...390 °F	(BGN-S/H* without Electr. Output) (BGF-S* without Electr. Output) (BGF-S* with Display at Distance)
-40...300 °F	(BGN-S/H* with Electr. Output) (BGF-S* with Electr. Output)
-40...660 °F	(BGN-S/H* with Display at Distance)
-40...257 °F	(BGN-P*)(BGF-P*)
Ambient Temperature:	-40...176 °F

Accuracy

BGN Liquid:	± 1.6 % of Full Scale (BGN-S/H*) ± 2.0 % of Full Scale (BGN-P*)
BGN Gas:	± 1.8 % of Full Scale (BGN-S/H*) ± 2.2 % of Full Scale (BGN-P*)
BGF Liquid/Gas:	± 2.0 % of Full Scale
Additional Inaccuracy with Transmitter (ES):	± 0.2 %
Repeatability:	± 0.5 % of Full Scale (BGN) ± 0.8 % of Full Scale (BGF)

* Code "S" = SS, Code "P" = PTFE-lined, Code "H" = Hastelloy®

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

BGN/BGF	
Explosion Protection:	BVS 03 ATEX H/B 112
BGN CE-Marking:	Pressure Equipment Directive 97/23/Eg

Technical Details: Display

Material:	Aluminum (Stove-Enameled) Stainless Steel (as Option)
Electrical Outputs:	Inductive Switch, SJ 3,5-N NAMUR (Standard) Inductive Switch, SJ 3,5-SN NAMUR (Safety Design) on Request Microswitch Others on Request
Ambient Temperature:	-40...176 °F (without Limit Switch) -40...150 °F (with Limit Switch)

Technical Details: Transmitter

- ES with HART®-Protocol
 - ES with HART®-Protocol and 2 NAMUR-Switches**
 - ES with HART®-Protocol and NAMUR-Switch**
/ 1 Pulse Output
 - ES with Profibus® PA
 - ES with HART®-Protocol and Totalizer
 - ES with Fieldbus® Foundation™
- ** Contact can be configured using HART®

Power Supply:	14 - 30 V _{DC}
Output:	Passive, Galvanically Isolated
Current:	4-20 mA
Binary 1 and 2:	U _i = 30 V, I _i = 20 mA, P _i = 100 mW
Input Binary:	Counter Reset (only for ES with Totalizer)
Ambient Temperature:	-40...158 °F

Certification

Explosion Protection:	DMT 00 ATEX E 075
Type of Protection:	 II 2G EEx ia IIC T6
BGN CE-Marking:	Explosion Protection Directive 94/9/EG (not for BGF)

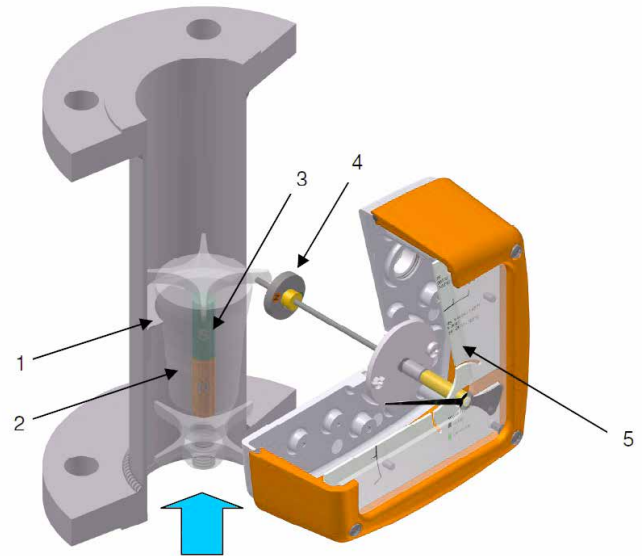


BGN: Vertical Installations





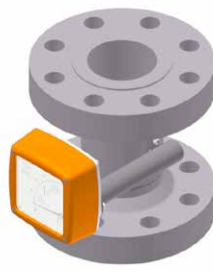


BGN Method of Operation

The BGN consists of a meter tube with connections, a measuring ring, and a conical float. The position of the float is transferred via an encapsulated magnet (3) to a counter magnet (4), which is fitted at the pointer axle and indicated via a pointer to the scale (5).

The fluid flow is from bottom to top. The float (2) is lifted until an annular gap between the measuring ring (1) and the conical-shaped float (2) is produced, which corresponds to the flow. The forces acting on the float are in equilibrium. Each position of the float corresponds to a flow value measured during calibration, which is then transferred to the scale.



Available Versions/Models

Aluminum Indicator	Stainless Steel Indicator	High Temperature	Special Materials/Linings
 <p>Optimized indicator. Large, easy to read scale. Rounded edges ensure proper draining after wet media contact. Special finish suitable for outdoor use.</p>	 <p>IP67 protection for extreme applications. Round design ensures proper draining after wet media contact. Proven in off-shore applications with rough and salty conditions.</p>	 <p>Indicator assembled at distance from the measuring pipe for process temperatures up to 660 °F. Able to be used with limit switches or transmitters.</p>	 <p>PTFE linings for chemical resistance. Hastelloy® or Monel® wetted parts. Able to be used in special areas or highly corrosive applications such as acid and lye.</p>
High Pressure	Heating Jacket	Custom Engineered Solutions	
 <p>The unique design of the BGN enables it to be built with extremely thick walled pipe. These models can be used in applications where other instruments are unable to go.</p>	 <p>A double wall design with a heating jacket can be used for media like steam, hot water, or thermal oil. The heating jacket is customized to meet your exact needs.</p>	 <p>We excel at developing custom solutions for your most challenging measurement problems. We are adept and accomplished at engineering and manufacturing custom assemblies. Examples include: regulating valves, flow controllers, and differential pressure flow regulators (including the piping). Contact us and we will be happy to help you engineer a solution to your most challenging situations.</p>	



BGN: Vertical Installations

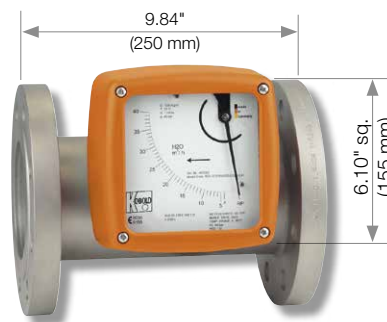
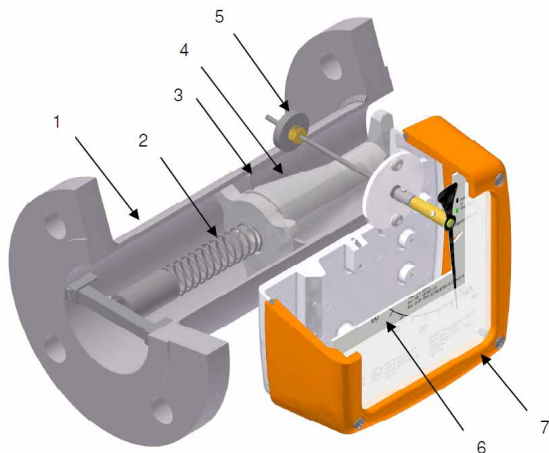


How to Build a BGN Part Number			
Please refer to our BGN datasheet and application guide to build an actual BGN part number. This table serves only as a broad overview of the standard selections. Please note that choosing certain ranges/features may exclude the choice of other options. Please see datasheet for additional details.			
Measuring Tube Material			
Stainless Steel (Max. 660 °F) / Stainless Steel with PTFE Casing (Max. 257 °F / 230 PSIG - Not for DN150 models) / Hastelloy® C-22 (Max. 660 °F - Not for DN10 models)			
DN	Connections	Water Ranges (GPM)	Air Ranges (SCFM)
DN10	1/2"...1" Class 150/300 RF ASME	0.002...0.022 to 0.0176...0.176	0.008...0.08 to 0.077...0.77
DN15	1/2"...1" Class 150/300 RF ASME, 1/4"...3/4" NPT	0.022...0.22 to 0.264...2.64	0.088...0.88 to 1.0...10.0
DN25	3/4"...1" Class 150/300 RF ASME, 1/4"...3/4" NPT	0.44...4.4 to 1.76...17.6	1.76...17.6 to 6.47...64.7
DN40	1-1/2" Class 150/300 RF ASME	1.1...11 to 2.64...26.4	4.12...41.2 to 10...100
DN50	2" Class 150/300 RF ASME, 1-1/2"...2" NPT	1.76...17.6 to 11...110	6.47...64.7 to 41.19...410
DN80	3" Class 150/300 RF ASME	7.05...70.5 to 17.61...176	27.0...270 to 64.74...647
DN100	4"...5" Class 150/300 RF ASME	17.61...176 to 44...440	on request
DN150	6" Class 150/300 RF ASME	44.03...440 to 57.24...572	on request
Heating/Cooling			
without / with Heating 1/2" 150 CI ANSI Flange / with Heating 1/2" NPT Connection			
Damping/Spring Stop			
without / with Flow Restrictor for Gas / with Liquid Damping / with Gas Damping / with Spring Stop / with Gas Damping and Spring Stop			
Draining Body			
without / with Self-Draining Body			
Certificates			
without / COC with Order 2.1 / COC with Order 2.2 / Inspection Cert. with Material Cert. 3.1 / Inspection Cert. with Material Cert. 3.2			
Display			
Aluminum / Aluminum at Distance* / SS / SS at Distance* / Aluminum with Pressure Compensation / Aluminum with Press. Comp. at Distance*			
Scale			
Water % Scale / Water Measuring Range / Media % Scale / Media Measuring Range / Dual Scale			
Electrical Output			
without / 1 or 2 Inductive Limit Switches, SIL-1 / 1 or 2 Micro-Switches / Transmitter ES with HART® EEx ia, 4-20 mA, SIL-1			
Transmitter ES with HART® EEx ia, 4-20 mA, 2 NAMUR Switches, SIL-1			
Transmitter ES with HART® EEx ia, 4-20 mA, 1 NAMUR Switch and 1 Pulse Output, SIL-1			
Electrical Transmitter ES with Profibus® PA, EEx ia / 4-20 mA with HART® and Totalizer / Electrical Transmitter ES with Fieldbus Foundation®			

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



BGF: Horizontal or Vertical Installations



BGF Method of Operation

The BGF measuring element (1) consists of a measuring ring (3) and a conical measuring body (4) with a compression spring (2). When there is adequate flow, the measuring body will be shifted until the flow force and the measuring body plus the spring tension establish equilibrium. The position is converted to a rotary motion by the magnet in the measuring body through a magnetic coupling system (5). It is then transmitted to the scale (6) inside the housing (7).

How to Build a BGF Part Number

Please refer to our BGF datasheet and application guide to build an actual BGF part number. This table serves only as a broad overview of the standard selections. Please note that choosing certain ranges/features may exclude the choice of other options. Please see datasheet for additional details.

Measuring Tube Material

Stainless Steel (Max. 390 °F) / Stainless Steel with PTFE Casing (Max. 257 °F / 230 PSIG)

DN	Connections	Water Ranges (GPM)	Air Ranges (SCFM)
DN15	1/2"...1-1/4" Class 150/300 RF ASME, 1/4"...3/4" NPT	0.044...0.44 to 0.264...2.64	0.176...1.76 to 1.0...10
DN25	3/4"...1-1/2" Class 150/300 RF ASME , 1/4"...3/4" NPT	0.44...4.4 to 1.76...17.6	1.76...17.6 to 6.47...64.7
DN40	1-1/2" Class 150/300 RF ASME, 3/4"...1-1/4" NPT	1.1...11 to 4.4...44	4.12...41.2 to 17.0...170
DN50	2"...2-1/2" Class 150/300 RF ASME, 1-1/4"...2" NPT	1.76...17.6 to 11...110	6.47...64.7 to 41.19...410
DN80	3" Class 150/300 RF ASME	7.05...70.5 to 26.4...264	27.0...270 to 100...1000

Magnet Bearer

Polypropylene (to 176 °F, from DN 50) / PTFE (BGF-S to 300 °F, BGF-P to 257 °F)

Flow Direction

Top to Bottom / Left to Right / Right to Left / Bottom to Top

Heating/Cooling

without / with Heating 1/2" 150 CI ANSI Flange / with Heating 1/2" NPT Connection

Certificates

without / COC with Order 2.1 / COC with Order 2.2 / Inspection Cert. with Material Cert. 3.1 / Inspection Cert. with Material Cert. 3.2

Display

* Display at Distance: up to 390 °F Possible

Aluminum / Aluminum at Distance* / SS / SS at Distance* / Aluminum with Pressure Compensation / Aluminum with Press. Comp. at Distance*

Scale

Water % Scale / Water Measuring Range / Media % Scale / Media Measuring Range / Dual Scale

Electrical Output

without / 1 or 2 Inductive Limit Switches, SIL-1 / 1 or 2 Micro-Switches / Transmitter ES with HART® EEx ia, 4-20 mA, SIL-1

Transmitter ES with HART® EEx ia, 4-20 mA, 2 NAMUR Switches, SIL-1

Transmitter ES with HART® EEx ia, 4-20 mA, 1 NAMUR Switch and 1 Pulse Output, SIL-1

Electrical Transmitter ES with Profibus® PA, EEx ia / 4-20 mA with HART® and Totalizer / Electrical Transmitter ES with Fieldbus Foundation®

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