

BL Series

High Pressure Boltless Flowmeters

Description

The patented, highly accurate Flow Technology BL Series positive displacement flowmeter is ideal for high pressure applications, such as methanol injection. By eliminating the need for high-strength fasteners, Flow Technology's unique "boltless" pressure vessel design provides inherent corrosion resistance in a compact, easy-to-maintain package.

Features

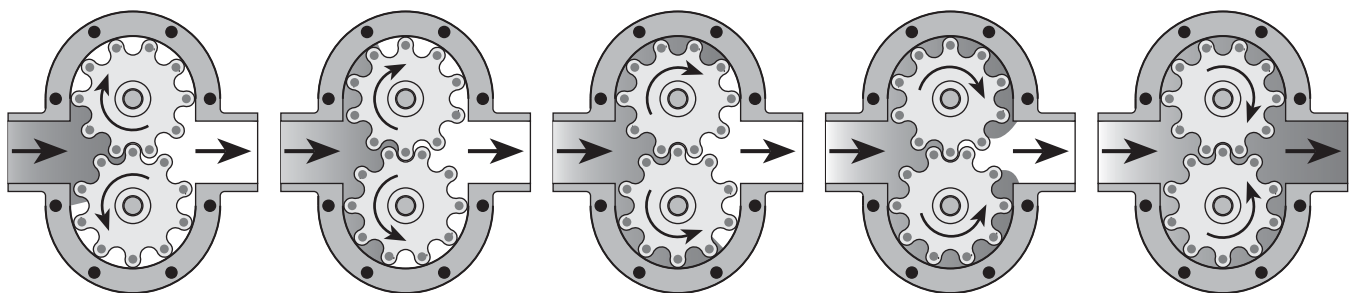
- Unique "boltless" pressure vessel design
- Metal seals standard
- Corrosion-resistant by design
- 6k to 15k psig operating pressure dependent on end fitting and size
- 1/16" to 1" line sizes
- Reference accuracy $\pm 0.05\%$ of rate
- Only two moving parts
- Bearingless design
- Easy to install and maintain
- Handles viscosities from 0.3 to 1,000,000 cP+
- Operating temperatures up to 400° F (204° C)
- Wide range of applications
- Non-intrusive sensor
- Up to 1000:1 turndown on viscous fluids
- Handles pulsating flow



BL Series
High Pressure Boltless Flowmeters

Protected by one or more U.S. Patents:
4641522, 4815318, 4911010, 4996888, 5027653, 5325715

Principle of Operation

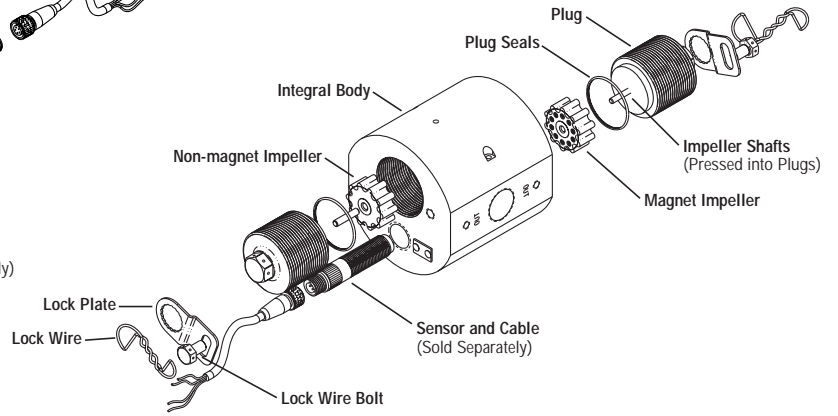
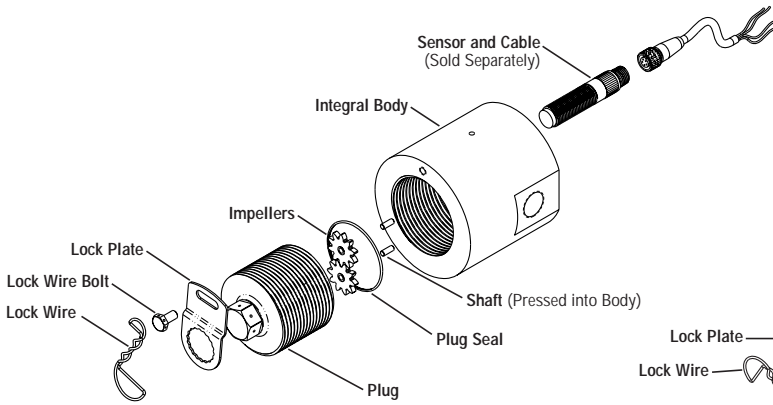


Flow Technology's positive displacement flowmeters use two rotating, thermoplastic impellers driven by the flowing liquid. Magnets imbedded in the impellers activate a non-intrusive sensor which generates a pulsed output signal. Each pulse represents a known volume of liquid that is captured in between the lobes of the impellers. A K-factor converts the pulses into engineering units for remote data collection and digital display.

Flowmeter Assembly Diagrams

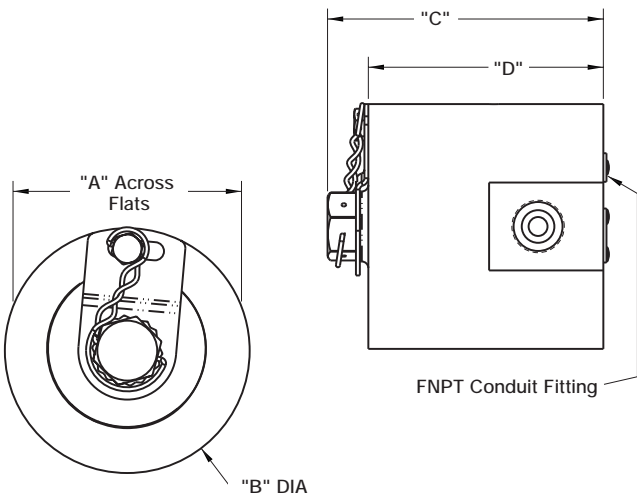
BL00Z, BL01Z

BL02Z, BL03Z, BL05Z, BL10Z

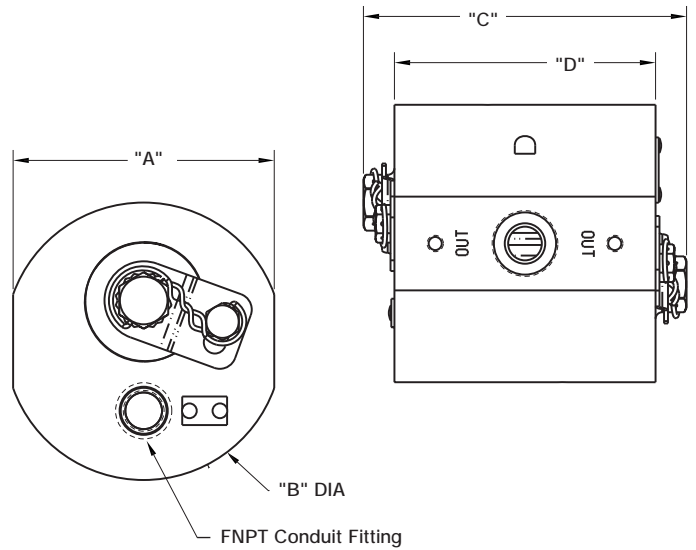


Dimensions

BL00Z, BL01Z



BL02Z, BL03Z, BL05Z, BL10Z



Dimensions

Basic Model No.	A		B		C		D		Conduit Fitting FNPT
	inches	mm	inches	mm	inches	mm	inches	mm	
BL00Z	3.5	89	3.75	95	4.23	107	3.60	91	3/4"
BL01Z	3.5	89	3.75	95	4.23	107	3.60	91	3/4"
BL02Z	4.0	102	4.25	108	4.95	126	4.00	102	3/4"
BL03Z	5.0	127	5.25	133	6.65	169	5.40	137	3/4"
BL05Z	6.0	152	6.25	159	7.90	201	6.65	169	3/4"
BL10Z	7.5	191	7.75	197	10.05	255	8.55	217	3/4"

Specifications

Process Temperature

Up to 400° F (204° C)
based on impeller materials
Temperatures above 100° F
(38° C) reduce pressure
rating (consult factory).

Operating Pressure

FNPT end fittings, all meter sizes: 6,000 psig
Autoclave end fittings, BL00 thru BL03: 15,000 psig
Autoclave end fittings, BL05 and BL10: 10,000 psig
Note: Based on 100° F (38° C) operating temperature

Turndown Ratio

(model's max. rated flow ÷ its minimum flow rate)

Methanol 6:1 standard
Low viscosity fluids 10:1 standard
Medium viscosity fluids 100:1 standard
High viscosity fluids Up to 1000:1

Repeatability

(Reference Accuracy) ±0.05% of rate

Note: Each flowmeter is individually calibrated on a ballistic calibrator in the flow lab on a liquid representing the specific application. Minimum viscosity calibration fluid is 0.75 cP.

Linearity

Typical ±0.5% of rate over upper
80% of full span

With enhanced signal
conditioning Up to ±0.1% of rate over full
turndown range

Output

(Refer to individual product sheets for complete specifications)

Sensors (1 required per meter)
Hall Effect Sensor: 4.75 to 24 VDC square-wave
pulse depending on supply
voltage, 3-wire
FM Approved, intrinsically safe
Magnetic Pick-up Sensor: 10 mV to 10 V sine-wave
pulse depending on flow
rate, 2-wire
Explosion-proof optional
Surface Reference Pickup: (Size 00 only)
7–30 VDC square-wave pulse
depending on supply
voltage, 3-wire
FM Approved, intrinsically
safe available

Signal Conditioners
and Transmitters

Refer to individual product
sheets available from
Flow Technology

Materials of Construction

Integral Body (Case) 316 stainless steel
Cover Plugs 316 stainless steel
Shafts
Standard: 316 stainless steel
Size 00: Tungsten Carbide
Impellers
Standard: PPS
Size 00: 440C
O-Rings Teflon® coated Inconel 718
Cover Plug Lock, Bolt 316 stainless steel

Model Specifications

Basic Model No.	Nominal Size	Standard Connection	Maximum Flow Rate		Recommended Mesh Size	Weight	
			GPM	L/min.		lbs.	kg
BL00Z	1/16"	See Available End Fittings Table	0.5	1.89	625	8.2	3.7
BL01Z	1/8"		1	3.79	100	8.2	3.7
BL02Z	1/4"		3	11.4	100	15.2	6.9
BL03Z	3/8"		6	22.7	80	31.5	14.3
BL05Z	1/2"		12	45.4	80	53	24
BL10Z	1"		25	94.6	60	104	47

Sensors

Basic Model No.	Magnetic	Approved Magnetic	Hall Effect	SRP	Approved SRP
BL00Z	N/A	N/A	N/A	SRP-221-QD	IS 100-05
BL01Z	3030-S21	3090-A	PS-910-QD	N/A	N/A
BL02Z	3030-S21	3090-A	PS-910-QD	N/A	N/A
BL03Z	3030-L21	3090-AL	PS-910-QD	N/A	N/A
BL05Z	3030-L21	3090-AL	PS-910-QD	N/A	N/A
BL10Z	3030-L21	3090-AL	PS-910-QD	N/A	N/A

Model Numbering System

B L [] [] Z - [] [] [] [] - [] [] [] [] [] [] []

Basic
Model No.

Nominal Size

00 = 1/16"
01 = 1/8"
02 = 1/4"
03 = 3/8"
05 = 1/2"
10 = 1"

Case Material

6 = 316 SS*
0 = Specify

Shaft Material

1 = 316 SS STD on BL01 thru BL10
C = Tungsten Carbide STD on BL00
0 = Specify

O-Ring Material

M = Metal O-Ring (Teflon® coated
Inconel 718)*
0 = Specify

Impeller Material

5 = PPS*
T = 440C SS (Size 00 only)
0 = Specify

Special Designator

000 = Standard Meter*
042 = 6000 psi
(for NPT connections)

Connection Size (see table)

00 = Specify
02 = 1/4"
03 = 3/8"
05 = 1/2"
06 = 9/16"
07 = 3/4"
10 = 1"

Connection Type

1 = NPT (Female)*°
A = Autoclave*
0 = Specify

Impeller Style

5 = Normal Temperature*
A = Normal Temperature,
Grooved +
I = Integral Bearing, Metal Gear
(Size 00 only)
M = Tight Geometry, Methanol
(120° F [49° C] max.)
0 = Specify

Available End Fittings

Nominal Connection Size	Basic Dims		Nominal Meter Size					
	Fitting OD	ID	00	01	02	03	05	10
NPT								
1/4"	.540"	.438"	X	X	X			
3/8"	.675"	.578"			X	X		
1/2"	.840"	.466"	X	X	X	X		
3/4"	1.050"	.614"			X	X	X	
1"	1.315"	.599"					X	X
Autoclave								
3/8"	.375"	.203"	X	X				
9/16"	.563"	.312"	X	X	X			
3/4"	.750"	.438"			X	X		
1"	1.00"	.562"					X	X

Material Guide

Name	Description
316 SS	316 Stainless Steel
PPS	Polyphenylene Sulfide, Ryton® by Phillips Petroleum
Inconel 718	Teflon® coated Inconel 718 (O-Ring material)
440C SS	440C Stainless Steel

Key

*	Standard Configuration
CF	Consult Factory
°	Must use 042 special designator
+	Not available in size 01 and 02 meters

Specifications are for reference only and are subject to change without notice.

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