Oval Gear
Industrial Oval Gear Flow Meters

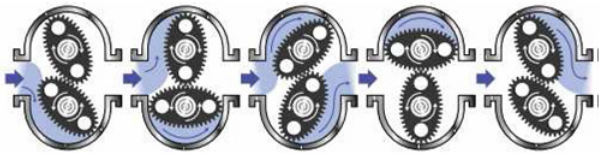
Industrial Oval Gear

Inline and Flanged Meters, 1/4", 1/2", 3/4", 1", 1" HF, 1-1/2", 2", 3"

DESCRIPTION

The Badger Meter Industrial Oval Gear Meter, Model IOG is a modular flow meter design, economical yet highly accurate and rugged. The model IOG is designed for a variety of chemical applications including petroleum based fluids, water solutions and any other liquid compatible with the materials of construction.

OPERATING PRINCIPLE



Fluid enters the inlet port and then passes through the metering chamber. Inside the chamber, fluid forces the internal gears to rotate before exiting through the outlet port. Each rotation of the gears displaces a specific volume of fluid. As the gears rotate, a magnet on each end of the gear passes a reed switch in the top-mounted register's circuit board. The reed switches send pulses to the microprocessor in the register to change the LED display segments. The oval gear meter can be used in conjunction with a variety of industrial registers. See the online documentation for Oval Gear Meter Registers, ER-420 Flow Rate/Totalizer, and the ER-500 Flow Monitor for more information on the available register options.

APPLICATIONS

Due to the rugged nature of this particular flow measurement technology, the Industrial Oval Gear Meter can be used in a number of applications where conventional meters are not acceptable. Whether the liquid being measured is very viscous or highly corrosive, the oval gear meter can handle it. The Industrial Oval Gear Meter is designed for a variety of applications including petroleum based fluids, water solutions, and any other liquid compatible with the materials of construction.

FEATURES

- Compact size
- High accuracy and repeatability
- Factory calibrated (stated in pulses per liter)
- Flow range of 0.067…185 gpm (0.25…700 lpm)
- Flexibility of installation options (vertical installation or horizontal installation)
- Low pressure drop
- Minimum number of wearable parts for long product life and easy field servicing
- Wide range of instrumentation available for control system interfacing

MAXIMUM VISCOSITY

- 1000 cP
- Consult the factory for higher viscosity applications.

OPERATING FLUID TEMPERATURES

Rotor Material	Operating Temperature Range
Stainless Steel	–22…240° F (–30…120° C)
LCP	–22…176° F (–30…80° C)

METER STORAGE TEMPERATURES

The meter storage temperature range is –67…248° F (–55…125° C).

PRESSURE RATING

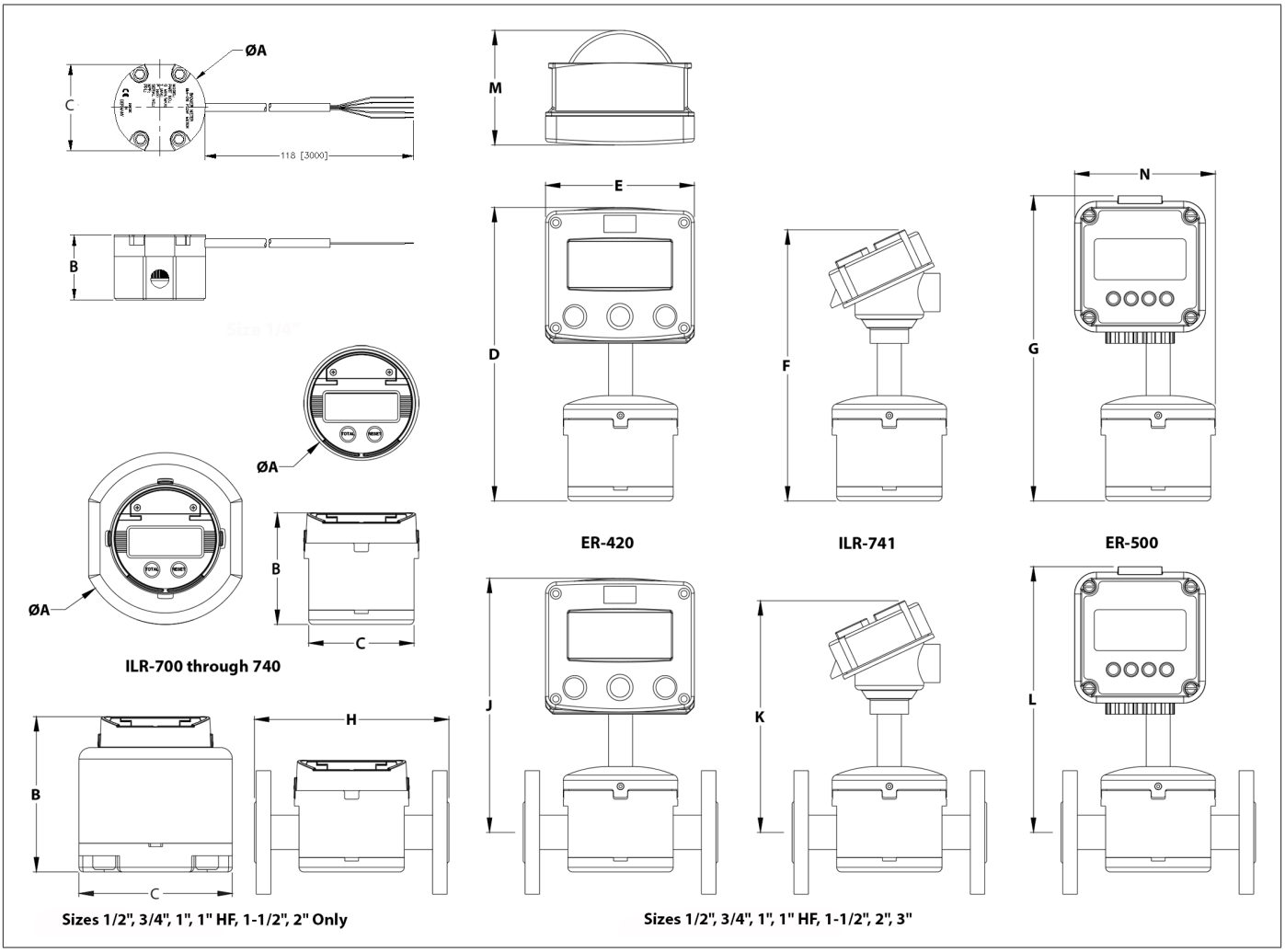
		Pressure Rating			
		psi			bar
Port Size	Housing Material	NPT/BSP	ANSI 150#	ANSI 300#	DIN
1/4"	Stainless	1500	—	—	—
	Aluminum	1000			
1/2"	Stainless	3000	285	—	16 bar
	Aluminum	2000			
3/4"	Stainless	3000	285	740	16 bar
	Aluminum	2000		—	
1"	Stainless	3000	285	740	16 bar
	Aluminum	2000		—	
1" HF	Stainless	3000	285	740	16 bar
	Aluminum	2000		—	
1-1/2"	Stainless	2000	285	740	16 bar
	Aluminum	1500		—	
2"	Stainless	1500	285	740	16 bar
	Aluminum	1000		—	
3"	Stainless	1000	285	740	16 bar
	Aluminum	750		—	

Badger Meter

IOG-DS-00016-EN-11 (September 2014)

Product Data Sheet

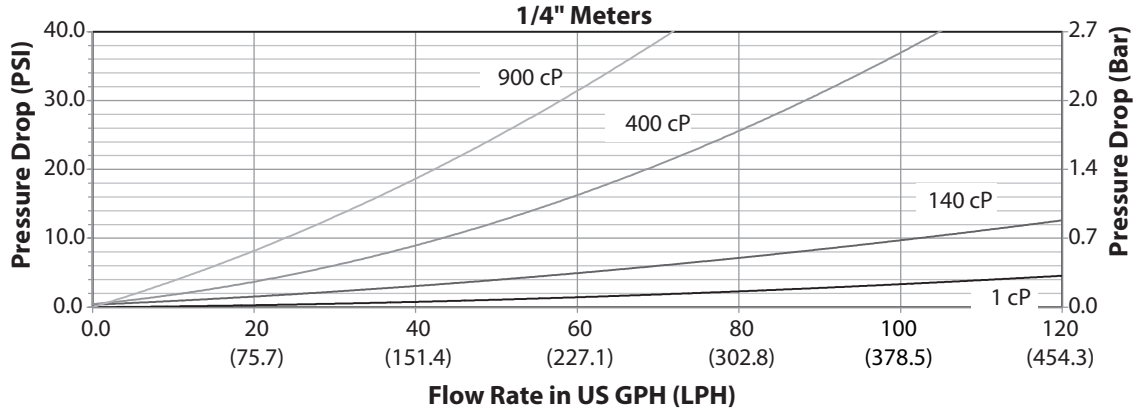
DIMENSIONS

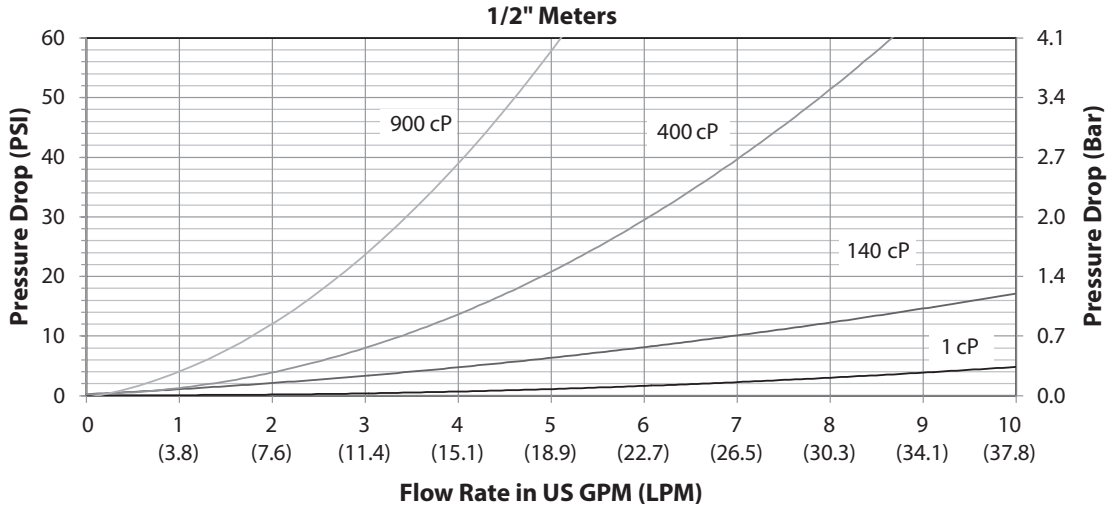


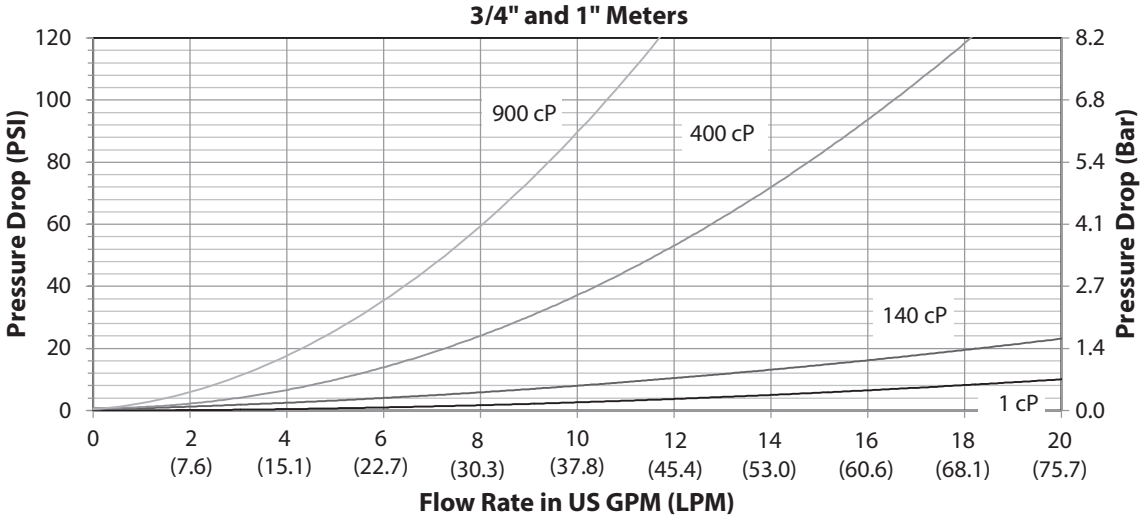
Port Size	A	B	C	D	E	F	G	H	J	K	L	M	N
1/4"	2.17" (55 mm)	1.54" (39 mm)	2.05" (52 mm)	—	—	—	—	—	—	—	—	—	—
1/2"	3.94" (100 mm)	3.44" (87.5 mm)	3.62" (92 mm)	9.70" (246.4 mm)	5.12" (130 mm)	8.93" (226.8 mm)	10.10" (256.5 mm)	6.69" (170 mm)	8.45" (214.6 mm)	7.68" (195.1 mm)	8.89" (225.8 mm)	3.94" (100.2 mm)	4.84" (122.9 mm)
3/4"	3.94" (100 mm)	3.84" (97.5 mm)	3.62" (92 mm)	10.10" (256.5 mm)	5.12" (130 mm)	9.33" (236.9 mm)	10.50" (266.7 mm)	6.69" (170 mm)	8.70" (220.9 mm)	7.93" (201.4 mm)	9.14" (232.2 mm)	3.94" (100.2 mm)	4.84" (122.9 mm)
1"	3.94" (100 mm)	3.84" (97.5 mm)	3.62" (92 mm)	10.10" (256.5 mm)	5.12" (130 mm)	9.33" (236.9 mm)	10.50" (266.7 mm)	6.69" (170 mm)	8.70" (220.9 mm)	7.93" (201.4 mm)	9.14" (232.2 mm)	3.94" (100.2 mm)	4.84" (122.9 mm)
1" HF	3.94" (100 mm)	3.89" (98.9 mm)	3.62" (92 mm)	10.15" (257.8 mm)	5.12" (130 mm)	9.38" (238.3 mm)	10.55" (268.0 mm)	6.69" (170 mm)	8.60" (218.4 mm)	7.83" (198.8 mm)	9.04" (229.6 mm)	3.94" (100.2 mm)	4.84" (122.9 mm)
1-1/2"	5.51" (140 mm)	4.93" (125.3 mm)	4.92" (125 mm)	11.15" (283.2 mm)	5.12" (130 mm)	10.38" (263.7 mm)	11.51" (292.4 mm)	8.35" (212 mm)	8.90" (226.1 mm)	8.13" (206.5 mm)	9.31" (236.5 mm)	—	—
2"	5.91" (150 mm)	5.34" (135.6 mm)	5.28" (134 mm)	11.60" (294.6 mm)	5.12" (130 mm)	10.83" (275.1 mm)	11.96" (303.8 mm)	10.39" (264 mm)	9.16" (232.7 mm)	8.39" (213.1 mm)	9.57" (243.1 mm)	—	—
3"	8.27" (210 mm)	—	7.09" (180 mm)	12.57" (319.3 mm)	5.12" (130 mm)	11.80" (299.7 mm)	12.93" (328.4 mm)	13.54" (344 mm)	9.58" (243.3 mm)	8.81" (223.8 mm)	9.99" (253.8 mm)	—	—

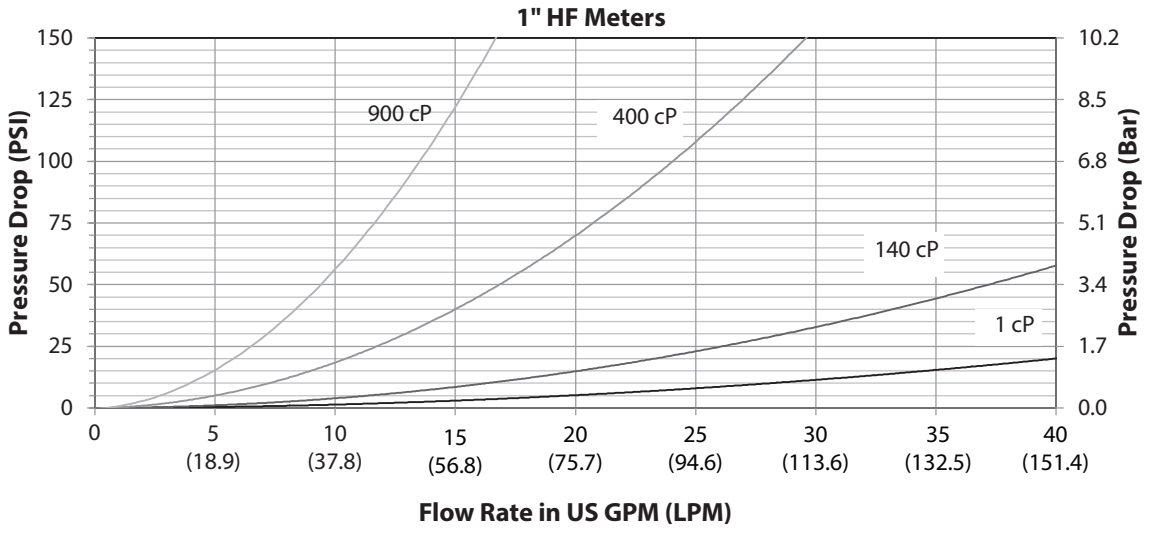
N**OTE:** ILR register series not compatible with 3" meter.

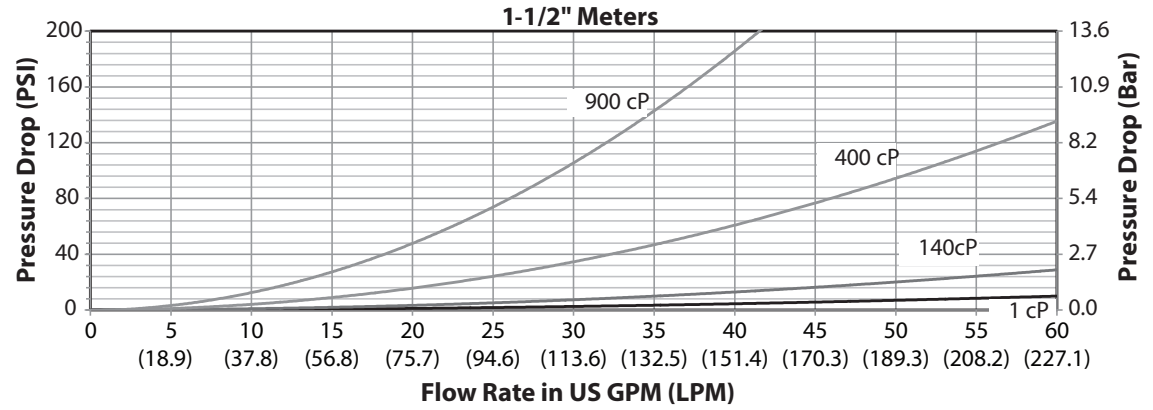
PRESSURE DROP VS FLOW RATE

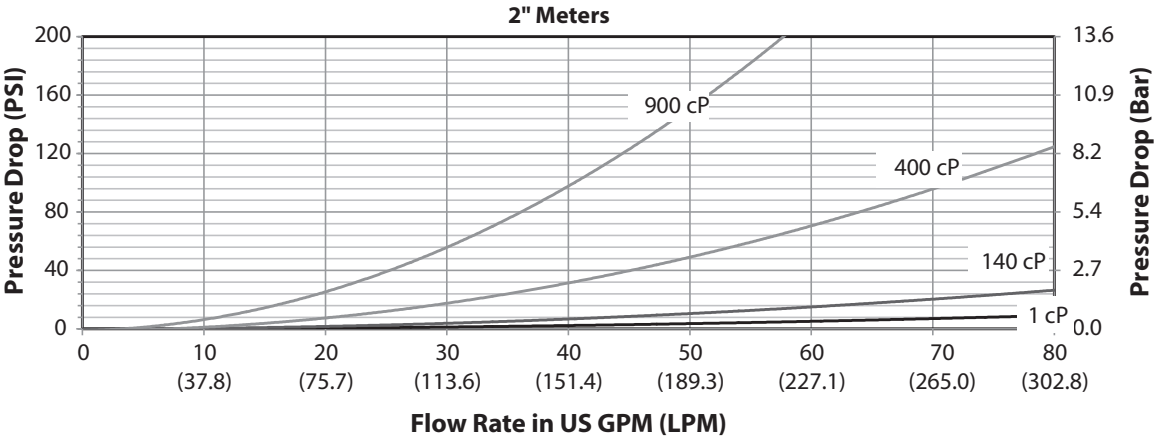


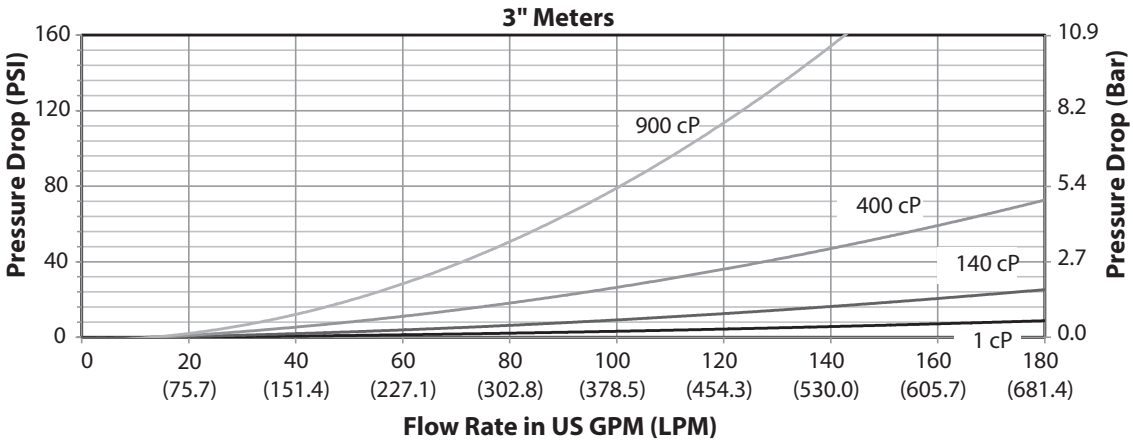





1" HF Meters
Pressure Drop (PSI)
Pressure Drop (Bar)
900 cP
400 cP
140 cP
1 cP
0
25
50
75
100
125
150
0.0
1.7
3.4
5.1
6.8
8.5
10.2
0
5 (18.9)
10 (37.8)
15 (56.8)
20 (75.7)
25 (94.6)
30 (113.6)
35 (132.5)
40 (151.4)
Flow Rate in US GPM (LPM)


1-1/2" Meters
Pressure Drop (PSI)
Pressure Drop (Bar)
900 cP
400 cP
140cP
1 cP
0
40
80
120
160
200
0.0
2.7
5.4
8.2
10.9
13.6
0
5 (18.9)
10 (37.8)
15 (56.8)
20 (75.7)
25 (94.6)
30 (113.6)
35 (132.5)
40 (151.4)
45 (170.3)
50 (189.3)
55 (208.2)
60 (227.1)
Flow Rate in US GPM (LPM)


2" Meters
Pressure Drop (PSI)
Pressure Drop (Bar)
900 cP
400 cP
140 cP
1 cP
0
40
80
120
160
200
0.0
2.7
5.4
8.2
10.9
13.6
0
10 (37.8)
20 (75.7)
30 (113.6)
40 (151.4)
50 (189.3)
60 (227.1)
70 (265.0)
80 (302.8)
Flow Rate in US GPM (LPM)



FLOW RANGE

Port Size	American (gpm)		SI (lpm)		Fluid Viscosity	Accuracy (%)	Repeatability (%)
	Low	High	Low	High			
1/4"	0.067	2.2	0.25	8.3	> 5.0 cP	± 1.0	± 0.03
	0.11	2.2	0.44	8.3	< 5.0 cP	± 2.5	
1/2"	0.25	8.0	1.0	30	> 5.0 cP	± 0.5	± 0.03
	0.50	6.6	2.0	25	< 5.0 cP	± 2.0	
3/4"	0.50	16	2.0	60	> 5.0 cP	± 0.5	± 0.03
	1.20	14	4.5	53	< 5.0 cP	± 2.0	
1"	0.6	18	2.3	68	> 5.0 cP	± 0.5	± 0.03
	1.4	16	5.3	60	< 5.0 cP	± 2.0	
1" HF	1.5	45	5.7	170	> 5.0 cP	± 0.5	± 0.03
	2.5	40	9.5	151	< 5.0 cP	± 2.0	
1-1/2"	2.5	65	9.5	246	> 5.0 cP	± 0.5	± 0.03
	4.0	60	15	227	< 5.0 cP	± 1.0	
2"	4.0	100	15	379	> 5.0 cP	± 0.5	± 0.03
	6.0	100	23	379	< 5.0 cP	± 1.0	
3"	5.0	185	19	700	> 5.0 cP	± 0.5	± 0.03
	10	185	38	700	< 5.0 cP	± 1.0	

MATERIALS OF CONSTRUCTION

Port Size	Wetted Parts							Bolts
	Housing	Cover	Spindle	Gears	Bearings	Magnet	O-Ring	
1/4"	316 SS	316 SS	316 SS	316 SS	Fluorosint 500	Neodymium Au Plated	Aflas	316 SS
	6061 Al	6061 Al					Viton	
1/2"	316 SS	316 SS	316 SS	316 SS	Graphalloy	Alnico	Aflas	316 SS
	6061 Al	6061 Al		LCP			Viton	
3/4"	316 SS	316 SS	316 SS	316 SS	Graphalloy	Alnico	Aflas	316 SS
	6061 Al	6061 Al		LCP			Viton	
1"	316 SS	316 SS	316 SS	316 SS	Graphalloy	Alnico	Aflas	316 SS
	6061 Al	6061 Al		LCP			Viton	
1" HF	316 SS	316 SS	316 SS	316 SS	Fluorosint	Neodymium Ni Plated	Aflas	316 SS
	6061 Al	6061 Al					Viton	
1-1/2"	316 SS	316 SS	316 SS	316 SS	Fluorosint	Neodymium Ni Plated	Aflas	316 SS
	6061 Al	6061 Al					Viton	
2"	316 SS	316 SS	316 SS	316 SS	Fluorosint	Neodymium Ni Plated	Aflas	316 SS
	6061 Al	6061 Al					Viton	
3"	316 SS	316 SS	316 SS	316 SS	Fluorosint	Neodymium Ni Plated	Aflas	316 SS
	6061 Al	6061 Al					Viton	

N**OTE:** Upon request, additional O-Ring options are Buna-N and EPDM.

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Control. Manage. Optimize.

www.badgermeter.com

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