Badger Meter

Recordall® Disc Meters

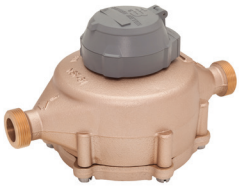
Lead-Free Bronze Alloy, Sizes 5/8", 5/8" x 3/4", 3/4" & 1"
NSF/ANSI Standards 61 and 372 Certified

Model LP—5/8", 5/8" × 3/4"

Model 25—5/8", 5/8" × 3/4"

Model 35—3/4"

Model 55—1"



Model 70—1"

DESCRIPTION

The Recordall Disc Series meters meet or exceed the most recent revision of AWWA Standard C700 and are available in a lead-free bronze alloy. The meters comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI Standards 61 and 372 (Trade Designations: MLP-LL, M25-LL, M35-LL, M55-LL, M70-LL) and carry the NSF-61 mark on the housing. All components of the lead-free bronze alloy meter (housing, measuring element, seals, and so on) comprise the certified system.

Applications: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

Operation: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register or encoder face.

Operating Performance: The Recordall Disc Series meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated in AWWA Standard C700.

Construction: Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber and permanently sealed register or encoder. The meter is available in a lead-free bronze alloy with externally-threaded spuds. A corrosion-resistant engineered polymer material is used for the measuring chamber.

Magnetic Drive: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading or AMR/AMI meter reading options.

Tamper-Proof Features: Unauthorized removal of the register or encoder is inhibited by the option of a tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

Maintenance: Badger Meter Recordall Disc Series meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters and meter models also minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

Connections: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.

Meter Spud and Connection Sizes

Model	Size Designation	×	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread (NPT)
LP	5/8"	×	7-1/2"	5/8"	3/4" (5/8")	1/2"
	5/8" x 3/4"	×	7-1/2"	5/8", 3/4"	1" (3/4")	3/4"
25	5/8"	×	7-1/2"	5/8"	3/4" (5/8")	1/2"
	5/8" x 3/4"	×	7-1/2"	5/8", 3/4"	1" (3/4")	3/4"
35	3/4"	×	7-1/2"	3/4"	1" (3/4")	3/4"
	3/4"	×	9"	3/4"	1" (3/4")	3/4"
	3/4" x 1"	×	9"	3/4"	1-1/4" (1")	1"
55	1"	×	10-3/4"	1"	1-1/4" (1")	1"
70	1"	×	10-3/4"	1"	1-1/4" (1")	1"

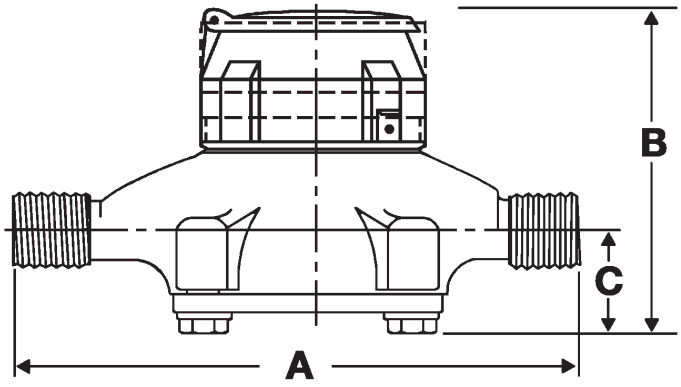
SPECIFICATIONS

	Model LP (5/8" & 5/8" × 3/4")	Model 25 (5/8" & 5/8" × 3/4")	Model 35 (3/4")	Model 55 (1")	Model 70 (1")
Typical Operating Range (100% ± 1.5%)	0.5…20 gpm (0.11…4.5 m^3/hr)	0.5…25 gpm (0.11…5.7 m^3/hr)	0.75…35 gpm (0.17…7.9 m^3/hr)	1…55 gpm (0.23…12.5 m^3/hr)	1.25…70 gpm (0.28…16 m^3/hr)
Low Flow	0.25 gpm (0.057 m^3/hr) Min. 95%	0.25 gpm (0.057 m^3/hr) Min. 98.5%	0.375 gpm (0.085 m^3/hr) Min. 97%	0.5 gpm (0.11 m^3/hr) Min. 95%	0.75 gpm (0.17 m^3/hr) Min. 95%
Maximum Continuous Operation	10 gpm (2.3 m^3/hr)	15 gpm (3.4 m^3/hr)	25 gpm (5.7 m^3/hr)	40 gpm (9.1 m^3/hr)	50 gpm (11.3 m^3/hr)
Pressure Loss at Maximum Continuous Operation	**5/8" size**: 2 psi @ 10 gpm (0.14 bar @ 2.3 m^3/hr) **5/8" × 3/4" size**: 1.5 psi @ 10 gpm (0.10 bar @ 2.3 m^3/hr)	**5/8" size**: 3.5 psi @ 15 gpm (0.24 bar @ 3.4 m^3/hr) **5/8" × 3/4" size**: 2.8 psi @ 15 gpm (0.19 bar @ 3.4 m^3/hr)	5 psi @ 25 gpm (0.37 bar @ 5.7 m^3/hr)	3.4 psi @ 40 gpm (0.23 bar @ 9.1 m^3/hr)	6.5 psi @ 50 gpm (0.45 bar @ 11.3 m^3/hr)
Maximum Operating Temperature	80° F (26° C)				
Maximum Operating Pressure	150 psi (10 bar)				
Measuring Element	Nutating disc, positive displacement				
Meter Connections	*Available in NL bronze and engineered polymer to fit spud thread bore diameter sizes:*				
	5/8" or 3/4" (DN 15 mm)	**5/8" size**: 5/8" (DN 15 mm) **5/8" × 3/4" size**: 3/4" (DN 15 mm)	3/4" (DN 20 mm)	1" (DN 25 mm)	1" (DN 25 mm)

MATERIALS

	Model LP (5/8" & 5/8" × 3/4")	Model 25 (5/8" & 5/8" × 3/4")	Model 35 (3/4")	Model 55 (1")	Model 70 (1")
Meter Housing	Lead-free bronze alloy				
Housing Bottom Plates	Lead-free bronze alloy, cast iron, engineered polymer		Cast iron, lead-free bronze alloy		
Measuring Chamber	Engineered polymer				
Disc	Engineered polymer				
Trim	Stainless steel				
Strainer	Engineered polymer				
Disc Spindle	Engineered polymer	Stainless steel	Stainless steel	Engineered polymer	Stainless steel
Magnet	Ceramic	Ceramic	Ceramic	Polymer bonded	Ceramic
Magnet Spindle	Engineered polymer	Stainless steel	Stainless steel	Engineered polymer	Stainless steel
Register Lid and Shroud	Engineered polymer, bronze				

DIMENSIONS



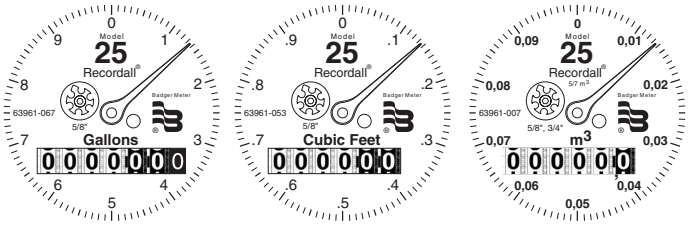
Meter Size	Model	A Laying Length	B Height Reg.	C Centerline Base	Width	Approx. Shipping Weight
5/8″ and 5/8″ × 3/4″ (15 mm)	LP	7-1/2" (190 mm)	3.70" (94 mm)	1.26" (32 mm)	3.75" (95 mm)	3 lb (1.4 kg)
5/8" (15 mm)	25	7-1/2" (190 mm)	4-15/16" (125 mm)	1-11/16" (42 mm)	4-1/4" (108 mm)	4-1/2 lb (2 kg)
5/8" × 3/4" (15 mm)		7-1/2" (190 mm)	4-15/16" (125 mm)	1-11/16" (42 mm)	4-1/4" (108 mm)	4-1/2 lb (2 kg)
3/4" (20 mm)	35	7-1/2" (190 mm)	5-1/4" (133 mm)	1-5/8" (41 mm)	5" (127 mm)	5-1/2 lb (2.5 kg)
3/4" (20 mm)		9" (229 mm)	5-1/4" (133 mm)	1-5/8" (41 mm)	5" (127 mm)	5-3/4 lb (2.6 kg)
3/4" × 1" (20 mm)		9" (229 mm)	5-1/4" (133 mm)	1-5/8" (41 mm)	5" (127 mm)	6 lb (2.7 kg)
1" (25 mm)	55	10-3/4" (273 mm)	6" (152 mm)	2-1/32" (52 mm)	6-1/4" (159 mm)	8-3/4 lb (3.9 kg)
1" (25 mm)	70	10-3/4" (273 mm)	6-1/2" (165 mm)	2-5/16" (59 mm)	7-3/4" (197 mm)	11-1/2 lb (5.2 kg)

REGISTERS / ENCODERS

Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 10,000,000 gallons (1,000,000 ft^3, 100,000 m^3).

A Model 25 register is used in the following example:



Model	Gallon	Cubic Feet	Cubic Meter
LP	10	1	0.1
25 (5/8")	10	1	0.1/0.01
25 (5/8" × 3/4")	10	1	0.1/0.01
35	10	1	0.1
55	10	1	0.1
70	10	1	0.1

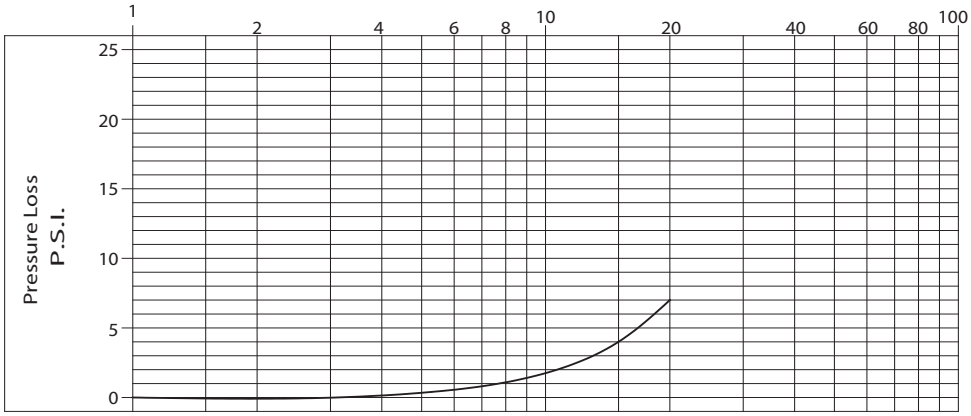
Optional—Encoders for AMR/AMI Reading Solutions

AMR/AMI solutions are available for all Recordall Disc Series meters. All reading options can be removed from the meter without disrupting water service. Badger Meter encoders provide years of reliable, accurate readings for a variety of applications and are also available pre-wired to Badger Meter approved AMR/AMI solutions. See details at ***www.badgermeter.com***.

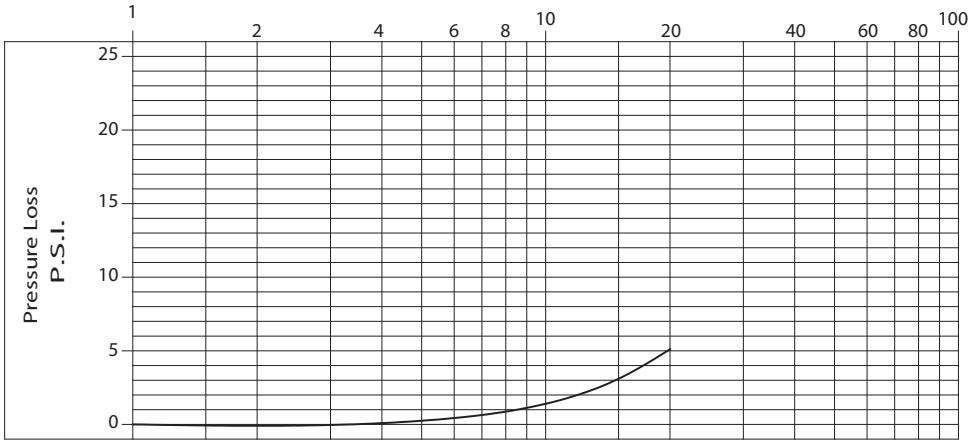
PRESSURE LOSS CHARTS

Rate of Flow in Gallons per Minute

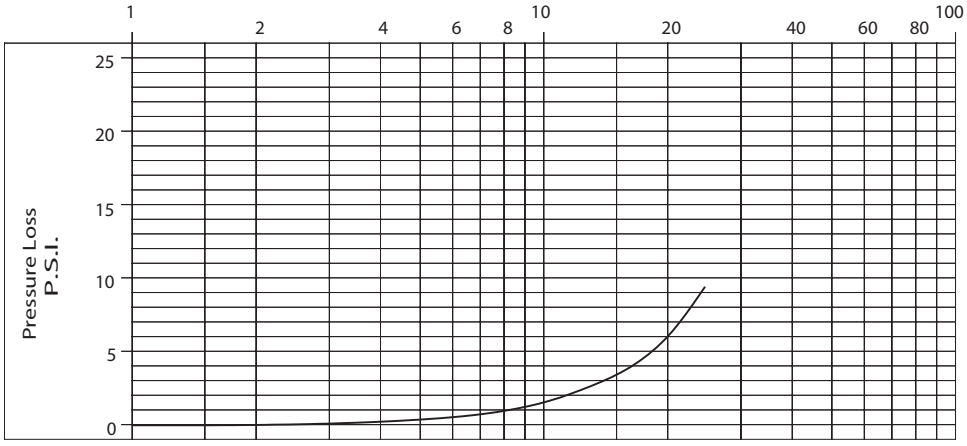
Model LP 5/8"



Model LP 5/8" × 3/4"



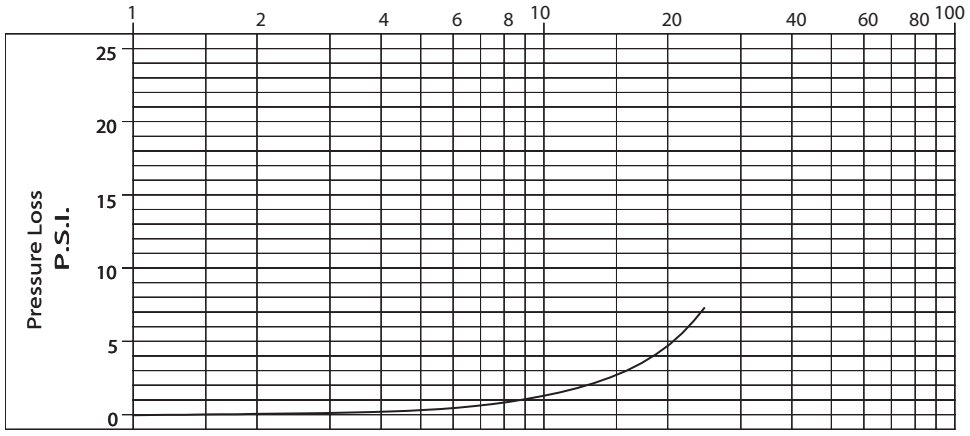
Model 25 5/8"



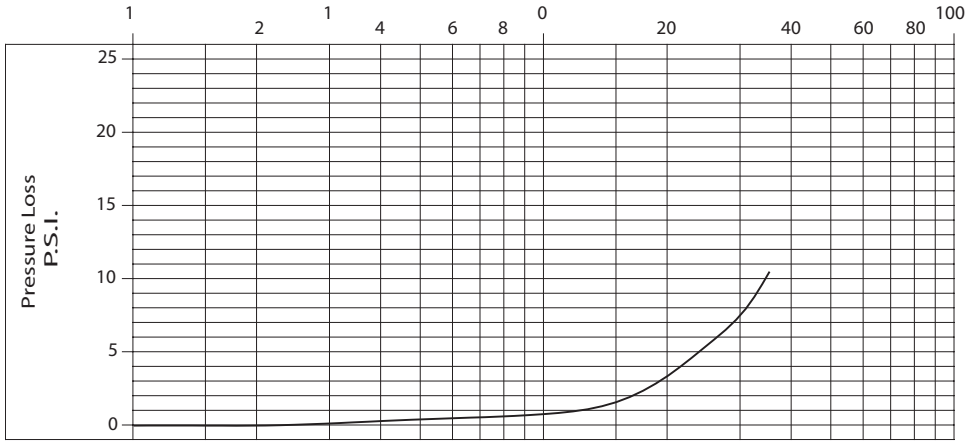
PRESSURE LOSS CHARTS (CONTINUED)

Rate of Flow in Gallons per Minute

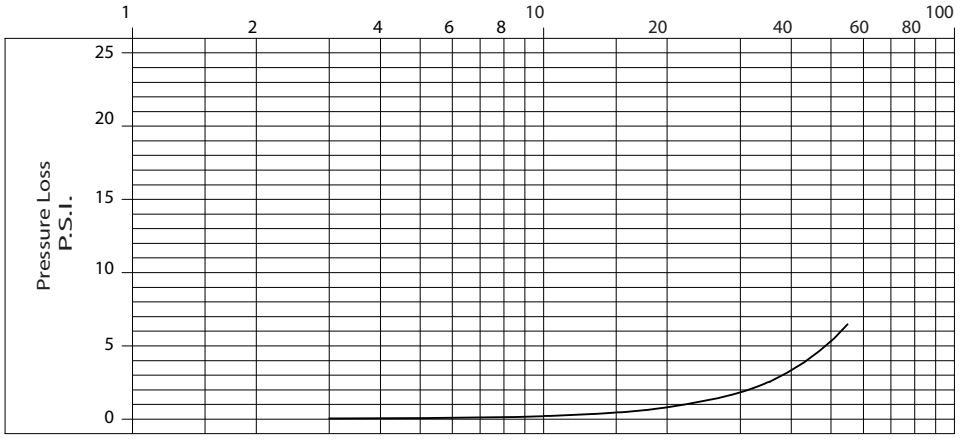
Model 25 5/8" × 3/4"



Model 35 3/4"



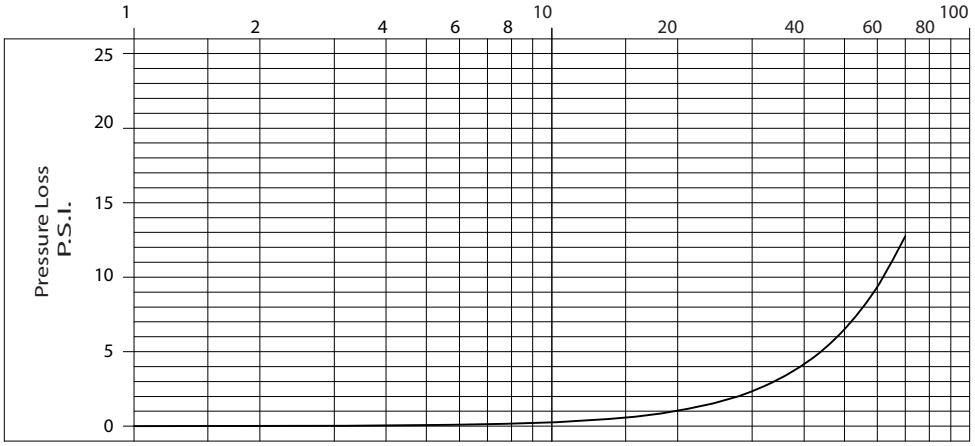
Model 55 1"



PRESSURE LOSS CHARTS (CONTINUED)

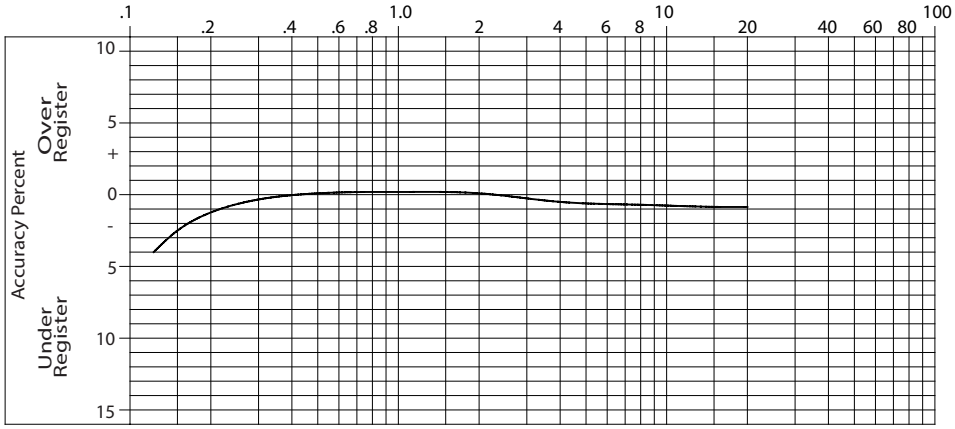
Rate of Flow in Gallons per Minute

Model 70 1"

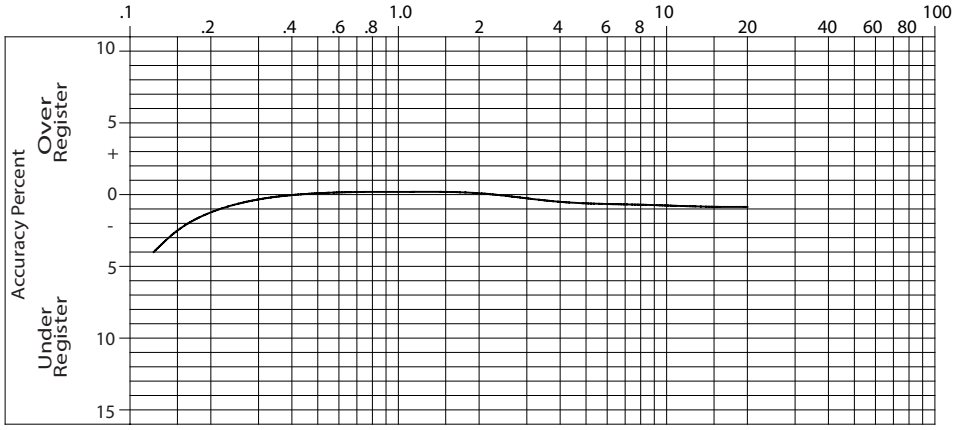


ACCURACY CHARTS

Model LP 5/8"

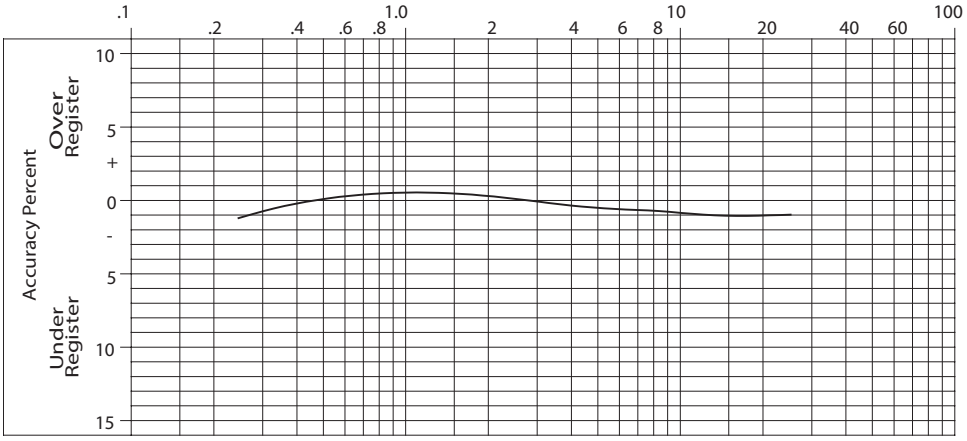


Model LP 5/8" × 3/4"

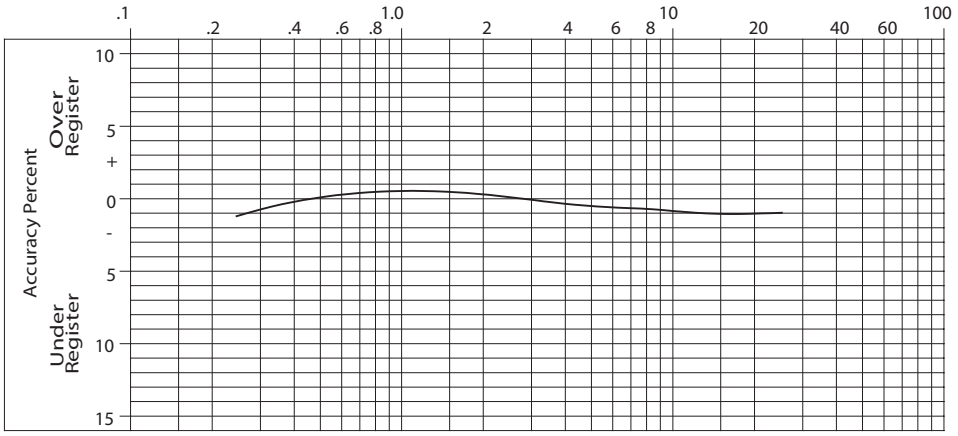


ACCURACY CHARTS (CONTINUED)

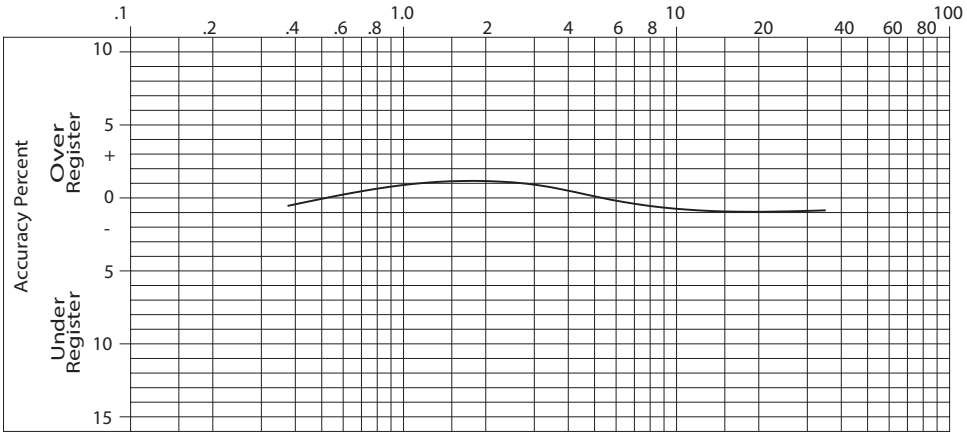
Model 25 5/8"



Model 25 5/8" × 3/4"

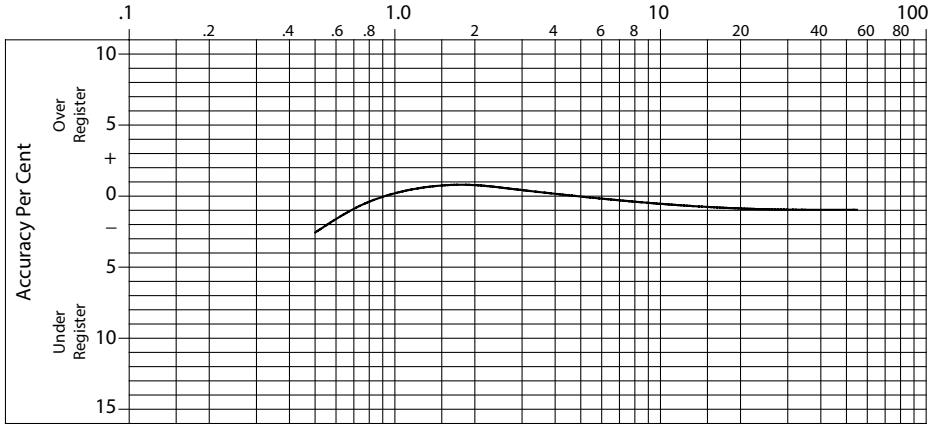


Model 35 3/4"

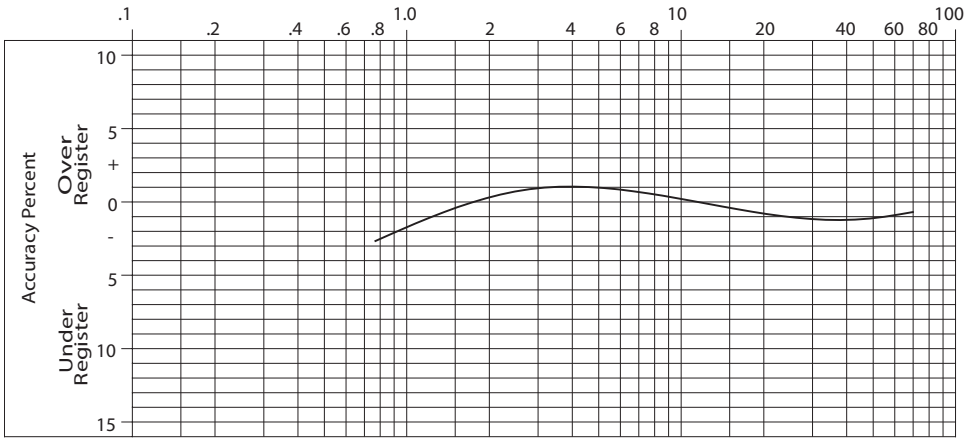


ACCURACY CHARTS (CONTINUED)

Model 55 1"



Model 70 1"



Making Water Visible®

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Legacy Document Numbers: RDM-DS-00062, 63, 64, 65, 66, and 73

Recordall® Disc Meters

Lead-Free Bronze Alloy Models 120 & 170, Sizes 1-1/2" (40 mm) & 2" (50 mm), NSF/ANSI Standards 61 and 372 Certified

DESCRIPTION

The Recordall Models 120 and 170 Disc Series meters meet or exceed the most recent revision of AWWA Standard C700 and are available in a lead-free bronze alloy. Both meters comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI Standards 61 and 372 (Trade Designations: M120-LL and M170LL) and carry the NSF-61 mark on the housing. All components of the lead-free bronze alloy meter (housing, measuring element, seals, and so on) comprise the certified system.

Applications: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

Operation: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register or encoder face.

Operating Performance: The Recordall Disc Series meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated in AWWA Standard C700.

Construction: Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register or encoder. The water meter is available in a lead-free bronze alloy. A corrosion-resistant engineered polymer material is used for the measuring chamber.

Magnetic Drive: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading or AMR/AMI meter reading options.

Tamper-Proof Features: Unauthorized removal of the register or encoder is inhibited by the option of a tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

Maintenance: Badger Meter Recordall Disc Series meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

Connections: Companion flanges in cast iron or NL bronze are available as options. Straight connection sets are available in NL bronze.

M120

M170

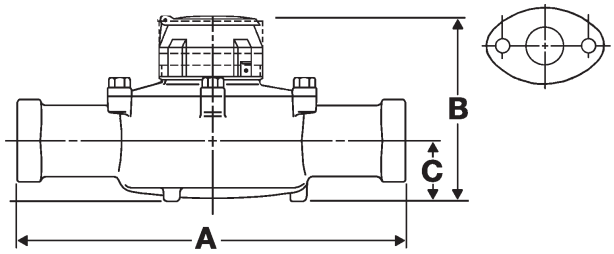
SPECIFICATIONS

Meter Model	M120	M170
Typical Operating Range (100% ± 1.5%)	2.5…120 gpm (0.57…27 m^3/hr)	2.5…170 gpm (0.57…39 m^3/hr)
Low Flow (Min. 95%)	1.25 gpm (0.28 m^3/hr)	1.5 gpm (0.34 m^3/hr)
Maximum Continuous Operation	80 gpm (18 m^3/hr)	100 gpm (23 m^3/hr)
Pressure Loss at Maximum Continuous Operation	4.8 psi at 80 gpm (0.33 bar at 18 m^3/hr)	3.3 psi at 100 gpm (0.23 bar at 23 m^3/hr)
Maximum Operating Temperature	80° F (26° C)	80° F (26° C)
Maximum Operating Pressure	150 psi (10 bar)	150 psi (10 bar)
Measuring Element	Nutating disc, positive displacement	Nutating disc, positive displacement
Meter Connections	1-1/2" AWWA two-bolt elliptical flange, drilled or 1-1/2…11-1/2 NPT internal pipe threads	2" AWWA two-bolt elliptical flange, drilled or 2…11-1/2 NPT internal pipe threads
Test Plugs	Optional 1" NPT test plug (TP)	Optional 1" NPT test plug (TP)

Materials

Meter Housing	Lead-free bronze alloy
Housing Top Plates	Lead-free bronze alloy
Measuring Chamber	Engineered polymer
Disc	Engineered polymer
Trim	Stainless steel
Strainer	Engineered polymer
Disc Spindle	Stainless steel
Magnet	Ceramic
Magnet Spindle	Stainless steel
Register Lid and Shroud	Engineered polymer, bronze

DIMENSIONS



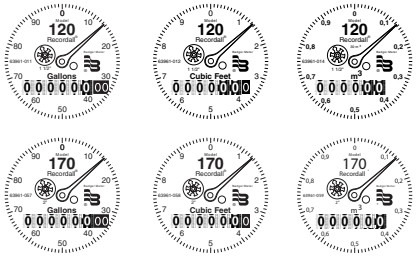
Meter Size	Meter Model	A Laying Length	B Height Reg./RTR	C Centerline Base	Width	Approx. Shipping Weight
1-1/2" (40 mm)	120 EL, Hex 120 EL, TP	12-5/8" (321 mm)	7" (178 mm)	2-3/8" (60 mm)	8-3/4" (222 mm)	19 lb (8.6 kg)
1-1/2" (40 mm)	120 ELL 120 ELL, TP	13" (330 mm)	7" (178 mm)	2-3/8" (60 mm)	8-3/4" (222 mm)	19 lb (8.6 kg)
2" (50 mm)	170 EL, Hex 170 EL, TP	15-1/4" (387 mm)	8" (203 mm)	2-7/8" (73 mm)	9-1/2" (241 mm)	30 lb (13.6 kg)
2" (50 mm)	170 ELL 170 ELL, TP	17" (432 mm)	8" (203 mm)	2-7/8" (73 mm)	9-1/2" (241 mm)	30 lb (13.6 kg)

EL = Elliptical | ELL = Elliptical Long | Hex = Hexagon, 1-1/2…11-1/2" NPT Thread | TP=Test Plug 1"

REGISTERS / ENCODERS

Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 10,000,000 gallons (1,000,000 ft^3, 100,000 m^3).



Meter Model	Gallon	Cubic Feet	Cubic Meter
120	100	10	1/0.1
170	100	10	1

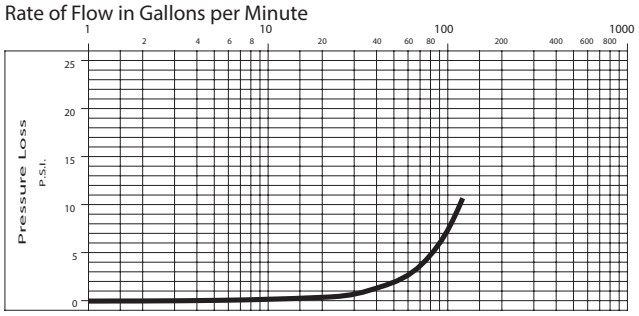
Optional—Encoders for AMR/AMI Reading Solutions

AMR/AMI solutions are available for all Recordall Disc Series meters. All reading options can be removed from the meter without disrupting water service. Badger Meter encoders provide years of reliable, accurate readings for a variety of applications and are also available pre-wired to Badger Meter approved AMR/AMI solutions. See details at **www.badgermeter.com**.

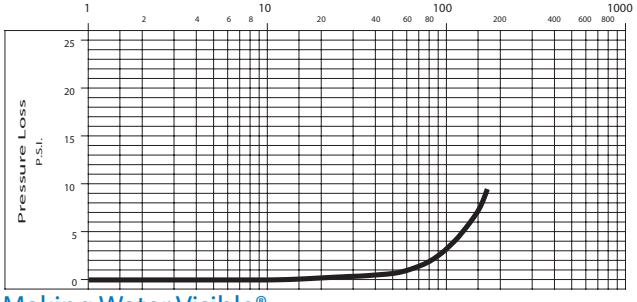
PRESSURE LOSS CHARTS

1-1/2" Meter

Rate of Flow in Gallons per Minute



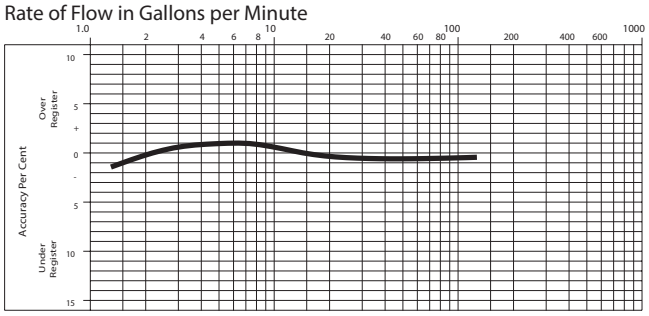
2" Meter



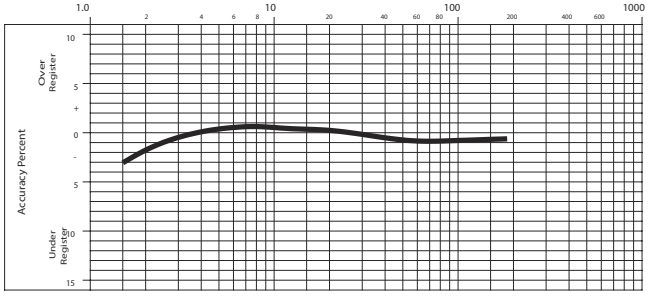
ACCURACY CHARTS

1-1/2" Meter

Rate of Flow in Gallons per Minute



2" Meter



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Legacy Document Numbers: RDM-DS-00071-EN and RDM-DS-00072-EN

Badger Meter

Recordall® Compound Series Meter

Lead-Free Bronze Alloy, Sizes 2", 3", 4" & 6"
NSF/ANSI Standards 61 and 372 Certified

DESCRIPTION

The Recordall Compound Series meters meet or exceed the most recent revision of AWWA Standard C700 and are available in a lead-free bronze alloy. The Compound Series meters comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI Standards 61 and 372 (Trade Designation: LL-NS) and carry the NSF-61 mark on the housing. All components of the lead-free bronze alloy meter (housing, measuring element, seals, and so on) comprise the certified system.

Badger Meter Recordall® Compound Series meters combine two metering technologies in one innovative package. A positive displacement chamber measures low flow, while a turbine chamber records high flow.

Offered in four sizes, the Compound Series meter features:

- Patented design that eliminates the need for a trigger valve and maintains crossover accuracy.
- Permanently sealed, tamper-resistant register or encoder.
- Meters and encoders that are compatible with Badger Meter AMR/AMI systems and other approved reading technologies

Badger Meter ORION® and GALAXY® AMR/AMI meter reading systems are available for all Compound Series meters. Itron® ERT reading systems are also available. An optional summator can be provided as an integral part of the register assembly. All register options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES

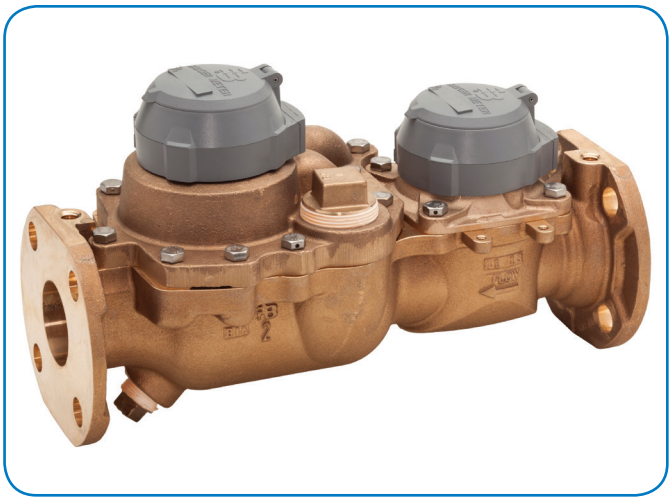
Unauthorized removal of the register or encoder is inhibited by the use of an optional tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

APPLICATIONS

Use the Recordall Compound meter for measuring potable cold water in commercial and industrial applications where flow is in one direction only. The meter is an ideal choice for facilities that experience rapid and wide fluctuations in water demand, such as hospitals, universities, residential complexes and manufacturing or processing facilities.

OPERATION

At low flow rates, the Compound Series meter diverts water up through a bypass to the disc chamber. Leaving the chamber's outlet port, water flows beyond the turbine element and main valve. As the flow rate increases, a pressure differential is created that opens the main valve. The water then flows straight through the turbine chamber. In addition, a portion still flows through the disc chamber before exiting the meter.



Rotor and disc movements are transmitted by magnetic drive couplings to individual register odometers. The direct magnetic drive provides a positive, reliable and dependable register coupling for straight-reading or remote reading options. The self-lubricating thermoplastic register gearing is designed to minimize friction and provide long life.

OPERATING PERFORMANCE

The Recordall Compound Series meets or exceeds registration accuracy for low, normal operating, maximum continuous operation, and changeover flow rates as specified in AWWA Standard C702.

CONSTRUCTION

The Recordall Compound Series meter's construction complies with ANSI and AWWA C702 standards. It consists of three basic components: meter housing, interchangeable measuring elements, and sealed direct reading registers. The measuring element consists of the disc measuring chamber, turbine head assembly, and high flow valve assembly. To simplify maintenance, the registers and measuring elements can be removed without removing the meter housing from the line.

METER INSTALLATION

The meter is designed for installations where flow is in one direction only. A separate strainer is required to ensure optimum flow conditioning and protection of the measuring element. Companion flanges for installation of meters on various pipe types and sizes are available in cast iron or NL bronze as an option.

RCS-DS-00078-EN-05 (June 2016)

Product Data Sheet

REGISTERS / ENCODERS

Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 100,000,000 gallons (10,000,000 ft^3, 1,000,000 m^3).

Optional—Encoders for AMR/AMI Reading Solutions

AMR/AMI solutions are available for all Recordall Compound Series meters. All reading options can be removed from the meter without disrupting water service. Badger Meter encoders provide years of reliable, accurate readings for a variety of applications and are also available pre-wired to Badger Meter approved AMR/AMI solutions. See details at **www.badgermeter.com**.

SPECIFICATIONS

Compound Series Model	2" (50 mm)	3" (80 mm)	4" (100 mm)	6" (150 mm)
Meter Flanges, Class 150	2" elliptical or round	3" round	4" round	6" round
	(50 mm)	(80 mm)	(100 mm)	(150 mm)
Typical Operating Range	0.5…200 gpm	0.5…450 gpm	0.75…1000 gpm	0.75…2000 gpm
(100% ± 1.5%)	(0.1…45 m^3/h)	(0.1…102 m^3/h)	(0.17…227 m^3/h)	(0.17…454.4 m^3/h)
Low Flow Registration (95% minimum)	0.25 gpm (0.06 m^3/h)	0.25 gpm (0.06 m^3/h)	0.375 gpm (0.09 m^3/h)	0.375 gpm (0.09 m^3/h)
Maximum Continuous Flow	170 gpm (38.3 m^3/h)	400 gpm (90.3 m^3/h)	800 gpm (181.6 m^3/h)	1500 gpm (340.5 m^3/h)
Pressure Loss at Maximum Continuous Flow	5.4 psi at 170 gpm	6.0 psi at 400 gpm	11.0 psi at 800 gpm	9.3 psi at 1500 gpm
	(0.38 bar at 38.3 m^3/h)	(0.41 bar at 90.3 m^3/h)	(0.75 bar at 181.6 m^3/h)	(0.64 bar at 340.5 m^3/h)
Crossover Flow Rate, Typical	12 gpm	12 gpm	20 gpm	30 gpm
Pressure Loss at Crossover	3.5 psi (0.24 bar)	4.0 psi (0.28 bar)	4.0 psi (0.28 bar)	5.0 psi (0.35 bar)
Minimum Crossover Accuracy	97%	97%	97%	95%
Maximum Operating Pressure	150 psi (10 bar)			
Maximum Operating Temperature	105° F (41° C)			
Test Plug	1-1/2"		2"	

Materials

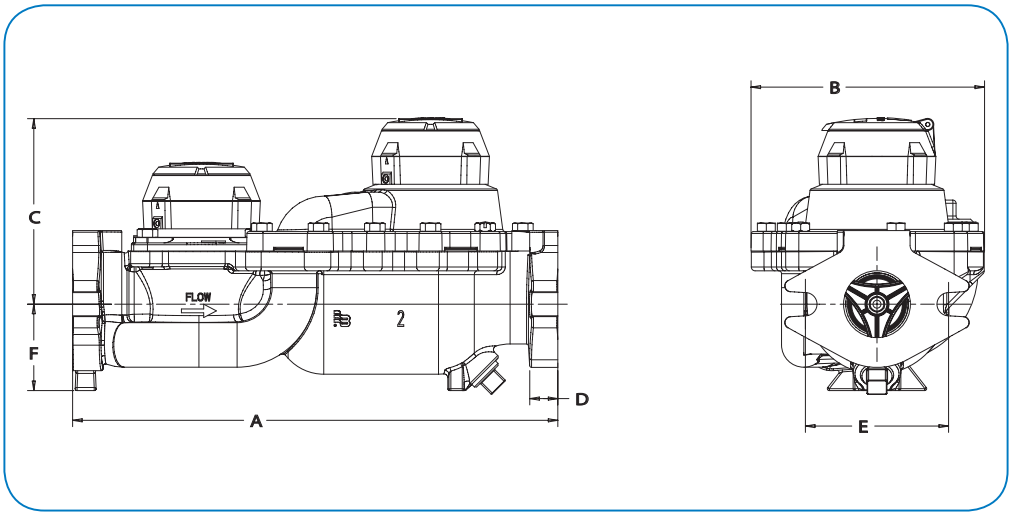
Meter Housing & Cover	Lead-free bronze alloy
Turbo Cast Head	Lead-free bronze alloy
Nose Cone & Straightening Vanes	Thermoplastic
Rotor	Thermoplastic
Rotor Radial Bearings	Lubricated thermoplastic
Rotor Thrust Bearing	Sapphire jewels
Rotor Bearing Pivots	Passivated 316 stainless steel
Calibration Mechanism	Stainless steel & thermoplastic
Measuring Chamber & Disc	Thermoplastic
High Flow Valve	Stainless steel & thermoplastic
Magnets	Ceramic
Register Lens	Glass
Register Housing & Cover	Thermoplastic or bronze
Trim	Stainless steel
Drain Plug (3/4")	Stainless steel or lead-free bronze alloy
Test Plug	Stainless steel or lead-free bronze alloy

PHYSICAL DIMENSIONS

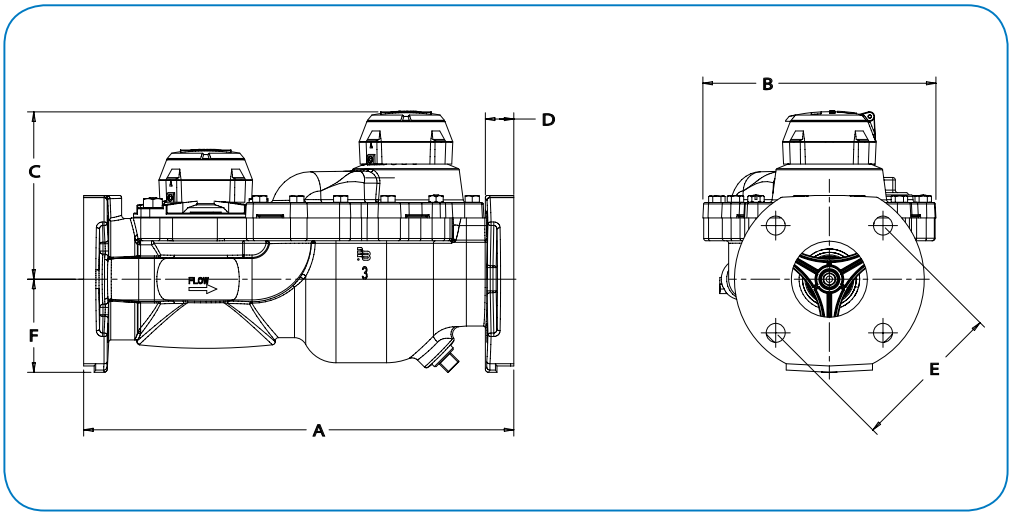
Compound Series Model	2" Elliptical (50 mm)	2" Round (50 mm)	3" (80 mm)	4" (100 mm)	6" (150 mm)
Meter & Pipe Size	2" (50 mm)		3" (80 mm)	4" (100 mm)	6" (150 mm)
Net Weight	45 lb (20 kg)		51 lb (23 kg)	85 lb (38 kg)	152 lb (69 kg)
Shipping Weight	63 lb (29 kg)		79 lb (36 kg)	120 lb (54 kg)	200 lb (90 kg)
Length (A)	15-1/4" * (387 mm)		17" (432 mm)	20" (508 mm)**	24" (610 mm)
Width (B)	7-3/8" (187 mm)		8-1/2" (216 mm)	9-1/8" (232 mm)	12-3/8" (314 mm)
Height (C)	5-7/8" (149 mm)		6-5/8" (168 mm)	7-1/4" (184 mm)	8-7/8" (225 mm)
Flange (D)	5/8" (16 mm)		3/4" (19 mm)	7/8" (22 mm)	15/16" (24 mm)
Bolt Circle (E)	4-1/2" (114 mm)	4-3/4" (121 mm)	6" (152 mm)	7-1/2" (191 mm)	9-1/2" (241 mm)
Centerline (C) to Base (F)	2-3/4" (70 mm)		3-5/8" (92 mm)	4-1/4" (108 mm)	5-3/8" (137 mm)
Number of Bolts	2	4	4	8	8

* Adapter available to increase total length to 17" (432 mm).
**Adapter available to increase total length to 24" (610 mm).

Elliptical Flange (2" Only)



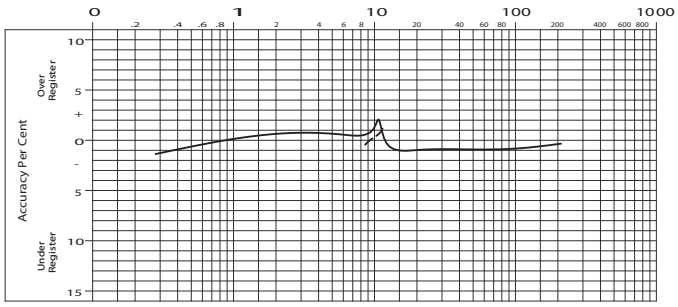
Round Flange



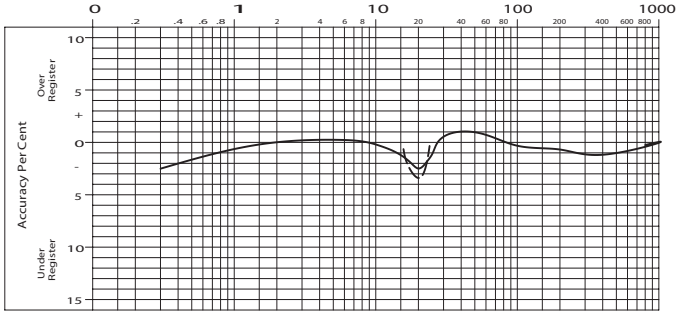
ACCURACY CHARTS

Rate of flow in gallons per minute (gpm)

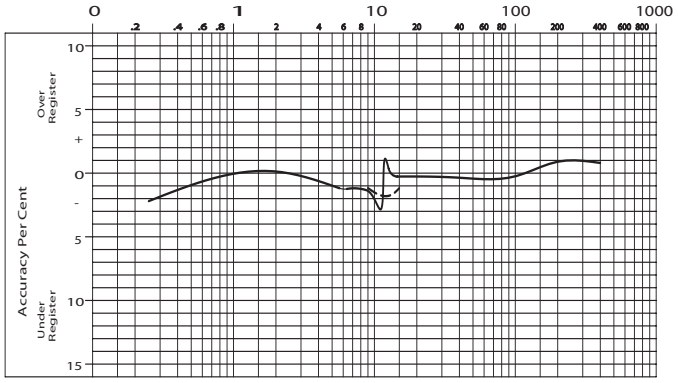
2" COMPOUND SERIES METER



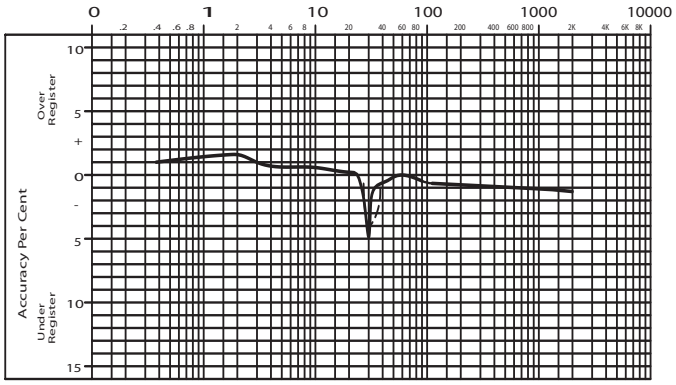
4" COMPOUND SERIES METER



3" COMPOUND SERIES METER

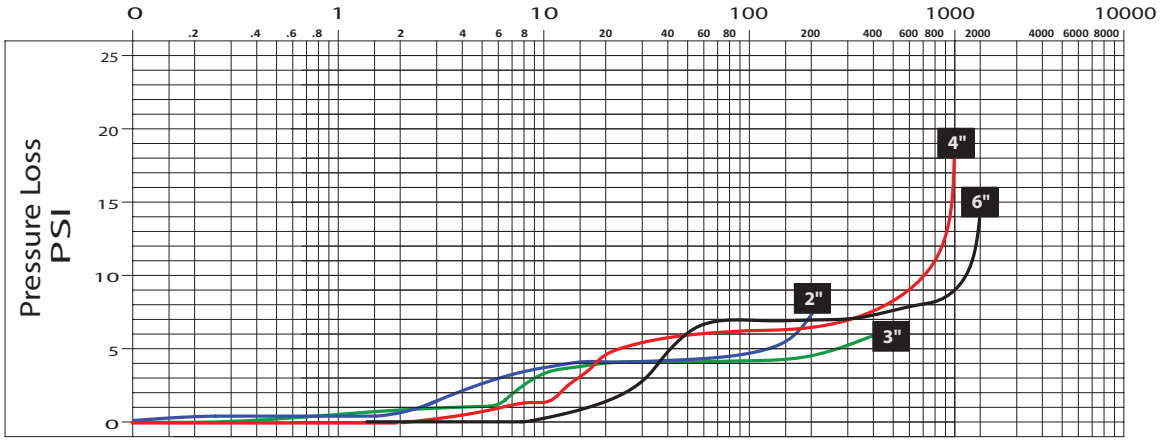


6" COMPOUND SERIES METER



PRESSURE LOSS CHART

Rate of flow in gallons per minute (gpm)



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Legacy Document Number: RCS-T-07

Badger Meter

Plate Strainers

Lead-Free Bronze Alloy, Sizes 2", 3", 4", and 6"

DESCRIPTION

Badger Meter® offers dual flange plate strainers, sizes 2…6", in a lead-free bronze alloy. Badger Meter plate strainers comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI Standards 61 and 372 (Trade Designation: Plate Strainer LL-NS) and carry the NSF-61 mark on the housing.

FEATURES

Badger Meter plate strainers exceed AWWA standards with an effective screening area to minimize flow restrictions to meters. The straining area is double the inlet to turbo and compound meter cases. These strainers also reduce turbine rotor bearing loading and resultant wear to maintain and extend accurate meter registration, by minimizing velocity profile distortion caused by changes in pipe direction or valving. For added flexibility, these strainers are compatible with all makes of meters. The rubber head O-Ring or gasket is reusable, which reduces replacement part costs. The screen is removable to clean the strainer in the service line. All sizes have a drain plug incorporated.

SCREENS

Made of non-corrosive 316 stainless steel with 3/16" or 1/4" perforations to effectively strain any larger foreign matter, and can be easily removed and cleaned.

HYDROSTATICALLY TESTED MATERIALS

Housings are designed and individually tested to withstand 150 psi maximum working pressure and 300 psi static pressure.

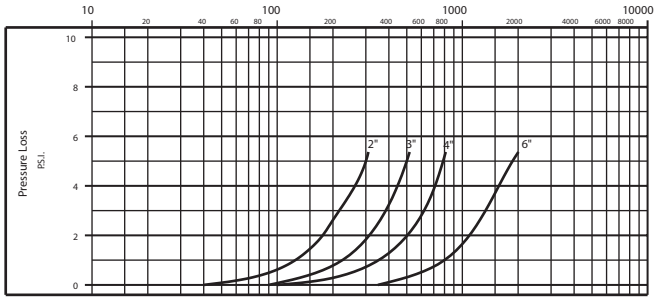
SPECIFICATIONS

Sizes and Configurations	2" Dual elliptical flange 2" Dual round flange 3" Dual round flange 4" Dual round flange 6" Dual round flange Compatible WITH any ASA 125 flange
Maximum Working Pressure	150 psi (10 bar)
Static Test Pressure	300 psi (20 bar)
Screen Area Ratio	Minimum 2-to-1 ratio of meter inlet
Screen	Removable in-line service
Screen Perforations	3/16" holes for 2", 3" and 4" strainers 1/4" holes for 6" strainer
Drain Plug	1/2" or 3/4" – 14 NPT removable in-line service
Recommended Applications	Recordall Turbo Series, Recordall Compound Series, and other makes of meters

Materials

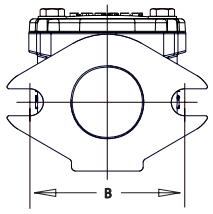
Strainer Housing	Lead-free bronze alloy
Housing Cover	Lead-free bronze alloy
Housing Cover Seal	Rubber
Strainer Screen	Stainless steel
Drain Plug	Lead-free bronze alloy
Housing Bolts	Stainless steel

Flow Rate vs Pressure Loss

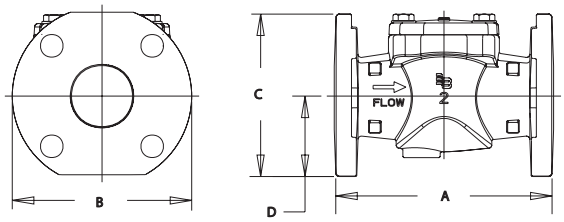


Product Data Sheet

DIMENSIONS



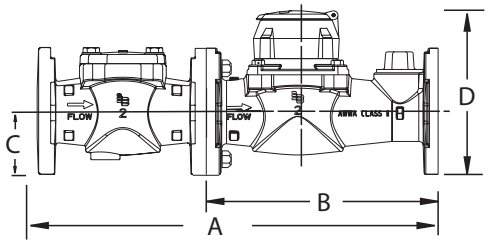
Dual Elliptical Flange



Dual Round Flange

Strainer Type	Nominal Size	Dimensions						Flange		Net Wt.
		A	B	C	D	Drain Plug (NPT)	Hsg. Bolt Dia.	No. Mtg. Holes	Hole Dia.	
Dual Ellip. Flange	2" (50 mm)	7" (178 mm)	4-1/2" (114 mm)	4-7/8" (122 mm)	1-7/8" (48 mm)	—	3/8-16	2	13/16" (21 mm)	11 lb (5.0 kg)
Dual Round Flange	2" (50 mm)	7" (178 mm)	6" (152 mm)	5-1/2" (140 mm)	2-5/8" (66 mm)	—	3/8-16	4	3/4" (19 mm)	14 lb (6.3 kg)
	3" (80 mm)	7" (178 mm)	7-1/2" (190 mm)	7-1/4" (184 mm)	3-5/8" (92 mm)	—	1/4-20	4	3/4" (19 mm)	22 lb (9.9 kg)
	4" (100 mm)	9" (229 mm)	9" (229 mm)	8-3/4" (223 mm)	4-3/8" (112 mm)	—	3/8-16	8	3/4" (19 mm)	35 lb (16 kg)
	6" (150 mm)	9" (229 mm)	11" (279 mm)	11" (279 mm)	5-1/2" (140 mm)	3/4"-14	3/8-16	8	7/8" (22mm)	59 lb (26.5 kg)

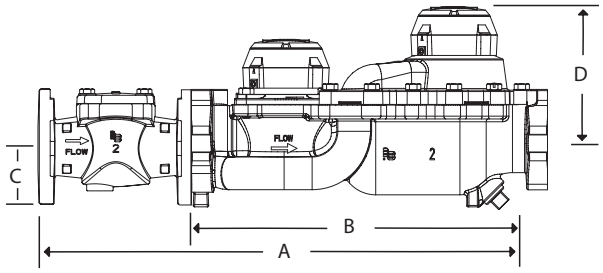
Recordall Turbo/Strainer **



Meter Size	Dimensions			
	A	B	C	D
2" (50 mm)	17" (432 mm)	10" (254 mm) RD	2-5/8" (66 mm) EL 2-1/16" (52 mm) RD	7-19/64" (185 mm) EL 6-23/32" (170 mm)
3" (80 mm)	19" (482 mm)	12" (305 mm)	3-5/8" (92 mm)	8-23/32" (221 mm)
4" (100 mm)	23" (584 mm)	14" (355 mm)	4-3/8" (112 mm)	9-21/32" (245 mm)
6" (150 mm)	27" (686 mm)	18" (457 mm)	5-1/2" (140 mm)	12-9/16" (319 mm)

** Badger Meter recommends a distance of five (5) pipe diameters between the strainer and the meter. (See individual meter Users manual.)

Recordall Compound/Strainer **



Meter Size	Dimensions			
	A	B	C	D
2" (50 mm)	22-1/4" (560 mm)	15-1/4" (387 mm)	2-5/8" (66 mm)	5-7/8" (149 mm)
3" (80 mm)	24" (609 mm)	17" (432 mm)	3-5/8" (92 mm)	6-5/8" (168 mm)
4" (100 mm)	29" (737 mm)	20" (508 mm)	4-3/8" (112 mm)	7-1/4" (184 mm)
6" (150 mm)	33" (838 mm)	24" (609 mm)	5-1/2" (140 mm)	8-7/8" (225 mm)

** Badger Meter recommends a distance of five (5) pipe diameters between the strainer and the meter. (See individual meter Users manual.)

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Legacy Document Number: PS-T-1

Badger Meter

Recordall® Fire Series Assemblies (FSAA)

Cold Water Meter & Strainer with Disc Bypass

UL Certified & FM 1044 Standard Approved for Fire Service Applications

NSF/ANSI Standards 61 and 372 Certified

DESCRIPTION

Recordall® Fire Series assemblies meet or exceed all pressure and performance requirements as stated in the most recent revision of AWWA Standard C703. The assembly's primary turbine meter features cast iron housing, while the disc bypass meter is cast in a lead-free bronze alloy. Fire Series assemblies comply with the lead-free provisions of the Safe Drinking Water Act and are also certified to NSF/ANSI Standards 61 and 372. These assemblies carry the NSF-61 Mark, Trade Designation: FSAA-01.

Badger Meter® Fire Series assemblies also conform to UL 327 and FM 1004. The strainer conforms to UL 321 and FM 5551. The valve conforms to UL 312 and FM 1045.

Offered in five sizes, Fire Series assemblies are designed for revenue-generating flexibility and control on high volume fire service water measurement applications and feature:

- Direct coupled turbine based on an exclusive "floating rotor" design that reduces bearing friction—and associated wear and tear for optimal performance during fire service events.
- Disc meter bypass. The disc meter conforms to AWWA C700.
- Low head loss for optimum pressure during fire extinguishing.
- Integral fire service strainer to protect the meter element from debris and prevent downstream blockage.
- Tamper-resistant calibration vane allowing in-line accuracy adjustments while under pressure.
- Factory-calibrated and tested measuring elements that are unitized for simplified installation and inventory.
- Meters and encoders are compatible with Badger Meter ORION® family of endpoints and other approved technologies

Applications

Use the Recordall Fire Series assembly for measuring potable cold water in your vital fire protection systems. Select this assembly when the fire service main is used for both high-volume fire applications, such as sprinkler systems, and low-volume domestic services, such as general purpose plumbing.

Operation & Performance

If water enters the meter at a low flow rate, a spring-loaded check valve on the downstream side holds the clapper assembly in a closed position. Based on size of the assembly the water is diverted through either a 1inch, 1-1/2 inch or 2 inch disc bypass meter. This enables accurate registration of domestic use, leakage or misuse of water intended for stand-by fire protection. When a major flow is required, the resulting water pressure opens the check valve and allows water to flow through the main turbine chamber at full pipe capacity. A small amount of water continues to flow through the bypass when the clapper assembly is fully open.

Direct magnetic drive is achieved when the magnet carrier is driven by a gear train coupled to the rotor. The gear train consists of two sets of gears connected by a vertical transmission shaft. One gear set is at the magnet carrier, the other is a worm gear set at the rotor shaft. When water enters the main turbine chamber at high volume rates, it contacts a multi-vaned rotor. The resulting rotor rotation is then transmitted by magnetic coupling to a sealed register or encoder. The direct magnetic drive provides a reliable meter-to-registration coupling.

Construction

Recordall Fire Series assemblies consist of the following basic components: meter housing, an AWWA Class II measuring chamber, a check valve with bypass piping, valve assembly, two isolation valves, a disc bypass measuring chamber and sealed registers or encoders. The assembly also includes a strainer, which features an open area at least six times the area of the nominal pipe size. The strainer is equipped with a flushing outlet port (or optional valve) for flushing debris from the upstream side of the strainer screen.

To simplify maintenance, the registers or encoders and measuring elements can be removed without removing the meter housing. Interchangeability of certain parts between meters also minimizes spare parts inventory investment.

Tamper-Proof Features

Unauthorized removal of the register or encoder is inhibited by the optional tamper-detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

Meter Installation

The meter is designed for installations where flow is in one direction only. Companion flanges for installation of meters on various pipe types and sizes are available in cast iron or NL bronze as an option. See the *"Recordall® Fire Series Assemblies (FSAA) User Manual"* for installation guidelines.

FM APPROVED

UL LISTED

Product Data Sheet

SPECIFICATIONS

FSAA Model Includes Disc Bypass Meter	**4 in. (100 mm)**	**6 in. (150 mm)**	**6 in. (150 mm)**	**8 in. (200 mm)**	**10 in. (250 mm)**
Meter Flanges , AWWA C207 Class D	4 in. (100 mm)	6 in. (150 mm)	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
Disc Bypass Meter	1 in. (25 mm)	1 in. (25 mm)	1-1/2 in. (38 mm)	2 in. (50 mm)	2 in. (50 mm)
Typical Operating Range (100% ± 1.5%)	1.25…1250 gpm (0.28…284 m^3/h)	1.25…2500 gpm (0.28…568 m^3/h)	2.5…2500 gpm (0.57…568 m^3/h)	2.5…4500 gpm (0.57…1022 m^3/h)	2.5…7000 gpm (0.57…1590 m^3/h)
Typical Low Flow (95% minimum)	0.75 gpm (0.17 m^3/h)	0.75 gpm (0.17 m^3/h)	1.5 gpm (0.34 m^3/h)	1.5 gpm (0.34 m^3/h)	1.5 gpm (0.34 m^3/h)
Maximum Continuous Flow	1000 gpm (227 m^3/h)	2000 gpm (454 m^3/h)	2000 gpm (454 m^3/h)	3500 gpm (795 m^3/h)	5500 gpm (1249 m^3/h)
Maximum Intermittent Flow	1250 gpm (284 m^3/h)	2500 gpm (568 m^3/h)	2500 gpm (568 m^3/h)	4500 gpm (1022 m^3/h)	7000 gpm (1590 m^3/h)
Maximum Operating Pressure	175 psi (12 bar)				
Maximum Operating Temperature	120° F (49° C)				
Pressure Loss at Crossover	3 psi (0.28 bar)				
Check Valve	Valve body conforms to UL 312 and FM 1044.				
Bypass Line	Specify right-facing (standard, as shown) or left-facing assembly.				
Strainer	Screen open area is at least six times the area of the nominal pipe size. Equipped with a 2 in. (4 in. model) or 3 in. (all other models) flushing port to flush debris from upstream side of strainer screen. Optional flush valve assembly available.				

MATERIALS

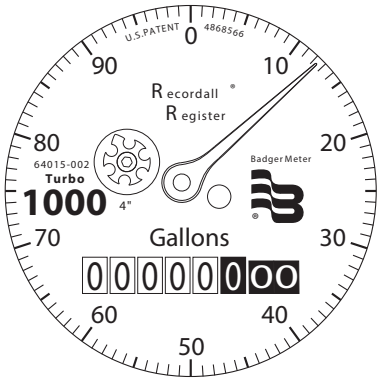
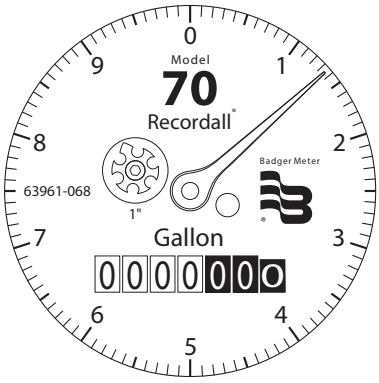
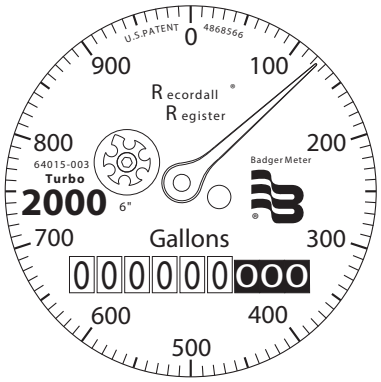
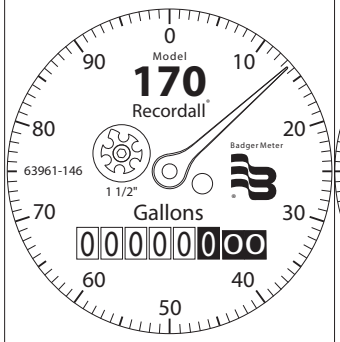
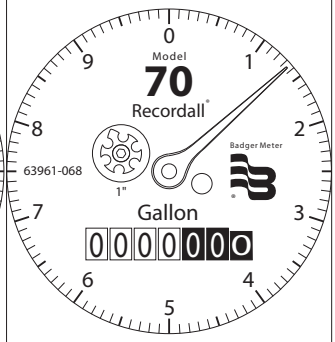
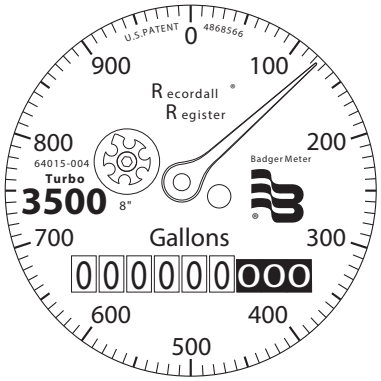
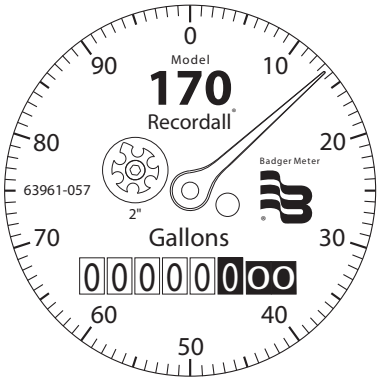
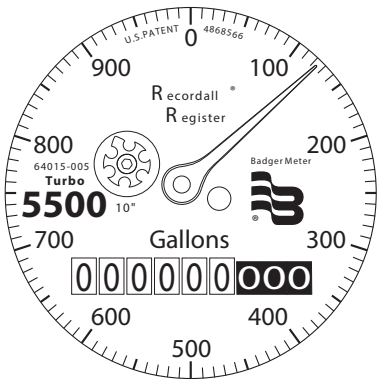
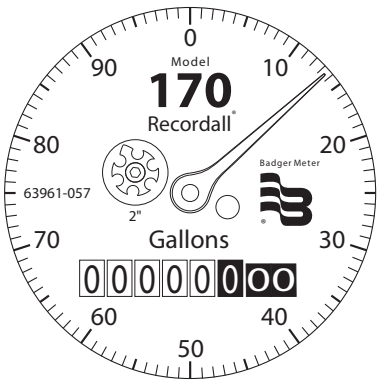
Meter Housing	Fusion-bonded epoxy coated ductile cast iron
Bypass Meter Housing & Cover	Lead-free bronze alloy
Bypass Measuring Chamber	Injection-molded thermoplastic
Bypass	Water works brass piping conforming to AWWA C800
Nose Cone & Straightening Vanes	Thermoplastic
Rotor	Thermoplastic
Rotor Radial Bearings	Lubricated thermoplastic
Rotor Thruster Bearing	Sapphire jewels
Rotor Bearing Pivots	Passivated 316 stainless steel
Calibration Mechanism	Stainless steel & thermoplastic
Magnet	Ceramic
Turbine Shaft & Bolts	Stainless steel
Clapper Assembly (clapper, spring, hinge & pins)	Stainless steel
Clapper Seal	Elastomeric, EPDM
Valve Seat	Stainless steel
Valve & Strainer Cover Plate	Fusion-bonded epoxy coated steel
Valve & Strainer Cover Plate Gasket	Elastomeric sheet / O-ring
Valve Body	Fusion-bonded epoxy coated steel / stainless steel
Strainer Screen & Trim	Stainless steel
Strainer Body	Fusion-bonded epoxy coated steel
Trim	Zinc-plated steel or (optional) all stainless steel

REGISTERS / ENCODERS

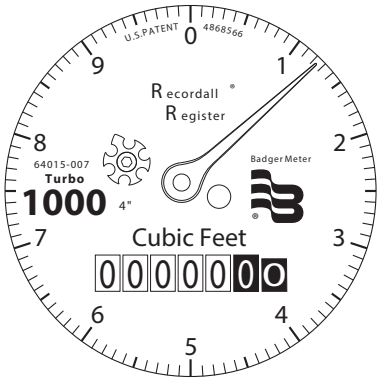
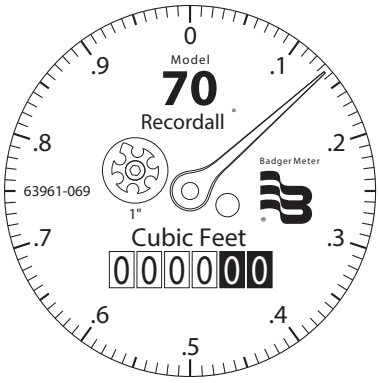
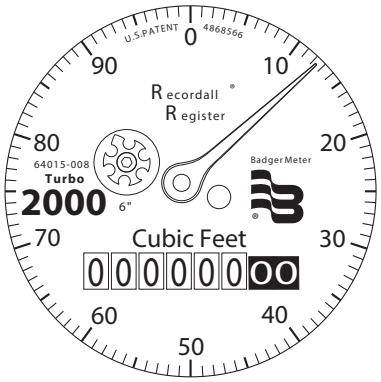
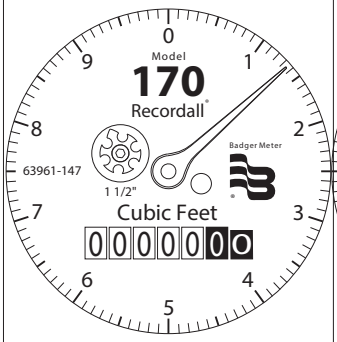
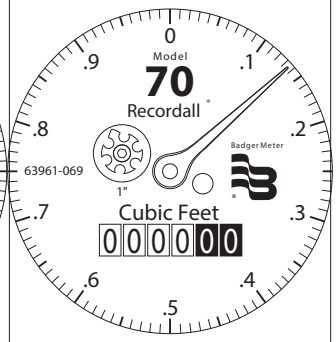
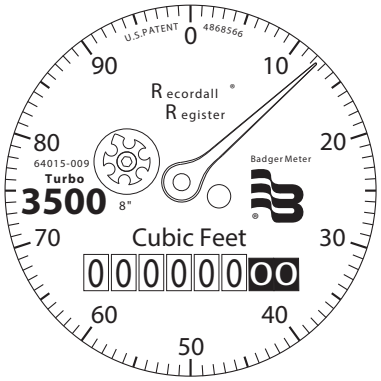
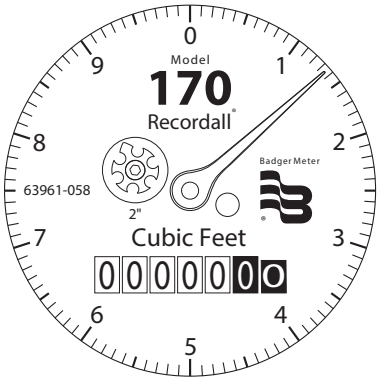
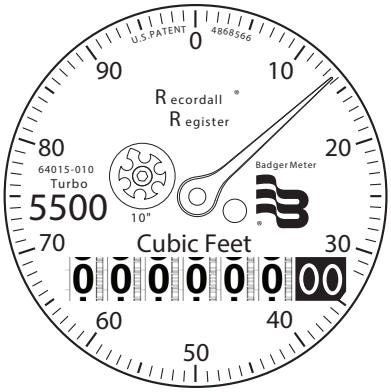
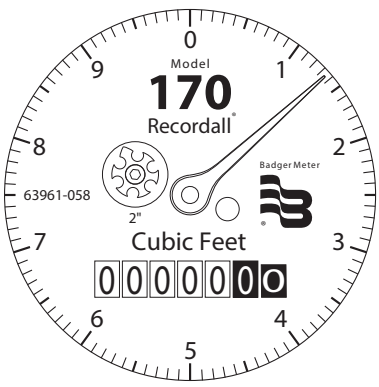
Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 10,000,000 gallons (1,000,000 ft^3, 100,000 m^3).

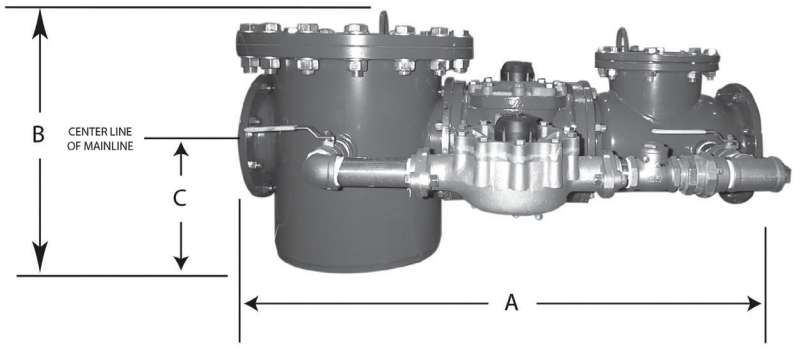
Registers—Gallons

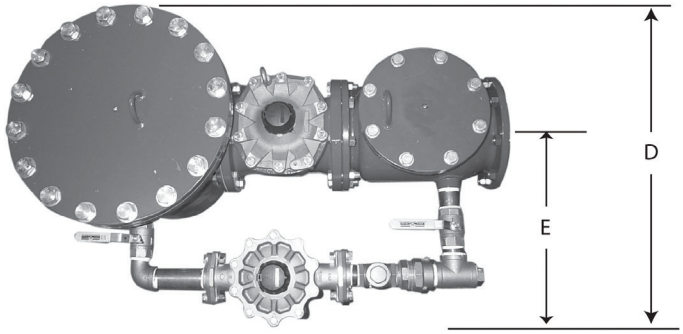
	High Flow	Low Flow
4 in.		
6 in.		 
8 in.		
10 in.		

Registers—Cubic Feet

	High Flow	Low Flow
4 in.		
6 in.		 
8 in.		
10 in.		

DIMENSIONS

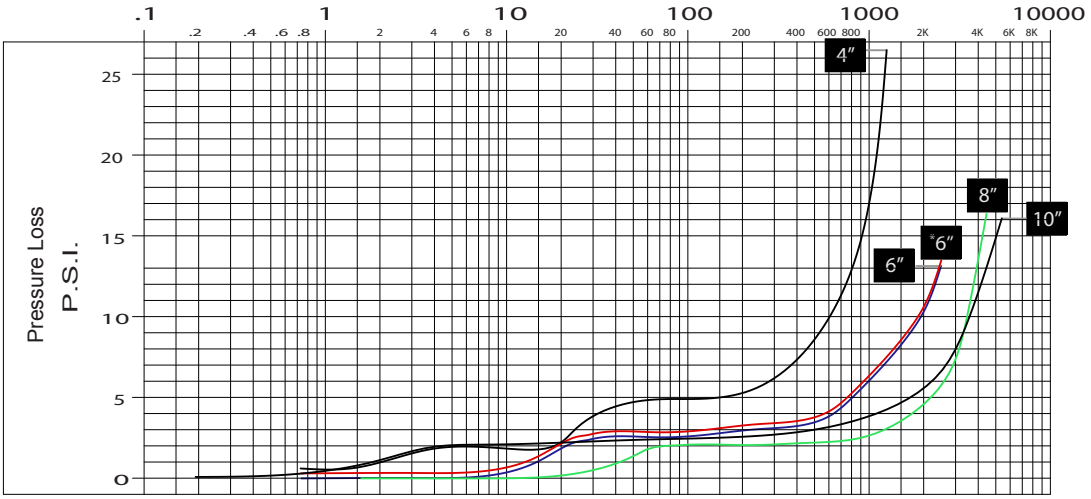




FSAA Model Includes Disc Bypass Meter	**4 in. (100 mm)**	**6 in. (150 mm)**	**6 in. (150 mm)**	**8 in. (200 mm)**	**10 in. (250 mm)**
Meter & Pipe Size	4 in. (100 mm)	—	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
Disc Bypass Meter	1 in. (25 mm)	1 in. (25 mm)	1-1/2 in. (38 mm)	2 in. (50 mm)	2 in. (50 mm)
Shipping Weigh Fully Assembled	312 lb (142 kg)	507 lb (230 kg)	507 lb (230 kg)	767 lb (348 kg)	1073 lb (487 kg)
Length (A)	33 in. (838 mm)	45 in. (1143 mm)	45 in. (1143 mm)	53 in. (1346 mm)	68 in. (1727 mm)
Height (B)	20-5/8 in. (524 mm)	22-3/8 in. (568 mm)	22-3/8 in. (568 mm)	25-1/16 in. (637 mm)	25-5/16 in. (643 mm)
Height (C)	10-5/8 in. (270 mm)	11-1/16 in. (281 mm)	11-1/16 in. (281 mm)	12-1/16 in. (306 mm)	14-13/16 in. (376 mm)
Height (D)	23-3/16 in. (589 mm)	30 in. (762 mm)	34-1/4 in. (870 mm)	35-1/2 in. (902 mm)	34-1/2 in. (876 mm)
Height (E)	16-7/16 in. (418 mm)	20-1/2 in. (521 mm)	24-3/4 in. (629 mm)	23 in. (584 mm)	20-3/4 in. (527 mm)

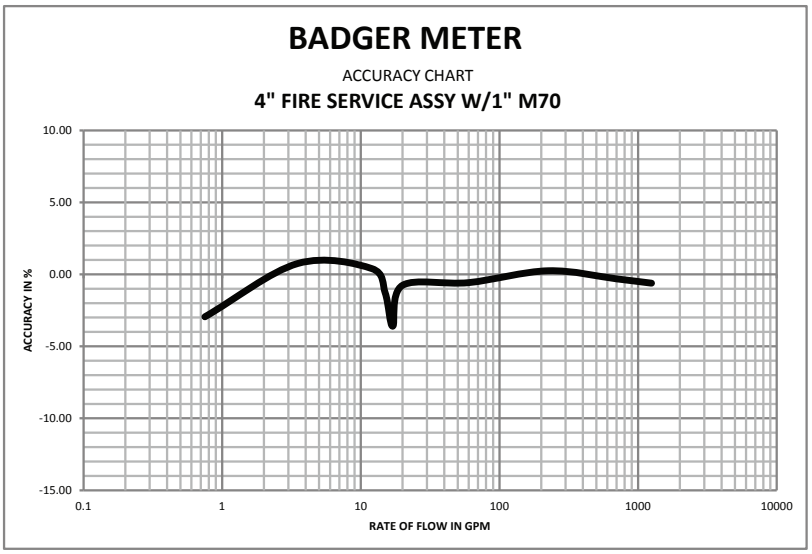
PRESSURE LOSS CHART

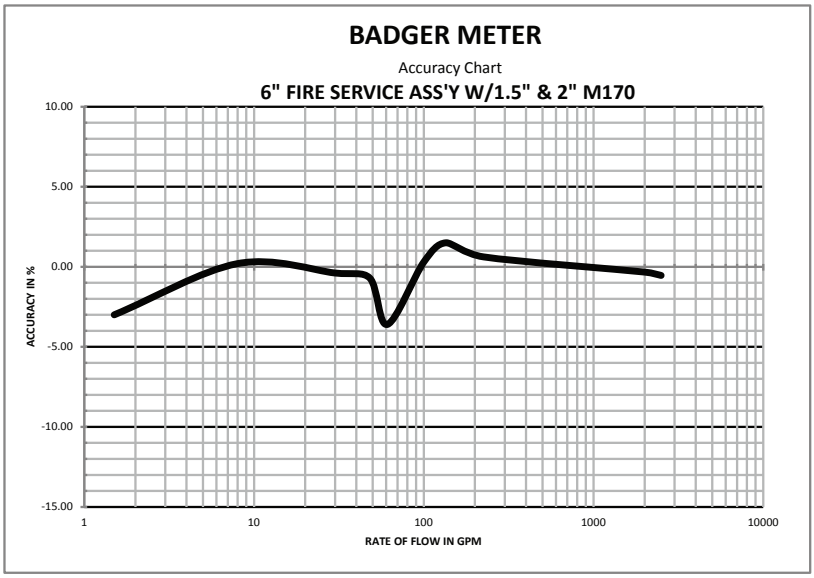
Rate of flow in gallons per minute (gpm).



ACCURACY CHARTS

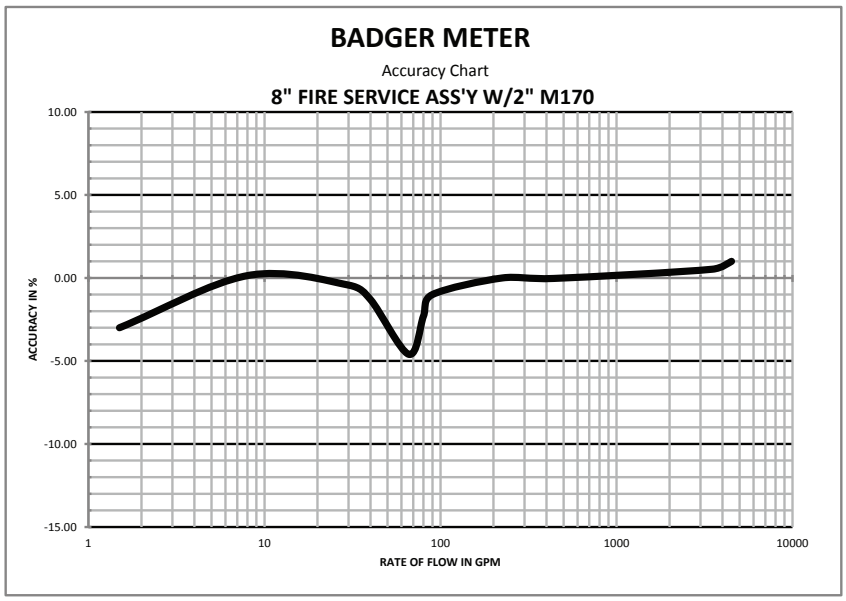
Rate of flow in gallons per minute (gpm).

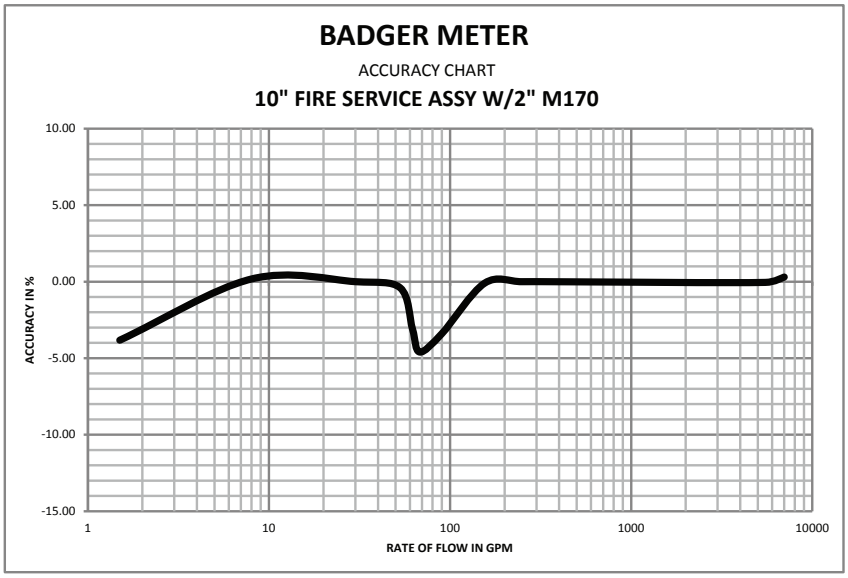




ACCURACY CHARTS (CONTINUED)

Rate of flow in gallons per minute (gpm).





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