

### DESCRIPTION

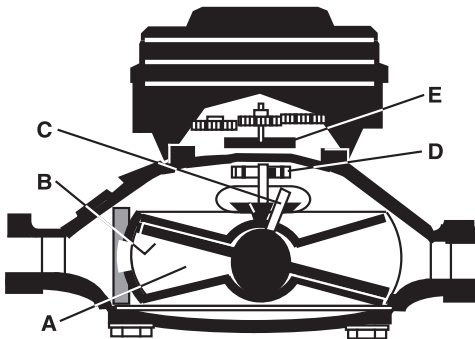
The Badger Meter Recordall® (RCDL) positive displacement meters are one of the most cost effective methods in metering industrial fluids. The RCDL meter has a simple, efficient design for high accuracy and repeatability over the entire meter flow range.

Available in sizes 1/2...2 in. for flows up to 170 gpm, these meters are extremely rugged and reliable. Maintenance is seldom required, but if necessary, takes only a few minutes. All parts are designed and built of materials that meet your application requirements and provide an enduring and a trouble-free, precision flow meter.

To complement the RCDL meter line, Badger Meter offers a complete line of accessories that includes totalizers, transmitters, rate of flow indicators and batch/process controllers.

### OPERATION

The metering principle, known as positive displacement, is based on the continuous filling and discharging of the measuring chamber. Controlled clearances between the disc and the chamber provide precise measurement of each volume cycle. As the disc nutates, the center spindle rotates a magnet. The movement of the magnet is sensed through the meter wall by a follower magnet or by various sensors. Each revolution of the magnet is equivalent to a fixed volume of fluid, which is converted to any engineering unit of measure for totalization, indication or process control.



Liquid flowing through the meter chamber (A) causes a disc (B) to nutate or wobble. This motion, in turn, results in the rotation of a spindle (C) and drive magnet (D). Rotation is transmitted through the wall of the meter to a second magnet (E) or varied style of sensor pickup.



### LEAD-FREE MODELS AVAILABLE

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/CAN Standards 61 and 372 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.

### FEATURES

- Wide flow range
- Rugged bronze or thermoplastic housing
- Meters available up to 250° F (see ["Temperature Chart" on page 2](#))
- Easily maintained without removing from line
- Durable components for minimal maintenance
- Wide range of compatible accessories

### PERFORMANCE

- Accuracy:  $\pm 1.5\%$
- Repeatability:  $\pm 0.5\%$
- Pressure Range: up to 150 psi
- Temperature Range: 32...250° F

## TEMPERATURE CHART

Meter Model	Meter Size	Housing Material	Chamber/Disc Material	Fluid	Temperature Range
M25	5/8 in. (15 mm)	lead-free bronze alloy	engineered polymer	cold liquids	32...120° F (0...49° C)
M25	3/4 in. (15 mm)	lead-free bronze alloy	engineered polymer	cold liquids	32...120° F (0...49° C)
M35	3/4 in. (20 mm)	lead-free bronze alloy	engineered polymer	cold liquids	32...120° F (0...49° C)
M55	1 in. (25 mm)	lead-free bronze alloy	engineered polymer	cold liquids	32...120° F (0...49° C)
M70	1 in. (25 mm)	lead-free bronze alloy	engineered polymer	cold liquids	32...120° F (0...49° C)
M120	1-1/2 in. (40 mm)	lead-free bronze alloy	engineered polymer	cold liquids	32...120° F (0...49° C)
M170	2 in. (50 mm)	lead-free bronze alloy	engineered polymer	cold liquids	32...120° F (0...49° C)
M25	5/8 in. (15 mm)	engineered polymer	engineered polymer	cold liquids	32...100° F (0...38° C)
M25	3/4 in. (20 mm)	engineered polymer	engineered polymer	cold liquids	32...100° F (0...38° C)
M25*	5/8 in. (15 mm)	lead-free bronze alloy	LCP	high temp or chemical	32...250° F (0...121° C)
M25*	3/4 in. (20 mm)	lead-free bronze alloy	LCP	high temp or chemical	32...250° F (0...121° C)
M70*	1 in. (25 mm)	lead-free bronze alloy	LCP	high temp or chemical	32...250° F (0...121° C)
M120*	1-1/2 in. (40 mm)	lead-free bronze alloy	LCP	chemical	32...110° F (0...43° C)

\* Model is not certified to NSF/ANSI/CAN Standards 61 and 372

## METER SPUD AND CONNECTION SIZES

Model	Size Designation in.	×	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread in.	Tailpiece Pipe Thread (NPT) (in.)
25B	5/8	×	7-1/2 in. (190 mm)	5/8 in. (15 mm)	3/4 (5/8)	1/2
	5/8 x 3/4	×	7-1/2 in. (190 mm)	5/8 in. (15 mm), 3/4 in. (20 mm)	1 (3/4)	3/4
25P	5/8	×	7-1/2 in. (190 mm)	5/8 in. (15 mm)	3/4 (5/8)	1/2
	5/8 x 3/4	×	7-1/2 in. (190 mm)	5/8 in. (15 mm), 3/4 in. (20 mm)	1 (3/4)	3/4
	3/4	×	9 in. (229 mm)	3/4 in. (20 mm)	1 (3/4)	3/4
35B	3/4	×	7-1/2 in. (190 mm)	3/4 in. (20 mm)	1 (3/4)	3/4
	3/4	×	9 in. (229 mm)	3/4 in. (20 mm)	1 (3/4)	3/4
	3/4 x 1	×	9 in. (229 mm)	3/4 in. (20 mm)	1-1/4 (1)	1
55B	1	×	10-3/4 in. (273 mm)	1 in. (25 mm)	1-1/4 (1)	1
70B	1	×	10-3/4 in. (273 mm)	1 in. (25 mm)	1-1/4 (1)	1

### NOTE:

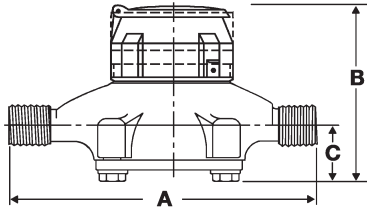
The engineering thread is always one thread size larger than the meter size or service pipe thread designation. Under *Coupling Nut and Spud Thread*, the size given in parentheses identifies the size to specify when ordering meter connections, such as tailpiece couplings.

## MATERIALS

Model	Model 25 Polymer	Model 25 Bronze	Model 35 Bronze	Model 55 Bronze	Model 70 Bronze	Model 120 Bronze	Model 170 Bronze
Size Designation	5/8 in. 5/8 x 3/4 in. 3/4 in.	5/8 in. 5/8 x 3/4 in.	3/4 in.	1 in.	1 in.	1-1/2 in.	2 in.
Meter Housing	Engineered polymer	Lead-free bronze alloy	Lead-free bronze alloy	Lead-free bronze alloy	Lead-free bronze alloy	Lead-free bronze alloy	Lead-free bronze alloy
Housing Bottom Plates	Engineered polymer	Cast iron, lead-free bronze alloy	Cast iron, lead-free bronze alloy	Cast iron, lead-free bronze alloy	Cast iron, lead-free bronze alloy	Lead-free bronze alloy	Lead-free bronze alloy
Measuring Chamber	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer
Disc	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer
Trim	n/a	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Strainer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer
Disc Spindle	Stainless steel	Stainless steel	Stainless steel	Engineered polymer	Stainless steel	Stainless steel	Stainless steel
Magnet	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Magnet Spindle	Engineered polymer	Engineered polymer	Stainless steel	Engineered polymer	Engineered polymer	Engineered polymer	Engineered polymer
Register Lid and Shroud	Engineered polymer, bronze	Engineered polymer, bronze	Engineered polymer, bronze	Engineered polymer, bronze	Engineered polymer, bronze	Engineered polymer, bronze	Engineered polymer, bronze

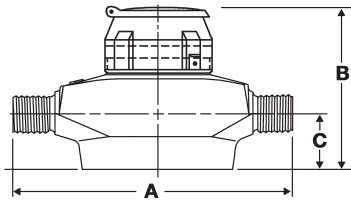
**DIMENSIONS**

**M25, M35, M55, M70 Bronze**



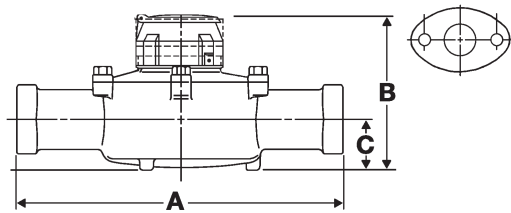
Meter Size	Model	A Laying Length	B Height w/Reg.	C Centerline Base	Width	Approx. Shipping Weight
5/8 in. (15 mm)	25	7-1/2 in. (190 mm)	4-15/16 in. (125 mm)	1-11/16 in. (42 mm)	4-1/4 in. (108 mm)	4-1/2 lb (2 kg)
5/8 in. x 3/4 in. (15 mm)		7-1/2 in. (190 mm)	4-15/16 in. (125 mm)	1-11/16 in. (42 mm)	4-1/4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

**M25 Polymer**



Meter Size	Model	A Laying Length	B Height w/Reg.	C Centerline Base	Width	Approx. Shipping Weight
5/8 in. (15 mm)	25	7-1/2 in. (190 mm)	5-1/16 in. (128 mm)	1-3/4 in. (44 mm)	4-13/16 in. (122 mm)	2-1/2 lb (1 kg)
5/8 x 3/4 in. (15 mm)		7-1/2 in. (190 mm)	5-1/16 in. (128 mm)	1-3/4 in. (44 mm)	4-13/16 in. (122 mm)	2-1/2 lb (1 kg)
3/4 in. (20 mm)		9 in. (229 mm)	5-1/16 in. (128 mm)	1-3/4 in. (44 mm)	4-13/16 in. (122 mm)	3 lb (1.4 kg)

**M120, M170 Bronze**



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

EL = Elliptical

ELL = Elliptical Long

Hex = Hexagon, 1-1/2...11-1/2 in. NPT Thread

TP=Test Plug 1 in.

## SPECIFICATIONS

### M25, M35, M55, M70 Bronze

Model	Model 25 Bronze	Model 25 Bronze	Model 35 Bronze	Model 55 Bronze	Model 70 Bronze
<b>Size Designation</b>	<b>5/8 in.</b>	<b>5/8 × 3/4 in.</b>	<b>3/4 in.</b>	<b>1 in.</b>	<b>1 in.</b>
<b>Typical Operating Range (100% ± 1.5%)</b>	0.5...25 gpm (0.11...5.7 m <sup>3</sup> /hr)	0.5...25 gpm (0.11...5.7 m <sup>3</sup> /hr)	0.75...35 gpm (0.17...7.9 m <sup>3</sup> /hr)	1...55 gpm (0.23...12.5 m <sup>3</sup> /hr)	1.25...70 gpm (0.28...16 m <sup>3</sup> /hr)
<b>Maximum Continuous Operation</b>	15 gpm (3.4 m <sup>3</sup> /hr)	15 gpm (3.4 m <sup>3</sup> /hr)	25 gpm (5.7 m <sup>3</sup> /hr)	40 gpm (9.1 m <sup>3</sup> /hr)	50 gpm (11.3 m <sup>3</sup> /hr)
<b>Pressure Loss at Maximum Continuous Operation</b>	3.5 psi @ 15 gpm (0.24 bar @ 3.4 m <sup>3</sup> /hr)	2.8 psi @ 15 gpm (0.19 bar @ 3.4 m <sup>3</sup> /hr)	5 psi @ 25 gpm (0.37 bar @ 5.7 m <sup>3</sup> /hr)	3.4 psi @ 40 gpm (0.23 bar @ 9.1 m <sup>3</sup> /hr)	6.5 psi @ 50 gpm (0.45 bar @ 11.3 m <sup>3</sup> /hr)
<b>Maximum Operating Pressure</b>	150 psi (10 bar)	150 psi (10 bar)	150 psi (10 bar)	150 psi (10 bar)	150 psi (10 bar)
<b>Meter Connections</b>	Available in NL bronze and engineered polymer to fit spud thread bore diameter sizes:				
	5/8 in. (DN 15 mm)	3/4 in. (DN 15 mm)	3/4 in. (DN 20 mm)	1 in. (DN 25 mm)	1 in. (DN 25 mm)

### M25 Polymer

Model	Model 25 Polymer	Model 25 Polymer	Model 25 Polymer
<b>Size Designation</b>	<b>5/8 in.</b>	<b>5/8 × 3/4 in.</b>	<b>3/4 in.</b>
<b>Typical Operating Range (100% ± 1.5%)</b>	1/2...25 gpm (0.11...5.7 m <sup>3</sup> /hr)	1/2...25 gpm (0.11...5.7 m <sup>3</sup> /hr)	1/2...30 gpm (1.0...6.8 m <sup>3</sup> /hr)
<b>Maximum Continuous Operation</b>	15 gpm (3.4 m <sup>3</sup> /hr)	15 gpm (3.4 m <sup>3</sup> /hr)	15 gpm (3.4 m <sup>3</sup> /hr)
<b>Pressure Loss at Maximum Continuous Operation</b>	4.2 psi at 15 gpm (0.29 bar at 3.4 m <sup>3</sup> /hr)	2.8 psi at 15 gpm (0.19 bar at 3.4 m <sup>3</sup> /hr)	2.8 psi at 15 gpm (0.19 bar at 3.4 m <sup>3</sup> /hr)
<b>Maximum Operating Pressure</b>	150 psi (10 bar)	150 psi (10 bar)	150 psi (10 bar)
<b>Meter Connections</b>	Available in NL bronze and engineered polymer to fit spud thread bore diameter sizes:		
	5/8 in. (DN 15 mm)	3/4 in. (DN 15 mm)	3/4 in. (DN 15 mm)

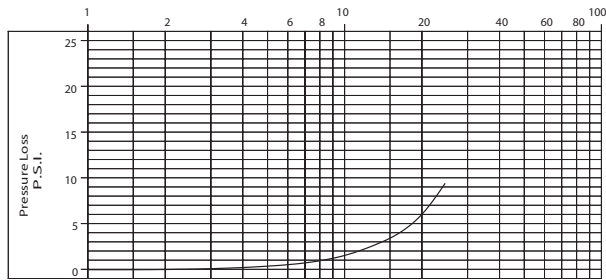
### M120, M170 Bronze

Model	Model 120 Bronze	Model 170 Bronze
<b>Size Designation</b>	<b>1-1/2 in.</b>	<b>2 in.</b>
<b>Typical Operating Range (100% ± 1.5%)</b>	2.5...120 gpm (0.57...27 m <sup>3</sup> /hr)	2.5...170 gpm (0.57...39 m <sup>3</sup> /hr)
<b>Maximum Continuous Operation</b>	80 gpm (18 m <sup>3</sup> /hr)	100 gpm (23 m <sup>3</sup> /hr)
<b>Pressure Loss at Maximum Continuous Operation</b>	4.8 psi at 80 gpm (0.33 bar at 18 m <sup>3</sup> /hr)	3.3 psi at 100 gpm (0.23 bar at 23 m <sup>3</sup> /hr)
<b>Maximum Operating Pressure</b>	150 psi (10 bar)	150 psi (10 bar)
<b>Meter Connections</b>	1-1/2 in. AWWA two-bolt elliptical flange, drilled or 1-1/2...11-1/2 NPT internal pipe threads	2 in. AWWA two-bolt elliptical flange, drilled or 2...11-1/2 NPT internal pipe threads
<b>Test Plugs</b>	Optional 1 in. NPT test plug (TP)	Optional 1 in. NPT test plug (TP)

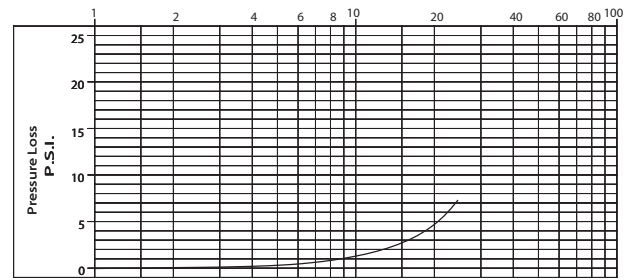
## PRESSURE LOSS CHARTS

### Bronze Meters, Sizes 5/8... 1 inch

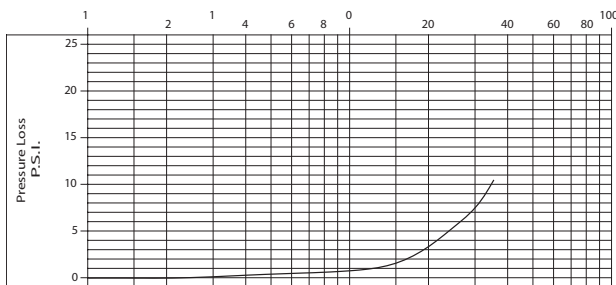
Rate of Flow in Gallons Per Minute



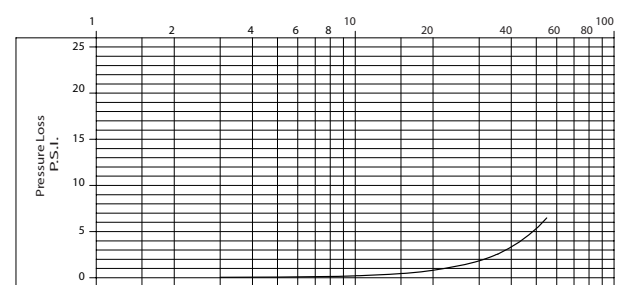
**Model 25 5/8 in.**



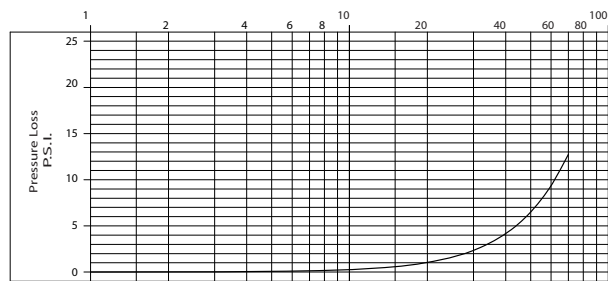
**Model 25 5/8 x 3/4 in.**



**Model 35 3/4 in.**



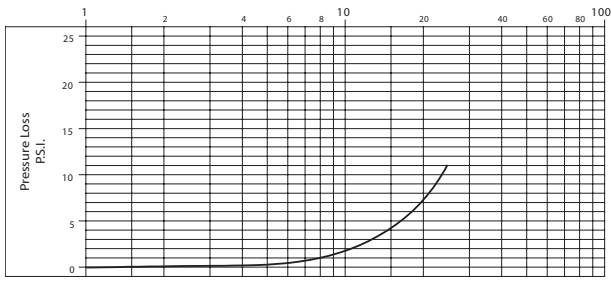
**Model 55 1 in.**



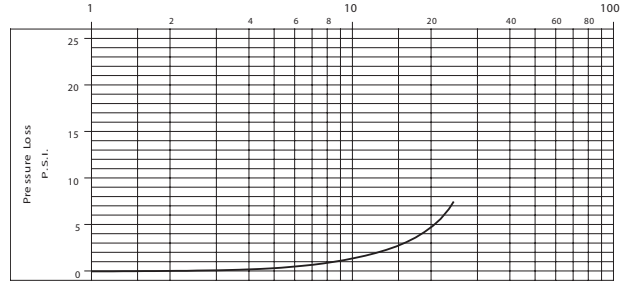
**Model 70 1 in.**

**Polymer Meters, Sizes 5/8...3/4 inch**

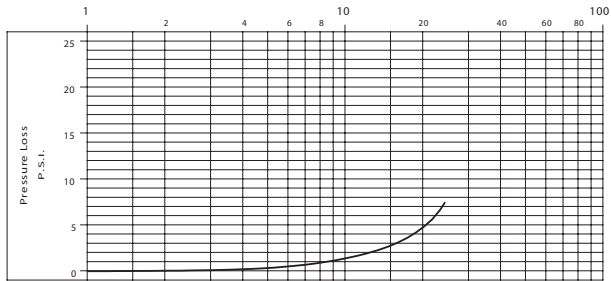
Rate of Flow in Gallons Per Minute



**Model 25 Polymer 5/8 in.**



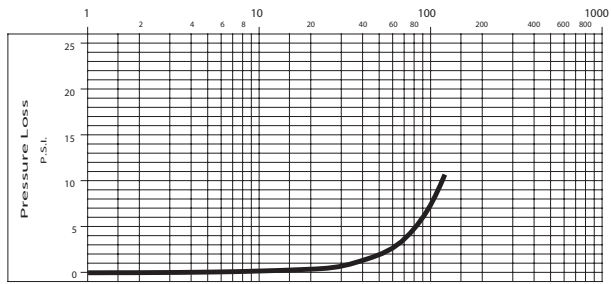
**Model 25 Polymer 5/8 x 3/4 in.**



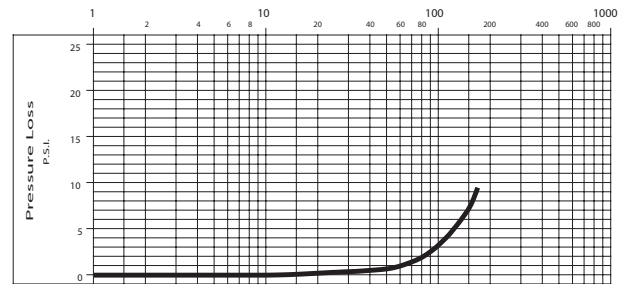
**Model 25 Polymer 3/4 in.**

**Bronze Meters, Sizes 1-1/2 and 2 inch**

Rate of Flow in Gallons Per Minute



**Model 120 1-1/2 in.**



**Model 170 2 in.**

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