



Grinnell

A Tyco International Company

Technical Services 866-500-4768 | +1-401-781-8220
www.grinnell.com



GRINNELL MODEL CB800

CIRCUIT BALANCING VALVE INSTALLATION & SETTING HANDBOOK

AUGUST 2011

IH-4500

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General Description

FEATURES

The GRINNELL CB800 Circuit Balancing Valves are designed for installation in hot water heating and chilled water air conditioning systems to achieve a hydronic balance between the various circuits of the system.

- One valve serves five functions:
 - Presetting
 - Measuring
 - Isolating
 - Filling
 - Draining
- Y-Pattern globe design provides minimum pressure loss and precise throttling
- Measuring channel around the stem assembly to the test ports maximizes the accuracy of the test pressures
- Infinitely adjustable presetting
- Exact measurement of the pressure loss and flow by means of the pressure test ports
- Location of test ports on the same side for easy access
- Dezincification brass and bronze components
- Minimum of 70 unique hand-wheel positions
- Rated for 300 psi at 300°F (20,7) bar at 150°C for the Groove x Groove
- Built-in hidden memory stop ensures return to balanced position after shutoff
- Enclosed hand-wheel lock cap prevents hand-wheel movement
- Self-sealing pressure/temperature ports use standard insertion probes to eliminate additional components
- Optional hose connection with ball valve for either test port

MATERIAL SPECIFICATIONS

Body

- Sizes 1/2 inch (DN15) to 2 inch (DN50) solder or NPT threaded connection brass resistant to dezincification (DZR)
- Sizes 2-1/2 inch (DN16) to 12 inch (DN300), grooved or flanged connection Cast Iron conforming to ASME/ANSI B16.5

Valve Stem & Disc

Brass Resistant to Dezincification (DZR)

O Ring

EPDM

Hand-wheel

Thermoplastic

⚠ WARNING

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Material and gasket selection should be verified for compatibility with the specific application. Always read and understand the installation instructions.

The GRINNELL Model CB800 Balancing Valve described herein must be installed and maintained in compliance with this document, in addition to the standards of any other authorities having jurisdiction. Failure to do so may result in serious personal injury or impair the performance of these devices.

Owners are responsible for maintaining their mechanical system and devices in proper operating condition. The installing contractor or device manufacturer should be contacted with any questions.

LIMITED WARRANTY

Products manufactured by Tyco International (Tyco) under the GRINNELL brand are warranted solely to the original Buyer for ten (10) years from date of shipment by Tyco against defects in material and workmanship when paid for and properly installed and maintained under normal use and service, except for the G-MINE line of products, which are warranted solely to the original Buyer for six (6) months from date of shipment by Tyco against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco or for products and components which have been subject to misuse, improper installation or maintenance, corrosion, or other external sources of damage. Materials found by Tyco to be defective shall be either repaired or replaced, at Tyco's sole option. Tyco neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco shall not be responsible for system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

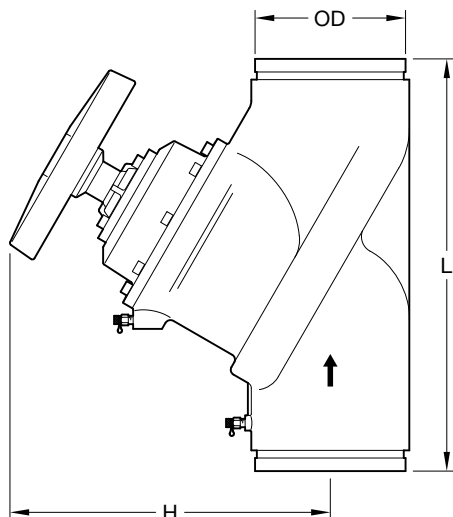
In no event shall Tyco be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether Tyco was informed about the possibility of such damages, and in no event shall Tyco's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

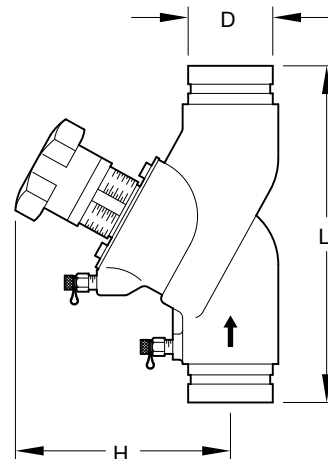
This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Dimensional Data



8 (DN200) to 12 (DN300)

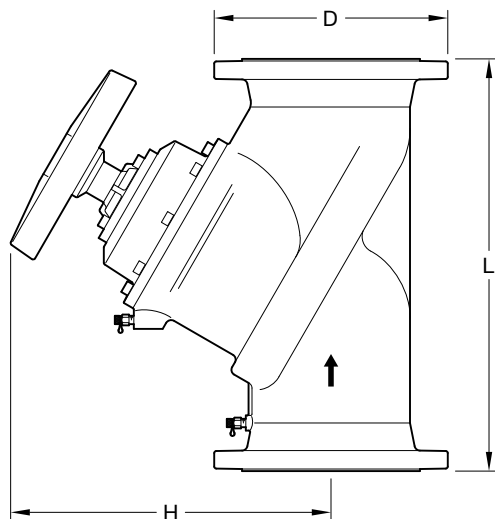


2-1/2 (DN65) to 6 (DN150)

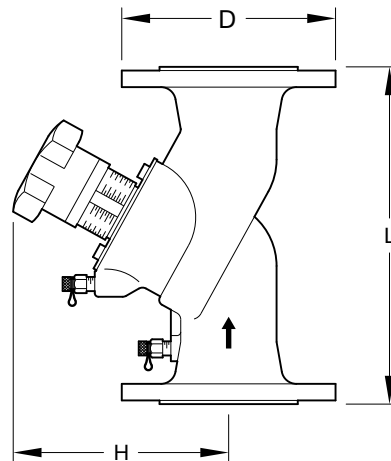
Grooved End

Nominal Pipe Size		Nominal Dimensions Inches (mm)			Approx. Weight Lbs. (kg)	Limits psi/°F (bar/°C)
ANSI Inches DN	O.D. Inches (mm)	A	B	C		
2-1/2 DN65	2.875 (73,0)	11.44 (290,6)	7.38 (187,5)	4.33 (110,0)	19.7 (8,9)	300/300 (20,7/150)
76,1 mm DN65	3.000 (76,1)	11.44 (290,6)	7.38 (187,5)	4.33 (110,0)	19.7 (8,9)	300/300 (20,7/150)
3 DN80	3.500 (88,9)	12.25 (311,2)	8.00 (203,2)	4.33 (110,0)	27.8 (12,6)	300/300 (20,7/150)
4 DN100	4.500 (114,3)	13.75 (349,3)	9.44 (239,8)	6.30 (160,0)	45.3 (20,6)	300/300 (20,7/150)
139,7 mm DN125	5.500 (139,7)	15.75 (400,0)	11.13 (282,7)	6.30 (160,0)	70.0 (31,8)	300/300 (20,7/150)
5 DN125	5.563 (141,3)	15.75 (400,0)	11.13 (282,7)	6.30 (160,0)	70.0 (31,8)	300/300 (20,7/150)
165,1 mm DN150	6.500 (165,3)	18.88 (479,6)	11.25 (285,8)	6.30 (160,0)	95.7 (43,5)	300/300 (20,7/150)
6 DN150	6.625 (168,3)	18.88 (479,6)	11.25 (285,8)	6.30 (160,0)	95.7 (43,5)	300/300 (20,7/150)
8 DN200	8.625 (219,1)	23.63 (600,2)	18.44 (468,4)	11.80 (300,0)	255.2 (116,0)	300/300 (20,7/150)
10 DN250	10.750 (273,1)	28.75 (730,3)	18.88 (479,6)	11.80 (300,0)	377.3 (171,5)	300/300 (20,7/150)
12 DN300	12.750 (323,9)	33.44 (849,4)	20.25 (514,4)	11.80 (300,0)	520.3 (236,5)	300/300 (20,7/150)

Dimensional Data



8 (DN200) to 12 (DN300)



2-1/2 (DN65) to 6 (DN150)

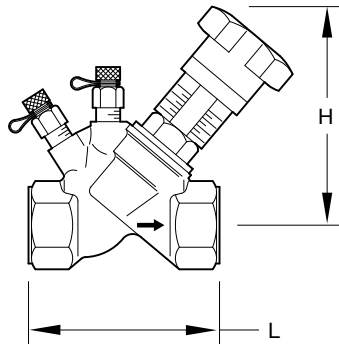
Flanged End

Nominal Pipe Size ANSI Inches DN	Nominal Dimensions Inches (mm)				Approx. Weight Lbs. (kg)	Limits psi/°F (bar/°C)
	A	B	C	D		
2-1/2 DN65	11.44 (290,6)	7.38 (187,5)	4.33 (110,0)	7.25 (184,2)	31.7 (14,4)	235/300 (16/150)
76,1 mm DN65	11.44 (290,6)	7.38 (187,5)	4.33 (110,0)	7.25 (184,2)	31.7 (14,4)	235/300 (16/150)
3 DN80	12.25 (311,2)	8.00 (203,2)	4.33 (110,0)	7.88 (200,2)	39.8 (18,0)	235/300 (16/150)
4 DN100	13.75 (349,3)	9.50 (241,3)	6.30 (160,0)	8.69 (220,7)	61.3 (27,8)	235/300 (16/150)
139,7 mm DN125	15.75 (400,1)	11.13 (282,7)	6.30 (160,0)	9.88 (250,9)	89.9 (40,9)	235/300 (16/150)
5 DN125	15.75 (400,1)	11.13 (282,7)	6.30 (160,0)	9.88 (250,9)	89.9 (40,9)	235/300 (16/150)
165,1 mm DN150	18.88 (479,6)	11.25 (285,8)	6.30 (160,0)	11.25 (285,8)	113.9 (51,8)	235/300 (16/150)
6 DN150	18.88 (479,6)	11.25 (285,8)	6.30 (160,0)	11.25 (285,8)	113.9 (51,8)	235/300 (16/150)
8 DN200	23.63 (600,2)	18.38 (466,9)	11.80 (300,0)	13.38 (339,9)	361.9 (164,5)	235/300 (16/150)
10 DN250	28.75 (730,3)	18.94 (481,1)	11.80 (300,0)	15.94 (404,9)	431.2 (196,0)	235/300 (16/150)
12 DN300	33.50 (850,9)	20.25 (514,4)	11.80 (300,0)	18.13 (460,5)	581.9 (264,5)	235/300 (16/150)

Flanges are available drilled for ANSI B16.1 (Class 125), B16.5 (Class 150), and B16.42 (Class 250) or PN16/10. Specify when ordering.

Dimensional Data

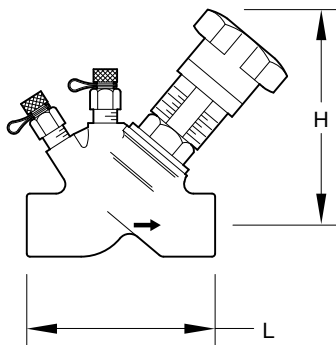
Threaded



Nominal Pipe Size ANSI Inches DN	Nominal Dimensions Inches (mm)			Approx. Weight Lbs. (kg)	Limits psi/°F (bar/°C)
	A	B	C		
1/2 DN15	3.13 (79,5)	4.49 (114,0)	2.75 (70,0)	1.6 (0,7)	235/300 (16/150)
3/4 DN20	3.31 (84,1)	4.56 (115,8)	2.75 (70,0)	1.8 (0,8)	235/300 (16/150)
1 DN25	3.84 (97,5)	4.69 (119,1)	2.75 (70,0)	2.5 (1,1)	235/300 (16/150)
1-1/4 DN32	4.38 (111,3)	5.38 (136,7)	2.75 (70,0)	3.0 (1,4)	235/300 (16/150)
1-1/2 DN40	4.75 (120,7)	5.44 (138,2)	2.75 (70,0)	4.0 (1,8)	235/300 (16/150)
2 DN50	5.94 (150,9)	5.81 (147,6)	2.75 (70,0)	6.0 (2,7)	235/300 (16/150)

Female NPT Thread Connection

Solder



Nominal Pipe Size ANSI Inches DN	Nominal Dimensions Inches (mm)			Approx. Weight Lbs. (kg)	Limits psi/°F (bar/°C)
	A	B	C		
1/2 DN15	3.50 (88,9)	4.50 (114,3)	2.75 (70,0)	1.6 (0,7)	235/300 (16/150)
3/4 DN20	3.81 (96,8)	4.56 (115,8)	2.75 (70,0)	1.4 (0,6)	235/300 (16/150)
1 DN25	4.31 (109,5)	4.69 (119,1)	2.75 (70,0)	1.8 (0,8)	235/300 (16/150)
1-1/4 DN32	5.06 (128,5)	5.38 (136,7)	2.75 (70,0)	3.1 (1,4)	235/300 (16/150)
1-1/2 DN40	5.56 (141,2)	5.44 (138,2)	2.75 (70,0)	3.8 (1,7)	235/300 (16/150)
2 DN50	6.56 (166,6)	5.81 (147,6)	2.75 (70,0)	5.2 (2,4)	235/300 (16/150)

Female Solder Connection

Installation Instructions

Valve Sizing

All Balancing Valves are sized to perform in a normal operation range between 25% and 100% of the full open position, at a minimum differential pressure between 1 to 3 ft. (0,3 to 0,9 m) of water. It is recommended that for improved accuracy, the valve is set to open 70%+.

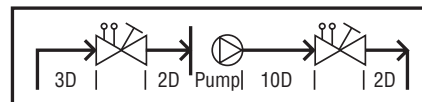
When maximum flow is known but a pressure drop through the balancing valve is unknown, select a balancing valve for a maximum pressure drop of 2 ft. water (0,0057 bar) in the full open position as shown in Table A.

Accurate flow measurement requires that the velocity distribution near the balancing valve stays constant, regardless of the total flow through the pipe. Fittings, such as elbows and tees, disturb the normal flow profile, which is established through straight pipe. Pumps create even greater disturbances. Failure to allow water flows around fittings and pumps to normalize can affect measuring accuracy by as much as 20% when the valve is in the fully open position. Minimum lengths (diameters, D) of straight pipe before and after the balancing valve prevent these errors. Valves are designed for vertical, horizontal or inclined installation.

Flow		Size		Connection
GPM	L / h	Inches	DN	
0.5 - 4.1	(100 - 1000)	1/2	(15)	solder / thread
4.1 - 6.1	(1.0k - 1.5k)	3/4	(20)	solder / thread
6.1 - 9.2	(1.5k - 2.3k)	1	(25)	solder / thread
9.2 - 20	(2.3k - 5.0k)	1-1/4	(32)	solder / thread
20 - 29	(5.0k - 7.2k)	1-1/2	(40)	solder / thread
29 - 40	(7.2k - 10k)	2	(50)	solder / thread
40 - 102	(10k - 25k)	2-1/2	(65)	flanged / grooved
102 - 125	(25k - 31k)	3	(80)	flanged / grooved
125 - 210	(31k - 50k)	4	(100)	flanged / grooved
210 - 300	(50k - 76k)	5	(125)	flanged / grooved
300 - 430	(76k - 108k)	6	(150)	flanged / grooved
430 - 760	(108k - 190k)	8	(200)	flanged / grooved
760 - 1350	(190k - 340k)	10	(250)	flanged / grooved
1350 -1500	(340k - 377k)	12	(300)	flanged / grooved

Table A

Minimum Pipe Diameters from Fittings



Installation

The valve may be installed in the supply or return line, in the vertical or horizontal position, with the hand-wheel up, down or on the side. Install the valve with the flow in the same direction as the arrow cast in the body. Install with a minimum of 3D (3 x nominal pipe diameter) of straight pipe in the upstream side.

Repositioning the Hand-Wheel

Depending on the position of the valve in the system, it may be desirable to move the hand-wheel and adjustment scales to make it easier to read.

1. Ensure the valve is closed and the adjustment scale is set at 0.
2. Use a small screwdriver and gently pry the cover plug out of the hand-wheel.
3. Use a 12mm socket to remove the screw.
4. Gently pull the hand-wheel up and remove it from the valve spindle.
5. Reposition the hand-wheel so that the adjustment scale is visible and slide the hand-wheel down the spindle.
6. Replace the screw and tighten.
7. Replace the Allen screw and tighten.
8. Replace the cover plug.

Installation Instructions

Presetting 1/2 Inch to 6 Inch (DN15 to DN150) Valves

The required preset value can be obtained by reference to the Pressure Loss / Presetting Charts for the appropriate size of the valve. Following the steps below, adjust the basic and fine adjustment scale on the hand-wheel to match the selected setting.

1. The preset value of the valve is adjusted with hand-wheel.
2. Turn the hand-wheel so that the arrow on the slide indicator matches the basic adjustment value. One complete turn of the hand-wheel adjusts the indicator one full position. The fine setting is displayed in the scale under the hand-wheel and indicates 1/10th of a turn of the hand-wheel.
3. With the valve open to the preset value, use a small screwdriver and gently pry the cover plug out of the hand-wheel. Insert a 3 mm Allen key (supplied) into the Allen screw (see Diagram B) and turn clockwise until tight. This will lock the hand-wheel may still be turned to the closed position. Replace the cover plug.

For presetting and fine adjustment of the flow volume, use the GRINNELL Model MC2 flow computing hand held Differential Measuring Computer.

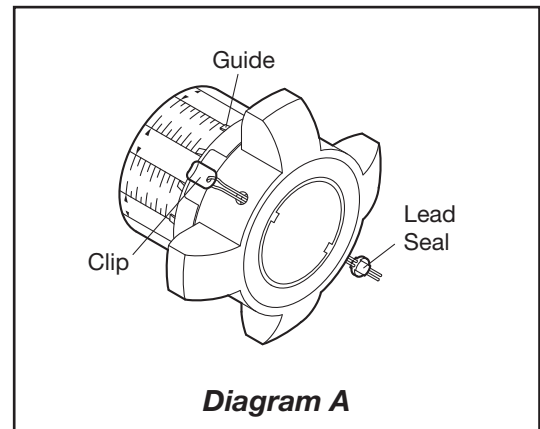
Protecting the Setting

A sealing wire may be threaded through the hole in the hand-wheel (see Diagram A) and lead seal fixed to prevent tampering of the setting.

Locking the Hand-Wheel

The hand-wheel can be locked in any position.

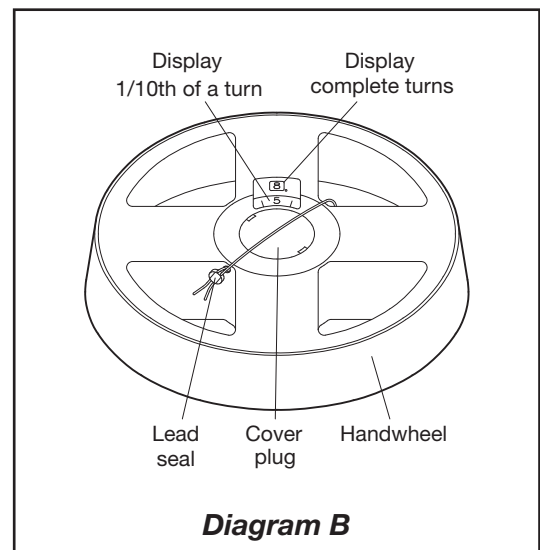
1. Slide the enclosed clip into the cutout in the hand-wheel between the guides (see Diagram C), making sure it locates into the sliding indicator.
2. Attach the lead seal wire through the hole in the clip then through the hole in the side of the hand-wheel (see Diagram A).
3. Ensure the sealing wire is fitted tightly, then crimp the seal.



Protecting the Setting

To prevent tampering, the hand-wheel can be locked in any position (Diagram B).

1. Attach the lead seal wire through the hole in the side of the hand-wheel.
2. Ensure the sealing wire is fitted tightly.
3. Crimp the seal.



Installation Instructions

Presetting 8 Inch to 12 Inch (DN200 to DN300) Valves

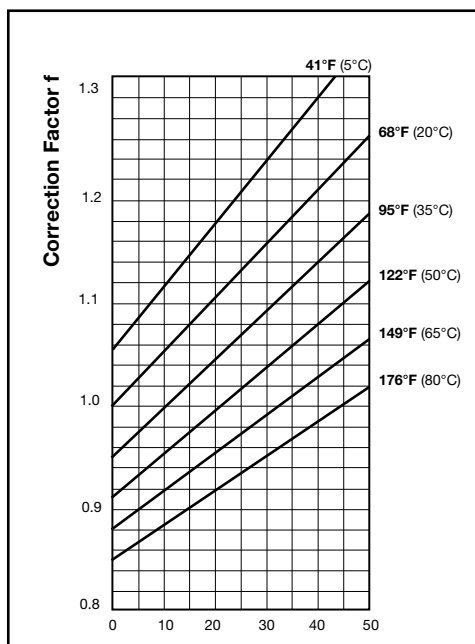
The required preset value can be obtained by reference to the flow chart for the appropriate size of the valve. Following the steps below, adjust the basic and fine adjustment scale on the hand-wheel to match the selected setting.

1. The preset value of the valve is adjusted with hand-wheel.
2. The outer displays indicates the valve setting scale from 0 to 12. The inner display indicates the valve setting scale in 1/10th of a turn of the hand-wheel.
3. With the valve open to the preset value, use a small screwdriver and gently pry the cover plug out of the hand-wheel. Using a 3/8 inch screwdriver turn the inner adjustment stem clockwise until tight. The hand-wheel may still be turned to the closed position. Replace the cover plug.

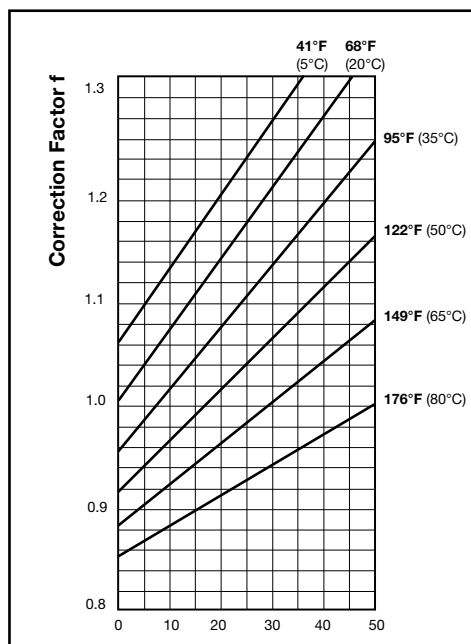
For presetting and fine adjustment of the flow volume, use the GRINNELL Model MC2 flow computing hand held Differential Measuring Computer.

Correction Factors for Water and Glycol Mixtures

When antifreeze is added to the heating water, the pressure loss in the chart must be multiplied by the correction factor f .



Weight proportion
of Ethylene Glycol [%]

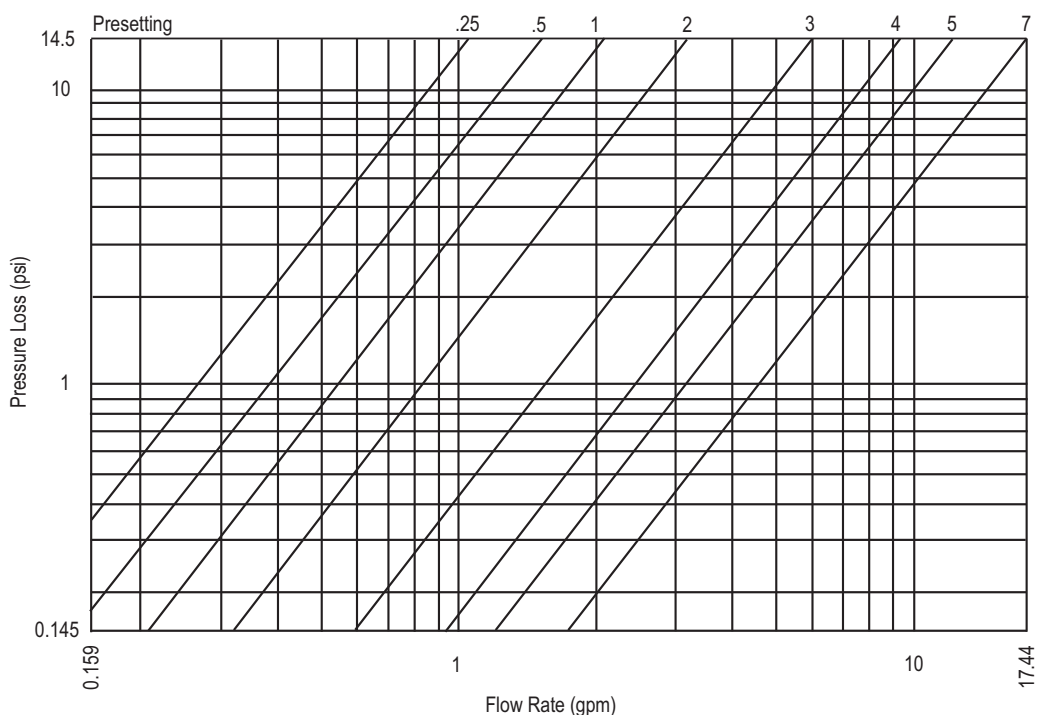


Weight proportion
of Ethylene Glycol [%]

Pressure Loss / Presetting Charts

Thread or Solder
1/2 Inch (DN15)

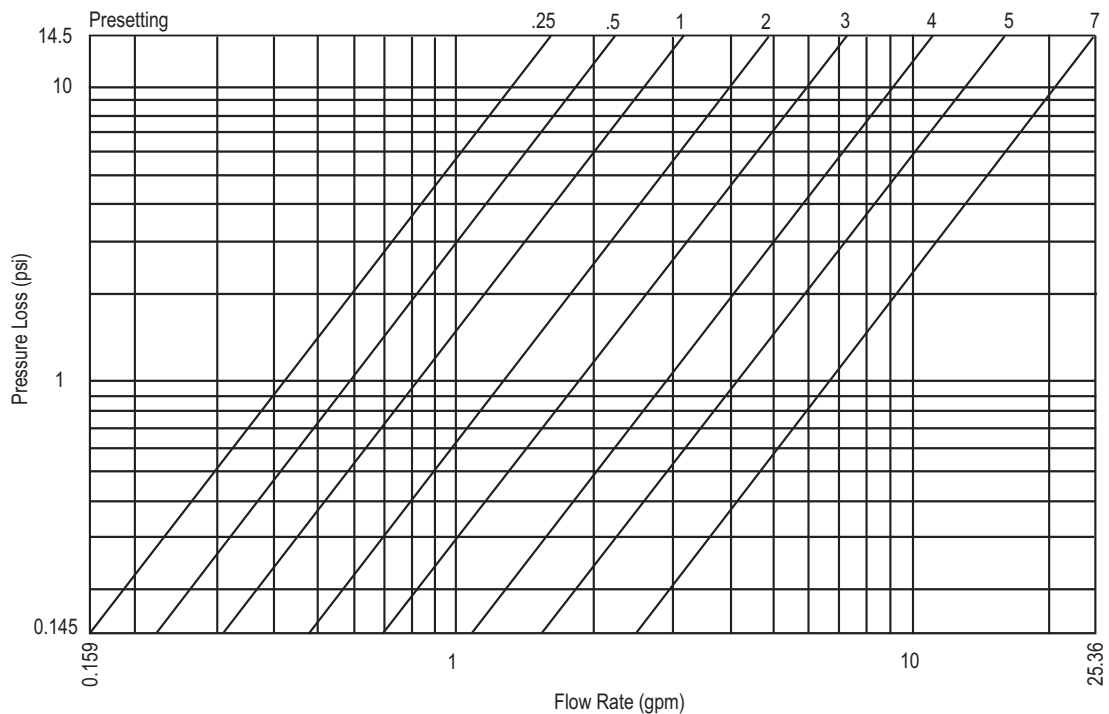
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.25	0.27	2.9	1.48	5.1	3.22
0.50	0.40	3.0	1.56	5.2	3.30
0.75	0.47	3.1	1.64	5.3	3.40
1.0	0.53	3.2	1.72	5.4	3.48
1.1	0.56	3.3	1.80	5.5	3.56
1.2	0.58	3.4	1.88	5.6	3.64
1.3	0.60	3.5	1.98	5.7	3.72
1.4	0.64	3.6	2.06	5.8	3.80
1.5	0.66	3.7	2.14	5.9	3.88
1.6	0.70	3.8	2.22	6.0	3.95
1.7	0.73	3.9	2.30	6.1	4.03
1.8	0.77	4.0	2.38	6.2	4.12
1.9	0.80	4.1	2.47	6.3	4.20
2.0	0.84	4.2	2.53	6.4	4.27
2.1	0.88	4.3	2.60	6.5	4.33
2.2	0.93	4.4	2.69	6.6	4.37
2.3	0.99	4.5	2.77	6.7	4.41
2.4	1.06	4.6	2.84	6.8	4.44
2.5	1.14	4.7	2.92	6.9	4.48
2.6	1.22	4.8	2.99	7.0	4.51
2.7	1.30	4.9	3.06		
2.8	1.40	5.0	3.14		



Pressure Loss / Presetting Charts

Thread or Solder
3/4 Inch (DN20)

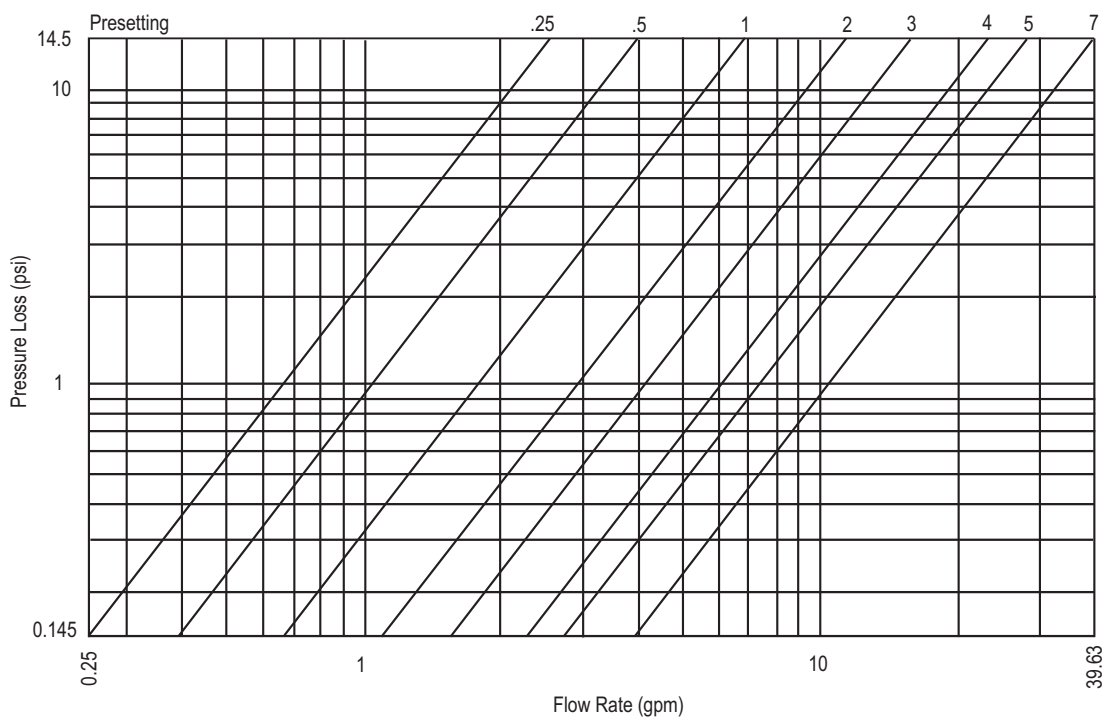
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.25	0.41	2.9	1.80	5.1	4.40
0.50	0.58	3.0	1.86	5.2	4.53
0.75	0.73	3.1	1.93	5.3	4.67
1.0	0.84	3.2	2.02	5.4	4.83
1.1	0.88	3.3	2.12	5.5	4.97
1.2	0.94	3.4	2.24	5.6	5.12
1.3	0.99	3.5	2.37	5.7	5.26
1.4	1.03	3.6	2.50	5.8	5.41
1.5	1.08	3.7	2.62	5.9	5.55
1.6	1.13	3.8	2.74	6.0	5.69
1.7	1.17	3.9	2.87	6.1	5.84
1.8	1.22	4.0	3.00	6.2	5.99
1.9	1.28	4.1	3.13	6.3	6.14
2.0	1.33	4.2	3.26	6.4	6.23
2.1	1.37	4.3	3.38	6.5	6.33
2.2	1.42	4.4	3.50	6.6	6.40
2.3	1.47	4.5	3.63	6.7	6.47
2.4	1.51	4.6	3.76	6.8	6.52
2.5	1.57	4.7	3.88	6.9	6.58
2.6	1.63	4.8	4.00	7.0	6.64
2.7	1.69	4.9	4.13		
2.8	1.74	5.0	4.24		



Pressure Loss / Presetting Charts

Thread or Solder
1 Inch (DN25)

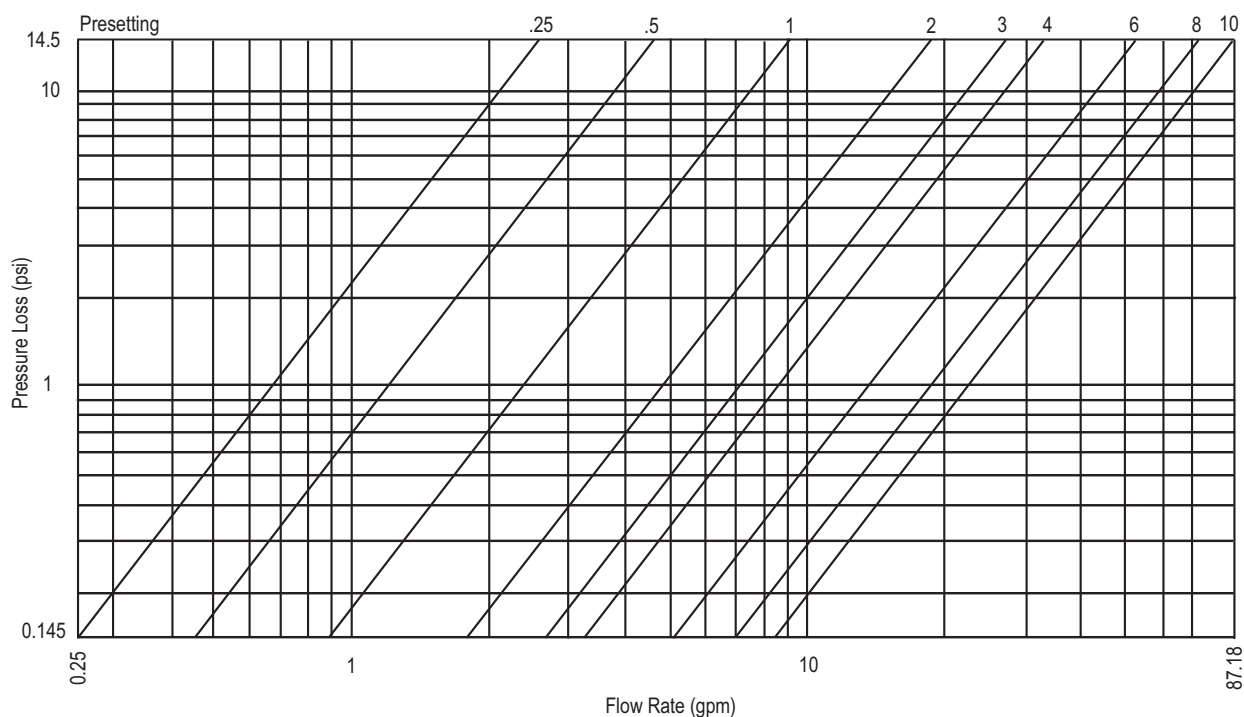
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.25	0.66	2.9	4.14	5.1	7.95
0.50	1.08	3.0	4.29	5.2	8.09
0.75	1.42	3.1	4.44	5.3	8.23
1.0	1.77	3.2	4.60	5.4	8.37
1.1	1.91	3.3	4.78	5.5	8.51
1.2	2.05	3.4	4.95	5.6	8.65
1.3	2.17	3.5	5.14	5.7	8.79
1.4	2.30	3.6	5.31	5.8	8.93
1.5	2.42	3.7	5.49	5.9	9.07
1.6	2.53	3.8	5.66	6.0	9.20
1.7	2.65	3.9	5.84	6.1	9.33
1.8	2.77	4.0	6.00	6.2	9.44
1.9	2.88	4.1	6.19	6.3	9.56
2.0	3.00	4.2	6.36	6.4	9.66
2.1	3.10	4.3	6.55	6.5	9.78
2.2	3.22	4.4	6.73	6.6	9.90
2.3	3.34	4.5	6.92	6.7	10.01
2.4	3.47	4.6	7.09	6.8	10.13
2.5	3.59	4.7	7.28	6.9	10.23
2.6	3.72	4.8	7.47	7.0	10.34
2.7	3.85	4.9	7.64		
2.8	3.99	5.0	7.81		



Pressure Loss / Presetting Charts

Thread or Solder
1-1/4 Inch (DN32)

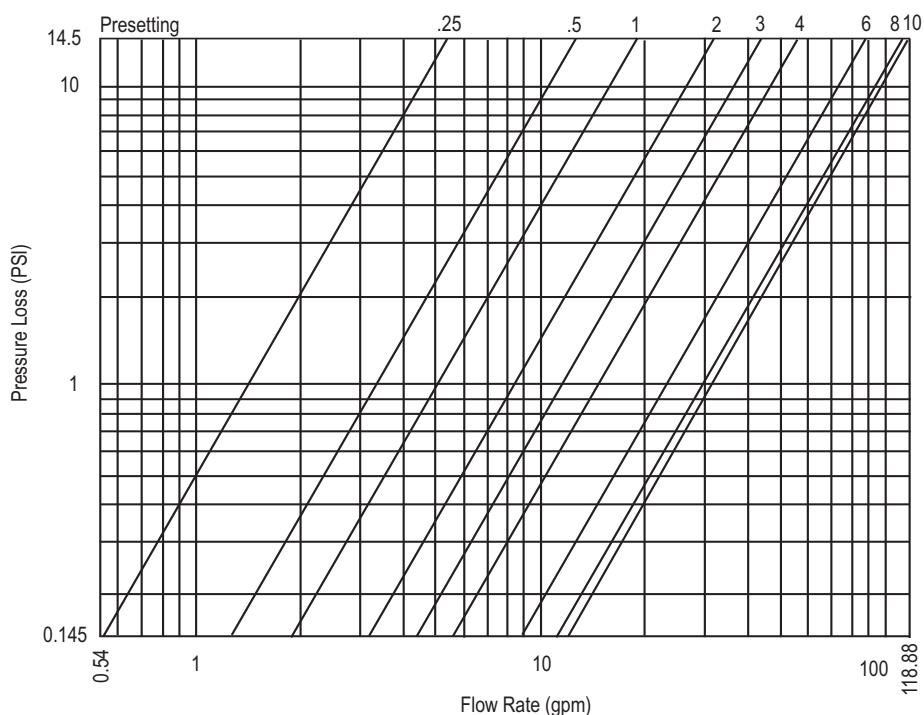
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.25	0.66	2.8	6.57	4.9	11.01	7.0	16.17	9.1	21.34
0.50	1.20	2.9	6.78	5.0	11.27	7.1	16.43	9.2	21.51
0.75	1.78	3.0	6.98	5.1	11.51	7.2	16.69	9.3	21.69
1.0	2.40	3.1	7.17	5.2	11.74	7.3	16.94	9.4	21.86
1.1	2.56	3.2	7.38	5.3	11.98	7.4	17.21	9.5	22.01
1.2	2.73	3.3	7.58	5.4	12.21	7.5	17.47	9.6	22.15
1.3	2.93	3.4	7.79	5.5	12.44	7.6	17.72	97	22.27
1.4	3.14	3.5	7.97	5.6	12.67	7.7	17.98	9.8	22.38
1.5	3.37	3.6	8.14	5.7	12.91	7.8	18.23	9.9	22.50
1.6	3.60	3.7	8.33	5.8	13.14	7.9	18.49	10.0	22.62
1.7	3.86	3.8	8.52	5.9	13.37	8.0	18.73		
1.8	4.13	3.9	8.71	6.0	13.60	8.1	18.99		
1.9	4.40	4.0	8.88	6.1	13.84	8.2	19.24		
2.0	4.67	4.1	9.13	6.2	14.09	8.3	19.50		
2.1	4.94	4.2	9.36	6.3	14.36	8.4	19.74		
2.2	5.21	4.3	9.59	6.4	14.62	8.5	19.97		
2.3	5.44	4.4	9.83	6.5	14.88	8.6	20.19		
2.4	5.67	4.5	10.06	6.6	15.12	8.7	20.34		
2.5	5.91	4.6	10.29	6.7	15.37	8.8	20.67		
2.6	6.10	4.7	10.52	6.8	15.64	8.9	20.91		
2.7	6.34	4.8	10.76	6.9	15.91	9.0	21.14		



Pressure Loss / Presetting Charts

Thread or Solder
1-1/2 Inch (DN40)

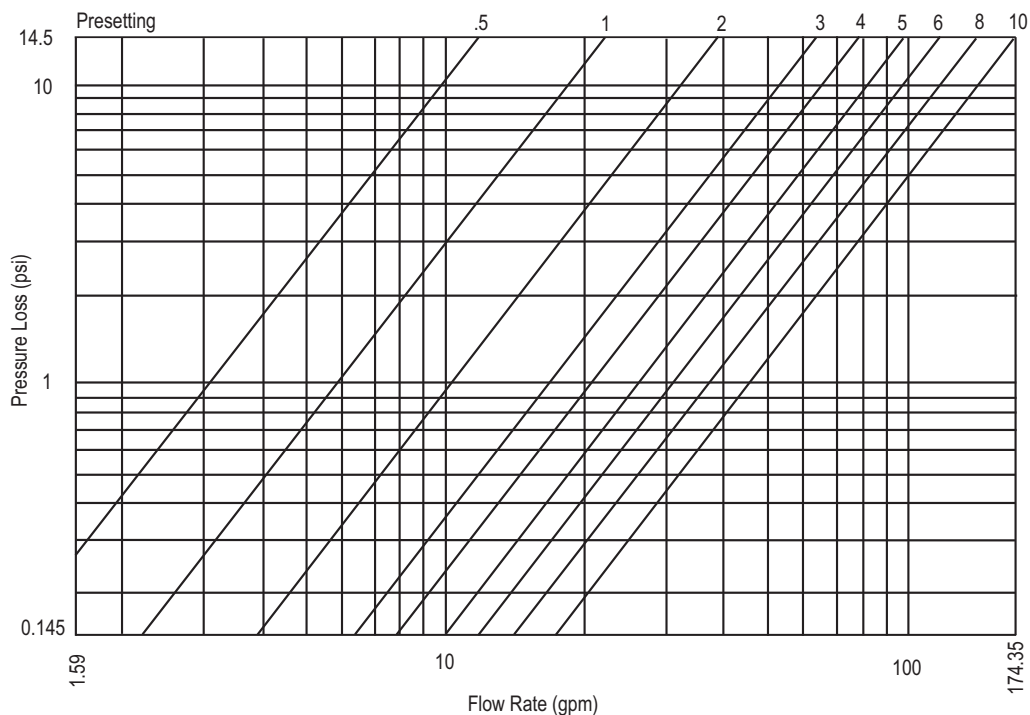
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.25	1.40	2.8	11.06	4.9	17.42	7.0	26.10	9.1	30.51
0.50	3.09	2.9	11.36	5.0	17.74	7.1	26.40	9.2	30.67
0.75	4.12	3.0	11.65	5.1	18.20	7.2	26.69	9.3	30.84
1.0	4.80	3.1	11.92	5.2	18.72	7.3	26.92	9.4	31.00
1.1	5.19	3.2	12.21	5.3	19.24	7.4	27.15	9.5	31.16
1.2	5.56	3.3	12.48	5.4	19.71	7.5	27.47	9.6	31.33
1.3	5.93	3.4	12.76	5.5	20.17	7.6	27.76	97	31.49
1.4	6.30	3.5	13.02	5.6	20.70	7.7	28.02	9.8	31.65
1.5	6.67	3.6	13.29	5.7	21.16	7.8	28.31	9.9	31.83
1.6	7.05	3.7	13.56	5.8	21.69	7.9	28.58	10.0	31.99
1.7	7.42	3.8	13.84	5.9	22.15	8.0	28.86		
1.8	7.79	3.9	14.10	6.0	22.62	8.1	29.01		
1.9	8.16	4.0	14.37	6.1	22.97	8.2	29.15		
2.0	8.53	4.1	14.71	6.2	23.31	8.3	29.30		
2.1	8.86	4.2	15.06	6.3	23.66	8.4	29.44		
2.2	9.17	4.3	15.41	6.4	24.01	8.5	29.59		
2.3	9.49	4.4	15.72	6.5	24.36	8.6	29.73		
2.4	9.80	4.5	16.05	6.6	24.71	8.7	29.88		
2.5	10.12	4.6	16.40	6.7	25.06	8.8	30.03		
2.6	10.43	4.7	16.74	6.8	25.41	8.9	30.19		
2.7	10.74	4.8	17.09	6.9	25.76	9.0	30.34		



Pressure Loss / Presetting Charts

Thread or Solder
2 Inch (DN50)

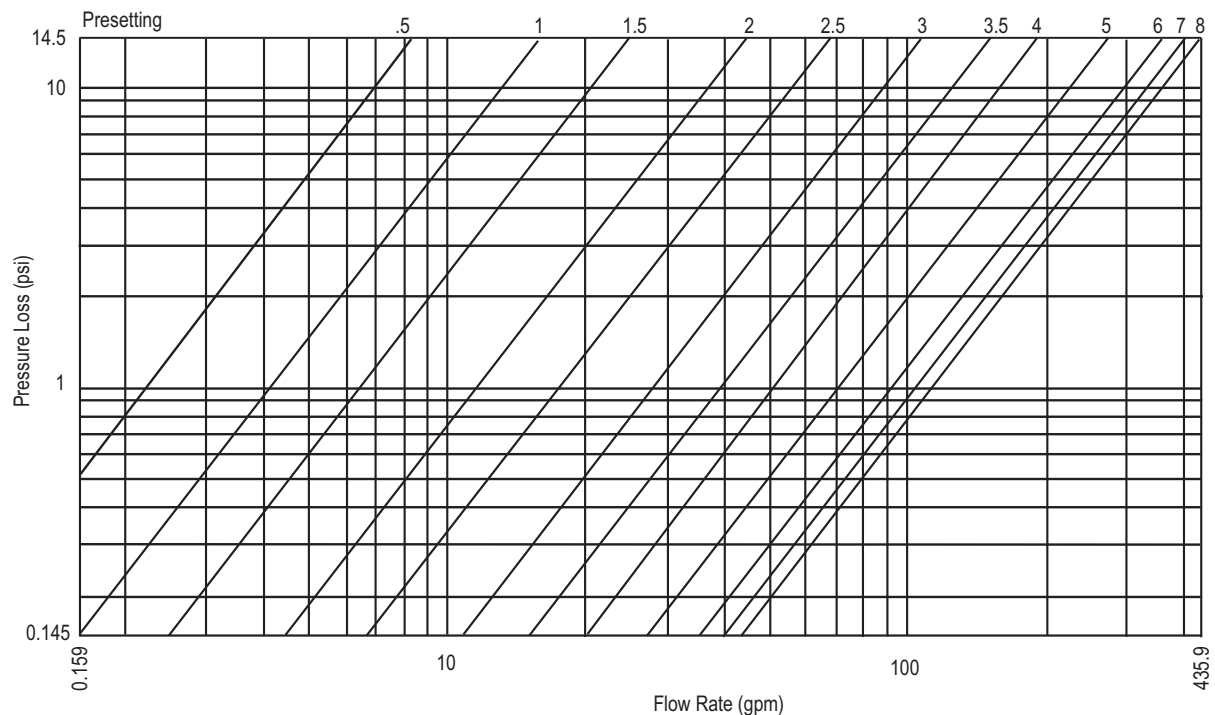
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.50	3.13	2.9	15.93	5.0	26.66	7.1	34.59	9.2	43.31
0.75	4.85	3.0	16.55	5.1	27.03	7.2	35.00	9.3	43.60
1.0	5.88	3.1	17.03	5.2	27.41	7.3	35.35	9.4	43.90
1.1	6.40	3.2	17.56	5.3	27.79	7.4	35.76	9.5	44.13
1.2	6.92	3.3	18.02	5.4	28.14	7.5	36.16	9.6	44.36
1.3	7.38	3.4	18.55	5.5	28.49	7.6	36.57	97	44.59
1.4	7.85	3.5	19.01	5.6	28.84	7.7	36.98	9.8	44.77
1.5	8.31	3.6	19.53	5.7	29.24	7.8	37.33	9.9	44.94
1.6	8.78	3.7	20.06	5.8	29.59	7.9	37.73	10.0	45.09
1.7	9.24	3.8	20.52	5.9	30.00	8.0	38.06		
1.8	9.77	3.9	21.05	6.0	30.04	8.1	38.55		
1.9	10.23	4.0	21.51	6.1	30.76	8.2	39.01		
2.0	10.66	4.1	22.09	6.2	31.16	8.3	39.42		
2.1	11.22	4.2	22.62	6.3	31.51	8.4	39.88		
2.2	11.80	4.3	23.08	6.4	31.92	8.5	40.35		
2.3	12.38	4.4	23.60	6.5	32.27	8.6	40.81		
2.4	12.97	4.5	24.07	6.6	32.62	8.7	41.28		
2.5	13.55	4.6	24.59	6.7	33.02	8.8	41.74		
2.6	14.13	4.7	25.12	6.8	33.43	8.9	42.21		
2.7	14.71	4.8	25.64	6.9	33.84	9.0	42.65		
2.8	15.35	4.9	26.16	7.0	34.20	9.1	43.02		



Pressure Loss / Presetting Charts

Grooved
2-1/2 Inch (DN65)

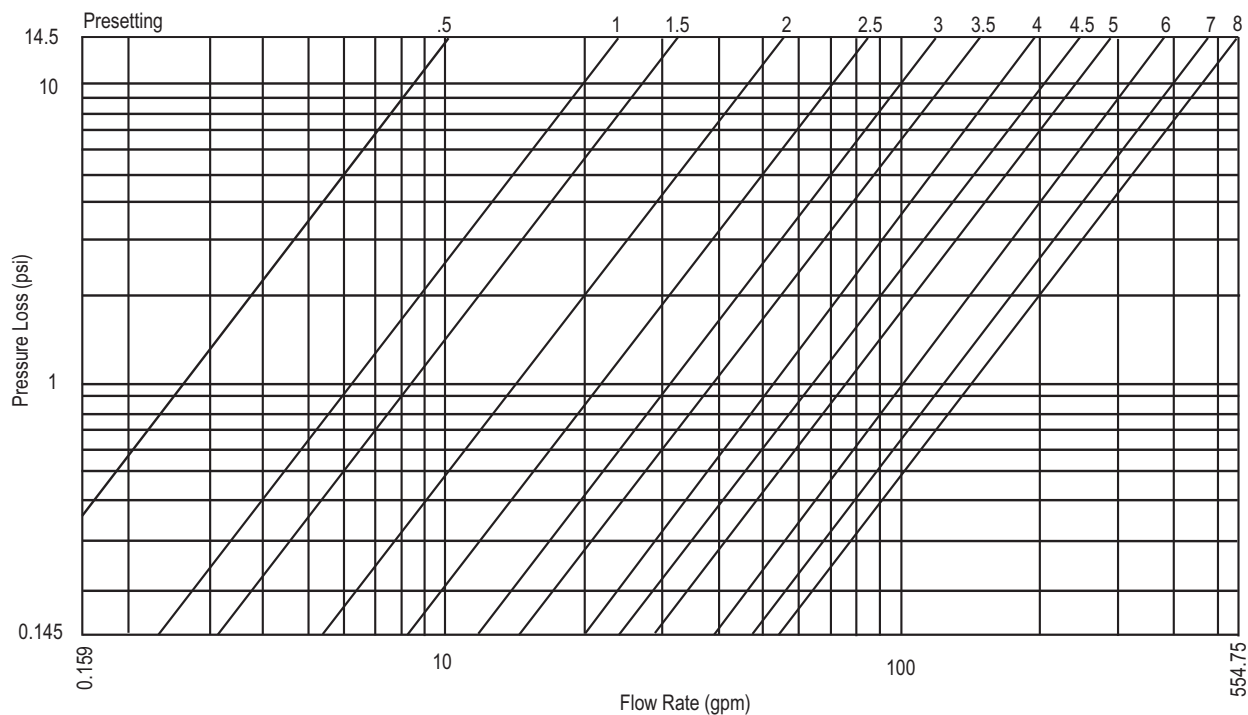
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	2.21	3.0	27.91	5.1	73.50	7.2	107.00
1.0	4.19	3.1	29.92	5.2	75.50	7.3	108.01
1.1	4.79	3.2	32.21	5.3	77.48	7.4	108.97
1.2	5.22	3.3	34.58	5.4	79.44	7.5	109.88
1.3	5.65	3.4	37.02	5.5	81.40	7.6	110.78
1.4	6.08	3.5	39.53	5.6	83.36	7.7	111.63
1.5	6.51	3.6	41.78	5.7	85.27	7.8	112.44
1.6	7.48	3.7	44.00	5.8	87.13	7.9	113.21
1.7	8.48	3.8	46.21	5.9	88.93	8.0	113.95
1.8	9.50	3.9	48.41	6.0	90.70		
1.9	10.55	4.0	50.58	6.1	92.42		
2.0	11.63	4.1	52.75	6.2	94.08		
2.1	12.73	4.2	54.88	6.3	95.71		
2.2	13.85	4.3	57.01	6.4	97.29		
2.3	15.02	4.4	59.13	6.5	98.84		
2.4	16.21	4.5	60.47	6.6	100.14		
2.5	17.44	4.6	63.31	6.7	101.40		
2.6	19.37	4.7	65.38	6.8	102.59		
2.7	21.37	4.8	67.44	6.9	103.76		
2.8	23.42	4.9	69.47	7.0	104.65		
2.9	25.52	5.0	70.93	7.1	105.97		



Pressure Loss / Presetting Charts

Grooved
3 Inch (DN80)

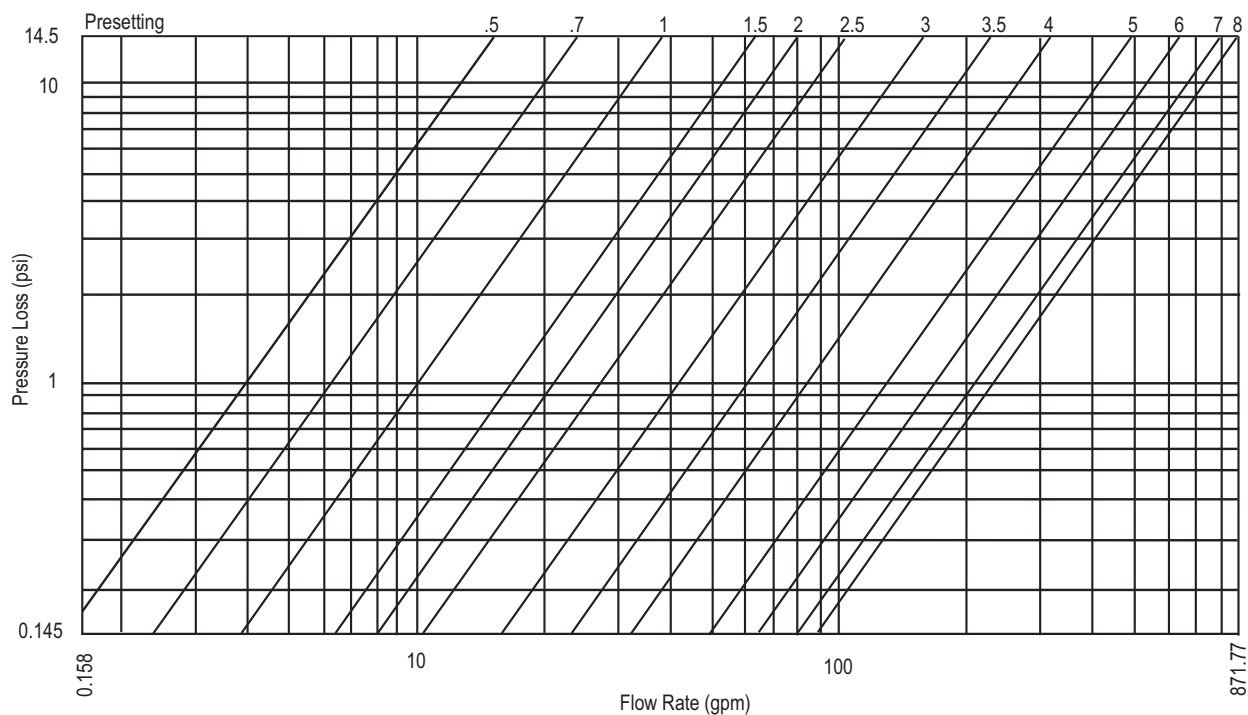
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	2.67	3.0	30.35	5.1	77.88	7.2	127.91
1.0	5.12	3.1	32.38	5.2	80.60	7.3	129.77
1.1	5.51	3.2	34.43	5.3	83.29	7.4	131.40
1.2	6.01	3.3	36.50	5.4	85.93	7.5	133.14
1.3	6.59	3.4	38.59	5.5	87.73	7.6	135.03
1.4	7.30	3.5	40.70	5.6	91.13	7.7	136.95
1.5	8.14	3.6	42.83	5.7	93.67	7.8	138.69
1.6	9.17	3.7	44.98	5.8	96.19	7.9	140.40
1.7	10.26	3.8	47.15	5.9	98.66	8.0	142.09
1.8	11.37	3.9	49.34	6.0	101.16		
1.9	12.55	4.0	52.03	6.1	103.53		
2.0	13.78	4.1	53.80	6.2	105.81		
2.1	15.06	4.2	56.06	6.3	108.29		
2.2	16.41	4.3	58.36	6.4	110.63		
2.3	17.83	4.4	60.67	6.5	113.43		
2.4	19.31	4.5	64.19	6.6	115.23		
2.5	21.69	4.6	65.37	6.7	117.49		
2.6	22.55	4.7	67.77	6.8	119.72		
2.7	24.30	4.8	70.19	6.9	121.94		
2.8	26.17	4.9	72.64	7.0	124.13		
2.9	28.19	5.0	75.12	7.1	126.03		



Pressure Loss / Presetting Charts

Grooved
4 Inch (DN100)

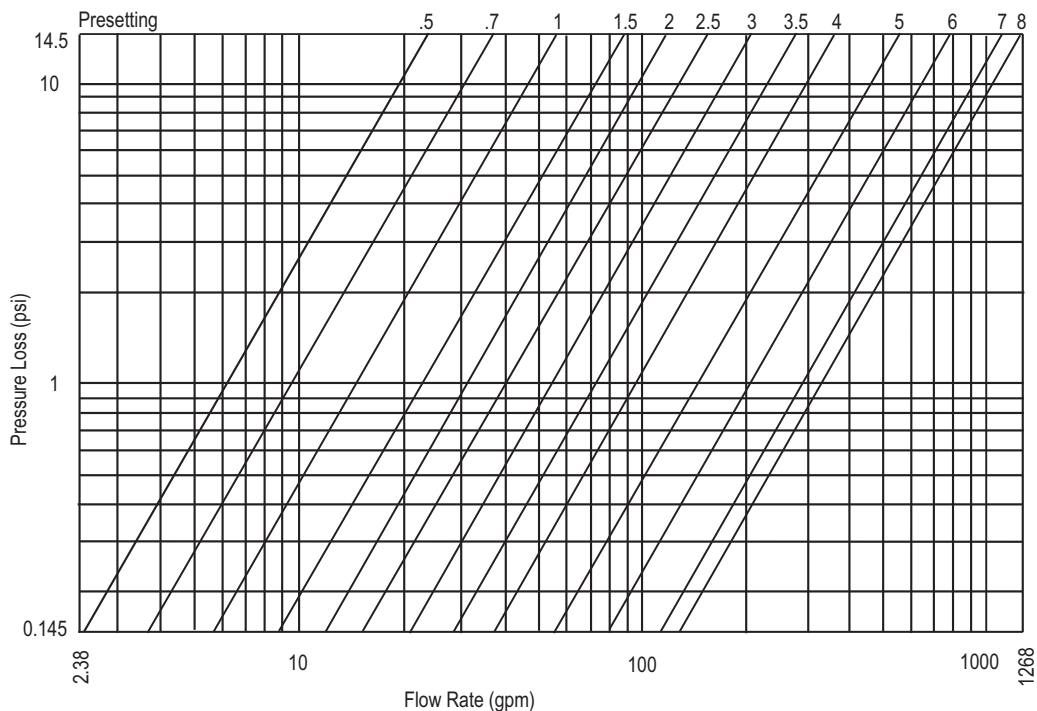
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	3.95	2.9	38.15	5.0	130.23	7.1	210.90
0.7	6.35	3.0	41.16	5.1	136.58	7.2	213.55
1.0	9.94	3.1	44.40	5.2	140.90	7.3	216.10
1.1	11.14	3.2	47.87	5.3	145.10	7.4	218.56
1.2	12.34	3.3	51.67	5.4	148.28	7.5	220.98
1.3	13.53	3.4	55.84	5.5	153.29	7.6	223.69
1.4	14.73	3.5	60.47	5.6	157.16	7.7	226.35
1.5	16.28	3.6	65.03	5.7	161.01	7.8	228.90
1.6	17.13	3.7	69.64	5.8	164.50	7.9	231.35
1.7	18.33	3.8	74.29	5.9	168.48	8.0	233.72
1.8	19.52	3.9	78.98	6.0	172.09		
1.9	20.72	4.0	83.72	6.1	176.67		
2.0	21.51	4.1	88.50	6.2	180.97		
2.1	23.12	4.2	93.34	6.3	185.00		
2.2	24.31	4.3	98.22	6.4	188.81		
2.3	25.51	4.4	103.15	6.5	190.73		
2.4	26.71	4.5	108.14	6.6	195.86		
2.5	27.91	4.6	113.22	6.7	199.14		
2.6	30.23	4.7	118.16	6.8	202.27		
2.7	32.71	4.8	122.95	6.9	205.27		
2.8	35.35	4.9	127.62	7.0	208.15		



Pressure Loss / Presetting Charts

Grooved
5 Inch (DN125)

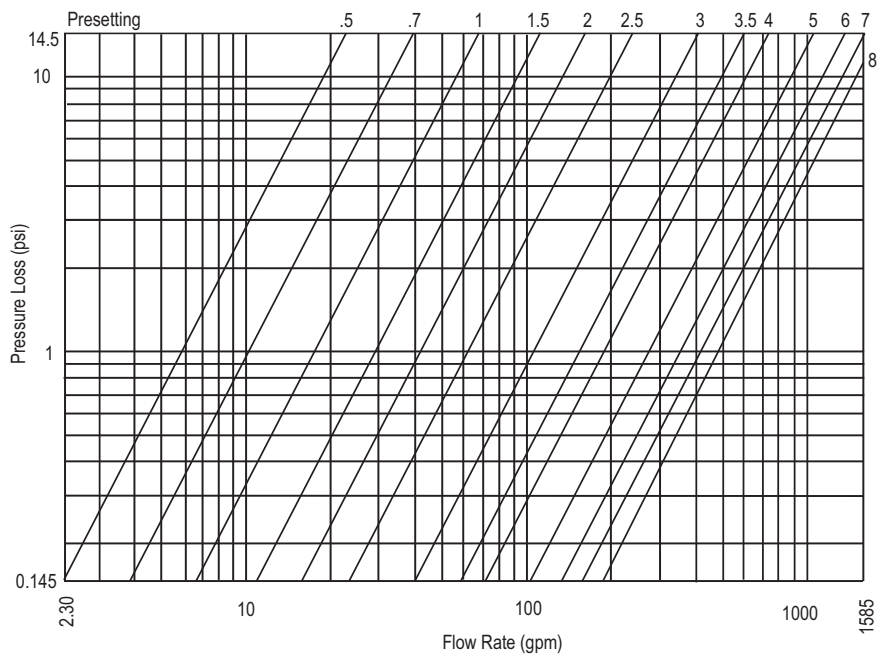
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	6.40	2.9	52.29	5.0	149.13	7.1	289.80
0.7	9.63	3.0	55.52	5.1	155.55	7.2	295.65
1.0	14.48	3.1	58.87	5.2	162.26	7.3	301.45
1.1	16.09	3.2	62.35	5.3	169.30	7.4	307.20
1.2	17.71	3.3	65.97	5.4	176.70	7.5	311.80
1.3	19.33	3.4	69.77	5.5	184.53	7.6	318.55
1.4	20.94	3.5	73.66	5.6	190.81	7.7	324.15
1.5	22.56	3.6	77.47	5.7	197.21	7.8	329.71
1.6	24.35	3.7	81.40	5.8	203.73	7.9	334.84
1.7	26.13	3.8	85.50	5.9	210.40	8.0	340.70
1.8	27.92	3.9	89.78	6.0	215.47		
1.9	29.70	4.0	94.25	6.1	224.13		
2.0	30.93	4.1	98.92	6.2	231.22		
2.1	33.27	4.2	103.84	6.3	238.49		
2.2	35.06	4.3	109.03	6.4	245.93		
2.3	36.84	4.4	114.53	6.5	253.55		
2.4	38.63	4.5	120.41	6.6	259.73		
2.5	40.41	4.6	125.77	6.7	265.86		
2.6	43.23	4.7	131.30	6.8	271.97		
2.7	46.15	4.8	137.02	6.9	277.94		
2.8	49.17	4.9	142.97	7.0	283.90		



Pressure Loss / Presetting Charts

Grooved
6 Inch (DN150)

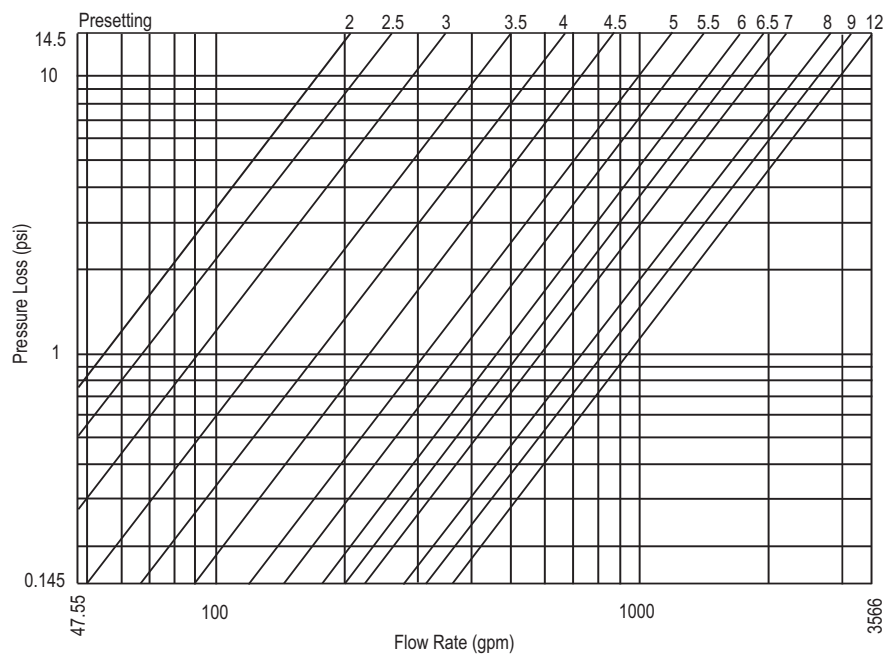
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	6.05	2.9	99.30	5.0	277.80	7.1	418.60
0.7	10.71	3.0	110.49	5.1	284.56	7.2	424.49
1.0	17.70	3.1	122.69	5.2	292.09	7.3	430.38
1.1	20.02	3.2	133.08	5.3	299.53	7.4	436.22
1.2	22.36	3.3	142.28	5.4	306.86	7.5	444.19
1.3	24.69	3.4	150.60	5.5	316.74	7.6	447.72
1.4	27.02	3.5	157.50	5.6	321.21	7.7	452.71
1.5	29.37	3.6	165.36	5.7	328.26	7.8	458.37
1.6	31.67	3.7	171.41	5.8	335.20	7.9	464.58
1.7	34.30	3.8	178.29	5.9	342.06	8.0	470.12
1.8	36.34	3.9	186.05	6.0	349.30		
1.9	38.67	4.0	194.33	6.1	355.53		
2.0	41.00	4.1	202.88	6.2	362.15		
2.1	43.17	4.2	211.35	6.3	368.70		
2.2	45.83	4.3	219.83	6.4	374.50		
2.3	49.19	4.4	228.30	6.5	379.88		
2.4	53.78	4.5	236.80	6.6	387.88		
2.5	62.70	4.6	245.09	6.7	393.42		
2.6	70.93	4.7	253.24	6.8	400.34		
2.7	79.71	4.8	260.63	6.9	406.47		
2.8	89.12	4.9	269.14	7.0	413.49		



Pressure Loss / Presetting Charts

Grooved 8 Inch (DN200)

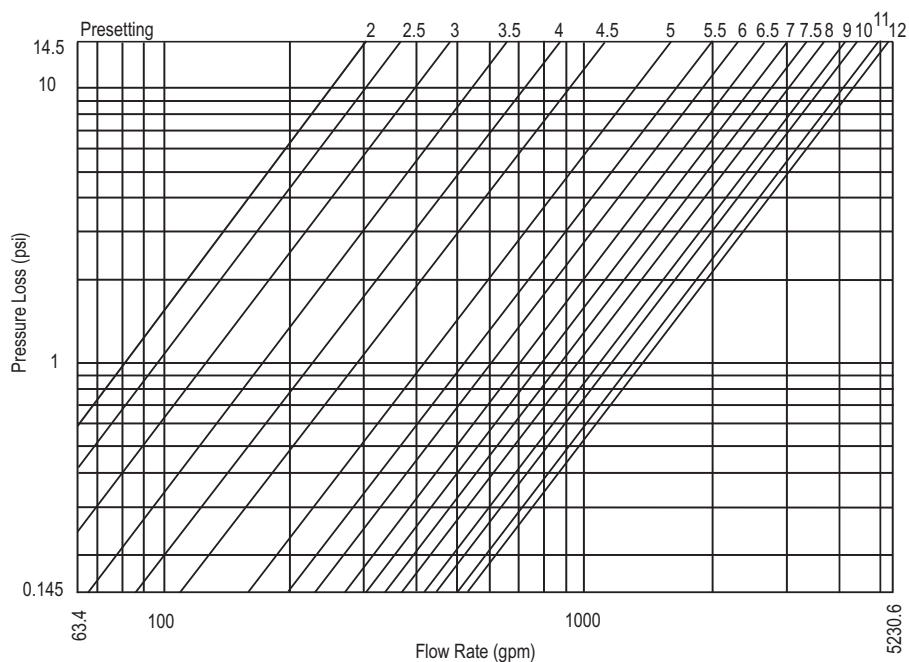
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
2.0	56.86	4.1	188.37	6.2	475.58	8.3	747.67	10.4	904.65
2.1	60.00	4.2	201.16	6.3	490.70	8.4	757.67	10.5	906.98
2.2	63.02	4.3	213.95	6.4	505.81	8.5	767.44	10.6	909.30
2.3	66.05	4.4	226.74	6.5	520.70	8.6	782.33	10.7	911.63
2.4	69.07	4.5	239.53	6.6	534.88	8.7	796.74	10.8	913.95
2.5	72.09	4.6	252.09	6.7	549.42	8.8	812.44	10.9	916.28
2.6	77.21	4.7	264.65	6.8	563.72	8.9	827.44	11.0	918.60
2.7	82.33	4.8	277.21	6.9	578.14	9.0	842.44	11.1	921.16
2.8	87.44	4.9	289.77	7.0	592.44	9.1	850.47	11.2	923.84
2.9	92.56	5.0	302.67	7.1	603.95	9.2	858.37	11.3	926.51
3.0	97.67	5.1	316.16	7.2	615.47	9.3	866.16	11.4	929.19
3.1	104.65	5.2	330.00	7.3	626.98	9.4	874.07	11.5	931.86
3.2	111.63	5.3	343.72	7.4	638.49	9.5	881.98	11.6	934.88
3.3	118.60	5.4	357.56	7.5	650.00	9.6	884.42	11.7	937.91
3.4	125.58	5.5	372.09	7.6	663.95	9.7	886.86	11.8	940.93
3.5	132.56	5.6	386.05	7.7	677.33	9.8	889.30	11.9	944.19
3.6	140.70	5.7	400.93	7.8	690.93	9.9	891.74	12.0	947.09
3.7	149.77	5.8	415.81	7.9	704.65	10.0	894.19		
3.8	158.37	5.9	430.58	8.0	718.60	10.1	896.74		
3.9	166.98	6.0	445.35	8.1	728.84	10.2	899.30		
4.0	175.58	6.1	460.47	8.2	738.14	10.3	901.86		



Pressure Loss / Presetting Charts

Grooved 10 Inch (DN250)

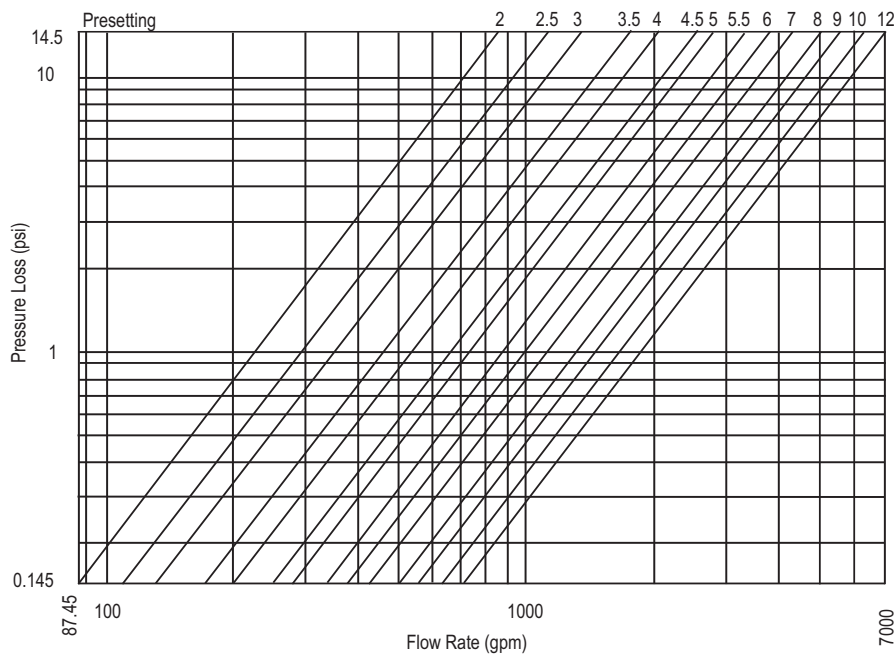
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
2.0	81.40	4.1	241.86	6.2	645.35	8.3	1011.63	10.4	1245.35
2.1	84.30	4.2	256.98	6.3	663.95	8.4	1023.26	10.5	1255.81
2.2	87.79	4.3	274.42	6.4	682.56	8.5	1034.88	10.6	1265.12
2.3	91.86	4.4	293.02	6.5	705.81	8.6	1045.35	10.7	1274.42
2.4	95.35	4.5	313.95	6.6	719.77	8.7	1054.65	10.8	1283.75
2.5	98.84	4.6	333.72	6.7	738.37	8.8	1065.12	10.9	1293.02
2.6	104.07	4.7	353.49	6.8	756.98	8.9	1075.58	11.0	1302.33
2.7	109.30	4.8	373.26	6.9	774.42	9.0	1084.88	11.1	1311.63
2.8	115.12	4.9	393.02	7.0	793.02	9.1	1095.35	11.2	1320.93
2.9	121.51	5.0	413.95	7.1	811.63	9.2	1106.98	11.3	1330.23
3.0	127.91	5.1	433.72	7.2	830.23	9.3	1117.44	11.4	1,339.53
3.1	136.05	5.2	453.49	7.3	847.67	9.4	1127.91	11.5	1,348.84
3.2	143.60	5.3	473.26	7.4	866.28	9.5	1139.53	11.6	1,358.14
3.3	151.74	5.4	491.86	7.5	883.72	9.6	1150.00	11.7	1,367.44
3.4	161.63	5.5	511.63	7.6	904.65	9.7	1160.47	11.8	1,376.74
3.5	174.42	5.6	531.40	7.7	924.42	9.8	1172.09	11.9	1,386.05
3.6	180.23	5.7	550.00	7.8	943.02	9.9	1183.72	12.0	1,395.35
3.7	190.70	5.8	569.77	7.9	960.47	10.0	1195.35		
3.8	202.33	5.9	588.37	8.0	976.74	10.1	1206.98		
3.9	213.95	6.0	606.98	8.1	988.38	10.2	1218.60		
4.0	226.74	6.1	626.74	8.2	1000.00	10.3	1231.40		



Pressure Loss / Presetting Charts

Grooved 12 Inch (DN300)

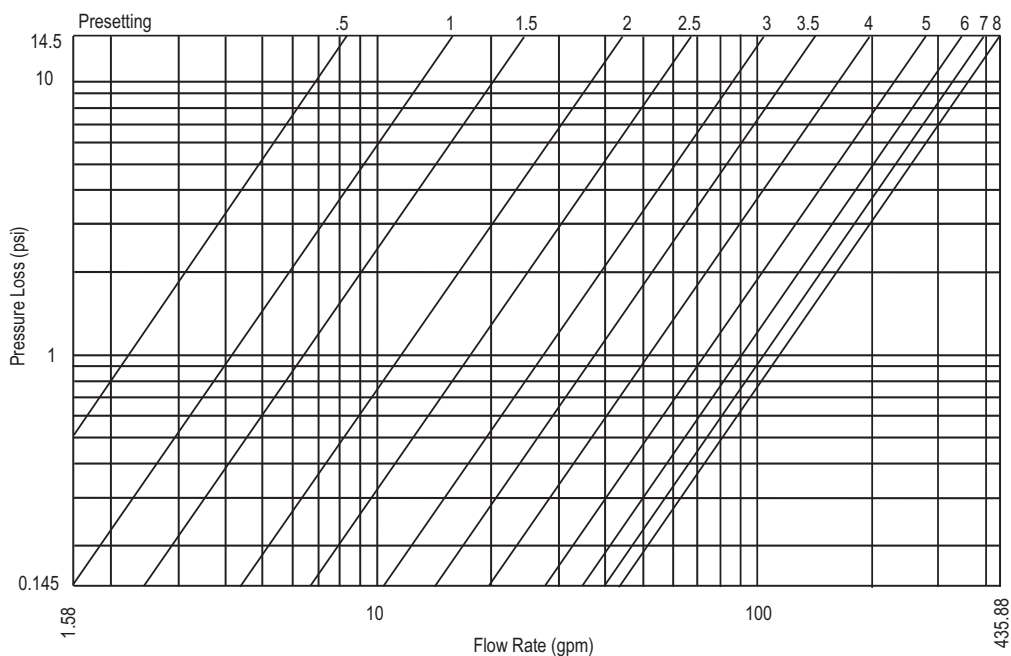
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
2.0	232.56	4.1	580.23	6.2	1,019.77	8.3	1,374.42	10.4	1,706.98
2.1	244.19	4.2	601.16	6.3	1,037.21	8.4	1,390.70	10.5	1,720.93
2.2	255.81	4.3	622.09	6.4	1,053.49	8.5	1,406.98	10.6	1,732.56
2.3	267.44	4.4	643.02	6.5	1,069.77	8.6	1,427.91	10.7	1,744.19
2.4	279.07	4.5	662.79	6.6	1,084.88	8.7	1,447.67	10.8	1,755.81
2.5	290.70	4.6	683.72	6.7	1,101.16	8.8	1,466.28	10.9	1,767.44
2.6	303.49	4.7	704.65	6.8	1,117.44	8.9	1,483.72	11.0	1,779.07
2.7	317.44	4.8	725.58	6.9	1,133.72	9.0	1,500.00	11.1	1,789.53
2.8	331.40	4.9	746.51	7.0	1,151.16	9.1	1,515.12	11.2	1,798.84
2.9	345.35	5.0	767.44	7.1	1,168.60	9.2	1,530.23	11.3	1,808.14
3.0	360.47	5.1	788.37	7.2	1,186.05	9.3	1,544.19	11.4	1,817.04
3.1	375.58	5.2	809.30	7.3	1,204.65	9.4	1,556.98	11.5	1,825.58
3.2	390.70	5.3	830.23	7.4	1,224.42	9.5	1,569.77	11.6	1,833.72
3.3	406.98	5.4	837.21	7.5	1,244.19	9.6	1,587.21	11.7	1,840.70
3.4	424.42	5.5	872.09	7.6	1,260.47	9.7	1,603.49	11.8	1,847.67
3.5	441.86	5.6	896.51	7.7	1,276.74	9.8	1,619.77	11.9	1,854.65
3.6	466.28	5.7	919.77	7.8	1,293.02	9.9	1,636.05	12.0	1,860.47
3.7	489.53	5.8	941.86	7.9	1,309.30	10.0	1,651.16		
3.8	512.79	5.9	962.79	8.0	1,325.58	10.1	1,666.28		
3.9	536.05	6.0	982.56	8.1	1,341.86	10.2	1,681.40		
4.0	558.14	6.1	1,001.16	8.2	1,358.14	10.3	1,694.19		



Pressure Loss / Presetting Charts

Flanged
2-1/2 Inch (DN65)

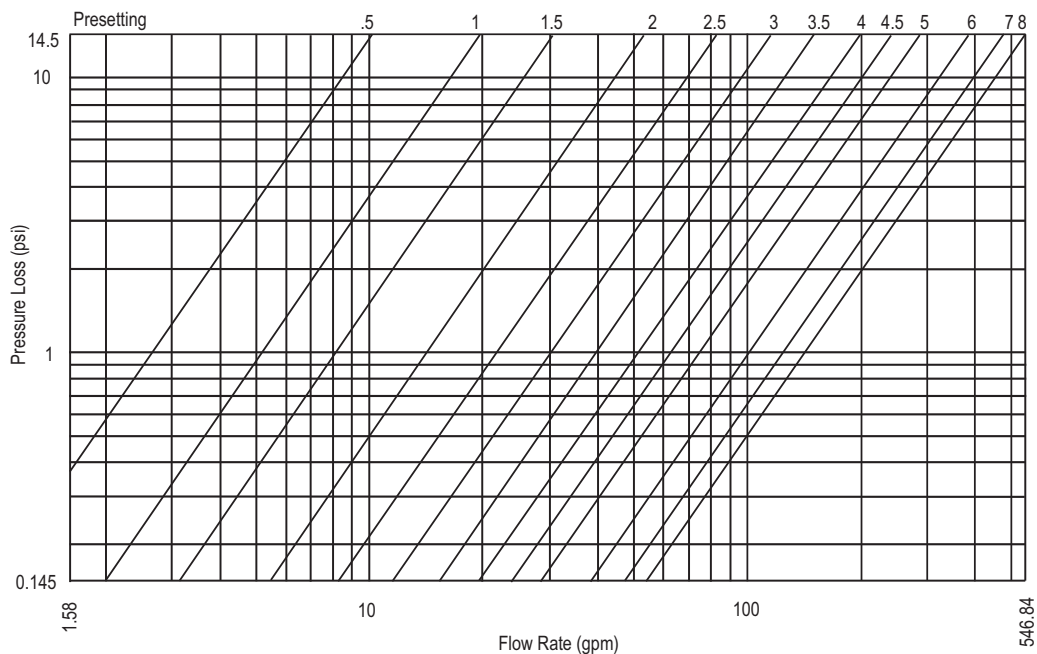
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	2.21	3.0	27.91	5.1	73.50	7.2	107.00
1.0	4.19	3.1	29.92	5.2	75.50	7.3	108.01
1.1	4.79	3.2	32.21	5.3	77.48	7.4	108.97
1.2	5.22	3.3	34.58	5.4	79.44	7.5	109.88
1.3	5.65	3.4	37.02	5.5	81.40	7.6	110.78
1.4	6.08	3.5	39.53	5.6	83.36	7.7	111.63
1.5	6.51	3.6	41.78	5.7	85.27	7.8	112.44
1.6	7.48	3.7	44.00	5.8	87.13	7.9	113.21
1.7	8.48	3.8	46.21	5.9	88.93	8.0	113.95
1.8	9.50	3.9	48.41	6.0	90.70		
1.9	10.55	4.0	50.58	6.1	92.42		
2.0	11.63	4.1	52.75	6.2	94.08		
2.1	12.73	4.2	54.88	6.3	95.71		
2.2	13.85	4.3	57.01	6.4	97.29		
2.3	15.02	4.4	59.13	6.5	98.84		
2.4	16.21	4.5	60.47	6.6	100.14		
2.5	17.44	4.6	63.31	6.7	101.40		
2.6	19.37	4.7	65.38	6.8	102.59		
2.7	21.37	4.8	67.44	6.9	103.76		
2.8	23.42	4.9	69.47	7.0	104.65		
2.9	25.52	5.0	70.93	7.1	105.97		



Pressure Loss / Presetting Charts

Flanged
3 Inch (DN80)

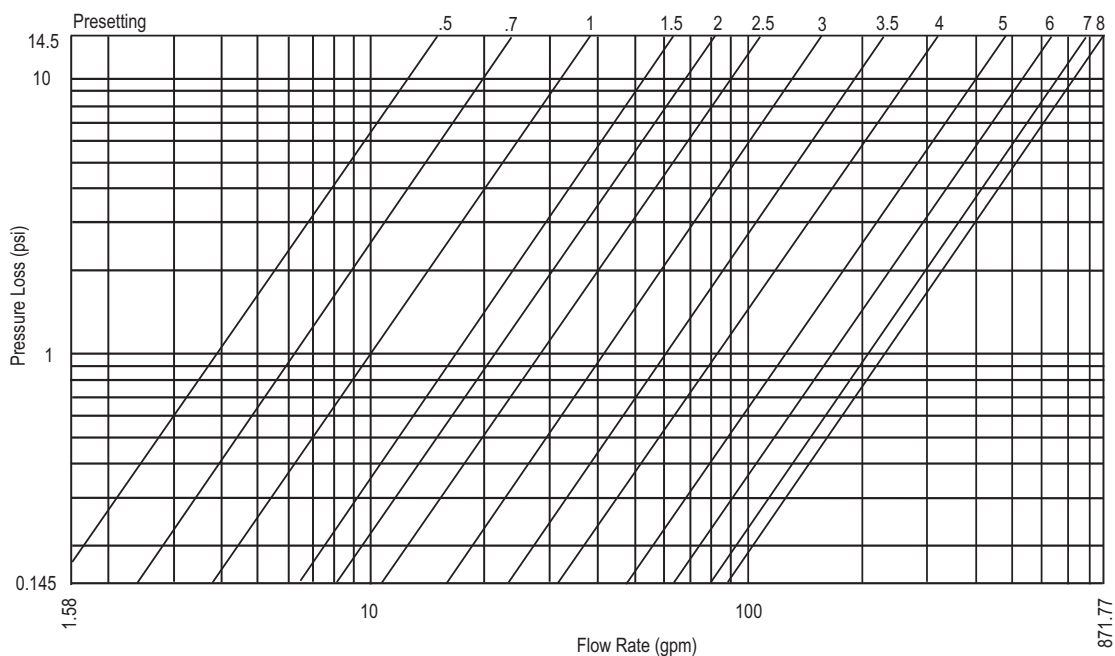
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	2.67	3.0	30.35	5.1	77.88	7.2	127.91
1.0	5.12	3.1	32.38	5.2	80.60	7.3	129.77
1.1	5.51	3.2	34.43	5.3	83.29	7.4	131.40
1.2	6.01	3.3	36.50	5.4	85.93	7.5	133.14
1.3	6.59	3.4	38.59	5.5	87.73	7.6	135.03
1.4	7.30	3.5	40.70	5.6	91.13	7.7	136.95
1.5	8.14	3.6	42.83	5.7	93.67	7.8	138.69
1.6	9.17	3.7	44.98	5.8	96.19	7.9	140.40
1.7	10.26	3.8	47.15	5.9	98.66	8.0	142.09
1.8	11.37	3.9	49.34	6.0	101.16		
1.9	12.55	4.0	52.03	6.1	103.53		
2.0	13.78	4.1	53.80	6.2	105.81		
2.1	15.06	4.2	56.06	6.3	108.29		
2.2	16.41	4.3	58.36	6.4	110.63		
2.3	17.83	4.4	60.67	6.5	113.43		
2.4	19.31	4.5	64.19	6.6	115.23		
2.5	21.69	4.6	65.37	6.7	117.49		
2.6	22.55	4.7	67.77	6.8	119.72		
2.7	24.30	4.8	70.19	6.9	121.94		
2.8	26.17	4.9	72.64	7.0	124.13		
2.9	28.19	5.0	75.12	7.1	126.03		



Pressure Loss / Presetting Charts

Flanged
4 Inch (DN100)

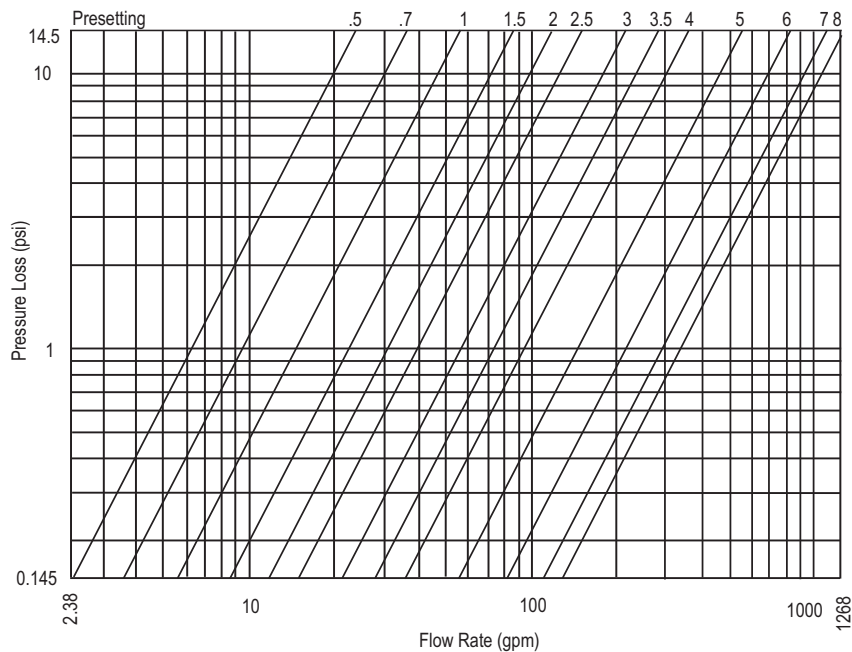
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	3.95	2.9	38.15	5.0	130.23	7.1	210.90
0.7	6.35	3.0	41.16	5.1	136.58	7.2	213.55
1.0	9.94	3.1	44.40	5.2	140.90	7.3	216.10
1.1	11.14	3.2	47.87	5.3	145.10	7.4	218.56
1.2	12.34	3.3	51.67	5.4	148.28	7.5	220.98
1.3	13.53	3.4	55.84	5.5	153.29	7.6	223.69
1.4	14.73	3.5	60.47	5.6	157.16	7.7	226.35
1.5	16.28	3.6	65.03	5.7	161.01	7.8	228.90
1.6	17.13	3.7	69.64	5.8	164.50	7.9	231.35
1.7	18.33	3.8	74.29	5.9	168.48	8.0	233.72
1.8	19.52	3.9	78.98	6.0	172.09		
1.9	20.72	4.0	83.72	6.1	176.67		
2.0	21.51	4.1	88.50	6.2	180.97		
2.1	23.12	4.2	93.34	6.3	185.00		
2.2	24.31	4.3	98.22	6.4	188.81		
2.3	25.51	4.4	103.15	6.5	190.73		
2.4	26.71	4.5	108.14	6.6	195.86		
2.5	27.91	4.6	113.22	6.7	199.14		
2.6	30.23	4.7	118.16	6.8	202.27		
2.7	32.71	4.8	122.95	6.9	205.27		
2.8	35.35	4.9	127.62	7.0	208.15		



Pressure Loss / Presetting Charts

Flanged
5 Inch (DN125)

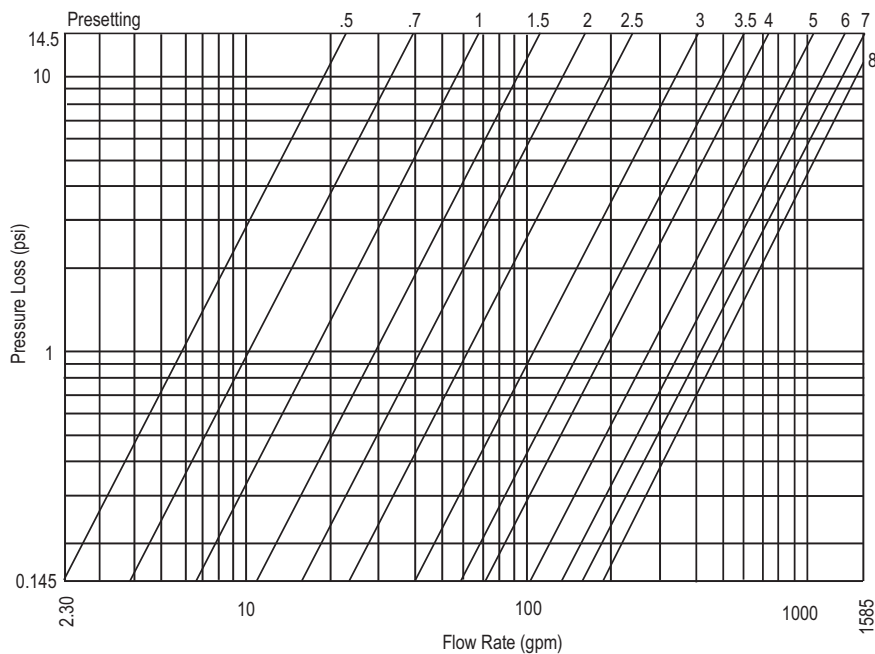
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	6.40	2.9	52.29	5.0	149.13	7.1	289.80
0.7	9.63	3.0	55.52	5.1	155.55	7.2	295.65
1.0	14.48	3.1	58.87	5.2	162.26	7.3	301.45
1.1	16.09	3.2	62.35	5.3	169.30	7.4	307.20
1.2	17.71	3.3	65.97	5.4	176.70	7.5	311.80
1.3	19.33	3.4	69.77	5.5	184.53	7.6	318.55
1.4	20.94	3.5	73.66	5.6	190.81	7.7	324.15
1.5	22.56	3.6	77.47	5.7	197.21	7.8	329.71
1.6	24.35	3.7	81.40	5.8	203.73	7.9	334.84
1.7	26.13	3.8	85.50	5.9	210.40	8.0	340.70
1.8	27.92	3.9	89.78	6.0	215.47		
1.9	29.70	4.0	94.25	6.1	224.13		
2.0	30.93	4.1	98.92	6.2	231.22		
2.1	33.27	4.2	103.84	6.3	238.49		
2.2	35.06	4.3	109.03	6.4	245.93		
2.3	36.84	4.4	114.53	6.5	253.55		
2.4	38.63	4.5	120.41	6.6	259.73		
2.5	40.41	4.6	125.77	6.7	265.86		
2.6	43.23	4.7	131.30	6.8	271.97		
2.7	46.15	4.8	137.02	6.9	277.94		
2.8	49.17	4.9	142.97	7.0	283.90		



Pressure Loss / Presetting Charts

Flanged
6 Inch (DN150)

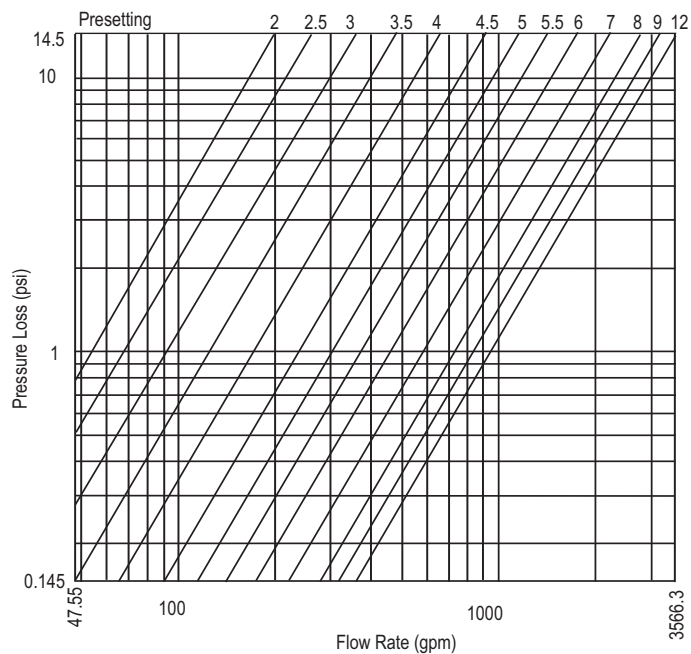
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
0.5	6.05	2.9	99.30	5.0	277.80	7.1	418.60
0.7	10.71	3.0	110.49	5.1	284.56	7.2	424.49
1.0	17.70	3.1	122.69	5.2	292.09	7.3	430.38
1.1	20.02	3.2	133.08	5.3	299.53	7.4	436.22
1.2	22.36	3.3	142.28	5.4	306.86	7.5	444.19
1.3	24.69	3.4	150.60	5.5	316.74	7.6	447.72
1.4	27.02	3.5	157.50	5.6	321.21	7.7	452.71
1.5	29.37	3.6	165.36	5.7	328.26	7.8	458.37
1.6	31.67	3.7	171.41	5.8	335.20	7.9	464.58
1.7	34.30	3.8	178.29	5.9	342.06	8.0	470.12
1.8	36.34	3.9	186.05	6.0	349.30		
1.9	38.67	4.0	194.33	6.1	355.53		
2.0	41.00	4.1	202.88	6.2	362.15		
2.1	43.17	4.2	211.35	6.3	368.70		
2.2	45.83	4.3	219.83	6.4	374.50		
2.3	49.19	4.4	228.30	6.5	379.88		
2.4	53.78	4.5	236.80	6.6	387.88		
2.5	62.70	4.6	245.09	6.7	393.42		
2.6	70.93	4.7	253.24	6.8	400.34		
2.7	79.71	4.8	260.63	6.9	406.47		
2.8	89.12	4.9	269.14	7.0	413.49		



Pressure Loss / Presetting Charts

Flanged
8 Inch (DN200)

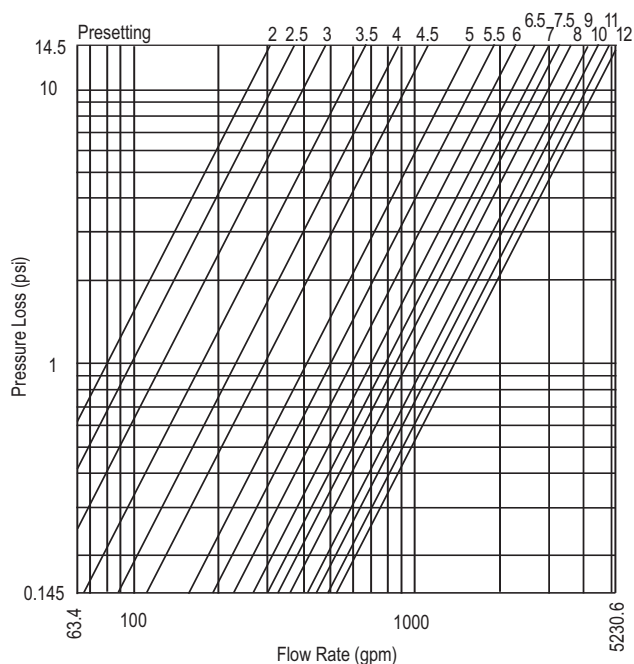
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
2.0	56.86	4.1	188.37	6.2	475.58	8.3	747.67	10.4	904.65
2.1	60.00	4.2	201.16	6.3	490.70	8.4	757.67	10.5	906.98
2.2	63.02	4.3	213.95	6.4	505.81	8.5	767.44	10.6	909.30
2.3	66.05	4.4	226.74	6.5	520.70	8.6	782.33	10.7	911.63
2.4	69.07	4.5	239.53	6.6	534.88	8.7	796.74	10.8	913.95
2.5	72.09	4.6	252.09	6.7	549.42	8.8	812.44	10.9	916.28
2.6	77.21	4.7	264.65	6.8	563.72	8.9	827.44	11.0	918.60
2.7	82.33	4.8	277.21	6.9	578.14	9.0	842.44	11.1	921.16
2.8	87.44	4.9	289.77	7.0	592.44	9.1	850.47	11.2	923.84
2.9	92.56	5.0	302.67	7.1	603.95	9.2	858.37	11.3	926.51
3.0	97.67	5.1	316.16	7.2	615.47	9.3	866.16	11.4	929.19
3.1	104.65	5.2	330.00	7.3	626.98	9.4	874.07	11.5	931.86
3.2	111.63	5.3	343.72	7.4	638.49	9.5	881.98	11.6	934.88
3.3	118.60	5.4	357.56	7.5	650.00	9.6	884.42	11.7	937.91
3.4	125.58	5.5	372.09	7.6	663.95	9.7	886.86	11.8	940.93
3.5	132.56	5.6	386.05	7.7	677.33	9.8	889.30	11.9	944.19
3.6	140.70	5.7	400.93	7.8	690.93	9.9	891.74	12.0	947.09
3.7	149.77	5.8	415.81	7.9	704.65	10.0	894.19		
3.8	158.37	5.9	430.58	8.0	718.60	10.1	896.74		
3.9	166.98	6.0	445.35	8.1	728.84	10.2	899.30		
4.0	175.58	6.1	460.47	8.2	738.14	10.3	901.86		



Pressure Loss / Presetting Charts

Flanged 10 Inch (DN250)

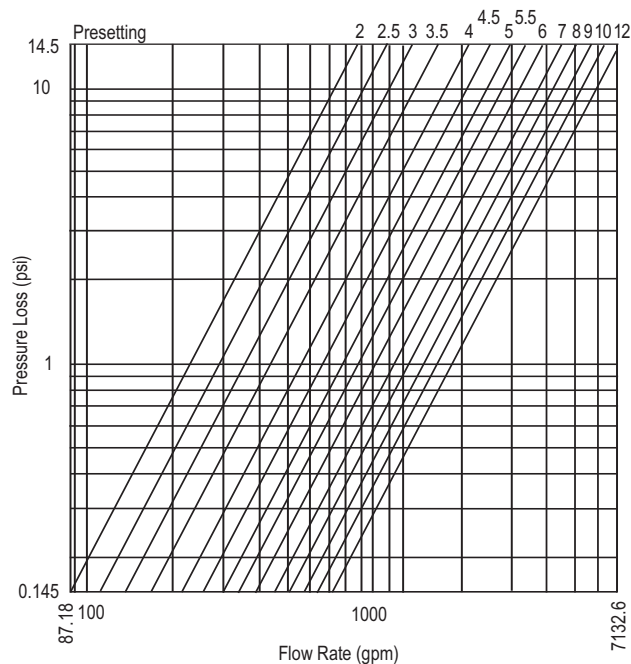
Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
2.0	81.40	4.1	241.86	6.2	645.35	8.3	1011.63	10.4	1245.35
2.1	84.30	4.2	256.98	6.3	663.95	8.4	1023.26	10.5	1255.81
2.2	87.79	4.3	274.42	6.4	682.56	8.5	1034.88	10.6	1265.12
2.3	91.86	4.4	293.02	6.5	705.81	8.6	1045.35	10.7	1274.42
2.4	95.35	4.5	313.95	6.6	719.77	8.7	1054.65	10.8	1283.75
2.5	98.84	4.6	333.72	6.7	738.37	8.8	1065.12	10.9	1293.02
2.6	104.07	4.7	353.49	6.8	756.98	8.9	1075.58	11.0	1302.33
2.7	109.30	4.8	373.26	6.9	774.42	9.0	1084.88	11.1	1311.63
2.8	115.12	4.9	393.02	7.0	793.02	9.1	1095.35	11.2	1320.93
2.9	121.51	5.0	413.95	7.1	811.63	9.2	1106.98	11.3	1330.23
3.0	127.91	5.1	433.72	7.2	830.23	9.3	1117.44	11.4	1,339.53
3.1	136.05	5.2	453.49	7.3	847.67	9.4	1127.91	11.5	1,348.84
3.2	143.60	5.3	473.26	7.4	866.28	9.5	1139.53	11.6	1,358.14
3.3	151.74	5.4	491.86	7.5	883.72	9.6	1150.00	11.7	1,367.44
3.4	161.63	5.5	511.63	7.6	904.65	9.7	1160.47	11.8	1,376.74
3.5	174.42	5.6	531.40	7.7	924.42	9.8	1172.09	11.9	1,386.05
3.6	180.23	5.7	550.00	7.8	943.02	9.9	1183.72	12.0	1,395.35
3.7	190.70	5.8	569.77	7.9	960.47	10.0	1195.35		
3.8	202.33	5.9	588.37	8.0	976.74	10.1	1206.98		
3.9	213.95	6.0	606.98	8.1	988.38	10.2	1218.60		
4.0	226.74	6.1	626.74	8.2	1000.00	10.3	1231.40		



Pressure Loss / Presetting Charts

Flanged 12 Inch (DN300)

Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value	Presetting	Cv Value
2.0	232.56	4.1	580.23	6.2	1,019.77	8.3	1,374.42	10.4	1,706.98
2.1	244.19	4.2	601.16	6.3	1,037.21	8.4	1,390.70	10.5	1,720.93
2.2	255.81	4.3	622.09	6.4	1,053.49	8.5	1,406.98	10.6	1,732.56
2.3	267.44	4.4	643.02	6.5	1,069.77	8.6	1,427.91	10.7	1,744.19
2.4	279.07	4.5	662.79	6.6	1,084.88	8.7	1,447.67	10.8	1,755.81
2.5	290.70	4.6	683.72	6.7	1,101.16	8.8	1,466.28	10.9	1,767.44
2.6	303.49	4.7	704.65	6.8	1,117.44	8.9	1,483.72	11.0	1,779.07
2.7	317.44	4.8	725.58	6.9	1,133.72	9.0	1,500.00	11.1	1,789.53
2.8	331.40	4.9	746.51	7.0	1,151.16	9.1	1,515.12	11.2	1,798.84
2.9	345.35	5.0	767.44	7.1	1,168.60	9.2	1,530.23	11.3	1,808.14
3.0	360.47	5.1	788.37	7.2	1,186.05	9.3	1,544.19	11.4	1,817.04
3.1	375.58	5.2	809.30	7.3	1,204.65	9.4	1,556.98	11.5	1,825.58
3.2	390.70	5.3	830.23	7.4	1,224.42	9.5	1,569.77	11.6	1,833.72
3.3	406.98	5.4	851.16	7.5	1,244.19	9.6	1,587.21	11.7	1,840.70
3.4	424.42	5.5	872.09	7.6	1,260.47	9.7	1,603.49	11.8	1,847.67
3.5	441.86	5.6	896.51	7.7	1,276.74	9.8	1,619.77	11.9	1,854.65
3.6	466.28	5.7	919.77	7.8	1,293.02	9.9	1,636.05	12.0	1,860.47
3.7	489.53	5.8	941.86	7.9	1,309.30	10.0	1,651.16		
3.8	512.79	5.9	962.79	8.0	1,325.58	10.1	1,666.28		
3.9	536.05	6.0	982.56	8.1	1,341.86	10.2	1,681.40		
4.0	558.14	6.1	1,001.16	8.2	1,358.14	10.3	1,694.19		

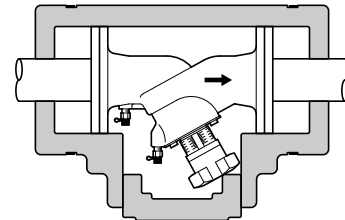
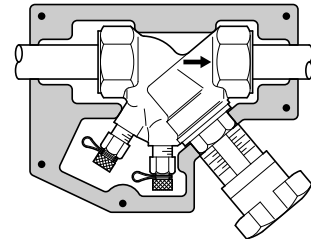


Accessories

Insulation Shells

Made of polyurethane, Insulation Shells are double wall with tongue and groove design.

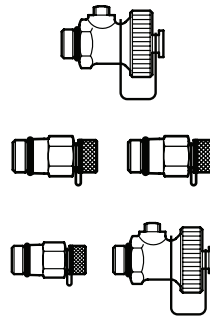
Nominal Valve Size Inches DN	Nominal Dimensions Inches / mm			Part Number
	Length	Width	Height	
1/2 DN150	7.20 (183)	2.83 (72)	5.35 (136)	CBIS050
3/4 DN20	7.68 (195)	3.15 (80)	5.63 (143)	CBIS075
1 DN25	9.57 (243)	3.46 (88)	5.94 (151)	CBIS010
1-1/4 DN32	10.00 (254)	4.02 (102)	6.77 (172)	CBIS125
1-1/2 DN40	9.84 (250)	4.29 (109)	7.28 (185)	CBIS150
2 DN50	10.87 (276)	4.92 (125)	8.23 (209)	CBIS200
2-1/2 DN65	19.88 (505)	10.24 (260)	16.14 (410)	CBIS250
3 DN80	20.87 (530)	11.02 (280)	16.34 (415)	CBIS300
4 DN100	22.73 (580)	12.60 (320)	20.47 (520)	CBIS400
5 DN125	24.41 (620)	14.17 (360)	22.05 (560)	CBIS500
6 DN150	28.74 (730)	15.75 (400)	23.62 (600)	CBIS600
8 DN200	31.50 (800)	17.72 (450)	29.92 (760)	CBIS800



Accessories

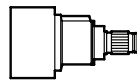
Port Accessories

Fill and Drain Ball Valve 1/4"	CBV025
Set of 2 Pressure Test Ports	CBTP02
Set of 1 Pressure Test Port, 1 Fill and Drain Ball Valve	CBTK02



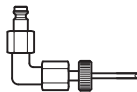
Stem Extensions

1/2" – 2"	CBSE7520
2-1/2" – 6"	CBSE2560



CBV Needles

Measuring probe for the MC2 Differential Measuring Computer	CBSR100
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MC2 Differential Measuring Computer

The Model MC2 Differential Measuring Computer is a hand-held computer-balancing instrument designed to measure the flow in the GRINNELL Balancing Valves from 1/2 inch (DN15) to 12 inch (DN300). It automatically calculates the flow rate for a valve, measures the differential pressure, temperature, compares the actual and nominal flow values, and displays the required presetting value. All results may be saved in the hand-held computer then downloaded and documented to a PC at a later date.

The easy-to-operate touch button keypad protects against water and dirt particles and the hand-held computer is supplied with a rechargeable power pack. The hand-held computer and all parts are stored in a convenient carrying case.





Grinnell

www.tyco-fire.com

www.grinnell.com

Global Locations

Cranston Technology Center

1467 Elmwood Ave.
Cranston, RI 02910 - USA
Tel: +1 401 781 8220
mechserv@grinnell.com

The Netherlands

Kopersteden 1,
7547 TJ Enschede,
The Netherlands
Tel: +31 (0)53 428 4444
mechserv-emea@grinnell.com

Asia / Pacific

2 Serangoon North Avenue 5
#07-01 Fu Yu Building,
Singapore 554911
Tel: +65 6577 4360
mechserv-apac@grinnell.com