Butterfly Valve – Epoxy
Series 7700

AE7721–3
Series 7700 butterfly valve with 10 position lever lock

AE7722–3
Series 7700 butterfly valve with gear operator

AE7721–3

Used in commercial grooved–end piping systems 2" through 12".

The uniqueness of the Series 7700 Gruvlok Butterfly Valve begins with the spherical bore of the disc seat area. This facilitates a constant DISC–TO–SEAT loading that maintains a leak tight seal regardless of disc position. The stem sealing force is constant through the full disc cycle and operating torques are kept low which increases valve life. The design provides a bubble tight seal from full vacuum to 300 psi when the valve is closed. The valve is rated for dead–end service to a full pressure rating of 300 psi. Manufactured without silicone Series 7700 available upon special request.

AE7722–3

The stem–to–disc connection provides zero backlash. The high strength, corrosion resistant, stainless steel stems are blow–out proof. Each stem is fitted with a secondary seal that also provides a lifetime lubrication chamber.

The Series 7700 valve is designed with the contractor in mind. The valve body is a rugged one–piece casting with an integral mounting base for gear operator or handle actuation, while providing room for a minimum of 2" of pipe insulation. The valve is designed and manufactured to meet or exceed the requirements of MSS SP–67.

For data on fire protection listings/ approvals, contact your ASC Engineered Solutions representative.

NSF/ANSI 61
UPC
C ®

2" – 10" Series 7700
Certified to NSF/ANSI 61
(cold water) and Annex G
LEAD FREE

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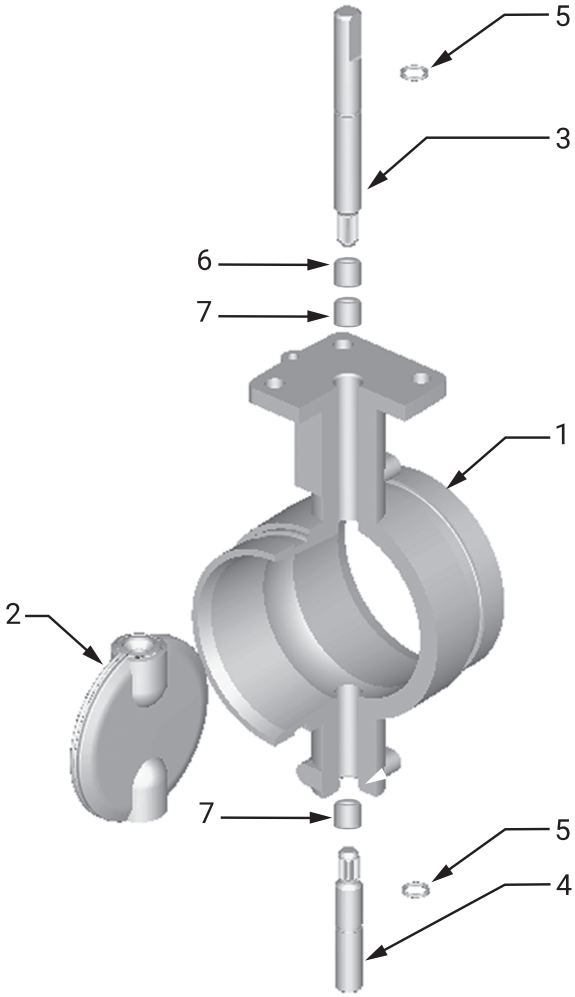
Butterfly Valve – Epoxy
Series 7700



Material Specifications

1. Body
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

Body Coating
Epoxy

2. Disc
Ductile Iron conforming to ASTM A 536 Grades 65-45-12

Disc Encapsulation
Properties as specified in accordance with ASTM D 2000.

Grade E (EPDM: Service Temperature Range -40°F to +230°F (-40°C to +110°C)
Recommended for water service, dilute acids, alkalies, oil-free air and many chemical services.
Not For Use In Petroleum Services.

Grade T (Nitrile: Service Temperature Range -20°F to +180°F (-29°C to +82°C)
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
Not For Use In Hot Water Services.

3, 4. UPPER AND LOWER SHAFT
Type 416 Stainless Steel

5. O-RINGS
Compatible with disc coating

6, 7. TOP AND BOTTOM BRONZE SLEEVE BUSHINGS
8", 10", & 12" Valve only

Gruvlok Butterfly Valve Series 7700 (Ordering Information)

Sample Part Number 8" AE7721-3 -->	8"	A	E	77	2	1 -	3	Special
	Size	Body Style	Body Coating	Series	Disc Coating	Operator	Stem	
	2" - 12"	A	E - Epoxy	77-77XX	1 - Nitrile (Grade T) 2 - EPDM (Grade E)	0 - None 1 - 10 Pos. L/Lock 2 - Gear Operator D - Infinite Pos. w/Memory Stop 4 - Short 10 Pos. L/lock Operator	3 - 416 S.S.	MWS - Manufactured without Silicone

Note: For operator safety, hand levers on the 10" and 12" valves are not available. Hand levers on the 8" valve will be limited to 150 psi to ensure safe operation. 8" valves supplied with a hand wheel will carry the full 300 psi pressure rating..

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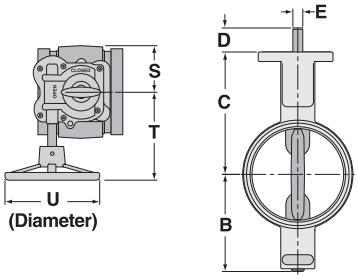
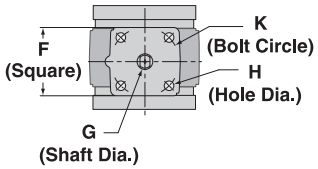
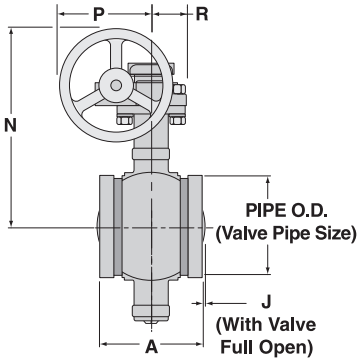
Butterfly Valve –Epoxy
Series 7700

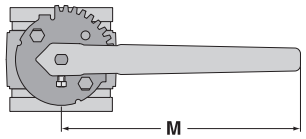
Series 7700 Butterfly Valve Dimensions

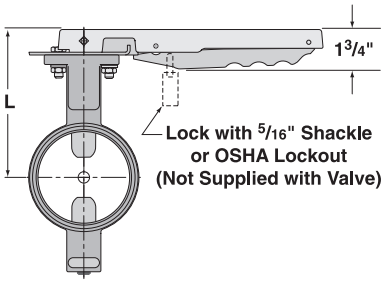
Dimensions	Valve Size (ANSI/DN)								
	2	2½	3	4	5	6	8	10	12
In./mm	50	65	80	100	125	150	200	250	300
O.D. In./mm	2 3/8 60.3	2 7/8 73.0	3 1/2 88.9	4 1/2 114.3	5 9/16 141.3	6 5/8 168.3	8 5/8 219.1	10 3/4 273.1	12 3/4 323.9
A	3 3/16 81.0	3 13/16 96.8	3 13/16 96.8	4 5/8 117.3	5 13/16 147.6	5 13/16 147.6	5 1/4 133.4	6 1/4 158.8	6 1/2 165.1
B	3 75.4	3 3/16 80.8	3 13/16 96.5	4 1/4 108.5	5 126.5	5 1/2 138.9	6 15/16 175.8	8 202.9	9 229.4
C	4 3/16 105.9	4 3/8 111.3	5 1/16 129.0	5 3/8 136.7	5 7/8 149.4	6 3/8 161.8	7 3/4 196.9	9 1/2 240.3	10 1/2 266.7
D	1 1/16 26.9	1 1/16 26.9	1 1/16 26.9	1 1/16 26.9	1 1/16 26.9	1 1/16 26.9	1 5/8 41.1	1 5/8 41.1	1 5/8 41.1
E	7/16 11.1	7/16 11.1	7/16 11.1	7/16 11.1	7/16 11.1	7/16 11.1	3/4 19.1	3/4 19.1	3/4 19.1
F	3 76.2	3 76.2	3 76.2	3 76.2	3 76.2	3 76.2	5 127.0	5 127.0	5 127.0
G	9/16 14.3	9/16 14.3	9/16 14.3	9/16 14.3	7/8 22.2	7/8 22.2	1 25.4	1 1/4 31.8	1 1/4 31.8
H	7/16 11.1	7/16 11.1	7/16 11.1	7/16 11.1	7/16 11.1	7/16 11.1	1/2 13.5	1/2 13.5	1/2 13.5
J	- -	- -	- -	- -	- -	1/8 3.3	1 3/8 34.8	1 7/8 47.0	2 3/4 70.1
K	3 76.2	3 76.2	3 76.2	3 76.2	3 76.2	3 76.2	5 127.0	5 127.0	5 127.0
L	5 5/16 135.1	5 1/2 140.5	6 1/4 158.2	6 1/2 165.9	7 178.6	7 1/2 191.0	- -	- -	- -
M	10 1/2 266.7	10 1/2 266.7	10 1/2 266.7	10 1/2 266.7	10 1/2 266.7	10 1/2 266.7	- -	- -	- -
N	7 13/16 198.0	8 203.3	8 11/16 221.1	9 228.7	9 1/2 241.4	10 253.9	14 15/16 379.2	16 5/8 422.7	20 11/16 525.3
P	4 102.1	4 102.1	4 102.1	4 102.1	4 102.1	4 102.1	8 1/16 204.5	8 1/16 204.5	11 5/8 295.4
R	1 1/2 38.2	1 1/2 38.2	1 1/2 38.2	1 1/2 38.2	1 1/2 38.2	1 1/2 38.2	2 5/16 58.5	2 5/16 58.5	2 9/16 65.5
S	2 51.0	2 51.0	2 51.0	2 51.0	2 51.0	2 51.0	2 5/8 66.0	2 5/8 66.0	3 1/4 83.0
T	6 5/16 160.3	6 5/16 160.3	6 5/16 160.3	6 5/16 160.3	6 5/16 160.3	6 5/16 160.3	10 13/16 275.3	10 13/16 275.3	13 13/16 350.3
U	5 127.0	5 127.0	5 127.0	5 127.0	5 127.0	5 127.0	12 304.8	12 304.8	18 457.2











Note: 3" or 5" handwheels may be included on valves sizes 2" – 4". Contact your ASC Engineered Solutions Rep. for additional information.

ASC Engineered Solutions

Butterfly Valve – Epoxy Performance Data
Series 7700

Maximum Working Pressure Rating: 300 PSI
(Commercial Applications – Sizes 2" thru 12")

C_V Values

Valve Size	O.D.	Disc Position (degrees open)							
		25°	30°	40°	50°	60°	70°	80°	90°
In./mm	In./mm								
2 50	2.375 60.3	4 0.3	7 0.5	19 1.3	44 3.0	48 3.3	80 5.5	111 7.7	158 10.9
2½ 65	2.875 73.0	9 0.6	14 1	34 2.3	78 5.4	84 5.8	142 9.8	196 13.5	280 19.3
3 80	3.500 88.9	14 1.0	20 1.4	50 3.4	112 7.7	128 8.8	215 14.8	285 19.7	400 27.6
4 100	4.500 114.3	29 2.0	41 2.8	100 6.9	239 16.5	250 17.2	420 29.0	582 40.1	826 57.0
5 125	5.563 141.3	62 4.3	76 5.2	182 12.5	415 28.6	445 30.7	780 53.8	1,100 75.8	1,480 102.0
6 150	6.625 168.3	96 6.6	141 9.7	325 22.4	755 52.1	809 55.8	1,370 94.5	1,920 132.4	2,678 184.6
8 200	8.625 219.1	172 11.9	252 17.4	592 40.8	1,365 94.1	1,460 100.7	2,430 167.5	3,410 235.1	4,819 332.3
10 250	10.750 273.1	230 15.9	328 22.6	792 54.6	1,825 125.8	1,962 135.3	3,260 224.8	4,590 316.5	6,431 443.4
12 300	12.75 323.9	418 28.8	604 41.6	1,440 99.3	3,350 231.0	3,590 247.5	5,980 412.3	8,750 603.3	11,947 823.7

Headloss Equivalent Length Of Pipe

Valve Size	O.D.	Equivalent Feet of Pipe* C=120			Max. Insulating Thickness
		Sch. 10	Sch. 30	Sch. 40	
In./mm	In./mm	Ft./m			In./mm
2 50	2.375 60.3	5.8 1.8	- -	4.7 1.4	2 50
2½ 65	2.875 73.0	5.1 1.6	- -	3.7 1.1	2½ 65
3 80	3.500 88.9	9.6 2.9	- -	7.2 2.2	2 50
4 100	4.500 114.3	7.5 2.3	- -	5.7 1.7	2½ 65
5 125	5.563 141.3	7.0 2.1	- -	5.6 1.7	2½ 65
6 150	6.625 168.3	6.1 1.9	- -	4.8 1.5	2½ 65
8 200	8.625 219.1	6.3 1.9	5.7 1.7	- -	2½ 65
10 250	10.750 273.1	11.3 3.4	10.2 3.1	- -	3 80
12 300	12.750 323.9	8.4 2.6	7.4 2.3	- -	3½ 90

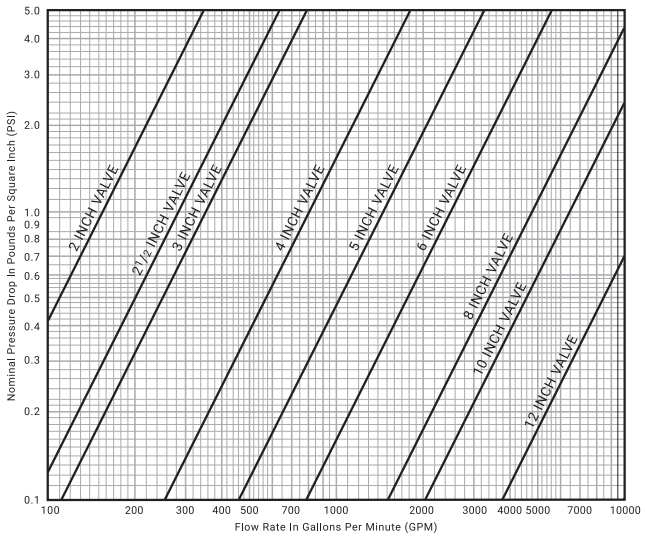
*The equivalent feet of pipe is based on the Hazen and Williams formula and the flow rates typically used with each size valve.

Valve Weight And Torque Values

Valve Size	O.D.	*Approx. Wt. Ea.	Operating Pressure				
			50 PSIG	100 PSIG	150 PSIG	200 PSIG	300 PSIG
In./mm	In./mm	Lbs./Kg	†Breakaway Torque (In. - Lbs) / N-m				
2 50	2.375 60.3	5 2.3	72 8.1	90 10.2	100 11.3	120 13.6	200 22.6
2½ 65	2.875 73.0	10 4.5	105 11.9	126 14.2	144 16.3	162 18.3	250 28.2
3 80	3.500 88.9	11 5.0	126 14.2	139 15.7	168 19.0	195 22	425 48.0
4 100	4.500 114.3	15 6.8	265 29.9	285 32.2	320 36.2	355 40.1	800 90.4
5 125	5.563 141.3	20 9.0	491 55.5	578 65.3	615 69.5	674 76.2	850 96.0
6 150	6.625 168.3	46 20.9	625 70.6	678 76.6	760 85.9	820 92.7	1,650 186.4
8 200	8.625 219.1	68 30.8	1,170 132.2	1,400 158.2	1,640 185.3	1,760 198.9	3,200 361.6
10 250	10.750 273.1	78 35.4	1,930 218.1	2,375 268.4	2,860 323.2	3,100 350.3	6,000 678.0
12 300	12.75 323.9	91 41.3	2,900 327.7	3,420 386.4	4,760 537.9	5,600 632.8	11,000 1,242.9

† These values are valid for water and lubricating fluid servi e only. Contact ASC Engineered Solutions for information on torques for dry and non-lubricating fluid servi e.

*Weights may vary based on valve options selected.



GRUVLOK
An ASC Engineered Solution

Butterfly Valve
Series 8000GR

Features

- Up to 150 psig (10.3 bar) WOG (non-shock) in Cast Iron
- Up to 200 psig (13.8 bar) WOG (non-shock) in Ductile Iron
- Outstanding flow characteristics
- Low torque operation
- Superior flow control
- Streamline profile disc
- Suitable for HVAC applications
- Vacuum service to 29.5" (750 mm) Hg
- End-of-line service capabilities

Fig. 8000GR Weight

Valve Size ANSI	O.D.	Weight	
		Valve Only	Valve with Gear Operator
In./DN(mm)	In./mm	Lbs./Kg.	Lbs./Kg.
14 350	14 355.6	354 160.6	397 180.1
16 400	16 406.4	428 194.1	538.5 244.3
18 450	18 457.2	524 237.7	679.0 308.0
20 500	20 508.0	704 319.3	858.0 389.2
24 600	24 609.6	1,027 465.8	1,324.5 600.8

Butterfly Valve Performance Data

Pressure Ratings:
150 PSIG (10.3 bar) WOG (non-shock)
200 PSIG (13.8 bar) WOG (non-shock)
Special order - available upon request.
29.5" (750 mm) Hg Vacuum Service

Temperature Ratings
Grade E (EPDM):
-40°F to 230°F (-40°C to 110°C)
(Service Temperature Range)
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
Not For Use In Petroleum Services.

Grade T (Nitrile):
-20°F to 180°F (Service Temperature Range)
(-29°C to 82°C)
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
Not For Use In Hot Water Services.

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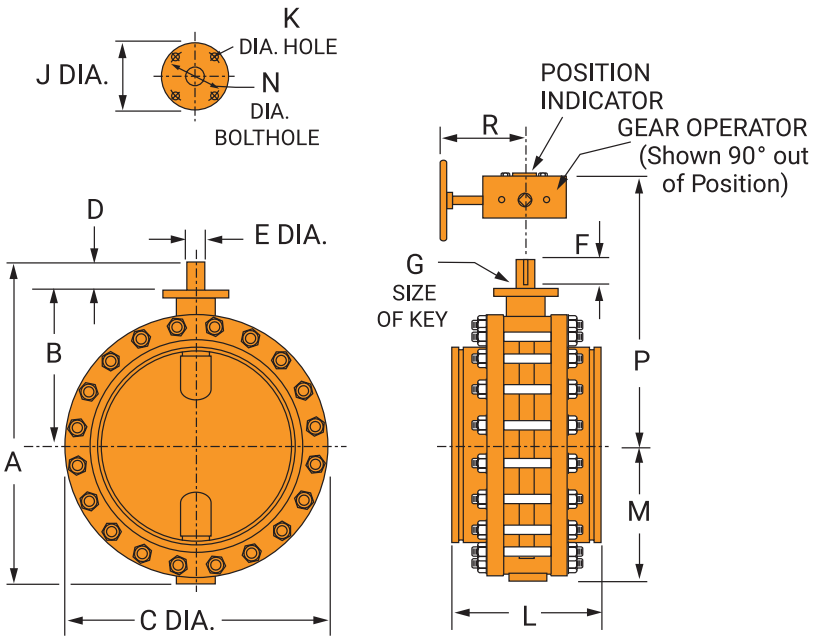
Butterfly Valve
Series 8000GR



Material Specifications

Body
Cast Iron - ASTM A126 CL.B, Epoxy Coated
Ductile Iron - ASTM A536, Epoxy Coated

Extension Body
Pipe - ASTM A53 Steel
Flange - ANSI B16.42 Forged Steel

Liner
Grade E (EPDM)
Grade T (Nitrile)
Note: Stem O-Ring material matches Liner

Disc
Stainless Steel - ASTM A351
Aluminum Bronze - ASTM B148 C95400
Nickel Plated Ductile Iron - ASTM A536 Grade 65-45-12

Drive Shaft
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

Bottom Shaft
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

Plug
Cast Iron - ASTM A 126 CL.B

Upper Bearing
Reinforced Nylon

Lower Bearing
Reinforced Nylon

Grounding Spring (14" – 20"
Stainless Steel 302

Grounding Ball (24" Only
AISI-1022

Tension Screw (24" Only
AISI-1020

ASC Engineered Solutions

Butterfly Valve
Series 8000GR

Series 8000GR Butterfly Valves Dimensions

Valve Size ANSI	O.D.	A	B	C	D	E	F	G	J	K	L	M	N	P	R
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm
14 350	14.0 355.6	27.1 687.3	13.5 342.9	21.0 533.4	2.0 50.8	1.6 41.4	1.5 38.1	0.4 9.7	6.5 165.1	5.3 133.4	13.1 331.7	11.6 293.6	5.3 133.4	17.3 438.2	13.4 340.4
16 400	16.0 406.4	29.4 747.8	14.8 374.7	23.5 596.9	2.0 50.8	1.6 41.4	1.5 38.1	0.4 9.7	6.5 165.1	5.3 133.4	14.1 357.1	12.7 322.3	5.3 133.4	18.8 476.3	13.4 340.4
18 450	18.0 457.2	32.1 816.1	15.5 393.7	25.0 635.0	3.0 76.2	2.1 54.1	2.4 60.3	0.5 12.7	9.5 241.3	7.5 190.5	15.1 382.5	13.6 346.2	7.5 190.5	19.6 498.6	12.6 320.0
20 500	20.0 508.0	34.9 886.0	16.8 425.5	27.5 698.5	3.0 76.2	2.1 54.1	2.4 60.3	0.5 12.7	9.5 241.3	7.5 190.5	16.1 407.9	15.1 384.3	7.5 190.5	20.9 530.4	12.6 320.0
24 600	24.0 609.6	40.5 1028.4	19.4 492.0	32.1 815.3	3.1 77.7	2.1 54.1	2.4 60.3	0.5 12.7	7.5 190.5	7.5 190.5	17.1 433.3	18.1 458.7	7.5 190.5	25.0 635.0	12.6 320.0

Series 8000GR Butterfly Valves (Ordering Information)

Sample Part Number 24" GD-82837 –>	24" Valve Size	G Body Style	D- Body	8 Series	2 Seat Material	8 Disc Material	3 Operator	7 Stem
	14" 16" 18" 20" 24"	G - Grooved	**C** - 150 PSI Service **D** - 200 PSI Service	**8** - 8000	**1** - Nitrile **2** - EPDM	**0** - Nickel Plated Ductile Iron **7** - 316 S.S. **8** - Bronze (Al-Brz.)	**0** - None **2** - Gear Operator **3** - Pneumatic **4** - Electric **5** - Spring Return Pneumatic **6** - Square Nut (with Gear Operator) **7** - Chain Wheel (with Gear)	**6** - 416 S.S. with RTFE Bearing **7** - 316 S.S. with RTFE Bearing

GRUVLOK
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ASC Engineered Solutions

Butterfly Valve
Series 8000GR

Torque is the rotary effort required to operate a value. This turning force in a butterfly valve is determined by three factors; the friction of the disc and seat due to interference for sealing, bearing friction, and fluid dynamic torque. Breakaway torque is the total of the torques resulting from bearing friction and disc /seat interference friction at a given pressure differential. This value is normally the highest required torque to operate a valve, and is used to size the actuator. Listed below are recommended sizing torques.

Note: These values include a safety factor and are for gases, including nonlubricating or dry gases, at 70 °F. Values for water and lubricating fluids would be reduced. Consult your ASC Engineered Solutions Sales Offci e for additional application information.

Actuator Sizing For General Service Application Series 8000GR Breakaway Torque

Line Pressure	Valve Size (In.)				
	14	16	18	20	24
(PSI)/Bar	Breakaway Torque (In. - Lbs.) / N-m				
50	6,246	8,262	10,800	13,662	20,250
3.4	706	934	1,220	1,544	2,288
100	7,200	9,900	13,050	16,650	24,300
6.9	814	1,119	1,475	1,881	2,746
150	8,262	11,400	15,300	19,650	28,330
10.3	934	1,288	1,729	2,220	3,201

C_V VALUES (WATER @ 70°F SP. GR. = 1.00)

Valve Size	Disc Position (Degrees Open)							
	20°	30°	40°	50°	60°	70°	80°	90°
In./mm								
14 350	335	670	1,226	1,935	2,893	4,406	6,752	9,578
16 400	443	886	1,622	2,560	3,827	5,829	8,933	12,671
18 450	567	1,138	2,075	3,275	4,896	7,457	11,429	16,211
20 500	711	1,422	2,609	4,116	6,156	9,377	14,371	20,385
24 600	1,038	2,078	3,792	5,985	8,947	13,628	20,887	29,627

Fluid Dynamic Torque is the force exerted when a fluid passes over the surface of the butterfly valve disc. The magnitude of this force is dependent on valve size, disc opening and flow through the valve. Typically, fluid dynamic torque is a maximum at an approximate 75° disc opening. Generally, the effects of dynamic torque ca n be ignored when the velocity is less than 15 feet/second for liquids and 15,000 feet/minute for gases to minimize the effects of turbulence on the valve. For applications above these limits, consult engineering.

The formula for determining the velocity for liquids is:

$$V = 0.0022 \frac{Q}{A}$$

V = Velocity of liquid (feet/second)

Q = Flow (gallons/minute)

A = Area of upstream pipe (sq. ft. See "Area of Pipe" chart

The formula for determining the velocity of gases:

$$Vg = \frac{Qf}{A}$$

Vg = Velocity of gas (feet/minute)

Qf = Flow of gas @ flowing condition* (cubic feet/minute)

A = Area of upstream pipe (sq. ft.) See "Area of Pipe" Chart

Area of Pipe

Pipe Size (Sch 40)	Area
In./mm	Sq. ft/Sq. cm
14 350	0.940 873.29
16 400	1.227 1,140
18 450	1.553 1,443
20 500	1.931 1,794
24 600	2.792 2,594

*Flowing condition means at temperature and pressure of gas stream in the valve

Butterfly Valves
Fig. 70G

The Fig. 70G Butterfly Valve is designed for use with Gruvlok couplings, an ASC Engineered Solution, for fast and easy installation on grooved pipe. The valve body is fully rubber lined in EPDM or Nitrile material. A 316 Stainless Steel Disc is standard. The valve is supplied with a two position lockable handle.

Grooved ends conform to the requirements of AWWA C606.

Not intended for use in potable water systems.

Performance

Pressure Rating: 200 psi (13.8 bar) maximum working pressure.

The valve must not be installed with the disc in the fully open position. The disc must be partially closed so that no part is protruding past the end of the valve body during installation.

Material Specifications

Housing
Ductile iron conforming to ASTM A 536, Grade 65-45-12, painted.

Body
Carbon steel, elastomer lined

Body Lining
Grade E (EPDM):
-40°F to 230°F (-40°C to 110°C)
(Service Temperature Range)
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
Not For Use In Petroleum Services.

Grade T (Nitrile):
-20°F to 180°F (Service Temperature Range)
(-29°C to 82°C)
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
Not For Use In Hot Water Services.

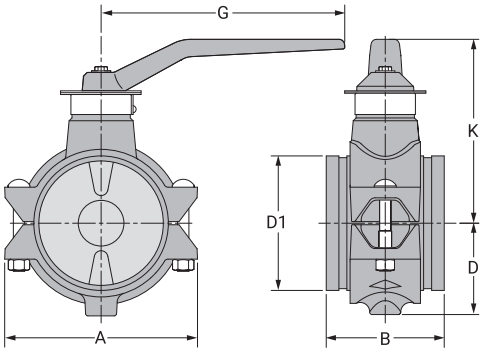
Upper & Lower Stem
416 Stainless Steel

DISC
316 Stainless Steel

HOUSING BOLTS & NUTS
Heat treated, oval-neck track head bolts conforming to ASTM A-183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A-563 Grade A or Grade B, or SAE J995 Grade.
2. Bolts and nuts are provided zinc electroplated.

ASC Engineered Solutions

Butterfly Valves
Fig. 70G



Nominal Size	Nominal Dimensions						Approx. Wt. Ea.
	A	B	D	D1	K	G	
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg.
2 50	4.06 103	3.19 81	1.87 48	2.37 60	2.37 60	5.5 140	3.50 1.6
3 80	5.62 143	3.81 97	2.75 70	3.50 89	3.50 89	7.00 178	7.00 3.2
4 100	7.00 178	4.56 116	3.50 88.9	4.50 114	4.50 114	9.00 229	12.00 5.5
6 150	9.5 241	5.81 148	4.50 114	6.63 168	6.63 168	12.00 305	30.00 13.6

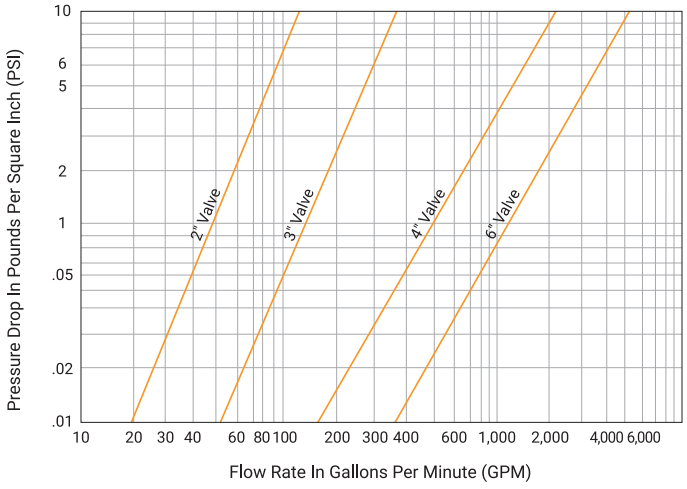
C_V Values

Size		Flow Coefficients – CV
Nominal Diameter	Actual Outside Diameter	Full Open Valve
In./mm	In./mm	
2 50	2.375 60.3	74 –
3 80	3.500 88.9	173 –
4 100	4.500 114.3	829 –
6 150	6.625 168.3	1287 –

C_V values for flow of water are with a full open valve.

Flow Characteristics

The chart below expresses the flow of water through a full open valve.



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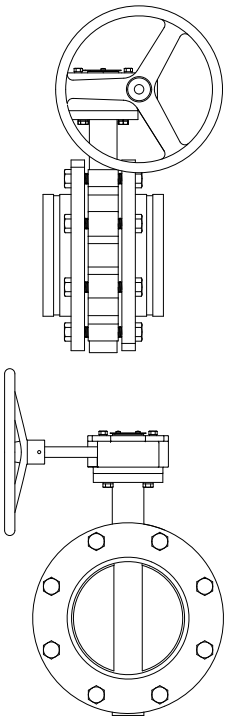
Gruvlok® Butterfly Valve
Fig. 1700G



Our figu e 1700G grooved end butterfly valve is offered in 2" through 12" sizes and is designed to be used in standard mechanical system applications up to 200 psi and temperatures ranging from –30°F to 275°F.

Features

- 316 Stainless Steel Disc
- 416 Stainless Steel Stem
- Pinless Disc & Stem Design
- Bi-directional
- Suitable for Dead End Service
- Seat design eliminates the need for flanged gaskets
- ISO 5211 Mounting Pad
- MSS SP-25 Markings
- MSS SP-67
- API 609
- EPDM seat -30°F to 275°F

Material Specifications

Housing
Ductile Iron conforming to ASTM A536, Grade 65-45-12

Coatings *
Flange Adapters: Rust inhibiting paint (Color: Orange)
Valve: Fusion bonded epoxy (Color: Blue)

Seat
EPDM -30°F to 275°F
Nitrile -20°F to 180°F

Operator
10 Position Lockable Lever Handle
Gear Operator
Bare Stem

*For other coating requirements, contact an ASC Engineered Solutions™ Representative.

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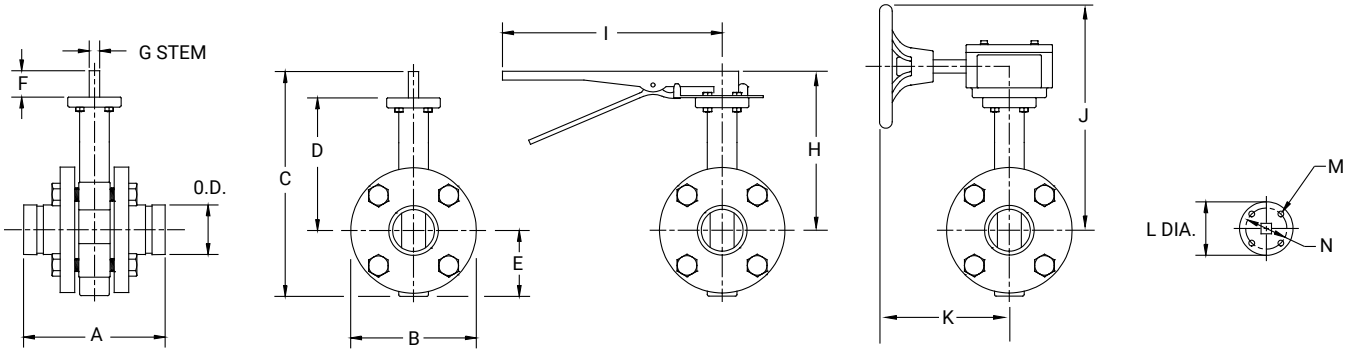
Gruvlok® Butterfly Valve
Fig. 1700G



Series 17 Butterfly Valve Dimension (inches)

Nominal Size*	O.D.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight
2	2.375	6.77	6	10.74	6.33	3.15	1.26	0.35	7.59	6.39	10.78	6.1	2.56	0.27	1.96	20.23
2 ½	2.875	6.87	7	11.65	6.89	3.5	1.26	0.35	8.15	10.5	11.34	6.1	2.56	0.27	1.96	24.64
3	3.5	6.93	7.5	12.12	7.12	3.74	1.26	0.35	8.38	10.5	11.57	6.1	2.56	0.27	1.96	27.97
4	4.5	7.65	9	13.62	7.87	4.49	1.26	0.43	9.13	10.5	12.32	6.1	3.54	0.39	2.76	44.43
5	5.563	7.78	10	14.64	8.38	5	1.26	0.55	9.64	10.5	12.83	6.1	3.54	0.39	2.76	58.79
6	6.625	7.8	11	15.63	8.89	5.48	1.26	0.55	10.15	10.5	13.34	6.1	3.54	0.39	2.76	71.03
8	8.625	8.49	13.5	18.89	10.23	6.89	1.77	0.67	12	14.21	17.86	8.74	4.92	0.47	4.01	99.22
10	10.75	9.5	16	21.26	11.49	8	1.77	0.86	13.26	19.64	19.17	8.74	4.92	0.47	4.01	169.04
12	12.75	10.15	19	22.8	13.26	7.77	1.77	0.86	15.03	19.64	20.94	8.38	5.51	0.47	4.01	244.25

Published weights for 2" through 8" sizes include lever operator. 10" and 12" size weights include gear operator.

Gruvlok® Butterfly Valve
Fig. 1700G

Technical Information

Size	Gear Op			C_V									Torque			
	Output Lbs	Ratio	Gear Box	10°	20°	30°	40°	50°	60°	70°	80°	90°	50 psi	100 psi	150 psi	200 psi
2	1504	24:1	1 Stage	0.1	5	12	24	45	64	90	125	135	70	105	108	115
2-½	1504	24:1	1 Stage	0.2	8	20	37	65	98	144	204	220	100	150	136	152
3	1504	24:1	1 Stage	0.3	12	22	39	70	116	183	275	302	150	250	192	204
4	1504	24:1	1 Stage	0.5	17	36	78	139	230	364	546	600	230	260	328	352
5	1504	24:1	1 Stage	0.8	29	61	133	237	392	620	930	1022	350	530	512	548
6	1504	24:1	1 Stage	2	45	95	205	366	605	958	1437	1579	460	680	831	907
8	6195	30:1	1 Stage	3	89	188	408	727	1202	1903	2854	3136	740	1110	1527	1697
10	6195	30:1	1 Stage	4	151	320	694	1237	2947	3240	4859	5340	1330	1880	2530	2857
12	12620	50:1	1 Stage	5	234	495	1072	1911	3162	5005	7507	8250	2260	3150	3794	4338

Size (in)	Pressure Rating (psi)	Temperature Rating (°F)			
		EPDM		Buna N	
		Min	Max	Min	Max
2 - 8	200	-30	275	10	180

Published weights for 2" through 8" sizes include lever operator. 10" and 12" size weights include gear operator.

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Large Diameter Butterfly Valve with Gear Operator
Model B333

The Model B333 Large Diameter Butterfly Valve provides efficient control of fluid flow in piping systems. It is a grooved-end bubble tight shut-off valve with end-to-end dimensions that meet MSS SP-67, Table 4 and a mounting pad that meets ISO 5211 for the mounting of power actuators. The valve is capable of bidirectional fluid flow at working pressures to 300 psi (20 bar) and may be positioned in any orientation.

The 14 to 24 inch (DN350 to DN600) Model B333 Butterfly Valve is configuraed with a worm type gear operator and consists of an epoxy powder coated ductile iron body and EPDM or Nitrile (NBR) rubber encapsulation dual-seal disc. The body and disc construction provides for increased strength and durability. The disc seal and body coating are compatible with a variety of chemicals and temperature ranges. Contact your ASC Representative for specific recommendations on seal and coating selections.

Maximum Working Pressure: 300 psi (20 bar), non-shock cold water

Material Specifications

Valve Body & Disc
Ductile iron conforming to ASTM A536, Gr. 65-45-12 and/or to ASTM A395 Gr. 65-45-15

Stem Seals
O-Ring, EPDM

Body Coating
Epoxy powder coating, black color

Disc Encapsulation
Grade "E" EPDM, Grade "T" Nitrile (NBR)

Upper and Lower Shafts
Stainless steel conforming to ASTM A582, Type 410

Gear Operator Housing
Cast iron, conforming to ASTM A126-B

Set Screw
Cr-Mo Steel

Hex Nut
Carbon Steel

Spring Pin
Spring Steel

Seat Material:

- Grade "E" EPDM – For service temperatures from -30°F to 200°F (-34°C to 93°C). Recommended for water service, dilute acids, alkalies, oil-free air, and many chemical services.
  Note: Not recommended for use in petroleum services.
- Grade "T" Nitrile – For service temperatures from -20°F to 180°F (-29°C to 82°C). Recommended for petroleum products, air with oil vapors, vegetable oils, and mineral oils. They are not recommended for use in hot water services.
  Note: Not recommended for use in hot water services.

Contact an ASC Engineered Solutions Sales Representative for specific recommendations on seat material.

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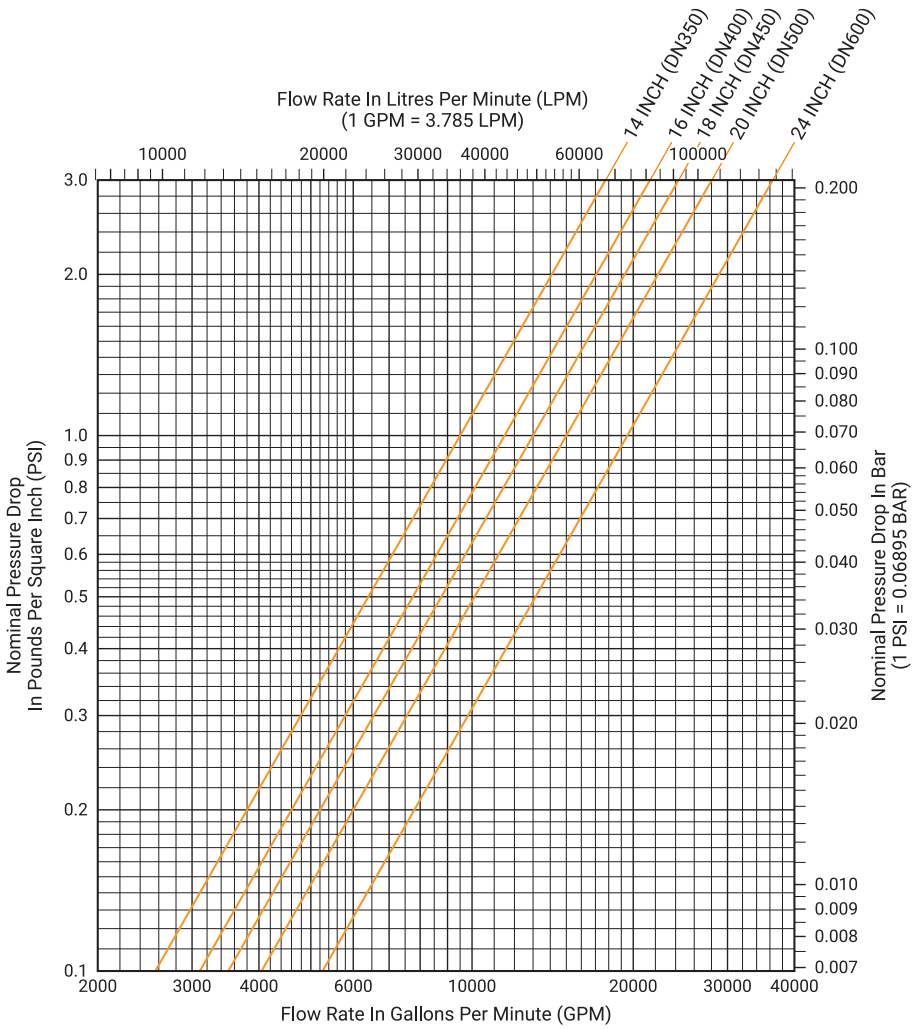
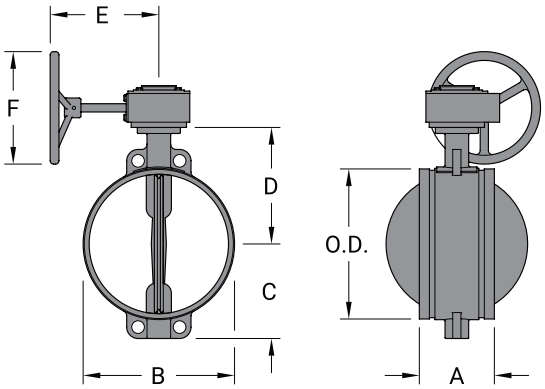
Large Diameter Butterfly Valve with Gear Operator
Model B333



Note: For design purposes, a safety factor of 15% to 20% should be applied to the values in the above table.

Large Diameter Butterfly Valve with Gear Operator
Model B333



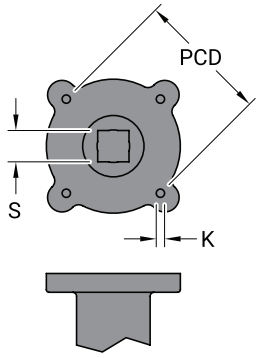
B333 Large Diameter Butterfly Valve

Valve Size	O.D.	Operating Torque	Dimensions						Approx. Wt. Ea.
			A	B	C	D	E	F	
In./mm	In./mm	In-lb/Nm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
14 350	14.000 355.6	3000 339	7.00 178	14.37 365	8.82 224	10.86 276	9.5 242	12.00 305	130.0 59
16 400	16.000 406.4	4000 452	7.00 178	16.38 416	9.76 248	11.89 302	9.5 242	12.00 305	147.4 67
18 450	18.000 457.2	5500 621.5	8.00 203	18.50 470	11.14 283	13.78 350	11.40 290	16.20 412	223.5 101.4
20 500	20.000 508.0	8000 904	8.50 216	20.75 527	12.36 314	15.08 383	11.40 290	16.20 412	292.6 133.0
24 600	24.000 609.6	9500 1073.5	10.00 254	24.76 629	14.49 368	17.83 463	11.40 290	16.20 412	352.0 160.0

These torque values were derived from test data with non-lubricated valves in water, non-pressurized at ambient temperatures
For information on alternative sizes, contact an ASC Engineered Solutions Sales Representative.
Note: The torque values are based on liquid applications. For dry or non-lubricating applications add a 25% service factor to the above values.

Gear Operator Mounting Dimensions

Valve Size	PCD Dia.	Dimensions	
		Bolt Size K	S
In./mm	In./mm	In./mm	In./mm
14 350	4.90 125	M12	0.94 24.0
16 400	5.5 140	M16	1.44 36.6
18 450	5.50 140	M16	1.736 44.1
20 500	6.50 165	M20	2.04 52.0
24 600	6.50 165	M20	2.04 52.0



Low Profile But erfly Valve
Series 8100

The Series 8100 Low Profile Butterfly Valve has a rated working pressure of 300 psi (20.7 bar) and provides efficient control of fluid in piping systems. Flow can be from either direction and the valve may be positioned in any orientation. The ductile iron body is epoxy-coated to resist atmospheric corrosion. The disc is EPDM encapsulated ductile iron compatible with a variety of chemicals and temperature ranges.

Maximum Working Pressure: 300 psi (20.7 bar)

Material Specifications

Body
Ductile iron conforming to ASTM A536

Body Coating
Black Epoxy-Coated

Disc
Ductile iron conforming to ASTM A 536

Disc Seal:

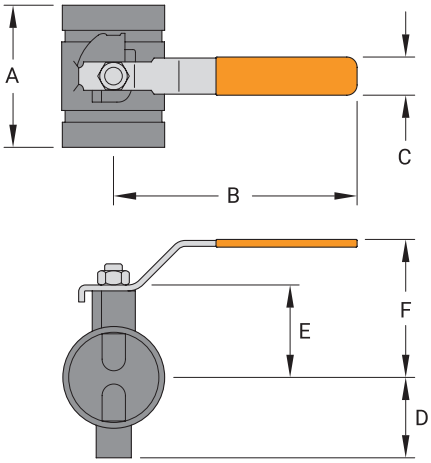
- Grade "E" EPDM encapsulated rubber -20°F to 250°F (-29°C to 121°C) with intermittent service at 250°F (121°C) and continuous service at 225°F (107°C)
- Optional: Grade "T" Nitrile encapsulated rubber -20°F to 180°F (-29°C to 82°C)

Stem
Two-piece stainless steel, splines conforming to AISI 420

Stem Seal
EDPM O-rings, upper and lower stem

Handle
Zinc-plated carbon steel

Low Profile But erfly Valve
Series 8100



Valve Size	O.D.	Dimensions						Approx. Wt. Ea.
		A	B	C	D	E	F	
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	3.4 87.4	6.0 154.4	1.0 25.4	1 .8 46.0	2.3 59.0	3.2 81.0	5.0 2.3
2½ 65	2.875 73.0	3.8 96.8	6.0 154.4	1.0 25.4	2.1 52.3	2.4 92.9	3.6 91.9	7.0 3.2
3 80	3.5 88.9	3.8 96.8	8.4 214.4	1.0 25.4	2.6 66.5	2.7 98.1	4.3 108.0	8.0 3.6
4 100	4.5 114.3	4.6 117.9	8.4 214.4	1.0 25.4	3.3 84.1	3.3 84.1	4.9 125.5	12.0 5.4
5 125	5.563 141.3	5.2 132.4	12.3 311.2	1 .3 31.8	3.9 99.0	3.9 99.0	5.8 147.6	-
6 150	6.625 168.3	5.3 133.4	12.3 311.2	1.3 31.8	4.4 113.3	4.4 113.3	7.0 177.8	19.0 8.6

PVC Butterfly Valve (Spline x Spline)
Model B8200L

Material Specifications

Body
Ductile iron conforming to ASTM A536, Gr. 65-45-12

Body Coating
Black Epoxy-Coated

Disc
Ductile iron conforming to ASTM A 536, Grade 65-45-12

Disc Seal
Grade "T" Nitrile encapsulated rubber

Stem
Two-piece Type 316 Stainless Steel Splines

Stem Seal
EPDM O-rings, upper and lower stem

Handle
Zinc-plated carbon steel

Model B8200L Butterfly Valves are available in sizes 2 through 8 inch diameters. Precision machined grooves in the valve body provide easy alignment of the valve and compatible PVC couplings, allowing for the insertion of the spline to connect the Model B8200L Valve to the PVC piping system. Flow may enter the valve from either direction and valve can be orientated in any direction.

The valve efficiently controls the flow of fluid through the use of a 10-position lever lock plate that has full open, closed, and graduated intermediate locking positions. The lever handle may be pad-locked in any of the positions, including full open and closed to prevent tampering.

The valve body is constructed of ductile iron with a tough epoxy-coating. The disc is Nitrile coated ductile iron construction. The body and disc construction provide high strength and durability as well as compatibility with a wide variety of chemicals. Type 316 Stainless Steel Stems have EDPM O-rings as back-up seals.

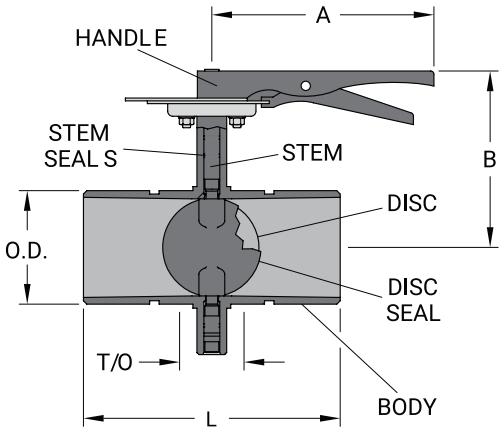
Model B8200L Butterfly Valves have a rated working pressure of 320 psi (22 bar), which equals or exceeds the pressure rating of all components. The working temperature range of the valve is from 32°F to 140°F (0°C to 60°C).

Maximum Working Pressure: 320 psi (22 bar)

Working Temperature Range: 32°F to 140°F (0°C to 60°C)

ASC Engineered Solutions

PVC Butterfly Valve (Spline x Spline)
Model B8200L



Valve Size	O.D.	Dimensions				Approx. Wt. Ea.
		A	B	L	T/O	
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	7.95 202.0	5.16 131.0	7.50 191.1	2.40 61.0	8.8 4.0
3 80	3.500 88.9	7.95 202,0	5.75 146.0	9.18 233.2	2.17 55.1	17.6 8.0
4 100	4.500 114.3	7.95 202.0	7.05 179.0	10.18 258.6	2.08 52.8	26.4 12.0
6 150	6.625 168.3	10.28 261.0	8.39 213.0	10.41 264.6	2.31 58.7	50.6 23.0
8 200	8.625 219.1	12.40 314.9	9.37 238.0	10.96 278.4	2.00 50.8	74.8 34.0

10" and 12" (250 and 300mm) are available upon request. Contact ASC Engineered Solutions Sales Representative.

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Ball-Valves
Series 7500

The Series 7500 grooved-end ball valve line consists of a 2" to 6", two piece design, and is available in configurations to address a broad spectrum of application requirements.

The Series 7500 has generous factors of safety for pressure retention and stem torsional strength. In addition, it has a blow-out proof stem design, low operating torque, and high C_v.

The Series 7500 is compliant with NACE MR01-75 when stainless steel trim is specified.

Grooved ends conform to the requirements of AWWA C606 for steel pipe.

For special configurations, contact your ASC Engineered Solutions representative.

For stainless steel, see the stainless steel section.

Pressure-Rating: 800 psig CWP (55 bar) in ASTM A 395 Ductile Iron

Material Specifications

Ductile Iron/Stainless Steel

Body
Ductile Iron ASTM A 395

Endplate
Ductile Iron ASTM A 395

Ball
Stainless Steel 316 or 304

Stem
316 Stainless Steel

Thrust Washer
RTFE

Stem Seal
Flouroelastomer

Retaining Ring
Carbon Steel

Handle
Carbon Steel Zinc Plated

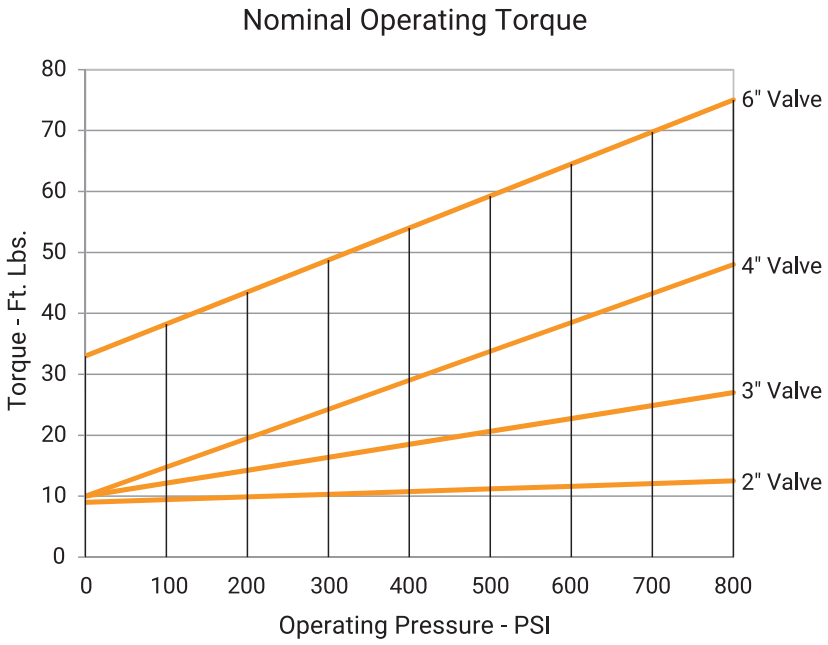
Handle Nut
300 Series Stainless Steel

Seat
RTFE

Body Seal
Viton

Lock Plate
300 Series Stainless Steel

Ball–Valves
Series 7500



The nominal torque values are for water and lubricating service only.
For dry gasses an additional multiplier of 2 should be applied to the nominal values.
Additional torque of up to 3 times the nominal value may be required to break the ball loose if the valve is not frequently operated.

Series 7500 Ball Valves (Ordering Information)

Sample Part Number
4" GI-7512-2 –>

4"	G	I -	75	4	2 -	2
Size	Configuration	Body/End Material	Series	Ball and Stem Material	Seat Material	Operator
2" - 6"	**G** - 2 Way Grooved End	**I** - Ductile Iron ASTM A395	75 - 7500	**4** - 304 Stainless Steel (2" - 4") **6** - 316 Stainless Steel	**2** - RTFE / Flouroelastomer	**2** - 2 Position Locking Handle **3** - Bare Stem (6" only) **M** - Mining Handle (4" & 6" only)

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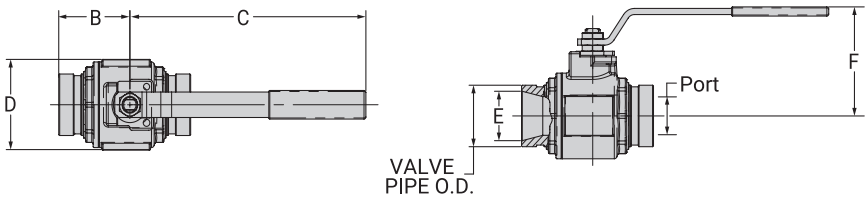
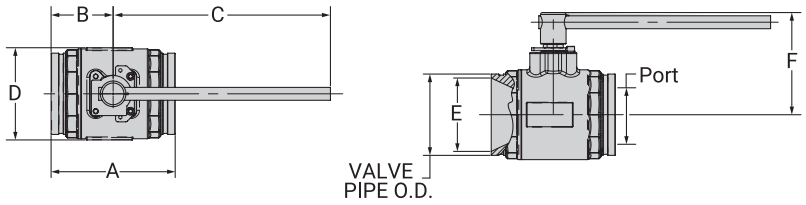
Ball-Valves
Series 7500



7500 Ball Valve

Size ANSI	O.D.	Nominal Dimensions							Cv	Approx. Wt. Ea.
		A	B	C	D	E	F	Port		
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm		Lbs./Kg
2 50	2.375 60.3	5 1/2 140	2 31/32 75	9 55/64 250	3 1/2 89	1 59/64 49	4 15/64 107	1 1/2 38	170	7.5 3.4
3 80	3.500 88.9	6 9/16 167	3 37/64 91	12 5/8 321	5 5/64 129	2 57/64 74	5 31/64 139	2 1/2 64	425	18.0 8.2
4 100	4.500 114.3	8 1/4 210	4 11/64 106	15 1/64 382	5 29/32 150	3 3/4 95	5 15/16 151	3 76	600	34.0 15.5
6* 150	6.625 168.3	10 7/64 257	5 1/16 129	15 1/64 382	7 33/64 191	5 63/64 152	7 13/32 188	4 102	850	67.0 30.5

*6" sizes come bare stem only. 2 position locking handle sold separately.



7500 Ball Valve With Mining Handle

Size ANSI	O.D.	Nominal Dimensions							Cv	Approx. Wt. Ea.
		A	B	C	D	E	F	Port		
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm		Lbs./Kg
4* 100	4.500 114.3	8 1/4 210	4 11/64 106	17 23/32 450	5 29/32 150	3 3/4 95	6 55/64 174	3 76	600	35.0 15.9
6* 150	6.625 168.3	10 7/64 257	5 1/16 129	17 23/32 450	7 33/64 191	5 63/64 152	8 21/64 212	4 102	850	68.0 30.9

*Mining handle sold separately.

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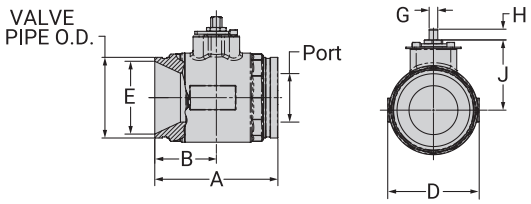
Ball–Valves
Series 7500



7500 Ball Valve With Bare Stem

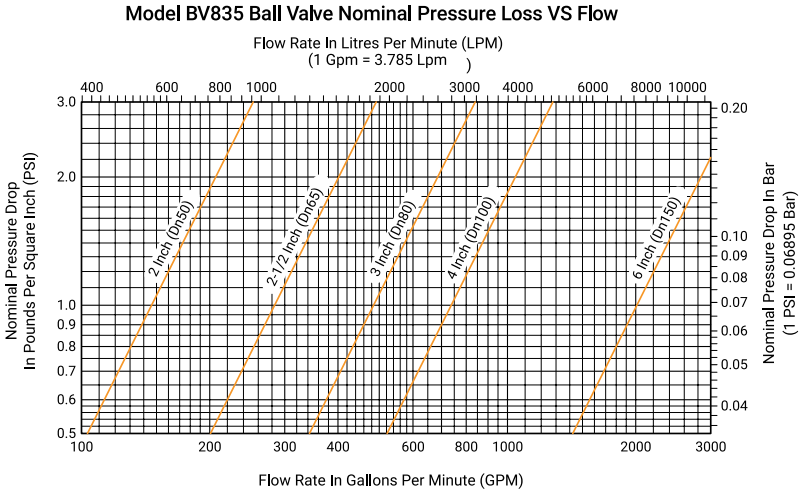
Size ANSI	O.D.	Nominal Dimensions								Cv	Approx. Wt. Ea.
		A	B	D	E	G	H	I	Port		
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm		Lbs./Kg
6 150	6.625 168.3	10 7/64 257	5 1/16 129	7 33/64 191	5 63/64 152	45/64 18	7/8 23	5 49/64 147	4 102	850	66.0 30.0

Standard option, handle sold separately.

Grooved End Ball Valve with Lever Handle and Gear Operator
Model BV835

The Model BV835 is a ductile iron, grooved end, regular port, two-piece ball valve that provides for efficient control of fluid in piping systems. The Model BV835 is designed and tested in conformance with MSS SP-110 and MSS SP-72. Flow may be from either direction, and the valves may be positioned in any orientation. The valves are furnished with grooved ends for use with Gruvlok grooved couplings. The handle is provided with a device for padlocking in either the open or closed position. The mounting pad is made to ISO 5211 to allow for mounting of power actuators.

Maximum Working Pressure: 1,000 psi (68.9 bar) 2" – 3" (50 – 80mm)
800 psi (55.1 bar) 4" – 6" (100 – 150mm)



Material Specifications

Body
Ductile iron conforming to ASTM A536, Gr. 65-45-12

Body Coating
Black enamel

Body Seal
PTFE

Ball
Type 304 Stainless Steel

Ball Seat
2" - 4" – Glass-filled TFE, 6" – Carbon-filled TFE

Stem
Carbon steel, nickle-plated, Optional: Type 304 Stainless Steel

Stem O-Ring
Fluroelastomer

Stem Seal
PTFE

Lever Handle
- 2" – 3" (50 – 80mm): Carbon Steel, Zinc Plated with PVC Plastic
- 4" – 6" (100 – 150mm): Ductile Iron and Carbon Steel

Bracket & Extension Sleeve
Ductile Iron conforming to ASTM A536, Grade 65-45-12 and/or ASTM A395, Grade 65-45-15

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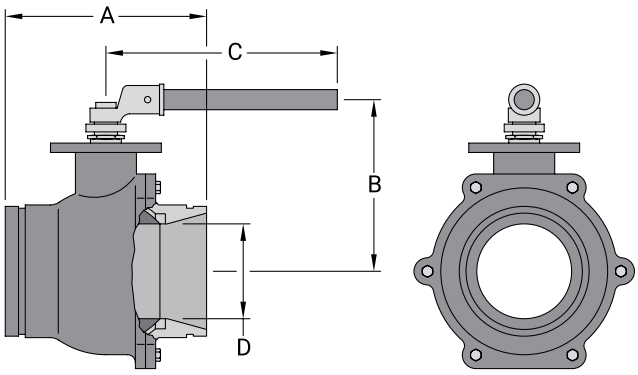
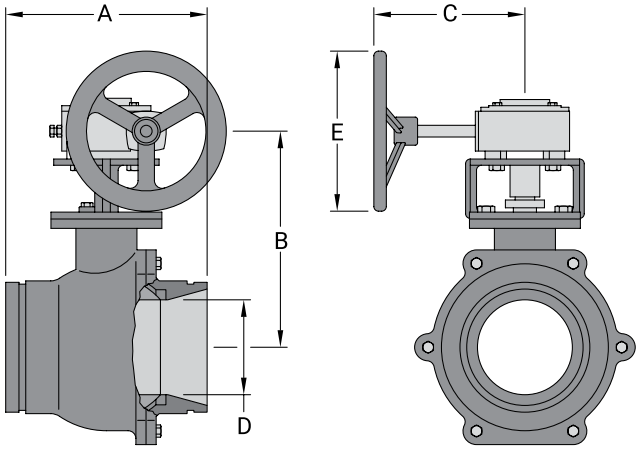
Grooved End Ball Valve with Lever Handle and Gear Operator
Model BV835





BV835 Ball Valve with Lever Handle

Valve Size	O.D.	Operating Torque	Dimensions				Approx. Wt. Ea.
			A	B	C	D	
In./mm	In./mm	In.-Lbs./Nm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	150 17	5.50 140.0	3.75 95.0	7.00 178.0	1.50 38.1	6.4 2.9
2½ 65	2.875 73	186 21	6.25 159.0	5.20 132.0	10.43 265.0	2.00 51.0	10.6 4.8
3 80	3.500 88.9	248 28	6.56 167.0	5.63 143.0	10.43 265.0	2.50 63.5	13.4 6.1
4 100	4.500 114.3	398 45	9.45 240.0	5.35 135.8	23.6 600.0	3.50 90.0	60.0 27.2
6 150	6.625 168.3	531 60	10.15 258.0	8.68 220.5	23.6 600.0	4.92 125.0	79.2 36.0

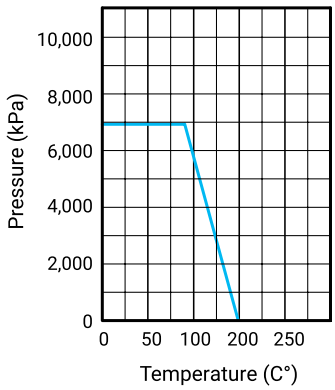
For the first opening or closing of the valve when the valve is not continuously operated, an additional torque of 2.0 – 2.5 times the listed operating torque is normally required. For information on larger sizes, contact an ASC Engineered Solutions Sales Representative.

BV835 Ball Valve with Gear Operator

Valve Size	O.D.	Dimensions					Approx. Wt. Ea.
		A	B	C	D	E	
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60,3	5.50 140,0	5.38 137,0	8.00 203,2	1.50 38,1	6.00 152,4	18.0 8,0
2½ 65	2.875 73,0	6.25 159,0	5.68 144,2	8.00 203,2	2.00 51,0	6.00 152,4	22.0 10,0
3 80	3.500 88,9	6.56 167,0	7.16 182,0	8.00 203,2	2.50 63,5	6.00 152,4	31.0 14,0
4 100	4.500 114,3	9.45 240,0	8.00 203,2	8.00 203,2	3.50 90,0	6.00 152,4	73.0 33,0
6 150	6.625 168,3	10.15 258,0	10.89 277,0	14.00 356,0	4.92 125,0	12.00 305,0	123.4 56,0

For information on larger sizes, contact an ASC Engineered Solutions Sales Representative.

Model BV835 Ball Valve
Pressure Performance



GRUVLOK
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Check Valve
Fig. 90G

The Fig. 90G Check Valve is designed for use with Gruvlok couplings, an ASC Engineered Solution, for fast and easy installation on grooved pipe.

Grooved ends conform to the requirements of AWWA C606.

The valve is fited with a large bonnet closure for ease of field servicing

All Fig. 90G Check Valves are supplied with a ½" NPT pipe plug installed in the bonnet cap.

The valve is available with Bonnet Gaskets and Clapper Seals made from EPDM or Nitrile.

Performance

Pressure Rating: 300 psi (20.7 bar) maximum working pressure.

The Fig 90G must be installed with the arrow on the valve body point in the direction of flow through the pipeline. This valve must be installed on horizontal pipelines only.

Material Specifications

Body
Ductile iron conforming to ASTM A 536, Grade 65-45-12, painted.

Bonnet Cap
Ductile iron conforming to ASTM A 536, Grade 65-45-12, painted.

Bonnet Coupling Housing
Ductile iron conforming to ASTM A 536, Grade 65-45-12, painted.

Clapper
Type 316 Stainless Steel

Clapper Pin
Type 316 Stainless Steel

Bushing
PTFE

Clapper Seat/Bumper/Bonnet Gasket
Grade E (EPDM):
-40°F to 230°F (-40°C to 110°C) (Service Temperature Range)
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
Not For Use In Petroleum Services.

Grade T (Nitrile):
-20°F to 180°F (Service Temperature Range) (-29°C to 82°C)
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
Not For Use In Hot Water Services.

Plugs
Malleable iron conforming to ASTM A 47, galvanized.

Closure Bolts & Nuts
Heat treated, oval-neck track head bolts conforming to ASTM A-183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A-563 Grade A or Grade B, or SAE J995 Grade 2. Bolts and nuts are provided zinc electroplated.

ASC Engineered Solutions

Check Valve
Fig. 90G

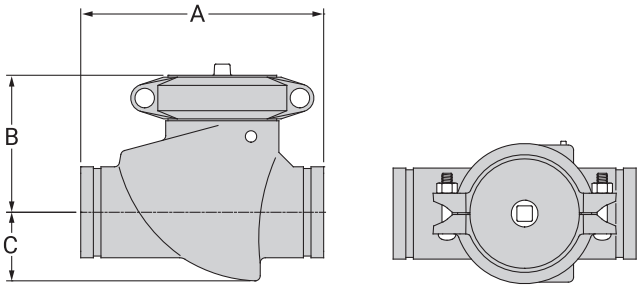


Fig. 90G Check Valve

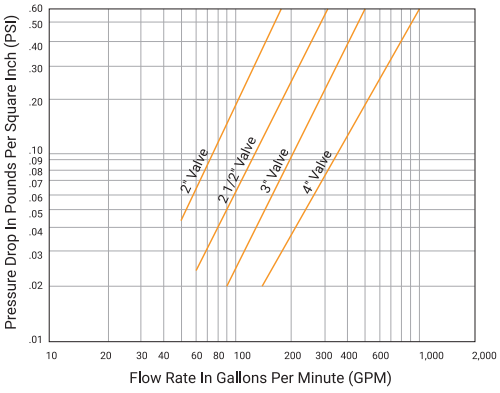
Nominal Size	O.D.	Nominal Dimensions			Approx. Wt. Ea.
		A	B	C	
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	Lbs./Kg.
2 50	2.375 60.3	9.02 229	5.12 30	1.85 47	11.4 5.2
2½ 65	2.875 73.0	9.25 235	5.34 136	2.24 57	21.3 9.7
3 80	3.500 88.9	10.75 273	5.71 145	2.76 70	16.0 7.3
4 100	4.500 114.3	12.01 305	6.42 163	3.31 84	33.3 15.1

C_V Values

Size		Flow Coefficients – C_V
Nominal Diameter	Actual Outside Diameter	Full Open Valve
In./mm	In./mm	
2 50	2.375 60.3	80 –
2½ 65	2.875 73.0	134 –
3 80	3.500 88.9	210 –
4 100	4.500 114.3	430 –

Flow Characteristics

The chart below expresses the flow of water through a full open valve.



C_V values for flow of water are with a full open valve.

Important Note:

The Fig 90G check valve life may be shortened and system damage may occur if check valves are installed too close to a source of unstable flow. Check valves must be installed at a reasonable distance away from pumps, elbows, expanders, reducers or other similar devices. Sound piping practices dictate a minimum of five (5) times the pipe diameter for general use. Distances between three (3) and five (5) diameters are allowable provided the flow velocity is less than 8 feet per second. Distances less than 3 diameters are not recommended.

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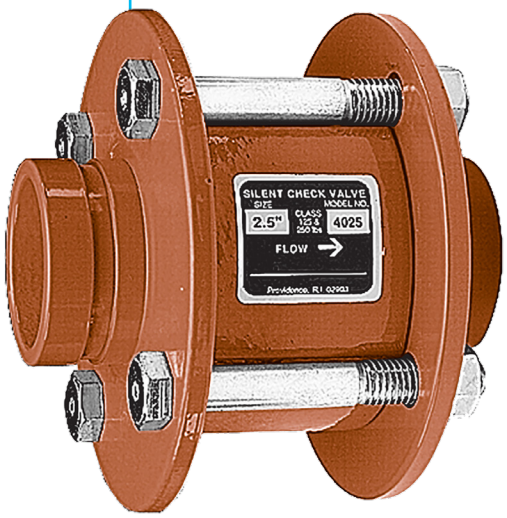
Grooved-End Silent Check Valve
Fig. 400G

Available in Sizes
2" thru 10"



The 400G is a center guided, spring loaded, silent check valve. Designed and engineered for silent operation with low head loss, the valve disc will close prior to the reversal of flow, thereby preventing or minimizing water hammer and damaging shock.

- The 400G can be used in any HVAC, industrial or commercial grooved piping systems.
- The valve is designed for liquid service with any pipe orientation, flow up or down.
- Bronze metal seats are standard, with Stainless Steel or resilient seats available as an option.
- Flow coefficients for this valve are some of the lowest in the industry and are listed for each size on the drawing.

Note: Valve is designed for liquid service only. Install 3 to 4 pipe diameters downstream from pump discharge or elbows to avoid flow turbulence.

Material Specifications

Standard Materials
Cast Iron body ASTM A 48, Class 35
Bronze Disc and Seat ASTM B 584 Alloy 838
Ductile Iron Grooved-Ends ASTM A 395

Optional Trim Materials
Bronze with Nitrile seats
Stainless Steel seats
Stainless with Nitrile seats

1. Body: Cast Iron ASTM A 48, Class 35

2. Seat: Bronze ASTM B 584, Copper Alloy 838

3. Plug: Bronze ASTM B 584, Copper Alloy 838

4. Spring: Stainless Steel T304, ASTM A 313

5. Bushing: Bronze ASTM B 584, Copper Alloy 836

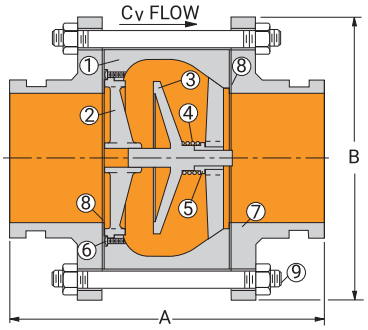
6. Screws: Stainless Steel T304, ASTM A 276

7. Grooved-End: Ductile Iron ASTM A 395

8. Gasket: Non Asbestos
For gasket grade recommendations see the Technical Data section

9. Bolts: Carbon Steel

Other materials and resilient seats are available. contact your Sales representative.



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ASC Engineered Solutions

Grooved-End Silent Check Valve
Fig. 400G

Available in Sizes 2" thru 10"

Fig. 400G Grooved-End Silent Check Valve

Valve Size	O.D.	Model	A	B	C_v Flow *	Approx Wt. Each
In./mm	In./mm	Number	In./mm	In./mm		Lbs./Kg
2 50	2.375 60.3	402G	6 152	6 152	66 1,676	12 5.4
2½ 65	2.875 73.0	4025G	6¼ 159	7 178	88 2,235	15 6.8
3 80	3.500 88.9	403G	6 7/16 164	71/2 191	130 3,302	20 9.1
4 100	4.500 114.3	404G	8⅛ 206	9 229	228 5,791	36 16.3
5 125	5.563 141.3	405G	11¼ 286	10 254	350 8,890	50 22.7
6 150	6.625 168.3	406G	12¼ 311	11 279	520 13,208	68 30.8
8 200	8.625 219.1	408G	13¾ 349	131/2 343	900 22,860	140 63.5
10 250	10.75 273.1	410G	16 406	16 406	1,450 36,830	198 89.8

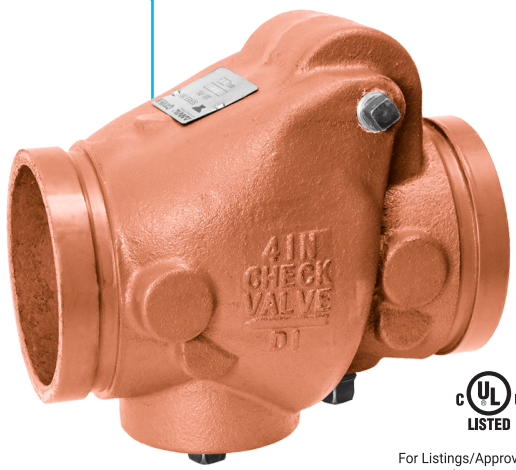
*Flow coefficient is the number of U.S. gallons/minute of 60˚ F (16˚ C) water that will flow through a valve with 1 psi (0.069 bar) of pressure drop across the valve.

Max. Non-Shock Working PSI 125# ANSI B16.1 Flange Rating

Size	Temperature	
	150˚F 65°C	200˚F 90°C
2" - 10"	200 PSI 13.8 bar	190 PSI 13.1 bar

GRUVLOK
An ASC Engineered Solution

Check Valves for use in Grooved-End Piping Systems
Series 7800



c UL us LISTED
FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.asc-es.com or contact an ASC Engineered Solutions Sales Representative.

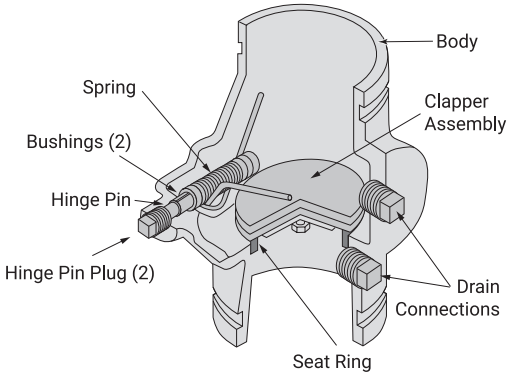
The Gruvlok Series 7800 Check Valve is a compact, cost effective valve offering low pressure-drop, non-slam performance. The Series 7800 Check Valve assembly is lighter and faster to install, and costs less than flanged and wafer valve assemblies.

In the fully open position the Series 7800 swing clapper is held tightly against the valve body, out of the flow stream, to provide maximum flow area and prevention of clapper flutter. The clapper design produces quick, non-slam closure before flow reversal can occur, while meeting FM requirements for an anti-water hammer valve rating.

Each valve is hydrostatically tested for leak tightness to 500 PSI. The clapperseat design permits leak free sealing of back pressures in service conditions ranging from 300 PSI (20.7 bar) to as low as 1 PSI (0.07 bar) (head pressure: 28").

Performance

Pressure Rating: Commercial Applications - Sizes 2" thru 12" inclusive, 300 psi (20.7 bar) maximum working pressure.



Material Specifications

Body
Ductile iron conforming to ASTM A 536, Grade 65-45-12

Coating
Rust inhibiting paint on exterior and interior - color: orange enamel

Clapper
2"- 5" Type 304 or 302 stainless steel to ASTM A 167

6"-12" Ductile iron conforming to ASTM A 536, Grade 65-45-12

Clapper Facing

Grade E EPDM: -40° to 230°F (-40° to 110°C) Service Temperature Range

Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.

Not For Use In Petroleum Services.

Grade T Nitrile: -20° to 180°F (-29° to 80°C) Service Temperature Range

Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.

Not For Use In Hot Water Services.

Seat Ring
Type 304 stainless steel to ASTM A 123, ASTM A 213, ASTM A 312 or ASTM A 269

Spring
Type 302 stainless steel to ASTM A 313

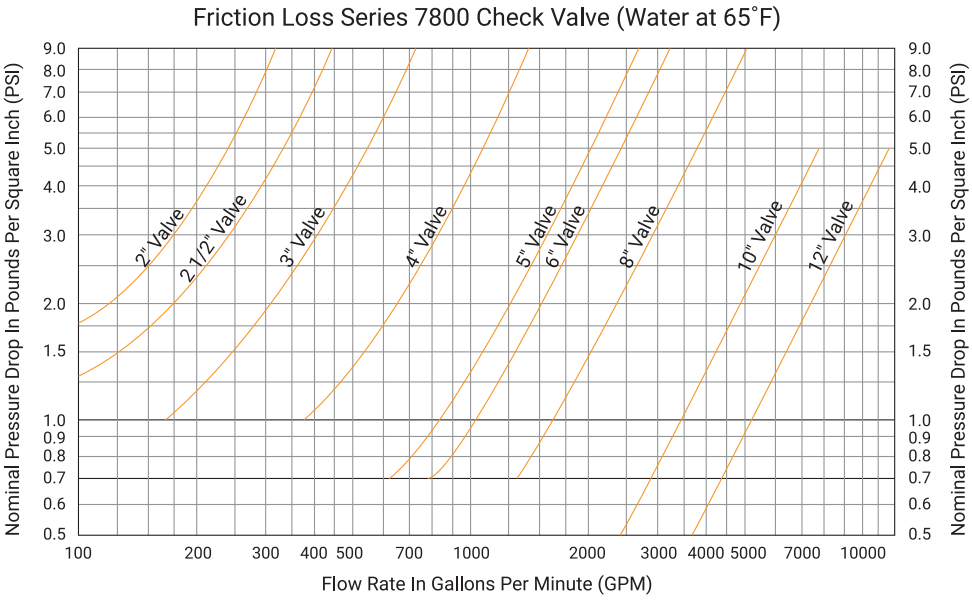
Hinge Pin
Type 304 or 302 stainless steel to ASTM A 580

Hinge Pin Bushings
Sintered bronze to ASTM B 438

Hinge Pin Plugs & Drain Plugs
Cast iron to ASTM A 126 Class A

GRUVLOK
An ASC Engineered Solution

Check Valves for use in Grooved-End Piping Systems
Series 7800



Flow Data - Friction Loss (Ft. of Pipe)

Valve Size	O.D.	C=100			C=120		
		Sch. 10	Sch. 30	Sch. 40	Sch. 10	Sch. 30	Sch. 40
In./mm	In./mm	Ft./m	Ft./m	Ft./m	Ft./m	Ft./m	Ft./m
2 50	2.375 60.3	10 3.0	– –	8 2.4	14 4.3	– –	11 3.4
2½ 65	2.875 73.0	14 4.3	– –	10 3.0	20 6.1	– –	15 4.6
3 80	3.500 88.9	17 5.2	– –	12 3.7	23 7.0	– –	17 5.2
4 100	4.500 114.3	17 5.2	– –	13 4.0	[23] 7.0	– –	18 5.5
5 125	5.563 141.3	14 4.3	– –	11 3.4	20 6.1	– –	15 4.6
6 150	6.625 168.3	23 7.0	– –	19 5.8	33 10.1	– –	26 7.9
8 200	8.625 219.1	35 10.7	32 9.8	30 9.1	50 15.2	45 13.7	43 13.1
10 250	10.750 273.1	28 8.5	25 7.6	24 7.3	40 12.2	36 11.0	34 10.4
12 300	12.750 323.9	31 9.4	28 8.5	26 7.9	44 13.4	39 11.9	37 11.3

Flow Data

The approximate friction losses, based on the Hazen and Williams formula, expressed in equivalent length of pipe is given below.
The friction losses have been calculated on the basis of flow rates typically used with each size valve.

Important Note:

Check valve life may be shortened and system damage may occur if check valves are installed too close to a source of unstable flow. Check valves must be installed at a reasonable distance away from pumps, elbows, expanders, reducers or other similar devices. Sound piping practices dictate a minimum of five (5) times the pipe diameter for general use. Distances between three (3) and five (5) diameters are allowable provided the flow velocity is less than 8 feet per second. Distances less than 3 diameters are not recommended.

This valve may be installed vertically or horizontally. In a horizontal installation, the hinge pin is to be located on top.

Not for use in copper systems.

Check Valves for use in Grooved-End Piping Systems
Series 7800

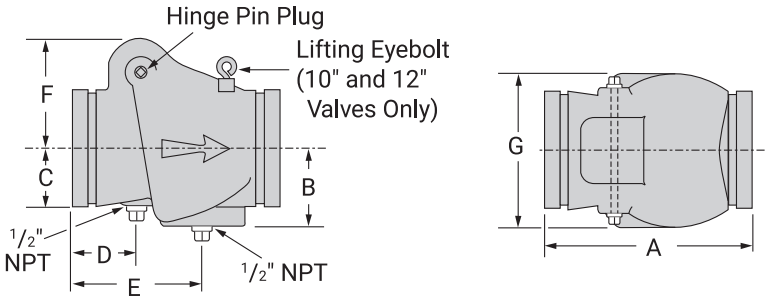


Fig. 7800 Check Valve

Valve Size	O.D.	Nominal Dimensions							Approx. Wt. Ea.
		A	B	C	D	E	F	G	
In./mm	In./mm	Ft./m	Ft./m	Ft./m	Ft./m	Ft./m	Ft./m	Ft./m	Ft./m
2 50	2.375 60.3	6 3/4 171	2 3/8 60	1 7/16 36	1 3/4 44	4 1/2 114	3 3/16 81	4 3/8 111	7.5 3.4
2 1/2 65	2.875 73.0	7 1/4 184	2 7/16 61	1 9/16 39	1 3/4 44	3 13/16 96	3 5/8 92	4 1/2 114	10.5 4.8
3 80	3.500 88.9	7 3/4 197	2 5/8 67	2 51	1 13/16 46	4 1/16 103	3 11/16 93	4 15/16 125	11.5 5.2
4 100	4.500 114.3	8 1/8 206	3 1/8 79	2 1/4 57	2 1/2 64	5 1/16 128	4 1/4 108	6 152	13.5 6.1
5 125	5.563 141.3	9 3/4 248	3 1/2 89	2 3/4 70	2 7/16 61	5 13/16 147	4 5/8 117	6 3/4 171	19.0 8.6
6 150	6.625 168.3	12 3/4 324	4 1/4 108	3 5/16 84	3 1/8 79	6 1/4 159	6 3/4 171	8 1/2 216	33.5 15.2
8 200	8.625 219.1	14 3/4 365	5 1/16 128	3 15/16 100	4 102	5 15/16 150	8 203	10 1/4 260	59.0 26.8
10 250	10.750 273.1	18 457	6 5/16 160	4 15/16 125	4 9/16 115	6 7/8 175	9 3/16 233	12 11/16 322	130.0 59.0
12 300	12.750 323.9	21 533	7 5/16 185	6 152	5 1/16 128	7 1/4 184	10 3/8 264	14 3/4 375	183.0 83.0

Series 7800 Check Valves (Ordering Information)

	4"	78	1	1	X
Sample Part Number 4" 7811-–>	Size	Series	Clapper Facing Material	Body Finish	Special Configuration
	2" - 12"	78 - 7800	1 - EPDM (Std) 2 - Nitrile (Std)	1 - Painted (Std)	2 - Other *

*Contact an ASC Engineered Solutions representative for more information.

ASC Engineered Solutions

Dual Disc Check Valve
Fig. CV890

The Fig. CV890 Dual Disc Check Valve is a grooved end, dual disc check valve used for pipelines to convey water and other fluids with a rated working pressure up to 300 psi (20.7 bar). This Dual Disc Check Valve is available in sizes from 14 inches (350 mm) to 24 inches (600 mm).

The Fig. CV890 Dual Disc Check Valve features a fully lined rubber body, spring-loaded 304 stainless steel disc and shafts. The Dual Disc Check Valve can be installed in a horizontal or vertical position (upward flow only). A lifting lug is provided with the assembly for ease of handling. The face to face dimensions conforms to API 594 Class 150 and grooved end dimensions to ANSI/AWWA C606. The seat and shell pressure tests conform to MSS SP-136 or higher.

The Fig. CV890 Dual Disc Check Valve is lighter than conventional swing check valves and is easier to install, utilizing only two grooved couplings. It is more economical than wafer or lugged valves. The Dual Disc Check Valve design produces less water hammer than a single disc valve. The spring-loaded disc design provides for positive closing. The fully lined rubber body and soft seat reduces noise and maintenance.

Maximum Working Pressure: 300 psi (20.7 bar) @ 100°F (38°C)

Material Specifications

Body
Ductile iron conforming to ASTM A536, Gr. 65-45-12

Body Lining

- Grade Nitrile – For service temperatures from -20°F to 230°F (-29°C to 110°C). Recommended for petroleum products, mineral oils, vegetable oils, aromatic hydrocarbons, acids and water </=150°F (+65°C).

  Note: Not recommended for use in hot water services.

- Grade EPDM – For service temperatures from -30°F to 230°F (-34°C to 110°C). For general service. Recommended for water service, dilute acids, alkalies, oil-free air and many chemical services.

  Note: Not recommended for use in petroleum services.

Disc
Stainless Steel Type 304

Disc Shafts
Stainless Steel Type 304

Spring
Stainless Steel Type 304

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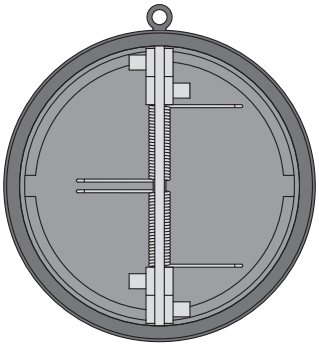
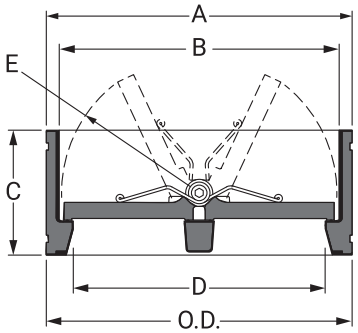
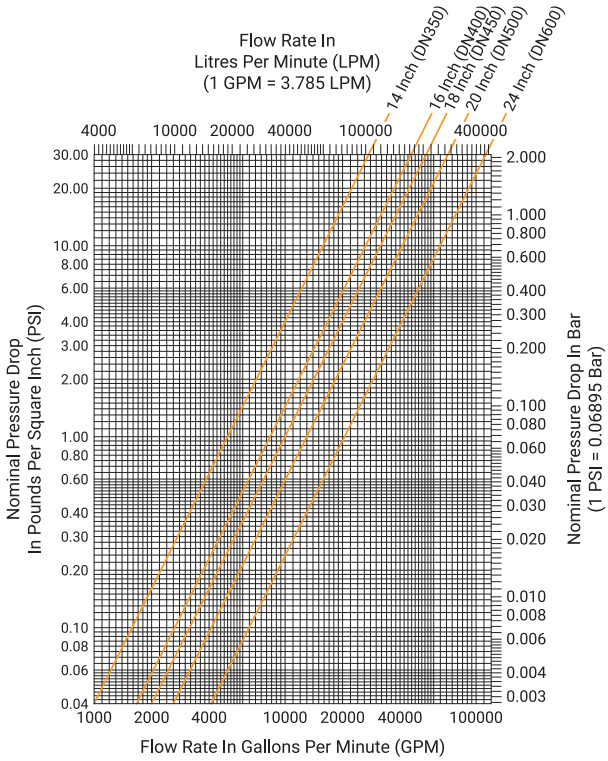
Dual Disc Check Valve
Fig. CV890





Valve Size	O.D.	Dimensions					Approx. Wt. Ea.
		A	B	C	D	E	
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
14 350	14.00 355.6	14.49 368	12.96 329	7.25 184	11.14 283	6.06 154	101 46
16 400	16.00 406.4	16.14 410	14.13 359	7.50 191	12.20 310	6.81 173	119 54
18 450	18.00 457.2	18.15 461	16.42 417	8.000 203	14.33 364	8.00 203	169 77
20 500	20.00 508.0	20.04 509	18.11 460	8.625 219	16.06 408	8.80 226	211 96
24 600	24.00 609.6	24.00 610	22.13 562	8.750 222	18.00 457	9.80 249	131 288



ASC Engineered Solutions

CTS Copper Butterfly Valve
Series 6700

NSF/ANSI 61
UPC
C ®
Hot Water / Annex G
LEAD FREE

Material Specifications

Valve Body:
ASTM B584 C89836; Bronze, Low Lead

Disc:
ASTM A536 Gr. 65-45-12; Ductile Iron

Disc Encapsulation:
Grade "EP" EPDM Rubber: Service temperature range: -40˚F to +250˚F (-40˚C to +121˚C. Recommended for water service, diluted acids, alkaline solutions, and oil-free air.

NOT RECOMMENDED FOR USE IN PETRO-LEUM APPLICATIONS.

Upper and Lower Shafts:
Stainless Steel Type 17-4PH; ASTM A564

Cerifi ations:
ANSI/NSF61 for use in Cold +86F(+30C and Hot +180F(+82C potable water systems. Annex G. UPC.

The lever handle bronze body butterfly valve is designed for use with grooved copper tubing (CTS), fittings and couplings. This valve features a 10 position lever handle, bronze body and EPDM rubber encapsulated disc. Both bronze valve body and the EPDM rubber disc obtained certification to ANSI/NSF 61 for use in potable water systems and is rated to 300 PSI.

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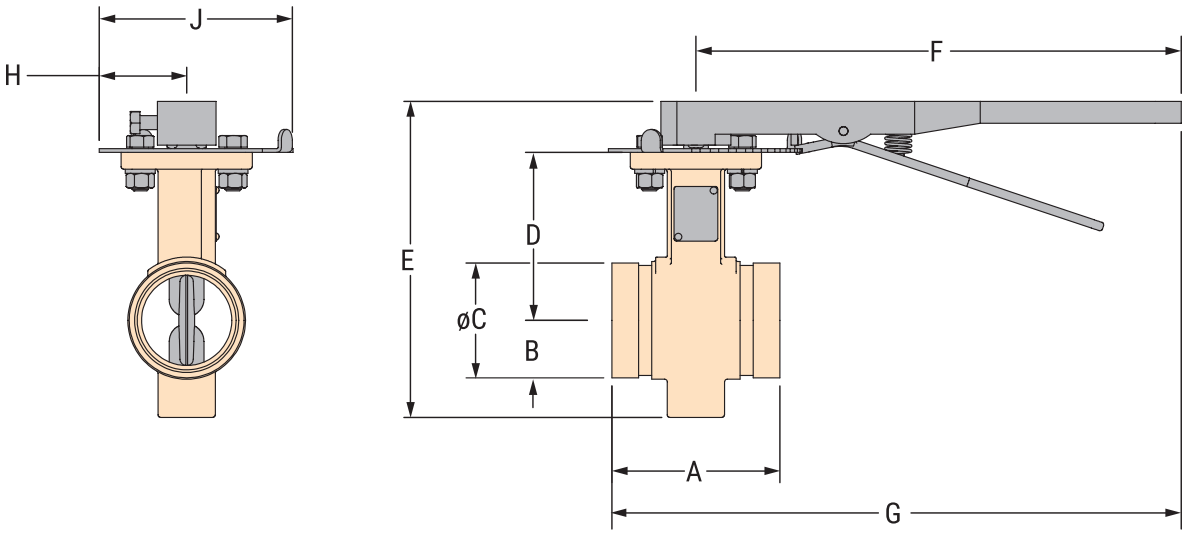
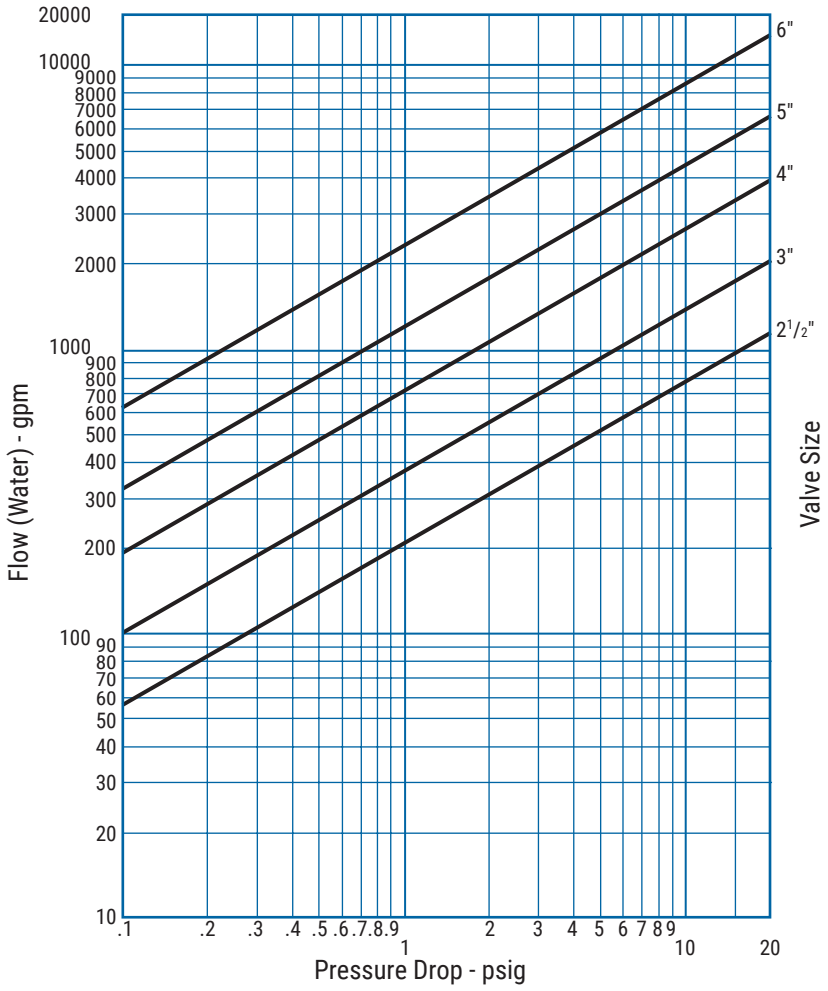
CTS Copper Butterfly Valve
Fig. Series 6700



CTS Copper Butterfly Valve Dimensions

Nominal Size	Copper Tube Diameter	Dimensions									Weight
		A	B	C	D	E	F	G	H	J	
In.	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./kg
2½	2.625	3.77	2.22	2.63	3.83	7.20	10.50	12.39	2.00	4.43	4
	66.7	95.8	56.4	66.7	97.3	182.5	266.7	314.6	50.8	112.5	1.8
3	3.125	3.77	2.60	3.13	4.08	7.84	10.50	12.39	2.00	4.43	5
	79.4	95.8	65.9	79.4	130.5	198.2	266.7	314.6	50.8	112.5	2.3
4	4.125	4.63	3.10	4.13	4.72	8.97	10.50	12.81	2.00	4.43	8
	104.8	117.6	78.7	104.9	119.9	227.8	266.7	325.5	50.8	112.5	3.8
5	5.125	5.88	3.85	5.13	5.22	10.27	10.50	13.44	2.00	4.43	14
	130.2	149.4	97.8	130.2	132.6	260.9	266.7	341.4	50.8	112.5	6.4
6	6.125	5.88	4.36	6.13	5.75	11.31	10.50	13.44	2.00	4.43	18
	155.6	149.4	110.8	155.6	146.2	287.3	266.7	341.4	50.8	112.5	8.1

CTS Copper Butterfly Valve
Series 6700



Values for flow of water at +60˚F (+16˚C)

$$C_v = \frac{Q}{\sqrt{\triangle P}}$$

Where: C_v = Flow coefficien

Q = Flow (GPM)

△P = Pressure drop (psi)

CTS Copper Butterfly (Ordering Information)

Sample Part Number 4" AN6721-3 –>	4"	A	N	67	2	1 -	3
	Size	Body Style	Body Type	Series	Disc Coating	Operator	Shaft
	2½" - 6"	A	Bronze	6700	2 - EPDM (Grade EP)	1 - 10 Pos. Handlever	3 - Stainless Steel Type 17-4PH

Grooved End Stainless Steel Butterfly Valve with Lever Handle
Model B480

For additional listings or approvals, visit our website at www.asc-es.com

The Model B480 Grooved End Stainless Steel Butterfly Valve with Lever Handle is a grooved-end stainless steel butterfly valve designed for 300 psi service, supplied with a 10-position locking lever handle. The end-to-end dimensions conform to MSS SP-67. The body is investment cast in grade CF8M (Type 316) to ASTM A743 with integral neck and ISO mounting top flange. The neck height allows for pipe insulation up to two inches thick. The disc is a dual-seal type, encapsulated either with Grade "EN" EPDM for cold water services or with Grade "T" Nitrile for oil services. The Model B480 Stainless Steel Butterfly Valves with standard disc and Grade "EN" EPDM seat are UL classified to ANSI/NSF 61 and ANSI/NSF 372.

Maximum Working Pressure: 300 psi (20 bar)

Materials of Construction

Valve Body
CF8M (Type 316) Stainless Steel conforming to ASTM A743 or A351, or A744 which is UL Classified in accordance with ANSI/ NSF 61 and ANSI/NSF 372 for potable water use up to 180°F (82°C)

Stems
Stainless Steel Type 410 conforming to ASTM A582

Disc
CF8M (Type 316) Stainless Steel conforming to ASTM A743 or A351, or A744 which is UL Classified in accordance with ANSI/NSF 61 and Annex G for potable water use up to 180°F (82°C)

Disc Encapsulation
Grade "EN" EPDM Rubber Classified in accordance with ANSI/NSF 61 and ANSI/NSF 372 for potable water use up to 180°F (82°C), or Grade "T" Nitrile

O-Rings
EPDM

Seat Material

- Grade "EN" EPDM – For service temperatures from -30°F to 230°F (-34°C to 110°C). For general service. Recommended for water service, dilute acids, alkalies, oil-free air and many chemical services.
  Note: Not recommended for use in petroleum services.
- Grade "T" Nitrile – For service temperatures from -20°F to 180°F (-29°C to 82°C). Recommended for petroleum products, air with oil vapors, vegetable oils, and mineral oils.
  Note: Not recommended for use in hot water services.

Contact an ASC Engineered Solutions Sales Representative for specific recommendations on seat material.

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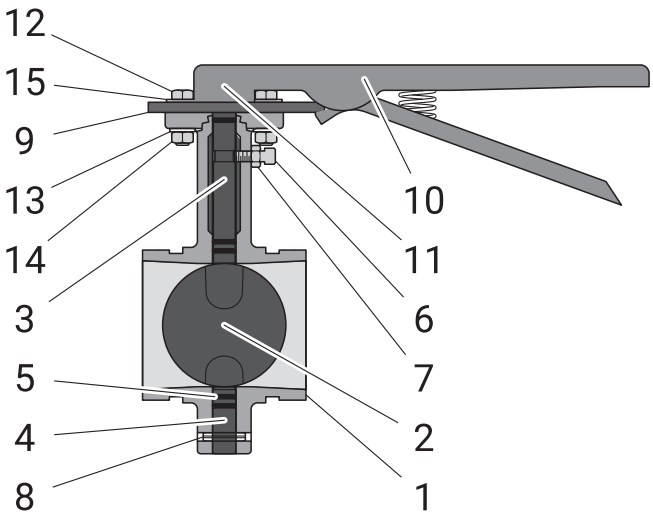
Grooved End Stainless Steel Butterfly Valve with Lever Handle
Model B480



B480 Shaft Size

Size	Shaft Size SJ-400 (B480)
2"	ϕ12.7
2½"	ϕ12.7
3"	ϕ12.7
4"	ϕ19.0
5"	ϕ19.0
6"	ϕ19.0
8"	ϕ19.0

Round shaft with pin.

Material Specifications

1. Body
Stainless Steel

2. Disc
Stainless Steel

3. Upper Shaft
Stainless Steel

4. Lower Shaft
Stainless Steel

5. O-Ring
EPDM

6. Hex Socket Set Screw
Stainless Steel

7. Hex Nut
Stainless Steel

8. Roll Pin
Spring Steel

9. Throttle Plate
Stainless Steel

10. Lever-Lock Handle Assembly
Stainless Steel

11. Roll Pin
Spring Steel

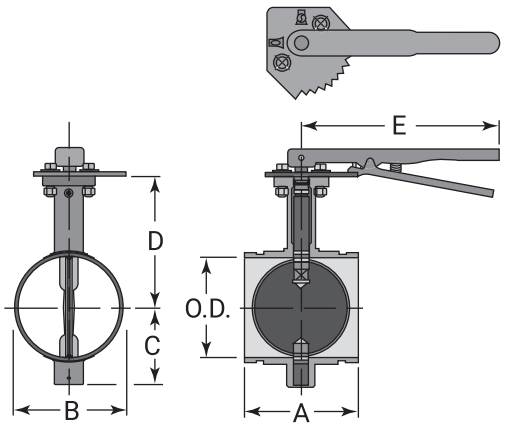
12. Hex Bolt
Stainless Steel

13. Lock Washer
Stainless Steel

14. Hex Nut
Stainless Steel

15. Flat Washer
Stainless Steel

Grooved End Stainless Steel Butterfly Valve with Lever Handle
Model B480

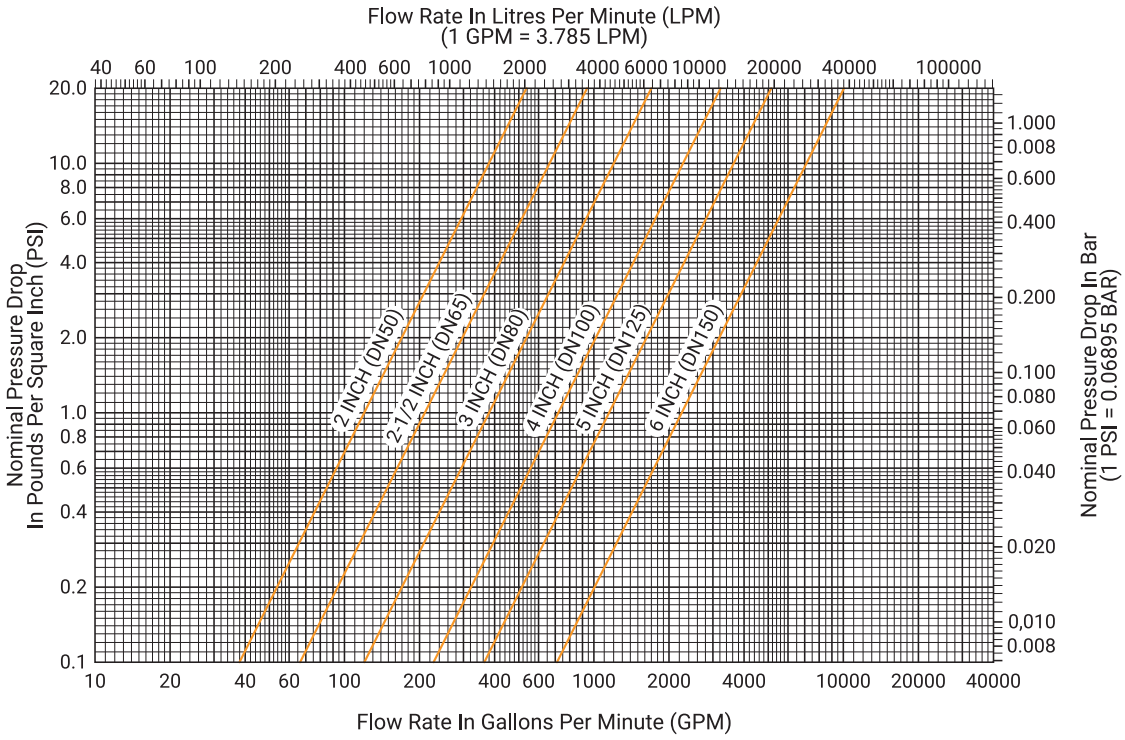


Valve Size	O.D.	Operating Torque	Dimensions					Approx. Wt. Ea.
			A	B	C	D	E	
In./mm	In./mm	In-lb/Nm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	78 8.80	3.19 81	2.756 70	2.480 63	4.17 106	10.0 254	5.0 2.,3
2½ 65	2.875 73.0	84 9.50	3.81 97	3.386 86	2.677 68	4.28 111	10.0 254	7.0 3,2
76.1mm 65	3.000 76.1	84 9.50	3.81 97	3.386 86	2.677 68	4.28 111	10.0 254	7.0 3,2
3 80	3.500 88.9	95 10.7	3.81 97	3.858 98	2.992 76	4.97 126	10.0 254	6.6 3,5
4 100	4.500 114.3	200 22.6	4.56 116	4.882 124	3.504 89	5.33 135	10.0 254	11.0 5,0
165.1mm 150	6.500 165.1	310 34.9	5.81 148	7.008 178	4.488 114	6.62 168	10.0 254	20.2 9,2
6 150	6.625 168.3	310 34.9	5.81 148	7.008 178	4.488 114	7.25 184	10.0 254	20.2 9,2

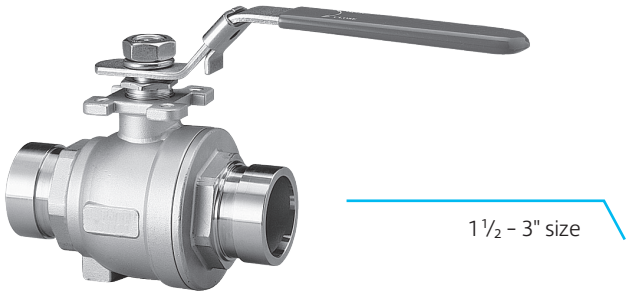
These torque values were derived from test data with non-lubricated valves in water, non-pressurized at ambient temperatures
For information on alternative sizes, contact an ASC Engineered Solutions Sales Representative.
Note: The torque values are based on liquid applications. For dry or non-lubricating applications add a 25% service factor to the above values.

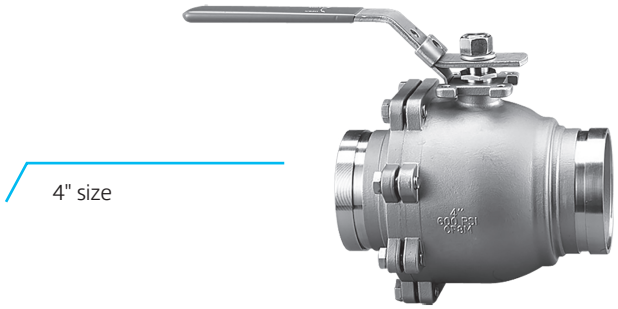
Grooved End Stainless Steel Butterfly Valve with Lever Handle
Model B480

Model B480 Grooved End Stainless Steel Butterfly Valve Nominal Pressure Loss Vs Flow



Grooved End Stainless Steel Ball Valve with Lever Handle
Model BV435





Material Specifications

Body
Cast Stainless Steel per ASTM A351-CF8M

Ball
Cast Stainless Steel per ASTM A351-CF8M

Upper Stems
Stainless steel per ASTM A276, Type 316

Operator
Stainless Steel Lever per ASTM A-276, Type 304

Seats
1 1/2 to 3 Inches: Virgin PTFE,
4 Inches: Glass Filled PTFE

Seals
PTFE

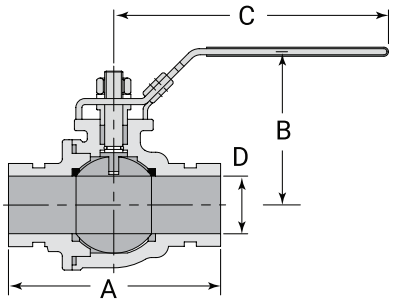
O-Rings
EPDM

The Model BV435 Grooved End Stainless Steel Ball Valves with Lever Handle provide for efficient control of fluid in piping systems. Flow may be from either direction, and the valves may be positioned in any orientation. The valves are furnished with grooved ends for use with Gruvlok grooved couplings. The handle is provided with a device for padlocking in either the open or closed position.

Maximum Working Pressure: 600 psi (41.4 bar)

ASC Engineered Solutions

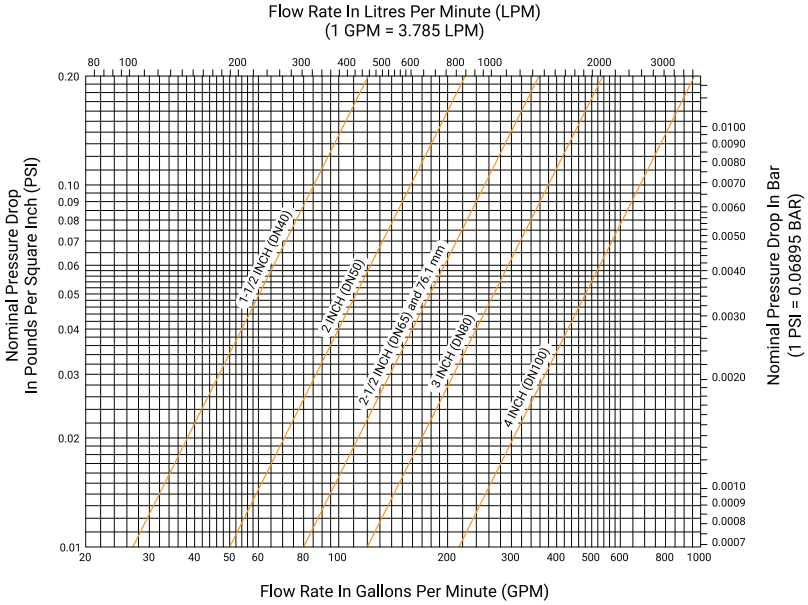
Grooved End Stainless Steel Ball Valve with Lever Handle
Model BV435



Size	O.D.	Dimensions				Operating Torque	Approx. Wt. Ea.
		A	B	C	D		
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In.-Lbs./Nm	Lbs./Kg
1½ 40	1.900 48.3	5.50 140	3.70 94	7.60 193	1.50 38	62 7	6.6 3.0
2 50	2.375 60.3	6.15 156	4.13 105	7.60 193	1.97 50	150 17	8.8 4.0
2½ 65	2.875 73.0	7.09 180	4.33 110	9.84 250	2.36 60	186 21	15.4 7.0
3 80	3.500 88.9	8.42 214	6.00 152	9.84 250	2.99 76	248 28	20.7 9.4
4 100	4.500 114.3	9.45 240	6.57 167	11.42 290	3.94 100	398 45	55 25.0

Weight includes the lever handle.

Model BV435 Grooved End Stainless Steel Ball Valve
Nominal Pressure Loss vs Flow



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