



GRINNELL Model B302 and Model BN302 Grooved End Butterfly Valves with Gear Operators or Lever-Lock Operators

General Description

The GRINNELL Models B302 and BN302 Butterfly Valves are available with either a Gear Operator or a Lever-Lock Operator (Figures 3 and 4). They provide for efficient control in piping systems of on/off or throttling/balancing service; fluid flow; and bubble-tight shut-off.

The Model BN302 Butterfly Valve is specifically NSF 61 Approved to Annex G. This valve is suitable for use with stainless steel domestic water systems.

The Model B302 or Model BN302 Butterfly Valve with Gear Operator is a self-locking, worm gear type. It is equipped with adjustable stop screws to lock the Handwheel position.

The Model B302 or Model BN302 Butterfly Valve with Lever-Lock Operator has a throttling plate that provides throttling notches every 10° for manual control in balancing up to 90° or to shut off service. The Lever may be pad-locked in any one of the positions, including opened or closed, by virtue of a locking hole located in the handle and lever.

Flow may be from either direction and the valve may be positioned in any orientation.

The valve is furnished with grooved ends for use with grooved couplings and can be easily adapted to flanged components utilizing GRINNELL Figure 71 Class 150 Flange Adapters.

The body and disc construction provides for increased strength and durability.

The disc seal and body coatings are compatible with a variety of chemicals and temperature ranges. Contact your GRINNELL Representative for specific recommendations on seal and coating selections.

⚠ 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 Models B302 and BN302 Butterfly Valves 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 this device.

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



Technical Data

Approvals

The Model BN302 Butterfly Valve is NSF 61 Approved to Annex G

Sizes

- Gear Operator:
2 to 12 Inch (DN50 to DN300)
- Lever Operator:
2 to 8 Inch (DN50 to DN200)

Maximum Working Pressure

- 2 to 10 Inch (DN50 to DN250):
300 psi (20,7 bar)
- 12 Inch (DN300):
200 psi (13,8 bar)

Encapsulated Disc

- Grade “E” EPDM Disc Seal:
-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)
- Grade “EN” EPDM Disc Seal:
-30°F to 230°F (-34°C to 110°C)

- Grade “T” Nitrile, Disc Seal:
-20°F to 180°F (-29°C to 82°C)
- Grade “O” Fluoroelastomer, Disc Seal:
20°F to 300°F (-7°C to 149°C)

Materials of Construction

- Body:
Ductile Iron conforming to ASTM A 395, Grade 60-40-18
- Body Coating:
Polyamide Coated
- Disc:
Ductile Iron conforming to ASTM A 395, Grade 60-40-18
- Upper and Lower Stem:
Type 416 Stainless Steel
- Gear Operator:
Cast Iron housing
- Lever-Lock Operator:
Handle Polymer-Coated Iron
Lever-Lock Zinc-Plated Steel
Throttling Plate Zinc-Plated Steel

Butterfly Valve Torque

Torque is the rotary effort required to operate a valve. This turning force in a butterfly valve is determined by three factors.

- Friction of the disc to seat for sealing
- Bearing friction
- Dynamic torque

Breakaway Torque is the total of the torques resulting from bearing friction and seat/disc interference friction at a given pressure differential. This value is normally the highest required torque to operate a valve and is used in sizing actuators. The torques listed are valid for water and lubricating fluids at ambient temperature. For dry and non-lubricating fluids, contact a GRINNELL Technical Service representative.

Butterfly valves, sizes 8 Inch and larger, when used on liquids, show a marked increase in dynamic torque that tends to close the valve. For this reason, gear operated or actuated valves are recommended.

The torque values listed in Figure 1 apply to EPDM. When calculating torques for Nitrile or Fluoroelastomer, multiply listed torque by 1.25.

Installation

NOTICE

All replacement parts must be obtained from the manufacturer to assure proper operation of the valve.

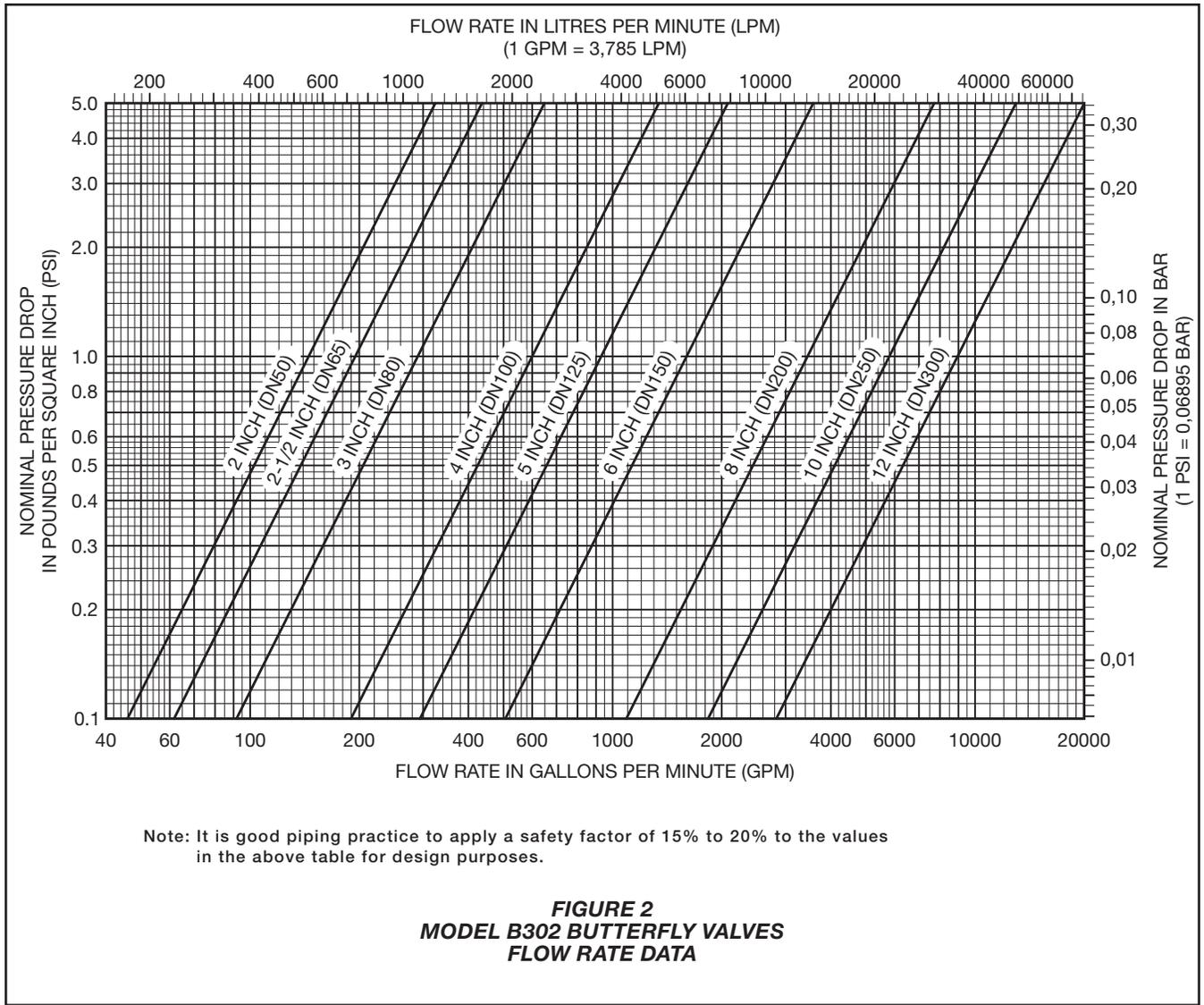
In piping systems, butterfly valves should be located where operation, inspection, and maintenance are readily accessible.

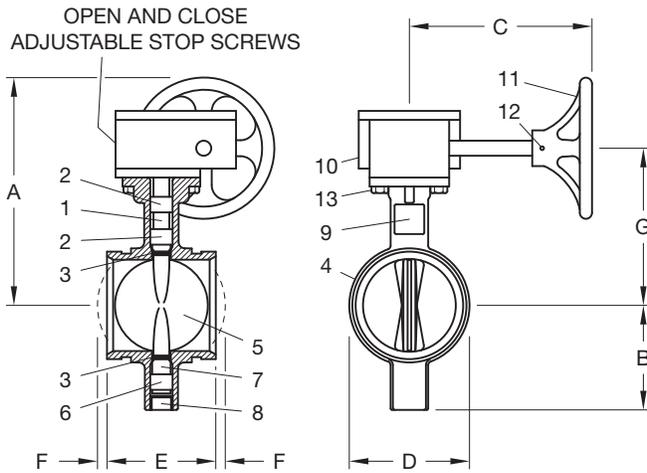
When a valve “closes hard,” it may be due to debris lodged in the sealing area. This may be corrected by backing-off the handle or handwheel and closing it again, several times if necessary. Never force the valve to seat by applying a wrench to the handwheel or extension to the lever, as it may distort the valve components or score the sealing surfaces.

To prevent rotation of the valve, the Model B302 Butterfly Valve is recommended to be installed with rigid type couplings such as the GRINNELL Figure 772 Coupling. If flexible couplings are used, additional support may be needed to prevent rotation.

Sizes ANSI DN	Torque Inch Lbs. (Nm)		
	100 psi (6,9 bar)	200 psi (13,8 bar)	300 psi (20,7 bar)
2 DN50	48 (5,42)	67 (7,56)	83 (9,38)
2-1/2 DN65	48 (5,42)	67 (7,56)	83 (9,38)
3 DN80	100 (11,25)	134 (15,13)	168 (18,98)
4 DN100	185 (20,88)	251 (16,20)	317 (35,81)
5 DN125	294 (33,21)	410 (46,31)	499 (56,37)
6 DN150	520 (58,71)	705 (79,65)	890 (100,55)
8 DN200	1,070 (120,88)	1,495 (168,90)	1,798 (203,14)
10 DN250	1,550 (175,12)	2,214 (250,15)	2,654 (299,85)
12 DN300	2,150 (242,91)	3,024 (341,66)	3,662 (413,74)

**FIGURE 1
MODEL B302 BUTTERFLY VALVES
TORQUE DATA**



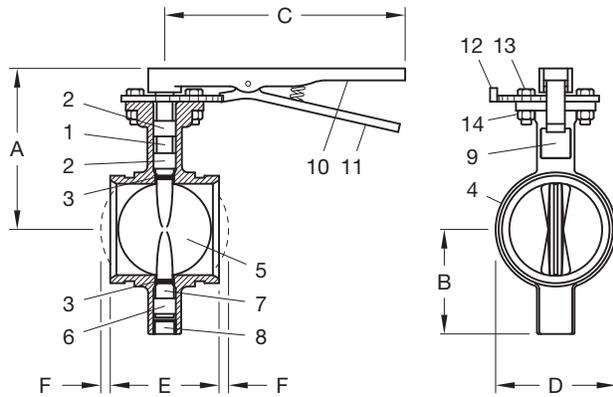


Detail	Part	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Upper Bearing	Split Metal	2
3	O-Ring	EPDM or Nitrile	2
4	Body	Polyamide-Coated Ductile Iron	1
5	Disc	Ductile Iron with EPDM or Nitrile Encapsulation Rubber	1
6	Lower Bearing	Split Metal	1
7	Lower Stem	Stainless Steel	1
8	Dust Plug	PVC	1
9	Nameplate	Aluminum	1
10	Gear Operator	Cast Iron	1
11	Handwheel	Cast Iron	1
12	Spring Pin	Steel	1
13	Hex Cap Screw	Steel, Zinc-Plated	2

Nominal Pipe Size		Nominal Dimensions Inches (mm)							Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A	B	C	D	E	F	G	
2 DN50	2.375 (60,3)	8.46 (214,9)	3.14 (79,8)	7.64 (194,1)	2.89 (73,4)	3.33 (84,6)	N/A*	5.50 (139,7)	14.5 (6,6)
2-1/2 DN65	2.875 (73,0)	8.65 (219,7)	3.25 (82,6)	7.64 (194,1)	3.46 (87,9)	3.85 (97,8)	N/A*	5.69 (144,5)	15.5 (7,0)
3 DN80	3.500 (88,9)	8.99 (226,1)	3.54 (89,9)	7.64 (194,1)	3.97 (100,8)	3.85 (97,8)	N/A*	5.94 (150,9)	17.0 (7,7)
4 DN100	4.500 (114,3)	9.79 (248,7)	4.35 (110,5)	7.64 (194,1)	5.03 (127,8)	4.56 (115,8)	N/A*	8.00 (203,2)	20.5 (9,3)
5 DN125	5.563 (141,3)	9.30 (236,2)	4.84 (122,9)	7.64 (194,1)	6.27 (159,3)	5.86 (148,8)	N/A*	7.33 (186,2)	25.0 (11,3)
6 DN150	6.625 (168,3)	13.53 (343,7)	5.93 (150,6)	9.53 (242,1)	7.25 (184,2)	5.86 (148,8)	N/A*	8.61 (218,7)	33.0 (15,0)
8 DN200	8.625 (219,1)	14.47 (367,5)	6.87 (174,5)	9.53 (242,1)	9.25 (235,0)	5.26 (133,6)	1.30 (33,0)	9.55 (242,6)	45.0 (20,4)
10 DN250	10.750 (273,1)	16.53 (418,9)	9.17 (232,9)	11.54 (293,1)	11.25 (285,8)	6.29 (159,8)	1.65 (41,9)	11.61 (294,9)	83.0 (37,6)
12 DN300	12.750 (323,9)	17.52 (445,0)	10.17 (258,3)	11.54 (293,1)	13.14 (333,8)	6.52 (165,6)	2.56 (65,0)	12.60 (320,0)	100.0 (45,4)

*The end of the Disc does not extend beyond valve Body.

FIGURE 3
MODEL B302 BUTTERFLY VALVES
WITH GEAR OPERATORS



Detail	Part	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Upper Bearing	Split Metal	2
3	O-Ring	EPDM or Nitrile	2
4	Body	Polyamide-Coated Ductile Iron	1
5	Disc	Ductile Iron with EPDM or Nitrile Encapsulation Rubber	1
6	Lower Bearing	Split Metal	1
7	Lower Stem	Stainless Steel	1
8	Dust Plug	PVC	1
9	Nameplate	Aluminum	1
10	Handle	Polymer-Coated Iron	1
11	Lever-lock	Steel, Zinc-Plated	1
12	Throttle Plate	Steel, Zinc-Plated	1
13	Hex Cap Screw	Steel, Zinc-Plated	2
14	Hex Nut	Steel, Zinc-Plated	2

Nominal Pipe Size		Nominal Dimensions Inches (mm)						Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A	B	C	D	E	F	
2 DN50	2.375 (60,3)	5.00 (127,0)	3.14 (79,8)	10.50 (266,7)	2.89 (73,4)	3.33 (84,6)	N/A*	6.5 (2,9)
2-1/2 DN65	2.875 (73,0)	5.19 (131,8)	3.25 (82,6)	10.50 (266,7)	3.46 (87,9)	3.85 (97,8)	N/A*	7.0 (3,2)
3 DN80	3.500 (88,9)	5.44 (138,2)	3.54 (89,9)	10.50 (266,7)	3.97 (100,8)	3.85 (97,8)	N/A*	8.5 (3,9)
4 DN100	4.500 (114,3)	6.33 (160,8)	4.35 (110,5)	13.75 (349,3)	5.03 (127,8)	4.56 (115,8)	N/A*	13.0 (5,9)
5 DN125	5.563 (141,3)	6.83 (173,5)	4.84 (122,9)	13.75 (349,3)	6.27 (159,3)	5.86 (148,8)	N/A*	18.0 (8,2)
6 DN150	6.625 (168,3)	8.11 (206,0)	5.93 (150,6)	13.75 (349,3)	7.25 (184,2)	5.86 (148,8)	N/A*	25.0 (11,3)
8 DN200	8.625 (219,1)	9.05 (229,9)	6.87 (174,5)	13.75 (349,3)	9.25 (235,0)	5.26 (133,6)	1.30 (33,0)	33.0 (15,0)

*The end of the Disc does not extend beyond valve Body.

FIGURE 4
MODEL B302 BUTTERFLY VALVES
WITH LEVER-LOCK OPERATORS

Limited Warranty

Products manufactured by Tyco Fire Suppression & Building Products (TFSBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFSBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFSBP 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 TFSBP to be defective shall be either repaired or replaced, at TFSBP's sole option. TFSBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFSBP shall not be responsible for system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFSBP 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 TFSBP was informed about the possibility of such damages, and in no event shall TFSBP'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.

Ordering Procedure

GRINNELL Products are available globally through a network of distribution centers. For the distributor nearest you, visit www.grinnell.com.

When placing an order, indicate the full product name.

Model B302 Butterfly Valve

Specify the following:

- Size
- Quantity
- Type of Operator:
 - Gear
 - Lever-lock
- Type of Disc Seal:
 - Grade "E" EPDM
 - Grade "T" Nitrile
 - Grade "O" Fluoroelastomer