



# Grinnell

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

### **General Description**

The GRINNELL Model B302 and Model BN302 Butterfly Valves provide for efficient control in piping systems of on/off or throttling/balancing service; fluid flow; and bubble-tight shut-off. The valves are 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 Model BN302 Butterfly Valve with Grade "EN" EPDM Disc Seal is specifically NSF 61 Approved to Annex G and NSF372 for cold +86°F (+30°C) and hot +180°F (+82°C) potable water service. This valve is suitable for use with stainless steel domestic water systems.

The 2 through 12 inch (DN50 through DN300) Model B302 or Model BN302 Butterfly Valve (Ref. Figure 1) with Gear Operator is a self-locking, worm gear type. It is equipped with adjustable stop screws to lock the valve at the full open and shut positions.

The 2 through 8 inch (DN50 through DN200) Model B302 or Model BN302 Butterfly Valve (Ref. Figure 2) 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 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.

#### **NOTICE**

*The GRINNELL Model B302 and Model BN302 Butterfly Valves described herein must be installed and maintained in compliance with this document, in addition to the standards of any authorities having jurisdiction. Failure to do so may result in serious personal injury, impair the performance of these devices, or void the warranty.*

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

*The designer is responsible for selecting products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Verify encapsulated disc material for compatibility with the specific application. Always read and understand the installation instructions.*

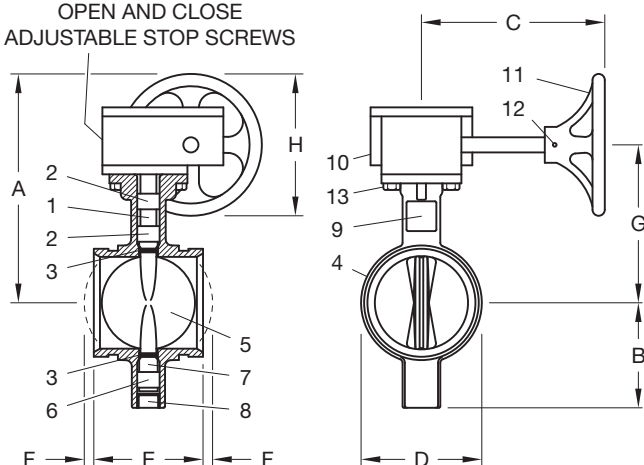
*Never remove any tubing component nor correct or modify any tubing deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.*



**10  
YEAR  
LIMITED  
WARRANTY**

For warranty terms  
and conditions, visit  
[www.grinnell.com](http://www.grinnell.com)

OPEN AND CLOSE  
ADJUSTABLE STOP SCREWS

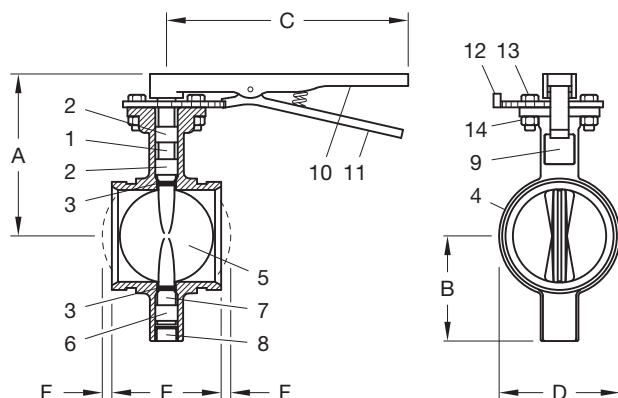


Detail	Part	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Upper Bearing	Steel/PTFE	2
3	O-Ring	EPDM, Nitrile or Fluoroelastomer	2
4	Body	Polyamide-Coated Ductile Iron	1
5	Disc	Ductile Iron Encapsulation per Table 1	1
6	Lower Bearing	Steel/PTFE	1
7	Lower Stem	Stainless Steel	1
8	Dust Plug	PVC	1
9	Nameplate	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	H	
<b>2</b> DN50	2.375 60,3	8.44 214,4	3.14 79,8	7.64 194,1	2.89 73,4	3.33 84,6	N/A*	5.48 139,2	5.91 150,1	21.2 9,6
<b>2-1/2</b> DN65	2.875 73,0	8.63 219,2	3.25 82,6	7.64 194,1	3.46 87,9	3.85 97,8	N/A*	5.67 144,0	5.91 150,1	22.0 10,0
<b>3</b> DN80	3.500 88,9	8.90 226,0	3.54 89,9	7.64 194,1	3.97 100,8	3.85 97,8	N/A*	5.94 150,9	5.91 150,1	23.0 10,4
<b>4</b> DN100	4.500 114,3	9.27 235,5	4.35 110,5	7.64 194,1	5.03 127,8	4.56 115,8	N/A*	6.31 160,3	5.91 150,1	28.0 12,7
<b>5</b> DN125	5.563 141,3	10.28 261,1	4.84 122,9	7.64 194,1	6.27 159,3	5.86 148,8	N/A*	7.32 185,9	5.91 150,1	31.0 14,1
<b>6</b> DN150	6.625 168,3	11.57 293,9	5.93 150,6	7.64 194,1	7.25 184,2	5.86 148,8	N/A*	8.61 218,7	5.91 150,1	41.0 18,6
<b>8</b> DN200	8.625 219,1	14.72 373,9	6.87 174,5	9.53 242,1	9.25 235,0	5.26 133,6	1.30 33,0	9.80 248,9	9.84 249,9	53.0 24,0
<b>10</b> 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	9.84 249,9	88.0 40,0
<b>12</b> 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	9.84 249,9	106.4 48,3

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

**FIGURE 1**  
**MODEL B302 AND MODEL BN302 BUTTERFLY VALVES**  
**WITH GEAR OPERATORS**



Detail	Part	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Upper Bearing	Steel/PTFE	2
3	O-Ring	EPDM, Nitrile or Fluoroelastomer	2
4	Body	Polyamide-Coated Ductile Iron	1
5	Disc	Ductile Iron Encapsulation per Table 1	1
6	Lower Bearing	Steel/PTFE	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	
<b>2</b> DN50	2.375 60,3	5.31 134,9	3.14 79,8	10.50 266,7	2.89 73,4	3.33 84,6	N/A*	6.7 3,0
<b>2-1/2</b> DN65	2.875 73,0	5.41 137,4	3.25 82,6	10.50 266,7	3.46 87,9	3.85 97,8	N/A*	7.5 3,4
<b>3</b> DN80	3.500 88,9	5.62 142,7	3.54 89,9	10.50 266,7	3.97 100,8	3.85 97,8	N/A*	8.7 4,0
<b>4</b> DN100	4.500 114,3	6.57 166,9	4.35 110,5	10.50 266,7	5.03 127,8	4.56 115,8	N/A*	12.2 5,5
<b>5</b> DN125	5.563 141,3	7.07 179,6	4.84 122,9	10.50 266,7	6.27 159,3	5.86 148,8	N/A*	17.3 7,9
<b>6</b> DN150	6.625 168,3	8.40 213,4	5.93 150,6	13.75 349,3	7.25 184,2	5.86 148,8	N/A*	27.4 12,5
<b>8</b> DN200	8.625 219,1	9.37 238,0	6.87 174,5	13.75 349,3	9.25 235,0	5.26 133,6	1.30 33,0	37.5 17,0

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

**FIGURE 2**  
**MODEL B302 AND MODEL BN302 BUTTERFLY VALVES**  
**WITH LEVER-LOCK OPERATORS**

## Technical Data

### Approvals

The Model BN302 Butterfly Valve with Grade "EN" EPDM Disc Seal is NSF 61 Approved to Annex G and NSF372 for cold +86°F (+30°C) and hot +180°F (+82°C) potable water service.



The Model B302 and the Model BN302 Butterfly Valves conform to MSS SP-67.

### 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)

### Operating Temperature Range

- See Table A

### Encapsulated Disc Material

- See Table A

### 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

Model	Encapsulated Disc Material			
	Grade "E" EPDM <sup>(a)</sup>	Grade "EN" EPDM <sup>(b)</sup>	Grade "T" Nitrile <sup>(c)</sup>	Grade "O" Fluoroelastomer <sup>(d)</sup>
B302	-20°F to 200°F (-29°C to 93° C)	N/A	-20°F to 180°F (-29°C to 82° C)	-20°F to 200°F (-29°C to 93° C)
BN302	N/A	-20°F to 200°F (-29°C to 93° C)	N/A	N/A

N/A: Not Available

<sup>(a)</sup> Recommended for hot water, dilute acids, alkalis, oil free air, and many chemical services not involving petroleum products. Not recommended for hydrocarbons or steam service.

<sup>(b)</sup> Recommended for NSF 61 Approved for potable water. Not recommended for use with hydrocarbons.

<sup>(c)</sup> Recommended for petroleum products, vegetable oils, mineral oils, and air with oils. High-end oil vapor temperature decreases to 150°F (66°C) Not recommended for hot water or hot dry air systems.

<sup>(d)</sup> Recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons. Not recommended for hot water.

**TABLE A**  
**MODEL B302 AND BN302 BUTTERFLY VALVES**  
**OPERATING TEMPERATURE RANGE**

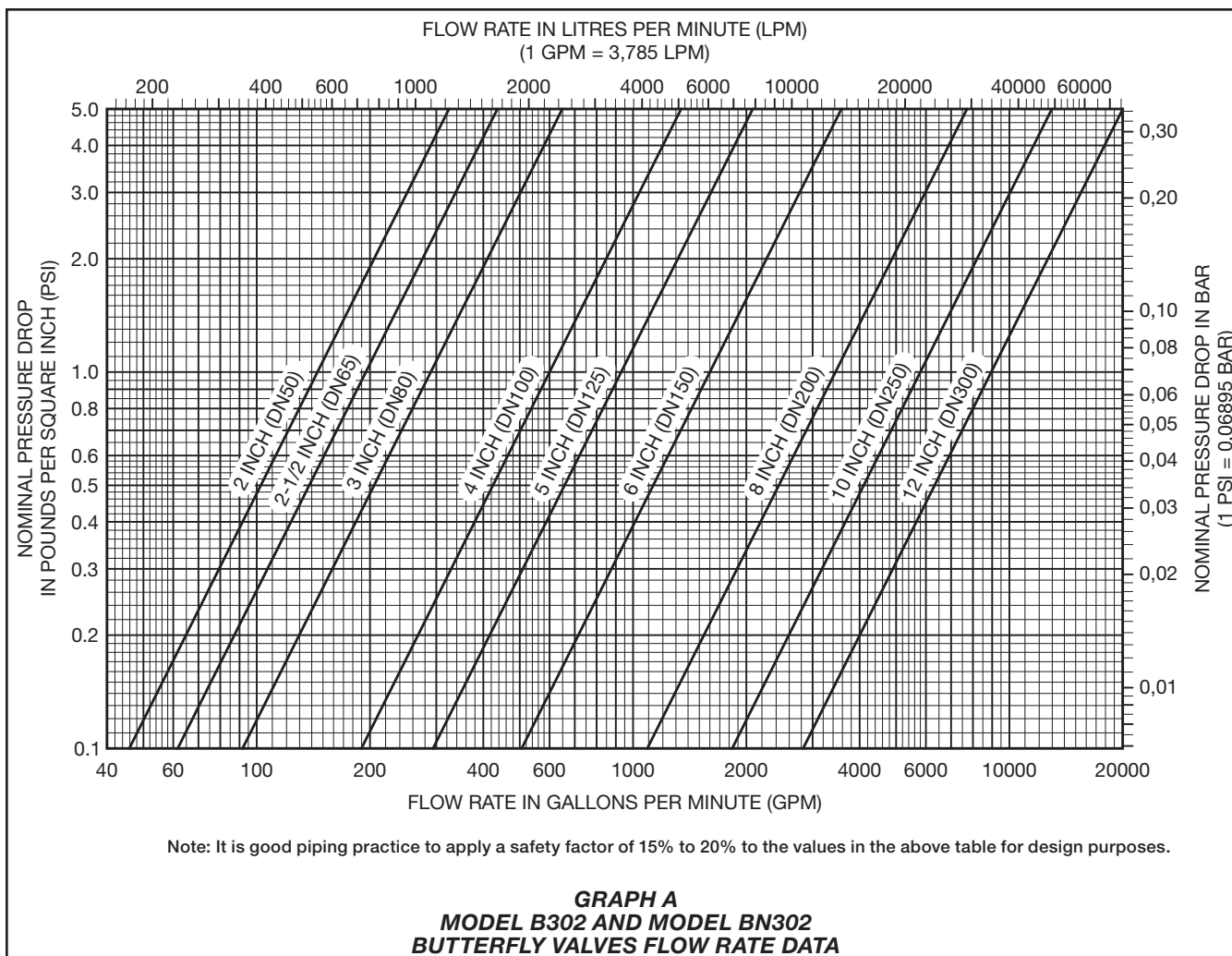
Sizes ANSI DN	Torque Inch Lbs. Nm		
	100 psi 6,9 bar	200 psi 13,8 bar	300 psi 20,7 bar
<b>2</b> DN50	48 5	67 8	83 9
<b>2-1/2</b> DN65	48 5	67 8	83 9
<b>3</b> DN80	100 11	134 15	168 19
<b>4</b> DN100	185 21	251 16	317 36
<b>5</b> DN125	294 33	410 46	499 56
<b>6</b> DN150	520 59	705 80	890 101
<b>8</b> DN200	1,070 121	1,495 169	1,798 203
<b>10</b> DN250	1,550 175	2,214 250	2,654 300
<b>12</b> DN300	2,150 243	3,024 342	-

**TABLE B**  
**MODEL B302 AND MODEL BN302**  
**BUTTERFLY VALVES TORQUE DATA**

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 provided in Table B apply to Grade "E" 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 or Model BN302 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.

## Ordering Procedure

Grinnell Mechanical Products, valves, accessories and other products are available globally through a network of distribution centers. For the nearest distributor, visit [www.grinnell.com](http://www.grinnell.com). When placing an order, indicate the full product name.

### Model B302 Butterfly Valve

Specify the following:

- Model B302
- Size
- Quantity
- Type of Operator:
  - Gear (2 to 12 inch)
  - Lever (2 to 8 inch)
- Type of Disc Seal:
  - Grade "E" EPDM
  - Grade "T" Nitrile
  - Grade "O" Fluoroelastomer

### Model BN302 Butterfly Valve

Specify the following:

- Model BN302
- Size
- Quantity
- Type of Operator:
  - Gear (2 to 12 inch)
  - Lever (2 to 8 inch)
- Type of Disc Seal:
  - Grade "EN" EPDM