

## **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.

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.

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.

The owner is responsible for maintaining their mechanical system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.









	Nom Pipe	inal Size				N	omin	nal In	Dimensi nches <i>mm</i>	ons	;			Approx. Weight	Approx. Weight		
	ANSI Inches DN	O.D. Inches <i>mm</i>	А	в	с	;	C	)	E		F	G	н	Lbs. kg			
	<b>2</b> 50	2.375 60,3	8.44 214,4	3.14 79,8	7.6 194	i4 1,1	2.8 73	39 ,4	3.33 <i>84,6</i>		N/A*	5.48 139,2	5.91 <i>150,1</i>	21.2 9,6			
	<b>2-1/2</b> 65	2.875 73,0	8.63 219,2	3.25 82,6	7.6 194	4 1,1	3.4 87,	46 ,9	3.85 97,8		N/A*	5.67 144,0	5.91 <i>150,1</i>	22.0 10,0			
	<b>3</b> 80	3.500 88,9	8.90 226,0	3.54 89,9	7.6 194	4 1,1	3.9 100	97 ),8	3.85 <i>97,8</i>		N/A*	5.94 150,9	5.91 <i>150,1</i>	23.0 10,4			
	<b>4</b> 100	4.500 <i>114,3</i>	9.27 235,5	4.35 110,5	7.6 194	i4 1,1	5.0 127	)3 7,8	4.56 115,8	3	N/A*	6.31 <i>160,3</i>	5.91 <i>150,1</i>	28.0 <i>12,7</i>			
	<b>5</b> 125	5.563 <i>141,3</i>	10.28 <i>261,1</i>	4.84 122,9	7.6 194	4 1,1	6.2 159	27 9,3	5.86 148,8	3	N/A*	7.32 185,9	5.91 <i>150,1</i>	31.0 <i>14,1</i>			
	<b>6</b> 150	6.625 168,3	11.57 293,9	5.93 150,6	7.6 194	4 1,1	7.2 184	25 4,2	5.86 148,8	3	N/A*	8.61 218,7	5.91 <i>150,1</i>	41.0 <i>18,6</i>			
	<b>8</b> 200	8.625 219,1	14.72 373,9	6.87 174,5	9.5 242	i3 2,1	9.2 235	25 5,0	5.26 133,6	3	1.30 <i>33,0</i>	9.80 248,9	9.84 249,9	53.0 24,0			
	<b>10</b> 250	10.750 273,1	16.53 <i>418,9</i>	9.17 232,9	11.5 293	54 3,1	11. 285	25 5,8	6.29 159,8	3	1.65 <i>41,9</i>	11.61 294,9	9.84 249,9	88.0 <i>40,0</i>			
	<b>12</b> 300	12.750 323,9	17.52 445,0	10.17 258,3	11.5 293	54 3,1	13. 333	.14 3,8	6.52 165,6	5	2.56 65,0	12.60 <i>320,0</i>	9.84 249,9	106.4 <i>48,3</i>			
<b></b>	*The end of th	ne Disc does r	not extend be	yond valve B	ody.	 		_	· ·			Ţ		·			
No.	Descriptio	on	Mat	erial		Q	ty		No.	De	escriptio	on	Ma	terial		Qty	
1	Stem		Stainles	s Steel		1			8	D	oust Plug		P	VC	$\downarrow$	1	
2	Bearing		Steel/	PTFE		2	2		9	N	ameplate	•	Alum	ninum	+	1	
3	O-Ring		or Fluoroe	elastomer		2	2		10	Gea	ar Opera	tor	Cas	t Iron		1	
4	Body		Ductil	e-Coated e Iron		1			11	H	andwhee		Cas	t Iron		1	
5	Disc	Enc	Ductil apsulatio	e Iron n per Tabl	e 1	1	1		12	S	pring Pir	1	St	eel		1	
6	Lower Bearing		Steel/	PTFE		1	1		13	ł	Hex Cap Screw		Steel, Zi	nc-Plated		2	
7	Lower Stem		Stainles	s Steel		1	1										
			OP ADJUST. A 2 _ A 1 _ 2 _ 3 _ 6 _ F	B302 A		5 7 8 — F		10 13 9 4			- C		5				

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		Nom Pipe	ninal Size			Nomi	nal Dimer Inches <i>mm</i>	isions			Approx. Weight		
		ANSI Inches <i>DN</i>	O.D. Inches <i>mm</i>	А	В	с	D	Е	F	G	Lbs. kg		
		2 50	2.375 60,3	5.31 <i>134,9</i>	3.14 79,8	10.50 266,7	2.89 73,4	3.33 <i>84,6</i>	N/A*	1.77 45,0	6.7 3,0		
		2-1/2 65	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*	1.74 <i>44,2</i>	7.5 3,4		
		3 80	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*	1.64 <i>41,7</i>	8.7 <i>4,0</i>		
		4 100	4.500 <i>114,3</i>	6.57 166,9	4.35 110,5	10.50 266,7	5.03 127,8	4.56 115,8	N/A*	2.08 52,8	12.2 5,5		
		5 125	5.563 <i>141,3</i>	7.07 179,6	4.84 122,9	10.50 266,7	6.27 159,3	5.86 148,8	N/A*	2.01 <i>51,1</i>	17.3 <i>7,</i> 9		
		6 150	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*	1.97 50,0	27.4 12,5		
		8 200	8.625 219,1	9.37 238,0	6.87 174,5	13.75 <i>349,3</i>	9.25 235,0	5.26 133,6	1.30 <i>33,0</i>	1.87 <i>47,5</i>	37.5 <i>17,0</i>		
		*The end of t	he Disc does r	not extend be	yond valve Bo	ody.			·,				
No.	Desc	cription		Material		Qty	No.	Desci	ription		Material		Qty
1	US	pper Stem	Sta	ainless Ste	eel	1	8	Dust	Plug		PVC		1
2	U Be	pper earing	S	Steel/PTFE	1	2	9	Nam	eplate		Aluminum		1
3	0-	-Ring	EF or Flu	PDM, Nitri Joroelasto	le omer	2	10	Hai	ndle	Polyn	ner-Coated Iro	on	1
4	B	Body	Polyamic	de-Coatec Iron	d Ductile	1	11	Leve	r-lock	Stee	el, Zinc-Platec	ł	1
5	[	Disc	Encapsı	ouctile Iror Ilation per	י Table 1	1	12	Thrott	le Plate	Stee	el, Zinc-Platec	1	1
6	Lo Be	ower earing	S	Steel/PTFE	E	1	13	Hex Ca	p Screw	Stee	el, Zinc-Platec	1	2
7	Lo	ower Stem	Sta	ainless Ste	el	1	14	Hex	Nut	Stee	el, Zinc-Platec	ł	2
			A MO	2 1 2 3 6 F DEL B30		C -	IRE 2 BN302 E			VES			

# Technical Data

#### Approvals

The Model BN302 Butterfly Valve with Grade "EN" EPDM Disc Seal is Certified to all requirements of NSF/ANSI 61, Annex G and NSF/ANSI 372 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.

#### IAPMO UPC Certified

#### 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 lnch (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

		Encapsulate	d Disc Material	
Model	Grade "E" EPDM <sup>(a)</sup>	Grade "EN" EPDM <sup>(b)</sup>	Grade "T" Nitrile©	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

#### NOTES:

a. 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.

- b. Recommended for NSF 61 Approved for potable water. Not recommended for use with hydrocarbons.
- c. 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.

 Recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons. Not recommended for hot water.

N/A: Not Available

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

Sizes ANSI	Torque Inch Lbs. <i>Nm</i>						
DN	100 psi	200 psi	300 psi				
	6,9 bar	13,8 bar	20,7 bar				
2	48	67	83				
50	5	8	9				
2-1/2	48	67	83				
65	5	8	9				
3	100	134	168				
80	<i>11</i>	<i>1</i> 5	<i>19</i>				
4	185	251	317				
100	<i>21</i>	<i>1</i> 6	36				
5	294	410	499				
125	33	46	56				
6	520	705	890				
150	59	80	101				
8	1,070	1,495	1,798				
200	<i>121</i>	<i>169</i>	<i>203</i>				
10	1,550	2,214	2,654				
250	<i>175</i>	250	<i>300</i>				
12	2,150	3,024	-				
300	<i>243</i>	<i>342</i>					

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

valid for water and lubricating fluids at ambient temperature. For dry and nonlubricating 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.

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## 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. 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

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