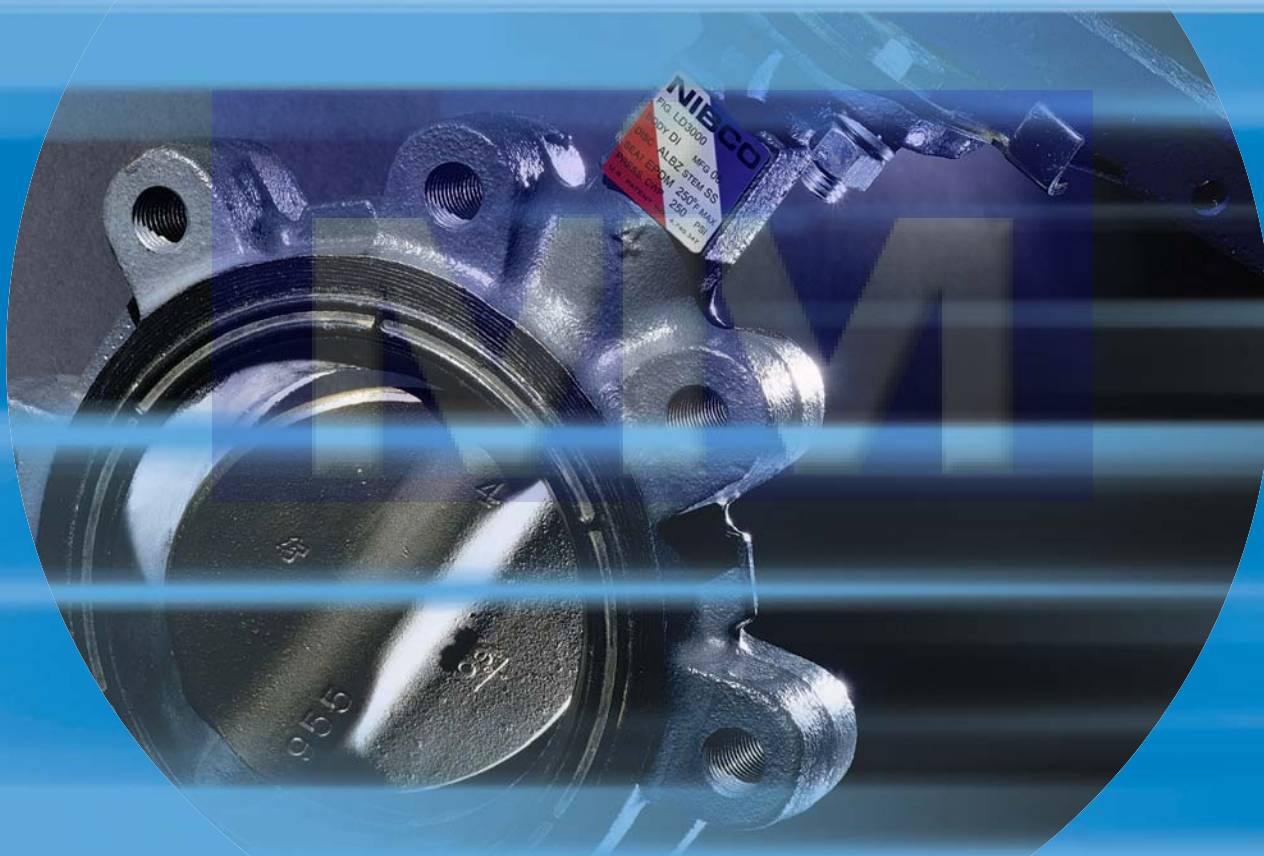


NIBCO®

AHEAD OF THE FLOW®



Butterfly Valves

Business-to-Business Solutions

Look to NIBCO for technology leadership.

The velocity with which e-business evolves demands that new products and services be continuously developed and introduced to keep our customers at the center of our business efforts. NIBCO provides an entire suite of business-to-business solutions that is changing the way we interact with customers.



NIBCOpartner.comSM is an exclusive set of secure web applications that allow quick access to customer-specific information and online order processing. This self-service approach gives you 24/7 access to your order status putting you in total control of your business.

Real time information includes:

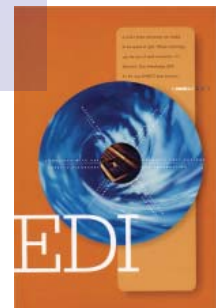
- Online order entry
- Viewable invoices & reports
- Inventory availability
- Current price checks
- Order status
- Online library of price sheets, catalogs & submittals

NIBCO Partner.com

Electronic Data Interchange (EDI) makes it possible to trade business documents at the speed of light. This technology cuts the cost of each transaction by eliminating the manual labor and paperwork involved in traditional order taking. This amounts to cost-savings, increased accuracy and better use of resources.

With EDI, you can trade:

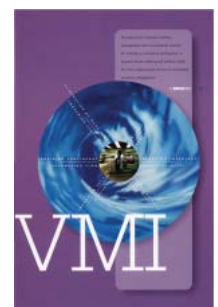
- Purchase orders
- PO Acknowledgements
- Invoices
- Product activity data
- Advanced ship notices
- Remittance advice



Vendor Managed Inventory (VMI), a sophisticated service for automated inventory management, reduces your overhead by transferring inventory management, order entry and forecasting to NIBCO. This is an on-going, interactive partnership with NIBCO.

Through automation, VMI brings results:

- Improves customer service
- Optimum inventory efficiencies
- Better forecasting
- Cuts transaction costs
- Peace of mind
- Relief from day-to-day management



General Index

Butterfly Valves

Visit our website for the most current information.



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Key to Butterfly Valve Figure Number System*

L	D	-	2	0	0	0	-	0	
Body Type	Body Material		Pressure Rating	Seat Material	Disc Material	Stem & Bushing Combinations			Operating Mechanism
L-Lug	D-Ductile Iron		L-Actuated	0-EPDM	0-Aluminum Bronze	0-416SS	Copper Alloy	Brass	0-Bare Stem
W-Wafer	C-Cast Iron		1-150 psi	1-Buna-N (Nitrile)	1-Ductile Iron ¹	1-416SS	316SS	Brass	1-Infinite Position
G-Grooved			2-200 psi	2-Fluoroelastomer	2-CF8M	2-17-4PH ³	316SS ³	316SS	Plate and Lock
F-Flanged			3-250 psi	5-UL/FM	6-EPDM Coated	5-416SS	PTFE/Bronze		3-Lever Lock (std)
			4-300 psi	7-Polyamide	Ductile Iron ²	7-416SS	PTFE		5-Gear
			5-285 psi		7-Buna-N Coated	8-316SS			
			6-350 psi		Brass or Ductile Iron ²	9-17-4PH			
			7-232 psi						

*This key is a guide only, it is not intended to infer that all combinations can or will be produced.

¹ Electro Nickel Plated.

² Grooved and flanged end only.

³ Lug style 14" and larger are 316SS stem with bronze bushings.

Key to N200 Butterfly Valves

Series	Body Style	Seat Material	Disc Material	Operator
N200 = 2"-12"	1 = Wafer 2 = Lug	3 = EPDM 4 = Buna	5 = Aluminum Bronze 6 = Ductile Iron 8 = Nylon Coated Ductile Iron	LH = Lever GO = Gear

how to order

State quantity, figure number and size for each valve you wish to order. See individual valve catalog pages for specific or special product designations.

HOW MANY TO ORDER –

NIBCO valves are decimal packed for your convenience in handling, shipping and stock-keeping. Number in master carton varies with item.

POLICY ON RETURNS TO FACTORY –

NO NIBCO valves are to be returned without prior written agreement. Transportation must be prepaid. A 20% charge will be made to cover cost of rehandling and reinspection.

TECHNICAL ASSISTANCE –

Engineers, contractors, wholesalers or manufacturers may obtain special or technical assistance from any factory representative of NIBCO. Write, fax or phone.

NIBCO INC.
World Headquarters
1516 Middlebury Street
Elkhart, IN 46516-4740
USA

Phone 1.574.295.3000
Fax 1.574.295.3307
Technical Service Phone 1.888.446.4226
Fax 1.888.336.4226

To the best of our knowledge the information contained in this publication is accurate. However, NIBCO® does not assume any liability whatsoever for the accuracy or completeness of such information. Final determinations of the suitability of any information or product for the use to be contemplated is the sole responsibility of the user. The manner of that use and whether there is any infringement of patents is also the sole responsibility of the user.

Warranty



NIBCO INC. 125% LIMITED WARRANTY

Applicable to NIBCO INC. Pressure Rated Metal Valves

NIBCO INC. warrants each NIBCO pressure rated metal valve to be free from defects in materials and workmanship under normal use and service for a period of five (5) years from date put into service.

In the event any defect occurs which the owner believes is covered by this warranty, the owner should immediately contact NIBCO Technical Services, either in writing or by telephone at (888) 446-4226 or (574) 295-3000. The owner will be instructed to return said product, at the owner's expense, to NIBCO INC., or an authorized representative for inspection. In the event said inspection discloses to NIBCO INC.'s satisfaction that said valve is defective, it will be replaced at NIBCO INC.'s expense. Replacements shall be shipped free of charge to the owner. In the event of the replacement of any valve, NIBCO INC. shall further pay the owner the greater of Twenty-Five (25%) Percent of the price of the valve according to NIBCO INC.'s published suggested list price schedule in effect at the time of purchase, or Ten (\$10.00) Dollars, to apply on the cost of the installation of said replacement valve.

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY SPECIFICALLY EXCLUDES INCIDENTAL AND CONSEQUENTIAL DAMAGES OF EVERY TYPE AND DESCRIPTION RESULTING FROM ANY CLAIMED DEFECT IN MATERIAL OR WORKMANSHIP, INCLUDING BUT NOT LIMITED TO, PERSONAL INJURIES AND PROPERTY DAMAGES. Some states or countries do not allow the exclusion or limitation of incidental or consequential damages so these limitations may not apply to you. TO THE EXTENT PERMITTED BY LAW, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state and country to country.



Butterfly Valves

Factors to Consider When Choosing Butterfly Valves

Operating Life

Butterfly valves can provide many maintenance free cycles and still provide "bubble tight" shut off.

Pressure Drop

Energy costs go up with **excessive** pressure drop. Point to keep in mind—the valve or valves are but one factor in a piping system that contribute to pressure drop. Of equal concern are these factors:

- Flow area of piping.
- Friction loss against pipe walls.
- Change of flow direction via fittings.

Butterfly valves have flow characteristics three times better than globe valves and approximately 75% of an equivalent size gate valve.

Versatility

Butterfly valves can be used for on/off service and throttling/balancing. They are superior in "versatility" as compared to a gate or globe valve. Butterfly valves have a wider range of chemical resistance due to the trim options and choice of elastomeric liners.

Weight

Installation dollars saved with lightweight butterfly valves as compared to heavyweight cast iron valves; i.e. a 10" butterfly may weigh 55 pounds, whereas a 10" iron gate may weigh 490 pounds. This can be an important savings when it is calculated over an entire system. The heavier the system, the stronger the pipe hangers, and the more expensive they become. So by considering the weight of a valve one can also **reduce** piping system costs.

Physical Size

Butterfly valves take up approximately 1/6 the space of a gate valve. Every cubic foot of a building costs money.

I.E.: 10" butterfly is about 21" high
10" iron gate is about 43" high

Bubble Tight Shut-Off

Gate and globe (metal to metal) seats cannot provide bubble tight shut-off. Resilient seated butterfly valves are bubble tight by design.

Ease of Operation

Butterfly valves offer 1/4 turn (90°) open to close. Gates and globes require multiple turns to open and close. Ease of opening or closing means that butterfly valves can employ less expensive operators.

Cost

A butterfly valve is generally 40% the cost of an iron gate. Not only low initial cost but low installation costs also.

Maintenance

Properly installed butterfly valves are virtually self cleaning and are less susceptible to failure due to trash material in the line.

2000/3000/5000 Series Butterfly Valves

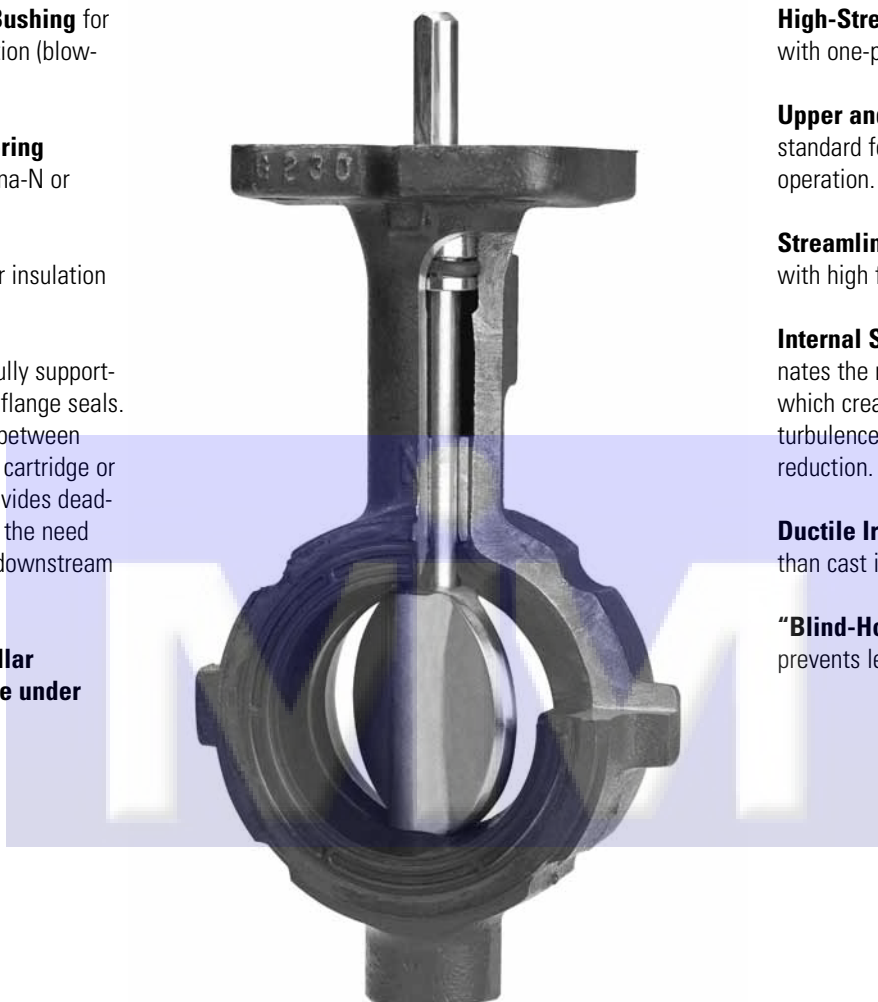
* **Threaded Collar Bushing** for positive stem retention (blow-out proof)

Body and Stem O-ring Seals of EPDM, Buna-N or Fluorocarbon.

Extended Neck for insulation up to 2".

Molded-in Liner fully supported by valve body at flange seals. Eliminates leakage between body and liner as in cartridge or boot type liners. Provides dead-end service without the need for a flange on the downstream side.

* **Do not remove collar bushing with valve under pressure.**



High-Strength Stem materials with one-piece thru-disc design.

Upper and Lower Bushings are standard for smooth valve operation.

Streamlined Spherical Disc with high flow capacity.

Internal Stem/Disc Drive eliminates the need for pins or bolts which create additional leak paths, turbulence in the waterway or flow reduction.

Ductile Iron Body more durable than cast iron (reduces breakage).

"Blind-Hole" lower bushing prevents leakage.

A High-Pressure Resilient-Seated Butterfly Valve Featuring:

- Pressure rating to 250 psi, 285 psi for 5000 Series, Vacuum to 28" Mercury
- Wide choice of materials to suit customer's application
- Bubble-tight shutoff at full pressure rating
- 200/232/250 bi-directional dead end service rating without a downstream flange required

Operation

Bare shaft, lever-lock flow control handle, worm gear operator, electric and pneumatic actuators

Body Styles

Tapped full lug or wafer

Butterfly Valves

Illustrated Index

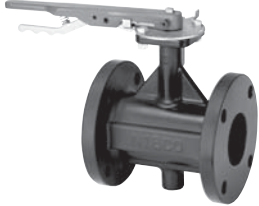
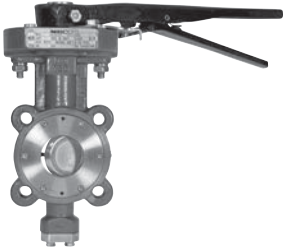
Visit www.nibco.com for on-line listing of information contained in this catalog.

Ductile Iron Body 200 PSI Wafer Style Butterfly Valve  WD2000 Series Sizes 2" thru 12" Molded-in Liner Aluminum Bronze Disc Page 9 - 10	Ductile Iron Body 200 PSI Lug Style Butterfly Valve  LD2000 Series Sizes 2" thru 12" Molded-In Liner Aluminum Bronze Disc Page 9 - 10	Ductile Iron Body 250 PSI Wafer Style Butterfly Valve  WD3000 Series Sizes 2" thru 12" Molded-in Liner Ductile Iron/SS Disc/Aluminum Bronze Pages 11 - 15
Ductile Iron Body 250 PSI Lug Style Butterfly Valve  LD3000 Series Sizes 2" thru 12" Molded-in Liner Ductile Iron/SS Disc/Aluminum Bronze Pages 11 - 15	UL Listed, FMRC Approved Ductile Iron Body Gear Operated with Flag Indicator  LD3510-8/WD3510-8 Sizes 2" thru 12" Ductile Iron Body Page 16	Ductile Iron Body 285 PSI Wafer/Lug Style Butterfly Valve  LD5022/WD5022 Sizes 2" thru 12" Molded-in Liner Stainless Steel Disc Page 17
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Butterfly Valves

Illustrated Index

Visit www.nibco.com for on-line listing of information contained in this catalog.

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CI or DI Body 200/285 PSI Flanged Butterfly Valve  FC2000/FD5000 Series Sizes 2" thru 12" Elastomer Coated Disc Pages 31 - 33	Carbon Steel 150/300 Class High Performance Butterfly Valve  LCS6822/LCS7822 Series Sizes 2 ½" thru 24" SS Disc Pages 34 - 40	

200 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive
Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges Lug Style 200 PSI bi-directional dead end service rating without a downstream flange required.

- CONFORMS TO MSS SP-67 • U.S. Coast Guard "Category A"
• LISTED BY IAPMO R&T FOR COMPLIANCE WITH SECTION 116875 OF THE CALIFORNIA HEALTH AND SAFETY CODE
• VERMONT ACT 193

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Stem Seal	EPDM Rubber
4. Body Seal	EPDM Rubber
5. Nameplate	Aluminum
6. Upper Bushing	Copper CDA 122
7. Liner	EPDM Rubber
8. Disc	Alum. Brz. ASTM B148 Alloy 954/955
9. Lower Bushing	Copper CDA 122
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

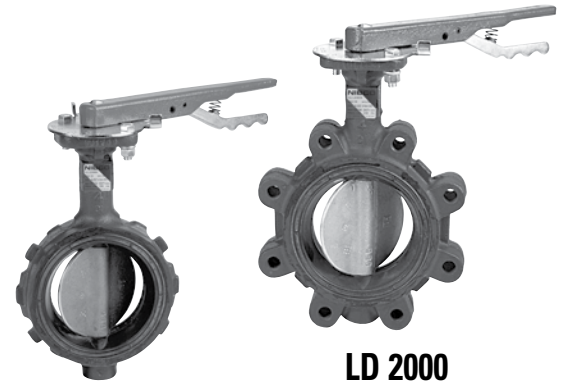
DIMENSIONS — WEIGHTS

Size	In. mm.	A	B	C	D	E	F	G Flat	Metal H	Rubber I	J Square	N Dia.
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250

Capscrew/Stud Data

Size	O In. mm.	P B.C.	R Dia.	K Dia.	L Dia.	Wafer Length	Lug Length	M B.C.	Lug Weight Lbs. Kg.	Wafer Weight Lbs. Kg.
2	50	3.25	.437	.437	4 5/8-11unc			4 3/4	7 3.2	5.5 2.5
2½	65	3.25	.437	.500	4 5/8-11unc			5 1/2	9 4.1	7.5 3.4
3	80	3.25	.437	.500	4 5/8-11unc			6	9.5 4.3	8 3.6
4	100	3.25	.437	.562	8 5/8-11unc			7 1/2	15 6.8	11 5.0
5	125	3.25	.437	.656	8 3/4-10unc			8 1/2	21 9.5	15 6.8
6	150	3.25	.437	.656	8 3/4-10unc			9 1/2	24 10.9	18 8.2
8	200	3.25	.437	.781	8 3/4-10unc			11 3/4	34 15.4	28 12.7
10	250	5.00	.562	1.000	12 7/8-9unc			14 1/4	62 28.1	45.5 20.7
12	300	5.00	.562	1.062	12 7/8-9unc			17	90 40.9	70 31.8

For actuated service where a lower torque is required use NIBCO Fig. No. WDLXXX-0 or LDLXXX-0 series, sizes 2" thru 12" only. Maximum pressure rating of 100 PSI for wet application and 50 PSI for dry application.

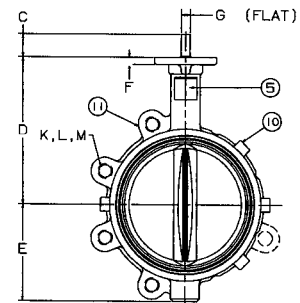
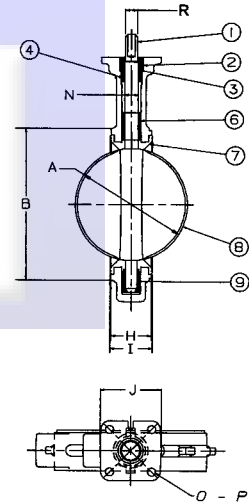


WD 2000

Wafer Style
EPDM Liner
and Aluminum
Bronze Disc

LD 2000

Lug Style
EPDM Liner
and Aluminum
Bronze Disc



NOT RECOMMENDED
FOR STEAM SERVICE

200 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive
Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges
Lug Style 200 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67
U.S. Coast Guard "Category A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Stem Seal	Buna-N Rubber Nitrile
4. Body Seal	Buna-N Rubber Nitrile
5. Nameplate	Aluminum
6. Upper Bushing	Copper CDA 122
7. Liner	Buna-N Rubber Nitrile
8. Disc	Alum. Brz. ASTM B148 Alloy 954/955
9. Lower Bushing	Copper CDA 122
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

DIMENSIONS — WEIGHTS

Size												
In.	mm.	A	B	C	D	E	F	G Flat	Metal H	Rubber I	J Square	N Dia.
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250

Capscrew/Stud Data

Size		O	P	R	K	L	Wafer Length	Lug Length	M	Lug Weight		Wafer Weight	
In.	mm.	B.C.	Dia.	Dia.	No.	Dia.			B.C.	Lbs.	Kg.	Lbs.	Kg.
2	50	3.25	.437	.437	4	5/8-11unc	Refer to butterfly valve technical information for bolt lengths		4¾	7	3.2	5.5	2.5
2½	65	3.25	.437	.500	4	5/8-11unc			5½	9	4.1	7.5	3.4
3	80	3.25	.437	.500	4	5/8-11unc			6	9.5	4.3	8	3.6
4	100	3.25	.437	.562	8	5/8-11unc			7½	15	6.8	11	5.0
5	125	3.25	.437	.656	8	¾-10unc			8½	21	9.5	15	6.8
6	150	3.25	.437	.656	8	¾-10unc			9½	24	10.9	18	8.2
8	200	3.25	.437	.781	8	¾-10unc			11¾	34	15.4	28	12.7
10	250	5.00	.562	1.000	12	7/8-9unc			14¼	62	28.1	45.5	20.7
12	300	5.00	.562	1.062	12	7/8-9unc			17	90	40.9	70	31.8

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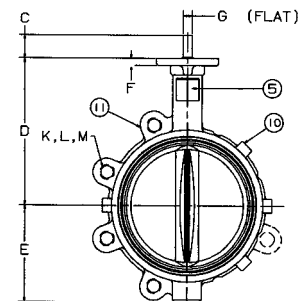
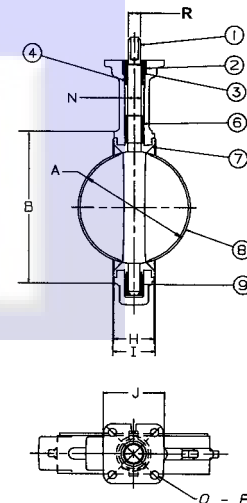


WD 2100

Wafer Style
Buna-N Liner
and Aluminum
Bronze Disc

LD 2100

Lug Style
Buna-N Liner
and Aluminum
Bronze Disc



NOT RECOMMENDED
FOR STEAM SERVICE

250 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive • Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges

Lug Style 232 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67
U.S. Coast Guard "Category A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Stem Seal	EPDM Rubber
4. Body Seal	EPDM Rubber
5. Nameplate	Aluminum
6. Upper Bushing	Copper CDA 122
7. Liner	EPDM Rubber
8. Disc	Alum. Brz. ASTM B148 Alloy 954/955
9. Lower Bushing	Copper CDA 122
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

DIMENSIONS — WEIGHTS

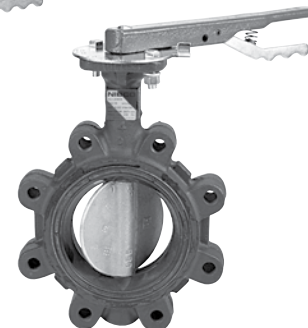
Size	In.	mm.	A	B	C	D	E	F	G	Metal	Rubber	J	N
									Flat	H	I	Square	Dia.
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	1.812	3.25	.500
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	1.938	3.25	.562
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	1.938	3.25	.562
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	2.188	3.25	.625
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	2.312	3.25	.750
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	2.312	3.25	.750
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	2.500	3.25	.875
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	2.812	4.75	1.125
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	3.125	4.75	1.250

Size		Capscrew/Stud Data						Lug Weight		Wafer Weight	
In.	mm.	O B.C.	P Dia.	R Dia.	K No.	L Dia.	Wafer Length	Lug Length	M B.C.	Lbs.	Kg.
2	50	3.25	.437	.437	4	5/8-11unc	Refer to butterfly valve technical information for bolt lengths		4¾	7	3.2
2½	65	3.25	.437	.500	4	5/8-11unc			5½	9	4.1
3	80	3.25	.437	.500	4	5/8-11unc			6	9.5	4.3
4	100	3.25	.437	.562	8	5/8-11unc			7½	15	6.8
5	125	3.25	.437	.656	8	¾-10unc			8½	21	9.5
6	150	3.25	.437	.656	8	¾-10unc			9½	24	10.9
8	200	3.25	.437	.781	8	¾-10unc			11¾	34	15.4
10	250	5.00	.562	1.000	12	7/8-9unc			14¼	62	28.1
12	300	5.00	.562	1.062	12	7/8-9unc			17	90	40.9
										70	31.8



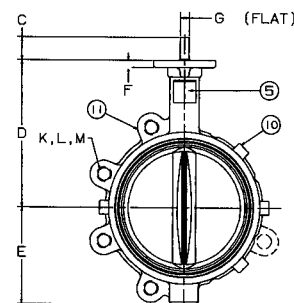
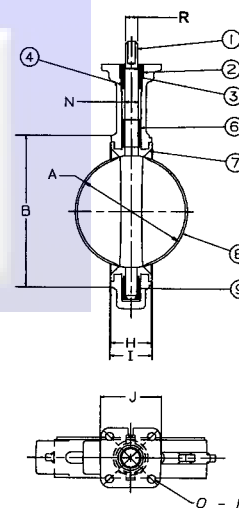
WD 3000

Wafer Style
EPDM Liner
and Aluminum
Bronze Disc



LD 3000

Lug Style
EPDM Liner
and Aluminum
Bronze Disc



NOT RECOMMENDED
FOR STEAM SERVICE

250 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive
Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges

Lug Style 250 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67
U.S. Coast Guard "Category A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Stem Seal	EPDM Rubber
4. Body Seal	EPDM Rubber
5. Nameplate	Aluminum
6. Upper Bushing	Copper CDA 122
7. Liner	EPDM Rubber
8. Disc	Ductile Iron ASTM A395 (plated)
9. Lower Bushing	Copper CDA 122
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

DIMENSIONS — WEIGHTS

Size												
In.	Mm.	A	B	C	D	E	F	G Flat	Metal H	Rubber I	J Square	N Dia.
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250

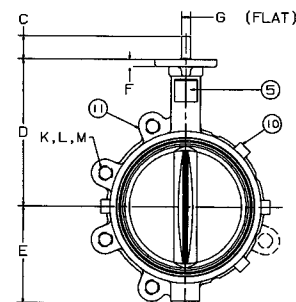
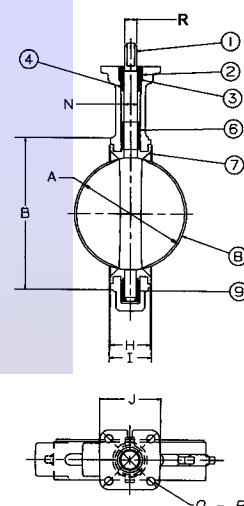
Size		Capscrew/Stud Data						Lug Weight		Wafer Weight	
In. mm.	B.C.	P Dia.	R Dia.	K No.	L Dia.	Wafer Length	Lug Length	M B.C.	Lbs. Kg.	Lbs. Kg.	
2 50	3.25 .437	.437	4 ⅝-11unc					4¾	7 3.2	5.5 2.5	
2½ 65	3.25 .437	.500	4 ⅝-11unc					5½	9 4.1	7.5 3.4	
3 80	3.25 .437	.500	4 ⅝-11unc					6	9.5 4.3	8 3.6	
4 100	3.25 .437	.562	8 ⅝-11unc					7½	15 6.8	11 5.0	
5 125	3.25 .437	.656	8 ¾-10unc					8½	21 9.5	15 6.8	
6 150	3.25 .437	.656	8 ¾-10unc					9½	24 10.9	18 8.2	
8 200	3.25 .437	.781	8 ¾-10unc					11¾	34 15.4	28 12.7	
10 250	5.00 .562	1.000	12 ⅞-9unc					14¼	62 28.1	45.5 20.7	
12 300	5.00 .562	1.062	12 ⅞-9unc					17	90 40.9	70 31.8	

For actuated service where a lower torque is required use NIBCO Fig. No. WDLXXX-0 or LDLXXX-0 series, sizes 2" thru 12" only. Maximum pressure rating of 100 PSI for wet application and 50 PSI for dry application



WD 3010
Wafer Style
EPDM Liner
and Ductile Disc

LD 3010
Lug Style
EPDM Liner
and Ductile Disc



NOT RECOMMENDED
FOR STEAM SERVICE

250 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive • Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges

Lug style 232 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67
U.S. Coast Guard "Category A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Stem Seal	Buna-N Rubber Nitrile
4. Body Seal	Buna-N Rubber Nitrile
5. Nameplate	Aluminum
6. Upper Bushing	Copper CDA 122
7. Liner	Buna-N Rubber Nitrile
8. Disc	Alum. Brz. ASTM B148 Alloy 954/955
9. Lower Bushing	Copper CDA 122
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

DIMENSIONS — WEIGHTS

Size												
In.	mm.	A	B	C	D	E	F	G Flat	Metal H	Rubber I	J Square	N Dia.
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250

Capscrew/Stud Data

Size		O	P	R	K	L	Wafer		Lug		M	Lug Weight		Wafer Weight	
In.	mm.	B.C.	Dia.	Dia.	No.	Dia.	Length	Length	B.C.	Length	B.C.	Lbs.	Kg.	Lbs.	Kg.
2	50	3.25	.437	.437	4	5/8-11unc	Refer to butterfly valve technical information for bolt lengths		4¾	7	3.2	5.5	2.5		
2½	65	3.25	.437	.500	4	5/8-11unc			5½	9	4.1	7.5	3.4		
3	80	3.25	.437	.500	4	5/8-11unc			6	9.5	4.3	8	3.6		
4	100	3.25	.437	.562	8	5/8-11unc			7½	15	6.8	11	5.0		
5	125	3.25	.437	.656	8	¾-10unc			8½	21	9.5	15	6.8		
6	150	3.25	.437	.656	8	¾-10unc			9½	24	10.9	18	8.2		
8	200	3.25	.437	.781	8	¾-10unc			11¾	34	15.4	28	12.7		
10	250	5.00	.562	1.000	12	7/8-9unc			14¼	62	28.1	45.5	20.7		
12	300	5.00	.562	1.062	12	7/8-9unc			17	90	40.9	70	31.8		



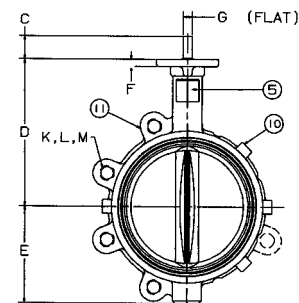
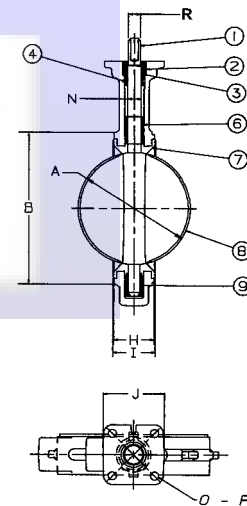
WD 3100

Wafer Style
Buna-N Liner
and Aluminum
Bronze Disc



LD 3100

Lug Style
Buna-N Liner and
Aluminum
Bronze Disc



NOT RECOMMENDED
FOR STEAM SERVICE

250 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive
Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges
Lug Style 250 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67
U.S. Coast Guard "Category A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Stem Seal	Buna-N Rubber
4. Body Seal	Buna-N Rubber
5. Nameplate	Aluminum
6. Upper Bushing	Copper CDA 122
7. Liner	Buna-N Rubber
8. Disc	Ductile Iron ASTM A395 (Plated)
9. Lower Bushing	Copper CDA 122
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

DIMENSIONS — WEIGHTS

Size													
In.	mm.	A	B	C	D	E	F	G	Metal	Rubber	J	N	
								Flat	H	I	Square	Dia.	
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500	
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562	
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562	
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625	
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750	
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750	
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875	
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125	
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250	

Capscrew/Stud Data

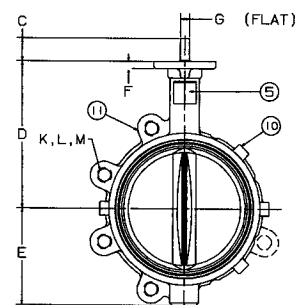
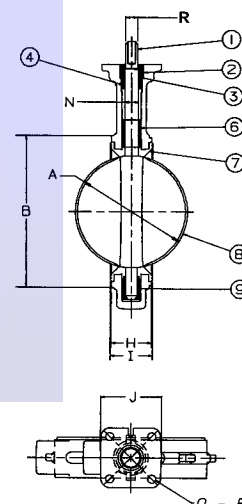
Size		O	P	R	K	L	Wafer	Lug	M	Lug Weight		Wafer Weight	
In.	mm.	B.C.	Dia.	Dia.	No.	Dia.	Length	Length	B.C.	Lbs.	Kg.	Lbs.	Kg.
2	50	3.25	.437	.437	4	5/16-11unc	Refer to butterfly valve technical information for bolt lengths		4¾	7	3.2	5.5	2.5
2½	65	3.25	.437	.500	4	5/16-11unc			5½	9	4.1	7.5	3.4
3	80	3.25	.437	.500	4	5/16-11unc			6	9.5	4.3	8	3.6
4	100	3.25	.437	.562	8	5/8-11unc			7½	15	6.8	11	5.0
5	125	3.25	.437	.656	8	¾-10unc			8½	21	9.5	15	6.8
6	150	3.25	.437	.656	8	¾-10unc			9½	24	10.9	18	8.2
8	200	3.25	.437	.781	8	¾-10unc			11¾	34	15.4	28	12.7
10	250	5.00	.562	1.000	12	7/8-9unc			14¼	62	28.1	45.5	20.7
12	300	5.00	.562	1.062	12	7/8-9unc			17	90	40.9	70	31.8

For actuated service where a lower torque is required use NIBCO Fig. No. WDLXXX-0 or LDLXXX-0 series, sizes 2" thru 12" only. Maximum pressure rating of 100 PSI for wet application and 50 PSI for dry application



WD 3110
Wafer Style
Buna-N Liner
and Ductile Disc

LD 3110
Lug Style
Buna-N Liner
and Ductile Disc



NOT RECOMMENDED
FOR STEAM SERVICE

250 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive • 316 S.S. Trim
Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges
Lug Style 250 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67
U.S. Coast Guard "Category A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A564 Type 17-4PH
2. Collar Bushing	Stainless Steel ASTM A276 Type 316
3. Stem Seal	Options: See Below*
4. Body Seal	Options: See Below*
5. Nameplate	Aluminum
6. Upper Bushing	Stainless Steel ASTM A276 Type 316
7. Liner	Options: See Below*
8. Disc	Stainless Steel ASTM A743 Grade CF8M
9. Lower Bushing	Stainless Steel ASTM A276 Type 316
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

*Optional Liners/Seals: 0 - EPDM 1 - Buna-N (Nitrile) 2 - Fluoroelastomer

DIMENSIONS — WEIGHTS

Size														
In.	mm.	A	B	C	D	E	F	G Flat	Metal H	Rubber I	J Square	N Dia.		
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500		
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562		
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562		
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625		
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750		
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750		
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875		
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125		
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250		

Capscrew/Stud Data

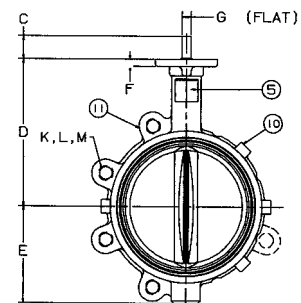
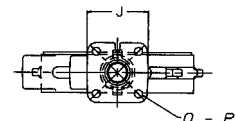
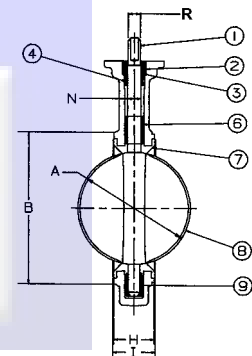
Size	O	P	R	K	L	Wafer	Lug	M	Lug Weight		Wafer Weight	
In. mm.	B.C.	Dia.	Dia.	No.	Dia.	Length	Length	B.C.	Lbs.	Kg.	Lbs.	Kg.
2 50	3.25	.437	.437	4	5/8-11unc	Refer to butterfly valve technical information for bolt lengths		4¾	7	3.2	5.5	2.5
2½ 65	3.25	.437	.500	4	5/8-11unc			5½	9	4.1	7.5	3.4
3 80	3.25	.437	.500	4	5/8-11unc			6	9.5	4.3	8	3.6
4 100	3.25	.437	.562	8	5/8-11unc			7½	15	6.8	11	5.0
5 125	3.25	.437	.656	8	¾-10unc			8½	21	9.5	15	6.8
6 150	3.25	.437	.656	8	¾-10unc			9½	24	10.9	18	8.2
8 200	3.25	.437	.781	8	¾-10unc			11¾	34	15.4	28	12.7
10 250	5.00	.562	1.000	12	7/8-9unc			14¼	62	28.1	45.5	20.7
12 300	5.00	.562	1.062	12	7/8-9unc			17	90	40.9	70	31.8

For actuated service where a lower torque is required use NIBCO Fig. No. WDLXXX-0 or LDLXXX-0 series, sizes 2" thru 12" only. Maximum pressure rating of 100 PSI for wet application and 50 PSI for dry application



WD 3*22
Wafer Style
Optional Liner
and CF8M Disc

LD 3*22
Lug Style
Optional Liner
and CF8M Disc



NOT RECOMMENDED
FOR STEAM SERVICE

250 lb. WWP UL/FM Butterfly Valves

Fire Protection Valve • Wafer or Lug Style Body • Molded in Seat •
Accepts internal supervisory switches

250 PSI/17.2 Bar Non-Shock Cold Water

CONFORMS TO MSS SP-67 • UL/ULC LISTED • FMRC APPROVED

- UL LISTED FOR INDOOR AND OUTDOOR SERVICE
- APPROVED BY NEW YORK CITY MEA 9-97-E, VOL.2 WHEN ASSEMBLED WITH APPROPRIATE NYC INDICATOR FLAG
- CALIFORNIA STATE FIRE MARSHAL LISTING NO. 7770-1243:104
- U.S. Coast Guard "Category A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM 582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Upper Bushing	Copper Alloy CDA 122
4. Stem Seal	EPDM
5. Body Seal	EPDM
6. Disc	Ductile Iron ASTM 395 (Nickel Plated)
7. Liner	EPDM
8. Lower Bushing	Copper Alloy CDA 122
9. Nameplate	Aluminum
10. Body	Ductile Iron ASTM A536
11. Gear Operator	Cast Iron and Steel
12. Indicator Flag	Cast Iron
13. Handwheel	Cast Iron

** -8 version has two factory mounted internal supervisory switches. 2" thru 8" uses switch TS-3. 10" thru 12" uses switch TS-1.

-4 version less switches.

Note: Wafer body will mate with ANSI or ISO flanges. O.D. of wafer body notched to fit ISO bolt circle.

Lug body available with ISO flange dimensions and metric bolt hole threads.

For dead-end service use lug style (rated 200 PSI for this service).

DIMENSIONS—WEIGHTS—QUANTITIES

Size	Dimensions									
	A	B	C	D	E	F	G	H	I	J
In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.
2 50	2.53 64	4.88 124	4.62 117	5.38 137	2.88 73	6.89 175	12.75 324	1.68 43	1.81 46	2.91 74
2½ 65	2.90 74	5.62 143	5.12 130	5.88 149	3.25 83	7.36 187	13.63 346	1.81 46	1.94 49	2.91 74
3 80	3.17 81	6.12 155	5.50 140	6.12 155	3.38 86	7.60 193	14.00 356	1.81 46	1.94 49	2.91 74
4 100	4.17 106	7.00 178	8.25 210	6.88 175	4.00 102	8.39 213	15.38 391	2.06 52	2.19 56	2.91 74
5 125	5.17 131	8.25 210	9.38 238	7.38 187	4.75 121	8.86 225	16.63 422	2.19 56	2.31 59	2.91 74
6 150	6.17 157	9.25 235	10.25 260	8.00 203	5.25 133	9.49 241	17.75 451	2.19 56	2.31 59	2.91 74
8 200	8.17 208	11.62 295	12.38 314	9.25 235	6.50 165	10.75 273	20.25 514	2.38 60	2.50 64	2.91 74
10 250	10.17 258	14.25 362	15.50 394	10.50 267	8.00 203	12.28 312	23.50 597	2.68 69	2.81 71	3.90 99
12 300	12.17 309	16.75 425	18.25 464	12.00 305	9.25 235	13.78 350	26.25 667	3.00 76	3.12 79	3.90 99

Size	Dimensions				Flange/Stud Data				Weight			
	K	M	N	P	Dia.	Wafer	Lug	BC	Lug	Wafer		
In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	No.	In. mm.	In. mm.	In. mm.	Lbs.	Kg.	Lbs.	Kg.
2 50	3.54 90	5.82 148	2.13 54	5.9 150	4 ⅝ 16	Refer to butterfly valve technical information for bolt lengths		4.75 121	23	11	21	10
2½ 65	3.54 90	5.82 148	2.13 54	5.9 150	4 ⅝ 16			5.50 140	25	11	24	11
3 80	3.54 90	5.82 148	2.13 54	5.9 150	4 ⅝ 16			6.00 152	26	12	24	11
4 100	3.54 90	5.82 148	2.13 54	5.9 150	8 ⅝ 16			7.50 191	31	14	27	12
5 125	3.54 90	7.64 194	2.13 54	5.9 150	8 ¾ 20			8.50 216	37	17	31	14
6 150	3.54 90	7.64 194	2.13 54	5.9 150	8 ¾ 20			9.50 241	40	18	34	15
8 200	3.54 90	7.91 201	2.13 54	9.8 250	8 ¾ 20			11.75 298	55	25	49	22
10 250	3.98 101	9.49 241	3.03 77	11.8 300	12 ⅞ 22			14.25 362	95	43	78	35
12 300	3.98 101	9.49 241	3.03 77	11.8 300	12 ⅞ 22			17.00 432	123	56	103	47

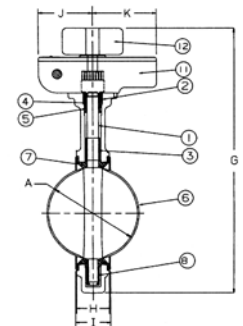
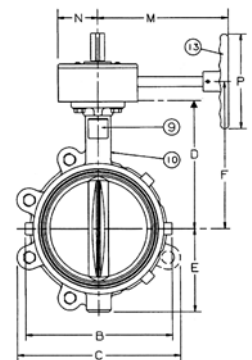


WD3510-8**

Wafer
(4" Shown)

LD3510-8**

Lug
(Not Shown)



(10" Shown)



285 PSI Butterfly Valves

Ductile Iron Body • Extended Neck • Geometric Drive
Molded-in Seat Liner • Lug and Wafer Style
(not intended for air lines)

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges
250 PSI Bi-directional Dead End Service with no need
for a downstream flange.

CONFORMS TO MSS SP-67
US COAST GUARD "CATEGORY A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Stainless Steel ASTM A236 Type 316
3. Stem Seal	EPDM Rubber
4. Body Seal	EPDM Rubber
5. Nameplate	Aluminum
6. Upper Bushing	Stainless Steel ASTM A276 Type 316
7. Liner	EPDM Rubber
8. Disc	Stainless Steel ASTM 743 Grade CF8M
9. Lower Bushing	Stainless Steel ASTM A276 Type 316
10. Body Wafer	Ductile Iron ASTM A536
11. Body Lug	Ductile Iron ASTM A536

DIMENSIONS — WEIGHTS

Size	In. mm.	A	B	C	D	E	F	G	Metal	Rubber	J	N
								Flat	H	I	Square	Dia.
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250

Size		Capscrew/Stud Data						Lug Weight		Wafer Weight	
In. mm.	B.C.	P Dia.	R Dia.	K No.	L Dia.	Wafer Length	Lug Length	M B.C.	Lbs. Kg.	Lbs. Kg.	
2	50	3.25	.437	.437	4 5/8-11unc	Refer to BFV Technical Information for bolt lengths		4¾	7	3.2	5.5 2.5
2½	65	3.25	.437	.500	4 5/8-11unc			5½	9	4.1	7.5 3.4
3	80	3.25	.437	.500	4 5/8-11unc			6	9.5	4.3	8 3.6
4	100	3.25	.437	.562	8 5/8-11unc			7½	15	6.8	11 5.0
5	125	3.25	.437	.656	8 ¾-10unc			8½	21	9.5	15 6.8
6	150	3.25	.437	.656	8 ¾-10unc			9½	24	10.9	18 8.2
8	200	3.25	.437	.781	8 ¾-10unc			11¾	34	15.4	28 12.7
10	250	5.00	.562	1.000	12 7/8-9unc			14¼	62	28.1	45.5 20.7
12	300	5.00	.562	1.062	12 7/8-9unc			17	90	40.9	70 31.8

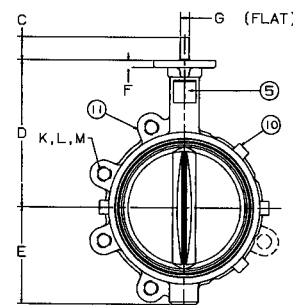
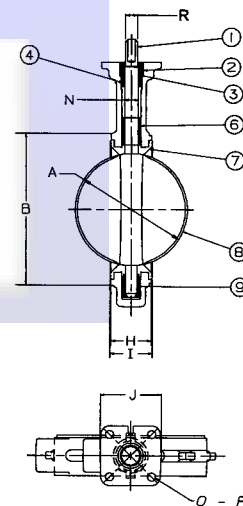


WD 5022

Wafer Style
EPDM Liner
and Stainless
Steel Disc

LD 5022

Lug Style
EPDM Liner
and Stainless
Steel Disc



NOT RECOMMENDED
FOR STEAM SERVICE

Large Diameter Butterfly Valves

LD1000/2000 Series

Ductile Iron

Lug body

EPDM or Buna-N liner materials

- 14" thru 48" size range
- 150/200 PSI WOG
- Bubble tight shut off at full rated pressure
- Bidirectional dead end service
Sizes 14" - 24" 150 psi
Sizes 30" - 48" 100 psi
- Extended neck for 2" of insulation
- Aluminum bronze, 316SS, nickel plated ductile iron disc
- 416 stainless steel stem
- Meets or exceeds the requirements of MSS SP-67



150 PSI Butterfly Valves

Ductile Iron Body • Cartridge Liner • Lug Style

Sizes 14", 16", 18", 20", and 24"

Install between Std. ASME Class 125/150 Flanges
150 PSI bi-directional dead end service rating without
a downstream flange.

CONFORMS TO MSS SP-67

- LISTED BY IAPMO R&T FOR COMPLIANCE WITH SECTION 116875 OF THE CALIFORNIA HEALTH AND SAFETY CODE
- VERMONT ACT 193

MATERIAL LIST

PART	SPECIFICATION
1. Bottom Plate	Steel ASTM A108 Grade 1035
2. Bolt	Steel ASTM A307 ASTM A307 (2 for 14"-20", 4 for 24")
3. O-Ring	Buna-N Rubber Nitrile
4. Bushing	Bronze ASTM B584 Grade C83600/316SS
5. O-Ring (2)	Buna-N Rubber Nitrile
6. Body	Ductile Iron ASTM A536
7. Seat	EPDM Rubber or Buna-N Rubber Nitrile
8. Disc	Alum. Brz. ASTM B148 Alloy C95400 Ductile Iron ASTM A536 Grade 65-45-12 (plated) Stainless Steel ASTM A351 Grade CF8M
9. Stem	Stainless Steel ASTM A582 Type 416 for Alum. Brz. or D.I. Discs Stainless Steel ASTM A276 Type 431 316SS for SS Discs Stainless Steel ASTM A276 Type 431 for 24" Size Only
10. Taper Pin (2)	Stainless Steel ASTM A564 Type 17-4PH
11. Bushing	Bronze ASTM B584 Grade C83600 or 316SS
12. Nameplate	Aluminum
13. Bushing	Bronze ASTM B584 Grade C83600 or 316SS
14. Key	Steel ASTM A108 Grade 1045
15. Seat Back Ring	Phenolic Resin, Aluminum B 26 (16" & larger) 14" - 24" six set screws in backing (not shown)

DIMENSIONS — WEIGHTS

Size	A	Min.	B	C	D	E	F	G	H	I
In. mm.	Dia.	Pipe I.D.	Dia.	Dia.				Body	Seat	Dia.
14 350	13.1	13.0	14.8	17.2	14.5	1.77	26.77	3.01	3.13	1.244
16 400	15.3	15.2	17.3	19.2	15.7	2.02	29.94	3.38	3.54	1.305
18 450	17.3	17.1	19.3	21.2	16.6	2.02	31.55	4.12	4.29	1.496
20 500	19.4	18.9	21.1	23.3	18.9	2.53	35.65	5.14	5.31	1.632
24 600	23.3	23.1	25.7	32.1	22.1	2.76	42.96	5.98	6.14	1.994

DIMENSIONS — WEIGHTS

Size	J	K	L	Q	Cap Screw	S	Lug
In. mm.	Dia.	Dia.	Dia.	Dia.	Length	Dia.	Weight
14 350	5.50	4.25	0.56	12	1-8UNC	18.75	121 54.9
16 400	7.75	6.25	0.81	16	1-8UNC	21.25	211 95.8
18 450	7.75	6.25	0.81	16	1½-7UNC	22.75	268 122.6
20 500	7.75	6.25	0.81	20	1½-7UNC	25.00	444 201.6
24 600	10.87	8.50	0.87	20	1¼-7UNC	29.50	594 269.7

Refer to
butterfly
valve
technical
information
for bolt
lengths

LD 1000/LD 1100

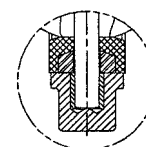
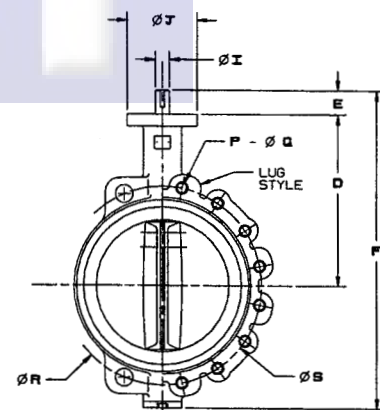
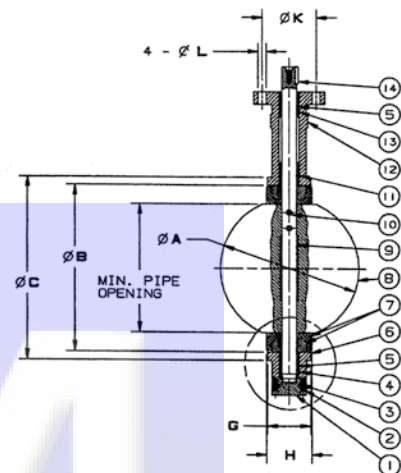
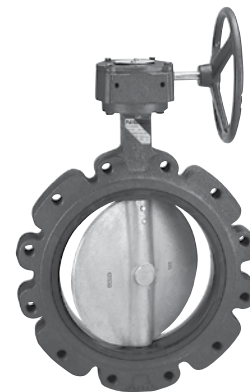
Lug Style
EPDM or Buna-N Liner
Aluminum Bronze Disc

LD 1010/LD 1110

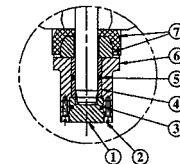
Lug Style
EPDM or Buna-N Liner
Ductile Iron Disc

LD 1022/LD 1122

Lug Style
EPDM or Buna-N Liner
Stainless Steel Disc



14" Reference



16"-24" Reference



NOT RECOMMENDED
FOR STEAM SERVICE

200 PSI Butterfly Valves

Ductile Iron Body • Cartridge Liner • Lug Style

Sizes 14", 16", 18", 20", and 24"

Install between Std. ASME Class 125/150 Flange
150 psi Bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67

- LISTED BY IAPMO R&T FOR COMPLIANCE WITH SECTION 116875 OF THE CALIFORNIA HEALTH AND SAFETY CODE
- VERMONT ACT 193

MATERIAL LIST

PART	SPECIFICATION
1. Bottom Plate	Steel ASTM A108 Grade 1035
2. Bolt	Steel ASTM A307/ASTM A307 (2 for 14"-20", 4 for 24")
3. O-Ring	Buna-N Rubber Nitrile
4. Bushing	Bronze ASTM B584 Grade C83600/316SS
5. O-Ring (2)	Buna-N Rubber Nitrile
6. Body	Ductile Iron ASTM A536
7. Seat	EPDM Rubber or Buna-N Rubber Nitrile
8. Disc	Alum. Brz. ASTM B148 Alloy C95400 Ductile Iron ASTM A536 Grade 65-45-12 (Nickel Plated) Stainless Steel ASTM A351 Grade CF8M
9. Stem	Stainless Steel ASTM A582 Type 416 or Stainless Steel ASTM A276 Type 431 316SS Stainless Steel ASTM A276 Type 431 for 24" Size Only
10. Taper Pin (2)	Stainless Steel ASTM A564 Type 17-4PH
11. Bushing	Bronze ASTM B584 Grade C83600 or 316SS
12. Nameplate	Aluminum
13. Bushing	Bronze ASTM B584 Grade C83600 or 316SS
14. Key	Steel ASTM A108 Grade 1045
15. Seat Back Ring	Phenolic Resin, Aluminum B 26 (16" & larger) 14" - 24" six set screws in backing (not shown)

DIMENSIONS — WEIGHTS

Size	A	Min.	B	C	D	E	F	G	H	I
In. mm.	Dia.	Pipe I.D.	Dia.	Dia.				Body	Seat	Dia.
14 350	13.1	13.0	14.8	17.2	14.5	1.77	26.77	3.01	3.13	1.244
16 400	15.3	15.2	17.3	19.2	15.7	2.02	29.94	3.38	3.54	1.305
18 450	17.3	17.1	19.3	21.2	16.6	2.02	31.55	4.12	4.29	1.496
20 500	19.4	18.9	21.1	23.3	18.9	2.53	35.65	5.14	5.31	1.632
24 600	23.3	23.1	25.7	32.1	22.1	2.76	42.96	5.98	6.14	1.994

DIMENSIONS — WEIGHTS

Size	J	K	L	P	Q	Cap Screw	S	Lug
In. mm.	Dia.	Dia.	Dia.		Dia.	Length	Dia.	Weight
14 350	5.50	4.25	0.56	12	1-8UNC	Refer to butterfly valve technical information for bolt lengths	18.75	121 54.9
16 400	7.75	6.25	0.81	16	1-8UNC		21.25	211 95.8
18 450	7.75	6.25	0.81	16	1½-7UNC		22.75	268 122.6
20 500	7.75	6.25	0.81	20	1½-7UNC		25.00	444 201.6
24 600	10.87	8.50	0.87	20	1¼-7UNC		29.50	594 269.7

*LD 2022, 2122, SSTRIM not available in 24"

LD 2000/LD 2100

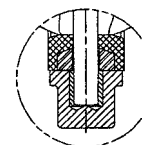
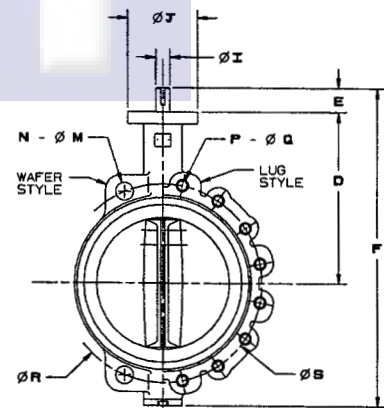
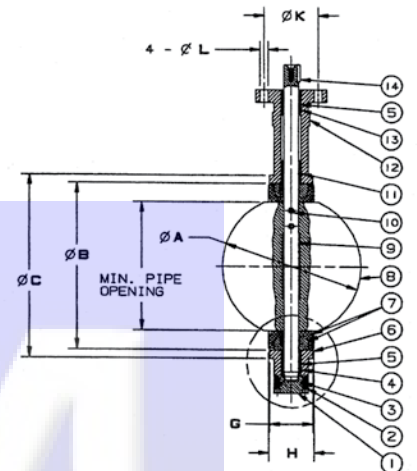
Lug Style
EPDM or Buna-N Liner
Aluminum Bronze Disc

LD 2010/LD 2110

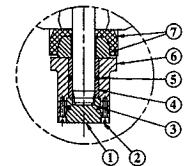
Lug Style
EPDM or Buna-N Liner
Ductile Iron Disc

LD 2022/LD 2122*

Lug Style
EPDM or Buna-N Liner
Stainless Steel Disc



14" Reference



16"-24" Reference



NOT RECOMMENDED
FOR STEAM SERVICE

150 PSI Butterfly Valves

Ductile Iron Body • Cartridge Liner • Double Flanged

Sizes 30", 36", 42" and 48"

Install between Std. ASME Class 125/150 Flanges
100 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67

MATERIAL LIST

PART	SPECIFICATION
1. Body	Ductile Iron ASTM A536
2. Bushing	Bronze ASTM B584 Grade C83600
3. Lower Stem	Stainless Steel ASTM A582 Type 416 Stainless Steel ASTM A276 Type 316SS
3a. Upper Stem	Stainless Steel ASTM A582 Type 416 Stainless Steel ASTM A276 Type 316SS
4. Seat Back Ring	Phenolic Resin, Aluminum B26 30" - 36" eight set screws in backing 42" - 48" ten set screws in backing
5. Seat	Rubber - BUNA (NBR) Rubber - EPDM
6. Disc	Aluminum Bronze ASTM B148 C95400 Ductile Iron ASTM A536 65-45-12 (Nickel Plated) Stainless Steel ASTM A351 Grade CF8M
7. Taper Pin(3)	Stainless Steel ASTM A582 Type 416 or ASTM A564
8. Rivet	Steel
9. Nameplate	Aluminum
10. Bushing	Bronze ASTM B584 C83600
11. Flat Key	Steel ASTM A108 1045
12. Bushing	Bronze ASTM B584 C83600
13. Socket Bolt	Steel ASTM A307
14. O-Ring	Rubber BUNA (NBR)
15. Bottom Plate	Steel ASTM A108 1035
16. Thrust Bearing	Bearing Steel
17. Washer	Steel

DIMENSIONS — WEIGHTS

Size										
In.	mm.	D1	D2	D4	D5	D7	D8 Dia.	D9	D10	D11
30	750	29.30	36.00	10.00	0.71	38.74	2.50	11.81	28.56	1¼-7UNC
36	900	34.04	42.75	10.00	0.71	46.00	2.95	11.81	33.09	1½-6UNC
42	1050	40.55	49.50	10.00	0.71	53.00	3.74	11.81	39.33	1½-6UNC
48	1200	45.67	56.00	11.75	0.87	59.50	4.13	13.78	44.35	1½-6UNC

											Lug Weight		
Size		C	L	A	B	E	N1	N2	T	K Key Size		Lbs.	Kg.
In.	mm.												
30	750	6.57	6.81	50.63	26.00	2.60	8	28	2.12	.71 x 2.50		926	420
36	900	8.00	8.31	58.82	28.35	4.65	8	32	2.38	.79 x 3.94		1482	660
42	1050	9.88	10.28	70.28	33.78	5.91	8	36	2.62	.98 x 5.51		1971	896
48	1200	10.88	11.26	76.96	37.04	5.91	8	44	2.75	1.10 x 5.51		2816	1280

LD 1000/LD 1100

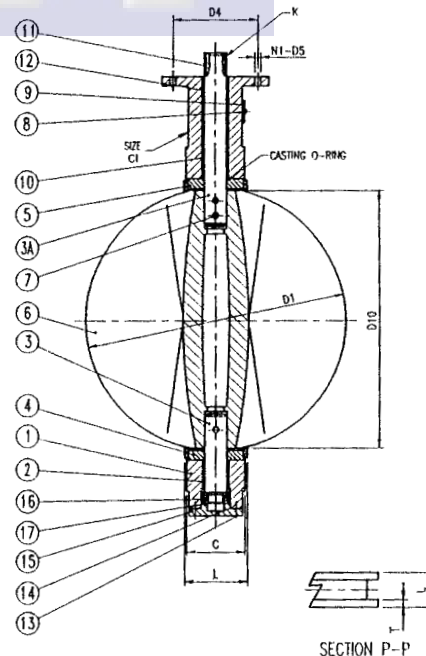
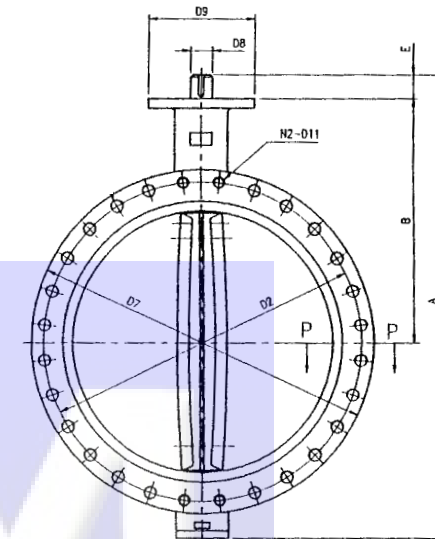
Lug Style
EPDM or Buna-N Liner
Aluminum Bronze Disc

LD 1010

Lug Style
EPDM Liner
Ductile Iron Disc

LD 1022

Lug Style
EPDM Liner
Stainless Steel Disc



NOT RECOMMENDED
FOR STEAM SERVICE

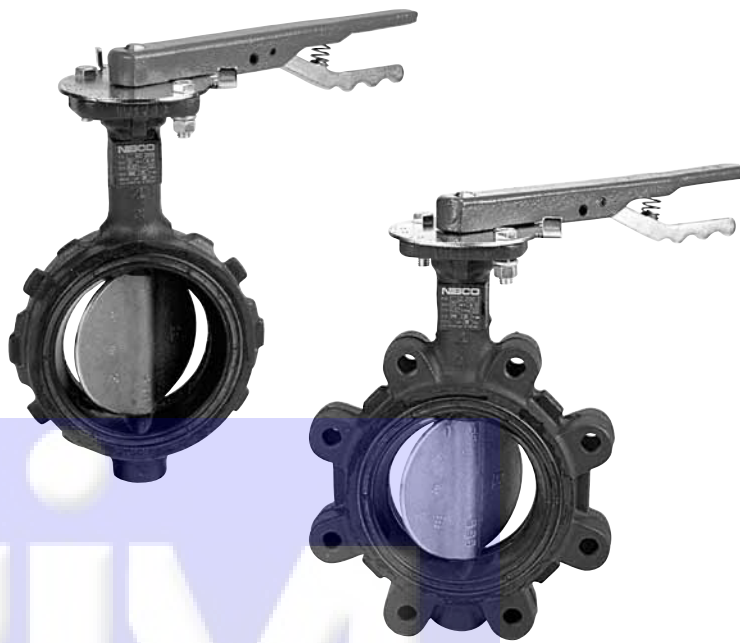
Cast Iron Butterfly Valves

WC/LC2000 Series

- **Cast Iron**

Lug or wafer body

- EPDM liner materials
- 2" thru 12" size range
- 200 PSI CWP
- Bubble tight shut off at full rated pressure
- Aluminum bronze disc
- 416 stainless steel stem



N200 Series

- **Cast Iron**

Lug or wafer body

- EPDM or Buna-N liner materials
- 2" thru 12" size range
- 200 PSI CWP
- Bubble tight shut off at full rated pressure
- Aluminum bronze or nickel plated ductile iron disc
- 416 stainless steel stem



Note - Stem extensions for this butterfly series are not available.

200 PSI Butterfly Valves

Cast Iron Body • Extended Neck • Geometric Drive
Molded-in Seat Liner • Lug and Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges
Lug Style 200 PSI bi-directional dead end service rating without a downstream flange required.

CONFORMS TO MSS SP-67
US COAST GUARD "CATEGORY A"

MATERIAL LIST

PART	SPECIFICATION
1. Stem	Stainless Steel ASTM A582 Type 416
2. Collar Bushing	Brass ASTM B124
3. Stem Seal	EPDM Rubber
4. Body Seal	EPDM Rubber
5. Nameplate	Aluminum
6. Upper Bushing	Copper CDA 122
7. Liner	EPDM Rubber
8. Disc	Alum. Brz. ASTM B148 Alloy 954/955
9. Lower Bushing	Copper CDA 122
10. Body Wafer	Cast Iron A 126 Class B
11. Body Lug	Cast Iron A 126 Class B

DIMENSIONS — WEIGHTS

Size	In. mm.	A	B	C	D	E	F	G	Metal	Rubber	J	N
								Flat	H	I	Square	Dia.
2	50	2.53	4.00	1.25	5.38	2.88	.38	.312	1.688	1.812	3.25	.500
2½	65	2.90	4.69	1.25	5.88	3.27	.38	.370	1.812	1.938	3.25	.562
3	80	3.15	5.12	1.25	6.12	3.40	.38	.370	1.812	1.938	3.25	.562
4	100	4.09	6.12	1.25	6.88	4.00	.38	.403	2.062	2.188	3.25	.625
5	125	5.13	7.25	1.25	7.38	4.75	.38	.496	2.188	2.312	3.25	.750
6	150	6.13	8.25	1.25	8.00	5.29	.38	.496	2.188	2.312	3.25	.750
8	200	8.13	10.41	1.25	9.25	6.50	.50	.560	2.375	2.500	3.25	.875
10	250	10.13	12.52	1.25	10.50	8.00	.50	.686	2.688	2.812	4.75	1.125
12	300	12.13	15.00	1.25	12.00	9.25	.50	.748	3.000	3.125	4.75	1.250

Capscrew/Stud Data											
Size	O	P	R	K	L	Wafer	Lug	M	Lug	Wafer	
In. mm.	B.C.	Dia.	Dia.	No.	Dia.	Length	Length	B.C.	Lbs. Kg.	Lbs. Kg.	
2	50	3.25	.437	.437	4	5/8-11unc		4¾	7 3.2	5.5 2.5	
2½	65	3.25	.437	.500	4	5/8-11unc		5½	9 4.1	7.5 3.4	
3	80	3.25	.437	.500	4	5/8-11unc		6	9.5 4.3	8 3.6	
4	100	3.25	.437	.562	8	5/8-11unc		7½	15 6.8	11 5.0	
5	125	3.25	.437	.656	8	¾-10unc		8½	21 9.5	15 6.8	
6	150	3.25	.437	.656	8	¾-10unc		9½	24 10.9	18 8.2	
8	200	3.25	.437	.781	8	¾-10unc		11¾	34 15.4	28 12.7	
10	250	5.00	.562	1.000	12	7/8-9unc		14¼	62 28.1	45.5 20.7	
12	300	5.00	.562	1.062	12	7/8-9unc		17	90 40.9	70 31.8	

Refer to
butterfly
valve
technical
information
for bolt
lengths

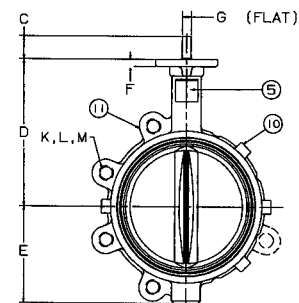
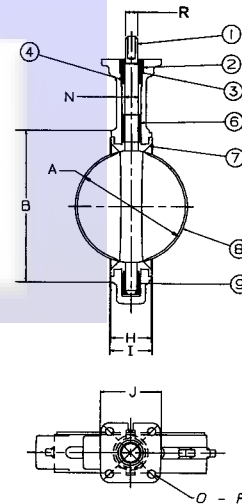


WC 2000

Wafer Style
EPDM Liner
and Aluminum
Bronze Disc

LC 2000

Lug Style
EPDM Liner
and Aluminum
Bronze Disc



NOT RECOMMENDED
FOR STEAM SERVICE

200 PSI Butterfly Valves

Cast Iron Body • Extended Neck
Cartridge Seat Liner • Lug Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges
Bi-directional dead end service rating without a downstream
flange required: 2"-6" 200 PSI, 8" 150 PSI, 10"-12" 100 PSI

CONFORMS TO MSS SP-67

MATERIAL LIST

PART	SPECIFICATION
1. Body	Cast Iron, Epoxy coated ASTM A126 CL.B
2. Body Bushing	Bronze ASTM B584 Grade C83600
3. Liner	EPDM Rubber w/Phenolic Backing Buna-N Rubber Nitrile w/Phenolic Backing
4. Stem	Stainless Steel ASTM A582 Type 416
5. Disc	Alum. Brz. ASTM B148 Alloy C95400 Ductile Iron ASTM A536 Grade 65-45-12 (plated)
6. Taper Pin (2 pin 6" - 12")	Stainless Steel ASTM A582 Type 416
7. Name Plate	Aluminum
8. Shaft Bushing	Bronze ASTM B584 Grade C83600
9. Stem Seal	Buna-N Rubber Nitrile

DIMENSIONS — WEIGHTS

Size	A	Min.	B	C	E	F	G	H	I
In. mm. Dia. Pipe I.D. Dia. Dia. D							Body	Seat	Dia.
2 50	2.08	1.38	3.00	3.94	6.34	1.26	10.75	1.655	1.81
2½ 65	2.54	1.95	3.50	4.72	6.89	1.26	11.65	1.759	1.93
3 80	3.10	2.66	4.09	5.00	7.13	1.26	12.12	1.780	1.93
4 100	4.10	3.67	5.32	6.14	7.87	1.26	13.62	2.050	2.18
5 125	4.85	4.48	6.26	7.48	8.39	1.26	14.65	2.140	2.31
6 150	6.12	5.84	7.42	8.35	8.90	1.26	15.62	2.195	2.33
8 200	7.97	7.85	9.38	10.55	10.24	1.77	18.88	2.385	2.52
10 250	9.86	9.76	11.51	12.79	11.50	1.77	21.26	2.584	2.83
12 300	11.87	11.72	13.55	15.87	13.27	1.77	24.57	3.029	3.19

Size	J	K	L	M	R	P	Q	T	Lug Weight
In. mm. Dia. B.C. Dia. Dia. Dia. Dia. Dia. Dia. Flats Lbs. Kg.									
2 50	3.00	1.97	0.28	0.75	4.75	4	¾-11UNC	.350	8.6 3.9
2½ 65	3.03	1.97	0.28	0.75	5.50	4	¾-11UNC	.350	10.8 4.9
3 80	3.03	1.97	0.28	0.75	6.00	4	¾-11UNC	.350	11.4 5.2
4 100	3.62	2.76	0.39	0.75	7.50	8	¾-11UNC	.437	18.9 8.6
5 125	3.62	2.76	0.39	0.88	8.50	8	¾-10UNC	.500	22.8 10.4
6 150	3.62	2.76	0.39	0.88	9.50	8	¾-10UNC	.500	27.1 12.3
8 200	4.50	4.02	0.47	0.88	11.75	8	¾-10UNC	.625	41.2 18.7
10 250	4.50	4.02	0.47	1.00	14.25	12	¾-9UNC	.812	56.3 25.9
12 300	5.50	4.02	0.47	1.00	17.00	12	¾-9UNC	.875	90.3 41.0

NOT RECOMMENDED
FOR STEAM SERVICE

N200235

Lug Style
EPDM Liner
Aluminum Bronze Disc

N200236

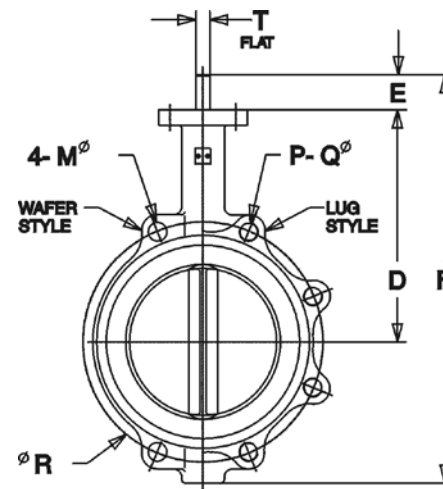
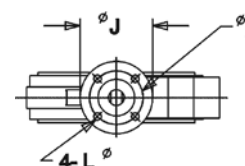
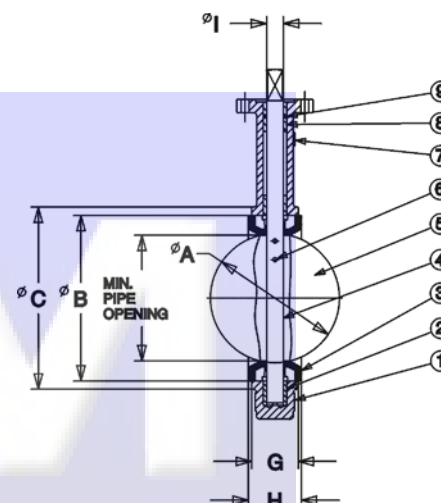
Lug Style
EPDM Liner
Ductile Iron Disc

N200245

Lug Style
Buna Liner
Aluminum Bronze Disc

N200246

Lug Style
Buna Liner
Ductile Iron Disc



200 PSI Butterfly Valves

Cast Iron Body • Extended Neck
Cartridge Seat Liner • Wafer Style

Sizes 2" through 12"

Install between Std. ASME Class 125/150 Flanges

CONFORMS TO MSS SP-67

MATERIAL LIST

PART	SPECIFICATION
1. Body	Cast Iron, Epoxy coated ASTM A126 CL.B
2. Body Bushing	Bronze ASTM B584 Grade C83600
3. Liner	EPDM Rubber w/Phenolic Backing Buna-N Rubber Nitrile w/Phenolic Backing
4. Stem	Stainless Steel ASTM A582 Type 416
5. Disc	Alum. Brz. ASTM B148 Alloy C95400 Ductile Iron ASTM A536 Grade 65-45-12 (plated)
6. Taper Pin (2 pin 6" - 12")	Stainless Steel ASTM A582 Type 416
7. Name Plate	Aluminum
8. Shaft Bushing	Bronze ASTM B584 Grade C83600
9. Stem Seal	Buna-N Rubber Nitrile

DIMENSIONS — WEIGHTS

Size	In.	mm.	A	Min.	B	C	E	F	G	H	I
Dia.	Pipe I.D.	Dia.	Dia.	D	D	D			Body	Seat	Dia.
2	50	2.08	1.38	3.00	3.94	6.34	1.26	10.75	1.655	1.81	0.496
2½	65	2.54	1.95	3.50	4.72	6.89	1.26	11.65	1.759	1.93	0.496
3	80	3.10	2.66	4.09	5.00	7.13	1.26	12.12	1.780	1.93	0.496
4	100	4.10	3.67	5.32	6.14	7.87	1.26	13.62	2.050	2.18	0.621
5	125	4.85	4.48	6.26	7.48	8.39	1.26	14.65	2.140	2.31	0.745
6	150	6.12	5.84	7.42	8.35	8.90	1.26	15.62	2.195	2.33	0.745
8	200	7.97	7.85	9.38	10.55	10.24	1.77	18.90	2.385	2.52	0.870
10	250	9.86	9.76	11.51	12.79	11.50	1.77	21.26	2.584	2.83	1.120
12	300	11.87	11.72	13.55	15.87	13.27	1.77	24.57	3.029	3.19	1.244

Size	J	B.C.	L	M	R	P	Q	T	Lug Weight
In. mm.	Dia.	Dia.	Dia.	Dia.	Dia.		Dia.	Flats	Lbs. Kg.
2	50	3.00	2.25	0.28	0.75	4.75	4	5/8-11UNC	.350 5.7 2.6
2½	65	3.03	2.25	0.28	0.75	5.50	4	5/8-11UNC	.350 7.5 3.9
3	80	3.03	2.25	0.28	0.75	6.00	4	5/8-11UNC	.350 8.4 3.8
4	100	3.62	2.75	0.39	0.75	7.50	8	5/8-11UNC	.437 12.3 5.6
5	125	3.62	2.75	0.39	0.88	8.50	8	3/4-10UNC	.500 17.2 7.8
6	150	3.62	2.75	0.39	0.88	9.50	8	3/4-10UNC	.500 19.6 8.9
8	200	4.50	3.50	0.47	0.88	11.75	8	3/4-10UNC	.625 29.7 13.5
10	250	4.50	3.50	0.47	1.00	14.25	12	7/8-9UNC	.812 44.0 20.0
12	300	5.50	4.25	0.47	1.00	17.00	12	7/8-9UNC	.875 65.8 29.9

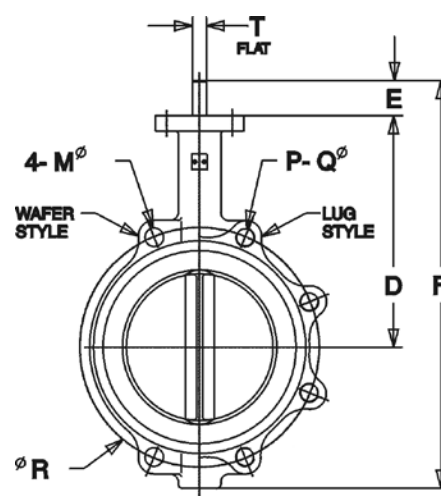
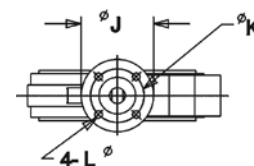
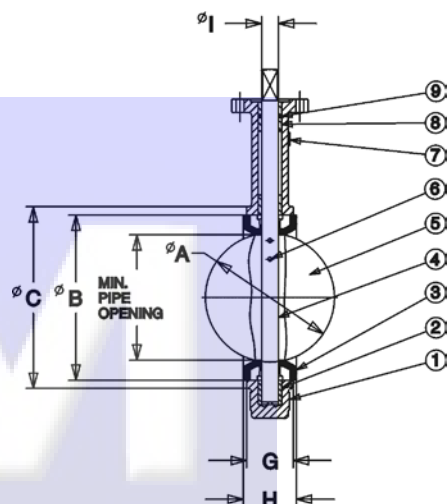
NOT RECOMMENDED
FOR STEAM SERVICE

N200135
Wafer Style
EPDM Liner
Aluminum Bronze Disc

N200136
Wafer Style
EPDM Liner
Ductile Iron Disc

N200145
Wafer Style
Buna Liner
Aluminum Bronze Disc

N200146
Wafer Style
Buna Liner
Ductile Iron Disc



Grooved Butterfly Valve

GD4765 Series

Polyamide Coated Ductile Iron body

Elastomer encapsulated disc (EPDM or Buna-N)

- Maximum Temperature Rating 200°F EPDM Disc and 180°F with Buna Disc
- 416 stainless steel stem
- 300 PSI WOG 2" thru 10"
- 200 PSI WOG 12"
- 175 PSI WOG 10" UL/FM
- UL & ULC listed, FMRC approved
- 2½" thru 10" UL listed for indoor and outdoor service
- UL/FM version accepts internal supervisory switches
- Meets or exceeds the requirements of MSS SP-67
- Polyamide coating has NSF certification



300 PSI Grooved End Butterfly Valves

- Polyamide Coated Ductile Iron Body • Extended Neck
- Elastomer Encapsulated Disc • Grooved Mechanical Style
 - 12" Maximum Pressure Rating 200 PSI • Maximum Temperature Rating of 200°F EPDM Disc and 180°F Buna Disc
 - Grooved End Compatible with IPS Pipe

Sizes 2" through 12"

GD 4765

w/EPDM Liner

GD 4775

w/Buna-N Liner



CONFORMS TO MSS SP-67

MATERIAL LIST

PART	SPECIFICATION
1. Upper Stem	Stainless Steel ASTM A582 Type 416
2. Upper Bearing	Split Metal
3. O-Ring	EPDM or Buna-N
4. Body	Ductile Iron ASTM A395 w/Polyamide Coating
5. Disc	Ductile Iron ASTM A395 w/EPDM or Buna-N Encapsulation
6. Lower Bearing	Split Metal
7. Lower Stem	Stainless Steel ASTM A582 Type 416
8. Dust Plug	PVC
9. Name Plate	Aluminum

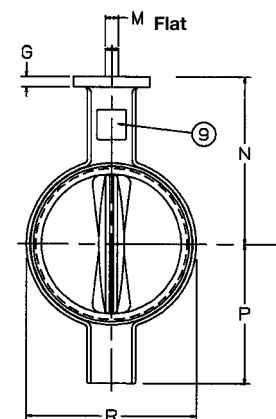
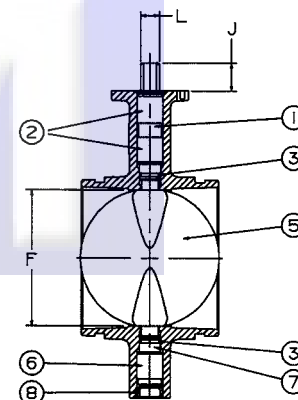
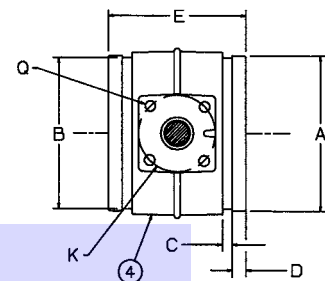
Polyamide coating has NSF certification

DIMENSIONS — WEIGHTS

Size		A	B	C	D	E	F	G	J
In.	mm.								
2	50	2.38	2.32	.33	.63	3.33	2.42	.46	1.31
2½	65	2.88	2.72	.31	.63	3.85	2.42	.46	1.22
3	80	3.50	3.34	.31	.63	3.85	2.86	.46	1.18
3 O.D.	76.1	3.00	2.84	.31	.63	3.85	2.42	.46	1.22
4	100	4.50	4.33	.38	.63	4.56	3.84	.46	1.24
5	125	5.56	5.39	.38	.63	5.86	4.79	.46	1.24
6	150	6.63	6.45	.38	.63	5.86	5.73	.46	1.29
6 O.D.	165.1	6.51	6.32	.38	.63	5.86	5.73	.46	1.29
8	200	8.63	8.44	.44	.75	5.26	7.71	.46	1.32
10	250	10.75	10.56	.50	.75	6.29	9.56	.70	1.38
12	300	12.76	12.51	.50	.75	6.52	11.55	.70	1.38

Size		K	L	M	N	P	Q	R	Weight	
In.	mm.								Lbs.	Kg.
2	50	3.25	.50	.37	4.00	3.14	.437	2.89	6.7	3.0
2½	65	3.25	.50	.37	4.19	3.25	.437	3.46	7.5	3.4
3	80	3.25	.50	.37	4.44	3.54	.437	3.97	8.7	3.9
3 O.D.	76.1	3.25	.50	.37	4.19	3.25	.437	3.46	8.7	3.9
4	100	3.25	.66	.50	5.33	4.35	.437	5.03	12.2	5.5
5	125	3.25	.66	.50	5.83	4.84	.437	6.27	17.3	7.8
6	150	3.25	.78	.56	7.11	5.93	.437	7.25	27.4	12.4
6 O.D.	165.1	3.25	.78	.56	7.11	5.93	.437	7.25	27.4	12.4
8	200	3.25	.78	.56	8.05	6.87	.437	9.25	32.5	14.7
10	250	5.00	1.06	.75	9.86	9.17	.562	11.25	69.6	31.6
12	300	5.00	1.06	.75	10.85	10.17	.562	13.14	88.0	39.9

NOT RECOMMENDED
FOR STEAM SERVICE



300 PSI Grooved End Butterfly Valves

Polyamide Coated Ductile Iron Body • Extended Neck
 • Elastomer Encapsulated Disc • Grooved Mechanical Style
 • 10" and 12" Maximum Pressure Rating 300 PSI • Maximum Temperature Rating of 200°F EPDM Disc and 180°F Buna Disc • Grooved End Compatible with IPS Pipe • Tested and Certified by NSF

Sizes 2" through 12"

CONFORMS TO MSS SP-67

MATERIAL LIST

PART	SPECIFICATION
1. Upper Stem	Stainless Steel ASTM A582 Type 416
2. Upper Bearing	Split Metal
3. O-Ring	EPDM or Buna-N
4. Body	Ductile Iron ASTM A395 w/Polyamide Coating
5. Disc	Ductile Iron ASTM A395 w/EPDM
6. Lower Bearing	Split Metal
7. Lower Stem	Stainless Steel ASTM A582 Type 416
8. Dust Plug	PVC
9. Name Plate	Aluminum

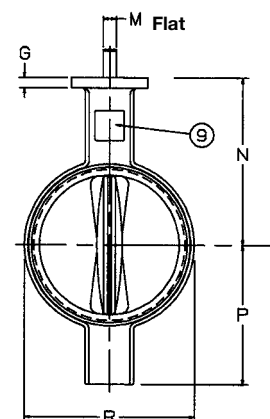
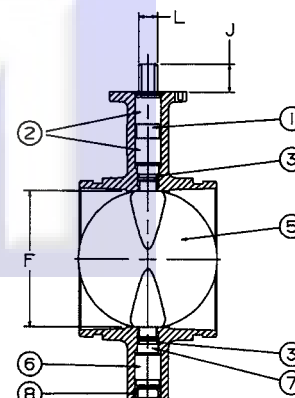
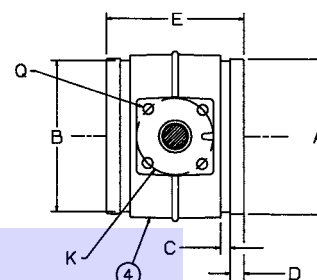
DIMENSIONS — WEIGHTS

Size		A	B	C	D	E	F	G	J
In.	mm.								
2	50	2.38	2.32	.33	.63	3.33	2.42	.46	1.31
2½	65	2.88	2.72	.31	.63	3.85	2.42	.46	1.22
3	80	3.50	3.34	.31	.63	3.85	2.86	.46	1.18
3 O.D.	76.1	3.00	2.84	.31	.63	3.85	2.42	.46	1.22
4	100	4.50	4.33	.38	.63	4.56	3.84	.46	1.24
5	125	5.56	5.39	.38	.63	5.86	4.79	.46	1.24
6	150	6.63	6.45	.38	.63	5.86	5.73	.46	1.29
6 O.D.	165.1	6.51	6.32	.38	.63	5.86	5.73	.46	1.29
8	200	8.63	8.44	.44	.75	5.26	7.71	.46	1.32
10	250	10.75	10.56	.50	.75	6.29	9.56	.70	1.38
12	300	12.76	12.51	.50	.75	6.52	11.55	.70	1.38

Size		K	L	M	N	P	Q	R	Weight	
In.	mm.								Lbs.	Kg.
2	50	3.25	.50	.37	4.00	3.14	.437	2.89	6.7	3.0
2½	65	3.25	.50	.37	4.19	3.25	.437	3.46	7.5	3.4
3	80	3.25	.50	.37	4.44	3.54	.437	3.97	8.7	3.9
3 O.D.	76.1	3.25	.50	.37	4.19	3.25	.437	3.46	8.7	3.9
4	100	3.25	.66	.50	5.33	4.35	.437	5.03	12.2	5.5
5	125	3.25	.66	.50	5.83	4.84	.437	6.27	17.3	7.8
6	150	3.25	.78	.56	7.11	5.93	.437	7.25	27.4	12.4
6 O.D.	165.1	3.25	.78	.56	7.11	5.93	.437	7.25	27.4	12.4
8	200	3.25	.78	.56	8.05	6.87	.437	9.25	32.5	14.7
10	250	5.00	1.06	.75	9.86	9.17	.562	11.25	69.6	31.6
12	300	5.00	1.06	.75	10.85	10.17	.562	13.14	88.0	39.9

NOT RECOMMENDED
FOR STEAM SERVICE

GD 4765N
w/EPDM Liner



300 lb. WWP UL/FM Butterfly Valves

Fire Protection Valve • Grooved Mechanical Style • Nylon Coated Ductile Iron Body • Extended Neck • Elastomer Encapsulated Disc • Internal Supervisory Switches Standard on -8 Version • Compatible with IPS Pipe

300 PSI/20.7 Bar Non-Shock Cold Water 2½" - 8"

175 PSI/12.1 Bar Non-Shock Cold Water 10"

UL/ULC LISTED • FMRC APPROVED • 2½" - 10" UL LISTED FOR INDOOR AND OUTDOOR SERVICE • CALIFORNIA STATE FIRE MARSHALL LISTING NO. 7770-1243:101 • APPROVED BY THE NEW YORK CITY MEA 9-97-E, VOL.2 WHEN ASSEMBLED WITH APPROPRIATE NYC INDICATOR FLAG

MATERIAL LIST

PART	SPECIFICATION
1. Upper Stem	Stainless Steel ASTM A582 Type 416
2. Upper Bushing	PTFE Bronze Sintered on Steel
3. "O" Ring	EPDM
4. Body	Ductile Iron ASTM A395 with Polyamide Coating
5. Disc	Ductile Iron ASTM A395 with EPDM Encapsulation
6. Lower Bushing	PTFE Bronze Sintered on Steel
7. Lower Stem	Stainless Steel ASTM A582 Type 416
8. Dust Plug	PVC
9. Nameplate	Aluminum
10. Gear Operator	Cast Iron and Steel
11. Indicator Flag	Cast Iron
12. Handwheel	Cast Iron

*-8N version has two factory mounted internal supervisory switches.

-4N version is gear operated only

Uses NIBCO model #TS-4 Switch Kit.

Polyamide coating has NSF certification.

DIMENSIONS—WEIGHTS—QUANTITIES

Dimensions											
Size	A	B	C	D	E	F	G	H			
In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.
2½	65 2.88	73 2.72	69 0.31	8 0.63	16 3.85	98 2.42	61 11.94	303 2.91	74		
3 O.D.	76.1 3.00	76 2.84	72 0.31	8 0.63	16 3.85	98 2.42	61 11.94	303 2.91	74		
3	80 3.50	89 3.34	85 0.31	8 0.63	16 3.85	98 2.86	73 12.48	317 2.91	74		
4	100 4.50	114 4.33	110 0.38	10 0.63	16 4.56	116 3.84	98 14.18	360 2.91	74		
5	125 5.56	141 5.39	137 0.38	10 0.63	16 5.86	149 4.79	122 15.17	385 2.91	74		
6	150 6.63	168 6.45	164 0.38	10 0.63	16 5.86	149 5.73	146 17.54	446 2.91	74		
6 O.D.	165.1 6.51	165 6.32	161 0.38	10 0.63	16 5.86	149 5.73	146 17.54	446 2.91	74		
8	200 8.63	219 8.44	214 0.44	11 0.75	19 5.26	134 7.71	196 19.42	493 2.91	74		
10	250 10.75	273 10.56	268 0.50	13 0.75	19 6.29	160 9.56	243 24.03	610 3.90	99		

Dimensions											
Size	J	K	L	M	N	P	Q	R	Weight		
In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	In. mm.	Lbs.	Kg.	
2½	65 3.54	90 2.13	54 5.82	148 5.67	144 4.19	106 3.25	83 5.9	150 3.46	88	22	10.0
3 O.D.	76.1 3.54	90 2.13	54 5.82	148 5.67	144 4.19	106 3.25	83 5.9	150 3.46	88	22	10.4
3	80 3.54	90 2.13	54 5.82	148 5.94	151 4.44	113 3.54	90 5.9	150 3.97	101	23	10.4
4	100 3.54	90 2.13	54 7.64	194 6.31	173 5.33	135 4.35	110 5.9	150 5.03	128	28	12.7
5	125 3.54	90 2.13	54 7.64	194 7.32	186 5.83	148 4.84	123 5.9	150 6.27	159	31	14.1
6	150 3.54	90 2.13	54 7.64	194 8.62	219 7.11	181 5.93	151 5.9	150 7.25	184	41	18.6
6 O.D.	165.1 3.54	90 2.13	54 7.64	194 8.62	219 7.11	181 5.93	151 5.9	150 7.25	184	41	18.6
8	200 3.54	90 2.13	54 7.91	201 9.80	249 8.05	204 6.87	174 9.8	250 9.25	235	53	24.1
10	250 3.98	101 3.03	77 9.49	241 11.61	295 9.86	250 9.17	233 11.8	300 18.00	457	88	40.0

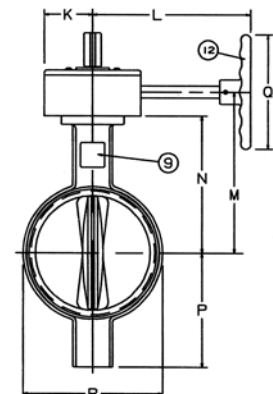
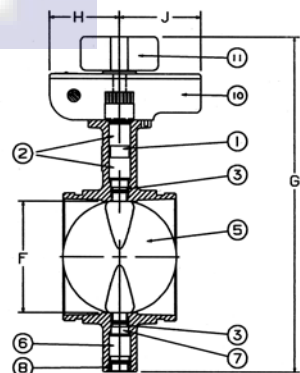
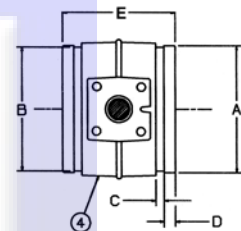


GD-1765-8N

10"
(not shown)

GD-4765-8N*

Grooved
2½" thru 8"



350 lb. WWP UL Butterfly Valves

Fire Protection Valve • Grooved Mechanical Style • Nylon Coated Ductile Iron Body • Extended Neck • Elastomer Encapsulated Disc • Internal Supervisory Switches Standard on -8 Version

350 PSI/24 Bar Non-Shock Cold Water

UL/ULC LISTED • UL LISTED FOR INDOOR AND OUTDOOR SERVICE
 • APPROVED BY NEW YORK CITY MEA 9-97-E VOL. 3 AT 350 PSI
 NON-SHOCK COLD WATER WHEN ASSEMBLED WITH APPROPRIATE
 NYC FLAG

MATERIAL LIST

PART	SPECIFICATION
1. Upper Stem	Stainless Steel ASTM A582 Type 416
2. Upper Bushing	PTFE Bronze Sintered on Steel
3. "O" Ring	EPDM
4. Body	Ductile Iron ASTM A395 with Polyamide Coating
5. Disc	Ductile Iron ASTM A395 with EPDM Encapsulation
6. Lower Bushing	PTFE Bronze Sintered on Steel
7. Lower Stem	Stainless Steel ASTM A582 Type 416
8. Dust Plug	PVC
9. Nameplate	Aluminum
10. Gear Operator	Cast Iron and Steel
11. Indicator Flag	Cast Iron
12. Handwheel	Cast Iron

Factory mounted with two internal supervisory switches.
 Uses NIBCO model #TS-4 Switch Kit.
 Polyamide coating has NSF certification.

DIMENSIONS—WEIGHTS—QUANTITIES

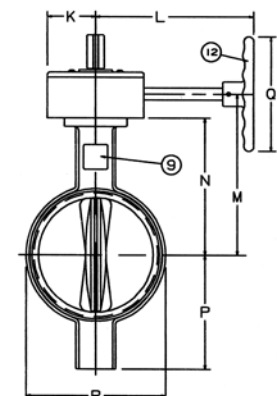
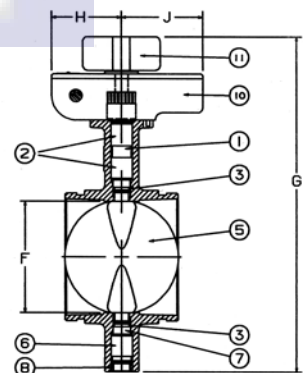
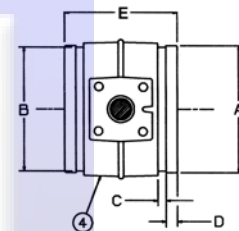
		Dimensions															
Size		A		B		C		D		E		F		G		H	
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.
2½	65	2.88	73	2.72	69	0.31	8	0.63	16	3.85	98	2.42	61	11.94	303	2.91	74
3	80	3.50	89	3.34	85	0.31	8	0.63	16	3.85	98	2.86	73	12.48	317	2.91	74
4	100	4.50	114	4.33	110	0.38	10	0.63	16	4.56	116	3.84	98	14.18	360	2.91	74
6	150	6.63	168	6.45	164	0.38	10	0.63	16	5.86	149	5.73	146	17.54	446	2.91	74
8	200	8.63	219	8.44	214	0.44	11	0.75	19	5.26	134	7.71	196	19.42	493	2.91	74
10	250	10.75	273	10.56	268	0.50	13	0.75	19	6.29	160	9.56	243	24.03	610	3.90	99

Size		Dimensions														Weight			
		J		K		L		M		N		P		Q				R	
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	Lbs.	Kg.
2½	65	3.54	90	2.13	54	5.82	148	5.67	144	4.19	106	3.25	83	5.9	150	3.46	88	22	10.0
3	80	3.54	90	2.13	54	5.82	148	5.94	151	4.44	113	3.54	90	5.9	150	3.97	101	23	10.4
4	100	3.54	90	2.13	54	7.64	194	6.31	173	5.33	135	4.35	110	5.9	150	5.03	128	28	12.7
6	150	3.54	90	2.13	54	7.64	194	8.62	219	7.11	181	5.93	151	5.9	150	7.25	184	41	18.6
8	200	3.54	90	2.13	54	7.91	201	9.80	249	8.05	204	6.87	174	9.8	250	9.25	235	53	24.1
10	250	3.98	101	3.03	77	9.49	241	11.61	295	9.86	250	9.17	233	11.8	300	11.25	286	88	40.0



GD-6765-8N

Grooved
 2½", 3", 4", 6", 8", 10"



4 Valves in one

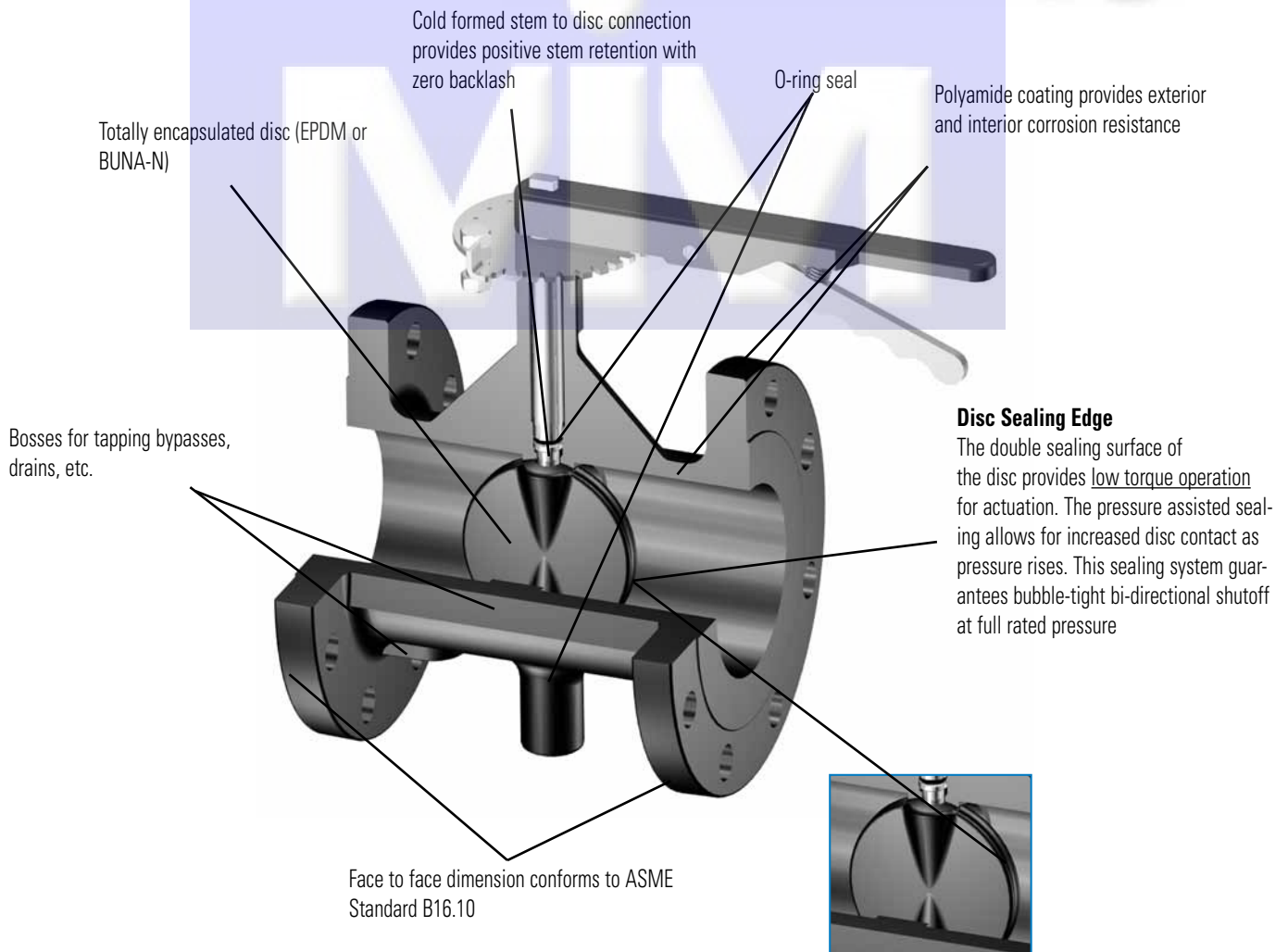
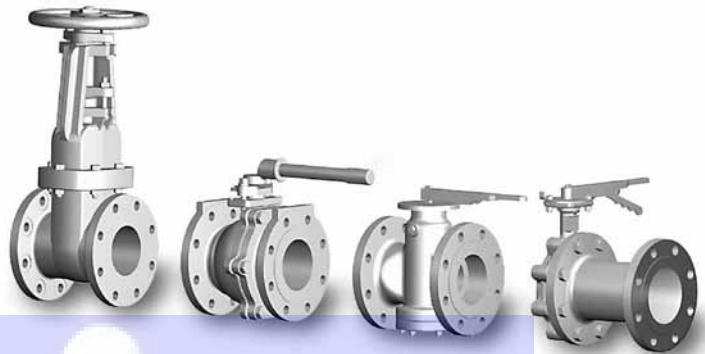
FC2000 Series FD5000 Series

Sizes 2"-12"

Your *Best* Valve Replacement Option

NIBCO's Flanged Butterfly Valve dimensionally replaces the:

- Gate Valve
- Ball Valve
- Plug Valve
- Spooled Butterfly Valve



Note - Polyamide Coating Maximum Temperature 200°F

200 PSI Flanged End Butterfly Valves

Polyamide Coated Cast Iron Body • Extended Neck • Cold Form Stem Drive
 • Elastomer Encapsulated Disc • Flanged Ends • Max. Temp. 200°F with EPDM only • ASME B16.10 Face-to-face dimensions

Patent Pending

Sizes 2" through 12"

CONFORMS TO MSS SP-67

MATERIAL LIST

PART	SPECIFICATION
1. Upper Stem	Stainless Steel, ASTM A582 Type 416
2. Upper Bushing	PTFE over Porous Bronze, Steel Backed
3. O-Ring	EPDM or BUNA-N
4. Body	Cast Iron ASTM A126 Class B with Polyamide Coating
5. Disc	Ductile Iron ASTM A395 with EPDM or BUNA-N Encapsulation
6. Lower Bushing	PTFE over Porous Bronze, Steel Backed
7. Lower Stem	Stainless Steel, ASTM A582 Type 416
8. Dust Plug	PVC
9. Nameplate	Aluminum

Class 125 flange ends

Polyamide coating has NSF certification

DIMENSIONS — WEIGHTS

Size		A	B	C	D	E	F	G	J
In.	mm.								
2	50	2.11	6.0	0.62	5.69	3.16	6.94	7.00	0.437
2½	65	2.59	7.0	0.69	5.78	3.25	7.03	7.50	0.437
3	80	3.07	7.5	0.75	5.99	3.54	7.24	8.00	0.437
4	100	4.03	9.0	0.94	6.99	4.35	8.24	9.00	0.437
5	125	5.05	10.0	0.94	7.47	4.85	8.72	10.00	0.437
6	150	6.07	11.0	1.00	8.28	5.94	9.53	10.50	0.437
8	200	7.98	13.5	1.12	9.25	6.87	10.50	11.50	0.437
10	250	10.02	16.0	1.19	11.03	9.18	12.28	13.00	0.562
12	300	12.00	19.0	1.25	12.01	10.16	13.26	14.00	0.562

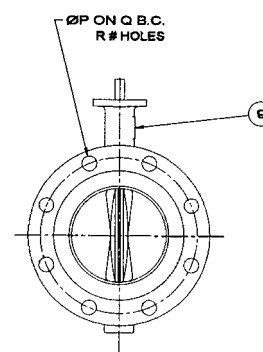
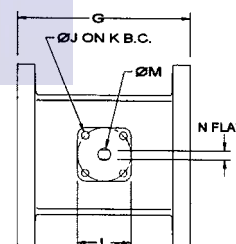
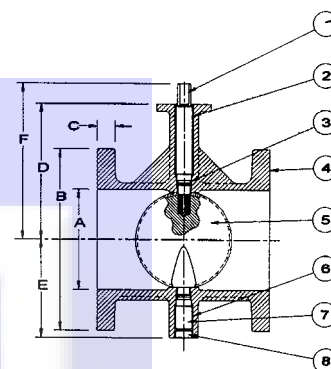
Size		K	L	M	N	P	Q	R	Weight	
In.	mm.								Lbs.	Kg.
2	50	3.25	3.25	0.50	0.37	0.75	4.75	4	16.5	7.5
2½	65	3.25	3.25	0.50	0.37	0.75	5.50	4	24	10.9
3	80	3.25	3.25	0.50	0.37	0.75	6.00	4	28	12.7
4	100	3.25	3.25	0.66	0.50	0.75	7.50	8	44	20.0
5	125	3.25	3.25	0.66	0.50	0.88	8.50	8	53	24.1
6	150	3.25	3.25	0.78	0.56	0.88	9.50	8	65	30.0
8	200	3.25	3.25	0.78	0.56	0.88	11.75	8	94	42.7
10	250	5.00	4.75	1.06	0.75	1.00	14.25	12	155	70.4
12	300	5.00	4.75	1.06	0.75	1.00	17.00	12	214	97.6

NOT RECOMMENDED
FOR STEAM SERVICE



FC-27*5-0

*Optional disc
EPDM (6)
or BUNA (7)



285 PSI Flanged End Butterfly Valves

Polyamide Coated Ductile Iron Body • Extended Neck • Cold Form Stem Drive
 • Elastomer Encapsulated Disc • Flanged Ends • Max. Temp. 200°F with EPDM only
 • ASME B16.50 Face-to-face dimensions

Patent Pending

Sizes 2" through 12"

CONFORMS TO MSS SP-67

MATERIAL LIST

PART	SPECIFICATION
1. Upper Stem	Stainless Steel, ASTM A582 Type 416
2. Upper Bushing	PTFE over Porous Bronze, Steel Backed
3. "O" Ring	EPDM or BUNA-N
4. Body	Ductile Iron ASTM A536 with Polyamide Coating
5. Disc	Ductile Iron ASTM A395 with EPDM or BUNA-N Encapsulation
6. Lower Bushing	PTFE over Porous Bronze, Steel Backed
7. Lower Stem	Stainless Steel, ASTM A582 Type 416
8. Dust Plug	PVC
9. Nameplate	Aluminum

Class 150 ends are standard. PN10, PN16 available.

Sizes 2" through 8", 285 psi - 10" to 12", 200 psi

Polyamide coating has NSF certification

DIMENSIONS — WEIGHTS

Size		A	B	C	D	E	F	G	H
In.	mm.								
2	50	2.11	6.0	0.62	5.69	3.16	6.94	7.00	3.62
2½	65	2.59	7.0	0.69	5.78	3.25	7.03	7.50	4.12
3	80	3.07	7.5	0.75	5.99	3.54	7.24	8.00	5.00
4	100	4.03	9.0	0.94	6.99	4.35	8.24	9.00	6.19
5	125	5.05	10.0	0.94	7.47	4.85	8.72	10.00	7.31
6	150	6.07	11.0	1.00	8.28	5.94	9.53	10.50	8.50
8	200	7.98	13.5	1.12	9.25	6.87	10.50	11.50	10.62
10	250	10.02	16.0	1.19	11.03	9.18	12.28	13.00	12.75
12	300	12.00	19.0	1.25	12.01	10.16	13.26	14.00	15.00

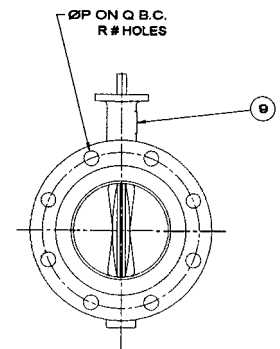
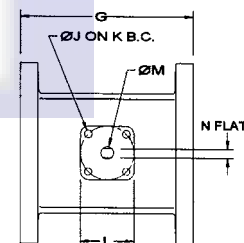
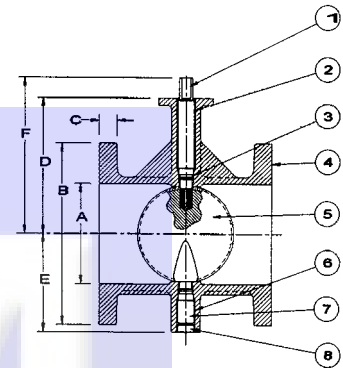
Size		J	K	L	M	N	P	Q	R	Weight	
In.	mm.									Lbs.	Kg.
2	50	0.437	3.25	3.25	0.50	0.37	0.75	4.75	4	16	7.3
2½	65	0.437	3.25	3.25	0.50	0.37	0.75	5.50	4	23	10.4
3	80	0.437	3.25	3.25	0.50	0.37	0.75	6.00	4	27	12.3
4	100	0.437	3.25	3.25	0.66	0.50	0.75	7.50	8	43	19.5
5	125	0.437	3.25	3.25	0.66	0.50	0.88	8.50	8	52	23.6
6	150	0.437	3.25	3.25	0.78	0.56	0.88	9.50	8	65	29.5
8	200	0.437	3.25	3.25	0.78	0.56	0.88	11.75	8	93	42.2
10	250	0.562	5.00	4.75	1.06	0.75	1.00	14.25	12	154	69.9
12	300	0.562	5.00	4.75	1.06	0.75	1.00	17.00	12	210	95.3

NOT RECOMMENDED
FOR STEAM SERVICE



FD-57*5-0

*Optional disc
EPDM (6)
or BUNA (7)



HIGH PERFORMANCE BUTTERFLY VALVE

LCS6822 (Class 150)

LCS7822 (Class 300)

APPLICATIONS

Ideally suited for Commercial, Industrial and Mechanical HVAC Services. Use in other applications must be approved by the manufacturer

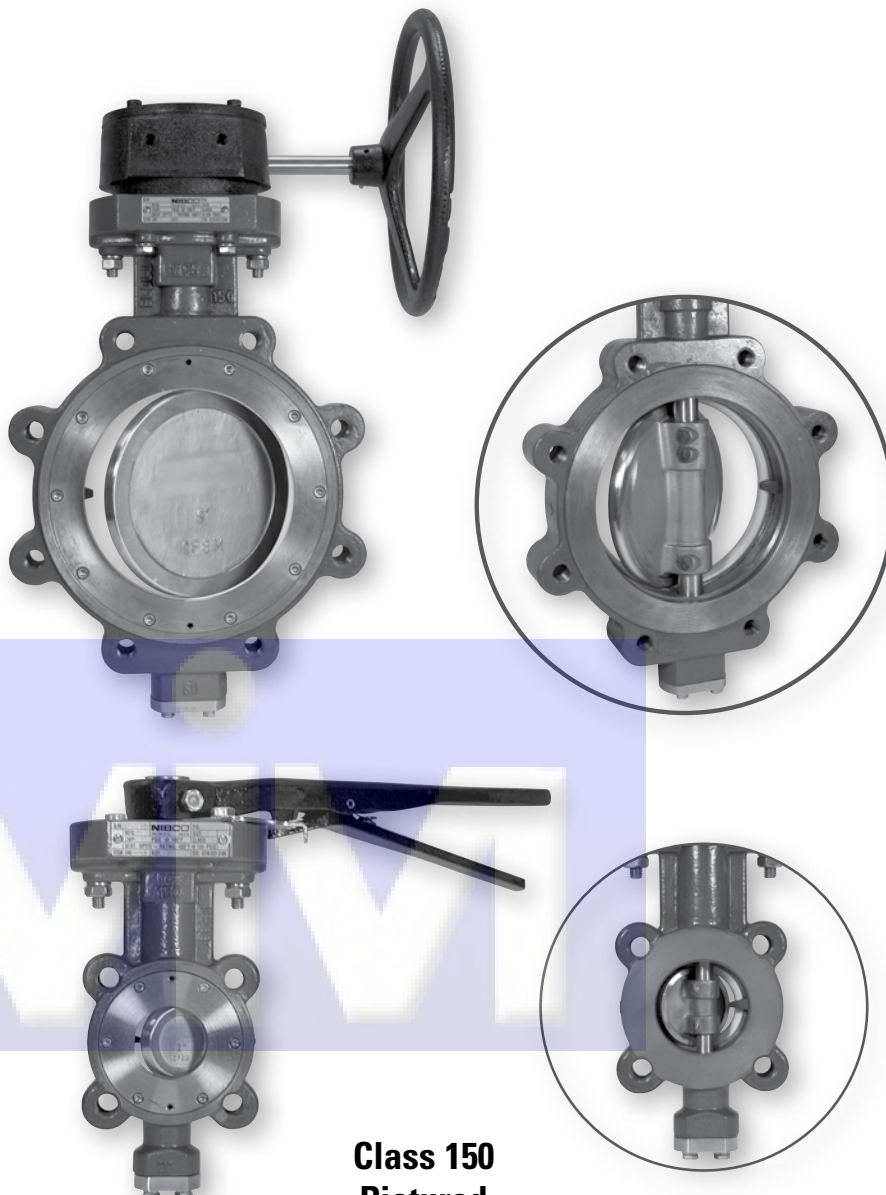
- Heating Hot Water
- Condenser Water
- Glycol
- Chilled Water
- Compressed Air
- Steam rated - 2" - 12" 150 psi for on/off applications and 50 psi modulating
- Chemical Process
- Isolation and Throttling
- Domestic Water

MATERIALS & CONSTRUCTION

- Body constructed of carbon steel
- Stainless steel disc and stem
- Seats of reinforced PTFE for exceptional chemical and heat resistance
- Welded disc pins
- Silicone is not used in the manufacture of this valve

DESIGN CRITERIA

- MSS SP-68 (Design)
- MSS SP-25 (Markings)
- API-609 Seat Pressure/Temperature Ratings/ Blow-out proof stem
- ASME/ANSI B16.34A, Body Pressure/Temperature Ratings
- ASME/ANSI B16.5 Flange Dimensions
- ISO 5211, EN 12116 Actuator Mounting Top Works
- ANSI Class 150 and Class 300
- Dual Offset Design



**Class 150
Pictured**

FEATURES

- Powder coated epoxy finish
- One-piece stem
- Direct mount actuation
- Live loaded adjustable packing with unique flush-mounted packing gland
- Integrally cast disc-stop
- Dual offset design
- Blow-out proof stem
- Bi-directional dead end service (Arrow on body indicates preferred flow)
- Maximum operating temperature 400°F at 100 psi
- 100% production tested per MSS SP-68

High Performance Butterfly Valve Series 6822 & 7822

Carbon Steel Body • Stainless Steel Disc and Stem • ISO 5211 Actuation Mounting

CLASS 150 - SIZES 2" THROUGH 24"

CLASS 300 - SIZES 2" THROUGH 12"

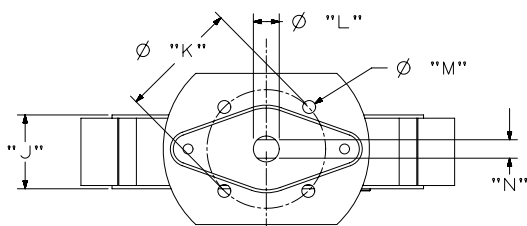
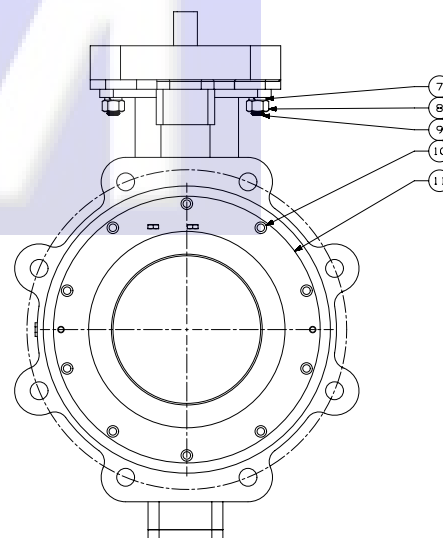
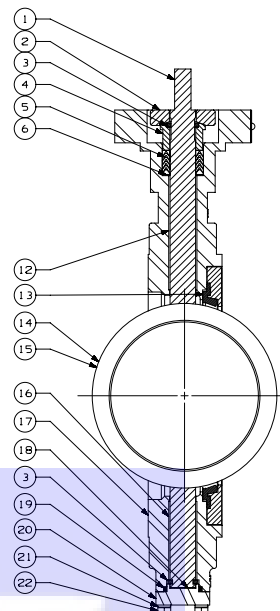
ANSI Class 150 & 300

MATERIAL LIST

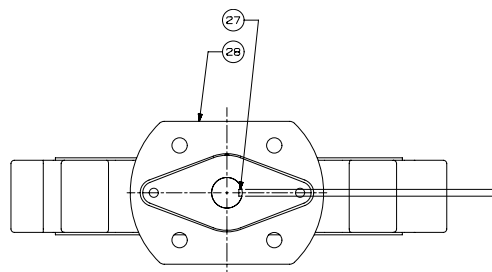
PART	SPECIFICATION
1. Stem	Stainless Steel UNS ASTM A564 UNS S17400
2. Flange, Gland	Stainless Steel ASTM A351 Grade CF8M
3. Retainer, Stem (4)	Stainless Steel ASTM A276 UNS S31600
4. Gland, Packing	Stainless Steel ASTM A276 UNS S31600
5. Packing (set)	PTFE
6. Retainer, Packing	Stainless Steel ASTM A276 UNS S31600
7. Lockwasher (2)	Stainless Steel Type 304 18-8
8. Nut (2)	Stainless Steel Type 304 18-8
9. Stud (2)	Stainless Steel Type 304 18-8
10. Screw, SHCS	Stainless Steel Type 304 18-8
11. Retainer, Seat	Stainless Steel ASTM A276 UNS S31600
12. Bushing, Upper	Stainless Steel Type 304 PTFE Coated
13. Seat	PTFE 15% Glass Reinforced
14. Disc	Stainless Steel ASTM A351 Grade CF8M
15. Pin, Disc (2)	Stainless Steel ASTM A276 UNS S31600
16. Bushing, Lower	Stainless Steel TYPE 304 PTFE Coated
17. Body	Carbon Steel ASTM A216 GRADE WCB
18. Disc, Spacer	Stainless Steel ASTM A240 UNS S31600
19. Seal, Lower	PTFE
20. Cap, Body	Stainless Steel ASTM A351 Grade CF8M
21. Lockwasher (4)	Stainless Steel Type 304 18-8
22. Screw, Hex (4)	Stainless Steel Type 304 18-8
23. Handle Assembly	Malleable Iron (shown separately)
24. Plate, Throttle	Steel, Plated (shown separately)
25. Screw, Hex	Carbon Steel, Plated (shown separately)
26. Lockwasher	Carbon Steel, Plated (shown separately)
27. Key	Carbon Steel ASTM A108 Grade 1045
28. ID Plate	Stainless Steel

NOTE: For severe steam applications, contact NIBCO Technical Services.

NOTE: If valve is installed opposite the flow arrow for dead end service a downstream flange is recommended.



2" - 8" Class 150 Valves
2" - 6" Class 300 Valves



10" - 24" Class 150 Valves
8" - 12" Class 300 Valves

SIZES 2" THROUGH 12"



*SPECIAL PITCH CAP SCREW THREAD REQUIRED PER MSS SP-68 SPECIFICATIONS.

14" - 24" SIZES AVAILABLE - CONSULT FACTORY

High Performance Butterfly Valve Technical Data

CLASS 150 HPBFV 6800 Series Flow Data

Valv Size	Cv Rating	DISC OPEN - Degrees								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	92	2	6	13	20	30	43	72	81	92
2½"	150	3	11	21	33	50	71	117	132	150
3"	260	5	18	36	57	86	122	203	230	260
4"	460	9	32	64	101	152	216	360	405	460
5"	760	15	53	106	167	251	357	595	670	760
6"	1150	23	81	161	253	380	540	897	1015	1150
8"	2100	42	147	295	462	695	987	1640	1850	2100
10"	3200	64	225	450	705	1056	1505	2496	2816	3200
12"	4700	94	330	660	1035	1551	2210	3666	4136	4700
14"	5800	116	406	815	1276	1915	2726	4525	5105	5800
16"	8000	160	560	1120	1760	2640	3760	6240	7040	8000
18"	10500	210	735	1470	2310	3465	4935	8190	9240	10500
20"	14000	280	980	1960	3080	4620	6580	10920	12320	14000
24"	21000	420	1470	2940	4620	6930	9870	16380	18480	21000

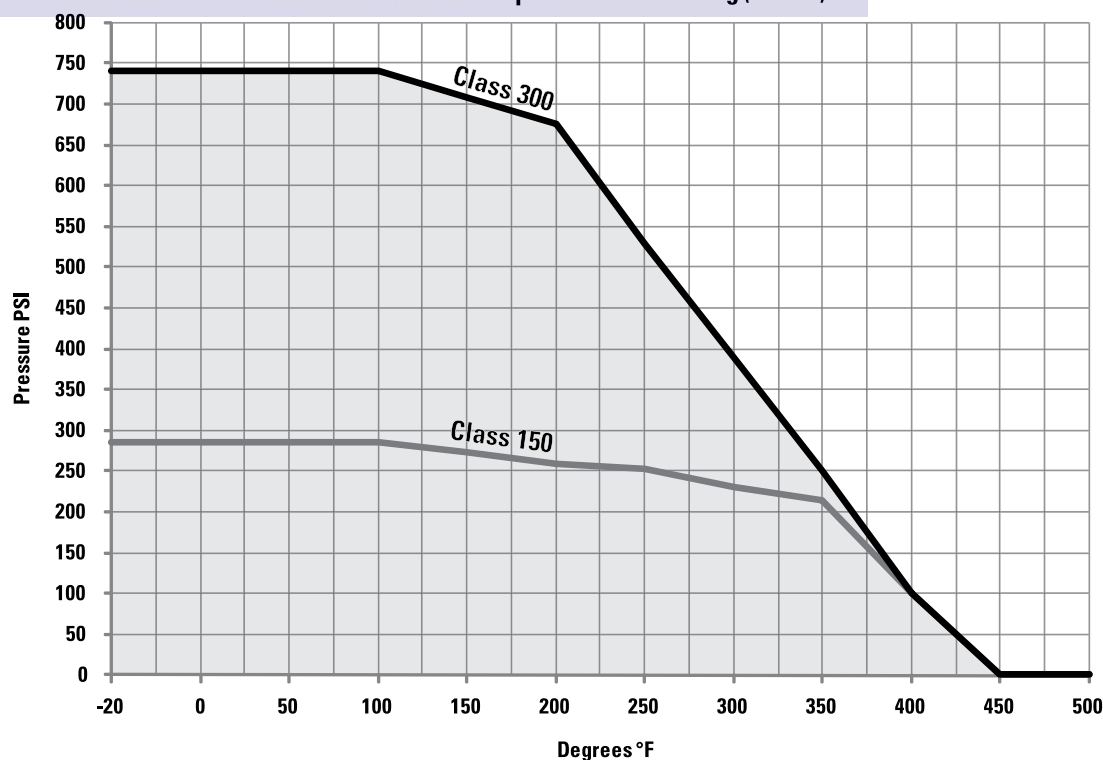
CLASS 300 HPBFV 7800 Series Flow Data

Valve Size	Cv Rating	DISC OPEN - Degrees								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	92	2	6	13	20	30	43	72	81	92
2½"	150	3	11	21	33	50	71	117	132	150
3"	260	5	18	36	57	86	122	203	230	260
4"	460	9	32	65	101	152	216	360	405	460
5"	760	15	53	106	167	251	357	595	670	760
6"	1150	23	81	161	253	380	540	897	1015	1150
8"	1900	38	133	266	418	627	895	1485	1675	1900
10"	2800	56	196	392	616	925	1316	2185	2465	2800
12"	4100	82	287	575	905	1355	1930	3200	3610	4100

Cv = Flow in U.S. Gallons per minute of 60°F water with a 1 psi pressure drop across valve

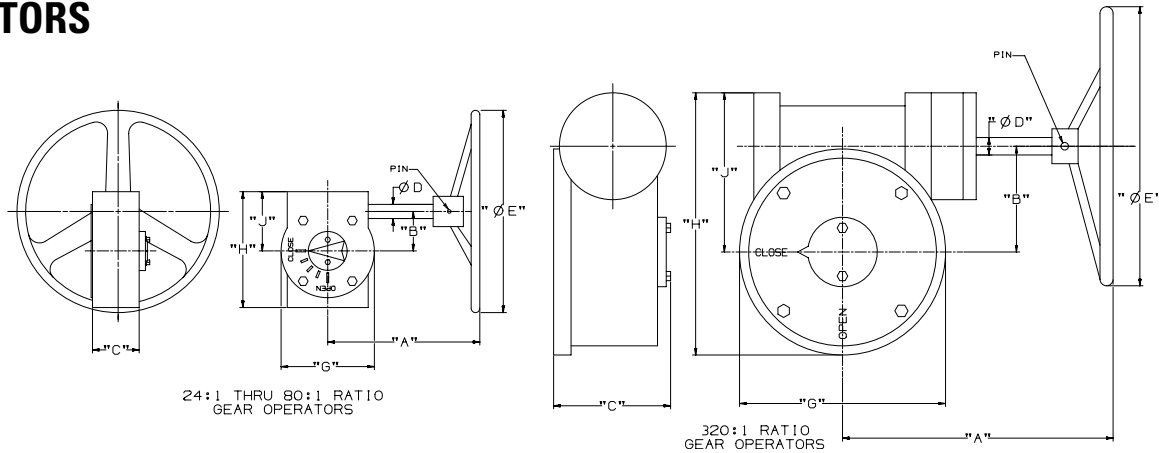
Pressure Temperature Seat Rating (RPTFE)

		Class 150	Class 300
Temperature °F	-20	285	740
	0	285	740
	50	285	740
	100	285	740
	150	273	708
	200	260	675
	250	254	530
	300	230	390
	350	215	250
	400	100	100
	450	0	0
	500	0	0
		Pressure PSI	



High Performance Butterfly Valve Technical Data

OPERATORS



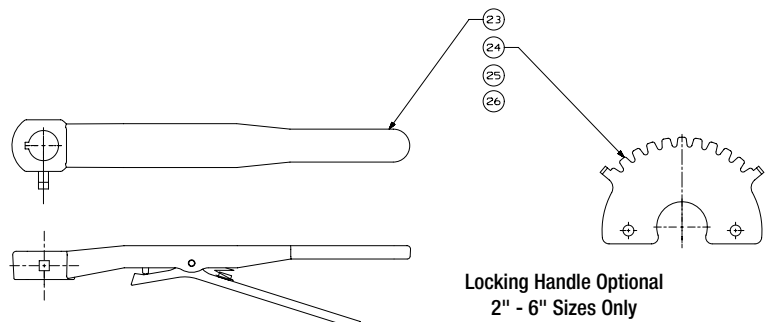
GEAR OPERATOR DIMENSIONS

Valve Size		Gear Operator Figure Number	Ratio	Gear Operator Mounting	A		B		C		D	
Class 150	Class 300				In.	mm.	In.	mm.	In.	mm.	In.	mm.
2"	2"	G024:1-1-8	24:1	F07	5.77	146.6	1.73	43.9	2.65	67.3	0.625	15.88
2-1/2", 3", 4"	2-1/2", 3", 4"	G024:1-3-8 W/STSA-4	24:1	F07	5.77	146.6	1.73	43.9	2.65	67.3	0.625	15.88
5", 6"	5", 6"	G024:1-3-8 W/STSA-5	24:1	F07	5.77	146.6	1.73	43.9	2.65	67.3	0.625	15.88
8"	—	G030:1-1-12 W/STSA-6	30:1	F10	9.50	241.3	2.50	63.5	3.00	76.2	0.750	19.05
—	8"	G030:1-1-12	30:1	F10	9.50	241.3	2.50	63.5	3.00	76.2	0.750	19.05
10"	—	G030:1-2-12	30:1	F12	9.50	241.3	2.50	63.5	3.00	76.2	0.750	19.05
12", 14"	10", 12"	G050:1-3-16	50:1	F12	9.00	228.6	3.00	76.2	3.00	76.2	0.750	19.05
16"	—	G080:1-2-16	80:1	F12	10.75	273.1	4.75	120.7	4.40	111.8	1.000	25.40
18"	—	G080:1-1-1-20	80:1	D16	10.75	273.1	4.75	120.7	4.40	111.8	1.000	25.40
20"	—	G0320:1-1-20	320:1	F16	15.51	394.0	6.06	153.9	6.46	164.1	1.190	30.23
24"	—	G0320:1-2-20	320:1	F16	15.51	394.0	6.06	153.9	6.46	164.1	1.190	30.23

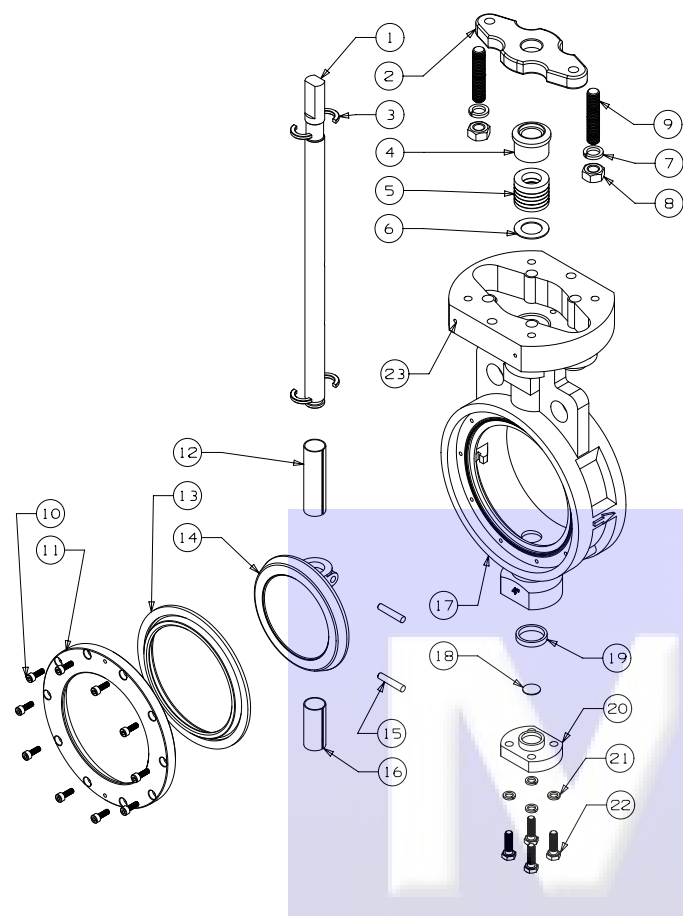
Valve Size		E		G		H		J		Mounting Screws	Handwheel Pin Size	Weight	
Class 150	Class 300	In.	mm.	In.	mm.	In.	mm.	In.	mm.			Lbs.	Kg.
2"	2"	8	203	4.00	101.6	5.07	128.8	2.90	73.7	5/16"-18 UNC	Ø.190 X 1.63 LONG	12	5.5
2-1/2", 3", 4"	2-1/2", 3", 4"	8	203	4.00	101.6	5.07	128.8	2.90	73.7	5/16"-18 UNC	Ø.190 X 1.63 LONG	12	5.5
5", 6"	5", 6"	8	203	4.00	101.6	5.07	128.8	2.90	73.7	5/16"-18 UNC	Ø.190 X 1.63 LONG	12	5.5
8"	—	12	305	6.00	152.4	6.90	175.3	3.90	99.1	3/8"-16 UNC	Ø.190 X 1.63 LONG	26.5	12
—	8"	12	305	6.00	152.4	6.90	175.3	3.90	99.1	3/8"-16 UNC	Ø.190 X 1.63 LONG	26.5	12
10"	—	12	305	6.00	152.4	6.90	175.3	3.90	99.1	3/8"-16 UNC	Ø.190 X 1.63 LONG	26.5	12
12", 14"	10", 12"	16	406	6.70	170.2	7.80	198.1	4.60	116.8	1/2"-13 UNC	Ø.190 X 1.63 LONG	37.5	17
16"	—	16	406	10.25	260.4	11.50	292.1	6.25	158.8	3/4"-10 UNC	Ø.380 X 1.81 LONG	72	33
18"	—	20	508	10.25	260.4	11.50	292.1	6.25	158.8	3/4"-10 UNC	Ø.380 X 1.81 LONG	72	33
20"	—	20	508	11.81	300.0	17.00	431.8	11.10	281.9	3/4"-10 UNC	Ø.380 X 2.50 LONG	200	91
24"	—	20	508	11.81	300.0	17.00	431.8	11.10	281.9	5/8"-11 UNC	Ø.380 X 2.50 LONG	200	91

LEVER HANDLE

Item	Description	Material
23	Handle Assembly	Malleable Iron
24	Plate, Throttle	Steel, Plated
25	Screw, Hex	Carbon Steel, Plated
26	Lockwasher	Carbon Steel, Plated



High Performance Butterfly Valve Technical Data



MATERIAL LIST

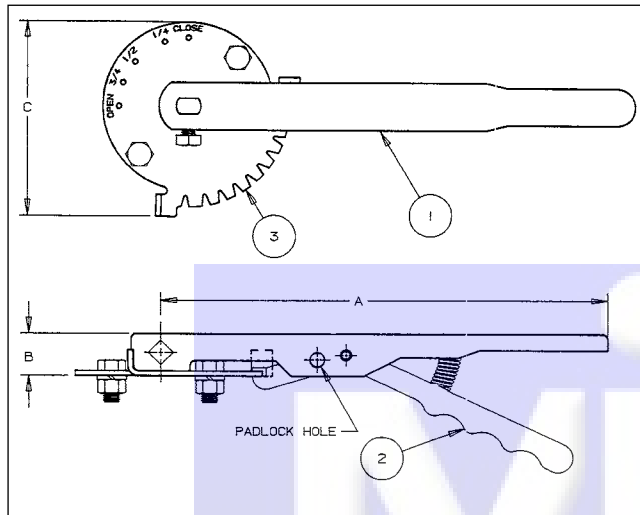
PART	SPECIFICATION
1. Stem	Stainless Steel UNS ASTM A564 UNS S17400
2. Flange, Gland	Stainless Steel ASTM A351 Grade CF8M
3. Retainer, Stem (2)	Stainless Steel ASTM A276 UNS S31600
4. Gland, Packing	Stainless Steel ASTM A276 UNS S31600
5. Packing	PTFE
6. Retainer, Packing	Stainless Steel ASTM A276 UNS S31600
7. Lockwasher (2)	Stainless Steel Type 304 18-8
8. Nut (2)	Stainless Steel Type 304 18-8
9. Stud (2)	Stainless Steel Type 304 18-8
10. Screw, SHCS	Stainless Steel Type 304 18-8
11. Retainer, Seat	Stainless Steel ASTM A276 UNS S31600
12. Bushing, Upper	Stainless Steel Type 304 PTFE Coated
13. Seat	PTFE 15% Glass Reinforced
14. Disc	Stainless Steel ASTM A351 Grade CF8M
15. Pin, Disc (2)	Stainless Steel ASTM A276 UNS S31600
16. Bushing, Lower	Stainless Steel Type 304 PTFE Coated
17. Body	Carbon Steel ASTM A216 Grade WCB
18. Disc, Spacer	Stainless Steel ASTM A240 UNS S31600
19. Seal, Lower	PTFE
20. Cap, Body	Stainless Steel ASTM A351 Grade CF8M
21. Lockwasher (4)	Stainless Steel Type 304 18-8
22. Screw, Hex (4)	Stainless Steel Type 304 18-8

Options and Accessories Index

Operators

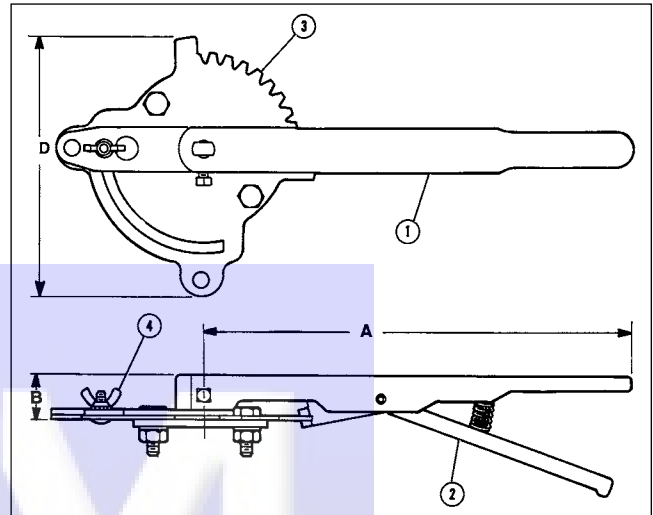
Lever-Lock	41
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Lever-Lock Operator (Standard) LD/WD2000/3000/5022



The lever-lock handle and throttling plate provide throttling notches every 10° for excellent manual control in balancing up to 90° or shut off service. The valve may be padlocked in any one of the positions including opened or closed by virtue of a locking hole located in the handle and lever.

Position-Lock Operator (Optional) LD/WD2000/3000/5022



The position-lock can be used to set the valve in any position or as a memory stop so the valve may be reopened to the previous position. The valve may be padlocked in full open or full closed position.

Ordering: Sold as a field retrofitable kit only.

MATERIAL LIST

PART	SPECIFICATION
1. Handle	Polymer Coated Iron
2. Lever-Lock	Zinc Plated Steel
3. Throttle Plate	Zinc Plated Steel

DIMENSIONS AND TORQUE OUTPUT

LD/WD Valve Size	FC/FD GD Valve Size	Lever (STD)	Throttle Plate (STD)	Throttle Plate/ Infinite Pos. Kit	Dimensions				Torque Rated Output in Inch-Pounds	
					A	B	C	D	At 60 pounds Pull	At 100 pounds Pull
2"		T115106PP	T115138PP	T114840FG	10½"	1"	4⅝"	6⅜"	540 In-Lbs.	900 In-Lbs.
2½" - 3"	2", 2½", 3"	T115107PP	T115138PP	T114841FG	10½"	1"	4⅝"	6⅜"	540 In-Lbs.	900 In-Lbs.
4"		T115108PP	T115138PP	T114842FG	10½"	1"	4⅝"	6⅜"	540 In-Lbs.	900 In-Lbs.
	4" - 5"	T118446PP	T115138PP	T114843FG	10½"	1"	4⅝"	6⅜"	540 In-Lbs.	900 In-Lbs.
5" - 6"		T115109PP	T115138PP	T114843FG	13¾"	1"	4⅝"	6⅜"	735 In-Lbs.	1225 In-Lbs.
8"	6"	T115110PP	T115138PP	T114844FG	13¾"	1"	4⅝"	6⅜"	735 In-Lbs.	1225 In-Lbs.

*Not recommended for 8", 10" and 12" valves

DIMENSIONS AND TORQUE OUTPUT

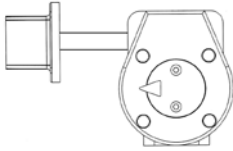
LCS 6822 Class 150	LCS 7822 Class 300	LEVER	A	B	C & D	@ 60 LBS. PULL	@ 100 LBS. PULL
2"	2"	RG70031 & RG70034 Bushing	13.75"	1.25"	N/A	735 In-Lbs.	1225
2½" - 4"	2½" - 4"	RG70032	13.75"	1.25"	N/A	735 In-Lbs.	1225
5" - 6"	5" - 6"	RG70033	13.75"	1.25"	N/A	735 In-Lbs.	1225

Butterfly Valves

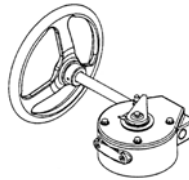
Options and Accessories

Gear Operator options and accessories (2" through 12" 2000/3000/5022 Series only)

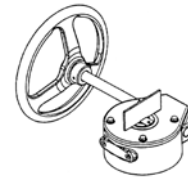
2" Square Operating Nut



Memory Stop

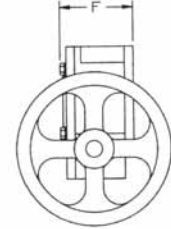
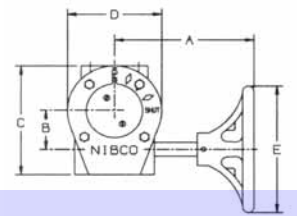


Flag Indicator



Cast Iron Gear Operator

The NIBCO butterfly valve can be provided with heavy-duty operator and indicator. Recommended for valves 8" and larger, for trouble-free operation in all moisture and weather conditions (not submersible). Operator is a self-locking worm gear type. Equipped with adjustable stops at open and shut positions. Ordering: Specify by adding (-5) to Fig. No., i.e., WD2000-5. Babbitt Sprocket may be added to handwheel. See below for sizing information. Available options: Memory Stop Gear Operator Kit, 2" Square Operating Nut, Flag Indicator and Handwheel for GO.



2"-24"

* No square operating nuts, flag indicators, or memory stop kits are available for this series butterfly valves.

GEAR OPERATOR DETAIL FOR SIZES 2" TO 24" (LCS6822 & LCS7822)*										GEAR OPERATOR ACCESSORIES & REPLACEMENT PARTS			
LCS6822 CL 150 HPBFV	LCS7822 CL 300 HPBFV	GEAR OPERATOR NUMBER	RATIO	GEAR OP WEIGHT	DIMENSIONS (INCHES)						STEM ADAPTER BUSHING	SPROCKET RIM MODEL	REPLACEMENT HANDWHEEL
					A	B	C	D	E	F			
2"	2"	RG70001	24:1	12	5.77	1.73	5.07	4.00	8.00	2.65	DIRECT	#2	RG70014
2½", 3", 4"	2½", 3", 4"	RG70002	24:1	12	5.77	1.73	5.07	4.00	8.00	2.65	RG70022	#2	RG70014
5", 6"	5", 6"	RG70003	24:1	12	5.77	1.73	5.07	4.00	8.00	2.65	RG70023	#2	RG70014
8"	-	RG70004	30:1	26	9.50	2.50	6.90	6.00	12.00	3.00	RG70024	#2½	RG70015
-	8"	RG70005	30:1	26	9.50	2.50	6.90	6.00	12.00	3.00	RG70025	#2½	RG70015
10"	-	RG70006	30:1	26	9.50	2.50	6.90	6.00	12.00	3.00	RG70025	#2½	RG70015
-	10"	RG70008	50:1	37	9.00	3.00	7.80	6.70	16.00	3.00	RG70026	#3	RG70016
12"	-	RG70007	50:1	37	9.00	3.00	7.80	6.70	16.00	3.00	RG70025	#3	RG70016
-	12"	RG70009	80:1	72	10.75	4.75	11.50	10.25	16.00	4.40	RG70027	#3	RG70017
14"	-	RG70008	50:1	37	9.00	3.00	7.80	6.70	16.00	3.00	RG70026	#3	RG70016
16"	-	RG70010	80:1	72	10.75	4.75	11.50	10.25	16.00	4.40	RG70028	#3	RG70017
18"	-	RG70011	80:1	74	10.75	4.75	11.50	10.25	20.00	4.40	RG70028	#4	RG70018
20"	-	RG70012	320:1	200	15.51	6.06	17.00	11.81	20.00	6.46	RG70029	#4	RG70019
24"	-	RG70013	320:1	200	15.51	6.06	17.00	11.81	20.00	6.46	RG70030	#4	RG70019

GEAR OPERATOR DETAIL FOR SIZES 2" TO 48" (1000/2000/3000/5022)											GEAR OPERATOR ACCESSORIES & REPLACEMENT PARTS					
LD / WD VALVE SIZE	FC / FD / GD VALVE SIZE	GEAR OPERATOR NUMBER	RATIO	GEAR OP WEIGHT	DIMENSIONS (INCHES)						STEM ADAPTER BUSHING	SPROCKET RIM MODEL	SQUARE OPERATING NUT	FLAG INDICATOR	MEMORY STOP KIT	REPLACEMENT HANDWHEEL
					A	B	C	D	E	F						
2"	-	T117118PP	24:1	10	7.64	1.77	5.04	4.24	5.91	2.79	T046652PP	#1½	T117792FC	T116682PP	T026196PP	T117122PP
2½" - 3"	2"-2½"-3"	T117118PP	24:1	10	7.64	1.77	5.04	4.24	5.91	2.79	T046653PP	#1½	T117792FC	T116682PP	T026196PP	T117122PP
4"	-	T117118PP	24:1	10	7.64	1.77	5.04	4.24	5.91	2.79	T046654PP	#1½	T117792FC	T116682PP	T026196PP	T117122PP
5" - 6"	4" - 5"	T117118PP	24:1	10	7.64	1.77	5.04	4.24	5.91	2.79	T046655PP	#1½	T117792FC	T116682PP	T026196PP	T117122PP
8"	6" - 8"	T117119PP	24:1	14	9.53	1.77	5.04	4.24	9.84	2.79	T046656PP	#2½	T117792FC	T116682PP	T026196PP	T117123PP
10"	-	T117120PP	30:1	23	11.54	2.48	6.93	6.06	9.84	3.26	-	#2½	T117793FC	T116682PP	T026197PP	T117124PP
12"	10" - 12"	T117121PP	30:1	23	11.54	2.48	6.93	6.06	9.84	3.26	-	#2½	T117793FC	T116682PP	T026197PP	T117124PP
14"	-	T116697PP	50:1	26	12.87	3.08	7.48	6.28	11.81	3.26	-	#2½	T117793FC	T116682PP	T026198PP	T117169PP
16"	-	T026150PP	80:1	58	13.58	4.72	10.24	9.84	11.81	4.27	-	#2½	T118099FC	T116682PP	T026199PP	T026131PP
18"	-	T026151PP	80:1	57	15.04	4.72	10.24	9.84	15.75	4.27	-	#3½	T118099FC	T116682PP	T026199PP	T026142PP
20"	-	T026211PP	291:1	90	18.11	4.13	11.42	9.84	11.81	5.24	-	#2½	T118099FC	T116682PP	T026199PP	T026131PP
24"	-	T026212PP	291:1	90	18.11	4.13	11.42	9.84	11.81	5.24	-	#2½	T118099FC	T116682PP	T026199PP	T026131PP
30"	-	-	540:1	174	13.23	5.98	15.16	11.81	15.75	6.54	-	#3½	-	-	-	T117836PP
36"	-	-	648:1	332	15.71	8.46	20.40	17.17	15.75	7.83	-	#3½	-	-	-	T117836PP
42"	-	-	800:1	510	17.17	14.21	21.02	19.69	17.72	11.85	-	#3½	-	-	-	T117837PP
48"	-	-	800:1	510	17.17	14.21	21.02	19.69	17.72	11.85	-	#3½	-	-	-	T117837PP

Notes:

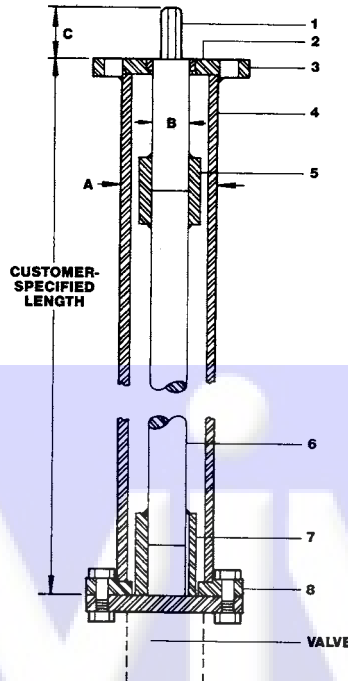
1. Gear operator comes with handwheel. Larger sizes come with handwheel unattached. Pin is taped to handwheel.
2. Stem adapter bushing must be ordered separately when needed for smaller size valves.
3. All other accessories must be ordered separately. (Sprocket rim, square operator nut, flag indicator & memory stop kit.)

Butterfly Valves

Options and Accessories

Stem Extensions

Stem extensions can be furnished to permit remote operation of butterfly valves in any required length. The top flange of an extension stem, plug shaft diameter, and distance across flats on plug shaft are the same size as the valve selected. This allows interchangeability of gear operators, actuators, and adapter bushings from valve mounting flange to extension stem top flange. When ordering, specify valve size, figure number, and the exact distance from the valve flange to the top of extension flange (customer-specified length shown at right). Stem extensions are available in lengths up to 10 feet. For stem extensions in excess of 10 feet consult factory.



MATERIAL LIST

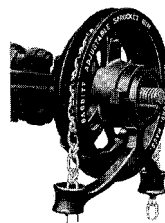
PART	SPECIFICATION
1. Plug	Steel
2. Top Flange Bushing	Bronze
3. Top Flange	Steel
4. Housing (Steel Pipe)	Steel
5. Plug and Rod Coupling	Steel
6. Rod	Steel
7. Rod and Stem Coupling	Steel
8. Bottom Flange	Steel

DIMENSIONS

SIZE	A	B	C
2"-12"	2.88	1.125	1.12
14"-24"	consult NIBCO Technical Services		

Adjustable Sprocket Rim

The Babbitt Adjustable Sprocket Rim will provide for remote operation of butterfly valves in high, normally out-of-reach locations. When ordering specify either the sprocket and chain number or the NIBCO valve figure number and size. The chain length must also be specified. (Chain length is determined by Height x 2 + 2 ft.)



DIMENSIONS - SPECIFICATIONS

Size No.	Dia. of Sprocket Wheel in Inches	Weight in Lbs.	Dia. of HDWL Rim Will Fit	Chain Size No.	Chain Weight per 100' in Lbs.	Butterfly Valve Size
1	5 5/8	4	4 1/8 to 5 5/8	1/0	17 1/2	—
1 1/2	7 1/2	5	6 to 7 1/2	1/0	17 1/2	2-6"
2	9	8	7 3/4 to 9	1/0	17 1/2	—
2 1/2	12 1/2	15	9 3/4 to 12 1/2	4/0	30	8-16", 20", 24"
3	15 1/2	21	12 3/4 to 15 1/2	4/0	30	—
3 1/2	19	25	15 3/4 to 19	4/0	30	18", 30"- 48"
4	22	34	19 1/4 to 22	5/0	35	—

No Silicone Used - Silicone Free Issue

All butterfly valves may incorporate the use of silicone in either grease or aerosol form during the assembly. LD/WD/GD series butterfly valves can be special ordered as "Assemble-Dry" without test. These valves will be assembled not using silicone in the form of grease or aerosol spray.

Note: Even though provisions are made to assemble valves and not incorporate the use of silicone lubricants, the potential for it to be present as air-borne particles prevents us from certifying that our valves are 100% silicone free

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Specifications

NIBCO butterfly valves are designed and manufactured to give maximum performance on recommended service at the lowest possible initial and upkeep cost. They meet or exceed the following specifications developed through years of experience, research and laboratory tests.

American Petroleum Institute

API-609 DESIGN

Manufacturers Standardization Society of the Valve and Fitting Industry, Inc.

MSS SP-25 MSS SP-67 MSS SP-68

United States Coast Guard — CG190

Now called "CIMDTINST — M16714.3"

"Equipment List"

"Items approved, certified or accepted under Marine Inspection and Navigation Laws"

NIBCO valves, fittings and flanges are listed in this document.

Code of Federal Regulations Title 46 Shipping Parts 41 to 69

The Code of Federal Regulations is a codification of the general and permanent rules published in the Federal Regulations by the Executive Departments and Agencies of the Federal Government.

This regulation is constantly revised to reference the latest ANSI, ASTM & MSS Standards to which NIBCO conforms to when building products.

NIBCO 2000 and 3000 services have been designated as suitable for Category A service.

NAVY — APL, CID, NSN

"Department of the Navy"

"Navy Ships Parts Control Center"

Mechanicsburg, PA

The Department of the Navy, when using standard commodity type valves, assigns APL-CID numbers to each individual valve manufactured by a company. Valves of the same figure number, but of different size get different CID numbers.

The (APL) Allowance Parts List, (CID) Code Identification Numbers and (NSN) National Stock Numbers are used by the Navy in the Parts Control Center to order replacement valves or parts of valves that are installed on board United States Navy vessels.

When a Navy vessel is being built, the shipyard doing the construction must apply to the Parts Control Center for CID numbers for all valves before the Navy will accept delivery of the vessel.

On many NIBCO valves, the CID and NSN numbers have been assigned. Consult NIBCO for more information.

American Bureau of Shipping — Rules for Building

The American Bureau of Shipping states in Article 36.15.1; All valves are to be constructed and tested in accordance with a recognized standard, such as ANSI, MSS or other, acceptable to the Bureau. They are to bear the trademark of the manufacturer legibly stamped or cast on the exterior of the valve, as well as the pressure rating class for which the manufacturer guarantees the valve will meet the requirements of the standards.

The following NIBCO butterfly valves are manufactured in facilities approved by ABS for marine service: LD or WD 2000 and 3000 series.

ABS Certificate No.: 00N09621-X Manufacturers Federal Code: NIBCO — 12168

Lloyd's Register of Shipping

NIBCO is an approved manufacturer of grey and ductile iron butterfly valves.

Det Norske Veritas

NIBCO DI Butterfly valves are in compliance with DNV Rules for classification of ships and mobile offshore units. DNV standards for Certification 2.09 No. 101. approved for fresh water, sea water, sanitary water, water ballast, cargo oil transfer and bilge lines

Sample Butterfly Valve Specification

Line Control Valves 2" or larger

Butterfly Valves: Valve shall be full lug or wafer body style. Valves to be manufactured in accordance with MSS SP-67. The valves shall be rated at least 200 PSI (2" - 12") and 150 PSI (14" - 48") bi-directional differential pressure. **Body** to have 2" extended neck for insulation and **shock resistant ductile iron**. Valves to have aluminum bronze disc and **molded in or cartridge seat** of EPDM rubber. Stem shall be 400 series stainless steel. Top and bottom stem bushings of dissimilar material are required with a positive stem retention mechanism. Sizes 2" - 6" shall be lever operated with a 10 position throttling plate; sizes 8" and larger shall be gear operated. **Lug style valves shall be capable of providing bi-directional "Dead End Service" minimally at 200 PSI (2-12"), 150 PSI (14"-24"), 100 PSI (30"-48") without the need for down stream flange.**

Acceptable valves:

NIBCO LD-2000 (2" - 12"), LD-1000 (14" - 48")

Flow Data

Cv Values for Valves

VALVE SIZE

Size (mm.)	4	8	10	15	20	25	32	40	50	65	80	90	100	125	150
Size (In.)	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
GATES															
S/T-29	.5	2	4.9	9.1	22	40	65	95	175						
S/T-111, 113, 131, 133 134, 135, 136, 154, 174, 176	–	5.6	10.7	17.6	32	54	97	135	230	337	536	710	960	1,525	2,250
T/F-617, 619, 667, 669, 607, 609 F-637, 639									215	335	510	710	945	1,525	2,250
GLOBES															
S/T-211, 235, 256 275-Y	.61	1.16	2.2	3.64	6.65	11.1	20	28	48	70	111	–	198		
T-275-B	–	1.16	2.21	3.64	6.65	11.1	20	28	48	70	111				
F-718, F-738								45	70	105	–	195	315	465	
CHECKS															
S/T-413, 433, 473 (Swing)	–	1.3	2.5	4.8	14.3	24	43	60	102	150	238	315	435	675	1,000
S/T-480 (Poppet)	–	–	3.70	6.86	16.3	30	49	72	130						
F-908 (Swing)									150	243	356	–	665	1,073	1,584
T/F-918, 968, 938 (Swing)									137	221	327	–	605	975	1,440
KW-900-W									48	77	135	–	270	450	720
F-910, 960 (Poppet)											155	–	278	431	625
W-910, 960 (Poppet)									66	88	130	–	228	350	520
W-920-W									71	108	178	–	330	560	840
BALL															
F-510, 530	–	–	–	11	25	45	–	137	217	–	482	–	790	–	1,144
F-515, 535	–	–	–	25	50	85	–	259	440	840	1,400	–	2,350	–	5,200
F-565	–	–	–	–	–	75	–	235	400	–	1,180	–	2,040	–	–
T-560-BR/CS/S6	–	4.0	4.0	5	12	22	35	52	95	–	–				
T-570	–	–	–	7	12	25	38	52	95	–	–				
T/S-580	–	–	–	5.8	13.9	27	44	64	100	–	–				
T/S-580-70	–	–	–	–	–	–	38.5	76	101.4	183	390				
T/S-585-70	–	4.2	6.2	15.3	30.4	48.8	103	143	245	–	–				
TM-585-70-66	–	–	–	15.3	30.4	48.8	103	143	245	–	–				
AT-585-70-66	–	–	–	–	–	–	–	–	183	–	–				
T-580-70-W3	–	–	–	–	–	–	21.6	38	48.5	–	–				
T/S-585-70-W3	–	–	–	6	12	19.5	–	–	–	–	–				
T-580 (CS-S6)	–	6	12	15	23	36	44	64	114	–	–				
T/S-590-Y	–	–	–	–	–	–	44	64	100	183	390				
T/S-595-Y	–	5.9	11.4	18.7	34	57	103	143	245	310	–				
TM/KM-595 (CS-S6)	–	6	12	19	37	64	103	143	245	–	–				
T/K-595 (CS-S6)	–	6	12	19	37	64	103	143	245	–	–				
BUTTERFLY															
LD1000/2000 Large Diameter															
LD/WD-2000, 3000									166	247	340	–	660	1,080	1,613
GD-4765, 4775 FC-2700, FD-5700									145	195	290	–	600	930	1,600

NOTE: Flow data for angle valves use globe Cv times 1.25:
Bronze Angles – 311, 335, 375, 376-AP
Iron Angles – 818, 869, 831

Liquid Flow:

$$Q = C_v \sqrt{\frac{\Delta P}{S}} \quad \text{or} \quad \Delta P = S \left(\frac{Q}{C_v} \right)^2$$

where... Q = flow rate (gallons per minute)
 ΔP = pressure drop across valve (psi)
 S = specific gravity of media

This equation is good for turbulent flow and for liquids with viscosities near that of water.

(Cv is defined as the flow in GPM that a valve will carry with a pressure drop of 1.0 psi when the media is water at 60°F.) (The specific gravity of water is 1 (one).)

Gas Flow:

$$Q = 1360 C_v \sqrt{\frac{\Delta P \times P_1}{ST}}$$

where . . . Q = gas flow (SCFH—std. cu. ft/hr)
S = specific gravity of gas (air = 1.0)
T = temp—degrees Rankine ($^{\circ}\text{F} + 460$)
 ΔP = pressure drop across valve (psi)
 P_1 = upstream pressure (psia) absolute

NOTE: ΔP must be less than $.5 P_1$. (Flow is critical when ΔP is greater than $.5 P_1$.)

[illegible]

Properties of Valve Materials

ALLOY	ASTM NO.	OTHER ALLOY DESIGNATION	NOMINAL OR MAXIMUM CHEMICAL COMPOSITION								
			AL	CARBON C	CHROME Cr	COBALT Co	COPPER Cu	IRON Fe	LEAD Pb	MANGANESE Mn	MOLYBDENUM Mo
Commercial Aluminum 380	SC 84 A (modified)	UNS A38000	87.0				1.0	1.3		.35	
Free Cutting Brass	B 16	UNS C36000					61.5		3.0		
Navy "M" (Steam Bronze)	B 61	UNS C92200	.005				88.0	.25	1.5		
Composition Bronze (Ounce Metal)	B 62	UNS C83600	.005				85.0	.30	5.0		
Copper-Silicon Alloy B	B 98/B 99	UNS C65100					96.0	.8	.05	.7	
Forging Brass	B 124	UNS C37700					60.0	.3	2.0		
Forging Brass	B 283	UNS C37700					58.0	.3	2.5		
Brass Wire (Red Brass)	B 134	UNS C23000					85.0	.05	.05		
Leaded Red Brass	B 140	UNS C31400					89.0	.10	1.9		
Aluminum Bronze (Cast)	B 148	UNS C95400	11.0				85.0	4.0			
Aluminum Bronze (Rod)	B 150	UNS C64200	7.0				91.0	.30	.05	.10	
Silicon Red Brass	B 371	UNS C69400					81.5	.20	.30		
Leaded Semi-Red Brass	B 584	UNS C84400	.005				81.0	.40	7.0		
Leaded Red Brass		UNS C84500	.005				78.0	.40	7.0		
Leaded Nickel Bronze	B 584	UNS C97600					64.0		4.0		
Copper (Wrot)	B 75	UNS C12200					99.9				
Gray Iron	A 126	Class B									
3% Ni Gray Iron	A 126 (modified)	Class B									
Austenitic Gray Iron (Ni-Resist)	A 436	Type 2		3.00	2.0		.5			1.0	
Ductile Iron (Ferritic)	A 395			3.20							
Austenitic Ductile Iron (Ductile)	A 536 65-45-12										
(Ductile)	A 536 80-55-06										
(Ni-Resist)	A 439 D2C			2.9	.5					2.4	1.0

NOMINAL OR MAXIMUM CHEMICAL COMPOSITION								NOMINAL PHYSICAL PROPERTIES			
NICKEL Ni	PHOS P	SILICON Si	SULFUR S	TIN Sn	TITAN- IUM Ti	TUNG- STEN W	ZINC Zn	TENSILE STRENGTH Psi	YIELD STRENGTH Psi	% ELONGATION	HARDNESS
.50		12.0		.15			.50	42,000	19,000	3.5	
							35.5	50,000	20,000	15	75 HRB
1.0	.05	.005	.05	6.0			4.5	34,000	16,000	22	65 HB *500 kg
1.0	.05	.005	.08	5.0			5.0	30,000	14,000	20	60 HB 500 kg
		1.6					1.5	86,000**	20,000	11	65 HRB
							38.0	52,000	20,000	45	80 HRB
							38.0	52,000	20,000	45	78 HRB
							15.0	56,000			60 HRB
.7							9.1	50,000	30,000	7	60 HRB
								75,000	30,000	12	170 HB *3000 kg
.25		2.0		.20			.50	90,000	45,000	9	80 HRB
		4.0					14.5	80,000	40,000	15	85 HRB
	.02	.005	.08	3.0			9.0	29,000	13,000	18	55 HB *500 kg
1.0	.02	.005	.08	3.0			12.0	29,000	13,000	16	55 HB *500 kg
20.0				4.0			8.0	40,000	17,000	10	80 HB
	.02							36,000	30,000	25	45 T
	.75		.15					31,000			195 HB
3.00	.75		.15					31,000			195 HB
20.0		2.0	.12					25,000			118 HB
	.08	2.50						60,000	40,000	18	167 HB
	.08	2.50						65,000	45,000	12	160 HB
	.08	2.50						80,000	55,000	6	160 HB
24.0	.08	3.0						58,000	28,000	20	146 HB

*Load Applied During Testing
**Allowable Range is 75,000 to 95,000

Properties of Valve Materials

				NOMINAL OR MAXIMUM CHEMICAL COMPOSITION							
ALLOY	ASTM NO.	OTHER ALLOY DESIGNATION	CARBON		CHROME	COBALT	COPPER	IRON	LEAD	MANGA-NESE	MOLYB-DENUM
			AL	C	Cr	Co	Cu	Fe	Pb	Mn	Mo
Stainless Steel	Wrot 304	A 167 304	UNS S30400	.08	19					2	
	Cast 316	A 351 CF8M	UNS S31600	.08	20					1.5	2.5
	Cast 316	A 743 CF16F		.16	20					1.5	1.5
	Cast 316	A 743 CF8M		.08	20					1.5	2.5
	Wrot 316	A 276 316	UNS S31600	.08	17					2	
	Cast 410	A 217 CA 15		.15	13					1	2.5
	Forged 410	A 182 F6A2		.15	13					1	
	Wrot 410	A 276 410	UNS S41000	.15	13					1	
	Wrot 416	A 582	UNS S41600	.15	13					1.25	
	Wrot 420	A 276 420	UNS S42000	.15	13					1	
Steels	Cast Alloy 20	A 743 CN7M		.07	20		3.5			1.5	2.5
	Wrot Alloy 20	B 473 20C63	UNS N08020	.07	20		3.5			2	2.5
	Wrot 17-4PH	A 564 630	UNS S17400	.07	16		3.5			1	
	Forged Carbon Steel	A 105		.35						1	
	Cast Carbon Steel	A 216 WCB		.3						1.1	
	Cast Carbon Steel	A 216 WCC		.25						1.2	
	1¼ Cast Cr. Moly Steel	A 217 WC6		.2	1.2					.7	.55
	Cast Cr. Moly Steel	A 217 C5		.2	5					.55	.55
	Cast Low Carbon Steel	A 352 LCB		.3						1.0	
	Nickel-Low Carbon Steel	A 352 LC2		.25						.65	
Trim Steels	B-7 Alloy Steel Studs	A 193 B7		.4	1					.85	.2
	304 SS Nuts	A 194 GR8		.08	19					2	
	2-H Alloy Steel Nuts	A 194 2H		.4							
	Reg. Steel Bolting	A 307 Gr. B		.2						.45	
	Steel Bolting	A 449		.4						.6	
	304SS Bolting	A 493 304	UNS S30400	.08	19					2	
	Eyebolts	A 489		.48						1.0	
	Gland Nuts	A 563 Gr. A		.37	.55		.35			1.0	
	H/W Nuts	A 108 1020	UNS G10200	.20						.45	
	Swing Bolt Pin	A 108 1212	UNS G12120	.13						.85	
Monel H.F.	Yoke Bushing Caps	A108 12L14		.15					.25	1.0	
	Seat Ring Base	A 519 1026		.25						.75	
	(Trademark Materials like, Stellite 6*, Stoody 6, and Wallex 6)		AWS 5.13	1.25	29	55		2.5			
	Cast Monel	QQ-N-288-E	.5	.3			30	3.5		1.5	
	Wrought Monel (K-500)	QQ-N-286-C1B	3.0	.1			24	2.0		1.5	

*Trademark by Cabot Corp.

NOMINAL OR MAXIMUM CHEMICAL COMPOSITION								NOMINAL PHYSICAL PROPERTIES			
NICKEL Ni	PHOS P	SILICON Si	SULFUR S	TIN Sn	TITAN- IUM Ti	TUNG- STEN W	ZINC Zn	TENSILE STRENGTH Psi	YIELD STRENGTH Psi	% ELONGATION	HARDNESS
9	.045	1.0	.03					75,000	30,000	40	202 HB
11	.04	2.0	.04					70,000	30,000	25	
11	.04	2.0	.04					70,000	30,000	30	
12	.045	1.0	.03					75,000	30,000	30	
12	.045	1.0	.03					75,000	30,000	30	
1	.04	1.5	.04					90,000	65,000	18	
	.04	1.0	.03					85,000	55,000	18	200/225 HB
.5	.04	1.0	.03					100,000	80,000	15	
	.06	1.0	.15					114,000	95,000	17	235 HB
	.04	1.0	.03								250/450 HB
28	.04	1.5	.04					62,000	25,000	35	
35	.045	1.0	.035					85,000	35,000	30	
4	.04	1.0	.03					115,000	75,000	18	255 HB
	.04	.035	.05					70,000	36,000	22	187 HB
	.04	.6	.045					70,000	36,000	22	
	.04	.6	.04					70,000	40,000	22	
	.04	.06	.045								
	.04	.75	.045								
	.04	.6	.045					65,000	35,000	24	
2.5	.04	.6	.045					70,000	40,000	24	
	.035	.25	.04					125,000	105,000	16	
9	.045	1.0	.03								126/300 HB
	.04		.05								250/300 HB
	.04		.05					100,000		18	121/212 HB
	.04		.05					120,000	92,000	14	
9	.045	1.0	.03					90,000			
	.04	.25	.05					75,000	30,000	30	
.35	.04	.2	.05								
	.04		.05								120/300 HB
	.10		.20								
	.07		.3								
	.04		.05					55,000	35,000	25	
3						5		105,000		10	350 HB
60		1.5						65,000	32,500	25	125/150 HB
67		.5	.01		.5			135,000	95,000	20	255 HB

Butterfly Valve Technical Information

Valve Installation Procedure - For Lug & Wafer Style Valves

Always position the connecting pipe flanges accurately in the line, allowing sufficient space between the flanges for the valve. Make sure the pipe flange faces are clean of any foreign material such as scale, metal shavings or welding slag. Valves should be installed with the disc in the closed position to prevent damage to sealing surfaces.

1. Carefully insert the valves between the pipe flanges. Do not apply any lubricants to the seat faces as this may damage them.
2. Line up, center and secure the valve between flanges using desired bolts or studs as listed in Table 4.
Do not tighten bolts at this time.
3. Carefully open the valve to assure free unobstructed disc movement. Disc interference may result when valves are installed in pipelines having smaller than normal inside diameters, such as heavy wall pipe, plastic-lined pipe, as-cast flanges or reducing flanges. Interference can also occur when connecting directly to a swing check or silent check. Suitable corrective measures must be taken to remove these obstructions, such as taper boring the pipe or installing a spacer or spool piece.
4. After proper operation is verified, tighten the bolts to the minimum recommended bolt torques listed in Table 3 below using a cross-over pattern, also shown below in Figure 3.
5. Pressurize piping to valve and inspect for leakage. If leakage is observed, tighten bolts using cross-over pattern, increasing torque until leak stops.
DO NOT EXCEED MAXIMUM TORQUES LISTED IN TABLE 3.
6. Recommended torques are made without warranty. Installer must verify proper strength bolts for application. Bolts shall be clean and un-lubricated.

Caution

1. Class 250 cast iron and Class 300 steel flanges **can not** be used on these valves.
2. Rubber faced or mechanical flanges are **not** recommended.
3. This valve is **not recommended** for steam service.
4. Valves should **not** be assembled to the flanges and then welded into the piping system.
5. Lever-lock handles are **not** recommended for use on 8" and larger valves.
6. Do not install EPDM liner in compressed air lines.

Table 3 Recommended Bolt Tightening Torques

Flange Size	Bolt Size	Minimum Bolt Torque (ft.·lbs.)	Maximum Bolt Torque (ft.·lbs.)
2"- 4"	5/8"	20	70
5"- 8"	3/4"	30	120
10" & 12"	7/8"	50	200
14" & 16"	1"	70	240
18" & 20"	1-1/8"	100	380
24" & 30"	1-1/4"	140	520
36" - 48"	1-1/2"	200	800

Table 4 Recommended Bolt Lengths

VALVE SIZE 1000/2000/3000 SERIES ONLY	TOTAL VALVE BODY WIDTH	ANSI B16.1 CLASS 125 CAST IRON FLANGE THICKNESS	ANSI B16.5 CLASS 150 STEEL FLANGE THICKNESS	ANSI B16.47 (SERIES A) CLASS 150 STEEL MSS SP-44 FLANGE THICKNESS	ANSI B16.47 (SERIES B) CLASS 150 STEEL WELD NECK FLANGE THICKNESS	ANSI B16.47 (SERIES B) CLASS 150 STEEL BLIND STYLE FLANGE THICKNESS	RECOMMENDED CAP SCREW LENGTH (LUGGED VALVES) DIMENSION "Y"	RECOMMENDED BOLT LENGTH (WAFFER VALVES) DIMENSION "X"	TOTAL QUANTITY CAP SCREWS/BOLTS (TO MOUNT 2 FLANGES)	CAP SCREW SIZE
2"	1.69	0.63	—	—	—	—	1.25	4.00	8/4	5/8-11 UNC
2 1/2"	1.81	0.69	—	—	—	—	1.50	5.00	8/4	5/8-11 UNC
3"	1.81	0.75	—	—	—	—	1.50	5.00	8/4	5/8-11 UNC
4"	2.06	0.94	0.94	—	—	—	1.75	5.00	16/8	5/8-11 UNC
5"	2.19	0.94	0.94	—	—	—	1.75	5.00	16/8	3/4-10 UNC
6"	2.19	1.00	1.00	—	—	—	2.00	6.00	16/8	3/4-10 UNC
8"	2.38	1.12	1.12	—	—	—	2.25	6.00	16/8	3/4-10 UNC
10"	2.69	1.19	1.19	—	—	—	2.25	7.00	24/12	7/8-9 UNC
12"	3.00	1.25	1.25	—	—	—	2.50	7.00	24/12	7/8-9 UNC
14"	3.01	1.38	1.38	—	—	—	2.50	7.00	24/12	1-8 UNC
16"	3.38	1.44	1.44	—	—	—	3.00	8.00	32/16	1-8 UNC
18"	4.12	1.56	1.56	—	—	—	3.00	9.00	32/16	1 1/8-7 UNC
20"	5.14	1.69	1.69	—	—	—	3.50	10.00	40/20	1 1/8-7 UNC
24"	5.98	1.88	1.88	—	—	—	4.00	11.00	40/20	1 1/4-7 UNC
30"	6.57	2.12	—	—	—	—	3.50	—	56	1 1/4-7 UNC
		—	—	—	1.75	—	3.00	—	56	
		—	—	—	—	2.00	3.50	—	56	
		—	—	2.94	—	—	4.25	—	56	
36"	8.00	2.38	—	—	—	—	4.00	—	64	1 1/2-6 UNC
		—	—	—	2.06	—	3.50	—	64	
		—	—	—	—	2.31	4.00	—	64	
		—	—	3.56	—	—	5.00	—	64	
42"	9.88	2.62	—	—	—	—	4.50	—	72	1 1/2-6 UNC
		—	—	—	2.31	—	4.00	—	72	
		—	—	—	—	2.69	4.50	—	72	
		—	—	3.81	—	—	5.50	—	72	
48"	10.87	2.75	—	—	—	—	4.50	—	88	1 1/2-6 UNC
		—	—	—	2.56	—	4.50	—	88	
		—	—	—	—	3.06	5.00	—	88	
		—	—	4.25	—	—	6.00	—	88	

**Bolt Tightening
Cross Over Pattern**

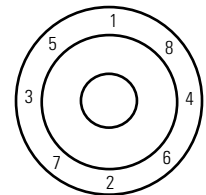
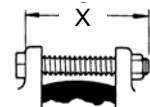


Fig. 3

**Suggested
Bolting Methods**



WAFFER STYLE



LUG STYLE

Butterfly Valve Technical Information

Gear Operator Installation and Handwheel Positioning

Tools Required		
Fire Protection (UL/FM)	2" — 8"	9/16" hex wrench & 1/8" hex allen wrench
	10" — 12"	3/4" hex wrench and 1/8" hex allen wrench
Commercial	2" — 8"	9/16" hex wrench
	10" — 14"	3/4" hex wrench
	16" — 18"	1 1/8" hex wrench

INSTALLATION

1. Install handwheel (1) onto gear operator shaft and secure with pin (2).
(If not already attached) See Fig. 1.
2. Turn the handwheel (1) clockwise until in full SHUT position.
3. Remove 2 screws holding pointer cover plate to center of gear operator to expose bore. Retain pointer cover plate and screws for reinstallation later.
4. Assure valve is in full SHUT position, turn valve stem (5) to close disc if necessary.
5. Assure both mounting base of gear operator (3) and valve top flange (6) are clean and dry.
6. Determined desired handwheel position in reference to the piping system and compare with Fig. 2. Basically there are 2 mounting positions for the gear operator onto the valve and the valve can be mounted in either direction into the piping system. This will allow handwheel to be positioned in any of the 4 Quadrants as shown in Fig. 2. Note that 10" and 12" size commercial valves only allow for handwheel positioning in Quadrants 1 and 2.
- 7a. Gear operators **with** adapter bushing
 - Insert adapter bushing (4) into gear operator (3) bore aligning bushing key with desired keyway. Keyway selection will determine handwheel orientation position.
 - Align adapter bushing (4) bore with valve stem (5) and slide gear operator assembly onto valve stem (5) until seated with valve top flange.
- 7b. Gear operators **without** adapter bushing
 - Align gear operator (3) bore with valve stem (5) and align with desired keyway. Keyway selection will determine handwheel orientation position.
 - Slide gear operator assembly onto valve stem (5) until seated with valve top flange.
8. Secure gear operator (3) to valve top flange (6) using supplied* fasteners (7 & 8).
9. Reinstall pointer cover plate onto gear operator that you removed in step 3 above. Arrow should be aligned to indicate SHUT position.
10. Rotate handwheel from full SHUT to full OPEN positions several times to assure proper operation.
11. Proceed with valve installation into piping system.

*A minimum of two fasteners is required, installed in opposite diagonal corners.

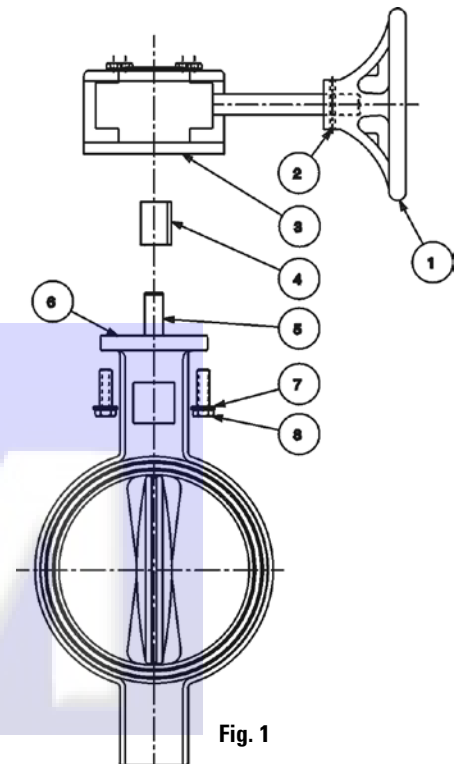


Fig. 1

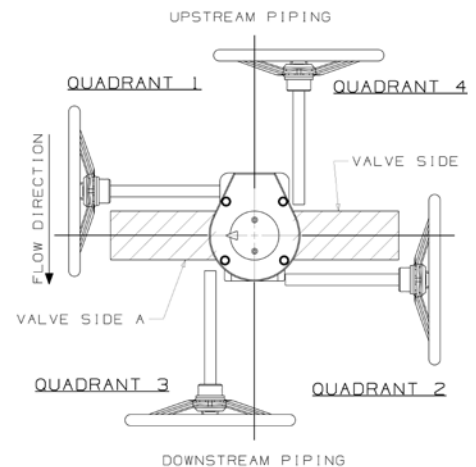
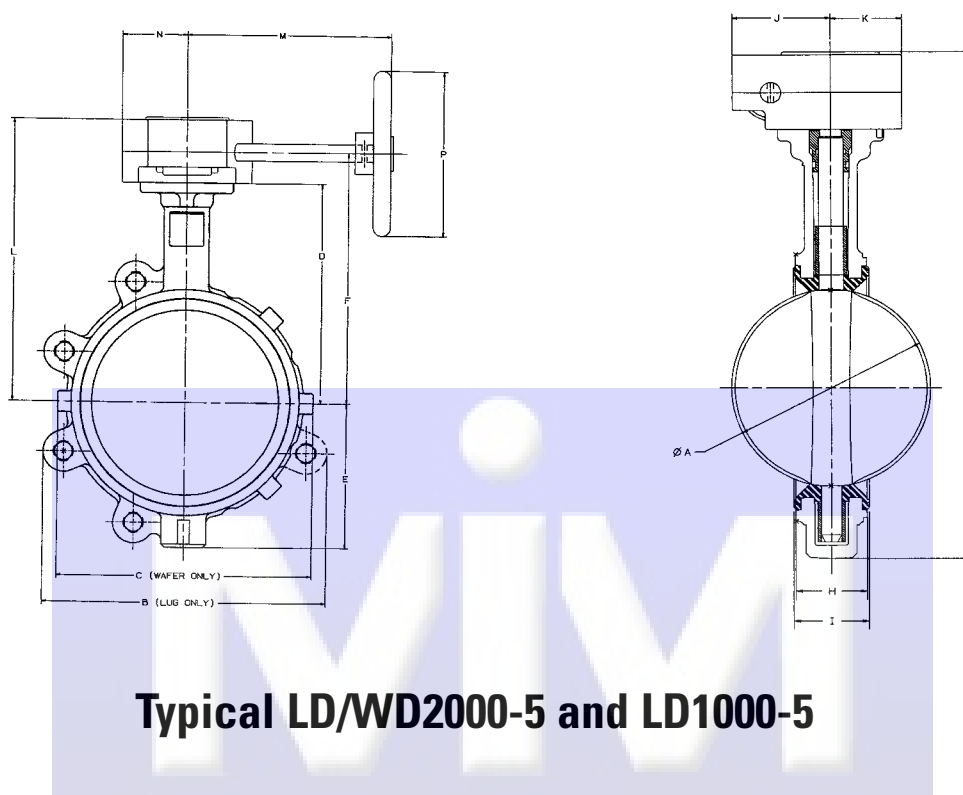


Fig. 2

Note - Connection of gear operator to valve stem varies depending on gear operator model, size and style. The adapter bushing and key may be different from illustration shown.

2000/3000 Series Technical Information

Valve with Gear Mounted



DIMENSIONS

Valve Size	A	B (Lug)	C (Wafer)	D	E	F	G	H (Metal)	I (Rubber)	J	K	L	M	N	P
2"	2.5	4.6	4.9	5.4	2.9	6.9	11.1	1.69	1.81	2.9	2.13	8.2	7.64	2.12	5.91
2½"	2.9	5.6	5.6	5.9	3.3	7.4	12.0	1.81	1.94	2.9	2.13	8.7	7.64	2.12	5.91
3"	3.1	6.1	6.1	6.1	3.4	7.6	12.3	1.81	1.94	2.9	2.13	8.9	7.64	2.12	5.91
4"	4.1	8.3	7.0	6.9	4.0	8.4	13.7	2.06	2.19	2.9	2.13	9.7	7.64	2.12	5.91
5"	5.1	9.4	8.3	7.4	4.8	8.9	15.0	2.19	2.31	2.9	2.13	10.2	7.64	2.12	5.91
6"	6.1	10.3	9.3	8.0	5.3	9.5	16.1	2.19	2.31	2.9	2.13	10.8	7.64	2.12	5.91
8"	8.1	13.4	11.6	9.3	6.5	10.8	18.5	2.38	2.5	2.9	2.13	12.0	9.53	2.12	9.84
10"	10.1	15.5	14.3	10.5	8.0	12.3	21.8	2.69	2.81	3.9	3.03	13.8	11.54	3.03	9.84
12"	12.1	18.3	16.8	12.0	9.3	13.8	24.6	3.00	3.13	3.9	3.03	15.3	11.54	3.03	9.84
14"	13.1	-	20.6	14.5	10.5	16.3	28.3	3.01	3.13	4.3	3.15	17.8	12.87	3.14	11.81
16"	15.3	-	22.3	15.7	11.7	17.9	31.7	3.38	3.54	6.3	3.94	20.0	13.58	4.92	11.81
18"	17.3	-	25.2	16.6	12.4	18.8	33.3	4.12	4.29	6.3	3.94	20.9	15.04	4.92	15.75
20"	19.4	-	27.4	18.9	13.7	21.3	37.8	5.14	5.31	6.5	4.92	24.1	18.11	4.92	11.81
24"	23.3	-	31.5	22.1	17.5	24.5	44.8	5.98	6.14	6.5	4.92	27.3	18.11	4.92	11.81

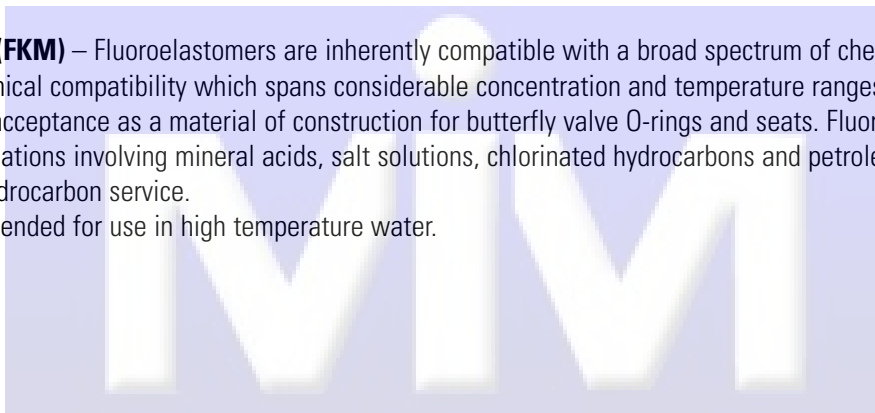
Butterfly Valve Technical Information

Resilient Liner Materials

EPDM – EPDM is a terpolymer elastomer made from ethylene-propylene diene monomer. EPDM has good abrasion and tear resistance and offers excellent chemical resistance to a variety of acids and alkalines. It is susceptible to attack by oils and is not recommended for applications involving petroleum oils, strong acids, or strong alkalines. EPDM should not be used on compressed air lines. It has exceptionally good weather aging and ozone resistance. It is fairly good in ketones and alcohols.

BUNA-N (Nitrile) (NBR) – Buna-N is a general purpose oil resistant polymer known as nitrile rubber. Nitrile is a copolymer of butadiene and acrylonitrile. Buna-N has good solvent, oil, water and hydraulic fluid resistance. It displays good compression set, abrasion resistance and tensile strength. Buna-N should not be used in highly polar solvents such as acetone and methyl ethyl ketone, nor should it be used in chlorinated hydrocarbons, ozone or nitro hydrocarbons. Some aviation fuels may not be compatible.

Fluoroelastomer (FKM) – Fluoroelastomers are inherently compatible with a broad spectrum of chemicals. Because of this extensive chemical compatibility which spans considerable concentration and temperature ranges, fluoroelastomers have gained wide acceptance as a material of construction for butterfly valve O-rings and seats. Fluoroelastomer can be used in most applications involving mineral acids, salt solutions, chlorinated hydrocarbons and petroleum oils. It is particularly good in hydrocarbon service. FKM is not recommended for use in high temperature water.



Liner Temperature Ratings

Liner Material	Temperature
EPDM**	-20°F to + 250°F
Nitrile (Buna-N)	-20°F to + 180°F
Fluoroelastomer	-20°F to + 300°F

** EPDM is rated at 250°F intermittent service and 225°F continuous service.

NOTE – The NIBCO® Chemical Resistance Guide should be referenced for liner material compatibility for each application.

Proprietary compound formulas are used for each of the elastomers to provide the right combination of seat compression, abrasion resistance, and chemical resistance to match your application. Elastomeric seat materials are not suitable for steam service.

Butterfly Valve Technical Information

Metals Used in Valves & Fittings

Aluminum—A non-ferrous metal, very lightweight, approximately one-third as much as steel. Aluminum exhibits excellent atmospheric corrosion resistance, but can be very reactive with other metals. In valves, aluminum is mainly used as an exterior trim component such as a handwheel or identification tag.

Copper—Among the most important properties of wrought copper materials are their thermal and electrical conductivity, corrosion resistance, wear resistance, and ductility. Wrought copper performs well in high temperature applications and is easily joined by soldering or brazing. Wrought copper is exclusively used for fittings.

Bronze—One of the first alloys developed in the bronze age is generally accepted as the industry standard for pressure rated bronze valves and fittings. Bronze has a higher strength than pure copper, is easily cast, has improved machinability, and is very easily joined by soldering or brazing. Bronze is very resistant to pitting corrosion, with general resistance to most chemicals less than that of pure copper.

Silicon Bronze—Has the ductility of copper but much more strength. Silicon bronze has equal or greater corrosion resistance to that of copper. Commonly used as stem material in pressure-rated valves, silicon bronze has greater resistance to stress corrosion cracking than common brasses.

Aluminum Bronze—The most widely accepted disc material used in butterfly valves, aluminum bronze is heat treatable and has the strength of steel. Formation of an aluminum oxide layer on exposed surfaces makes this metal very corrosion resistant. Not recommended for high pH wet systems.

Brass—Generally good corrosion resistance. Susceptible to de-zincification in specific applications; excellent machinability. Primary uses for wrought brass are for ball valve stems and balls, and iron valve stems. A forging grade of brass is used in ball valve bodies and end pieces.

Gray Iron—An alloy of iron, carbon and silicon; easily cast; good pressure tightness in the as-cast condition. Gray iron has excellent dampening properties and is easily machined. It is standard material for bodies and bonnets of Class 125 and 250 iron body valves. Gray iron has corrosion resistance that is improved over steel in certain environments.

Ductile Iron—Has composition similar to gray iron. Special treatment modifies metallurgical structure which yields higher mechanical properties; some grades are heat treated to improve ductility. Ductile iron has the strength properties of steel using similar casting techniques to that of gray iron.

Carbon Steel—Very good mechanical properties; good resistance to stress corrosion and sulfides. Carbon steel has high and low temperature strength, is very tough and has excellent fatigue strength. Mainly used in gate, globe, and check valves for applications up to 850°F, and in one-, two-, and three-piece ball valves.

3% Nickel Iron—Improved corrosion resistance over gray and ductile iron. Higher temperature corrosion resistance and mechanical properties. Very resistant to oxidizing atmospheres.

Nickel-Plated Ductile Iron—Nickel coatings have received wide acceptance for use in chemical processing. These coatings have very high tensile strength, 50 to 225 ksi. To some extent, the hardness of a material is indicative of its resistance to abrasion and wear characteristics. Nickel plating is widely specified as a disc coating for butterfly valves.

400 Series Stainless Steel—An alloy of iron, carbon, and chromium. This stainless is normally magnetic due to its martensitic structure and iron-content. 400 series stainless steel is resistant to high temperature oxidation and has improved physical and mechanical properties over carbon steel. Most 400 series stainless steels are heat-treatable. The most common applications in valves are, for stem material in butterfly valves, and backseat bushings and wedges in cast steel valves.

316 Stainless Steel—An alloy of iron, carbon, nickel, and chromium. A non-magnetic stainless steel with more ductility than 400SS. Austenitic in structure, 316 stainless steel has very good corrosion resistance to a wide range of environments, is not susceptible to stress corrosion cracking and is not affected by heat treatment. Most common uses in valves are: stem, body and ball materials.

17-4 PH Stainless Steel*—Is a martensitic precipitation/age hardening stainless steel offering high strength and hardness. 17.4 PH withstands corrosive attack better than any of the 400 series stainless steels and in most conditions its corrosion resistance closely approaches that of 300 series stainless steel. 17.4 PH is primarily used as a stem material for butterfly and ball valves.

Alloy 20Cb-3*—This alloy has higher amounts of nickel and chromium than 300 series stainless steel and with the addition of columbium, this alloy retards stress corrosion cracking and has improved resistance to sulfuric acid. Alloy 20 finds wide use in all phases of chemical processing. Commonly used as interior trim on butterfly valves.

Monel*—Is a nickel-copper alloy used primarily as interior trim on butterfly and ball valves. One of the most specified materials for corrosion resistance to sea and salt water. Monel is also very resistant to strong caustic solutions.

Stellite*—Cobalt base alloy, one of the best all-purpose hard facing alloys. Very resistant to heat, abrasion, corrosion, impact, galling, oxidation, thermal shock and erosion. Stellite takes a high polish and is used in steel valve seat rings. Normally applied with transfer plasma-arc; Stellite hardness is not affected by heat treatment.

Hastelloy C*—A high nickel-chromium molybdenum alloy which has outstanding resistance to a wide variety of chemical process environments including strong oxidizers such as wet chlorine, chlorine gas, and ferric chloride. Hastelloy C is also resistant to nitric, hydrochloric, and sulfuric acids at moderate temperatures.

Note: See NIBCO's "Chemical Resistance Guide Catalog" for specific questions.

**Alloy 20Cb-3 is a registered trademark of Carpenter Technology*

**Hastelloy C is a registered trademark of Cabot Corporation*

**Stellite is a registered trademark of Cabot Corporation*

**Monel is a registered trademark of International Nickel*

**17-4 PH Stainless Steel is a registered trademark of Armco Steel Company*

Butterfly Valve Technical Information

Torque Data

LD/WD 2000/3000/5022 Series Torque Data (In. Lbs.)

Size	100 PSI	200 PSI	250 PSI
2"	140	180	195
2½"	190	235	255
3"	250	300	325
4"	430	530	580
5"	590	790	845
6"	795	1,035	1,155
8"	1,850	2,350	2,600
10"	2,350	2,900	3,125
12"	3,875	5,390	6,145

LD/WD 1000/2000 Series Torque Data (In. Lbs.)

Size	50 PSI	75 PSI	100 PSI	150 PSI
14"	—	3,837	—	4,870
16"	—	5,003	—	6,685
18"	—	6,567	—	8,958
20"	—	8,540	—	11,950
24"	—	13,220	—	18,680
30"	28,320	29,782	30,864	33,336
36"	40,624	41,875	43,480	46,528
42"	69,744	72,076	74,632	79,864
48"	96,648	100,520	103,840	111,112

N200 Series Torque Data (In. Lbs.)

Size	100 PSI	200 PSI
2	120	220
2½	130	320
3	180	480
4	280	820
5	360	1,162
6	600	1,560
8	1,100	2,890
10	2,040	5,270
12	4,500	8,050

Note: Torque Data shown is for general service (clean water, ambient temperatures). For non-lubricating, high temperatures or aggressive media, consult Nibco Technical Service.

Butterfly Valve Torque Data

Torque is the rotary effort required to operate a valve. This turning force in a butterfly valve is determined by three factors. (1) Friction of the disc to seat for sealing (2) Bearing friction (3) 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 values listed at the left are based on performance tests and include a safety factor. The torques listed are valid for water and lubricating fluids at ambient temperature. For dry and non-lubricating fluids, contact your NIBCO customer service representative.

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

Torque listed for EPDM. When calculating torques for Buna-N, or Fluoroelastomer multiply listed torque by 1.25. Consult factory for dry service valves.

FC/FD27*5/57*5 GD4765/4775 Torque Data (In. Lbs.)

Size	100 PSI	200 PSI	300 PSI
2	48	67	83
2½	48	67	83
3	100	134	168
4	185	251	317
5	294	410	499
6	520	705	890
8	1,070	1,495	1,798
10	1,550	2,214	2,654
12	2,150	3,024	3,662

Figure Number Comparisons*

Butterfly Valves

DUCTILE IRON

NIBCO	WD2000	LD2000	WD2100	LD2100	WD3010	LD3010	WD3110	LD3110	WD3022	LD3022
Bray	30-11010-120	31-11010-120	30-11010-684	31-11010-684	30-11010-119	31-11010-119	30-11010-713	31-11010-713	30-11010-124	31-11010-124
Centerline	A2-061-05	B2-061-05	A2-061-01	B2-061-01	A2-021-05	B2-021-05	A2-021-01	B2-021-01	A2-044-05	B2-044-05
Demco	NEC1114351	NEC5114351	NEC1114311	NEC5114311	NEC1115351	NEC5115351	NEC1115311	NEC5115311	NEC1122351	NEC5122351
Grinnell	WD-8281-3	LD-8281-3	WD-8181-3	LD-8181-3	WD-8201-3	LD-8201-3	WD-8101-3	LD-8101-3	WD-8271-4	LD-8271-4
Keystone	HS-1	HS-2	HS-1	HS-2	HS-1	HS-2	HS-1	HS-2	HS-1	HS-2
Milwaukee	MW-233-E	ML-233-E	MW-233-B	ML-233-B	MW-232-E	ML-232-E	MW-232-B	ML-232-B	MW-234-E	ML-234-E
Mueller Steam	55-ANK6-1	56-ANK6-1	55-ANK3-1	56-ANK3-1	55-ANI6-1	56-ANI6-1	55-ANI3-1	56-ANI3-1	55-AHH6-1	56-AHH6-1
Watts	DBF-04-121-15	DBF-03-121-15	DBF-04-121-25	DBF-03-121-25	DBF-04-111-15	DBF-03-111-15	DBF-04-111-25	DBF-03-111-25	DBF-04-131-25	DBF-03-131-25

NOTE: NIBCO lug style butterfly valves are fully rated for dead end service without a downstream flange. All valves listed above as comparable may not have this rating.

CAST IRON

NIBCO	N200235	N200135	N200245	N200145	N200236	N200136	N200246	N200146
Grinnell	LC128*3	WC128*3	LC118*3	WC118-3	LC120*3	WC120*3	LC110*3	WC110*3
Centerline	B106135	A106145	B106161	A106131	B102135	A102135	B102131	A102131
Watts	BF03-121-1	BF04-121-1	BF03-121-2	BF04-121-2	BF03-111-1	BF04-111-1	BF03-111-2	BF04-111-2
Milwaukee	CL223E	CW223E	CL223B	CW223B	CL222E	CW222E	CL222B	CW222B

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