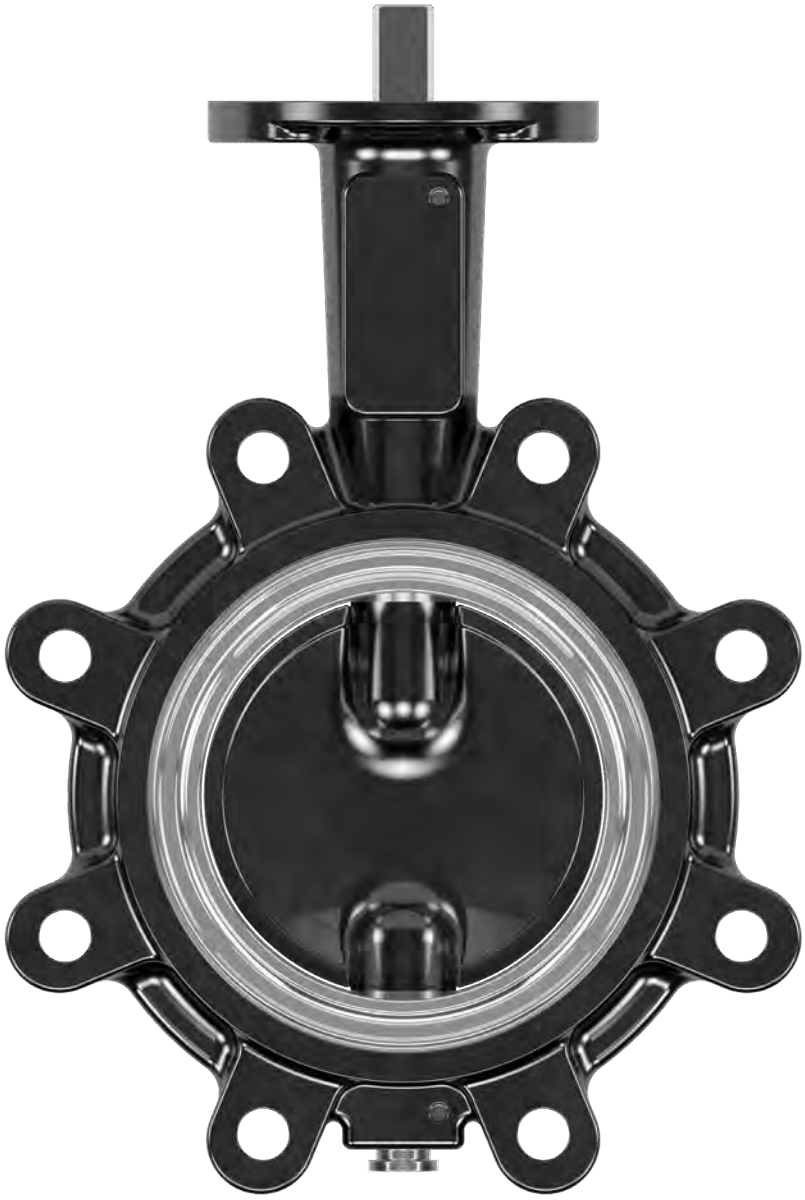


Demco butterfly valves

High-quality design and rugged dependability
for rigorous industrial, oilfield, and drilling applications

Contents

Demco valve manufacturing facility in Oklahoma City, Oklahoma, US.

SLB is a leading provider of valves, valve automation, and measurement systems to the oil and gas industry. Our products are primarily used to control, direct, and measure the flow of oil and gas as it is moved to refineries, petrochemical plants, and industrial centers for processing.

We provide valve products that are sold through distributor networks worldwide. Our products are used in oil and gas and industrial applications and include widely recognized brands such as Demco™ butterfly and gate valves, Navco™ floating ball valves, Nutron™ ball valves, Tom Wheatley™ check valves, Wheatley™ check valves, and WKM™ valves.

Designed for dependable, heavy-duty performance in abrasive and corrosive service conditions, Demco butterfly valves are commonly selected for a number of oilfield applications, including drilling and production.

Features and benefits

As one of the most durable resilient-seated butterfly valves in the industry, the Demco butterfly valve excels in a variety of applications.

Cast in both wafer and tapped lug patterns in a variety of material choices, Demco butterfly valves feature a one-piece body for reduced weight and increased strength.

The unique stem hole design in the disc ensures a dry stem journal. The hard-backed seat enables ease of installation, reliable operation, and in-field repairability without special tools. Demco butterfly valves are available in sizes 2 to 36 in [50 to 900 mm].

Engineered for long-term, reduced-maintenance performance, Demco butterfly valves are commonly selected for a variety of applications in the following industries:

- chemical and petrochemical
- agriculture
- oil and gas drilling and production
- food and beverage
- water and wastewater
- cooling towers (HVAC)
- power
- mining and materials
- dry bulk handling
- marine.

Bidirectional sealing

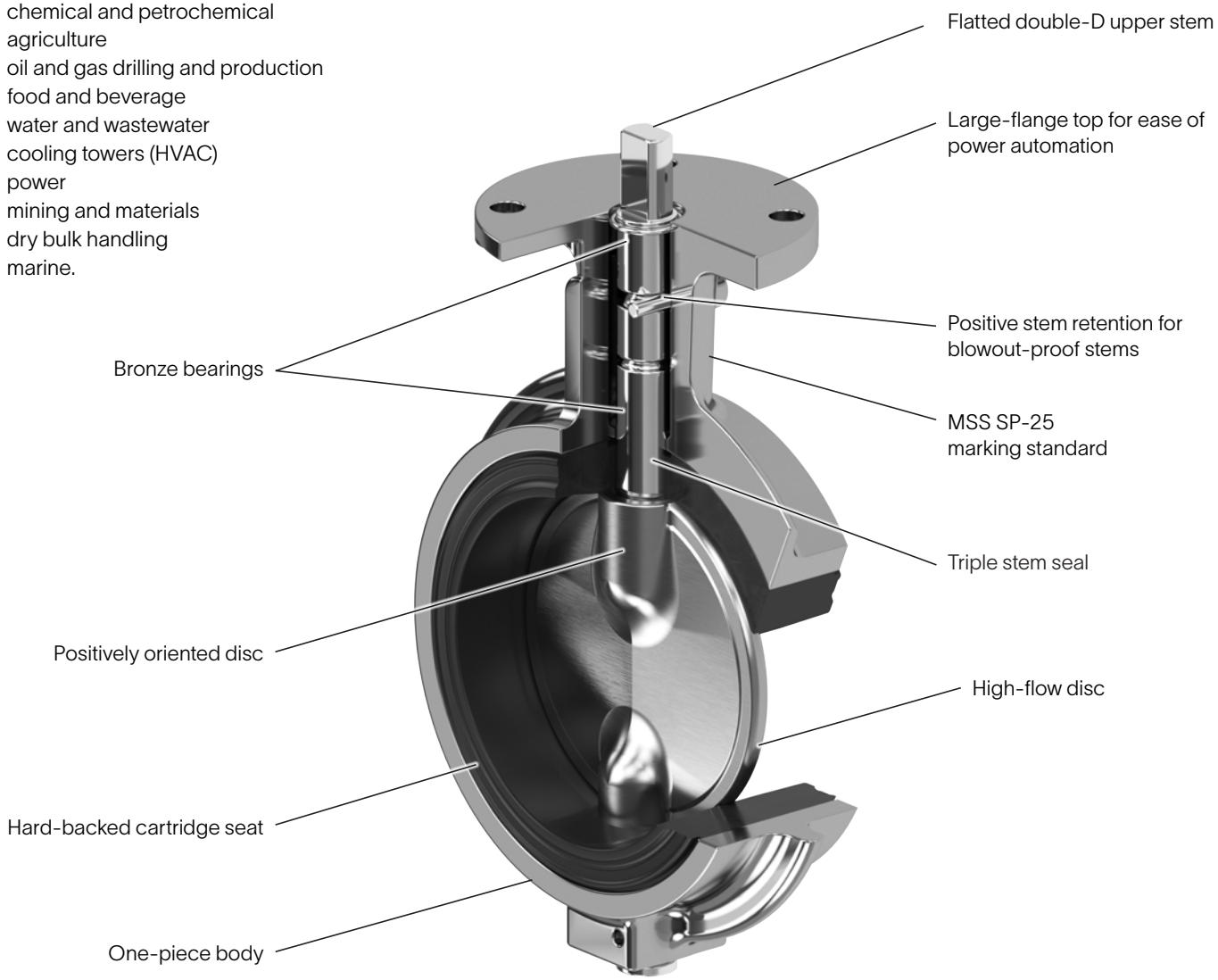
The Demco butterfly valve provides bidirectional sealing at full rated pressure with identical flow from either direction.

Integral flange seal

An integral flange seal molded into the edge of the seat accommodates ASME weld neck, slip-on, threaded, socket, and stub-end type C flanges.

ASME Class 150 rating

With a body rating of ASME Class 150 (285-psi nonshock), the wafer body diameters are designed to self-center in the ASME Class 150 flange pattern.



Wafer-style Demco butterfly valve.

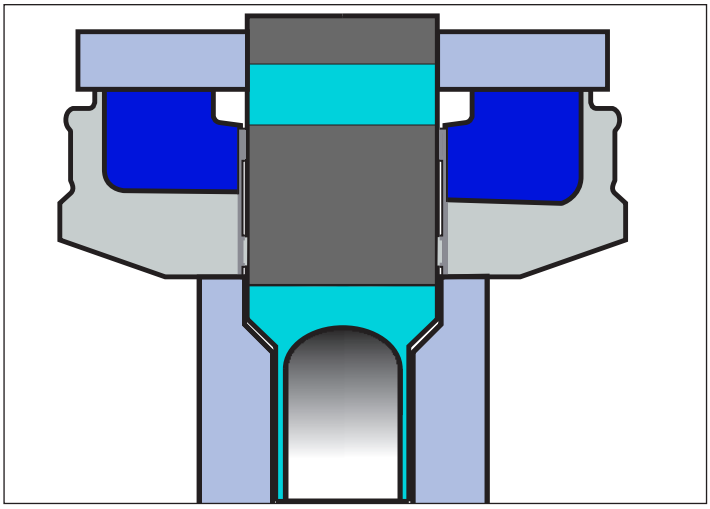
Multiple pressure ratings

Three drop-tight pressure ratings are offered for 2- to 12-in [50- to 300-mm] sizes. The standard shutoff pressure rating is 200 psi, but 285- and 50-psi shutoff ratings are also available. The 14- to 36-in [350- to 900-mm] valves are available in 150- and 285-psi drop-tight shutoff ratings.

Dry stem journal that reduces potential for leakage

The Demco butterfly valve's disc is uniquely designed with a continuous annular-raised band around the stem hole and disc edge, which presses flat into the seat at every angular position.

The resilient seat presses back with a higher force than the line pressure, preventing leakage to the stem. In addition, two O-ring ribs are provided in the seat stem bore to create a triple stem seal. In comparison, seal designs with boot seats accomplish the seal by an interference squeezing on the stem or an O-ring in the stem journal. The potential for leakage behind the seat is high for this type of design. As the disc wipes the seat, elongation of the stem seal area enables leakage to collect behind the seat. This condition is reduced by the Demco butterfly valve's dry stem journal and hard-backed seat.



Dry stem journal.

Hard-backed cartridge seat

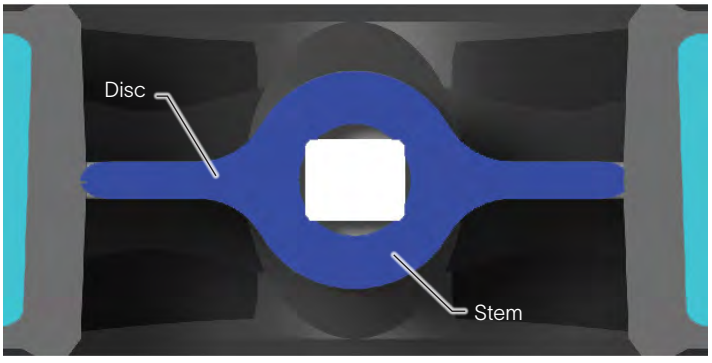
The Demco butterfly valve's cartridge seat is constructed by permanently bonding a resilient elastomer to a rigid backing ring. In addition to superior sealing integrity, this design

- makes valve installation easier because no special precautions are required for disc position, which is especially advantageous when installing valves with fail-closed actuators
- reduces high torque and premature failure caused by elastomer distortion, as found in other nonrigid seat designs
- simplifies seat replacement because the seat is slip-fitted into the body with no need for special tools.

Hard-backed cartridge seat.

Positively oriented disc

The rectangular drive ensures the proper orientation of the stem disc connection. In 2- to 24-in [50- to 600-mm] valves, the disc is permitted to float on the stem to center in the valve seat. This design enhances drop-tight sealing and prolongs service life.



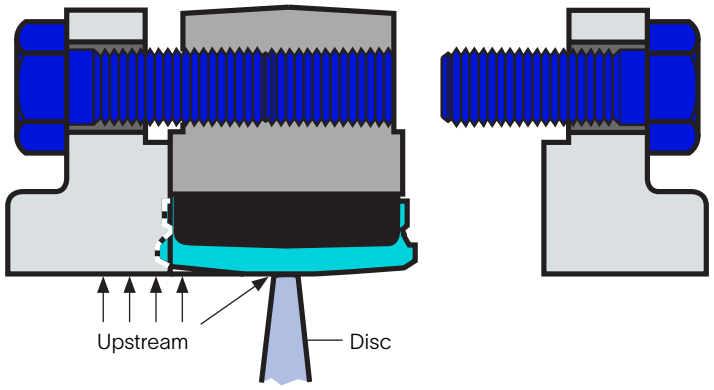
Positively oriented disc.

Features and benefits

End-of-line service

Lug body valves may be used (with attached blind flange) in end-of-line service with downstream piping removed. Only weld-neck or socket flanges can be used for this service. Because upstream pressure is excluded between the flange and the seat face by the Demco valve's flange seal design, there is no effective force to slide the seat downstream. The 2- to 12-in [50- to 300-mm] lug butterfly-style Demco valves are suitable for liquid service up to 200 psi. For NF-C 14 to 36 in, an open or blind flange is required.

Lug body valves are recommended for isolation of pumps, control devices, or other system components that may need to be removed for repair or replacement. Lug valves also are suitable for installation at points from which piping expansion may proceed.



End-of-line service.

Design and testing specifications

- MSS SP-67 (testing is applicable upon request)
- MSS SP-25 (standard marking system for valves)

In addition, Demco butterfly valves can be supplied to comply with these standards:

- ABS
- CE/PED
- CRN
- DNV
- EAC
- API Spec 607 4th Ed. fire test
- US Coast Guard 46 CFR 56.20.

Specifications

Sizes, in [mm]		2 to 36 in [50 to 900 mm]	
Body type and style designations	Long-neck NE-C and NF-C	2- to 36-in [50- to 900-mm] wafer or lug	
	Short-neck NE-I	2- to 12-in [50- to 300-mm] wafer*	
	NE-D	2- to 12-in [50- to 300-mm] wafer**	
	Marine	2- to 36-in [50- to 900-mm] wafer or lug	
Standard pressure rating, psi		**Standard**	**Options**
	2 to 12 in [50 to 300 mm]	200	285
	14 to 36 in [350 to 900 mm]	150	285
Operating temperatures, degF [degC]	–30 to 300 [–34 to 149], depending on seat material selection and application (see page 24)		
Standard material options		**Standard**	**Options**
	Bodies	Ductile iron	Aluminum bronze, carbon steel, and stainless steel (SS)
	Discs	Nickel-plated ductile iron, aluminum bronze, and SS	ZPEX® coated ductile iron (see note) and MONEL®
	Stems	416 SS	316 SS and MONEL
	Seats	Buna-N, FKM	Ethylene propylene diene monomer (EPDM) and natural rubber

Note: Many more options available (consult SLB or see pages 9, 10, and 11 on how to order).

Fire-safe API Spec 607 4th Edition, CRN, ABS, DNV, EAC, and PED certifications on selected sizes and pressure ratings.

* With double-D stem

** With square stem only

Styles and accessories

Demco butterfly valves come in a variety of styles to suit a range of applications. In addition, a variety of high-quality accessories is available to further enhance suitability to the application.

Series NE-C

Sizes 2 to 12 in [50 to 300 mm] are available in both wafer and lug styles. This series is a general-purpose valve with a neck length designed to provide full clearance for the valve top over 2 in of insulation on ASME Class 150 pipe flanges.

Series NE-I

Sizes 2 to 12 in [50 to 300 mm] are suited for a range of applications in many industries, including food and beverage, utilities, and process flowlines. This short neck design is offered in a variety of body materials. The valves are designed for installation between ASME Class 125 and 150 flanges.

Series NE-D

The valves in this series can be made in sizes 2 to 12 in [50 to 300 mm]. The Series NE-D valve is a short-neck valve with body notches. The valves are designed for installation between ASME Class 125 and 150 flanges.

Series NF-C

Sizes 14 to 36 in [350 to 900 mm] are available in both wafer and lug styles. The wafer body has two drilled locator lugs at the top and bottom for ASME Class 150 flanges. Bronze bearings are installed on both stems for reduced operating torque.

Series NE-C lug 6 in [150 mm].

Series NE-I wafer 3 in [80 mm].

Series NF-C lug 16 in [400 mm].
Also available in wafer style (not shown).

Series NE-D wafer 4 in [100 mm].

Marine

Demco butterfly valves valves for marine applications are available in all sizes and conform to

- 46 CFR Part 56 of the US Coast Guard Marine Engineering Regulations
- US Coast Guard Category (A) Acceptance on API Spec 607 qualified valves
- ABS Standard, including tagging per MSS SP-25 and testing per MSS SP-67.

Marine Demco butterfly valves are shell and seat tested and come with body, disc, and stem material testing reports (MTRs).

Actuators

Consult SLB or visit slb.com/valves for actuation options.

Handles

There are three basic handle designs that are compatible with any 2- to 12-in [50- to 300-mm] valve: 10-position locking, 2-position locking, and memory stop. Memory-stop handles provide throttling, which is infinitely adjustable and can be set by a lock nut with a memory-stop setting (adjustable open stop). Handles are available in basic trim, corrosion-resistant trim, and sanitary trim.

Gear operators

Weatherproof gear operators for Demco butterfly valves are offered with a choice of handwheel. The worm gear has either self-locking set screws to control open and closed positioning or an optional adjustable memory stop for a return to a preset open position after closing.

Fire test

Demco butterfly valves with the resilient seat design have been fire tested and qualified to meet the stringent requirements of API Spec 607 4th Edition. This valve design provides fire-test capabilities regardless of flow direction.

Sizes Qualified	2 to 6 in	8 to 36 in
Body style	Lug	Wafer and lug
Body material	Ductile iron	Ductile iron
Seat material	FKM	FKM
Working pressure	285 psi	200 and 285 psi

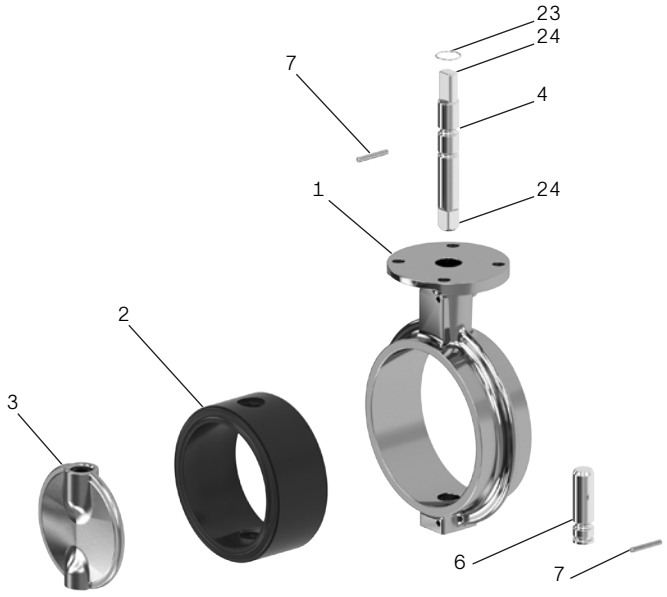
Series NE-C.

Fire test per API Spec 607 4th Edition.

Series NE-C, NE-I, and NE-D

2 to 12 in [50 to 300 mm]

Quantity	Quantity	Description	Material
1	One	Body	See "How to order" for material choices and styles
2	One	Seat	
3	One	Disc	
4	One	Upper stem	
6	One	Lower stem	
7	Two	Spring pin	SS
14	One	Retainer	SS
22	One	Top O-ring	Buna-N
23	Two required for fire-safe valves	Stem O-ring	FKM
24	2	Bearing	Bronze



Series NE-I wafer.

How to order

XX	XXXXX	-	X	X	X	X	XX	X
Fire Safety	Base Part Number		Body Configuration	Body Material*	Stem Material	Disc Material	Seat Elastomer	Actuation

Fire Safety

Non–fire safe	J0

Base Part Number

Based on valve series and shutoff pressure. See page 12.

Body Configuration

NE-C, NE-I	
Wafer	1
Lug	5
NE-D	
Wafer	1

NE-C (long neck)	
Ductile iron (lug)	1
Ductile iron (wafer)	2
NE-I	
Ductile iron (NE-I, wafer only)	1
Optional	
Aluminum bronze	3
SS	8
NE-D	
Ductile iron	1

Body Material*

NE-C, NE-I, and NE-D	
416 SS	1
316 SS**	2
MONEL	3

Stem Material

NE-C, NE-I, and NE-D	
316 SS	2
Aluminum bronze	4
Ductile iron, nickel-plated	5
ZPEX-coated ductile iron	A
MONEL	3

Disc Material

NE-C, NE-I, and NE-D	
Buna-N	31
FKM	34
Peroxide-cured EPDM rubber	35
Natural rubber	36

Seat Elastomer

Handle	
Ten-position locking	1
Bare stem	9
Two-position locking	6
Ten-position locking; corrosion resistant	K
Gear operators†	
Handwheel	A
Bare shaft	E

Actuation

*Standard coating is green enamel; other coatings are available on request.
**17-4-PH® SS for 8- to 12-in [200- to 300-mm] upper stem only.
†Gear operator recommended for 8- to 12-in [200- to 300-mm] sizes in all series.

(Example: 6-in [150-mm] NE-C, 200-psi, wafer, ductile iron body, 416 SS stem, nickel-plated ductile iron disc, Buna-N seat with 10-position locking handle—22124-1215311)

Styles and accessories

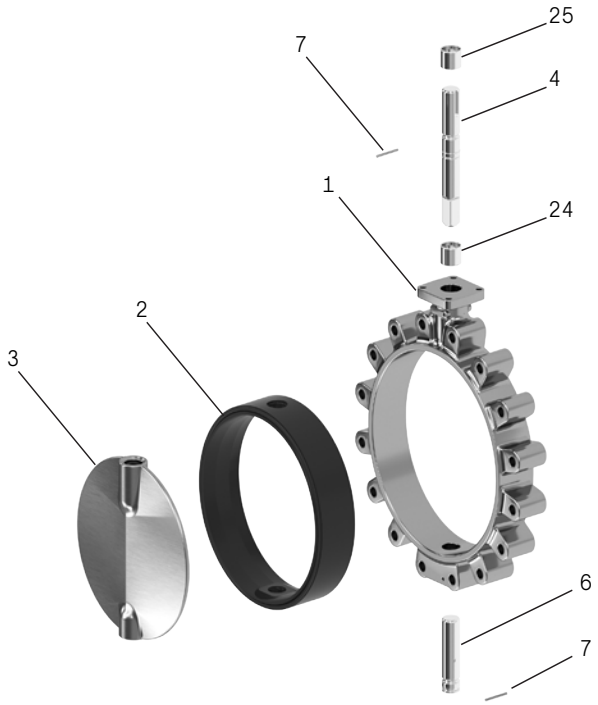
Series NF-C

14 to 24 in [350 to 600 mm]

Key No.	Quantity	Description	Material
1	One	Body	See "How to order" for material choices and styles
2	One	Seat	
3	One	Disc	
4	One	Upper stem	
6	One	Lower stem	
7	Two	Spring pin	SS
14	One	Retainer (spacer)*	SS
23	Two required for fire-safe valves	Stem O-ring	FKM
24	1	Bearing	Bronze
25	1	Bearing	Bronze

Complete material specifications on page 26.

*14- to 20-in [350- to 500-mm] spacer.



Series NF-C lug.

How to order

XX	XXXXX	-	X	X	X	X	XX	X
Fire Safety	Base Part Number		Body Configuration	Body Material*	Stem Material	Disc Material	Seat Elastomer	Actuation

Fire Safety		Body Configuration		Body Material*		Stem Material		Disc Material		Seat Elastomer		Actuation	
Non–fire safe	J0	Wafer	1	416 SS	1	316 SS	2	Buna-N	31	None	9
		Lug	5	316 SS	2	Aluminum bronze	4	FKM	34	**Gear operators**	
		Ductile iron (lug)	1			Nickel-plated ductile iron	5	EPDM	35	Handwheel	A
		Ductile iron (wafer)	2			ZPEX-coated ductile iron	A			Bare shaft	E
		Optional									
		Aluminum bronze	3								
		SS (lug)	8								

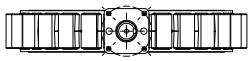
Based on valve series and shutoff pressure. See page 12.

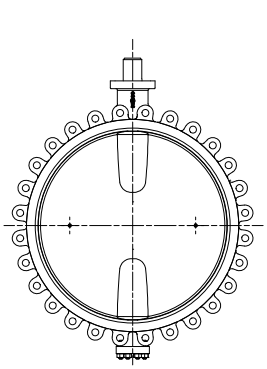
*Standard coating is green enamel; other coatings are available on request.

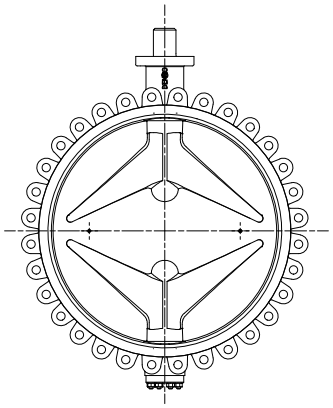
(Example: 18-in [450-mm] NF-C, 150-psi lug, SS trim, Buna-N seat, handwheel actuation—23822-512231A)

Series NF-C

30 and 36 in [750 and 900 mm]



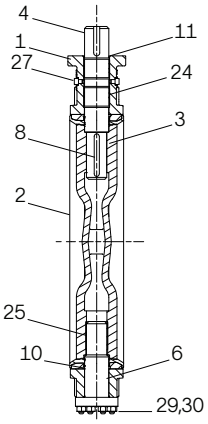




30-in [750-mm] NF-C

Key No.	Quantity	Description	Material
1	1	Body	See "How to order" for material choices and styles.
2	1	Seat—hard backed	
3	1	Disc	
4	1	Upper stem	
6	1	Lower stem	
7	2	Disc screw	18-8 SS
8	1	Key	SS
9	2 required for fire-safe valves	O-ring	FKM
14	1	Spacer	Steel
24	4	Upper bearing	Bronze
25	1	Lower bearing	Bronze
26	1	Thrust collar	Bronze
27	1	Set screw	18-8 SS
28	1	Cap	Ductile iron
29	4	Screw	Carbon steel
30	4	Lock washer	Carbon steel

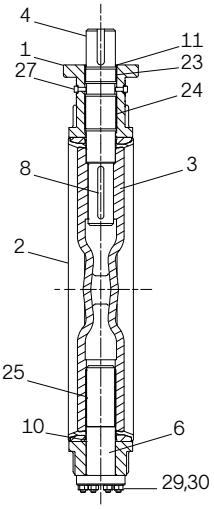
Complete material specifications on page 26.



30 in

36-in [900-mm] NF-C

Key No.	Quantity	Description	Material
1	1	Body	See "How to order" for material choices and styles.
2	1	Seat—hard backed	
3	1	Disc	
4	1	Upper stem	
6	1	Lower stem	
8	1	Key	SS
10	2 required for fire-safe valves	O-ring	FKM
11	1	O-ring	Buna-N
23	1	Upper bearing	DU® bearing
24	1	Upper bearing	DU bearing
25	2	Lower bearing	DU bearing
27	1	Set screw	18-8 SS
29	8	Screw	Carbon steel
30	8	Lock washer	Carbon steel



36 in

How to order

XX	XXXXX	-	X	X	X	X	XX	X
Fire Safety	Base Part Number		Body Configuration	Body Material*	Stem Material	Disc Material	Seat Elastomer	Actuation
Non–fire safe J0	Based on valve series and shutoff pressure. See page 12.		Lug 5 Ductile iron (lug) 1	416 SS 1 17-4-PH SS 2	316 SS 2 Aluminum bronze 4 Nickel-plated ductile iron 5 ZPEX-coated ductile iron A	Buna-N 31 FKM 34 EPDM 35	Bare stem 9 **Gear operators** Handwheel A Bare shaft E	

*Standard coating is green enamel; other coatings are available on request.

(Example: 36 in [900 mm], 150-psi lug, ductile iron lug, 416 SS body, 316 SS stem, aluminum bronze disc, EPDM seat, gear operator with handwheel—J025349-511435A

Series base part numbers and weights

Series NE-C*										
Description, in [mm]		**2 [50]**	**2½ [65]**	**3 [80]**	**4 [100]**	**5 [125]**	**6 [150]**	**8 [200]**	**10 [250]**	**12 [300]**
200 psi		22119	22120	22121	22122	22123	22124	22125	22126	22127
285 psi		22225	22226	22227	22228	22229	22230	22231	22232	22233
Weight, lbm/bare stem	Wafer	5.8	7.0	7.7	11.4	14.7	17.6	28.5	47.9	71.0
	Lug	8.0	9.9	10.7	17.0	24.5	28.5	43.5	65.9	98.5

Series NE-I*										
Description, in [mm]		**2 [50]**	**2½ [65]**	**3 [80]**	**4 [100]**	**5 [125]**	**6 [150]**	**8 [200]**	**10 [250]**	**12 [300]**
200 psi		22128	22129	22130	22131	22132	22133	22134	22135	22136
285 psi		22252	22253	22254	22255	22256	22257	22258	22259	22260
Wafer weight, lbm/bare stem	SS	4.9	6.4	6.9	10.2	13.7	16.4	28.4	44.8	66.8
	Aluminum bronze	4.7	6.2	6.7	9.9	13.4	16.0	28.0	44.3	66.3
Lug weight, lbm/bare stem	Bronze	6.8	8.7	9.5	15.7	23.1	27.0	42.0	64.4	96.8
	SS	7.0	8.9	9.7	16.0	23.5	27.5	42.5	64.9	97.5

Series NE-D*									
Description, in [mm]	**2 [50]**	**2½ [65]**	**3 [80]**	**4 [100]**	**5 [125]**	**6 [150]**	**8 [200]**	**10 [250]**	**12 [300]**
200 psi	22181	22129	25093	22183	22184	22185	22134	22186	22136
285 psi	22279	22253	25135	22281	22282	22283	22258	22284	22260
Wafer weight, lbm/bare stem	4.9	6.4	6.9	10.2	13.7	16.4	28.4	44.8	66.8

*Gear operator recommended for 8- to 12-in [200- to 300-mm] sizes.

Series NF-C*						
Description, in [mm]		**14 [350]**	**16 [400]**	**18 [450]**	**20 [500]**	**24 [600]**
150 psi		23820	23821	23822	23823	23824
285 psi		25318	25319	25320	25321	25322
Weight, lbm/bare stem	Wafer	102	166	214	257	401
	Lug	116	203	239	332	535

*Marine valves: consult SLB for B-255, B-256, and B-258 datasheets.

Marine series

Demco butterfly valves for marine applications meet all the requirements of US Coast Guard Marine Engineering Regulations as outlined in 46 CFR Part 56 and the ABS Standard, including tagging per MSS SP-25 and testing per MSS SP-67. All valves are shell tested at 1½ times the rated working pressure and seat tested at rated working pressure.

Marine Series										
Description	**in [mm]**	**2 [50]**	**2½ [65]**	**3 [80]**	**4 [100]**	**5 [125]**	**6 [150]**	**8 [200]**	**10 [250]**	**12 [300]**
200 psi		22923	22924	22925	22926	22927	22928	22929	22930	22931
285 psi		22914	22915	22916	22917	22918	22919	22920	22921	22922
Weight, lbm/bare stem, NE-C long-neck body										
Wafer	Ductile iron	5.8	7.0	7.7	11.4	14.7	17.6	28.5	47.9	71.0
Lug	Ductile iron	8.0	9.9	10.7	17.0	24.5	28.5	43.5	65.9	98.5
NE-I short-neck body										
Wafer	Ductile iron, SS	4.9	6.4	6.9	10.2	13.7	16.4	28.4	44.8	66.8
	Aluminum bronze	4.7	6.2	6.7	9.9	13.4	16.0	28.0	44.3	66.3
Lug	Aluminum bronze	6.8	8.7	9.5	15.7	23.1	27.0	42.0	64.4	96.8
	SS, steel	7.0	8.9	9.7	16.0	23.5	27.5	42.5	64.9	97.5

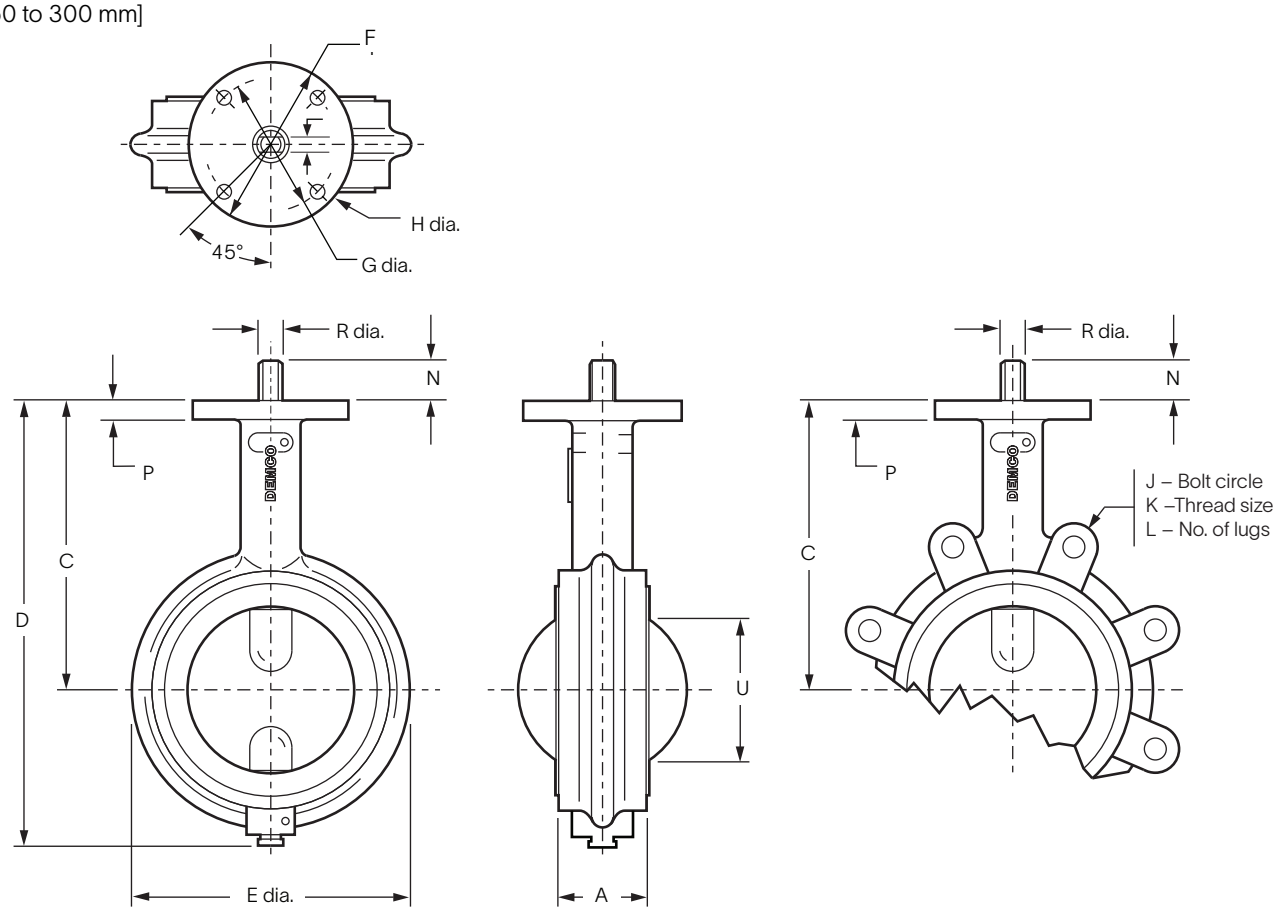
Description	**in [mm]**	**14 [350]**	**16 [400]**	**18 [450]**	**20 [500]**	**24 [600]**	**30 [750]**	**36 [900]**
150 psi		24611	24612	24613	24614	24615	25348	25349
285 psi		25302	25303	25304	25305	25306	25350	25308
Weight, lbm/bare stem, NF-C long-neck body								
Lug	Ductile iron	116	203	239	332	535	1,050	2,020
	Aluminum bronze	113	199	235	325	525	na	na

na = not applicable

Dimensional data (valves)

Series NE-C

2 to 12 in [50 to 300 mm]

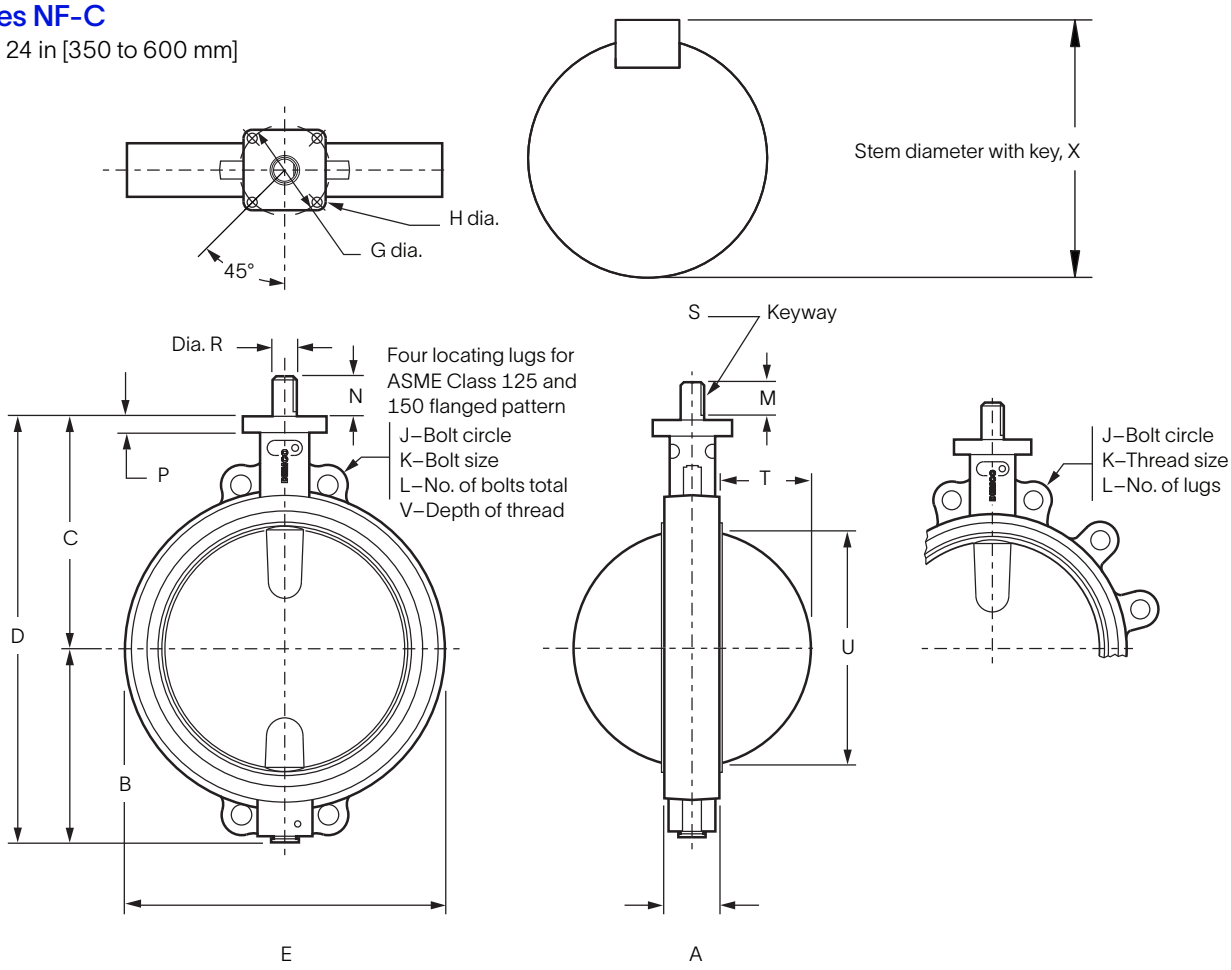


Size, in	A	C	D	E	F	G	H	J	K	L	N	P	R	S	U
2	1.74	5.62	8.44	4.12	4.00	3.25	0.408	4.75	5/8–11	4	1.00	0.44	0.625	0.375	1.467
2½	1.86	6.12	9.19	4.88	4.00	3.25	0.408	5.50	5/8–11	4	1.00	0.44	0.625	0.375	2.144
3	1.86	6.38	9.69	5.38	4.00	3.25	0.408	6.00	5/8–11	4	1.00	0.44	0.625	0.375	2.743
4	2.11	7.12	11.00	6.88	4.00	3.25	0.408	7.50	5/8–11	8	1.00	0.44	0.625	0.375	3.601
5	2.24	7.75	12.12	7.75	4.00	3.25	0.408	8.50	3/4–10	8	1.25	0.44	0.838	0.500	4.582
6	2.24	8.25	13.25	8.75	4.00	3.25	0.408	9.50	3/4–10	8	1.25	0.44	0.838	0.500	5.624
8	2.54	9.44	15.56	11.00	6.00	5.00	0.533	11.75	3/4–10	8	1.38	0.56	0.838	0.500	7.429
10	2.74	11.25	18.69	13.38	6.00	5.00	0.533	14.25	7/8–9	12	1.38	0.56	0.963	0.625	9.382
12	3.24	12.19	21.69	16.12	6.00	5.00	0.533	17.00	7/8–9	12	1.38	0.56	1.338	0.750	11.35
Size, mm															
50	44	143	214	105	102	83	10.36	121	5/8–11	4	25	11.2	15.88	9.53	37
65	47	155	233	124	102	83	10.36	140	5/8–11	4	25	11.2	15.88	9.53	54
80	47	162	246	137	102	83	10.36	152	5/8–11	4	25	11.2	15.88	9.53	70
100	54	181	279	175	102	83	10.36	191	5/8–11	8	25	11.2	15.88	9.53	91
125	57	197	308	197	102	83	10.36	216	3/4–10	8	32	11.2	21.29	12.70	116
150	57	210	337	222	102	83	10.36	241	3/4–10	8	32	11.2	21.29	12.70	142.8
200	65	240	395	279	152	127	13.54	298	3/4–10	8	35	14.2	21.29	12.70	189
250	70	286	475	340	152	127	13.54	362	7/8–9	12	35	14.2	24.46	15.88	238
300	82	310	551	409	152	127	13.54	432	7/8–9	12	35	14.2	33.99	19.05	288

Note: 2- to 12-in [50- to 300-mm] disc will open into Sch. 80 pipe ID.

Series NF-C

14 to 24 in [350 to 600 mm]



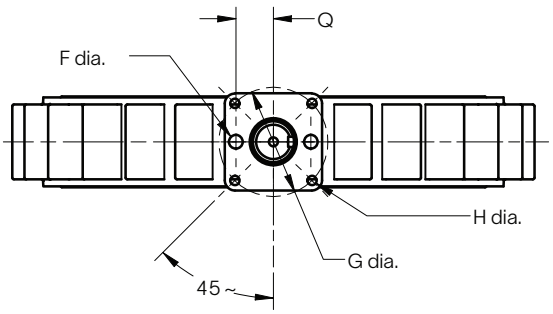
Size, in	A	B	C	D	E	G	H	J	K	L	M	N	P	R	S	T	U	X
14	3.00	10.63	12.75	23.4	16.20 17.3*	5.00	0.56	18.75	1–8 1*	12	2.00	2.25	0.88	1.375	5/16 × 5/32	5.12	12.89	1.512
16	4.00	11.66	13.75	25.4	18.16 19.2*	5.00	0.56	21.25	1–8 1*	16	2.00	2.25	0.88	1.625	3/8 × 3/16	5.65	14.76	1.783
18	4.50	12.96	14.75	27.7	20.35 21.4*	6.50	0.81	22.75	1⅛–7 1⅛*	16	2.50	2.75	1.00	1.875	½ × 3/16	6.37	16.63	2.029
20	5.00	13.97	15.75	29.7	22.63 23.6*	6.50	0.81	25.00	1⅛–7 1⅛*	20	2.50	2.75	1.00	1.875	½ × 3/16	7.12	18.58	2.029
24	6.00	16.19	19.00	35.2	27.31 28.3*	6.50	0.81	29.50	1¼–7 1¼*	20	2.50	3.00	1.00	1.875	½ × 3/16	8.67	22.56	2.029
Size, mm																		
350	76	270	324	594	411 439*	127	14.2	476	1–8 1*	12	51	57	22.4	34.93	7.94 × 3.97	130	327	38.40
400	102	296	349	645	461 488*	127	14.2	540	1–8 1*	16	51	57	22.4	41.28	9.53 × 4.76	144	375	45.29
450	114	329	375	704	517 544*	165	20.6	578	1⅛–7 1⅛*	16	64	57	25.4	47.63	12.70 × 4.76	162	422	51.54
500	127	355	400	754	575 599*	165	20.6	635	1⅛–7 1⅛*	20	64	57	25.4	47.63	12.70 × 4.76	181	472	51.54
600	152	411	483	894	694 719*	165	20.6	749	1¼–7 1¼*	20	64	76	25.4	47.63	12.70 × 4.76	220	573	51.54

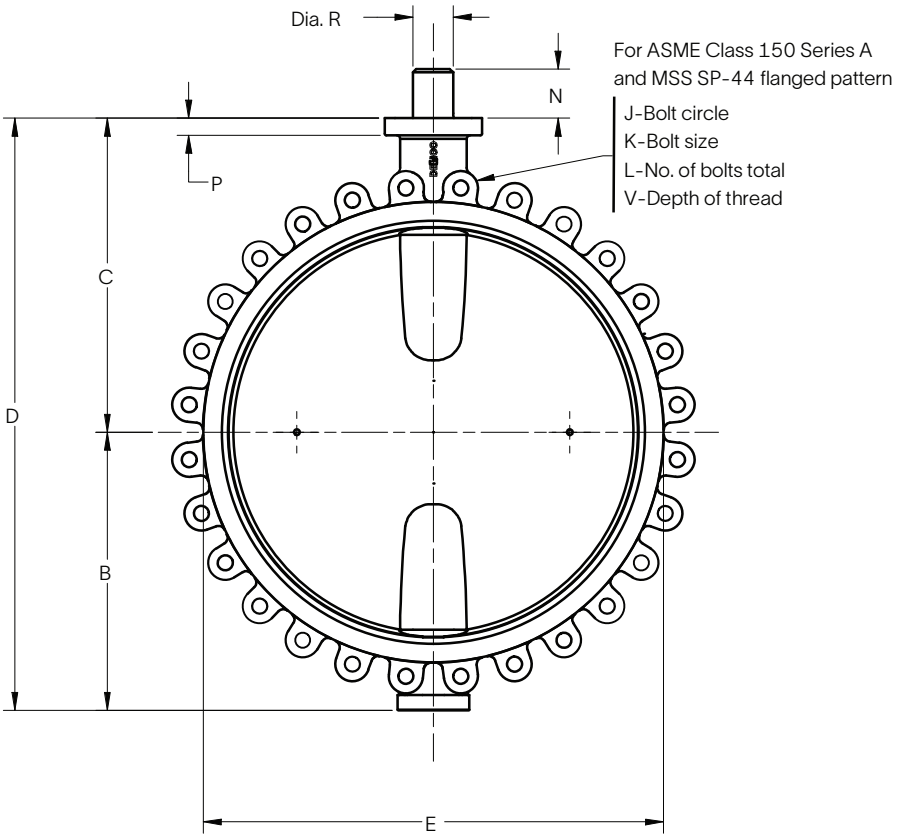
*Wafer valve dimension is the bottom figure. Lug valve dimension is the top figure.

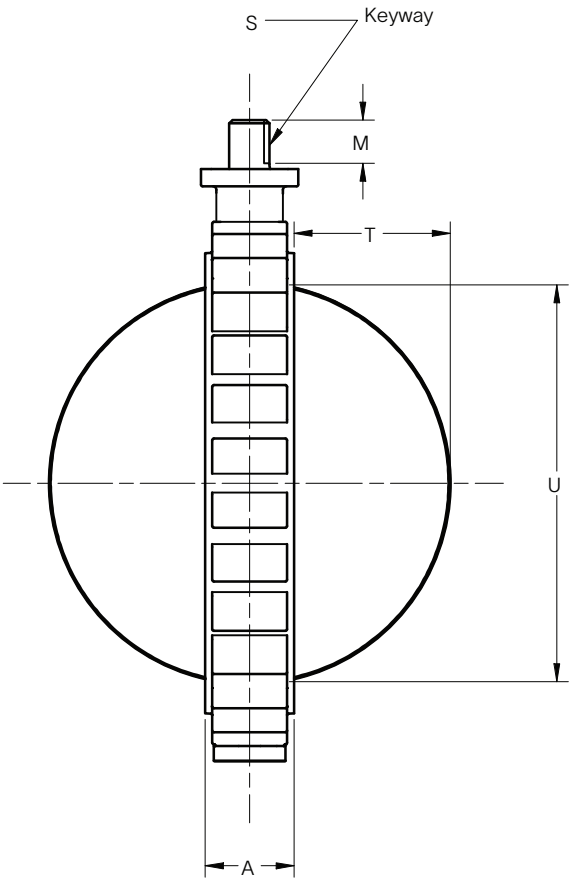
Dimensional data (valves)

Series NF-C

30 to 36 in [750 to 900 mm]



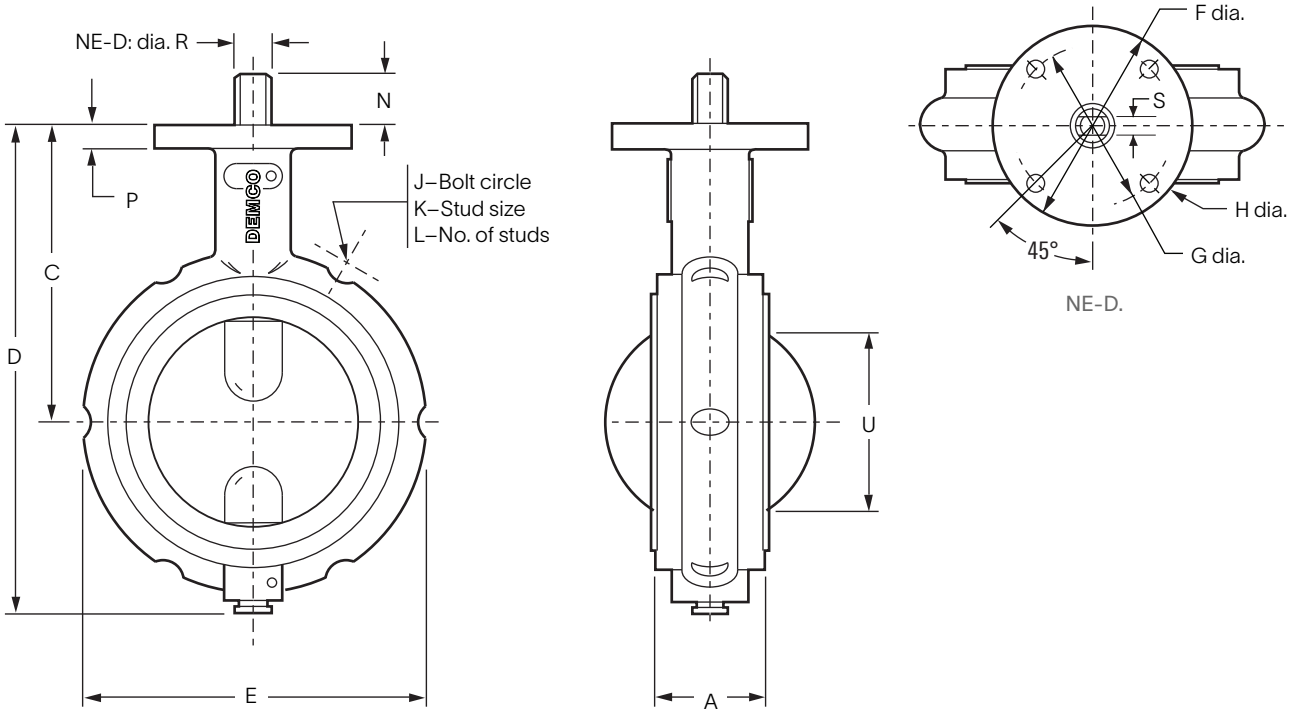




Size, in	A	B	C	D	E	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X
30	6.50	21.2	23.0	44.2	34.1	8.00	0.69	36.00	1¼–7UNC	28	3.4	3.7	1.2	3.000	¾ × ⅜	11.45	28.55	1.750	28.67	3.327
36	7.88	25.0	27.8	52.8	40.5	10.25	0.81	42.75	1½–6UNC	32	4.0	4.4	1.5	3.625	⅞ × 7/16	13.86	34.71	1.750	34.70	4.009
Size, mm																				
750	165	538	584	1,123	866	203	17.53	914	1¼–7UNC	28	86	94	30.5	76.2	19.05 × 9.53	291	725	44.45	728	84.51
900	200	635	706	1,342	1,029	260	20.57	1,086	1½–6UNC	32	102	112	38.1	92.1	22.23 × 11.11	352	882	44.45	881	101.8

Series NE-D

2 to 12 in [50 to 300 mm]



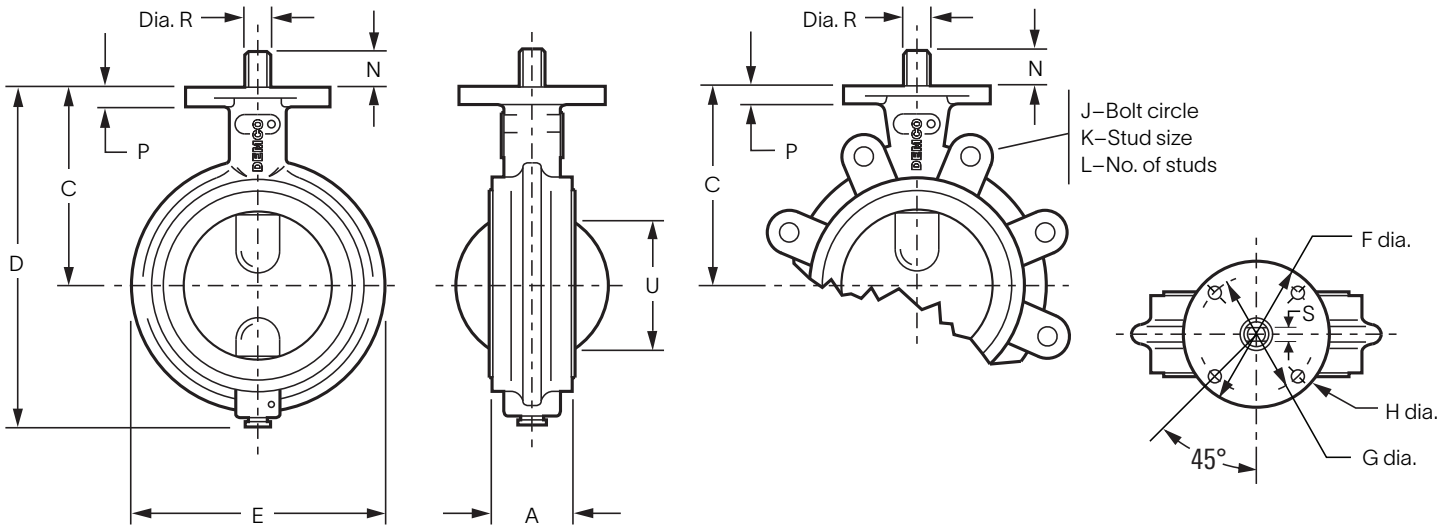
NE-D.

Size, in	A	C	D	E	F	G	H	J	K	L	N	P	R	S	U
2	1.74	3.94	6.75	4.12	4.00	3.25	0.408	4.27	⅜	4	1.00	0.44	0.625	0.375	1.467
2½	1.86	4.44	7.50	4.88	4.00	3.25	0.408	5.31	⅜	4	1.00	0.44	0.625	0.375	2.144
3	1.86	4.88	8.19	5.38	4.00	3.25	0.408	4.91	⅜	6	1.00	0.44	0.625	0.375	2.743
4	2.11	6.00	9.88	6.88	4.00	3.25	0.408	7.03	½	6	1.00	0.44	0.625	0.375	3.601
5	2.24	6.00	10.38	7.75	4.00	3.25	0.408	7.56	½	6	1.25	0.44	0.838	0.500	4.582
6	2.24	6.50	11.50	8.75	4.00	3.25	0.408	9.16	½	8	1.25	0.44	0.838	0.500	5.624
8	2.54	8.06	14.19	11.00	6.00	5.00	0.533	11.72	⅝	8	1.38	0.56	0.838	0.500	7.428
10	2.74	9.97	17.41	13.38	6.00	5.00	0.533	13.72	⅝	8	1.38	0.56	0.963	0.625	9.382
12	3.24	10.91	20.41	16.12	6.00	5.00	0.533	16.62	½	12	1.38	0.56	1.338	0.750	11.35
Size, mm															
50	44	100	171	105	102	83	10.36	108	10	4	25	11.2	15.88	9.53	37
65	47	113	191	124	102	83	10.36	135	10	4	25	11.2	15.88	9.53	54
80	47	124	208	137	102	83	10.36	125	10	6	25	11.2	15.88	9.53	70
100	54	152	251	175	102	83	10.36	179	15	6	25	11.2	15.88	9.53	91
125	57	152	264	197	102	83	10.36	192	15	6	32	11.2	21.29	12.70	116
150	57	165	292	222	102	83	10.36	233	15	8	32	11.2	21.29	12.70	142.8
200	65	205	360	279	152	127	13.54	298	16	8	35	14.2	21.29	12.70	189
250	70	253	442	340	152	127	13.54	348	16	8	35	14.2	24.46	15.88	238
300	82	277	518	409	152	127	13.54	422	15	12	35	14.2	33.99	19.05	288

Dimensional data (valves)

Series NE-I

2 to 12 in [50 to 300 mm]



Size, in	A	C	D	E	F	G	H	J	K–Thread Size	L–No. of Lugs	N	P	R	S	U
2	1.74	3.94	6.75	4.12	4.00	3.25	0.408	4.27	5/8–11	4	1.00	0.44	0.625	0.375	1.467
2½	1.86	4.44	7.50	4.88	4.00	3.25	0.408	5.31	5/8–11	4	1.00	0.44	0.625	0.375	2.144
3	1.86	4.88	8.19	5.38	4.00	3.25	0.408	4.91	5/8–11	6	1.00	0.44	0.625	0.375	2.743
4	2.11	6.00	9.88	6.88	4.00	3.25	0.408	7.03	5/8–11	6	1.00	0.44	0.625	0.375	3.601
5	2.24	6.00	10.38	7.75	4.00	3.25	0.408	7.56	3/4–10	6	1.25	0.44	0.838	0.500	4.582
6	2.24	6.50	11.50	8.75	4.00	3.25	0.408	9.16	3/4–10	8	1.25	0.44	0.838	0.500	5.624
8	2.54	8.06	14.19	11.00	6.00	5.00	0.533	11.72	3/4–10	8	1.38	0.56	0.838	0.500	7.428
10	2.74	9.97	17.41	13.38	6.00	5.00	0.533	13.72	7/8–9	8	1.38	0.56	0.963	0.625	9.382
12	3.24	10.91	20.41	16.12	6.00	5.00	0.533	16.62	7/8–9	12	1.38	0.56	1.338	0.750	11.35
Size, mm															
50	44	100	171	105	102	83	10.36	108	5/8–11	4	25	11.2	15.88	9.53	37
65	47	113	191	124	102	83	10.36	135	5/8–11	4	25	11.2	15.88	9.53	54
80	47	124	208	137	102	83	10.36	125	5/8–11	6	25	11.2	15.88	9.53	70
100	54	152	251	175	102	83	10.36	179	5/8–11	6	25	11.2	15.88	9.53	91
125	57	152	264	197	102	83	10.36	192	3/4–10	6	32	11.2	21.29	12.70	116
150	57	165	292	222	102	83	10.36	233	3/4–10	8	32	11.2	21.29	12.70	142.8
200	65	205	360	279	152	127	13.54	298	3/4–10	8	35	14.2	21.29	12.70	189
250	70	253	442	340	152	127	13.54	348	7/8–9	8	35	14.2	24.46	15.88	238
300	82	277	518	409	152	127	13.54	422	7/8–9	12	35	14.2	33.99	19.05	288

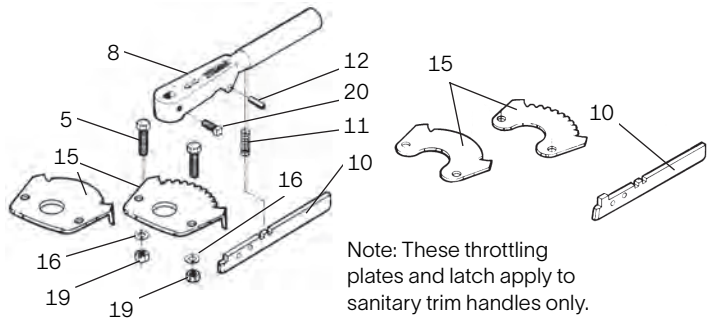
Handles

How to order

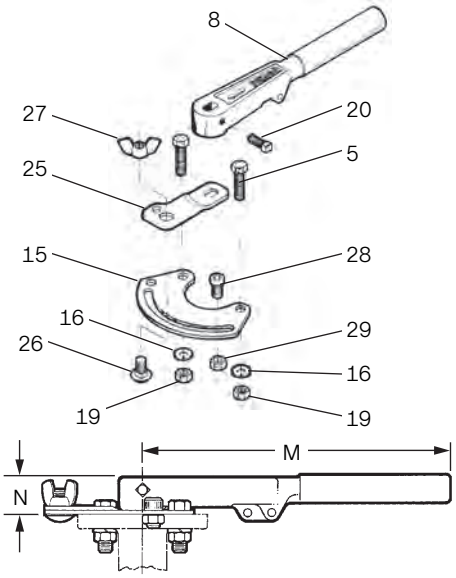
XXXXX	-	00X
Base part number		Trim

Trim	
Standard	1
Corrosion resistant	2

Description, in [mm]	2 to 4 [50 to 100]	5 to 6 [125 to 150]	8 [200]	10 [250]	12 [300]
Ten-position, standard	24227	24228	24229	24230	24231
Two-position, standard	24232	24233	24234	24235	24236
Throttling, standard	24252	24253	24254	24255	24256
Weight, lbm	2.3	2.9	6.5	6.5	6.5



Note: These throttling plates and latch apply to sanitary trim handles only.



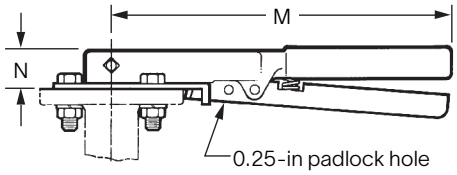
Two- and 10-Position Locking Handles

Key No.	Description	Material Standard	Corrosion Resistant
5	Screw	Steel	SS
8	Handle	Ductile iron	Ductile iron
10	Latch	Zinc-plated steel	SS
11	Spring	Spring steel	SS
12	Spring pin	Spring steel	SS
15	Throttle plate	Zinc-plated steel	SS
16	Lockwasher	Steel	SS
19	Nut	Steel	SS
20	Set screw	Steel	SS
25*	Throttling tab	Zinc-plated steel	SS
26*	Carriage bolt	Steel	SS
27*	Wing nut	Steel	SS
28*	Screw	Steel	SS
29*	Nut	Steel	SS

* For throttling, memory stop handle only.

Infinite Throttling with Memory Stop Handle

Dimension, in [mm]	2 to 4 [50 to 100]	5 to 6 [125 to 150]	8 to 12 [200 to 300]
M	9.50 [241]	11.00 [279]	15.00 [381]
N	0.85 [21.6]	1.07 [27.2]	1.13 [28.7]



Two- and 10-Position Locking Handles

Dimension, in [mm]	2 to 4 [50 to 100]	5 to 6 [125 to 150]	8 to 12 [200 to 300]
M	9.50 [241]	11.00 [279]	15.00 [381]
N	0.87 [22.1]	1.07 [27.2]	1.13 [28.7]

Worm gear operators

Manual worm gear operators are self-locking in all positions. Adjustment screws stop travel at open and closed positions. Position indicator is standard on all models. Gearing is permanently lubricated.

Gray iron weatherproof case and cover enclose a ductile iron gear and hardened steel worm supported by bronze bearings. Standard external coating is green enamel. White epoxy, coal tar epoxy, and inorganic zinc primer are available upon special request.

How to order

2 to 12 in [50 to 300 mm]

XXXXX	-	X	X	X	X	X
Base part number		Case Material	Gear Material	Actuation	Valve Size, in [mm]	Configuration
		Gray iron 2	Ductile iron 1	Handwheel 3	2 to 4 [50 to 100] 1	Standard 2
				None 9	5 and 6 [125 and 150] 5	
					8 [200] 7	
					10 [250] 8	
					12 [300] 9	

Description, in [mm]	2 to 4 [50 to 500]	5 to 6 [125 to 150]	8 [200]	10 [250]	12 [300]
Operator base number	22622	22622	22623	22623	22623
Additional information					
Weight, lbm [kg] with handwheel	7.8 [3.5]	7.8 [3.5]	17.2 [7.8]	17.2 [7.8]	18.6 [8.4]

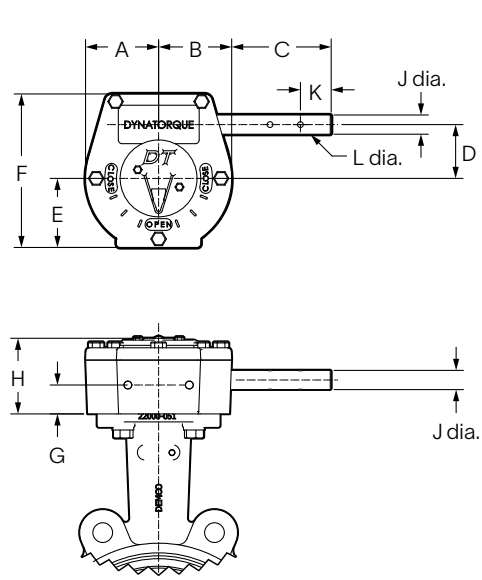
14 to 36 in [350 to 900 mm]

XXXXX	-	X
Base part number		Gear operator assembly part number
		Gear operator less actuation 09
		Gear operator with handwheel 03

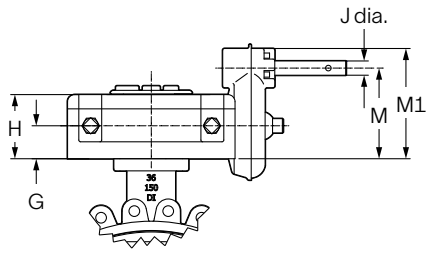
Description, in [mm]	14 [350]	16 [400]	18 to 20 [450 to 500]	24 [600]	30 [750]	36 [900]
Operator base number	2060229	2060230	2060231	2060232	2060332	2060334
Additional information						
Weight, lbm [kg] (with handwheel)	19.0 [8.6]	22.0 [10.0]	33.0 [15.0]	43.0 [19.5]	107.0 [48.5]	137.0 [62.1]

Valve Size, in [mm]	Gear Ratio	Turns/90° Rotation	Maximum Input Torque, lbf.ft
2 to 6 [50 to 150]	30:1	7½	46
8 to 12 [200 to 300]	48:1	12	65
14 to 16 [350 to 400]	48:1	12	65
18 to 20 [450 to 500]	57:1	14¼	98
24 [600]	60:1	15	164
30 [750]	316:1	79	104
36 [900]	240:1	60	174

(Example: 6 in [150 mm], gray iron case, ductile iron gear, with handwheel, for 5- and 6-in valves, standard configuration—22622-21352)



2- to 24-in [50- to 600-mm] valves.



30- to 36-in [750- to 900-mm] valves.

Dimensional Data															
Size, in	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**	**L**	**M**	**M1**	**N**	**R**
2 to 6	2.38	2.38	3.23	1.75	2.25	5	1.1	2.62	0.625	1	0.19	–	–	6	4.23
8 to 10	3	3	3.24	2.51	2.98	6.71	1.37	2.92	0.625	1	0.19	–	–	6	4.24
12	3	3	3.24	2.51	2.98	6.71	1.37	2.92	0.625	1	0.19	–	–	10	4.86
14	3	3	4.98	2.51	2.98	6.71	1.37	2.92	0.625	1.25	0.19	–	–	12	8.98
16	3	3	5.73	2.51	2.98	6.71	1.37	2.92	0.625	1.25	0.25	–	–	18	10.73
18 to 20	3.2	3.2	7.05	3	3.2	7.84	1.5	3.18	1	1.25	0.25	–	–	18	12.05
24	3.56	3.56	7.94	3.63	3.25	8.38	1.63	3.54	1	1.25	0.38	–	–	24	15.06
30	5.68	9.92	4.09	4.3	4.44	14.24	2	4.2	1	1.25	0.39	4.94	6.51	18	9.09
36	6.49	9.6	4.09	7.3	6.5	17.41	2.31	5.12	1	1.25	0.39	5.19	6.57	24	11.21
Size, mm															
50 to 150	60	60	82	44	57	127	28	67	16	25	5	–	–	152	107
200 to 250	76	76	82	64	76	170	35	74	16	25	5	–	–	152	108
300	76	76	82	64	76	170	35	74	16	25	5	–	–	254	123
350	76	76	126	64	76	170	35	74	16	32	5	–	–	305	228
400	76	76	146	64	76	170	35	74	16	32	6	–	–	457	273
450 to 500	81	81	179	76	81	199	38	81	25	32	6	–	–	457	306
600	90	90	202	92	83	213	41	90	25	32	10	–	–	610	383
750	144	252	104	109	113	362	51	107	25	32	10	125	165	457	231
900	165	244	104	185	165	442	59	130	25	32	10	132	167	610	285

Note: DT-1 gear operator dimensions became standard gear operator midyear 2000 (for old style DT-3, consult SLB).

General technical information

Pressure rating

Three drop-tight pressure ratings are offered for Demco butterfly valves. Normally, 200-psi shutoff is used in butterfly applications. However, 285-psi shutoff is optionally available for higherpressure applications. For smaller actuator sizing, 50-psi valves offer reduced torque.

For reduced torque, throttling valves—which do not provide drop-tight closure—are available.

Vacuum rating

Demco butterfly valves will seal against 10 um of vacuum (29.9-in Hg). For reduced torque and extended seat life, 50-psi discs are recommended for the dry service conditions found in many vacuum applications.

Marking

Each valve is positively identified by marking and tagging per MSS SP-25.

Actuation

Positive latch handles, worm gear operators, and automatic actuators are available and interchangeable.

The Demco butterfly valve's top flange is dimensionally compatible with other butterfly valves. With the optional “utility top” stem, the Demco valve interchanges directly with other valves, enabling valve replacement without the need for new actuation.

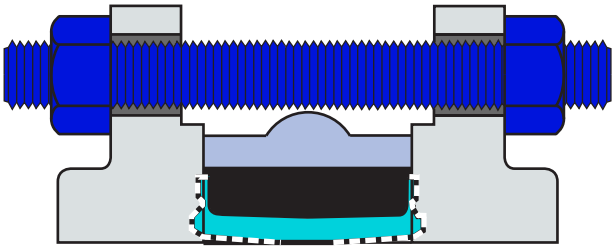
Installation and maintenance

Demco butterfly valves are bidirectional, with identical flow way from either face. To install, simply close the valve, insert between flanges, and make up with studs or cap screws. No regular maintenance or lubrication is required.

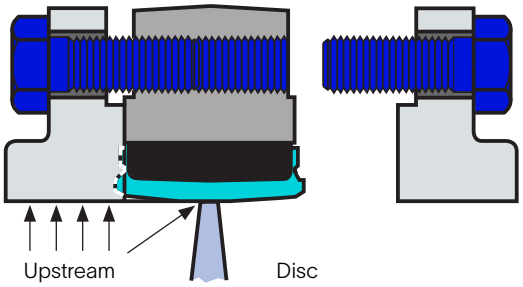
Disassembly for inspection or replacement of parts is simple. Open the valve, remove handle or actuator, remove tangential pins, pull out the stems, and push the disc and seat out of the body. Reassemble in reverse order, with a small amount of general-purpose nonhydrocarbon-based lubricant on the outside of stems, seat, and disc flats.

Steel or cast iron flanges of either raised- or flat-faced type are suitable for use with Demco butterfly valves. Plastic flanges are subject to damage at installation by overtightening the bolting and may deflect or cup, resulting in flange leaks. Refer proposed plastic flange installations to SLB for review and recommendation.

Throttling discs with no seat interference do not provide a stem seal. Stem O-rings are provided for this application. Flange gaskets assist the O-rings in 2- to 12-in [50- to 300-mm] valves and must be used only with throttling discs.



Wafer valve connection.



Lug valve connection with downstream flange removed.

Torque data

The torque required to operate a given butterfly valve is determined by two factors: friction of the disc and the seat. The interference and dynamic forces of flow through the valve tend to open or close the valve. The actuator torque output must meet or exceed the maximum torque requirement of the valve. Dry service increases opening torque significantly. Consult SLB for dry service torque requirements.

The disc of a butterfly valve in partially opened condition is subject to lift forces from passage of fluid over its surfaces. This effect is analogous to an airplane wing and results in an unbalanced turning force on the disc. The dynamic torque is proportional to the pressure drop through the valve and may become significant in some applications.

Dynamic torque typically is at a maximum when the disk opening is about 70°. Under high differential pressure conditions, such torque may exceed the design strength of stems, connections, or actuators.

Butterfly Valve Torques—Normal Wet Opening, lbf.in

Valve Size, in [mm]	2 [50]	2½ [65]	3 [80]	4 [100]	5 [125]	6 [150]	8 [200]	10 [250]	12 [300]	14 [350]	16 [400]	18 [450]	20 [500]	24 [600]	30 [750]	36 [900]
285-psi shutoff	225	326	510	765	1,190	1,530	2,550	4,125	7,000	15,000	20,500	38,400	45,000	65,000	82,000	90,000
200-psi shutoff	132	192	300	450	700	900	1,500	2,650	4,500	–	–	–	–	–	–	–
150-psi shutoff	–	–	–	–	–	–	–	–	–	7,740	10,280	12,600	15,600	30,000	50,000	67,500
50-psi shutoff	108	108	192	264	450	550	1,000	1,800	3,000	4,500	6,500	8,400	10,800	20,000	30,000	50,000

Standard material data

Bodies						
Description		**NE-C**	**NF-C 14 to 24 in**	**NF-C 30 and 36 in**	**NE-I**	**NE-D**
Ductile iron	A395 (60-40-18)*	Wafer and lug	Wafer and lug	Wafer and lug	Wafer	Wafer
Bronze	B148 (952)		Wafer and lug		Wafer and lug	
SS	A351 (CF8M)				Wafer and lug	
Discs						
Ductile iron or nickel plated	A536 (65-45-12)	●	●	●	●	●
Bronze	B148 (955)		●	●		
316 SS	A743 (CF8M)	●	●	●	●	●
Stems						
416 SS	QQ-S-764-B	●	●	●	●	●
316 SS	AMS 5648 B	●	●	●	●	●
17-4 PH SS	AMS 5643	●	●		●	●

*Conforms to US Coast Guard Marine Engineering Regulations, 46 CFR Part 56. Consult SLB for special material requirements.

Seats vary. See pages 9, 10, and 11 for seat material description and part number scheme for available options for different valve series.

Buna-N is a general-purpose elastomer compounded for maximum hydrocarbon or petroleum resistance. Temperature rating is 0 to 180 degF [–18 to 82 degC], the same as nitrile, Hycar®, and NBR.

General service EPDM is recommended for water service. Resistance to saturated steam up to 275 degF [135 degC] is superior. EPDM is suitable in alkaline solutions. EPDM is not suitable for oil or hydrocarbons. The peroxide-cured version is rated to 20 to 275 degF [–6 to 135 degC].

FKM is superior at elevated temperatures and in harsh chemical environments. FKM is not suitable for hot water or steam. Temperature rating is 20 to 300 degF [–6 to 149 degC], the same as fluoroelastomer.

Natural rubber generally is superior to other elastomers in abrasion resistance and is recommended for dry material handling. Use in oils and solvents is not recommended. Temperature rating is from –30 to 150 degF [–34 to 65 degC].

Other seat elastomers are available for special applications. Consult SLB.

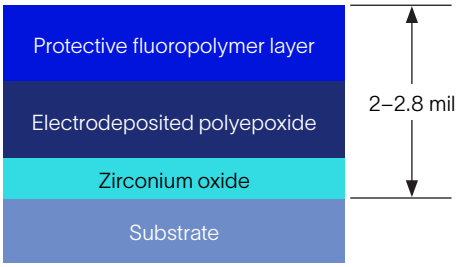
ZPEX coating system

The ZPEX coating is designed specifically for severe service environments. ZPEX system is ideal for oil and gas, saltwater, water treatment, chemical processing, and other extreme applications. Unlike single-component coatings, the ZPEX system has been designed as a system of interdependent thin-film coatings working in concert to provide the ultimate protection for extreme environments.

The ZPEX system begins with an electrodeposited epoxy primer (e-coat), wherein the part is immersed in a series of tanks consisting of cleaning, pretreatment, and epoxy coating. This primer process creates a chemical-resistant base coat that forms an electromolecular bond with the substrate as well as provides corrosion protection to 100% of the part, even in hard-to-reach recesses and threads.

To complete the ZPEX system, a fluoropolymer topcoat is applied over the e-coat primer. The superior bond created in our patented crosslinking of the epoxy and fluoropolymer coatings prevents the ZPEX system from chipping or peeling. It also prevents corrosion from creeping under the coating if ever compromised.

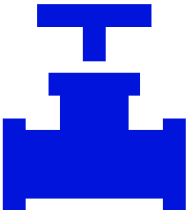
The system can replace stainless steel in most corrosive environments, including saltwater and hydrogen sulfide. The ZPEX system has also outlasted stainless steel 7× over at a fraction of the cost. The lead time is approximately 1 week.



ZPEX layer composition.

ZPEX system advantages

- Lower energy consumption while increasing flow rates in pump applications
- Prevention of thread galling
- Reduced downtime
- High abrasion resistance
- Thin film for application on ring grooves, Victaulic® connections, threaded connections, machined surfaces, and recessed areas
- < 4,000-h ASTM B117 salt spray
- Excellent performance in HPHT autoclave testing
- 500-degF [260-degC] maximum operating temperature
- 2.0- to 2.8-mil dry film thickness
- Low coefficient of friction (0.016)



Durable resilient-seated Demco butterfly valves

Designed for dependable, heavy-duty performance in abrasive and corrosive service conditions, Demco butterfly valves are commonly selected for a number of oilfield applications, including drilling and production.