

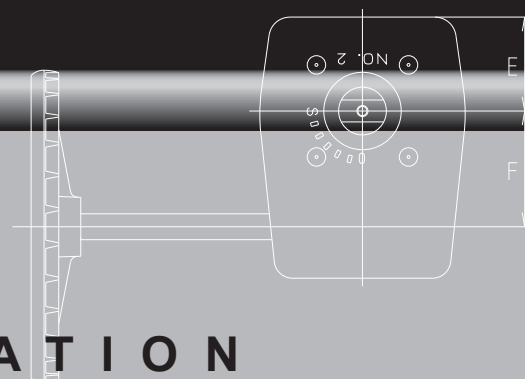
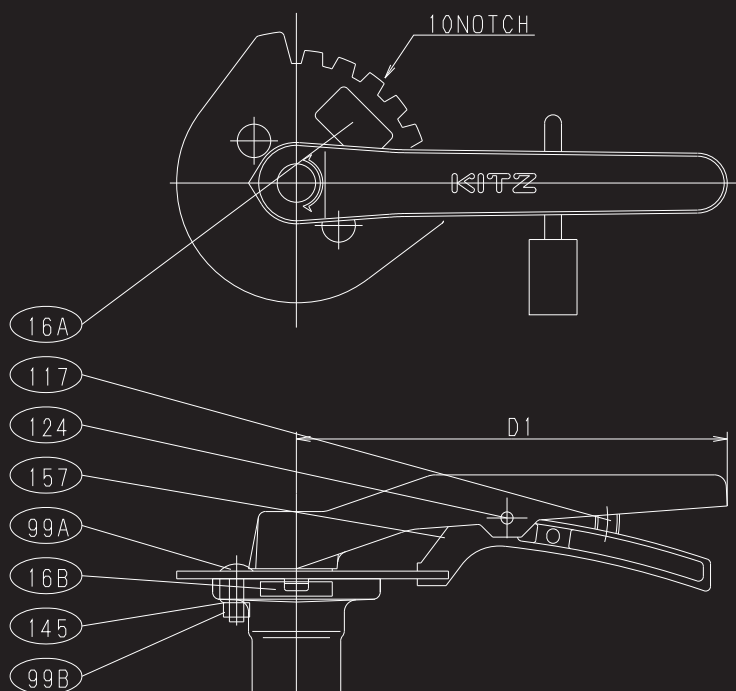
Technical drawing of a vertical rod assembly, likely a component of a mechanical system. The drawing shows a central rod with various components labeled with numbers and letters, and dimensions indicated.

Labels:

- A
- 10
- 9
- 98
- 45B
- 45A
- 67A
- 48
- 1
- 3
- 67B
- 106
- 4
- 103
- 67C
- 85

Dimensions:

- H (Total height)
- H1 (Height from top flange to middle flange)
- H2 (Height from middle flange to bottom flange)
- d (Rod diameter)
- D (Outer diameter of the middle section)
- L (Length of the bottom section)



KITZ CORPORATION

Distributed by Osland Piping Supply

Ph: 651-552-9773 Fax: 651-450-4502 E Mail: sales@oslandpiping.com

A PRODUCT OF TECHNOLOGY



VISIT THE KITZ WEBSITE FOR IMPORTANT INFORMATION:

- **KITZ** Corporate Background - **Since 1951!**
- Product Specifics
- Contact Information (worldwide)
- Customer Access (MTR printout, etc.)
- Technical Data/Catalogs and much more...



www.kitzus-hca.com



KITZ®

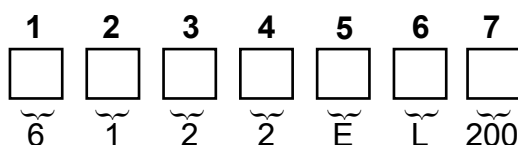
GENERAL INDEX

DJ SERIES BUTTERFLY VALVES

Page

GENERAL TERMS & CONDITIONS/WARRANTY	BFV-2
ILLUSTRATED INDEX	BFV-3
ENGINEERING DATA INDEX	BFV-10

CODE NUMBER SYSTEM



1	SERIES STYLE	CODE
	WAFER	5
	LUG	6

2	BODY	CODE
	DUCTILE IRON	1

3	DISC/STEM	CODE
	DUCTILE IRON + ENP / 410 SS	1
	ALUMINUM BRONZE / 410 SS	2
	316 SS / 329 SS	3
	316 SS / 316 SS (1)	4

4	PRESSURE	CODE
	150 PSI (5)	1
	200 PSI	2
	250 PSI (3)	3

5	LINER	CODE
	NBR (BUNA-N)	B
	EPDM	E

6	OPERATOR	CODE
	LEVER (2)	L
	GEAR (4)	G
	BARE STEM	X

7	SIZE	CODE
	2"	200
	3"	300
	4"	400
	5"	500
	6"	600
	8"	800
	10"	910
	12"	912
	14"	914
	16"	916
	18"	918
	20"	920
	24"	924

NOTES:

- (1) 150 PSI Max.
- (2) 2" - 8"
- (3) 2" - 12"
- (4) 10" - 24" Standard (2" - 8" Optional)
- (5) Standard for 14" - 24"

GENERAL TERMS AND CONDITIONS

ACCEPTANCE

All quotations are for acceptance within 30 days from date of quotation unless extended in writing. In the event a purchase order is placed after this time, the Seller's company reserves the right to requote prices of all valves offered. All orders and contracts are subject to credit approval and acceptance by KITZ.

FREIGHT

All materials will be shipped F.O.B. point of shipment – no freight allowance unless otherwise stated and agreed upon with the Buyer.

PRICES

There will be added to all prices quoted any sales, excise, or similar tax which Seller may be required to collect on or in connection with the sale. Seller reserves the right to cancel any order in the event that selling prices shall be established by Federal, State or other governmental regulation with respect to the products covered by the order which shall be lower than the prices specified in the order.

ESCALATION TERMS

Prices shown in this price schedule reflect the costs in effect at the time of publication. These prices will remain firm on all products with a quoted delivery of twenty six (26) weeks or less. On products with a quoted delivery of more than 26 weeks, the Seller has a right to price and invoice at the applicable price sheet in effect at the time of shipment. In no event will the

invoiced price be less than price originally quoted.

DEFERRED SHIPMENTS

If for any reason the Buyer desires to delay shipments more than 30 days after manufacturing or to place a hold or to stop the order during the manufacturing cycle, the Seller's company reserves the right to consider the order cancelled and to invoke cancellation charges.

CREDIT TERMS

As quoted. Overdue balances will be subject to 1.5% service charge per month on such indebtedness.

DELIVERIES

Shipments made to the Buyer shall at all times be subject to the approval of Seller's Credit Department. All schedules of shipments are estimated as closely as possible and Seller will use its best effort to ship within the time schedule but does not guarantee to do so. Seller shall not be liable for any direct, indirect, or consequential damage or loss caused by delay in delivery, regardless of the cause of delay. Items offered from stock are subject to prior sale.

RETURNS

No returns are allowed without prior arrangements made with the Seller. Product considered for return must be in new, resalable condition and of current design.

WARRANTY

Seller will replace without charge or refund the purchase price of products manufactured by Seller which prove to be defective in material or workmanship, provided in each case that the product is properly installed and is used in the service for which Seller recommends it and that written claim, specifying the alleged defect, is presented to the Seller within one year from the date of shipment. Seller shall in no event be responsible for claims of A) labor, expenses, or other damages occasioned by defective parts or products or for B) consequential or secondary damages.

The Warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states Buyer's exclusive remedy and Seller's exclusive liability.

DESIGN

Because of a policy of continuous product improvement, Seller reserves the right to change design, materials or specifications without notice. There will be a charge for modifying an order after it has been entered when such change or modification results in additional engineering or clerical work for either KITZ or its suppliers.

NOTE

KITZ reserves the right to correct any obvious clerical errors in quotations, invoices and other contracts.

DJ SERIES BUTTERFLY VALVES

ILLUSTRATED INDEX

NUMERICAL INDEX

CODE # PAGE

2" - 8"

5112BFV-5-6
5122BFV-5-6
5141*BFV-5-6
6112BFV-5-6
6122BFV-5-6
6141*BFV-5-6

10" - 12"

5112BFV-7
5122BFV-7
5141*BFV-7
6112BFV-7
6122BFV-7
6141*BFV-7

14" - 24"

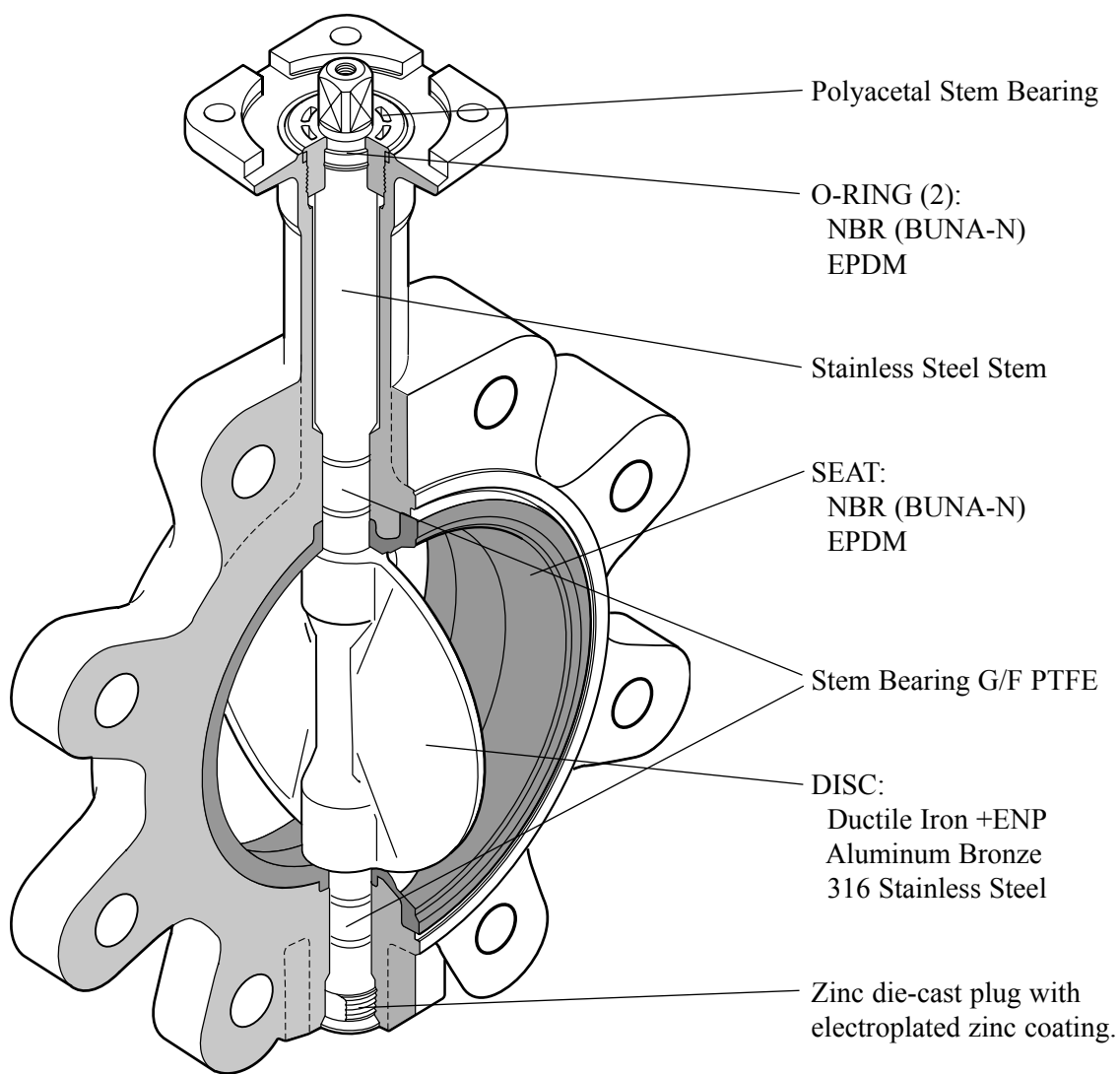
5111BFV-9
5121BFV-9
5131BFV-9
5141*BFV-9
6111BFV-9
6121BFV-9
6131BFV-9
6141*BFV-9

2" - 8"	10" - 12"	14" - 24"
Ductile Iron Body • Extended Neck DISC: DI • AB • 316SS LINER: NBR • EPDM	Ductile Iron Body • Extended Neck DISC: DI • AB • 316SS LINER: NBR • EPDM	Ductile Iron Body • Extended Neck DISC: DI • AB • 316SS LINER: NBR • EPDM
<p>WAFER</p>  <p>200 PSI Code # 5112(B/E)(L/G) Code # 5122(B/E)(L/G) *Code # 5141(B/E)(L/G)</p>	<p>WAFER</p>  <p>200 PSI Code # 5112(B/E)G Code # 5122(B/E)G *Code # 5141(B/E)G</p>	<p>WAFER</p>  <p>150 PSI Code # 5111(B/E)G Code # 5121(B/E)G *Code # 5141(B/E)G</p>
<p>LUG</p>  <p>200 PSI Code # 6112(B/E)(L/G) Code # 6122(B/E)(L/G) *Code # 6141(B/E)(L/G)</p>	<p>LUG</p>  <p>200 PSI Code # 6112(B/E)G Code # 6122(B/E)G *Code # 6141(B/E)G</p>	<p>LUG</p>  <p>150 PSI Code # 6111(B/E)G Code # 6121(B/E)G *Code # 6141(B/E)G</p>

*316 stem limit to 150 psi

DJ SERIES BUTTERFLY VALVES

SIZE 2" - 12"

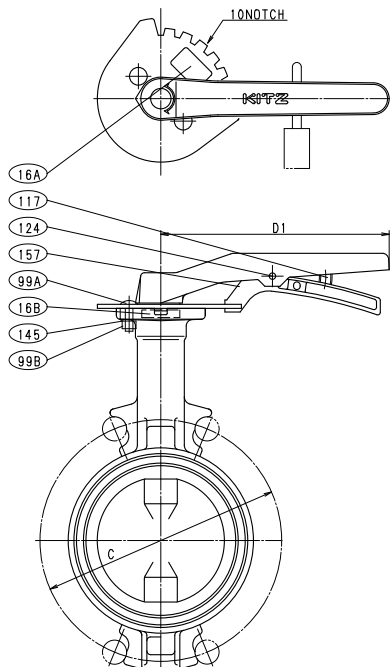
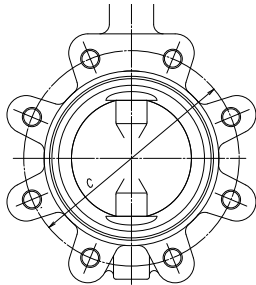
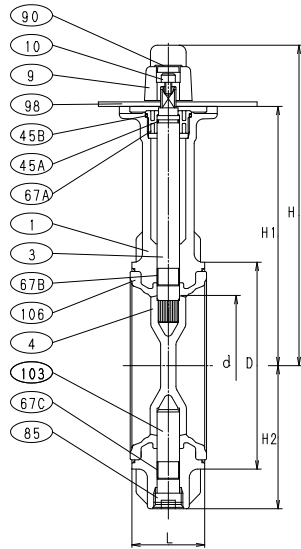


Lug Style

BUTTERFLY VALVES - 200 PSI*

Lug & Wafer Design • Ductile Iron Body • Extended Neck
Bi-Directional • Molded Seat • ISO Mounting Pad • Locking Lever
SIZE 2" - 8"

DESIGN STANDARDS: MSS SP-67 & API-609 Cat. A END CONNECTION: ANSI CL 125/150 FLANGES WALL THICKNESS: KITZ STD



MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	DUCTILE IRON (A536 Gr. 65-45-12)
3	STEM* (1)	STAINLESS STEEL (A276, Type 410 or 316)
4	DISC	DUCTILE IRON, AL. BRONZE, AND 316 SS
9	HANDLE	ALUMINUM DIE-CAST
10	HANDLE BOLT	CARBON STEEL
16A/B	NAME PLATE	ALUMINUM
45A	O-RING	NBR/EPDM
45B	O-RING	NBR/EPDM
67A	BEARING	POLYACETAL
67B/C	STEM BEARING	G/F PTFE
85	PLUG	ZINC DIE-CAST (2)
90	CAP	P.V.C.
98	INDEX PLATE	CARBON STEEL
99A	SET BOLT	CARBON STEEL
99B	NUT	CARBON STEEL
103	BOTTOM STEM*	STAINLESS STEEL (A276, TYPE 410 or 316)
106	SEAT RUBBER (3)	NBR/EPDM
145	SPRING WASHER	CARBON STEEL

- (1) Line scribed on top of the stem indicates the disc direction.
(2) Chromate Coating
(3) Vulcanized to the Body

DIMENSIONS											
SIZE	d	D	C	H	H1	H2	L	D1	Lbs.	Wafer Lbs. Kgs.	Lug Kgs.
in. 2	1.97	3.54	4.75	7.52	5.79	2.64	1.69	7.09	4.2	6.6	
mm 50	50	90	120.5	191	147	67	43	180	1.9	3.0	
in. 2 1/2	2.56	4.09	5.50	7.83	6.10	2.95	1.81	7.09	5.1	7.9	
mm 65	65	104	139.5	199	155	75	46	180	2.3	3.6	
in. 3	3.15	4.88	6.00	8.54	6.81	3.58	1.81	7.09	6.8	11.0	
mm 80	80	124	152.5	217	173	91	46	180	3.1	5.1	
in. 4	3.94	5.75	7.50	8.94	7.20	3.98	2.06	7.09	7.7	18.0	
mm 100	100	146	190.5	227	183	101	52	180	3.5	8.1	
in. 5	4.92	6.93	8.50	10.43	8.31	5.00	2.19	9.06	13.0	25.0	
mm 125	125	176	216	265	211	127	56	230	5.8	11.0	
in. 6	5.91	8.11	9.50	10.91	8.78	5.47	2.19	9.06	18.0	30.0	
mm 150	150	206	241.5	277	223	139	56	230	8.0	14.0	
in. 8	7.76	10.12	11.75	11.61	9.76	6.65	2.38	13.78	28.0	48.0	
mm 200	197	257	298.5	295	248	169	60	350	13.0	22.0	

NOTE:

KITZ lug style butterfly valves are rated for bi-directional dead end service to full working pressure of the valve with the downstream flange removed. In dead end service exceeding 96 hours, a downstream flange is recommended.



Code # 5112 (B/E)L
Disc: Ductile Iron
(A536 + ENP)

Code # 5122 (B/E)L
Disc: Aluminum Bronze
(C95400)

***Code # 5141 (B/E)L**
Disc: 316 SS
(A351 Gr. CF8M)

*316 stem rated for
150 PSI max.



Code # 6112 (B/E)L
Disc: Ductile Iron
(A536 + ENP)

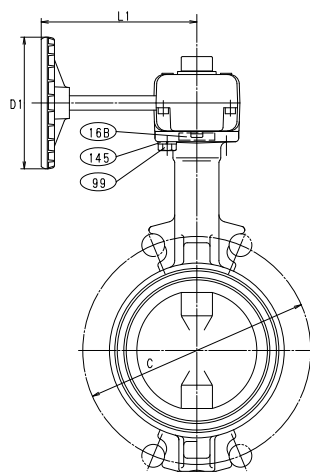
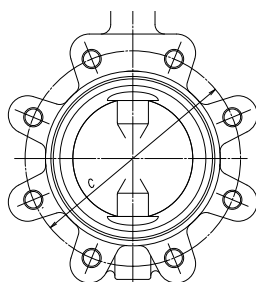
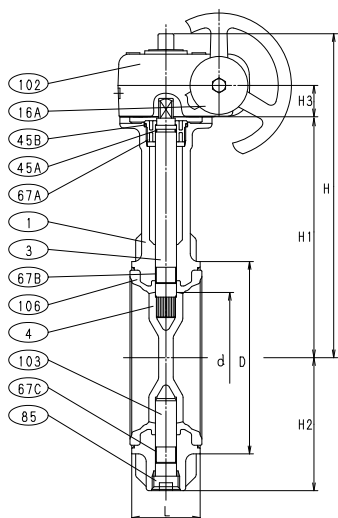
Code # 6122 (B/E)L
Disc: Aluminum Bronze
(C95400)

***Code # 6141 (B/E)L**
Disc: 316 SS
(A351 Gr. CF8M)

BUTTERFLY VALVES - 200 PSI*

Lug & Wafer Design • Ductile Iron Body • Extended Neck
Bi-Directional • Molded Seat • ISO Mounting Pad • Gear Operator
SIZE 2" - 8"

DESIGN STANDARDS: MSS SP-67 & API-609 Cat. A **END CONNECTION:** ANSI CL. 125/150 FLANGES **WALL THICKNESS:** KITZ STD



MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	DUCTILE IRON (A536 Gr. 65-45-12)
3	STEM*	STAINLESS STEEL (A276, Type 410 or 316)
4	DISC	DUCTILE IRON, AL. BRONZE, AND 316 SS
16A/B	NAME PLATE	ALUMINUM
45A/B	O-RING	NBR/EPDM
67A	BEARING	POLYACETAL
67B/C	STEM BEARING	G/F PTFE
85	PLUG	ZINC DIE-CAST (2)
99	SET BOLTS	CARBON STEEL
102	GEAR UNIT	ALUMINUM DIE-CAST
103	BOTTOM STEM*	STAINLESS STEEL (A276, TYPE 410 or 316)
106	SEAT RUBBER (3)	NBR/EPDM
145	SPRING WASHER	CARBON STEEL

- (1) Line scribed on top of the stem indicates the disc direction.
(2) Chromate Coating
(3) Vulcanized to the Body

DIMENSIONS												
SIZE		d	D	C	H	H1	H2	L	D1	L1	Wafer Lbs Kgs.	Lugs Lbs Kgs.
in.	2	1.97	3.54	4.75	7.64	5.79	2.64	1.69	3.15	4.78	4.9	7.1
mm	50	50	90	120.5	194	147	67	42.9	80	121.5	2.2	3.2
in.	2½	2.56	4.09	5.50	7.95	6.10	2.95	1.81	3.15	4.78	5.7	8.4
mm	65	65	104	139.5	202	155	75	46	80	121.5	2.6	3.8
in	3	3.15	4.88	6.00	9.29	6.81	3.58	1.81	4.33	5.31	8.6	13.0
mm	80	80	124	152.5	236	173	91	46	110	135	3.9	5.8
in	4	3.94	5.75	7.50	9.69	7.20	3.98	2.06	4.33	5.31	9.2	19.0
mm	100	100	146	190.5	246	183	101	52.3	110	135	4.2	8.8
in	5	4.92	6.93	8.50	10.79	8.31	5.00	2.19	4.33	5.91	14.0	26.0
mm	125	125	176	216	274	211	127	55.6	110	150	6.3	12.0
in	6	5.91	8.11	9.50	11.26	8.78	5.47	2.19	4.33	5.91	19.0	32.0
mm	150	150	206	241.5	286	223	139	55.6	110	150	8.5	15.0
in	8	7.76	10.12	11.75	12.80	9.76	6.65	2.38	6.69	7.09	30.0	49.0
mm	200	197	257	298.5	325	248	169	60.5	170	180	13.0	22.0

For gear operator details, refer to page 20.

NOTE:

KITZ lug style butterfly valves are rated for bi-directional dead end service to full working pressure of the valve with the downstream flange removed. In dead end service exceeding 96 hours, a downstream flange is recommended.



Code # 5112 (B/E)G
Disc: Ductile Iron
(A536 + ENP)

Code # 5122 (B/E)G
Disc: Aluminum Bronze
(C95400)

***Code # 5141 (B/E)G**
Disc: 316 SS
(A351 Gr. CF8M)

*316 stem rated for 150 PSI max.



Code # 6112 (B/E)G
Disc: Ductile Iron
(A536 + ENP)

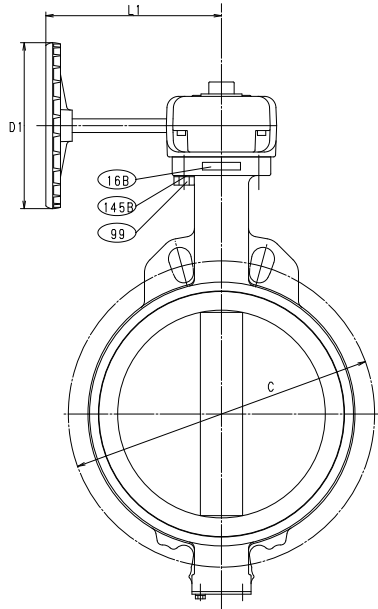
Code # 6122 (B/E)G
Disc: Aluminum Bronze
(C95400)

***Code # 6141 (B/E)G**
Disc: 316 SS
(A351 Gr. CF8M)

BUTTERFLY VALVES - 200 PSI*

Lug & Wafer Design • Ductile Iron Body • Extended Neck
Bi-Directional • Molded Seat • ISO Mounting Pad • Gear Operator
SIZE 10" - 12"

DESIGN STANDARDS: MSS SP-67 & API-609 Cat. A **END CONNECTION:** ANSI CL 125/150 FLANGES **WALL THICKNESS:** KITZ STD



MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	DUCTILE IRON (A536 Gr. 65-45-12)
3	STEM*	STAINLESS STEEL (A276, Type 410 or 316)
4	DISC	DUCTILE IRON, AL. BRONZE, AND 316 SS
16A/B	NAME PLATE	ALUMINUM
35	END PLATE BOLTS	CARBON STEEL
36	GLAND PLATE BOLT	STAINLESS STEEL
45A/B	O-RING	NBR/EPDM
60	KEY (12")	CARBON STEEL
67A/B/C	STEM BEARING	G/F PTFE
99	SET BOLTS	CARBON STEEL
102	GEAR UNIT	
103	BOTTOM STEM*	STAINLESS STEEL (A276, TYPE 410 or 316)
106	SEAT RUBBER (2)	NBR/EPDM
144	GLAND PLATE	CARBON STEEL
145A/B	SPRING WASHER	CARBON STEEL
147	END PLATE	CARBON STEEL

(1) Line scribed on top of the stem indicates the disc direction.
(2) Vulcanized to the Body

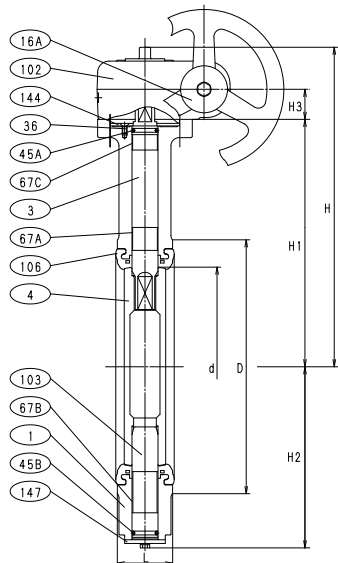


Code # 5112 (B/E)G
Disc: Ductile Iron
(A536 + ENP)

Code # 5122 (B/E)G
Disc: Aluminum Bronze
(C95400)

***Code # 5141 (B/E)G**
Disc: 316 SS
(A351 Gr. CF8M)

*316 stem rated for
150 PSI max.



DIMENSIONS												
SIZE	d	D	C	H	H1	H2	L	D1	L1	Wafer		Lug
										Lbs. Kgs.	Lbs. Kgs.	
in. 10	9.72	12.28	14.25	15	11.97	8.62	2.69	6.69	7.09	59.5	81	
mm 250	247	312	362	381	304	219	68.3	170	180	27.0	37.0	
in. 12	11.65	14.33	17.00	15.98	12.95	9.61	3.06	6.69	7.09	77.2	106.6	
mm 300	296	364	432	406	329	244	77.7	170	180	35.0	48.0	

For gear operator details, refer to page 20.

NOTE:

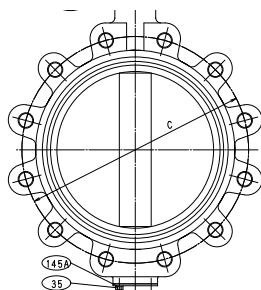
KITZ lug style butterfly valves are rated for bi-directional dead end service to full working pressure of the valve with the downstream flange removed. In dead end service exceeding 96 hours, a downstream flange is recommended.



Code # 6112 (B/E)G
Disc: Ductile Iron
(A536 + ENP)

Code # 6122 (B/E)G
Disc: Aluminum Bronze
(C95400)

***Code # 6141 (B/E)G**
Disc: 316 SS
(A351 Gr. CF8M)

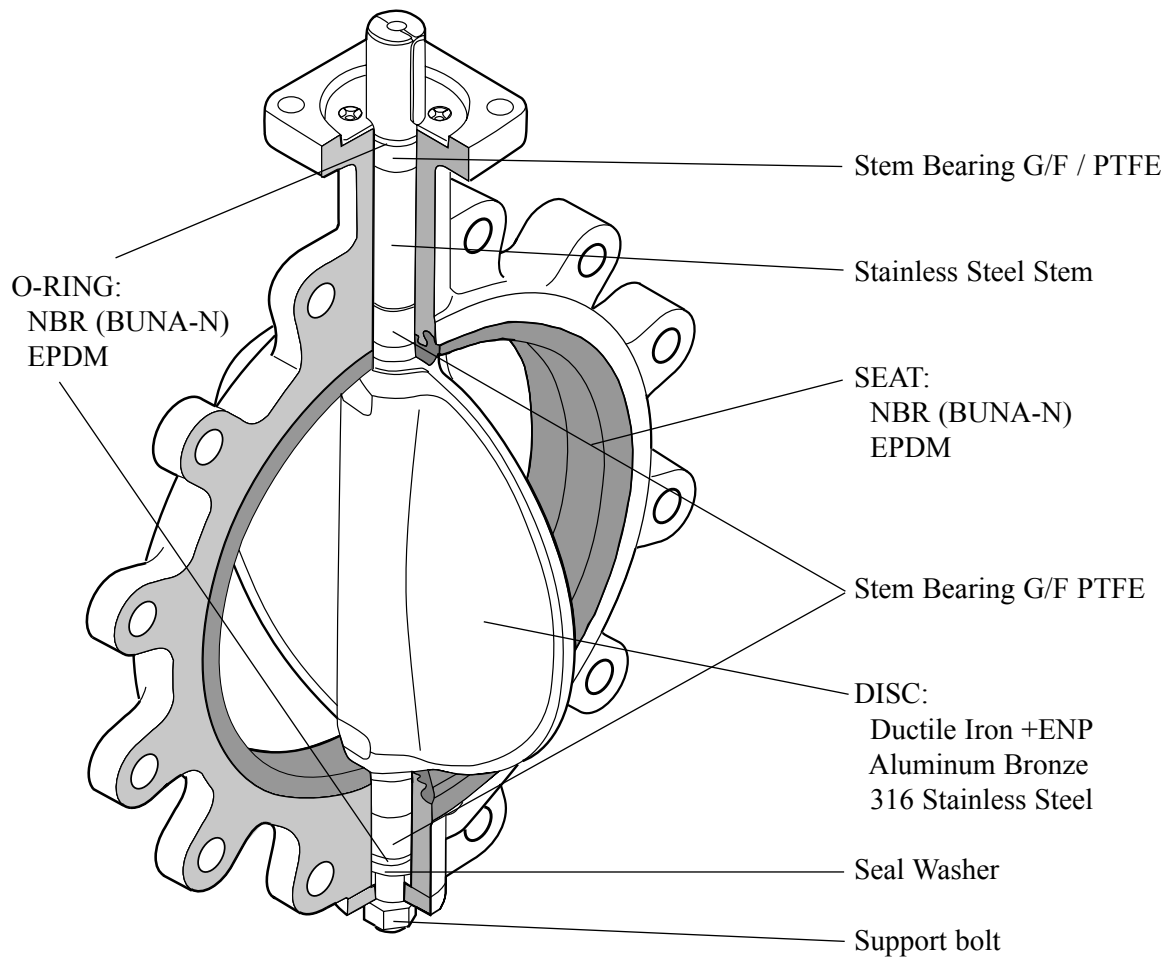


DJ SERIES BUTTERFLY VALVES

150 PSI

SIZE 14" - 24"

DJ SERIES BUTTERFLY VALVES - 150 PSI

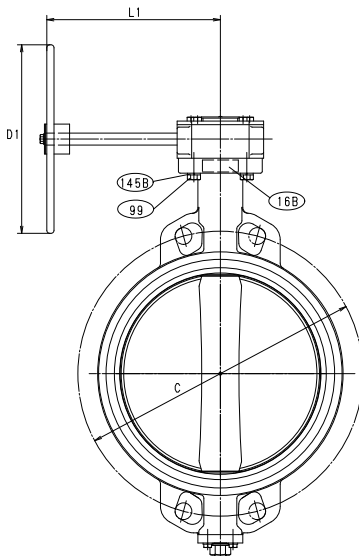
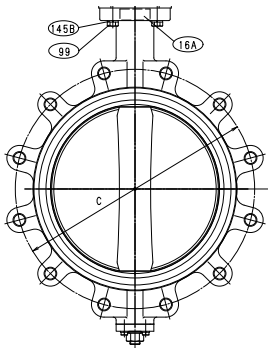
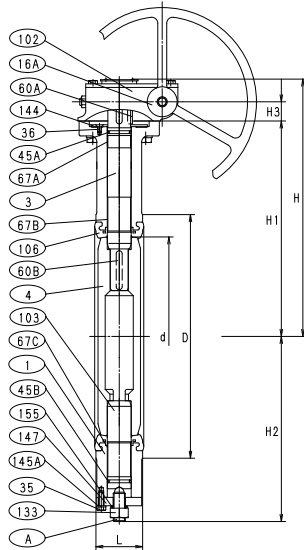


Lug Style

BUTTERFLY VALVES - 150 PSI

Lug & Wafer Design • Ductile Iron Body • Extended Neck
Bi-Directional • Bonded Seat • ISO Mounting Pad • Gear Operator
SIZE 14" - 24"

DESIGN STANDARDS: MSS SP-67 & API-609 Cat. A **END CONNECTION:** ANSI CL. 125/150 FLANGES **WALL THICKNESS:** KITZ STD



MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	DUCTILE IRON (A536 Gr. 65-45-12)
3	STEM (1)	STAINLESS STEEL (A276, Type 410, 420 or 316)
4	DISC	DUCTILE IRON, AL. BRONZE, AND 316 SS
16A/B	NAME PLATE	ALUMINUM
35	END PLATE BOLTS	CARBON STEEL
36	GLAND PLATE BOLT	STAINLESS STEEL
45A/B	O-RING	NBR/EPDM
60A/B	KEY	CARBON STEEL
67A/B/C	STEM BEARING	G/F PTFE
99	SET BOLTS	CARBON STEEL
102	GEAR UNIT	
103	BOTTOM STEM (14")	STAINLESS STEEL (A276, Type 410 or 316)
	BOTTOM STEM (16"-24")	STAINLESS STEEL (A276, Type 420 or 316)
106	SEAT RUBBER	NBR/EPDM
133	NUT	CARBON STEEL
144	GLAND PLATE	CARBON STEEL
145A/B	SPRING WASHER	CARBON STEEL
147	END PLATE	CARBON STEEL
155	SEAL WASHER	CARBON STEEL
A	SUPPORT BOLT	ALLOY STEEL

(1) Type 410 is standard in 14" with D.I. and Al.Bz. disc.

DIMENSIONS												
SIZE	d	D	C	H	H1	H2	H3	L	D1	L1	Wafer Lug	
											Lbs. Kgs.	Lbs. Kgs.
in. 14	13.15	16.02	18.75	17.60	14.17	12.17	1.85	3.06	12.20	8.66	119	160
mm 350	334	407	476.5	447	360	309	47	77.7	310	220	54	72
in. 16	15.16	18.35	21.25	19.76	16.34	13.43	1.85	4.00	12.20	8.66	172	247
mm 400	385	466	539.5	502	415	341	47	101.6	310	220	78	112
in. 18	17.09	20.55	22.75	20.71	17.28	14.37	1.85	4.50	12.20	8.66	252	337
mm 450	434	522	578	526	439	365	47	114.3	310	220	114	153
in. 20	18.98	22.64	25.00	23.11	19.21	16.30	2.36	5.00	19.69	14.17	309	430
mm 500	482	575	635	587	488	414	60	127	500	360	140	195
in. 24	22.80	26.77	29.50	25.00	21.10	18.23	2.36	6.06	19.69	14.17	529	712
mm 600	579	680	749.5	635	536	463	60	153.9	500	360	240	323

For gear operator details, refer to page 20.

NOTE:

KITZ lug style butterfly valves are rated for bi-directional dead end service to full working pressure of the valve with the downstream flange removed. In dead end service exceeding 96 hours, a downstream flange is recommended.



Code # 5111 (B/E)G
Disc: Ductile Iron
(A536 + ENP)

Code # 5121 (B/E)G
Disc: Aluminum Bronze
(C95400)

Code # 5141 (B/E)G
Disc/Stem: 316/316 SS



Code # 6111 (B/E/V)G
Disc: Ductile Iron
(A536 + ENP)

Code # 6121 (B/E)G
Disc: Aluminum Bronze
(C95400)

Code # 6141 (B/E)G
Disc/Stem: 316/316 SS

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SPECIFICATIONS

KITZ Butterfly valves are designed and manufactured to provide maximum performance on recommended service applications at the lowest possible Initial and Life Cycle cost. They meet or exceed the following standards developed through research, laboratory tests and years of experience.

BUTTERFLY VALVES

- API-609 Category A Design
- MSS SP-25 Marking
- MSS SP-67 Design & Testing

SAMPLE BUTTERFLY VALVE SPECIFICATION

Valves shall have Ductile Iron Body with 2" Extended Neck to allow for insulation. Body design shall be Full Lug or Wafer style having a bi-directional differential pressure rating of 200 psi (2" - 12") and 150 psi (14" - 24"). Stem shall be of Stainless Steel with top and bottom bushing of dissimilar materials with positive stem retention mechanism. Valve shall have (Aluminum Bronze) Disc and bonded or cartridge style seat of (EPDM) rubber. Lug style valve shall be capable of providing bi-directional "Dead End Service" at full rated pressure with the down stream flange removed. Sizes 2" - 6" shall be Lever Operated with 10 position throttling plate and Sizes 8" and larger shall be Gear Operated and manufactured in accordance to MSS SP-67, MSS SP-25 and API-609.

KITZ Code Numbers:

- 5122EL - Wafer (2" - 6") Lever Operated
- 6122EL - Lug (2" - 6") Lever Operated
- 5122EG - Wafer (8" - 12") Gear Operated
- 6122EG - Lug (8" - 12") Gear Operated
- 5121EG - Wafer (14" - 24") Gear Operated
- 6121EG - Lug (14" - 24") Gear Operated

METAL USED IN THE MANUFACTURE OF VALVES AND FITTINGS

Aluminum - A non-ferrous metal. Its chemical weight is about one-third as much as steel. Aluminum resistant to atmospheric corrosion but can be very reactive with other metals. Thus, its main use in valve is for handwheels and identification tags.

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. It is generally accepted as the industry standard for pressure rated bronze valves and fittings. Bronze has a higher strength than pure copper. It casts easily. Machinability is excellent and is joined easily with solder or brazing. Bronze is very resistant to pit corrosion, and is generally more resistant to most chemicals than pure copper.

Silicon Bronze - Has the ductility of copper with equal or greater corrosion strength than copper. Silicon Bronze has greater resistance to stress cracking than most brasses and the increase in strength makes it an excellent choice for as a stem material in pressure rated valves.

Aluminum Bronze - The most widely accepted disc material used in butterfly valves. Aluminum Bronze is heat treatable and is equal in strength to carbon steel. Formation of an aluminum oxide layer on exposed surfaces makes this metal very corrosive resistant. However, it's not recommended for high pH wet system applications.

Brass - Generally has good corrosion resistance and machinability. It is susceptible to de-zincification in some valve design and specific application. The primary uses for wrought brass: iron valve stems and the ball and stem in ball valves.

Gray Iron - An alloy of iron, carbons and silicon that is easily cast and machined. In the as-cast condition, becomes a good pressure vessel but is susceptible to shock load and can fracture under stress. Gray iron has superior corrosion resistance to steel in certain environments making it a standard choice for iron bodies and bonnets of Class 125 & 250 Gate, Globe and Check.

Ductile Iron - Has similar chemical composition to Gray iron but special treatment in the casting process modifies the metallurgical structure yielding mechanical properties equal to carbon steel but retains the superior corrosion resistance in certain environments. This metallurgical structure change make it an ideal choice for butterfly valve bodies.

Cast Steel - Has excellent mechanical properties, good resistance to stress corrosion and sulfides. Carbon Steel has high and low temperature strength as well as excellent fatigue strength characteristics. Primarily used in the manufacture of gate, globe, check and ball valves for application up to 850°F.

Nickel-Plated Ductile Iron - Nickel coatings has received wide acceptance for use in chemical processing industry. These coatings have a high tensile strength - 50 to 225 ksi, which improves the abrasion and wear characteristics. This is 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. Four Hundred Series stainless steel is resistant to high temperature oxidation and has improved physical and mechanical properties over carbon steel. The most common application in valves is for stem materials in gate, butterfly valves and for backseat busing and wedges in Cast Steel valves.

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

329 Series Stainless Steel - Duplex stainless steel's have a micro-structure that is a mixture of austenite and ferrite. This blend produces alloys with twice the yield strength of austenitic alloys and upgrade in general corrosion resistance in parts that are not going to be welded. The most common application in valves is for stem materials in ball and butterfly valves.

PROPERTIES OF VALVE MATERIALS

ASTM (UNS)		Alloy		Chemical Composition*											Physical Properties (min.)					
		Cu	Sn	Pb	Zn	Bi	C	Ni	S	P	CR	Mn	Mo	Si	Fe	Al	Other	Tensile (ksi)	Yield (ksi)	Elong. (%)
COPPER ALLOYS																				
Free Cutting Brass		60.0-63.0	...	2.5-3.7	bal	...	...	...	...	...	...	...	...	...	0.35	...	...	...	*	*
Navy "M" (Steam Bronze)		86.0-90.0	5.5-6.5	1.0-2.0	3.0-5.0	...	...	1.00	...	...	...	...	...	...	...	...	...	...	...	...
Composition Bronze		84.0-86.0	4.0-6.0	4.0-6.0	4.0-6.0	...	...	1.00	...	...	...	...	...	...	...	...	...	30	14	20
Aluminum Bronze		85.0	...	...	...	...	...	...	...	...	...	...	...	...	4.0	11.0	...	...	...	...
Forged Brass		58.0-61.0	...	1.5-2.5	bal	...	...	...	...	...	...	...	...	...	0.30	...	...	50	18	25
Naval Brass		59.0-62.0	0.50-1.0	0.20	bal	...	...	...	...	...	...	...	...	...	0.10	...	...	52	22	25
Leaded Semi-Red Brass		81.0	3.0	7.0	9.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cast Bi-Se Alloy		84.0-89.0	3.5-6.0	0.20	7.0-9.0	1.0-2.0	...	1.00	...	0.05	...	...	...	0.01	0.30	0.01	.10-.30	...	...	...
Cu-Zn-Sn-Bi Alloy		58.0-62.0	1.3-1.8	0.01	bal	0.50-2.0	...	1.50	...	0.20	...	0.03	...	0.10	0.10	0.50	0.80	...	...	...
IRON																				
Cast Grey Iron		...	...	...	...	...	...	...	0.15	0.75	...	...	...	...	bal	...	...	31	...	...
Ductile Iron (65-45-12)		...	...	...	...	...	3.5-3.8	...	0.01	.02-.05	...	.15-.40	...	2.3-2.8	bal	...	0.05	65	45	12
Ductile Iron (Ferritic)		...	...	...	...	...	3.00 min	...	...	0.08	...	...	...	2.50	bal	...	...	60	40	18
Ductile Ni-Resist		...	...	...	...	...	3.00	18.0-22.0	...	0.08	2.75-4.0	0.7-1.25	...	1.5-3.0	bal	...	...	58	30	7
STAINLESS STEEL																				
304 (Cast) J92600		...	...	...	...	...	0.08	8.0-11.0	0.04	0.04	18.0-21.0	1.50	0.50	2.00	...	...	...	...	...	...
316 (Cast) J92900		...	...	...	...	...	0.08	9.0-12.0	0.04	0.04	18.0-21.0	1.50	2.0-3.0	1.50	...	...	...	70	30	30
304 (Wrought) S30400		...	...	...	...	...	0.08	8.0-11.0	0.03	0.05	18.0-20.0	2.00	...	1.00	...	...	...	75	30	40
316 (Wrought) S31600		...	...	...	...	...	0.08	10.0-14.0	0.03	0.05	16.0-18.0	2.00	2.0-3.0	1.00	...	...	...	75	30	40
329 (Wrought) S32900		...	...	...	...	...	0.08	3.0-6.0	0.03	0.04	23.0-28.0	1.50	1.0-3.0	1.00	...	...	...	105	80	25
410 (Wrought) S41000		...	...	...	...	...	0.08-0.015	...	0.03	0.04	11.0-13.0	1.00	...	1.00	...	...	0.05-0.30Cb	...	...	...
CARBON STEEL																				
Forged Carbon Steel		...	...	...	...	...	0.04	...	0.05	0.04	...	0.60-1.05	...	0.35	...	...	...	70	36	22
Cast Carbon Steel J03002		...	...	...	...	...	0.30	...	0.05	0.04	...	1.00	...	0.60	...	...	1.0 max	70	36	22
BOLTING																				
Carbon Steel Bolt & Stud		...	...	...	...	...	0.29	...	0.05	0.04	...	0.90	...	...	...	...	...	60	...	18
B-7 Alloy Stud		...	...	...	...	...	0.37-0.49	...	0.04	0.04	0.75-1.20	0.65-1.10	0.15-0.25	0.15-0.35	...	...	...	125	105	16
304 SS Stud		...	...	...	...	...	0.08	8.0-11.0	0.03	0.45	16.0-20.0	2.00	...	1.00	...	...	...	125	100	12

* Subject to Temper, Size and Form

† Chemical requirements are not specified under this specification, composition is subordinate to the mechanical properties specified under A536.

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 oil and is not recommended for applications involving petroleum oils, strong acids, or strong alkalines. It should not be used for compressed air lines. It has exceptionally good weather aging and ozone resistance and has fairly good resistance to ketones and alcohols.

BUNA-N (Nitrile) (NBR)

Buna-N is a general-purpose oil resistant polymer known as Nitrile rubber. It is a copolymer of butadiene and acrylonitrile. It has good resistance to Hydraulic fluid, oil, water, and solvents. It shows good tensile strength and abrasion resistance while displaying good compression set. It is not recommended for highly polar solvents such as acetone and methyl ethyl ketone nor in chlorinated hydrocarbons, ozone or nitro hydrocarbons.

LINER MATERIAL TEMPERATURE RANGE

	<u>Min.</u>	<u>Max.</u>
EPDM	-29°C / -20°F	121°C / 250°F
BUNA-N (Nitrile)	-12°C / 10°F	82°C / 180°F

KITZ utilizes proprietary compound formulas for each elastomer. They provide the right combination of seat compression, abrasion and chemical resistance to match a broad range of applications.

Note: Elastomeric seat materials are not suitable for steam service.

CHEMICAL RESISTANCE GUIDE

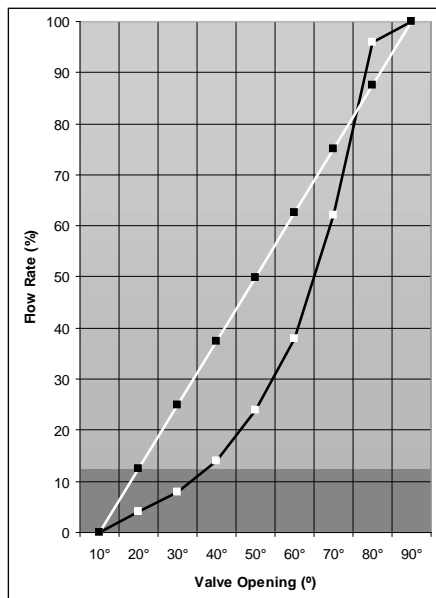
MATERIALS/FLUID	DISC			SEAT		
	AL-BRZ	DUCTILE	316	NBR	EPDM	VITON
Acetic Acid (10%)	Very Poor	Poor	Excellent	Very Poor	Good	Very Poor
Air	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Ammonia (anhydrous liquid)	Very Poor	Good	Excellent	Poor	Good	Very Poor
Ammonia (solution)	Very Poor	Good	Excellent	Good	Good	Very Poor
Ammonium Sulfate	Very Poor	Poor	Good	Excellent	Excellent	Good
Animal Oil	Good	Excellent	Excellent	Excellent	Good	Good
Calcium Carbonate	Very Poor	Very Poor	Good	Excellent	Excellent	Excellent
Carbonic Acid	--	Very Poor	Good	Good	Good	Excellent
Chlorinated Water	Very Poor	--	Poor	Good	-	Excellent
Ethane	-	Good	Good	Excellent	Very Poor	Excellent
Ethyl Alcohol	Good	Good	Excellent	Good	Excellent	Good
Freon12	Excellent	Good	Excellent	Good	Excellent	Poor
Gasoline (refined/unleaded)	Good	Good	Excellent	Poor	Very Poor	Excellent
Hydrochloric Acid	Very Poor	Very Poor	Very Poor	Poor	Good	Excellent
Hydrogen Gas (cold)	Excellent	Good	Excellent	Good	Good	Excellent
Lubricating Oil (petroleum base)	Good	Excellent	Excellent	Excellent	Very Poor	Excellent
Methyl Alcohol	Excellent	Good	Excellent	Good	Excellent	Poor
Mineral Oil	Good	Good	Excellent	Excellent	Very Poor	Excellent
Natural Gas	Excellent	Excellent	Excellent	Good	Very Poor	Excellent
Oxygen (cold)	Excellent	Good	Excellent	Good	Good	Excellent
Petroleum Oil (refined)	Good	-	-	Good	Very Poor	Good
Propane Gas	-	Good	Excellent	Excellent	Very Poor	Excellent
Sea Water	Excellent	Very Poor	Good	Excellent	Excellent	Excellent
Soybean Oil	-	Poor	Excellent	Excellent	Poor	Excellent
Sulfuric Acid (7%)	Very Poor	Very Poor	Good	Good	Good	Excellent
Sulfuric Acid (20%)	Very Poor	Very Poor	Very Poor	Very Poor	Good	Excellent
Sulfuric Acid (50% & larger)	Very Poor	Very Poor	Very Poor	Very Poor	Good	Good
Sulfurous Acid	Very Poor	Very Poor	Good	Poor	Poor	Excellent
Steam (100°C)	Excellent	Excellent	Excellent	Very Poor	Good	Poor
Vegetable Oil	Good	Poor	Excellent	Excellent	Poor	Excellent
Water (hot, 150°F)	Excellent	Poor	Excellent	Very Poor	Good	Excellent

The above performance data has been developed from field testing, customer field reports and/or in-house testing. Properties/applications shown are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. While the utmost care has been used in compiling this data, we assume no responsibility for errors.

FLOW DATA

Cv Values for DJ Series Butterfly Valves

Flow Characteristics (Static Clean Water)



Flow Rate Cv* Values

SIZE		% OPEN								
Inch	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
2	50	0	5	10	18	29	47	75	107	124
2 1/2	65	0	12	22	39	64	102	163	232	270
3	80	0	17	33	57	94	149	240	341	397
4	100	0	29	55	96	158	252	404	577	671
5	125	0	44	83	145	369	381	610	871	1013
6	150	0	66	126	219	362	576	922	1318	1532
8	200	0	125	230	400	660	1050	1680	2400	2792
10	250	0	160	325	575	950	1514	2423	3462	4024
12	300	0	258	493	859	1418	2260	3618	5168	6010
14	350	0	324	617	1076	1776	2829	4530	6472	7525
16	400	0	433	826	1441	2378	3760	6068	8669	10080
18	450	0	564	1076	1876	3096	4933	7898	11283	13120
20	500	0	588	1311	2286	3774	6012	9626	13751	15990
24	600	0	1018	1942	3388	5590	8907	14688	22742	23690

* 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 60°F water.

LIQUID FLOW:

$$Q = C_v \sqrt{\Delta P / S}$$

Q = liquid flow rate (gallons per minute)

ΔP = pressure drop across valve (psi)

S = specific gravity of media

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°.

GAS FLOW:

$$Q = 1360 C_v \sqrt{\Delta P \times P_1 / S T}$$

Q = gas flow rate (SCFH — std. cu. ft./hr.)

S = specific gravity of gas (air = 1.0)

T = temp. - degrees rankin (°F + 460)

DP = pressure drop across valve (psi)

P₁ = upstream pressure (psia) absolute

Note that ΔP must be less than .5

(Flow is critical when ΔP is greater than .5 P₁).

VALVE SIZING

- On/Off Service

Simply select a valve which is the same as the piping system.

- Throttling Service

Select Cv data from above table: 30 - 60° and follow these steps:

1) Define:

(Q) - System flow requirements

(DP) - Maximum allowable pressure drop

(S) - Specific gravity of the pipeline media

2) Calculate Cv using above formula

3) Select valve size between (30 - 60°)

4) Do not exceed maximum velocity:

Liquids: 20 ft./second

Gases: 15,000 ft./minute

V = $\frac{S \times .321}{A}$ (liquid only)

A

A = Area of pipe in square inches

Example: Throttling Service

Given:

Q - 975 GPM (Flow)

ΔP - 1.50 (Pressure Drop)

S = (Specific Gravity)

$$1) C_v = Q \sqrt{\frac{S}{\Delta P}} = 975 \sqrt{\frac{1.50}{1.0}}$$

2) From Cv table:

8" Valve Cv Flow Rate

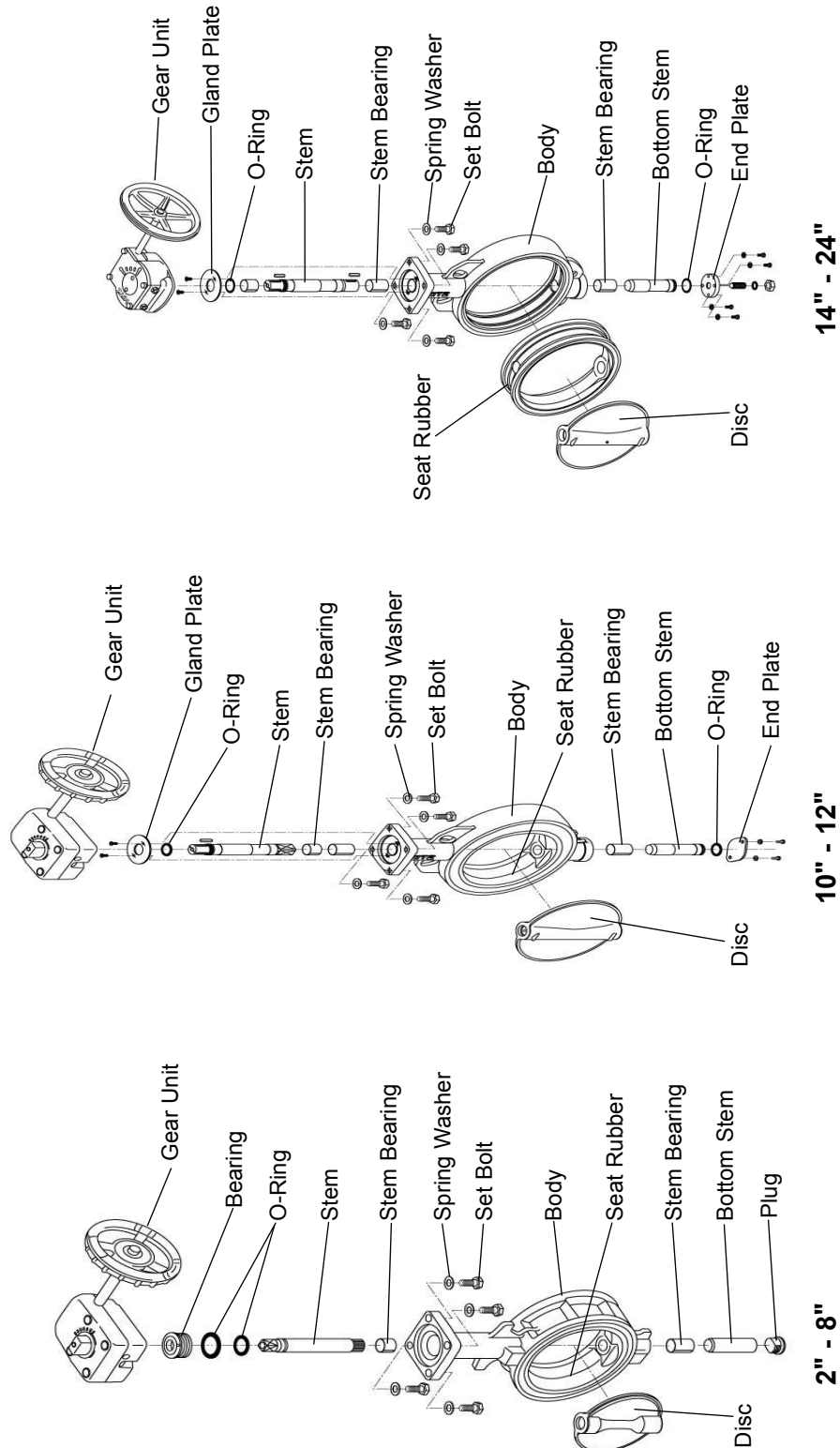
Open range 30 - 60°: 230 - 1050

$$3) \text{ Velocity - } V = \frac{S \times .321}{A}$$

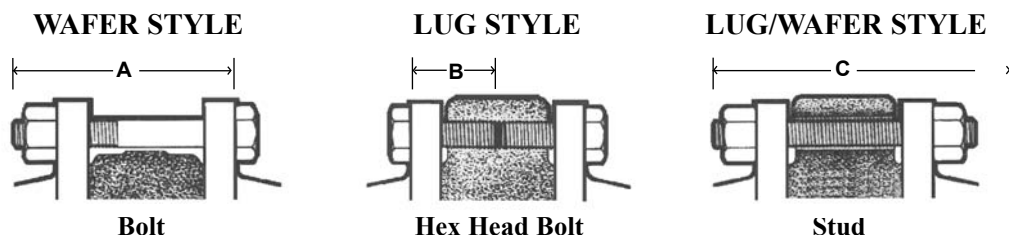
$$\frac{975 \times .321}{50.3} = 6.22 \text{ ft./sec.}$$

6.22 ft./sec. is within the limits. So for given conditions, an 8" valve should be used.

DJ SERIES BUTTERFLY VALVES EXPLODED VIEW



FLANGE BOLT DATA



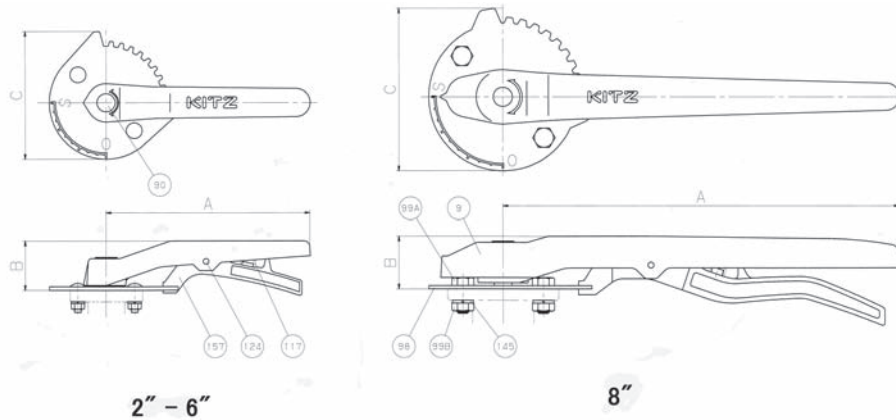
Size		Diameter		Number		Bolt Length "A"		Hex Head Bolt Length "B"		Stud Length "C"	
				Bolt/Stud	Hex Head Bolt						
inch	mm	inch	mm	inch	inch	inch	mm	inch	mm	inch	mm
2	50	5/8-11	15.875	4	8	4 ¹ / ₄	107.95	1 ¹ / ₂	38.1	5	127.00
2 ¹ / ₂	65	5/8-11	15.875	4	8	4 ³ / ₄	120.65	1 ⁵ / ₈	41.275	5 ¹ / ₂	139.70
3	80	5/8-11	15.875	4	8	4 ³ / ₄	120.65	1 ³ / ₄	44.45	5 ¹ / ₂	139.70
4	100	5/8-11	15.875	8	16	5	127.00	1 ⁷ / ₈	47.625	5 ³ / ₄	146.05
5	125	3/4-10	19.05	8	16	5 ¹ / ₄	133.35	1 ⁷ / ₈	47.625	6 ¹ / ₄	158.75
6	150	3/4-10	19.05	8	16	5 ¹ / ₂	139.70	2	50.8	6 ¹ / ₂	165.10
8	200	3/4-10	19.05	8	16	5 ³ / ₄	146.05	2 ¹ / ₈	53.975	6 ³ / ₄	171.45
10	250	7/8-9	22.225	12	24	6 ¹ / ₂	165.10	2 ³ / ₈	60.325	7 ¹ / ₂	190.50
12	300	7/8-9	22.225	12	24	7	177.80	2 ⁵ / ₈	66.675	8	203.20
14	350	1-8	25.4	12	24	7 ¹ / ₂	190.50	2 ³ / ₄	69.85	8 ³ / ₄	222.25
16	400	1-8	25.4	16	32	8 ¹ / ₂	215.90	3 ¹ / ₄	82.55	9 ³ / ₄	247.65
18	450	1 ¹ / ₈ -7	28.575	16	32	9 ¹ / ₄	234.95	3 ⁵ / ₈	92.075	10 ³ / ₄	273.05
20	500	1 ¹ / ₈ -7	28.575	20	40	10 ¹ / ₄	260.35	4	101.6	11 ¹ / ₂	292.10
24	600	1 ¹ / ₄ -7	31.75	20	40	11 ³ / ₄	298.45	4 ⁵ / ₈	117.475	13 ¹ / ₄	336.55

Note: Use pipe flanges conforming to ANSI Class 125 or 150. Steel, Cast Iron, Bronze and Plastic may be used. The use of additional flange gaskets are not required.

Threads on bolts, studs and nuts shall be in accordance with the Unified Course Thread Series (UNC), Class A&B (ANSI B-1.1).

LOCKING LEVER DATA

5000 & 6000 DUCTILE SERIES

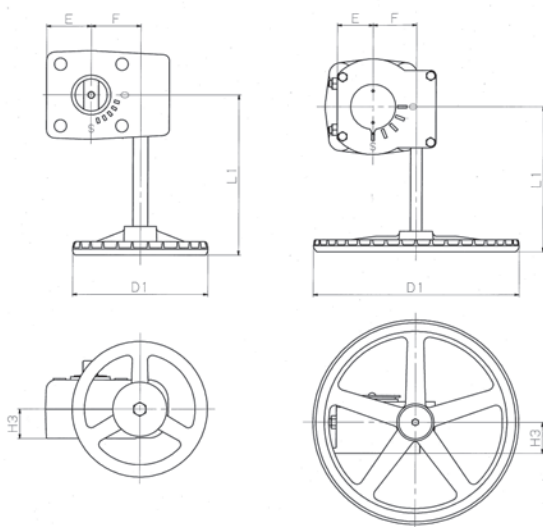


MATERIAL LIST			
NO.	NAME OF PART	MATERIAL	SPECIFICATION
9	HANDLE	ALUMINUM DIE-CAST	B85, SC102A
	HANDLE (2")	DUCTILE IRON (8" Only)	A536 Gr. 65-45-12
10	HANDLE BOLT	ALLOY STEEL (not shown)	
		CARBON STEEL (8" Only)	A307 Gr. B
16C	HANDLE WASHER	CARBON STEEL (8" Only) (not shown)	A36
117	HANDLE SPRING	STAINLESS STEEL	A276 Type 304
124	SPRING PIN	STAINLESS STEEL	A276 Type 304
157	STOP LEVER	ALUMINUM DIE-CAST	B85 SC102A
		DUCTILE IRON (8" Only)	A538 Gr. 65-45-12
90	CAP	P.V.C. (2" - 6")	
98	INDEX PLATE	-	-
99A	SET BOLT	-	-
99B	NUT	-	-
145	SPRING WASHER	-	-

DIMENSIONS - SPECIFICATIONS									
SIZE		A	B	C	Wt.		TORQUE RATING OUTPUT - in./kg-cm		
							50#'S PULL	100#'S PULL	
In.	2	7.09	1.73	4.45	Lbs.	0.4	in.	280	560
mm	50	180	44	113	kgs.	0.2	kg-cm	322	644
in.	2 1/2	7.09	1.73	4.45	Lbs.	0.4	in.	280	560
mm	65	180	44	113	kgs.	0.2	kg-cm	322	644
in.	3	7.09	1.73	4.45	Lbs.	0.4	in.	280	560
mm	80	180	44	113	kgs.	0.2	kg-cm	322	644
in.	4	7.09	1.73	4.45	Lbs.	0.4	in.	280	560
mm	100	180	44	113	kgs.	0.2	kg-cm	322	644
in.	5	9.06	2.13	4.45	Lbs.	0.9	in.	380	760
mm	125	230	54	113	kgs.	0.4	kg-cm	437	874
in.	6	9.06	2.13	4.45	Lbs.	0.9	in.	380	760
mm	150	230	54	113	kgs.	0.4	kg-cm	437	874
in.	8	13.78	1.54	5.67	Lbs.	2.9	in.	615	1230
mm	200	350	39	144	kgs.	1.3	kg-cm	707	1414

GEAR OPERATOR

5000 & 6000 DUCTILE SERIES



The Ductile Series butterfly valves can be operated with a heavy-duty operator with indicator. The gear operator is recommended for valves 8" and larger for trouble-free operation in all moisture and weather conditions. The gear operator is a self-locking worm gear type with adjustable stops for open/close position.

Ordering: Specify by adding (G) to the Code Number, i.e. 6122EG.

MATERIAL LIST

NAME OF PART	MATERIAL
Gear Operator 2" - 12"	
Gear Case	Aluminum Die-Cast
Handle	Aluminum Die-Cast
Handle Shaft	Stainless Steel

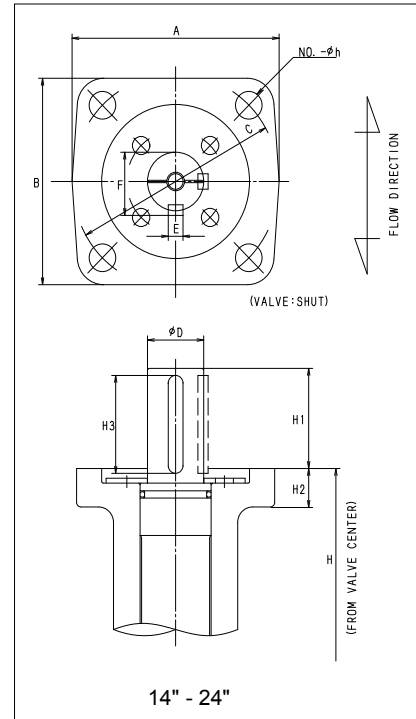
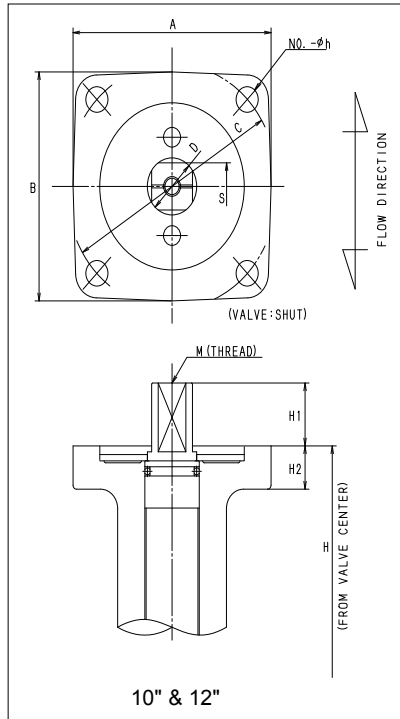
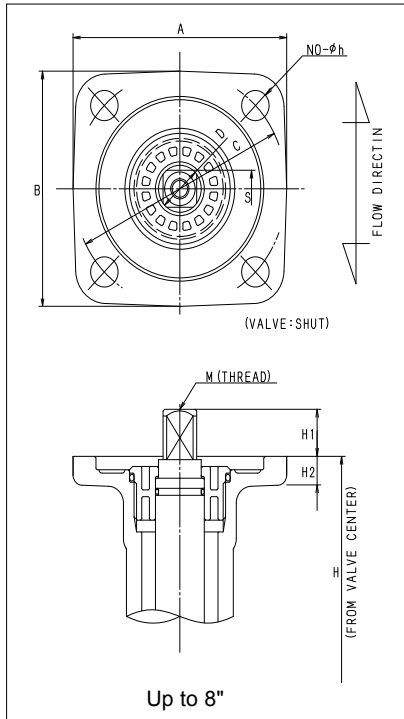
MATERIAL LIST

NAME OF PART	MATERIAL
Gear Operator 14" - 24"	
Gear Case	Cast Iron
Handle	Carbon Steel
Handle Shaft	Stainless Steel

DIMENSIONS - SPECIFICATIONS

	SIZE	H3	D1	L1	E	F	Gear No.	Wt.
in.	2	0.73	3.15	4.78	1.14	1.10	No. 0	Lbs. 1.1
mm	50	18.5	80	121.5	29	28		kgs. .05
in.	2 1/2	0.73	3.15	4.78	1.14	1.10	No. 0	Lbs. 1.1
mm	65	18.5	80	121.5	29	28		kgs. .05
in.	3	0.94	4.33	5.31	1.44	1.59	No. 1a	Lbs. 2.2
mm	80	24	110	135	36.5	40.5		kgs. 1.0
in.	4	0.94	4.33	5.31	1.44	1.59	No. 1a	Lbs. 2.2
mm	100	24	110	135	36.5	40.5		kgs. 1.0
in.	5	0.94	4.33	5.91	1.44	1.59	No. 1b	Lbs. 2.2
mm	125	24	110	150	36.5	40.5		kgs. 1.0
in.	6	0.94	4.33	5.91	1.44	1.59	No. 1b	Lbs. 2.2
mm	150	24	110	150	36.5	40.5		kgs. 1.0
in.	8	1.26	6.69	7.09	2.01	2.48	No. 2a	Lbs. 6.6
mm	200	32	170	180	51	63		kgs. 3.0
in.	10	1.26	6.69	7.09	2.01	2.48	No. 2b	Lbs. 6.6
mm	250	32	170	180	51	63		kgs. 3.0
in.	12	1.26	6.69	7.09	2.01	2.48	No. 2c	Lbs. 6.6
mm	300	32	170	180	51	63		kgs. 3.0
in.	14	1.85	12.20	8.66	2.13	2.58	No. 3	Lbs. 20.0
mm	350	47	310	220	54	65.5		kgs. 9.0
in.	16	1.85	12.20	8.66	2.13	2.58	No. 3	Lbs. 20.0
mm	400	47	310	220	54	65.5		kgs. 9.0
in.	18	1.85	12.20	8.66	2.13	2.58	No. 3	Lbs. 20
mm	450	47	310	220	54	65.5		kgs. 9.0
in.	20	2.36	19.69	14.17	2.68	3.48	No. 4	Lbs. 53.0
mm	500	60	500	360	68	88.5		kgs. 24.0
in.	24	2.36	19.69	14.17	2.68	3.48	No. 4	Lbs. 53.0
mm	600	60	500	360	68	88.5		kgs. 24.0

BARE STEM DIMENSIONAL DATA FOR ACTUATION



DIMENSIONS - 2" - 12"												
SIZE	S	D	H	H1	H2	AxB	C	No.	h	M	FLANGE TYPE	
in. 2	.35	.47	5.79	.55	.33	1.97x1.97	1.97	4	.28	M6	F5	
mm 50	9	12	147	14	8.5	50x50	50	4	7	M6	F5	
in. 2 1/2	.35	.47	6.10	.55	.33	1.97x1.97	1.97	4	.28	M6	F5	
mm 65	9	12	155	14	8.5	50x50	50	4	7	M6	F5	
in. 3	.43	.55	6.81	.55	.33	2.76x2.76	2.76	4	.39	M6	F7	
mm 80	11	14	173	14	8.5	70x70	70	4	10	M6	F7	
in. 4	.43	.55	7.20	.55	.33	2.76x2.76	2.76	4	.39	M6	F7	
mm 100	11	14	183	14	8.5	70x70	70	4	10	M6	F7	
in. 5	.51	.63	8.31	.87	.33	2.76x2.76	2.76	4	.39	M6	F7	
mm 125	13	16	211	22	8.5	70x70	70	4	10	M6	F7	
in. 6	.51	.63	8.78	.87	.33	2.76x2.76	2.76	4	.39	M6	F7	
mm 150	13	16	223	22	8.5	70x70	70	4	10	M6	F7	
in. 8	.61	.83	9.76	.94	.39	3.86x3.86	4.02	4	.43	M6	F10	
mm 200	15.5	21	248	24	10	98x98	102	4	11	M6	F10	
in. 10	.94	1.14	11.97	1.26	.39	3.86x3.86	4.02	4	.43	M10	F10	
mm 250	24	29	304	32	10	98x98	102	4	11	M10	F10	
in. 12	1.06	1.28	12.95	1.26	.39	3.86x3.86	4.02	4	.43	M10	F10	
mm 300	27	32.5	329	32	10	98x98	102	4	11	M10	F10	

DIMENSIONS - 14" - 24"												
SIZE	D	E	F	H	H1	H2	H3	AxB	C	No.	h	FLANGE TYPE
in. 14	1.50	.39	1.61	14.17	2.56	.98	2.56	5.51x5.28	5.51	4	.71	F14
mm 350	38	10	41	360	65	25	65	140x134	140	4	18	F14
in. 16	1.50	.39	1.61	16.34	2.56	.98	2.56	5.51x5.28	5.51	4	.71	F14
mm 400	38	10	41	415	65	25	65	140x134	140	4	18	F14
in. 18	1.50	.39	1.61	17.28	2.56	.98	2.56	5.51x5.28	5.51	4	.71	F14
mm 450	38	10	41	439	65	25	65	140x134	140	4	18	F14
in. 20	1.97	.55	2.11	19.21	3.70	1.10	3.15	6.69x6.38	6.50	4	.87	F16
mm 500	50	14	53.5	488	94	28	80	170x162	165	4	22	F16
in. 24	1.97	.55	2.11	21.10	3.70	1.10	3.15	6.69x6.38	6.50	4	.87	F16
mm 600	50	14	53.5	536	94	28	80	170x162	165	4	22	F16

TORQUE INFORMATION / DATA

TORQUE

Torque is the rotary effort required to operate a valve. There are three factors that determine the valves torque:

- 1) Disc / Seat Interference Friction
- 2) Bearing Friction
- 3) Dynamic torque

BREAKING TORQUE

Breaking torque is a combination of the above mentioned frictions at any given differential pressure. This value is normally the highest required torque for “wet” (water and other non-lubricating medias at ambient temperature) on/off service.

- The listed torque is for NBR (BUNA-N) and EPDM.
- For “dry” service (non-lubricating, dry gas media), multiply highest value by 1.6.
- For “lubed” service (clean, non-abrasive lubricating media) multiply highest value by .85.
- When sizing actuators for single valve applications, multiply highest value by 1.25.

5000 & 6000 SERIES / TORQUE VALUES

UNIT: In.-Lbs.

SIZE	50 PSI	100 PSI	150 PSI	200 PSI
2	90	97	100	103
2 1/2	135	146	148	154
3	216	233	238	246
4	270	291	296	308
5	496	534	544	565
6	690	743	759	781
8	1,169	1,259	1,286	1,328
10	2,347	2,528	2,582	2,673
12	3,544	3,817	3,898	4,036
14	3,331	3,470	3,608	-
16	5,395	5,620	5,844	-
18	6,458	6,727	6,996	-
20	9,576	9,975	10,374	-
24	15,498	16,144	16,789	-

CROSS REFERENCE CHART

DUCTILE IRON

KITZ	5122E	6122E	5112B	6112B	6112E	5112E	6112	5112B	5131B*	6131B*
NIBCO	WD2000	LD2000	WD2000	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	NEC51115351	NEC1115311	NEC5115311	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	AR-1	AR-2	AR-1	AR-2	AR-1	AR-2	AR-1	AR-2	AR-1	AR-2
MILWAUKEE	MW-233-E	ML-233-E	MW-233-8	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-ANK6-1	56-ANK-1	55-ANK3-1	56-ANK3-1	55-AHH6-1	56-AHH6-1

* KITZ 316 Disc and Stem rated for 150 psi max.

CAST IRON

KITZ	6122E	5122E	6122B	5122B	6112E	5112E	6112B	5112B
CENTERLINE	B106135	A106145	B106181	A106131	B102135	A102135	B102131	A102131
GRINNELL	LC-128-3	WC-128-3	LC-118-3	WC-118-3	LC-120-3	WC-120-3	LC-110-3	WC-110-3
MILWAUKEE	CL223E	CW223E	CL223B	CW223B	CL222E	CW222E	CL223B	CW222B
NIBCO	N200235	N200135	N200245	N200145	N200236	N200138	N200246	N200148
WATTS	BF04-121-1	BF04-121-1	BF03-121-2	BF04-121-2	BF03-111-1	BF04-111-1	BF03-111-2	BF04-111-2

Charts indicate comparable figure numbers of other manufacturers' products of similar design or use and should only be used as a guide, some variation in detail is possible.

STORAGE / HANDLING AND INSTALLATION GUIDE

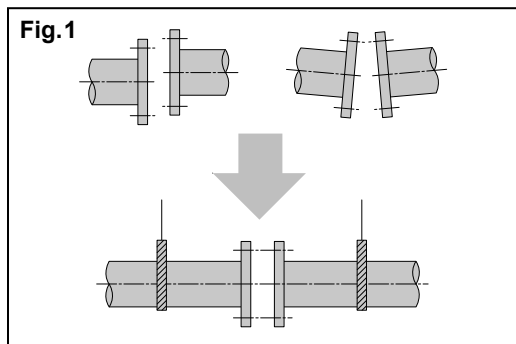
STORAGE AND HANDLING

Store valves in a dry, clean and corrosion-free environment with no direct exposure to the sun, leaving valves 10° open for prevention of permanent distortion of the resilient seat. Care should be exercised while storing valves. Avoid dropping valves on a hard surface or stacking too high to prevent damage to valve or injury to the handler.

INSTALLATION ON PIPELINE

1. Mount valve onto flanges only after flanges have been welded to pipes and cooled down to room temperature to prevent damage to resilient seat.
2. Inspect flange surface finish to assure that it is smooth and free of damage / deformation. Remove rust, welding splatters and any foreign objects from flange finish and bore that may affect sealing performance and operation.
3. For trouble-free operation it is essential to center and align both upstream and downstream flanges as shown in Fig. 1.

Fig.1



4. To begin valve mounting, set jack bolts under the piping for flat support at the same height, and adjust the flange-to-flange distance so that it is roughly 1/4" (6mm) clearance on both sides of valve body.
5. Set two alignment bolts into lower mounting guides/lug of valve and install valve being careful not to force to prevent damage to resilient seat (Fig. 2).
6. Insert the next set of bolts in the upper mounting guides/lugs and center valve within flanges. Before flange bolts are tightened carefully open to assure unobstructed disc movement. Interference of the disc may be the result of heavy wall pipe, plastic lined pipe, cast flanges or when bolted directly to a reducing flange and or another valve.

It may be necessary to taper bore the pipe to allow free disc movement or you may need to install a spool piece/spacer between the two valves.

Remove jack bolts and set all bolts and tighten alternating diagonally until the flange contacts the valve body (Fig. 3 & 4).

Fig.2

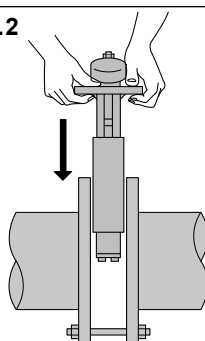


Fig.3

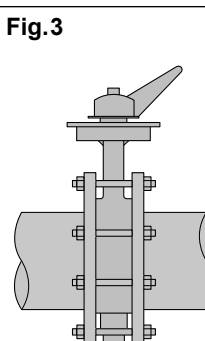
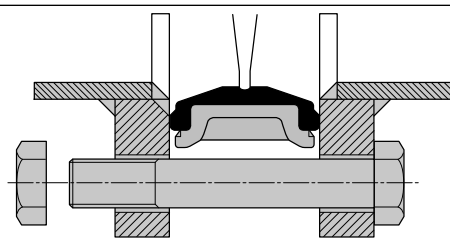


Fig.4



VALVE OPERATION

1. Valve operation should be limited to lever, gears or actuation. The use of cheater bar may result in the malfunction of the valve and operator.
2. Valves should be fully opened before loop test of the piping system with higher than normal pressure. The use of closed valve in place of a blind flange is not recommended.
3. Before dismantling valves from piping system, take the following precautions.
 - a. Do not loosen bolts while under pressure
 - b. Do Relieve line pressure
 - c. Completely drain piping system

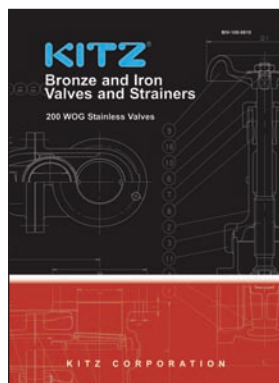
Note:

1. Use piping flanges conforming to ANSI Class 125 / 150.
2. Mechanical or rubber faced flanges are **not** recommended.
3. NBR, EPDM and FKM (Viton) are **not** recommended for steam service.
4. KITZ recommends the use of Gear Operator on valves 8" and larger.

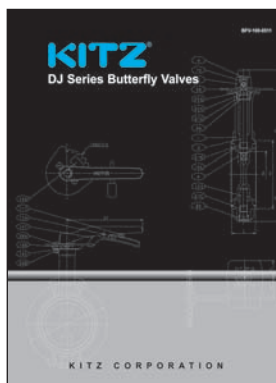
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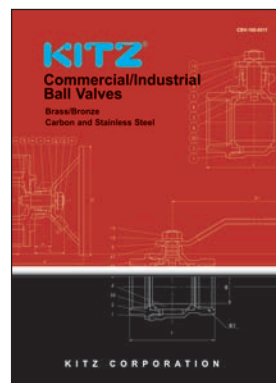
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BIV-100



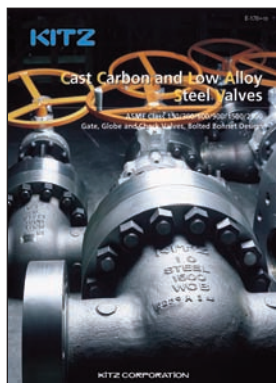
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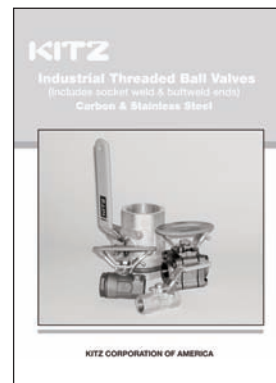
CBV-100



E-150



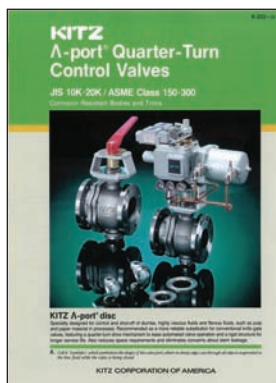
E-170



ITBV-00



K-201



K-203



K-204



CAUTION

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