Standard Valve?
No Such Thing.

ITT Engineered Valves Group (ITT EVG) has built a remarkable reputation in the standard and custom-engineered valve industry based upon the simple, yet innovative business practice that there is no such thing as a standard valve. Whether it's a tried and true valve – or a valve that exists only in your imagination –We can make it happen. Our inventory of affordable and ready to go Fabri-Valve designs is unrivaled in the industry.

All on hand for rapid shipment to you. What's more for over fifty years, the Fabri-Valve name means valves built and modified with customizations the industry has mandated.

Fabri-Valve® is one segment of ITT's Engineered Process Solutions Group (EPSG), which also manufactures Dia-Flo®, Cam-Tite®, Skotch®, Richter™ Chemie Technik, and Pure-Flo® products. The innovations shared throughout EPSG have meant flexibility in design, speed of construction, higher performance and more economical alternatives.

And as industry has evolved, so has the Fabri-Valve brand – with a proactive philosophy and a "can do" attitude. We approach each customer's requirements with the certainty that we will provide the right valve for the right job. Our unparalleled resources offer an affordable single source solution for all your valve requirements.

Whether it's valves required for the demands of pulp and paper, chemical, petroleum refining, mining, iron and steel, wastewater, power, food and beverage, or marine companies, Engineered Valves Group builds the Fabri-Valve designs that our customers call for and require.

If it can be welded, we can make it. Engineered Valves Group builds fabricated, lined, and cast Fabri-Valve designs in five basic materials: 304, 316 and 317L stainless steels, carbon steel, and ductile iron. Our valve capabilities also cover virtually all weldable alloys...titanium, 254 SMO®, HASTELLOY, etc...

Our flexible factory allows for and aggressively seeks creative solutions to customers' challenges. We have built a business and a reputation on the fact that there is no such thing as a standard valve or a standard job. We know that each and every application has variables that can hinder or stop your process. Based upon our long-standing and diverse valve construction experience, Fabri-Valve can demonstrate a host of options and will customize the exact valve for your exact requirements. We understand the rigors of the fluids, gases and slurries that flow through your piping systems. The right valve for the right job. Our valves substantially reduce downtime and maintenance costs and consistently outlive their payback period. Our company history is built upon that strength.

In addition to our inventories, we employ lean manufacturing techniques that ensure quick on-time delivery and rapid throughput on all orders – from the most routine to the most complex. With valve and stock bodies constructed to your exact specifications. And, if your circumstances require it, we can fabricate a completely new and job-specific valve.

Standard Customers?
No Such Thing.

ITT Engineered Valves Group works to give the customer exactly what is needed, when it is needed. For every style of valve and construction type that is out there, there are hundreds of even more varied uses, with thousands of different customers who have their own unique circumstance. Short turnaround time with right and tight delivery schedules. Lead times and costs held to a minimum – even when supplying exceptionally large or highly customized hardware valve assemblies.

We stand behind our product. Keeping in mind that quality of valve construction is always managed with a keen focus on safety, environment and health in the applied use and employment of our valves. This is quality you can trust to get the job done for you.

We at ITT Engineered Valves Group know that it takes expertise and a solid track record to provide valves for such a wide and highly critical range of uses. Where valve performance is not just measured in production and profits, but in what they restrict, control and protect as well.

The largest knife gate valve we made in Amory, MS USA had a 96" internal diameter (the area of a 7' x 7' room)

Standard Problem Solving?
Hardly Ever.

In business since 1948, Fabri-Valve, manufactured by ITT Industries, Engineered Valves Gruop, has a proven track record in solving specific and individual customer challenges. We modify or make customized valves to our clients' exact specifications. From valves that are 2" in diameter to valves that will easily house a family of four, we make your valves in a way that they work. No ifs, ands or buts. Tell us what you require and we'll make it. It's just that simple.

Lined, cast or fabricated valve construction, the very nature of fabrication allows a maximum of flexibility in customizing to meet specific needs, materials, pressure rating and configuration.

Standard Workforce?
Not Around Here.

To make such promises, you must have a workforce that is experienced, empowered and dedicated to working hard to make selecting the right valve easy. Our employees have an average of 16 years' experience in this critical and complex field. They are people with a "can do" attitude. They pride themselves on their technical savvy and empowered approach. Troubleshooting is no trouble for a workforce that focuses all of this experience on making or modifying the right valve for you. Whether it is creating a valve from scratch or modifying a standard option, our workforce is dedicated to giving a customer what is needed.

A High Standard for Quality, Safety, Environmental and Health Concerns?

You bet.

ITT Industries, Engineered Valves Group, for over 50 years, has made it a point of pride to place a strong emphasis on quality, safety, environmental and health concerns – for our workforce, our customers and populations that these products serve. We know it takes a fully equipped testing laboratory, surface smoothness measuring, nuclear alloy analysis, testing, radiography, finite element analysis, and one hundred percent testing to ensure that safety.

Our exhaustive testing, combined with an experienced and keen eye on all of these measures of quality control, makes us the leader in providing you with the right valve for the right job. You can have confidence in what we say; our track record demonstrates our commitment to providing the most reliable and hardest working valves in the industry. Your environment, your health and the safety of your employees and end users are always at the forefront of every quality check we enforce. Whether it's a standard or custom-designed valve, Engineered Valves Group makes it. And makes it right.

What you want, when you need it?

Now you know.

ITT Fabri-Valve.

Fabri-Valve, ITT Industries Engineered Valves Group

Fabri-Valve® C/F37 Heavy Duty Knife Gate Valve

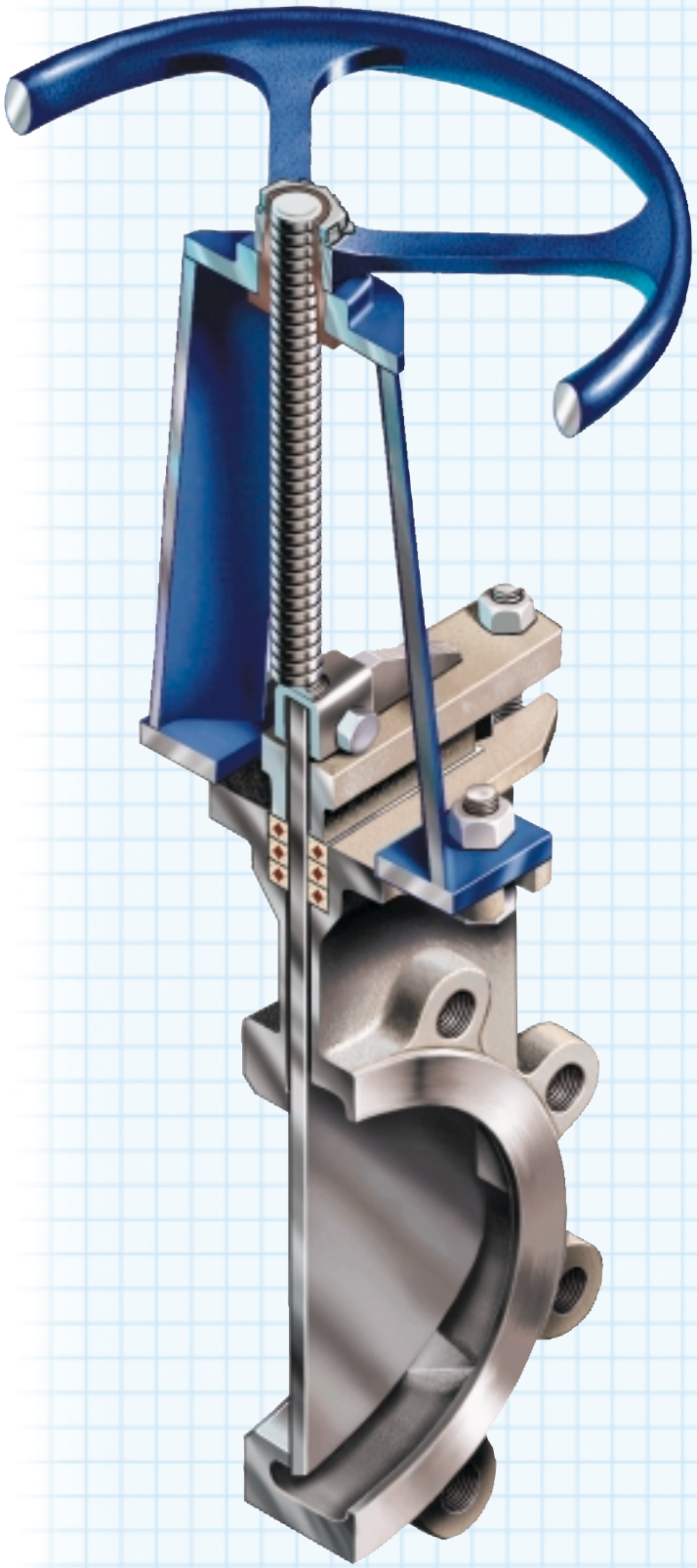


Figure C37 with energized cored packing.

Energized cored packing is standard with 6" (DN 150) and larger C37 valves and all F37 valves.

Fabri-Valve Figures C37 and F37 are some of the most popular knife gate valve configurations. Figure C37 knife gate valves through 24", feature a heavy duty, rugged one-piece cast body, chest and flanges (except 5", which is fabricated – F37). Sizes larger than 24" are fabricated from heavy plate. The Figure C/F37 is available in all stainless steel (designated "S") or with alloy steel wetted parts and carbon steel external parts (designated "R"). In sizes 1.5" through 24", the "S" and the "R" share the same solid cast body. Sizes larger than 24" feature fabricated bodies configured to the service conditions. The Figure C/F37 is available with the widest range of seats in the industry including: integral metal, replaceable hardfaced metal, rubber "D" ring, replaceable rubber, polyurethane, UHMW-P, and PTFE. Standard body materials include 304, 316, and 317L stainless steel. Special alloys such as 254 SMO® are also available. Special flange drillings are also available.

All Figure C/F37 knife gate valves with handwheels include a provision for a locking device. Consult factory for details.

Specifications

Size Range

1.5" – 96"

Pressure Rating

1.5" – 24":	150 psi (10.3 bar) CWP (cold working pressure)
25" – 48":	Designs available in 50 psi (3.5 bar), 100 psi (6.9 bar) or 150 psi (10.3 bar) CWP
Larger than 48":	Manufactured to customer specification

Temperature Rating

1.5" – 48" 450°F (232°C).
Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork. Consult factory for sizes larger than 48" (DN 1200) and for service temperatures up to 1500°F (816°C).

Flange Drilling

ANSI 125/150

Testing

Every Fabri-Valve Figure C/F37 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:

- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage

Standard Seat test:

- Metal Seat: Hydro test at 40 psi (2.8 bar) and at the rated CWP
- Resilient Seat: Hydro test at 15 psi (1 bar) and rated CWP

Pressure/Temperature Ratings

The tables below are the Maximum Pressure/Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material and, if applicable, the resilient seat material. In a majority of knife gate valve designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure C37
Pressure/Temperature Rating - psi

Temp °F	Temp °C	Cast 304	Cast 304L	Cast 316	Cast 316L	Cast 317L	Cast WCB A-216	Cast DI
150	66	150	150	150	150	150	150	150
200	93	142	142	150	150	135	150	150
250	121	135	135	142	142	128	150	147
300	149	129	129	134	134	121	150	143
350	177	123	123	128	128	116	150	139
400	204	118	118	123	123	112	150	135
450	232	114	114	118	118	108	150	131
500	260	111	111	114	114	105	150	127
600	316	104	104	108	108	100	150	119
700	371	101	101	104	104	96	142	
800	427	96	96	100	100	92	103	
900	482	93		99			57	
1000	538	89		97			21	
1100	593	64		76				
1200	649	41		46				
1300	704	28		29				
1400	760	20		20				
1500	816	15		14				

Figure F37
Pressure/Temperature Rating - psi

Temp °F	Temp °C	304	304L	316	316L	317L	A 36	A516Gr70
150	66	150	133	150	133	150	150	150
200	93	133	114	141	113	135	137	150
250	121	126	108	133	107	128	135	150
300	149	120	102	124	101	121	133	150
350	177	115	98	119	97	116	131	150
400	204	110	93	114	93	112	128	150
450	232	107	90	110	90	108	125	150
500	260	103	87	106	87	105	121	150
600	316	97	82	101	83	100	111	150
700	371	94	80	97	80	96	108	142
800*	427*	89	77	93	77	92		103
900*	482*	87		92				57
1000*	538*	83		90				21
1100*	593*	78		88				
1200*	649*	49		59				
1300*	704*	30		33				
1400*	760*	18		18				
1500*	816*	11		10				

* "R" Series valves have external, non-wetted, carbon steel components. Standard "R" Series valves are limited to 700°F (371°C); however alternate "R" Series constructions are available to 1000°F (538°C)

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How To Order" section explains the Valve Model Codes.

Shutoff Performance

Metal Seat

- Single integral metal seat
  - 1.5" – 24" 40cc / minute / inch of valve size
  - 25" – 48" 60cc / minute / inch of valve size
  - Above 48" Consult Factory
- Single hardfaced integral metal seat
  - 1.5" – 24" 80cc / minute / inch of valve size
  - 25" – 48" 120cc / minute / inch of valve size
  - Above 48" Consult Factory
- Dual metal seats
  - Consult factory. All sizes.
- Single hardfaced replaceable metal seat
  - 1.5" – 24" 80cc / minute / inch of valve size
  - Above 24" Consult Factory

Resilient Seat

- Single "D" ring, or single replaceable resilient seat (excluding PTFE)
  - Zero leakage. All sizes.
- Dual seats
  - Consult Factory. All sizes.
- Single replaceable PTFE seat
  - Consult Factory. All sizes.

Low Pressure Operation

Metal seated knife gate valves are seat tested at 40 psid (2.8 bar) in the preferred flow direction. When pressure falls below the 40 psid (2.8 bar) test pressure, less force is pushing the gate into the seat, which may result in additional seat leakage. When improved low-pressure shutoff performance is required, optional chest buttons and/or centerline buttons should be specified.

Fabri-Valve® C/F37 Heavy Duty Knife Gate Valve

Available Options

- "D" Ring Seat
- Lever Operator
- Dual Seats
- Poly Replaceable Seats
- UHMW Replaceable Seats
- PTFE Replaceable Seats
- Rubber Replaceable Seats
- Hard Faced Replaceable Seats
- Elastomer Replaceable Seats
- Hard Faced Gate Edge
- Hard Gate Material
- Nickel-TFE Coated Gate
- Epoxy Coating
- Thru Drilled Flanges
- Flush Ports
- Chest Buttons: Not available 2"-6"
- Centerline Buttons
- Backing Ring
- Extra Wedges
- V-Port
- Cast Ni-Hard Deflection Cones Available 3"-16"
- Fabricated Deflection Cones
- Locking Devices
- E-Z Spin Handwheel
- Live Loaded Packing
- Self-Supporting Yokes
- Alternate Flange Drilling
- Bevel Gear
- Chainwheels
- Cylinder Actuators
- Electric Actuators
- Ratchet
- Extended Stems
- Gate Support Strips
- Rod Boots

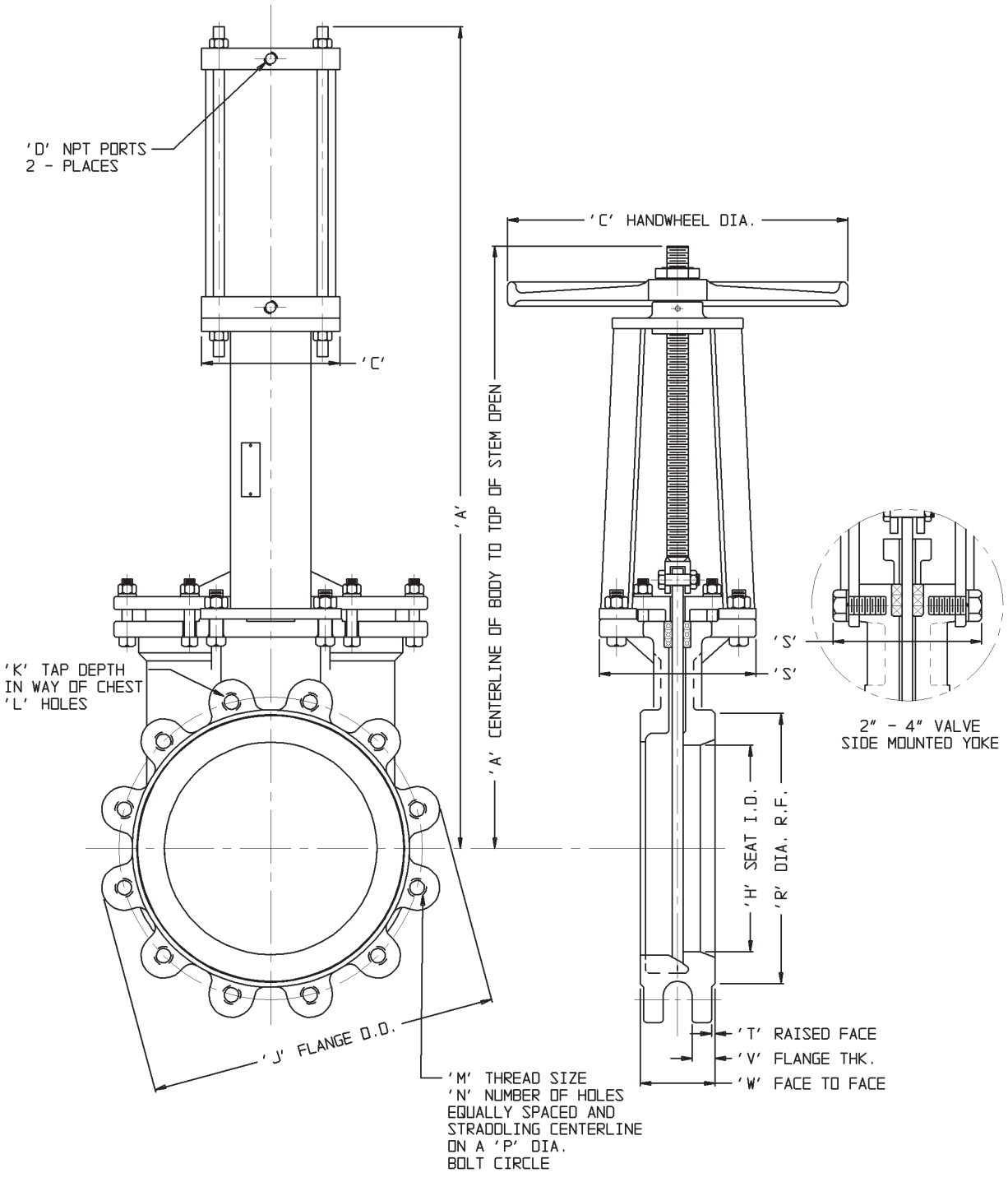
Dimensions

Valve Size		TABLE 1			DIMENSION Inches (mm) Figure C37 with HANDWHEEL OR CYLINDER																	Weight **	
Inches	DN	A			C			D		H*	J	K	L	M	N	P	R	S	T	V	W	lb	kg
		HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL														
2	50	13-11/16 (348)	18-3/8 (467)	16-7/8 (429)	8 (203)	3 (76)	4 (102)	3/8-18	1/4-18	2 (51)	6 (152)	3/8 (10)	2	5/8-11NC	4	4-3/4 (121)	3-5/8 (92)	4 (102)	1/16 (2)	9/16 (14)	1-7/8 (48)	17	8
		HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL														
3	80	16-7/16 (418)	20-7/8 (530)	19-3/8 (492)	8 (203)	3 (76)	4 (102)	3/8-18	1/4-18	3 (76)	7-1/2 (191)	13/32 (10)	2	5/8-11NC	4	6 (152)	5 (127)	4 (102)	1/16 (2)	9/16 (14)	2 (51)	21	10
		HW	3-1/4 CYL	4 CYL	HW	3-1/4 CYL	4 CYL	3-1/4 CYL	4 CYL														
4	100	19-3/16 (487)	22-1/8 (562)	22-7/8 (581)	8 (203)	4 (76)	4-1/2 (114)	1/4-18	3/8-18	4 (102)	9 (229)	13/32 (10)	2	5/8-11NC	8	7-1/2 (191)	6-3/16 (157)	4 (102)	1/16 (2)	11/16 (17)	2 (51)	30	14
		HW	4 CYL	6 CYL	HW	4 CYL	6 CYL	4 CYL	6 CYL														
6	150	25-5/16 (643)	28-7/8 (733)	29-1/4 (743)	10 (254)	4-1/2 (114)	6-1/2 (165)	3/8-18	3/8-18	6 (152)	11 (279)	7/16 (11)	2	3/4-10NC	8	9-1/2 (241)	8-1/2 (216)	7-3/8 (187)	1/16 (2)	5/8 (16)	2-1/4 (57)	75	34
		HW	6 CYL	8 CYL	HW	6 CYL	8 CYL	6 CYL	8 CYL														
8	200	32-5/8 (829)	35-13/16 (910)	36-5/16 (922)	12 (305)	6-1/2 (165)	8-5/8 (219)	3/8-18	3/8-18	8 (203)	13-1/2 (343)	5/8 (16)	2	3/4-10NC	8	11-3/4 (298)	10-5/8 (270)	7-3/8 (187)	1/16 (2)	13/16 (21)	2-3/4 (70)	94	45
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL														
10	250	37-3/4 (959)	41-7/16 (1053)	42-3/16 (1072)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	10 (254)	16 (406)	1/2 (13)	4	7/8-9NC	12	14-1/4 (362)	12-3/4 (324)	7-3/8 (187)	1/8 (3)	15/16 (24)	2-3/4 (70)	126	57
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL														
12	300	44-9/16 (1132)	48 (1219)	48-3/4 (1238)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	12 (305)	19 (483)	1/2 (13)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)	177	80
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL														
14	350	49-1/4 (1251)	54-1/16 (1373)	55-3/16 (1402)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	13-1/4 (337)	21 (533)	7/16 (11)	4	1-8NC	12	18-3/4 (476)	16-1/4 (413)	7-3/4 (197)	3/16 (5)	15/16 (24)	3 (76)	215	98
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL														
16	400	56-1/2 (1435)	61-1/16 (1551)	62-3/16 (1580)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	15-1/4 (387)	23-1/2 (597)	9/16 (14)	6	1-8NC	16	21-1/4 (540)	18-1/2 (470)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	268	122
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL														
18	450	63-5/16 (1608)	66-1/2 (1689)	67-5/8 (1718)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	17-1/4 (438)	25 (635)	5/8 (16)	6	1-1/8-7NC	16	22-3/4 (578)	21 (533)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	407	185
		HW	14 CYL	16 CYL	HW	14 CYL	16 CYL	14 CYL	16 CYL														
20	500	68-5/8 (1743)	72-15/16 (1853)	73-7/16 (1865)	20 (508)	14-3/4 (375)	17 (432)	3/4-14	3/4-14	19-1/4 (489)	27-1/2 (699)	29/32 (23)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)	523	237
		HW	16 CYL	18 CYL	HW	16 CYL	18 CYL	16 CYL	18 CYL														
24	600	79-13/16 (2027)	84-11/16 (2151)	86-5/8 (2200)	20 (508)	17 (432)	19 (483)	3/4-14	3/4-14	23-1/4 (591)	32 (813)	13/16 (21)	8	1-1/4-7NC	20	29-1/2 (749)	27-1/4 (692)	14-1/8 (359)	3/16 (5)	1-5/16 (33)	4-1/2 (114)	713	321

* For 14" - 24" valves with rubber replaceable seats, use the port I.D. dimensions show in the Flow Coefficients Table (see last page).

** Figures C37R and C37S with Handwheels

Refer to TABLE 1 for dimensions



with Cylinder

with Handwheel

Fabri-Valve® C/F37 Heavy Duty Knife Gate Valve

Dimensions

Valve Size		TABLE 2 DIMENSION Inches (mm) Figure C37 with BEVEL GEAR																
Inches	DN	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	V	W
6	150	25-5/16 (643)	19-11/16 (500)	12 (305)	12-3/8 (314)	6-1/2 (165)	6 (152)	11 (279)	7/16 (11)	2	3/4-10NC	8	9-1/2 (241)	8-1/2 (216)	7-3/8 (187)	1/16 (2)	5/8 (16)	2-1/4 (57)
8	200	32-15/16 (837)	24-5/8 (625)	12 (305)	12-3/8 (314)	6-1/2 (165)	8 (203)	13-1/2 (343)	5/8 (16)	2	3/4-10NC	8	11-3/4 (298)	10-5/8 (270)	7-3/8 (187)	1/16 (2)	13/16 (21)	2-3/4 (70)
10	250	38-1/16 (967)	27-9/16 (700)	12 (305)	12-3/8 (314)	6-1/2 (165)	10 (254)	16 (406)	1/2 (13)	4	7/8-9NC	12	14-1/4 (362)	12-3/4 (324)	7-3/8 (187)	1/8 (3)	15/16 (24)	2-3/4 (70)
12	300	44-9/16 (1132)	31-13/16 (808)	12 (305)	12-3/8 (314)	6-1/2 (165)	12 (305)	19 (483)	1/2 (13)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)
14	350	49-5/16 (1252)	34-3/4 (883)	12 (305)	12-3/8 (314)	6-1/2 (165)	13-1/4 (337)	21 (533)	7/16 (11)	4	1-8NC	12	18-3/4 (476)	16-1/4 (413)	7-3/4 (197)	3/16 (5)	15/16 (24)	3 (76)
16	400	56-9/16 (1437)	40-3/8 (1026)	12 (305)	12-1/16 (306)	6-1/2 (165)	15-1/4 (387)	23-1/2 (597)	9/16 (14)	6	1-8NC	16	21-1/4 (540)	18-1/2 (470)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)
18	450	63-5/16 (1608)	43-13/16 (1113)	12 (305)	12-1/16 (306)	6-1/2 (165)	17-1/4 (438)	25 (635)	5/8 (15)	6	1-1/8-7NC	16	22-3/4 (578)	21 (533)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)
20	500	68-5/8 (1543)	47-15/16 (1218)	12 (305)	12-1/16 (306)	6-1/2 (165)	19-1/4 (489)	27-1/2 (699)	29/32 (23)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)
24	600	79-7/8 (2029)	55-3/16 (1402)	12 (305)	12-1/16 (306)	6-1/2 (165)	23-1/4 (591)	32 (813)	13/16 (21)	8	1-1/4-7NC	20	29-1/2 (749)	27-1/4 (692)	14-1/8 (359)	3/16 (5)	1-5/16 (33)	4-1/2 (114)

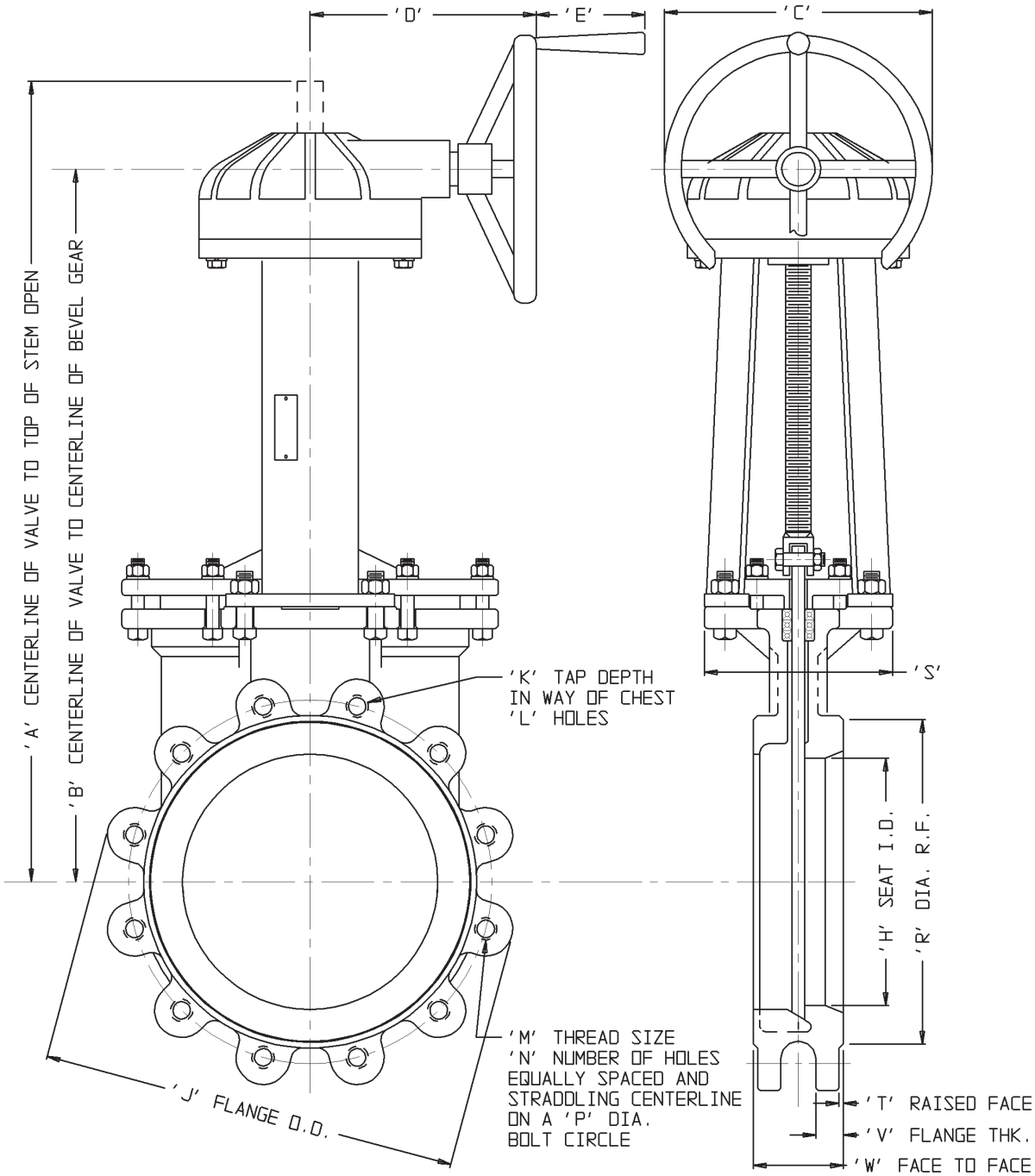
6" - 14" valves have a bevel gear ratio of 3:1
16" - 24" valves have a bevel gear ratio of 4:1

Materials of Construction

Part	Materials	
	C37R & F37R	C37S & F37S
Body and Chest	1.5" – 24"(except 5") solid one piece. C37R-304: Cast 304 stainless steel C37R-316: Cast 316 stainless steel C37R-317L: Cast 317L stainless steel Larger than 24" and the 5" are fabricated with stainless steel wetted parts and carbon steel exterior parts.	1.5" - 24" (except 5") solid one piece. C37S-304: Cast 304 stainless steel C37S-316: Cast 316 stainless steel C37S-317L: Cast 317L stainless steel Larger than 24" and the 5" are fabricated of all stainless steel
Seat	Integral seat to 1500°F (816°C) with appropriate packing RH: Replaceable hardfaced seat to 750°F (399°C) standard Up to 1600°F(871°C) with proper packing and gaskets RT: Replaceable PTFE seat to 400°F (204°C) RW: Replaceable UHMWP seat to 140°F (60°C) RP: Replaceable polyurethane seat to 180°F (82°C)	
Gate	Stainless steel of same grade used in body, finished to 32 RMS	
Yoke	1.5" - 4", Cast ductile iron 6" and above fabricated carbon steel	1.5" - 4", cast 304 stainless steel 6" and above fabricated 304 stainless steel
Yoke Fasteners	Plated steel	Stainless steel
Stem	304 stainless steel	
Stem Nut	Acid resistant bronze	
Lubrication Fitting	Plated steel	
Packing	Acrylic/PTFE/silicone[1]	
Packing Follower	Ductile iron/carbon steel with plated steel bolts	304 stainless steel with stainless steel bolts
Handwheel	Cast iron	
Handwheel Retaining Nut	Malleable iron	Stainless steel
Tab Washer	Stainless steel	

[1] Energized cored packing is standard with 6" (DN150) and larger C37 valves and all F37 valves.

Refer to TABLE 2 for dimensions



Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figures C37 and F37
Cv Ratings, Port Diameter, and Area

Valve Size		Standard Port			With V-Seat			With Replaceable Poly or Replaceable Rubber seat		
In.	DN	Cv	Port I.D. Inches	Port Area Sq. In.	Cv	Port Inside Inches	Port Area Sq. In.	Cv	Port I.D. Inches	Port Area Sq. In.
2	50	288	2.00	3.1	165	2.00	2.8	288	2.00	3.1
3	75	648	3.00	7.1	355	3.00	6.3	648	3.00	7.1
4	100	1,152	4.00	12.6	515	4.00	9.5	1,152	4.00	12.6
6	150	2,592	6.00	28.3	1,350	6.00	24.9	2,592	6.00	28.3
8	200	4,608	8.00	50.3	2,050	8.00	38.1	4,608	8.00	50.3
10	250	7,208	10.00	78.5	3,200	10.00	59.0	7,208	10.00	78.5
12	300	10,400	12.00	113.1	4,450	12.00	82.3	10,400	12.00	113.1
14	350	12,650	13.25	137.9	5,350	13.25	98.8	10,080	12.00	113.1
16	400	16,750	15.25	182.6	6,950	15.25	128.4	14,200	14.25	159.5
18	450	21,450	17.25	233.7	10,700	17.25	198.2	18,500	16.25	207.4
20	500	26,700	19.25	291.0	13,250	19.25	245.4	22,700	18.00	254.5
24	600	38,900	23.25	424.6	15,400	23.25	284.7	33,900	22.00	380.1
30*	750*	49,850	26.69	559.4	Consult Factory					
36*	900*	74,800	32.69	839.2						
42*	1050*	104,800	38.69	1175.5						
48*	1200*	136,700	44.19	1533.5						

*50 psi (3.5 bar) CWP valve design. Contact factory for higher pressure designs.

Engineered Valves Group

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Fabri-Valve

ITT Industries
Engineered for life

Fabri-Valve® C37L Lined Knife Gate Valve

The Fabri-Valve C37L offers the corrosion resistance of a stainless steel lining with the economy of a cast iron body. The body and chest are lined with a choice of 304, 316 or 317L stainless steel. Fabri-Valve lined valves feature fully supported liners that are vacuum leak tested during manufacture. Meets or exceeds specifications MSS-SP-81 and Tappi 405-8.

Specifications

Size Range
30" & 36"

Pressure Rating
150 psi (10.3 bar) CWP (cold working pressure)

Temperature Rating
450°F (232°C). Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork.

Flange Drilling
ANSI 125/150

Testing

Every Fabri-Valve Figure C37L valve is fully tested prior to shipment. Testing includes a body shell test, a seat test, and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:
- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage

Standard Seat test:
- Metal Seat: Hydro test at 40 psi (2.8 bar) and at the rated CWP
- Resilient Seat: Hydro test at 15 psi (1 bar) and rated CWP

Shutoff Performance

Metal Seat
- Single integral metal seat
  30" & 36" 60cc / minute / inch of valve size

Resilient Seat
- Single "D" ring Zero leakage all sizes

Available Options

- **"D" Ring Seat**
- **Epoxy Coating**
- **Thru Drilled Flanges**
- **V-Port**
- **Locking Devices**
- **Live Loaded Packing**
- **Self-Supporting Yoke**
- **Bevel Gear**
- **Centerline Buttons**
- **Backing Rings**
- **Deflection Cones**
- **Chainwheels**
- **Cylinder Actuators**
- **Electric Actuators**
- **Ratchet**
- **Extended Stems**
- **Gate Support Strips**
- **Rod Boots**

Pressure/Temperature Ratings

The table below is the Maximum Pressure Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material, and if applicable, the resilient seat material. In a majority of knife gate valve designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Temp		Pressure/Temperature Rating - psi (bar)
°F	°C	
150	66	150 (10.3)
200	93	141 (9.7)
250	121	132 (9.1)
300	149	122 (8.4)
350	177	113 (7.8)
400	204	104 (7.2)
450	232	94 (6.5)

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

C_V Ratings			
Valve Size		Metal C_V	D-Ring C_V
Inches	DN		
30	750	53,950	54,450
36	900	77,800	79,600

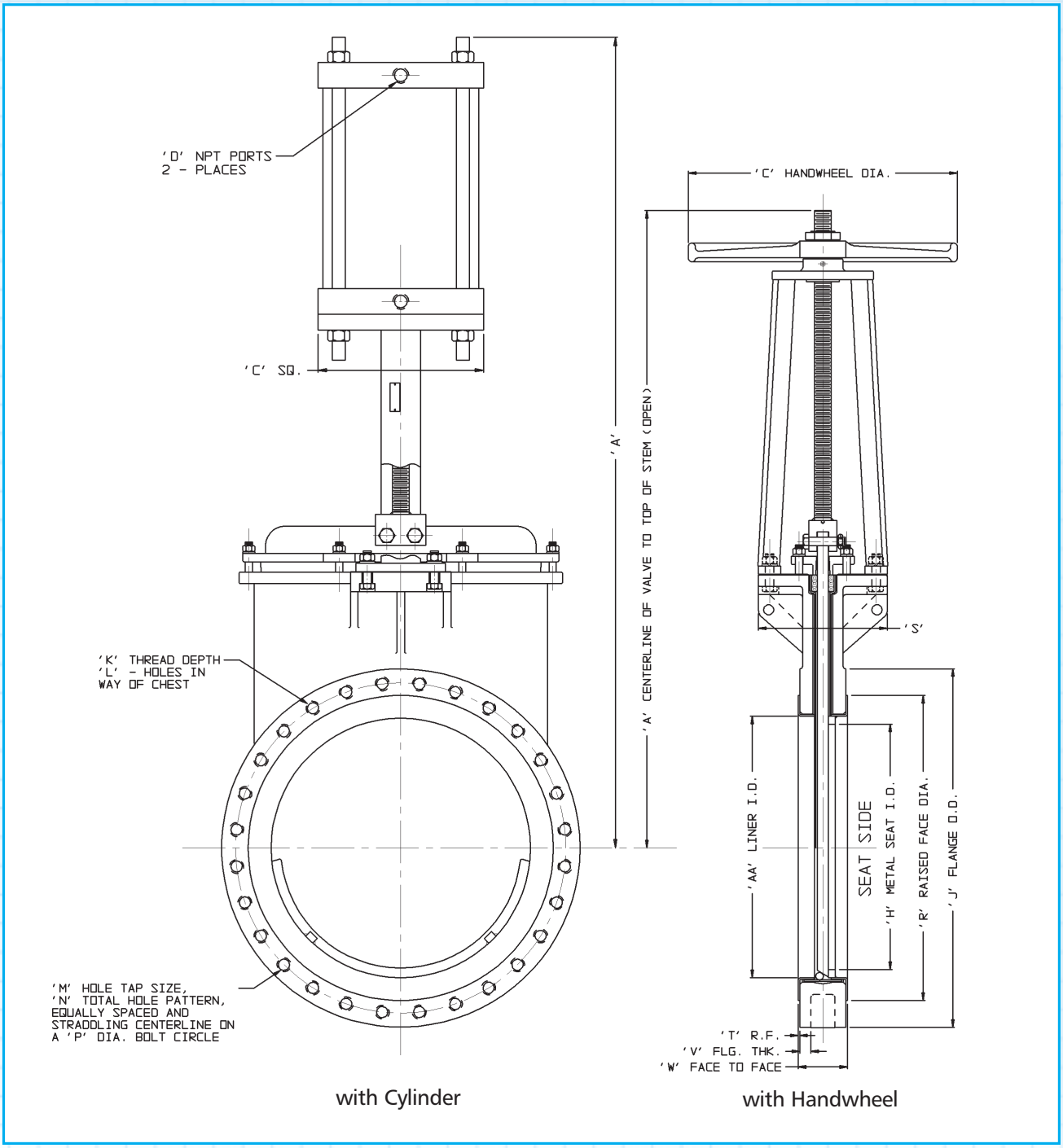
Materials of Construction

Part	Material
Body, Chest and Flanges	One piece cast iron body, chest and flanges lined with 304, 316 or 317L stainless steel. Flanges have smooth stainless steel raised faces.
Seat	Stainless steel or optional "D" ring
Gate	Same grade stainless steel as liner, finished to 32 RMS
Yoke	Carbon steel
Yoke Fasteners	Plated steel
Stem	304 Stainless steel
Stem Nut	Acid resistant bronze
Lubrication Fitting	Plated steel
Packing	Acrylic/PTFE/Silicone
Packing Follower	Carbon steel with plated steel bolting
Handwheel	Cast iron
Handwheel Nut	Malleable iron
Tab Washer	Stainless steel

Dimensions

Valve Size		DIMENSION Inches (mm) C37L with HANDWHEEL OR CYLINDER																				Weight*	
Inches	DN	A			C			D		H	J	K	L	M	N	P	R	S	T	V	W	AA	lb	kg
		HW	14 CYL	16 CYL	HW	14 CYL	16 CYL	14 CYL	16 CYL															
30	750	98-5/16 (2497)	103-1/16 (2718)	103-9/16 (2630)	30 (762)	14-3/4 (375)	17 (432)	3/4-14	3/4-14	27-3/8 (695)	38-3/4 (984)	7/8 (22)	10	1-1/4-7NC	28	36 (914)	33-3/4 (857)	16 (406)	1/8 (3)	1-3/16 (30)	4-5/8 (117)	29-1/2 (749)	1600	726
		HW	16 CYL	18 CYL	HW	16 CYL	18 CYL	16 CYL	18 CYL															
36	900	116-1/4 (2953)	121-3/8 (3083)	123-1/4 (3131)	30 (762)	17 (432)	19 (483)	3/4-14	3/4-14	32-7/8 (835)	46 (1168)	1-7/32 (31)	12	1-1/2-6NC	32	42-3/4 (1086)	40-1/4 (1022)	20 (508)	1/8 (3)	1-1/2 (38)	5-3/4 (146)	35-1/2 (902)	2134	968

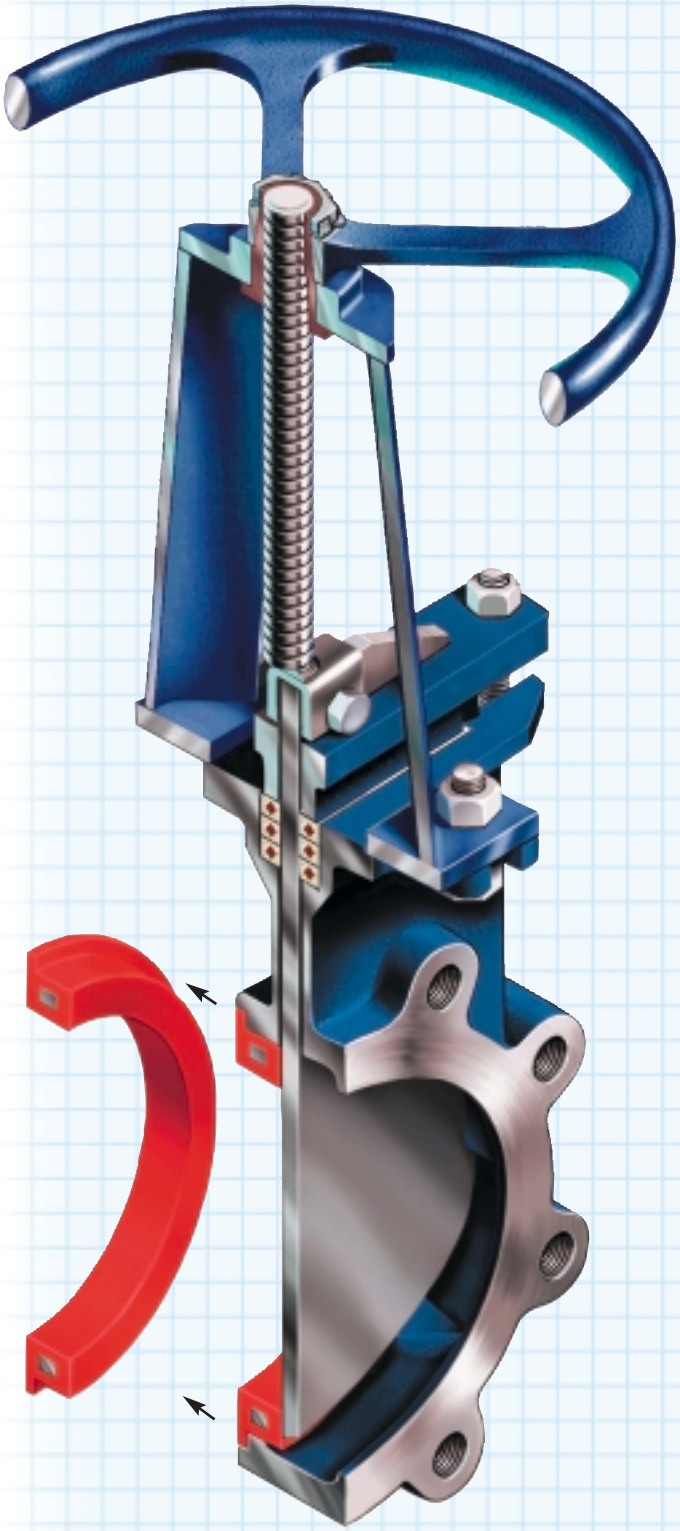
* Valve with Handwheel



with Cylinder

with Handwheel

Fabri-Valve® C45 Ductile Iron Knife Gate Valve



Replaceable seat is held in place by the adjacent mating flange.

Shown with energized cored packing.
Standard with 6”(DN 150) and larger Figure C45 valves.

The basic Fabri-Valve C45 features a solid ductile iron or carbon steel body with an integral cast metal seat. However, this valve is most often used with the patented, pop-in style replaceable seats, which are available in a variety of rubbers, polyurethane, UHMW-P, TFE, and hard-faced metal. The pop-in seats feature a much larger cross section and seating area than conventional knife gate valve seats thus providing a seating surface far removed from the flow stream. Replaceable seats offer a unique advantage; abrasion resistance, long seat life, and the convenience of easy seat replacement.

All Figure C45 knife gate valves with handwheels include a provision for a locking device.

CAUTION: (Replaceable soft seats)
Review Fabri-Valve gasket/mating flange recommendations.

Specifications

Size Range
2" – 24"

Pressure Rating
150 psi (10.3 bar) CWP (cold working pressure)

Temperature Rating
See Materials of Construction (seat section).
Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork.

Flange Drilling
Flat faced ANSI 125/150

Testing

Every Fabri-Valve C45 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test, and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:

- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage

Standard Seat test:

- Metal Seat: Hydro test at 40 psi (2.8 bar) and at the rated CWP
- Resilient Seat: Hydro test at 15 psi (1 bar) and rated CWP

Pressure/Temperature Ratings

The table below is the Maximum Pressure /Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material and, if applicable, the resilient seat material. In a majority of knife gate valve designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure C45 Pressure/Temperature Rating - psi			
Temp °F	Temp °C	Cast Steel WCB A-216	Cast DI A536 GR 65-45-12
150	66	150	150
200	93	150	150
250	121	150	147
300	149	150	143
350	177	150	139
400	204	150	135
450	232	150	131
500	260	150	127
600	316	150	119
700	371	142	
800	427	103	
900	482	57	
1000	538	21	

Low Pressure Operation

Metal seated knife gate valves are seat tested at 40 psid (2.8 bar) in the preferred flow direction. When pressure falls below the 40 psid (2.8 bar) test pressure, less force is pushing the gate into the seat, which may result in additional seat leakage. When improved low-pressure shutoff performance is required, optional chest buttons should be specified

Available Options

- **"D" Ring Seat**
- **Lever Operator**
- **Dual Seats**
- **Poly Replaceable Seats**
- **UHMW Replaceable Seats**
- **PTFE Replaceable Seats**
- **Rubber Replaceable Seats**
- **Hard Faced Gate Edge**
- **Hard Gate Material**
- **Nickel-TFE Coated Gate**
- **Epoxy Coating**
- **Thru Drilled Flanges**
- **Flush Ports**
- **Chest Buttons:** Not available 2" – 6"
- **Cast Ni-Hard Deflection Cones:** Available sizes 3" – 16"
- **Fabricated Deflection Cones**
- **Locking Devices**
- **E-Z Spin Handwheel**
- **Live Loaded Packing**
- **Self-Supporting Yokes**
- **Bevel Gear**
- **Chainwheels**
- **Cylinder Actuators**
- **Electric Actuators**
- **Ratchet**
- **Extended Stems**
- **Rod Boots**

Shutoff Performance

Metal Seat

- Single integral metal seat
  2" – 24" 40cc / minute / inch of valve size
- Single hardfaced replaceable metal seat
  2" – 24" 80cc / minute / inch of valve size
- Dual hardfaced replaceable metal seats
  Consult factory. All sizes.

Resilient Seat

- Single "D" ring, or single replaceable resilient seat (excluding PTFE)
  Zero leakage. All sizes.
- Dual seats
  Consult factory. All sizes.
- Single replaceable PTFE seat
  Consult factory. All sizes.

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at 16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure C45 Knife Gate Valves C_v Ratings, Port Diameter and Area							
		Standard Port			With Replaceable Poly or Replaceable Rubber seat		
Valve Size In.	Valve Size DN	C_v	Port I.D. Inches	Port Area Sq. In.	C_v	Port I.D. Inches	Port Area Sq. In.
2	50	288	2.00	3.1	288	2.00	3.1
3	75	648	3.00	7.1	648	3.00	7.1
4	100	1,152	4.00	12.6	1,152	4.00	12.6
6	150	2,592	6.00	28.3	2,592	6.00	28.3
8	200	4,608	8.00	50.3	4,608	8.00	50.3
10	250	7,208	10.00	78.5	7,208	10.00	78.5
12	300	10,400	12.00	113.1	10,400	12.00	113.1
14	350	12,650	13.25	137.9	10,080	12.00	113.1
16	400	16,750	15.25	182.6	14,200	14.25	159.5
18	450	21,450	17.25	233.7	18,500	16.25	207.4
20	500	26,700	19.25	291.0	22,700	18.00	254.5
24	600	38,900	23.25	424.6	33,900	22.00	380.1

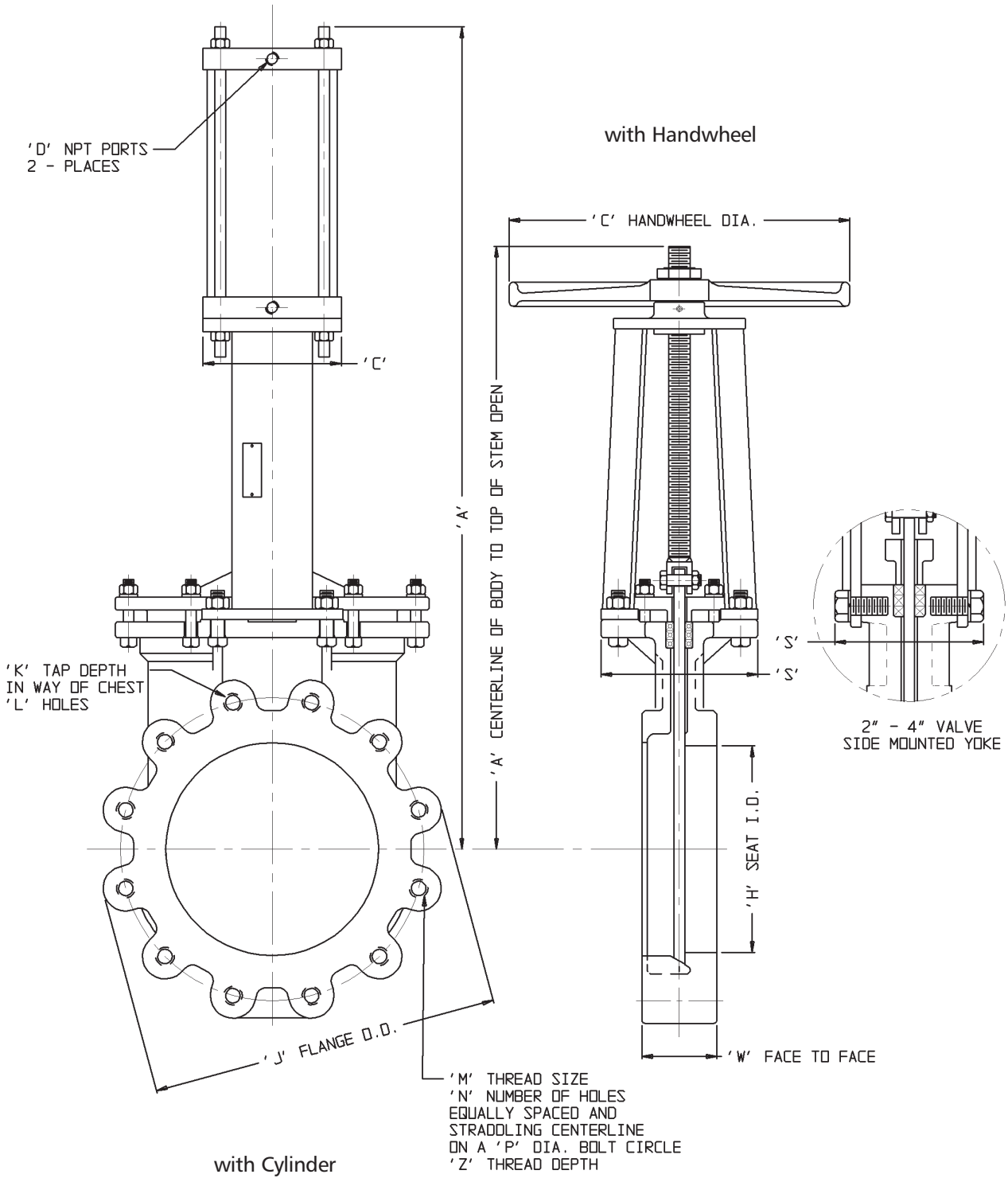
Fabri-Valve® C45 Ductile Iron Knife Gate Valve

Dimensions

Valve Size		TABLE 1			DIMENSION Inches (mm) C45 with HANDWHEEL OR CYLINDER															Weight*	
Inches	DN	A			C			D		H	J	K	L	M	N	P	S	W	Z	lb	kg
		HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL												
2	50	13-11/16 (348)	18-3/8 (467)	16-7/8 (429)	8 (203)	3 (76)	4 (102)	3/8-18	1/4-18	2 (51)	6 (152)	1/2 (12)	2	5/8-11NC	4	4-3/4 (121)	4 (102)	1-7/8 (48)	9/16 (14)	21	10
		HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL												
3	80	16-7/16 (418)	20-7/8 (530)	19-3/8 (492)	8 (203)	3 (76)	4 (102)	3/8-18	1/4-18	3 (76)	7-1/2 (191)	1/2 (12)	2	5/8-11NC	4	6 (152)	4 (102)	2 (51)	5/8 (16)	26	12
		HW	3-1/4 CYL	4 CYL	HW	3-1/4 CYL	4 CYL	3-1/4 CYL	4 CYL												
4	100	19-3/16 (487)	22-1/8 (562)	22-7/8 (581)	8 (203)	4 (76)	4-1/2 (114)	1/4-18	3/8-18	4 (102)	9 (229)	1/2 (12)	2	5/8-11NC	8	7-1/2 (191)	4 (102)	2 (51)	5/8 (16)	31	14
		HW	4 CYL	6 CYL	HW	4 CYL	6 CYL	4 CYL	6 CYL												
6	150	25-5/16 (643)	28-7/8 (733)	29-1/4 (743)	10 (254)	4-1/2 (114)	6-1/2 (165)	3/8-18	3/8-18	6 (152)	11 (279)	9/16 (14)	2	3/4-10NC	8	9-1/2 (241)	7-3/8 (187)	2-1/4 (57)	3/4 (19)	52	24
		HW	6 CYL	8 CYL	HW	6 CYL	8 CYL	6 CYL	8 CYL												
8	200	32-5/8 (829)	35-13/16 (910)	36-5/16 (922)	12 (305)	6-1/2 (165)	8-5/8 (219)	3/8-18	3/8-18	8 (203)	13-1/2 (343)	5/8 (16)	2	3/4-10NC	8	11-3/4 (298)	7-3/8 (187)	2-3/4 (70)	1 (25)	105	48
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL												
10	250	37-3/4 (959)	41-7/16 (1053)	42-3/16 (1072)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	10 (254)	16 (406)	5/8 (16)	4	7/8-9NC	12	14-1/4 (362)	7-3/8 187)	2-3/4 (70)	1 (25)	145	66
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL												
12	300	44-9/16 (1132)	48 (1219)	48-3/4 (1238)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	12 (305)	19 (483)	5/8 (16)	4	7/8-9NC	12	17 (432)	7-1/2 (191)	3 (76)	1 (25)	205	93
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL												
14	350	49-1/4 (1251)	54-1/16 (1373)	55-3/16 (1402)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	13-1/4 (337)	21 (533)	21/32 (17)	4	1-8NC	12	18-3/4 (476)	7-3/4 (197)	3 (76)	1 (25)	235	107
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL												
16	400	56-1/2 (1435)	61-1/16 (1551)	62-3/16 (1580)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	15-1/4 (387)	23-1/2 (597)	25/32 (20)	6	1-8NC	16	21-1/4 (540)	11-1/4 (286)	3-1/2 (89)	1-1/4 (32)	390	145
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL												
18	450	63-5/16 (1608)	66-1/2 (1689)	67-5/8 (1718)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	17-1/4 (438)	25 (635)	3/4 (19)	6	1-1/8-7NC	16	22-3/4 (578)	11-1/4 (286)	3-1/2 (89)	1-3/8 (35)	515	177
		HW	14 CYL	16 CYL	HW	14 CYL	16 CYL	14 CYL	16 CYL												
20	500	68-5/8 (1743)	72-15/16 (1853)	73-7/16 (1865)	20 (508)	14-3/4 (375)	17 (432)	3/4-14	3/4-14	19-1/4 (489)	27-1/2 (699)	1-1/8 (29)	8	1-1/8-7NC	20	25 (635)	14 (356)	4-1/2 (114)	1-1/2 (38)	690	234
		HW	16 CYL	18 CYL	HW	16 CYL	18 CYL	16 CYL	18 CYL												
24	600	79-13/16 (2027)	84-11/16 (2151)	86-5/8 (2200)	20 (508)	17 (432)	19 (483)	3/4-14	3/4-14	23-1/4 (591)	32 (813)	1-1/16 (27)	8	1-1/4-7NC	20	29-1/2 (749)	14-1/8 (359)	4-1/2 (114)	1-1/2 (38)	923	313

* Valve and Handwheel

Refer to TABLE 1 for dimensions



Fabri-Valve® C45 Ductile Iron Knife Gate Valve

Materials of Construction

Part	Materials
Body and Chest	Ductile iron
Flanges	Ductile iron
Seat Rating	Integral metal, D-ring, or replaceable With integral seat 500°F (260°C) With RW seat 140°F (60°C) With RP seat 180°F (82°C) With RH seat 550°F (288°C) standard, 650°F (343°C) with special packing. With RT seat 400°F (204°C)
Gate	304 stainless steel finished to 32 RMS
Yoke	Carbon steel
Yoke Bolting	Plated steel
Packing	Acrylic/PTFE/silicone [1]
Packing Follower	Ductile iron w/plated steel bolting
Stem	304 stainless steel
Stem Nut	Acid resistant bronze
Lubrication Fitting	Plated steel
Handwheel	Cast iron
Handwheel Retaining Nut	Malleable iron
Tab Washer	Stainless steel

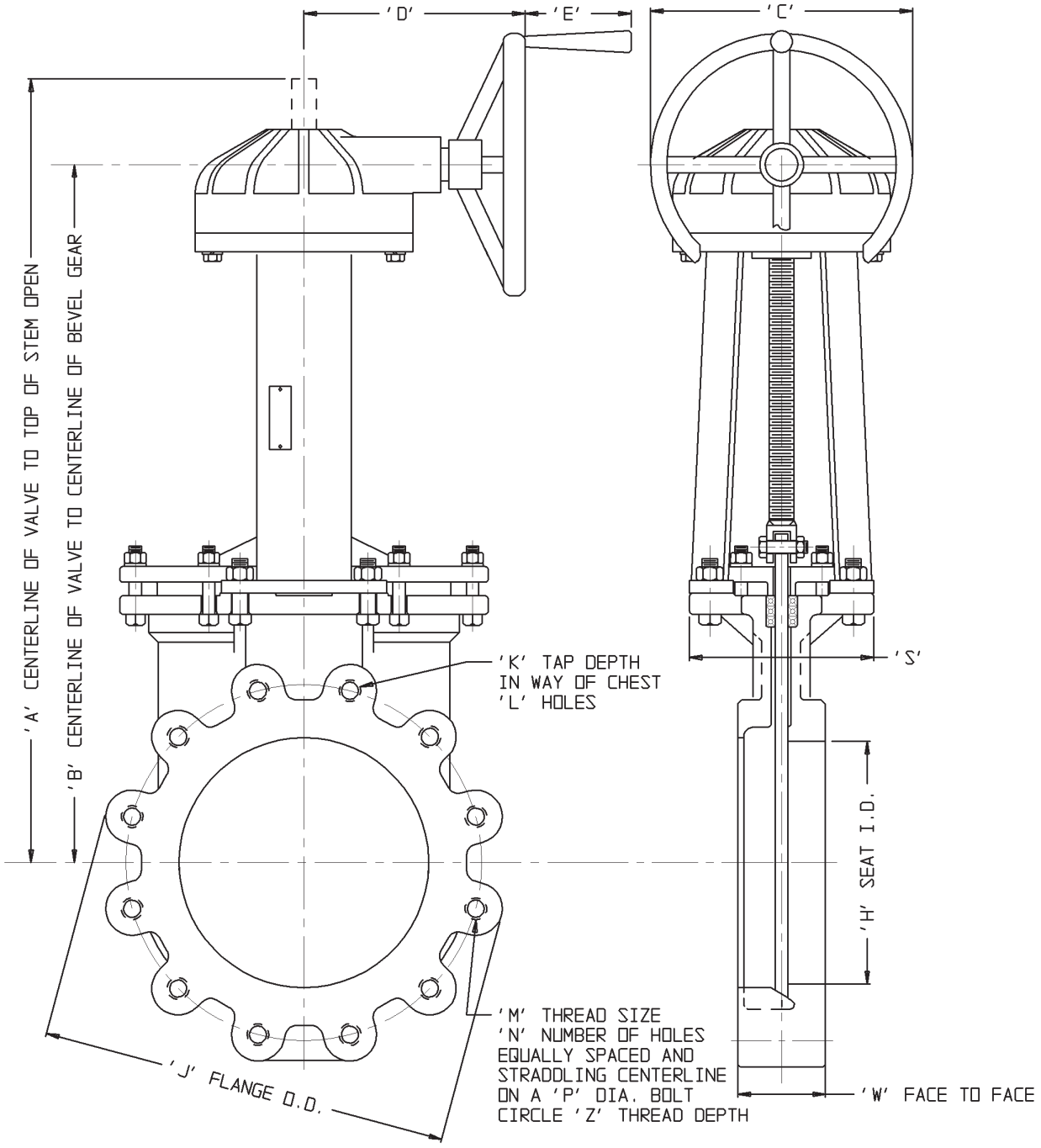
[1] Energized cored packing is standard with 6" (DN150) and larger C45 valves

Dimensions

Valve Size		TABLE 2 DIMENSION Inches (mm) C45 with BEVEL GEAR														
Inches	DN	A	B	C	D	E	H	J	K	L	M	N	P	S	W	Z
6	150	25-5/16 (643)	19-11/16 (500)	12 (305)	12-3/8 (314)	6-1/2 (165)	6 (152)	11 (279)	9/16 (14)	2	3/4-10NC	8	9-1/2 (241)	7-3/8 (187)	2-1/4 (57)	3/4 (19)
8	200	32-15/16 (837)	24-5/8 (625)	12 (305)	12-3/8 (314)	6-1/2 (165)	8 (203)	13-1/2 (343)	5/8 (16)	2	3/4-10NC	8	11-3/4 (298)	7-3/8 (187)	2-3/4 (70)	1 (25)
10	250	38-1/16 (967)	27-5/16 (694)	12 (305)	12-3/8 (314)	6-1/2 (165)	10 (254)	16 (406)	5/8 (16)	4	7/8-9NC	12	14-1/4 (362)	7-3/8 (187)	2-3/4 (70)	1 (25)
12	300	44-9/16 (1132)	31-13/16 (808)	12 (305)	12-3/8 (314)	6-1/2 (165)	12 (305)	19 (483)	5/8 (16)	4	7/8-9NC	12	17 (432)	7-1/2 (191)	3 (76)	1 (25)
14	350	49-13/16 (1265)	34-3/4 (883)	12 (305)	12-3/8 (314)	6-1/2 (165)	13-1/4 (337)	21 (533)	21/32 (17)	4	1-8NC	12	18-3/4 (476)	7-3/4 (197)	3 (76)	1 (25)
16	400	56-9/16 (1437)	40-3/8 (1026)	12 (305)	12-1/16 (306)	6-1/2 (165)	15-1/4 (387)	23-1/2 (597)	25/32 (20)	6	1-8NC	16	21-1/4 (540)	11-1/4 (286)	3-1/2 (89)	1-1/4 (32)
18	450	63-5/16 (1608)	43-13/16 (1113)	12 (305)	12-1/16 (306)	6-1/2 (165)	17-1/4 (438)	25 (635)	3/4 (19)	6	1-1/8-7NC	16	22-3/4 (578)	11-1/4 (286)	3-1/2 (89)	1-3/8 (35)
20	500	68-5/8 (1543)	47-15/16 (1218)	12 (305)	12-1/16 (306)	6-1/2 (165)	19-1/4 (489)	27-1/2 (699)	1-1/8 (29)	8	1-1/8-7NC	20	25 (635)	14 (356)	4-1/2 (114)	1-1/2 (38)
24	600	79-7/8 (2029)	55-3/16 (1402)	12 (305)	12-1/16 (306)	6-1/2 (165)	23-1/4 (591)	32 (813)	1-1/16 (27)	8	1-1/4-7NC	20	29-1/2 (749)	14-1/8 (359)	4-1/2 (114)	1-1/2 (81)

6" - 14" valves have a bevel gear ratio of 3:1
16" - 24" valves have a bevel gear ratio of 4:1

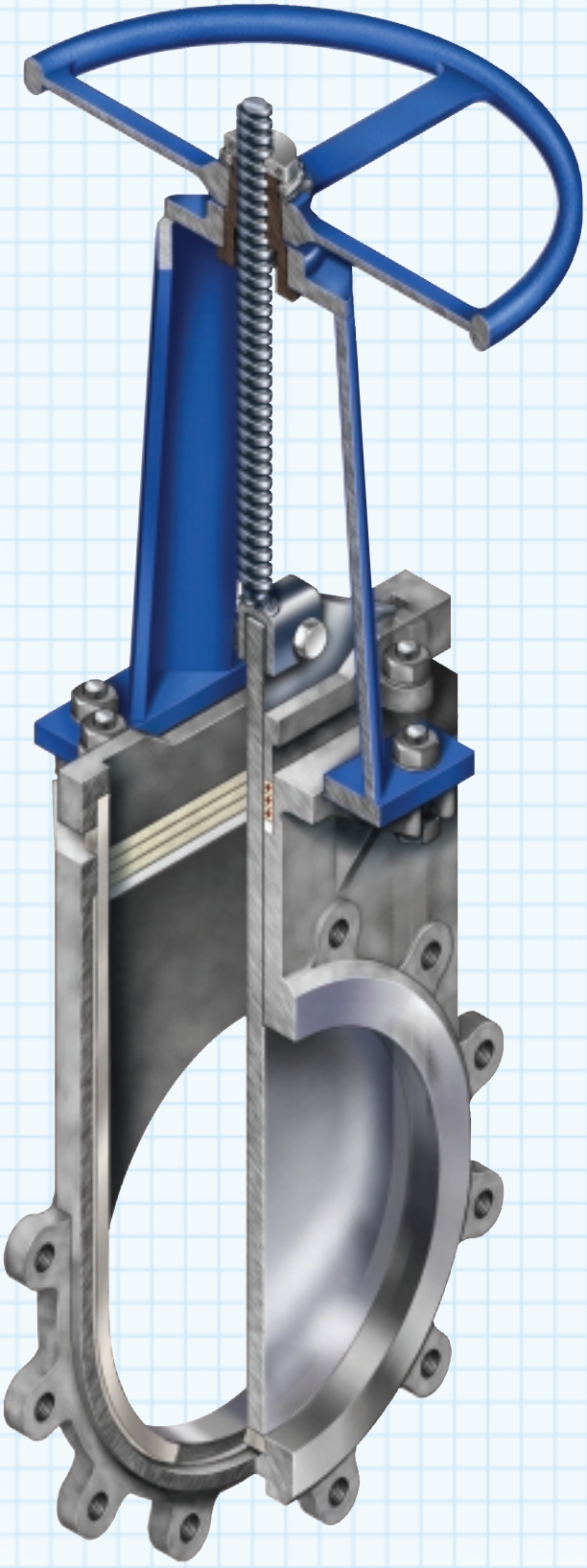
Refer to TABLE 2 for dimensions



with Cylinder

with Handwheel

Fabri-Valve® C67 Bi-directional Knife Gate Valve



Energized cored packing and packing supports are standard with 6" (DN 150) and larger Figure C67 valves

The Fabri-Valve Figure C67 features a unique, patented*, perimeter seal that provides bi-directional shutoff. The seal is retained in the valve body by its trapezoidal shape. A relief has been cast into the valve body behind the seal. Designed to overcome the problems experienced with existing perimeter seal designs, the relief greatly reduces seal compression set; the shape of the seal eliminates leakage due to seat rollover, eliminates seal pullout due to fluid velocity, and eliminates grooves that collect material and prevent the valve from properly closing. This unique valve design is available in stainless steel and carbon steel. Stainless steel bodied valves have white EPDM seals as standard. Carbon steel bodied valves have black EPDM seals as standard. Black Viton or white Viton, AFLAS, Hycar, Hypalon, Neoprene, HNBR, and other seal materials are available as options.

All Figure C67 handwheel actuated knife gate valves include a provision for a locking device.

Specifications

Size Range

2" – 36"

Pressure Rating

2" – 24" 150 psi (10.3 bar) CWP (cold working pressure)

30" 100 psi (6.9 bar)

36" 80 psi (5.5 bar)

Consult factory for higher pressure designs.

Temperature Rating

EPDM Seat -50°F (-45°C) to 280°F (138°C)

Viton Seat -30°F(-34°C) to 350°F (177°C)

Flange Drilling

ANSI 125/150 Drilling

Testing

Every Fabri-Valve Figure C67 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

- Standard Shell test: Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage
- Standard Resilient Seat test: Hydro test at 15 psi (1 bar) and rated CWP

*U.S. Patent #5, 154,397

Pressure/Temperature Ratings

The table below is the Maximum Pressure Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material and the resilient seat material. In a majority of knife gate valve designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure C67 Pressure-Temperature Rating -psi							
Temp °F	Temp °C	Cast 304	Cast 304L	Cast 316	Cast 316L	Cast 317L	Cast WCB A-216
150	66	150	150	150	150	150	150
200	93	142	142	150	150	135	150
250	121	135	135	142	142	128	150
300	149	129	129	134	134	121	150
350	177	123	123	128	128	116	150
400	204	118	118	123	123	112	150
450	232	114	114	118	118	108	150
500	260	111	111	114	114	105	150

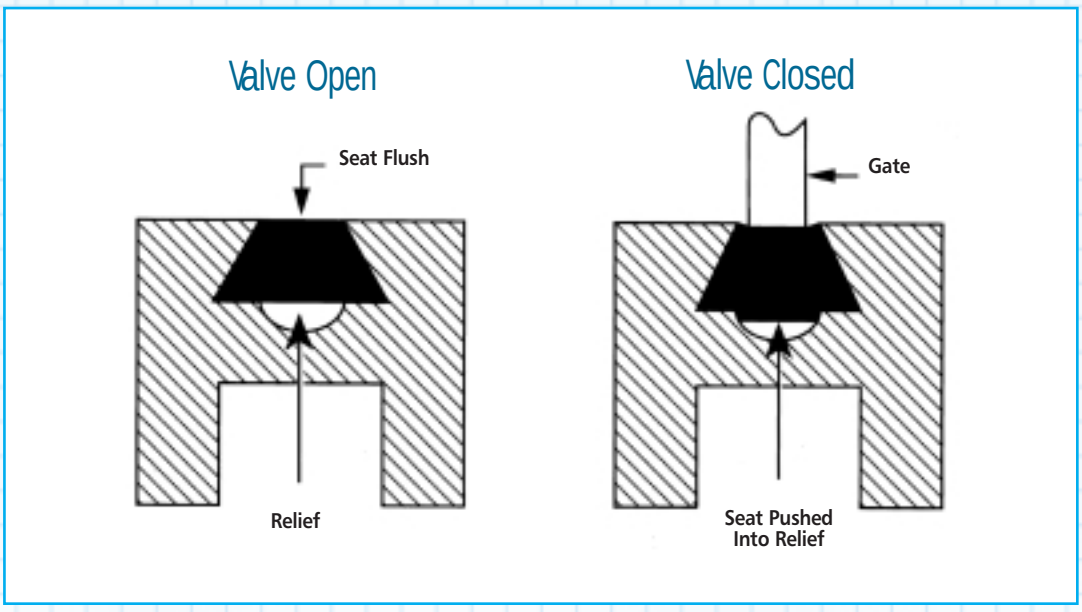
Shutoff Performance

Zero leakage. All sizes.

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure C67 Knife Gate Valves C_v Ratings, Port Diameter and Area							
		Standard Port			With V-Seat		
Valve Size In.	Valve Size DN	C_v	Port I. D. Inches	Port Area Sq. In.	C_v	Port I.D. Inches	Port Area Sq. In.
2	50	288	2.00	3.1	165	2.00	2.8
3	75	648	3.00	7.1	355	3.00	6.3
4	100	1,152	4.00	12.6	515	4.00	9.5
6	150	2,592	6.00	28.3	1,350	6.00	24.9
8	200	4,608	8.00	50.3	2,050	8.00	38.1
10	250	7,208	10.00	78.5	3,200	10.00	59.0
12	300	10,400	12.00	113.1	4,450	12.00	82.3
14	350	12,650	13.25	137.9	5,350	13.25	98.8
16	400	16,750	15.25	182.6	6,950	15.25	128.4
18	450	21,450	17.25	233.7	10,700	17.25	198.2
20	500	26,700	19.25	291.0	13,250	19.25	245.4
24	600	38,900	23.25	424.6	15,400	23.25	284.7
30	750	61,600	29.25	671.9	Consult Factory		
36	900	89,460	35.25	975.9			



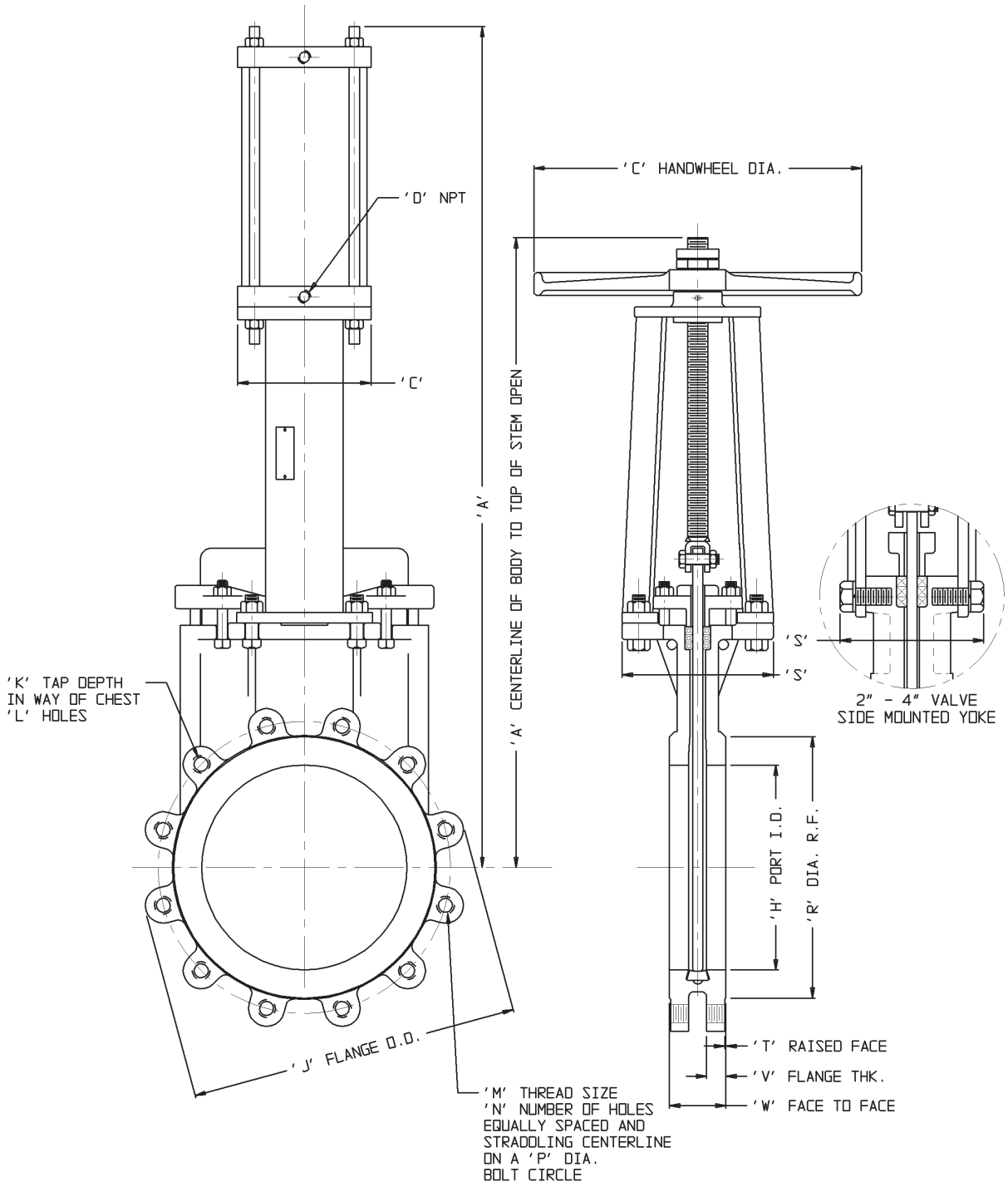
Fabri-Valve® C67 Bi-directional Knife Gate Valve

Dimensions

Valve Size		TABLE 1			DIMENSION Inches (mm) C67 with HANDWHEEL OR CYLINDER																	Weight *	
Inches	DN	A			C			D		H	J	K	L	M	N	P	R	S	T	V	W	lb	kg
		HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL														
2	50	14-7/8 (378)	18-3/16 (462)	16-7/16 (418)	10 (254)	3 (76)	4 (102)	3/8-18	1/4-18	2 (51)	6 (152)	27/64 (11)	2	5/8-11NC	4	4-3/4 (121)	3-5/8 (92)	4 (102)	1/16 (2)	9/16 (14)	1-7/8 (48)	17	8
		HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL														
3	80	17-5/8 (448)	20-11/16 (525)	19-3/16 (487)	10 (254)	3 (76)	4 (102)	3/8-18	1/4-18	3 (76)	7-1/2 (191)	23/64 (9)	2	5/8-11NC	4	6 (152)	5 (127)	4 (102)	1/16 (2)	9/16 (14)	2 (51)	21	10
		HW	3-1/4 CYL	4 CYL	HW	3-1/4 CYL	4 CYL	3-1/4 CYL	4 CYL														
4	100	19-13/16 (503)	21-15/16 (557)	22-11/16 (576)	10 (254)	4 (102)	4-1/2 (114)	1/4-18	3/8-18	4 (102)	9 (229)	27/64 (11)	2	5/8-11NC	8	7-1/2 (191)	6-3/16 (157)	4 (102)	1/16 (2)	11/16 (17)	2 (51)	30	14
		HW	4 CYL	6 CYL	HW	4 CYL	6 CYL	4 CYL	6 CYL														
6	150	27-3/8 (695)	29-9/16 (751)	29-15/16 (760)	16 (406)	4-1/2 (114)	6-1/2 (165)	3/8-18	3/8-18	6 (152)	11 (279)	7/16 (11)	2	3/4-10NC	8	9-1/2 (241)	8-1/2 (216)	7-3/8 (187)	1/16 (2)	5/8 (16)	2-1/4 (57)	75	34
		HW	6 CYL	8 CYL	HW	6 CYL	8 CYL	6 CYL	8 CYL														
8	200	34-3/16 (868)	36-3/8 (924)	36-7/8 (937)	16 (406)	6-1/2 (165)	8-5/8 (219)	3/8-18	3/8-18	8 (203)	13-1/2 (343)	21/32 (17)	2	3/4-10NC	8	11-3/4 (298)	10-5/8 (270)	7-3/8 (187)	1/16 (2)	13/16 (21)	2-3/4 (70)	95	45
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL														
10	250	39-5/8 (1006)	42-9/16 (1081)	43-5/16 (1100)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	10 (254)	16 (406)	9/16 (14)	4	7/8-9NC	12	14-1/4 (362)	12-3/4 (324)	7-3/8 (187)	1/16 (2)	15/16 (24)	2-3/4 (70)	139	63
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL														
12	300	46-1/4 (1175)	49 (1245)	49-3/4 (1264)	20 (508)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	12 (305)	19 (483)	1/2 (13)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)	197	87
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL														
14	350	51-9/16 (1310)	55-1/16 (1399)	56-3/16 (1427)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	13-1/4 (337)	21 (533)	1/2 (13)	4	1-8NC	12	18-3/4 (476)	16-1/4 (413)	7-3/4 (197)	3/16 (5)	15/16 (24)	3 (76)	301	147
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL														
16	400	59-3/16 (1503)	62-3/8 (1584)	63-1/2 (1613)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	15-1/4 (387)	23-1/2 (597)	5/8 (16)	6	1-8NC	16	21-1/4 (540)	18-1/2 (470)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	379	180
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL														
18	450	66-1/2 (1689)	70-1/16 (1780)	70-11/16 (1795)	30 (762)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	17-1/4 (438)	25 (635)	19/32 (15)	6	1-1/8-7NC	16	22-3/4 (578)	21 (533)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	467	212
		HW	14 CYL	16 CYL	HW	14 CYL	16 CYL	14 CYL	16 CYL														
20	500	72-7/8 (1851)	77-1/4 (1962)	77-3/4 (1975)	30 (762)	14-3/4 (375)	17 (432)	3/4-14	3/4-14	19-1/4 (489)	27-1/2 (699)	31/32 (25)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)	523	237
		HW	16 CYL	18 CYL	HW	16 CYL	18 CYL	16 CYL	18 CYL														
24	600	84-3/4 (2153)	88-9/16 (2249)	90-1/2 (2299)	30 (762)	17 (432)	19 (483)	3/4-14	3/4-14	23-1/4 (591)	32 (813)	29/32 (23)	8	1-1/4-7NC	20	29-1/2 (749)	27-1/4 (692)	14-1/8 (359)	3/16 (5)	1-5/16 (33)	4-1/2 (114)	713	321
		HW	18 CYL	18 CYL	HW	16 CYL	18 CYL	16 CYL	18 CYL														
30	750	N/A	106-15/16 (2716)	108-13/16 (2764)	N/A	17 (432)	19 (483)	3/4-14	3/4-14	29-1/4 (591)	38-3/4 (984)	15/16 (24)	10	1-1/4-7NC	28	36 (914)	33-3/4 (857)	15 (381)	3/16 (5)	1-5/16 (33)	4-1/2 (114)	Consult Factory	
		HW	18 CYL	20 CYL	HW	18 CYL	20 CYL	18 CYL	20 CYL														
36	900	N/A	130-15/16 (3326)	131-11/16 (3345)	N/A	19 (483)	21 (533)	3/4-14	3/4-14	35-1/4 (895)	46 (1168)	1 (25)	12	1-1/2-6NC	32	42-3/4 (1086)	40-1/4 (1022)	19 (483)	3/16 (5)	1-3/8 (35)	5-1/2 (140)		

* Figures C67R and C67S with Handwheel

Refer to TABLE 1 for dimensions



with Cylinder

with Handwheel

Fabri-Valve® C67 Bi-directional Knife Gate Valve

Dimensions

Valve Size		TABLE 2 DIMENSION Inches (mm) C67 W/BEVEL GEAR																
Inches	DN	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	V	W
6	150	26-11/16 (678)	20-11/16 (525)	12 (305)	12-3/8 (314)	6-1/2 (165)	6 (152)	11 (279)	7/16 (11)	2	3/4-10NC	8	9-1/2 (241)	8-1/2 (216)	7-3/8 (187)	1/16 (2)	5/8 (16)	2-1/4 (57)
8	200	34-1/4 (870)	25-1/2 (648)	12 (305)	12-3/8 (314)	6-1/2 (165)	8 (203)	13-1/2 (343)	21/32 (17)	2	3/4-10NC	8	11-3/4 (298)	10-5/8 (270)	7-3/8 (187)	1/16 (2)	13/16 (21)	2-3/4 (70)
10	250	39-5/8 (1006)	29-1/16 (738)	12 (305)	12-3/8 (314)	6-1/2 (165)	10 (254)	16 (406)	9/16 (14)	4	7/8-9NC	12	14-1/4 (362)	12-3/4 (324)	7-3/8 (187)	1/16 (2)	15/16 (24)	2-3/4 (70)
12	300	46-1/4 (1175)	33-7/16 (849)	12 (305)	12-3/8 (314)	6-1/2 (165)	12 (305)	19 (483)	1/2 (13)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)
14	350	51-9/16 (1310)	37-1/16 (941)	12 (305)	12-3/8 (314)	6-1/2 (165)	13-1/4 (337)	21 (533)	1/2 (13)	4	1-8NC	12	18-3/4 (476)	16-1/4 (413)	7-3/4 (197)	3/16 (5)	15/16 (24)	3 (76)
16	400	59-3/16 (1503)	43 (1092)	12 (305)	12-1/16 (306)	6-1/2 (165)	15-1/4 (387)	23-1/2 (597)	5/8 (16)	6	1-8NC	16	21-1/4 (540)	18-1/2 (470)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)
18	450	66-1/2 (1689)	47 (1194)	12 (305)	12-1/16 (306)	6-1/2 (165)	17-1/4 (438)	25 (635)	19/32 (15)	6	1-1/8-7NC	16	22-3/4 (578)	21 (533)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)
20	500	72-7/8 (1851)	51-3/8 (1305)	12 (305)	12-1/16 (306)	6-1/2 (165)	19-1/4 (489)	27-1/2 (699)	31/32 (25)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)
24	600	84-3/4 (2029)	59-3/8 (1508)	12 (305)	12-1/16 (306)	6-1/2 (165)	23-1/4 (591)	32 (813)	29/32 (23)	8	1-1/4-7NC	20	29-1/2 (749)	27-1/4 (692)	14-1/8 (359)	3/16 (5)	1-5/16 (33)	4-1/2 (114)
30	750	106-3/16 (1851)	77-1/4 (1305)	18 (457)	12-1/16 (306)	6-1/2 (165)	29-1/4 (743)	38-3/4 (984)	15/16 (24)	10	1-1/4-7NC	28	36 (914)	33-3/4 (857)	15 (381)	3/16 (5)	1-5/16 (33)	4-1/2 (114)
36	900	129-1/16 (2153)	94 (1508)	24 (610)	12-1/16 (306)	6-1/2 (165)	35-1/4 (895)	46 (1168)	1 (25)	12	1-1/2-6NC	32	42-3/4 (1086)	40-1/4 (1022)	19 (483)	3/16 (5)	1-3/8 (35)	5-1/2 (140)

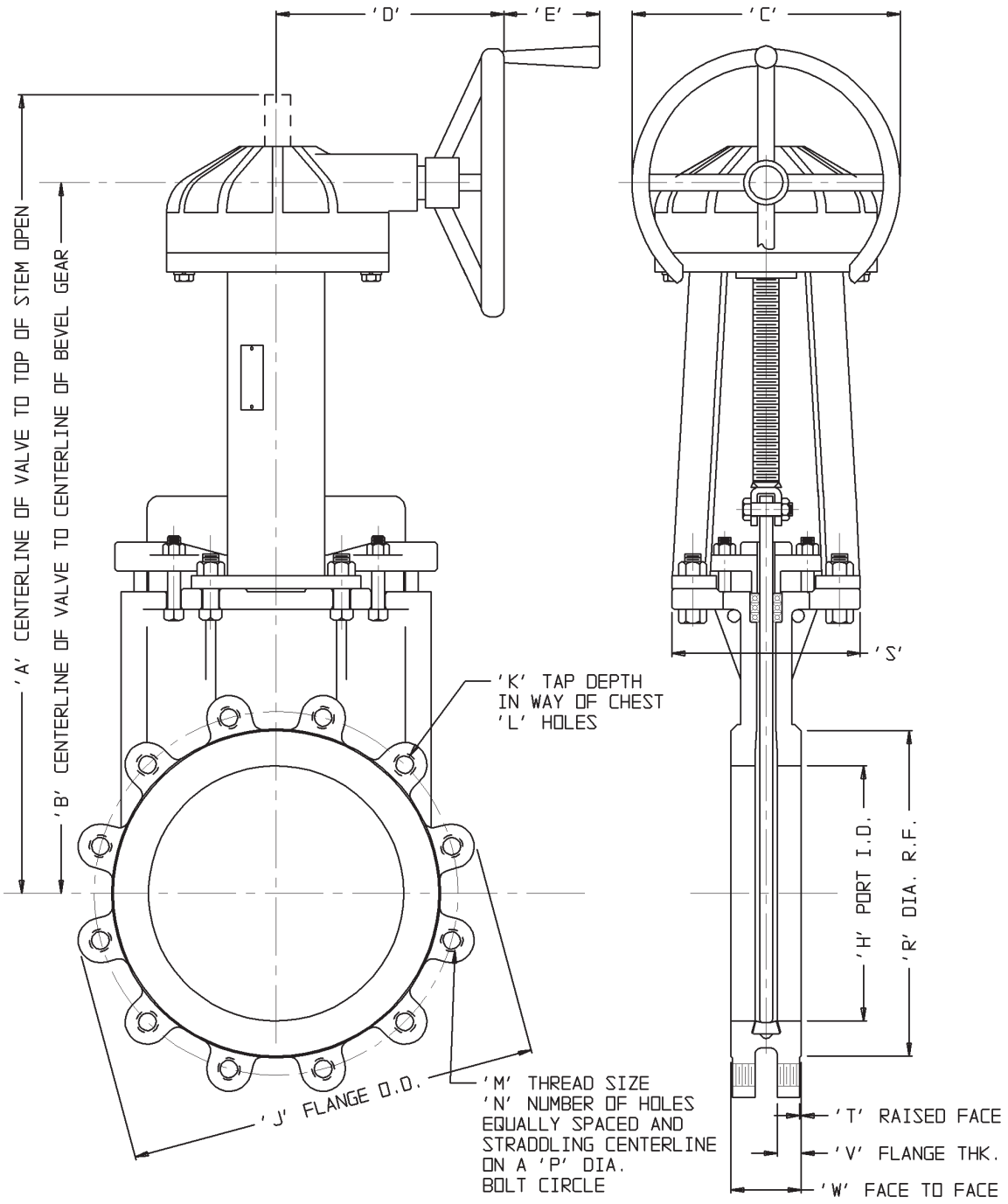
6" - 14" Valves have a bevel gear ratio of 3:1
16" - 36" Valves have a bevel gear ratio of 4:1

Materials of Construction

Part	Materials		
	C67R 2"- 36"	C67S 2"- 36"	C67R-WCB 2"- 36"
Body and Chest	Solid, one piece, cast 304, 316 or 317L stainless steel.	Solid, one piece, cast 304, 316 or 317L stainless steel.	Solid, one piece, cast carbon steel
Seat	Elastomer, white EPDM std.	Elastomer, white EPDM std.	Elastomer, black EPDM standard
Gate	Same grade as body	Same grade as body	304 stainless steel
Yoke 2"- 4" 6"- 36"	Ductile iron Carbon steel	Cast 304 stainless steel 304 stainless steel	Ductile iron Carbon steel
Yoke Fasteners	Plated steel	Stainless steel	Plated steel
Stem	304 stainless steel	304 stainless steel	304 stainless steel
Stem Nut	Acid resistant bronze	Acid resistant bronze	Acid resistant bronze
Lubrication Fitting	Plated steel	Plated steel	Plated steel
Packing	Acrylic/PTFE[1]/Silicone	Acrylic/PTFE[1]/Silicone	Acrylic/PTFE[1]/Silicone
Packing Follower	Ductile iron/Carbon steel	304 stainless steel	Ductile iron
Follower Bolts	Plated steel	Stainless steel	Plated steel
Handwheel	Cast iron	Cast iron	Cast iron
Handwheel Retaining Nut	Malleable iron	Stainless steel	Malleable Iron
Tab Washer	Stainless steel	Stainless steel	Stainless steel
Travel Stop	Plated steel	Stainless steel	Plated steel

[1] PTFE/Graphite/Viton packing is standard with Viton and AFLAS seals.

Refer to TABLE 2 for dimensions



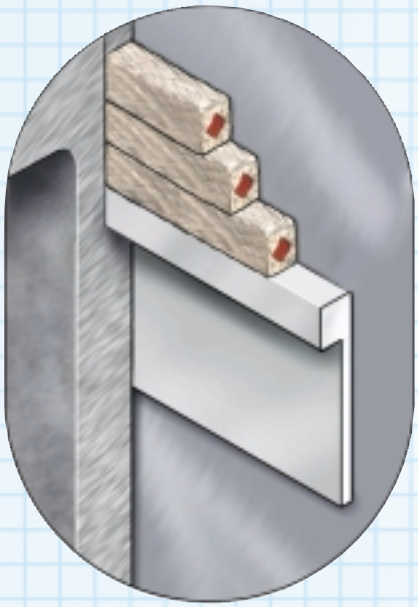
with Bevel Gear

Available Options

- **Hard Gate Material**
- **Nickel-TFE Coated Gate**
- **Epoxy Coating**
- **Thru Drilled Flanges**
- **Flush Ports:** Chest Only, 6" (DN 150) and larger
- **V-Port**
- **Locking Devices**
- **E-Z Spin Handwheel**
- **Live Loaded Packing**
- **Chest Liners**
- **Self-Supporting Yokes**
- **Alternate Flange Drilling**
- **Bevel Gear**
- **Chainwheels**
- **Cylinder Actuators**
- **Electric Actuators**
- **Ratchet**
- **Extended Stems**
- **Rod Boots**

Chest Liners

Optional chest liners fill the clearances between the gate and the chest of the Figure C67 body. Chest liners prevent solids entrapment in the chest area, and also provide increased gate support for high flow/high pressure applications. Standard materials are ultra high molecular weight polyethylene (UHMW) and reinforced PTFE.



Engineered Valves Group

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Fabri-Valve

ITT Industries
Engineered for life

Fabri-Valve® C105 Polyurethane Lined Knife Gate Valve

Abrasion resistance at its best with a unique one piece polyurethane liner throughout the body and chest. Stainless steel gate, with an option for special alloy gates. The patented, replaceable "pop-in" steel reinforced polyurethane seat is standard.

Pressure/Temperature Ratings

Figure C105	
Pressure-Temperature Rating	
180°F max	150psi (10.3 bar)

Consult Factory for Temperatures up to 220°F(104°C)

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure 105
4"-12" Knife Gate Valves

C_v Ratings, Port Diameter and Area

Valve Size		Standard Port Replaceable Polyurethane		
In.	DN	C_v	Port I.D Inches	Port Area Sq. In.
4	100	1,152	4.00	12.6
6	150	2,592	6.00	28.3
8	200	4,608	8.00	50.3
10	250	7,208	10.00	78.5
12	300	10,400	12.00	113.1

Available Options

- Bevel Gear
- Chainwheels
- Cylinder Actuators
- Electric Actuators
- E-Z Spin Handwheel
- Lever Operator
- Ratchet
- Epoxy Coating
- Extended Stems
- Hard Faced Gate Edge
- Hard Gate Material
- Nickel-TFE Coated Gate
- Live-Load Packing
- Locking Devices
- Rod Boots
- Self-Supporting Yokes
- Thru Drill Flanges

Specifications

Size Range
4"-12"

Pressure Rating
150 psi (10.3 bar) CWP(cold working pressure)

Temperature Rating
180°F(82°C). Consult factory for temperatures up to 220°F(104°C)

Flange Drilling
Flat Face ANSI 125/150

Testing

Every Fabri-Valve Figure C105 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test, and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:

- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage

Standard Seat test:

- Resilient Seat: Hydro test at 15 psi and rated CWP

Shutoff Performance

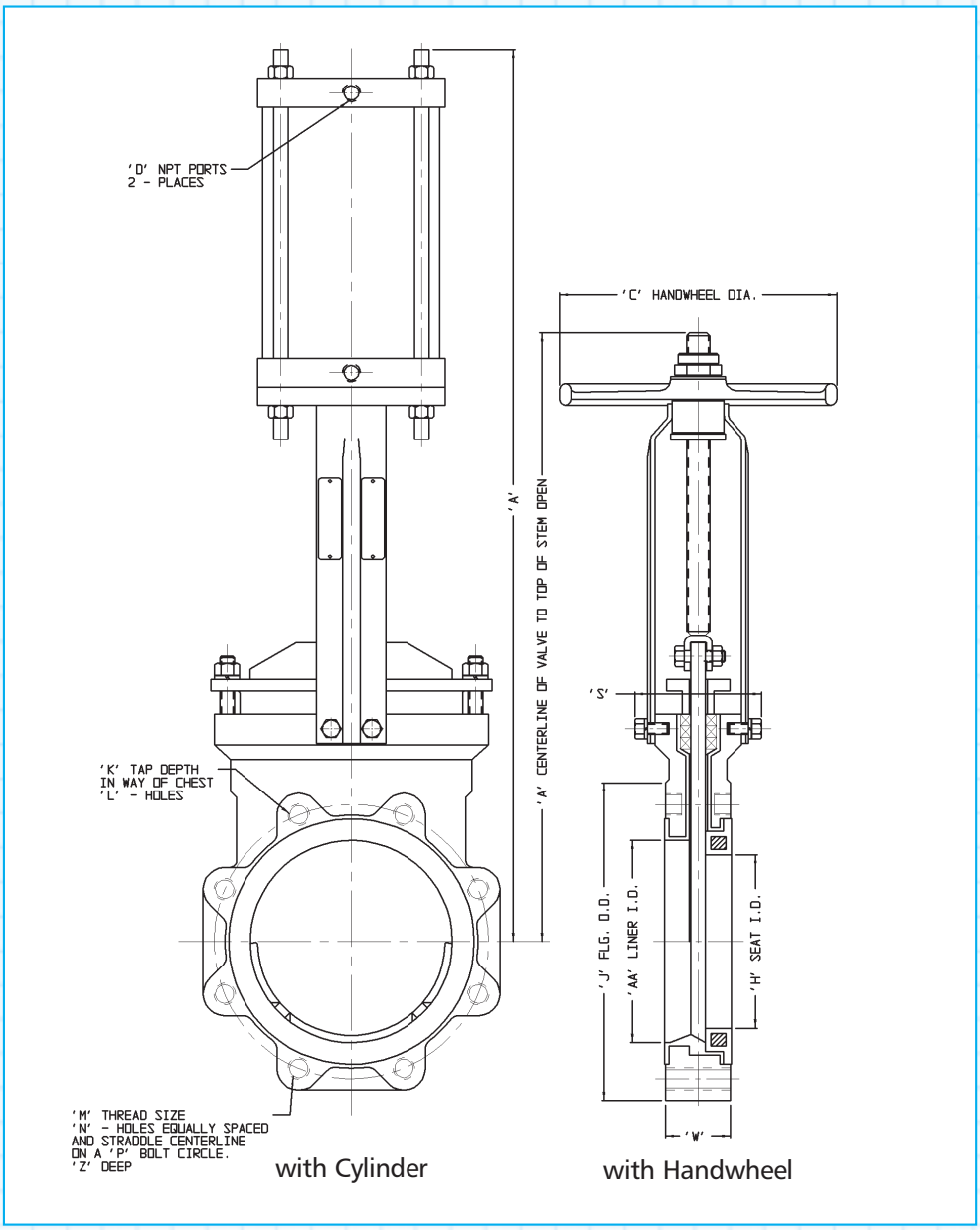
- Resilient Seat: Polyurethane
  Zero leakage. All sizes.

Materials of Construction

Parts	Materials
Body	Cast iron 4"-12"
Body Liner	Molded Polyurethane, 180°F (82°C)
Seat	Steel-reinforced Replaceable Polyurethane
Gate	304 stainless steel
Yoke	Carbon steel
Yoke Fasteners	Plated steel
Packing	TFE/Graphite
Packing Follower	Carbon steel/Ductile Iron
Follower Bolting	Plated steel
Stem	304 stainless steel
Stem Nut	Acid Resistant Bronze
Lubrication Fitting	Plated steel
Handwheel	Cast Iron
Handwheel Retaining Nut	Malleable iron
Tab Washer	Stainless steel
Travel stop	Plated steel
Glide Ring	304 stainless steel

Dimensions

Valve Size		DIMENSION Inches (mm) with HANDWHEEL OR CYLINDER																		
Inches	DN	A			C			D		H	J	K	L	M	N	P	S	W	Z	AA
		HW	3-1/4 CYL	4 CYL	HW	3-1/4 CYL	4 CYL	3-1/4 CYL	4 CYL											
4	100	20-3/16 (513)	21-1/8 (537)	21-5/8 (5549)	8 (203)	4 (102)	4-1/2 (114)	1/4-18	3/8-18	4 (102)	9 (229)	5/8 (16)	2	5/8-11NC	8	7-1/2 (191)	4 (102)	2 (51)	3/4 (19)	4-5/8 (117)
		HW	4 CYL	6 CYL	HW	4 CYL	6 CYL	4 CYL	6 CYL											
6	150	26-11/16 (678)	28-5/8 (727)	29 (737)	10 (254)	4-1/2 (114)	6-1/2 (165)	3/8-18	3/8-18	6 (152)	11 (279)	5/8 (16)	2	3/4-10NC	8	9-1/2 (241)	4-3/4 (121)	2-1/4 (57)	7/8 (22)	6-3/4 (171)
		HW	6 CYL	8 CYL	HW	6 CYL	8 CYL	6 CYL	8 CYL											
8	200	35-15/16 (913)	36-5/8 (930)	37-1/8 (943)	12 (305)	6-1/2 (165)	8-5/8 (219)	3/8-18	3/8-18	8 (203)	13-1/2 (343)	3/4 (19)	2	3/4-10NC	8	11-3/4 (298)	5-3/8 (137)	2-3/4 (70)	1 (25)	9 (229)
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL											
10	250	41-13/16 (1062)	43-3/16 (1097)	43-15/16 (1116)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	10 (254)	16 (406)	13/16 (21)	4	7/8-9NC	12	14-1/4 (362)	6-1/8 (156)	2-3/4 (70)	1 (25)	11 (279)
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL											
12	300	47-1/16 (1195)	49-1/8 (1248)	49-7/8 (1267)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	12 (305)	19 (483)	3/4 (19)	4	7/8-9NC	12	17 (432)	6-1/8 (156)	3 (76)	1-1/4 (32)	13-1/2 (343)



Fabri-Valve® C/F134 Bonneted Knife Gate Valve

The Fabri-Valve C/F134R/S bonneted knife gate valve is used in difficult services to provide high cycle stem sealing and superior stem seal containment. The cylindrical packing around the stem provides a tighter, easier to maintain stem seal. Bonneted valves are available with an optional metal backseat on the stem. In addition, the valve can be supplied with a gate wiper and purge ports in the bonnet to minimize movement of material into the bonnet. If a non-pressurized dirt shield is required, specify a Figure 37 w/dirt shroud. Standard body materials include Figure 304, 316 and 317L stainless steel. Special alloys such as 254 SMO®, Hastelloy C...are also available.

Shutoff Performance

Metal Seat

- Single integral metal seat
  1.5"- 24" 40cc / minute / inch of valve size
  25" – 48" 60cc / minute / inch of valve size
  Above 48" consult factory
- Single hardfaced integral metal seat
  1.5"- 24" 80cc / minute / inch of valve size
  25" – 48" 120cc / minute / inch of valve size
  Above 48" consult factory
- Single hardfaced replaceable metal seat
  1.5"- 24" 80cc / minute / inch of valve size
  Above 24" consult factory
- Dual metal seats
  Consult factory. All sizes

Resilient Seat

- Single "D" ring, or single replaceable resilient seat (excluding PTFE)
  Zero leakage. All sizes
- Dual seats
  Consult factory. All sizes
- Single replaceable PTFE seat
  Consult factory. All sizes

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Specifications

Size Range
1.5"- 96"

Pressure Rating
1.5"-24" 150 psi (10.3 bar) CWP
Consult Factory for higher pressures.

Bonnet
150 psi (10.3 bar) CWP standard. If a Non-pressurized dirt shield is required, use a Figure 37 w/dirt shroud.

Temperature Rating
1.5"-48" 450°F (232°C)
Designs available to 2000°F, Consult Factory.
Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork.

Flange Drilling
ANSI 125/150

Testing

Every Fabri-Valve C/F134 is fully tested prior to shipment. Testing includes a body shell test, a seat test, and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:

- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage

Standard Seat test:

- Metal Seat: Hydro test at 40 psi and at the rated CWP
- Resilient Seat: Hydro test at 15 psi and rated CWP

Figure C134 Bonneted Knife Gate Valves

C_v Ratings, Port Diameter and Area

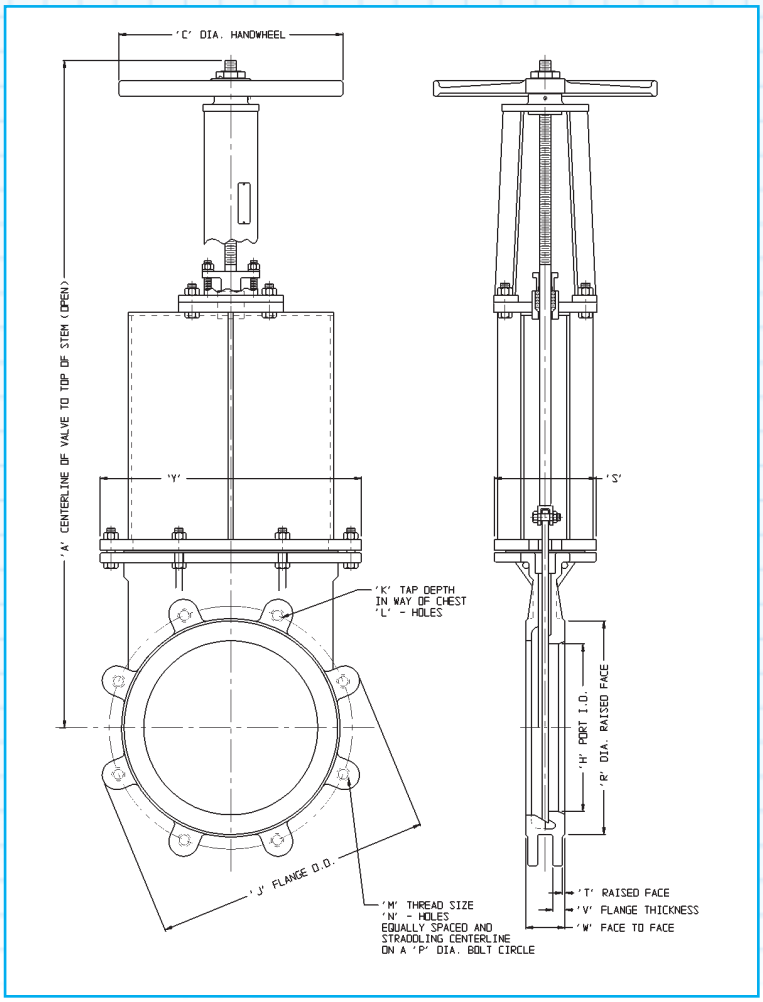
Valve Size		Standard Port			With V-Port			With Repl. Poly or Repl. Rubber seat		
In.	DN	C_v	Port I.D. Inches	Port Area Sq. In.	C_v	Port I.D. Inches	Port Area Sq. In.	C_v	Port I.D. Inches	Port Area Sq. In.
2	50	288	2.00	3.1	165	2.00	2.8	288	2.00	3.1
3	75	648	3.00	7.1	355	3.00	6.3	648	3.00	7.1
4	100	1,152	4.00	12.6	515	4.00	9.5	1,152	4.00	12.6
6	150	2,592	6.00	28.3	1,350	6.00	24.9	2,592	6.00	28.3
8	200	4,608	8.00	50.3	2,050	8.00	38.1	4,608	8.00	50.3
10	250	7,208	10.00	78.5	3,200	10.00	59.0	7,208	10.00	78.5
12	300	10,400	12.00	113.1	4,450	12.00	82.3	10,400	12.00	113.1
14	350	12,650	13.25	137.9	5,350	13.25	98.8	10,080	12.00	113.1
16	400	16,750	15.25	182.6	6,950	15.25	128.4	14,200	14.25	159.5
18	450	21,450	17.25	233.7	10,700	17.25	198.2	18,500	16.25	207.4
20	500	26,700	19.25	291.0	13,250	19.25	245.4	22,700	18.00	254.5
24	600	38,900	23.25	424.6	15,400	23.25	284.7	33,900	22.00	380.1

Dimensions

Valve Size		DIMENSION Inches (mm) C134 with HANDWHEEL															Weight**	
Inches	DN	A	C	H*	J	K	L	M	N	P	R	S	T	V	W	Y	lb	kg
2	50	18-5/8 (465)	8 (203)	2 (51)	6 (152)	3/8 (10)	2	5/8-11NC	4	4-3/4 (121)	3-5/8 (92)	6-1/4 (159)	1/16 (2)	9/16 (14)	1-7/8 (48)	5-1/8 (130)	40	18
3	80	22-16 (560)	8 (203)	3 (76)	7-1/2 (191)	13/32 (10)	2	5/8-11NC	4	6 (152)	5 (127)	6-1/4 (159)	1/16 (2)	9/16 (14)	2 (51)	6-1/8 (156)	62	28
4	100	25-13/16 (656)	8 (203)	4 (102)	9 (229)	13/32 (10)	2	5/8-11NC	8	7-1/2 (191)	6-3/16 (157)	6-1/4 (159)	1/16 (2)	11/16 (17)	2 (51)	7-1/8 (181)	77	35
6	150	35-7/16 (900)	10 (254)	6 (152)	11 (279)	7/16 (11)	2	3/4-10NC	8	9-1/2 (241)	8-1/2 (216)	7-3/8 (187)	1/16 (2)	5/8 (16)	2-1/4 (57)	10 (254)	110	50
8	200	46-1/8 (1172)	12 (305)	8 (203)	13-1/2 (343)	5/8 (16)	2	3/4-10NC	8	11-3/4 (298)	10-5/8 (270)	7-3/8 (187)	1/16 (2)	13/16 (21)	2-3/4 (70)	12-3/4 (324)	190	86
10	250	52-5/8 (1337)	16 (406)	10 (254)	16 (406)	1/2 (13)	4	7/8-9NC	12	14-1/4 (362)	12-3/4 (324)	7-3/8 (187)	1/8 (3)	15/16 (24)	2-3/4 (70)	16-1/8 (410)	260	118
12	300	62-1/8 (1578)	16 (406)	12 (305)	19 (483)	1/2 (13)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)	18-3/4 (476)	370	168
14	350	68-13/16 (1748)	20 (508)	13-1/4 (337)	21 (533)	7/16 (11)	4	1-8NC	12	18-3/4 (476)	16-1/4 (413)	7-3/4 (197)	3/16 (5)	15/16 (24)	3 (76)	19-7/8 (505)	441	200
16	400	78-13/16 (2002)	20 (508)	15-1/4 (387)	23-1/2 (597)	9/16 (14)	6	1-8NC	16	21-1/4 (540)	18-1/2 (470)	11-3/4 (298)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	22-3/8 (568)	600	272
18	450	87-1/16 (2211)	20 (508)	17-1/4 (438)	25 (635)	5/8 (16)	6	1-1/8-7NC	16	22-3/4 (578)	21 (533)	11-3/5 (298)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	24-3/8 (619)	714	324
20	500	95-15/16 (2437)	20 (508)	19-1/4 (489)	27-1/2 (699)	29/32 (23)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)	26-3/8 (670)	825	374
24	600	111 (2819)	20 (508)	23-1/4 (591)	32 (813)	13/16 (21)	8	1-1/4-7NC	20	29-1/2 (749)	27-1/4 (692)	14-1/8 (359)	3/16 (5)	1-5/16 (33)	4-1/2 (114)	31 (787)	1301	590

* For 14"-24" valves with rubber replaceable and poly replaceable seats, use the port I.D. dimensions show in the Flow Coefficients Table (See previous page)

** Figures C134R, C134S, F134R and F134S with Handwheel



Available Options

- "D" Ring Seat
- Lever Operator
- Dual Seats
- Rubber Replaceable Seats
- Poly Replaceable Seats
- UHMW Replaceable Seats
- PTFE Replaceable Seats
- Hard Faced Replaceable Seats
- Hard Faced Integral SS Seats
- Hard Faced Gate Edge
- Hard Gate Material
- Nickel-TFE Coated Gate
- Epoxy Coating
- Thru Drilled Flanges
- Flush Ports
- Chest Buttons: Required on valves without wiper packing
- Centerline Buttons
- Backing Ring
- Extra Wedges
- V-Port
- Cast Ni-Hard Deflection Cones: Available 3"–16"
- Fabricated Deflection Cones
- Locking Devices
- E-Z Spin Handwheel
- Live Loaded Packing
- Self-Supporting Yokes
- Alternate Flange Drilling
- Gate Wiper
- Back Seat
- Bevel Gear
- Chainwheels
- Cylinder Actuators
- Electric Actuators
- Ratchet
- Extended Stems
- Gate Support Strips
- Rod Boots

Pressure/Temperature Ratings

This table is the maximum pressure/temperature ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material, and if applicable, the resilient seat material. In a majority of knife gate valve designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Low Pressure Operation

Metal seated knife gate valves are seat tested at 40 psid (2.8 bar) in the preferred flow direction. When pressure falls below the 40 psid (2.8 bar) test pressure, less force is pushing the gate into the seat, which may result in additional seat leakage. When improved low-pressure shutoff performance is required, optional chest buttons and/or centerline buttons should be specified.

Figure C/F134

Pressure-Temperature Rating - psi

Temp °F	Temp °C	304	304L	316	316L	317L
150	66	150	133	150	133	150
200	93	133	114	141	113	135
250	121	126	108	133	107	128
300	149	120	102	124	101	121
350	177	115	98	119	97	116
400	204	110	93	114	93	112
450	232	107	90	110	90	108
500	260	103	87	106	87	105
600	316	97	82	101	83	100
700	371	94	80	97	80	96
800*	427*	89	77	93	77	92
900*	482*	87		92		
1000*	538*	83		90		
1100*	593*	64		76		
1200*	649*	41		46		
1300*	704*	28		29		
1400*	760*	18		18		
1500*	816*	11		10		

* F134R valves have external, non-wetted, carbon steel components. Standard F134R valves are limited to 700°F (371°C); however alternate F134R constructions are available to 1000°F (538°C)

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How To Order" section explains the Valve Model Codes.

Materials of Construction

Parts	Materials	
	C134R	C134S
Body, Chest and Flanges	Stainless steel per customer specification.	Stainless steel per customer specification.
Bonnet	Same as body with carbon steel exterior parts	Same as body with carbon steel exterior parts
Gate	Same as body material	Same as body material
Yoke	Carbon steel	304 Stainless steel
Yoke Fasteners	Plated steel	Stainless steel
Stem	Same as body material	Same as body material
Stem Nut	Acid Resistant Bronze	Acid Resistant Bronze
Grease Fitting	Plated steel	Plated steel
Packing	PTFE/Graphite	PTFE/Graphite
Packing Follower	Carbon steel/Ductile Iron	316 Stainless Steel
Handwheel	Cast iron	Cast iron
Handwheel Retaining Nut	Malleable iron	Stainless steel
Tab Washer	Stainless steel	Stainless steel

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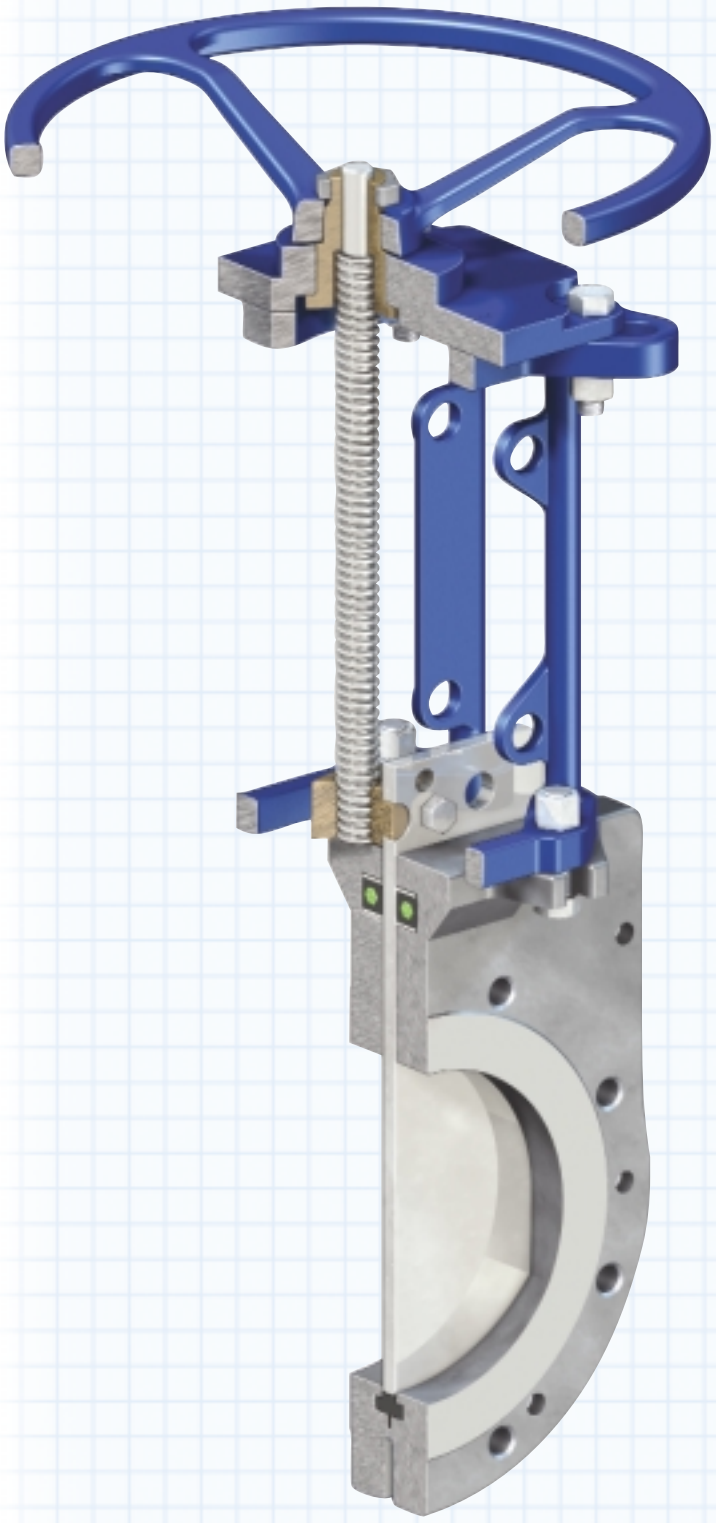
Fabri-Valve

ITT Industries

Engineered for life

Fabri-Valve® XS150 High Performance Knife Gate Valve



XS150 High Performance Knife Gate Valve

The Fabri-Valve® XS150 High Performance Knife Gate valve features a robust perimeter seal that provides bi-directional bubble tight shutoff. The perimeter seal is double-locked in the valve body to securely retain the perimeter seal in the seal groove even during the most demanding applications. The perimeter seal has shoulders, which mechanically retain (lock) the seal in the seal groove. The tab on the perimeter seal acts as the body joint seal and eliminates the possibility of body joint leakage caused by pipe stresses. The tab also helps retain the perimeter seal in the seal groove (secondary lock). The seal groove is specially designed to prevent seal pull-out but also allows the seal to move and prevent over-compression.

Advantages

True Full-Port:

□ Unrestricted straight-through flow design provides high capacity for gas, liquids, and fibrous slurries. The gate guides are not in the flow area; a True Full-Port Design.

Ease of Maintenance:

□ Injectable packing allows easy packing adjustments to be made under line pressure without valve disassembly or removal of the valve from the pipeline.[1]

□ One-piece perimeter & chest seal design allows for quick & easy maintenance.

□ Fewer components.

One-Piece Perimeter & Chest Seal:

□ Bi-directional, bubble tight, repeatable shut-off.

□ Double-Locked Perimeter Seal.

1. The perimeter seal has shoulders, which mechanically retain (lock) the seal in the seal groove even during the most demanding applications.
2. The seal's tab feature acts as the body joint seal but also as a secondary lock preventing seal pullout.

□ Shut-off performance is unaffected by differential pressure. Excellent bi-directional shut-off even at very low pressures.

[1] If the pipeline media is dangerous, lethal, harmful, active, scorching or under high pressure, special precautions must be taken before removing the packing bolts. Consult the XS150 Installation & Maintenance manual for instructions.

Advantages (cont.)

- □ Chest seal wraps around the entire gate eliminating leakage paths.
- □ Chest Seal completely encloses injectable packing; therefore, contamination of the process fluid by "loose" packing is eliminated.
- □ Body protects the perimeter seal from the rigors of the direct process flow.
- □ Large cross-section provides longer service life.

Design:

- □ ANSI Class 150 Rating[2, 3, 4]
- □ Standard MSS-SP81 Face-to-Face.[4]
- □ Standard valves are suitable for bi-directional dead-end service at the full pressure-temperature rating of the valve.
- □ Robust Full Face Flange.
- □ Reliable body joint eliminates the possibility of body joint leakage caused by pipe stresses.
- □ Options to mate with a variety of ANSI flanges, as well as with DIN flanges and custom bolt patterns.
- □ Gate Guides guarantee that the gate is properly positioned and supported during operation. The gate guides do not reduce the flow area.
- □ Open & Closed lock-out is standard
- □ Non-Rising stem design minimizes space required for installation.[5]
- □ Dual scraper blades clean gate during operation and protect the seals from abrasives.
- □ Universal Yoke allows easy conversion from handwheel to cylinder operated and vice versa.
- □ A taper is added to the body's internal diameter to eliminate the possibility of material collecting at the bottom of the port and preventing proper closure. The taper ensures automatic "clean-out" and "flushing"
- □ Minimized chest area and close tolerances prevents media packing.
- □ "Modified TFE" bearing surfaces in chest provide extra gate support.
- □ Dished handwheel keeps hands away from pinch points while operating.

Available in a Wide Choice of Materials for a Broad Range of Applications

- □ To meet specific application requirements, a variety of seal materials and body materials are offered. Contact Factory.

[2] Stainless = 275 psi cold working pressure; Carbon Steel = 285 psi cold working pressure

[3] The seal temperature ratings determine the practical temperature limitations.

[4] 2", 3", 4" XS150's have flat face flanges. 6" to 24" XS150's have raised face flanges.

[5] Valves with a bevel gear have a rising stem.

Specifications

Size Range

2" – 24"

Valve Body Pressure-Temperature Rating

2" – 24" ANSI Class 150[2, 3, 4]

Consult factory for higher-pressure designs.

The table below is the maximum working pressure ratings of the valve body only. The seal ratings determine the practical limitations in actual service conditions.

Temperature °F (°C)	Body Rating – psi (bar)	
	Carbon Steel	316 SS
-20 to 100 (-29 to 38)	285 (19.7)	275 (19.0)
200 (93)	260 (17.9)	240 (16.5)
300 (149)	230 (15.8)	215 (14.8)
400 (204)	200 (13.8)	195 (13.4)

*Ratings correspond to ASME B16.34-1996

Temperature Rating

Viton® Seat -30°F (-34°C) to 350°F (177°C)
Aflas® Seat 30°F (-1°C) to 400°F (204°C)
EPDM Seat -50°F (-46°C) to 280°F (138°C)

Flange Drilling

ANSI 125/150 Drilling Standard.[4]
Contact factory for alternate flange drilling.

Testing

Every Fabri-Valve XS150 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test: Hydro test at 1.5 times the rated CWP (cold working pressure)

- Zero allowable leakage

Standard Resilient Seat test: Hydro test at 15 psi (1 bar) and rated CWP.

- Zero allowable leakage

Shutoff Performance

Zero leakage. All sizes.

ANSI/FCI 70-2 establishes a series of six leakage classes for control valves and defines the test procedure. Class VI allows the least leakage. XS150's are bubble tight, which exceeds Class VI requirements.

Fabri-Valve® XS150 High Performance Knife Gate Valve

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Valve Size	Cv
2	299
3	876
4	2,421
6	6,213
8	10,921
10	16,507
12	26,649
14	29,205
16	41,560
18	51,356
20	61,765
24	83,937

Available Options

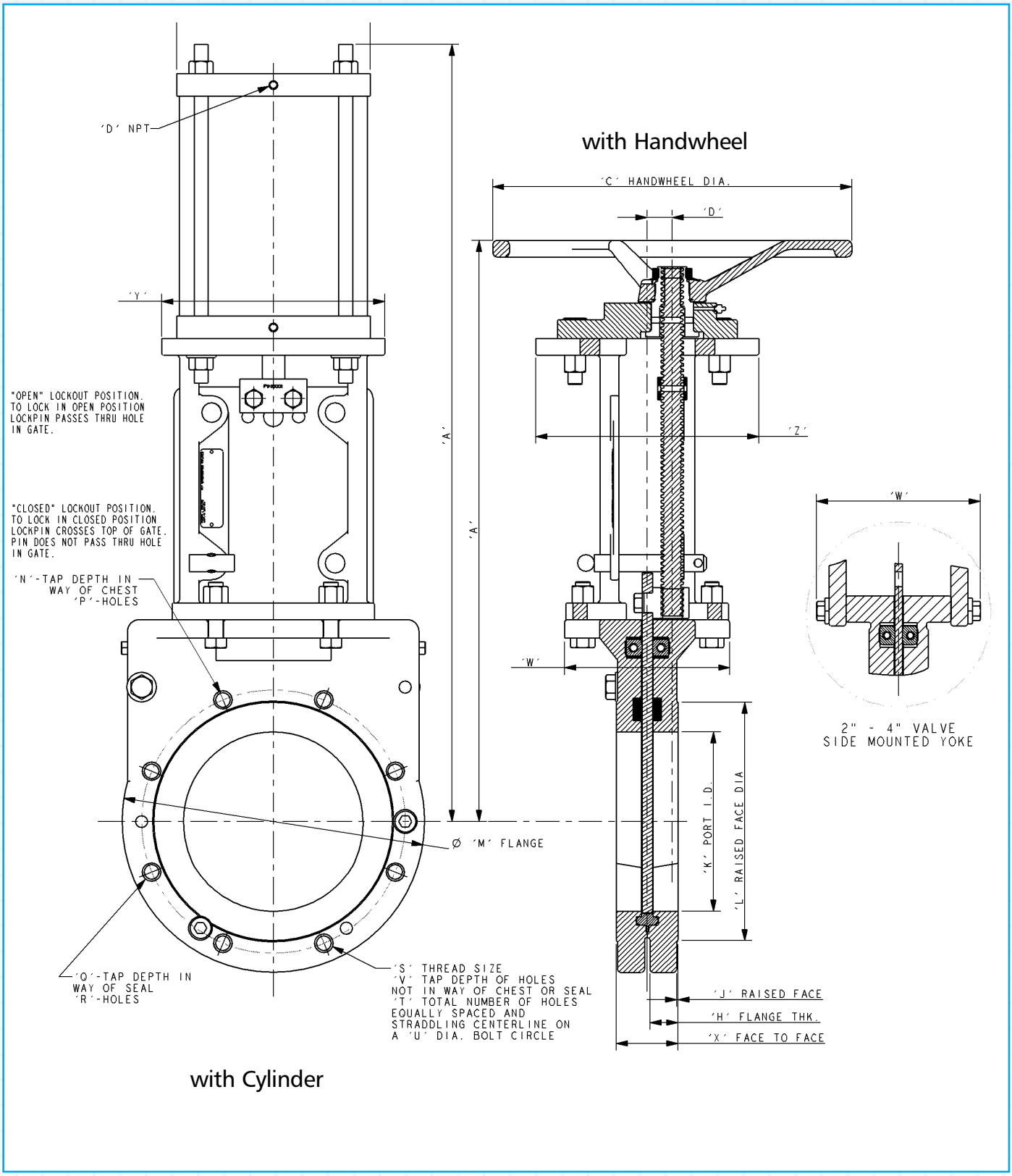
- Hardened Gate Material
- Hard Chromed Gate
- Nickel-TFE Coated Gate
- Epoxy Coating
- V-Port
- Locking Devices
- Alternate Flange Drilling
- Bevel Gear
- Chainwheels
- Cylinder Actuators
- Electric Actuators
- Ratchet
- Extended Stems
- Rod Boots
- Limit Switches
- Positioner
- Solenoids
- Abrasion Resistant Wear Ring

DIMENSIONS INCHES (mm) XS150 W/HANDWHEEL OR CYLINDER

VALVE SIZE		'A'						'C'						'D'						'H'	'J'	'K'	'L'	'M'	'N'	'P'	'Q'	'R'	'S'	'T'	'U'	'V'	'W'	'X'	'Y'	'Z'
IN	DN	HW	4 CYL					HW	4 CYL					HW	4 CYL																						
2	50	13.69	18.81					10.00	4.50					0.88	38-18					0.81	N/A	2.00	N/A	6.00	0.44	2	N/A	N/A	.625-11NC	4	4.75	0.75	5.13	1.88	4.38	4.38
		(348)	(427)					(254)	(114)					(22)						(21)		(51)		(152)	(11)						(121)	(19)	(130)	(48)	(111)	(111)
		HW	5 CYL	6 CYL				HW	5 CYL	6 CYL				HW	5 CYL	6 CYL																				
3	80	15.56	19.75	20.00				10.00	5.50	6.50				0.88	38-18	38-18				0.88	N/A	3.00	N/A	7.50	0.44	2	N/A	N/A	.625-11NC	4	6.00	0.75	5.75	2	6.13	6.13
		(395)	(502)	(508)				(254)	(140)	(165)				(22)						(22)		(76)		(191)	(11)						(152)	(19)	(146)	(51)	(156)	(156)
		HW	5 CYL	6 CYL				HW	5 CYL	6 CYL				HW	5 CYL	6 CYL																				
4	100	17.31	22.50	22.75				10.00	5.50	6.50				0.88	38-18	38-18				0.86	N/A	4.00	N/A	9.00	0.5	2	N/A	N/A	.625-11NC	8	7.50	0.75	5.75	2	6.13	6.13
		(440)	(572)	(578)				(254)	(140)	(165)				(22)						(22)		(102)		(229)	(13)						(191)	(19)	(146)	(51)	(156)	(156)
		HW	5 CYL	6 CYL	8 CYL			HW	5 CYL	6 CYL	8 CYL			HW	5 CYL	6 CYL	8 CYL																			
6	150	21.88	28.00	28.25	28.63			16.00	5.50	6.50	9.00			1.05	38-18	38-18	38-18			0.94	0.06	6.00	8.50	11.00	0.45	2	N/A	N/A	.75-10NC	8	9.50	0.75	7.38	2.25	8.13	8.13
		(556)	(711)	(718)	(727)			(406)	(140)	(165)	(229)			(27)						(24)	(2)	(152)	(215)	(279)	(11)						(241)	(19)	(187)	(57)	(207)	(207)
		HW	6 CYL	8 CYL	10 CYL			HW	6 CYL	8 CYL	10 CYL			HW	6 CYL	8 CYL	10 CYL																			
8	200	25.94	34.31	34.69	35.69			16.00	6.50	9.00	11.00			1.11	38-18	38-18	.50-14			1.19	0.06	8.00	10.63	13.50	0.63	2	N/A	N/A	.75-10NC	8	11.75	0.75	7.38	2.75	9.94	9.94
		(659)	(871)	(881)	(907)			(406)	(165)	(229)	(279)			(28)						(30)	(2)	(203)	(270)	(343)	(16)						(298)	(19)	(187)	(70)	(252)	(252)
		HW	8 CYL	10 CYL	14 CYL			HW	8 CYL	10 CYL	14 CYL			HW	8 CYL	10 CYL	14 CYL																			
10	250	29.50	40.31	41.31	43.06			16.00	9.00	11.00	14.75			1.16	38-18	.50-14	.75-14			1.19	0.06	10.00	12.75	16.00	0.56	4	N/A	N/A	.875-9NC	12	14.25	1.00	7.38	2.75	11.88	9.94
		(749)	(1024)	(1048)	(1084)			(406)	(228)	(279)	(375)			(29)						(30)	(2)	(254)	(324)	(406)	(14)						(362)	(25)	(187)	(70)	(302)	(252)
		HW	8 CYL	10 CYL	14 CYL	16 CYL		HW	8 CYL	10 CYL	14 CYL	16 CYL		HW	8 CYL	10 CYL	14 CYL	16 CYL																		
12	300	34.38	48.69	47.69	49.69	50.00		20.00	9.00	11.00	14.75	17.00		1.23	38-18	.50-14	.75-14	.75-14		1.25	0.13	12.00	15.00	19.00	0.63	4	N/A	N/A	.875-9NC	12	17.00	1.00	7.50	3.00	11.69	9.94
		(873)	(1186)	(1211)	(1262)	(1270)		(508)	(229)	(279)	(375)	(432)		(31)						(32)	(3)	(305)	(381)	(483)	(18)						(432)	(25)	(191)	(78)	(297)	(252)
		HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL	HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL	HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL																	
14	350	39.31	52.00	53.00	53.00	53.88	54.19	20.00	9.00	11.00	12.75	14.75	17.00	1.60	38-18	.50-14	.50-14	.75-14	.75-14	1.5	0.13	13.25	16.25	21.00	0.56	4	N/A	N/A	1.00-8NC	12	18.75	1.00	10.38	3.00	15.50	15.50
		(998)	(1321)	(1346)	(1346)	(1369)	(1376)	(508)	(229)	(279)	(324)	(375)	(432)	(041)						(38)	(3)	(337)	(413)	(533)	(14)						(476)	(25)	(264)	(78)	(394)	(394)
		HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL	HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL	HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL																	
16	400	43.81	59.50	59.50	59.50	60.38	60.69	20.00	9.00	11.00	12.75	14.75	17.00	1.66	38-18	.50-14	.50-14	.75-14	.75-14	1.75	0.13	15.25	18.50	23.50	0.5	6	N/A	N/A	1.00-8NC	16	21.25	1.25	10.63	3.50	15.50	15.50
		(1113)	(1486)	(1511)	(1511)	(1534)	(1542)	(508)	(229)	(279)	(324)	(375)	(432)	(042)						(44)	(3)	(387)	(470)	(597)	(13)						(540)	(32)	(270)	(89)	(394)	(394)
		HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL	HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL	HW	8 CYL	10 CYL	12 CYL	14 CYL	16 CYL																	
18	450	47.97	63.94	64.94	64.94	65.81	66.12	30.00	9.00	11.00	12.75	14.75	17.00	2.00	38-18	.50-14	.50-14	.75-14	.75-14	1.75	0.13	17.25	21.00	25.00	0.44	6	N/A	N/A	1.125-7NC	16	22.75	1.06	12.25	3.50	15.75	15.50
		(1218)	(1624)	(1649)	(1649)	(1672)	(1679)	(762)	(229)	(279)	(324)	(375)	(432)	(051)						(44)	(3)	(438)	(533)	(635)	(11)						(578)	(27)	(311)	(89)	(400)	(394)
		HW	10 CYL	12 CYL	14 CYL	16 CYL	18 CYL	HW	10 CYL	12 CYL	14 CYL	16 CYL	18 CYL	HW	10 CYL	12 CYL	14 CYL	16 CYL	18 CYL																	
20	500	52.23	71.19	71.19	72.06	72.38	73.38	30.00	11.00	12.75	14.75	17.00	19.00	2.00	.50-14	.50-14	.75-14	.75-14	.75-14	2.25	0.19	19.25	23.00	27.50	0.75	8	0.75	2	1.125-7NC	20	25.00	1.25	13.50	4.50	17.25	17.14
		(1327)	(1808)	(1808)	(1830)	(1838)	(1864)	(762)	(279)	(324)	(375)	(432)	(483)	(051)						(57)	(5)	(488)	(584)	(699)	(19)		(19)				(635)	(32)	(343)	(114)	(438)	(435)
		HW	10 CYL	12 CYL	14 CYL	16 CYL	18 CYL	HW	10 CYL	12 CYL	14 CYL	16 CYL	18 CYL	HW	10 CYL	12 CYL	14 CYL	16 CYL	18 CYL																	
24	600	80.40	83.31	83.31	84.19	84.50	85.50	30.00	11.00	12.75	14.75	17.00	19.00	2.13	.50-14	.50-14	.75-14	.75-14	.75-14	2.25	0.19	23.25	27.25	32.00	0.75	8	0.75	4	1.25-7NC	20	29.50	1.25	16.00	4.50	21.75	17.14
		(1534)	(2116)	(2116)	(2138)	(2146)	(2172)	(762)	(279)	(324)	(375)	(432)	(483)	(054)						(57)	(5)	(591)	(692)	(813)	(19)		(19)				(749)	(32)	(406)	(114)	(552)	(435)

Refer to Sketch on page 5

Note: 2", 3", 4" XS150's have flat face flanges.
6" to 24" XS150's have raised face flanges.

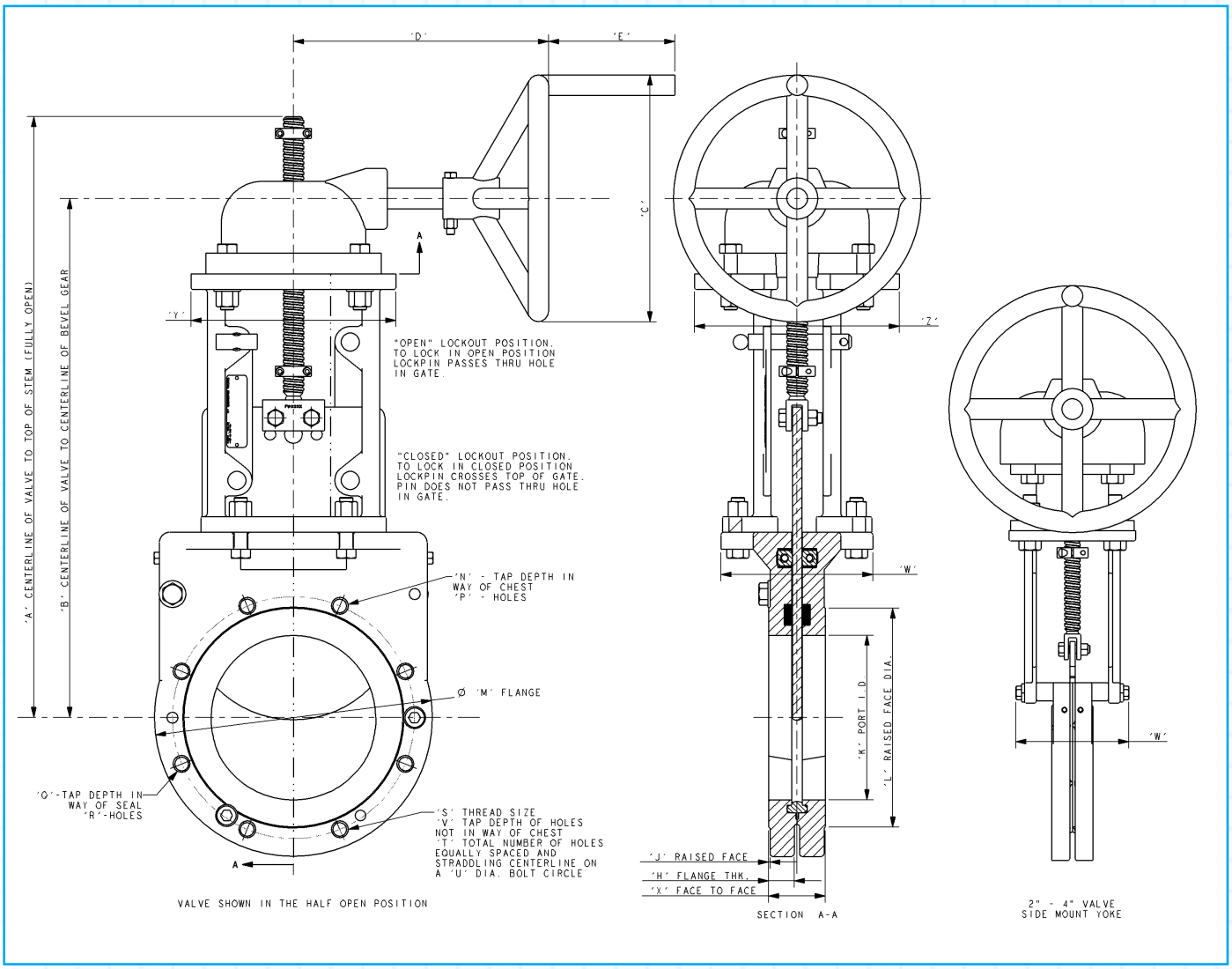


Refer to Table on page 4

Note: 2", 3", 4" XS150's have flat face flanges.
6" to 24" XS150's have raised face flanges.

Fabri-Valve® XS150 High Performance Knife Gate Valve

VALVE SIZE		DIMENSIONS INCHES (mm) FOR 2" - 12" XS-150 BEVEL GEAR																					
IN	DN	BEVEL GEAR MODEL	'A'	'B'	'C'	'D'	'E'	'H'	'J'	'K'	'L'	'M'	'N'	'P'	'Q'	'R'	'S'	'T'	'U'	'V'	'W'	'X'	'Y'	'Z'
2	50	BG-3	18.31 (465)	16.31 (414)	12.00 (305)	12.38 (314)	6.50 (165)	0.81 (21)	N/A	2.00 (51)	N/A	6.00 (152)	0.44 (11)	2	N/A	N/A	.625-11NC	4	4.75 (121)	0.75 (19)	5.13 (130)	1.88 (48)	4.38 (111)	4.38 (111)
3	80	BG-3	21.19 (538)	18.19 (462)	12.00 (305)	12.38 (314)	6.50 (165)	0.88 (22)	N/A	3.00 (76)	N/A	7.50 (191)	0.44 (11)	2	N/A	N/A	.625-11NC	4	6 (152)	0.75 (19)	5.75 (146)	2 (51)	6.13 (156)	6.13 (156)
4	100	BG-3	24.31 (618)	19.94 (506)	12.00 (305)	12.38 (314)	6.50 (165)	0.88 (22)	N/A	4.00 (102)	N/A	9.00 (229)	0.5 (13)	2	N/A	N/A	.625-11NC	8	7.5 (191)	0.75 (19)	5.75 (146)	2 (51)	6.13 (156)	6.13 (156)
6	150	BG-3	27.44 (697)	21.19 (538)	12.00 (305)	12.38 (314)	6.50 (165)	0.94 (24)	0.06 (2)	6.00 (152)	8.5 (215)	11.00 (279)	0.45 (11)	2	N/A	N/A	.75-10NC	8	9.5 (241)	0.75 (19)	7.38 (187)	2.25 (57)	8.13 (207)	8.13 (207)
8	200	BG-3	33.50 (851)	25.25 (641)	12.00 (305)	12.38 (314)	6.50 (165)	1.19 (30)	0.06 (2)	8.00 (203)	10.63 (270)	13.50 (343)	0.63 (16)	2	N/A	N/A	.75-10NC	8	11.75 (298)	0.75 (19)	7.38 (187)	2.75 (70)	9.94 (252)	9.94 (252)
10	250	BG-3	39.13 (994)	28.81 (732)	12.00 (305)	12.38 (314)	6.50 (165)	1.19 (30)	0.06 (2)	10.00 (254)	12.75 (324)	16.00 (406)	0.56 (14)	4	N/A	N/A	.875-9NC	12	14.25 (362)	1 (25)	7.38 (187)	2.75 (70)	11.88 (302)	9.94 (252)
12	300	BG-3	45.50 (1156)	33.19 (843)	12.00 (305)	12.38 (314)	6.50 (165)	1.25 (32)	0.13 (3)	12.00 (305)	15 (381)	19.00 (483)	0.63 (16)	4	N/A	N/A	.875-9NC	12	17 (432)	1 (25)	7.5 (191)	3 (76)	11.69 (297)	9.94 (252)



Note: 2", 3", 4" XS150's have flat face flanges.
6" to 24" XS150's have raised face flanges.

VALVE SIZE		150 CWP DIMENSIONS INCHES(mm) FOR 14" - 24" XS-150 BEVEL GEAR																					
IN	DN	BEVEL GEAR MODEL	'A'	'B'	'C'	'D'	'E'	'H'	'J'	'K'	'L'	'M'	'N'	'P'	'Q'	'R'	'S'	'T'	'U'	'V'	'W'	'X'	'Y'	'Z'
14	356	BG-3	50.78 (1290)	37.19 (945)	12.00 (305)	13.59 (345)	7.00 (178)	1.50 (38)	0.13 (3)	13.25 (337)	16.25 (413)	21.00 (533)	0.56 (14)	4	N/A	N/A	1-8NC	12	18.75 (476)	1.00 (25)	10.38 (264)	3.00 (76)	15.50 (394)	15.50 (394)
16	406	BG-4	56.31 (1430)	42.63 (1083)	12.00 (305)	16.25 (413)	7.00 (178)	1.75 (44)	0.13 (3)	15.25 (387)	18.50 (470)	23.50 (597)	0.50 (13)	6	N/A	N/A	1-8NC	16	21.25 (540)	1.25 (32)	10.63 (270)	3.50 (89)	15.50 (394)	15.50 (394)
18	457	BG-4	61.75 (1568)	46.04 (1169)	18.00 (457)	16.38 (416)	7.00 (178)	1.75 (44)	0.13 (3)	17.25 (438)	21.00 (533)	25.00 (635)	0.44 (11)	6	N/A	N/A	1-1/8-7NC	16	22.75 (578)	1.06 (27)	12.25 (311)	3.50 (89)	15.75 (400)	15.50 (394)
20	508	BG-4	68.00 (1727)	50.29 (1277)	24.00 (610)	17.88 (454)	7.00 (178)	2.25 (57)	0.19 (5)	19.25 (489)	23.00 (584)	27.50 (699)	0.75 (19)	8	0.75 (19)	2	1-1/8-7NC	20	25.00 (635)	1.25 (32)	13.50 (343)	4.50 (114)	17.25 (438)	17.14 (435)
24	610	BG-34	80.13 (2035)	58.44 (1484)	12.00 (305)	18.00 (457)	7.00 (178)	2.25 (57)	0.19 (5)	23.25 (591)	27.25 (692)	32.00 (813)	0.75 (19)	8	0.75 (19)	4	1-1/4-7NC	20	29.50 (749)	1.25 (32)	16.00 (406)	4.50 (114)	21.75 (552)	17.14 (435)

VALVE SIZE		285 CWP DIMENSIONS INCHES(mm) FOR 14" - 24" XS-150 BEVEL GEAR																					
IN	DN	BEVEL GEAR MODEL	'A'	'B'	'C'	'D'	'E'	'H'	'J'	'K'	'L'	'M'	'N'	'P'	'Q'	'R'	'S'	'T'	'U'	'V'	'W'	'X'	'Y'	'Z'
* 14	356	BG-3	50.78 (1290)	37.19 (945)	24.00 (610)	15.25 (387)	7.00 (178)	1.50 (38)	0.13 (3)	13.25 (337)	16.25 (413)	21.00 (533)	0.56 (14)	4	N/A	N/A	1-8NC	12	18.75 (476)	1.00 (25)	10.38 (264)	3.00 (76)	15.50 (394)	15.50 (394)
* 16	406	BG-4	56.31 (1430)	42.63 (1083)	24.00 (610)	17.88 (454)	7.00 (178)	1.75 (44)	0.13 (3)	15.25 (387)	18.50 (470)	23.50 (597)	0.50 (13)	6	N/A	N/A	1-8NC	16	21.25 (540)	1.25 (32)	10.63 (270)	3.50 (89)	15.50 (394)	15.50 (394)
18	457	BG-34	62.72 (1593)	48.00 (1219)	12.00 (305)	18.00 (457)	7.00 (178)	1.75 (44)	0.13 (3)	17.25 (438)	21.00 (533)	25.00 (635)	0.44 (11)	6	N/A	N/A	1-1/8-7NC	16	22.75 (578)	1.06 (27)	12.25 (311)	3.50 (89)	15.75 (400)	15.50 (394)
20	508	BG-44	68.00 (1727)	53.16 (1350)	12.00 (305)	20.88 (530)	7.00 (178)	2.25 (57)	0.19 (5)	19.25 (489)	23.00 (584)	27.50 (699)	0.75 (19)	8	0.75 (19)	2	1-1/8-7NC	20	25.00 (635)	1.25 (32)	13.50 (343)	4.50 (114)	17.25 (438)	17.14 (435)
24	610	BG-44GT	80.13 (2035)	61.31 (1557)	18.00 (457)	21.00 (533)	7.00 (178)	2.25 (57)	0.19 (5)	23.25 (591)	27.25 (692)	32.00 (813)	0.75 (19)	8	0.75 (19)	4	1-1/4-7NC	20	29.50 (749)	1.25 (32)	16.00 (406)	4.50 (114)	21.75 (552)	17.14 (435)

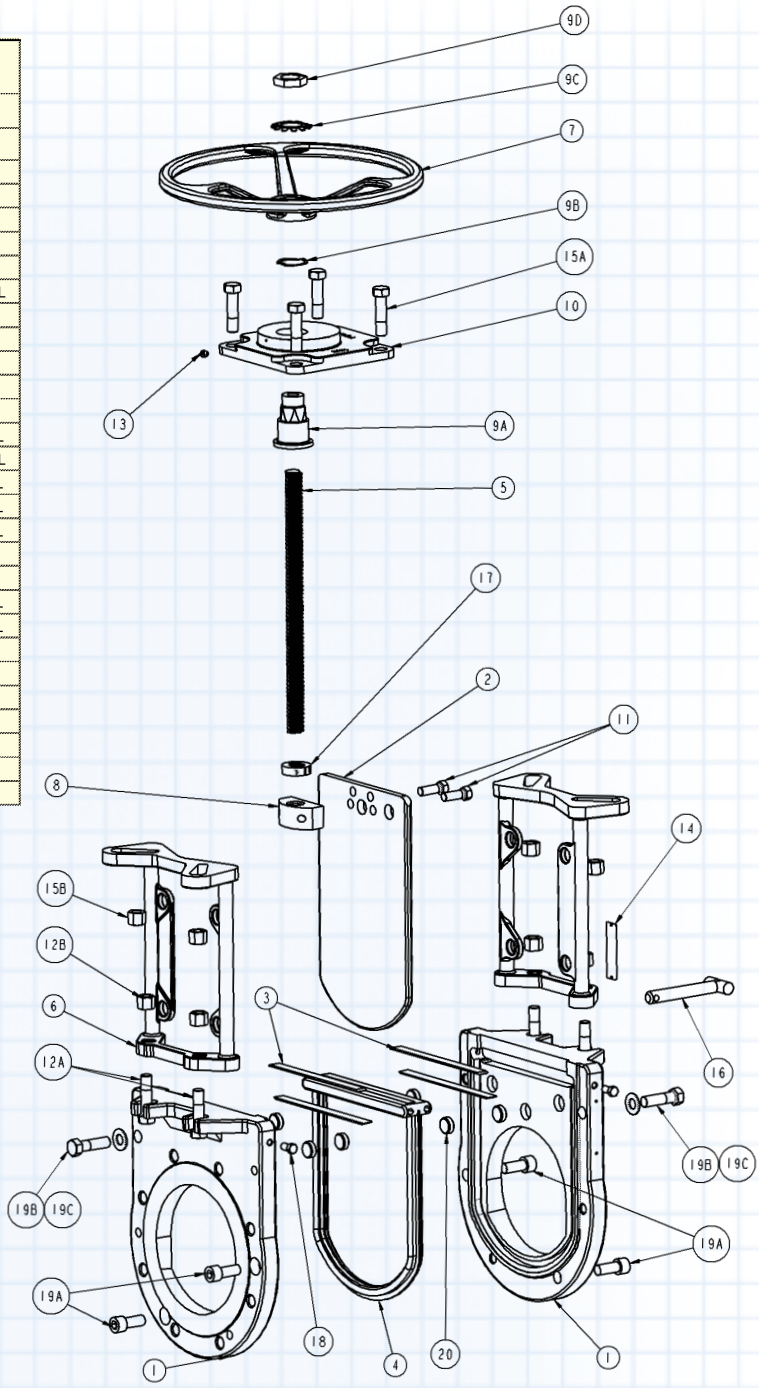
Refer to Sketch on page 6

* At higher differential pressures, a larger handwheel is offered to reduce the rim pull effort. Note "C" and "D" dimensions.

Note: 2", 3", 4" XS150's have flat face flanges.
6" to 24" XS150's have raised face flanges.

	PARTS LIST		
ITEM	DESCRIPTION	MATERIAL	
		S' SERIES	R' SERIES
1	BODY HALF	AS SPECIFIED BY CUSTOMER	
2	GATE	AS SPECIFIED BY CUSTOMER	
* 3	GATE SCRAPERS	PHENOLIC	
* 4	GATE SEAL/ INJECTABLE PACKING SEAL	EPDM, VITON OR AFLAS	
5	STEM	304SS	
6	YOKE HALF	304SS	CARBON STEEL
7	HANDWHEEL	CAST IRON	
8	NON-RISING STEMNUT (NRS)	ACID RESISTENT BRONZE	
9A	DRIVE NUT	BRONZE/SS	BRONZE
9B	WAVE SPRING	STAINLESS STEEL	
9C	RETAINING WASHER	STAINLESS STEEL	
9D	RETAINER NUT	STAINLESS STEEL	PLATED STEEL
10	DRIVE NUT HUB	304SS	CARBON STEEL
11	NRS STEMNUT FASTENERS	STAINLESS STEEL	PLATED STEEL
12A	YOKE BOLTS	STAINLESS STEEL	PLATED STEEL
12B	YOKE HEX NUTS	STAINLESS STEEL	PLATED STEEL
13	GREASE FITTING	PLATED STEEL	
14	SERIAL NUMBER TAG	STAINLESS STEEL	
15A	DRIVE NUT HUB BOLTS	STAINLESS STEEL	PLATED STEEL
15B	DRIVE NUT HUB HEX NUTS	STAINLESS STEEL	PLATED STEEL
16	LOCK OUT PIN	17-4PH SS	
17	TRAVEL STOP	STAINLESS STEEL	
18	INJECTABLE PACKING BOLTS	STAINLESS STEEL	
19A	BODY HALF BOLT (SOCKET HEAD)	STAINLESS STEEL	
19B	BODY HALF BOLT (CAP HEAD)	STAINLESS STEEL	
19C	BODY HALF FLAT WASHER	STAINLESS STEEL	
20	GATE GUIDE (CHEST)	GLASS FILLED TFE	

*Recommended spare parts.



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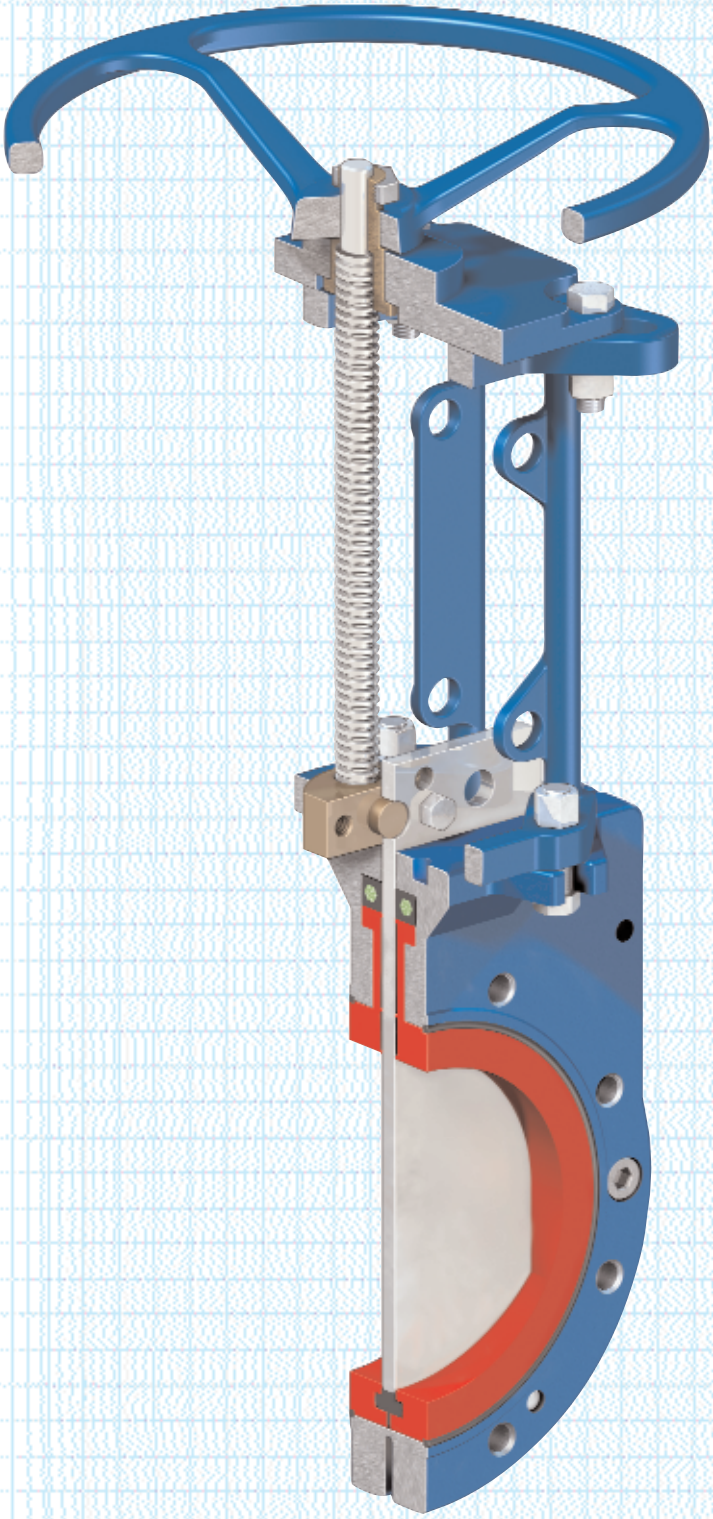
Fabri-Valve

ITT Industries
Engineered for life

Fabri-Valve® XS150-ULV Urethane Lined Knife Gate Valve



XS150-ULV Urethane Lined Knife Gate Valve Zero Discharge Valve

The Fabri-Valve® XS150-ULV Urethane Lined Knife Gate Valve provides an economical solution for abrasive and corrosive applications. The XS150-ULV does not discharge process media to the environment. The design utilizes the same superior sealing techniques as the XS150, featuring a robust perimeter seal that provides bi-directional, bubble-tight shutoff. Replaceable FV8000™ urethane liners are added to protect the body from abrasion and corrosion.

The XS150 body halves are machined to accept the removable urethane liners (full port). A triple scraper design is incorporated into the FV8000 liners, which cleans the gate during operation and prevents media build up in chest area. The perimeter seal has shoulders, which mechanically retain (lock) the seal in the seal groove located in the FV8000 liners. The seal groove is specially designed to prevent seal pull-out but also allows the seal to move and prevent overcompression.

Advantages

FV8000 Liner* & Seat are Independent:

- □ Liner and slightly recessed seat work in harmony providing body protection and bubble-tight, bi-directional shutoff in abrasive and/or corrosive applications.
- □ Liner protects the perimeter seal from the abrasion of direct process flow.
- □ Liner material is harder for superior abrasion resistance since it is not used for sealing.
- □ Triple scraper design is incorporated into liners which cleans gate during operation and prevents media build-up in chest area.

* Patent Pending

[1] If the pipeline media is dangerous, lethal, harmful, active, scorching or under high pressure, special precautions must be taken before removing the packing bolts. Consult the XS150-ULV Installation & Maintenance manual for instructions.

Advantages (cont.)

Ease of Maintenance:
- □ Injectable packing allows easy packing adjustments to be made under line pressure without valve disassembly or removal of the valve from the pipeline.[1]
- □ One-piece perimeter and chest seal design allows for quick and easy maintenance.
- □ Liners are easily replaced.

One-Piece Perimeter & Chest Seal*:
- □ Bi-directional, repeatable shutoff.
- □ Zero Discharge. Zero leakage.
- □ Perimeter Seal:
  1. The perimeter seal has shoulders, which mechanically retain (lock) the seal in the seal groove even during the most demanding applications.
  2. The seal grove is specially designed to prevent seal pull-out but also allows the seal to move and prevent overcompression.
- □ Shut-off performance is unaffected by differential pressure. Excellent bi-directional shut-off even at very low pressures.
- □ Chest seal wraps around the entire gate eliminating leakage paths.
- □ Chest seal completely encloses injectable packing; therefore, contamination of the process fluid by "loose" packing is eliminated.

Design:
- □ Standard MSS-SP81 Face-to-Face.
- □ Robust gate resists distortion due to effects of water hammer.
- □ A taper is added to the liner's internal diameter to eliminate the possibility of material collecting at the bottom of the port and preventing proper closure. The taper ensures automatic "clean-out" and "flushing".
- □ Minimized chest area and close tolerances prevents media packing.
- □ Flange O-rings seal against mating flange and prevent overcompression of the FV8000 urethane liners. No gaskets are required.
- □ Unrestricted straight-through flow design provides true full-port design.
- □ Non-Rising stem design minimizes space required for installation.[2]
- □ Universal yoke allows easy conversion between handwheel and cylinder operated.
- □ Dished handwheel keeps hands away from pinch points while operating.

[2] Valves with a bevel gear have a rising stem.
[3] Consult factory for urthane-lined designs available in sizes 26" through 60".

* Patent Pending

Specifications

Size Range[3]
2" – 24"

Pressure Rating
150 psi (10.3 bar) CWP (cold working pressure)

Temperature Rating
170°F (77°C) Standard
Higher temperatures available upon request.

Flange Drilling
ANSI 125/150 Drilling Standard.
Contact factory for alternate flange drilling.

Testing
Every Fabri-Valve XS150-ULV valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test: Hydro test at 1.5 times the rated CWP (cold working pressure)
- Zero allowable leakage

Standard Resilient Seat test: Hydro test at 15 psi (1 bar) and rated CWP.
- Zero allowable leakage

Shutoff Performance
Zero leakage.for all sizes.

ANSI/FCI 70-2 establishes a series of six leakage classes for control valves and defines the test procedure. Class VI allows the least leakage. XS150-ULV's are bubble tight, which exceeds Class VI requirements.

Available in a Wide Choice of Materials for a Broad Range of Applications
- □ To meet specific application requirements, a variety of seal materials and gate materials are offered. Contact Factory.

Installation Orientation
Mount sizes 14" – 24" in horizontal piping with vertical stem travel.

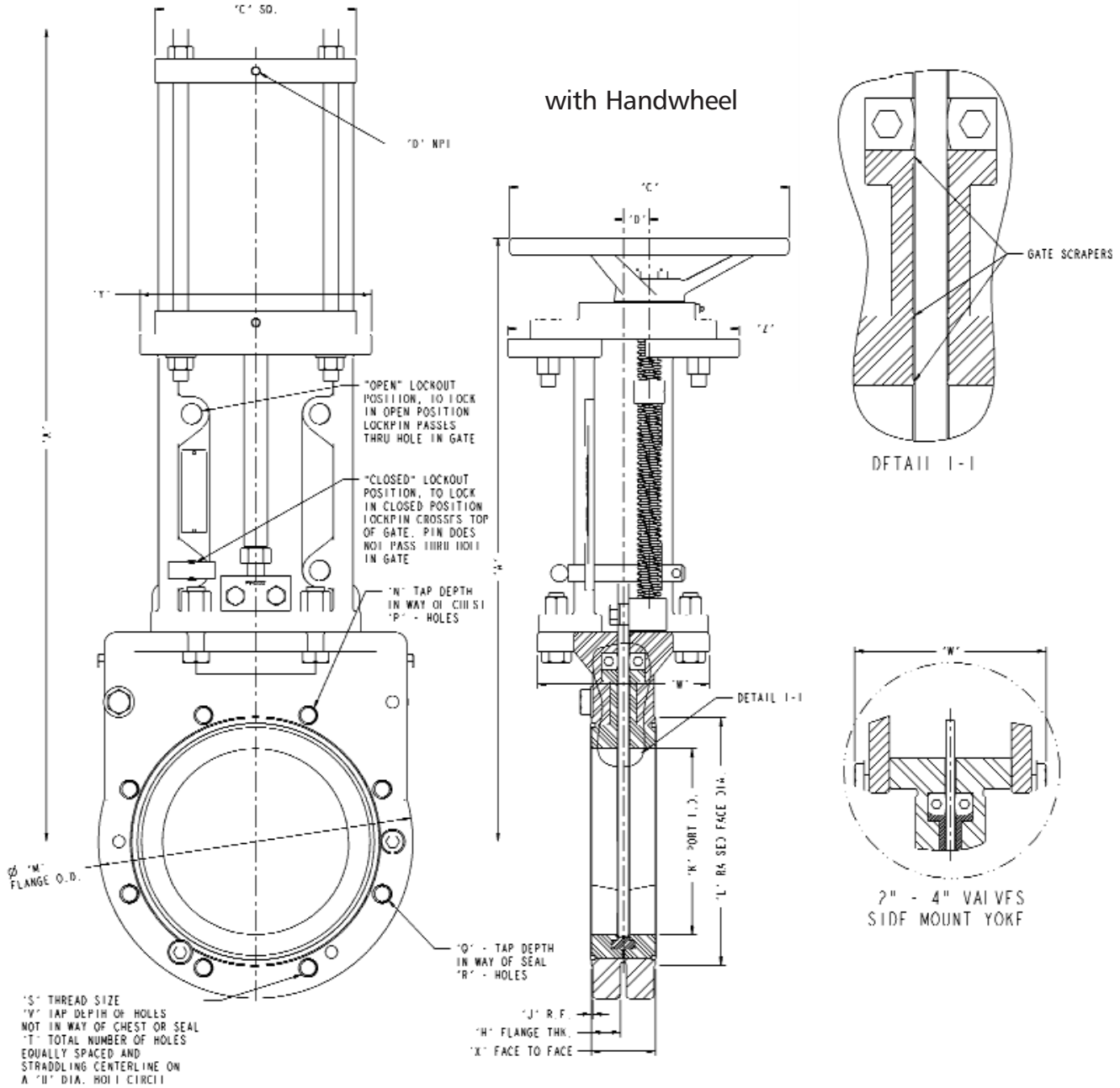
Fabri-Valve® XS150-ULV Urethane Lined Knife Gate Valve

Valve Size		Dimensions Inches (mm) ULV w/ Handwheel or Cylinder																	
IN	DN	'A'						'C'						'D'					
2	50	HW	4Cyl					HW	4Cyl					HW	4Cyl				
		13.69	16.81					10.00	4.50					0.88	.38-18				
		(348)	(427)					(254)	(114)					(22)					
3	80	HW	5Cyl	6Cyl				HW	5Cyl	6Cyl				HW	5Cyl	6Cyl			
		15.56	19.75	20.00				10.00	5.50	6.50				0.88	.38-18	.38-18			
		(395)	(502)	(508)				(254)	(140)	(165)				(22)					
4	100	HW	5Cyl	6Cyl				HW	5Cyl	6Cyl				HW	5Cyl	6Cyl			
		17.31	22.50	22.75				10.00	5.50	6.50				0.88	.38-18	.38-18			
		(440)	(572)	(578)				(254)	(140)	(165)				(22)					
6	150	HW	5Cyl	6Cyl	8Cyl			HW	5Cyl	6Cyl	8Cyl			HW	5Cyl	6Cyl	8Cyl		
		21.88	28.00	28.25	28.63			16.00	5.50	6.50	9.00			1.05	.38-18	.38-18	.38-18		
		(556)	(711)	(718)	(727)			(406)	(140)	(165)	(229)			(27)					
8	200	HW	6Cyl	8Cyl	10Cyl			HW	6Cyl	8Cyl	10Cyl			HW	6Cyl	8Cyl	10Cyl		
		25.94	34.31	34.69	35.69			16.00	6.50	9.00	11.00			1.1	.38-18	.38-18	.50-14		
		(659)	(871)	(881)	(907)			(406)	(165)	(229)	(279)			(28)					
10	250	HW	8Cyl	10Cyl	14Cyl			HW	8Cyl	10Cyl	14Cyl			HW	8Cyl	10Cyl	14Cyl		
		29.50	41.31	40.31	43.06			16.00	9.00	11.00	14.75			1.16	.38-18	.50-14	.75-14		
		(749)	(1024)	(1049)	(1094)			(406)	(229)	(279)	(375)			(29)					
12	300	HW	8Cyl	10Cyl	14Cyl	16Cyl		HW	8Cyl	10Cyl	14Cyl	16Cyl		HW	8Cyl	10Cyl	14Cyl	16Cyl	
		34.38	46.69	47.69	49.69	50.00		20.00	9.00	11.00	14.75	17.00		1.23	.38-18	.50-14	.75-14	.75-14	
		(873)	(1186)	(1211)	(1262)	(1270)		(508)	(229)	(279)	(375)	(432)		(31)					
14	350	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl
		*	52.00	53.00	53.00	53.88	54.19	*	9.00	11.00	12.75	14.75	17.00	*	.38-18	.50-14	.50-14	.75-14	.75-14
		*	(1321)	(1346)	(1346)	(1369)	(1376)	*	(229)	(279)	(324)	(375)	(432)	*					
16	400	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl
		*	58.50	59.50	59.50	60.38	60.69	*	9.00	11.00	12.75	14.75	17.00	*	.38-18	.50-14	.50-14	.75-14	.75-14
		*	(1486)	(1511)	(1511)	(1534)	(1542)	*	(229)	(279)	(324)	(375)	(432)	*					
18	450	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl	HW	8Cyl	10Cyl	12Cyl	14Cyl	16Cyl
		*	63.94	64.94	64.94	65.82	66.12	*	9.00	11.00	12.75	14.75	17.00	*	.38-18	.50-14	.50-14	.75-14	.75-14
		*	(1624)	(1649)	(1649)	(1672)	(16.79	*	(229)	(279)	(324)	(375)	(432)	*					
20	500	HW	10Cyl	12Cyl	14Cyl	16Cyl	18Cyl	HW	10Cyl	12Cyl	14Cyl	16Cyl	18Cyl	HW	10Cyl	12Cyl	14Cyl	16Cyl	18Cyl
		*	71.19	71.19	72.06	72.38	73.38	*	11.00	12.75	14.75	17.00	19.00	*	.50-14	.50-14	.75-14	.75-14	.75-14
		*	(1808)	(1808)	(1830)	(1838)	(1864)	*	(279)	(324)	(375)	(432)	(483)	*					
24	600	HW	10Cyl	12Cyl	14Cyl	16Cyl	18Cyl	HW	10Cyl	12Cyl	14Cyl	16Cyl	18Cyl	HW	10Cyl	12Cyl	14Cyl	16Cyl	18Cyl
		*	83.31	83.31	84.19	84.50	85.50	*	11.00	12.75	14.75	17.00	19.00	*	.50-14	.50-14	.75-14	.75-14	.75-14
		*	(2116)	(2116)	(2138)	(2146)	(2172)	*	(279)	(324)	(375)	(432)	(483)	*					

Valve Size		Dimensions Inches (mm) ULV w/ Handwheel or Cylinder																
IN	DN	'H'	'J'	'K'	'L'	'M'	'N'	'P'	'Q'	'R'	'S'	'T'	'U'	'V'	'W'	'X'	'Y'	'Z'
2	50	0.81	N/A	2.00	N/A	6.00	0.38	2	N/A	N/A	.625-11NC	4	4.75	.75	5.13	1.88	4.38	4.38
		(21)	N/A	(51)	N/A	(152)	(10)	2	N/A	N/A	.625-11NC	4	(121)	(19)	(130)	(48)	(111)	(111)
3	80	.088	N/A	3.00	N/A	7.50	0.38	2	N/A	N/A	.625-11NC	4	6.00	.75	5.75	2	6.13	6.13
		(22)	N/A	(76)	N/A	(191)	(10)	2	N/A	N/A	.625-11NC	4	(152)	(19)	(146)	(51)	(156)	(156)
4	100	0.88	N/A	4.00	N/A	9.00	0.38	2	N/A	N/A	.625-11HC	8	7.50	.75	5.75	2	6.13	6.13
		(22)	N/A	(102)	N/A	(229)	(10)	2	N/A	N/A	.625-11NC	8	(191)	(19)	(146)	(51)	(156)	(156)
6	150	0.94	0.06	6.00	8.50	11.00	0.38	2	N/A	N/A	.75-10NC	8	9.50	.75	7.38	2.25	8.13	8.13
		(24)	(2)	(152)	(215)	(279)	(10)	2	N/A	N/A	.75-10NC	8	(241)	(19)	(187)	(57)	(207)	(207)
8	200	1.19	0.06	8.00	10.63	13.50	0.63	2	N/A	N/A	.75-10NC	8	11.75	.75	7.38	2.75	9.94	9.94
		(30)	(2)	(203)	(270)	(343)	(16)	2	N/A	N/A	.75-10NC	8	(298)	(19)	(187)	(70)	(252)	(252)
10	250	1.19	0.06	10.00	12.75	16.00	0.44	4	N/A	N/A	.875-9NC	12	14.25	1.00	7.38	2.75	11.88	9.94
		(30)	(2)	(254)	(324)	(406)	(11)	4	N/A	N/A	.875-9NC	12	(362)	(25)	(187)	(70)	(302)	(252)
12	300	1.25	0.13	12.00	15.00	19.00	0.44	4	N/A	N/A	.875-9NC	12	17.00	1.00	7.50	3.00	11.69	9.94
		(32)	(3)	(305)	(381)	(483)	(11)	4	N/A	N/A	.875-9NC	12	(432)	(25)	(191)	(78)	(297)	(252)
14	350	1.5	0.13	13.25	16.25	21.00	0.56	4	N/A	N/A	1.00-8NC	12	18.75	1.00	10.38	3.00	15.50	15.50
		(38)	(3)	(337)	(413)	(533)	(14)	4	N/A	N/A	1.00-8NC	12	(478)	(25)	(264)	(78)	(394)	(394)
16	400	1.75	0.13	15.25	18.50	23.50	0.5	6	N/A	N/A	1.125-7NC	16	21.25	1.25	10.63	3.50	15.50	15.50
		(44)	(3)	(387)	(470)	(597)	(13)	6	N/A	N/A	1.125-7NC	16	(540)	(32)	(270)	(89)	(394)	(394)
18	450	1.75	0.13	17.25	21.00	25.00	0.56	6	N/A	N/A	1.125-7NC	16	22.75	1.06	12.25	3.50	15.75	15.50
		(44)	(3)	(438)	(533)	(635)	(14)	6	N/A	N/A	1.125-7NC	16	(578)	(27)	(311)	(89)	(400)	(394)
20	500	2.25	0.19	19.25	23.00	27.50	0.75	8	2	0.75	1.125-7NC	20	25.00	1.25	13.50	4.50	17.25	17.14
		(57)	(5)	(489)	(584)	(699)	(19)	8	2	(19)	1.125-7NC	20	(635)	(32)	(343)	(114)	(438)	(435)
24	600	2.25	0.19	23.25	27.25	32.00	0.75	8	4	0.75	1.25-7NC	20	29.50	1.25	16.00	4.50	21.75	17.14
		(57)	(5)	(591)	(692)	(813)	(19)	8	4	(19)	1.25-7NC	20	(749)	(32)	(408)	(114)	(552)	(435)

Refer to Sketch on page 5

Note: 2", 3", 4" XS150 ULV's have flat face flanges.
6" to 24" XS150 ULV's have raised face flanges.
* Bevel Gear required sizes 14"– 24".



Refer to Table on page 4

Note: 2", 3", 4" XS150 ULV's have flat face flanges.
6" to 24" XS150 ULV's have raised face flanges.
Cylinders are sized to meet process conditions.

Fabri-Valve® XS150-ULV Urethane Lined Knife Gate Valve

FlowCoefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Valve Size	Cv
2	299
3	876
4	2,421
6	6,213
8	10,921
10	16,507
12	26,649
14	29,205
16	41,560
18	51,356
20	61,765
24	83,937

AvailableOptions

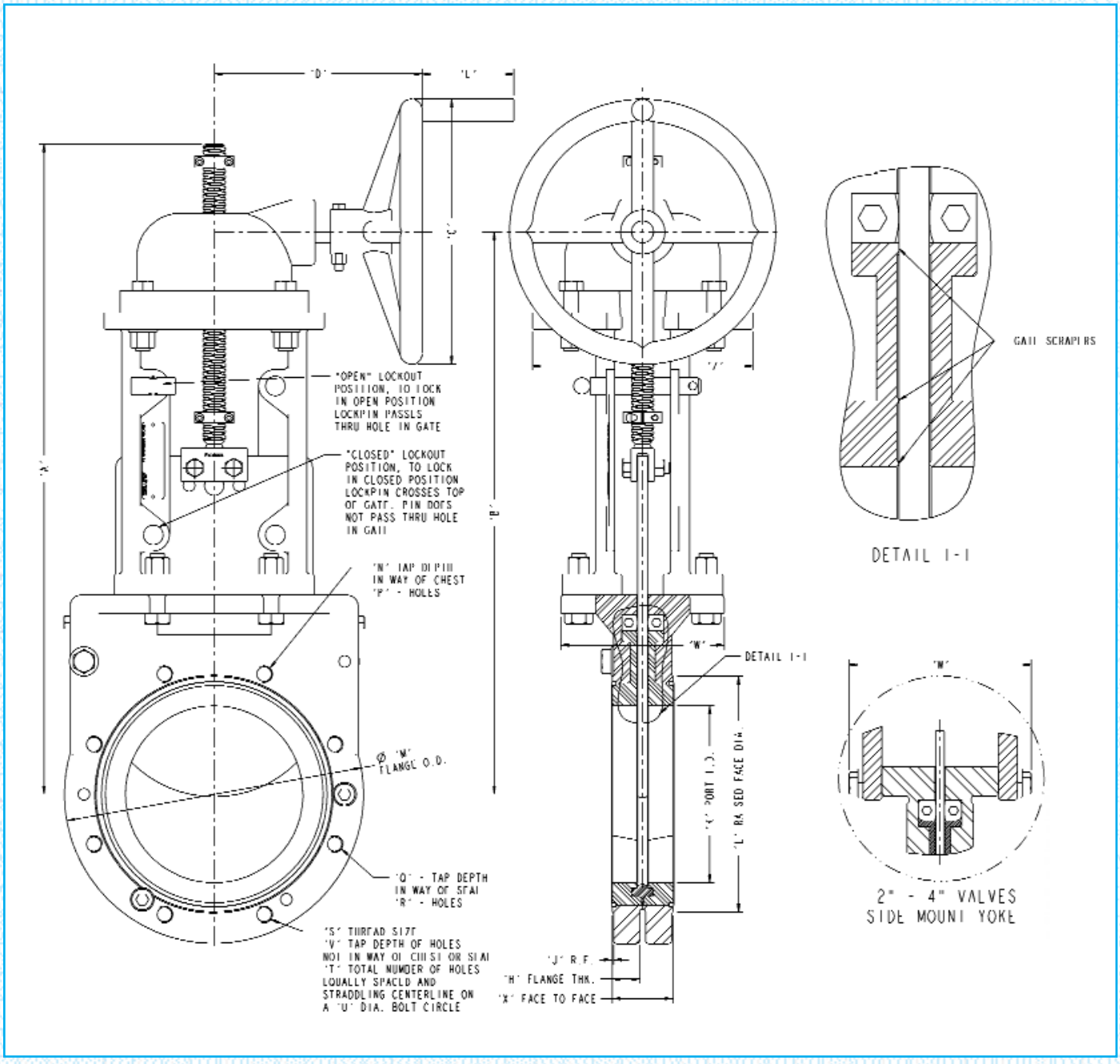
- Duplex Stainless Steel Gates
- Hardened Gate Material
- Hard Chromed Gate
- Nickel-TFE Coated Gate
- Epoxy Coating
- Locking Devices
- Alternate Flange Drilling
- Bevel Gear
- Chainwheels
- Cylinder Actuators
- Electric Actuators
- Ratchet
- Extended Stems
- Rod Boots
- Limit Switches
- Positioner
- Solenoids

150 CWP Dimensions Inches (mm) for 2" - 24" ULV with Bevel Gear

Valve Size		Dyna-torque Bevel Gear Model	'A'	'B'	'C'	'D'	'E'	'H'	'J'	'K'	'L'	'M'	'N'	'P'	'Q'	'R'	'S'	'T'	'U'	'V'	'W'	'X'	'Y'	'Z'
IN	DN																							
2	50	BG-3	18.31	16.31	12.00	12.38	6.50	0.81	N/A	2.00	N/A	6.00	0.38	2	N/A	N/A	.625-11NC	4	4.75	0.75	5.13	1.88	4.38	4.38
		BG-3	(465)	(414)	(305)	(314)	(165)	(21)	N/A	(51)	N/A	(152)	(10)	2	N/A	N/A	.625-11NC	4	(121)	(19)	(130)	(48)	(111)	(111)
3	80	BG-3	21.19	18.19	12.00	12.38	6.50	0.88	N/A	3.00	N/A	7.50	0.38	2	N/A	N/A	.625-11NC	4	6	0.75	5.75	2.00	6.13	6.13
		BG-3	(538)	(462)	(305)	(314)	(165)	(22)	N/A	(76)	N/A	(191)	(10)	2	N/A	N/A	.625-11NC	4	(152)	(19)	(146)	(51)	(156)	(156)
4	100	BG-3	24.31	19.94	12.00	12.38	6.50	0.88	N/A	4.00	N/A	9.00	0.38	2	N/A	N/A	.625-11NC	8	7.5	0.75	5.75	2.00	6.13	6.13
		BG-3	(618)	(506)	(305)	(314)	(165)	(22)	N/A	(102)	N/A	(229)	(10)	2	N/A	N/A	.625-11NC	8	(191)	(19)	(146)	(51)	(156)	(156)
6	150	BG-3	27.44	21.19	12.00	12.38	6.50	0.94	0.06	6.00	8.5	11.00	0.38	2	N/A	N/A	.75-10NC	8	9.5	0.75	7.38	2.25	8.13	8.13
		BG-3	(697)	(538)	(305)	(314)	(165)	(24)	(2)	(152)	(215)	(279)	(10)	2	N/A	N/A	.75-10NC	8	(241)	(19)	(187)	(57)	(207)	(207)
8	200	BG-3	33.50	25.25	12.00	12.38	6.50	1.19	0.06	8.00	10.63	13.50	0.63	2	N/A	N/A	.75-10NC	8	11.75	0.75	7.38	2.75	9.94	9.94
		BG-3	(851)	(641)	(305)	(314)	(165)	(30)	(2)	(203)	(270)	(343)	(16)	2	N/A	N/A	.75-10NC	8	(298)	(19)	(187)	(70)	(252)	(252)
10	250	BG-3	39.13	28.81	12.00	12.38	6.50	1.19	0.06	10.00	12.75	16.00	0.44	4	N/A	N/A	.875-9NC	12	14.25	1.00	7.38	2.75	11.88	9.94
		BG-3	(994)	(732)	(305)	(314)	(165)	(30)	(2)	(254)	(324)	(406)	(11)	4	N/A	N/A	.875-9NC	12	(362)	(25)	(187)	(70)	(302)	(252)
12	300	BG-3	45.50	33.19	12.00	12.38	6.50	1.25	0.13	12.00	15.00	19.00	0.44	4	N/A	N/A	.875-9NC	12	17.00	1.00	7.50	3.00	11.69	9.94
		BG-3	(1156)	(843)	(305)	(314)	(165)	(32)	(3)	(305)	(381)	(483)	(11)	4	N/A	N/A	.875-9NC	12	(432)	(25)	(191)	(76)	(297)	(252)
14	356	BG-3	50.78	37.19	12.00	13.59	7.00	1.50	0.13	13.25	16.25	21.00	0.56	4	N/A	N/A	1-8NC	12	18.75	1.00	10.38	3.00	15.50	15.50
		BG-3	(1290)	(945)	(305)	(345)	(178)	(38)	(3)	(337)	(413)	(533)	(14)	6	N/A	N/A	1-8NC	12	(476)	(25)	(264)	(76)	(394)	(394)
16	406	BG-4	56.31	42.63	12.00	16.25	7.00	1.75	0.13	15.25	18.50	23.50	0.50	6	N/A	N/A	1-8NC	16	21.25	1.25	10.63	3.50	15.50	15.50
		BG-4	(1430)	(1083)	(305)	(413)	(178)	(44)	(3)	(387)	(470)	(597)	(13)	6	N/A	N/A	1-8NC	16	(540)	(32)	(270)	(89)	(394)	(394)
18	457	BG-4	61.75	46.04	18.00	16.36	7.00	1.75	0.13	17.25	21.00	25.00	0.56	6	N/A	N/A	1-1/8-7NC	16	22.75	1.06	12.25	3.50	15.75	15.50
		BG-4	(1568)	(1169)	(457)	(416)	(178)	(44)	(3)	(438)	(533)	(635)	(14)	6	N/A	N/A	1-1/8-7NC	16	(578)	(27)	(311)	(89)	(400)	(394)
20	508	BG-4	68.00	50.29	24.00	17.88	7.00	2.25	0.19	19.25	23.00	27.50	0.75	8	0.75	2	1-1/8-7NC	20	25.00	1.25	13.50	4.50	17.25	17.14
		BG-4	(1727)	(1271)	(610)	(454)	(178)	(57)	(5)	(489)	(584)	(699)	(19)	8	(19)	2	1-1/8-7NC	20	(635)	(32)	(343)	(114)	(438)	(435)
24	610	BG-34	80.13	58.44	12.00	18.00	7.00	2.25	0.19	23.25	27.25	32.00	0.75	8	0.75	4	1-1/4-7NC	20	29.50	1.25	16.00	4.50	21.75	17.14
		BG-34	(2035)	(1484)	(305)	(457)	(178)	(57)	(5)	(591)	(692)	(813)	(19)	8	(19)	4	1-1/4-7NC	20	(749)	(32)	(406)	(114)	(552)	(435)

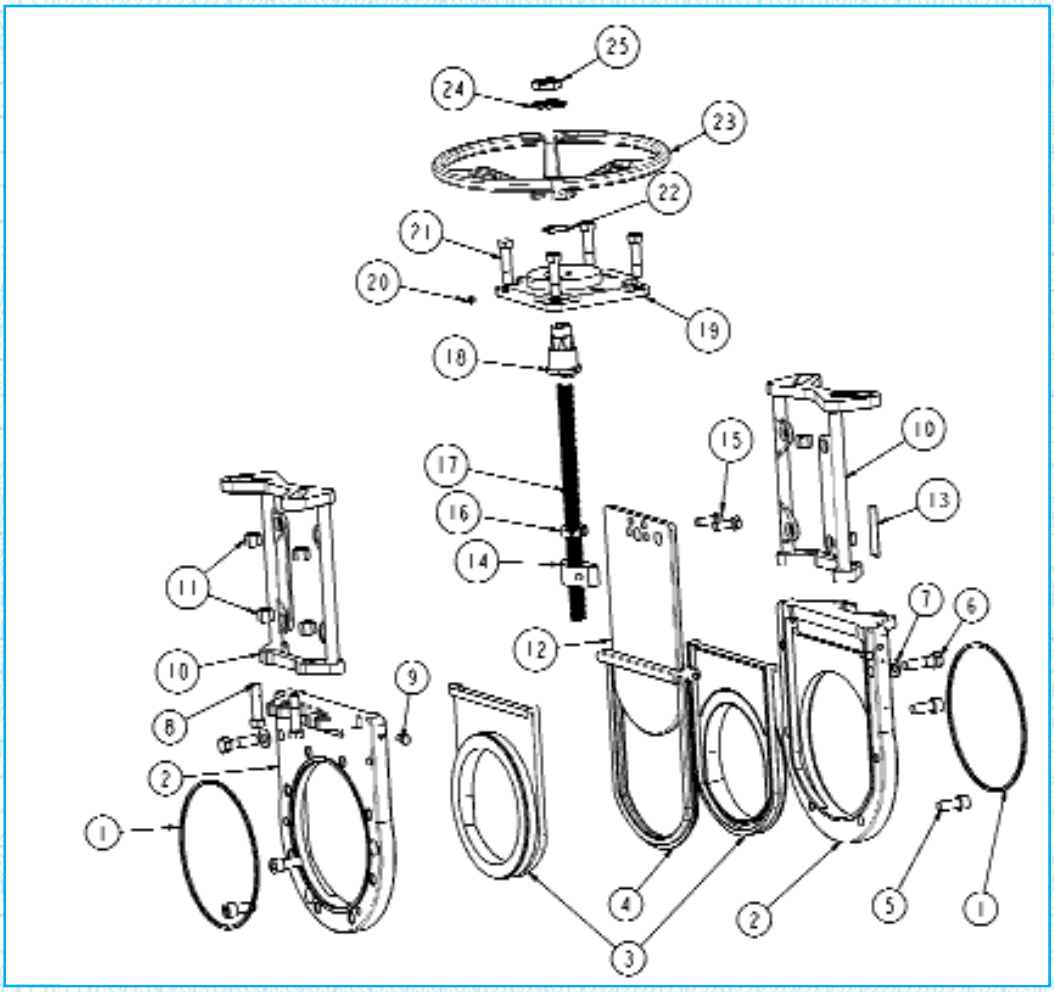
Refer to Sketch on page 7

Note: 2", 3", 4" XS150 ULV's have flat face flanges.
6" to 24" XS150 ULV's have raised face flanges.



Note: 2", 3", 4" XS150 ULV's have flat face flanges.
6" to 24" XS150 ULV's have raised face flanges.

Parts List					
Item	**Description**	**Material**	**Item**	**Description**	**Material**
1	O-Ring	EPDM, Viton, Aflas, Neoprene	14	Non Rising Stem Nut	Acid Resistant Bronze
2	Body	Carbon Steel	15	Stem Nut Bolts	Plated Steel
3	Liner	FV8000 Urethane Compound	16	Travel Stop	Stainless Steel
4	Seal	EPDM, Viton, Aflas, Neoprene	17	Non Rising Stem	304 SS
5	Socket Head Clamping Bolt	Stainless Steel	18	Drive Nut	Bronze
6	Capscrew Clamping Bolt	Stainless Steel	19	Yoke Hub	Carbon Steel
7	Clamp Bolt Washer	Stainless Steel	20	Grease Fitting	Plated Steel
8	Yoke to Body Bolt	Plated Steel	21	Yoke Hub Bolts	Plated Steel
9	Injection Port Bolt	Stainless Steel	22	Wave Spring	Stainless Steel
10	Yoke Half	Carbon Steel	23	Handwheel	Cast Iron
11	Yoke Retainer Nut	Carbon Steel	24	Retainer Washer	Stainless Steel
12	Gate	SS as Specified by Customer	25	Retainer Nut	Plated Steel
13	Serial Number Tag	Stainless Steel			



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ITT

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Fabri-Valve® C33/C133/F33/F133 Slide Gate Valves

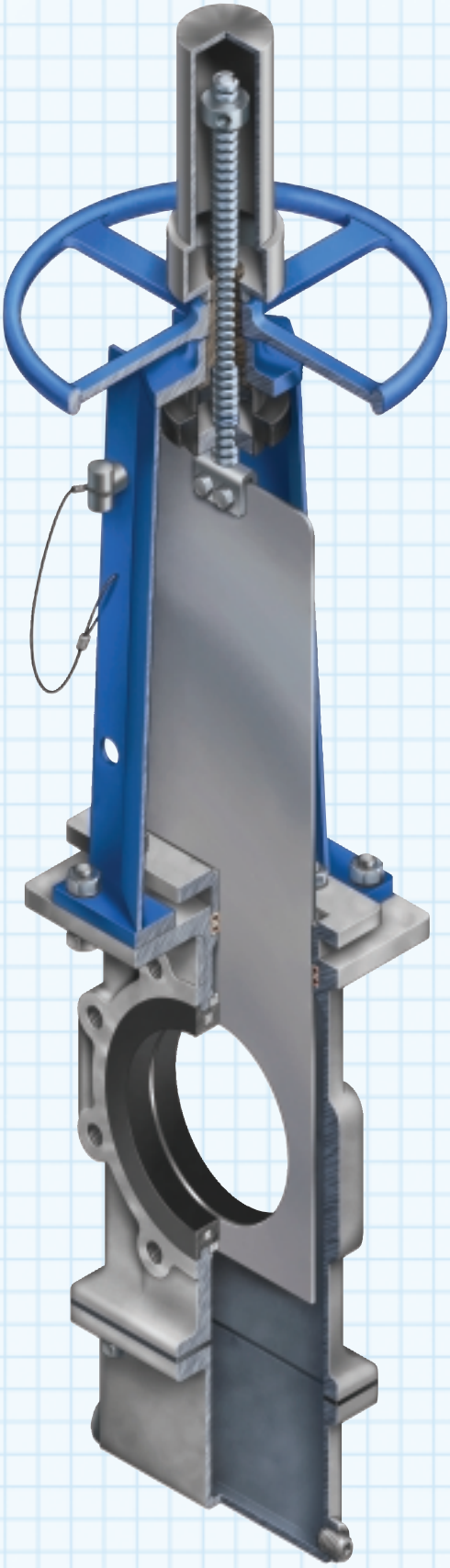


Figure C133 with energized cored packing.

Energized cored packing is standard with 6"(DN 150) and larger C33/C133 valves and all F33/F133 valves.

Fabri-Valve Figures C33 / C133 / F33 / F133 are bi-directional soft seated, slide gate valves designed for on/off service in heavy slurries. Specially designed body liners and constant contact seats minimize seat stress ensuring exceptional service life. Seats are self gasketing and are compatible with raised or flat faced, lined or unlined flanges. Figures C/F133 have a containment bonnet attached to the bottom flange to capture any discharge during cycling.

Specifications

Size Range
2"– 72"

Pressure Rating
2" –24" : 150 (10.3 bar) CWP (cold working pressure)
26" and larger are rate to customer requirement.
Designs to 360 psi (24.8 bar) are available, Consult Factory.

Temperature Rating
2" – 72": 200°F (93°C).
Higher temperature designs are available, Refer to section "Pressure/Temperature Rating (Soft Components)".

Flange Drilling
ANSI 125/150

Testing

Every Fabri-Valve Figure C/F33 and C/F133 is tested prior to shipment. Testing includes a seat test and a cycling test to insure proper functioning of moving parts. Figures C133 and F133 are also body shell tested.* Additional testing is also available. Please let us know your requirements.

* Figures C33 and F33 seats are designed to restrict discharge in the open and closed posistions (see seat test); therefore, Figures C33 and F33 are not body shell tested.

Shell test: Hydro test at 1.5 times the rated CWP – allowable leakage is zero

Dual Resilient seat test: Hydro test at 15 psi (1 bar) and rated CWP – Zero water leakage

Available Options

- **Dual Seats (STD)**
- **Hard Gate Material**
- **Nickel -TFE Coated Gate**
- **Epoxy Coating**
- **Flush Ports:** Standard on C133
- **Locking Devices (STD)**
- **E-Z Spin Handwheel**
- **Live Loaded Packing**
- **Chest Liners (STD)**
- **Self-Supporting Yokes**
- **Alternate Flange Drilling**
- **Bevel Gear**
- **Chainwheels**
- **Cylinder Actuators**
- **Electric Actuators**
- **Ratchet**
- **Extended Stems**
- **Gate Support Strips**
- **Rod Boots**

Pressure/Temperature Ratings

The tables below are the maximum pressure/temperature ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material, and if applicable, the resilient seat material. In a majority of designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure C33 & C133							
Pressure-Temperature Rating - psi							
Temp		Cast	Cast	Cast	Cast	Cast WCB	Cast
°F	°C	304L	316	316L	317L	A-216	DI
150	66	150	150	150	150	150	150
200	93	142	150	150	135	150	150
250	121	135	142	142	128	150	147
300	149	129	134	134	121	150	143
350	177	123	128	128	116	150	139
400	204	118	123	123	112	150	135
450	232	114	118	118	108	150	131
500	260	111	114	114	105	150	127

Figure F33 & F133								
Pressure-Temperature Rating - psi								
Temp		304	304L	316	316L	317L	A-36	A516Gr70
°F	°C							
150	66	150	133	150	133	150	150	150
200	93	133	114	141	113	135	137	150
250	121	126	108	133	107	128	135	150
300	149	120	102	124	101	121	133	150
350	177	115	98	119	97	116	131	150
400	204	110	93	114	93	112	128	150
450	232	107	90	110	90	108	125	150
500	260	103	87	106	87	105	121	150

Pressure/Temperature Ratings (Soft Components)

Seat Material	Support Ring/Liner Material	Maximum Pressure/Temp.
EPDM	UHMW-P	150psi/200°F
EPDM	Carbon/PTFE	150psi/280°F
Viton, Aflas	Carbon/PTFE	150psi/350°F
Buna-N	UHMW-P	150psi/200°F
Buna-N	Carbon/PTFE	150psi/280°F

Figure C33 / F33 / C133 / F133			
Valve Size		Handwheel	Rimpull and Number of Turns
In.	DN	Dia. (in.)	
2	50	10	19 lb, 11 turns
3	75	18	13 lb, 15 turns
4	100	18	16 lb, 19 turns
6	150	18	21 lb, 28 turns
8	200	20	32 lb, 36 turns
10	250	20	42 lb, 45 turns
12	300	20	54 lb, 54 turns
14	350		3:1 BG W/12"Hw, 50 lb, 180 turns
16	400		4:1 BG W/12"Hw, 48 lb, 272 turns
18	450		4:1 BG W/12"Hw, 70 lb, 304 turns
20	500		4:1 BG W/18"Hw, 58 lb, 338 turns
24	600		4:1 BG W/24"Hw, 64 lb, 408 turns
30	750		16:1 BG W/12"Hw, 67 lb, 2064 turns
36	900		16:1 BG W/18"Hw, 66 lb, 2486.5 turns
42	1050		16:1 BG W/24"Hw, 69 lb, 2909 turns
48	1200		24:1 BG W/24"Hw, 56 lb, 4997 turns

*Differential Pressure has little effect on the Rimpull

BG = Bevel Gear

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure C33 / C133 / F33 / F133				
C_v Ratings, Port Diameter and Area				
Valve Size		Standard Port		
In.	DN	C_v	Port I. D Inches	Port Area Sq. In.
2	50	290	2.00	3.1
3	75	650	3.00	7.1
4	100	1150	4.00	12.6
6	150	2590	6.00	28.3
8	200	4610	8.00	50.3
10	250	7200	10.00	78.5
12	300	10370	12.00	113.1
14	350	12640	13.25	137.9
16	400	16740	15.25	182.6
18	450	21420	17.25	233.7
20	500	26680	19.25	291.0
24	600	38920	23.25	424.6
30	750	61600	29.25	671.9
36	900	89460	35.25	975.9
42	1050	122510	41.25	1336.4
48	1200	160740	47.25	1753.4

Fabri-Valve® C33/C133/F33/F133 Slide Gate Valves

Dimensions

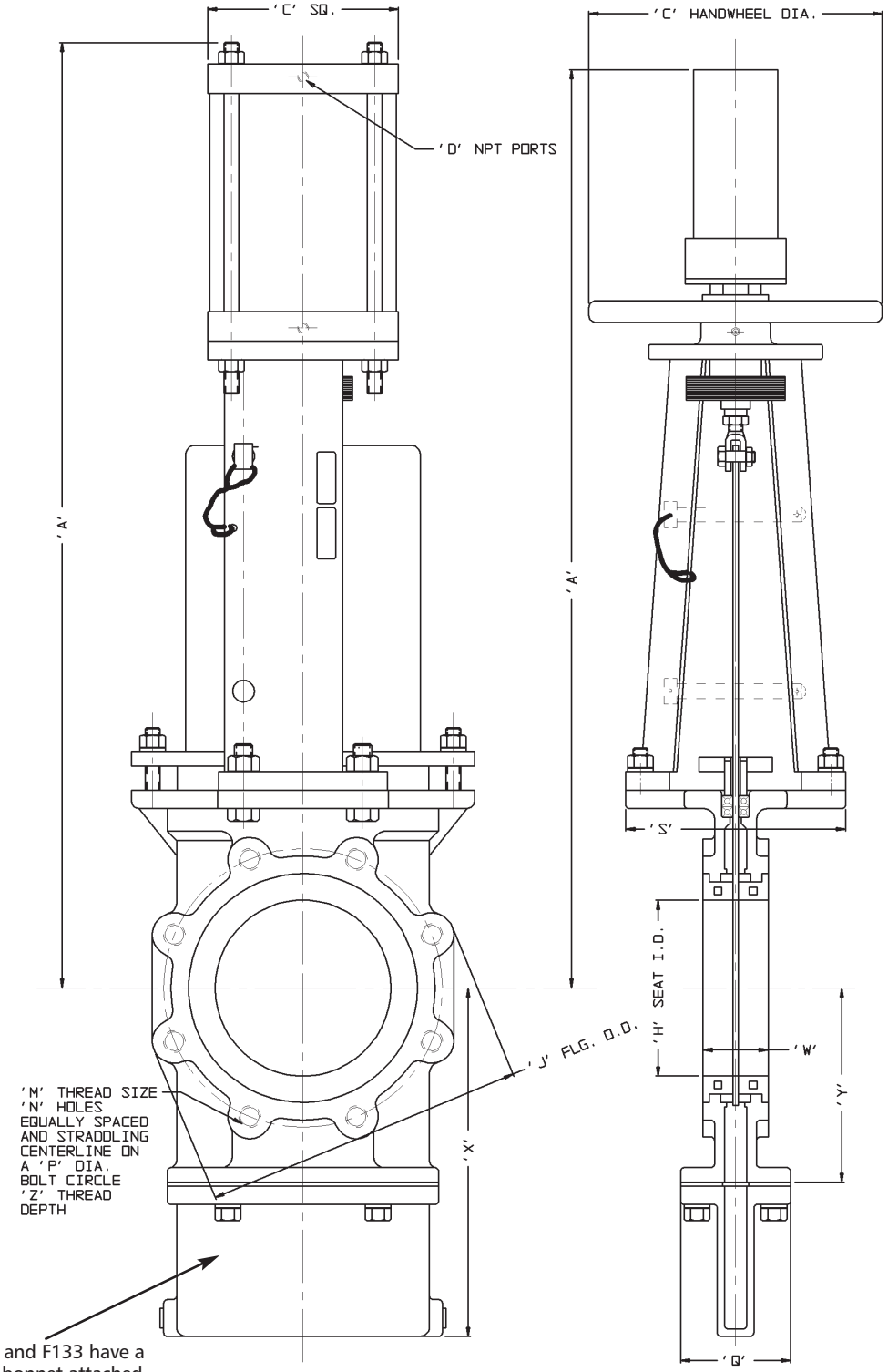
Valve Size		TABLE 1			DIMENSION Inches (mm) C133 with HANDWHEEL OR CYLINDER															
Inches	DN	A			C			D		H	J	M	N	P	Q	S	W	X	Y	Z
		HW	4 CYL	5 CYL	HW	4 CYL	5 CYL	4 CYL	5 CYL											
2	50	21-1/2 (546)	21 (533)	21 (533)	10 (254)	4-1/2 (114)	5-1/2 (140)	3/8-18	3/8-18	2 (51)	6 (152)	5/8-11NC	4	4-3/4 (121)	2-1/8 (54)	4-15/16 (125)	1-7/8 (48)	7 (178)	5-15/16 (151)	3/8 (10)
		HW	5 CYL	6 CYL	HW	5 CYL	6 CYL	5 CYL	6 CYL											
3	80	24-1/4 (616)	23-7/16 (595)	23-11/16 (601)	18 (457)	5-1/2 (140)	6-1/2 (165)	3/8-18	3/8-18	3 (76)	7-1/2 (191)	5/8-11NC	4	6 (152)	2-1/4 (57)	4-15/16 (125)	2 (51)	8-3/4 (222)	7-7/16 (189)	27/64 (11)
		HW	5 CYL	6 CYL	HW	5 CYL	6 CYL	5 CYL	6 CYL											
4	100	27 (686)	26-3/16 (665)	26-7/16 (672)	18 (457)	5-1/2 (140)	6-1/2 (165)	3/8-18	3/8-18	4 (102)	9 (229)	5/8-11NC	8	7-1/2 (191)	2-1/4 (57)	4-15/16 (125)	2 (51)	10-1/4 (260)	8-15/16 (227)	27/64 (11)
		HW	6 CYL	8 CYL	HW	6 CYL	8 CYL	6 CYL	8 CYL											
6	150	32-1/16 (814)	31-1/2 (800)	32 (813)	18 (457)	6-1/2 (165)	8-5/8 (219)	3/8-18	3/8-18	6 (152)	11 (279)	3/4-10NC	8	9-1/2 (241)	3-3/4 (95)	7-3/8 (187)	2-1/4 (57)	12-1/8 (308)	6-5/8 (168)	33/64 (13)
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL											
8	200	40-13/16 (1037)	37-3/8 (949)	37-3/4 (959)	20 (508)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	8 (203)	13-1/2 (343)	3/4-10NC	8	11-3/4 (298)	3-7/8 (98)	7-3/8 (187)	2-3/4 (70)	15-13/16 (402)	7-3/4 (197)	5/8 (16)
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL											
10	250	46-1/8 (1172)	43-1/2 (1105)	44-1/8 (1121)	20 (508)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	10 (254)	16 (406)	7/8-9NC	12	14-1/4 (362)	4-1/2 (114)	7-3/8 (187)	2-3/4 (70)	19-7/8 (505)	9-1/4 (235)	19/32 (15)
		HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL											
12	300	52-1/8 (1324)	49-7/16 (1256)	50-1/4 (1276)	20 (508)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14	12 (305)	19 (483)	7/8-9NC	12	17 (432)	4-1/2 (114)	7-1/2 (191)	3 (76)	23-1/4 (591)	10-1/4 (273)	23/32 (18)
		HW	10 CYL	12 CYL	HW	10 CYL	12 CYL	10 CYL	12 CYL											
14	350	Note 1	58-1/2 (1486)	58-1/2 (1486)	N/A	12-3/4 (324)	12-3/4 (324)	1/2-14	1/2-14	13-1/4 (337)	21 (533)	1-8NC	12	18-3/4 (476)	6-5/8 (168)	11-1/4 (286)	2-7/8 (73)	26-1/8 (664)	12-7/8 (327)	1/2 (13)
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL											
16	400	Note 1	64-9/16 (1640)	65-11/16 (1668)	N/A	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	15-1/4 (387)	23-1/2 (597)	1-8NC	16	21-1/4 (540)	7-3/4 (197)	11-1/4 (286)	3-3/8 (86)	28-11/16 (729)	14-1/8 (359)	3/4 (19)
		HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL											
18	450	Note 1	69-13/16 (1773)	70-15/16 (1802)	N/A	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14	17-1/4 (438)	25 (635)	1-1/8-7NC	16	22-3/4 (578)	8-1/8 (206)	11-1/2 (292)	3-3/8 (86)	31-7/8 (810)	14-3/4 (375)	23/32 (18)
		HW	14 CYL	16 CYL	HW	14 CYL	16 CYL	14 CYL	16 CYL											
20	500	Note 1	77-5/16 (1964)	77-9/16 (1970)	N/A	14-3/4 (375)	17 (432)	3/4-14	3/4-14	19-1/4 (489)	27-1/2 (699)	1-1/8-7NC	20	25 (635)	9-3/4 (248)	11-1/2 (292)	4-1/2 (114)	35-3/8 (899)	16-1/4 (413)	1-3/16 (30)
		HW	16 CYL	18 CYL	HW	16 CYL	18 CYL	16 CYL	18 CYL											
24	600	Note 1	90 (2286)	91-1/4 (2318)	N/A	17 (432)	19 (483)	3/4-14	3/4-14	23-1/4 (591)	32 (813)	1-1/4-7NC	20	29-1/2 (749)	10-7/8 (276)	11-1/2 (292)	4-1/2 (114)	42-1/16 (1068)	19-3/4 (502)	1-1/8 (29)

Note 1: Use Bevel Gear.

* Figures C133 and F133 have a containment bonnet attached to the bottom flange to capture any discharge during cycling.

As standard, remote operated Figure C33 and F33 valves are equipped with a bottom shroud to protect personnel during cycling.
Specify Figure C133 or F133 if media discharged during cycling must be contained.

Refer to TABLE 1 for dimensions



Figures C133 and F133 have a containment bonnet attached to the bottom flange to capture any discharge during cycling.

with Cylinder

with Handwheel

Fabri-Valve® C33/C133/F33/F133 Slide Gate Valves

Dimensions

Valve Size		TABLE 2	DIMENSION Inches (mm) C133 with BEVEL GEAR														
Inches	DN	A	B*	C*	D*	E	H	J	M	N	P	Q	S	W	X**	Y	Z
14	350	55-3/16 (1402)	41-5/16 (1049)	12 (305)	12-1/16 (306)	6-1/2 (165)	13-1/4 (337)	21 (533)	1-8NC	12	18-3/4 (476)	6-5/8 (168)	11-1/4 (286)	2-7/8 (73)	26-1/8 (664)	12-7/8 (327)	1/2 (13)
16	400	61-1/4 (1556)	45-3/8 (1153)	12 (305)	12-1/16 (306)	6-1/2 (165)	15-1/4 (387)	23-1/2 (597)	1-8NC	16	21-1/4 (540)	7-3/4 (197)	11-1/4 (286)	3-3/8 (86)	28-11/16 (729)	14-1/8 (359)	3/4 (19)
18	450	67-1/8 (1705)	48-5/8 (1235)	18 (457)	13-9/16 (344)	6-1/2 (165)	17-1/4 (438)	25 (635)	1-1/8-7NC	16	22-3/4 (578)	8-1/8 (206)	11-1/2 (292)	3-3/8 (86)	31-7/8 (810)	14-3/4 (375)	23/32 (18)
20	500	73-3/8 (1865)	52-7/8 (1343)	18 (457)	13-9/16 (344)	6-1/2 (165)	19-1/4 (489)	27-1/2 (699)	1-1/8-7NC	20	25 (635)	9-3/4 (248)	11-1/2 (292)	4-1/2 (114)	35-3/8 (899)	16-1/4 (413)	1-3/16 (30)
24	600	85-9/16 (2173)	60-11/16 (1541)	24 (610)	15-1/16 (383)	6-1/2 (165)	23-1/4 (591)	32 (813)	1-1/4-7NC	20	29-1/2 (749)	10-7/8 (276)	11-1/2 (292)	4-1/2 (114)	42-1/16 (1068)	19-3/4 (502)	1-1/8 (29)

***** Bevel Gear Ratio is 3:1 (14"); 4:1 (16"- 24")

** Figures C133 and F133 have a containment bonnet attached to the bottom flange to capture any discharge during cycling.

Materials of Construction

Part	Materials	
	C33S and C133S	C33R and C133R
Body	Stainless grade per Customer Specification	Stainless grade or Ductile Iron per Customer Specification
Support Ring	Standard: UHMW-P	
Yoke Assembly	304 SS	Carbon steel
Replaceable Seat	Standard: EPDM	
Gate	Stainless grade per Customer Specification	
Handwheel	Cast iron [2]	Cast iron [2]
Stem Assembly / Cyl. Clamp	304 SS	304 SS/Carbon steel
Packing	Acrylic/PTFE/Silicone [3]	
Packing Gland	316 SS	
Bonnet	SS as spec.	
Serial No. Tag	18-8 SS	
Fasteners	18-8 SS	Plated mild steel
Stem Nut [1]	Acid Resistant Bronze	
Grease Fitting (handwheel)	Plated mild steel	
Lanyard	18-8-SS	
Lockout Pin	304 SS [4]	
Rod Boot	Hypalon nylon	
Warning Tag	18-8 SS	
Stop Nut Assembly [1]	304 SS	304 SS/Carbon steel
Stop Nut [1]	304 SS	Carbon steel
Stem Cover [1]	304 SS	Carbon steel
Bonnet Gasket	Aramid fibers with NBR synthetic rubber	

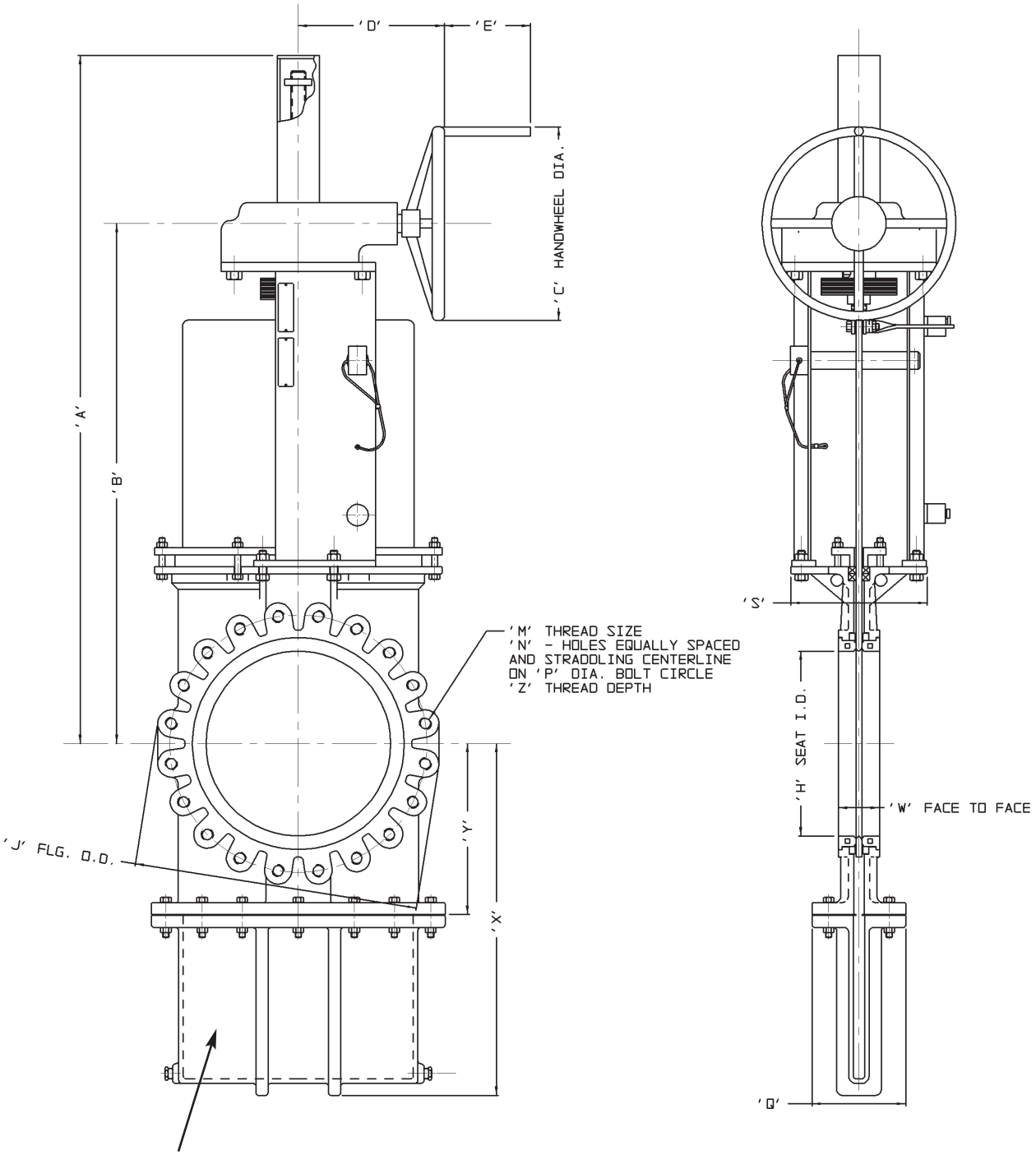
[1] Handwheel and Bevel Gear

[2] Handwheel is Cast Iron; Bevel Gear is Carbon Steel

[3] Energized cored packing is standard with 6" (DN150) and larger C33/C133 valves and all F33/F133 valves.

[4] Valves with Cylinders have 17- 4 SS Lockout Pins

Refer to TABLE 2 for dimensions



Figures C133 and F133 have a containment bonnet attached to the bottom flange to capture any discharge during cycling.

Fabri-Valve® F39 Slide Gate Valve

The Fabri-Valve Figure F39 slide gate valve is designed for shut off and throttling in difficult abrasive and/or high solids slurry service. The standard round port configuration is used for on/off service and the optional diamond port configuration is used for throttling. Available with a handwheel or automated, the Figure F39 has the unique ability to operate in a static column of solid particles and powders. The opening in the slide gate merely moves a disc of material laterally then returns it when the slide gate is reversed. Consult factory for shut off capability with standard and optional seats.

All Figure 39 slide gate valves with handwheels include a provision for a locking device. Consult factory for details.

Specifications

Size Range 1.5" – 96"

Pressure Rating

1.5" – 24": 150 (10.3 bar) CWP (cold working pressure)

25" – 48" : Available in 50 (3.5 bar), 100 (6.9 bar) and 150 (10.3) CWP

Above 48": Manufactured to customer specification

Consult factory for higher pressure designs.

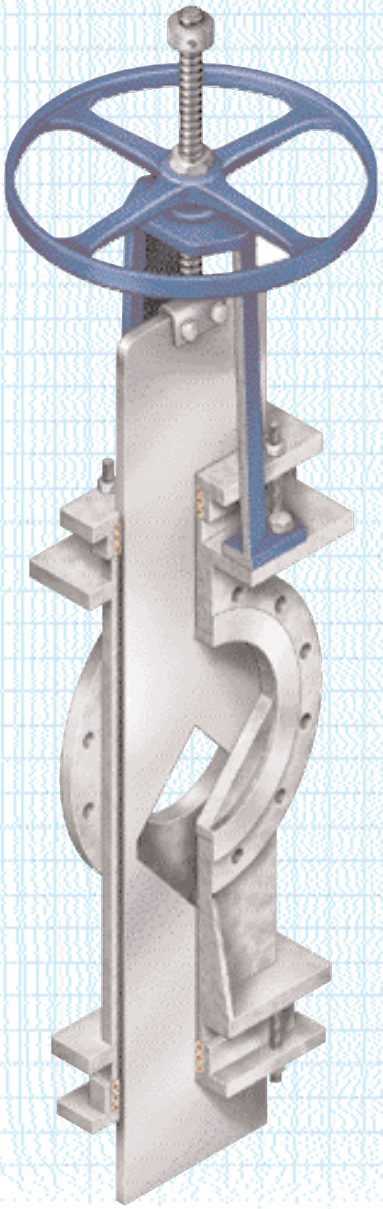
Temperature Rating

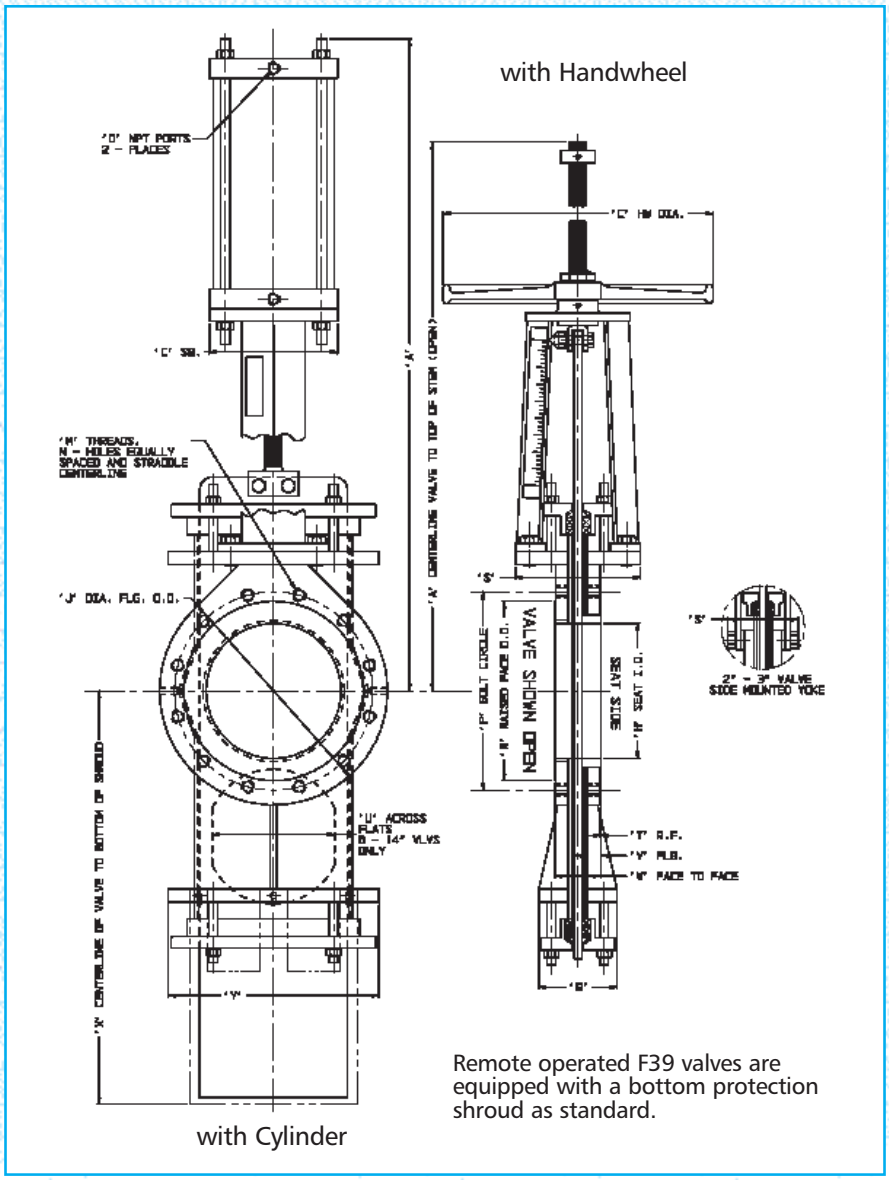
1.5" – 48": 450°F (232°C)

Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork.

Consult factory for sizes larger than 48" (DN 1200) and for service temperatures up to 2000°F (1093°C).

Flange Drilling ANSI 125/150





Remote operated F39 valves are equipped with a bottom protection shroud as standard.

Figure F 39

Testing

Every Fabri-Valve Figure F39 valve is tested prior to shipment. Testing includes a body shell test and a cycling test to insure proper functioning of moving parts. Valves with a resilient seat are also seat tested. Additional testing is also available. Please let us know your requirements.

Shell test: Hydro test at 1.5 times the rated CWP — zero allowable leakage

Seat test: Resilient seat — Hydro test at 15 psi (1 bar) and rated CWP — allowable leakage as follows:

Single "D" ring, or single replaceable resilient seat (excluding PTFE)
All sizes zero leakage

Single replaceable PTFE seat
All sizes consult factory

Dual seats – all configurations
All sizes consult factory

Materials of Construction

Part	Materials	
	F39R	F39S
Wetted Body and Chest Components	Stainless steel type 304, 316 or 317L	Stainless steel type 304, 316 or 317L
External Flanges and Stiffeners	Carbon steel flanges	Same as wetted components
Seat	Same as wetted components	Same as wetted components
Gate finished to 32 RMS	Same material as body finished to 32 RMS	Same material as body
Yoke	Carbon steel	304 stainless steel
Yoke Bolting	Plated steel	Stainless steel
Packing	Acrylic/PTFE/silicone	Acrylic/PTFE/silicone
Packing Follower	Ductile iron/Carbon steel	Stainless steel
Follower Bolting	Plated steel	Stainless steel
Stem	304 stainless steel	304 stainless steel
Stem Nut	Acid resistant bronze	Acid resistant bronze
Lubrication Fitting	Plated steel	Plated steel
Handwheel	Cast iron	Cast iron
Handwheel Retaining Nut	Malleable iron	Stainless steel
Tab Washer	Stainless steel	Stainless steel
Travel Stop	Plated steel	Stainless steel

Dimensions

Valve Size		DIMENSION Inches (mm) F39 with HANDWHEEL OR CYLINDER																						Weight*	
Inches	DN	A			C			D		H	J	M	N	P	Q	R	S	T	U	V	W	X	Y	lb	kg
2	50	HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL	2 (51)	6 (152)	5/8-11NC	4	4-3/4 (121)	4 (102)	3-5/8 (92)	3-11/16 (94)	1/16 (2)	N/A	9/16 (14)	1-7/8 (48)	9-3/8 (238)	6-1/2 (165)	40	18
		16 (406)	19 (483)	17-1/2 (445)	8 (203)	3 (76)	4 (102)	3/8-18	1/4-18																
3	80	HW	2-1/2 CYL	3-1/4 CYL	HW	2-1/2 CYL	3-1/4 CYL	2-1/2 CYL	3-1/4 CYL	3 (76)	7-1/2 (191)	5/8-11NC	4	6 (152)	4 (102)	5 (127)	3-11/16 (94)	1/16 (2)	N/A	9/16 (14)	2 (51)	11-7/8 (302)	7-5/8 (194)	45	20
		18-3/4 (476)	21-3/4 (552)	20-1/4 (514)	8 (203)	3 (76)	4 (102)	3/8-18	1/4-18																
4	100	HW	3-1/4 CYL	4 CYL	HW	3-1/4 CYL	4 CYL	3-1/4 CYL	4 CYL	4 (102)	9 (229)	5/8-11NC	8	7-1/2 (191)	4 (102)	6-3/16 (157)	7-3/8 (187)	1/16 (2)	N/A	9/16 (14)	2 (51)	13-1/2 (343)	9 (229)	64	29
		24-3/8 (619)	25-1/16 (637)	25-13/16 (656)	10 (254)	4 (102)	4-1/2 (114)	1/4-18	3/8-18																
6	150	HW	4 CYL	6 CYL	HW	4 CYL	6 CYL	4 CYL	6 CYL	6 (152)	11 (279)	3/4-10NC	8	9-1/2 (241)	4-1/8 (105)	8-1/2 (216)	7-3/8 (187)	1/16 (2)	5-1/4 (133)	11/16 (17)	2-1/4 (57)	19-3/8 (492)	10-3/8 (264)	94	43
		28-1/2 (724)	31-5/16 (795)	31-11/16 (805)	10 (254)	4-1/2 (114)	6-1/2 (165)	3/8-18	3/8-18																
8	200	HW	6 CYL	8 CYL	HW	6 CYL	8 CYL	6 CYL	8 CYL	8 (203)	13-1/2 (343)	3/4-10NC	8	11-3/4 (298)	4-1/4 (108)	10-5/8 (270)	7-3/8 (187)	1/16 (2)	7-1/4 (184)	13/16 (21)	2-3/4 (70)	25 (635)	12-1/2 (318)	174	79
		34-3/4 (883)	36-11/16 (932)	37-3/16 (945)	12 (305)	6-1/2 (165)	8-5/8 (219)	3/8-18	3/8-18																
10	250	HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL	10 (254)	16 (406)	7/8-9NC	12	14-1/4 (362)	4-5/8 (117)	12-3/4 (324)	7-1/2 (191)	1/16 (2)	8-3/4 (222)	13/16 (21)	2-3/4 (70)	30-3/16 (767)	13-7/8 (352)	245	111
		41-11/16 (1059)	42-3/4 (1086)	43-1/2 (1105)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14																
12	300	HW	8 CYL	10 CYL	HW	8 CYL	10 CYL	8 CYL	10 CYL	12 (305)	19 (483)	7/8-9NC	12	17 (432)	4-7/8 (124)	15 (381)	7-3/4 (197)	1/8 (3)	11-1/4 (286)	7/8 (22)	3 (76)	34-7/8 (886)	15-7/8 (403)	326	148
		45 (1143)	48-1/8 (1222)	48-7/8 (1241)	16 (406)	8-5/8 (219)	10-7/8 (276)	3/8-18	1/2-14																
14	350	HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL	13-5/8 (346)	21 (533)	1-8NC	12	18-3/4 (476)	7 (178)	16-1/4 (413)	11-1/8 (283)	1/8 (3)	13-1/4 (337)	7/8 (22)	3 (76)	40-15/16 (1040)	19-7/8 (505)	444	201
		53-1/16 (1348)	54-3/4 (1391)	55-7/8 (1419)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14																
16	400	HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL	15-1/4 (387)	23-1/2 (597)	1-8NC	16	21-1/4 (540)	7 (178)	18-1/2 (470)	11-1/4 (286)	1/8 (3)	N/A	1 (25)	3-1/2 (89)	44-13/16 (1138)	22 (559)	620	281
		57-15/16 (1472)	60-7/8 (1546)	62 (1575)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14																
18	450	HW	12 CYL	14 CYL	HW	12 CYL	14 CYL	12 CYL	14 CYL	17-1/4 (438)	25 (635)	1-1/8-7NC	16	22-3/4 (578)	10 (254)	21 (533)	11-1/4 (286)	1/8 (3)	N/A	1 (25)	3-1/2 (89)	50-9/16 (1284)	23-7/8 (606)	Consult Factory	
		65 (1651)	66-1/8 (1680)	67-1/4 (1708)	20 (508)	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14																
20	500	HW	14 CYL	16 CYL	HW	14 CYL	16 CYL	14 CYL	16 CYL	19-1/4 (489)	27-1/2 (699)	1-1/8-7NC	20	25 (635)	10 (254)	23 (584)	14 (356)	1/8 (3)	N/A	1-3/8 (35)	4-1/2 (114)	55-11/16 (1414)	26-1/2 (673)		
		72-1/8 (1857)	74 (1880)	74-1/2 (1892)	20 (508)	14-3/4 (375)	17 (432)	3/4-14	3/4-14																
24	600	HW	16 CYL	18 CYL	HW	16 CYL	18 CYL	16 CYL	18 CYL	23-1/4 (591)	32 (813)	1-1/4-7NC	20	29-1/2 (749)	11 (279)	27-1/4 (692)	14 (356)	1/8 (3)	N/A	1-3/8 (35)	4-1/2 (114)	64-9/16 (1640)	31 (787)		
		81-3/8 (2067)	86 (2184)	87-15/16 (2234)	20 (508)	17 (432)	19 (483)	3/4-14	3/4-14																

* Valve with Handwheel

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure F39 Slide Gate Valves

C_v Ratings, Port Diameter and Area

Valve Size		V-Port			O-Port		
In.	DN	C_v	Port I.D. Inches	Port Area Sq. In.	C_v	Port I.D. Inches	Port Area Sq. In.
2	50	115	1.4	2.0	288	2.00	3.1
3	75	215	2.1	4.4	648	3.00	7.1
4	100	465	2.9	8.4	1,152	4.00	12.6
6	150	1,050	4.3	18.5	2,592	6.00	28.3
8	200	2,050	5.7	32.5	4,608	8.00	50.3
10	250	3,350	7.1	50.4	7,208	10.00	78.5
12	300	4,950	8.5	72.2	10,400	12.00	113.1
14	350	8,513	9.7	94.1	13,400	13.63	145.8
16	400	10,700	10.8	116.6	16,750	15.25	182.6
18	450	13,750	12.2	148.8	21,450	17.25	233.7
20	500	17,030	13.6	184.9	26,700	19.25	291.0
24	600	24,825	16.5	272.2	38,900	23.25	424.6

Available Options

- **"D" Ring Seat**
- **Dual Seats**
- **Poly Replaceable Seats**
- **UHMW Replaceable Seats**
- **PTFE Replaceable Seats**
- **Rubber Replaceable Seats**
- **Hard Faced Replaceable Seats**
- **Hard Faced Integral SS Seats**
- **Hard Faced Gate Edge**
- **Hard Gate Material**
- **Nickel -TFE Coated Gate**
- **Epoxy Coating**
- **Thru Drilled Flanges**
- **Flush Ports**
- **Chest Buttons:** Not available 2"- 6"
- **Backing Ring**
- **V-Port**
- **Locking Devices**
- **Live Loaded Packing**
- **Self-Supporting Yokes**
- **Bevel Gear**
- **Chainwheels**
- **Cylinder Actuators**
- **Electric Actuators**
- **Ratchet**
- **Extended Stems**
- **Gate Support Strips**
- **Rod Boots**
- **E-Z Spin Handwheel**

Pressure/Temperature Ratings

The table below presents the Maximum Pressure/Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material and, if applicable, the resilient seat material. In a majority of designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure F39 Slide Gate Valve

Pressure-Temperature Rating - psi

Temp		304	304L	316	316L	317L	A 36	A516Gr70
°F	°C							
150	66	150	133	150	133	150	150	150
200	93	133	114	141	113	135	137	150
250	121	126	108	133	107	128	135	150
300	149	120	102	124	101	121	133	150
350	177	115	98	119	97	116	131	150
400	204	110	93	114	93	112	128	150
450	232	107	90	110	90	108	125	150
500	260	103	87	106	87	105	121	150
600	316	97	82	101	83	100	111	150
700	371	94	80	97	80	96	108	142
800*	427*	89	77	93	77	92		103
900*	482*	87		92				57
1000*	538*	83		90				21
1100*	593*	78		88				
1200*	649*	49		59				
1300*	704*	30		33				
1400*	760*	18		18				
1500*	816*	11		10				

* "R" Series valves have alloy steel wetted parts and a carbon steel exterior. Standard "R" Series valves are limited to 700°F (371°C); however alternate "R" Series constructions are available to 1000°F (538°C)

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How To Order" section explains the Valve Model Codes.

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Fabri-Valve

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Fabri-Valve® Wedge Gate Valve

The fabricated, bolted bonnet, Fabri Valve Figure F71, OS and Y wedge gate valve is an economical alternative when full ANSI rated valves are not required. In addition, the ability to select construction materials piece by piece can often result in substantial savings. The integral gate guides provide positive guidance of the wedge throughout the stroke of the valve.

Testing

Every Fabri-Valve wedge gate valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Shell test: Hydro test at 1.5 times the rated CWP (cold working pressure) — zero allowable leakage

Seat test: Metal seat — Hydro test at 10 psi (0.7 bar) and rated CWP - allowable leakage:

3" – 24" 10cc/hour/inch of valve size
Above 24" consult factory
Hardfaced seats all sizes consult factory

Seat test: Resilient seat — Hydro test at 15 psi (1 bar) and rated CWP — allowable leakage as follows:

"D" ring resilient seat (excluding PTFE)
All sizes zero leakage

"D" ring PTFE seat
All sizes consult factory

Specifications

Size Range: 3" – 84"

Pressure Rating: 3" – 24", 150 psi (10.3 bar) CWP (cold working pressure). Consult factory for higher pressure designs up to 750 psi (51.7 bar). Above 24", designed to customer requirements.

Temperature Rating: 500°F (260°C) standard, Consult factory for applications to 1500°F (816°C).

Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork

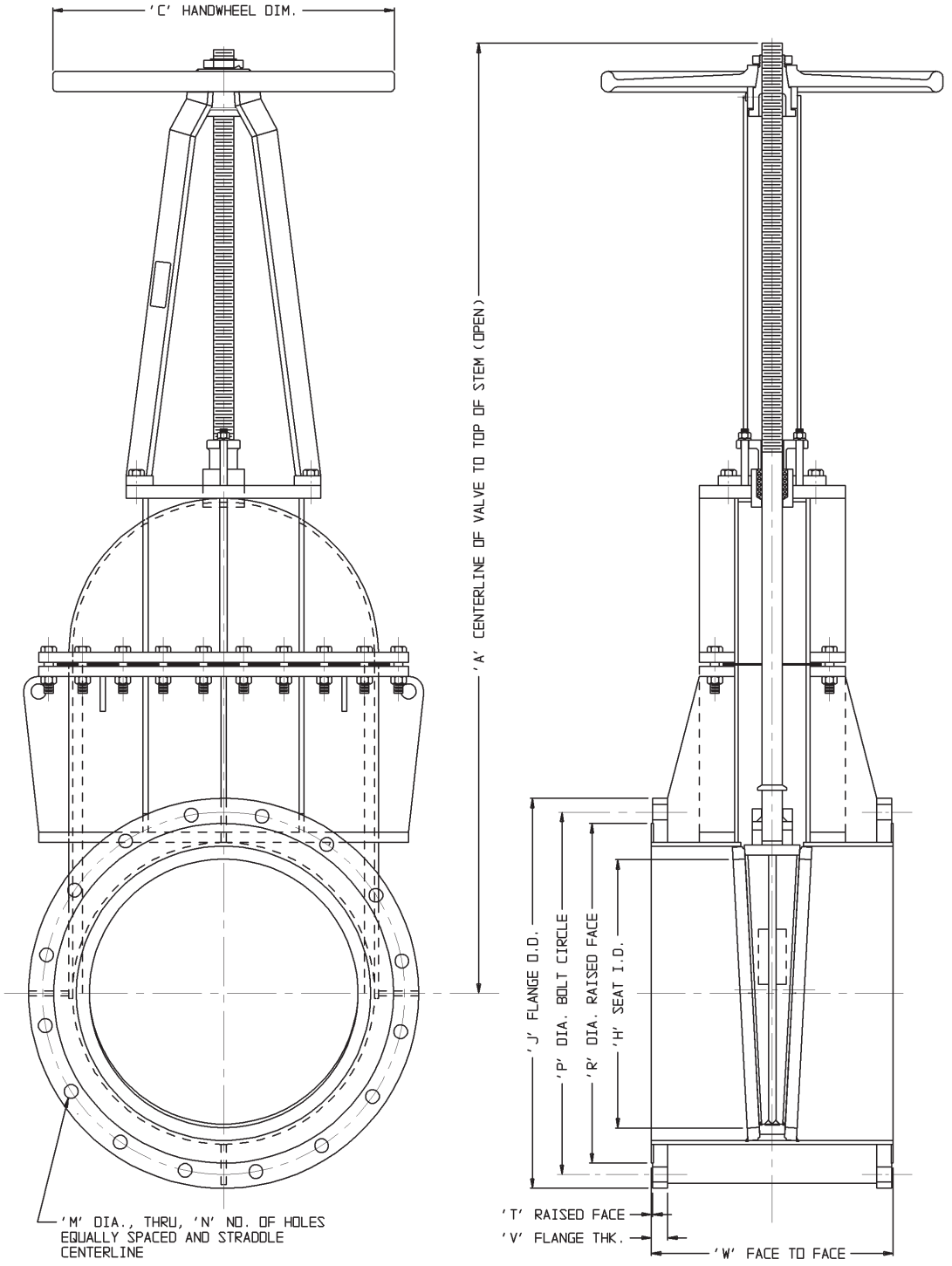
Materials of Construction

Part	Materials	
	F71R	F71S
Wetted Body and Chest Components	Stainless steel type 304, 316 or 317L	Stainless steel type 304, 316 or 317L
External Flanges and Stiffeners	Carbon steel with stainless steel gasket surface	Solid stainless steel
Seats	Stainless steel	Stainless steel
Gate	Stainless steel	Stainless steel
Yoke	Carbon steel	304 stainless steel
Yoke Bolting	Plated steel	Stainless steel
Packing	PTFE-Graphite	PTFE-Graphite
Packing Follower	Carbon steel/ductile Iron	316 stainless steel
Follower Bolting	Plated steel	Stainless steel
Stem	Stainless steel	Stainless steel
Stem Nut	Acid resistant bronze	Acid resistant bronze
Lubrication Fitting	Plated steel	Plated steel
Handwheel	24" and above carbon steel 2" – 20" cast iron	24" and above carbon steel 2" – 20" cast iron
Handwheel Retaining Nut	Malleable iron	Stainless steel
Tab Washer	Stainless steel	Stainless steel

Dimensions

Valve Size		DIMENSION Inches (mm) F71 with HANDWHEEL											Weight *	
Inches	DN	A	C	H	J	M	N	P	R	T	V	W	lb	kg
3	80	19-5/6 (491)	12 (305)	2-1/2 (64)	7-1/2 (191)	3/4 (19)	4	6 (152)	FLAT FACE		5/8 (16)	8 (203)	57	26
4	100	21-3/4 (552)	12 (305)	3-1/2 (89)	9 (229)	3/4 (19)	8	7-1/2 (191)	6-3/16 (157)	1/16 (2)	9/16 (14)	9 (229)	70	32
6	150	29-3/8 (746)	12 (305)	5-15/16 (151)	11 (279)	7/8 (22)	8	9-1/2 (241)	8-1/2 (216)	1/16 (2)	11/16 (17)	10-1/2 (267)	100	45
8	200	38-13/16 (986)	16 (406)	7-15/16 (202)	13-1/2 (343)	7/8 (22)	8	11-3/4 (298)	10-5/8 (270)	1/16 (2)	13/16 (21)	11-1/2 (292)	144	65
10	250	45-5/8 (1159)	16 (406)	9-15/16 (252)	16 (406)	1 (25)	12	14-1/4 (362)	12-3/4 (324)	1/16 (2)	13/16 (21)	13 (330)	209	95
12	300	55 (1397)	20 (508)	12-3/16 (310)	19 (483)	1 (25)	12	17 (432)	15 (381)	1/8 (3)	7/8 (22)	14 (356)	317	144
14	350	55 (1397)	20 (508)	12-3/16 (310)	21 (533)	1-1/8 (29)	12	18-3/4 (476)	16-1/4 (413)	1/8 (3)	7/8 (22)	15 (381)	347	157
16	400	68-1/16 (1729)	20 (508)	14-5/16 (379)	23-1/2 (597)	1-1/8 (29)	16	21-1/4 (540)	18-1/2 (470)	1/8 (3)	1-1/8 (29)	16 (406)	596	270
18	450	75-15/16 (1929)	20 (508)	16-5/16 (414)	25 (635)	1-1/4 (32)	16	22-3/4 (578)	21 (533)	71/8 (3)	1-1/8 (29)	17 (432)	702	318
20	500	83-1/2 (2121)	20 (508)	18-1/16 (459)	27-1/2 (699)	1-1/4 (32)	20	25 (635)	23 (584)	1/8 (3)	1-1/8 (29)	18 (457)	816	370
24	600	101 (2565)	30 (762)	21-1/2 (546)	32 (813)	1-3/8 (35)	20	29-1/2 (749)	27-1/4 (692)	1/8 (3)	1-1/8 (29)	20 (508)	1196	542

* Figures F71R and F71S with Handwheel



with Handwheel

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure F71
Wedge Gate Valves

Cv Ratings, Port Diameter and Area

Valve Size		Standard Port		
In.	DN	C_v	Port I.D. Inches	Port Area Sq. In.
3	75	438	2.50	4.9
4	100	858	3.50	9.6
6	150	2,540	5.94	27.7
8	200	4,540	7.94	49.5
10	250	7,114	9.94	77.6
12	300	10,700	12.19	115.4
14	350	10,400	12.19	115.4
16	400	14,340	14.31	160.8
18	450	18,620	16.31	208.9
20	500	22,830	18.06	256.2
24	600	32,350	21.50	363.0

Available Options

- **Jack Screws**
- **Bottom Clean-outs**

Pressure/Temperature Ratings

The table below is the Maximum Pressure/Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material, and if applicable, the resilient seat material. In a majority of valve designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure F71
Pressure/Temperature Rating - psi

Temp		304	304L	316	316L	317L	A 36	A516Gr70
°F	°C							
150	66	150	133	150	133	150	150	150
200	93	133	114	141	113	135	137	150
250	121	126	108	133	107	128	135	150
300	149	120	102	124	101	121	133	150
350	177	115	98	119	97	116	131	150
400	204	110	93	114	93	112	128	150
450	232	107	90	110	90	108	125	150
500	260	103	87	106	87	105	121	150
600	316	97	82	101	83	100	111	150
700	371	94	80	97	80	96	108	142
800*	427*	89	77	93	77	92		103
900*	482*	87		92				57
1000*	538*	83		90				21
1100*	593*	78		88				
1200*	649*	49		59				
1300*	704*	30		33				
1400*	760*	18		18				
1500*	816*	11		10				

* "R" Series valves have alloy steel wetted parts and a carbon steel exterior. Standard "R" Series valves are limited to 700°F (371°C); however alternate "R" Series constructions are available to 1000°F (538°C)

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How To Order" section explains the Valve Model Codes.

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Fabri-Valve

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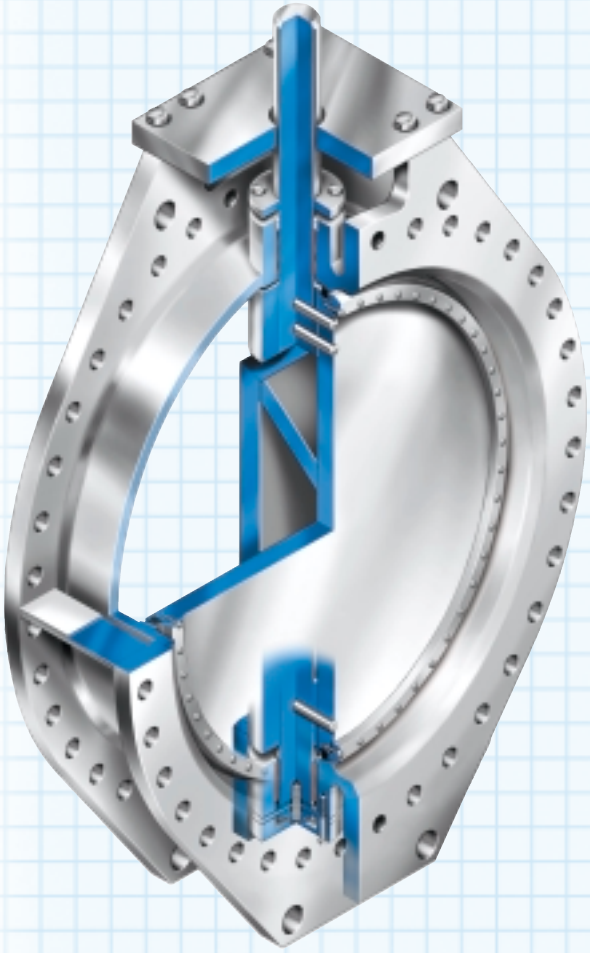
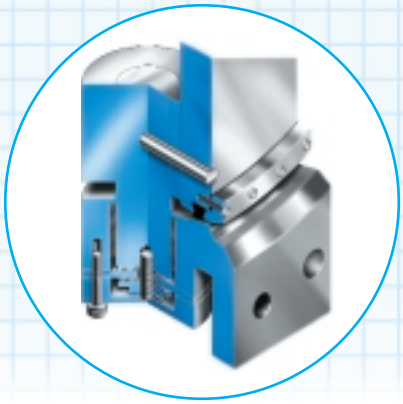
Fabri-Valve® F60 Butterfly Valve





The Fabri-Valve Figure F60 rubber seated butterfly valve design platform is extremely flexible and can meet a multitude of face-to-face dimensions and pressure ratings. Computer-aided design is utilized allowing for accurate, cost effective designs. Since each valve is designed for a specific application the dimensions shown in this catalog are approximate.

Specifications

Size Range
36" – 96"

Pressure Rating
As specified.
400 psi (27.6 bar) – maximum

Temperature Rating
Consult factory for applications above 400°F (204°C)

Testing

Every Fabri-Valve Figure F60 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:

- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage

Standard Resilient Seat test:

- Resilient Seat: Hydro test at the rated CWP

Shutoff Performance

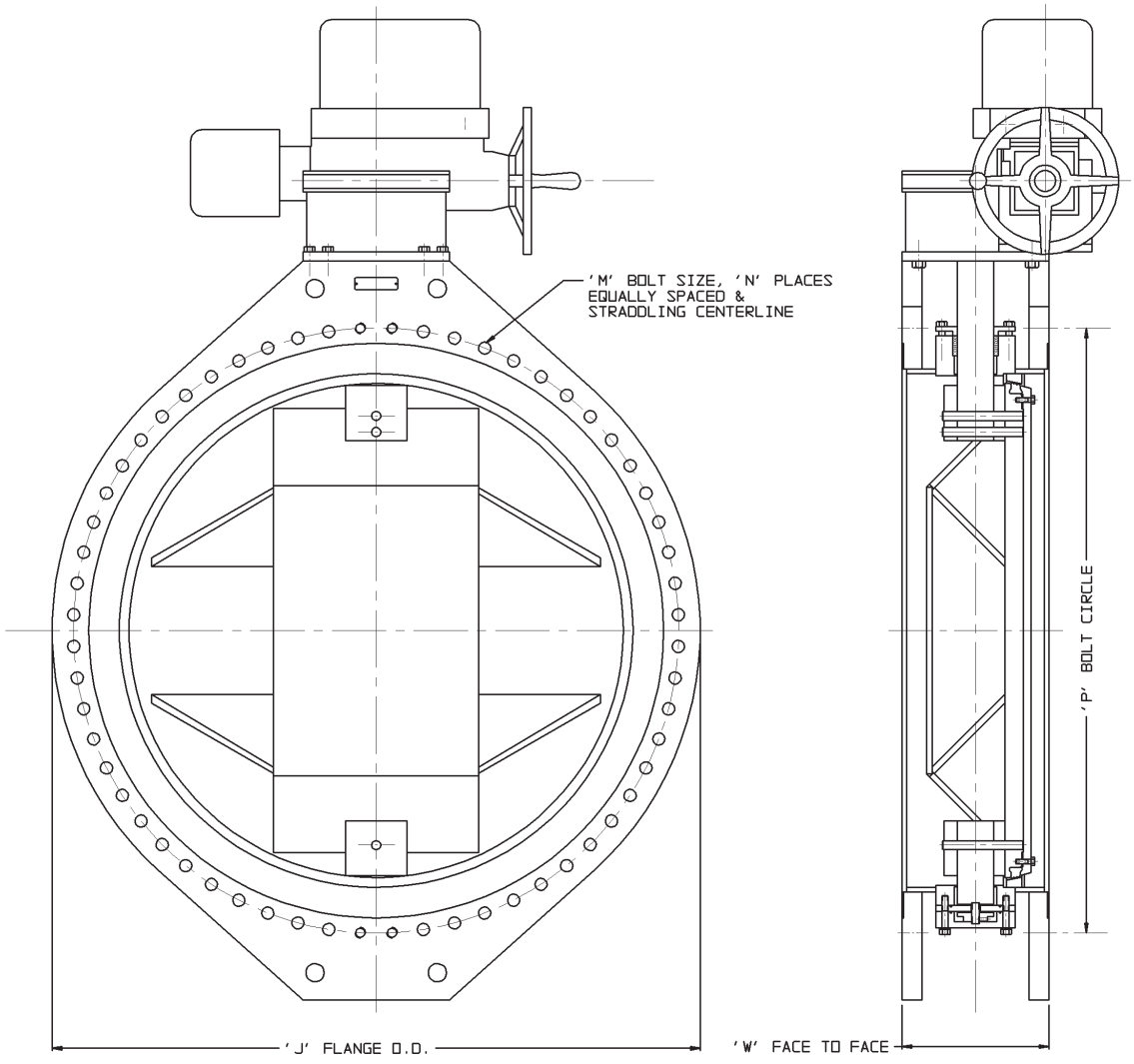
- Zero leakage. All sizes and both flow directions.

Dimensions

Valve Size		F60 BUTTERFLY VALVE				
Inches	DN	J	M	N	P	W
36	900	46 (1168)	1-1/2 (38)	32	44-3/4 (1086)	12 (305)
42	1050	53 (1346)	1-1/2 (38)	36	49-1/2 (1257)	12 (305)
48	1200	59-1/2 (1511)	1-1/2 (38)	44	56 (1422)	15 (381)
54	1350	66-1/4 (1683)	1-3/4 (44)	44	62-3/4 (1594)	15 (381)
60	1500	73 (1854)	1-3/4 (44)	52	69-1/4 (1759)	15 (381)
66	1650	80 (2032)	1-3/4 (44)	52	76 (1930)	18 (457)
72	1800	86-1/2 (2197)	1-3/4 (44)	60	82-1/2 (2096)	18 (457)
78	2000	93 (2362)	2 (51)	64	89 (2291)	18 (457)
84	2100	99-3/4 (2534)	2 (51)	64	95-1/2 (2426)	18 (457)
90	2250	106-1/2 (2705)	2-1/4 (57)	68	102 (2591)	21 (533)
96	2400	113-1/4 (2877)	2-1/4 (57)	68	108-1/2 (2756)	24 (610)

Materials of Construction

Part	Materials		
	F60R	F60S	F60M 2" – 24"
Body/Disc	Stainless steel	Stainless steel	Carbon steel
Flanges	Carbon steel	Stainless steel	Carbon steel
Seat	Stainless steel	Stainless steel	Stainless steel
Seal	Buna-N, EPDM, Viton or Neoprene	Buna-N, EPDM, Viton or Neoprene	Buna-N, EPDM, Viton or Neoprene
Packing	V-cup Buna-N	V-cup Buna-N	V-cup Buna-N
Packing Follower	Carbon steel	304 stainless steel	Carbon steel
Follower Bolting	Plated steel	Stainless steel	Plated steel
Bearings	Composite	Composite	Composite
Seal Retainer & Seal Retainer Fasteners	Stainless steel	Stainless steel	Plated steel



with Bevel Gear

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure F60 C_V Ratings		
Valve Size		
In.	DN	
36	900	73 900
42	1050	100 600
48	1200	131 400
54	1350	166 300
60	1500	205 300
66	1650	248 450
72	1800	295 650
78	2000	347 000
84	2100	402 450
90	2250	462 000
96	2400	525 650

Engineered Valves Group

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Fabri-Valve

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Fabri-Valve® F10 Swing Check Valve

The Fabri-Valve F10 is a swing check valve that can be installed in any orientation. Snubbers (dash pots) are available to control the rate of closing in unusual orientations. When ordered with counterweights, the counterweight hub will normally be furnished unkeyed. If orientation of the valve is specified on the order, the hub will be keyed at the factory. Fabricated construction allows a choice of standard and special materials.

Specifications

Size Range
3" – 48"

Pressure Rating
150 psi (10.3 bar) CWP to 24"
50 psi (3.5 bar) CWP 30" – 48"

Temperature Rating
500°F (260°C),
Consult factory for applications to 1500°F(816°C)

NOTE: Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork.

Flange Drilling
ANSI 125/150 through hole is standard.
Contact factory for alternate flange drilling.

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure F10 Check Valves

Port Diameter, Area and C_v Ratings

Valve Size		Standard Port		
In.	DN	C_v	Port I.D. Inches	Port Area Sq. In.
3	80	340	2.50	4.9
4	100	660	3.50	9.6
6	150	1,950	5.94	27.7
8	200	2,750	7.94	49.5
10	250	4,800	9.94	77.6
12	300	6,400	12.19	116.7
14	350	9,200	12.19	116.7
16	400	12,800	14.31	160.8
18	450	17,000	16.31	208.9
20	500	20,600	18.06	256.2
24	600	31,400	22.06	382.2

Testing

Every Fabri-Valve Figure F10 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:
- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage.

Standard Seat test:
- Metal Seat: Hydro test at 40 psi (2.8 bar) and at the rated CWP
- Resilient Seat : Hydro test at 15 psi (1 bar) and rated CWP

Shutoff Performance

Metal Seat
3" – 24" 30cc/hour/inch of valve size
Above 24" Consult factory

Resilient Seat
- Single “D” ring
  Zero leakage. All sizes.

Available Options

- **"D" Ring Seat**
- **Counterweight**
- **Snubbers**
- **Hard Face Disk Sealing Surface**
- **Live-Loaded Packing**
- **Epoxy Coating**

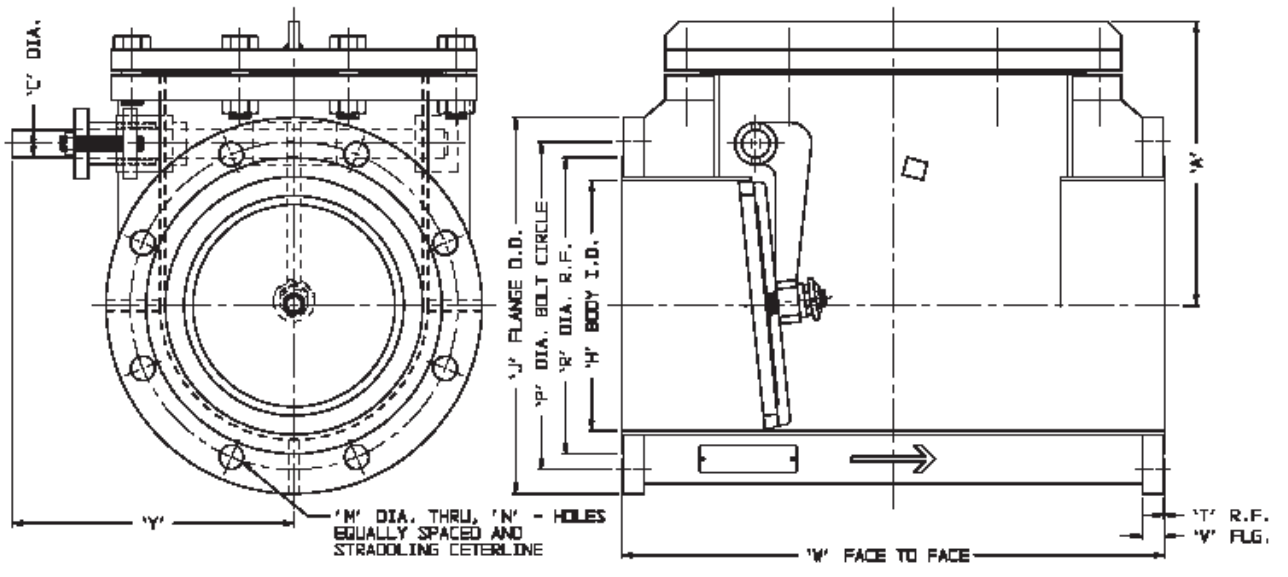
Materials of Construction

Part	Materials	
	F10R	F10S
Wetted Body Components	Stainless steel type 304, 316 or 317L with carbon steel exterior	Stainless steel type 304, 316 or 317L
External Flanges and Stiffeners	Carbon steel	Same as wetted components
Seat	Same as wetted components	Same as wetted components
Disc	Same as wetted components	Same as wetted components
Packing	PTFE/Graphite	PTFE/Graphite
Packing Follower	Carbon steel/ductile iron	Stainless steel
Follower Bolting	Plated steel	Stainless steel
Cover Bolting	Plated steel	Stainless steel

Other materials are available — Consult factory

Dimensions

Valve Size		DIMENSION Inches (mm)												Weight	
Inches	DN	A	C	H	J	M	N	P	R	T	V	W	Y	lb	kg
3	80	6-1/4 (159)	N/A	3-1/2 (89)	7-1/2 (191)	3/4 (19)	4	6 (152)	5 (127)	1/16 (2)	9/16 (14)	9-1/2 (214)	N/A	35	16
4	100	7 (178)	3/4 (19)	4-1/2 (114)	9 (229)	3/4 (19)	8	7-1/2 (191)	6-3/16 (157)	1/16 (2)	9/16 (14)	11-1/2 (292)	7-3/8 (187)	57	26
6	150	8-7/8 (225)	1 (25)	7 (178)	11 (279)	7/8 (22)	8	9-1/2 (241)	8-1/2 (216)	1/16 (2)	11/16 (17)	14 (356)	9-1/8 (232)	95	43
8	200	10-1/8 (257)	1 (25)	9 (229)	13-1/2 (343)	1 (25)	8	11-3/4 (298)	10-5/8 (270)	1/16 (2)	13/16 (21)	19-1/2 (495)	10-1/8 (257)	168	76
10	250	12-1/2 (318)	1-1/4 (32)	11 (279)	16 (406)	1 (25)	12	14-1/4 (362)	12-3/4 (324)	1/16 (2)	13/16 (21)	24-1/2 (622)	12-3/8 (314)	240	109
12	300	14-1/2 (368)	1-1/4 (32)	13-1/2 (343)	19 (483)	1 (25)	12	17 (432)	15 (381)	1/16 (2)	13/16 (21)	27-1/2 (699)	14-3/16 (360)	405	184
14	350	14-1/2 (368)	1-1/4 (32)	13-1/2 (343)	21 (533)	1-1/8 (29)	12	18-3/4 (476)	16-1/4 (413)	1/16 (2)	13/16 (21)	31 (787)	14-3/16 (360)	460	208
16	400	16-3/8 (416)	1-1/2 (38)	15-5/8 (397)	23-1/2 (597)	1-1/8 (29)	16	21-1/4 (540)	18-1/2 (470)	1/8 (3)	1 (25)	34 (864)	15-1/8 (384)	675	306
18	450	17-5/8 (448)	1-1/2 (38)	17-5/8 (448)	25 (635)	1-1/4 (32)	16	22-3/4 (578)	21 (533)	1/8 (3)	1 (25)	38-1/2 (978)	16-3/4 (425)	820	372
20	500	20-1/4 (514)	1-1/2 (38)	19-1/2 (495)	27-1/2 (699)	1-1/4 (32)	20	25 (635)	23 (584)	1/8 (3)	1 (25)	38-1/2 (978)	18 (457)	1010	458
24	600	24-7/8 (632)	1-3/4 (44)	23-1/2 (597)	32 (813)	1-3/8 (35)	20	29-1/2 (749)	27-1/4 (692)	1/8 (3)	1 (25)	51 (1295)	21-1/2 (546)	1300	590



Pressure/Temperature Ratings

The table to the right is the Maximum Pressure/ Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material and, if applicable, the resilient seat material. In a majority of designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure F10

Pressure/Temperature Rating - psi

Temp °F	Temp °C	304	304L	316	316L	317L	A 36	A516Gr70
150	66	150	133	150	133	150	150	150
200	93	133	114	141	113	135	137	150
250	121	126	108	133	107	128	135	150
300	149	120	102	124	101	121	133	150
350	177	115	98	119	97	116	131	150
400	204	110	93	114	93	112	128	150
450	232	107	90	110	90	108	125	150
500	260	103	87	106	87	105	121	150
600	316	97	82	101	83	100	111	150
700	371	94	80	97	80	96	108	142
800*	427*	89	77	93	77	92		103
900*	482*	87		92				57
1000*	538*	83		90				21
1100*	593*	78		88				
1200*	649*	49		59				
1300*	704*	30		33				
1400*	760*	18		18				
1500*	816*	11		10				

* "R" Series valves have alloy steel wetted parts and a carbon steel exterior. Standard "R" Series valves are limited to 700°F (371°C); however alternate "R" Series constructions are available to 1000°F (538°C)

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How To Order" section explains the Valve Model Codes.

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Fabri-Valve

ITT Industries
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Fabri-Valve® F11 Tilting Disc Check Valve

The Fabri-Valve Figure F11 tilting disc check valve offers an economical alternative to cast alloy check valves. Standard valves have 304, 316 or 317L wetted surfaces. Any weldable alloy can be used. Material can be selected by component to minimize the use of expensive alloys where not essential. For example, interior surfaces and the flange raised faces could be alloy 20, and the flanges and exterior reinforcements could be 304SS or even carbon steel. The Fabri-Valve Figure F11 uses a unique cartridge type design. The valve is made up of two pieces, the cartridge and the spool. Together they equal the ANSI laying length. The cartridge contains the check mechanism while the spool provides the ANSI laying length. While many fabricated swing check valves are made in two pieces, others use a diagonally split body. The standard flange arrangement used on the Figure F11 eliminates misalignment and odd shaped gaskets. It also permits the use of just the cartridge where space is limited. The Fabri-Valve Figure F11 is a "packingless" design, thereby eliminating periodic packing adjustments. This valve is for installation in horizontal pipelines only.

Flow Coefficients

The Cv values below represent U.S. gallons per minute 60°F water through a 100% open valve at a pressure drop of 1 psi. The metric equivalent, Kv, is the flow of water at +16°C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

Figure F11 Check Valves

C_v Ratings, Port Diameter and Area

Standard Port

Valve Size		C_v	Port I.D. Inches	Port Area Sq. In.
In.	DN			
4	100	420	4.00	12.5
6	150	850	6.13	29.4
8	200	1,650	8.00	50.3
10	250	2,600	9.75	74.7
12	300	3,750	12.25	117.9
14	350	4,850	14.00	153.9
16	400	6,600	16.00	201.1
18	450	8,400	17.50	240.5
20	500	10,600	19.50	298.7
24	600	15,600	23.25	424.6

Specifications

Size Range
4" – 24"

Pressure Rating
150 psi (10.3 bar) CWP

Temperature Rating
Standard "R" series construction to 700°F (371°C)
Standard "S" series construction to 750°F (399°C)
Constructions available for applications to 1500°F (816°C).Consult factory

Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork.

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How to Order Section" explains the Valve Model Codes.

Flange Drilling
ANSI 125/150 through hole is standard.
Contact factory for alternate flange drilling.

Testing

Every Fabri-Valve check valve is fully tested prior to shipment. Testing includes a body shell test, a seat test and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Shell test: Hydro test at 1.5 times the rated CWP (cold working pressure) – allowable leakage

Seat test: Hydro test at 40 psi (2.8 bar) and rated CWP – zero allowable leakage

Metal seat
4" – 24" 40 cc / min / inch of valve size

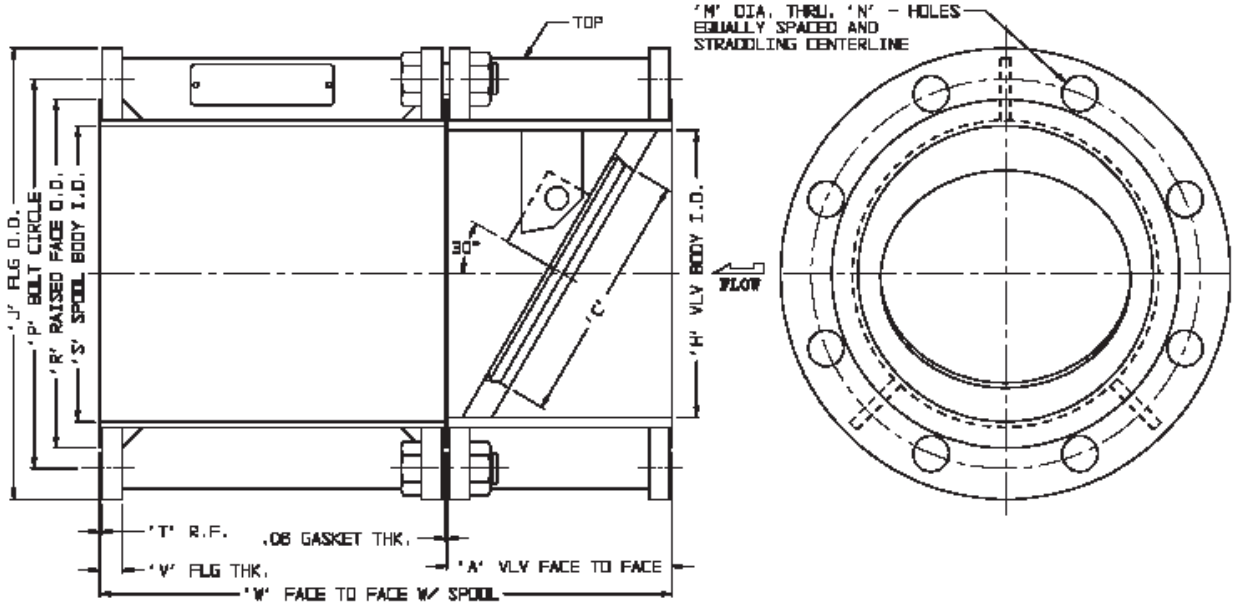
Materials of Construction

Part	Materials	
	F11R	F11S
Wetted Body Components	Stainless steel type 304, 316 or 317L	Stainless steel type 304, 316 or 317 L
External Flanges and Stiffeners	Carbon steel	Same as wetted components
Seat	Same as wetted components	Same as wetted components
Disc	Same as wetted components	Same as wetted components
Body Bolting	Plated steel	Stainless steel
Gasket	Non Asbestos Aramid Fiber	Non Asbestos Aramid Fiber

Other materials are available – Consult factoty

Dimensions

Valve Size		DIMENSION Inches (mm)												Weight	
Inches	DN	A	C	H	J	M	N	P	R	S	T	V	W	lb	kg
4	100	4 (102)	4 (102)	4-3/4 (121)	9 (229)	3/4 (19)	8	7-1/2 (191)	6-3/16 (157)	4-31/32 (126)	1/16 (2)	9/16 (14)	11-1/2 (292)	35	16
6	150	5-1/2 (140)	6-1/8 (156)	7 (178)	11 (279)	7/8 (22)	8	9-1/2 (241)	8-1/2 (216)	7-7/32 (183)	1/16 (2)	9/16 (14)	14 (356)	61	28
8	200	6-5/8 (168)	8 (203)	9 (229)	13-1/2 (343)	7/8 (22)	8	11-3/4 (298)	10-5/8 (270)	9-7/32 (234)	1/16 (2)	13/16 (21)	18 (457)	109	49
10	250	7-7/8 (200)	9-3/4 (248)	10-3/4 (273)	16 (406)	1 (25)	12	14-1/4 (362)	12-3/4 (324)	10-31/32 (278)	1/16 (2)	13/16 (21)	21-3/4 (552)	165	75
12	300	9-1/2 (241)	12-1/4 (311)	13-1/2 (343)	19 (483)	1 (25)	12	17 (432)	15 (381)	13-23/32 (348)	1/16 (2)	7/8 (22)	25-1/2 (648)	220	100
14	350	10-1/2 (267)	14 (356)	15 (381)	21 (533)	1-1/8 (29)	12	18-3/4 (476)	16-1/4 (413)	15-7/32 (387)	1/8 (3)	7/8 (22)	28 (711)	290	132
16	400	12 (305)	16 (406)	17-1/4 (438)	23-1/2 (597)	1-1/8 (29)	16	21-1/4 (540)	18-1/2 (470)	17-15/32 (444)	1/8 (3)	1 (25)	29-1/2 (749)	365	166
18	450	13 (330)	17-1/2 (445)	18-5/8 (473)	25 (635)	1-1/4 (32)	16	22-3/4 (578)	21 (533)	18-27/32 (479)	1/8 (3)	1 (25)	31 (787)	444	201
20	500	14-1/4 (362)	19-1/2 (495)	20-3/4 (527)	27-1/2 (699)	1-1/4 (32)	20	25 (635)	23 (584)	20-31/32 (533)	1/8 (3)	1 (25)	32-1/2 (826)	531	241
24	600	17 (432)	23-1/4 (591)	24-3/4 (629)	32 (813)	1-3/8 (35)	20	29-1/2 (749)	27-1/4 (692)	24-31/32 (634)	1/8 (3)	1 (25)	39-1/2 (1003)	725	329



Pressure/Temperature Ratings

Figure F10								
Pressure/Temperature Rating - psi								
Temp		304	304L	316	316L	317L	A 36	A516Gr70
°F	°C							
150	66	150	133	150	133	150	150	150
200	93	133	114	141	113	135	137	150
250	121	126	108	133	107	128	135	150
300	149	120	102	124	101	121	133	150
350	177	115	98	119	97	116	131	150
400	204	110	93	114	93	112	128	150
450	232	107	90	110	90	108	125	150
500	260	103	87	106	87	105	121	150
600	316	97	82	101	83	100	111	150
700	371	94	80	97	80	96	108	142
800*	427*	89	77	93	77	92		103
900*	482*	87		92				57
1000*	538*	83		90				21
1100*	593*	78		88				
1200*	649*	49		59				
1300*	704*	30		33				
1400*	760*	18		18				
1500*	816*	11		10				

* "R" Series valves have alloy steel wetted parts and a carbon steel exterior. Standard "R" Series valves are limited to 700°F (371°C); however alternate "R" Series constructions are available to 1000°F (538°C)

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How To Order" section explains the Valve Model Codes.

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Fabri-Valve
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Fabri-Valve® F44 Siamese Knife Gate Valve

The Fabri-Valve Figure F44 Siamese knife gate valve replaces two standard knife gate valves and a pipe "Y". By utilizing a single fabrication, the gates can be placed so they meet right at the intersection of the "Y". This arrangement minimizes the dead leg that occurs in a conventional two valve arrangement as a result of the valves being located several inches from the junction of the pipes.

Fabri-Valve F44, Siamese knife gate valves are available in "Y" and lateral configurations. The angle between the legs and the actuator orientation can be varied to suit specific application needs. The typical Figure F44 has one inlet with two, three or more outlets. However, the figure F44 design platform is extremely flexible; therefore, designs including single or multiple inlets with single or multiple outlets can easily be manufactured.

Pressure/Temperature Ratings

The table below presents the Maximum Pressure/Temperature Ratings for the metallic components only. When checking pressure/temperature ratings, check the temperature rating and chemical compatibility of the packing material and, if applicable, the resilient seat material. In a majority of knife gate valve designs, the temperature limit or the chemical compatibility of the seat and/or packing material determines the practical pressure/temperature limitations.

Figure F44 Pressure/Temperature Rating - psi								
Temp		304	304L	316	316L	317L	A 36	A516Gr70
°F	°C							
150	66	150	133	150	133	150	150	150
200	93	133	114	141	113	135	137	150
250	121	126	108	133	107	128	135	150
300	149	120	102	124	101	121	133	150
350	177	115	98	119	97	116	131	150
400	204	110	93	114	93	112	128	150
450	232	107	90	110	90	108	125	150
500	260	103	87	106	87	105	121	150
600	316	97	82	101	83	100	111	150
700	371	94	80	97	80	96	108	142
800*	427*	89	77	93	77	92		103
900*	482*	87		92				57
1000*	538*	83		90				21
1100*	593*	78		88				
1200*	649*	49		59				
1300*	704*	30		33				
1400*	760*	18		18				
1500*	816*	11		10				

* "R" Series valves have alloy steel wetted parts and a carbon steel exterior. Standard "R" Series valves are limited to 700°F (371°C); however alternate "R" Series constructions are available to 1000°F (538°C)

NOTE: Each valve is identified by Size-Figure-Series-etc. The "How To Order" section explains the Valve Model Codes.

Specifications

Size Range

3" – 48" (DN 80 – DN 1200)

Pressure Rating

3" – 24": 150 psi (10.3 bar) CWP(cold working pressure)
Above 24": Manufactured per customer's specification.

Temperature Rating

450°F (232°C) Standard
Consult factory for applications to 1500°F (816°C)
Service temperatures above 400°F (204°C) require high temperature fasteners. Specify service temperature on paperwork.

Face to Face

Per Requirement

Flange Drilling

Per Requirement

Materials of Construction

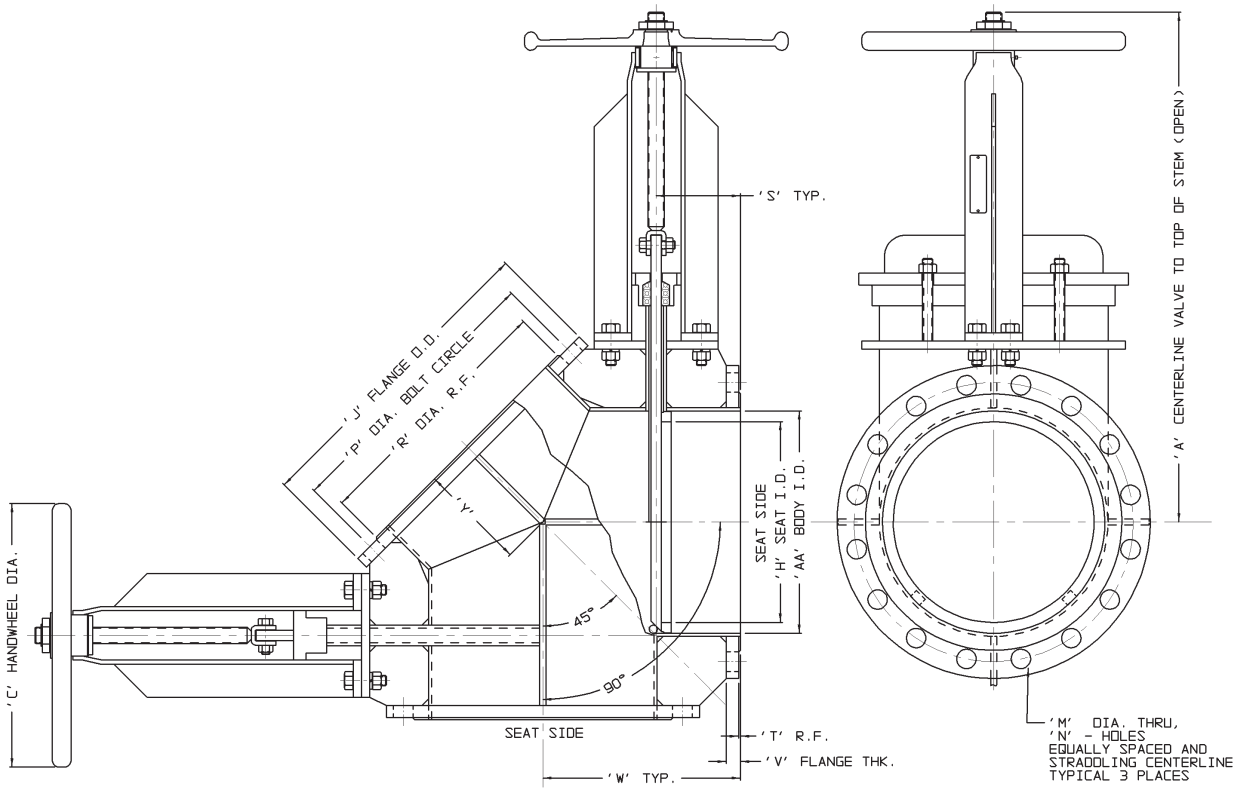
Part	Materials	
	F44R	F44S
Wetted Body and Chest Components	Heavy wrought stainless steel type 304, 316 or 317L	Heavy wrought stainless steel type 304, 316 or 317L
External Flanges and Stiffeners	Carbon steel	Same as wetted components
Seat	Same as wetted components	Same as wetted components
Gate	Same material as body finished to 32 RIMS	Same material as body finished to 32 RIMS
Yoke	Carbon steel	304 Stainless steel
Yoke Bolting	Plated steel	Stainless steel
Packing	Acrylic/PTFE/Silicone	Acrylic/PTFE/Silicone
Packing Box	Ductile iron/Carbon steel	316 stainless steel
Packing Box Bolting	Plated steel	Stainless steel
Stem	304 stainless steel	304 stainless steel
Stem Nut	Acid resistant bronze	Acid resistant bronze
Handwheel Retaining Nut	Malleable iron	Stainless steel
Tab Washer	Stainless steel	Stainless steel

Available Options

- **"D" Ring Seat**
- **Hard Faced Integral SS Seats**
- **Hard Faced Gate Edge**
- **Hard Gate Material**
- **Nickel-TFE Coated Gate**
- **Epoxy Coating**
- **Thru Drilled Flanges (STD)**
- **Flush Ports**
- **Chest Buttons:** 6" and larger
- **Centerline Buttons**
- **Backing Ring**
- **Extra Wedges**
- **V-Port**
- **Locking Devices**
- **E-Z Spin Handwheel**
- **Live Loaded Packing**
- **Self-Supporting Yokes**
- **Bevel Gear**
- **Chainwheels**
- **Cylinder Actuators**
- **Electric Actuators**
- **Ratchet**
- **Extended Stems**
- **Gate Support Strips**
- **Rod Boots**

Dimensions

Valve Size		DIMENSION Inches (mm) F44 with HANDWHEEL													
Inches	DN	A	C	H	J	M	N	P	R	S	T	V	W	Y	AA
3	80	18-1/8 (460)	8 (203)	2-1/2 (64)	7-1/2 (191)	3/4 (19)	4	6 (152)	5 (127)	3-5/8 (92)	1/16 (2)	9/16 (14)	5-1/2 (140)	5-3/4 (1146)	3-1/2 (89)
4	100	20-3/4 (527)	8 (203)	3-1/2 (89)	9 (229)	3/4 (19)	8	7-1/2 (191)	6-3/16 (157)	4-1/8 (105)	1/16 (2)	9/16 (14)	6-1/2 (165)	6-1/4 (159)	4-1/2 (114)
6	150	26-11/16 (678)	10 (254)	6 (152)	11 (279)	7/8 (22)	8	9-1/2 (241)	8-1/2 (216)	4-1/2 (114)	1/16 (2)	11/16 (17)	8 (203)	6-1/4 (159)	7 (178)
8	200	34-3/8 (873)	12 (305)	8 (203)	13-1/2 (343)	7/8 (22)	8	11-3/4 (298)	10-5/8 (270)	4-3/8 (111)	1/16 (2)	13/16 (21)	9 (229)	6-1/4 (159)	9 (229)
10	250	41-5/16 (1049)	16 (406)	10 (254)	16 (406)	1 (25)	12	14-1/4 (362)	12-3/4 (324)	5-3/8 (137)	1/16 (2)	13/16 (21)	11 (279)	6-1/4 (159)	11 (279)
12	300	46-15/16 (1192)	16 (406)	12 (305)	19 (483)	1 (25)	12	17 (432)	15 (381)	5-1/8 (130)	1/8 (3)	7/8 (22)	12 (305)	6-1/2 (165)	13-1/2 (343)
14	350	46-15/16 (1192)	16 (406)	12 (305)	21 (533)	1-1/8 (29)	12	18-3/4 (476)	16-1/4 (413)	7-1/8 (181)	1/8 (3)	7/8 (22)	14 (356)	7-1/2 (191)	13-1/2 (343)
16	400	55-7/16 (1408)	20 (508)	14-1/4 (362)	23-1/2 (597)	1-1/8 (29)	16	21-1/4 (540)	18-1/2 (470)	6-13/16 (173)	1/8 (3)	1 (25)	15 (381)	8-1/4 (210)	15-5/8 (397)
18	450	62-1/2 (1588)	20 (508)	16-1/4 (413)	25 (635)	1-1/4 (32)	16	22-3/4 (578)	21 (533)	7-1/2 (191)	1/8 (3)	1 (25)	16-1/2 (419)	8-1/4 (210)	17-5/8 (448)
20	500	69-1/8 (1756)	20 (508)	18 (457)	27-1/2 (699)	1-1/4 (32)	20	25 (635)	23 (584)	8-3/16 (208)	1/8 (3)	1 (25)	18 (457)	8-3/4 (222)	19-5/8 (498)
24	600	81-15/16 (2081)	20 (508)	22 (559)	32 (813)	1-3/8 (35)	20	29-1/2 (749)	27-1/4 (692)	10 (254)	1/8 (3)	1 (25)	22 (559)	9 (229)	23-5/8 (600)



Actuator orientation and the angles between the legs can be varied to suit the application.
The typical Figure F44 has one inlet with two, three or more outlets. However, the figure F44 design platform is extremely flexible; therefore designs including single or multiple inlets with single or multiple outlets can easily be manufactured.

Fabri-Valve® C132 Transmitter Isolation Valve

The Fabri-Valve Figure C132 transmitter isolation valve is designed specifically to isolate an instrument transmitter from a tank. This allows transmitter replacement or maintenance of the transmitter without disrupting the process or draining the vessel. A special tank side flange permits blind boltup from the tank exterior. This is accomplished by moving the upper flange holes outboard. They remain on the ANSI 125/150 bolt circle but are now located closer to the horizontal centerline. Fabri-Valve transmitter isolation valves are designed to fit installations where the upper tank flange bolts are located 25° to 27° above the horizontal centerline. The transmitter side flange bolting is a standard ANSI 125/150 configuration. The Fabri-Valve transmitter isolation valve is available in two configurations; the C132R features the Fabri-Valve solid cast stainless steel body with heavy duty cast ductile iron yoke and packing follower. The C132S features a solid cast stainless steel body with heavy duty cast stainless steel yoke, and packing follower, and all stainless steel bolting. Standard body materials are 316 and 317L stainless steel. Special materials such as 254 SMO® are also available.

Specifications

Size Range 3"

Pressure Rating 150 psi (10.3 bar) CWP (cold working pressure)

Temperature Rating
450°F (232°C) with standard packing. Consult factory for higher temperatures.

Flanges Drilling Outlet ANSI 125/150 drilling
Inlet special

Testing

Every Fabri-Valve Figure C132 valve is fully tested prior to shipment. Testing includes a body shell test, a seat test, and a cycling test to insure proper functioning of moving parts. Additional testing is also available. Please let us know your requirements.

Standard Shell test:

- Hydro test at 1.5 times the rated CWP (cold working pressure) – Zero allowable leakage

Standard Seat test:

- Metal Seat: Hydro test at 40 psi (2.8 bar) and at the rated CWP
- Resilient Seat: Hydro test at 15 psi (1 bar) and rated CWP

Available Options

- **"D" Ring Seat**
- **Lever Operator**
- **Hard Gate Material**
- **Nickel -TFE Coated Gate**
- **Epoxy Coating**
- **Flush Ports**
- **Centerline Buttons**
- **Locking Devices**
- **Live Loaded Packing**
- **Ratchet (STD)**

Shutoff Performance

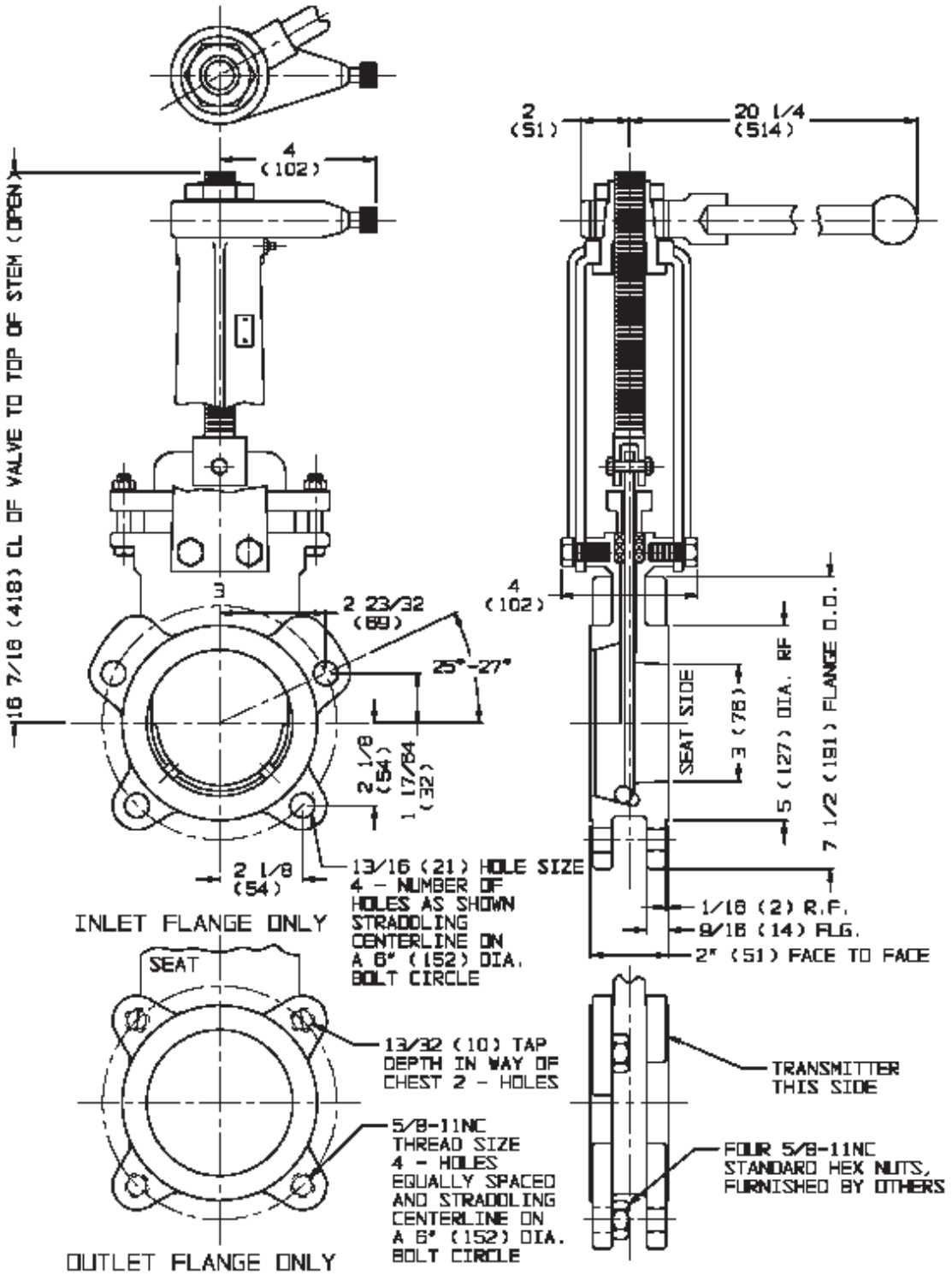
- Integral Metal seat: 40cc / minute / inch of valve size
- "D" ring Zero leakage. All sizes.

Materials of Construction

Part	Materials	
	C132R	C132S
Body and Chest	Cast stainless steel type 316 or 317L	Cast stainless steel type 316 or 317L
Seat	Integrally cast (optional "O" ring)	
Gate	Stainless steel of same grade used in body, finished to 32 RMS	
Yoke	Ductile iron	Cast 304 stainless steel
Yoke Bolting	Plated steel	Stainless steel
Packing	Acrylic/PTFE	
Packing Follower	Ductile iron w/plated steel bolting	304 stainless steel w/stainless steel bolting
Stem Nut	Acid resistant bronze	
Lubrication Fitting	Plated steel	
Ratchet Operator	Cast iron/carbon steel	
Operator Retaining Nut	Malleable iron	Stainless steel
Tab Washer	Stainless steel	

Figure C 132

Dimensions, Inches (mm)



Total Weight: 21 lbs (10kg)

Tough services demand tough valves.

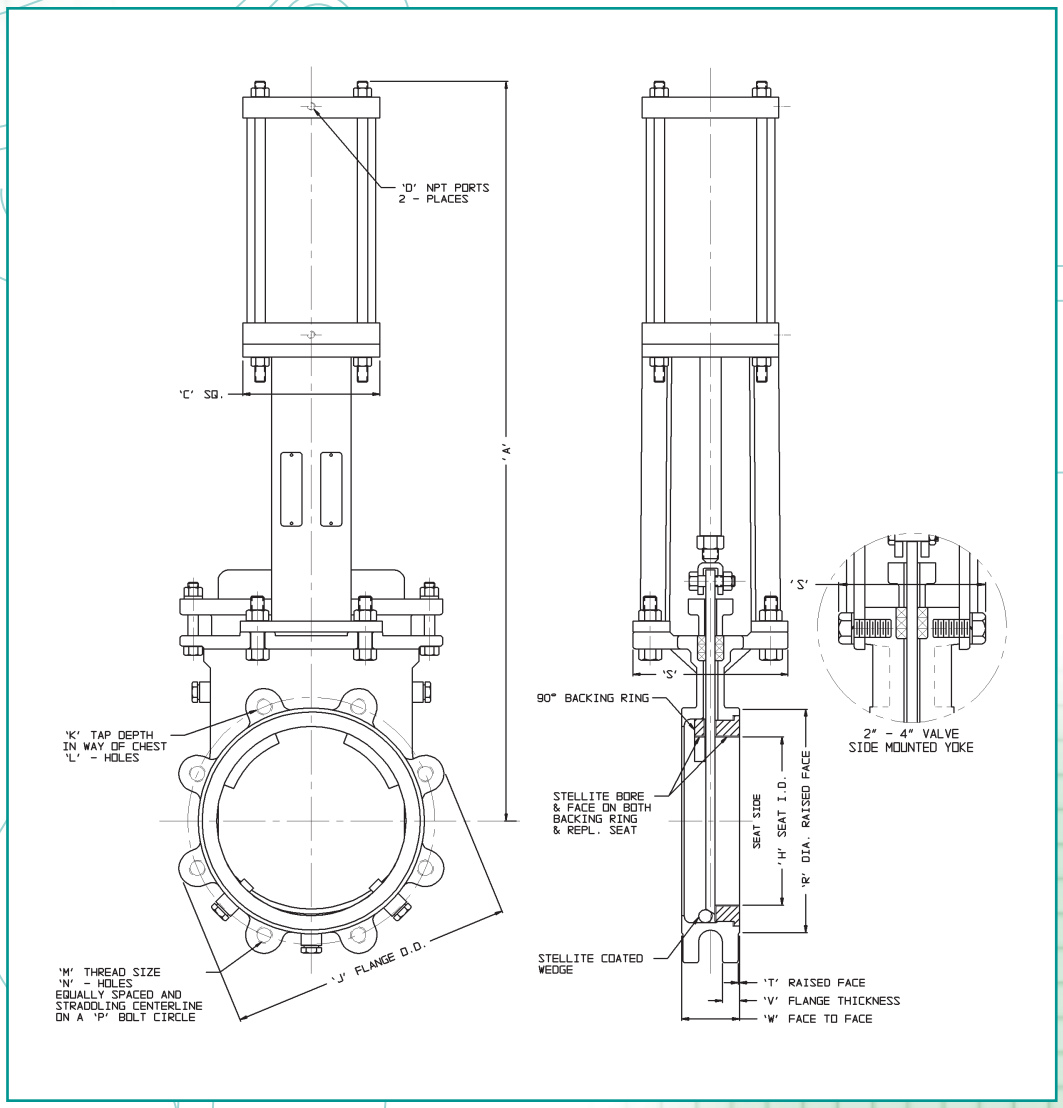
Recycle and rejects services are tough on valves. Over the years many new, and often expensive valve configurations have been thrown at these applications without much success. Now, Engineered Process Solutions offers a specially configured knife gate valve that solves the valve problems common to these services.

Bring it on!

Designed to address the specific service problems found in recycle and rejects service, the *Fabri-Valve* Figure C42 is configured to minimize the effects of the following service problems:

- **Physical damage of the sealing surfaces** (gate and seat) due to wire, staples and other debris, resulting in unacceptable sealing degradation.
- **Clogging** due to accumulation of wire, staples or other debris that is compacted into the bottom of the valve, resulting in the failure of the valve to close completely, and excessive leakage.
- **Poor packing performance** due to damage of the gate surface, abrasion and high cyclic conditions.

Fabri-Valve Figure C42 solves these problems by selecting tough materials for the components that face the tough conditions. The seat is protected on both the ID and face by a heavy overlay of special impact resistant alloy. The gate is precision ground from a very hard corrosion resistant alloy. Together they provide an effective, durable shear to cut through wire, staples and other debris.



Dimensions

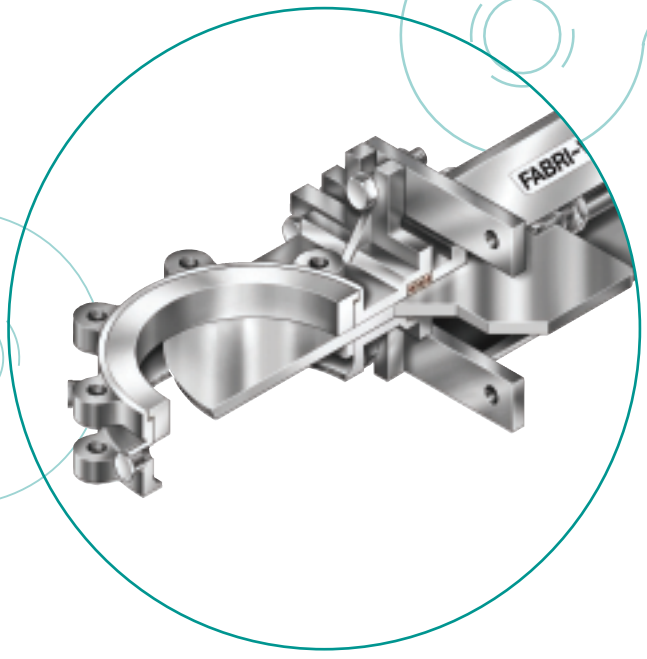
Valve Size		DIMENSION Inches (mm) C42 with CYLINDER															Weight
Inches	DN	A	C	D	H	J	K	L	M	N	P	R	S	T	V	W	lb (kg)
2	50	4 CYL 17-3/8 (441)	4 CYL 4-1/2 (114)	4 CYL 3/8-18	2 (51)	6 (152)	3/8 (10)	2	5/8-11NC	4	4-3/4 (121)	3-5/8 (92)	4 (102)	1/16 (2)	9/16 (14)	1-7/8 (48)	35 (15.8)
3	80	5 CYL 20-1/8 (511)	5 CYL 5-1/2 (140)	5N CYL 3/8-18	3 (76)	7-1/2 (191)	13/32 (10)	2	5/8-11NC	4	6 (152)	5 (127)	4 (102)	1/16 (2)	9/16 (14)	2 (51)	53 (24)
4	100	5 CYL 22-7/8 (581)	5 CYL 5-1/2 (140)	5 CYL 3/8-18	4 (102)	9 (229)	13/32 (10)	2	5/8-11NC	8	7-1/2 (191)	6-3/16 (157)	4 (102)	1/16 (2)	11/16 (17)	2 (51)	58 (26.5)
6	150	8 CYL 29-3/4 (756)	8 CYL 8-5/8 (219)	8 CYL 3/8-18	6 (152)	11 (279)	7/16 (11)	2	3/4-10NC	8	9-1/2 (241)	8-1/2 (216)	7-3/8 (187)	1/16 (2)	5/8 (16)	2-1/4 (57)	129 (58.5)
8	200	10 CYL 37-1/16 (941)	10 CYL 10-7/8 (276)	10 CYL 1/2-14	8 (203)	13-1/2 (343)	5/8 (16)	2	3/4-10NC	8	11-3/4 (298)	10-5/8 (270)	7-3/8 (187)	1/16 (2)	13/16 (21)	2-3/4 (70)	230 (104.6)
10	250	10 CYL 42-3/16 (1072)	10 CYL 10-7/8 (276)	10 CYL 1/2-14	10 (254)	16 (406)	1/2 (13)	4	7/8-9NC	12	14-1/4 (362)	12-3/4 (324)	7-3/8 (187)	1/8 (3)	15/16 (24)	2-3/4 (70)	268 (122)
12	300	12 CYL 49-1/4 (1251)	12 CYL 12-3/4 (324)	12 CYL 1/2-14	12 (305)	19 (483)	1/2 (13)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)	373 (169.6)
14	350	14 CYL 55-3/16 (1402)	14 CYL 14-3/4 (375)	14 CYL 3/4-14	13-1/4 (337)	21 (533)	7/16 (11)	4	1-8NC	12	18-3/4 (476)	16-1/4 (413)	7-3/4 (197)	3/16 (5)	15/16 (24)	3 (76)	523 (237.9)
16	400	14 CYL 62-3/16 (1580)	14 CYL 14-3/4 (375)	14 CYL 3/4-14	15-1/4 (387)	23-1/2 (597)	9/16 (14)	6	1-8NC	16	21-1/4 (540)	18-1/2 (470)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	558 (253.5)
18	450	16 CYL 68-1/8 (1730)	16 CYL 17 (432)	16 CYL 3/4-14	17-1/4 (438)	25 (635)	5/8 (16)	6	1-1/8-7NC	16	22-3/4 (578)	21 (533)	11-1/4 (286)	3/16 (5)	1-1/16 (27)	3-1/2 (89)	803 (364.9)
20	500	16 CYL 73-7/16 (1865)	16 CYL 17 (432)	16 CYL 3/4-14	19-1/4 (489)	27-1/2 (699)	29/32 (23)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)	941 (427.8)
24	600	18 CYL 86-5/8 (2200)	18 CYL 19 (483)	18 CYL 3/4-14	23-1/4 (591)	32 (813)	13/16 (21)	8	1-1/4-7NC	20	29-1/2 (749)	27-1/4 (692)	14-1/8 (359)	3/16 (5)	1-5/16 (33)	4-1/2 (114)	1318 (599.1)

Larger sizes available.

High performance and easy installation.

A specially designed, heavy duty, open bore, cast stainless steel valve body is designed to eliminate the tight cavities that promote the compacting of staples and wire. Instead the wire, staples and debris are sheared, and the pieces fall away.

In addition to acting as an effective shear, the hard gate also resists surface damage which preserves packing performance. Special abrasion resistant packing and live loading of the packing follower promote high cycle packing performance. The self-supporting yokes prevent actuator alignment problems and make installation a snap.



The Fabri-Valve C42, a tough valve, *not* a tough choice.

It is also simple, effective, economical and backed by experience. Contact your local ITT Distributor for more information on how the *Fabri-Valve* Figure C42 will help solve your recycle/rejects problems, and keep your operation running smoothly.

Optional Vortex Breaker

The Vortex Breaker is a hard-faced replaceable seat with hardened lugs on the internal diameter, which disrupt the vortex adjacent to the gate face. (Solves severe valve wear problems caused by sand and grit bearing vortices).

Engineered Valves Group

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Fabri-Valve

ITT Industries
Engineered for life

We're at the core of the drilling industry.

That core specifically is the demand for valves that stand up to harsh drilling fluid system requirements, and our Figure C45 DFV (Drilling Fluid Valve) met the demand for heavy duty replaceable seats - and with that we changed everything. Production expectations were raised. Drilling fluid systems functioned more efficiently and effectively.

And ITT Engineered Process Solutions (ITT EPS) has always been there. Developing a specially configured valve to improve operating efficiency, reliability and safety in today's drilling fluid systems. Designed and produced, hand-in-hand with input, influence, and expertise from some of the best engineers and operators in the drilling business, the *Fabri-Valve* DFV is a tried and true industry standard.

21st century choices.

Up until the 1980's, the only valves of choice for the drilling industry were metal seated knife gate valves and butterfly valves. Restricted flow and inherent leaking problems were par for the course. Adhesive O-rings, added for better sealing capacity, could not withstand the extremes of abrasion, temperature and chemical challenges that the drilling fluid presented. Special replaceable seats that extend the life of the drilling fluid system valves and an unobstructed flow design which reduces the potential for pump damage caused by back pressure and volume restrictions has made our DFV the industry standard.

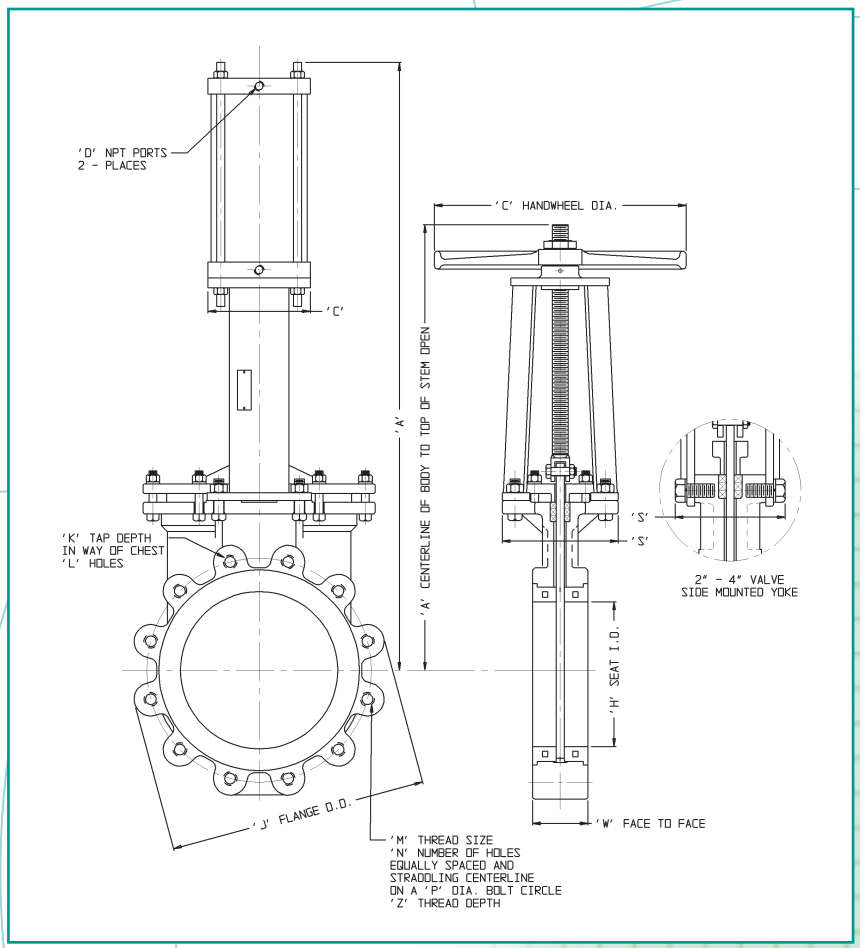
The proven design of the DFV allows the drilling fluid system to function efficiently and effectively. ITT EPS has been and will continue to be committed to meeting the needs of the drilling industry with the DFV.

Out of reach, yet close at hand.

Pneumatics. They're at the core of the DFV pneumatically-actuated control valve. Reliable and safe remote-location management, monitoring and regulating - all accomplished, if necessary, far from hard-to-access areas on the drilling fluid system.

Unlimited innovation for a limited space.

We know that dimensions are critical. We listened when you told us that. And that's why the DFV's port is a full port design offering 40% greater flow than a butterfly valve and replaces a butterfly valve with no dimensional changes. As a result of our unique DFV design, these valves can extend the life of centrifugal pumps by increasing flow and eliminating damage that can occur from back pressure. With increased flow and less potential for damage to the drilling system, you may find that your energy costs are decreased as well.



Dimensions

Valve Size		DIMENSION Inches (mm) C45 DFV with HANDWHEEL OR CYLINDER																	
Inches	DN	A			C			D		H	J	K	L	M	N	P	S	W	Z
2	50	HW 14-13/16 (376)	2-1/2 CYL 18-3/8 (467)	3-1/4 CYL 16-7/8 (429)	HW 8 (203)	2-1/2 CYL 3 (76)	3-1/4 CYL 4 (102)	2-1/2 CYL 3/8-18	3-1/4 CYL 1/4-18	2 (51)	6 (152)	1/2 (12)	2	5/8-11NC	4	4-3/4 (121)	4 (102)	1-7/8 (48)	9/16 (14)
3	80	HW 17-9/16 (446)	2-1/2 CYL 20-7/8 (530)	3-1/4 CYL 19-3/8 (492)	HW 8 (203)	2-1/2 CYL 3 (76)	3-1/4 CYL 4 (102)	2-1/2 CYL 3/8-18	3-1/4 CYL 1/4-18	3 (76)	7-1/2 (191)	1/2 (12)	2	5/8-11NC	4	6 (152)	4 (102)	2 (51)	5/8 (16)
4	100	HW 20-1/8 (511)	3-1/4 CYL 22-1/8 (562)	4 CYL 22-7/8 (581)	HW 8 (203)	3-1/4 CYL 4 (76)	4 CYL 4-1/2 (114)	3-1/4 CYL 1/4-18	4 CYL 3/8-18	4 (102)	9 (229)	1/2 (12)	2	5/8-11NC	8	7-1/2 (191)	4 (102)	2 (51)	5/8 (16)
6	150	HW 25-11/16 (652)	4 CYL 28-7/8 (733)	6 CYL 29-1/4 (743)	HW 10 (254)	4 CYL 4-1/2 (114)	6 CYL 6-1/2 (165)	4 CYL 3/8-18	6 CYL 3/8-18	6 (152)	11 (279)	9/16 (14)	2	3/4-10NC	8	9-1/2 (241)	7-3/8 (187)	2-1/4 (57)	3/4 (19)
8	200	HW 33-27/32 (860)	6 CYL 35-13/16 (910)	8 CYL 36-5/16 (922)	HW 12 (305)	6 CYL 6-1/2 (165)	8 CYL 8-5/8 (219)	6 CYL 3/8-18	8 CYL 3/8-18	8 (203)	13-1/2 (343)	5/8 (16)	2	3/4-10NC	8	11-3/4 (298)	7-3/8 (187)	2-3/4 (70)	1 (25)
10	250	HW 38-25/32 (985)	8 CYL 41-7/16 (1053)	10 CYL 42-3/16 (1072)	HW 16 (406)	8 CYL 8-5/8 (219)	10 CYL 10-7/8 (276)	8 CYL 3/8-18	10 CYL 1/2-14	10 (254)	16 (406)	5/8 (16)	4	7/8-9NC	12	14-1/4 (362)	7-3/8 (187)	2-3/4 (70)	1 (25)
12	300	HW 44-19/16 (1133)	8 CYL 48 (1219)	10 CYL 48-3/4 (1238)	HW 16 (406)	8 CYL 8-5/8 (219)	10 CYL 10-7/8 (276)	8 CYL 3/8-18	10 CYL 1/2-14	12 (305)	19 (483)	5/8 (16)	4	7/8-9NC	12	17 (432)	7-1/2 (191)	3 (76)	1 (25)
14	350	HW 50 (1270)	12 CYL 54-1/16 (1373)	14 CYL 55-3/16 (1402)	HW 20 (508)	12 CYL 12-3/4 (324)	14 CYL 14-3/4 (375)	12 CYL 1/2-14	14 CYL 3/4-14	12 (305)	21 (533)	21/32 (17)	4	1-8NC	12	18-3/4 (476)	7-3/4 (197)	3 (76)	1 (25)
16	400	HW 57-1/16 (1449)	12 CYL 61-1/16 (1551)	14 CYL 62-3/16 (1580)	HW 20 (508)	12 CYL 12-3/4 (324)	14 CYL 14-3/4 (375)	12 CYL 1/2-14	14 CYL 3/4-14	14-1/4 (362)	23-1/2 (597)	25/32 (20)	6	1-8NC	16	21-1/4 (540)	11-1/4 (286)	3-1/2 (89)	1-1/4 (32)
18	450	HW 63-9/16 (1614)	12 CYL 66-1/2 (1689)	14 CYL 67-5/8 (1718)	HW 20 (508)	12 CYL 12-3/4 (324)	14 CYL 14-3/4 (375)	12 CYL 1/2-14	14 CYL 3/4-14	16-1/4 (413)	25 (635)	3/4 (19)	6	1-1/8-7NC	16	22-3/4 (578)	11-1/4 (286)	3-1/2 (89)	1-3/8 (35)
20	500	HW 69-7/16 (1764)	14 CYL 72-15/16 (1853)	16 CYL 73-7/16 (1865)	HW 20 (508)	14 CYL 14-3/4 (375)	16 CYL 17 (432)	14 CYL 3/4-14	16 CYL 3/4-14	18 (457)	27-1/2 (699)	1-1/8 (29)	8	1-1/8-7NC	20	25 (635)	14 (356)	4-1/2 (114)	1-1/2 (38)
24	600	HW 80-5/8 (2048)	16 CYL 84-11/16 (2151)	18 CYL 86-5/8 (2200)	HW 20 (508)	16 CYL 17 (432)	18 CYL 19 (483)	16 CYL 3/4-14	18 CYL 3/4-14	22 (559)	32 (813)	1-1/16 (27)	8	1-1/4-7NC	20	29-1/2 (749)	14-1/8 (359)	4-1/2 (114)	1-1/2 (38)

Valves for the life of the job.

You want these valves to last until the job is done. The DFV uses easily replaceable seats to provide bubble tight shut-off from 0-150 psi (10.3 bar). These replaceable seats are retained by the mating flange, which reduces maintenance time. To deliver a positive seal around the gate, DFV valves are designed with PTFE Graphite braided packing that keeps its sealing surface memory. The DFV also utilizes a first row of Kevlar packing to act as a wiper – protecting the packing from abrasive drilling fluid.

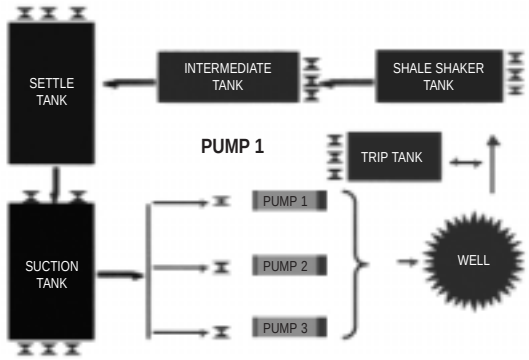
Features & Benefits

- **Long lasting replaceable seats**
- **Reduces pump damage caused by back pressure and volume restrictions**
- **Flow capacity - 40% greater than conventional butterfly valves**
- **Zero leakage of fluid at 0-150 psi (10.3 bar)**
- **Positive shut-off at 0-150 psi (10.3 bar) in both directions with dual seats**
- **Replaces butterfly valve with no dimensional changes**
- **Seat flush ports are standard**
- **Ease of automation**
- **Safe remote operation away from hard-to-access areas**

We have the valve you need.

Every job has specific valve requirements. That's why we manufacture the *Fabri-Valve* DFV in a variety of materials of construction. We offer handwheel, gear operator, double acting air cylinder, spring return cylinder, hydraulic cylinder or electric operator configurations. Ask us. Our breakthrough innovation and valve advancement experts are ready to give you the valve solution for your success.

Drilling Fluid System



Note: DFV replaces butterfly valves throughout the low pressure system.

Available Options

- **Hard Gate Material**
- **Thru Drilled Flanges**
- **Flush Ports (STD)**
- **Locking Devices**
- **Live Loaded Packing**
- **Self-Supporting Yokes**
- **Single Replaceable Seat (Uni-directional Service)**
- **"Energized Packing" with Viton® Core**

Engineered Valves Group

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Fabri-Valve

ITT Industries
Engineered for life

Fabri-Valve® FA Actuator

Benefits:

1. **Piston Rods —** made from medium carbon steel with 100,000 psi minimum yield in accordance with ASTM A108. All piston rods are hard chrome plated and highly polished to resist nicks and dents.

2. **Seals —** rod packing/wiper, tube seals, and piston seals are made of Buna-N rubber compound for leak-proof performance at low breakaway pressures.

3. **Rod Bearing —** bearing offers a durable wear surface for long lasting service.

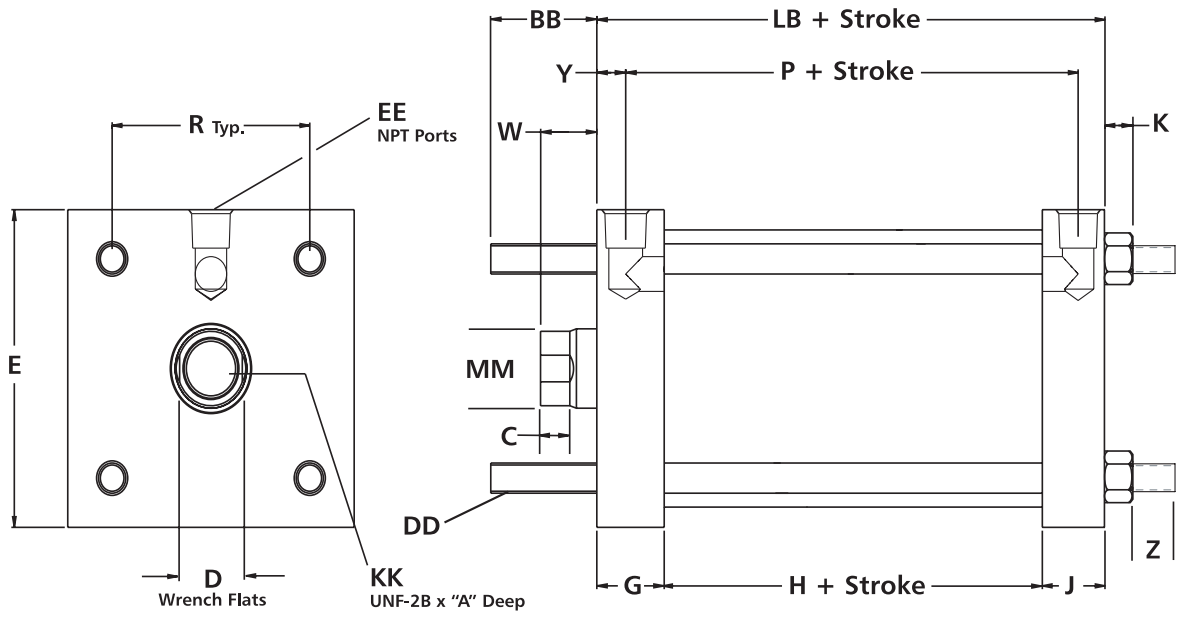
4. **Ports —** unrestricted ports permit maximum flow with minimum pressure drop. Heads may be rotated independently at 90Þ intervals for convenient port location.

5. **Tubing —** Composite tube ensures smooth operation with minimum friction.

6. **Piston —** made from high-grade alloy iron. Pistons are one piece, pilot fitted to the piston rod and locked in place.

7. **Tie Rods and Nuts —** tie rods are made from 100,000 psi minimum yield, medium carbon steel. They are pre-stressed at assembly with high strength alloy hex nuts to minimize the possibility of tie rod elongation.

8. **Head and Cap End Covers —** rolled steel material per ASTM A108. Our heads and caps are machined to assure perfect alignment of the rod bearing, piston rod, piston, and tube.



FA Series Dimensions

Basic Dimensions																			
Bore	A	C	D	E	G	H	J	K	P	R	W	Y	Z	BB	DD	EE	KK	LB	MM
2.5	0.75	0.25	0.50	3.00	0.88	0.75	0.88	0.31	1.75	2.19	0.62	0.38	0.56	1.12	.31"-24	.25"-18	.44"-20	2.50	0.62
3.25	1.12	0.38	0.88	4.00	0.88	0.75	0.88	0.38	1.75	2.76	0.75	0.38	0.75	1.38	.38"-24	.25"-18	.75"-16	2.50	1.00
4	1.12	0.38	0.88	4.50	1.00	1.00	1.00	0.38	2.12	3.32	0.75	0.44	0.75	1.38	38"-24	.38"-18	.75"-16	3.00	1.00
5	1.12	0.38	0.88	5.50	1.00	1.00	1.00	0.44	2.12	4.10	0.75	0.44	0.75	1.81	.50"-20	.38"-18	.75"-16	3.00	1.00
6	1.12	0.38	0.88	6.50	1.00	1.25	1.00	0.44	2.38	4.88	0.88	0.44	0.75	1.81	.50"-20	.38"-18	.75"-16	3.25	1.00
7	1.12	0.38	0.88	8.00	1.00	1.50	1.00	0.56	2.62	5.73	0.88	0.44	0.75	2.00	.62"-18	.38"-18	.75"-16	3.50	1.00
8	1.12	0.38	0.88	9.00	1.00	1.50	1.00	0.56	2.62	6.44	0.88	0.44	0.75	2.00	.62"-18	.38"-18	.75"-16	3.50	1.00
10	1.12	0.38	0.88	11.00	1.25	1.62	1.25	0.69	3.00	7.92	1.00	0.56	1.00	2.25	.75"-16	.50"-14	.75"-16	4.12	1.00
12	1.62	0.50	1.12	12.75	1.25	1.62	1.25	0.69	3.00	9.40	1.00	0.56	1.00	2.25	.75"-16	.50"-14	1.00"-14	4.12	1.38
14	1.62	0.50	1.12	14.75	1.50	1.75	1.50	0.81	3.38	10.90	1.00	0.69	1.12	2.50	.88"-14	.75"-14	1.00"-14	4.75	1.38
16	1.62	0.62	1.50	17.00	1.50	2.00	1.50	0.88	3.62	12.59	1.25	0.69	1.12	2.75	1.00"-14	.75"-14	1.00"-14	5.00	1.75
18	2.25	0.75	1.69	19.00	1.75	2.25	1.75	1.00	3.88	14.14	1.50	0.94	1.25	3.25	1.12"-12	.75"-14	1.50"-12	5.75	2.00
20	2.25	0.75	1.69	21.00	2.00	2.50	2.00	1.12	4.12	15.77	1.50	1.19	1.25	3.25	1.25"-12	.75"-14	1.50"-12	6.50	2.00
22	3.50	0.75	2.62	23.00	2.00	3.50	2.00	1.12	5.12	17.15	2.25	1.19	1.25	3.50	1.25"-12	.75"-14	2.25"-12	7.50	3.00
24	3.50	0.75	3.00	25.25	2.50	3.50	2.50	1.12	5.50	18.74	2.25	1.50	1.25	3.50	1.25"-12	.75"-14	2.50"-12	8.50	3.50

Weight

Approximate Weight* (FA with composite cylinder)			
Bore Inches	Rod Dia. Inches	A	B
		Weight at Zero Stroke (lbs.)	Weight per inch of Valve Diameter (lbs.)
2.5	0.62	6.2	0.2
3.25	1.00	11.0	0.4
4	1.00	16.7	0.5
5	1.00	25.0	0.6
6	1.00	36.0	0.6
7	1.00	50.9	0.8
8	1.00	65.8	0.8
10	1.00	125.3	1.1
12	1.38	170.4	1.4
14	1.38	265.6	1.7
16	1.75	366.2	2.7
18	2.00	528.9	3.3
20	2.00	735.0	3.7
22	3.00	983.9	4.9
24	3.50	1359.3	5.8

*Cylinder Weight (Lbs.) = A + (B x Valve Diameter)

Force Chart

Extend Force (lbs.)					Retract Force (lbs.)				
Bore Size	Supply Pressure (PSI)				Rod Dia.	Supply Pressure (PSI)			
	60	80	100	150		60	80	100	150
2.5	294	393	491	736	0.62	276	368	460	691
3.25	497	663	829	1244	1.00	450	601	751	1126
4	754	1005	1256	1884	1.00	707	942	1178	1766
5	1178	1570	1963	2944	1.00	1130	1507	1884	2826
6	1696	2261	2826	4239	1.00	1649	2198	2748	4121
7	2308	3077	3847	5770	1.00	2261	3014	3768	5652
8	3014	4019	5024	7536	1.00	2967	3956	4946	7418
10	4710	6280	7850	11775	1.00	4663	6217	7772	11657
12	6782	9043	11304	16956	1.38	6693	8924	11156	16733
14	9232	12309	15386	23079	1.38	9143	12190	15238	22856
16	12058	16077	20096	30144	1.75	11913	15884	19856	29783
18	15260	20347	25434	38151	2.00	15072	20096	25120	37680
20	18840	25120	31400	47100	2.00	18652	24869	31086	46629
22	22796	30395	37994	56991	3.00	22373	29830	37288	55931
24	27130	36173	45216	67824	3.50	26553	35404	44254	66382

Temperature Rating

Buna-N seals, Composite tube: -20°F (-11°C) to 220°F (122°C)

Alternate Constructions

Buna-N seals, Steel tube (option): -20°F (-11°C) to 220°F (122°C)
Viton® seals (option), steel tube (option): -15°F (-8°C) to 400°F (222°C)
Low Temperature (option): to -58°F (-50°C) Contact factory

Viton® is a registered trademark of Dupont Dow Elastomers

Fabri-Valve® FA Actuator

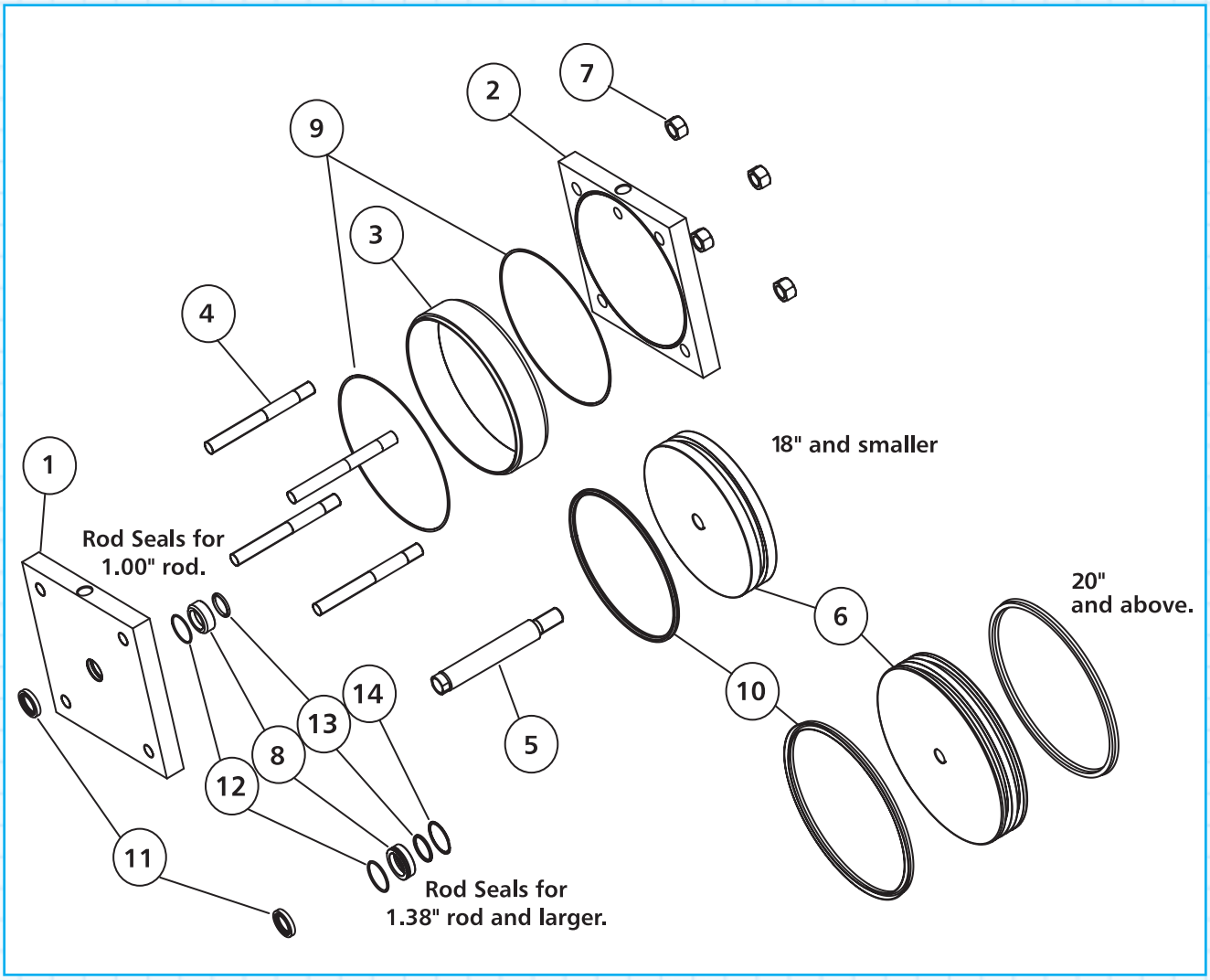
Part Identification

HARD PARTS

1. Head End Cover
2. Cap End Cover
3. Tube
4. Tie Rods
5. Piston Rod
6. Piston
7. Tie Rod Nuts
8. Rod Bearing

SOFT SEALS

9. Tube Gaskets
10. Piston Seals
11. Rod Wiper
12. Rod Bearing O-ring
13. Rod Seal
14. Retaining Ring

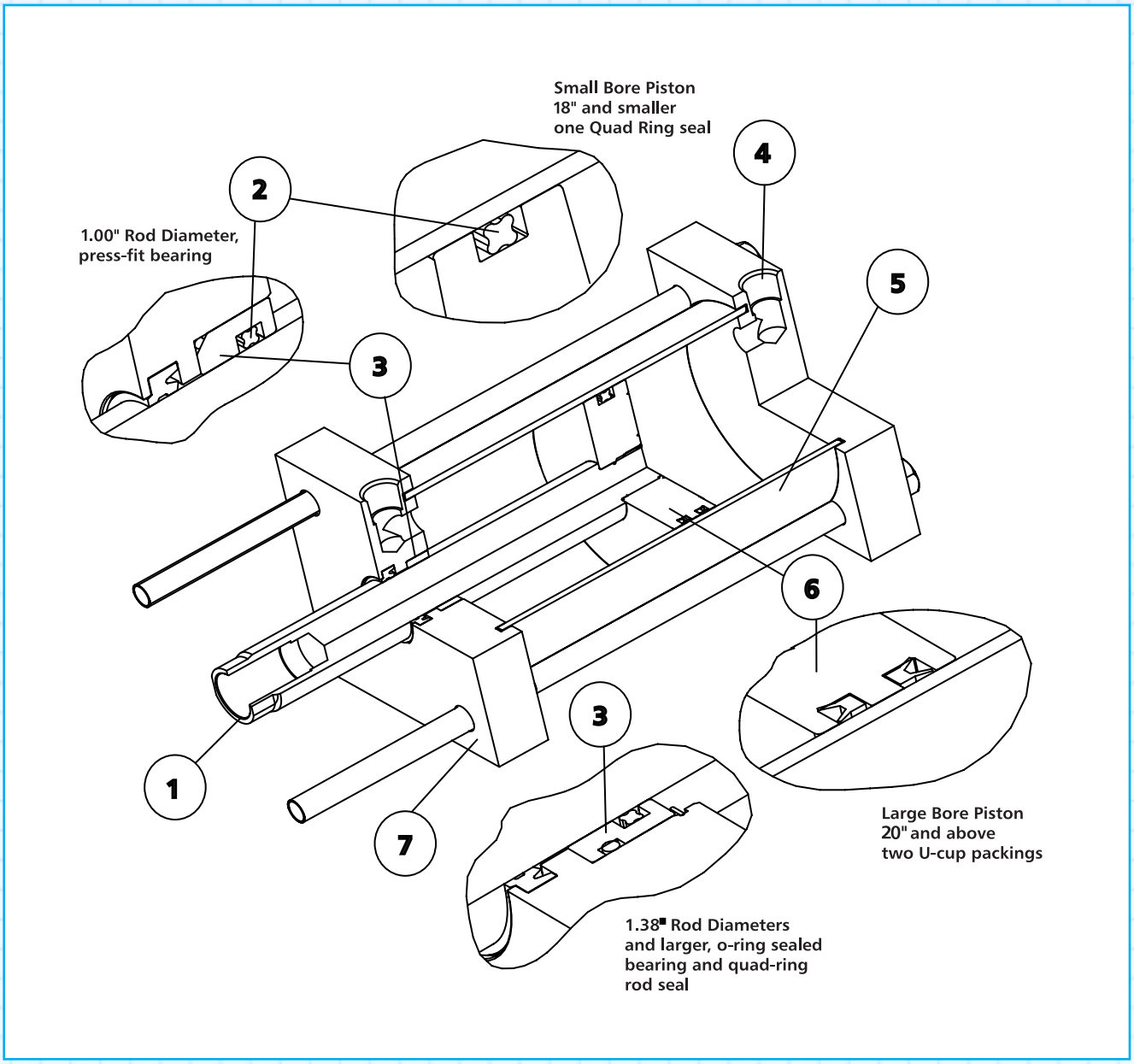


*In the prior design, cylinders with 8" & smaller bores had Quad Ring Seals and 10" & larger bores had (2) U-cup seals.

Available Options

- **Double Rod End**
- **Adjustable Stroke**
- **Stainless Steel Piston Rod**
- **Water-fitted**
- **Spring Extend or Retract**
- **Proximity Switches**
- **Viton Seals**
- **Epoxy or Special Paint**
- **Lifting Eyes** (attaches to tie rods)
- **Rod Boots** [1]
- **Chrome plated, micro honed steel tube (ASTM A519)**

[1] May require a longer stroke cylinder and a different yoke. Consult Factory.



*In the prior design, cylinders with 8" & smaller bores had Quad Ring Seals and 10" & larger bores had (2) U-cup seals.

CYLINDER SIZING (Double Acting/Pneumatic)
Figures 37, 37L, 44, 45, 100, 105, 134

CLEAR FLUID & GAS

Valve Size (Inches)	Cyl. Air Supply Press.(psi).	Line Pressure Differential (psid)												
		5	10	20	30	40	50	60	70	80	90	100	125	150
2	100	2	2	2	2	2	2	2	2	2	2	2	2	2
	80	2	2	2	2	2	2	2	2	2	2	2	2	2 1/2
	60	2	2	2	2	2	2	2	2	2	2	2	2 1/2	2 1/2
	40	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4
3	100	2	2	2	2	2	2	2	2	2	2 1/2	2 1/2	2 1/2	3 1/4
	80	2	2	2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4
	60	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4	3 1/4	3 1/4	4
	40	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	4	4	4
4	100	2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4	3 1/4	3 1/4
	80	2	2	2 1/2	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	4	4
	60	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	4	4	4	5
	40	3 1/4	3 1/4	3 1/4	3 1/4	4	4	4	4	4	4	5	5	5
6	100	2 1/2	2 1/2	2 1/2	3 1/4	3 1/4	3 1/4	3 1/4	4	4	4	4	5	5
	80	2 1/2	2 1/2	3 1/4	3 1/4	3 1/4	4	4	4	4	4	5	5	5
	60	3 1/4	3 1/4	3 1/4	4	4	4	4	5	5	5	5	6	6
	40	4	4	4	5	5	5	5	6	6	6	6	8*	8*
8	100	2 1/2	3 1/4	3 1/4	3 1/4	4	4	4	5	5	5	5	6	6
	80	3 1/4	3 1/4	4	4	4	5	5	5	5	5	6	6	8*
	60	3 1/4	4	4	5	5	5	5	6	6	6	6	8*	8
	40	4	5	5	5	6	6	8*	8*	8*	8*	8	10	10
10	100	3 1/4	3 1/4	4	4	5	5	5	5	6	6	6	8*	8*
	80	3 1/4	4	4	5	5	5	6	6	6	8*	8*	8	8
	60	4	4	5	5	6	6	8*	8*	8*	8*	8	10	10
	40	5	5	6	6	8*	8*	8	8	10	10	10	10	12
12	100	3 1/4	4	4	5	5	6	6	6	8*	8*	8*	8	10
	80	4	4	5	5	6	6	8*	8*	8*	8	8	10	10
	60	5	5	6	6	8*	8*	8	8	8	10	10	10	12
	40	5	6	8*	8*	8	10	10	10	10	12	12	12	14
14	100	4	4	5	5	6	6	8*	8*	8	8	8	10	10
	80	4	5	5	6	8*	8*	8*	8	8	10	10	10	12
	60	5	5	6	8*	8*	8	10	10	10	10	10	12	14
	40	6	6	8*	8	10	10	10	12	12	12	14	14	16
16	100	4	5	5	6	8*	8*	8	8	8	10	10	10	12
	80	5	5	6	8*	8*	8	8	10	10	10	10	12	12
	60	5	6	8*	8	8	10	10	10	12	12	12	14	14
	40	6	8*	8	10	10	12	12	12	14	14	14	16	18
18	100	5	5	6	8*	8*	8	8	10	10	10	10	12	12
	80	5	6	8*	8*	8	10	10	10	10	12	12	14	14
	60	6	6	8*	8	10	10	12	12	12	12	14	14	16
	40	8*	8	10	10	12	12	14	14	14	16	16	18	20
20	100	5	5	6	8*	8	10	10	10	10	12	12	12	14
	80	5	6	8*	8	10	10	10	12	12	12	14	14	16
	60	6	8*	8	10	10	12	12	12	14	14	14	16	18
	40	8*	8	10	12	12	14	14	16	16	18	18	20	22
24	100	6	6	8*	8	10	10	12	12	12	14	14	16	16
	80	6	8*	8	10	10	12	12	14	14	14	16	16	18
	60	8*	8	10	12	12	14	14	16	16	16	18	20	22
	40	8	10	12	14	14	16	18	18	20	20	22	24	—
30	100	6	8*	10	10	12	12	14	14	16	16	16	18	20
	80	8*	8	10	12	12	14	16	16	18	18	18	20	22
	60	8	10	12	14	14	16	18	18	20	20	22	24	—
	40	10	12	14	16	18	20	20	22	24	24	—	—	—
36	100	8*	8	10	12	14	14	16	18	18	20	20	22	24
	80	8	10	12	14	16	16	18	20	20	22	22	24	—
	60	10	12	14	16	18	18	20	22	24	24	—	—	—
	40	12	14	16	18	22	24	24	—	—	—	—	—	—

For cylinder sizing for other valve figure numbers, please consult the factory.
Note: For dry solids service consult factory for sizing.
Note: This sizing chart is not for sizing extreme service conditions. If in doubt, do not use this chart…consult the factory.

* The factory stocks 8" cylinders. However, for large, very price competitive situations that do not require quick shipments (i.e. projects), a slightly less expensive 7" can also be used. Consult Factory.

CYLINDER SIZING (Double Acting/Pneumatic)
Figures 37, 37L, 44, 45, 100, 105, 134

SLURRY SERVICE

Valve Size (Inches)	Cyl. Air Supply Press.(psi).	Line Pressure Differential (psid)												
		5	10	20	30	40	50	60	70	80	90	100	125	150
2	100	2	2	2	2	2	2	2	2	2	2	2	2½	2½
	80	2	2	2	2	2	2	2	2	2	2½	2½	2½	3¼
	60	2	2	2	2	2	2	2½	2½	2½	2½	2½	3¼	3¼
	40	2	2	2½	2½	2½	2½	3¼	3¼	3¼	3¼	3¼	4	4
3	100	2	2	2	2	2	2½	2½	2½	2½	2½	3¼	3¼	3¼
	80	2	2	2	2½	2½	2½	2½	3¼	3¼	3¼	3¼	4	4
	60	2	2½	2½	2½	3¼	3¼	3¼	3¼	3¼	4	4	4	5
	40	2½	2½	3¼	3¼	3¼	4	4	4	4	4	5	5	5
4	100	2	2	2½	2½	2½	3¼	3¼	3¼	3¼	3¼	4	4	5
	80	2	2½	2½	3¼	3¼	3¼	3¼	4	4	4	4	5	5
	60	2½	2½	3¼	3¼	3¼	4	4	4	4	5	5	5	6
	40	3¼	3¼	4	4	4	5	5	5	5	5	6	6	8*
6	100	2½	2½	3¼	3¼	4	4	4	5	5	5	5	6	6
	80	2½	3¼	3¼	4	4	5	5	5	5	6	6	6	8*
	60	3¼	3¼	4	4	5	5	5	6	6	6	8*	8*	8
	40	4	4	5	5	6	6	8*	8*	8*	8	8	10	10
8	100	3¼	3¼	4	4	5	5	5	6	6	6	8*	8*	8
	80	3¼	4	4	5	5	6	6	6	8*	8*	8*	8	10
	60	4	4	5	5	6	6	8*	8*	8	8	8	10	10
	40	5	5	6	8*	8*	8	8	10	10	10	10	12	12
10	100	3¼	4	5	5	6	6	8*	8*	8*	8	8	10	10
	80	4	4	5	6	6	8*	8*	8	8	10	10	10	12
	60	4	5	6	8*	8*	8	8	10	10	10	10	12	12
	40	5	6	8*	8	10	10	10	12	12	12	12	14	16
12	100	4	4	5	6	8*	8*	8	8	10	10	10	12	12
	80	4	5	6	8*	8*	8	10	10	10	10	12	12	14
	60	5	6	8*	8	8	10	10	10	12	12	12	14	16
	40	6	8*	8	10	10	12	12	14	14	14	16	16	18
14	100	4	5	6	8*	8	8	10	10	10	10	12	12	14
	80	5	5	8*	8*	8	10	10	10	12	12	12	14	16
	60	5	6	8*	10	10	10	12	12	14	14	14	16	18
	40	6	8*	10	10	12	14	14	14	16	16	18	20	22
16	100	5	5	8*	8	8	10	10	12	12	12	12	14	16
	80	5	6	8*	8	10	10	12	12	12	14	14	16	18
	60	6	8*	8	10	12	12	14	14	14	16	16	18	20
	40	8*	8	10	12	14	14	16	16	18	18	20	22	24
18	100	5	6	8*	8	10	10	12	12	12	14	14	16	18
	80	6	8*	8	10	10	12	12	14	14	16	16	18	20
	60	6	8*	10	12	12	14	14	16	16	18	18	20	22
	40	8	10	12	14	14	16	18	18	20	20	22	24	—
20	100	5	6	8	10	10	12	12	14	14	14	16	18	18
	80	6	8*	10	10	12	14	14	14	16	16	18	20	22
	60	8*	8	10	12	14	14	16	18	18	20	20	22	24
	40	8	10	12	14	16	18	20	20	22	24	24	—	—
24	100	6	8*	10	12	12	14	14	16	16	18	18	20	22
	80	8*	8	10	12	14	16	16	18	18	20	20	22	—
	60	8	10	12	14	16	18	18	20	22	22	24	—	—
	40	10	12	14	18	20	22	22	24	—	—	—	—	—
30	100	8*	10	12	14	16	16	18	20	20	22	22	—	—
	80	8	10	12	16	18	18	20	22	24	24	—	—	—
	60	10	12	14	18	20	22	24	24	—	—	—	—	—
	40	12	14	18	20	24	—	—	—	—	—	—	—	—
36	100	8	10	14	16	18	20	22	24	24	—	—	—	—
	80	10	12	16	18	20	22	24	—	—	—	—	—	—
	60	12	14	18	20	24	—	—	—	—	—	—	—	—
	40	14	16	22	24	—	—	—	—	—	—	—	—	—

For cylinder sizing for other valve figure numbers, please consult the factory.
Note: For dry solids service consult factory for sizing.
Note: This sizing chart is not for sizing extreme service conditions. If in doubt, do not use this chart...consult the factory.

* The factory stocks 8" cylinders. However, for large, very price competitive situations that do not require quick shipments (i.e. projects), a slightly less expensive 7" can also be used. Consult Factory.

CYLINDER SIZING (Double Acting/Pneumatic)
Figure F39

SLURRY/SOLIDS

Valve Size (inches)	Cyl. Air Supply Press.(psi)	Line Pressure Differential (psid)												
		5	10	20	30	40	50	60	70	80	90	100	125	150
2	100	2	2	2	2	2	2	2	2½	2½	2½	2½	2½	3¼
	80	2	2	2	2½	2½	2½	2½	2½	2½	2½	2½	3¼	3¼
	60	2½	2½	2½	2½	2½	2½	2½	3¼	3¼	3¼	3¼	3¼	4
	40	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	4	4	4	4	5
3	100	2½	2½	2½	2½	2½	2½	3¼	3¼	3¼	3¼	3¼	4	4
	80	2½	2½	2½	3¼	3¼	3¼	3¼	3¼	3¼	3¼	4	4	4
	60	3¼	3¼	3¼	3¼	3¼	3¼	4	4	4	4	4	5	5
	40	3¼	4	4	4	4	4	5	5	5	5	5	6	6
4	100	2½	2½	3¼	3¼	3¼	3¼	3¼	4	4	4	4	5	5
	80	3¼	3¼	3¼	3¼	4	4	4	4	4	4	5	5	5
	60	3¼	3¼	4	4	4	4	5	5	5	5	5	6	6
	40	4	4	5	5	5	5	5	6	6	6	6	8*	8*
6	100	3¼	3¼	4	4	4	5	5	5	5	5	6	6	8*
	80	4	4	4	5	5	5	5	6	6	6	6	8*	8*
	60	4	4	5	5	5	6	6	6	8*	8*	8*	8	8
	40	5	5	6	6	8*	8*	8*	8	8	8	8	10	10
8	100	4	4	5	5	5	6	6	6	6	8*	8*	8	8
	80	4	5	5	5	6	6	8*	8*	8*	8*	8	10	10
	60	5	5	6	6	8*	8*	8*	8	8	10	10	10	12
	40	6	6	8*	8*	8	10	10	10	10	10	12	12	14
10	100	4	5	5	6	6	8*	8*	8*	8	8	8	10	10
	80	5	5	6	6	8*	8*	8	8	10	10	10	10	12
	60	5	6	8*	8*	8	8	10	10	10	10	12	12	14
	40	8*	8*	8	10	10	10	12	12	12	12	14	14	16
12	100	5	5	6	8*	8*	8	8	10	10	10	10	12	12
	80	5	6	8*	8*	8	8	10	10	10	10	12	12	14
	60	6	8*	8*	8	10	10	10	12	12	12	14	14	16
	40	8*	8	10	10	12	12	14	14	14	16	16	18	20
14	100	5	6	8*	8*	8	10	10	10	10	12	12	14	14
	80	6	6	8*	8	10	10	10	12	12	12	14	14	16
	60	8*	8*	8	10	10	12	12	14	14	14	14	16	18
	40	8	10	10	12	12	14	14	16	16	18	18	20	22
16	100	6	6	8*	8	10	10	10	12	12	12	14	14	16
	80	6	8*	8	10	10	12	12	12	14	14	14	16	18
	60	8*	8	10	10	12	12	14	14	16	16	16	18	20
	40	10	10	12	14	14	16	16	18	18	20	20	22	—
18	100	6	8*	8	10	10	12	12	12	14	14	14	16	18
	80	8*	8	10	10	12	12	14	14	14	16	16	18	20
	60	8	10	10	12	14	14	16	16	18	18	18	20	22
	40	10	10	12	14	16	18	18	20	20	22	22	—	—
20	100	8*	8*	10	10	12	12	14	14	14	16	16	18	20
	80	8*	8	10	12	12	14	14	16	16	18	18	20	22
	60	8	10	12	12	14	16	16	18	18	20	20	22	—
	40	10	12	14	16	18	18	20	22	22	—	—	—	—
24	100	8*	8	10	12	14	14	16	16	18	18	18	22	22
	80	8	10	12	14	14	16	18	18	20	20	22	—	—
	60	10	12	14	16	16	18	20	20	22	—	—	—	—
	40	12	14	16	18	20	22	—	—	—	—	—	—	—
30	100	8	10	12	14	16	18	18	20	22	22	—	—	—
	80	10	12	14	16	18	20	20	22	—	—	—	—	—
	60	12	12	16	18	20	22	—	—	—	—	—	—	—
	40	14	16	20	22	—	—	—	—	—	—	—	—	—
36	100	10	12	14	16	18	20	22	—	—	—	—	—	—
	80	12	14	16	18	20	22	—	—	—	—	—	—	—
	60	12	14	18	22	—	—	—	—	—	—	—	—	—
	40	16	16	18	22	—	—	—	—	—	—	—	—	—

For cylinder sizing for other valve figure numbers, please consult the factory.
Note: For dry solids service consult factory for sizing.
Note: This sizing chart is not for sizing extreme service conditions. If in doubt, do not use this chart...consult the factory.

* The factory stocks 8" cylinders. However, for large, very price competitive situations that do not require quick shipments (i.e. projects), a slightly less expensive 7" can also be used. Consult Factory.

CYLINDER SIZING (Double Acting/Pneumatic)
Figure C67

CLEAR FLUID, GAS, OR SLURRY SERVICE

Valve Size (inches)	Cyl. Air Supply Press.(psi)	Line Pressure Differential (psid)												
		5	10	20	30	40	50	60	70	80	90	100	125	150
2	100	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3¼
	80	4	4	4	4	4	4	4	4	4	4	4	4	4
	60	4	4	4	4	4	4	4	4	4	4	4	4	4
	40	5	5	5	5	5	5	5	5	5	5	5	5	5
3	100	4	4	4	4	4	4	4	4	4	4	4	4	4
	80	4	4	4	4	4	4	4	4	4	4	4	4	4
	60	5	5	5	5	5	5	5	5	5	5	5	5	5
	40	6	6	6	6	6	6	6	6	6	6	6	6	6
4	100	4	4	4	4	4	4	4	4	4	4	4	4	4
	80	5	5	5	5	5	5	5	5	5	5	5	5	5
	60	5	5	5	5	5	5	5	5	5	5	5	5	5
	40	6	6	6	6	6	6	6	6	6	6	6	6	6
6	100	5	5	5	5	5	5	5	5	5	5	5	5	5
	80	5	5	5	5	5	5	5	5	5	5	5	5	5
	60	6	6	6	6	6	6	6	6	6	6	6	6	6
	40	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*
8	100	5	5	5	5	5	5	5	5	5	5	5	6	6
	80	6	6	6	6	6	6	6	6	6	6	6	6	8*
	60	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8
	40	8	8	8	8	8	8	8	8	8	8	8	10	10
10	100	6	6	6	6	6	6	6	6	6	6	6	8*	8*
	80	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8	8
	60	8*	8*	8*	8*	8*	8*	8*	8*	8*	8*	8	10	10
	40	10	10	10	10	10	10	10	10	10	10	10	10	12
12	100	6	6	6	6	6	6	6	6	8*	8*	8*	8	10
	80	8*	8*	8*	8*	8*	8*	8*	8*	8*	8	8	10	10
	60	8	8	8	8	8	8	8	8	8	10	10	10	12
	40	10	10	10	10	10	10	10	10	10	12	12	12	14
14	100	8*	8*	8*	8*	8*	8*	8*	8*	8	8	8	10	10
	80	8	8	8	8	8	8	8	8	8	10	10	10	12
	60	10	10	10	10	10	10	10	10	10	10	10	12	14
	40	12	12	12	12	12	12	12	12	12	12	14	14	16
16	100	8*	8*	8*	8*	8*	8*	8	8	8	10	10	10	12
	80	8	8	8	8	8	8	8	10	10	10	10	12	12
	60	10	10	10	10	10	10	10	10	12	12	12	14	14
	40	12	12	12	12	12	12	12	12	14	14	14	16	18
18	100	8	8	8	8	8	8	8	10	10	10	10	12	12
	80	10	10	10	10	10	10	10	10	10	12	12	14	14
	60	10	10	10	10	10	10	12	12	12	12	14	14	16
	40	12	12	12	12	12	12	14	14	14	16	16	18	20
20	100	8	8	8	8	8	10	10	10	10	12	12	12	14
	80	10	10	10	10	10	10	10	12	12	12	14	14	16
	60	10	10	10	10	10	12	12	12	14	14	14	16	18
	40	14	14	14	14	14	14	14	16	16	18	18	20	22
24	100	10	10	10	10	10	10	12	12	12	14	14	16	16
	80	10	10	10	10	10	12	12	14	14	14	16	16	18
	60	12	12	12	12	12	14	14	16	16	16	18	20	22
	40	14	14	14	14	14	16	18	18	20	20	22	24	—
30	100	12	12	12	12	12	12	14	14	16	16	16	18	20
	80	12	12	12	12	12	14	16	16	18	18	18	20	22
	60	14	14	14	14	14	14	16	18	18	20	20	22	24
	40	18	18	18	18	18	18	20	20	22	24	24	—	—
36	100	14	14	14	14	14	14	16	18	18	20	20	22	24
	80	14	14	14	14	16	16	18	20	20	22	22	24	—
	60	18	18	18	18	18	18	20	22	24	24	—	—	—
	40	20	20	20	20	20	22	24	24	—	—	—	—	—

For cylinder sizing for other valve figure numbers, please consult the factory.
Note: For dry solids service consult factory for sizing.
Note: This sizing chart is not for sizing extreme service conditions. If in doubt, do not use this chart…consult the factory.

* The factory stocks 8" cylinders. However, for large, very price competitive situations that do not require quick shipments (i.e. projects), a slightly less expensive 7" can also be used. Consult Factory.

CYLINDER SIZING (Double Acting/Pneumatic)
Figures C33, C133, F33, F133

Valve Size (Inches)	Cyl. Air Supply Press.(psi)	Line Pressure Differential (psid)
		0 - 150
2	100 80 60 40	4 4 5 6
3	100 80 60 40	4 5 5 6
4	100 80 60 40	5 5 6 8*
6	100 80 60 40	5 6 8* 8
8	100 80 60 40	6 8* 8 10
10	100 80 60 40	8* 8 10 10
12	100 80 60 40	8 10 10 12
14	100 80 60 40	8 10 12 14
16	100 80 60 40	10 10 12 14
18	100 80 60 40	10 12 14 16
20	100 80 60 40	12 14 16 18
24	100 80 60 40	14 16 18 22
30	100 80 60 40	18 20 24 —
36	100 80 60 40	20 24 — —

For cylinder sizing for other valve figure numbers, please consult the factory.
Note: For dry solids service consult factory for sizing.
Note: This sizing chart is not for sizing extreme service conditions. If in doubt, do not use this chart…consult the factory.

* The factory stocks 8" cylinders. However, for large, very price competitive situations that do not require quick shipments (i.e. projects), a slightly less expensive 7" can also be used. Consult Factory.

CYLINDER SIZING (Double Acting/Pneumatic)
XS150

CLEAR FLUID, GAS, OR SLURRY SERVICE

Valve Size inches (DN)	Cyl. Air Supply psi (bar)	Differential Pressure - PSI (bar)														
		0-40 (0-2.8)	50 (3.5)	60 (4.1)	70 (4.8)	80 (5.5)	90 (6.2)	100 (6.9)	125 (8.6)	150 (10)	175 (12.1)	200 (13.8)	225 (15.5)	250 (17.2)	275 (19)	285 (19.7)
2 (50)	100 (6.9)	4**	4**	4**	4**	4**	4**	4**	4**	4**	4**	4**	4**	4**	4**	4**
	80 (5.5)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	60 (4.1)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	40 (2.8)	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF
3 (80)	100 (6.9)	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**
	80 (5.5)	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**
	60 (4.1)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	40 (2.8)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
4 (100)	100 (6.9)	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5**	5	5	5
	80 (5.5)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	60 (4.1)	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6
	40 (2.8)	6	6	6	6	6	6	6	6	6	6	6	CF	CF	CF	CF
6 (150)	100 (6.9)	5	5	5	5	5	5	5	5	5	5	6	6	6	6	8*
	80 (5.5)	5	5	5	5	5	5	5	5	5	6	6	8*	8*	8*	8*
	60 (4.1)	6	6	6	6	6	6	6	6	6	8*	8*	8*	8	8	8
	40 (2.8)	8*	8*	8*	8*	8*	8*	8*	8*	8*	8	8	CF	CF	CF	CF
8 (200)	100 (6.9)	6**	6**	6**	6**	6**	6**	6**	6	6	8*	8*	8*	8	8	8
	80 (5.5)	6	6	6	6	6	6	6	6	8*	8*	8	8	10	10	10
	60 (4.1)	8*	8*	8*	8*	8*	8*	8*	8*	8	8	10	10	10	10	10
	40 (2.8)	8	8	8	8	8	8	8	10	10	10	CF	CF	CF	CF	CF
10 (250)	100 (6.9)	8**	8**	8**	8**	8**	8**	8**	8**	8**	8	8	10	10	10	10
	80 (5.5)	8**	8**	8**	8**	8**	8**	8**	8	8	10	10	10	10	14	14**
	60 (4.1)	8**	8**	8**	8**	8**	8**	8	10	10	10	14**	14**	14**	14	14
	40 (2.8)	10	10	10	10	10	10	10	10	14**	14**	14	14	14	CF	CF
12 (300)	100 (6.9)	8**	8**	8**	8**	8**	8**	8**	8	10	10	10	10	14**	14**	14**
	80 (5.5)	8**	8**	8**	8**	8**	8	8	10	10	10	14**	14**	14**	14	14
	60 (4.1)	8	8	8	8	8	10	10	10	14**	14**	14	14	14	16	16
	40 (2.8)	10	10	10	10	10	14**	14**	14**	14	14	16	16	CF	CF	CF
14 (350)	100 (6.9)	8**	8**	8**	8**	8	8	8	10	10	12	12	12	14	14	14
	80 (5.5)	8	8	8	8	8	10	10	10	12	12	14	14	14	16	16
	60 (4.1)	10	10	10	10	10	10	10	12	14	14	14	16	16	CF	CF
	40 (2.8)	12	12	12	12	12	12	14	14	16	16	CF	CF	CF	CF	CF
16 (400)	100 (6.9)	8**	8**	8	8	8	10	10	10	12	12	14	14	14	16	16
	1680 (5.5)	8	8	8	10	10	10	10	12	12	14	14	16	16	16	CF
	60 (4.1)	10	10	10	10	12	12	12	14	14	16	16	CF	CF	CF	CF
	40 (2.8)	12	12	12	12	14	14	14	16	CF	CF	CF	CF	CF	CF	CF
18 (450)	100 (6.9)	8	8	8	10	10	10	10	12	12	14	14	16	16	CF	CF
	80 (5.5)	10	10	10	10	10	12	12	14	14	16	16	CF	CF	CF	CF
	60 (4.1)	10	10	12	12	12	12	14	14	16	CF	CF	CF	CF	CF	CF
	40 (2.8)	12	12	14	14	14	16	16	CF	CF	CF	CF	CF	CF	CF	CF
20 (500)	100 (6.9)	10**	10	10	10	10	12	12	12	14	16	16	18	18	18	18
	80 (5.5)	10	10	10	12	12	12	14	14	16	16	18	18	CF	CF	CF
	60 (4.1)	10	12	12	12	14	14	14	16	18	18	CF	CF	CF	CF	CF
	40 (2.8)	14	14	14	16	16	18	18	CF	CF	CF	CF	CF	CF	CF	CF
24 (600)	100 (6.9)	10	10	12	12	12	14	14	16	16	18	18	CF	CF	CF	CF
	80 (5.5)	10	12	12	14	14	14	16	16	18	CF	CF	CF	CF	CF	CF
	60 (4.1)	12	14	14	16	16	16	18	CF	CF	CF	CF	CF	CF	CF	CF
	40 (2.8)	14	16	18	18	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF

CF = Consult Factory

* Cylinder is Oversized. A 7" cylinder is required; however, the factory inventories 8" cylinders.

** Standard factory valve-cylinder combination (Note: Cylinder is slightly oversized).

Large Pipelines have their own unique challenges.

To someone outside the industry, the concept of a 96" diameter valve might be overwhelming. For you, it's another day at the office. Simple. You get out your valve supplier's catalog and flip to the 96" diameter valve page, right?

Not quite. We know.

When it comes to custom fabrication, nothing can beat the Fabri-Valve®. by ITT Engineered Valves Group (EVG).

There's nothing cookie cutter about custom. You know that. There's also nothing cookie cutter about valve suppliers. We know that. And we stake our reputation on that fact.

There are no off-the-shelf solutions to large valve requirements. Anything greater than 36" is a specification within itself. Different applications, different service demands. All

dictating special design considerations – even if they are being made for the same market. Sheer size adds another unique set of complexities to the design and manufacturing of large valves. And few valve suppliers have the skills to produce a consistently reliable product.

It's what we do.

For some firms, large valve requirements don't come along every day. That's why it's so important to find a large valve supplier you can rely on. That's where ITT EVG comes in, with the knowledge, experience and facilities to be your source for reliable Fabri-Valve large valves.

Thinking big is no small matter. It's the same when it comes to experience.

And experience is the key to success in manufacturing large valves. ITT EVG has an industry leading valve manufacturer for over 50 years. We've learned that there's more to building large valves than cutting and welding plate. We're masters at designing large valves that provide precise performance for specific applications. Liquid, slurry or gas — whatever the environment. Our skilled craftsmen (including welders certified to over 60 ASME weld standards) routinely render designs into reliable, high-performance finished valves made of virtually any weldable alloy.

There's nothing run-of-the-mill about large valves.

Extraordinary consideration has to be made for forces, spans, deflections, loading seating surfaces, site constraints and media characteristics. That's why the valves that are used can't be ordinary either.

The Fabri-Valve brand has been synonymous with large valves for decades with bore diameters that range from 1-1/2" to 144". We've learned over the years that each valve has to be specifically designed and built to perform to the customer's specific service conditions.

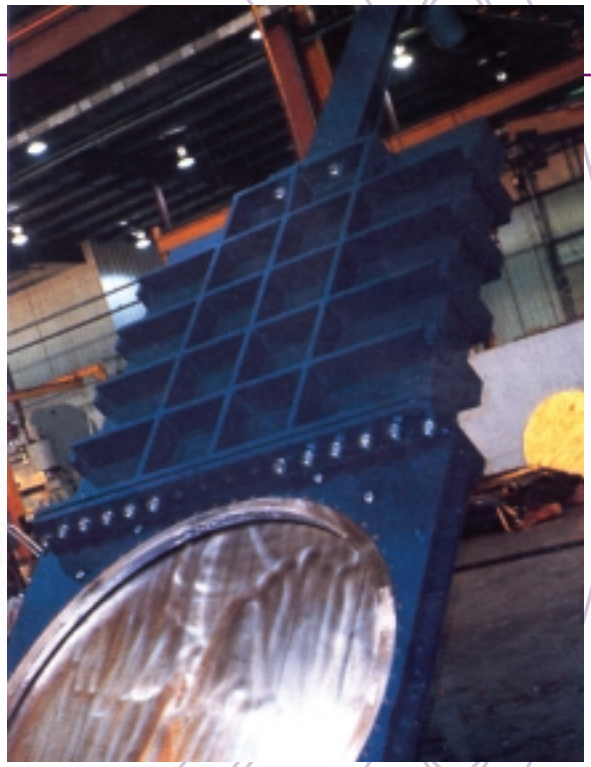
From design through delivery, we focus on providing you with an extraordinary value in a valve that has the right design, the right price and the right delivery time. Because we're not limited by valve type, size or materials, we can provide a wide range of design

flexibility in our products. If you need a 48" valve rated for 15 psi, you'll get exactly what you need. And, importantly, you'll pay only for what you need.

We can design to fit your space envelope, using whatever valve type best fits your performance requirement – knife gate, wedge gate, slide gate, butterfly or check valve. Seating materials can be metal, elastomer, or plastic. Valves that can operate at pressures up to ANSI Class 300 and withstand temperatures up to 2000° F. And we provide you the most cost-effective operator mode for the application, whether it's hydraulic, electric or pneumatic.

100% tested. 100% of the time.

We test every valve we make to be sure it meets our quality standards and your performance criteria. Too much is riding on your investment to risk leaving anything to chance. Cycle testing, shell testing and seat testing are standard. And we will design additional specific testing procedures to meet special system design criteria. Testing that you can observe. In person or on video tape.



Our world class manufacturing facility, with ISO 9001 quality certification, is equipped to provide all Certificates of Compliance or other testing documentation you may need.

And at the end of the process, ITT EVG will deliver a Fabri-Valve that will have 100% of the quality and reliability your job demands.

Let's get started.

To assist you in developing your large-valve design, we've included a Large Valve Specification Worksheet that will lead you through each of the considerations. We are dedicated to providing you with the optimum valve design for your application, at a price we're confident you'll find equally appealing.

Engineered Valves Group

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Fabri-Valve

ITT Industries
Engineered for life

OPTIONS INDEX

Options Availability

Knife gate and slide gate valves are available with many options. The following chart defines availability by figure number.

OPTION	37L[1]	C37	C33/ C133	F39	C42	F44	C45	C67	C/F100	C132	C134
"D" Ring Seat	X	X		X		X	X		X	X	X
Hard Faced Replaceable Seats		X		X	STD		X				X
Hard Faced Integral SS Seats		X		X		X					X
Poly Replaceable Seats		X		X			X				X
PTFE Replaceable Seats		X		X			X				X
Rubber Replaceable Seats		X		X			X				X
UHMW Replaceable Seats		X		X			X				X
Dual Seats		X	STD	X			X				X
Bevel Gear	X	X	X	X	X	X	X	X	X		X
Chainwheels	X	X	X	X	X	X	X	X	X		X
Cylinder Actuator [2]	X	X	X	X	X	X	X	X	X		X
Self-Supporting Yokes	X	X	X	X	STD	X	X	X	X		X
Electric Actuators	X	X	X	X	X	X	X	X	X		X
E-Z Spin Handwheel		X	X	X		X	X	X	X		X
Handwheels	X	X	X	X	X	X	X	X	X		X
Lever Operator		X					X		X	X	X
Rachet	X	X	X	X	X	X	X	X	X	STD	X
Backing Ring	X	X		X	STD	X					X
Centerline Buttons	X	X				X				X	X
Chest Buttons		X[3]		X[3]		X[4]	X[3]				X[5]
Chest Liners			STD					X			
Cast Ni-Hard Deflection Cones [6]		X					X				X
Fabricated Deflection Cones	X	X	X	X	X	X	X	X	X		X
Epoxy Coating	X	X					X				X
Extended Stems	X	X	X	X		X	X	X	X	X	X
Extra Wedges	X	X			X	X					X
Flush Ports		X	X[7]	X	STD	X	X	X[4,8]		X	X
Gate Support Strips	X	X	X	X		X					X
Hard Faced Gate Edge		X		X		X	X				X
Hard Gate Material		X	X	X	STD	X	X	X	X	X	X
Nickel-TFE Coated Gate		X	X	X		X	X	X	X	X	X
Live Loaded Packing	X	X	X	X	STD	X	X	X	X	X	X
Back Seat											X
Locking Devices	X	X	STD	X	X	X	X	X	X	X	X
Rod Boots	X	X	X	X	X	X	X	X	X		X
Thru Drilled Flanges	X	X		X	X	STD	X	X	X		X
V-Port	X	X		X		X		X			X

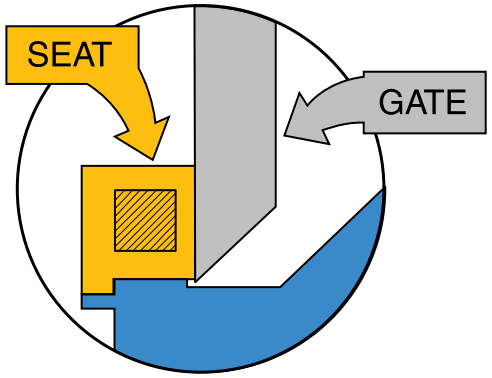
[1] The 37L is only available in sizes 30" and 36"
[2] Single and double acting
[3] Not available 2"- 6"
[4] 6" and larger only
[5] Required on valves without wiper packing
[6] Only available in sizes 3" through 16"
[7] Standard on the C133
[8] Chest only

Replaceable Seats

The rugged Fabri-Valve replaceable seat is available in many different materials, and can be ordered in the following Fabri-Valve figure numbers:

C33, C37, C45D, C105, C133, C134, & F39 (Special)

The Fabri-Valve Replaceable Seat is designed for tough applications. The thick section provides a wide seating area with the majority of the seating surface far removed from the abuse of the flow stream. While providing rugged service, the toughest services will eventually require replacement. This seat design simply slips into the specially machined valve body and is held in place by the adjacent pipe flange. End of service applications will require mating flange installation.



Polyurethane (RP) replaceable seats are designated "RP". Polyurethane is excellent in abrasive applications. A heavy steel internal reinforcing ring insures that the Polyurethane holds its shape and remains in place. Gaskets are not used with this seat. Maximum temperature is 180°F (82°C).

PTFE (RT) replaceable seats are designated "RT". The "RT" seat is machined from a solid piece of pure PTFE stock. No other knife gate valve offers a mechanically retained PTFE seat with a broad seating surface. Gaskets are not used with this seat. Maximum temperature is 400°F (204°C).

Ultra high molecular weight polyethylene (RW) replaceable seats are designated "RW", and are machined from a solid piece of UHMW stock. This rugged material is used for a wide variety of tough abrasive services. Gaskets are not used with this seat. Maximum temperature is 140°F (60°C).

Rubber replaceable seats are also available in a wide variety of rubbers including Neoprene®, Viton®, Aflas®, Hypalon®, EPDM, Hycar®, and HNBR. A heavy steel internal reinforcing ring insures that the rubber holds its shape and remains in place. Gaskets **are not** used with this seat.

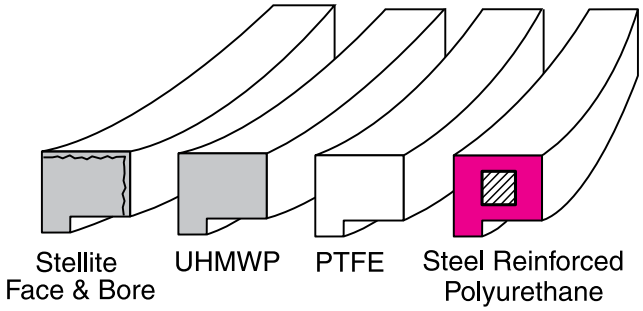
TEMPERATURE RATINGS FOR REPLACEABLE RUBBER SEATS	
Material	Maximum Temperature
EPDM (Ethylene Propylene Diene Monomer)	280°F (138°C)
Viton® (Fluorelastomer)	350°F (193°C)
Neoprene® (Chloroprene Rubber)	180°F (82°C)
Hycar® (Nitrile Rubber)	200°F (93°C)
Hypalon® (Chlorosulfonated Polyethylene)	275°F (135°C)
Aflas® (Fluorelastomer)	400°F (204°C)
HNBR (Hydrogenated Nitrile Butadiene Rubber)	280°F (138°C)

NOTE: ITT Engineered Valves Group reserves the right to substitute materials to achieve equivalent performance.

Hard faced (RH) replaceable seats are designated "RH", and are machined from a solid piece of steel (carbon steel for the C45D, and the same material as the body for all other valves). The seat face is overlaid with a cobalt based alloy (0.050" minimum finished thickness) with a hardness of approximately Rockwell C41. The seat I.D. can also be overlaid with a cobalt based alloy as an option. RH seats are used on difficult services, particularly when high temperatures of up to 1600°F (871°C) are involved. RH seats are supplied (with valves and as parts) with a 1/16" (1.6mm) thick gasket between the seat and the body, and also require a gasket between the body and the mating flange. Maximum temperature 750°F (399°C) with the standard gasket and 1600°F (871°C) with reinforced graphite. NOTE: Maximum temperature limit of the RH seat is dictated by the base material, see the technical section of the catalog for details.

Replaceable seats can also be supplied in F39 slide gate valves on a special order basis. Consult factory for shut-off criteria.

CAUTION: Replaceable seats must be retained by a mating pipe flange. System pressure must be relieved before servicing seats.



Mating Flanges

Replaceable seats can be used with either flat or raised face mating flanges. When used in conjunction with rubber or urethane lined pipe non-metallic replaceable seats must be equipped with a 1/4" (6.4 mm) thick metal spacer. Consult factory for details. Metallic replaceable seats can be used with any type mating flange or pipe.

Dual Seats

Fabri-Valve can also supply knife gate valves with dual seats for bi-directional flow. Dual seats are available in all seat configurations. Recognize that a dual seated valve does not have the wedging action of a single seated valve, and therefore may not shutoff as well. Also, care must be taken to consider possible clogging of the space between the seats. This is a problem normally handled by flushing with air or liquid depending upon the system. For this purpose, flush ports are supplied as standard on double replaceable seated Fabri-Valve knife gate valves

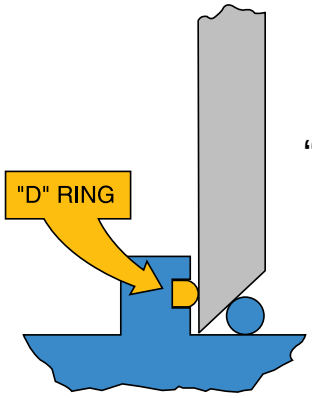
Dual seated valves are rated for full pressure in both directions.

NOTE: Sizes 2" to 4" with dual "D" ring seals utilize a slip in second seat.

CAUTION: Dual seats create a trough between the seats that may collect solids. Consult the factory for use in services containing solids.

Elastomer “D” Ring Seats for Conventional Knife Gate Valves

Resilient seats are used when tight shutoff is required. The basic resilient seat design consists of an elastomer “D” shaped ring recessed into the face of the valve seat. The “D” shape provides the maximum surface area for adhesive used to retain the ring, as well as maximum sealing surface. The temperature limit of the adhesive, 250°F (121°C), limits the temperature of this seat configuration regardless of the seat material. “D” rings furnished in valves 2"-4" in size are mounted in a removable stainless steel seat ring when dual seats are specified. In applications where adhesives are not suitable or where high temperatures are required, consider the replaceable elastomer seat or the C67.



“D” Ring Seat

FDA approved materials available on request.

TEMPERATURE RATINGS FOR “D” RING SEATS

Material	Maximum Temperature
EPDM (Ethylene Propylene Diene Monomer)	250°F (121°C)
Viton® (Fluorelastomer)	250°F (121°C)
Neoprene® (Chloroprene Rubber)	180°F (82°C)
Hycar® (Nitrile Rubber)	200°F (93°C)
Hypalon® (Chlorosulfonated Polyethylene)	250°F (121°C)
Aflas® (Fluorelastomer)	250°F (121°C)
HNBR (Hydrogenated Nitrile Butadiene Rubber)	250°F (121°C)

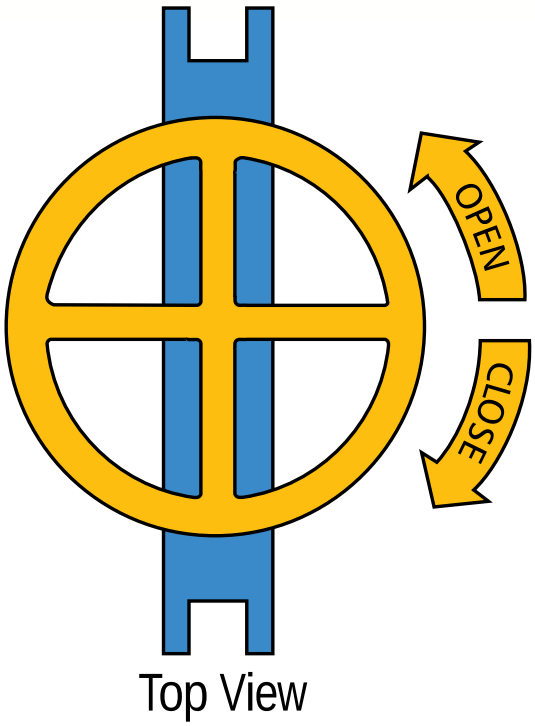
Aflas is a registered trademark of Asahi Glass Co., Ltd.
Neoprene and Hypalon are registered trademarks of DuPont
Hycar is a registered trademark of BF Goodrich

NOTE: ITT Engineered Process Solutions reserves the right to substitute comparable materials to achieve equivalent performance.

Handwheels

Handwheels are standard on most knife gate valves through 24" (DN 600). Rimpull is defined as the amount of force that must be applied to the handwheel rim to open or close the valve. Rimpull may exceed reasonable limits depending on the pressure drop across the valve, packing drag, and service conditions. Packing drag and ^{3}P across the valve are major contributors to the amount of force required. In most applications the ^{3}P drops as the valve is opened thus the rimpull is reduced as the valve is opened.

When rimpull exceeds acceptable levels bevel gear operators are used to reduce the rimpull. Keep in mind that when a gear operator is used to reduce the rimpull the number of turns required will increase proportional to the effort decrease. For example: given the same size handwheel, a 3:1 gear will decrease the rimpull by a factor of 2.7 and triple the number of turns required.



Top View

Bearing Handwheel (E-Z Spin)

For extreme duty, a low torque bearing handwheel assembly is available. The assembly features the heavy duty Fabri-Valve yoke assembly fitted with a roller bearing stemnut.

The following charts will assist in selecting a manual gear operator.

Figures C37, F37, C45, 37L, C134, F134, C105, C100, F100 – Rimpull

Media is clear fluid or gas

Valve Size (Inches)	Handwheel Dia. (Inches)	Differential Pressure		
		50 psid	100 psid	150 psid
2	8	4 lb, 10 turns	5 lb, 10 turns	7 lb, 10 turns
3	8	7 lb, 14 turns	9 lb, 14 turns	13 lb, 14 turns
4	8	10 lb, 18 turns	14 lb, 18 turns	20 lb, 18 turns
6	10	14 lb, 26.5 turns	22 lb, 26.5 turns	32 lb, 26.5 turns
8	12	23 lb, 34.5 turns	37 lb, 34.5 turns	54 lb, 34.5 turns
10	16	25 lb, 43 turns	41 lb, 43 turns	61 lb, 43 turns
12	16	34 lb, 52 turns	57 lb, 52 turns	85 lb, 52 turns 3:1 W/12"Hw, 45 lb, 156 turns
14	20	42 lb, 60 turns	72 lb, 60 turns	108 lb, 60 turns 3:1 W/12"Hw, 71 lb, 180 turns
16	20	53 lb, 68 turns	93 lb, 68 turns 4:1 W/12"Hw, 46 lb, 272 turns	139 lb, 68 turns 4:1 W/12"Hw, 68 lb, 272 turns
18	20	76 lb, 76 turns	135 lb, 76 turns 4:1 W/12"Hw, 66 lb, 304 turns	4:1 W/12"Hw, 99 lb, 304 turns
20	20	93 lb, 80 turns 4:1 W/12"Hw, 46 lb, 320 turns	4:1 W/12"Hw, 81 lb, 320 turns	4:1 W/12"Hw, 121 lb, 320 turns
24	20	130 lb, 96 turns 4:1 W/12"Hw, 64 lb, 384 turns	4:1 W/12"Hw, 115 lb, 384 turns	4:1 W/18"Hw, 114 lb, 384 turns
30	30	130 lb, 120 turns 4:1 W/12"Hw, 96 lb, 480 turns	4:1 W/18"Hw, 118 lb, 480 turns	4:1 W/24"Hw, 150 lb, 480 turns
36		4:1 W/12"Hw, 136 lb, 576 turns	4:1 W/24"Hw, 144 lb, 576 turns	16:1 W/18"Hw, 99 lb, 2304 turns
42		4:1 W/18"Hw, 140 lb, 672 turns	16:1 W/18"Hw, 82 lb, 2688 turns	16:1 W/18"Hw, 147 lb, 2688 turns
48		16:1 W/12"Hw, 85 lb, 3072 turns	16:1 W/18"Hw, 130 lb, 3072 turns	24:1 W/24"Hw, 104 lb, 4608 turns

Figure F39 – Rimpull CLEAR FLUID, GAS OR SLURRY SERVICE

Valve Size (Inches)	Handwheel Dia. (Inches)	Differential Pressure		
		50 psid	100 psid	150 psid
2	8	6 lb rimpull, 9 turns	7 lb rimpull, 9 turns	11 lb rimpull, 9 turns
3	8	10 lb rimpull, 14 turns	12 lb rimpull, 14 turns	18 lb rimpull, 14 turns
4	10	14 lb rimpull, 18 turns	19 lb rimpull, 18 turns	28 lb rimpull, 18 turns
6	10	20 lb rimpull, 26.5 turns	27 lb rimpull, 26.5 turns	41 lb rimpull, 26.5 turns
8	12	31 lb rimpull, 34.5 turns	44 lb rimpull, 34.5 turns	66 lb rimpull, 34.5 turns
10	16	32 lb rimpull, 43 turns	48 lb rimpull, 43 turns	72 lb rimpull, 43 turns
12	16	42 lb rimpull, 51 turns 3:1 W/12"Hw, 22 lb rimpull, 153 turns	66 lb rimpull, 51 turns 3:1 W/12"Hw, 35 lb rimpull, 153 turns	98 lb rimpull, 51 turns 3:1 W/12"Hw, 52 lb rimpull, 153 turns
14	20	52 lb rimpull, 56.5 turns 3:1 W/12"Hw, 34 lb rimpull, 169.5 turns	82 lb rimpull, 56.5 turns 3:1 W/12"Hw, 54 lb rimpull, 169.5 turns	123 lb rimpull, 56.5 turns 3:1 W/12"Hw, 80 lb rimpull, 169.5 turns
16	20	65 lb rimpull, 64 turns 4:1 W/12"Hw, 32 lb rimpull, 256 turns	104 lb rimpull, 64 turns 4:1 W/12"Hw, 51 lb rimpull, 256 turns	156 lb rimpull, 64 turns 4:1 W/12"Hw, 77 lb rimpull, 256 turns
18	20	91 lb rimpull, 74 turns 4:1 W/12"Hw, 45 lb rimpull, 296 turns	150 lb rimpull, 74 turns 4:1 W/12"Hw, 74 lb rimpull, 296 turns	223 lb rimpull, 74 turns 4:1 W/12"Hw, 110 lb rimpull, 296 turns
20	20	109 lb rimpull, 82 turns 4:1 W/12"Hw, 54 lb rimpull, 328 turns	182 lb rimpull, 82 turns 4:1 W/12"Hw, 89 lb rimpull, 328 turns	270 lb rimpull, 82 turns 4:1 W/12"Hw, 133 lb rimpull, 328 turns
24	20	150 lb rimpull, 98 turns 4:1 W/12"Hw, 74 lb rimpull, 392 turns	254 lb rimpull, 98 turns 4:1 W/12"Hw, 125 lb rimpull, 392 turns	4:1 W/18"Hw, 124 lb rimpull, 392 turns
30	30	147 lb rimpull, 123 turns 4:1 W/12"Hw, 108 lb rimpull, 492 turns	256 lb rimpull, 123 turns 4:1 W/18"Hw, 126 lb rimpull, 492 turns	16:1 W/18"Hw, 67 lb rimpull, 1968 turns

Figure C67 – Rimpull CLEAR FLUID, GAS OR SLURRY SERVICE

Valve Size (Inches)	Handwheel Dia. (Inches)	Differential Pressure		
		50 psid	100 psid	150 psid
2	8	18 lb, 9.25 turns	18 lb, 9.25 turns	18 lb, 9.25 turns
3	10	18 lb, 13.25 turns	18 lb, 13.25 turns	18 lb, 13.25 turns
4	10	22 lb, 17.25 turns	22 lb, 17.25 turns	22 lb, 17.25 turns
6	12	32 lb, 25.25 turns	32 lb, 25.25 turns	33 lb, 25.25 turns
8	12	40 lb, 33.25 turns	40 lb, 33.25 turns	54 lb, 33.25 turns
10	12	50 lb, 41.5 turns	54 lb, 41.5 turns	80 lb, 41.5 turns
12	20	36 lb, 49.5 turns	46 lb, 49.5 turns	68 lb, 49.5 turns 3:1 W/12"Hw, 45 lb, 148.5 turns
14	20	50 lb, 54.75 turns	72 lb, 54.75 turns	108 lb, 54.75 turns 3:1 W/12"Hw, 71 lb, 164.25 turns
16	20	57 lb, 62.75 turns	93 lb, 62.75 turns 4:1 W/12"Hw, 46 lb, 251 turns	139 lb, 62.75 turns 4:1 W/12"Hw, 68 lb, 251 turns
18	30	51 lb, 70.75 turns 4:1 W/12"Hw, 66 lb, 283 turns	90 lb, 70.75 turns 4:1 W/12"Hw, 99 lb, 283 turns	134 lb, 70.75 turns
20	30	62 lb, 78.75 turns 4:1 W/12"Hw, 46 lb, 315 turns	110 lb, 78.75 turns 4:1 W/12"Hw, 81 lb, 315 turns	4:1 W/12"Hw, 121 lb, 315 turns
24	30	87 lb, 94.75 turns 4:1 W/12"Hw, 64 lb, 379 turns	4:1 W/12"Hw, 115 lb, 379 turns	4:1 W/18"Hw, 114 lb, 379 turns
30		4:1 W/12"Hw, 96 lb, 480 turns	4:1 W/18"Hw, 118 lb, 480 turns	4:1 W/24"Hw, 150 lb, 480 turns
36		4:1 W/12"Hw, 136 lb, 570 turns	4:1 W/24"Hw, 144 lb, 570 turns	16:1 W/18"Hw, 99 lb, 2280 turns

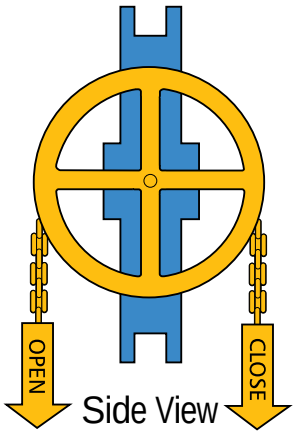
Figure C33, F33, C133, F133 – Rimpull CLEAR FLUID, GAS OR SLURRY SERVICE

Valve Size (Inches)	Handwheel Dia. (Inches)	Differential Pressure (0-150 pisd)
2	10	19 lb, 11 turns
3	18	13 lb, 15 turns
4	18	16 lb, 19 turns
6	18	21 lb, 28 turns
8	20	32 lb, 36 turns
10	20	42 lb, 45 turns
12	20	54 lb, 54 turns
14		3:1 W/12"Hw, 50 lb, 180 turns
16		4:1 W/12"Hw, 48 lb, 272 turns
18		4:1 W/12"Hw, 70 lb, 304 turns
20		4:1 W/18"Hw, 58 lb, 338 turns
24		4:1 W/24"Hw, 64 lb, 408 turns
30		16:1 W/12"Hw, 67 lb, 2064 turns
36		16:1 W/18"Hw, 66 lb, 2486.5 turns
42		16:1 W/24"Hw, 69 lb, 2909 turns
48		24:1 W/24"Hw, 56 lb, 4997 turns

Differential Pressure has little effect on the C33/C133 rimpull

Chainwheel

When valves are installed overhead, chainwheels can be supplied for easy operation. Chainwheels can be used in conjunction with bevel gear actuators for easy operation of large diameter valves. Galvanized (std) or brass chain is available.



The following charts show chainwheel size by valve size and the chainpull based on ³P's of 50,100 and 150 psi. This chart is based on non-slurry service.

Figures C37, F37, C45, C37L, C134, F134, C105, C100, F100 – Chainpull

Valve Size (inches)	Chainwheel Dia. (inches)	Differential Pressure		
		50 psid	100 psid	150 psid
2	9	3.1	4.0	6.0
3	9	5.3	7.5	11.2
4	9	8.1	11.8	17.7
6	12	11.3	17.6	26.3
8	12	22.1	36.0	53.9
10	18.5	20.9	35.0	52.3
12	18.5	28.6	48.8	73.0
14	21.5	38.6	66.9	99.9
16	21.5	49.1	86.1	128.4
18	21.5	70.5	124.9	51.8*
20	21.5	85.8	42.5*	63.3*
24	21.5	120.4	60.3*	89.8*

MEDIA IS CLEAR FLUID OR GAS * Using 4:1 Bevel Gear

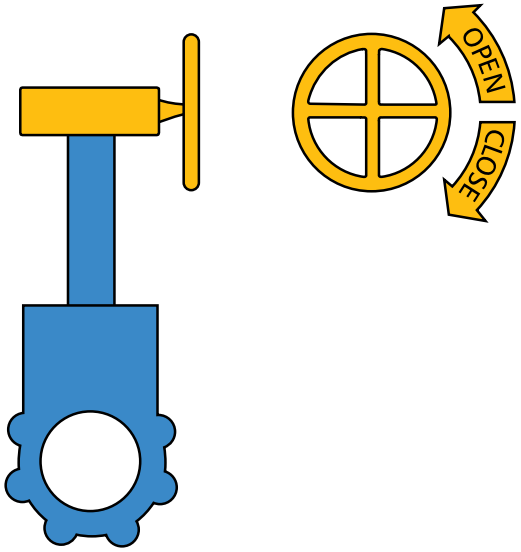
Figure C67 – Chainpull

Valve Size (inches)	Chainwheel Dia. (inches)	Differential Pressure		
		50 psid	100 psid	150 psid
2	12	11.4	11.4	11.4
3	12	14.8	14.8	14.8
4	12	18.2	18.2	18.2
6	18.5	20.2	20.2	21.1
8	18.5	25.9	25.9	35.0
10	18.5	31.9	35.0	52.3
12	21.5	32.8	42.0	62.8
14	21.5	45.9	66.9	99.9
16	21.5	53.0	86.1	128.4
18	30	50.5	89.5	133.5
20	30	61.5	109.6	45.4*
24	30	86.3	43.2*	64.4*

CLEAR FLUID, GAS OR SLURRY SERVICE * Using 4:1 Bevel Gear

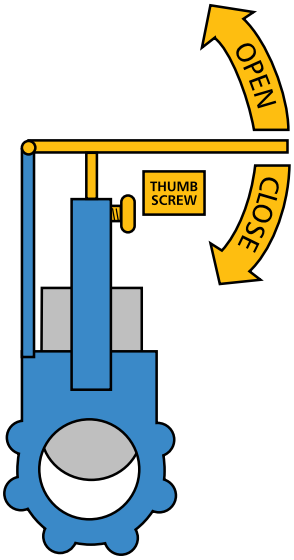
Bevel Gear

Totally enclosed weatherproof right angle drive bevel gear actuators can be furnished on all Fabri-Valve handwheel actuated valves. Bevel gear actuators offer as much as an 18:1 mechanical advantage, which makes larger diameter valves much easier to actuate. Options for bevel gears include stem protectors and 2" square AWWA drive nuts.



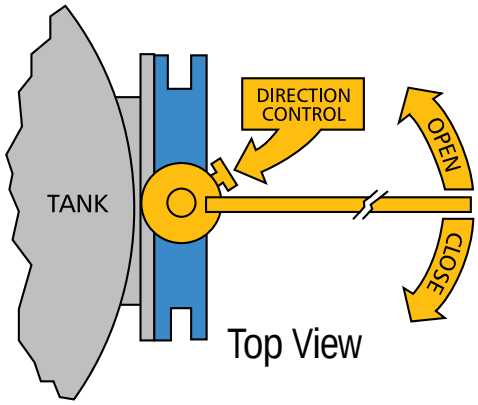
Lever

2"–14" valves can be supplied with lever operators. Levers are not available on the C67. Fabri-valve recommends the use of PTFE packing or other packing material that imparts lubricity, to minimize the force required to actuate the lever. Levers should not be used in high line pressure or reverse flow applications. Consult factory for recommendations.



Ratchet

All valves can be furnished with ratchet operators for installations where space limitations would not permit use of handwheels or bevel gears. The C132 Transmitter Isolation Valve, which is usually installed next to a tank wall, has a ratchet operator as standard.



Cylinder Actuators

All Fabri-Valve knife gate, slide gate, and wedge gate valves can be supplied with pneumatically or hydraulically actuated cylinders

Refer to FA actuator's technical bulletin for sizing of pneumatc cylinders. For hydraulic actuators, contact factory.

Accessories

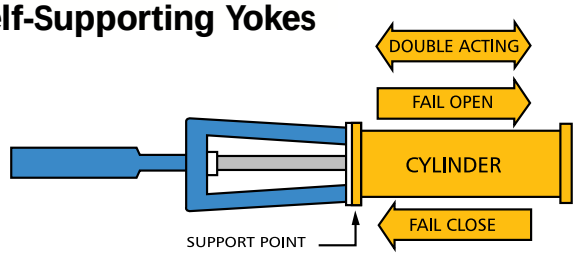
A full complement of accessories is available including:

- Limit Switches (mechanical and proximity type)
- Positioners
- Transducers
- Filter Regulators/Lubricators
- Enclosures
- Speed Controls
- Fail Safe Systems
- Gate Position Indicators
- Directional Control Valves
- Self Supporting Yokes

Cylinder options available include:

- Spring return (consult factory for sizing)
- High temperature seals
- Low temperature seals
- Manual overrides
- Special body materials
- Adjustable strokes (travel stops)
- High pressure operation
- Water operation/AWWA specification
- Stainless steel Rods
- Cushions
- Rod boots
- Lifting eye

Self-Supporting Yokes



Properly support the cylinder actuator at the yoke operator mount plate, when the valve is mounted in a position other than stem-vertical; the support can be a pedestal from the bottom or support from the top. Spring return cylinders may require additional support at the top of cylinder due to length and weight. Cylinders in harsh vibration service may require additional support or damping at the top of the cylinder.

As an option, self-supporting yokes are available for installations where the actuator's cylinder rod is not vertical and traditional support methods are unavailable. Self-supporting yokes are specifically designed to bear the full weight of the actuator.

Alternate Stem Threads

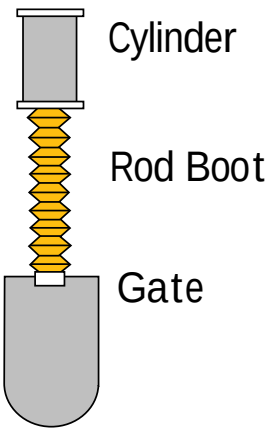
Stems with different thread lead/pitch are available as an option. (Lead is the distance a screw thread advances axially in one complete turn. On a single thread, the lead and pitch are identical.) ITT EPS, Fabri-Valve can manufacture valves that require fewer turns to operate by increasing the thread lead/pitch (may permit a smaller electric actuator to be utilized). Contact the factory for details.

Electric Actuators

Fabri-Valve products are available with a wide range of electric actuators. Options include: operating current, enclosures, limit switches, controls, starters, switches, etc… Consult the factory for details.

Rod Boots*

A rod boot is a convoluted rubber/cloth tube that is clamped over the cylinder rod. Its purpose is to protect the rod and rod seal from dirt and debris that could cause premature failure of cylinder sealing components.



*May require a longer stroke cylinder and a different yoke. Contact Factory.

Chest Buttons

Chest buttons are set screws installed in the chest of knife gate valves. The set screw, which has a reinforced PTFE tip (brass, and Nitronic® 60 are optional), is threaded into a coupling and adjusted to contact the back side of the gate. This helps keep the gate against the seat. Chest buttons help optimize shutoff in low △P applications, or where it is necessary to install the valve in a vertical pipe with the gate underneath the seat. Chest buttons are standard on all single resilient seated knife gate valves in size 30" (DN 750) and larger (except Fig. 37L & Fig. C67).

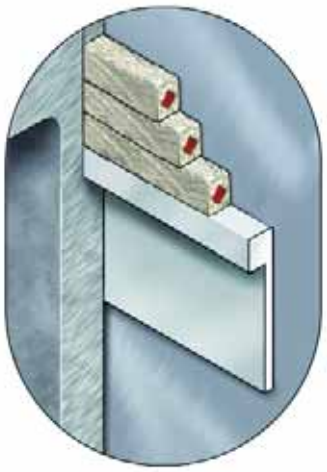
NITRONIC® is a registered trademark of ARMCO Inc

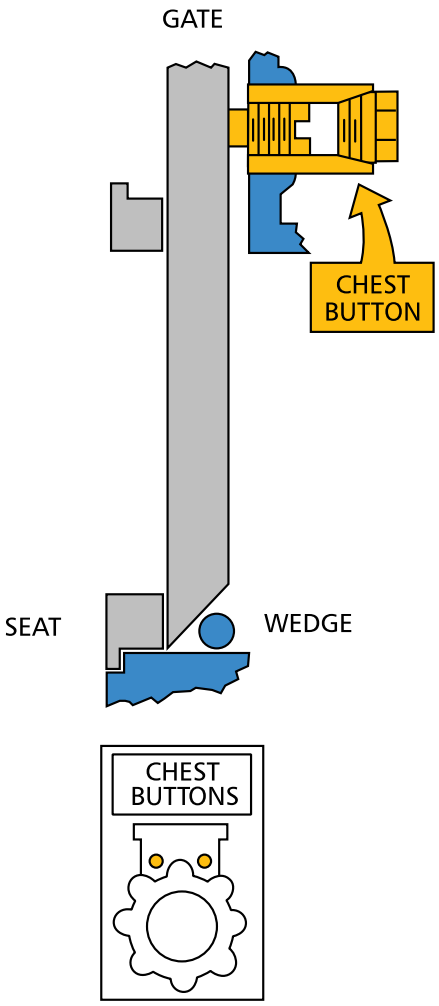
Centerline Buttons

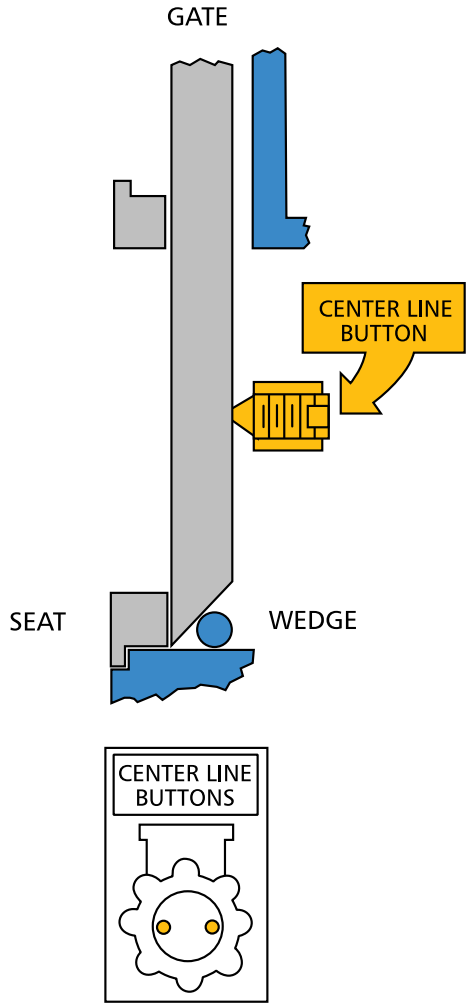
Centerline buttons are set screws installed at the horizontal centerline of the valve (3 O'clock and 9 O'clock positions). The set screw, which has a hardened tip, is threaded into a coupling, and is adjusted to contact the gate. Centerline buttons help optimize shutoff in low ³P applications. Centerline buttons are standard on all single seated knife gate valves in size 30" (DN 750) and larger (except Fig. C67).

Chest Liners

Chest liners are available on the C67 to fill the clearances between the gate and the chest of the valve body. Chest liners prevent solids entrapment in the chest area, and also provide increased gate support for high flow/high pressure applications. Standard materials are Ultra high molecular weight polyethylene (UHMW) and reinforced PTFE.



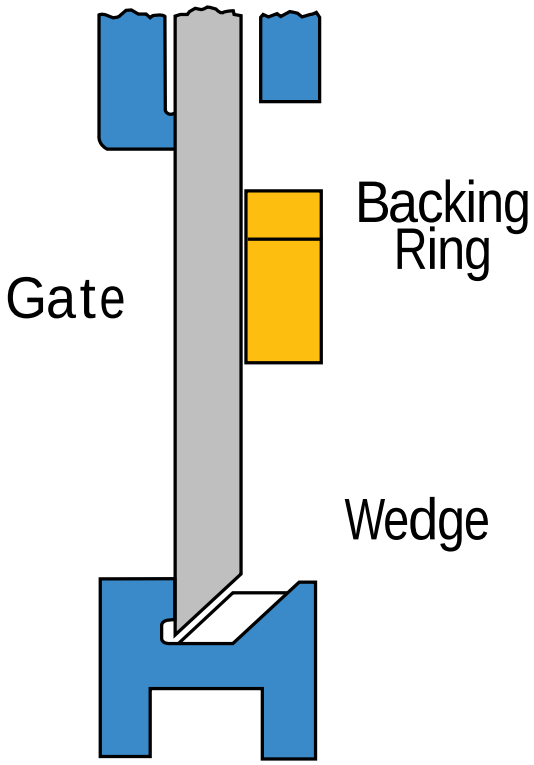




Backing Rings

Backing rings are square stock shaped to fit in the upper port opposite the seat. Backing rings support the gate in reverse flow conditions, and prevent gate damage caused by reverse flow. Care should be taken to specify the correct backing ring configuration for slurry service.

The standard backing ring option (segmented) consists of two segments. The standard backing ring option supports the gate and also allows any media in the chest to drain.



Reverse Flow Pressure Rating

(with optional backing rings)

Figure C37 & Figure C134 valves

- Closed:
  150 CWP (reverse flow)

- Cycling Service:

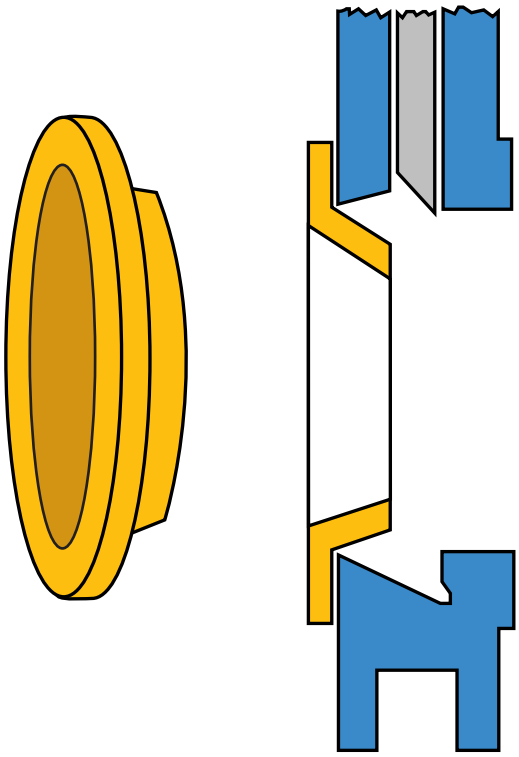
2" & 3":	150 psid maximum (reverse flow)
4":	125 psid maximum (reverse flow)
6" & 8":	100 psid maximum (reverse flow)
10" - 16":	150 psid maximum (reverse flow)
18" - 24":	100 psid* maximum (reverse flow)

* Alternate backing ring designs are available that allow the valve to be cycled against higher reverse flow pressures. Consult Factory.

Abrasion Protection, Metallic Components

The components of a knife gate valve that take the most abuse in abrasive services are the gate and the seat. Several options are available to help combat abrasion related problems:

1. **Deflection Cones:** A deflection cone is a metal cone clamped between the upstream valve flange and the adjacent pipe flange. The deflection cone, while only slightly reducing the valve port I.D., redirects flow away from the seat and protects the valves sealing surface. Deflection cones are easily replaced, at far less cost than replacing an entire valve.



The standard material for deflection cones in size 3" through 16" (DN 75-DN 400) is cast Ni-Hard. Ni-Hard is a rugged high nickel cast iron with a hardness of Rockwell C-58. Larger size deflection cones are fabricated from stainless steel and can be hardened by overlaying with Stellite 6® or tungsten carbide. When ordered with a valve, deflection cones are supplied with a gasket for use between the deflection cone and the valve body. A gasket is also required between the deflection cone and the mating flange.

2. **Hardening the seats and gates:** several different methods are available to harden the gate and seat surfaces. They all provide a much harder surface than the standard stainless steel, which is approximately Rockwell B80.

A. 17-4 PH stainless steel is a heat treated stainless steel used for gates. Gates made of 17-4 PH are hardened throughout to a hardness of approximately Rockwell C44. This material has good abrasion and impact resistance and good to excellent corrosion resistance. Maximum temperature rating is 900°F (482°C).

B. 400 series is a hard alloy steel, Rockwell hardness is C51. Abrasion resistance and corrosion resistance are excellent, and it has very good impact resistance. Maximum temperature rating is 900°F (482°C).

C. Stellite 6® is an alloy of cobalt-chromium and tungsten, which is overlaid on the surface by welding. The surface must then be machined to finish. Stellite® thickness is 0.050 inches minimum. Stellite® is usually used on the seat and/or leading edge of the gate. It is particularly effective when the gate must cut through fibers or chips by providing a durable sharp cutting edge. Stellite® provides a hardness of approximately Rockwell C41. Abrasion resistance is good, and it has excellent impact and corrosion resistance. Maximum temperature rating is 1600°F (871°C).

D. Tungsten carbide is a thin coating of approximately .010 inches in thickness that provides a hardness of approximately Rockwell C70. Abrasion resistance is excellent, corrosion resistance is good, and impact resistance is only fair. Maximum temperature rating is 1200°F (649°C).

E. Nitriding is a process of case (surface) hardening. The material to be hardened is heated in an atmosphere of ammonia or in contact with a nitrogenous material to produce hardness by absorption of the nitrogen. Nitriding can be used for gates and for seats by treating the entire body, reaching a hardness of approximately Rockwell C65. However, corrosion resistance is substantially reduced and the hardened layer is very thin. Impact resistance is poor.

F. Hard chrome is a thin layer (.003") of industrial hard chrome coating. Rockwell hardness is C52. Abrasion, corrosion, and impact resistance are good. Maximum temperature rating is 1000°F (538°C).

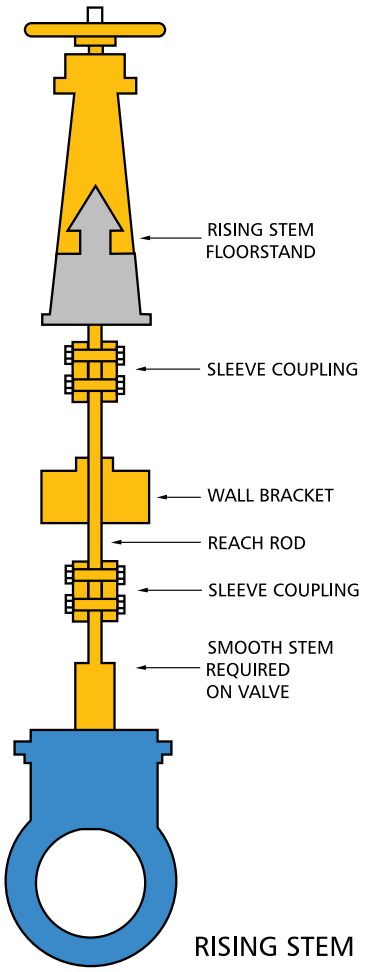
NOTE: ITT Engineered Process Solutions reserves the right to substitute comparable materials to achieve equivalent performance.

Extended Stems

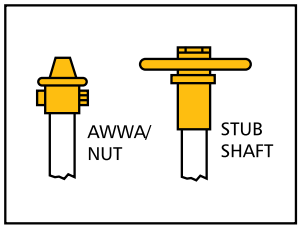
Two types of stem extensions are offered: rising stem and non-rising stem.

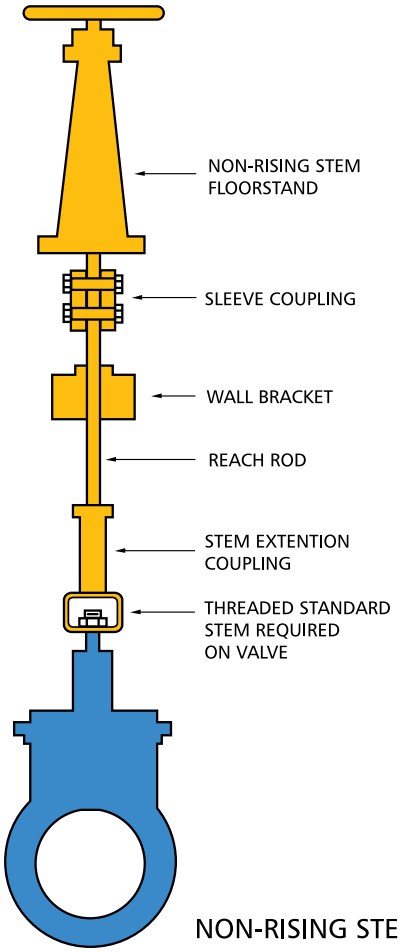
The rising stem arrangement places the handwheel (gear, etc.) and the stem nut in the extended position. The stem threads are also located in the extended position, which provides a measure of valve position at the handwheel. When the handwheel is turned clockwise the stem nut engages the stem causing the valve to close. This arrangement requires substantial support of the handwheel and anchoring of the valve/pipe since the stem is alternately subjected to tension and compression to open and close the valve. Support of the handwheel is normally accomplished with a floorstand. Stem guides (wall brackets) are typically required to prevent the extended stem and reach rod from buckling during the closing cycle of the valve. Fabri-Valve recommends wall brackets be placed at distances not to exceed fifty times the reach rod diameter. For example: A 1-1/2" O.D. reach rod would require support at a maximum interval of 75" (1.50 O.D. x 50).

When extended position indication is not required, a **non-rising stem** arrangement is typically used. The non-rising arrangement consists of a **stem extension coupling** in place of the standard handwheel, a reach rod, and a handwheel. Turning the handwheel atop the reach rod then rotates the stem extension coupling. The reach rod does not rise and fall with the opening and closing of the valve. Rather, the standard valve stem rises and falls inside the hollow tube of the stem extension coupling. The only support needed for this arrangement is at the handwheel. The non-rising arrangement does not see the tension and compression of the rising stem arrangement. Therefore, it is not as sensitive to valve and handwheel support as the rising stem arrangement. However, the valve must be properly supported to avoid having the topworks serve as a pipe support. A floor stand is not essential to the operation of a non-rising arrangement. A stub shaft, which accepts the stock handwheel, may be attached directly to the reach rod. In this configuration, a wall bracket or guide should be located as close to the stub shaft as possible.



RISING STEM





NON-RISING STEM

Flush Ports

Knife gate valve services often involve suspended materials that collect in the bottom of the valve or in the chest area. Collection of material in these areas is generally unimportant unless it causes a problem in the operation of the valve. Flush ports are used to keep the valve clear of material by injecting fluid to flush the debris clear.

The flushing medium can be a liquid, a gas, or even steam. Constant, heavy volume flushing is not normally required. Flushing during stroking of the valve is often sufficient. Where the material being handled tends to setup or de-water, a slight trickle is often sufficient.

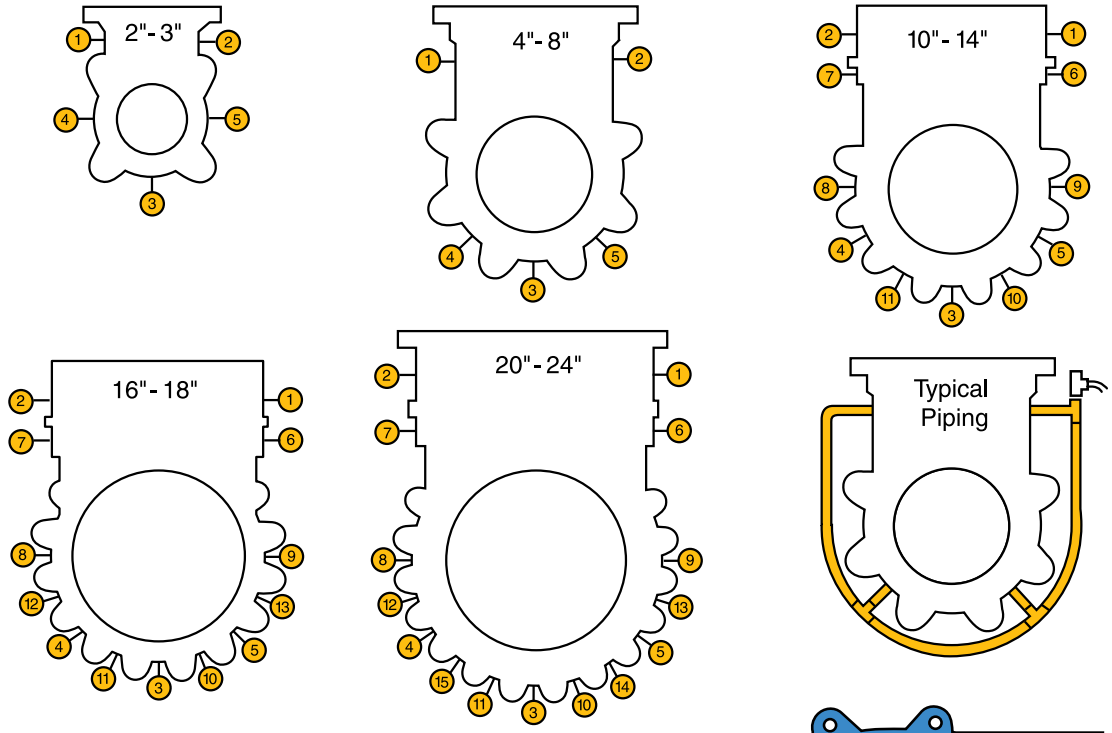
Flush ports can be positioned on the sides of the chest and in the bottom of the valve. The following detail shows the availability of flush ports by size for the C37. Specify quantity and location of flush ports for each size valve being ordered. If no position is specified flush ports will be furnished in numeric order by position number. Flush ports are shipped hydro tested, with a pipe plug in place. The plug will be carbon steel for ductile iron bodied valves, and T316 SS for all other valves.

Flush ports are also available fully piped.

NOTE: C45D flush positions are available same as the C37 except:

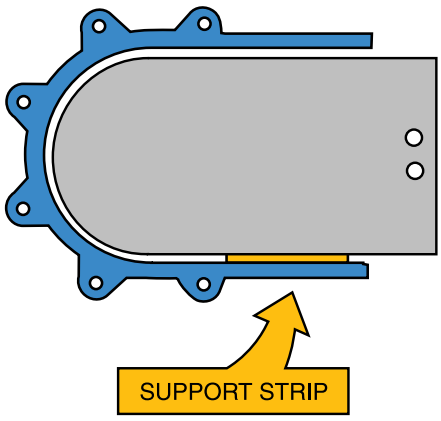
Positions 4 & 5 not available on the 2" and 3" C45D
Positions 3, 8, & 9 not available on the 10"–14" C45D

Figures C37 and C45 (View of valve side that is opposite the seat)



Gate Support Strip for Large Knife Gate Valves

Valves larger than 24" (DN 600) mounted in positions other than with the stem vertical may require special gate support and packing material to insure optimum packing performance. When valves are mounted so the gate is in the horizontal position, on edge, a hard-faced gate support strip mounted in the chest and a hard packing such as acrylic/PTFE or Kevlar® are recommended. For other mounting positions consult factory. When ordering, specify orientation.



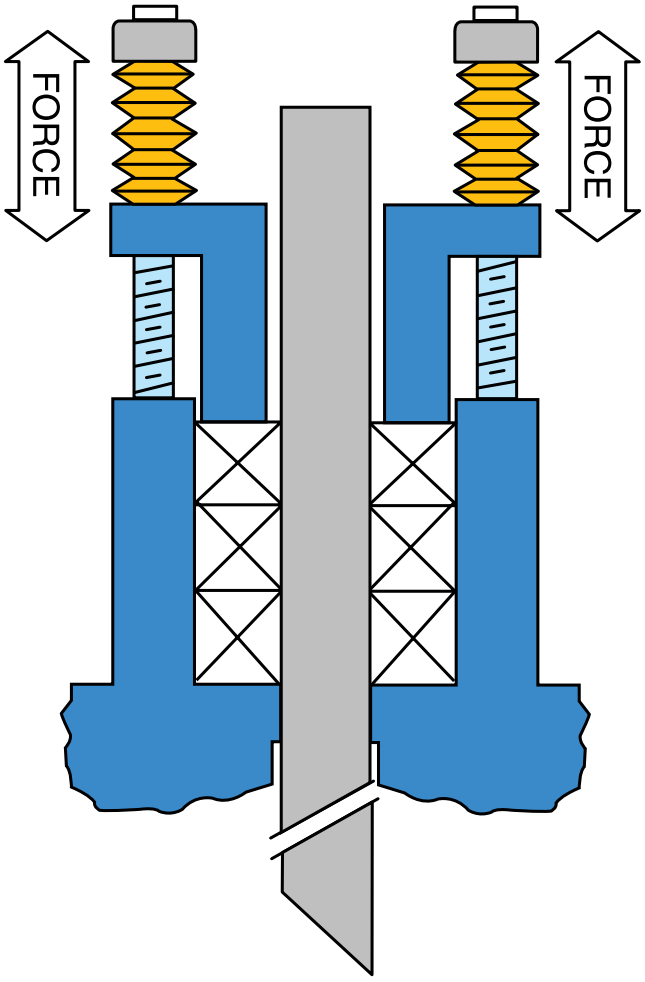
Live Loading the Packing

The term “live loading” refers to the use of springs to maintain pressure on the packing during thermal cycling or high cycle conditions. A stack of spring washers is placed on extended packing follower bolts to exert pressure on the packing follower. The springs are stacked opposing each other so each spring exerts its designed load over a given travel distance. Stacked in the opposing position, load remains constant while total travel is determined by the number of springs stacked. Adjustment is made by tightening the bolting until the springs go solid, thus the springs also serves as a built in tightening gauge.

Backseat

As an option, Figures C134, F134 & F71 can be equipped with a backseat. The bottom of the stuffing box and the top of the gate clamp are precisely machined to create a tight metal to metal seal when the valve is fully opened. The backseat option allows the valve to be repacked under line pressure. WARNING: Never repack a valve under pressure if the pipeline contains dangerous, lethal, harmful, active, or scorching media.

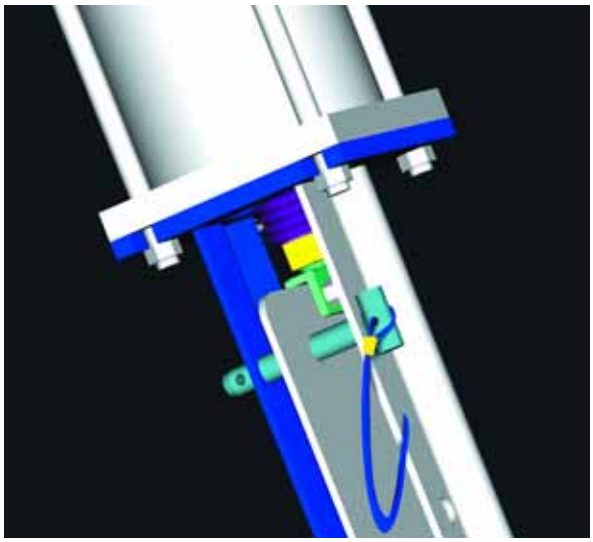
Spring Washers



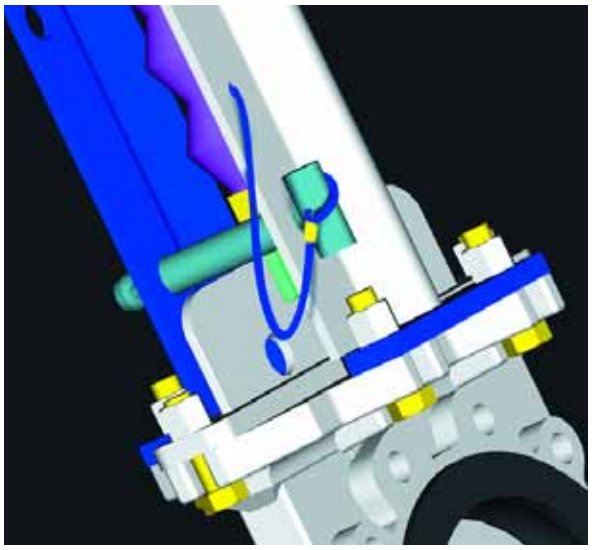
Locking Devices

All Fabri-Valve knife gate valves and slide gate valves are available with a locking device. The locking device can either be a SS cable attached to the yoke, that is then passed through the handwheel spokes and padlocked (manually actuated valves only), or a heavy duty pin that passes through the yoke legs, engages the gate, and is padlocked. Locking pins are designed to withstand the full thrust load capacity of the actuator.

Pin Locking Device



Locked Open



Locked Closed

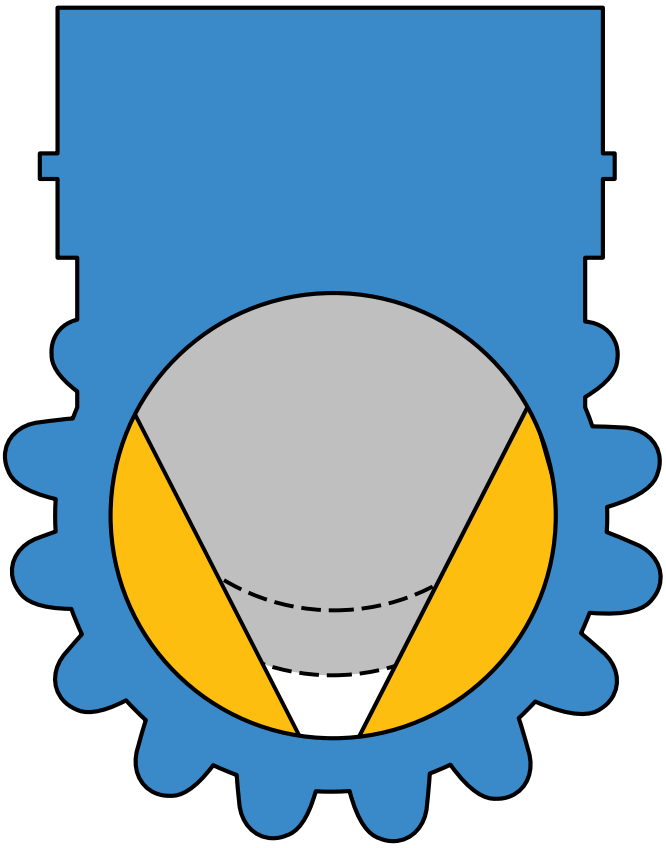
Cable Locking Device

Unlocked

Locked

V-Port

This modified port opening allows a knife gate valve to be used for metering service, on suspended solids, with very little chance of the valve plugging. On standard knife gate valves, the port configuration in the nearly closed position, takes the shape of a crescent, which has a tendency to plug with suspended solids at the points of the crescent. The shape of the Fabri-Valve V-Seat eliminates this problem. The change in flow characteristics is not as significant as the reduction in plugging during the first stages of opening.



V- Port

TECHNICAL INDEX

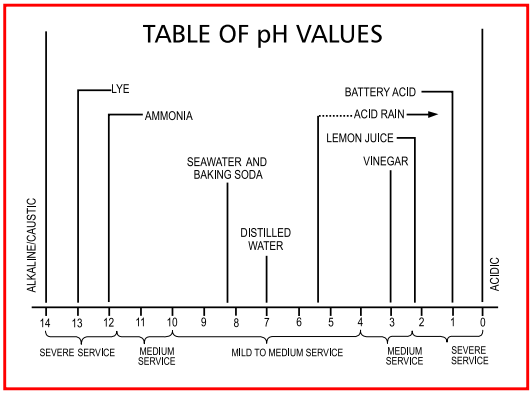
Knife Gate Valve Packing

The purpose of packing in knife gate valves is to provide a seal around the gate where it passes through the valve body. The ability to maintain a seal is dependent upon many factors including:

1. **Smoothness of the gate and consistency of gate section.** A rough gate surface carries away particles of the packing with each valve cycle. This reduction in packing volume results in a loss of packing pressure against the gate, reducing sealing ability. Variation in gate section can also produce a reduction in packing pressure, resulting in reduced sealing ability.

2. **Range of chemical compatibility.** Packing consists of two components. A fiber which is woven to give the packing form, and a filler/lubricant which fills the voids between the fibers and provides lubricity. Cored packing also contain a third component, an elastomer core, which provides resiliency and improved sealing ability. All components must be resistant to the materials being handled.

   Chemical compatibility of packing is expressed in terms of the pH of the material being handled. pH is a measure of the presence of hydrogen ions. It is a scientific shorthand for measuring the level of acidity or alkalinity of a substance. The scale is logarithmic, making Lye at 13, ten times as alkaline as Ammonia at 12.



Strong Oxidizing Agents

Oxidizers act as a catalyst and cause the carbon to combine with oxygen and cause a breakdown of the fiber.

(a) Fluorine, which is used as an oxidizer or rocket fuel.
(b) Sulfur Trioxide, which is used to make sulfuric acid.
(c) Aqua Regia (nitric and hydrochloric acid), which is used to dissolve metals.
(d) Sodium Peroxide, which is used in dyeing, paper bleaching, and oxygen generation.
(e) Oleum (fuming sulfuric), which is used in detergent and explosive manufacturing.
(f) Perchloric Acid, which is used in the manufacturing of explosives, esters, and medicine.
(g) Sulfuric Acid greater than 75% and over 250°F (121°C), which is the most widely used industrial chemical.
(h) Chloric Acid greater than 10% and over 200°F (93°C), which ignites organic materials on contact.
(i) Ferric Chloride greater than 50% and over 200°F (93°C), which is used for sewage treatment, photography, medicine, etching, feed additives, and oxidizing disinfectant.
(j) Nitric Acid greater than 20% and over 250°F (121°C), which is used in fertilizer, etching, medicine, dyeing, drugs, and explosives.
(k) Chlorous Acid greater than 10% and over 200°F.
(l) Iodine greater than 5% and over 200°F (93°C), which is used in soaps, medicine, some lubricants, dyes and salt.
(m) Hydrofluoric Acid greater than 40% and over 200°F (93°C), which is used for pickling, purification, dissolving ores, cleaning castings, etching, cleaning stone and brick, and fermentation.
(n) Sodium Hypochlorite greater than 5%, which is used in textiles, water purification, and bleaching pulp and paper.
(o) Sodium Chlorate greater than 5%, which is used as a bleach for paper pulp, medicine, and leather tanning textiles.
(p) Calcium Chlorate greater than 5%, which is used in pyrotechnics and photography.

3. **Abrasion caused by service conditions.** Since materials that are soft and move around under load make good sealing materials, most good sealing materials are not very abrasion resistant, particularly when materials are pulled through the packing as in the case of a knife gate valve. Synthetic packing such as Kevlar® fiber does an excellent job in abrasive service, and can be used in combination with a softer packing to take advantage of the best features of each. For example, PTFE packing, when used in conjunction with a bottom row of Kevlar® provides a good seal with the PTFE while allowing the Kevlar® to clean the gate and retain the PTFE.

   Kevlar® is a registered trademark of DuPont

4. **Thermal Cycling.** The function of the packing is dependent upon maintaining a load against a sealing surface. Thermal cycling causes expansion and contraction of the valve body, gate, and packing components, which alters the sealing load. Live loading the packing hardware will improve packing performance in thermal cycling applications.

5. **Cycling Requirements.** Packing wear occurs each time the gate passes through the packing. Packing adjustments are made to compensate for wear. Live loading the packing hardware reduces adjustment requirements to an absolute minimum.

BRAIDED PACKING SPECIFICATIONS

Braided Packing Name	pH Range	Maximum Temp.	Description	Characteristics
Acrylic/PTFE	3-11	500°F (260°C)	Acrylic yarns impregnated with PTFE and a break-in lubricant	Excellent resistance to chemicals due to PTFE dispersion
Acrylic/PTFE/ Silicone core	3-11	500°F (260°C)	Acrylic yarns impregnated with PTFE and a break-in lubricant, with a Silicone rubber core	Excellent resistance to chemicals due to PTFE dispersion, with improved sealing over Acrylic/PTFE
PTFE/Graphite	0-14	550°F (288°C)	Gore GFO® yarn impregnated with PTFE	Excellent chemical resistance and good sealing
PTFE/Graphite/ Viton® core	0-14	550°F (288°C)	Gore GFO® yarn impregnated with PTFE, with a Viton® rubber core	Excellent chemical resistance, with improved sealing over PTFE/Graphite
PTFE	0-14	500°F (260°C)	PTFE yarn impregnated with a break-in lubricant	Excellent chemical resistance and good sealing
FDA PTFE	0-14	500°F (260°C)	Virgin PTFE yarn impregnated with an FDA approved break-in lubricant	FDA approved
FDA PTFE/ Silicone core	0-14	500°F (260°C)	Virgin PTFE yarn impregnated with an FDA approved break-in lubricant, with a Silicone rubber core	FDA approved, with improved sealing capability over FDA PTFE
Carbon Yarn	0-14	650°F (1) 1200°F (2)	High temperature core with outer jacket of carbon yarn and Inconel® wire	Excellent for high temperature and pressure steam service
Graphite Filament (not for use with fuming nitric acid, oleum or fluorine)	0-14	800°F (427°C) in oxidizing atmosphere 1200°F (649°C) in steam 1600°F (871°C) non-oxidizing	Purest of graphite filament yarns impregnated with graphite particles	Excellent for high temperature, with a very low coefficient of friction
PTFE/Graphite/ Kevlar®	3-11	500°F (260°C)	Gore GFO® yarn (PTFE/Graphite) with Kevlar® corners and a break-in lubricant	Characteristics of PTFE/Graphite packing, plus resistant to extrusion
Kevlar®	3-11	500°F (260°C)	Kevlar® yarns impregnated with PTFE and a break-in lubricant	Excellent abrasion resistance due to great tensile strength of yarn
Kevlar®/ Viton® core	3-11	500°F (260°C)	Kevlar® yarns impregnated with PTFE and a break-in lubricant, with a Viton® rubber core	Excellent abrasion resistance due to great tensile strength of yarn, with improved sealing capability over Kevlar®
Copper	N/A	1200°F (649°C)	Square braided copper filaments	Used as a scraper

Gore GFO® is a registered trademark of W. L. Gore & Assoc. Inc.
Viton® is a registered trademark of DuPont Dow Corporation
Inconel® is a registered trademark of Inco Alloys International

(1) Oxidizing
(2) Non-Oxidizing

Low Pressure Operation

Knife gate valves standards, MSS SP-81 specifically, require a seat test at 40 psi (2.8 bar). In addition Fabri-Valve tests the seat at the maximum rated CWP. Due to the relatively large surface area of the gate, when pressure in metal seated valves falls below 40 psi (2.8 bar) seat sealing may degrade somewhat. Conversely, when pressure exceeds the 40 psi (2.8 bar) standard test pressure, sealing generally shows improvement. Low-pressure seat sealing can be improved by employing chest buttons and/or centerline buttons, which serve the same purpose as higher pressure by keeping the gate in close alignment with the seat.

Pressure/Temperature Ratings

Most knife gate valve applications are limited by the temperature limit or the chemical compatibility of the seat and/or packing material. When checking pressure/ temperature ratings, be sure to check the temperature rating and chemical compatibility of the packing material, and the seat material if it is other than the integral metal seat.

Reverse Pressure Rating

Single seated knife gate valves are considered unidirectional with regard to sealing. That is, they are designed to have the line pressure assist sealing by pushing the gate against the seat. All single seated Fabri-Valve knife gate valves except the Figure 100 are rated for full reverse pressure in the fully closed position. Though leakage in reverse pressure may exceed standard leakage rates, damage to the valve or gross leakage will not occur. Installation where line pressure pushes the gate away from the seat during cycling could result in damage to the valve resulting in gross leakage in either direction. For reverse pressure during cycling, knife gate valves should be equipped with backing rings.

The 1.5” - 24” Figure C67 knife gate valves are bi-directional and are rated for 150 psi (10.3 bar) in both directions, in cycling and non-cycling service. The 30” C67 is rated for 100 psi (6.9 bar) in both directions, in cycling and non-cycling service, and the 36” C67 is rated for 80 psi (5.5 bar) in both directions, in cycling and non-cycling service.

The Figures C100 and F100 knife gate valves are not reverse pressure rated.

Material Standards

Cast valves are supplied in Ductile Iron, Carbon Steel 304 SS, 316 SS, 316L SS and 317L SS. Other alloys such as the cast equivalents of 254SMO®, AL6XN®, Alloy 20®, 304L SS, 904L SS, 309 SS, Hastelloy®, Inconel®, and Monel® are also available. In addition, valves can be fabricated from a wide range of special alloys, economically and on a small run basis. Valves may be fabricated entirely of the special alloy or may be built with just the wetted parts of the special alloy and the remainder of the valve of either a lesser alloy or carbon steel. Fabricated valve materials available include those listed above, plus Titanium. Fabri-Valve has experience with a wide range of alloys, in both cast and fabricated configurations.

NOTE: ITT Engineered Process Solutions reserves the right to substitute comparable materials to achieve equivalent performance.

Maximum temperatures for materials commonly used in the construction of Fabri-Valve valves

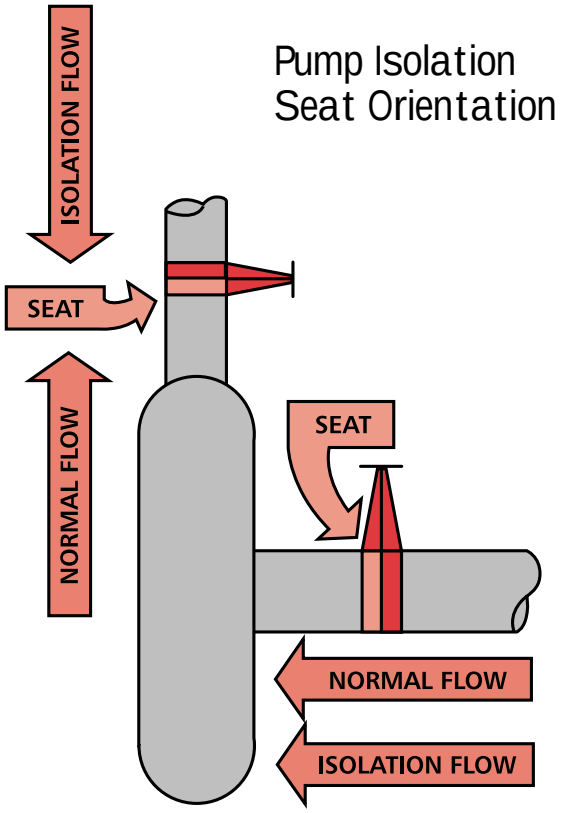
	ASTM Specification			
Material	Cast	Plate	Max. Temp.°F	Min. Temp.°F
Cast Iron	A126 B	-	450	-20
Ductile Iron	A536 65-45-12	-	650	-30
Carbon Steel	A216 WCB	A36	650	-30
Carbon Steel	-	A285	850	-30
Carbon Steel	-	A516Gr70	1000	
410 / 13 Cr	A743 CA15	A240	1200	
304 / 18 Cr, 8 Ni	A351 CF8	A240	1700	-100
309 / 22 Cr, 12 Ni	A351 CH20	A240	1800	
310 / 24 Cr, 19 Ni	A351 HK40	A240	1900	
316 / 16 Cr, 10 Ni	A351 CF8M	A240	1700	-100
316L / 16 Cr, 10 Ni	A351 CF3M	A240	850	-100
317L / 18 Cr, 11 Ni	A351 CG3M	A240	850	
Inconel 800HT®	A351 CT15C	B407	2000	
254SMO®	A351 CK3MCUN	A240	1000	
Alloy 20®	A351 CN7M	B463	*	
Hastelloy C276®	A494 CW12MW	B575	*	
Titanium	-	B265 Gr2	*	

* Consult Factory

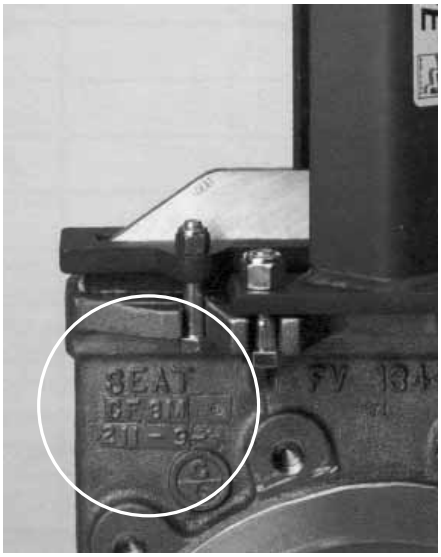
CAUTION:
Ratings are based on the temperature of the valve. Care must be taken to consider service and/or environmental conditions that will adversely affect the valve.

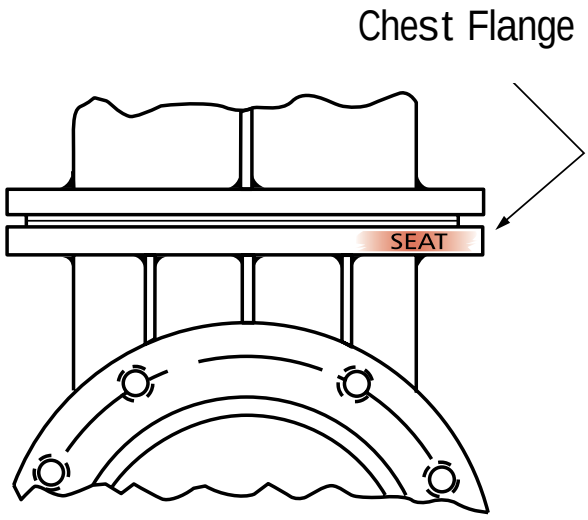
Pump Isolation

When using a knife gate valve to isolate the suction side of a pump, use the standard knife gate installation (valve's seat on the down stream side). When using knife gate valves to isolate the discharge side of a pump, install the valve backwards (seat upstream). Valves used to isolate the discharge side of a pump should be equipped with backing rings.



Seat Orientation Markings





Bonneted Valves

Gaskets

Gaskets are required in some Fabri-Valve valves such as bonneted valves, check valves, and valves equipped with replaceable metal seats. Gasket materials available and their specifications/performance ratings are as follows:

Standard Gasket
Aramid Fibers with NBR Synthetic Rubber; Temperatures to 750°F (399°C), pressures to 900 psi (62 bar).

Corrosive Service
TFE; Temperatures to 500°F (260°C).

High Temperature
Compressed carbon fiber; Temperatures to 900°F (482°C)
Reinforced Graphite; Temperatures to 1600°F (871°C).

Standard Orientation

NOTE: Where position is indicated as upstream or downstream it applies only to single directional shutoff valves.

I. Butterfly Valves:
Looking at the actuator end of shaft, the disc rotates clockwise to close. Clockwise rotation of the handwheel closes the valve.

II. Gate Valves
The handwheel rotates clockwise to close the valve.

III. Bevel Gear and Worm Gear Operators:

a. Gate Valves
The handwheel is perpendicular to the pipeline, to the right side when looking downstream.

b. Butterfly Valves
With the valve shaft vertical, actuator on top, the handwheel is perpendicular to the pipeline, to the left side when looking downstream.
NOTE: On Figure 60 valves, downstream is looking into the side of the disc opposite the seat.

IV. Cylinders
Cylinders are mounted with the ports on the seat side.

V. Electric Motor Operator
Limit switch compartment is on the upstream side.

VI. Limit Switches
Limit switches are mounted on the seat side of the valve, same as cylinder ports.

VII. Directional Control Valves (solenoids, etc...)
Control valves are mounted on the seat side of the valve, same as cylinder ports.

VIII. Positioners
Positioners are mounted on the right side of the valve when looking downstream, and are piped to open valve with increasing signal.

IX. Filter-Regulator-Lubricator
Shipped loose. Can be furnished mounted and piped to the supply port of the directional control valve (valve orientation must be supplied).

X. Fail Safe System
Shipped loose

XI. Levers
Lever is perpendicular to pipeline, to the right side when looking downstream.

XII. Position Indicators
Position indicators are mounted to the upstream side of valve, to the right side when looking downstream.

Exterior Coatings

Standard Coating
Type: Low Sheen Alkyd Primer
Color: Dark Blue
Thickness: 2-3 mils
Maximum Temperature: 200° F (93°C)

Optional Coatings

- *Corrosion Resistant*
  Type: Coal Tar Epoxy
  Color: Black
  Thickness: 8-20 mils
  Maximum Temperature: 350° F (177°C)

- *Corrosion Resistant*
  Type: Two-part Epoxy
  Color: Dark Blue
  Thickness: 2-3 mils
  Maximum Temperature: 230° F (110°C)

- *High Temperature*
  Type: Polysiloxane Inorganic
  Color: Deep Gray
  Thickness: 4-6 mils
  Maximum Temperature: 2000° F (1093°C)

Knife Gate and Wedge Gate Valve Flange Bolting

Assumptions:

1. 1/16" allowed for compressed gasket thickness.
2. Mating flange thickness is based on ANSI B16.5, 150# Flanges. Tolerences of +1/8" on valve sizes 2" to 18" and +3/16" on sizes 20" and 24" are not taken into consideration.
3. Due to machining tolerances, etc., flange thickness and tapped bolt hole depth may vary slightly. Therefore, it is recommended that studs be used in the tapped holes in the chest area. If bolts are used, flat washers should be used to prevent the bolts from bottoming in the tapped hole and either harming the chest or preventing proper tightening.

Valve Size	Figures C33, C133, C37, C45, C67 and C134						Figures F 10, F11, F36 & F71**
	Bolt Size	Total No. Bolts	No. Tapped Holes in Chest Area		Minimum Stud Length (Inches)	Bolt Length (Inches)	Minimum Bolt Length (Inches)
			Series C37, C45, C134 & C67	Series C33, C133			
2	.625-11NC	4	2	4	2.00	1.25	2.25
3	.625-11NC	4	2	4	2.25	1.50	2.50
4	.625-11NC	8	2	8	2.25	1.50	2.50
5 *	.75-10NC	8	2	8	2.50	1.50	2.50
6	.75-10NC	8	2	8	2.50	1.50	2.50
8	.75-10NC	8	2	8	2.75	1.88	2.75
10	.875-9NC	12	4	12	2.75	1.88	3.00
12	.875-9NC	12	4	12	3.00	2.00	3.00
14	1.00-8NC	12	4	12	3.25	2.13	3.25
16	1.00-8NC	16	6	12	3.25	2.25	3.50
18	1.125-7NC	16	6	16	3.50	2.38	3.75
20	1.125-7NC	20	8	20	4.00	2.88	4.00
24	1.25-7NC	20	8	20	4.50	3.25	4.25

* 5" Valve is fabricated, not cast.
** Flange holes are not tapped. Drilling is 1/8" larger than recommended bolt size. Nuts are required.

Packing Gland Bolting

The standard nuts for the packing gland bolting feature a nylon insert type anti-vibration lock.

NOTE: Applications above 400°F (204°C) must be identified so nuts with an alternative locking device can be used in lieu of the nylon insert.

Installation Caution

Mating piping must be properly supported, and care should be exercised in mating up the flanges, to prevent distortion of the valve body and/or flanges caused by piping stresses and/or installation procedures.

Mechanical Properties of Stem Nut Materials

	Acid Resistant Bronze	316 SS	Ni-Resist
Tensile (PSI x 10^3)	65	75	25
Yield (PSI x 10^3)	20	30	25

Bearing Properties in Order of Preference

1. Manganese Bronze
2. Ni-Resist
3. 316 SS*

*Care must be taken to reduce surface loads and provide lubrication and differential hardness between components to avoid galling.

NOTE: ITT Engineered Process Solutions reserves the right to substitute comparable materials to achieve equivalent performance.

Codes, Standards and Specifications

Fabri-Valve continually keeps abreast of new standards and/or revised standards through participation in MSS, ASME, ASTM, ANSI, NACE and AWS. Listed below are some of the more commonly used codes and standards, along with a brief summary of each.

ANSI	American National Standards Institute (formerly ASA and USAS)
ASME	American Society of Mechanical Engineers
ISO	International Organization for Standardization
MSS	Manufacturers Standardization Society for the Valves & Fittings Industry
ASTM	American Society for Testing and Materials
API	American Petroleum Institute
AWWA	American Water Works Association
AISC	American Institute of Steel Construction
NACE	National Association of Corrosion Engineers
AWS	American Welding Society
DIN	Deutsche Industrie Norm (Germany Industry Standard or Norm)
SSPC	Steel Structures Painting Council
TAPPI	Technical Association of the Pulp and Paper Industry
BS	British Standards

ANSI

a. B16.1 Cast Iron Pipe Flanges and Flanged Fittings (CL. 25, 125, 250, and 800.) CL. 25 and 125 lb. to 96" size, CL. 250 lb. to 48" size. CL. 25 and CL. 125 flange drilling matches B16.5, CL. 150 steel flanges, except CL. 25 bolts are smaller. CL. 250 flange drilling matches B16.5, CL. 300 steel flanges.

When using valves between cast iron flanges, flat-faced valve flanges or spacers should be used to prevent breaking the cast iron flanges.

b. B16.5 Pipe Flanges and Flanged Fittings (CL. 150, 300, etc.) to 24" size.

This standard is used by Fabri-Valve for flange bolting pattern dimensions through 24" size unless specified otherwise. Fabri-Valve standard flange thicknesses do not match this standard, due to pressure ratings.

This standard also contains pressure/temperature rating charts, which basically are as follows:

1. A CL. 150 mild steel flange or fitting manufactured from A515 Gr. 70, is good for 150 PSI at approximately 550°F. At ambient temperature, it is good for 285 PSI. NOTE: Ambient is -20 to 100°F. Charts then give pressure ratings at other temperatures up to 1000°F for various materials of construction.

2. A CL. 300 mild steel flange, valve or fitting manufactured from A515 Gr. 70, is good for 300 PSI at approximately 840°F. At ambient temperature, it is good for 740 PSI. NOTE: It is very important that it is understood whether an ANSI class valve is required or if a CWP valve may be utilized. Example: CL. 150 or 150 PSI CWP.

c. B16.10 Face-to-Face and End-to-End Dimensions of Valves This standard is used by Fabri-Valve for face-to-face and end-to-end dimensions on 2"-24" wedge gate valves (Figure 71, 72 and 78) and check valves (Figure 10 & 11).

d. B16.34-Valves Flanged, Threaded, And Welding End This standard covers fabricated valves, but: proscribes a minimum wall thickness that requires very thick pressure walls – making valves more costly, requires flanged valves be class rated, restricts the materials that can be used, and specifies a minimum weld efficiency factor which dictates spot x-ray of pressure vessel welds.

e. B16.47 Large Diameter Steel Flanges: NPS 26 Through NPS 60 This standard is used by Fabri-Valve for flange bolting pattern dimensions for valves over 24" unless specified otherwise. Fabri-Valve standard flange thicknesses do not match this standard, due to pressure ratings.

f. B31.1 Power Piping Short section on valves, basically referring that B16.34 valves may be designed toB31.1 and may include proof-testing.

g. B31.3 Petroleum Refinery Piping Same as "F" (B31.1) above.

ASME

a. Section II-Material Specifications Usually closely parallels ASTM specifications.

b. Section VIII, Division 1-Pressure Vessels For unfired pressure vessels.
Used as a guide in design of Fabri-Valves. Has charts showing allowable stresses for various materials at various temperatures (some to 1500°F). Establishes casting and joint welding efficiency factors depending on degree of non-destructive testing. Also has section on proof testing and design of flanges.

c. Section IX-Welding Qualifications Procedures for weld and welder qualifications for use in pressure vessels. Used as a guide for Fabri-Valve welders and welding procedures.

ISO

International organization to establish international standards for items including valves.

MSS

SP-6 Finishes for Contact Faces of Connecting End Flanges of Ferrous Valves and Fittings.

SP-9 MSS Spot-Facing Standard.

SP-25 Standard Marking System for Valves, Fittings, Flanges and Unions

SP-42 MSS 150 lb. Corrosion Resistant Cast Flanged Valves (to 12" size)

SP-44 MSS Steel Pipeline Flanges Formerly an addition to ANSI B16.5 with additional flange sizes. Now information included in ANSI B16.47

SP-61 Hydrostatic Testing of Steel Valves Covers wedge gate and check valves.

SP-67 Butterfly Valves

SP-81 Stainless Steel, Bonnetless, Flanged, Wafer Knife Gate Valves Fabri-Valve Figure C37 meets this standard.

ASTM

Specifications for materials, including chemistry and physical properties.

API

a. API 595 Cast Iron Gate Valves

b. API 598 Valve Inspection and Test

c. API 600 Steel Gate Valves

AWWA

a. C207 Standard for Steel Pipe Flanges This standard is used by Fabri-Valve for flange bolting pattern dimensions greater than 60" size unless specified otherwise. Fabri-Valve standard flange thicknesses do not match this standard, due to pressure ratings.

b. C504-Rubber Sealed Butterfly Valves

AISC

Steel Construction Manual. Used primarily for building and bridge design, but can be and is used as a guide in designing large, low-pressure valves and structural components of all valves such as yokes.

NACE

The Technical Society concerned exclusively with the protection and performance of materials in corrosive environments.

Std. MR-01-75-material requirements-materials for valves for resistance to sulfide stress cracking in production and pipeline service.

AWS

The AWS structural welding code specify the nature and size of acceptable discontinuities which may remain in a particular type of welded structure for a specific service. The code usually requires the removal and repair of cracks, but permit limited amounts of some other discontinuities, particularly porosity.

DIN

Standards for flanges used in Germany and other parts of Europe.

DIN 2501-ND10 Flange Dimensions – superceded by

DIN EN 1092-1 Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated. Steel flanges

SSPC

a. SP-6 Commercial Blast Cleaning

b. SP-10 Near-White Blast Cleaning

TAPPI

TIS 405-8 and 405-20 Valve Standards for Pulp and Paper Mills (Standard for Stainless Steel, Bonnetless, Flanged Wafer Knife Gate Valves). Revoked by TAPPI, were same as MSS SP-81.

British Standards

BS10 British Standard Flange

BS EN 1092-1 Flanges and their joints. Circular flanges for pipes, valves, fittings and accessories, PN designated. Steel flanges

Standard Domestic Packaging

(Protection for shipment by Common Carrier) Plywood covers are secured to flange faces on all valves prior to shipment. Handwheels are installed on the valve when shipped, except handwheels larger than 24" in diameter and handwheels for bevel gears, which are removed and strapped to one flange. Cylinders are provided with a cardboard cover to protect against strap abrasion. Cylinder actuated valves having instrumentation/controls subject to damage are provided with an additional wooden box cover for protection. All 24" valves and larger will be skidded for shipping unless otherwise directed by customer. Skids will be utility grade timbers with cross-members adequate for support, unit bolted and/or strapped to skid, and handwheel secured to flange cover or yoke. Stem nut assembly will be secured with tape or other means to prevent loss of parts in shipment. Specialty items requiring skidding or pallets are prepared as required to insure damage-free delivery at destination.

Export Crating

"Optional Export Crating" includes a fully enclosed non-coniferous and/or OSB (Oriented Strand Board) wooden box with reinforced ends and sides from utility grade 3/4" net lumber with skids. Goods are stowed inside in a manner to insure minimum movement and no damage from top stowage. Polyethylene sheet is draped over the valves. Boxes are steel strapped at each end and stenciled or painted with shipping information supplied by customer. Items are stowed in the box to take full advantage of all available space. Fabri-Valve will supply the customer with critical information on Net and Gross weights, cubic dimensions, and other pertinent data, as it becomes available. Other box liner materials and/or protective coatings are available on request. See Pricebook for export crating charge.

Export or Domestic Crating Other than Standard

Special crating or other preparation will be furnished at customers' expense. Specify requirements on your purchase order.

Recommended Long Term Storage Procedure for Fabri-Valve® Products

I. Handwheel, Lever, or manual gear operated gate valve.

a. **Objective**
The following are Fabri-Valve's recommendations for storage procedures to retain maximum product integrity during long-term storage of 1 to 5 years.

b. **Location**

1. The preferred storage location is a clean, dry, protected warehouse.
2. If valves are to be stored outside, precautions should be taken to keep valves clean and dry.

c. **Equipment Orientation**
Valves may be stored in the vertical or horizontal position. In horizontal position, seat side of valve should be on bottom.

d. **Storage Preparation**

1. Valves may be stored as shipped, provided the above storage location and equipment orientation instructions are followed.
2. If the as shipped condition must be altered for receiving inspection, reattach flange covers and repackage valve.
3. Then follow the above Instructions for location and equipment orientation.

NOTE: O-ring valves should be stored with the gate slightly open (Gate off of seating wedges)

e. **Storage Inspection**

1. Visual inspection shall be performed on a semi-annual basis and results recorded.
2. Visual inspection as a minimum shall include checking the following: Packaging, Covers, Dryness, and Cleanliness.

f. **Maintenance**
Maintenance shall consist of correcting deficiencies noted during inspection. All maintenance activity shall be recorded.

II. Cylinder Operated Gate Valve

a. **Objective**
The following are Fabri-Valve's recommendations for storage procedures to retain maximum product integrity during long-term storage of 1 to 5 years.

b. **Location**

1. The preferred location is a clean, dry protected warehouse.
2. If valves are to be stored outside, precautions should be taken to keep valves clean and dry.

c. **Equipment Orientation**

1. The preferred orientation for optimum protection of cylinder is with the valve fully opened and with the cylinder in the vertical position.
2. An acceptable alternate for valves with cylinder diameters of 6" or less is with the cylinder in the horizontal position. In horizontal position, seat side of valve should be on bottom.
3. If valves with cylinders larger than 6" in diameter must be stored with the cylinder in the horizontal position then the cylinder must be operated 6-12 times every 3-4 months.

d. **Storage Preparation**

1a. For storage of up to 3 years - Squirt a good grade of hydraulic oil into cylinder ports and operate cylinder 6-12 times on a yearly basis.

1b. For storage of 3-5 years - Squirt a good grade of hydraulic oil into cylinder ports and operate cylinder 6-12 times. Extend cylinder rod, until valve is fully closed. Then coat cylinder gland and rod with heavy grease. Retract cylinder rod until valve is fully open, drawing good grade of hydraulic oil into rod end of cylinder.

2. Securely plug cylinder ports with pipe plugs, if cylinder is not piped.

3. Cover flange faces with flange covers. Plywood flange covers installed at factory are acceptable.

4. Then follow the above instructions on location and equipment orientation.

NOTE: O-ring valves should be stored with the gate slightly open. (Gate off of seating wedges)

e. **Storage Inspection**

1. Visual inspection shall be performed on a semi-annual basis and results recorded.

2. Visual inspection as a minimum, shall include checking the following: Packaging, Covers, Dryness and Cleanliness.

f. **Maintenance**

Maintenance shall consist of correcting deficiencies noted during inspection. All maintenance activity shall be recorded.

III. Electric Motor Operated Gate Valve – Normal Storage

a. **Objective**

The following are Fabri-Valve's recommendations for storage procedures to retain maximum product integrity during long-term storage of 1 to 5 years.

b. **Location**

Valves to be stored in a clean, dry protected warehouse, free from excessive vibration and rapid temperature changes.

NOTE: The maximum source of equipment deterioration anticipated during long-term storage is from possible condensation within the actuator enclosure that may be produced by rapid temperature changes. The user should consider the connection of built-in heaters or addition of heat sources in the electrical enclosures during storage.

c. **Equipment Orientation**

1. The preferred storage position is with the valve stem and motor shaft in the horizontal position and the actuator limit switch compartment cover vertically up.

2. An acceptable alternate position is with the valve stem vertical, the motor shaft horizontal and the limit switch compartment cover either facing to the side or vertically up.

3. The assembly shall be stored off the floor on suitable skids and shall be covered with an unsealed dust cover with the bottom open and air holes in the side.

d. **Storage Preparation, Inspection and Maintenance**

1. For storage situations of 1 to 2 years maximum, spray electric contacts with CRC #2-26®. (This preservative does not have to be removed prior to usage of the actuator.)

2. For storage situations between 2 and 5 years, spray electric contacts with CRC Lectra Shield® spray coating. (This coating must be removed with a suitable cleaner, such as any standard petroleum solvent, prior to making electrical connections.)

3. Cover flange faces with flange covers. Plywood flange covers installed at factory are acceptable.

e. **Storage Inspection**

1. Visual inspection shall be performed on a semi-annual basis and results recorded.

2. Visual inspection as a minimum, shall include checking the following: Packaging, Plugs, Covers, Dryness, Cleanliness, and Function of heat sources (when used).

NOTE: O-ring valves should be stored with the gate slightly open (Gate off of seating wedges)

f. **Maintenance**

Maintenance shall consist of correcting deficiencies noted during inspection. All maintenance activity shall be recorded.

IV. Storage of Rubber Products

While the various rubbers possess differing degrees of resistance to the deteriorating influences which may be present during storage, the same general recommendations apply to all. Vulcanized rubber products should be stored in a cool, dry, dark place away from steam pipes, sunlight, etc. The product should be supported so that no portion of it is under undue stress from loading or bending. For example, replacement seals should not be hung over a hook or allowed to kink, but should be stored in a flat position. Seals in assembled valves and actuators should be positioned to minimize compression on the seals. For example, storage of valves in the vertical position with the gate or disc open will minimize the occurrence of compression on the seals.