Engineered Valves

Fabri-Valve CF37
Heavy Duty Knife Gate Valve

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CF37 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 with all F37 valves.

Fabri-Valve Figures C37 and F37 are some of the most popular and versatile knife gate valve configurations. Figure C37 knife gate valves in sizes 2" – 36" feature a heavy duty, rugged one-piece cast body rated to 150 psi CWP. In sizes larger than 36" the F37 valves are fabricated from heavy plate and can be designed to meet the specific pressure rating of the application. The C37 series in sizes 2" – 24" is supplied as standard in stainless steel construction (designated "S"). All valves larger than 24" (cast or fabricated) can be supplied as an "S" configuration or with alloy steel wetted parts and carbon steel external parts (designated "R"). The Figure C/F37 portfolio is available with a wide range of seat options, including integral metal; integral or replaceable hard-faced metal; rubber "D" ring; and replaceable rubber, polyurethane, UHMWPE, and PTFE. Standard body materials include 304, 316, and 317L stainless steel. Special alloys such as 254 SMO® are also available.

The C37 in sizes 2" – 24" has been upgraded with the universal yoke design which provides greater range of valve application. The yoke plates include a lockout provision for both manual and actuated valves, while greatly simplifying the conversion of valve operators in the field. The yoke plates also allow for easier mounting of mechanical and proximity sensors.

Specifications

Size Range
1.5" – 132" (DN40 - DN3400)

Pressure Rating
Cast Body 2" – 36": 150 psi (10.3 bar) CWP (cold working pressure)
Fabricated Body 1.5" – 132": Designs available in pressures 50 psi (3.4 bar) to 300 psi (20.6 bar). Consult factory for higher pressures.

Temperature Rating
Standard temperature rating is to 450°F (232°C). Services above 400°F (204°C) require high temperature fasteners. Consult factory for service temperatures up to 1500°F (816°C).

Flange Drilling
ANSI 125/150
Consult factory for other flange drillings.

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. Please consult the factory for any special testing 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

See chart on page 3 for seat shutoff ratings.

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		Cast 304	Cast 304L	Cast 316	Cast 316L	Cast 317L	Cast WCB A-216	Cast DI
°F	°C							
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	105	100	150	119
700	371	101	101	104	104	96	103	
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		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 external, carbon steel components. Standard "R" series valves are limited to 700°F (371°C). Alternate "R" series constructions are available to 1000°F (538°C). "S" series valves should be specified above 1000°F (538°C).

Shutoff Ratings

Seat Type Metal	Valve Size	Shut Off Rating (1)
Single integral metal	2" - 24"	40 cc
	26" - 48"	60 cc
	> 48"	Consult factory
Single hardfaced integral metal	2" - 24"	80 cc
	26" - 48"	120 cc
	> 48"	Consult factory
Single hardfaced replaceable metal	2" - 24"	80 cc
	> 24"	Consult factory
Dual metal	All sizes	Consult factory
Seat Type Resilient	**Valve Size**	**Shut Off Rating (1)**
Single "D" ring or replaceable (ex. PTFE)	All sizes	0 cc
Single replaceable PTFE	All sizes	Consult factory
Dual D ring or replaceable	All sizes	Consult factory

(1) Measured as cc / minute / inch of valve size

Consult factory for sizes larger than 48".

Flow Coefficients

Figures C37 and F37 Cv Ratings, Port Diameter, and Area										
		Standard Port			With V-Seat			With Replaceable Poly or Replaceable Rubber Seat		
Valve Size		Cv	Port I.D. Inches	Port Area Sq. In.	Cv	Port I.D. Inches	Port Area Sq. In.	Cv	Port I.D. Inches	Port Area Sq. In.
In.	DN									
2	50	288	2.00	3.1	165	2.00	2.8	288	2.00	3.1
3	80	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 Factury					
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

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.

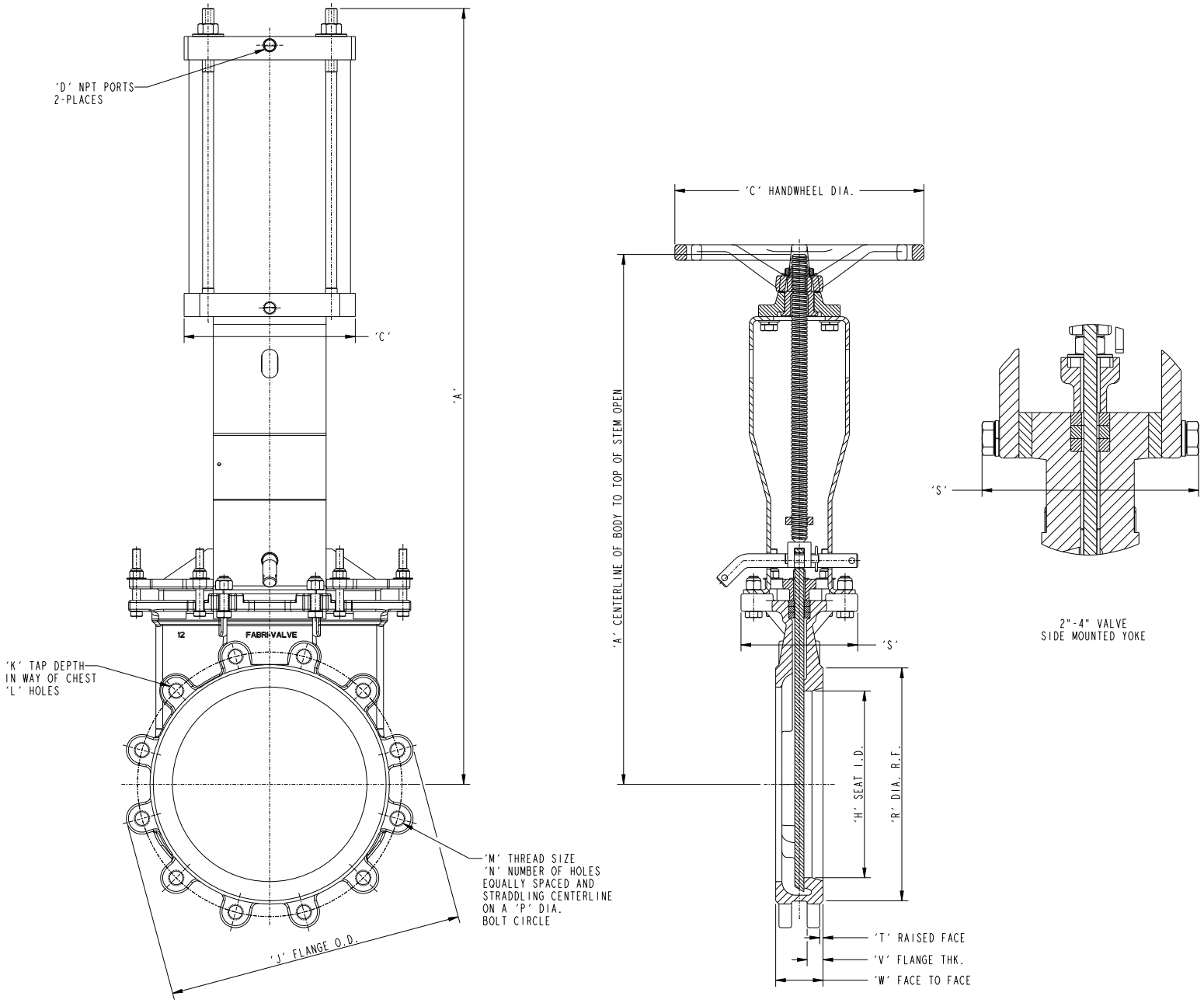
Dimensions: C37 with Handwheel or Cylinder (2”-24”)

Valve Size		Table 1	DIMENSION Inches (mm) C37 with HANDWHEEL OR CYLINDER																			Weight*	
Inches	DN	A			C			D		H	J	K	L	M	N	P	R	S	T	V	W	lb(HW)	kg(HW)
2	50	HW	4 CYL	-	HW	4 CYL	-	4 CYL	-	2 (51)	6 (152)	3/8 (9.52)	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)	18	8
		14-1/8 (359)	17-7/16 (443)	-	8 (203)	4-1/2 (114)	-	3/8-18	-														
3	80	HW	4 CYL	-	HW	4 CYL	-	4 CYL	-	3 (76)	7-1/2 (191)	13/32 (10.31)	2	5/8-11NC	4	6 (152)	5 (127)	4 (102)	1/16 (2)	9/16 (14)	2 (51)	27	12
		15-15/16 (405)	19-3/4 (502)	-	8 (203)	4-1/2 (114)	-	3/8-18	-														
4	100	HW	5 CYL	-	HW	5 CYL	-	5 CYL	-	4 (102)	9 (229)	7/16 (11.11)	2	5/8-11NC	8	7-1/2 (191)	6-3/16 (157)	4 (102)	1/16 (2)	11/16 (17)	2 (51)	32	15
		20-1/8 (511)	22-9/16 (573)	-	8 (203)	5-1/2 (140)	-	3/8-18	-														
6	150	HW	6 CYL	-	HW	6 CYL	-	6 CYL	-	6 (152)	11 (279)	7/16 (11.11)	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)	65	29
		28-5/16 (719)	29-5/8 (752)	-	10 (254)	6-1/2 (165)	-	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)	7/16 (11.11)	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)	101	46
		34-15/16 (890)	35-7/8 (911)	36-3/4 (933)	12 (406)	6-1/2 (165)	9 (229)	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)	1/2 (12.7)	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)	134	61
		40-1/2 (1029)	42 (1067)	43-3/8 (1102)	16 (406)	9 (229)	11 (280)	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)	1/2 (12.7)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)	184	83
		46-7/8 (1191)	48-1/2 (1232)	49-7/8 (1267)	16 (406)	9 (229)	11 (280)	3/8-18	1/2-14														
14	350	HW	12 CYL	-	HW	12 CYL	-	12 CYL	-	13-1/4 (337)	21 (533)	7/16 (11.11)	4	1-8NC	12	18-3/4 (476)	16-1/4 (413)	7-3/4 (197)	3/16 (5)	15/16 (24)	3 (76)	244	111
		52-5/8 (1337)	57-1/4 (1454)	-	20 (508)	12-3/4 (324)	-	1/2-14	-														
16	400	HW	12 CYL	-	HW	12 CYL	-	12 CYL	-	15-1/4 (387)	23-1/2 (597)	9/16 (14.29)	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)	329	149
		59-1/2 (1511)	63 (1600)	-	20 (508)	12-3/4 (324)	-	1/2-14	-														
18	450	-	12 CYL	14 CYL	-	12 CYL	14 CYL	12 CYL	14 CYL	17-1/4 (438)	25 (635)	9/16 (14.29)	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)	-	-
		-	68-15/16 (1751)	68-11/16 (1744)	-	12-3/4 (324)	14-3/4 (375)	1/2-14	3/4-14														
20	500	-	14 CYL	16 CYL	-	14 CYL	16 CYL	14 CYL	16 CYL	19-1/4 (489)	27-1/2 (699)	7/8 (22.22)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)	-	-
		-	73-1/2 (1867)	74-1/8 (1882)	-	14-3/4 (375)	17 (432)	3/4-14	3/4-14														
24	600	-	16 CYL	18 CYL	-	16 CYL	18 CYL	16 CYL	18 CYL	23-1/4 (591)	32 (813)	13/16 (20.64)	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)	-	-
		-	86-1/16 (2186)	86-13/16 (2205)	-	17 (432)	19 (483)	3/4-14	3/4-14														

(parentheses) = reference dimensions in mm

C37 with Handwheel or Cylinder (2”-24”)

Refer to TABLE 1 for dimensions.



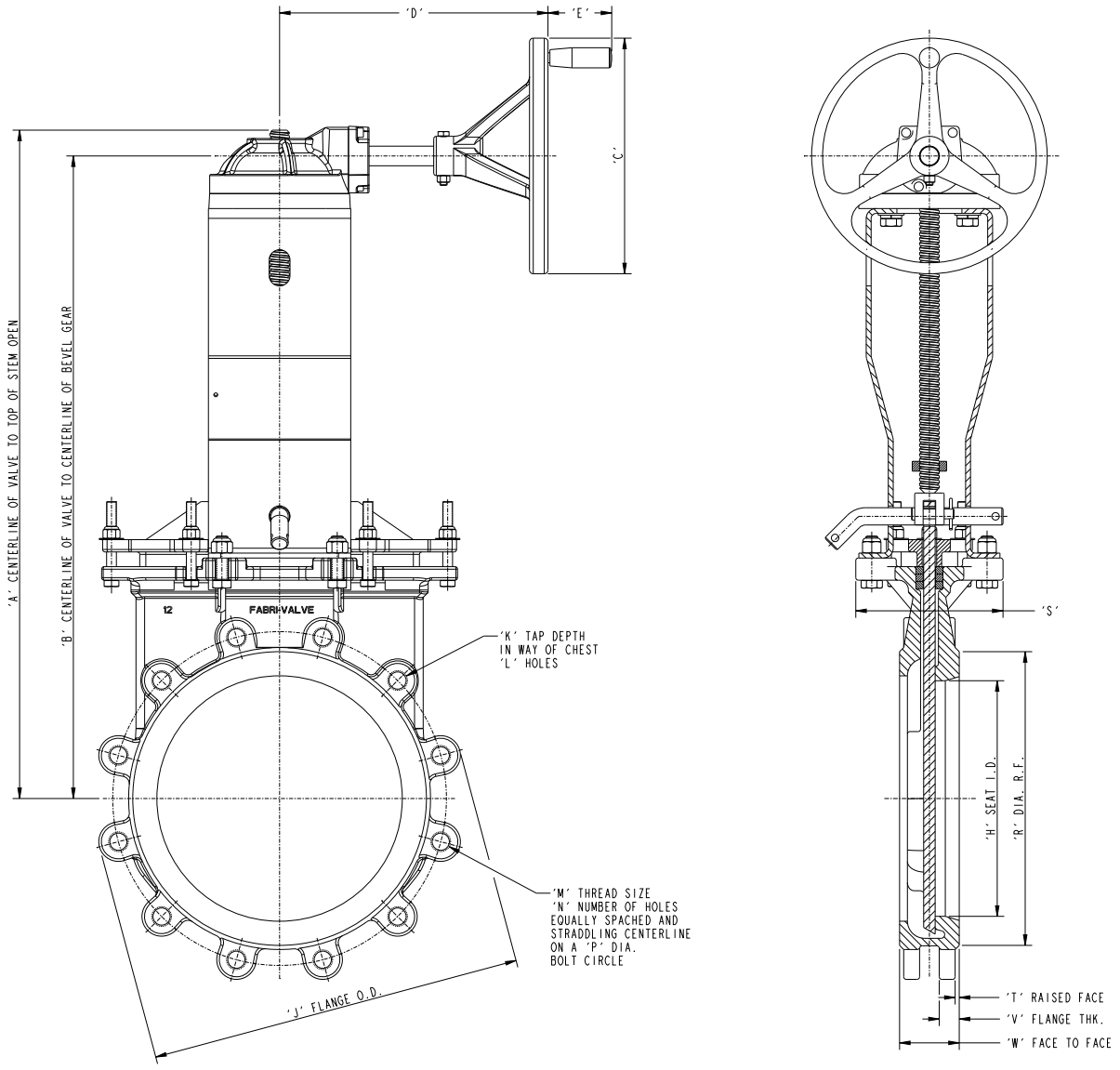
Dimensions: C37 with Bevel Gear (6” - 24”)

Valve Size		Table 2	DIMENSION Inches (mm) C37 W/BEVEL GEAR																WEIGHT	
Inches	DN	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	V	W	LBS	KG
6	150	28-5/16 (719)	21-1/8 (537)	12 (305)	13-11/16 (347)	3-1/4 (83)	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)	95	43
8	200	35-1/16 (891)	25-3/8 (644)	12 (305)	13-11/16 (347)	3-1/4 (83)	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)	125	57
10	250	40-1/2 (1029)	28-1/2 (724)	12 (305)	13-11/16 (347)	3-1/4 (83)	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)	151	68
12	300	47 (1194)	32-3/4 (832)	12 (305)	13-11/16 (347)	3-1/4 (83)	12 (305)	19 (493)	1/2 (13)	4	7/8-9NC	12	17 (432)	15 (381)	7-1/2 (191)	3/16 (5)	1 (25)	3 (76)	202	92
14	350	51-9/16 (1310)	36-3/8 (924)	12 (305)	13-11/16 (347)	3-1/4 (83)	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)	250	113
16	400	58-7/16 (1484)	41-1/8 (1044)	12 (305)	13-11/16 (347)	3-1/4 (83)	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)	336	152
18	450	63-1/2 (1613)	44-1/16 (1119)	12 (305)	13-11/16 (347)	3-1/4 (83)	17-1/4 (438)	25 (635	9/16 (14)	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)	409	185
20	500	69 (1753)	50-11/16 (1287)	12 (305)	16-5/16 (414)	3-1/4 (83)	19-1/4 (489)	27-1/2 (699)	7/8 (22)	8	1-1/8-7NC	20	25 (635)	23 (584)	14 (356)	3/16 (5)	1-3/16 (30)	4-1/2 (114)	604	274
24	600	80-15/16 (2056)	58-5/8 (1489)	12 (305)	16-5/16 (414)	3-1/4 (83)	23-1/4 (591)	32 (813)	13/16 (21)	8	1-1/4-7NC	20	29-1/2 (749)	27-1/2 (692)	14-1/8 (359)	3/16 (5)	1-5/16 (33)	4-1/2 (114)	817	370

(parentheses) = reference dimensions in mm 6” - 14” valves have a bevel gear ratio of 3:1 16” - 24” valves have a bevel gear ratio of 4:1

C37 with Bevel Gear (6”-24”)

Refer to TABLE 2 for dimensions.



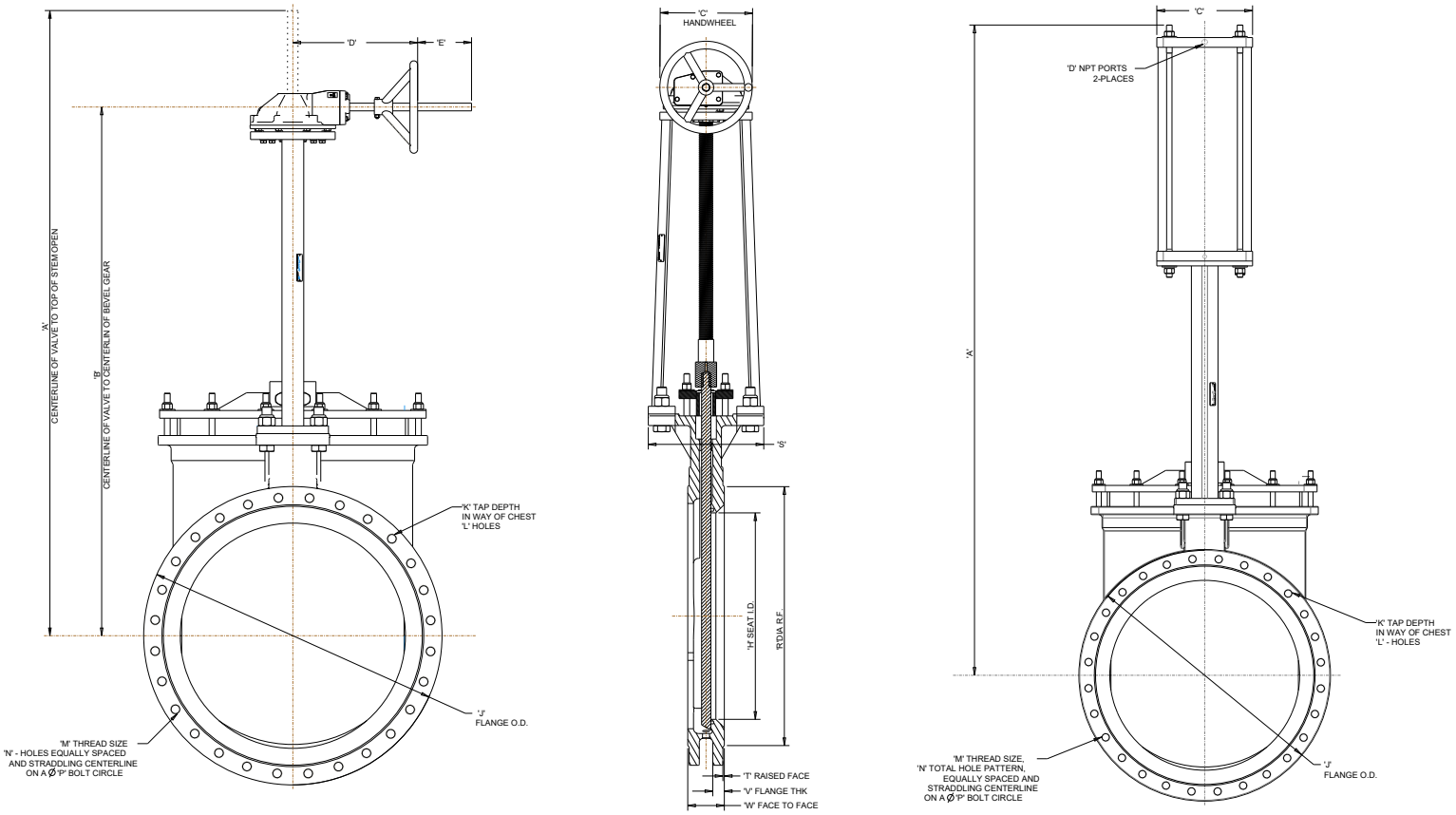
Dimensions: C37 with Bevel Gear or Cylinder (28”-36”)

Valve Size		TABLE 3	DIMENSION Inches (mm) C37 with BEVEL GEAR OR CYLINDER																				
Inches	DN	A		B		C		D		E		H	J	K	L	M	N	P	R	S	T	V	W
28	700	BG	18 CYL	BG	18 CYL	BG	18 CYL	BG	18 CYL	BG	18 CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL
		CF	101.2 (2570)	CF	NA	24.0 (610)	19.0 (843)	12.1 (307)	3/4-14 NPT	6.5 (165)	NA	27.25 (692)	36.50 (927)	1.18 (30)	10	1-1/4-7 UNC	28	34.00 (864)	31.50 (800)	20.00 (508)	0.08 (2)	1.90 (48)	6.50 (165)
30	750	BG	18 CYL	BG	18 CYL	BG	18 CYL	BG	18 CYL	BG	18 CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL
		95.31	103.6 (2631)	68.66 (1744)	NA	30.0 (762)	19.0 (843)	16.2 (411)	3/4-14 NPT	6.5 (165)	NA	26.75 (679)	38.75 (984)	1.13 (29)	10	1-1/4-7 UNC	28	36.00 (914)	33.63 (854)	15.00 (381)	0.19 (5)	1.50 (38)	4.75 (1210)
32	800	BG	20 CYL	BG	20 CYL	BG	20 CYL	BG	20 CYL	BG	18 CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL
		CF	114.7 (2913)"	CF	NA	24.0 (610)	21.0 (533)	23.8 (605)	3/4-14 NPT	6.5 (165)	NA	31.25 (794)	42.50 (1080)	1.18 (30)	10	1-1/4-7 UNC	28	37.25 (946)	NA	18.88 (480)	NA	2.00 (51)	7.00 (178)
36	900	BG	22 CYL	BG	22 CYL	BG	22 CYL	BG	22 CYL	BG	22 CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL	BG / CYL
		121.88	120.6 (3063)	84.35 (2142)	NA	24.0 (610)	23.0 (584)	23.8 (605)	3/4-14 NPT	6.5 (165)	NA	32.19 (818)	46.00 (1168)	1.00 (25)	12	1-1/2-6 UNC	32	42.75 (1096)	40.43 (1027)	16.00 (406)	0.19 (5)	1.69 (43)	5.75 (146)

(parentheses) = reference dimensions in mm CF - Consult Factory NA - Not Applicable Contact factory for valve weights

C37 with Bevel Gear or Cylinder (28”-36”)

Refer to TABLE 3 for dimensions.



Materials of Construction

Parts	Materials		
	C37S 2" – 24" (except 5")	C37R or C37S 28" – 36"	F37R or F37S all sizes (includes 5")
Body and Chest	"Cast 304 stainless steel Cast 316 stainless steel Cast 317L stainless steel Contact factory for alternate materials"	Cast 304 stainless steel Cast 316 stainless steel Cast 317L stainless steel Contact factory for alternate materials	Fabricated 304 stainless steel Fabricated 316 stainless steel Fabricated 317L stainless steel Contact factory for alternate materials
Seat	Integral seat 1500°F (816°C) with appropriate packing selection "D" ring elatomer seat in various materials. Consult factory for temperature ratings. RH: Replaceable hardfaced seat to 750°F (399°C) standard' up to 1600°F (871°C) with proper packing and gaskets RP: Replaceable polyurethane seat to 180°F (82°C) RT: Replaceable PTFE seat to 400°F (204°C) RW: Replaceable UHMWPE seat to 140°F (60°C)		
Gate	Stainless steel of same grade used in body		
Yoke	304 stainless steel	R series: Carbon steel S series: 304 stainless steel	R series: Carbon steel S series: 304 stainless steel
Yoke Fasteners	Stainless steel		
Stem	304 Stainless steel		
Stem Nut	Acid resistant bronze		
Lubrication Fitting	Plated steel		
Packing	Acrylic/PTFE/Silicone Contact factory for alternate materials		
Packing Follower	304 stainless steel	R series: Ductile or malleable iron S series: Stainless steel	
Follower Bolts	Stainless steel	R series: Plated steel S series: Stainless steel	
Handwheel	Cast Iron		
Handwheel Retaining Nut	Stainless steel	R series: Malleable Iron S series: Stainless steel	
Tab Washer	Stainless steel		

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

Available Options

Body
- Epoxy Coating
- Chest and Centerline Buttons
- Backing Ring
- Extra Wedges
- Flush Ports
- V-Port
- Defection Cones (Cast, Fabricated)
- Thru Drilled Flanges
- Alternate Flange Drilling

Gate
- Hard Gate Material
- Hard Faced Gate Edge
- Nickel-TFE Coated Gate
- Locking Devices
- Gate Covers
- Gate Support Strips

Seat
- "D" Ring
- Dual
- Replaceable Polyurethane
- Replaceable UHMWPE
- Replaceable PTFE
- Replaceable Rubber (various materials)
- Replaceable Hard Faced

Operators
- E-Z Spin Hand Wheel
- Bevel Gear
- Chain Wheels
- Cylinder Actuators
- Electric Actuators
- Ratchet Handle

Packing
- Optional Packing Materials
- Live Loaded Packing

Other / Accessories
- Self-Supporting Yokes
- Extended Stems
- Rod Boots
- Limit Switches

ITT Engineered Valves
33 Centerville Road
Lancaster, PA 17603, USA
Tel: +1 (717) 509-2200

Cam-Line, Cam-Tite, Dia-Flo, EnviZion, Pure-Flo, Skotch

ITT Engineered Valves
1110 Bankhead Avenue
Amory, MS 38821, USA
Tel: +1 (662) 256-7185

Fabri-Valve

ITT Bornemann GmbH
31683 Obernkirchen
Germany
Tel: +49 5724 390-0

EnviZion, Pure-Flo