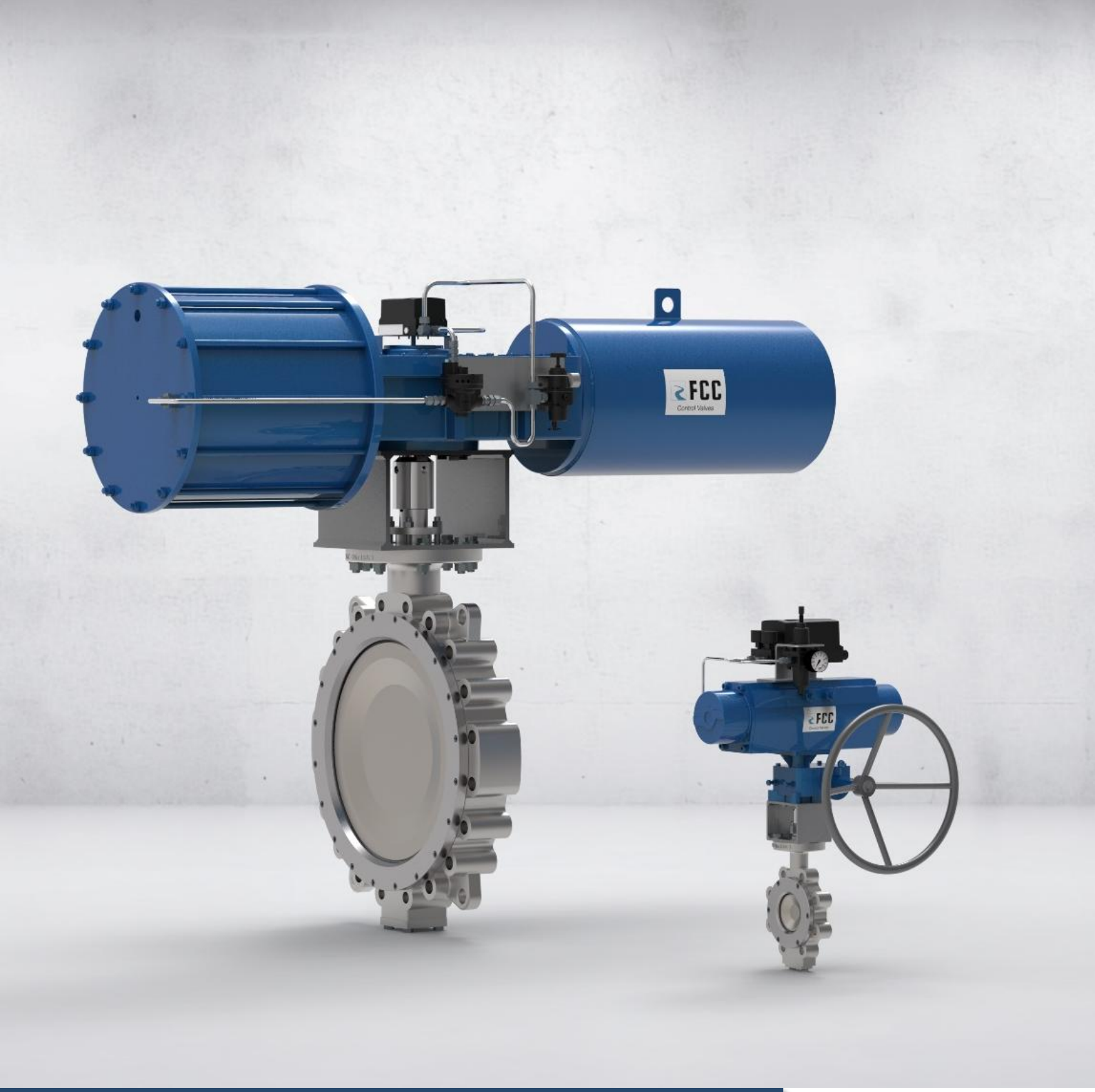


Series 20 Double Offset Butterfly Valves

Pressure class up to 600#, Sizes up to 36" and beyond

Bespoke & Severe Service Solutions

FCC

Proactive | Collaborative | Result oriented

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Model Number 19



Meet the Series 20

The Series 20 double-offset butterfly valve combines practical design with dependable performance. Its two-offset geometry moves the disc away from the seat (over 90% of disengagement is achieved with less than 2° rotation) enabled by the eccentric cam action.

Designed for versatility, it provides bidirectional shutoff and is available with soft or metal seating to handle a wide range of pressures and temperatures. A durable one-piece shaft, precision-machined sealing surfaces, and multiple body styles—wafer, lug, and double-flanged—make the Series 20 easy to install and reliable for both isolation and control in water, process, and general industrial applications

High Flow, Precise Control & Low Ownership Cost

Precision and Reliability for Modern Flow Control

As an essential element within today's process loop, the Double Offset Butterfly Valve delivers dependable performance and precise regulation to maintain system stability, safety, and operational efficiency. Its engineered two-offset geometry significantly reduces seat contact during operation, minimizing wear and lowering operating torque to ensure smooth, consistent functionality over an extended service life.

Designed to operate across a wide range of process conditions, the Series 20 Double Offset Valve combines robust construction with optimized flow dynamics, making it a versatile solution for both isolation and throttling duties. Its durable seating arrangement and streamlined disc profile support reliable shutoff and enhanced controllability, even in demanding industrial environments.

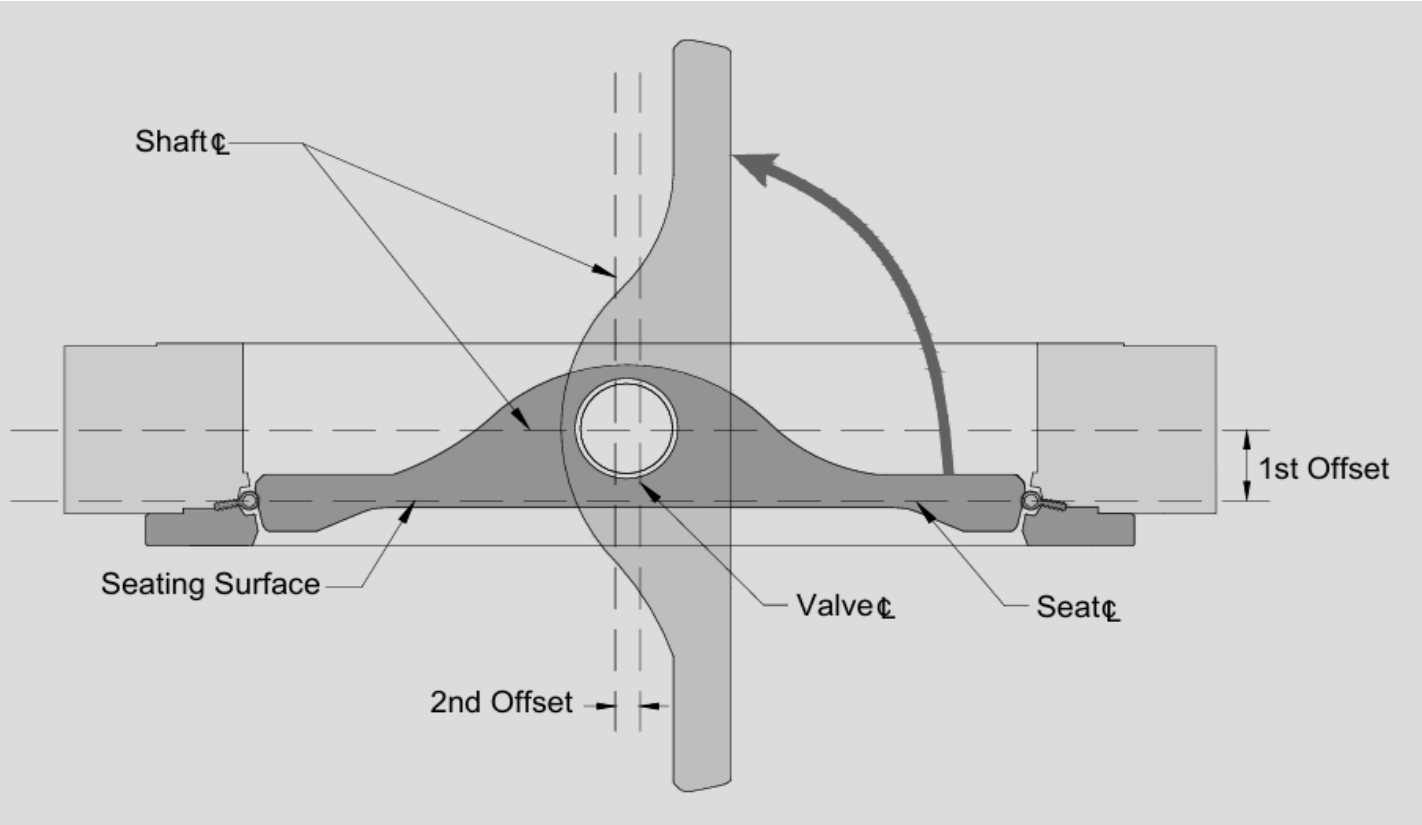
With flexible configuration options and compatibility with modern automation systems, the Series 20 is built for the evolving needs of industry. Whether integrated into water treatment networks, chemical systems, power plants, or HVAC installations, it helps achieve improved productivity, reduced maintenance requirements, and overall process efficiency.

Engineering Data

Double Offset Butterfly Valve designed as per ASME B16.34 & API 609

Sizes, Pressure rating	3” to 36”, ASME Class 150, 300 consult factory for sizes >36” 3” to 30”, ASME Class 600, consult factory for sizes >30”
Body Style	Lugged, Double Flange Short Pattern(DFSP)
Flow Characteristics	Modified Equal Percentage (Inherent)
Seal Type & Leakage class	Soft seal : Bi Directional Zero Leak Metal Seal : Class IV ANSI 70-2 Firesafe Seal : Bi Directional Zero Leak
Flow Direction	Standard : Flow To Open Optional : Bi-Directional on request
End Connections	Size – 3” to 24” Standard: Flanged RF as per ASME B16.5 Optional: Flanged FF as per ASME B16.5 Size – 26” to 36” Standard: Flanged RF as per ASME B16.47 Series A. Optional: Flanged FF as per ASME B16.47 Series A.
Face To Face	Lug – 3” to 24” - API 609 Cat B Lug – 24” to 36” – FCC Standard Double Flange Short Pattern – 3” to 36” – API 609 Cat B
Bonnet Design	Standard (-29° to 232°C), Extension (-46° to 427°C), Cryogenic (-46°C to -196°C)
NACE Conformance	NACE conformance shall be offered for Body, Disc, Shaft & Bolting material when requested
Mode Of Actuation	Pneumatic, Manual, Electrical, Hydraulic & Electro-Hydraulic.

Double Offset



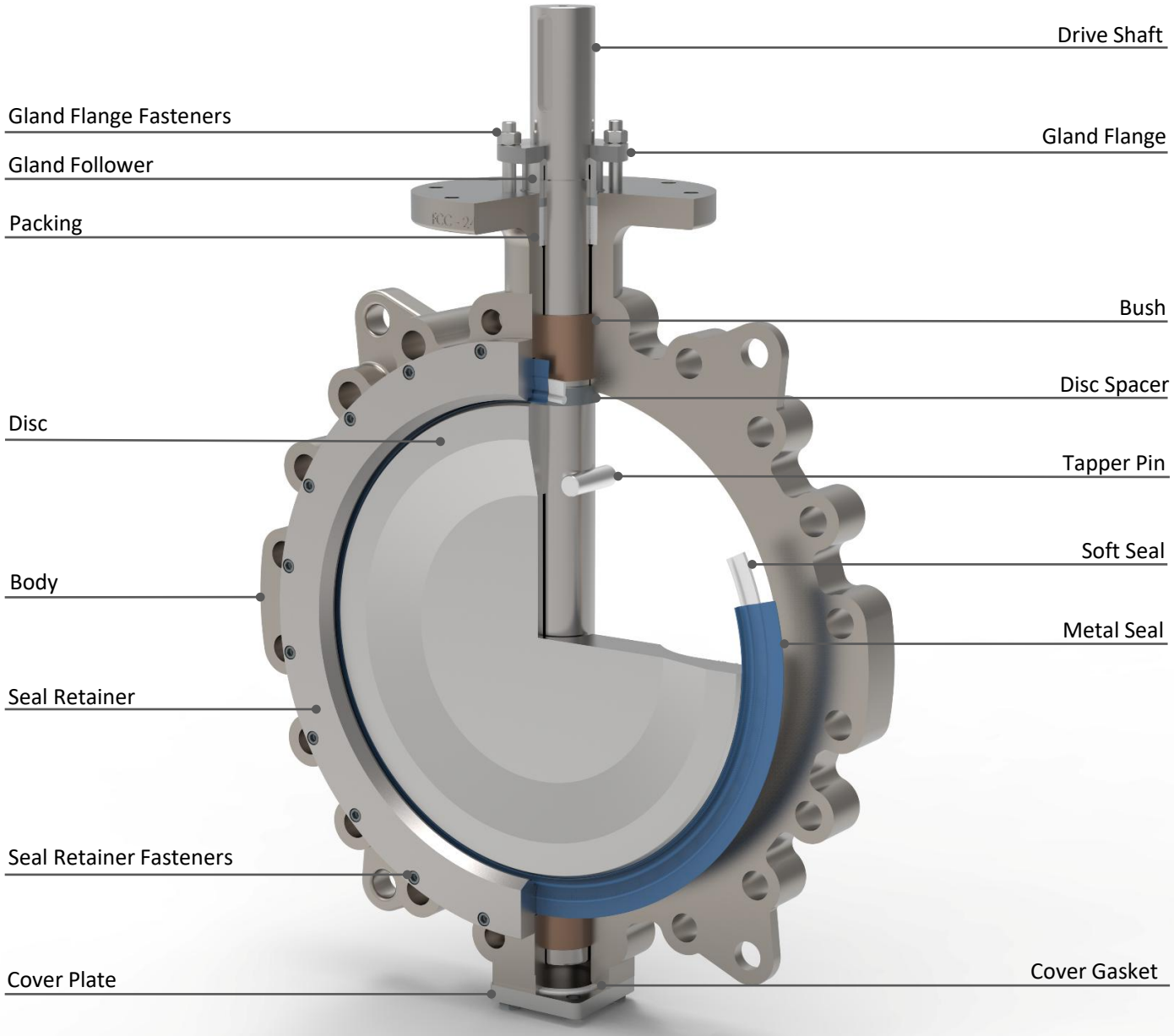
First Offset

The rotation axis of the disc is moved back from the seating surfaces of the disc. The purpose of this offset is to have a continuous sealing surface on the disc. It allows replacement of seal or seat without removing the disc.

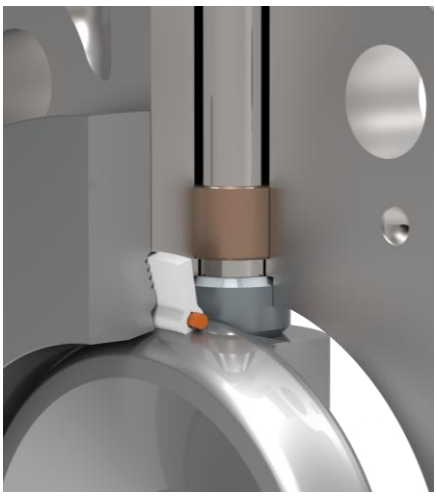
Second Offset

This is achieved by placing the shaft offset to one side of the valve centre line. The purpose of this offset is to drive away the disc from the seat more quickly as it moves. Thus, reducing friction and wear.

Valve Components



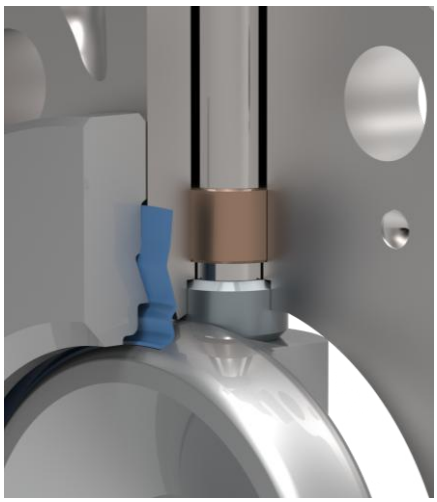
Sealing Solutions



Soft Seal

Applications requiring control over the flow of the pipeline and tight shut off on liquids or gases in the closed position is recommended to use soft seals.

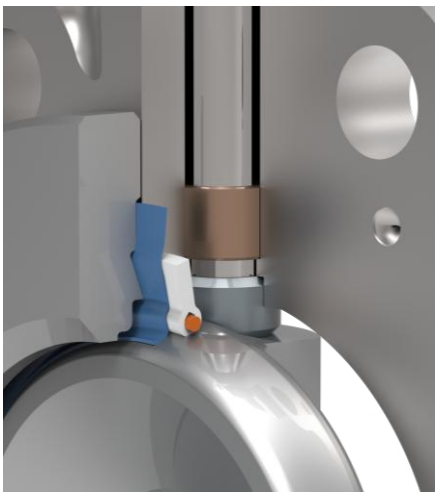
Resilient seals, such as PTFE, glass-filled PTFE and EPDM etc., facilitate a clear flow passage and prevent fluid build-up inside of the seal.



Metal Seal

For applications demanding Class IV shut-off in the closed position, especially in scenarios where elevated temperatures or arduous service conditions make the use of a soft seal impractical, a Flexible Metal seal is recommended.

The choice of a Flexible Metal seal is driven by its ability to withstand harsh conditions and maintain a reliable shut-off, providing a robust solution where softer seals may not be suitable.



Firesafe Seal

In applications requiring a dual-seal design for a 100% shut-off under normal operating conditions, a secondary metal seal functions as a backup in the event of a fire-induced deterioration of the soft seal. The metal seal safeguards the valve's integrity by allowing only minimal leakage when in the closed position.

As a result, the valve remains operational post-fire until it is considered safe to be removed for seal overhauling. This design ensures the sustained functionality and safety of the valve in conditions following a fire incident.

Table 1: Seal Types Vs Temperature

Seal type	Material	Temperature Range (°C)
Soft Seal	PTFE w/ Silicon Energizer RPTFE w/ Silicon Energizer	-46 to 232
Metal Seal	Inconel 718	-196 to 427
Fire Safe Seal	Soft Seal + Metal Seal	-46 to 232
Cryo Seal	PTFE w/ Energizer	-196 to 232

Notes

1. BAM certified seals are available on request

Material Specification

Table 2: Material Combinations

Description	Carbon Steel	Stainless Steel	Duplex/ Super Duplex	Al. Bronze	Monel	Inconel
Body	WCB/WCC/LCB/LCC	CF8M/CF3M	4A & 6A	Al.Bronze	Monel 400	Inconel 625
Disc	CF8M/CF3M		4A & 6A	Monel 400	Monel 400	Inconel 625
Shaft & Pins	17-4 PH/Inconel 718		32760/Inconel 718	Monel K500/Inconel 718		Inconel 718
Soft Seat	PTFE + Silicone Energizer / RPTFE + Silicone Energizer					
Metal Seat	Inconel 718					
Seat Gasket	Graphite					
Seat Retainer	SS316		4A	Monel K500 / Inc 625		
Retainer screw	A4-70/ A193 B8M		4A	Inconel 625		
Disc Spacer	XM-19		4A	Inconel 625		
Packing	PTFE (Temp < 232 ° C) or Graphite (Temp > 232 ° C)					
Gland follower	SS316		4A	Inconel 625		
Gland Bolts	A4-70/ A193 B8M					
Cover Plate	SS316		4A	Inconel 625		
Cover Plate	SS316		4A	Inconel 625		
Cover Bolts	A4-70/ A193 B8M					
Cover Gasket	316L Spiral Wound		S32760 spiral wound	Inconel 625 Spiral Wound		
Bush	DU Bush (Temp < 232 ° C) or Stellite Bush (Temp > 232 °C)					

Notes

1. Stelliting, hard chrome plating and nitriding on Sealing area (i.e, Disc).
2. Stelliting on disc will be preferred on metal seal configuration
3. Alloy 718, XM-19 shaft based on valve torque.
4. Material configuration for temperature above > 427° Contact factory.
5. For other material combination Contact factory.

Flow Coefficient Cv

Table 3: ASME Class 150

Valve Size (in)	Degree of Opening				
	10°	30°	50°	70°	90°
3	5	29	78	140	167
4	9	57	158	284	306
6	32	126	297	675	1215
8	59	252	617	1431	2520
10	90	405	945	2218	3870
12	140	630	1467	3375	5985
14	158	729	1701	3953	6885
16	207	918	2178	4959	8820
18	153	1062	3168	6264	9450
20	180	1377	4050	7920	12150
24	216	1980	5976	11520	18000
30	288	3465	9630	18810	28800
36	432	4887	14760	28530	43650

Table 4: ASME Class 300

Valve Size (in)	Degree of Opening				
	10°	30°	50°	70°	90°
3	5	29	78	140	167
4	9	57	158	284	306
6	23	124	333	639	900
8	42	216	567	1224	1800
10	55	266	702	1566	2385
12	83	387	990	2250	3600
14	90	441	1080	2340	3690
16	162	657	1656	4095	7020
18	85	972	2799	5553	8550
20	99	1125	3348	6570	9900
24	162	1800	5328	10260	16200
30	261	2907	7650	17010	26100
36	342	4194	13320	26280	40500

Table 5: ASME Class 600

Valve Size (in)	Degree of Opening				
	10°	30°	50°	70°	90°
3	3	11	60	122	149
4	5	41	86	189	270
6	14	117	243	540	720
8	18	188	432	945	1350
10	36	270	630	1386	1980
12	50	360	900	1953	2790
14	72	378	1440	2700	3510
16	86	450	1080	2610	4500
18	117	594	1710	3510	5400
20	129	855	2430	4770	7200
24	162	1080	3240	6300	9900
30	180	1485	4590	9000	13500

Valve Torque

Dynamic Torque

The Double Offset Geometry results in Torque that tends to rotate the disc towards the seat and assists valve closure, as the fluid flows in the Non preferred direction (Flow to Close)

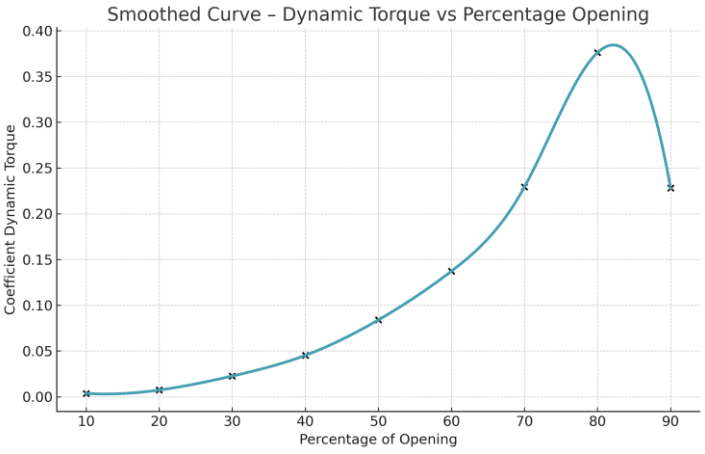
Combined effect of Geometry and the Hydro dynamic fluid pressure around the disc, results in a torque that increases steadily with increase in opening and reaches its peak at around 70-80 degree and thereafter falls rapidly.

Neglect the dynamic torque values if used for ON/OFF applications.

Table 6: Co-efficient of dynamic torque, Ct

% of Opening	Coefficient dynamic Torque
10	0.0036
20	0.0073
30	0.0226
40	0.0452
50	0.0839
60	0.1372
70	0.2292
80	0.376
90	0.228

Hydrodynamic torque characteristics is represented in **chart – 1** below



Hydrodynamic torque can be calculated using the formula

$T_d = (C_t \times D^3) \times \Delta P$

where, Td – Dynamic Torque in lbs inch
C_t – Torque Coefficient Factor
D – Disc Diameter in inch
ΔP – Pressure Drop in psi(g)

Valve Torque

Table 7: ASME Class 150

Valve Size (in)	Shaft Dia (in)	Soft Seal (lbf.in)				Metal Seal (lbf.in)				Firesafe Seal (lbf.in)				Mast (lbf.in)
		Differential Pressure (bar)				Differential Pressure (bar)				Differential Pressure (bar)				
		10	15	17	20	10	15	17	20	10	15	17	20	
3	5/8“	330	390	450	480	1080	1120	1174	1215	1200	1245	1305	1350	2903
4	5/8“	480	555	630	690	1215	1323	1417	1485	1350	1470	1575	1650	2903
6	3/4”	1215	1440	1650	1800	2362	2538	2700	2835	2625	2820	3000	3150	5016
8	1”	2250	2550	2925	3150	3780	3982	4185	4320	4200	4425	4650	4800	11889
10	1 - 1/4“	4200	4950	5640	6150	5670	6115	6561	6885	6300	6795	7290	7650	23221
12	1 - 1/4“	6150	7500	8850	9750	9315	9922	10516	10935	10350	11025	11685	12150	23221
14	1 - 1/2“	9450	11100	12750	14250	17550	18900	20925	22950	19500	21000	23250	25500	40126
16	2“	13650	16950	20250	22500	21600	23760	25920	27540	24000	26400	28800	30600	95113
18	2“	21000	25500	30000	33000	25650	28350	30375	32400	28500	31500	33750	36000	95113
20	2 - 1/2“	27000	31950	37050	40500	31050	33750	37800	48600	34500	37500	42000	54000	185768
24	3”	43500	51900	60150	66000	44550	51300	59400	85050	49500	57000	66000	94500	321007
30	3 - 1/2“	70500	80550	101550	112500	67770	83835	102195	175635	75300	93150	113550	195150	509748
36	3 - 1/2“	96000	121500	147000	165000	102736	135811	171317	307533	114150	150900	190350	341700	509748

Valve Torque

Table 8: ASME Class 300

Valve Size (in)	Shaft Dia (in)	Soft Seal (lbf.in)				Metal Seal (lbf.in)				Firesafe Seal (lbf.in)				Mast (lbf.in)
		Differential Pressure (bar)				Differential Pressure (bar)				Differential Pressure (bar)				
		10	25	37	50	10	25	37	50	10	25	37	50	
3	5/8“	330	570	795	1035	1080	1283	1485	1620	1200	1425	1650	1800	2903
4	5/8“	480	795	1095	1500	1215	1620	2025	2295	1350	1800	2250	2550	2903
6	3/4”	1500	2475	3450	4500	2835	3915	4995	5805	3150	4350	5550	6450	5016
8	1 - 1/4“	2775	4650	6450	7950	4252	5805	7425	8370	4725	6450	8250	9300	23221
10	1 - 1/2“	4950	8250	11400	15000	9855	13770	17550	20250	10950	15300	19500	22500	40126
12	1 - 1/2“	7500	12450	17250	22500	14850	19845	24840	28350	16500	22050	27600	31500	40126
14	2“	12900	20100	27450	33000	25650	32400	35100	37800	28500	36000	39000	42000	95113
16	2 - 1/2“	21000	32250	43500	57000	37800	51300	59400	66150	42000	57000	66000	73500	185768
18	2 - 1/2“	27000	40500	54150	67500	49410	63990	70470	76005	54900	71100	78300	84450	185768
20	3”	36000	55050	73950	91500	65610	85995	94500	102465	72900	95550	105000	113850	321007
24	3.5”	57000	85500	115050	142500	101790	131895	141750	151605	113100	146550	157500	168450	509748
30	4 - 1/2“	120000	190500	258000	315000	130680	188190	223020	256770	145200	209100	247800	285300	1084666
36	5”	178500	270000	360000	435000	208440	308475	364095	422415	231600	342750	404550	469350	1487882

Valve Torque

Table 9: ASME Class 600

Valve Size (in)	Shaft Dia (in)	Soft Seal (lbf.in)				Metal Seal (lbf.in)				Firesafe Seal (lbf.in)				Mast (lbf.in)
		Differential Pressure (bar)				Differential Pressure (bar)				Differential Pressure (bar)				
		10	40	70	100	10	40	70	100	10	40	70	100	
3	3/4“	720	1305	1800	2175	1803	2265	2775	2724	2004	2517	3084	3027	5016
4	1”	1440	2400	3150	4050	2181	3038	3963	4974	2422	3375	4404	5527	11889
6	1 - 1/4”	2550	4800	6900	8700	3983	6843	10517	10935	4425	7602	11685	12150	23221
8	1 - 1/2“	6150	10800	15150	21000	6750	11688	16875	22275	7500	12985	18750	24750	40126
10	2”	12450	18000	27000	36000	11610	23436	33075	35573	12900	26040	36750	39525	95113
12	2”	17700	21000	39000	45000	16335	34425	49275	53325	18150	38250	54750	59250	95113
14	2 - 1/2“	21000	36000	49500	64500	24705	42930	61965	67365	27450	47700	68850	74850	185768
16	3”	24750	53250	69000	97500	35775	64800	94905	129600	39750	72000	105450	144000	321007

Notes:
1. The MAST (Maximum Allowable Shaft Torque) values correspond to 17-4PH.
2. Valve torque includes FOS of 1.5
3. To convert Lbf.in to Nm which is multiply by 0.1129
4. Consult factory for Torque values above 16” valve size

For other materials multiply the value with the factors below

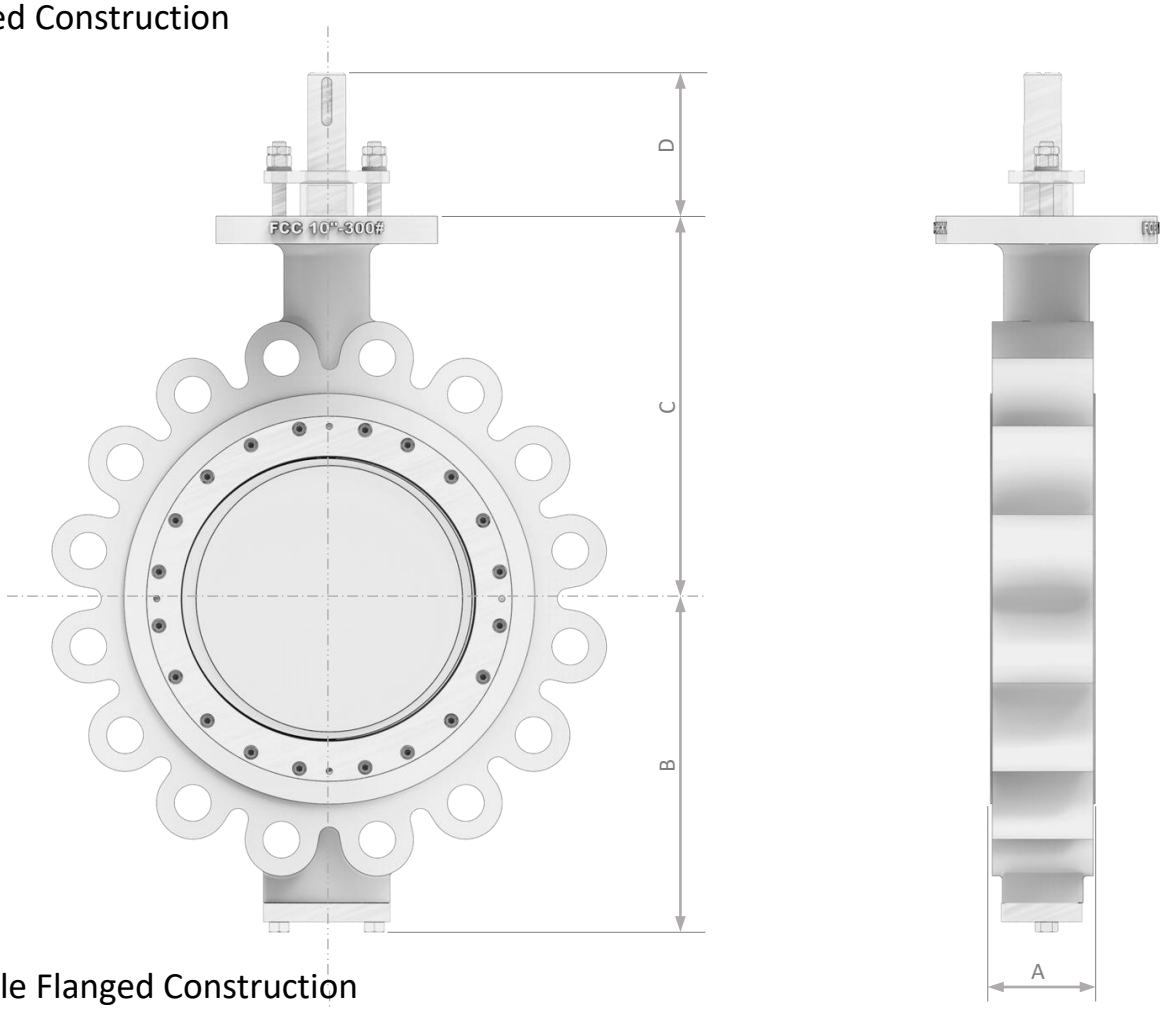
Materials	SS316	Nitronic 50	S32760	Monel K500	Inconel 718
Factor	0.51	0.74	0.80	0.95	1.43

Under certain conditions, hydrodynamic torque can meet or exceed the Break Torques.

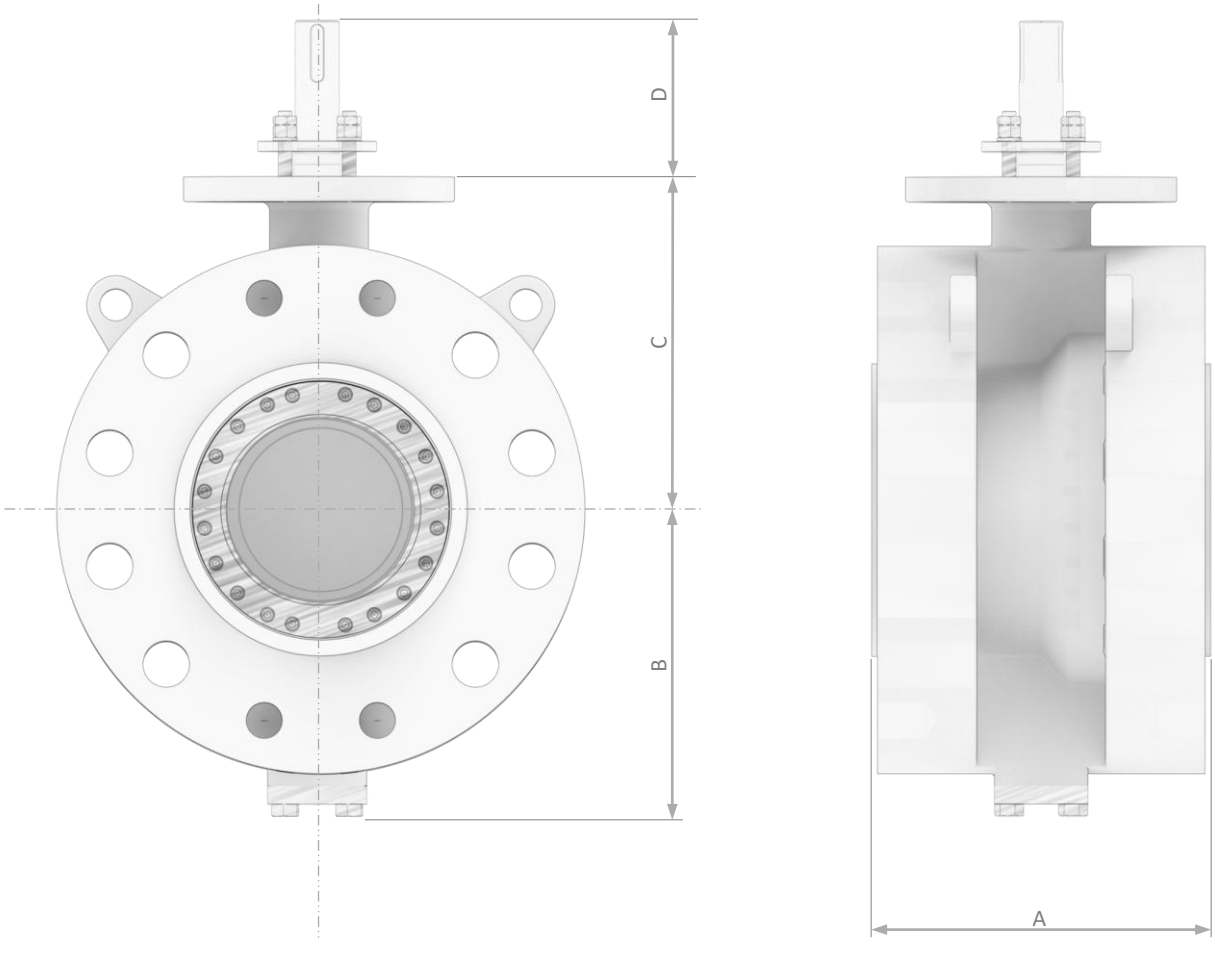
When designing valve systems, hydrodynamic torque must be considered to ensure correct selection of actuator.

Dimensions, Weights & Bolting

Lugged Construction



Double Flanged Construction



150# Dimensions, Weights & Bolting

Table 10: Dimensions & Weights

Valve Size (in)	Dimensions (mm)								Actuator Mounting	Weight (kg)	
	A		B	C	D	Ø PCD	Ø OD	Ø S	Flange Type ISO 5211	LW	DF
	LW	DF									
3	48	114	120	130	75	152.4	212	5/8“	F05	8	27
4	54	127	140	170	90	190.5	230	5/8“	F07	16	31
6	57	140	170	200	90	241.3	280	3/4”	F07	20	39
8	64	152	205	235	110	298.4	344	1”	F10	34	64
10	71	165	245	280	110	362.0	408	1 - 1/4“	F12	55	89
12	81	178	275	310	120	431.8	483	1 - 1/4“	F14	80	129
14	92	190	310	360	145	476.2	535	1 - 1/2“	F14	105	163
16	102	216	340	400	145	539.8	598	2“	F16	142	210
18	114	222	365	425	165	577.8	637	2“	F16	180	240
20	127	229	405	465	165	635.0	700	2 - 1/2“	F25	235	285
24	154	267	460	520	180	749.3	817	3”	F25	349	450
30	165	318	605	680	210	914.4	988	3 - 1/2“	F30	583	725
36	203	330	650	735	240	1085.5	1168	3 - 1/2“	F35	856	1154

Table 11: End Connection and Bolting (Lugged)

Valve Size (in)	Drilled Holes					Tapped Holes				
	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts
3	5/8- 11 UNC	6	4	5/8- 11 UNC	8	-	-	-	-	-
4	5/8- 11 UNC	6.25	8	5/8- 11 UNC	16	-	-	-	-	-
6	3/4- 10 UNC	6.75	8	3/4- 10 UNC	16	-	-	-	-	-
8	3/4- 10 UNC	7.25	8	3/4- 10 UNC	16	-	-	-	-	-
10	7/8- 9 UNC	8	12	7/8- 9 UNC	24	-	-	-	-	-
12	7/8- 9 UNC	8.5	12	7/8- 9 UNC	24	-	-	-	-	-
14	1-8 UN	9.5	12	1-8 UN	24	-	-	-	-	-
16	1-8 UN	10	16	1-8 UN	32	-	-	-	-	-
18	1-1/8- 8 UN	11	16	1-1/8- 8 UN	32	-	-	-	-	-
20	1-1/8- 8 UN	11.75	16	1-1/8- 8 UN	32	1-1/8- 8 UN	4.5	8	1-1/8- 8 UN	8
24	1-1/4- 8 UN	13.5	16	1-1/4- 8 UN	32	1-1/4- 8 UN	5	8	1-1/4- 8 UN	8
30	1-1/4- 8 UN	16.25	24	1-1/4- 8 UN	48	1-1/4- 8 UN	6.25	8	1-1/4- 8 UN	8
36	1-1/2- 8 UN	19.50	28	1-1/2- 8UN	56	1-1/2- 8 UN	7.50	8	1-1/2- 8 UN	8

150# Dimensions, Weights & Bolting

Table 12: End Connection and Bolting (Double Flanged)

Valve Size (in)	Drilled Holes					Tapped Holes				
	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts
3	5/8- 11 UNC	4	8	5/8- 11 UNC	16	-	-	-	-	-
4	5/8- 11 UNC	4	8	5/8- 11 UNC	16	5/8-11 UNC	2.75	8	5/8- 11 UNC	8
6	3/4- 10 UNC	4.25	8	3/4- 10 UNC	16	3/4-10 UNC	3	8	3/4- 10 UNC	8
8	3/4- 10 UNC	4.5	8	3/4- 10 UNC	16	3/4-10 UNC	3.25	8	3/4- 10 UNC	8
10	7/8- 9 UNC	5	16	7/8- 9 UNC	32	7/8- 9 UNC	3.5	8	7/8- 9 UNC	8
12	7/8- 9 UNC	5	16	7/8- 9 UNC	32	7/8-9 UNC	3.5	8	7/8- 9 UNC	8
14	1-8 UN	5.75	16	1-8 UN	32	1-8 UN	4	8	1-8 UN	8
16	1-8 UN	5.75	24	1-8 UN	48	1-8 UN	4	8	1-8 UN	8
18	1-1/8- 8 UN	6.25	24	1-1/8- 8 UN	48	1-1/8-8 UN	4.5	8	1-1/8- 8 UN	8
20	1-1/8- 8 UN	6.25	32	1-1/8- 8 UN	64	1-1/8- 8 UN	4.5	8	1-1/8- 8 UN	8
24	1-1/4- 8 UN	7.25	32	1-1/4- 8 UN	64	1-1/4- 8 UN	5	8	1-1/4- 8 UN	8
30	1-1/4- 8 UN	9.75	48	1-1/4- 8 UN	96	1-1/4- 8 UN	6.25	8	1-1/4- 8 UN	8
36	1 1/2 -8 UN	11.25	56	1 1/2 -8 UN	112	1 1/2 -8 UN	7.5	8	1 1/2 -8 UN	8

300# Dimensions, Weights & Bolting

Table 13: Dimensions & Weights

Valve Size (in)	Dimensions (mm)								Actuator Mounting	Weight (kg)	
	A		B	C	D	Ø PCD	Ø OD	Ø S	Flange Type ISO 5211	LW	DF
	LW	DF									
3	48	114	120	130	75	168.1	212	5/8“	F07	14	26
4	54	127	155	185	90	200.2	254	5/8“	F07	20	39
6	59	140	190	220	110	269.7	319	3/4”	F10	34	63
8	73	152	260	270	120	330.2	384	1 - 1/4“	F12	57	98
10	83	165	270	310	120	387.4	445	1 - 1/2“	F14	85	130
12	92	178	310	350	145	450.8	524	1 - 1/2“	F16	123	180
14	117	190	340	390	165	514.4	584	2“	F16	207	256
16	133	216	370	420	165	571.5	650	2 - 1/2“	F25	269	329
18	149	222	405	480	180	628.6	712	2 - 1/2“	F25	357	400
20	159	229	440	515	210	685.8	777	3”	F30	416	505
24	181	267	515	600	210	812.8	918	3.5”	F30	635	753
30	241	318	615	700	210	997.0	1096	4 - 1/2“	F35	1103	1125
36	241	330	700	800	235	1168.4	1270	5”	F40	1663	2070

Table 14: End Connection and Bolting (Lugged)

Valve Size (in)	Drilled Holes					Tapped Holes				
	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts
3	3/4- 10 UNC	6.5	8	3/4- 10 UNC	16	-	-	-	-	-
4	3/4- 10 UNC	7	8	3/4- 10 UNC	16	-	-	-	-	-
6	3/4- 10 UNC	7.75	12	3/4-10 UNC	24	-	-	-	-	-
8	7/8- 9 UNC	9	12	7/8- 9 UNC	24	-	-	-	-	-
10	1-8 UN	10	12	1-8 UN	24	1-8 UN	4.5	8	1-8 UN	8
12	1-1/8- 8 UN	11	16	1-1/8- 8 UN	32	1-1/8-8 UN	4.75	8	1-1/8- 8 UN	8
14	1-1/8- 8 UN	12.25	16	1-1/8- 8 UN	32	1-1/8-8 UN	5	8	1-1/8- 8 UN	8
16	1-1/4- 8 UN	13.25	16	1-1/4- 8 UN	32	1-1/4- 8 UN	5.25	8	1-1/4- 8 UN	8
18	1-1/4- 8 UN	14.25	20	1-1/4- 8 UN	40	1-1/4- 8 UN	5.5	8	1-1/4- 8 UN	8
20	1-1/4- 8 UN	15	20	1-1/4- 8 UN	40	1-1/4- 8 UN	5.75	8	1-1/4- 8 UN	8
24	1-1/2- 8 UN	16.75	20	1-1/2- 8 UN	40	1-1/2- 8 UN	6.5	8	1-1/2- 8 UN	8
30	1-3/4- 8 UN	21.75	24	1-3/4- 8 UN	48	1-3/4- 8 UN	8	8	1-3/4- 8 UN	8
36	2 – 8 UN	23.25	28	2 – 8 UN	56	2 – 8 UN	9.0	8	2 – 8 UN	8

300# Dimensions, Weights & Bolting

Table 15: End Connection and Bolting (Double Flanged)

Valve Size (in)	Drilled Holes					Tapped Holes				
	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts
3	3/4- 10 UNC	4.5	8	3/4- 10 UNC	16	3/4-10 UNC	3.25	8	3/4- 10 UNC	8
4	3/4- 10 UNC	4.75	8	3/4- 10 UNC	16	3/4-10 UNC	3.25	8	3/4- 10 UNC	8
6	3/4- 10 UNC	5.25	16	3/4-10 UNC	32	3/4-10 UNC	3.5	8	3/4- 10 UNC	8
8	7/8- 9 UNC	5.75	16	7/8- 9 UNC	32	7/8- 9 UNC	4	8	7/8- 9 UNC	8
10	1-8 UN	6.75	24	1-8 UN	48	1-8 UN	4.5	8	1-8 UN	8
12	1-1/8- 8 UN	7.25	24	1-1/8- 8 UN	48	1-1/8-8 UN	4.75	8	1-1/8- 8 UN	8
14	1-1/8- 8 UN	7.5	32	1-1/8- 8 UN	64	1-1/8-8 UN	5	8	1-1/8- 8 UN	8
16	1-1/4- 8 UN	8	32	1-1/4- 8 UN	64	1-1/4- 8 UN	5.25	8	1-1/4- 8 UN	8
18	1-1/4- 8 UN	8.25	40	1-1/4- 8 UN	80	1-1/4- 8 UN	5.5	8	1-1/4- 8 UN	8
20	1-1/4- 8 UN	8.5	40	1-1/4- 8 UN	80	1-1/4- 8 UN	5.75	8	1-1/4- 8 UN	8
24	1-1/2- 8 UN	9.5	40	1-1/2- 8 UN	80	1-1/2- 8 UN	6.5	8	1-1/2- 8 UN	8
30	1-3/4- 8 UN	12.25	48	1-3/4- 8 UN	96	1-3/4- 8 UN	8	8	1-3/4- 8 UN	8
36	2 – 8 UN	13.25	56	2 – 8 UN	112	2 – 8 UN	9.0	8	2 – 8 UN	8

600# Dimensions, Weights & Bolting

Table 16: Dimensions & Weights

Valve Size (in)	Dimensions (mm)								Actuator Mounting	Weight (kg)	
	A		B	C	D	Ø PCD	Ø OD	Ø S	Flange Type ISO 5211	LW	DF
	LW	DF									
3	54	180	130	165	75	66	210	3/4“	F10	15	30
4	64	190	165	210	90	91	275	1”	F10	28	52
6	78	210	215	250	110	135	355	1 - 1/4”	F12	58	101
8	102	230	255	290	120	188	422	1 - 1/2“	F14	99	173
10	117	250	305	350	165	236	510	2”	F16	178	270
12	140	270	335	380	165	284	560	2”	F25	223	310
14	155	290	355	410	180	328	605	2 - 1/2“	F25	280	370
16	178	310	420	500	200	366	688	3”	F30	425	550
18	200	330	440	520	200	414	745	3 - 1/2“	F30	515	660
20	216	350	470	550	210	465	815	4”	F35	652	780
24	232	390	535	620	210	561	942	5”	F35	880	1080
30	318	450	625	710	210	711	1132	5 - 3/4“	F40	1540	1750

Table 17: End Connection and Bolting (Lugged)

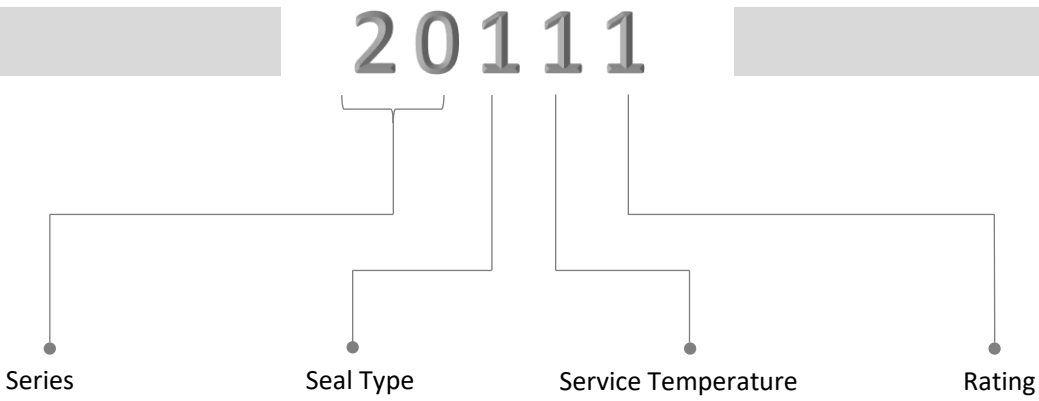
Valve Size (in)	Drilled Holes					Tapped Holes				
	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts
3	3/4- 10 UNC	7.25	8	3/4- 10 UNC	16	-	-	-	-	-
4	7/8- 9 UNC	8.5	8	7/8- 9 UNC	16	-	-	-	-	-
6	1-8 UN	10	12	1-8 UN	24	-	-	-	-	-
8	1-1/8- 8 UN	11.75	12	1-1/8- 8UN	24	-	-	-	-	-
10	1-1/4- 8 UN	13.25	12	1-1/4- 8 UN	24	1-1/4-8 UN	5.75	8	1-1/4- 8 UN	8
12	1-1/4-8 UN	14.5	16	1-1/4- 8 UN	32	1-1/4-8 UN	5.75	8	1-1/4- 8 UN	8
14	1-3/8- 8 UN	15.5	16	1-3/8- 8 UN	32	1-3/8-8 UN	6.25	8	1-3/8- 8 UN	8
16	1-1/2- 8 UN	17.25	16	1-1/2- 8 UN	32	1-1/2- 8 UN	6.75	8	1-1/2- 8 UN	8
18	1-5/8- 8 UN	18.75	16	1-5/8- 8 UN	32	1-5/8- 8 UN	7.25	8	1-5/8- 8 UN	8
20	1-5/8- 8 UN	20	20	1-5/8- 8 UN	40	1-5/8- 8 UN	7.5	8	1-5/8- 8 UN	8
24	1-7/8- 8 UN	22.25	20	1-7/8- 8 UN	40	1-7/8- 8 UN	8.5	8	1-7/8- 8 UN	8
30	2- 8 UN	27.25	24	2- 8 UN	48	2- 8 UN	9.5	8	2- 8 UN	8

600# Dimensions, Weights & Bolting

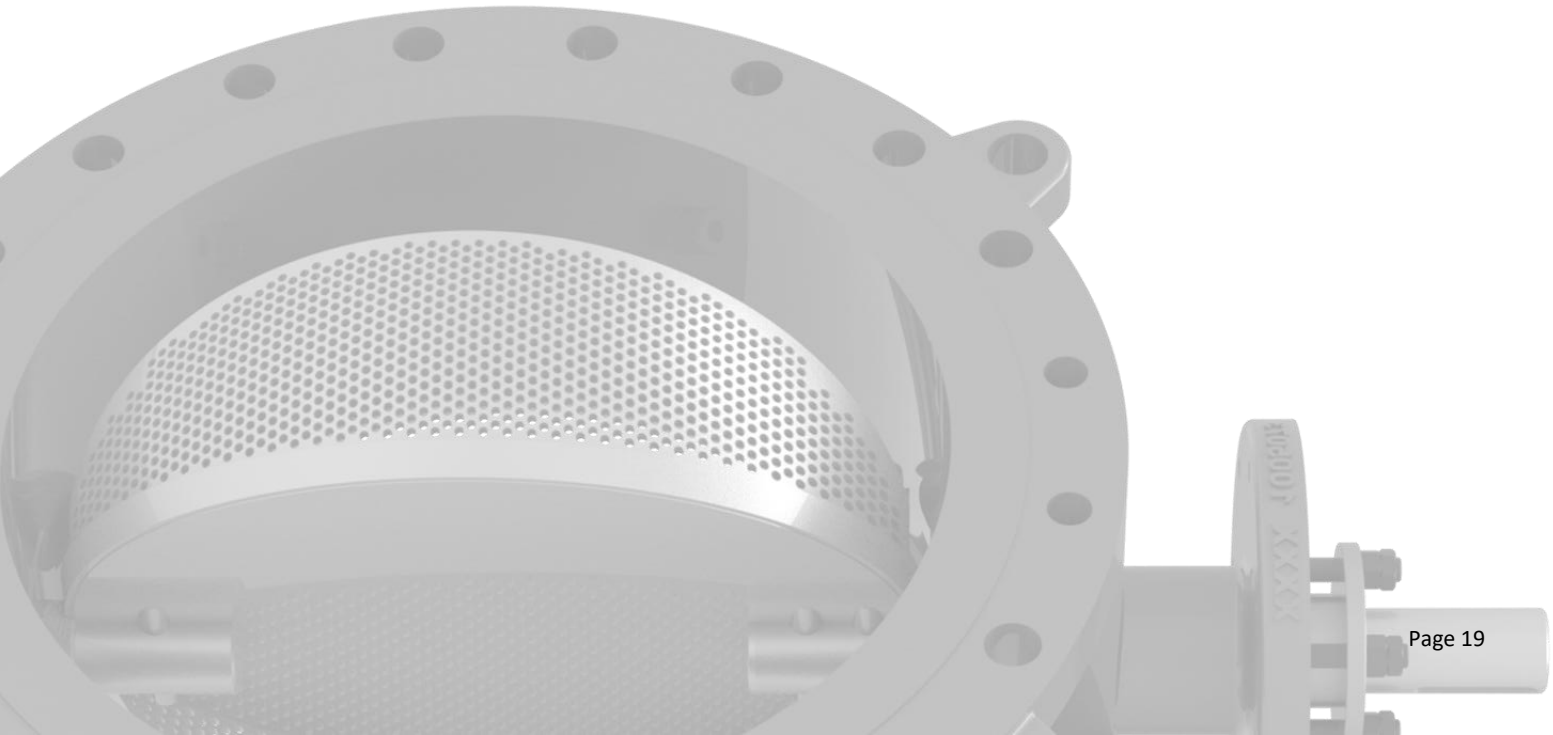
Table 18: End Connection and Bolting (Double Flanged)

Valve Size (in)	Drilled Holes					Tapped Holes				
	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts	Stud Size	Length (in)	No of Studs	Nut Size	No of Nuts
3	3/4- 10 UNC	5	8	3/4- 10 UNC	16	3/4-10 UNC	3.25	8	3/4- 10 UNC	8
4	7/8- 9 UNC	5.75	8	7/8- 9 UNC	16	7/8- 9 UNC	4	8	7/8- 9 UNC	8
6	1-8 UN	6.75	16	1-8 UN	32	1-8 UN	4.5	8	1-8 UN	8
8	1-1/8- 8 UN	7.75	16	1-1/8- 8UN	32	1-1/8-8 UN	5	8	1-1/4- 8 UN	8
10	1-1/4- 8 UN	8.5	24	1-1/4- 8 UN	48	1-1/4-8 UN	5.75	8	1-1/4- 8 UN	8
12	1-1/4-8 UN	8.75	32	1-1/4- 8 UN	64	1-1/4-8 UN	5.75	8	1-1/4- 8 UN	8
14	1-3/8- 8 UN	9.25	32	1-3/8- 8 UN	64	1-3/8-8 UN	6.25	8	1-3/8- 8 UN	8
16	1-1/2- 8 UN	10	32	1-1/2- 8 UN	64	1-1/2- 8 UN	6.75	8	1-1/2- 8 UN	8
18	1-5/8- 8 UN	10.75	32	1-5/8- 8 UN	64	1-5/8- 8 UN	7.25	8	1-5/8- 8 UN	8
20	1-5/8- 8 UN	11.5	40	1-5/8- 8 UN	80	1-5/8- 8 UN	7.5	8	1-5/8- 8 UN	8
24	1-7/8- 8 UN	13	40	1-7/8- 8 UN	80	1-7/8- 8 UN	8.5	8	1-7/8- 8 UN	8
30	2- 8 UN	14.5	48	2- 8 UN	96	2- 8 UN	9.5	8	2- 8 UN	8

Model Number



Series	Seal Type	Service Temperature	Rating
20	1- Double Offset, Soft Seal	1 - Warm Service	1 - 150
	2- Double Offset, Metal Seal	2 - High Temperature	2 - 300
	X- Double Offset, Firesafe Seal	3 – Cryogenic	3 - 600







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