DelVal® SERIES 44/45/46 & 47/48/49

Double Eccentric High Performance Butterfly Valves
Wafer, Lug and Double Flange

Sizes 2″ - 48″ / DN 50 - DN 1200

ASME Class150 & Class 300

DelVal Flow Controls

Leading the Industry with Innovation by Design

DelVal Flow Controls is pleased to offer top-of-the-line products in pipeline flow control. The DelVal® Series 44/45/46, 47/48/49 has been developed with extensive application, design and manufacturing expertise. These products are produced by employing modern manufacturing practices under a robust quality assurance system. These practices ensure consistent product quality and dependable performance. The DelVal® Series 44/45/46, 47/48/49 has been designed to include state-of-the-art features that are described in this bulletin.

Features

Top Flange
The top flange is drilled as per EN ISO 5211 to accommodate direct mounting of a wide range of actuators.

Body
One-piece wafer body style or full lug style for dead end service. Both body styles offer bidirectional sealing as standard in conformance with full ASME class 150 and class 300 rating.

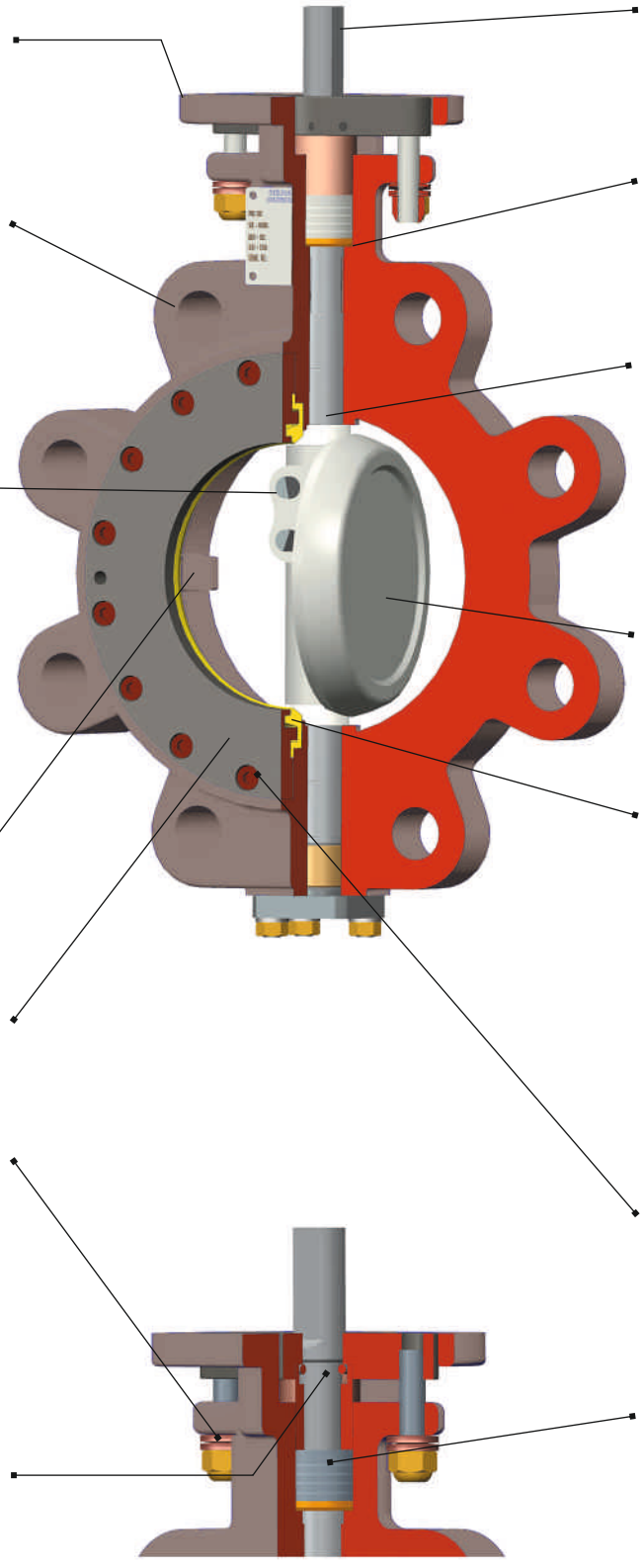
Wedge Pin
Pins are offset from the center of the stem which places them in compression rather than shear thus eliminating potential for failure. The pins are precision fit and wedge type which provide positive mechanical attachment of disc to stem.

Disc Stop
The disc stop is designed to prevent disc from rotating in wrong direction and to minimize possible seat damage.

Seat Retainer
Retains seat in the body and is supplied in the same material as the body.

Stem Seal
Gland flange assembly is “live loaded” with Belleville Springs. This ensures continuous compression of packing and sealing contact at the stem and body. Rocker shaped gland bridge compensates for uneven adjustment of gland bolts.

Blow-out Proof Stem
Retainer circlip provides blow -out proof stem.



Stem
The high-strength, stainless steel one-piece stem provides maximum strength for high torque applications.

Extended Neck
Extended neck allows for 2” of pipeline insulation and easy access to stem packing adjustment and actuator mounting.

Bearings
The drive and non-drive end stem “Bear-X” bearings are made out of an engineered high compressive strength composite polymer material having excellent thermal, chemical and wear resistance .

Disc
The disc has been engineered to maximize flow and minimize resistance to provide a high flow coefficient (Cv).

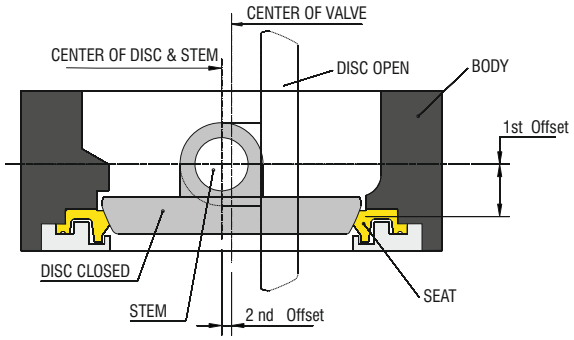
Seat
The unique seat design utilizes a flexible lip seal concept. When the disc closes, this action causes a slight deflection in the seat, energizing the seat. During this energized position, the seat has a stored energy force constantly pushing against the disc. In addition to this ”energized” force, when pressure is on the insert side, the pressure pushes under the lip which further amplifies the sealing force between the disc and the seat.

Bi-Directional Dead End Service
All lug valves are suitable for dead-end service to full ASME pressure rating, bi-directionally.

Adjustable Stem Packing
The stem packing system features a pull down gland with easy access to the adjusting hex head nuts without removal of the actuator.

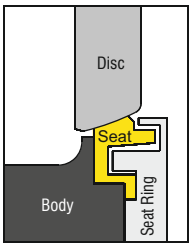
Features and Selection

Double Offset Disc Design



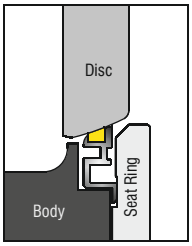
The offset disc produces a cam-like action, pulling the disc from the seat. This action reduces seat wear and eliminates seat deformation when the disc is in the open position. The disc does not contact the seat when the valve is in the open condition; therefore, seat service life is extended and torques are reduced. As the valve closes, the cam-like action converts the rotary motion of the disc to a linear type motion effectively pushing the disc onto the seat.

Seat Designs



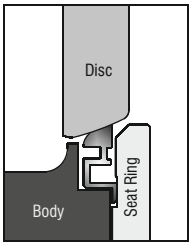
Soft Seat

Soft Seat : Flexible lip seat design retains its original shape and maintains a seal against the disc regardless of the flow direction.



Fire Safe Seat

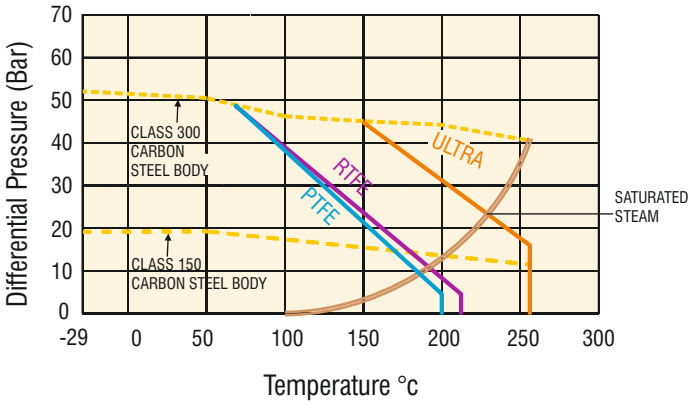
Fire Safe Seat : During and after fire, when the resilient material has been partially or completely destroyed, the metal seat ring provides a positive seal by remaining in constant contact with the disc in either direction of media flow.



Metal Seat

Metal Seat : Flexible metal seat offers a very high sealing capability with low leakage rates. The mechanical properties and the shape of the metal seat allow it to flex and maintain constant positive sealing against the disc.

Seat Pressure / Temperature



ULTRA Seat

An engineered fluorocarbon polymer that is rated for 260 °C at 19 bar. Excellent for handling aggressive fluids at high pressures, Ultra is recommended for extended service in hostile environments involving chemical, thermal, and mechanical stress . Ultra has excellent thermal stability and is ideal for steam, hot gases, and a variety of process chemicals where service can also be subject to pressure cycling.

Special Applications

Vacuum

Standard valves are rated for tight shut-off of vacuum to 2×10^{-2} torr.

Oxygen

Valves for critical gaseous oxygen service are specially prepared, cleaned, inspected, assembled and tested to ensure removal of all burrs, sharp edges, dirt, hydrocarbon oil or grease and other contaminants.

NACE Service

Valves conform to NACE MR 0175 are available. These valves are well suited for oil and gas industry applications requiring resistant materials to sulfide stress cracking.

Steam

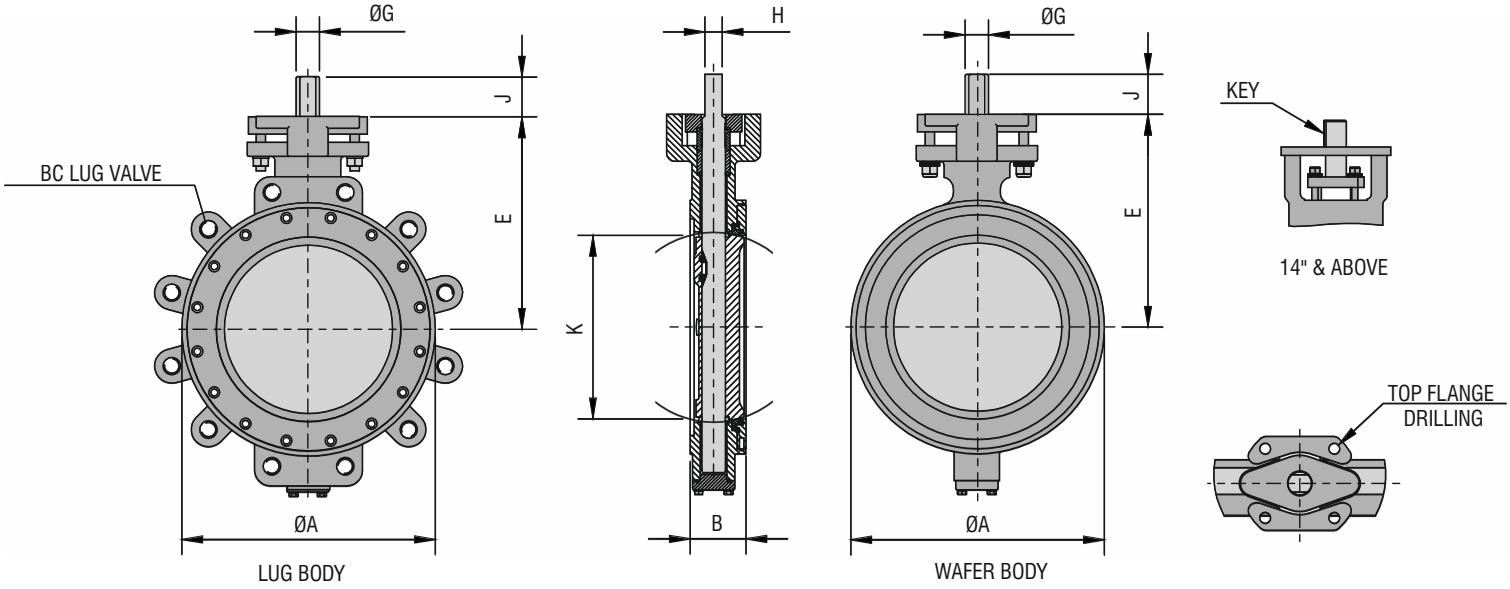
Valves are available for saturated steam at 14 Bar rating with Ultra seat for series 44 /45/46 and 31 Bar for series 47 / 48/49.

SPECIFICATION AND CODES

Design : API 609, ASME B16.34.BS EN 593, BS EN12516
Face to Face: API 609, ASME B16.10, ISO 5752, BS EN 558
Testing: API 598, BS EN 12266-1,ANSI-FCI 70-2 Class VI,
ISO 5208, ANSI-FCI 70-2 Class IV for Metal Seat
Flange Accommodation : ASME B16 5, ASME B16.47 series 'B'
Optional-BS EN 1092, ASME B16.47 series 'A'
Fire Safe : API 607

Compliance With: Pressure Equipment Directive
PED/97/23/EC
Body Style: Wafer, Lug and Double Flange
Pressure Rating : Class 150, Class 300
Temperature Range : -29°C to 260°C (soft seat)
-29°C to 538°C (metal seat)

Engineering



DIMENSIONS (mm)

ASME CLASS 150 (Series 44/45)

Valve Size		ØA	✱B	E	Top Flange Drilling			ØG	H	J	Key Size	K	Lug Bolting Data			Apx. Weights In Kg.	
Inch	DN				BC	No. of holes	Hole Dia.						BC	No. of holes	Tapping UNC/UN-2B	Wafer	Lug
2	50	97	43	125	70	4	10	14	10	32	-	39.8	120.7	4	5/8-11	3.5	4.0
2 1/2	65	105	46	146	70	4	10	16	11	32	-	50.6	139.7	4	5/8-11	4.0	4.9
3	80	139	48	150	70	4	10	16	11	32	-	68.4	152.4	4	5/8-11	4.9	6.3
4	100	170	54	172	70	4	10	16	11	32	-	90.3	190.5	8	5/8-11	7.1	12.0
5	125	186	57	188	70/102	4	10/12	19	13	32	-	110.8	215.9	8	3/4-10	8.9	13.4
6	150	216	57	209	70/102	4	10/12	19	13	32	-	138.7	241.3	8	3/4-10	11.3	14.2
8	200	269	64	240	125	4	14	22	16	32	-	183.2	298.5	8	3/4-10	11.6	21.3
10	250	324	71	272	125	4	14	30	22	51	-	232.6	362.0	12	7/8-9	27.7	40.8
12	300	381	81	310	125	4	14	35	24	51	-	277.7	431.8	12	7/8-9	50.4	57.2
14	350	413	92	405	125/140	4	14/18	40	-	51	12 x 8	307	476.2	12	1-8	62.0	82.7
16	400	470	102	456	140/165	4	18/22	50	-	64	12 x 10	354	539.7	16	1-8	93.0	112.5
18	450	534	114	491	140/165	4	18/22	55	-	64	16 x 10	405	577.8	16	1 1/8-8	105.8	139.0
20	500	584	127	536	165	4	22	60	-	102	18 x 11	466.3	635.0	20	1 1/8-8	114.3	187.3
24	600	695	154	634	165/254	8	22/18	70	-	102	20 x 12	522.8	749.3	20	1 1/4-8	230	318.2
26	650	715	165	720	254	8	18	88.9	-	102	22.23x15.88	605.0	-	-	-	300	-
28	700	805	165	725	254	8	18	88.9	-	102	22.23x15.88	660.5	-	-	-	385	-
30	750	857	191	755	254	8	22	88.9	-	102	22.23x15.88	715.0	914.4	28	1 1/4-8	450	720.0
32	800	911	191	805	298	8	22	101.6	-	134	25.4 x 19.05	767.0	-	-	-	525	-
36	900	1022	203	860	298	8	22	101.6	-	134	25.4 x 19.05	864.2	1085.8	32	1 1/2-8	775	1220.0
40	1000	1130	217	970	356	8	22	105	-	135	28 x 16	890	-	-	-	1100	-
44	1100	1250	254	1020	356	8	22	105	-	135	28 x 16	1040	-	-	-	1275	-
48	1200	1360	254	1080	356	8	22	105	-	135	28 x 16	1118	-	-	-	1435	-

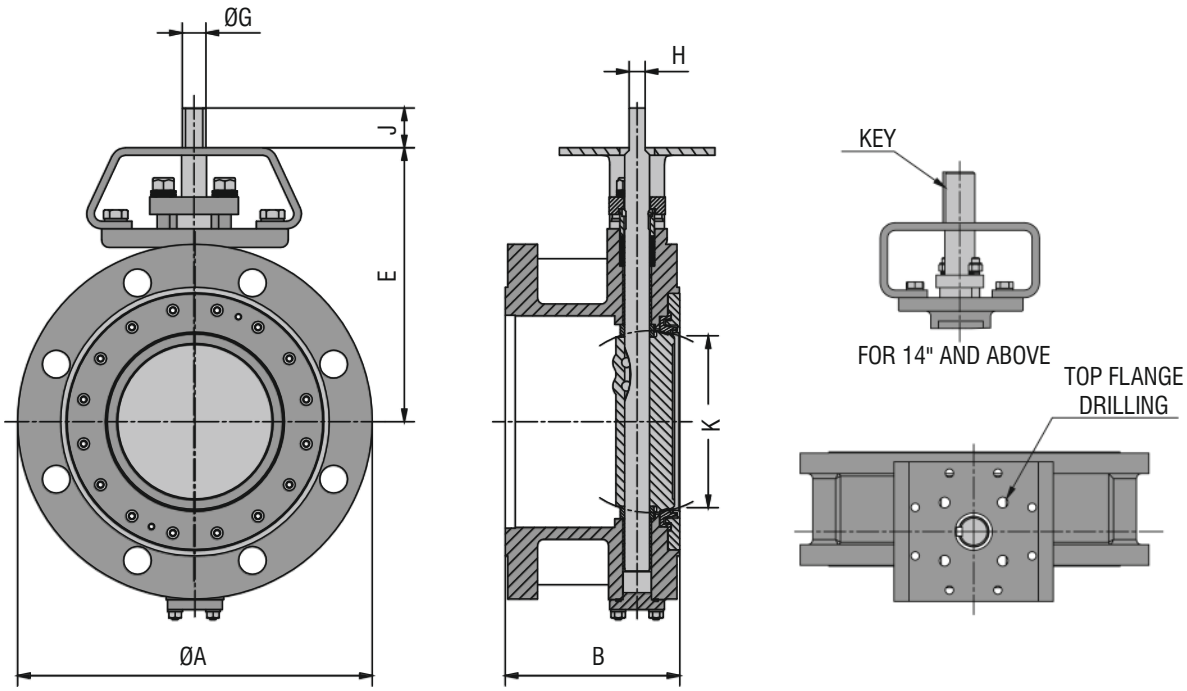
ASME CLASS 300 (Series 47/48)

Valve Size		ØA	✱B	E	Top Flange Drilling			ØG	H	J	Key Size	K	Lug Bolting Data			Apx. Weights In Kg.	
Inch	DN				BC	No. of holes	Hole Dia.						BC	No. of holes	Tapping UNC/UN-2B	Wafer	Lug
2	50	97	43	125	70	4	10	14	10	32	-	39.8	127.0	8	5/8-11	3.5	4.0
2 1/2	65	105	46	146	70	4	10	16	11	32	-	50.6	149.2	8	3/4-10	4.0	4.9
3	80	132	48	158	70	4	10	16	11	32	-	68.4	168.3	8	3/4-10	5.8	6.0
4	100	172	54	172	70	4	10	16	11	32	-	90.3	200.0	8	3/4-10	7.8	11.1
5	125	186	59	200	70/102	4	10/12	19	13	32	-	110.8	235.0	8	3/4-10	9.2	14.2
6	150	216	59	220	125	4	14	22	16	32	-	138.7	269.9	12	3/4-10	14.2	31.2
8	200	270	73	285	125	4	14	30	22	51	-	180.3	330.2	12	7/8-9	24.1	35.9
10	250	326	83	300	125	4	14	35	24	51	-	228.6	387.4	16	1-8	40.2	52.8
12	300	381	92	341	140/165	4	18/22	40	29	51	-	271.8	450.8	16	1 1/8-8	68.8	91.2
14	350	413	117	457	140/165	4	18/22	55	-	64	16 x 10	307.3	514.4	20	1 1/8-8	129.7	148.0
16	400	470	133	500	165	4	22	55	-	64	16 x 10	348.0	571.5	20	1 1/4-8	153.1	182.8
18	450	545	149	550	254	8	18	70	-	102	20 x 12	396.2	628.6	24	1 1/4-8	177.5	233.8
20	500	584	159	600	254	8	18	88.9	-	102	22.23x15.88	436.9	685.8	24	1 1/4-8	230.8	334.5
24	600	692	181	700	298	8	22	101.6	-	134	25.4x19.05	523.2	812.8	24	1 1/2-8	333.4	460.8

* Face to Face dimension "B", generally conforming to MSS SP 68 TABLE 1 / API 609 Category B / BS EN 558-1 / ISO 5752 / ASME B 16.10

All bolt holes 1 1/8" and larger have an 8-Un thread series as per MSS SP 68 & API 609. Delval reserves rights to change the content without notice.

Engineering



Double Flanged Body

DIMENSIONS (mm)

ASME CLASS 150 (Series 46)

Valve Size		øA	✱ B	E	Top Flange Drilling			øG	H	J	K	Key Size	Apx. Weights in KG.
Inch	DN				BC	No. of Holes	Hole Dia.						
3	**80**	202	114	190	70	4	10	16	11	32	55.3	-	24
4	**100**	230	127	220	70	4	10	16	11	32	81	-	35
5	**125**	255	140	220	70/102	4	10/12	19	13	32	102	-	40
6	**150**	285	140	220	70/102	4	10/12	19	13	32	131	-	48
8	**200**	345	152	277	125	4	14	22	16	32	178	-	56
10	**250**	405	165	304	102/125	4	12/14	30	22	51	224.5	-	70
12	**300**	485	178	380	125	4	14	35	24	51	268.3	-	115
14	**350**	535	190	405	125/140	4	14/18	40	-	51	296	12x8	135
16	**400**	595	216	484	140/165	4	18/22	50	-	64	346.3	12x10	165
18	**450**	635	222	520	140/165	4	18/22	55	-	64	397.2	16x10	235
20	**500**	700	229	577	165/254	4	22/18	60	-	102	437.3	18x11	340
24	**600**	815	267	650	165/254	8	22/18	70	-	102	532	20x12	485
26	**650**	870	292	675	254	8	18	88.9	-	102		22.23x15.88	575
28	**700**	925	292	675	254	8	18	88.9	-	102		22.23x15.88	660
30	**750**	985	318	755	298	8	22	88.9	-	102		22.23x15.88	750
32	**800**	1060	318	765	298	8	22	101.6	-	134		25.4x19.05	850
36	**900**	1170	330	860	298	8	22	101.6	-	134		25.4x19.05	1080
40	**1000**	1290	410	1000	356	8	22	105	-	135	880	32x18	1340
44	**1100**	1405	470	1050	356	8	22	105	-	135		32x18	1710
48	**1200**	1510	470	1110	356	8	22	105	-	135	1107	32x18	2038

ASME CLASS 300 (Series 49)

Valve Size		ØA	✱ B	E	TOP FLANGE DRILLING			ØG	H	J	K	Key Size	Apx. Weights In Kg.
Inches	DN				BC	No. of Holes	Hole Dia.						
3	**80**	210	114	175	70	4	10	16	11	32	55.3	-	34
4	**100**	255	127	190	70	4	10	16	11	32	81	-	49
5	**125**	280	140	200	70/102	4	10/12	19	13	32	102	-	56
6	**150**	320	140	245	125	4	14	22	16	32	131	-	67
8	**200**	380	152	305	125	4	14	30	22	51	178	-	78
10	**250**	445	165	351	125	4	14	35	24	51	224.5	-	98
12	**300**	520	178	400	125/165	4	14/22	40	29	51	268.3	-	161
14	**350**	585	190	500	165	4	22	55	-	64	296	16 x 10	189
16	**400**	650	216	522	165	4	22	55	-	64	346.3	16 x 10	231
18	**450**	710	222	587	254	8	18	70	-	102	396.2	20 x 12	330
20	**500**	775	229	602	254	8	18	88.9	-	102	436.9	22.23x15.88	475
24	**600**	915	267	795	298	8	22	101.6	-	134	523.2	25.4x19.05	675

* Face to Face dimension "B", generally conforming to MSS SP 68 TABLE 1 / API 609 Category B / BS EN 558-1 / ASME B 16.10
All bolt holes 1 1/8" and larger have an 8-Un thread series as per MSS SP 68 & API 609.
DelVal reserves the rights to change the contents without notice.

Torque

Maximum Seating and Unseating Torque in Nm for ASME Class 150

Soft Seat Design

Valve Size		Differential Pressure (bar)				
Inch	DN	PN3.5	PN7	PN10	PN16	Class 150
2	50	24	26	27	28	29
2.5	65	27	28	29	31	32
3	80	32	33	34	37	40
4	100	43	46	49	53	68
5	125	59	65	70	78	83
6	150	88	95	104	116	124
8	200	148	162	175	199	214
10	250	193	219	244	283	315
12	300	235	285	336	413	465
14	350	389	482	579	735	836
16	400	496	618	744	936	1076
18	450	646	808	966	1224	1409
20	500	862	1087	1296	1663	1897
24	600	1305	1648	2008	2558	2958
26	650	1597	1950	2210	2610	3170
28	700	1755	2150	2490	2830	3360
30	750	2395	2912	3429	4256	4825
32	800	3099	3762	4529	5456	6325
36	900	3865	4762	5659	7094	8081
40	1000	6102	7601	9100	11499	13152
44	1100	7725	8960	10320	13040	14910
48	1200	9950	12450	14770	18806	21420

Fire Safe Seat Design

Valve Size		Differential Pressure (bar)				
Inch	DN	PN3.5	PN7	PN10	PN16	Class 150
2	50	52	54	56	59	61
2.5	65	54	57	58	61	63
3	80	69	71	73	77	80
4	100	85	90	94	101	107
5	125	96	104	113	127	137
6	150	161	175	190	213	226
8	200	264	293	315	355	387
10	250	398	443	494	572	628
12	300	593	682	768	896	997
14	350	704	807	905	1080	1190
16	400	812	944	1094	1313	1475
18	450	1034	1289	1571	1980	2285
20	500	1463	1858	2239	2896	3316
24	600	2304	2724	3172	3886	4322

Metal Seat Design

Valve Size		Differential Pressure (bar)				
Inch	DN	PN3.5	PN7	PN10	PN16	Class 150
2	50	58	60	63	66	70
2.5	65	68	70	73	76	79
3	80	84	89	91	94	99
4	100	107	113	117	125	134
5	125	119	129	143	159	171
6	150	201	219	236	265	280
8	200	333	369	394	446	482
10	250	490	554	624	707	795
12	300	747	846	964	1118	1254
14	350	880	1021	1132	1347	1485
16	400	1015	1184	1365	1654	1839
18	450	1302	1637	1944	2506	2829
20	500	1814	2304	2789	3638	4149
24	600	2880	3432	3957	4876	5388

Maximum Seating and Unseating Torque in Nm for ASME Class 300

Soft Seat Design

Valve Size		Differential Pressure (bar)				
Inch	DN	PN10	Class 150	PN25	PN40	Class 300
2	50	27	29	32	40	42
2.5	65	29	32	34	42	47
3	80	34	40	44	54	60
4	100	49	68	74	95	108
5	125	88	111	123	161	186
6	150	120	154	175	234	275
8	200	228	300	341	459	545
10	250	338	461	530	731	876
12	300	473	639	729	1002	1189
14	350	724	1058	1258	1807	2194
16	400	879	1270	1492	2181	2645
18	450	1136	1652	1935	2786	3371
20	500	1501	2191	2605	3761	4589
24	600	2047	2979	3485	5101	6158
26	650	-	-	-	-	-
28	700	-	-	-	-	-
30	750	-	-	-	-	-
32	800	-	-	-	-	-
36	900	-	-	-	-	-
40	1000	-	-	-	-	-
44	1100	-	-	-	-	-
48	1200	-	-	-	-	-

Fire Safe Seat Design

Valve Size		Differential Pressure (bar)				
Inch	DN	PN10	Class 150	PN25	PN40	Class 300
2	50	56	61	63	67	70
2.5	65	58	63	66	70	74
3	80	73	80	82	87	92
4	100	94	107	121	144	162
5	125	124	145	157	194	217
6	150	205	247	271	340	389
8	200	337	412	453	576	659
10	250	506	610	669	838	964
12	300	825	1078	1202	1616	1900
14	350	926	1207	1362	1827	2147
16	400	1123	1515	1730	2406	2870
18	450	1727	2552	3021	4385	5359
20	500	2405	3619	4247	6284	7580
24	600	3864	5705	6702	9708	11765

Metal Seat Design

Valve Size		Differential Pressure (bar)				
Inch	DN	PN10	Class 150	PN25	PN40	Class 300
2	50	63	70	75	79	83
2.5	65	73	79	83	89	91
3	80	91	99	102	108	115
4	100	117	134	150	179	202
5	125	156	180	196	241	269
6	150	255	309	340	426	488
8	200	422	511	573	721	818
10	250	627	760	828	1039	1200
12	300	1040	1334	1511	2012	2394
14	350	1146	1508	1703	2303	2686
16	400	1392	1890	2162	3009	3588
18	450	2159	3217	3745	5435	6648
20	500	3032	4511	5351	7893	9456
24	600	4812	7189	8384	12122	14712

Note :- Above torque values are indicative and defined for flow in preferred direction i.e. Seat retainer upstream.
For torque values for flow in non preferred direction i.e. seat retainer downstream, multiply the above values by 1.25
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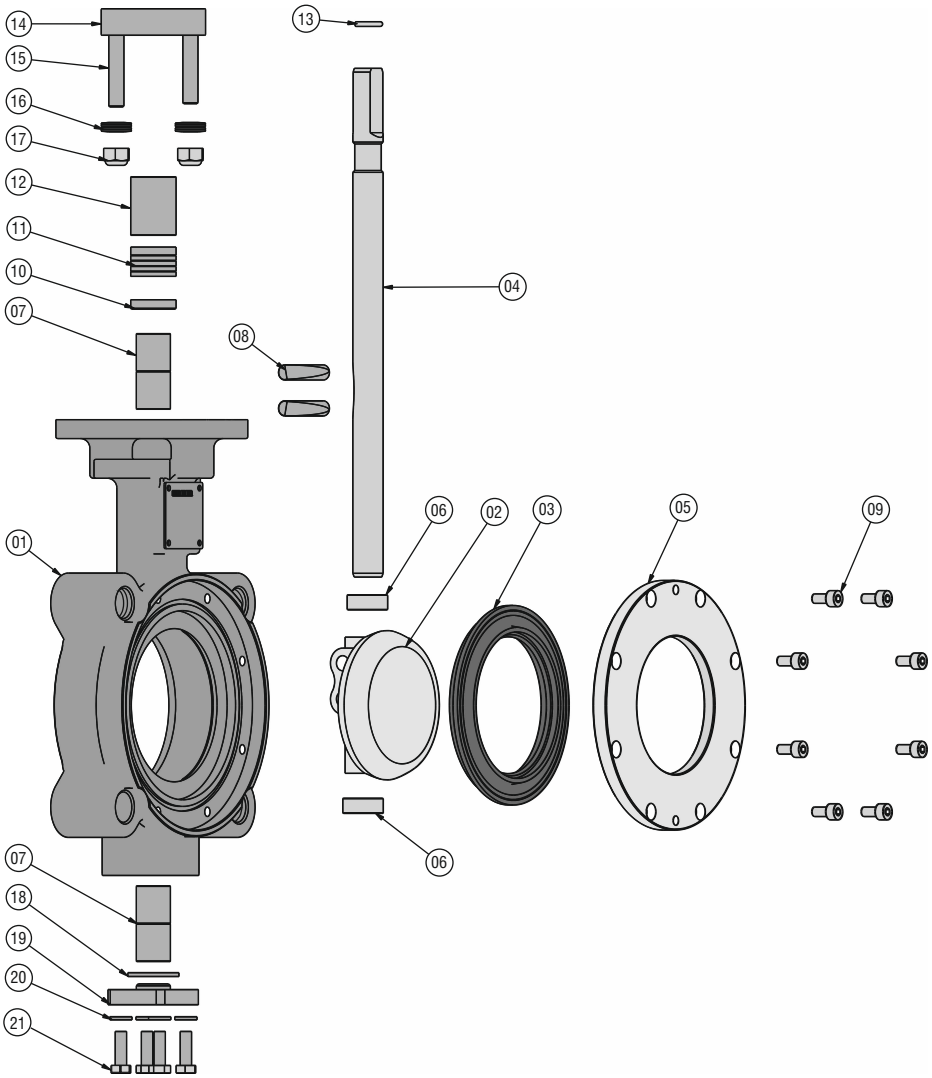
Exploded View



Item	Component	Carbon Steel	Stainless Steel
1	Body	A216 WCB	A351 CF8 / CF8M
2	Disc	A351 CF8/CF8M	
3*	Seat	ULTRA / RPTFE (2" to 24") PTFE / RPTFE (14" to 48") FIRESAFE-SS 316+PTFE (2" to 24") METAL-SS 316/INCONEL 625 (2" to 24")	
4	Stem	A479 SS 410 / A479 SS 316 / A479 XM-19 / A564 17-4 PH	
5	Seat Retainer	Carbon Steel	SS TYPE 304 /SS TYPE 316
6	Disc Spacer	SS TYPE 316	
7*	Bearing	Bear -X / SS 316 +Kevlar®/ HT 316	
8*	Wedge Pin	17-4 PH	
9	Retainer Screw	A4-70(SS316)	
10	Packing Support	SS TYPE 316	
11*	Stem Packing	PTFE (CHEVRON)/ GRAPHITE	

Item	Component	Carbon Steel	Stainless Steel
12	Gland	SS TYPE 316	
13*	Snap Ring	STAINLESS STEEL	
14	Gland Flange	Carbon Steel	SS TYPE 304
15	Gland Flange Stud	GR. B8	
16*	Belleville Spring	Stainless Steel	
17*	Nyloc Nut	A2-70(SS 304)	
18*	Gasket	PTFE/GRAPHITE	
19	Bottom Flange	Carbon Steel	SS TYPE 316
20	Washer	SS TYPE 304	
21	Hex Hd Bolt	GR. B8	

The materials shown are representative, all other materials are available on request e.g. LCB, Duplex SS, Super Duplex

*Recommended Spares.

Operators

All valves can be direct mounted with pneumatic actuators or electric actuators and accessories for complete automation options such as fail open/close and positioner controlled. Valves can be mounted with manual overrides.

Valves up to size 48" can be direct mounted with gear operators for manual operation. Gear operators can also be attached with chain-wheel operators for opening or closing valves located on pipelines at high elevations.

Valves upto 8" for Class 150 and upto 6" for Class 300 can be supplied with lever handles for manual operation. Optional accessories for hand-lever operation can be provided for various flow control requirements. Pad locking can also be provided for preventing unauthorized operation.

How to order DelVal valves

Series	Size	Trim / Other Variables / Special						
☐ ☐	☐ ☐ ☐	☐	☐	☐	☐	☐	☐	☐
Valve Description	**Valve Description**	**Body**	**Disc**	**Stem**	**Seat**	**Rating**	**Operator**	**Special**
4A : Wafer Class 150 4B : Lug Class 150 4C : Double Flange Class 150 4D : Wafer Class 300 4E : Lug Class 300 4F: Double Flange Class 300	020 : 2" 025 : 2.5" 030 : 3" 040 : 4" 050 : 5" 060 : 6" 080 : 8" 100 : 10" 120 : 12" 140 : 14" 160 : 16" 180 : 18" 200 : 20" 240 : 24" 260 : 26" 280 : 28" 300 : 30" 320 : 32" 360 : 36" 400 : 40" 440 : 44" 480 : 48"	3- WCB 4- CF8M(SS316) 8- CF8(SS304)	4-CF8M(SS316) 8- CF8(SS304)	1-SS410 4-SS316 6- 17-4-PH K- XM-19	T- PTFE U-ULTRA R-RTFE M-METAL (SS) N-METAL (INCONEL) F-FIRE SAFE	5 - Class 150 6 - Class 300	B-BARE L - LEVER G - GEAR A - Actuator	0-NO SPECIAL REQUIREMENT S - SPECIAL REQUIREMENT AS SPECIFIED BY CUSTOMER

Example : To order a 12" Wafer Body Valve, CF8M Body, CF8M Disc, SS316 Stem, RTFE Seat, 150 Class, Gear Operated with no special requirements:

4	A	1	2	0	4	4	4	R	5	G	0

Distributor

DelVal Flow Controls USA
6068 Highway 73
Geismar, LA 70734
USA

Phone: (225) 744-4326
Fax: (225) 744-4328

Email : sales@delvalflow.com

DelVal Flow Controls India
Office & Work : Gat. No. 25/1A,
Kavathe, Post - Javale Tal. Khandala,
Satara Dist., Pin - 412801,
INDIA
Phone :+91-2169-241285
Fax :+91-2169-241288

Email : salesindia@delvalflow.com

Website : www.delvalflow.com