Alpine
Wafer & Lugged Butterfly Valves

- **PN10 & PN16: 50mm to 1000mm**
- **PN25: 50mm to 600mm**

Features

- **Type: Rubber Lined with replaceable elastomeric seat**
- **Replaceble Liner**
- **End connection: Wafer**
- **Working Temperature: -15˚C to + 120˚C**

Standards conformance:

- ISO 5752-20 face to face
- To suit flanges: DIN, BS4504, SANS1123, ANSI
- Top mounting flange: ISO 5211

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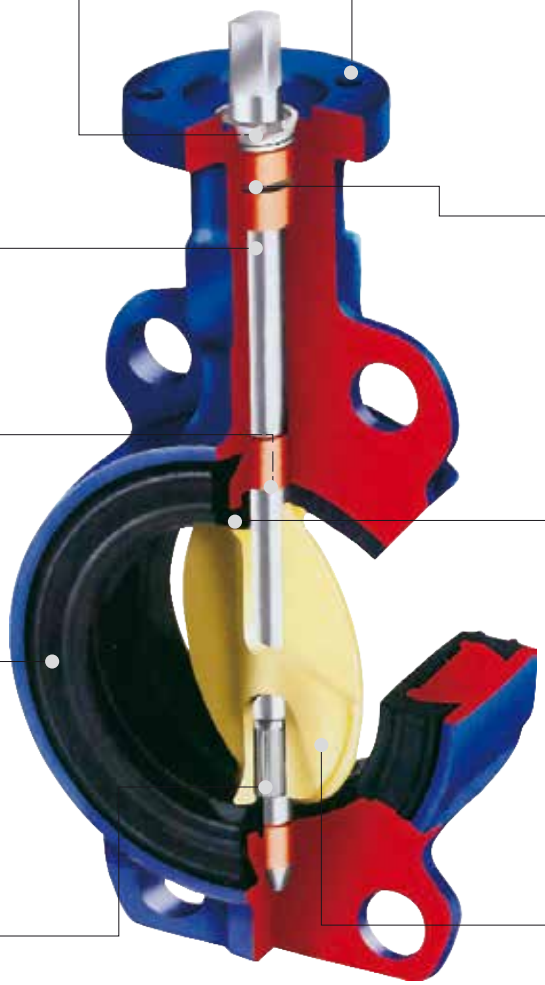
The Alpine High Performance Rubber-lined Butterfly valve matches in quality with the best in the world. All the typical weaknesses of standard Rubber-lined Butterfly valves have been eliminated such as:

- Dry stem: the sealing arrangement which utilizes the lining around the stem and extra O rings ensures that the line fluid can never get past the stem to corrode the shaft area and inner body of the valve
- Replaceable liner: It is held rigidly in place and prevented from movement and damage by the blade action.
- Streamlined and polished disc to ensure minimum pressure drop and low wear
- One piece shaft with square connection between Stem and blade ensuring rigid connection and long life

Applications

- This design has been used in the most difficult applications and where long life is expected .
- Water reticulation
- Low pressure steam
- HVAC
- Mining: water and air
- Marine applications
- Sea water applications



Retaining system
The shaft is retained in the body with a retaining ring, a thrust washer and two C-rings, providing a "blow-out proof" shaft assembly. The retaining ring may be easily removed with a standard hand tool on field disassembly.

Shaft
One-piece through shaft ensures dependability and positive disc positioning.

Bushing (4-5)
Shaft bushings reduce torque and isolate the shaft from the valves body, preventing seizure of the shaft due to corrosion in the shaft journal.

Seat/Body
The tongue-and0groove seat to body retention method makes field replacement simple and fast. The resilient seat features lower torque and eliminates the need for flange gaskets.

Disc and shaft Connection
The spine or square connection eliminates shaft retention components being exposed to the line media, Maximum flow is achieved

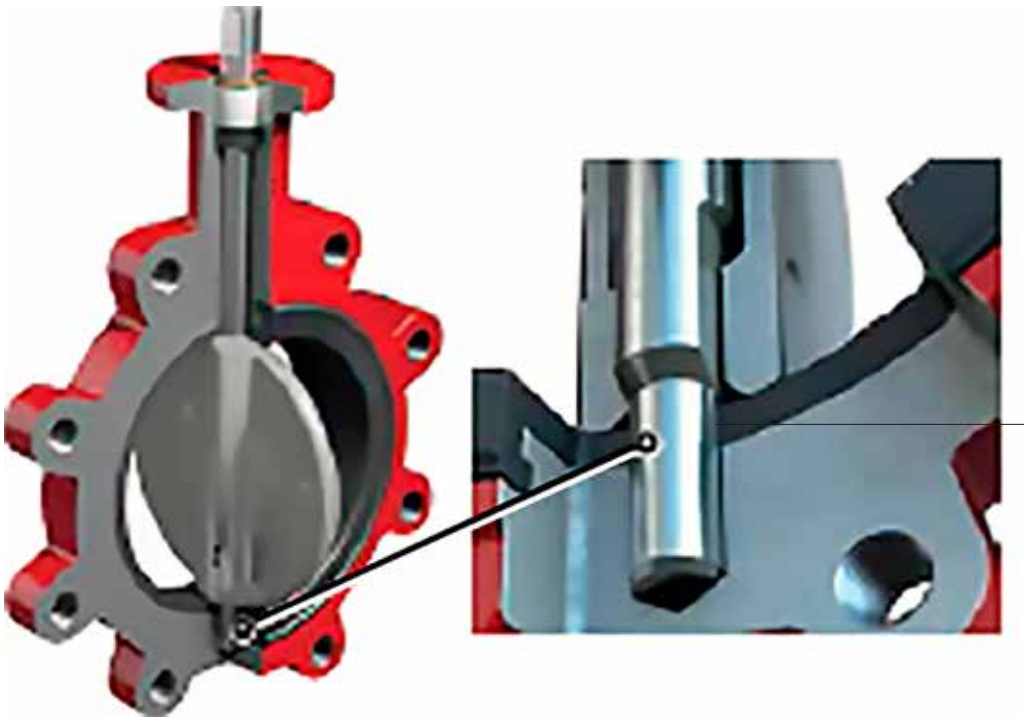
Mounting Flange
ISO5211 mounting flange accommodates direct mounting of all types of actuators, including: handles, gear operators, electric and pneumatic.

O-Ring (1-2)
Shaft: seal provides further assurance against stem leakage.

Hub Seal
Smooth finished disc flats mate with seat flats to give a highly efficient primary seal that prevents leakage into the shaft area.

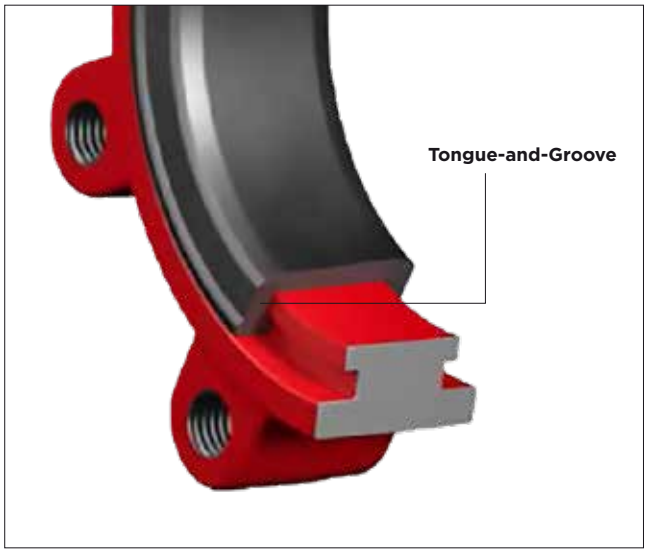
Disc
Precision profiles provides bubble-tight shut-off, assures minimum torque and longer seat life.

ISOLATION FROM LINE MEDIA
Ultra's seat design and internal disc to stem connection isolates the line media from the body and stem.



INTERNAL DISC TO STEM CONNECTION
Alpine has square machined flats on the stem and in the disc. The non-wetted connections eliminate exposed external disc to stem connections.

The disc and the stem connection minimize any play and results in secure fitment. Stem design incorporates a blowout proof feature.



SEAT DESIGN
The seat is designed to seal with slip-on or weld-neck flanges and the molded o-ring eliminates the need for flange gaskets. The tongue and groove locks the seat in place and makes the valve capable of "dead-end" service.

This resilient seated butterfly valve provides both a primary and secondary seal between the disc and seat as well as the stem and seat which ensures the total encapsulation of the line media and zero external leakage.

Valve dimensions in mm																			
DN	DN																		Mass/
mm	inch	A	B	C	øD	E1	E2	F	øG*	H	øJ	K	øL	Nb	øM	a	b	l	weight (kg)
50	2”	110	74	43	94	26	-	11	-	14	90	-	70	4	9	-	-	-	2.8
65	2½”	118	81	46	107	26	-	11	-	14	90	-	70	4	9	-	-	-	3.3
80	3”	125	93	46	126	26	-	11	-	14	90	-	70	4	9	-	-	-	4
100	4”	140	107	52	150	26	-	14	-	16	-	100	102	4	11	-	-	-	6
125	5”	160	122	56	179	26	-	14	-	16	-	100	102	4	11	-	-	-	8.5
150	6”	175	135	56	204	26	-	19	-	17	-	100	102	4	11	-	-	-	11
200	8”	206	170	60	259	26	-	19	-	17	-	100	102	4	11	-	-	-	15
250	10”	247	200	68	313	36	70	27	35	17	-	132	125	4	14	10	8	60	23
300	12”	277	233	78	369	36	70	27	35	17	-	132	125	4	14	10	8	60	31
350	14”	300	270	78	418	36	70	27	35	17.5	-	132	125	4	14	10	8	60	39
400	16”	345	300	102	467	43	90.5	32	40	21	-	132	140	4	18	12	8	73	69
450	18”	375	330	114	521	49	100	36	50	22	-	140	140	4	18	14	9	60	83
500	20”	425	375	127	571	63	100	46	60	25	210	-	165	4	22	18	11	80	107
550	22”	470	405	154	622	63	100	46	60	25	210	-	165	4	22	18	11	80	123
600	24”	495	430	154	670	63	100	46	60	25	210	-	165	4	22	18	11	80	145
650	26”	545	485	165	753	81	110	55	80	30	300	-	254	8	18	22	14	100	187
700	28”	570	510	165	776	81	110	55	80	30	300	-	254	8	18	22	14	100	217
750	30”	610	531	165	843	81	110	55	80	30	300	-	254	8	18	22	14	100	275
800	32”	640	560	190	882	81	110	55	80	30	300	-	254	8	18	22	14	100	310
850	34”	700	640	203	970	-	110	-	100	30	300	-	254	8	18	28	16	100	370
900	36”	700	665	203	1000	-	110	-	100	30	300	-	254	8	18	28	16	100	448
1000	40”	750	715	216	1	105	-	110	-	100	30	350	-	298	8	22	28	16	100

NOTES

- Flange accommodation must be specified when ordering.
- Specify size, product name, part name, material and flange accommodation when ordering spare parts.
- C = FTF ISO 5752 series 20 - NF E 29305 series 20 - MSS SP 67 - API 609 - DIN 3202 - BS 5155 - EN 558 (excl. DN350).
- Outside dimensions of the shafts are standard.
- For other valve sizes, see specific datasheets.
- (øG*) Ultra standard is square shafts for DN50-DN800, key drive for DN850-DN1000. Key drive for DN250-DN800 are available on request.
- 1 bar = 14.6 Psi

MAXIMUM DIFFERENTIAL PRESSURE (BAR)																							
Valve size	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	1000
Wafer between flanges	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	16	16	16	16	16	16	16
Wafer end of line	10	10	5	5	5	4	4	2	2	2	2	1	1	1	1	-	-	-	-	-	-	-

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Valve dimensions in mm																				
DN	DN																			Mass/
mm	inch	A	B	C	øD	E1	E2	F	øG*	H	øJ	K	øL	Nb	øM	a	b	l	R	weight (kg)
50	2”	152	76	43	153	26	-	11	-	14	90	-	70	4	9	-	-	-	38	3.7
65	2½”	159	84	46	173	26	-	11	-	14	90	-	70	4	9	-	-	-	40	4.2
80	3”	166	90	46	188	26	-	11	-	14	90	-	70	4	9	-	-	-	40	7.1
100	4”	182	109	52	219	26	-	14	-	16	-	100	102	4	11	-	-	-	45	8.7
125	5”	193	120	56	252	26	-	14	-	16	-	100	102	4	11	-	-	-	48	11
150	6”	217	140	56	278	26	-	19	-	17	-	100	102	4	11	-	-	-	48	15
200	8”	242	167	60	335	26	-	19	-	17	-	100	102	4	11	-	-	-	52	22
250	10”	280	203	68	400	36	70	27	35	17	-	132	125	4	14	10	8	60	60	33
300	12”	310	228	78	482	36	70	27	35	17	-	132	125	4	14	10	8	60	70	44
350	14”	350	270	78	520	36	70	27	35	17.5	-	132	125	4	14	10	8	60	70	67
400	16”	375	300	102	588	43	90.5	32	40	21	-	140	140	4	18	12	8	73	90	104
450	18”	400	330	114	650	49	100	36	50	22	-	140	140	4	18	14	9	60	100	136
500	20”	425	375	127	704	63	100	46	60	25	210	-	165	4	22	18	11	80	113	180
550	22”	470	405	154	765	63	100	46	60	25	210	-	165	4	22	18	11	80		230
600	24”	495	430	154	828	63	100	46	60	25	210	-	165	4	22	18	11	80	140	260
650	26”	545	485	165	870	81	110	55	80	30	300	-	254	8	18	22	14	100		270
700	28”	570	510	165	895	81	110	55	80	30	300	-	254	8	18	22	14	100	150	280
750	30”	610	540	165	972	81	110	55	80	30	300	-	254	8	18	22	14	100	150	370
800	32”	640	560	190	1010	81	110	55	80	30	300	-	254	8	18	22	14	100	170	400
850	34”	700	640	203	1120	-	110	-	100	30	300	-	254	8	18	28	16	100		530
900	36”	700	665	203	1148	-	110	-	100	30	300	-	254	8	18	28	16	100	190	550
1000	40”	750	715	216	1240	-	110	-	100	30	350	-	298	8	22	28	16	100	190	660

NOTES

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- Specify size, product name, part name, material and flange accommodation when ordering spare parts.
- C = FTF ISO 5752 series 20 - NF E 29305 series 20 - MSS SP 67 - API 609 - DIN 3202 - BS 5155 - EN 558 (excl. DN350).
- Outside dimensions of the shafts are standard.
- For other valve sizes, see specific datasheets.
- (øG*) Ultra standard is square shafts for DN50-DN800, key drive for DN850-DN1000. Key drive for DN250-DN800 are available on request.
- 1 bar = 14.6 Psi

MAXIMUM DIFFERENTIAL PRESSURE (BAR) FOR LUGGED VALVES																						
Valve size	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	1000
Lugged between flanges	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Lugged end of line	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

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FLOW COEFFICIENTS (K_v AND C_v)

Kv is the flow in m3/h of water, at an average temperature of 20°C, crossing the valve with creating a headloss of 1 bar.
$C_v = 1.16\ K_v$

SIMPLIFIED FORMULA

Headloss		Non compressible fluide	Gas
$\Delta p < \frac{P_1}{2}$	K_v	$= \frac{Q}{31.6}\sqrt{\frac{\rho_1}{\Delta p}}$	$= \frac{Q_N}{514}\sqrt{\frac{\rho_N . T}{\Delta p . P_2}}$
$\left(P_2 > \frac{P_1}{2}\right)$ $\left(\Delta p > \frac{P_1}{2}\right)$	K_v		$= \frac{2Q_N}{514.P_1}\sqrt{\rho_N . T}$
$\left(P_2 < \frac{P_1}{2}\right)$			

DEFINITIONS

Kv : Flow coefficient of the valve
Q : Flow in m3/h
Δp : Headloss in the valve in bar
P1 : Upstream pressure in bar
P2 : Downstream pressure in bar
QN : Flow in normal conditions (0°C, 760 mm Hg) in m3/h
T : Temperature of the fluid in °K
ρ1 : Volumic weight of the fluid in kg/m3
ρN : Volumic weight in normal conditions

K_v VALUES																		
DN mm	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**
size inch	**2”**	**2½”**	**3”**	**4”**	**5”**	**6”**	**8”**	**10”**	**12”**	**14”**	**16”**	**18”**	**20”**	**22”**	**24”**	**26”**	**28”**	**30”**
20°	3	6	10	13	30	45	68	128	197	265	345	449	566	694	828	982	1161	1358
30°	9	17	26	37	60	90	162	257	394	531	690	899	1131	1395	1656	1954	2323	2715
40°	21	40	63	86	150	225	270	429	661	880	1134	1498	1881	2305	2750	3275	3850	4538
50°	39	73	115	152	249	375	486	772	1183	1595	2070	2697	3395	4164	4969	5882	6969	8168
60°	65	124	195	268	439	660	756	1201	1841	2479	3218	4195	5280	6527	7730	9207	10813	12703
70°	93	178	280	457	747	1123	1431	2273	3486	4692	6096	7942	9997	12396	14630	17398	20515	24049
80°	105	201	316	573	927	1393	2457	3904	5985	8057	10465	13636	17160	21050	25124	30023	35233	41290
90°	110	210	330	610	1000	1500	2700	4300	6600	8900	11500	15000	18800	22767	27600	32733	38600	45400

DN mm	**800**	**850**	**900**	**1000**	**1050**
size inch	**32”**	**34”**	**36”**	**40”**	**42”**
20°	1540	1750	1970	2460	2847
30°	3080	3500	3940	4910	5684
40°	5148	5812	6570	8190	9482
50°	9266	10511	11800	14740	17063
60°	14410	16244	18370	22940	26556
70°	27280	31045	34770	43400	50241
80°	46838	52712	59630	74450	86186
90°	51500	58777	65600	81900	94809

HEADLOSS COEFFICIENT (Kα)

For liquid, the formula of the headloss with a disc opening angle α is:

$$\Delta P\alpha = \frac{\rho}{10\ 000}\ K\alpha\ \frac{V\alpha^2}{2g}$$

In the case of water the formula is simplified

$$\Delta H\alpha = K\alpha\ \frac{V\alpha^2}{2g}$$

DEFINITIONS

Kα is the headloss coefficient according to the angle to opening in which:
ΔPα : Headloss in a valve opened to an angle α expressed in bar
Vα : Velocity of the fluid in a pipeline of diameter equal to the one of the valve expressed in m/s when the valve is opened to an angle α
g : Acceleration of gravity in m/s2
Kα : Headloss according to the angle to opening. Results in the table
ρ : Volumic weight of the fluid (kg/m3)
Vα ΔHα : Headloss on the valve opened to an angle a expressed in meters of water columns.

K_v VALUES																		
DN mm	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**
size inch	**2”**	**2½”**	**3”**	**4”**	**5”**	**6”**	**8”**	**10”**	**12”**	**14”**	**16”**	**18”**	**20”**	**22”**	**24”**	**26”**	**28”**	**30”**
20°	1089	778	642	928	425	392	543	374	327	335	337	319	306	298	297	290	279	269
30°	121	97	95	115	106	98	96	93	82	83	84	80	77	74	74	73	70	67
40°	22	17	16	21	17	16	34	33	29	30	31	29	28	27	27	26	25	24
50°	6.4	5.3	4.9	6.8	6.2	5.6	10.6	10.3	9.1	9.3	9.4	8.8	8.5	8.3	8.2	8.1	7.8	7.4
60°	2.3	1.8	1.7	2.2	2.0	1.8	4.4	4.2	3.7	3.8	3.9	3.7	3.5	3.4	3.4	3.3	3.2	3.1
70°	1.13	0.88	0.82	0.75	0.69	0.63	1.23	1.19	1.05	1.07	1.08	1.02	0.98	0.93	0.95	0.92	0.89	0.86
80°	0.89	0.69	0.64	0.48	0.45	0.41	0.42	0.4	0.35	0.36	0.37	0.35	0.33	0.32	0.2	0.31	0.3	0.29
90°	0.81	0.63	0.59	0.42	0.38	0.35	0.34	0.33	0.29	0.3	0.3	0.29	0.28	0.28	0.27	0.26	0.25	0.24

DN mm	**800**	**850**	**900**	**1000**
size inch	**32”**	**34”**	**36”**	**40”**
20°	271	267	265	259
30°	68	67	66	65
40°	24	24	24	23
50°	7.5	7.4	7.4	7.2
60°	3.1	3.1	3	3
70°	0.86	0.85	0.85	0.83
80°	0.29	0.29	0.29	0.28
90°	0.24	0.24	0.24	0.23

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MAXIMUM ALLOWABLE TORQUES IN NM FOR STANDARD SHAFT MATERIAL (13% CR)																		
DN mm	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**
size inch	**2”**	**2½”**	**3”**	**4”**	**5”**	**6”**	**8”**	**10”**	**12”**	**14”**	**16”**	**18”**	**20”**	**22”**	**24”**	**26”**	**28”**	**30”**
13% Cr	122	122	122	297	297	743	743	2128	2128	4000	4000	8693	16000	16000	16000	41300	41300	41300

DN mm	**800**	**850**	**900**	**1000**	**1050**	**1100**	**1200**	**1300**	**1350**	**1400**	**1500**	**1600**	**1650**	**1800**	**2000**
size inch	**32”**	**34”**	**36”**	**40”**	**42”**	**44”**	**48”**	**52”**	**54”**	**56”**	**60”**	**64”**	**66”**	**72”**	**80”**
13% Cr	41300	83210	83210	83210	96830	96830	96830	96830	96830	96830	96830	96830	206140	206140	318650

NOTES

1. The given maximum allowable torques are applicable for standard type valves.

ACTUATOR SIZING TORQUES IN NM																		
DN mm	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**
size inch	**2”**	**2½”**	**3”**	**4”**	**5”**	**6”**	**8”**	**10”**	**12”**	**14”**	**16”**	**18”**	**20”**	**22”**	**24”**	**26”**	**28”**	**30”**
At full rating	15	26	40	68	115	170	320	480	720	950	1350	1700	2300	2750	3200	3800	4500	5200
At 10 bar (1)	10	17	26	44	75	110	208	312	468	660	900	1130	1530	1840	2130	2530	3000	3800

DN mm	**800**	**850**	**900**	**1000**
size inch	**32”**	**34”**	**36”**	**40”**
At full rating	6000	6900	8000	10500
At 10 bar (1)	4000	4600	5300	7000

NOTES

- Torques valid for fresh water at ambient temperature. Please specify differential pressure at ordering.
- Valve torque at lower pressure ratings (1) is reduced in function of disc closing angle being above 0°.
- 1 bar = 14.6 Psi.

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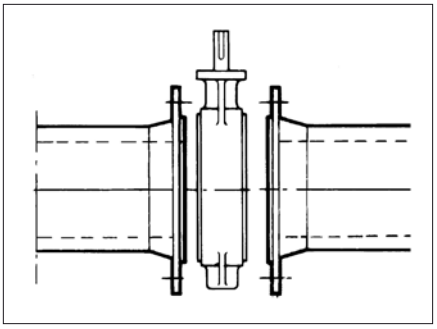
ASSEMBLY ON LINE

1. Leave sufficient space between the flanges to avoid injury to the sides of the seat while sliding the valve between the two flanges. Be sure that these edges have well aligned, parallel, and erect sealing faces.
2. Center the valve by bolting the body locator first.
3. Progressively tighten diametrically opposed bolts by alternating sides until contact has been made between the metal valve body and the flange faces. Tighten bolts fully.
4. Control after mounting: operate the valve from fully open position to fully closed position to make sure that nothing is obstructing the disc.



BETWEEN FLANGES AND DEAD END ASSEMBLY FOR WAFER TYPE

DN mm		50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	1000
size inch		2”	2½”	3”	4”	5”	6”	8”	10”	12”	14”	16”	18”	20”	22”	24”	26”	28”	30”	32”	34”	36”	40”
EN 1092	PN 6	1		1	1	1	1	1	1	1	1	1	1	1		1							
DIN 2501	PN 10															1							
BS 4504	PN 16															1							
ISO 2084	PN 25															1							
EN 1759	Class 150			1												1							
ANSI B 16.5	Class 150			1												1	See ANSI B 16.47 A						
ANSI B 16.47 A	Class 150	See ANSI B 16.5 V V															V				V		
BS 10	Table E	1	1				1																
JIS B 2210	JIS 10 K			1	1						1									1			
	JIS 16 K	1	1				1																
MSS SP 44	Class 150														V	1	V				V		
AWWA C207	Tables 2-3-4-5														V		V				V		

BETWEEN FLANGES AND DEAD END ASSEMBLY FOR LUGGED TYPE

DN mm		50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	1000
size inch		2”	2½”	3”	4”	5”	6”	8”	10”	12”	14”	16”	18”	20”	22”	24”	26”	28”	30”	32”	34”	36”	40”
EN 1092	PN 6																						
DIN 2501	PN 10																						
BS 4504	PN 16																						
ISO 2084	PN 25																			V		V	
EN 1759	Class 150																					V	
ANSI B 16.5	Class 150																See ANSI B 16.47 A						
ANSI B 16.47 A	Class 150	See ANSI B 16.5 V V															V				V	V	
BS 10	Table E																						
JIS B 2210	JIS 10 K																						
	JIS 16 K																			V		V	
MSS SP 44	Class 150														V		V				V	V	
AWWA C207	Tables 2-3-4-5														V		V				V	V	

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