





## WAFER CHECK VALVES (SHORT PATTERN)

Valve Size		Class 150		Class 300		Class 600		Class 900		Class 1500	
Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)
2	(50)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)
2 1/2	(65)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)
3	(80)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)	3/4	(19.1)	7/8	(22.2)
4	(100)	3/4	(19.1)	3/4	(19.1)	7/8	(22.2)	7/8	(22.2)	1 1/4	(31.8)
6	(150)	3/4	(19.1)	7/8	(22.2)	1 1/8	(28.6)	1 3/8	(34.9)	1 3/4	(44.5)
8	(200)	1 1/8	(28.6)	1 1/8	(28.6)	1 1/2	(38.1)	1 3/4	(44.5)	2 1/4	(57.2)
10	(250)	1 1/8	(28.6)	1 1/2	(38.1)	2 1/4	(57.2)	2 1/4	(57.2)	2 7/8	(73.1)
12	(300)	1 1/2	(38.1)	2	(50.8)	2 3/8	(60.3)	—	—	—	—
14	(350)	1 3/4	(44.5)	2	(50.8)	2 5/8	(66.7)	—	—	—	—
16	(400)	2	(50.8)	2	(50.8)	2 7/8	(73.0)	—	—	—	—
18	(450)	2 3/8	(60.3)	3	(76.2)	3 1/4	(82.6)	—	—	—	—
20	(500)	2 1/2	(63.5)	3 1/4	(82.6)	3 5/8	(92.1)	—	—	—	—

## OTHER COMMON FACE TO FACE DIMENSIONS

### KNIFE GATE, GATE, BUTTERFLY & DIAPHRAGM VALVES

Inches	(mm)	Diaphragm (BS 5156)	Butterfly (ISO 5752-Short)	Knife Gate	Gate (BS 5150/ AS 3579*)
1/2	(15)	108	—	—	108
3/4	(20)	117	—	—	117
1	(25)	127	—	—	127
1 1/4	(32)	146	—	—	140
1 1/2	(40)	159	33	—	165
2	(50)	190	43	48	178*
2 1/2	(65)	216	46	48	190*
3	(80)	254	46	51	203*
4	(100)	305	52	51	229*
5	(125)	356	56	57	254*
6	(150)	406	56	57	267*
8	(200)	521	60	70	292*
10	(250)	635	68	70	330*
12	(300)	749	78	76	356*
14	(350)	749	78	76	381
16	(400)	—	102	89	406
18	(450)	—	114	89	432
20	(500)	—	127	114	457
22	(550)	—	154	—	—
24	(600)	—	154	114	508

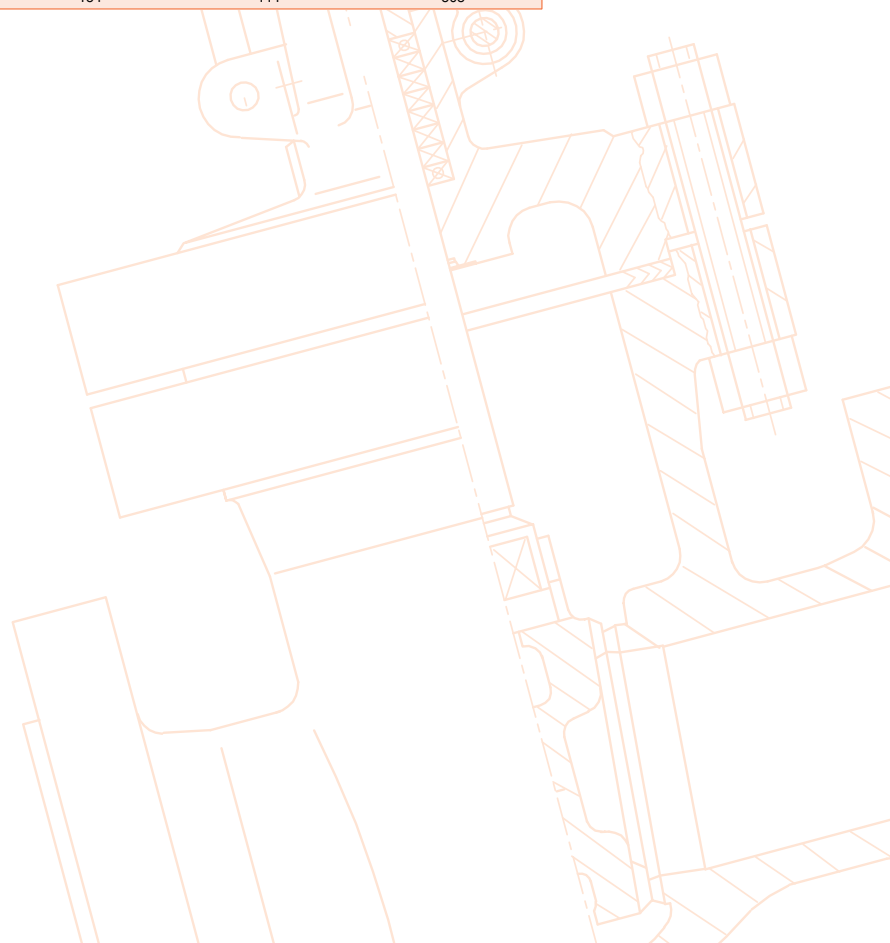
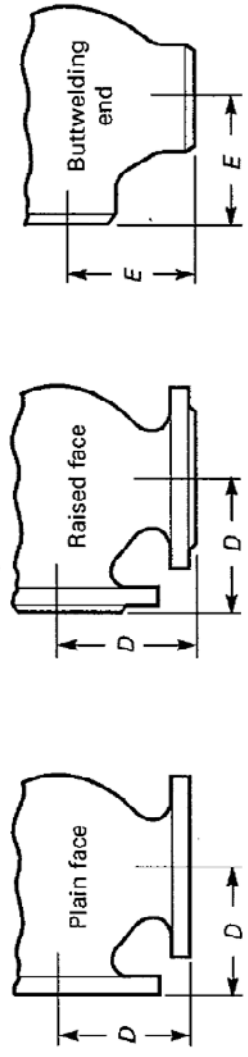


Table 1 Class 125 Cast Iron Flanged and Class 150 Steel Flanged and Butt Welding End Valves, Face-to-Face and End-to-End Dimensions



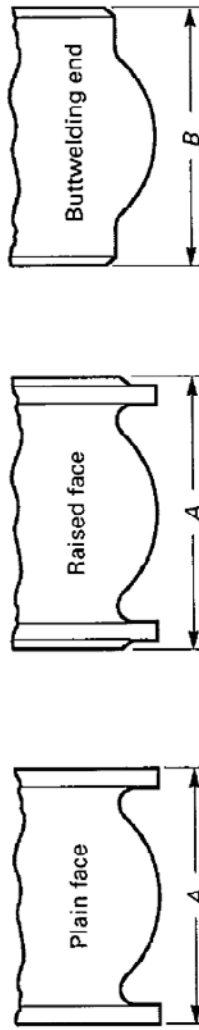
Nominal Valve Size	Class 125 Cast Iron					Class 150 Steel					Class 150 Steel							
	1	2	3	4	5	6	7	8	9	10	11	12	Class 150 Steel					
	Class 125 Cast Iron					Class 150 Steel					Class 150 Steel							
NPS	DN	Flanged End (Flat Face)					Flanged End (2 mm Raised Face) and Welding End					Gate						
		Gate, Solid Wedge and Double Disc, A	Short Pattern, A	Long Pattern, A	Regular and Venturi Pattern, A	Round Port, Full Bore, A	Globe, Lift Check and Swing Check Type A [Note (1)] AWWA C508, A	Globe, Lift Check and Swing Check [Note (4)], A	Angle and Lift Check, D	Solid Wedge and Double Disc, A	Conduit, A	Solid Wedge, Double Disc, and Conduit, B	Plug	Short Pattern, A				
1/4	8	...	...	...	...	...	...	...	...	...	...	...	102	...	...	102	...	...
3/8	10	...	...	...	...	...	...	...	...	...	...	...	102	...	...	102	...	...
1/2	15	...	...	...	...	...	...	...	...	...	...	...	108	...	...	108	...	...
3/4	20	...	...	...	...	...	...	...	...	...	...	...	117	...	...	117	...	...
1	25	...	140	...	140 (2)	140	...	...	...	...	...	...	127	...	...	127	...	140
1 1/4	32	...	...	...	165 (2)	152	...	...	...	...	...	...	140	...	...	140	...	...
1 1/2	40	...	165	...	165 (2)	165	...	...	...	...	...	...	165	...	...	165	...	165
2	50	178	178	...	190 (2)	190	203	203	102	178	178	178	178	178	178	216	216	178
2 1/2	65	190	190	...	210 (2)	210	254	216	108	190	190	190	190	190	190	241	241	190
3	80	203	203	...	229 (2)	229	279	241	121	203	203	203	203	203	203	282	282	203
4	100	229	229	...	229 (2)	305	330	292	146	229	229	229	229	229	229	305	305	229
5	125	254	254	...	356 (2)	381	...	330	165	254	254	254	254	254	254	381	381	254
6	150	267	267	...	394	457	406	356	178	267	267	267	267	267	267	403	403	267
8	200	292	292	...	457	559	495	495	248	292	292	292	292	292	292	419	419	292
10	250	330	330	...	533	660	559	622	311	330	330	330	330	330	330	457	457	330
12	300	356	356	...	610	762	660	698	349	356	356	356	356	356	356	502	502	356
14	350	381 (5)	432 (6)	...	686	...	762	787	394	381	381	381	381	381	381	572	572	...
16	400	406 (5)	451 (6)	...	762	...	775	914 (7)	457	406	406	406	406	406	406	610	610	...
18	450	432 (5)	546 (6)	...	864	...	851	1 016 (9)	...	432	432	432	432	432	432	660	660	...
20	500	457 (5)	597 (6)	...	914	...	1 016	1 016 (9)	...	457	457	457	457	457	457	711	711	...

Table 1 Class 125 Cast Iron Flanged and Class 150 Steel Flanged and Butt Welding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)



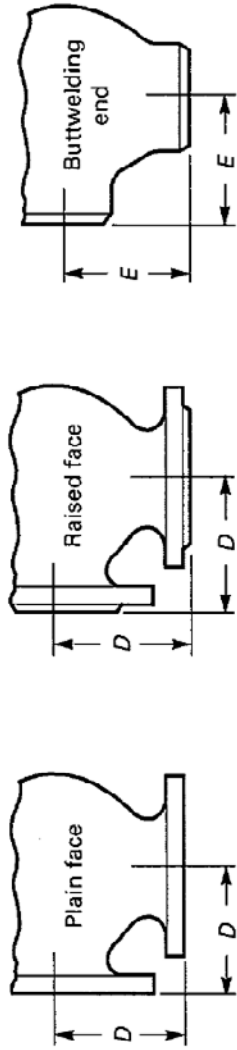
Nominal Valve Size	Class 150 Steel														
	Class 125 Cast Iron						Class 150 Steel								
	13	14	15	16	17	18	19	20	21	22	23				
NPS															
DN															
	Class 150 Steel														
	Flanged End (2 mm Raised Face) and Welding End														
	Plug						Globe, Lift and Swing Check [Note (1)], A and B			Y-Globe and Y-Swing Check, A and B		Flanged End		Welding End	
	Regular Pattern, A	Short and Regular Pattern, B	Venturi Pattern, A	Round Port, Full Bore, A	Angle and Lift Check, D and E							Long Pattern, A	Short Pattern, A	Long Pattern, B	Short Pattern, B
1/4	...	...	...	...	102	51	...	...	...	...	...	...	...	...	...
3/8	...	...	...	...	102	51	...	...	...	...	...	...	...	...	...
1/2	...	...	...	...	108	57	...	...	...	...	...	108	108	...	...
3/4	...	...	...	...	117	64	...	...	...	...	...	117	117	...	...
1	...	...	...	176	127	70	...	...	...	...	...	127	127	...	...
1 1/4	...	...	...	...	140	76	...	...	...	...	...	140	140	...	...
1 1/2	...	...	...	...	165	83	...	...	...	...	...	165	165	...	...
2	...	267	...	267	203	102	...	...	...	...	...	178	178	...	...
2 1/2	...	305	...	298	216	108	...	...	...	...	...	190	190	...	...
3	...	330	...	343	241	121	...	...	...	...	...	203	203	...	...
4	305	356	...	432	292	146	...	...	...	...	...	229	229	...	...
5	381	381	...	...	356 (3)	178	...	...	...	...	...	...	...	...	...
6	394	457	...	546 (4)	406 (3)	203	...	...	...	...	...	394	267	...	...
8	457	521	...	622 (4)	495	248	...	...	...	...	...	457	292	...	...
10	533	559	...	660 (4)	622	311	...	...	...	...	...	533	330	...	...
12	610	635	...	762 (4)	698	349	...	...	...	...	...	610	356	...	...
14	686	...	...	...	787	394	...	...	...	...	...	686	381	...	...
16	762	...	...	...	914 (8)	457	...	...	...	...	...	762	406	...	...
18	864	...	...	...	978 (10)	...	...	...	...	...	...	864	...	...	...
20	914	...	...	...	978 (10)	...	...	...	...	...	...	914	...	...	...

Table 1 Class 125 Cast Iron Flanged and Class 150 Steel Flanged and Butt Welding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)



Nominal Valve Size NPS DN	Class 125 Cast Iron				Class 150 Steel				Class 150 Steel						
	1	2	3	4	5	6	7	8	9	10	11	12			
	Class 125 Cast Iron Flanged End (Flat Face)												Class 150 Steel Flanged End (2 mm Raised Face) and Welding End		
	Gate, Solid Wedge and Double Disc, A			Plug			Globe, Lift Check and Swing Check Type A [Note (1)] AWWA C508, A	Globe, Lift Check and Swing Check [Note (1)], A	Angle and Lift Check, D	Gate		Plug			
	Short Pattern, A	Long Pattern AWWA C517, A	Regular and Venturi Pattern, A	Round Port, Full Bore, A	Solid Wedge and Double Disc, A	Solid Wedge and Double Disc, A				Solid Wedge, Double Disc, and Conduit, B	Short Pattern, A				
22 550	...	...	...	...	...	...	...	...	...	...	508	...	...		
24 600	508 (5)	762 (6)	1 067	1 067 (11)	...	1 168	...	1 219 (9)	...	508	508	762	...		
26 650	...	...	...	...	...	...	...	...	...	559	559	864 (12)	...		
28 700	...	...	...	...	...	...	...	...	...	610	610	914 (12)	...		
30 750	...	952 (6)	1 295	1 295 (11)	...	...	...	1 422 (9)	...	610	660	914 (12)	...		
32 800	...	...	...	...	...	...	...	...	...	711 (14)	711	965 (12)	...		
34 850	...	...	...	...	...	...	...	...	...	762 (14)	762	1 016 (12)	1 016		
36 900	...	1 321 (6)	1 524	1 600 (11)	...	...	...	1 600 (9)	...	711	813	1 016 (12)	...		
40 1 000	...	...	...	...	...	...	...	1 778 (9)	...	813	...	...	...		
42 1 050	...	1 575 (6)	1 829	...	...	...	...	...	...	...	...	...	...		
48 1 200	...	...	2 134	...	...	...	...	1 930 (9)	...	...	...	...	...		
54 1 350	...	...	2 438	...	...	...	...	...	...	...	...	...	...		
60 1 500	...	...	2 667	...	...	...	...	...	...	...	...	...	...		
66 1 650	...	...	2 921	...	...	...	...	...	...	...	...	...	...		
72 1 800	...	...	3 175	...	...	...	...	...	...	...	...	...	...		

Table 1 Class 125 Cast Iron Flanged and Class 150 Steel Flanged and Butt welding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)



Nominal Valve Size		Class 125 Cast Iron				Class 150 Steel				Class 150 Steel							
		13	14	15	16	17	18	19	20	21	22	23					
NPS	DN	Class 150 Steel															
		Flanged End (2 mm Raised Face) and Welding End															
		Plug				Globe, Lift Check, and Swing Check [Note (1), A and B		Angle and Lift Check, D and E		Y-Globe and Y-Swing Check, A and B		Ball					
		Regular Pattern, A		Short and Regular Pattern, B		Venturi Pattern, A		Round Port, Full Bore, A		Long Pattern, A		Short Pattern, A		Long Pattern, B		Short Pattern, B	
22	550	...	...	...	...	1 067 (10)	...	...	...	...	...	...	...	1 092	...	...	...
24	600	1 067	...	1 067	...	1 295 (10)	...	...	...	...	...	...	1 067	1 143	...	...	813
26	650	...	...	...	...	1 295 (10)	...	...	...	...	...	...	1 143 (13)	1 245	...	...	...
28	700	...	...	...	...	1 448 (10)	...	...	...	...	...	...	1 245 (13)	1 346	...	...	...
30	750	...	...	...	...	1 524 (10)	...	...	...	...	...	...	1 295 (13)	1 397	...	...	...
32	800	...	...	...	...	...	...	...	...	...	...	...	1 372 (13)	1 524	...	...	...
34	850	...	...	...	...	...	...	...	...	...	...	...	1 473 (13)	1 626	...	...	...
36	900	...	...	...	...	1 956 (10)	...	...	...	...	...	...	1 524 (13)	1 727	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

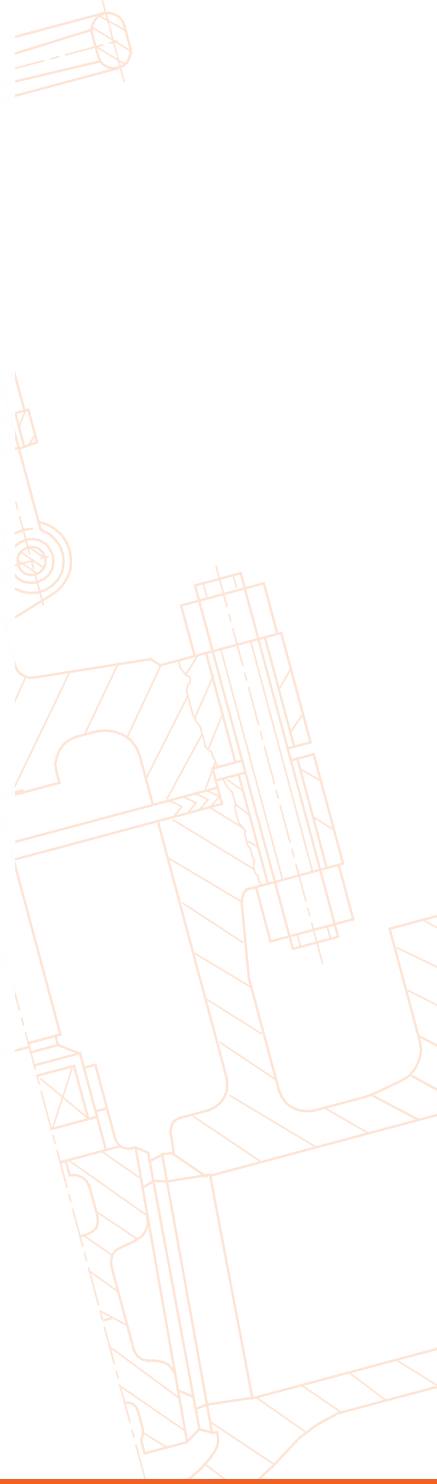
**Table 1 Class 125 Cast Iron Flanged and Class 150 Steel Flanged and Butt welding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)**

**GENERAL NOTES:**

- (a) Dimensions are in millimeters.
- (b) See Table 9 for adjustments to tabulated dimensions that may be required for certain flange facings.

**NOTES:**

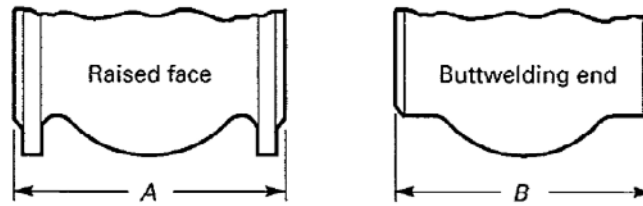
- (1) These dimensions are not intended to cover the type of check valve having the seat angle at approximately 45 deg to the run of the valve, or the "Underwriter Pattern," or other patterns where large clearances are required.
- (2) Regular pattern only. The face-to-face dimension of NPS 4 (DN 100) may be 305 at the manufacturer's option.
- (3) Globe and horizontal lift check only. The face-to-face and end-to-end dimension for Class 150 steel flanged and butt welding end swing check valves in NPS 5 (DN 125) is 330 and in NPS 6 (DN 150) is 356.
- (4) These data for Class 150 round port full bore plug valves are extracted from API 6D.
- (5) Solid wedge only.
- (6) These data for NPS  $\geq 14$  (DN  $\geq 350$ ) Class 125 cast iron plug valves are extracted from AWWA C517.
- (7) Globe and horizontal lift check only.
- (8) Globe and horizontal lift check only. The face-to-face and end-to-end dimension for Class 150 steel flanged and butt welding end swing check valves in NPS 16 (DN 400) is 864.
- (9) These data for NPS  $\geq 18$  (DN  $\geq 450$ ) Class 125 cast iron globe and check valves are extracted from AWWA C508, Type B.
- (10) Swing check only.
- (11) Venturi pattern only.
- (12) Double disc and conduit only.
- (13) These data for Class 150 ball valves are extracted from API 6D.
- (14) These data for Class 150 gate valves are extracted from API 6D. For NPS 30 (DN 750) and NPS 36 (DN 900) through-conduit valves, use 660 mm and 813 mm, respectively.





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**Table 2 Class 250 Cast Iron Flanged and Class 300 Steel Flanged and Buttwelding End Valves, Face-to-Face and End-to-End Dimensions**



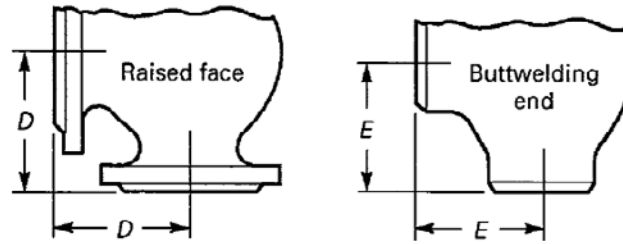
Class 250 Cast Iron  
and Class 300 Steel

Class 300 Steel

		1	2	3	4	5	6	7	8	9
		Class 250 Cast Iron						Class 300 Steel		
		Flanged End (2 mm Raised Face)						Flanged and Welding End		
Nominal Valve Size		Gate, Solid Wedge and Double Disc, A	Plug			Globe, Lift Check, and Swing Check, A	Angle and Lift Check, D	Ball		
			Short Pattern, A	Regular Pattern, A	Venturi Pattern, A			Long Pattern, A	Short Pattern, A and B	Long Pattern, B
NPS	DN	A	A	A	A	A	D	A	A and B	B
1/2	15	...	...	...	...	...	...	140	140	...
3/4	20	...	...	...	...	...	...	152	152	...
1	25	...	...	159	...	...	...	165	165	...
1 1/4	32	...	...	...	...	...	...	178	178	...
1 1/2	40	...	...	190	...	...	...	190	190	190
2	50	216	184	216	...	267	133	216	216	216
2 1/2	65	241	203	241	...	292	146	241	241	241
3	80	282	235	282	...	318	159	282	282	282
4	100	305	267	305	...	356	178	305	305	305
5	125	381	...	387	...	400	200	...	...	...
6	150	403	378	425	403	444	222	403	403	457
8	200	419	...	502	419	533	267	502	419	521
10	250	457	568	597	457	622	311	568	457	559
12	300	502	648	711	502	711	356	648	502	635
14	350	572	...	...	762	...	...	762	572	762
16	400	610	...	...	838	...	...	838	610	838
18	450	660	...	...	914	...	...	914	660	914
20	500	711	...	...	991	...	...	991	711	991
22	550	...	...	...	1 118	...	...	1 092	...	1 092
24	600	787	...	...	1 143	...	...	1 143	813	1 143
26	650	...	...	...	...	...	...	1 245	...	1 245
28	700	...	...	...	...	...	...	1 346	...	1 346
30	750	...	...	...	...	...	...	1 397	...	1 397
32	800	...	...	...	...	...	...	1 524	...	1 524
34	850	...	...	...	...	...	...	1 626	...	1 626
36	900	...	...	...	...	...	...	1 727	...	1 727
38	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...

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**Table 2 Class 250 Cast Iron Flanged and Class 300 Steel Flanged and Butt welding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)**



Class 250 Cast Iron  
and Class 300 Steel

Class 300 Steel

		10	11	12	13	14	15	16	17	
		Class 300 Steel								
		Flanged End (2 mm Raised Face) and Welding End								
Nominal Valve Size	NPS	DN	Gate, Solid Wedge, Double Disc, and Conduit, A and B	Plug				Globe and Lift Check, A and B	Angle and Lift Check, D and E	Swing Check, A and B
				Short and Venturi Pattern, A	Short and Venturi Pattern, B	Regular Pattern, A	Round Port, Full Bore, A and B			
1/2	15	15	140 (1)	...	...	...	...	152	76	...
3/4	20	20	152 (1)	...	...	...	...	178	89	...
1	25	25	165 (1)	159 (2)	...	...	190	203	102	216
1 1/4	32	32	178 (1)	...	...	...	...	216	108	229
1 1/2	40	40	190	190 (2)	...	...	241	229	114	241
2	50	50	216	216	267 (2)	...	282	267	133	267
2 1/2	65	65	241	241	305 (2)	...	330	292	146	292
3	80	80	282	282	330 (2)	...	387	318	159	318
4	100	100	305	305	356 (2)	...	457	356	178	356
5	125	125	381	...	...	...	...	400	200	400
6	150	150	403	403	457	403	559	444	222	444
8	200	200	419	419	521	502	686	559	279	533
10	250	250	457	457	559	568	826	622	311	622
12	300	300	502	502	635	711	965	711	356	711
14	350	350	762	762 (3)	762 (3)	762	...	838 (4)	...	838
16	400	400	838	838 (3)	838 (3)	838	...	864 (4)	...	864
18	450	450	914	914 (3)	914 (3)	914	...	978 (4)	...	978
20	500	500	991	991 (3)	991 (3)	991	...	1 016 (4)	...	1 016
22	550	550	1 092	1 092 (3)	1 092 (3)	1 092	...	1 118 (4)	...	1 118
24	600	600	1 143	1 143 (3)	1 143 (3)	1 143	...	1 346 (4)	...	1 346
26	650	650	1 245	1 245 (3)	1 245 (3)	1 245	...	1 346 (4)	...	1 346
28	700	700	1 346	1 346 (3)	1 346 (3)	1 346	...	1 499 (4)	...	1 499
30	750	750	1 397	1 397 (3)	1 397 (3)	1 397	...	1 594 (4)	...	1 594
32	800	800	1 524	1 524 (3)	1 524 (3)	1 524	...	...	...	...
34	850	850	1 626	1 626 (3)	1 626 (3)	1 626	...	...	...	...
36	900	900	1 727	1 727 (3)	1 727 (3)	1 727	...	2 083 (4)	...	2 083
38	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...

# ASME B16.10 - 2017 cont'd

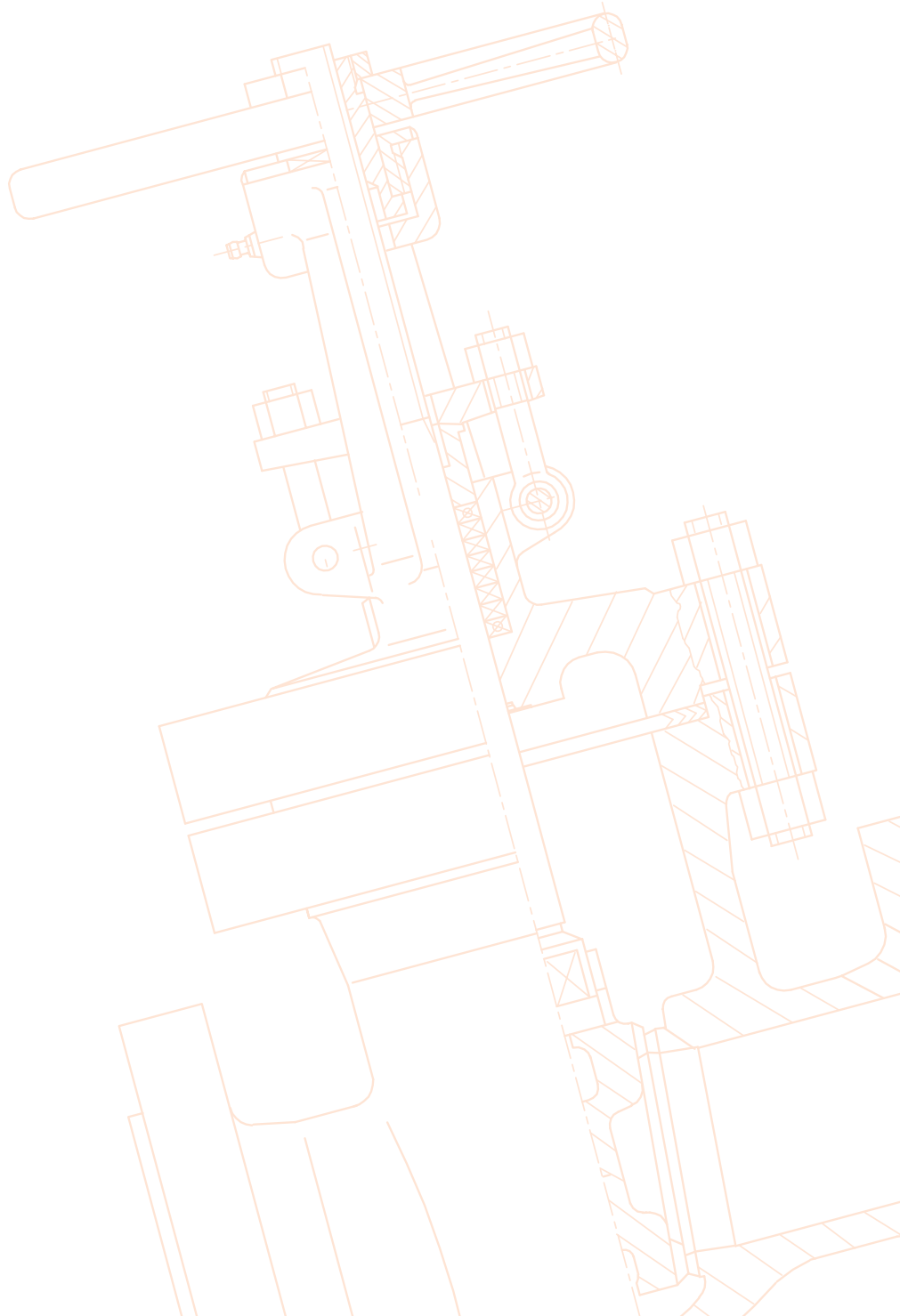
**Table 2 Class 250 Cast Iron Flanged and Class 300 Steel Flanged and Buttwelding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)**

**GENERAL NOTES:**

- (a) Dimensions are in millimeters.
- (b) See Table 9 for adjustments to tabulated dimensions that may be required for certain flange facings.

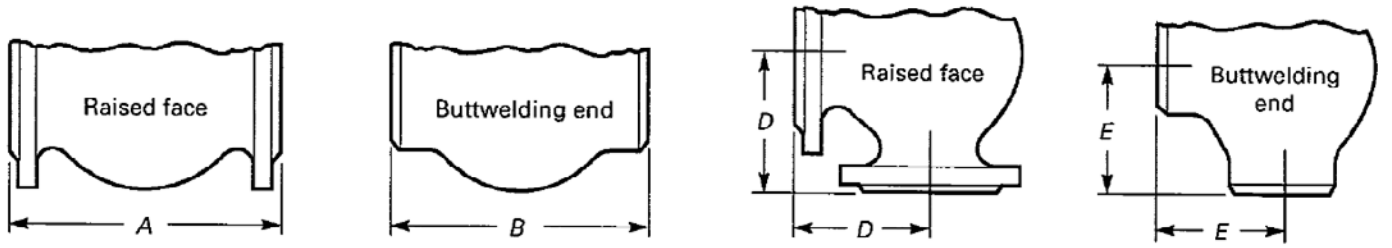
**NOTES:**

- (1) Solid wedge only.
- (2) Plug — short pattern only.
- (3) Venturi pattern only.
- (4) These data for Class 300 check valves are extracted from API 6D.



# ASME B16.10 - 2017 cont'd

**Table 3 Class 600 Steel Flanged and Butt welding End Valves, Face-to-Face and End-to-End Dimensions**



		1	2	3	4	5	6	7	8	9	10
		Class 600 Steel									
		Flanged End (7 mm Raised Face and Welding End)									
Nominal Valve Size		Ball	Gate		Plug			Globe Lift Check, and Swing Check, Long Pattern, A and B	Globe Lift Check, and Swing Check, Short Pattern [Note (1)], B	Angle and Lift Check, Long Pattern, D and E	Angle and Lift Check, Short Pattern [Note (1)], E
		Long Pattern, A and B	Solid Wedge, Double Disc, and Conduit, Long Pattern, A and B	Short Pattern, [Note (1)], B	Regular and Venturi Pattern, A and B	Round Bore, Full Port, A	Round Bore, Full Port, B				
NPS	DN	A and B	A and B	B	A and B	A	B	A and B	B	D and E	E
1/2	15	165	165 (2)	...	...	...	...	165	...	83	...
3/4	20	190	190 (2)	...	...	...	...	190	...	95	...
1	25	216	216	133	216 (3)	254	...	216	133	108	...
1 1/4	32	229	229	146	229 (3)	...	...	229	146	114	...
1 1/2	40	241	241	152	241	318	...	241	152	121	...
2	50	292	292	178	292	330	...	292	178	146	108
2 1/2	65	330	330	216	330	381	...	330	216	165	127
3	80	356	356	254	356	444	...	356	254	178	152
4	100	432	432	305	432	508	559	432	305	216	178
5	125	...	508	381	...	...	...	508	381	254	216
6	150	559	559	457	559	660	711	559	457	279	254
8	200	660	660	584	660	794	845	660	584	330	...
10	250	787	787	711	787	940	1 016	787	711	394	...
12	300	838	838	813	838	1 067	1 067	838	813	419	...
14	350	889	889	889	889	...	...	889 (4)	...	...	...
16	400	991	991	991	991	...	...	991 (4)	...	...	...
18	450	1 092	1 092	1 092	1 092 (5)	...	...	1 092 (4)	...	...	...
20	500	1 194	1 194	1 194	1 194 (5)	...	...	1 194 (4)	...	...	...
22	550	1 295	1 295	...	1 295 (5)	...	...	1 295 (4)	...	...	...
24	600	1 397	1 397	1 397	1 397 (5)	...	...	1 397 (4)	...	...	...
26	650	1 448	1 448	...	1 448 (5)	...	...	1 448 (4)	...	...	...
28	700	1 549	1 549	...	...	...	...	1 600 (4)	...	...	...
30	750	1 651	1 651	...	1 651 (5)	...	...	1 651 (4)	...	...	...
32	800	1 778	1 778 (6)	...	1 778 (5)	...	...	...	...	...	...
34	850	1 930	1 930 (6)	...	1 930 (5)	...	...	...	...	...	...
36	900	2 083	2 083 (6)	...	2 083 (5)	...	...	2 083 (4)	...	...	...
38	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...	...

# ASME B16.10 - 2017 cont'd

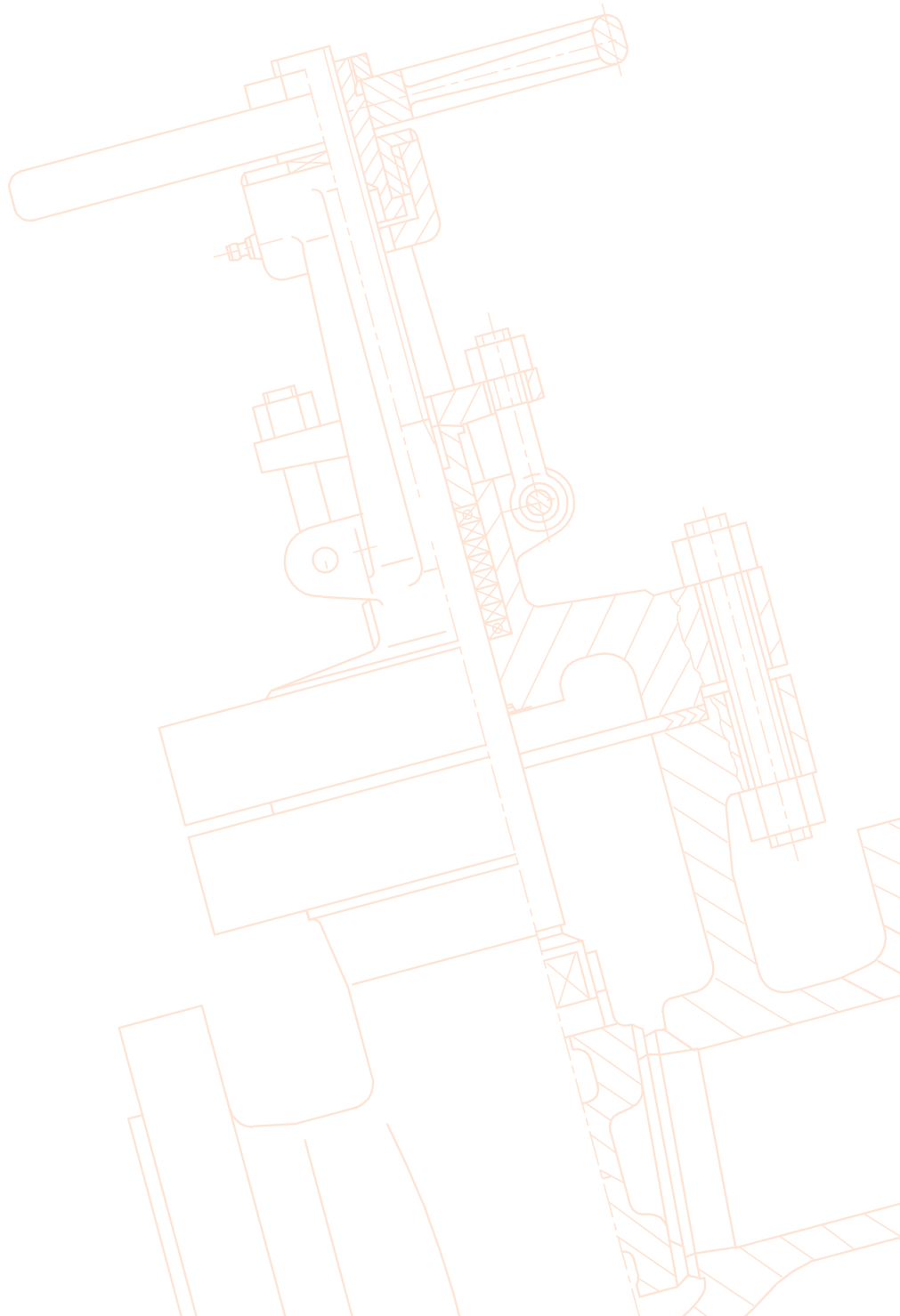
**Table 3 Class 600 Steel Flanged and Buttwelding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)**

**GENERAL NOTES:**

- (a) Dimensions are in millimeters.
- (b) See Table 9 for adjustments to tabulated dimensions that may be required for certain flange facings.

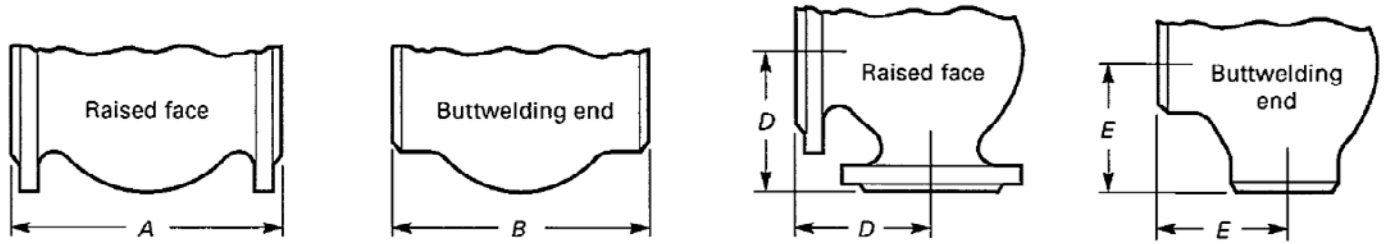
**NOTES:**

- (1) These dimensions apply to pressure seal or flangeless bonnet valves. They may be applied at the manufacturer's option to valves with flanged bonnets.
- (2) Solid wedge only.
- (3) Regular pattern only.
- (4) Swing check only.
- (5) Venturi pattern only.
- (6) Double disc and conduit only.



# ASME B16.10 - 2017 cont'd

**Table 4 Class 900 Steel Flanged and Buttwelding End Valves, Face-to-Face and End-to-End Dimensions**



		1	2	3	4	5	6	7	8	9
		Class 900 Steel								
		Flanged End (7 mm Raised Face) and Welding End								
Nominal Valve Size		Gate		Plug		Globe Lift Check, and Swing Check, Long Pattern, A and B	Globe Lift Check, and Swing Check, Short Pattern [Note (1)], B	Angle and Lift Check, Long Pattern, D and E	Angle and Lift Check, Short Pattern [Note (1)], E	Ball
		Solid Wedge, Double Disc, and Conduit, Long Pattern, A and B	Short Pattern, [Note (1)], B	Regular and Venturi Pattern, A and B	Round Port, Full Bore, A					Long Pattern, A and B
NPS	DN									
3/4	20 (2)	...	...	...	...	229	...	114	...	...
1	25 (2)	254 (3)	140	254 (4)	...	254	...	127	...	254
1 1/4	32 (2)	279 (3)	165	279 (4)	...	279	...	140	...	279
1 1/2	40 (2)	305 (3)	178	305 (4)	356	305	...	152	...	305
2	50 (2)	368	216	368 (4)	381	368	...	184	...	368
2 1/2	65 (2)	419	254	419 (4)	432	419	254	210	...	419
3	80	381	305	381 (4)	470	381	305	190	152	381
4	100	457	356	457 (5)	559	457	356	229	178	457
5	125	559	432	...	...	559	432	279	216	...
6	150	610	508	610	737	610	508	305	254	610
8	200	737	660	737	813	737	660	368	330	737
10	250	838	787	838	965	838	787	419	394	838
12	300	965	914	965	1 118	965	914	483	457	965
14	350	1 029	991	...	...	1 029	991	514	495	1 029
16	400	1 130	1 092	1 130 (5)	...	1 130 (6)	1 092	660	...	1 130
18	450	1 219	...	...	...	1 219 (6)	...	737	...	1 219
20	500	1 321	...	1 321 (5)	...	1 321 (6)	...	826	...	1 321
22	550	...	...	...	...	...	...	...	...	...
24	600	1 549	...	...	...	1 549 (6)	...	991	...	1 549
26	650	...	...	...	...	...	...	...	...	1 651 (7)
28	...	...	...	...	...	...	...	...	...	...
30	750	...	...	...	...	...	...	...	...	1 880 (7)
32	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...
36	900	...	...	...	...	...	...	...	...	2 286 (7)
38	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	...	...	...	...	...	...
42	...	...	...	...	...	...	...	...	...	...
44	...	...	...	...	...	...	...	...	...	...
46	...	...	...	...	...	...	...	...	...	...
48	...	...	...	...	...	...	...	...	...	...

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**Table 4 Class 900 Steel Flanged and Butt welding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)**

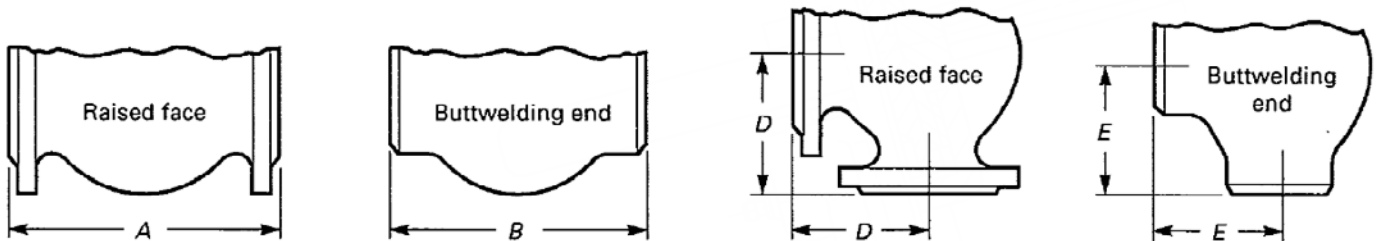
**GENERAL NOTES:**

- (a) Dimensions are in millimeters.
- (b) See Table 9 for adjustments to tabulated dimensions that may be required for certain flange facings.

**NOTES:**

- (1) These dimensions apply to pressure seal or flangeless bonnet valves. They may be applied at the manufacturer's option to valves with flanged bonnets.
- (2) The connecting end flanges for Class 900 valves, NPS 2½ (DN 65) and smaller, are identical to those of Class 1500 valves. The face-to-face dimensions for all Class 900 valves, NPS 2½ (DN 65) and smaller, except round port full bore plug valves (column 4), are identical with those of Class 1500 valves.
- (3) Solid wedge only.
- (4) Regular pattern only.
- (5) Venturi pattern only.
- (6) Swing check only.
- (7) These data for Class 900 full and reduced bore ball valves are extracted from API 6D.

**Table 5 Class 1500 Steel Flanged and Butt welding End Valves, Face-to-Face and End-to-End Dimensions**



		1	2	3	4	5	6	7	8
		Class 1500 Steel							
		Flanged End (7 mm Raised Face) and Welding End							
Nominal Valve Size		Gate		Plug		Globe Lift Check, and Swing Check, Long Pattern, A and B	Globe Lift Check, and Swing Check, Short Pattern [Note (1)], B	Angle and Lift Check, Long Pattern, D and E	Ball Long Pattern, A and B
		Solid Wedge, Double Disc, and Conduit, Long Pattern, A and B	Short Pattern, [Note (1)], B	Regular and Venturi Pattern, A and B	Round Port, Full Bore, A				
NPS	DN								
½	15	...	...	...	...	216 (2)	...	108	...
¾	20	...	...	...	...	229	...	114	...
1	25	254 (3)	140	254 (4)	...	254	...	127	...
1¼	32	279 (3)	165	279 (4)	...	279	...	140	...
1½	40	305 (3)	178	305 (4)	...	305	...	152	...
2	50	368	216	368 (4)	391	368	216	184	368
2½	65	419	254	419 (4)	454	419	254	210	419
3	80	470	305	470 (4)	524	470	305	235	470
4	100	546	406	546 (4)	625	546	406	273	546
5	125	673	483	...	...	673	483	337	...
6	150	705	559	705	787	705	559	353	705
8	200	832	711	832	889	832	711	416	832
10	250	991	864	991	1 067	991	864	495	991
12	300	1 130	991	1 130	1 219	1 130	991	565	1 130
14	350	1 257	1 067	...	...	1 257	1 067	629	1 257
16	400	1 384	1 194	1 384 (5)	...	1 384 (6)	1 194	...	1 384
18	450	1 537	1 346	...	...	1 537 (6)	...	...	1 537 (7)
20	500	1 664	1 473	...	...	1 664 (6)	...	...	1 664 (7)
22	550	...	...	...	...	...	...	...	...
24	600	1 943	...	...	...	1 943 (6)	...	...	...
26	650	...	...	...	...	...	...	...	1 943 (7)

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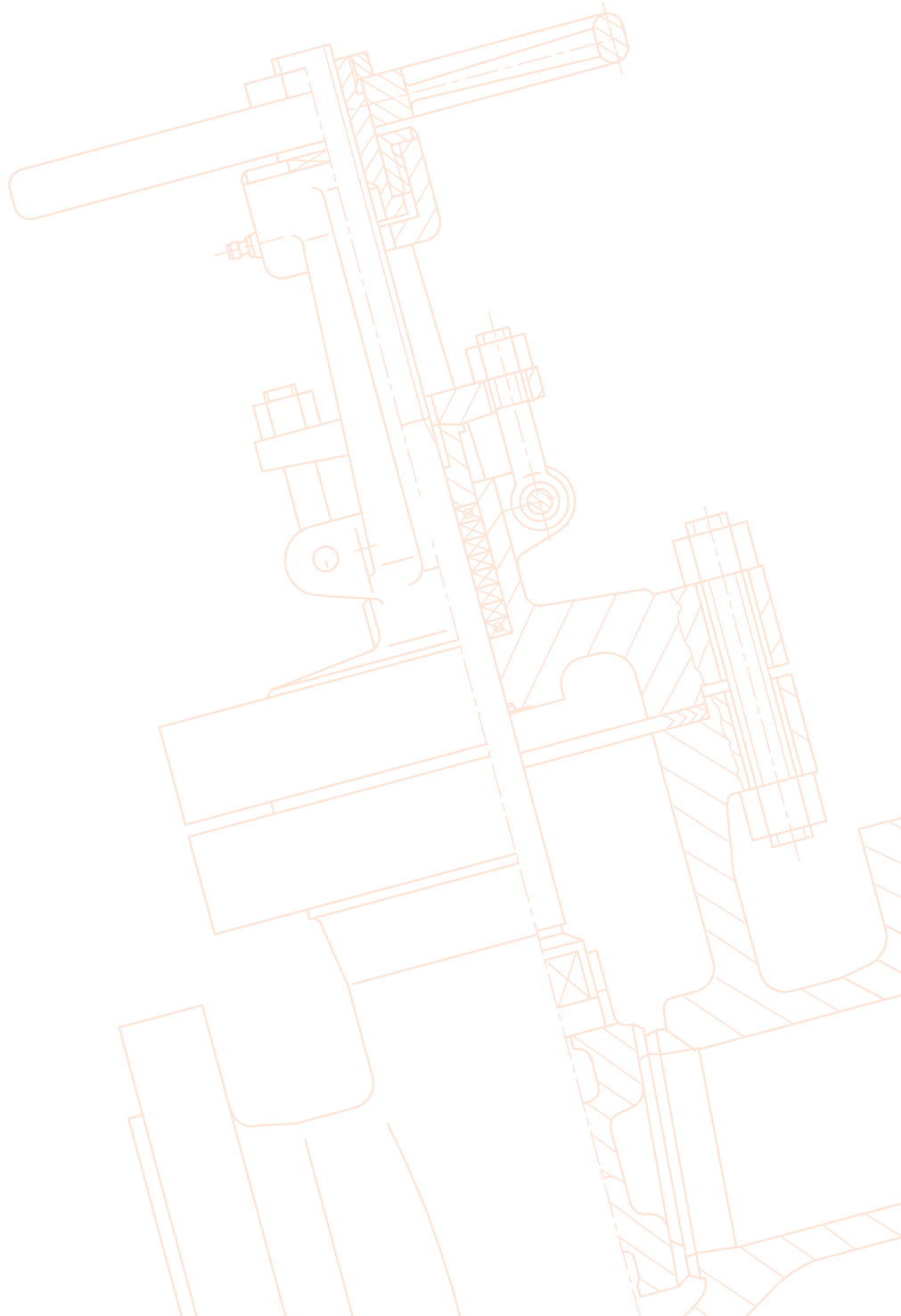
**Table 5 Class 1500 Steel Flanged and Buttwelding End Valves, Face-to-Face and End-to-End Dimensions (Cont'd)**

**GENERAL NOTES:**

- (a) Dimensions are in millimeters.
- (b) See Table 9 for adjustments to tabulated dimensions that may be required for certain flange facings.

**NOTES:**

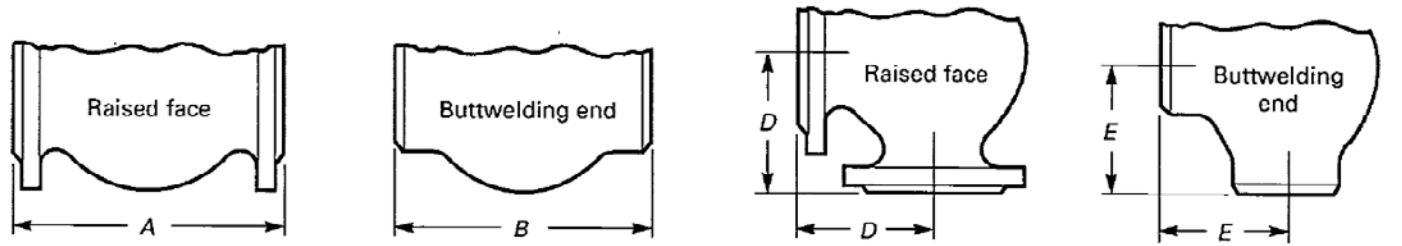
- (1) These dimensions apply to pressure seal or flangeless bonnet valves. They may be applied at the manufacturer's option to valves with flanged bonnets.
- (2) Globe and lift check only.
- (3) Solid wedge only.
- (4) Regular pattern only.
- (5) Venturi pattern only.
- (6) Swing check only.
- (7) These data for Class 1500 full and reduced bore valves are extracted from API 6D.





# ASME B16.10 - 2017 cont'd

**Table 6 Class 2500 Steel Flanged and Buttwelding End Valves, Face-to-Face and End-to-End Dimensions**



		1	2	3	4	5	6	7	
		Class 2500 Steel							
		Flanged End (7 mm Raised Face) and Welding End							
Nominal Valve Size		Gate			Plug Regular Pattern, A and B	Globe Lift Check, and Swing Check, Long Pattern, A and B	Globe Lift Check, and Swing Check, Short Pattern [Note (1)], B	Angle and Lift Check, Long Pattern, D and E	Ball
		Solid Wedge, Double Disc, and Conduit, Long Pattern, A and B	Short Pattern, [Note (1)], B						Long Pattern, A and B
NPS	DN								
1/2	15	264 (2)	...	...	264	...	132	...	
3/4	20	273 (2)	...	...	273	...	137	...	
1	25	308 (2)	186	308	308	...	154	...	
1 1/4	32	349 (2)	232	...	349	...	175	...	
1 1/2	40	384 (2)	232	384	384	...	192	...	
2	50	451	279	451	451	279	226	451	
2 1/2	65	508	330	508	508	330	254	508	
3	80	578	368	578	578	368	289	578	
4	100	673	457	673	673	457	337	673	
5	125	794	533	794	794	533	397	...	
6	150	914	610	914	914	610	457	914	
8	200	1 022	762	1 022	1 022	762	511	1 022	
10	250	1 270	914	1 270	1 270	914	635	1 270	
12	300	1 422	1 041	1 422	1 422	1 041	711	1 422	
14	350	...	1 118	...	...	...	...	...	
16	400	...	1 245	...	...	...	...	...	
18	450	...	1 397	...	...	...	...	...	

**GENERAL NOTES:**

- (a) Dimensions are in millimeters.
- (b) See Table 9 for adjustments to tabulated dimensions that may be required for certain flanged facings.

**NOTES:**

- (1) These dimensions apply to pressure seal or flangeless bonnet valves. They may be applied at the manufacturer's option to valves with flanged bonnets.
- (2) Solid wedge only.

Table 7 Classes 125 and 250 Cast Iron and Classes 150 to 2500 Steel Wafer Type Valves, Face-to-Face Dimensions

Nominal Valve Size	Swing Check, Single and Dual Plate, Installation Between Standard ANSI Flanges [Note (4)]																		
	Steel									Cast Iron [Note (3)]									
	2			3			4			5			6			7			
	Bonnetless Knife Gate CWP Rating (150°F Max.) [Note (1)]	Bonnetless Knife Gate Short Pattern, Class 150 [Note (2)]	Bonnetless Knife Gate Long Pattern, Class 150 [Note (2)]	Bonnetless Knife Gate Short Pattern, Class 300 [Note (2)]	Bonnetless Knife Gate Long Pattern, Class 300 [Note (2)]	125	150	200	250	Class	250	300	400	500	600	700	800	900	1500
2	48	50.8	69.8	69.8	69.8	54	60	60	60	60	54	60	60	60	60	60	60	60	60
2 1/2	...	...	...	...	...	54	60	60	60	60	60	60	60	60	60	60	60	60	60
3	51	50.8	101.6	69.8	101.6	67	73	73	73	73	67	73	73	73	73	73	73	73	73
4	51	50.8	104.6	69.8	104.6	67	73	73	73	73	67	73	73	73	73	73	73	73	73
5	57	...	...	...	...	83	...	...	...	...	83	...	...	...	...	...	...	...	...
6	57	57.2	63.5	80.0	104.6	95	95	95	95	95	95	95	95	95	95	95	95	95	95
8	70	69.8	73.2	88.9	117.6	127	127	127	127	127	127	127	127	127	127	127	127	127	127
10	70	69.8	79.2	118.9	136.6	140	140	140	140	140	140	140	140	140	140	140	140	140	140
12	76	76.2	82.6	127.0	143.0	181	181	181	181	181	181	181	181	181	181	181	181	181	181
14	76	76.2	91.9	139.7	158.8	184	184	184	184	184	184	184	184	184	184	184	184	184	184
16	89	88.9	95.2	139.7	168.4	191	191	191	191	191	191	191	191	191	191	191	191	191	191
18	89	88.9	104.6	158.8	177.8	203	203	203	203	203	203	203	203	203	203	203	203	203	203
20	114	114.3	114.3	189.0	189.0	213	213	213	213	213	213	213	213	213	213	213	213	213	213
24	114	114.3	127.0	215.9	215.9	222	222	222	222	222	222	222	222	222	222	222	222	222	222
26	...	171.4	180.1	215.9	215.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	180.8	180.8	254.0	254.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	117.0	187.4	209.6	266.7	266.7	305	305	305	305	305	305	305	305	305	305	305	305	305	305
32	...	206.2	218.9	292.1	292.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	225.6	249.9	304.8	304.8	368	368	368	368	368	368	368	368	368	368	368	368	368	368
42	117.0	247.6	304.8	304.8	374.6	432	432	432	432	432	432	432	432	432	432	432	432	432	432
48	...	292.1	419.1	304.8	424.4	524	524	524	524	524	524	524	524	524	524	524	524	524	524

GENERAL NOTES:

(a) Dimensions are in millimeters.

(b) The tolerances of para. 5.1 apply to face-to-face dimensions for sizes NPS 24 (DN 600) and smaller. For sizes NPS 30 (DN 750) and larger, the tolerance shall be ±6.0 mm.

NOTES:

(1) These data are for CWP rated knife gate valves are extracted from MSS SP-81.

(2) These data for Class rated knife gate valves are extracted from MSS SP-135.

(3) These data for cast iron swing check valves are extracted from API 594.

(4) Valves of sizes NPS 30 (DN 750) and larger in Class 150, 300, and 600 shall have body outside diameters and gasket surface dimensions compatible with flange standards specified in the purchase order, e.g., ASME B16.47 Series B or ASME B16.47 Series A (MSS SP-44).

(5) These data for long pattern steel swing check valves in sizes NPS 24 (DN 600) and smaller are extracted from API 6D and API 594. Data for larger sizes are extracted from API 594.

(6) These data for short pattern steel swing check valves are extracted from API 6D.

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**Table 8 Classes 25 and 125 Cast Iron and Classes 150 to 600 Steel Butterfly Valves, Face-to-Face Dimensions**

		1	2	3	4	5	6	7	8	9
		Class 150 Cast Iron and Steel [Notes (1), (2), and (3)]					Steel Grooved End [Notes (1), (3)]	Steel Offset Seat Lug and Wafer Style [Notes (4), (5)]		
Nominal Valve Size		Flanged End		Lug and Wafer Style [Note (6)]			Class 150	Class 150	Class 300	Class 600
NPS	DN	Narrow	Wide	Narrow	Wide	Extra Wide				
1½	40	...	...	33	37	38	86	...	...	...
2	50	...	...	43	44	46	81	...	...	...
2½	65	...	...	46	49	51	97	...	...	...
3	80	127	127	46	49	51	97	48	48	54
4	100	127	178	52	56	57	116	54	54	64
5	125	127	190	56	64	65	148	...	...	...
6	150	127	203	56	70	71	148	57	59	78
8	200	152	216	60	71	75	133	64	73	102
10	250	203	381	68	76	79	159	71	83	117
12	300	203	381	78	83	86	165	81	92	140
14	350	203	406	78	92	95	178	92	117	155
16	400	203	406	79	102	105	178	102	133	178
18	450	203	406	102	114	117	203	114	149	200
20	500	203	457	111	127	130	216	127	159	216
24	600	203	457	...	154	157	254	154	181	232
30	750	305	559	...	165	...	...	...	...	...
36	900	305	559	...	200	...	...	...	...	...
42	1 050	305	610	...	251	...	...	...	...	...
48	1 200	381	660	...	276	...	...	...	...	...
54	1 350	381	711	...	...	...	...	...	...	...
60	1 500	381	762	...	...	...	...	...	...	...
66	1 650	457	864	...	...	...	...	...	...	...
72	1 800	457	914	...	...	...	...	...	...	...

GENERAL NOTE: Dimensions are in millimeters.

**NOTES:**

- (1) These butterfly valves are of the design generally having concentric location of disc and seat, covered by MSS SP-67, from which these data are extracted.
- (2) These valves are dimensionally compatible with flanges conforming to ASME B16.1 Class 25 or Class 125, ASME B16.5 Class 150, ASME B16.24 Class 150, ASME B16.42 Class 150, or AWWA C207.
- (3) For these butterfly valves, a tolerance of ±2.0 mm shall be allowed on face-to-face dimensions of valves of NPS 6 (DN 150) and smaller, and a tolerance of ±3.0 mm on NPS 8 (DN 200) and larger, except that for single flange and flangeless valves of NPS 30 (DN 750) and larger, a tolerance of ±6.0 mm shall be allowed.
- (4) For these valves, a tolerance of ±3.0 mm shall be allowed on the face-to-face dimensions for all sizes and pressure classes.
- (5) The data for offset seat valves, columns 7 through 9, are extracted from MSS SP-68 and API 609.
- (6) The installed face-to-face dimension is the dimension of the valve face-to-face after installation in the pipeline. It does not include the thickness of gaskets where separate gaskets are used. It does include the compressed (installed) thickness of gaskets or seals that are an integral part of the valve.

## ASME B16.10 - 2017 cont'd

**Table 9 Determination of Face-to-Face and End-to-End Dimensions of Flanged Valves Having Various Flange Facings**

Material	Class	Flat Face	Face-to-Face [Notes (1) and (2)]				Ring Type Joint	Large or Small	
			2 mm Raised Face	7 mm Raised Face	Large or Small			Female Face	Groove Face
					Male Face	Tongue Face			
Cast Iron	125	(3)	...	...	...	...	...	...	...
	250	...	(3)	...	...	...	...	...	...
Steel	125	(4)	(3)	...	+13	+13	(5)	+10	+10
	300	(4)	(3)	...	+13	+13	(5)	+10	+10
	600 to 2500	...	...	(3)	(6)	(6)	(5)	-3	-3

GENERAL NOTE: Dimensions are in millimeters.

**NOTES:**

- (1) To determine the face-to-face or end-to-end dimensions of valves having both flanges as tabulated in this table, adjust the face-to-face (not the butt-weld end-to-end) dimensions shown for the valve type (gate, globe, etc.), material, class, and size in Tables 1 through 6 by the amount shown.
- (2) For center-to-face or center-to-end dimensions of angle type valves, use one-half the numerical adjustment shown herein.
- (3) These face-to-face dimensions are listed in Tables 1 through 6. (See table of desired Class Number.)
- (4) For Class 150 and for Class 300 steel valves having flat faces, either the full thickness of the flange or the thickness with the 2 mm raised face removed may be supplied unless otherwise specified. For full thickness of flange, the face-to-face dimensions listed for 2 mm raised face apply. Users are reminded that removing the 2 mm raised faces will make the face-to-face dimensions nonstandard.
- (5) The X dimensions given in Table 10 added to the appropriate raised face flange face-to-face dimensions of Tables 1 through 6 establish the end-to-end dimensions of steel valves having flanges with ring joint facings.
- (6) These face-to-face dimensions are those listed for 7 mm raised face in Tables 3 through 6.

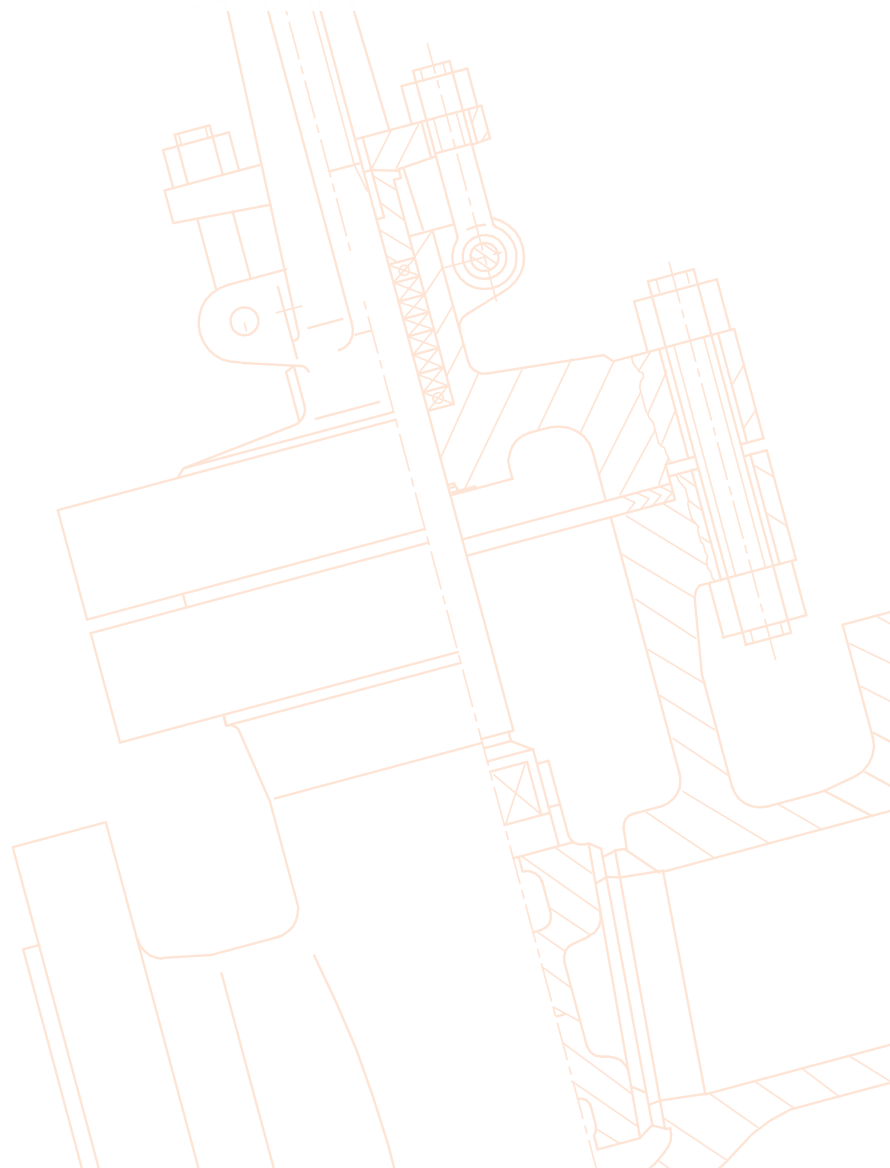
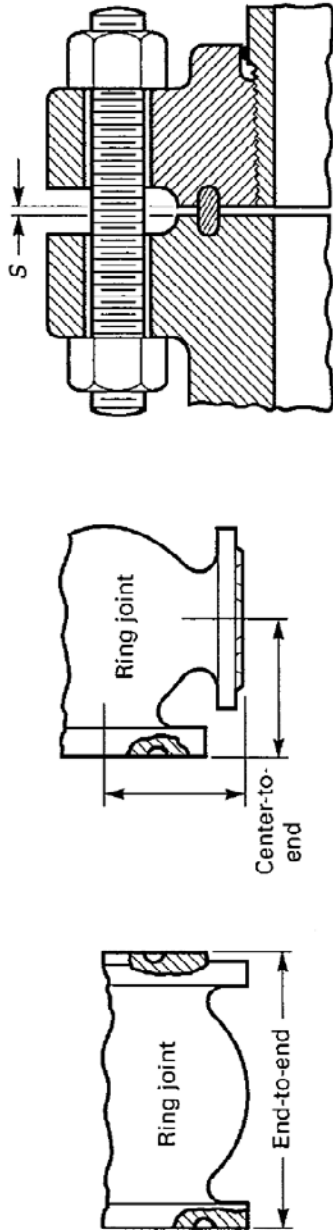


Table 10 Classes 150 to 2500 Steel Valves Having End Flanges With Ring Joint Facings, End-to-End Dimensions



Nominal Valve Size	Class 150		Class 300		Class 600		Class 900		Class 1500		Class 2500	
	1	2	3	4	5	6	7	8	9	10	11	12
NPS	X	S	X	S	X	S	X	S	X	S	X	S
1/2	...	...	11	3	-2 (1)	3	0	4	0	4	0	4
3/4	...	...	13	4	0	4	0	4	0	4	0	4
1	13	4	13	4	0	4	0	4	0	4	0	4
1 1/4	13	4	13	4	0	4	0	4	0	4	0	4
1 1/2	13	4	13	4	0	4	0	4	0	4	0	4
2	13	4	16	6	3	5	3	3	3	3	3	3
2 1/2	13	4	16	6	3	5	3	3	3	3	3	3
3	13	4	16	6	3	5	3	3	3	3	3	3
4	13	4	16	6	3	5	3	3	3	3	3	3
5	13	4	16	6	3	5	3	3	3	3	3	3
6	13	4	16	6	3	5	3	3	3	3	3	3
8	13	4	16	6	3	5	3	3	3	3	3	3
10	13	4	16	6	3	5	3	3	3	3	3	3
12	13	4	16	6	3	5	3	3	3	3	3	3
14	13	3	16	6	3	5	3	3	3	3	3	3
150	13	4	16	6	3	5	3	3	3	3	3	3
200	13	4	16	6	3	5	3	3	3	3	3	3
250	13	4	16	6	3	5	3	3	3	3	3	3
300	13	4	16	6	3	5	3	3	3	3	3	3
350	13	3	16	6	3	5	3	3	3	3	3	3
400	13	3	16	6	3	5	3	3	3	3	3	3
450	13	3	16	6	3	5	3	3	3	3	3	3
500	13	3	19	6	6	5	3	3	3	3	3	3
550	13 (2)	(3)	22 (2)	6	10 (2)	6	...	...	...	...	...	...
600	13	3	22	6	10	6	19	6	28	11	...	...

**Table 10 Classes 150 to 2500 Steel Valves Having End Flanges With Ring Joint Facings, End-to-End Dimensions (Cont'd)**

Nominal Valve Size	1		2		3		4		5		6		7		8		9		10		11		12	
	NPS	DN	X	S	X	S	X	S	X	S	X	S	X	S	X	S	X	S	X	S	X	S	X	S
26	650	...	...	...	25 (2)	6	13 (2)	6	13 (2)	6	6	21 (3)	21	21 (3)	...	...	...	...	...	...	...	...	...	...
28	700	...	...	25 (2)	6	13 (2)	6	13 (2)	6	6	21 (3)	21	21 (3)	...	...	...	...	...	...	...	...	...	...	...
30	750	...	...	25 (2)	6	13 (2)	6	13 (2)	6	6	21 (3)	21	21 (3)	...	...	...	...	...	...	...	...	...	...	...
32	800	...	...	28 (2)	(3)	16 (2)	(3)	16 (2)	(3)	(3)	27 (3)	27	27 (3)	...	...	...	...	...	...	...	...	...	...	...
34	850	...	...	28 (2)	(3)	16 (2)	(3)	16 (2)	(3)	(3)	27 (3)	27	27 (3)	...	...	...	...	...	...	...	...	...	...	...
36	900	...	...	28 (2)	(3)	16 (2)	(3)	16 (2)	(3)	(3)	27 (3)	27	27 (3)	...	...	...	...	...	...	...	...	...	...	...

**GENERAL NOTES:**

- (a) Dimensions are in millimeters.
- (b) Flanges conform to those of ASME B16.5 for the corresponding size and pressure class, except in NPS 22 (DN 550), NPS 26 (DN 650), and larger sizes. See Note (2).
- (c) To determine the end-to-end dimensions of valves having flanges with ring joint facings, the X dimensions must be added to the nominal raised face flange face-to-face dimensions of Tables 1 through 6. For angle and angle lift check valves, one-half of the X dimensions as listed in this table must be added to the nominal dimensions for center-to-end dimensions. For approximate distance between ends of flanges having octagonal or oval ring gaskets, when rings are compressed, use S dimensions as listed in this table.

**NOTES:**

- (1) This dimension has a minus value because the height of the applicable ring joint face is 1 mm less than the height of the raised face.
- (2) Flanges for NPS 22 (DN 550), NPS 26 (DN 650), and larger sizes conform to those of MSS SP-44 and ASME B16.47, Series A for the corresponding size and pressure class.
- (3) S dimension is not determined.

