



NAHRAB GOSTAR ESHTEHARD

Manufacture of Industrial Valves & relevant equipment

Steel butt welding And Flanged Fittings

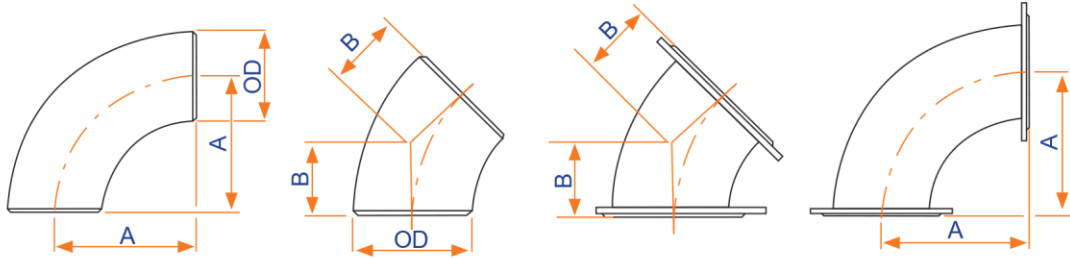
Fabric Elbow



Fabric Elbow

Flanged Standard: EN 1092-1 / ISO 7005-01

Design Standard: ANSI/ASME B16.9



Nominal Pipe Size (inch)	DN (mm)	Outside Diameter at Bevel (OD)	Center-to-End	
			90-deg Elbows, A	45-deg Elbows, B
2	50	60.3	76	35
2½	65	76.1	95	44
3	80	88.9	114	51
3½	90	101.6	133	57
4	100	114.3	152	64
5	125	139.7	190	79
6	150	168.3	229	95
8	200	219.1	305	127
10	250	273	381	159
12	300	323.8	457	190
14	350	355.6	533	222
16	400	406.4	610	254
18	450	457.2	686	286
20	500	508	762	318
22	550	558.8	838	343
24	600	609.6	914	381
26	650	660.4	991	405
28	700	711.2	1067	438
30	750	762	1143	470
32	800	812.8	1219	502
34	850	863.6	1295	533
36	900	914.4	1372	565
38	950	965.2	1448	600
40	1000	1016	1524	632
42	1050	1066.8	1600	660
44	1100	1117.6	1676	695
46	1150	1168.4	1753	727
48	1200	1219.2	1829	759

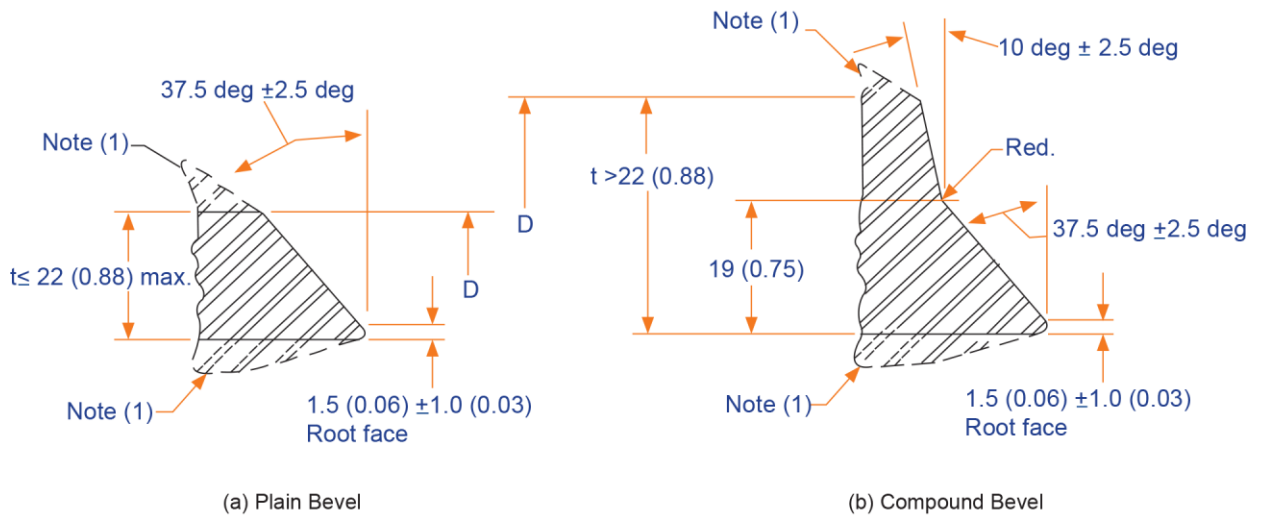
Specification for size larger than 1200 mm will be provided as per request

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Subject to alteration

We reserve the right to make any technical modification. We are not responsible for any error in printing.

Welding Bevels and Root Face ASME B 16.9



Nominal Wall Thickness. t	End Preparation
Less than *[Note (2)]	cut square or slightly chamfer, at manufacturer's option (not illustrated)
X * to 22(0.88), inclusive	plain bevel as in illustration (a) above
More than 22 (0.88)	compound bevelas in illustration (b) above

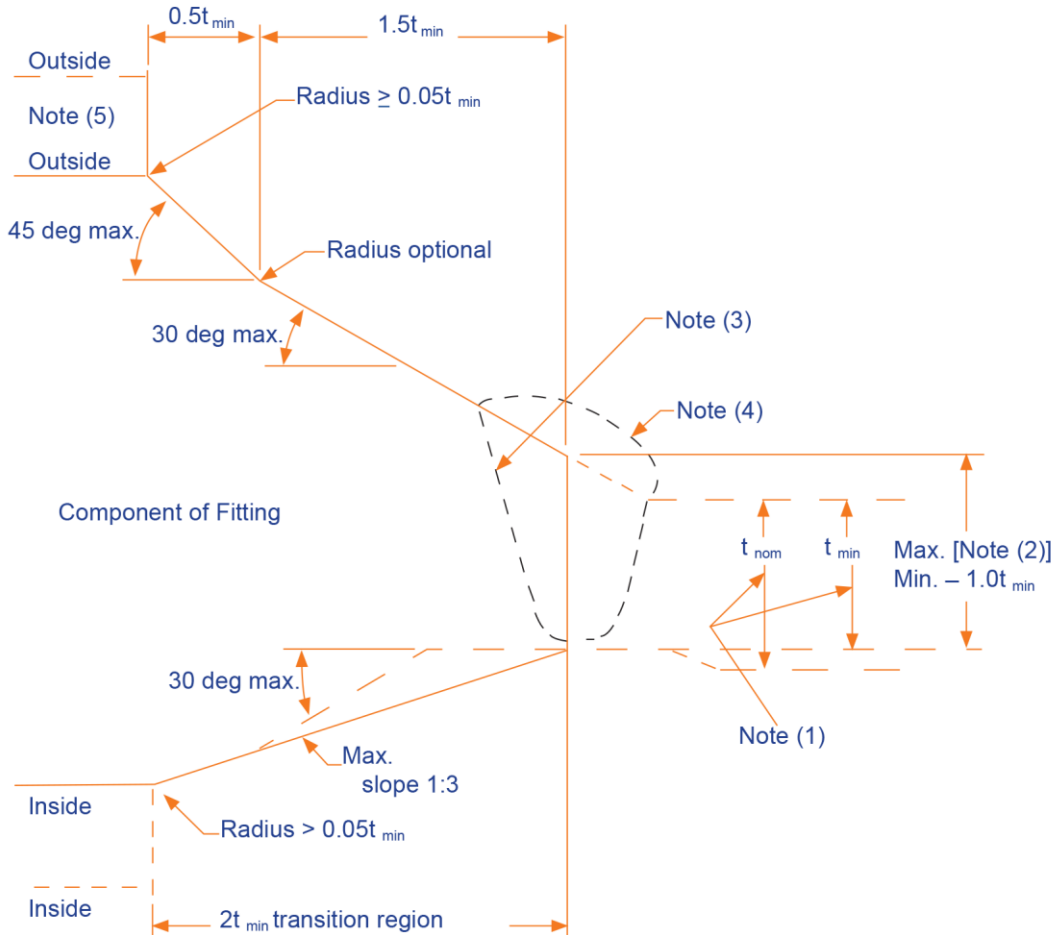
GENERAL VOTES:

- (a) Dimensions in parentheses are in inches.
 (b) Other dimensions in millimeters.

NOTES:

- (1) See section 8 and Fig. 1 for transition contours.
 (2) $\times = 5$ (0.19) for carbon steel or ferritic alloy steel and 3(0.12) for austenitic alloy steel.

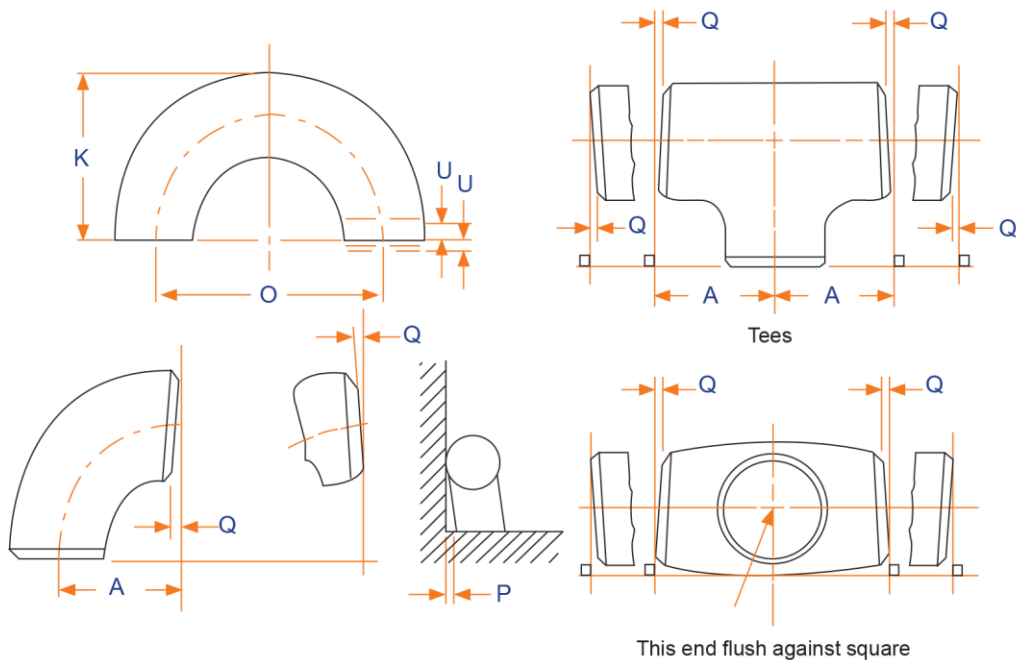
Maximum Envelope For Welding end Transitions



NOTES:

- (1) The value of t_{min} is whichever of the following is applicable:
 - (a) the minimum ordered wall thickness of the pipe, to include pipe that is purchased to a nominal wall thickness with an undertolerance other than 12.5%.
 - (b) 0.875 times the nominal wall thickness of pipe ordered to a pipe schedule wall thickness that has an undertolerance of 12.5%.
- (2) The maximum thickness at the end of the component is:
 - (a) the greater of $\{t_{min} + 4 \text{ mm (0.16)}\}$ or $1.15 t_{min}$ when ordered on a minimum wall basis.
 - (b) the greater of $\{t_{min} + 4 \text{ mm (0.16)}\}$ or $1.10 t_{min}$ when ordered on a minimum wall basis.
- (3) weld bevel is for illustration only.
- (4) The weld reinforcement permitted by applicable code may lie outside the maximum envelope.
- (5) where transition using maximum slope do not intersect the inside or outside surfaces within the transition region, as shown by phantom outline, maximum slopes shall be used. Alternatively radii lying within the envelope may be used.

Tolerances ASME B 16.9



All Fittings [notes(1)and(2)] (inch)				Center-to-End Dimensions		Overall Length of Reducers and Lap Joint Stup Ends, F, H	Overall Length of Caps, E	180-deg Returns		
Nominal pipe Size (NPS)	DN	Outside Dimmeter At End [Notes(3) and (4)]	Inside Dimmeter At End [Notes(3) and (5)]	90-deg and 45-deg Long and Short Radios Elbows and Tees, A,B,C, M	3D Radius Elbows, A,B			Center- to Center Dimension O	Back-to- Face Dimension, K	Alignment ,Of End U
1/2 to 2 1/2	15-65	+1.6,-0.8	0.8	2	3	2	3	6	6	1
3 to 3 1/2	80-90	1.6	1.6	2	3	2	3	6	6	1
4	100	1.6	1.6	2	3	2	3	6	6	1
5 to 8	125-200	+2.4,-1.6	1.6	2	3	2	6	6	6	1
10 to 18	250-450	+4.0,-3.2	3.2	2	3	2	6	10	6	2
20 to 24	500-600	+6.4,-4.8	4.8	2	3	2	6	10	6	2
26 to 30	650- 750	+6.4,-4.8	4.8	3	6	5	10			
32 to 48	800-1200	+6.4,-4.8	4.8	5	6	5	10			

Tolerances (Cont'd)

Nominal pipe Size (NPS)	DN	Lap Joint Stub Ends [Note (6)]		
		Outside Diameter Of Lap, G	Fillet Radius Of Lap, R	Lap Thickness
1/2 to 2 1/2	15-65	+0,-1	+0,-1	+1.6,-0
3 to 2 1/2	80-90	+0,-1	+0,-1	+1.6,-0
4	100	+0,-1	+0,-2	+1.6,-0
5 to 8	125-200	+0,-1	+0,-2	+1.6,-0
10 to 18	250-450	+0,-2	+0,-2	+3.2,-0
20 to 24	500-600	+0,-2	+0,-2	+3.2,-0
26 to 30	650-750			
32 to 48	800-1200			

Nominal pipe Size (NPS)	DN	Angularity Tolerances	
		Off Angle Q	Off Plane P
1/2 to 4	15-100	1	2
5 to 8	125-200	2	4
10 to 12	250-300	3	5
14 to 16	350-400	3	6
18 to 24	450-600	4	10
26 to 30	650-750	5	10
32 to 42	800-1050	5	13
44 to 48	1100-1200	5	19

GENERAL NOTES:

- (a) All dimensions are in milimeters.
- (b) Tolerances are equal plus and minus except as noted.

NOTES:

- (1) The inside diameter and the nominal wall thicknesses at ends are to be specified by the purchaser.
- (2) A minimum wall thickness of 87.5 applies unless the purchaser specifies a different wall thickness tolerance. see fig. 1, Note (1).
- (3) Out-of-round is the sum of absolute values of plus and minus tolerances.
- (4) This tolerance may not apply in localized areas of formed fitting where increased wall thickness is required to meet design requirements of para. 2.2.
- (5) Unless otherwise specified by the purchaser, these tolerances apply to the nominal inside diameter, which equals the difference between the nominal outside diameter and twice the nominal wall thickness.
- (6) See Table 9 limiting dimensions of outside diameter of barrel.

Dimension of Welded & Seamless Pipe Carbon and Alloy Steel Pipe

Nominal pipe Size (NPS)		Outside Diameter	Wall Thickness																	Nominal pipe Size (mm)		
(mm)	(inch)		SGP	Sch. 5 S	Sch. 10 S	Sch. 10	Sch. 20	Sch. 30	Sch. 40 S	STD. Wall	Sch. 40	Sch. 60	Sch. 80 S	Extra Strong	Sch. 80	Sch. 100	Sch. 120	Sch. 140	Sch. 160		XX Strong	
15	1½	21.3	2.8	1.7	2.1	2.11		2.41	2.8	2.77	2.77		3.7	3.73	3.73				4.78	7.47	15	
20	¾	26.9	2.8	1.7	2.1	2.11		2.41	2.9	2.87	2.87		3.9	3.91	3.91				5.56	7.82	20	
25	1	33.4	3.2	1.7	2.8	2.77		2.90	3.4	3.38	3.38		4.5	4.55	4.55				6.35	9.09	25	
32	1¼	42.4	3.5	1.7	2.8	2.77		2.97	3.6	3.56	3.56		4.9	4.85	4.85				6.35	9.70	32	
40	1½	48.3	3.5	1.7	2.8	2.77		3.18	3.7	3.68	3.68		5.1	5.08	5.08				7.41	10.15	40	
50	2	60.3	3.8	1.7	2.8	2.77		3.18	3.9	3.91	3.91		5.5	5.54	5.54				8.74	11.07	50	
65	2½	76.1	4.2	2.1	3	3.05		4.78	5.2	5.16	5.16		7	7.01	7.01				9.53	14.02	65	
80	3	88.9	4.2	2.1	3	3.05		4.78	5.5	5.49	5.49		7.6	7.62	7.62				11.13	15.24	80	
90	3½	101.6	4.2	2.1	3	3.05		4.78	5.7	5.74	5.74		8.1	8.08	8.08						90	
100	4	114.3	4.5	2.1	3	3.05		4.78	6	6.02	6.02		8.6	8.56	8.56		11.13		13.49	17.12	100	
125	5	139.7	4.5	2.8	3.4	3.40			6.6	6.55	6.55		9.5	9.53	9.53		12.70		15.88	19.05	125	
150	6	168.3	5.0	2.8	3.4	3.40			7.1	7.11	7.11		11	10.97	10.97		14.27		18.26	21.95	150	
200	8	219.1	5.8	2.8	3.8	3.76	6.35	7.04	8.2	8.18	8.18	10.31	12.7	12.7	12.70	15.09	18.26	20.62	23.01	22.23	200	
250	10	273.1	6.6	3.4	4.2	4.19	6.35	7.80	9.3	9.27	9.27	12.70	12.7	12.7	15.09	18.26	21.44	25.40	28.58	25.4	250	
300	12	323.9	6.9	4	4.6	4.57	6.35	8.38	9.5	9.53	9.53	10.31	14.27	12.7	12.7	17.48	21.44	25.40	28.58	33.32	25.4	300
350	14	355.6	7.9	4	4.8	6.35	7.92	9.53	9.5	9.53	11.13	15.09		12.7	19.05	23.83	27.79	31.75	35.71		350	
400	16	406.4	7.9	4.2	4.8	6.35	7.92	9.53	9.5	9.53	12.70	16.66		12.7	21.44	26.19	30.96	36.53	40.49		400	
450	18	457.2	7.9	4.2	4.8	6.35	7.92	11.13	9.5	9.53	14.27	19.05		12.7	23.83	29.36	34.93	39.67	45.24		450	
500	20	508	7.9	4.8	5.5	6.35	9.53	12.70	9.5	9.53	15.09	20.62		12.7	26.19	32.54	38.10	44.45	50.01		500	
550	22	558.8		4.8	5.5	6.35	9.53	12.70	9.5	9.53		22.23		12.7	28.58	34.93	41.28	47.63	53.98		550	
600	24	609.6		5.5	6.4	6.35	9.53	14.27	9.5	9.53	17.48	24.61		12.7	30.96	38.89	46.02	52.37	59.54		600	
650	26	660.4				7.92	12.7			9.53				12.7							650	
700	28	711.2				7.92	12.7	15.88		9.53				12.7							700	
750	30	762		6.4	7.9	7.92	12.7	15.88	9.5	9.53				12.7							750	
800	32	812.8				7.92	12.7	15.88		9.53	17.48			12.7							800	
850	34	863.6				7.92	12.7	15.88		9.53	17.48			12.7							850	
900	36	914.4				7.92	12.7	15.88		9.53	19.05			12.7							900	

Unit: mm



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