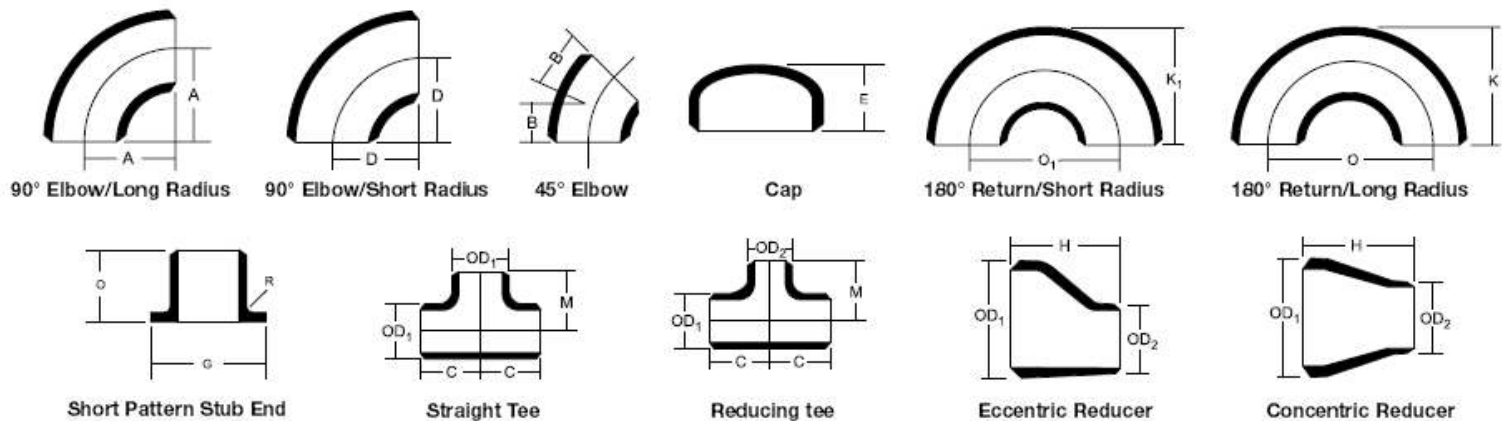




IPS INDUSTRIAL DIMENSIONAL TOLERANCES FOR FITTINGS



All Fittings				Elbows and Tees	180° Returns			Elbows and Tees		Reducers and Stub Ends	Stub Ends		Caps
Nominal Pipe Size	Outside Diameter at Bevel	Inside Diameter at Ends	Wall Thickness	Center-to-End Length A, B, C, D, M	Center-to-Center Length O, O ₁	Back-to-Face Length K, K ₁	Alignment of Ends	Off Angle	Off Plane	Overall Length F, H	Outside Diameter of Lap G	Radius R	Overall Length E
1/2 - 2 1/2	+0.06/-0.03	±0.03	Not Less Than 87-1/2% of the Nominal Thickness Specified	±0.06	±0.25	±0.25	±0.03	0.03	0.06	±0.06	±0/-0.03	±0/-0.03	±0/-12
3 - 3-1/2	+0.06	+0.06		±0.06	±0.25	±0.25	±0.03	0.03	0.06	±0.06	±0/-0.03	±0/-0.03	±0/-12
4	+0.06	+0.06		±0.06	±0.25	±0.25	±0.03	0.03	0.06	±0.06	±0/-0.03	±0/-0.03	±0/-12
5 - 8	+0.09/-0.06	+0.06		±0.06	±0.25	±0.25	±0.03	0.06	0.12	±0.06	±0/-0.03	±0/-0.06	±0/-25
10 - 12	+0.16/-0/12	+0.12		±0.09	±0.38	±0.25	±0.06	0.09	0.19	±0.09	±0/-0.06	±0/-0.06	±0/-25
14 - 16	+0.16/-0/12	+0.12		±0.09	±0.38	±0.25	±0.06	0.09	0.25	±0.09	±0/-0.06	±0/-0.06	±0/-25
18	+0.16/-0/12	+0.12		±0.09	±0.38	±0.25	±0.06	0.12	0.38	±0.09	±0/-0.06	±0/-0.06	±0/-25
20 - 24	+0.25/-0/19	+0.19		±0.09	±0.38	±0.25	±0.06	0.12	0.38	±0.09	±0/-0.06	±0/-0.06	±0/-25

All dimensions are in inches

¹ In accordance with ASME/ANSI B16.9

Grade ¹	Chemical Requirements (Composition, %) ^{2,3}										Tensile Requirements ^{2,4}		
	C	Mn	P	S	Si	Ni	Cr	Mo	N	Cu	Yield Strength PSI	Tensile Strength PSI	Elongation %
304L	.035	2.00	.045	.030	1.00	8.0-13.0	18.0-20.0	-	-	-	25,000	70,000	30
304	.08	2.00	.045	.030	1.00	8.0-11.0	18.0-20.0	-	-	-	30,000	75,000	30
304H	.04-.10	2.00	.045	.030	1.00	8.0-11.0	18.0-20.0	-	-	-	30,000	75,000	30
316L	.035	2.00	.045	.030	1.00	10.0-15.0	16.0-18.0	2.00-3.00	-	-	25,000	70,000	30
316	.08	2.00	.045	.030	1.00	10.0-	16.0-	2.00-	-	-	30,000	75,000	30