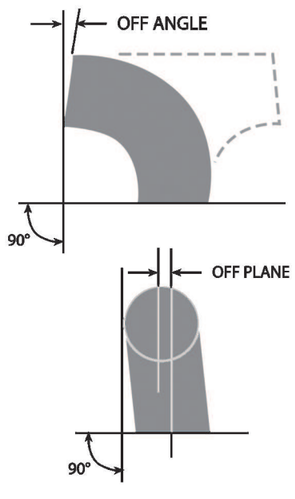
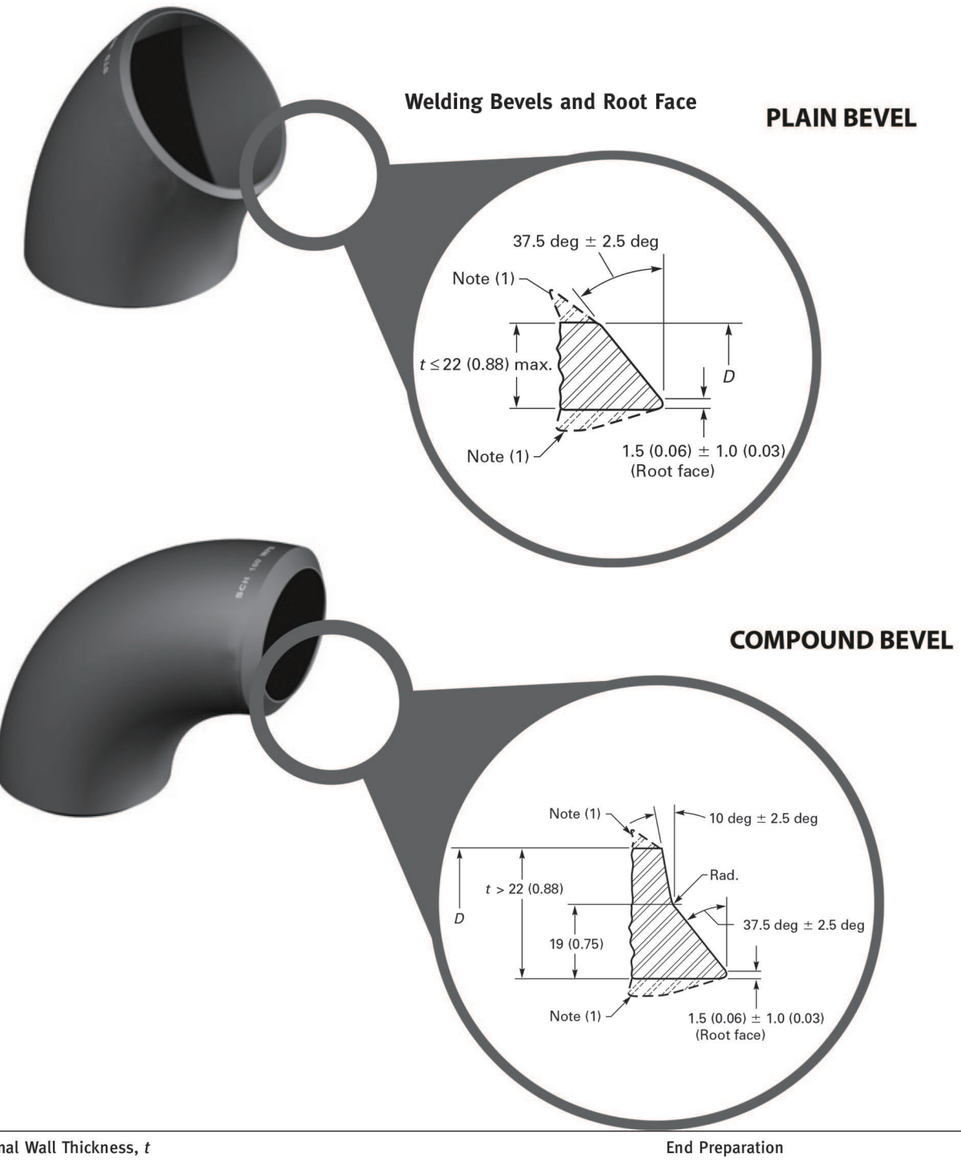
Weldbend Fittings			3R 90° and 3R 45° Elbows	90° and 45° Elbows and Tees	Reducers and Lap Joint Stub Ends	Caps	180° Return Bends			Stub Ends		
Pipe Size	Outside Diameter	Inside Diameter	Center to End	Center to End	Overall Length	Overall Length	Center to Center	Back to Face	Alignment of Ends	Outside Diameter of Lap	Thickness of Lap	Radius of Lap
	O.D.	I.D.	C, A	C, A, B, R	L, J	H	V	W		K	T	N
½ to 2 ½	+0.06, −0.03	0.03	0.09	0.06	0.06	0.12	0.25	0.25	0.03	+0, −0.03	+0, −0.03	+0.06, −0
3 to 3 ½	0.06	0.06	0.09	0.06	0.06	0.12	0.25	0.25	0.03	+0, −0.03	+0, −0.06	+0.06, −0
4	0.06	0.06	0.09	0.06	0.06	0.12	0.25	0.25	0.03	+0, −0.03	+0, −0.06	+0.0, −0
5 to 8	+0.09, −0.06	0.06	0.09	0.06	0.06	0.25	0.25	0.25	0.03	+0, −0.03	+0, −0.06	+0.06, −0
10 to 18	+0.16, −0.12	0.12	0.12	0.09	0.09	0.25	0.38	0.25	0.06	+0, −0.06	+0, −0.06	+0.12, −0
20 to 24	+0.25, −0.19	0.19	0.12	0.09	0.09	0.25	0.38	0.25	0.06	+0, −0.06	+0, −0.06	+0.12, −0
26 to 30	+0.25, −0.19	0.19	0.25	0.12	0.19	0.38						
30 to 48	+0.25, −0.19	0.19	0.38	0.19	0.19	0.38						

1. All dimensions are in inches.
2. Tolerances are equal plus and minus unless indicated.
3. The inside diameter and nominal wall thickness at ends are to be specified by purchaser.
4. Please refer to ASME B16.9 for further information regarding tolerances.
5. Minimum wall thickness of 87.5% applies.
6. The out-of-round is the sum of the absolute values of the plus and minus tolerances.

Pipe Size	Off Angle	Off Plane
½ – 4	0.03	0.06
5 – 8	0.06	0.12
10 – 12	0.09	0.19
14 – 16	0.09	0.25
18 – 24	0.12	0.38
26 – 30	0.19	0.38
32 – 42	0.19	0.50
44 – 48	0.19	0.75





Nominal Wall Thickness, *t*	End Preparation
Less than *x* [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 bevel as in illustration (b) above

GENERAL NOTES:
(a) Dimensions in parentheses are in inches.
(b) Other dimensions are in millimeters.

NOTES:
(1) See section 8 and Fig. 1 for transition contours.
(2) x = 5 (0.19) for carbon steel or ferritic alloy steel and 3 (0.12) for austenitic alloy steel.