



WELDED STAINLESS STEEL TUBING FOR: ROUND, SQUARE & RECTANGLE SHAPES - ASTM A249/A269		
A1016, table 3: Permitted Variations in Outside Diameter (a)		
Specified Outside Diameter, in.	Tolerances, in.	
	OD, in.	Wall
Under 1	±0.004	All Sizes +/- 10%
1 to 1-1/2, incl.	±0.006	
Over 1-1/2 to 2, excl.	±0.008	
2 to 2-1/2, excl.	±0.010	
2-1/2 to 3, excl.	±0.012	
3 to 4, incl.	±0.015	
Over 4 to 7-1/2, incl.	+ 0.015, - 0.025	
Over 7-1/2 to 9, incl.	+0.015, - 0.045	

(a) Except as provided in 10.2 and 10.3, these permitted variations include out-of-roundness. These permitted variations in outside diameter apply to hot-finished seamless, welded and cold-finished seamless tubes before other fabricating operations such as upsetting, swaging, expanding, bending, or polishing.

<u>Outside Diameter, in.</u>	<u>Ovality Allowance</u>
1 and under	0.020
Over 1	2.0% of specified outside diameter

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<b>WELDED STAINLESS STEEL ORNAMENTAL TUBING - ASTM A554</b>		
<b>Diameter, Wall (a), and Ovality Tolerances (All Conditions Except Tubing With Bead Removed)</b>		
<b>OD Size, in.</b>	<b>Wall Thickness</b>	<b>OD, +/-, in.</b>
Under 1/2	0.020 to 0.049	0.004
1/2 to 1	0.020 to 0.065	0.005
1/2 to 1	over 0.065 to 0.134	0.010
Over 1 to 1-1/2, incl.	0.025 to 0.065	0.008
Over 1 to 1-1/2, incl.	over 0.065 to 0.134	0.010
Over 1-1/2 to 2 incl.	0.025 to 0.049	0.010
Over 1-1/2 to 2, incl.	over 0.049 to 0.083	0.011
Over 1-1/2 to 2, incl.	over 0.083 to 0.149	0.012
Over 2 to 2-1/2, incl.	0.032 to 0.065	0.012
Over 2 to 2-1/2, incl.	over 0.065 to 0.109	0.013
Over 2 to 2-1/2, incl.	over 0.109 to 0.165	0.014
Over 2-1/2 to 3-1/2, incl.	0.032 to 0.165	0.014
Over 2-1/2 to 3-1/2, incl.	over 0.165	0.020
Over 3-1/2 to 5, incl.	0.035 to 0.165	0.020
Over 3-1/2 to 5, incl.	over 0.165	0.025
Over 5 to 7-1/2, incl.	0.049 to 0.250	0.025
Over 5 to 7-1/2, incl.	over 0.250	0.030
Over 7-1/2 to 16, incl.	all	0.00125 in./in. of circumference

(a) Wall tolerance  $\pm$  10% of specified wall thickness.

Note 1: Ovality is the difference between maximum and minimum outside diameters measured at any one cross section. There is no additional tolerance for ovality on tubes having a specified wall thickness of more than 3% of the outside diameter.

Note 2: For sizes up to and including 5-in. outside diameter, an ovality tolerance of twice the tabular outside diameter tolerance spread shown is applied one half plus and one half minus to tubes having a specified wall thickness of 3% or less of the specified outside diameter. The average of the maximum and minimum outside diameter readings should fall within the outside diameter tolerances as shown in this table.

Note 3: For sizes over 5-in. to and including 16-in. outside diameter, when the specified wall thickness is 3% or less of the outside diameter, the ovality shall not exceed 1.5% of the specified outside diameter.

<b>WELDED STAINLESS STEEL ORNAMENTAL TUBING - ASTM A554</b>		
<b>Outside Dimension Tolerances for Square and Rectangular Tubing</b>		
<b>Largest Specified Outside Dimension Across Flats, in.</b>	<b>Wall Thickness, in.</b>	<b>+/-, in. across Flats, Convexity or Concavity, incl.</b>
To 1-1/4, incl.	all	0.015
Over 1-1/4 to 2-1/2, incl.	all	0.020
Over 2-1/2 to 5-1/2, incl.	all	0.030
Over 5-1/2 to 8, incl.	all	0.060

<b>WELDED STAINLESS STEEL ORNAMENTAL TUBING - ASTM A554</b>
<b>Wall Thickness Tolerance</b>
+/- 10% of specified wall thickness

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WELDED STAINLESS STEEL ORNAMENTAL TUBING - ASTM A554	
Maximum Radii of Corners	
Wall Thickness, in.	Radii of Corners, max, in.
Over 0.020 to 0.049, incl.	3/32
Over 0.049 to 0.065, incl.	1/8
Over 0.065 to 0.083, incl.	9/64
Over 0.083 to 0.095, incl.	3/16
Over 0.095 to 0.109, incl.	13/64
Over 0.109 to 0.134, incl.	7/32
Over 0.134 to 0.156, incl.	1/4
Over 0.156 to 0.200, incl.	3/8
Over 0.200 to 0.250, incl.	1/2
Over 0.250 to 0.375, incl.	3/4

WELDED STAINLESS STEEL ORNAMENTAL TUBING - ASTM A554	
Twist Tolerances	
Largest Size, in.	Twist In 3 ft., max, in.
Under 1/2	0.050
1/2 to 1-1/2 , incl.	0.075
Over 1-1/2 to 2-1/2, incl.	0.095
Over 2-1/2 to 4, incl.	0.125
Over 4 to 6, incl.	0.250
Over 6	0.375

WELDED STAINLESS STEEL ORNAMENTAL TUBING - ASTM A554	
Squareness of Sides	
$\pm B = C \times 0.006$	
<u>Where:</u>	
B = tolerance for out-of-square, and	
C = length of longest side	
The straightness tolerance is 0.075 in. in 3 ft. using a 3-ft. straightedge and feeler gauge.	

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