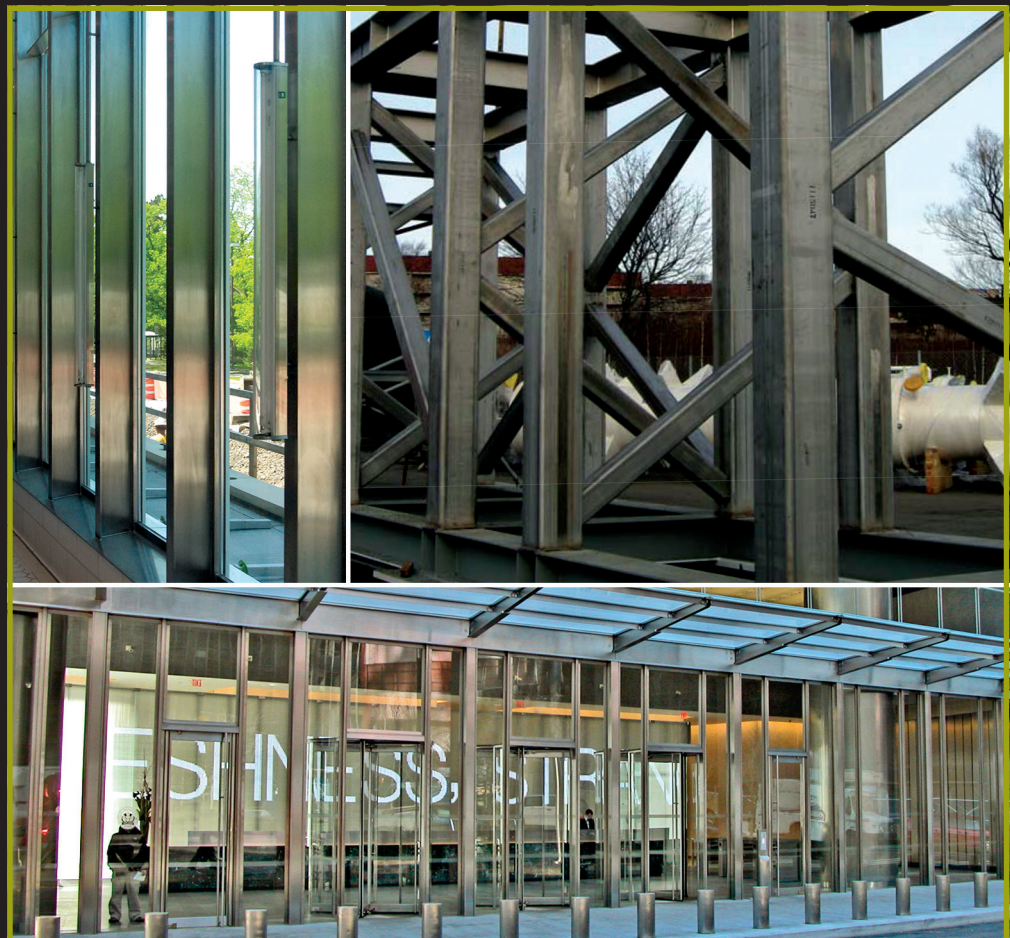


# STRUCTURAL STAINLESS STEEL DESIGN TABLES

IN ACCORDANCE WITH  
AISC DG27: STRUCTURAL STAINLESS STEEL





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Skid for offshore regasification plant  
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Bottom:

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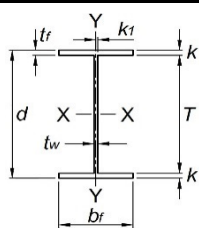
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# PART I: DIMENSIONS AND PROPERTIES

Table 1-1	W-Shapes (Welded)
Table 1-2A	S-Shapes (Welded)
Table 1-2B	S-Shapes (Hot Rolled)
Table 1-3A	C-Shapes (Welded)
Table 1-3B	C-Shapes (Hot Rolled)
Table 1-4	MC-Shapes (Welded)
Table 1-5A	Equal Angles (Welded)
Table 1-5B	Equal Angles (Hot Rolled)
Table 1-5C	Workable gages in Equal Angle Legs
Table 1-6A	Rectangular HSS (Roll Formed)
Table 1-6B	Rectangular HSS (Brake Pressed)
Table 1-6C	Rectangular HSS (Roll Formed), Compactness criteria
Table 1-6D	Rectangular HSS (Brake Pressed), Compactness criteria
Table 1-7A	Square HSS (Roll Formed)
Table 1-7B	Square HSS (Brake Pressed)
Table 1-7C	Square HSS (Roll Formed), Compactness criteria
Table 1-7D	Square HSS (Brake Pressed), Compactness criteria
Table 1-8	Round HSS
Table 1-9	Pipe

<b>Version history:</b>	
V1.0	issued 11/06/2017
V1.1	$Q_s$ values for angles corrected in Tables 1-5A & 1-5B



**Table 1-1  
W-Shapes (Welded\*)  
Dimensions**

Shape	Area, A	Depth, d		Web			Flange				Distance				
				Thickness, t <sub>w</sub>	t <sub>w</sub> /2	Width, b <sub>f</sub>	Thickness, t <sub>f</sub>	k		k <sub>f</sub>	T	Workable Gage			
								k <sub>des</sub>	k <sub>det</sub>				in.	in.	in.
in. <sup>2</sup>	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		
W24×131 <sup>c2</sup>	38.3	24.5	24½	0.605	⅝	⅝ <sub>16</sub>	12.9	12 <sup>7</sup> / <sub>8</sub>	0.960	⅝ <sub>16</sub>	0.960	⅝ <sub>16</sub>	⅝ <sub>16</sub>	22 <sup>5</sup> / <sub>8</sub>	5½
×117 <sup>c1,c2,f2</sup>	34.2	24.3	24¼	0.550	9 <sup>1</sup> / <sub>16</sub>	⅝ <sub>16</sub>	12.8	12 <sup>3</sup> / <sub>4</sub>	0.850	⅞	0.850	⅞	⅝ <sub>16</sub>	22 <sup>5</sup> / <sub>8</sub>	5½
×104 <sup>c1,c2,f2</sup>	30.4	24.1	24	0.500	½	¼	12.8	12 <sup>3</sup> / <sub>4</sub>	0.750	¾	0.750	¾	¼	22 <sup>5</sup> / <sub>8</sub>	5½
×94 <sup>c1,c2</sup>	27.5	24.3	24¼	0.515	½	¼	9.07	9 <sup>9</sup> / <sub>8</sub>	0.875	⅞	0.875	⅞	¼	22½	5½
×84 <sup>c1,c2</sup>	24.5	24.1	24 <sup>5</sup> / <sub>8</sub>	0.470	½	¼	9.02	9	0.770	¾	0.770	¾	¼	22½	5½
×76 <sup>c1,c2</sup>	22.2	23.9	23 <sup>3</sup> / <sub>8</sub>	0.440	7 <sup>1</sup> / <sub>16</sub>	¼	8.99	9	0.680	1 <sup>1</sup> / <sub>16</sub>	0.680	1 <sup>1</sup> / <sub>16</sub>	¼	22½	5½
×68 <sup>c1,c2,f2,v2</sup>	19.9	23.7	23¾	0.415	7 <sup>1</sup> / <sub>16</sub>	¼	8.97	9	0.585	9 <sup>1</sup> / <sub>16</sub>	0.585	9 <sup>1</sup> / <sub>16</sub>	¼	22½	5½
×62 <sup>c1,c2,v2</sup>	18.0	23.7	23¾	0.430	7 <sup>1</sup> / <sub>16</sub>	¼	7.04	7	0.590	9 <sup>1</sup> / <sub>16</sub>	0.590	9 <sup>1</sup> / <sub>16</sub>	¼	22½	3½ <sup>g</sup>
×55 <sup>c1,c2,f2,v2</sup>	16.0	23.6	23 <sup>3</sup> / <sub>8</sub>	0.395	⅝	⅝ <sub>16</sub>	7.01	7	0.505	½	0.505	½	¾ <sub>16</sub>	22 <sup>5</sup> / <sub>8</sub>	3½ <sup>g</sup>
W21×122 <sup>c2</sup>	35.6	21.7	21 <sup>1</sup> / <sub>8</sub>	0.600	⅝	⅝ <sub>16</sub>	12.4	12 <sup>3</sup> / <sub>8</sub>	0.960	⅝ <sub>16</sub>	0.960	⅝ <sub>16</sub>	⅝ <sub>16</sub>	19¾	5½
×111 <sup>c2,f2</sup>	32.5	21.5	21½	0.550	9 <sup>1</sup> / <sub>16</sub>	⅝ <sub>16</sub>	12.3	12 <sup>3</sup> / <sub>8</sub>	0.875	⅞	0.875	⅞	⅝ <sub>16</sub>	19¾	5½
×101 <sup>c1,c2,f2</sup>	29.5	21.4	21 <sup>1</sup> / <sub>8</sub>	0.500	½	¼	12.3	12¼	0.800	1 <sup>3</sup> / <sub>16</sub>	0.800	1 <sup>3</sup> / <sub>16</sub>	¼	19¾	5½
×93 <sup>c2</sup>	27.1	21.6	21 <sup>1</sup> / <sub>8</sub>	0.580	9 <sup>1</sup> / <sub>16</sub>	⅝ <sub>16</sub>	8.42	8 <sup>7</sup> / <sub>8</sub>	0.930	⅝ <sub>16</sub>	0.930	⅝ <sub>16</sub>	⅝ <sub>16</sub>	19¾	5½
×83 <sup>c1,c2</sup>	24.1	21.4	21 <sup>1</sup> / <sub>8</sub>	0.515	½	¼	8.34	8 <sup>7</sup> / <sub>8</sub>	0.835	1 <sup>3</sup> / <sub>16</sub>	0.835	1 <sup>3</sup> / <sub>16</sub>	¼	19¾	5½
×73 <sup>c1,c2</sup>	21.3	21.2	21¼	0.455	7 <sup>1</sup> / <sub>16</sub>	¼	8.30	8¼	0.740	¾	0.740	¾	¼	19¾	5½
×68 <sup>c1,c2</sup>	19.8	21.1	21 <sup>1</sup> / <sub>8</sub>	0.430	7 <sup>1</sup> / <sub>16</sub>	¼	8.27	8¼	0.685	1 <sup>1</sup> / <sub>16</sub>	0.685	1 <sup>1</sup> / <sub>16</sub>	¼	19¾	5½
×62 <sup>c1,c2</sup>	18.0	21.0	21	0.400	⅝	¾ <sub>16</sub>	8.24	8¼	0.615	⅝	0.615	⅝	¾ <sub>16</sub>	19¾	5½
×57 <sup>c1,c2</sup>	16.5	21.1	21	0.405	⅝	¾ <sub>16</sub>	6.56	6½	0.650	⅝	0.650	⅝	¾ <sub>16</sub>	19¾	3½
×50 <sup>c1,c2,v2</sup>	14.5	20.8	20 <sup>7</sup> / <sub>8</sub>	0.380	⅝	¾ <sub>16</sub>	6.53	6½	0.535	9 <sup>1</sup> / <sub>16</sub>	0.535	9 <sup>1</sup> / <sub>16</sub>	¾ <sub>16</sub>	19¾	3½
×44 <sup>c1,c2,f2,v2</sup>	12.8	20.7	20 <sup>7</sup> / <sub>8</sub>	0.350	⅝	¾ <sub>16</sub>	6.50	6½	0.450	7 <sup>1</sup> / <sub>16</sub>	0.450	7 <sup>1</sup> / <sub>16</sub>	¾ <sub>16</sub>	19¾	3½
W18×106 <sup>c2</sup>	31.0	18.7	18¾	0.590	9 <sup>1</sup> / <sub>16</sub>	⅝ <sub>16</sub>	11.2	11¼	0.940	⅝ <sub>16</sub>	0.940	⅝ <sub>16</sub>	⅝ <sub>16</sub>	16 <sup>7</sup> / <sub>8</sub>	5½
×97 <sup>c2</sup>	28.4	18.6	18 <sup>5</sup> / <sub>8</sub>	0.535	9 <sup>1</sup> / <sub>16</sub>	⅝ <sub>16</sub>	11.1	11 <sup>1</sup> / <sub>8</sub>	0.870	⅞	0.870	⅞	⅝ <sub>16</sub>	16 <sup>7</sup> / <sub>8</sub>	5½
×86 <sup>c2,f2</sup>	25.2	18.4	18 <sup>5</sup> / <sub>8</sub>	0.480	½	¼	11.1	11 <sup>1</sup> / <sub>8</sub>	0.770	¾	0.770	¾	¼	16 <sup>7</sup> / <sub>8</sub>	5½
×76 <sup>c1,c2,f2</sup>	22.2	18.2	18¼	0.425	7 <sup>1</sup> / <sub>16</sub>	¼	11.0	11	0.680	1 <sup>1</sup> / <sub>16</sub>	0.680	1 <sup>1</sup> / <sub>16</sub>	¼	16 <sup>7</sup> / <sub>8</sub>	5½
×71 <sup>c2</sup>	20.7	18.5	18½	0.495	½	¼	7.64	7 <sup>5</sup> / <sub>8</sub>	0.810	1 <sup>3</sup> / <sub>16</sub>	0.810	1 <sup>3</sup> / <sub>16</sub>	¼	16 <sup>7</sup> / <sub>8</sub>	3½ <sup>g</sup>
×65 <sup>c2</sup>	19.0	18.4	18 <sup>5</sup> / <sub>8</sub>	0.450	7 <sup>1</sup> / <sub>16</sub>	¼	7.59	7 <sup>5</sup> / <sub>8</sub>	0.750	¾	0.750	¾	¼	16 <sup>7</sup> / <sub>8</sub>	3½ <sup>g</sup>
×60 <sup>c1,c2</sup>	17.5	18.2	18¼	0.415	7 <sup>1</sup> / <sub>16</sub>	¼	7.56	7½	0.695	1 <sup>1</sup> / <sub>16</sub>	0.695	1 <sup>1</sup> / <sub>16</sub>	¼	16¾	3½ <sup>g</sup>
×55 <sup>c1,c2</sup>	16.1	18.1	18 <sup>5</sup> / <sub>8</sub>	0.390	⅝	¾ <sub>16</sub>	7.53	7½	0.630	⅝	0.630	⅝	¾ <sub>16</sub>	16 <sup>7</sup> / <sub>8</sub>	3½ <sup>g</sup>
×50 <sup>c1,c2</sup>	14.5	18.0	18	0.355	⅝	¾ <sub>16</sub>	7.50	7½	0.570	9 <sup>1</sup> / <sub>16</sub>	0.570	9 <sup>1</sup> / <sub>16</sub>	¾ <sub>16</sub>	16 <sup>7</sup> / <sub>8</sub>	3½ <sup>g</sup>
×46 <sup>c1,c2</sup>	13.4	18.1	18	0.360	⅝	¾ <sub>16</sub>	6.06	6	0.605	⅝	0.605	⅝	¾ <sub>16</sub>	16 <sup>7</sup> / <sub>8</sub>	3½ <sup>g</sup>
×40 <sup>c1,c2,v2</sup>	11.6	17.9	17 <sup>7</sup> / <sub>8</sub>	0.315	5 <sup>1</sup> / <sub>16</sub>	¾ <sub>16</sub>	6.02	6	0.525	½	0.525	½	¾ <sub>16</sub>	16 <sup>7</sup> / <sub>8</sub>	3½ <sup>g</sup>
×35 <sup>c1,c2,f2,v2</sup>	10.2	17.7	17¾	0.300	5 <sup>1</sup> / <sub>16</sub>	¾ <sub>16</sub>	6.00	6	0.425	7 <sup>1</sup> / <sub>16</sub>	0.425	7 <sup>1</sup> / <sub>16</sub>	¾ <sub>16</sub>	16 <sup>7</sup> / <sub>8</sub>	3½ <sup>g</sup>

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

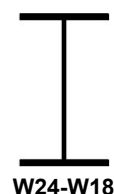
<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

<sup>v1/v2</sup> Web shear coefficient,  $C_v$ , is less than 1.0 in AISC *Specification* Section G2.1(b) with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

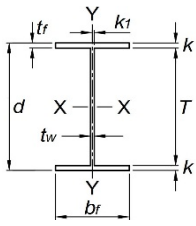
Note: Welded sections are available both in austenitic and duplex stainless steel.

**Table 1-1 (continued)  
W-Shapes (Welded)  
Properties**



Nominal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				$r_{ts}$	$h_0$	Torsional Properties	
			$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$Z$			$J$	$C_w$
	$b_f/2t_f$	$h/t_w$	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>6</sup>
133	6.70	37.3	3990	326	10.2	367	340	52.9	2.98	81.4	3.50	23.5	9.06	47100
118	7.53	41.0	3510	289	10.1	325	297	46.5	2.95	71.3	3.47	23.4	6.38	40700
105	8.50	45.1	3080	256	10.1	287	259	40.7	2.92	62.4	3.44	23.3	4.46	35200
95.3	5.18	43.8	2670	220	9.86	251	109	24.0	1.99	37.4	2.41	23.4	4.93	15000
84.9	5.86	48.0	2340	194	9.78	222	94.4	20.9	1.96	32.6	2.38	23.3	3.44	12800
76.8	6.61	51.3	2070	173	9.67	198	82.5	18.4	1.93	28.6	2.35	23.2	2.48	11100
68.8	7.66	54.4	1800	152	9.53	174	70.4	15.7	1.88	24.5	2.32	23.1	1.71	9430
62.5	5.97	52.5	1520	128	9.20	151	34.5	9.79	1.38	15.7	1.76	23.2	1.54	4620
55.4	6.94	57.1	1320	112	9.08	132	29.0	8.29	1.35	13.3	1.73	23.1	1.06	3860
124	6.45	32.9	2940	271	9.08	305	305	49.2	2.92	75.5	3.41	20.7	8.54	32700
113	7.05	35.9	2650	247	9.04	276	274	44.5	2.91	68.1	3.39	20.6	6.48	29200
102	7.68	39.5	2400	225	9.01	251	248	40.3	2.90	61.7	3.37	20.6	4.93	26200
94.1	4.53	34.1	2050	190	8.69	219	92.8	22.1	1.85	34.6	2.25	20.7	5.63	9940
83.6	4.99	38.4	1810	169	8.66	194	80.8	19.4	1.83	30.3	2.22	20.6	4.02	8570
73.8	5.60	43.4	1580	149	8.63	170	70.5	17.0	1.82	26.5	2.20	20.5	2.79	7410
68.8	6.04	46.0	1460	138	8.58	158	64.7	15.6	1.81	24.3	2.19	20.4	2.25	6760
62.6	6.70	49.4	1310	125	8.52	142	57.5	13.9	1.78	21.7	2.17	20.4	1.67	5960
57.3	5.04	48.8	1150	109	8.34	126	30.6	9.34	1.36	14.8	1.69	20.4	1.60	3190
50.3	6.10	52.0	964	92.6	8.15	108	24.9	7.63	1.31	12.1	1.65	20.3	1.01	2570
44.3	7.22	56.5	822	79.6	8.03	93.3	20.7	6.36	1.27	10.1	1.62	20.2	0.672	2110
107	5.96	28.6	1900	203	7.83	229	220	39.4	2.67	60.4	3.11	17.8	7.18	17400
98.5	6.41	31.5	1740	187	7.82	210	201	36.1	2.66	55.2	3.09	17.7	5.62	15800
87.3	7.20	35.1	1520	165	7.77	185	175	31.6	2.64	48.3	3.06	17.6	3.92	13600
76.9	8.12	39.6	1320	145	7.73	162	153	27.6	2.62	42.2	3.03	17.5	2.70	11700
71.8	4.71	34.0	1160	126	7.49	144	60.3	15.8	1.71	24.6	2.06	17.7	3.29	4700
65.8	5.06	37.4	1060	116	7.48	132	54.8	14.4	1.70	22.5	2.04	17.6	2.57	4240
60.7	5.44	40.6	974	107	7.46	122	50.1	13.2	1.69	20.6	2.03	17.5	2.04	3850
55.7	5.98	43.2	881	97.2	7.40	111	44.9	11.9	1.67	18.5	2.01	17.5	1.55	3430
50.4	6.57	47.5	790	87.8	7.37	99.6	40.1	10.7	1.66	16.5	1.99	17.4	1.15	3040
46.5	5.01	46.8	702	77.8	7.24	89.5	22.5	7.43	1.30	11.7	1.59	17.5	1.12	1710
40.3	5.73	53.5	602	67.3	7.20	77.2	19.1	6.35	1.28	9.92	1.57	17.4	0.738	1440
35.2	7.06	56.2	500	56.5	7.02	65.3	15.3	5.11	1.23	8.03	1.53	17.3	0.453	1140

**Table 1-1 (continued)  
W-Shapes (Welded\*)  
Dimensions**



Shape	Area, A	Depth, d		Web			Flange				Distance				
				Thickness, t <sub>w</sub>	t <sub>w</sub> /2	Width, b <sub>f</sub>	Thickness, t <sub>f</sub>	k		k <sub>f</sub>	T	Workable Gage			
								k <sub>des</sub>	k <sub>det</sub>						
in. <sup>2</sup>	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
W16×100	29.3	17.0	17	0.585	<sup>9</sup> / <sub>16</sub>	<sup>5</sup> / <sub>16</sub>	10.4	10 <sup>3</sup> / <sub>8</sub>	0.985	1	0.985	1	<sup>5</sup> / <sub>16</sub>	15 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×89 <sup>c2</sup>	26.0	16.8	16 <sup>3</sup> / <sub>4</sub>	0.525	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	10.4	10 <sup>3</sup> / <sub>8</sub>	0.875	<sup>7</sup> / <sub>8</sub>	0.875	<sup>7</sup> / <sub>8</sub>	<sup>1</sup> / <sub>4</sub>	15 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×77 <sup>c2</sup>	22.5	16.5	16 <sup>1</sup> / <sub>2</sub>	0.455	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	10.3	10 <sup>1</sup> / <sub>4</sub>	0.760	<sup>3</sup> / <sub>4</sub>	0.760	<sup>3</sup> / <sub>4</sub>	<sup>1</sup> / <sub>4</sub>	15	5 <sup>1</sup> / <sub>2</sub>
×67 <sup>c1,c2,f2</sup>	19.5	16.3	16 <sup>3</sup> / <sub>8</sub>	0.395	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10.2	10 <sup>1</sup> / <sub>4</sub>	0.665	<sup>1</sup> / <sub>16</sub>	0.665	<sup>1</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	15	5 <sup>1</sup> / <sub>2</sub>
×57 <sup>c2</sup>	16.6	16.4	16 <sup>3</sup> / <sub>8</sub>	0.430	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	7.12	7 <sup>7</sup> / <sub>8</sub>	0.715	<sup>1</sup> / <sub>16</sub>	0.715	<sup>1</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	15	3 <sup>1</sup> / <sub>2</sub> <sup>g</sup>
×50 <sup>c1,c2</sup>	14.6	16.3	16 <sup>3</sup> / <sub>4</sub>	0.380	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	7.07	7 <sup>7</sup> / <sub>8</sub>	0.630	<sup>5</sup> / <sub>8</sub>	0.630	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	15 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub> <sup>g</sup>
×45 <sup>c1,c2</sup>	13.1	16.1	16 <sup>1</sup> / <sub>8</sub>	0.345	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	7.04	7 <sup>7</sup> / <sub>8</sub>	0.565	<sup>5</sup> / <sub>8</sub>	0.565	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	15	3 <sup>1</sup> / <sub>2</sub> <sup>g</sup>
×40 <sup>c1,c2</sup>	11.6	16.0	16	0.305	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	7.00	7	0.505	<sup>1</sup> / <sub>2</sub>	0.505	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	15	3 <sup>1</sup> / <sub>2</sub> <sup>g</sup>
×36 <sup>c1,c2,f2</sup>	10.4	15.9	15 <sup>1</sup> / <sub>8</sub>	0.295	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	6.99	7	0.430	<sup>7</sup> / <sub>16</sub>	0.430	<sup>7</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	15 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub> <sup>g</sup>
×31 <sup>c1,c2,f2,v2</sup>	8.99	15.9	15 <sup>1</sup> / <sub>8</sub>	0.275	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.53	5 <sup>1</sup> / <sub>2</sub>	0.440	<sup>7</sup> / <sub>16</sub>	0.440	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	15 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>
×26 <sup>c1,c2,f2,v2</sup>	7.55	15.7	15 <sup>1</sup> / <sub>4</sub>	0.250	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.50	5 <sup>1</sup> / <sub>2</sub>	0.345	<sup>3</sup> / <sub>8</sub>	0.345	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	15 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>
W14×120 <sup>f2</sup>	35.0	14.5	14 <sup>1</sup> / <sub>2</sub>	0.590	<sup>9</sup> / <sub>16</sub>	<sup>5</sup> / <sub>16</sub>	14.7	14 <sup>3</sup> / <sub>4</sub>	0.940	<sup>15</sup> / <sub>16</sub>	0.940	<sup>15</sup> / <sub>16</sub>	<sup>5</sup> / <sub>16</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×109 <sup>f2</sup>	31.7	14.3	14 <sup>3</sup> / <sub>8</sub>	0.525	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	14.6	14 <sup>5</sup> / <sub>8</sub>	0.860	<sup>7</sup> / <sub>8</sub>	0.860	<sup>7</sup> / <sub>8</sub>	<sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×99 <sup>f2</sup>	28.8	14.2	14 <sup>1</sup> / <sub>8</sub>	0.485	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	14.6	14 <sup>5</sup> / <sub>8</sub>	0.780	<sup>3</sup> / <sub>4</sub>	0.780	<sup>3</sup> / <sub>4</sub>	<sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×90 <sup>c2,f1,f2</sup>	26.2	14.0	14	0.440	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	14.5	14 <sup>1</sup> / <sub>2</sub>	0.710	<sup>1</sup> / <sub>16</sub>	0.710	<sup>1</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×82	23.7	14.3	14 <sup>1</sup> / <sub>4</sub>	0.510	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	10.1	10 <sup>1</sup> / <sub>8</sub>	0.855	<sup>7</sup> / <sub>8</sub>	0.855	<sup>7</sup> / <sub>8</sub>	<sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×74 <sup>c2</sup>	21.5	14.2	14 <sup>1</sup> / <sub>8</sub>	0.450	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	10.1	10 <sup>1</sup> / <sub>8</sub>	0.785	<sup>13</sup> / <sub>16</sub>	0.785	<sup>13</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×68 <sup>c2</sup>	19.7	14.0	14	0.415	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	10.0	10	0.720	<sup>3</sup> / <sub>4</sub>	0.720	<sup>3</sup> / <sub>4</sub>	<sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>
×61 <sup>c2,f2</sup>	17.6	13.9	13 <sup>3</sup> / <sub>8</sub>	0.375	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10.0	10	0.645	<sup>5</sup> / <sub>8</sub>	0.645	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×53 <sup>c2</sup>	15.3	13.9	13 <sup>3</sup> / <sub>8</sub>	0.370	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	8.06	8	0.660	<sup>1</sup> / <sub>16</sub>	0.660	<sup>1</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×48 <sup>c2</sup>	13.8	13.8	13 <sup>3</sup> / <sub>4</sub>	0.340	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8.03	8	0.595	<sup>5</sup> / <sub>8</sub>	0.595	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×43 <sup>c1,c2,f2</sup>	12.3	13.7	13 <sup>3</sup> / <sub>8</sub>	0.305	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8.00	8	0.530	<sup>1</sup> / <sub>2</sub>	0.530	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	12 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×38 <sup>c1,c2</sup>	11.0	14.1	14 <sup>1</sup> / <sub>8</sub>	0.310	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	6.77	6 <sup>3</sup> / <sub>4</sub>	0.515	<sup>1</sup> / <sub>2</sub>	0.515	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub> <sup>g</sup>
×34 <sup>c1,c2,f2</sup>	9.86	14.0	14	0.285	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	6.75	6 <sup>3</sup> / <sub>4</sub>	0.455	<sup>7</sup> / <sub>16</sub>	0.455	<sup>7</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>
×30 <sup>c1,c2,f2</sup>	8.71	13.8	13 <sup>3</sup> / <sub>8</sub>	0.270	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	6.73	6 <sup>3</sup> / <sub>4</sub>	0.385	<sup>3</sup> / <sub>8</sub>	0.385	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	13	3 <sup>1</sup> / <sub>2</sub>
×26 <sup>c1,c2</sup>	7.55	13.9	13 <sup>3</sup> / <sub>8</sub>	0.255	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.03	5	0.420	<sup>7</sup> / <sub>16</sub>	0.420	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	13	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×22 <sup>c1,c2,f2,v2</sup>	6.36	13.7	13 <sup>3</sup> / <sub>4</sub>	0.230	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.00	5	0.335	<sup>5</sup> / <sub>16</sub>	0.335	<sup>5</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	13	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

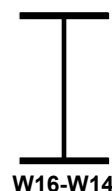
<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

<sup>v1/v2</sup> Web shear coefficient,  $C_v$ , is less than 1.0 in AISC *Specification* Section G2.1(b) with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

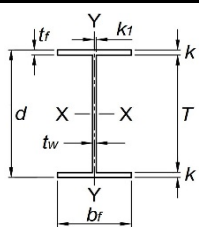
\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

Note: Welded sections are available both in austenitic and duplex stainless steel.

**Table 1-1 (continued)  
W-Shapes (Welded)  
Properties**



Nominal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				$r_{ts}$	$h_o$	Torsional Properties	
			$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$Z$			$J$	$C_w$
	$b_f/2t_f$	$h/t_w$	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>6</sup>
lb/ft														
102	5.29	25.6	1480	174	7.10	197	186	35.7	2.52	54.8	2.92	16.0	7.41	11900
90.2	5.92	28.6	1290	154	7.05	174	163	31.4	2.50	48.0	2.89	15.9	5.21	10200
77.9	6.77	33.0	1100	133	7.00	149	138	26.9	2.48	41.1	2.86	15.8	3.40	8590
67.8	7.70	38.0	947	116	6.96	129	119	23.2	2.47	35.4	2.83	15.7	2.27	7290
57.7	4.98	34.9	750	91.3	6.72	104	43.1	12.1	1.61	18.8	1.93	15.7	2.07	2660
50.7	5.61	39.5	651	80.1	6.68	91.0	37.2	10.5	1.60	16.3	1.90	15.6	1.42	2270
45.5	6.23	43.5	579	71.8	6.64	81.3	32.8	9.34	1.58	14.4	1.89	15.6	1.03	1990
40.4	6.93	49.2	511	63.8	6.62	71.9	28.8	8.25	1.57	12.7	1.87	15.5	0.727	1730
36.2	8.12	50.8	441	55.6	6.50	62.9	24.5	7.00	1.53	10.8	1.84	15.4	0.492	1460
31.2	6.28	54.5	367	46.2	6.39	53.0	12.4	4.49	1.17	7.00	1.44	15.4	0.409	739
26.2	7.97	60.0	294	37.4	6.24	43.2	9.59	3.49	1.13	5.45	1.40	15.3	0.226	564
121	7.80	21.4	1360	188	6.24	210	495	67.5	3.76	102	4.22	13.5	8.81	22700
110	8.49	24.0	1230	171	6.22	190	447	61.2	3.75	92.6	4.19	13.5	6.67	20200
100.0	9.34	26.0	1100	155	6.17	171	402	55.2	3.73	83.5	4.16	13.4	5.00	18000
90.7	10.2	28.6	987	141	6.14	155	362	49.9	3.72	75.5	4.14	13.3	3.76	16000
82.4	5.92	24.7	870	122	6.05	137	148	29.3	2.50	44.7	2.86	13.5	4.65	6710
74.5	6.41	28.0	784	111	6.04	124	134	26.6	2.49	40.4	2.84	13.4	3.53	5990
68.2	6.97	30.4	711	101	6.01	113	121	24.2	2.48	36.8	2.83	13.3	2.73	5380
61.1	7.75	33.6	628	90.5	5.97	100	107	21.5	2.47	32.7	2.80	13.2	1.97	4710
53.1	6.11	34.1	530	76.1	5.88	85.2	57.6	14.3	1.94	21.9	2.24	13.3	1.71	2530
48.0	6.75	37.1	473	68.6	5.85	76.5	51.4	12.8	1.93	19.5	2.22	13.2	1.26	2240
42.7	7.54	41.3	416	61.0	5.81	67.7	45.2	11.3	1.91	17.2	2.21	13.1	0.893	1950
38.2	6.57	42.2	380	53.8	5.87	60.6	26.7	7.88	1.56	12.1	1.83	13.6	0.729	1230
34.2	7.41	45.9	334	47.8	5.82	53.7	23.3	6.91	1.54	10.6	1.82	13.5	0.515	1070
30.2	8.74	48.4	285	41.2	5.72	46.4	19.6	5.82	1.50	8.96	1.79	13.5	0.338	886
26.2	5.98	51.3	240	34.4	5.63	39.4	8.90	3.54	1.09	5.52	1.32	13.5	0.313	405
22.0	7.46	56.8	193	28.1	5.51	32.3	6.99	2.80	1.05	4.36	1.29	13.4	0.176	314



**Table 1-1 (continued)**  
**W-Shapes (Welded\*)**  
**Dimensions**

Shape	Area, A	Depth, d		Web			Flange				Distance				
				Thickness, t <sub>w</sub>	t <sub>w</sub> /2	Width, b <sub>f</sub>	Thickness, t <sub>f</sub>	k		k <sub>f</sub>	T	Workable Gage			
								k <sub>des</sub>	k <sub>det</sub>						
in. <sup>2</sup>	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
W12×106	30.9	12.9	12 <sup>7</sup> / <sub>8</sub>	0.610	<sup>5</sup> / <sub>8</sub>	<sup>5</sup> / <sub>16</sub>	12.2	12 <sup>1</sup> / <sub>4</sub>	0.990	1	0.990	1	<sup>5</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×96	27.9	12.7	12 <sup>3</sup> / <sub>4</sub>	0.550	<sup>9</sup> / <sub>16</sub>	<sup>5</sup> / <sub>16</sub>	12.2	12 <sup>3</sup> / <sub>8</sub>	0.900	<sup>7</sup> / <sub>8</sub>	0.900	<sup>7</sup> / <sub>8</sub>	<sup>5</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×87 <sup>f2</sup>	25.3	12.5	12 <sup>1</sup> / <sub>2</sub>	0.515	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	12.1	12 <sup>1</sup> / <sub>8</sub>	0.810	<sup>1</sup> / <sub>16</sub>	0.810	<sup>1</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×79 <sup>f2</sup>	22.9	12.4	12 <sup>3</sup> / <sub>8</sub>	0.470	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	12.1	12 <sup>1</sup> / <sub>8</sub>	0.735	<sup>3</sup> / <sub>4</sub>	0.735	<sup>3</sup> / <sub>4</sub>	<sup>1</sup> / <sub>4</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×72 <sup>f2</sup>	20.8	12.3	12 <sup>1</sup> / <sub>4</sub>	0.430	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	12.0	12	0.670	<sup>1</sup> / <sub>16</sub>	0.670	<sup>1</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	11	5 <sup>1</sup> / <sub>2</sub>
×65 <sup>c2,f2</sup>	18.8	12.1	12 <sup>1</sup> / <sub>8</sub>	0.390	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	12.0	12	0.605	<sup>5</sup> / <sub>8</sub>	0.605	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×58 <sup>c2,f2</sup>	16.7	12.2	12 <sup>1</sup> / <sub>4</sub>	0.360	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10.0	10	0.640	<sup>5</sup> / <sub>8</sub>	0.640	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×53 <sup>c2,f2</sup>	15.3	12.1	12	0.345	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10.0	10	0.575	<sup>9</sup> / <sub>16</sub>	0.575	<sup>9</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	11	5 <sup>1</sup> / <sub>2</sub>
×50 <sup>c2</sup>	14.4	12.2	12 <sup>1</sup> / <sub>4</sub>	0.370	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	8.08	8 <sup>1</sup> / <sub>8</sub>	0.640	<sup>5</sup> / <sub>8</sub>	0.640	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×45 <sup>c2,f2</sup>	12.9	12.1	12	0.335	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8.05	8	0.575	<sup>9</sup> / <sub>16</sub>	0.575	<sup>9</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	11	5 <sup>1</sup> / <sub>2</sub>
×40 <sup>c2,f2</sup>	11.5	11.9	12	0.295	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8.05	8	0.515	<sup>1</sup> / <sub>2</sub>	0.515	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×35 <sup>c1,c2</sup>	10.3	12.5	12 <sup>1</sup> / <sub>2</sub>	0.300	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	6.56	6 <sup>1</sup> / <sub>2</sub>	0.520	<sup>1</sup> / <sub>2</sub>	0.520	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>
×30 <sup>c1,c2,f2</sup>	8.72	12.3	12 <sup>3</sup> / <sub>8</sub>	0.260	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	6.52	6 <sup>1</sup> / <sub>2</sub>	0.440	<sup>7</sup> / <sub>16</sub>	0.440	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>
×26 <sup>c1,c2,f2</sup>	7.57	12.2	12 <sup>1</sup> / <sub>4</sub>	0.230	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	6.49	6 <sup>1</sup> / <sub>2</sub>	0.380	<sup>3</sup> / <sub>8</sub>	0.380	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>
×22 <sup>c1,c2</sup>	6.41	12.3	12 <sup>1</sup> / <sub>4</sub>	0.260	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.03	4	0.425	<sup>7</sup> / <sub>16</sub>	0.425	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×19 <sup>c1,c2</sup>	5.50	12.2	12 <sup>1</sup> / <sub>8</sub>	0.235	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.01	4	0.350	<sup>3</sup> / <sub>8</sub>	0.350	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×16 <sup>c1,c2,f2,v2</sup>	4.64	12.0	12	0.220	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	3.99	4	0.265	<sup>1</sup> / <sub>4</sub>	0.265	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×14 <sup>c1,c2,f2,v2</sup>	4.08	11.9	11 <sup>7</sup> / <sub>8</sub>	0.200	<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	3.97	4	0.225	<sup>1</sup> / <sub>4</sub>	0.225	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
W10×88	25.7	10.8	10 <sup>7</sup> / <sub>8</sub>	0.605	<sup>5</sup> / <sub>8</sub>	<sup>5</sup> / <sub>16</sub>	10.3	10 <sup>1</sup> / <sub>4</sub>	0.990	1	0.990	1	<sup>5</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×77	22.4	10.6	10 <sup>3</sup> / <sub>4</sub>	0.530	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	10.2	10 <sup>1</sup> / <sub>4</sub>	0.870	<sup>7</sup> / <sub>8</sub>	0.870	<sup>7</sup> / <sub>8</sub>	<sup>1</sup> / <sub>4</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×68	19.8	10.4	10 <sup>3</sup> / <sub>4</sub>	0.470	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	10.1	10 <sup>3</sup> / <sub>8</sub>	0.770	<sup>3</sup> / <sub>4</sub>	0.770	<sup>3</sup> / <sub>4</sub>	<sup>1</sup> / <sub>4</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×60 <sup>f2</sup>	17.4	10.2	10 <sup>1</sup> / <sub>4</sub>	0.420	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	10.1	10 <sup>1</sup> / <sub>8</sub>	0.680	<sup>1</sup> / <sub>16</sub>	0.680	<sup>1</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×54 <sup>f2</sup>	15.6	10.1	10 <sup>3</sup> / <sub>8</sub>	0.370	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	10.0	10	0.615	<sup>5</sup> / <sub>8</sub>	0.615	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×49 <sup>f2</sup>	14.2	9.98	10	0.340	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	10.0	10	0.560	<sup>9</sup> / <sub>16</sub>	0.560	<sup>9</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×45	13.0	10.1	10 <sup>3</sup> / <sub>8</sub>	0.350	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	8.02	8	0.620	<sup>5</sup> / <sub>8</sub>	0.620	<sup>5</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×39 <sup>c2,f2</sup>	11.3	9.92	9 <sup>7</sup> / <sub>8</sub>	0.315	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	7.99	8	0.530	<sup>1</sup> / <sub>2</sub>	0.530	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×33 <sup>c2,f2</sup>	9.49	9.73	9 <sup>3</sup> / <sub>4</sub>	0.290	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	7.96	8	0.435	<sup>7</sup> / <sub>16</sub>	0.435	<sup>7</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×30 <sup>c2</sup>	8.76	10.5	10 <sup>1</sup> / <sub>2</sub>	0.300	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	5.81	5 <sup>3</sup> / <sub>4</sub>	0.510	<sup>1</sup> / <sub>2</sub>	0.510	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×26 <sup>c2</sup>	7.53	10.3	10 <sup>3</sup> / <sub>8</sub>	0.260	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.77	5 <sup>3</sup> / <sub>4</sub>	0.440	<sup>7</sup> / <sub>16</sub>	0.440	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×22 <sup>c1,c2,f2</sup>	6.41	10.2	10 <sup>3</sup> / <sub>8</sub>	0.240	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.75	5 <sup>3</sup> / <sub>4</sub>	0.360	<sup>3</sup> / <sub>8</sub>	0.360	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×19 <sup>c2</sup>	5.54	10.2	10 <sup>1</sup> / <sub>4</sub>	0.250	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.02	4	0.395	<sup>3</sup> / <sub>8</sub>	0.395	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×17 <sup>c1,c2</sup>	4.91	10.1	10 <sup>3</sup> / <sub>8</sub>	0.240	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.01	4	0.330	<sup>5</sup> / <sub>16</sub>	0.330	<sup>5</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×15 <sup>c1,c2,f2</sup>	4.33	9.99	10	0.230	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.00	4	0.270	<sup>1</sup> / <sub>4</sub>	0.270	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×12 <sup>c1,c2,f2</sup>	3.46	9.87	9 <sup>7</sup> / <sub>8</sub>	0.190	<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	3.96	4	0.210	<sup>3</sup> / <sub>16</sub>	0.210	<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

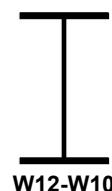
<sup>v1/v2</sup> Web shear coefficient,  $C_v$ , is less than 1.0 in AISC *Specification* Section G2.1(b) with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

Note: Welded sections are available both in austenitic and duplex stainless steel.

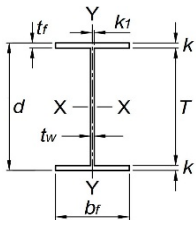


**Table 1-1 (continued)**  
**W-Shapes (Welded)**  
**Properties**



Nominal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				$r_{ts}$	$h_0$	Torsional Properties	
			$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$Z$			$J$	$C_w$
	$b_f/2t_f$	$h/t_w$	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>6</sup>
107	6.17	17.9	925	143	5.47	162	301	49.3	3.13	74.9	3.54	11.9	8.51	10700
96.7	6.76	19.8	824	130	5.44	146	270	44.4	3.11	67.4	3.51	11.8	6.36	9410
87.6	7.48	21.2	731	117	5.38	130	241	39.7	3.09	60.3	3.48	11.7	4.70	8270
79.4	8.22	23.2	654	106	5.34	117	216	35.8	3.07	54.2	3.45	11.6	3.51	7320
72.2	8.99	25.4	588	96.0	5.31	106	195	32.4	3.06	49.1	3.43	11.6	2.66	6540
65.1	9.92	28.0	524	86.5	5.28	95.2	174	29.0	3.05	44.0	3.41	11.5	1.96	5780
58.1	7.82	30.3	467	76.6	5.28	84.7	107	21.4	2.53	32.4	2.84	11.6	1.88	3570
52.9	8.69	31.6	417	69.1	5.23	76.3	95.7	19.2	2.50	29.0	2.82	11.5	1.39	3160
49.9	6.31	29.5	385	63.2	5.18	70.7	56.3	13.9	1.98	21.3	2.27	11.6	1.55	1880
44.8	7.00	32.6	342	56.6	5.14	63.1	49.9	12.4	1.97	18.9	2.25	11.5	1.13	1650
39.9	7.82	37.0	303	50.7	5.13	56.1	44.8	11.1	1.97	16.9	2.25	11.4	0.808	1460
35.6	6.31	38.2	283	45.2	5.25	50.7	24.5	7.47	1.54	11.4	1.80	12.0	0.700	879
30.2	7.41	44.1	236	38.2	5.20	42.7	20.3	6.24	1.53	9.55	1.78	11.9	0.428	720
26.2	8.54	49.8	202	33.0	5.16	36.8	17.3	5.34	1.51	8.15	1.76	11.8	0.279	607
22.2	4.74	44.1	154	25.0	4.90	28.9	4.65	2.31	0.852	3.64	1.05	11.9	0.266	164
19.1	5.72	48.8	127	20.9	4.81	24.3	3.76	1.88	0.827	2.97	1.03	11.8	0.161	131
16.1	7.53	52.1	100	16.7	4.65	19.6	2.82	1.41	0.779	2.25	0.99	11.7	0.090	96.8
14.1	8.82	57.3	86.1	14.5	4.59	17.0	2.35	1.19	0.760	1.89	0.975	11.7	0.061	80.4
89.1	5.18	14.6	530	97.7	4.54	112	179	34.8	2.64	53.0	3.00	9.85	7.07	4330
77.8	5.86	16.7	451	85.2	4.49	96.7	154	30.1	2.62	45.8	2.96	9.73	4.78	3630
68.5	6.58	18.9	390	74.9	4.44	84.3	133	26.4	2.60	40.0	2.93	9.63	3.31	3090
60.4	7.41	21.1	337	65.9	4.40	73.6	116	23.0	2.58	34.9	2.90	9.54	2.28	2640
54.2	8.15	23.9	299	59.2	4.37	65.7	103	20.6	2.57	31.2	2.88	9.48	1.67	2320
49.3	8.93	26.1	268	53.8	4.35	59.4	93.4	18.7	2.56	28.3	2.86	9.42	1.26	2070
45.2	6.47	25.3	244	48.3	4.33	54.0	53.3	13.3	2.02	20.2	2.29	9.48	1.36	1200
39.0	7.53	28.1	205	41.3	4.27	45.9	45.0	11.3	2.00	17.1	2.26	9.39	0.866	992
32.9	9.15	30.6	166	34.2	4.19	37.9	36.6	9.19	1.96	14.0	2.23	9.30	0.502	790
30.4	5.70	31.5	168	32.1	4.38	36.2	16.7	5.75	1.38	8.82	1.61	9.96	0.582	414
26.1	6.56	36.3	143	27.6	4.35	30.9	14.1	4.89	1.37	7.48	1.59	9.89	0.374	345
22.2	7.99	39.4	117	22.9	4.26	25.7	11.4	3.97	1.33	6.09	1.56	9.81	0.219	275
19.2	5.09	37.8	94.6	18.5	4.13	21.2	4.29	2.13	0.880	3.34	1.07	9.85	0.209	104
17.0	6.08	39.4	80.2	15.9	4.04	18.3	3.56	1.77	0.851	2.79	1.05	9.78	0.138	85.1
15.0	7.41	41.1	67.2	13.5	3.94	15.6	2.89	1.44	0.817	2.28	1.02	9.72	0.091	68.3
12.0	9.43	49.7	52.2	10.6	3.88	12.3	2.18	1.10	0.794	1.73	0.998	9.66	0.046	50.8

**Table 1-1 (continued)**  
**W-Shapes (Welded\*)**  
**Dimensions**



Shape	Area, A	Depth, d		Web			Flange				Distance				
				Thickness, tw	tw/2	Width, bf	Thickness, tf	k		kf	T	Workable Gage			
								kdes	kdet						
in. <sup>2</sup>	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		
W8×67	19.5	9.00	9	0.570	<sup>9</sup> / <sub>16</sub>	<sup>5</sup> / <sub>16</sub>	8.28	8 <sup>1</sup> / <sub>4</sub>	0.935	<sup>15</sup> / <sub>16</sub>	0.935	<sup>15</sup> / <sub>16</sub>	<sup>5</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×58	17.0	8.75	8 <sup>3</sup> / <sub>4</sub>	0.510	<sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>4</sub>	8.22	8 <sup>1</sup> / <sub>4</sub>	0.810	<sup>13</sup> / <sub>16</sub>	0.810	<sup>13</sup> / <sub>16</sub>	<sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×48	14.0	8.50	8 <sup>1</sup> / <sub>2</sub>	0.400	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	8.11	8 <sup>1</sup> / <sub>8</sub>	0.685	<sup>1</sup> / <sub>16</sub>	0.685	<sup>1</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×40 <sup>f2</sup>	11.6	8.25	8 <sup>1</sup> / <sub>4</sub>	0.360	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>16</sub>	8.07	8 <sup>1</sup> / <sub>8</sub>	0.560	<sup>9</sup> / <sub>16</sub>	0.560	<sup>9</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×35 <sup>f2</sup>	10.2	8.12	8 <sup>1</sup> / <sub>8</sub>	0.310	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8.02	8	0.495	<sup>1</sup> / <sub>2</sub>	0.495	<sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×31 <sup>f2</sup>	8.99	8.00	8	0.285	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	8.00	8	0.435	<sup>7</sup> / <sub>16</sub>	0.435	<sup>7</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
×28 <sup>f2</sup>	8.11	8.06	8	0.285	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	6.54	6 <sup>1</sup> / <sub>2</sub>	0.465	<sup>7</sup> / <sub>16</sub>	0.465	<sup>7</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	4
×24 <sup>c2,f2</sup>	6.94	7.93	8 <sup>3</sup> / <sub>8</sub>	0.245	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	6.50	6 <sup>1</sup> / <sub>2</sub>	0.400	<sup>3</sup> / <sub>8</sub>	0.400	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	4
×21 <sup>c2</sup>	6.09	8.28	8 <sup>1</sup> / <sub>4</sub>	0.250	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.27	5 <sup>1</sup> / <sub>4</sub>	0.400	<sup>3</sup> / <sub>8</sub>	0.400	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×18 <sup>c2,f2</sup>	5.19	8.14	8 <sup>1</sup> / <sub>8</sub>	0.230	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.25	5 <sup>1</sup> / <sub>4</sub>	0.330	<sup>5</sup> / <sub>16</sub>	0.330	<sup>5</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×15 <sup>c2</sup>	4.36	8.11	8 <sup>1</sup> / <sub>8</sub>	0.245	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.02	4	0.315	<sup>5</sup> / <sub>16</sub>	0.315	<sup>5</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×13 <sup>c2,f2</sup>	3.76	7.99	8	0.230	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.00	4	0.255	<sup>1</sup> / <sub>4</sub>	0.255	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×10 <sup>c1,c2,f2</sup>	2.89	7.89	7 <sup>1</sup> / <sub>8</sub>	0.170	<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	3.94	4	0.205	<sup>3</sup> / <sub>16</sub>	0.205	<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
W6×25	7.28	6.38	6 <sup>3</sup> / <sub>8</sub>	0.320	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	6.08	6 <sup>1</sup> / <sub>8</sub>	0.455	<sup>7</sup> / <sub>16</sub>	0.455	<sup>7</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>
×20 <sup>f2</sup>	5.82	6.20	6 <sup>1</sup> / <sub>4</sub>	0.260	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	6.02	6	0.365	<sup>3</sup> / <sub>8</sub>	0.365	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>
×16	4.69	6.28	6 <sup>1</sup> / <sub>4</sub>	0.260	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.03	4	0.405	<sup>3</sup> / <sub>8</sub>	0.405	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×15 <sup>c2,f1,f2</sup>	4.37	5.99	6	0.230	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.99	6	0.260	<sup>1</sup> / <sub>4</sub>	0.260	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>
×12 <sup>f2</sup>	3.50	6.03	6	0.230	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.00	4	0.280	<sup>1</sup> / <sub>4</sub>	0.280	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
×9 <sup>c2,f2</sup>	2.62	5.90	5 <sup>1</sup> / <sub>8</sub>	0.170	<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	3.94	4	0.215	<sup>3</sup> / <sub>16</sub>	0.215	<sup>3</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>
W5×19	5.48	5.15	5 <sup>1</sup> / <sub>8</sub>	0.270	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.03	5	0.430	<sup>7</sup> / <sub>16</sub>	0.430	<sup>7</sup> / <sub>16</sub>	<sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×18.9	5.48	5.00	5	0.316	<sup>5</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	5.00	5	0.416	<sup>7</sup> / <sub>16</sub>	0.416	<sup>7</sup> / <sub>16</sub>	<sup>3</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
×16	4.63	5.01	5	0.240	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	5.00	5	0.360	<sup>3</sup> / <sub>8</sub>	0.360	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub> <sup>g</sup>
W4×13	3.77	4.16	4 <sup>1</sup> / <sub>8</sub>	0.280	<sup>1</sup> / <sub>4</sub>	<sup>1</sup> / <sub>8</sub>	4.06	4	0.345	<sup>3</sup> / <sub>8</sub>	0.345	<sup>3</sup> / <sub>8</sub>	<sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub> <sup>g</sup>

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

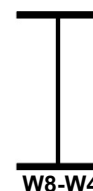
<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

<sup>v1/v2</sup> Web shear coefficient,  $C_v$ , is less than 1.0 in AISC *Specification* Section G2.1(b) with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

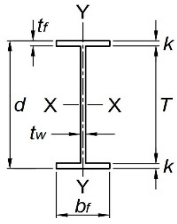
\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

Note: Welded sections are available both in austenitic and duplex stainless steel.

**Table 1-1 (continued)  
W-Shapes (Welded)  
Properties**



Nominal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				$r_{ts}$	$h_0$	Torsional Properties	
			$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$Z$			$J$	$C_w$
	lb/ft	$b_f/2t_f$	$h/t_w$	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>
67.8	4.43	12.5	270	60.0	3.72	69.7	88.6	21.4	2.13	32.6	2.44	8.07	4.77	1440
58.8	5.07	14.0	226	51.7	3.65	59.3	75.1	18.3	2.10	27.8	2.40	7.94	3.13	1180
48.4	5.92	17.8	182	42.9	3.61	48.5	60.9	15.0	2.09	22.8	2.36	7.82	1.84	930
40.2	7.21	19.8	145	35.1	3.53	39.3	49.1	12.2	2.06	18.5	2.32	7.69	1.03	726
35.2	8.10	23.0	125	30.8	3.51	34.2	42.6	10.6	2.05	16.1	2.30	7.63	0.706	619
31.2	9.19	25.0	108	27.1	3.47	29.9	37.1	9.27	2.03	14.0	2.28	7.57	0.486	530
28.1	7.03	25.0	96.4	23.9	3.45	26.7	21.6	6.62	1.63	10.1	1.85	7.60	0.482	312
24.1	8.12	29.1	81.1	20.5	3.42	22.7	18.3	5.63	1.62	8.54	1.83	7.53	0.306	259
21.1	6.59	29.9	74.2	17.9	3.49	20.1	9.77	3.71	1.27	5.67	1.47	7.88	0.258	152
18.0	7.95	32.5	60.9	15.0	3.43	16.7	7.97	3.03	1.24	4.65	1.44	7.81	0.154	121
15.1	6.37	30.5	47.0	11.6	3.28	13.3	3.41	1.70	0.884	2.65	1.07	7.80	0.119	51.8
13.0	7.84	32.5	38.5	9.65	3.20	11.1	2.73	1.36	0.852	2.14	1.05	7.74	0.075	40.8
10.0	9.61	44.0	29.8	7.55	3.21	8.59	2.09	1.06	0.851	1.65	1.03	7.69	0.035	30.9
25.3	6.68	17.1	53.0	16.6	2.70	18.8	17.1	5.61	1.53	8.55	1.74	5.93	0.434	150
20.2	8.25	21.0	41.0	13.2	2.65	14.8	13.3	4.41	1.51	6.71	1.71	5.84	0.224	113
16.3	4.98	21.0	31.8	10.1	2.60	11.5	4.43	2.20	0.972	3.38	1.13	5.88	0.205	38.2
15.2	11.5	23.8	28.7	9.59	2.56	10.6	9.32	3.11	1.46	4.74	1.67	5.73	0.092	76.5
12.1	7.14	23.8	21.7	7.19	2.49	8.16	2.99	1.50	0.925	2.31	1.09	5.75	0.080	24.7
9.10	9.16	32.2	16.0	5.43	2.47	6.09	2.19	1.11	0.914	1.71	1.07	5.69	0.035	17.7
19.0	5.85	15.9	25.9	10.1	2.17	11.5	9.13	3.63	1.29	5.52	1.46	4.72	0.287	50.8
19.0	6.01	13.2	23.8	9.53	2.09	10.9	8.69	3.48	1.26	5.31	1.45	4.58	0.280	45.7
16.1	6.94	17.9	21.1	8.41	2.13	9.47	7.50	3.00	1.27	4.56	1.44	4.65	0.172	40.6
13.1	5.88	12.4	11.2	5.38	1.72	6.19	3.85	1.90	1.01	2.91	1.17	3.82	0.135	14.0



**Table 1-2A  
S-Shapes (Welded\*)  
Dimensions**

Shape	Area, A	Depth, d		Web			Flange				Distance		Workable Gage
				Thickness, t <sub>w</sub>	t <sub>w</sub> /2	Width, b <sub>f</sub>	Thickness, t <sub>f</sub>	k	T				
										in. <sup>2</sup>	in.	in.	
S15×50	14.6	15.0	15	0.550	9/16	5/16	5.64	5 5/8	0.622	5/8	5/8	13 3/4	3 1/2 <sup>g</sup>
×42.9	12.5	15.0	15	0.411	7/16	1/4	5.50	5 1/2	0.622	5/8	5/8	13 3/4	3 1/2 <sup>g</sup>
S12×50	14.6	12.0	12	0.687	11/16	3/8	5.48	5 1/2	0.659	11/16	11/16	10 5/8	3 <sup>g</sup>
×40.8	12.0	12.0	12	0.472	7/16	1/4	5.25	5 1/4	0.659	11/16	11/16	10 5/8	3 <sup>g</sup>
×35	10.2	12.0	12	0.428	7/16	1/4	5.08	5 1/8	0.544	9/16	9/16	10 7/8	3 <sup>g</sup>
×31.8	9.26	12.0	12	0.350	3/8	3/16	5.00	5	0.544	9/16	9/16	10 7/8	3 <sup>g</sup>
S10×35	10.2	10.0	10	0.594	5/8	5/16	4.94	5	0.491	1/2	1/2	9	2 3/4 <sup>g</sup>
×25.4	7.38	10.0	10	0.311	5/16	3/16	4.66	4 5/8	0.491	1/2	1/2	9	2 3/4 <sup>g</sup>
S8×23	6.70	8.00	8	0.441	7/16	1/4	4.17	4 1/8	0.425	7/16	7/16	7 7/8	2 1/4 <sup>g</sup>
×18.4	5.34	8.00	8	0.271	1/4	1/8	4.00	4	0.425	7/16	7/16	7 7/8	2 1/4 <sup>g</sup>
S7×20	5.82	7.00	7	0.450	1/2	1/4	3.86	3 7/8	0.392	3/8	3/8	6 1/4	2 <sup>g</sup>
×15.3	4.44	7.00	7	0.252	1/4	1/8	3.66	3 5/8	0.392	3/8	3/8	6 1/4	2 <sup>g</sup>
S6×17.25	5.02	6.00	6	0.465	7/16	1/4	3.57	3 5/8	0.359	3/8	3/8	5 1/4	—
×12.5	3.62	6.00	6	0.232	1/4	1/8	3.33	3 3/8	0.359	3/8	3/8	5 1/4	—
S5×14.75	4.29	5.00	5	0.494	1/2	1/4	3.28	3 1/4	0.326	5/16	5/16	4 3/8	—
×10	2.89	5.00	5	0.214	3/16	1/8	3.00	3	0.326	5/16	5/16	4 3/8	—
S4×9.5	2.75	4.00	4	0.326	5/16	3/16	2.80	2 3/4	0.293	5/16	5/16	3 3/8	—
×7.7	2.22	4.00	4	0.193	3/16	1/8	2.66	2 5/8	0.293	5/16	5/16	3 3/8	—
S3×7.5	2.17	3.00	3	0.349	3/8	3/16	2.51	2 1/2	0.260	1/4	1/4	2 1/2	—
×5.7	1.63	3.00	3	0.170	3/16	1/8	2.33	2 5/8	0.260	1/4	1/4	2 1/2	—

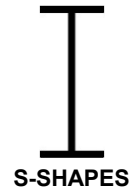
<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

— Indicates flange is too narrow to establish a workable gage.

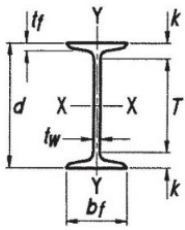
Note: Welded sections are available both in austenitic and duplex stainless steel.

**Table 1-2A (continued)  
S-Shapes (Welded)  
Properties**



Nominal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				$r_{ts}$	$h_0$	Torsional Properties	
			$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$Z$			$J$	$C_w$
	$b_f/2t_f$	$h/t_w$	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>6</sup>
50.6	4.53	25.0	482	64.3	5.75	76.5	18.8	6.67	1.13	10.9	1.45	14.4	1.66	972
43.4	4.42	33.5	443	59.1	5.95	68.6	17.3	6.29	1.18	9.99	1.45	14.4	1.17	894
50.6	4.16	15.5	302	50.3	4.55	60.6	18.4	6.72	1.12	11.2	1.44	11.3	2.23	592
41.6	3.98	22.6	271	45.2	4.75	52.7	16.0	6.10	1.15	9.68	1.42	11.3	1.34	514
35.4	4.67	25.5	228	38.0	4.73	44.4	12.0	4.72	1.08	7.52	1.34	11.5	0.820	394
32.1	4.60	31.2	217	36.2	4.84	41.6	11.4	4.56	1.11	7.13	1.34	11.5	0.674	374
35.4	5.03	15.2	146	29.2	3.78	35.1	10.0	4.05	0.990	6.79	1.28	9.51	1.04	226
25.6	4.75	29.0	123	24.6	4.08	28.1	8.30	3.56	1.06	5.55	1.27	9.51	0.445	188
23.2	4.91	16.2	64.3	16.1	3.10	19.1	5.19	2.49	0.880	4.04	1.10	7.58	0.422	74.5
18.5	4.71	26.4	57.1	14.3	3.27	16.3	4.55	2.28	0.923	3.53	1.10	7.58	0.245	65.3
20.2	4.92	13.8	42.1	12.0	2.69	14.3	3.80	1.97	0.808	3.24	1.02	6.61	0.351	41.5
15.4	4.67	24.7	36.4	10.4	2.86	11.9	3.21	1.75	0.850	2.72	1.01	6.61	0.175	35.0
17.4	4.97	11.4	26.1	8.70	2.28	10.5	2.77	1.55	0.743	2.57	0.948	5.64	0.297	22.0
12.6	4.64	22.8	21.9	7.30	2.46	8.36	2.21	1.33	0.781	2.06	0.924	5.64	0.121	17.6
14.9	5.03	8.80	15.1	6.04	1.88	7.33	1.96	1.20	0.676	2.02	0.871	4.67	0.263	10.7
10.0	4.60	20.3	12.2	4.88	2.05	5.58	1.47	0.980	0.713	1.52	0.839	4.67	0.081	8.03
9.54	4.78	10.5	6.73	3.37	1.56	3.99	1.08	0.771	0.627	1.24	0.771	3.71	0.088	3.71
7.70	4.54	17.7	6.01	3.01	1.65	3.45	0.921	0.692	0.644	1.07	0.753	3.71	0.051	3.16
7.53	4.83	7.11	2.90	1.93	1.16	2.32	0.694	0.553	0.566	0.895	0.702	2.74	0.068	1.30
5.65	4.48	14.6	2.50	1.67	1.24	1.92	0.549	0.471	0.580	0.724	0.671	2.74	0.030	1.03

**Table 1-2B**  
**S-Shapes (Hot Rolled)**  
**Dimensions**



Shape	Area, A	Depth, d		Web			Flange				Distance		
				Thickness, tw		tw/2	Width, bf		Thickness, tf		k	T	Workable Gage
				in.	in.		in.	in.	in.	in.			
S6×12.5	3.66	6.00	6	0.232	¼	⅛	3.33	3⅞	0.359	⅜	13/16	4⅞	—
S5×10	2.93	5.00	5	0.214	3/16	⅛	3.00	3	0.326	5/16	¾	3½	—
S4×7.7	2.26	4.00	4	0.193	3/16	⅛	2.66	2⅝	0.293	5/16	¾	2½	—
S3×5.7	1.66	3.00	3	0.170	3/16	⅛	2.33	2⅜	0.260	¼	⅝	1¾	—

<sup>9</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

— Indicates flange is too narrow to establish a workable gage.

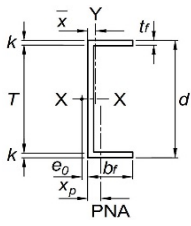
Note: Hot rolled sections are only available in austenitic stainless steel.

**Table 1-2B (continued)**  
**S-Shapes (Hot Rolled)**  
**Properties**



Nominal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				$r_{ts}$	$h_0$	Torsional Properties	
			$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$Z$			$J$	$C_w$
	$b_f/2t_f$	$h/t_w$	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>6</sup>
12.7	4.64	19.4	22.0	7.34	2.45	8.45	1.80	1.08	0.702	1.86	0.831	5.64	0.167	14.3
10.2	4.61	16.8	12.3	4.90	2.05	5.66	1.19	0.795	0.638	1.37	0.754	4.67	0.114	6.52
7.84	4.54	14.1	6.05	3.03	1.64	3.50	0.748	0.562	0.576	0.970	0.676	3.71	0.073	2.57
5.76	4.48	11.0	2.50	1.67	1.23	1.94	0.447	0.383	0.518	0.656	0.605	2.74	0.043	0.838

**Table 1-3A  
C-Shapes (Welded\*)  
Dimensions**



Shape	Area, A	Depth, d		Web			Flange				Distance			$r_{ts}$	$h_o$
				Thickness, $t_w$		Width, $b_f$	Average Thickness, $t_f$		k	T	Workable Gage				
				in.	in.		in.	in.				in.	in.		
C15×50	14.6	15.0	15	0.716	$\frac{1}{16}$	$\frac{3}{8}$	3.72	$\frac{3}{4}$	0.650	$\frac{5}{8}$	$\frac{5}{8}$	$13\frac{3}{4}$	$2\frac{1}{4}$	1.23	14.4
×40 <sup>c2</sup>	11.7	15.0	15	0.520	$\frac{1}{2}$	$\frac{1}{4}$	3.52	$3\frac{1}{2}$	0.650	$\frac{5}{8}$	$\frac{5}{8}$	$13\frac{3}{4}$	2	1.21	14.4
×33.9 <sup>c2</sup>	9.90	15.0	15	0.400	$\frac{3}{8}$	$\frac{3}{16}$	3.40	$3\frac{3}{8}$	0.650	$\frac{5}{8}$	$\frac{5}{8}$	$13\frac{3}{4}$	2	1.19	14.4
C12×30	8.79	12.0	12	0.510	$\frac{1}{2}$	$\frac{1}{4}$	3.17	$3\frac{3}{8}$	0.501	$\frac{1}{2}$	$\frac{1}{2}$	11	$1\frac{3}{4}$ <sup>g</sup>	1.07	11.5
×25 <sup>c2</sup>	7.31	12.0	12	0.387	$\frac{3}{8}$	$\frac{3}{16}$	3.05	3	0.501	$\frac{1}{2}$	$\frac{1}{2}$	11	$1\frac{3}{4}$ <sup>g</sup>	1.06	11.5
×20.7 <sup>c1,c2</sup>	6.05	12.0	12	0.282	$\frac{5}{16}$	$\frac{3}{16}$	2.94	3	0.501	$\frac{1}{2}$	$\frac{1}{2}$	11	$1\frac{3}{4}$ <sup>g</sup>	1.04	11.5
C10×30	8.79	10.0	10	0.673	$\frac{1}{16}$	$\frac{3}{8}$	3.03	3	0.436	$\frac{7}{16}$	$\frac{7}{16}$	$9\frac{1}{4}$	$1\frac{3}{4}$ <sup>g</sup>	0.973	9.56
×25	7.32	10.0	10	0.526	$\frac{1}{2}$	$\frac{1}{4}$	2.89	$2\frac{7}{8}$	0.436	$\frac{7}{16}$	$\frac{7}{16}$	$9\frac{1}{4}$	$1\frac{3}{4}$ <sup>g</sup>	0.964	9.56
×20	5.85	10.0	10	0.379	$\frac{3}{8}$	$\frac{3}{16}$	2.74	$2\frac{3}{4}$	0.436	$\frac{7}{16}$	$\frac{7}{16}$	$9\frac{1}{4}$	$1\frac{1}{2}$ <sup>g</sup>	0.947	9.56
×15.3 <sup>c1,c2</sup>	4.46	10.0	10	0.240	$\frac{1}{4}$	$\frac{1}{8}$	2.60	$2\frac{5}{8}$	0.436	$\frac{7}{16}$	$\frac{7}{16}$	$9\frac{1}{4}$	$1\frac{1}{2}$ <sup>g</sup>	0.920	9.56
C9×20	5.85	9.00	9	0.448	$\frac{7}{16}$	$\frac{1}{4}$	2.65	$2\frac{5}{8}$	0.413	$\frac{7}{16}$	$\frac{7}{16}$	$8\frac{5}{8}$	$1\frac{1}{2}$ <sup>g</sup>	0.898	8.59
×15 <sup>c2</sup>	4.38	9.00	9	0.285	$\frac{5}{16}$	$\frac{3}{16}$	2.49	$2\frac{1}{2}$	0.413	$\frac{7}{16}$	$\frac{7}{16}$	$8\frac{5}{8}$	$1\frac{3}{8}$ <sup>g</sup>	0.874	8.59
×13.4 <sup>c2</sup>	3.91	9.00	9	0.233	$\frac{1}{4}$	$\frac{1}{8}$	2.43	$2\frac{3}{8}$	0.413	$\frac{7}{16}$	$\frac{7}{16}$	$8\frac{5}{8}$	$1\frac{3}{8}$ <sup>g</sup>	0.859	8.59
C8×18.75	5.49	8.00	8	0.487	$\frac{1}{2}$	$\frac{1}{4}$	2.53	$2\frac{1}{2}$	0.390	$\frac{3}{8}$	$\frac{3}{8}$	$7\frac{1}{4}$	$1\frac{1}{2}$ <sup>g</sup>	0.845	7.61
×13.75	4.02	8.00	8	0.303	$\frac{5}{16}$	$\frac{3}{16}$	2.34	$2\frac{3}{8}$	0.390	$\frac{3}{8}$	$\frac{3}{8}$	$7\frac{1}{4}$	$1\frac{3}{8}$ <sup>g</sup>	0.817	7.61
×11.5 <sup>c2</sup>	3.35	8.00	8	0.220	$\frac{1}{4}$	$\frac{1}{8}$	2.26	$2\frac{1}{4}$	0.390	$\frac{3}{8}$	$\frac{3}{8}$	$7\frac{1}{4}$	$1\frac{3}{8}$ <sup>g</sup>	0.798	7.61
C7×14.75	4.31	7.00	7	0.419	$\frac{7}{16}$	$\frac{1}{4}$	2.30	$2\frac{1}{4}$	0.366	$\frac{3}{8}$	$\frac{3}{8}$	$6\frac{1}{4}$	$1\frac{1}{4}$ <sup>g</sup>	0.779	6.63
×12.25	3.57	7.00	7	0.314	$\frac{5}{16}$	$\frac{3}{16}$	2.19	$2\frac{1}{4}$	0.366	$\frac{3}{8}$	$\frac{3}{8}$	$6\frac{1}{4}$	$1\frac{1}{4}$ <sup>g</sup>	0.761	6.63
×9.8 <sup>c2</sup>	2.85	7.00	7	0.210	$\frac{3}{16}$	$\frac{1}{8}$	2.09	$2\frac{1}{8}$	0.366	$\frac{3}{8}$	$\frac{3}{8}$	$6\frac{1}{4}$	$1\frac{1}{4}$ <sup>g</sup>	0.737	6.63
C6×13	3.80	6.00	6	0.437	$\frac{7}{16}$	$\frac{1}{4}$	2.16	$2\frac{1}{8}$	0.343	$\frac{5}{16}$	$\frac{5}{16}$	$5\frac{5}{8}$	$1\frac{3}{8}$ <sup>g</sup>	0.726	5.66
×10.5	3.06	6.00	6	0.314	$\frac{5}{16}$	$\frac{3}{16}$	2.03	2	0.343	$\frac{5}{16}$	$\frac{5}{16}$	$5\frac{5}{8}$	$1\frac{1}{8}$ <sup>g</sup>	0.703	5.66
×8.2 <sup>c2</sup>	2.38	6.00	6	0.200	$\frac{3}{16}$	$\frac{1}{8}$	1.92	$1\frac{7}{8}$	0.343	$\frac{5}{16}$	$\frac{5}{16}$	$5\frac{5}{8}$	$1\frac{1}{8}$ <sup>g</sup>	0.676	5.66
C5×9	2.62	5.00	5	0.325	$\frac{5}{16}$	$\frac{3}{16}$	1.89	$1\frac{7}{8}$	0.320	$\frac{5}{16}$	$\frac{5}{16}$	$4\frac{3}{8}$	$1\frac{1}{8}$ <sup>g</sup>	0.651	4.68
×6.7	1.95	5.00	5	0.190	$\frac{3}{16}$	$\frac{1}{8}$	1.75	$1\frac{3}{4}$	0.320	$\frac{5}{16}$	$\frac{5}{16}$	$4\frac{3}{8}$	—	0.615	4.68
C4×7.25	2.11	4.00	4	0.321	$\frac{5}{16}$	$\frac{3}{16}$	1.72	$1\frac{3}{4}$	0.296	$\frac{5}{16}$	$\frac{5}{16}$	$3\frac{3}{8}$	1 <sup>g</sup>	0.592	3.70
×5.4	1.56	4.00	4	0.184	$\frac{3}{16}$	$\frac{1}{8}$	1.58	$1\frac{1}{8}$	0.296	$\frac{5}{16}$	$\frac{5}{16}$	$3\frac{3}{8}$	—	0.554	3.70
C3×6	1.75	3.00	3	0.356	$\frac{3}{8}$	$\frac{3}{16}$	1.60	$1\frac{1}{8}$	0.273	$\frac{1}{4}$	$\frac{1}{4}$	$2\frac{1}{2}$	—	0.546	2.73
×5	1.45	3.00	3	0.258	$\frac{1}{4}$	$\frac{1}{8}$	1.50	$1\frac{1}{2}$	0.273	$\frac{1}{4}$	$\frac{1}{4}$	$2\frac{1}{2}$	—	0.521	2.73
×4.1	1.19	3.00	3	0.170	$\frac{3}{16}$	$\frac{1}{8}$	1.41	$1\frac{3}{8}$	0.273	$\frac{1}{4}$	$\frac{1}{4}$	$2\frac{1}{2}$	—	0.493	2.73

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

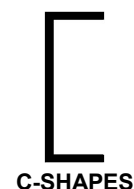
\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

— Indicates flange is too narrow to establish a workable gage.

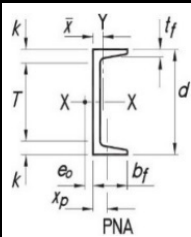
Note: Welded sections are available both in austenitic and duplex stainless steel.



**Table 1-3A (continued)  
C-Shapes (Welded)  
Properties**



Nominal Wt.	Shear Ctr, $e_o$	Axis X-X					Axis Y-Y						Torsional Properties			
		$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$\bar{x}$	$Z$	$x_p$	$J$	$C_w$	$\bar{r}_o$	$H$	
		in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>6</sup>	in.		
50.6	0.584	403	53.7	5.25	68.3	13.3	4.64	0.954	0.857	8.93	0.487	2.31	493	5.53	0.932	
40.6	0.767	347	46.3	5.45	57.2	11.2	4.19	0.978	0.847	7.62	0.390	1.21	408	5.76	0.921	
34.3	0.896	313	41.7	5.62	50.5	9.84	3.89	0.997	0.870	6.98	0.330	0.833	356	5.98	0.913	
30.5	0.618	162	27.0	4.29	33.7	6.37	2.62	0.851	0.735	4.86	0.366	0.722	151	4.58	0.913	
25.4	0.747	144	24.0	4.44	29.3	5.58	2.43	0.874	0.750	4.37	0.305	0.436	131	4.76	0.901	
21.0	0.869	129	21.5	4.62	25.5	4.81	2.24	0.892	0.788	4.01	0.252	0.296	112	4.99	0.890	
30.5	0.367	103	20.6	3.42	26.7	4.82	2.06	0.741	0.691	4.14	0.440	1.07	79.1	3.66	0.916	
25.4	0.495	91.0	18.2	3.53	23.0	4.17	1.88	0.755	0.670	3.56	0.366	0.580	68.5	3.79	0.906	
20.3	0.637	78.7	15.7	3.67	19.3	3.51	1.70	0.775	0.672	3.07	0.293	0.296	56.8	3.97	0.891	
15.5	0.796	67.1	13.4	3.88	15.8	2.84	1.51	0.798	0.720	2.71	0.223	0.166	45.3	4.24	0.872	
20.3	0.516	60.8	13.5	3.22	16.9	3.00	1.49	0.716	0.636	2.77	0.325	0.350	39.4	3.50	0.892	
15.2	0.684	50.9	11.3	3.41	13.6	2.41	1.32	0.742	0.660	2.36	0.243	0.163	31.1	3.74	0.871	
13.6	0.741	47.6	10.6	3.49	12.5	2.18	1.25	0.747	0.680	2.24	0.217	0.132	28.0	3.84	0.863	
19.0	0.432	43.9	11.0	2.83	13.9	2.44	1.27	0.667	0.611	2.41	0.343	0.359	25.1	3.09	0.886	
13.9	0.603	36.0	9.00	2.99	10.9	1.88	1.09	0.684	0.614	1.96	0.251	0.145	19.1	3.30	0.864	
11.6	0.697	32.4	8.10	3.11	9.57	1.63	1.01	0.698	0.647	1.82	0.209	0.102	16.4	3.46	0.849	
14.9	0.442	27.1	7.74	2.51	9.70	1.69	0.981	0.626	0.577	1.82	0.308	0.213	13.1	2.78	0.866	
12.4	0.536	24.1	6.89	2.60	8.40	1.43	0.887	0.633	0.578	1.61	0.255	0.124	11.1	2.90	0.852	
9.88	0.647	21.2	6.06	2.73	7.14	1.19	0.804	0.646	0.609	1.45	0.204	0.077	9.12	3.07	0.833	
13.2	0.381	17.3	5.77	2.13	7.28	1.28	0.797	0.580	0.555	1.50	0.317	0.190	7.20	2.40	0.848	
10.6	0.484	15.1	5.03	2.22	6.16	1.05	0.708	0.586	0.548	1.28	0.255	0.099	5.88	2.52	0.832	
8.25	0.599	13.1	4.37	2.35	5.14	0.843	0.627	0.595	0.576	1.13	0.198	0.057	4.72	2.69	0.809	
9.09	0.430	8.88	3.55	1.84	4.37	0.772	0.565	0.543	0.524	1.03	0.262	0.082	2.94	2.14	0.801	
6.76	0.552	7.45	2.98	1.95	3.52	0.578	0.479	0.544	0.543	0.869	0.195	0.041	2.20	2.31	0.775	
7.32	0.385	4.56	2.28	1.47	2.82	0.518	0.424	0.495	0.498	0.772	0.264	0.059	1.23	1.79	0.757	
5.41	0.499	3.82	1.91	1.56	2.27	0.379	0.354	0.493	0.511	0.644	0.195	0.029	0.907	1.93	0.726	
6.07	0.324	2.07	1.38	1.09	1.73	0.365	0.328	0.457	0.488	0.600	0.292	0.048	0.464	1.43	0.678	
5.03	0.393	1.85	1.23	1.13	1.51	0.295	0.289	0.451	0.480	0.520	0.242	0.029	0.380	1.50	0.661	
4.13	0.461	1.65	1.10	1.18	1.31	0.233	0.252	0.442	0.486	0.459	0.198	0.019	0.306	1.57	0.636	



**Table 1-3B  
C-Shapes (Hot Rolled)  
Dimensions**

Shape	Area, A	Depth, d		Web			Flange				Distance			$r_{ts}$	$h_o$
				Thickness, $t_w$		$t_w/2$	Width, $b_f$		Average Thickness, $t_f$		k	T	Workable Gage		
				in.	in.		in.	in.	in.	in.					
C8×18.75	5.51	8.00	8	0.487	1/2	1/4	2.53	2 1/2	0.390	3/8	1 5/16	6 1/8	1 1/2 <sup>g</sup>	0.800	7.61
C6×10.5	3.07	6.00	6	0.314	5/16	3/16	2.03	2	0.343	5/16	1 1/16	4 3/8	1 1/8 <sup>g</sup>	0.669	5.66
	×8.2	2.39	6.00	6	0.200	3/16	1/8	1.92	1 1/8	0.343	5/16	1 1/16	4 3/8	1 1/8 <sup>g</sup>	0.643
C5×9	2.64	5.00	5	0.325	5/16	3/16	1.89	1 7/8	0.320	5/16	3/4	3 1/2	1 1/8 <sup>g</sup>	0.616	4.68
	×6.7	1.97	5.00	5	0.190	3/16	1/8	1.75	1 1/4	0.320	5/16	3/4	—	0.584	4.68
C4×7.25	2.13	4.00	4	0.321	5/16	3/16	1.72	1 3/4	0.296	5/16	3/4	2 1/2	1 <sup>g</sup>	0.563	3.70
	×5.4	1.58	4.00	4	0.184	3/16	1/8	1.58	1 1/8	0.296	5/16	3/4	—	0.528	3.70
C3×4.1	1.20	3.00	3	0.170	3/16	1/8	1.41	1 3/8	0.273	1/4	1 1/16	1 1/8	—	0.469	2.73

<sup>c1</sup> Shape is slender for compression with  $F_y = 30$  ksi.

<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

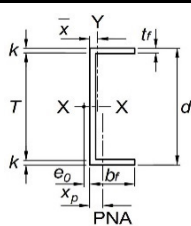
— Indicates flange is too narrow to establish a workable gage.

Note: Hot rolled sections are only available in austenitic stainless steel.

**Table 1-3B (continued)**  
**C-Shapes (Hot Rolled)**  
**Properties**



Nominal Wt.	Shear Ctr, $e_o$	Axis X-X				Axis Y-Y						Torsional Properties			
		$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$\bar{x}$	$Z$	$x_p$	$J$	$C_w$	$\bar{r}_o$	$H$
		in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>6</sup>	in.	
19.1	0.431	43.9	11.0	2.82	13.9	1.97	1.01	0.598	0.565	2.17	0.344	0.434	25.1	3.05	0.894
10.6	0.486	15.1	5.04	2.22	6.18	0.860	0.561	0.529	0.500	1.14	0.256	0.128	5.91	2.48	0.842
8.29	0.599	13.1	4.35	2.34	5.16	0.687	0.488	0.536	0.512	0.987	0.199	0.074	4.70	2.65	0.824
9.16	0.427	8.89	3.56	1.84	4.39	0.624	0.444	0.486	0.478	0.913	0.264	0.109	2.93	2.10	0.815
6.83	0.552	7.48	2.99	1.95	3.55	0.470	0.372	0.489	0.484	0.757	0.215	0.055	2.22	2.26	0.790
7.39	0.386	4.58	2.29	1.47	2.84	0.425	0.337	0.447	0.459	0.695	0.266	0.082	1.24	1.75	0.767
5.48	0.501	3.85	1.92	1.56	2.29	0.312	0.277	0.444	0.457	0.565	0.231	0.040	0.921	1.88	0.742
4.16	0.461	1.65	1.10	1.18	1.32	0.191	0.196	0.398	0.437	0.399	0.262	0.027	0.307	1.53	0.655



**Table 1-4  
MC-Shapes (Welded\*)  
Dimensions**

Shape	Area, A	Depth, d		Web			Flange				Distance			$r_{ts}$	$h_o$
				Thickness, $t_w$		Width, $b_f$	Average Thickness, $t_f$		k	T	Workable Gage				
				in.	$t_w/2$		in.	in.				in.			
MC8×19.8 <sup>c2,f1,f2</sup>	5.72	8.00	8	0.375	$\frac{3}{8}$	$\frac{3}{16}$	4.00	4	0.375	$\frac{3}{8}$	$\frac{3}{8}$	7¼	2½	1.41	7.63
×13.5 <sup>c1,c2,f1,f2</sup>	3.88	8.00	8	0.250	$\frac{1}{4}$	$\frac{1}{8}$	4.00	4	0.250	$\frac{1}{4}$	$\frac{1}{4}$	7½	2½	1.42	7.75
MC6×14.6 <sup>f2</sup>	4.22	6.00	6	0.375	$\frac{3}{8}$	$\frac{3}{16}$	3.00	3	0.375	$\frac{3}{8}$	$\frac{3}{8}$	5¼	2 <sup>g</sup>	1.05	5.63
×10 <sup>c2,f1,f2</sup>	2.88	6.00	6	0.250	$\frac{1}{4}$	$\frac{1}{8}$	3.00	3	0.250	$\frac{1}{4}$	$\frac{1}{4}$	5½	2 <sup>g</sup>	1.06	5.75
MC4×6.5 <sup>f2</sup>	1.88	4.00	4	0.250	$\frac{1}{4}$	$\frac{1}{8}$	2.00	2	0.250	$\frac{1}{4}$	$\frac{1}{4}$	3½	—	0.702	3.75
×6.1 <sup>f2</sup>	1.75	4.00	4	0.250	$\frac{1}{4}$	$\frac{1}{8}$	1.75	1¾	0.250	$\frac{1}{4}$	$\frac{1}{4}$	3½	—	0.611	3.75
MC3×4.8	1.38	3.00	3	0.250	$\frac{1}{4}$	$\frac{1}{8}$	1.50	1½	0.250	$\frac{1}{4}$	$\frac{1}{4}$	2½	—	0.521	2.75
×3.5 <sup>f2</sup>	1.01	3.00	3	0.188	$\frac{3}{16}$	$\frac{1}{8}$	1.38	1¾	0.188	$\frac{3}{16}$	$\frac{3}{16}$	2¾	—	0.483	2.81
MC2×3	0.875	2.00	2	0.250	$\frac{1}{4}$	$\frac{1}{8}$	1.00	1	0.250	$\frac{1}{4}$	$\frac{1}{4}$	1½	—	0.342	1.75
×2.4	0.680	2.00	2	0.188	$\frac{3}{16}$	$\frac{1}{8}$	1.00	1	0.188	$\frac{3}{16}$	$\frac{3}{16}$	1¾	—	0.346	1.81
×1.6 <sup>f2</sup>	0.469	2.00	2	0.125	$\frac{1}{8}$	$\frac{1}{16}$	1.00	1	0.125	$\frac{1}{8}$	$\frac{1}{8}$	1¾	—	0.351	1.88

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

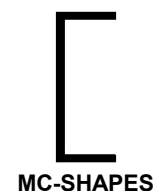
<sup>g</sup> The actual size, combination and orientation of fastener components should be compared with the geometry of the cross section to ensure compatibility.

\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

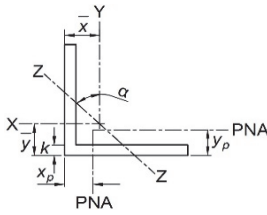
— Indicates flange is too narrow to establish a workable gage.

Note: Welded sections are available both in austenitic and duplex stainless steel.

**Table 1-4 (continued)**  
**MC-Shapes (Welded)**  
**Properties**



Nominal Wt.	Shear Ctr, $e_o$	Axis X-X				Axis Y-Y						Torsional Properties			
		$I$	$S$	$r$	$Z$	$I$	$S$	$r$	$\bar{x}$	$Z$	$x_p$	$J$	$C_w$	$\bar{r}_o$	$H$
		in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>6</sup>	in.	
19.8	1.24	55.5	13.9	3.11	16.4	8.72	3.05	1.23	1.14	5.49	0.358	0.254	88.3	4.11	0.665
13.5	1.33	38.8	9.70	3.16	11.3	6.08	2.09	1.25	1.09	3.77	0.243	0.076	63.7	4.17	0.663
14.6	0.867	22.3	7.43	2.30	8.91	3.52	1.67	0.913	0.887	3.00	0.352	0.183	19.3	3.03	0.665
9.99	0.953	15.9	5.30	2.35	6.20	2.49	1.15	0.930	0.841	2.08	0.240	0.055	14.4	3.10	0.665
6.52	0.578	4.41	2.21	1.53	2.64	0.695	0.493	0.608	0.590	0.890	0.235	0.034	1.70	2.02	0.666
6.07	0.462	3.97	1.99	1.51	2.41	0.474	0.379	0.520	0.500	0.684	0.219	0.032	1.16	1.86	0.732
4.79	0.391	1.75	1.17	1.13	1.42	0.277	0.267	0.448	0.464	0.483	0.230	0.024	0.363	1.48	0.666
3.50	0.377	1.31	0.873	1.14	1.05	0.174	0.178	0.415	0.400	0.319	0.168	0.010	0.239	1.44	0.709
3.03	0.203	0.456	0.456	0.722	0.578	0.074	0.112	0.290	0.339	0.201	0.219	0.014	0.038	0.948	0.673
2.36	0.246	0.377	0.377	0.745	0.465	0.060	0.088	0.297	0.319	0.159	0.170	0.006	0.034	0.981	0.668
1.63	0.289	0.276	0.276	0.767	0.330	0.043	0.062	0.304	0.296	0.111	0.117	0.002	0.027	1.010	0.665



**Table 1-5A  
Equal Angles (Welded\*)  
Properties**

Shape	k	Wt.	Area, A	Axis X-X						Flexural-Torsional Properties		
				I	S	r	$\bar{y}$	Z	$y_p$	J	$C_w$	$\bar{r}_0$
				in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>6</sup>	in.
L8x8x $\frac{3}{4}$ c2	$\frac{3}{4}$	39.7	11.4	69.7	12.2	2.47	2.28	22.0	0.713	2.14	10.4	4.41
x $\frac{5}{8}$ c1,c2	$\frac{5}{8}$	33.3	9.61	59.4	10.3	2.49	2.23	18.6	0.601	1.25	6.16	4.44
x $\frac{1}{2}$ c1,c2	$\frac{1}{2}$	26.9	7.75	48.6	8.36	2.50	2.19	15.1	0.484	0.646	3.23	4.48
x $\frac{3}{8}$ c1,c2	$\frac{3}{8}$	20.3	5.86	37.3	6.36	2.52	2.14	11.5	0.366	0.275	1.40	4.51
x $\frac{1}{4}$ c1,c2	$\frac{1}{4}$	13.7	3.94	25.5	4.32	2.54	2.09	7.76	0.246	0.082	0.424	4.55
L6x6x $\frac{3}{4}$	$\frac{3}{4}$	29.3	8.44	28.2	6.67	1.83	1.77	12.0	0.703	1.58	4.17	3.25
x $\frac{5}{8}$ c2	$\frac{5}{8}$	24.7	7.11	24.2	5.67	1.84	1.73	10.2	0.593	0.926	2.50	3.29
x $\frac{1}{2}$ c1,c2	$\frac{1}{2}$	19.9	5.75	19.9	4.61	1.86	1.68	8.31	0.479	0.479	1.32	3.32
x $\frac{3}{8}$ c1,c2	$\frac{3}{8}$	15.1	4.36	15.4	3.53	1.88	1.64	6.35	0.363	0.204	0.575	3.36
x $\frac{1}{4}$ c1,c2	$\frac{1}{4}$	10.2	2.94	10.6	2.40	1.90	1.59	4.32	0.245	0.061	0.176	3.39
L5x5x $\frac{3}{4}$	$\frac{3}{4}$	24.1	6.94	15.7	4.52	1.50	1.52	8.16	0.694	1.30	2.32	2.67
x $\frac{5}{8}$	$\frac{5}{8}$	20.3	5.86	13.6	3.86	1.52	1.48	6.95	0.586	0.763	1.40	2.71
x $\frac{1}{2}$ c2	$\frac{1}{2}$	16.5	4.75	11.3	3.17	1.54	1.43	5.68	0.475	0.396	0.744	2.75
x $\frac{3}{8}$ c1,c2	$\frac{3}{8}$	12.5	3.61	8.74	2.42	1.56	1.39	4.36	0.361	0.169	0.327	2.78
x $\frac{5}{16}$ c1,c2	$\frac{5}{16}$	10.5	3.03	7.42	2.04	1.56	1.36	3.68	0.303	0.099	0.193	2.79
x $\frac{1}{4}$ c1,c2	$\frac{1}{4}$	8.45	2.44	6.05	1.65	1.57	1.34	2.98	0.244	0.051	0.101	2.81
L4x4x $\frac{1}{2}$	$\frac{1}{2}$	13.0	3.75	5.56	1.97	1.22	1.18	3.56	0.469	0.313	0.366	2.17
x $\frac{3}{8}$ c2	$\frac{3}{8}$	9.92	2.86	4.36	1.52	1.23	1.14	2.74	0.358	0.134	0.162	2.21
x $\frac{1}{4}$ c1,c2	$\frac{1}{4}$	6.72	1.94	3.04	1.05	1.25	1.09	1.88	0.243	0.040	0.051	2.24
L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{3}{8}$ c2	$\frac{3}{8}$	8.62	2.48	2.87	1.15	1.08	1.01	2.08	0.354	0.116	0.106	1.92
x $\frac{1}{4}$ c1,c2	$\frac{1}{4}$	5.85	1.69	2.01	0.793	1.09	0.966	1.43	0.241	0.035	0.033	1.95
L3x3x $\frac{1}{2}$	$\frac{1}{2}$	9.54	2.75	2.22	1.07	0.898	0.932	1.93	0.458	0.229	0.144	1.60
x $\frac{3}{8}$	$\frac{3}{8}$	7.32	2.11	1.76	0.833	0.913	0.887	1.50	0.352	0.099	0.065	1.63
x $\frac{1}{4}$ c1,c2	$\frac{1}{4}$	4.99	1.44	1.24	0.574	0.928	0.841	1.04	0.240	0.030	0.021	1.66
x $\frac{3}{16}$ c1,c2	$\frac{3}{16}$	3.78	1.09	0.962	0.441	0.939	0.819	0.794	0.182	0.013	0.009	1.68
L2 $\frac{1}{2}$ x2 $\frac{1}{2}$ x $\frac{3}{8}$	$\frac{3}{8}$	6.01	1.73	0.984	0.567	0.754	0.764	1.02	0.346	0.081	0.036	1.34
x $\frac{1}{4}$ c2	$\frac{1}{4}$	4.12	1.19	0.703	0.394	0.769	0.716	0.711	0.238	0.025	0.012	1.37
x $\frac{3}{16}$ c1,c2	$\frac{3}{16}$	3.13	0.902	0.547	0.303	0.779	0.695	0.545	0.180	0.011	0.005	1.39
L2x2x $\frac{3}{8}$	$\frac{3}{8}$	4.71	1.36	0.479	0.351	0.593	0.635	0.633	0.340	0.064	0.017	1.05
x $\frac{1}{4}$	$\frac{1}{4}$	3.25	0.938	0.348	0.247	0.609	0.591	0.445	0.235	0.020	0.006	1.08
x $\frac{3}{16}$ c2	$\frac{3}{16}$	2.48	0.715	0.272	0.190	0.617	0.569	0.343	0.179	0.008	0.003	1.10
x $\frac{1}{8}$ c1,c2	$\frac{1}{8}$	1.68	0.484	0.190	0.131	0.627	0.547	0.235	0.121	0.003	0.001	1.12

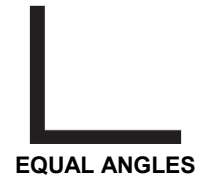
<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

Note 1: For workable gages, refer to Table 1-5C.

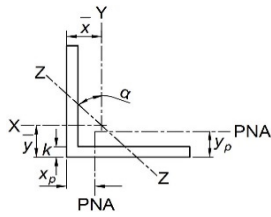
Note 2: Welded sections are available in austenitic and duplex stainless steel.

**Table 1-5A (continued)  
Equal Angles (Welded)  
Properties**



Shape	Axis Y-Y						Axis Z-Z				$Q_s$	
	$I$	$S$	$r$	$\bar{x}$	$Z$	$x_p$	$I$	$S$	$r$	Tan $\alpha$	$F_y = 30$ ksi	$F_y = 65$ ksi
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	in.			
L8x8x $\frac{3}{4}$ c2	69.7	12.2	2.47	2.28	22.0	0.713	28.3	8.78	1.58	1.00	1.00	0.860
x $\frac{5}{8}$ c1,c2	59.4	10.3	2.49	2.23	18.6	0.601	24.0	7.61	1.58	1.00	0.954	0.748
x $\frac{1}{2}$ c1,c2	48.6	8.36	2.50	2.19	15.1	0.484	19.6	6.33	1.59	1.00	0.839	0.558
x $\frac{3}{8}$ c1,c2	37.3	6.36	2.52	2.14	11.5	0.366	15.0	4.96	1.60	1.00	0.656	0.314
x $\frac{1}{4}$ c1,c2	25.5	4.32	2.54	2.09	7.76	0.246	10.2	3.45	1.61	1.00	0.292	0.139
L6x6x $\frac{3}{4}$	28.2	6.67	1.83	1.77	12.0	0.703	11.7	4.67	1.18	1.00	1.00	1.00
x $\frac{5}{8}$ c2	24.2	5.67	1.84	1.73	10.2	0.593	9.91	4.05	1.18	1.00	1.00	0.915
x $\frac{1}{2}$ c1,c2	19.9	4.61	1.86	1.68	8.31	0.479	8.06	3.39	1.18	1.00	0.983	0.790
x $\frac{3}{8}$ c1,c2	15.4	3.53	1.88	1.64	6.35	0.363	6.21	2.68	1.19	1.00	0.839	0.558
x $\frac{1}{4}$ c1,c2	10.6	2.40	1.90	1.59	4.32	0.245	4.27	1.90	1.21	1.00	0.519	0.248
L5x5x $\frac{3}{4}$	15.7	4.52	1.50	1.52	8.16	0.694	6.55	3.05	0.971	1.00	1.00	1.00
x $\frac{5}{8}$ c2	13.6	3.86	1.52	1.48	6.95	0.586	5.62	2.69	0.979	1.00	1.00	1.00
x $\frac{1}{2}$ c2	11.3	3.17	1.54	1.43	5.68	0.475	4.64	2.29	0.988	1.00	1.00	0.894
x $\frac{3}{8}$ c1,c2	8.74	2.42	1.56	1.39	4.36	0.361	3.53	1.80	0.989	1.00	0.935	0.721
x $\frac{5}{16}$ c1,c2	7.42	2.04	1.56	1.36	3.68	0.303	2.99	1.55	0.993	1.00	0.839	0.558
x $\frac{1}{4}$ c1,c2	6.05	1.65	1.57	1.34	2.98	0.244	2.43	1.28	0.998	1.00	0.695	0.357
L4x4x $\frac{1}{2}$	5.56	1.97	1.22	1.18	3.56	0.469	2.29	1.37	0.781	1.00	1.00	1.00
x $\frac{3}{8}$ c2	4.36	1.52	1.23	1.14	2.74	0.358	1.77	1.10	0.787	1.00	1.00	0.860
x $\frac{1}{4}$ c1,c2	3.04	1.05	1.25	1.09	1.88	0.243	1.23	0.798	0.796	1.00	0.839	0.558
L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{3}{8}$ c2	2.87	1.15	1.08	1.01	2.08	0.354	1.18	0.826	0.690	1.00	1.00	0.929
x $\frac{1}{4}$ c1,c2	2.01	0.793	1.09	0.966	1.43	0.241	0.812	0.594	0.693	1.00	0.911	0.686
L3x3x $\frac{1}{2}$	2.22	1.07	0.898	0.932	1.93	0.458	0.942	0.715	0.585	1.00	1.00	1.00
x $\frac{3}{8}$ c2	1.76	0.833	0.913	0.887	1.50	0.352	0.726	0.579	0.587	1.00	1.00	1.00
x $\frac{1}{4}$ c1,c2	1.24	0.574	0.928	0.841	1.04	0.240	0.500	0.420	0.589	1.00	0.983	0.790
x $\frac{3}{16}$ c1,c2	0.962	0.441	0.939	0.819	0.794	0.182	0.388	0.335	0.597	1.00	0.839	0.558
L2 $\frac{1}{2}$ x2 $\frac{1}{2}$ x $\frac{3}{8}$	0.984	0.567	0.754	0.764	1.02	0.346	0.412	0.381	0.488	1.00	1.00	1.00
x $\frac{1}{4}$ c2	0.703	0.394	0.769	0.716	0.711	0.238	0.287	0.283	0.491	1.00	1.00	0.894
x $\frac{3}{16}$ c1,c2	0.547	0.303	0.779	0.695	0.545	0.180	0.221	0.225	0.495	1.00	0.935	0.721
L2x2x $\frac{3}{8}$	0.479	0.351	0.593	0.635	0.633	0.340	0.206	0.229	0.389	1.00	1.00	1.00
x $\frac{1}{4}$	0.348	0.247	0.609	0.591	0.445	0.235	0.144	0.172	0.392	1.00	1.00	1.00
x $\frac{3}{16}$ c2	0.272	0.190	0.617	0.569	0.343	0.179	0.110	0.137	0.392	1.00	1.00	0.860
x $\frac{1}{8}$ c1,c2	0.190	0.131	0.627	0.547	0.235	0.121	0.077	0.099	0.398	1.00	0.839	0.558

**Table 1-5A (continued)**  
**Equal Angles (Welded\*)**  
**Properties**



Shape	k	Wt.	Area, A	Axis X-X						Flexural-Torsional Properties		
				I	S	r	$\bar{y}$	Z	$y_p$	J	$C_w$	$\bar{r}_0$
				in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>6</sup>	in.
L1½×1½×¼	¼	2.38	0.688	0.139	0.134	0.449	0.466	0.242	0.229	0.014	0.002	0.798
× $\frac{3}{16}$	$\frac{3}{16}$	1.83	0.527	0.110	0.104	0.457	0.444	0.188	0.176	0.006	0.001	0.814
× $\frac{1}{8}$	$\frac{1}{8}$	1.25	0.359	0.078	0.072	0.466	0.422	0.130	0.120	0.002	0.000	0.832
L1¼×1¼×¼	¼	1.95	0.563	0.077	0.091	0.369	0.402	0.163	0.225	0.012	0.001	0.653
× $\frac{3}{16}$	$\frac{3}{16}$	1.50	0.434	0.062	0.071	0.376	0.381	0.128	0.174	0.005	0.001	0.670
× $\frac{1}{8}$ <sup>c2</sup>	$\frac{1}{8}$	1.03	0.297	0.044	0.049	0.384	0.358	0.089	0.119	0.002	0.000	0.686
L1×1×¼	¼	1.52	0.438	0.037	0.056	0.290	0.339	0.101	0.219	0.009	0.001	0.510
× $\frac{3}{16}$	$\frac{3}{16}$	1.18	0.340	0.030	0.044	0.297	0.318	0.079	0.170	0.004	0.000	0.526
× $\frac{1}{8}$	$\frac{1}{8}$	0.813	0.234	0.022	0.031	0.305	0.296	0.056	0.117	0.001	0.000	0.543
L¾×¾× $\frac{3}{8}$	$\frac{3}{8}$	0.596	0.172	0.009	0.017	0.224	0.233	0.030	0.115	0.001	0.000	0.399
L½×½× $\frac{1}{8}$	$\frac{1}{8}$	0.379	0.109	0.002	0.007	0.145	0.170	0.013	0.109	0.001	0.000	0.256

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

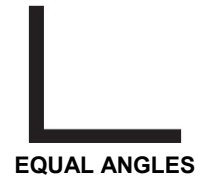
\* The values in the tables apply to sections which are continuously welded with full penetration welds, including laser fusion.

Note 1: For workable gages, refer to Table 1-5C.

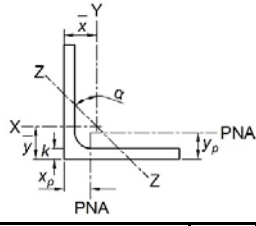
Note 2: Welded sections are available in austenitic and duplex stainless steel.



**Table 1-5A (continued)  
Equal Angles (Welded)  
Properties**



Shape	Axis Y-Y						Axis Z-Z				$Q_s$	
	$I$	$S$	$r$	$\bar{x}$	$Z$	$x_p$	$I$	$S$	$r$	Tan $\alpha$	$F_y = 30$ ksi	$F_y = 65$ ksi
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	in.			
L1½×1½×¼	0.139	0.134	0.449	0.466	0.242	0.229	0.059	0.090	0.293	1.00	1.00	1.00
× $\frac{3}{16}$	0.110	0.104	0.457	0.444	0.188	0.176	0.045	0.072	0.294	1.00	1.00	1.00
× $\frac{1}{8}$	0.078	0.072	0.466	0.422	0.130	0.120	0.032	0.053	0.297	1.00	0.983	0.790
L1¼×1¼×¼	0.077	0.091	0.369	0.402	0.163	0.225	0.033	0.059	0.243	1.00	1.00	1.00
× $\frac{3}{16}$	0.062	0.071	0.376	0.381	0.128	0.174	0.026	0.048	0.243	1.00	1.00	1.00
× $\frac{1}{8}$ c2	0.044	0.049	0.384	0.358	0.089	0.119	0.018	0.035	0.245	1.00	1.00	0.894
L1×1×¼	0.037	0.056	0.290	0.339	0.101	0.219	0.017	0.035	0.196	1.00	1.00	1.00
× $\frac{3}{16}$	0.030	0.044	0.297	0.318	0.079	0.170	0.013	0.029	0.194	1.00	1.00	1.00
× $\frac{1}{8}$	0.022	0.031	0.305	0.296	0.056	0.117	0.009	0.021	0.195	1.00	1.00	1.00
L¾×¾× $\frac{3}{8}$	0.009	0.017	0.224	0.233	0.030	0.115	0.004	0.011	0.146	1.00	1.00	1.00
L½×½× $\frac{1}{8}$	0.002	0.007	0.145	0.170	0.013	0.109	0.001	0.004	0.098	1.00	1.00	1.00



**Table 1-5B  
Equal Angles (Hot Rolled)  
Properties**

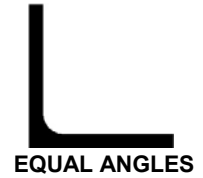
Shape	k	Wt. lb/ft	Area, A in. <sup>2</sup>	Axis X-X						Flexural-Torsional Properties		
				I in. <sup>4</sup>	S in. <sup>3</sup>	r in.	ȳ in.	Z in. <sup>3</sup>	y <sub>p</sub> in.	J in. <sup>4</sup>	C <sub>w</sub> in. <sup>6</sup>	r̄ <sub>0</sub> in.
L6×6×½ <sup>c1,c2</sup>	1	20.0	5.77	19.9	4.59	1.86	1.67	8.22	0.481	0.501	1.32	3.31
×¾ <sup>c1,c2</sup>	¾	15.2	4.38	15.4	3.51	1.87	1.62	6.27	0.365	0.218	0.575	3.34
L5×5×½ <sup>c2</sup>	1	16.6	4.79	11.3	3.15	1.53	1.42	5.66	0.479	0.417	0.744	2.73
×¾ <sup>c1,c2</sup>	¾	12.7	3.65	8.76	2.41	1.55	1.37	4.33	0.365	0.183	0.327	2.76
L4×4×½	¾	13.0	3.75	5.52	1.96	1.21	1.18	3.50	0.469	0.322	0.366	2.16
×¾ <sup>c2</sup>	¾	9.92	2.86	4.32	1.50	1.23	1.13	2.69	0.358	0.141	0.162	2.19
×¼ <sup>c1,c2</sup>	⅝	6.69	1.93	3.00	1.03	1.25	1.08	1.82	0.241	0.044	0.051	2.22
L3½×3½×¾ <sup>c2</sup>	¾	8.64	2.5	2.82	1.13	1.06	1.00	1.95	0.356	0.117	0.106	1.90
×¼ <sup>c1,c2</sup>	⅝	5.88	1.7	1.97	0.772	1.08	0.951	1.32	0.242	0.035	0.033	1.92
L3×3×½	¾	9.57	2.76	2.20	1.06	0.895	0.929	1.91	0.460	0.230	0.144	1.59
×¾	¾	7.32	2.11	1.75	0.825	0.910	0.884	1.48	0.352	0.101	0.065	1.62
×¼ <sup>c1,c2</sup>	⅝	4.99	1.44	1.23	0.569	0.926	0.836	1.02	0.240	0.031	0.021	1.65
×¾ <sup>c1,c2</sup>	⅞	3.78	1.09	0.948	0.433	0.933	0.812	0.774	0.182	0.014	0.009	1.67
L2½×2½×¾	⅝	6.00	1.730	0.972	0.558	0.749	0.758	1.01	0.346	0.083	0.036	1.33
×¼ <sup>c2</sup>	½	4.13	1.190	0.692	0.387	0.764	0.711	0.695	0.238	0.026	0.012	1.36
×¾ <sup>c1,c2</sup>	⅞	3.12	0.901	0.535	0.295	0.771	0.687	0.529	0.180	0.011	0.005	1.38
L2×2×¾	⅝	4.75	1.370	0.476	0.348	0.591	0.632	0.629	0.343	0.066	0.017	1.05
×¼	½	3.27	0.944	0.346	0.244	0.605	0.586	0.440	0.236	0.021	0.006	1.08
×¾ <sup>c2</sup>	⅞	2.50	0.722	0.271	0.188	0.612	0.561	0.338	0.181	0.009	0.003	1.09
×¼ <sup>c1,c2</sup>	⅝	1.70	0.491	0.189	0.129	0.620	0.534	0.230	0.123	0.003	0.001	1.10
L1½×1½×¼	⅝	2.40	0.689	0.138	0.133	0.447	0.464	0.227	0.231	0.014	0.002	0.793
×¾ <sup>c1,c2</sup>	⅞	1.84	0.529	0.109	0.103	0.454	0.441	0.176	0.178	0.006	0.001	0.809
×¼ <sup>c1,c2</sup>	¼	1.26	0.361	0.077	0.071	0.462	0.417	0.119	0.121	0.002	0.000	0.823
L1¼×1¼×¼	⅝	1.96	0.564	0.076	0.090	0.367	0.401	0.151	0.227	0.012	0.001	0.650
×¾ <sup>c1,c2</sup>	⅞	1.51	0.435	0.061	0.070	0.374	0.378	0.118	0.175	0.005	0.001	0.665
×¼ <sup>c2</sup>	¼	1.04	0.299	0.043	0.048	0.381	0.354	0.080	0.121	0.002	0.000	0.679
L1×1×¼	⅝	1.53	0.439	0.037	0.055	0.288	0.338	0.090	0.220	0.009	0.001	0.507
×¾ <sup>c1,c2</sup>	⅞	1.19	0.342	0.030	0.043	0.294	0.316	0.071	0.172	0.004	0.000	0.521
×¼	¼	0.821	0.236	0.021	0.030	0.301	0.292	0.049	0.119	0.001	0.000	0.535
L¾×¾×¾	⅞	0.605	0.174	0.008	0.016	0.217	0.226	0.025	0.116	0.001	0.000	0.384
L½×½×½	⅞	0.388	0.112	0.002	0.006	0.138	0.165	0.010	0.112	0.001	0.000	0.243

<sup>c1</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

Note 1: For workable gages, refer to Table 1-5C.

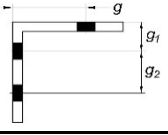
Note 2: Hot rolled sections are only available in austenitic stainless steel.

**Table 1-5B (continued)**  
**Equal Angles (Hot Rolled)**  
**Properties**

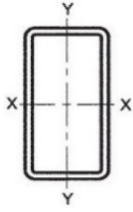


Shape	Axis Y-Y						Axis Z-Z				$Q_s$
	$I$	$S$	$r$	$\bar{x}$	$Z$	$x_p$	$I$	$S$	$r$	Tan $\alpha$	$F_y = 30$ ksi
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	in.		
L6×6×½ <sup>c1,c2</sup>	19.9	4.59	1.86	1.67	8.22	0.481	8.06	3.40	1.18	1.00	0.983
×¾ <sup>c1,c2</sup>	15.4	3.51	1.87	1.62	6.27	0.365	6.21	2.69	1.19	1.00	0.839
L5×5×½ <sup>c2</sup>	11.3	3.15	1.53	1.42	5.66	0.479	4.64	2.29	0.980	1.00	1.00
×¾ <sup>c1,c2</sup>	8.76	2.41	1.55	1.37	4.33	0.365	3.55	1.83	0.986	1.00	0.935
L4×4×½	5.52	1.96	1.21	1.18	3.50	0.469	2.25	1.35	0.776	1.00	1.00
×¾ <sup>c2</sup>	4.32	1.50	1.23	1.13	2.69	0.358	1.73	1.08	0.779	1.00	1.00
×¼ <sup>c1,c2</sup>	3.00	1.03	1.25	1.08	1.82	0.241	1.19	0.776	0.783	1.00	0.839
L3½×3½×¾ <sup>c2</sup>	2.82	1.13	1.06	1.00	1.95	0.356	1.16	0.820	0.683	1.00	1.00
×¼ <sup>c1,c2</sup>	1.97	0.772	1.08	0.951	1.32	0.242	0.807	0.600	0.690	1.00	0.911
L3×3×½	2.20	1.06	0.895	0.929	1.91	0.460	0.922	0.703	0.580	1.00	1.00
×¾	1.75	0.825	0.910	0.884	1.48	0.352	0.716	0.570	0.581	1.00	1.00
×¼ <sup>c1,c2</sup>	1.23	0.569	0.926	0.836	1.02	0.240	0.490	0.415	0.585	1.00	0.983
×¾ <sup>c1,c2</sup>	0.948	0.433	0.933	0.812	0.774	0.182	0.373	0.326	0.586	1.00	0.840
L2½×2½×¾	0.972	0.558	0.749	0.758	1.01	0.346	0.400	0.373	0.481	1.00	1.00
×¼ <sup>c2</sup>	0.692	0.387	0.764	0.711	0.695	0.238	0.276	0.274	0.482	1.00	1.00
×¾ <sup>c1,c2</sup>	0.535	0.295	0.771	0.687	0.529	0.180	0.209	0.216	0.482	1.00	0.936
L2×2×¾	0.476	0.348	0.591	0.632	0.629	0.343	0.203	0.227	0.386	1.00	1.00
×¼	0.346	0.244	0.605	0.586	0.440	0.236	0.142	0.171	0.387	1.00	1.00
×¾ <sup>c2</sup>	0.271	0.188	0.612	0.561	0.338	0.181	0.109	0.137	0.389	1.00	1.00
×¼ <sup>c1,c2</sup>	0.189	0.129	0.620	0.534	0.230	0.123	0.076	0.099	0.391	1.00	0.839
L1½×1½×¼	0.138	0.133	0.447	0.464	0.227	0.231	0.058	0.089	0.291	1.00	1.00
×¾ <sup>c2</sup>	0.109	0.103	0.454	0.441	0.176	0.178	0.045	0.072	0.292	1.00	1.00
×¼ <sup>c1,c2</sup>	0.077	0.071	0.462	0.417	0.119	0.121	0.032	0.053	0.295	1.00	0.983
L1¼×1¼×¼	0.076	0.090	0.367	0.401	0.151	0.227	0.033	0.058	0.242	1.00	1.00
×¾ <sup>c2</sup>	0.061	0.070	0.374	0.378	0.118	0.175	0.026	0.048	0.242	1.00	1.00
×¼ <sup>c2</sup>	0.043	0.048	0.381	0.354	0.080	0.121	0.018	0.036	0.245	1.00	1.00
L1×1×¼	0.037	0.055	0.288	0.338	0.090	0.220	0.017	0.035	0.194	1.00	1.00
×¾ <sup>c2</sup>	0.030	0.043	0.294	0.316	0.071	0.172	0.013	0.028	0.193	1.00	1.00
×¼ <sup>c2</sup>	0.021	0.030	0.301	0.292	0.049	0.119	0.009	0.022	0.194	1.00	1.00
L¾×¾×¾	0.008	0.016	0.217	0.226	0.025	0.116	0.003	0.011	0.141	1.00	1.00
L½×½×½	0.002	0.006	0.138	0.165	0.010	0.112	0.001	0.004	0.091	1.00	1.00

**Table 1-5C**  
**Workable Gages in Equal Angle Legs, in.**

	Leg	8	6	5	4	3½	3	2½	2	1½	1¼	1
	<b>g</b>	4½	3½	3	2½	2	1¾	1⅝	1⅞	1⅞	7⁄8	¾
<b>g<sub>1</sub></b>	3	2¼	2	—	—	—	—	—	—	—	—	—
<b>g<sub>2</sub></b>	3	2½	1¾	—	—	—	—	—	—	—	—	—

Note: Other gages are permitted to suit specific requirements subject to clearances and edge distance limitations.



**Table 1-6A**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
	in.	lb/ft	in. <sup>2</sup>						
HSS16×8×0.500	0.500	76.9	22.2	11.2	27.2	711	88.9	5.66	112
×0.375	0.375	59.2	17.1	17.3	38.7	565	70.6	5.75	87.6
×0.312	0.312	49.5	14.3	20.8	46.5	476	59.5	5.77	73.5
×0.250 *	0.250	40.2	11.6	28.0	60.0	393	49.1	5.82	60.3
HSS14×10×0.500	0.500	76.9	22.2	15.2	23.2	600	85.7	5.20	104
×0.375	0.375	59.2	17.1	22.7	33.3	476	68.0	5.28	81.5
×0.312	0.312	49.5	14.3	27.2	40.1	401	57.3	5.30	68.4
×0.250	0.250	40.2	11.6	36.0	52.0	331	47.3	5.34	56.0
HSS14×8×0.500	0.500	70.0	20.2	11.2	23.2	509	72.7	5.02	90.6
×0.375	0.375	54.0	15.6	17.3	33.3	407	58.1	5.11	71.3
×0.312	0.312	45.2	13.0	20.8	40.1	343	49.0	5.14	59.9
×0.250	0.250	36.7	10.6	28.0	52.0	284	40.6	5.18	49.2
HSS14×6×0.500	0.500	63.1	18.2	7.20	23.2	417	59.6	4.79	77.1
×0.375	0.375	48.8	14.1	12.0	33.3	337	48.1	4.89	61.1
×0.312	0.312	40.8	11.8	14.4	40.1	284	40.6	4.91	51.3
×0.250	0.250	33.3	9.59	20.0	52.0	237	33.9	4.97	42.3
HSS12×10×0.500	0.500	70.0	20.2	15.2	19.2	413	68.8	4.52	82.9
×0.375	0.375	54.0	15.6	22.7	28.0	330	55.0	4.60	65.2
×0.312	0.312	45.2	13.0	27.2	33.7	278	46.3	4.62	54.8
×0.250	0.250	36.7	10.6	36.0	44.0	230	38.3	4.66	44.9
HSS12×8×0.500	0.500	63.1	18.2	11.2	19.2	347	57.8	4.37	71.4
×0.375	0.375	48.8	14.1	17.3	28.0	279	46.5	4.45	56.5
×0.312	0.312	40.8	11.8	20.8	33.7	236	39.3	4.47	47.5
×0.250 *	0.250	33.3	9.59	28.0	44.0	196	32.7	4.52	39.1
HSS12×6×0.500	0.500	56.1	16.2	7.20	19.2	281	46.8	4.16	59.9
×0.375	0.375	43.6	12.6	12.0	28.0	228	38.0	4.25	47.7
×0.312	0.312	36.5	10.5	14.4	33.7	193	32.2	4.29	40.2
×0.250	0.250	29.8	8.59	20.0	44.0	161	26.8	4.33	33.2
HSS12×4×0.500	0.500	49.2	14.2	3.20	19.2	215	35.8	3.89	48.4
×0.375	0.375	38.4	11.1	6.67	28.0	178	29.7	4.00	39.0
×0.312	0.312	32.2	9.28	8.01	33.7	151	25.2	4.03	32.9
×0.250 *	0.250	26.3	7.59	12.0	44.0	127	21.2	4.09	27.3
×0.180 *	0.180	19.2	5.54	18.1	62.5	94.5	15.8	4.13	20.2

Note 1: For compactness criteria, refer to Table 1-6C.

Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

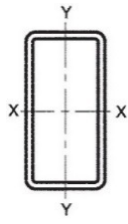
**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**



**HSS16-  
HSS12**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS16×8×0.500	241	60.3	3.29	69.0	13.8	5.75	603	106	3.83
×0.375	193	48.3	3.36	54.2	14.3	6.31	466	83.3	3.89
×0.312	163	40.8	3.38	45.6	14.6	6.60	395	70.9	3.89
×0.250 *	135	33.8	3.41	37.4	14.9	6.88	321	58.2	3.93
HSS14×10×0.500	357	71.4	4.01	82.7	11.8	7.75	734	118	3.83
×0.375	284	56.8	4.08	64.8	12.3	8.31	565	92.3	3.89
×0.312	240	48.0	4.10	54.5	12.6	8.60	478	78.4	3.89
×0.250	198	39.6	4.13	44.6	12.9	8.88	387	64.2	3.93
HSS14×8×0.500	213	53.3	3.25	61.5	11.8	5.75	502	91.6	3.49
×0.375	171	42.8	3.31	48.5	12.3	6.31	388	72.3	3.56
×0.312	145	36.3	3.34	40.8	12.6	6.60	330	61.8	3.56
×0.250	120	30.0	3.36	33.5	12.9	6.88	268	50.8	3.60
HSS14×6×0.500	110	36.7	2.46	42.4	11.8	3.75	298	65.6	3.16
×0.375	89.1	29.7	2.51	33.6	12.3	4.31	234	52.7	3.23
×0.312	76.0	25.3	2.54	28.4	12.6	4.60	199	45.0	3.23
×0.250	63.4	21.1	2.57	23.4	12.9	4.88	163	37.3	3.26
HSS12×10×0.500	312	62.4	3.93	73.2	9.75	7.75	585	99.6	3.49
×0.375	249	49.8	4.00	57.6	10.3	8.31	451	78.4	3.56
×0.312	211	42.2	4.03	48.4	10.6	8.60	382	66.7	3.56
×0.250	174	34.8	4.05	39.7	10.9	8.88	309	54.7	3.60
HSS12×8×0.500	185	46.3	3.19	54.0	9.75	5.75	403	77.5	3.16
×0.375	149	37.3	3.25	42.7	10.3	6.31	313	61.6	3.23
×0.312	127	31.8	3.28	36.0	10.6	6.60	266	52.6	3.23
×0.250 *	105	26.3	3.31	29.6	10.9	6.88	216	43.3	3.26
HSS12×6×0.500	94.4	31.5	2.41	36.9	9.75	3.75	243	55.7	2.83
×0.375	77.2	25.7	2.48	29.4	10.3	4.31	190	44.6	2.89
×0.312	65.9	22.0	2.51	24.9	10.6	4.60	162	38.2	2.89
×0.250	55.2	18.4	2.53	20.6	10.9	4.88	133	31.8	2.93
HSS12×4×0.500	36.2	18.1	1.60	21.7	9.75	1.75	111	33.8	2.49
×0.375	30.5	15.3	1.66	17.6	10.3	2.31	89.6	27.9	2.56
×0.312	26.3	13.2	1.68	15.0	10.6	2.60	77.2	24.2	2.56
×0.250 *	22.3	11.2	1.71	12.5	10.9	2.88	63.8	20.3	2.60
×0.180 *	16.9	8.45	1.75	9.27	11.2	3.19	47.6	15.3	2.61

— Indicates flat depth or width is too small to establish a workable flat.



**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
	in.	lb/ft	in. <sup>2</sup>						
HSS10×8×0.500	0.500	56.1	16.2	11.2	15.2	222	44.4	3.70	54.2
×0.375	0.375	43.6	12.6	17.3	22.7	180	36.0	3.78	43.1
×0.312	0.312	36.5	10.5	20.8	27.2	152	30.4	3.80	36.3
×0.250	0.250	29.8	8.59	28.0	36.0	127	25.4	3.85	30.0
HSS10×6×0.500	0.500	49.2	14.2	7.20	15.2	176	35.2	3.52	44.7
×0.375	0.375	38.4	11.1	12.0	22.7	145	29.0	3.61	35.9
×0.312	0.312	32.2	9.28	14.4	27.2	123	24.6	3.64	30.3
×0.250 *	0.250	26.3	7.59	20.0	36.0	103	20.6	3.68	25.1
×0.180 *	0.180	19.2	5.54	29.2	51.4	76.8	15.4	3.72	18.5
HSS10×4×0.500	0.500	42.3	12.2	3.20	15.2	131	26.2	3.28	35.2
×0.375	0.375	33.2	9.58	6.67	22.7	110	22.0	3.39	28.7
×0.312	0.312	27.8	8.03	8.01	27.2	93.6	18.7	3.41	24.2
×0.250	0.250	22.9	6.59	12.0	36.0	79.3	15.9	3.47	20.2
HSS10×2×0.375	0.375	28.0	8.08	1.33	22.7	75.4	15.1	3.05	21.5
×0.250	0.250	19.4	5.59	4.00	36.0	55.5	11.1	3.15	15.4
×0.180	0.180	14.2	4.10	6.94	51.4	42.1	8.42	3.20	11.5
HSS9×5×0.500	0.500	42.3	12.2	5.20	13.2	117	26.0	3.10	33.6
×0.375	0.375	33.2	9.58	9.33	20.0	97.8	21.7	3.20	27.3
×0.250	0.250	22.9	6.59	16.0	32.0	70.3	15.6	3.27	19.3
HSS9×3×0.500	0.500	35.3	10.2	1.20	13.2	80.9	18.0	2.82	25.1
×0.375	0.375	28.0	8.08	4.00	20.0	69.9	15.5	2.94	20.9
×0.250	0.250	19.4	5.59	8.00	32.0	51.1	11.4	3.02	14.9
×0.180	0.180	14.2	4.10	12.5	45.8	38.6	8.58	3.07	11.1
HSS8×6×0.500	0.500	42.3	12.2	7.20	11.2	101	25.3	2.88	31.5
×0.375	0.375	33.2	9.58	12.0	17.3	83.7	20.9	2.96	25.6
×0.312	0.312	27.8	8.03	14.4	20.8	71.2	17.8	2.98	21.6
×0.250	0.250	22.9	6.59	20.0	28.0	60.1	15.0	3.02	18.0
×0.180	0.180	16.7	4.82	29.2	40.3	45.0	11.3	3.06	13.3
HSS8×4×0.500	0.500	35.3	10.2	3.20	11.2	72.3	18.1	2.66	24.0
×0.375	0.375	28.0	8.08	6.67	17.3	61.9	15.5	2.77	19.9
×0.312	0.312	23.5	6.78	8.01	20.8	52.8	13.2	2.79	16.8
×0.250 *	0.250	19.4	5.59	12.0	28.0	45.1	11.3	2.84	14.1
×0.180 *	0.180	14.2	4.10	18.1	40.3	34.0	8.50	2.88	10.5
×0.120 *	0.120	9.67	2.79	29.7	63.0	23.7	5.93	2.91	7.27

Note 1: For compactness criteria, refer to Table 1-6C.

Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**

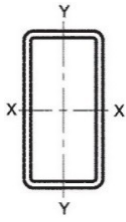


**HSS10-  
HSS8**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS10×8×0.500	157	39.3	3.11	46.5	7.75	5.75	308	63.4	2.83
×0.375	127	31.8	3.17	37.0	8.31	6.31	240	50.7	2.89
×0.312	108	27.0	3.21	31.2	8.60	6.60	204	43.3	2.89
×0.250	90.2	22.6	3.24	25.8	8.88	6.88	166	35.8	2.93
HSS10×6×0.500	79.3	26.4	2.36	31.4	7.75	3.75	188	45.5	2.49
×0.375	65.4	21.8	2.43	25.2	8.31	4.31	148	36.8	2.56
×0.312	55.8	18.6	2.45	21.3	8.60	4.60	126	31.5	2.56
×0.250 *	46.9	15.6	2.49	17.7	8.88	4.88	103	26.2	2.60
×0.180 *	35.1	11.7	2.52	13.1	9.19	5.19	76.3	19.6	2.61
HSS10×4×0.500	30.1	15.1	1.57	18.2	7.75	1.75	87.6	27.7	2.16
×0.375	25.5	12.8	1.63	14.9	8.31	2.31	70.9	23.0	2.23
×0.312	22.1	11.1	1.66	12.7	8.60	2.60	61.1	19.9	2.23
×0.250	18.8	9.40	1.69	10.6	8.88	2.88	50.5	16.7	2.26
HSS10×2×0.375	4.85	4.85	0.775	6.05	8.31	0.313	16.8	9.32	1.89
×0.250	3.85	3.85	0.830	4.50	8.88	0.875	13.0	7.36	1.93
×0.180	3.04	3.04	0.861	3.43	9.19	1.19	10.1	5.80	1.95
HSS9×5×0.500	46.3	18.5	1.95	22.3	6.75	2.75	116	32.4	2.16
×0.375	38.8	15.5	2.01	18.1	7.31	3.31	92.7	26.7	2.23
×0.250	28.2	11.3	2.07	12.8	7.88	3.88	65.3	19.2	2.26
HSS9×3×0.500	13.3	8.87	1.14	11.1	6.75	0.750	42.0	16.7	1.83
×0.375	11.7	7.80	1.20	9.29	7.31	1.31	35.2	14.4	1.89
×0.250	8.84	5.89	1.26	6.73	7.88	1.88	25.8	10.8	1.93
×0.180	6.81	4.54	1.29	5.07	8.19	2.19	19.5	8.27	1.95
HSS8×6×0.500	64.1	21.4	2.29	25.9	5.75	3.75	135	35.3	2.16
×0.375	53.5	17.8	2.36	21.0	6.31	4.31	107	28.8	2.23
×0.312	45.7	15.2	2.39	17.8	6.60	4.60	91.7	24.9	2.23
×0.250	38.6	12.9	2.42	14.8	6.88	4.88	75.1	20.7	2.26
×0.180	29.0	9.67	2.45	11.0	7.19	5.19	55.5	15.5	2.28
HSS8×4×0.500	23.9	12.0	1.53	14.7	5.75	1.75	64.6	21.5	1.83
×0.375	20.6	10.3	1.60	12.2	6.31	2.31	52.6	18.0	1.89
×0.312	17.8	8.90	1.62	10.4	6.60	2.60	45.4	15.7	1.89
×0.250 *	15.3	7.65	1.65	8.72	6.88	2.88	37.6	13.2	1.93
×0.180 *	11.6	5.80	1.68	6.52	7.19	3.19	28.1	10.1	1.95
×0.120 *	8.16	4.08	1.71	4.51	7.46	3.46	19.3	7.02	1.97

— Indicates flat depth or width is too small to establish a workable flat.





**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
	in.	lb/ft	in. <sup>2</sup>			in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
HSS8×2×0.375	0.375	22.8	6.58	1.33	17.3	40.1	10.0	2.47	14.2
×0.312	0.312	19.2	5.53	1.60	20.8	34.3	8.58	2.49	12.0
×0.250	0.250	15.9	4.59	4.00	28.0	30.1	7.53	2.56	10.3
×0.180	0.180	11.7	3.38	6.94	40.3	23.0	5.75	2.61	7.72
×0.120	0.120	8.01	2.31	13.0	63.0	16.3	4.08	2.66	5.37
HSS7×5×0.500	0.500	35.3	10.2	5.20	9.20	61.4	17.5	2.45	22.5
×0.375	0.375	28.0	8.08	9.33	14.7	52.2	14.9	2.54	18.5
×0.250	0.250	19.4	5.59	16.0	24.0	38.0	10.9	2.61	13.2
×0.180	0.180	14.2	4.10	23.6	34.7	28.7	8.20	2.65	9.80
HSS7×4×0.500	0.500	31.9	9.18	3.20	9.20	50.8	14.5	2.35	19.2
×0.375	0.375	25.4	7.33	6.67	14.7	44.0	12.6	2.45	16.0
×0.250	0.250	17.6	5.09	12.0	24.0	32.3	9.23	2.52	11.5
HSS7×3×0.500	0.500	28.4	8.18	1.20	9.20	40.2	11.5	2.22	16.0
×0.375	0.375	22.8	6.58	4.00	14.7	35.7	10.2	2.33	13.5
×0.250	0.250	15.9	4.59	8.00	24.0	26.6	7.60	2.41	9.79
×0.180	0.180	11.7	3.38	12.5	34.7	20.3	5.80	2.45	7.35
HSS6×4×0.500	0.500	28.4	8.18	3.20	7.20	33.8	11.3	2.03	14.9
×0.375	0.375	22.8	6.58	6.67	12.0	29.7	9.90	2.12	12.5
×0.312	0.312	19.2	5.53	8.01	14.4	25.5	8.50	2.15	10.7
×0.250 *	0.250	15.9	4.59	12.0	20.0	22.1	7.37	2.19	9.06
×0.180 *	0.180	11.7	3.38	18.1	29.2	16.8	5.60	2.23	6.79
×0.120 *	0.120	8.01	2.31	29.7	46.4	11.8	3.93	2.26	4.72
HSS6×3×0.500	0.500	24.9	7.18	1.20	7.20	26.2	8.73	1.91	12.1
×0.375	0.375	20.2	5.83	4.00	12.0	23.8	7.93	2.02	10.4
×0.312	0.312	17.0	4.91	4.81	14.4	20.5	6.83	2.04	8.89
×0.250	0.250	14.2	4.09	8.00	20.0	17.9	5.97	2.09	7.62
×0.180	0.180	10.5	3.02	12.5	29.2	13.8	4.60	2.14	5.74
×0.120	0.120	7.18	2.07	21.4	46.4	9.76	3.25	2.17	4.01
HSS6×2×0.375	0.375	17.6	5.08	1.33	12.0	17.8	5.93	1.87	8.33
×0.312	0.312	14.9	4.28	1.60	14.4	15.4	5.13	1.90	7.12
×0.250	0.250	12.4	3.59	4.00	20.0	13.8	4.60	1.96	6.18
×0.180	0.180	9.23	2.66	6.94	29.2	10.7	3.57	2.01	4.70
×0.120	0.120	6.35	1.83	13.0	46.4	7.68	2.56	2.05	3.30

Note 1: For compactness criteria, refer to Table 1-6C.

Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

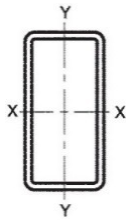
**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**



**HSS8-  
HSS6**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS8×2×0.375	3.85	3.85	0.765	4.83	6.31	0.313	12.9	7.34	1.56
×0.312	3.45	3.45	0.790	4.20	6.60	0.596	11.5	6.60	1.56
×0.250	3.08	3.08	0.819	3.63	6.88	0.875	9.94	5.80	1.60
×0.180	2.44	2.44	0.850	2.78	7.19	1.19	7.72	4.58	1.61
×0.120	1.78	1.78	0.878	1.96	7.46	1.46	5.47	3.30	1.64
HSS7×5×0.500	36.1	14.4	1.88	17.8	4.75	2.75	80.5	24.4	1.83
×0.375	30.8	12.3	1.95	14.6	5.31	3.31	64.6	20.2	1.89
×0.250	22.6	9.04	2.01	10.4	5.88	3.88	45.8	14.7	1.93
×0.180	17.1	6.84	2.04	7.79	6.19	4.19	34.0	11.1	1.95
HSS7×4×0.500	20.8	10.4	1.51	12.9	4.75	1.75	53.3	18.4	1.66
×0.375	18.1	9.05	1.57	10.8	5.31	2.31	43.6	15.5	1.73
×0.250	13.5	6.75	1.63	7.78	5.88	2.88	31.3	11.5	1.76
HSS7×3×0.500	10.1	6.73	1.11	8.58	4.75	0.750	29.9	12.5	1.49
×0.375	9.08	6.05	1.17	7.32	5.31	1.31	25.4	10.9	1.56
×0.250	6.95	4.63	1.23	5.36	5.88	1.88	18.6	8.23	1.60
×0.180	5.38	3.59	1.26	4.05	6.19	2.19	14.1	6.35	1.61
HSS6×4×0.500	17.7	8.85	1.47	11.2	3.75	1.75	42.4	15.4	1.49
×0.375	15.6	7.80	1.54	9.44	4.31	2.31	34.9	13.1	1.56
×0.312	13.5	6.75	1.56	8.06	4.60	2.60	30.3	11.5	1.56
×0.250 *	11.7	5.85	1.60	6.84	4.88	2.88	25.1	9.71	1.60
×0.180 *	8.99	4.50	1.63	5.14	5.19	3.19	18.9	7.44	1.61
×0.120 *	6.36	3.18	1.66	3.58	5.46	3.46	13.0	5.22	1.64
HSS6×3×0.500	8.53	5.69	1.09	7.33	3.75	0.750	24.0	10.4	1.33
×0.375	7.78	5.19	1.16	6.34	4.31	1.31	20.6	9.19	1.39
×0.312	6.82	4.55	1.18	5.45	4.60	1.60	18.0	8.12	1.39
×0.250	6.00	4.00	1.21	4.67	4.88	1.88	15.1	6.96	1.43
×0.180	4.66	3.11	1.24	3.54	5.19	2.19	11.5	5.41	1.45
×0.120	3.34	2.23	1.27	2.48	5.46	2.46	7.97	3.83	1.47
HSS6×2×0.375	2.84	2.84	0.748	3.61	4.31	0.313	8.96	5.32	1.23
×0.312	2.55	2.55	0.772	3.15	4.60	0.596	8.00	4.80	1.23
×0.250	2.31	2.31	0.802	2.75	4.88	0.875	6.96	4.26	1.26
×0.180	1.84	1.84	0.832	2.12	5.19	1.19	5.42	3.38	1.28
×0.120	1.35	1.35	0.859	1.51	5.46	1.46	3.84	2.45	1.30

— Indicates flat depth or width is too small to establish a workable flat.



**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
	in.	lb/ft	in. <sup>2</sup>						
HSS5×4×0.500	0.500	24.9	7.18	3.20	5.20	20.9	8.36	1.71	11.0
×0.375	0.375	20.2	5.83	6.67	9.3	18.7	7.48	1.79	9.44
×0.312	0.312	17.0	4.91	8.01	11.2	16.2	6.48	1.82	8.06
×0.250	0.250	14.2	4.09	12.0	16.0	14.1	5.64	1.86	6.89
×0.180	0.180	10.5	3.02	18.1	23.6	10.8	4.32	1.89	5.19
×0.120	0.120	7.18	2.07	29.7	38.0	7.67	3.07	1.92	3.62
HSS5×3×0.500	0.500	21.4	6.18	1.20	5.20	15.8	6.32	1.60	8.77
×0.375	0.375	17.6	5.08	4.00	9.33	14.7	5.88	1.70	7.71
×0.312	0.312	14.9	4.28	4.81	11.2	12.7	5.08	1.72	6.59
×0.250	0.250	12.4	3.59	8.00	16.0	11.3	4.52	1.77	5.70
×0.180	0.180	9.23	2.66	12.5	23.6	8.74	3.50	1.81	4.32
×0.120	0.120	6.35	1.83	21.4	38.0	6.24	2.50	1.85	3.04
HSS5×2×0.250	0.250	10.7	3.09	4.00	16.0	8.48	3.39	1.66	4.51
×0.180	0.180	7.98	2.30	6.94	23.6	6.64	2.66	1.70	3.46
×0.120	0.120	5.51	1.59	13.0	38.0	4.81	1.92	1.74	2.45
HSS4×3×0.250	0.250	10.7	3.09	8.00	12.0	6.45	3.23	1.44	4.03
×0.180	0.180	7.98	2.30	12.5	18.1	5.05	2.53	1.48	3.08
×0.120 *	0.120	5.51	1.59	21.4	29.7	3.65	1.83	1.52	2.18
×0.080 *	0.080	3.75	1.08	34.0	46.5	2.54	1.27	1.53	1.50
HSS4×2×0.375	0.375	12.4	3.58	1.33	6.67	5.75	2.88	1.27	4.00
×0.312	0.312	10.5	3.04	1.60	8.01	5.04	2.52	1.29	3.46
×0.250	0.250	8.98	2.59	4.00	12.0	4.69	2.35	1.35	3.09
×0.180	0.180	6.74	1.94	6.94	18.1	3.73	1.87	1.39	2.39
×0.120 *	0.120	4.68	1.35	13.0	29.7	2.74	1.37	1.42	1.71
×0.080 *	0.080	3.19	0.921	21.5	46.5	1.93	0.965	1.45	1.19
HSS4×1.5×0.250	0.250	8.11	2.34	2.00	12.0	3.81	1.91	1.28	2.62
×0.180	0.180	6.11	1.76	4.17	18.1	3.08	1.54	1.32	2.05
×0.120	0.120	4.26	1.23	8.85	29.7	2.29	1.15	1.36	1.48
×0.083	0.083	3.02	0.871	14.7	44.8	1.68	0.840	1.39	1.07
×0.063	0.063	2.30	0.662	20.0	60.0	1.29	0.645	1.40	0.818
HSS3×2×0.250	0.250	7.24	2.09	4.00	8.00	2.21	1.47	1.03	1.92
×0.180	0.180	5.49	1.58	6.94	12.5	1.80	1.20	1.07	1.51
×0.120 *	0.120	3.85	1.11	13.0	21.4	1.35	0.900	1.10	1.10
×0.080 *	0.080	2.64	0.761	21.5	34.0	0.957	0.638	1.12	0.769

Note 1: For compactness criteria, refer to Table 1-6C.

Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

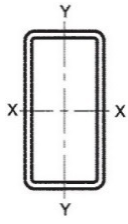
**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**



**HSS5-  
HSS3**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS5×4×0.500	14.7	7.35	1.43	9.42	2.75	1.75	31.8	12.3	1.33
×0.375	13.2	6.60	1.50	8.08	3.31	2.31	26.5	10.6	1.39
×0.312	11.4	5.70	1.52	6.91	3.60	2.60	23.0	9.31	1.39
×0.250	9.98	4.99	1.56	5.90	3.88	2.88	19.2	7.96	1.43
×0.180	7.68	3.84	1.59	4.46	4.19	3.19	14.5	6.13	1.45
×0.120	5.45	2.73	1.62	3.11	4.46	3.46	9.96	4.31	1.47
HSS5×3×0.500	6.95	4.63	1.06	6.08	2.75	0.750	18.3	8.34	1.16
×0.375	6.48	4.32	1.13	5.35	3.31	1.31	15.9	7.47	1.23
×0.312	5.69	3.79	1.15	4.61	3.60	1.60	13.9	6.61	1.23
×0.250	5.05	3.37	1.19	3.98	3.88	1.88	11.7	5.70	1.26
×0.180	3.95	2.63	1.22	3.04	4.19	2.19	8.93	4.45	1.28
×0.120	2.84	1.89	1.25	2.14	4.46	2.46	6.21	3.17	1.30
HSS5×2×0.250	1.92	1.92	0.788	2.32	3.88	0.875	5.50	3.49	1.10
×0.180	1.55	1.55	0.821	1.79	4.19	1.19	4.29	2.78	1.11
×0.120	1.14	1.14	0.847	1.28	4.46	1.46	3.04	2.02	1.14
HSS4×3×0.250	4.10	2.73	1.15	3.30	2.88	1.88	8.47	4.46	1.10
×0.180	3.23	2.15	1.19	2.53	3.19	2.19	6.47	3.49	1.11
×0.120 *	2.34	1.56	1.21	1.79	3.46	2.46	4.51	2.50	1.14
×0.080 *	1.64	1.09	1.23	1.24	3.64	2.64	3.10	1.75	1.15
HSS4×2×0.375	1.83	1.83	0.715	2.39	2.31	0.313	5.13	3.30	0.893
×0.312	1.65	1.65	0.737	2.10	2.60	0.596	4.60	3.01	0.893
×0.250	1.54	1.54	0.771	1.88	2.88	0.875	4.06	2.72	0.928
×0.180	1.25	1.25	0.803	1.47	3.19	1.19	3.18	2.18	0.946
×0.120 *	0.927	0.927	0.829	1.06	3.46	1.46	2.26	1.60	0.969
×0.080 *	0.660	0.660	0.847	0.736	3.64	1.64	1.57	1.13	0.980
HSS4×1.5×0.250	0.755	1.01	0.568	1.26	2.88	0.375	2.28	1.86	0.845
×0.180	0.631	0.841	0.599	1.00	3.19	0.690	1.84	1.54	0.863
×0.120	0.481	0.641	0.625	0.734	3.46	0.960	1.34	1.15	0.885
×0.083	0.359	0.479	0.642	0.534	3.63	1.13	0.973	0.854	0.897
×0.063	0.280	0.373	0.650	0.411	3.72	1.22	0.755	0.668	0.899
HSS3×2×0.250	1.15	1.15	0.742	1.44	1.88	0.875	2.68	1.95	0.762
×0.180	0.947	0.947	0.774	1.14	2.19	1.19	2.12	1.59	0.780
×0.120 *	0.715	0.715	0.803	0.831	2.46	1.46	1.51	1.17	0.802
×0.080 *	0.512	0.512	0.820	0.583	2.64	1.64	1.06	0.843	0.813

— Indicates flat depth or width is too small to establish a workable flat.



**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
	in.	lb/ft	in. <sup>2</sup>						
HSS3×1.5×0.250	0.250	6.38	1.84	2.00	8.00	1.73	1.15	0.970	1.58
×0.180	0.180	4.86	1.40	4.17	12.5	1.44	0.960	1.01	1.26
×0.120	0.120	3.43	0.990	8.85	21.4	1.10	0.733	1.05	0.927
×0.083	0.083	2.45	0.705	14.7	32.8	0.814	0.543	1.07	0.676
×0.060	0.060	1.79	0.516	20.8	45.8	0.606	0.404	1.08	0.499
HSS3×1×0.180	0.180	4.24	1.22	1.39	12.5	1.08	0.720	0.941	1.01
×0.120	0.120	3.02	0.870	4.69	21.4	0.847	0.565	0.987	0.754
×0.080 *	0.080	2.08	0.601	8.98	34.0	0.616	0.411	1.01	0.536
×0.060 *	0.060	1.58	0.456	12.5	45.8	0.477	0.318	1.02	0.411
HSS2.5×1.5×0.250	0.250	5.51	1.59	2.00	6.00	1.05	0.840	0.813	1.15
×0.180	0.180	4.24	1.22	4.17	9.7	0.892	0.714	0.855	0.931
×0.120	0.120	3.02	0.870	8.85	17.2	0.692	0.554	0.892	0.695
×0.083	0.083	2.16	0.622	14.7	26.7	0.518	0.414	0.913	0.510
×0.063	0.063	1.64	0.474	20.0	36.0	0.403	0.322	0.922	0.392
HSS2.5×1×0.120	0.120	2.60	0.750	4.69	17.2	0.522	0.418	0.834	0.552
×0.083	0.083	1.87	0.539	8.66	26.7	0.397	0.318	0.858	0.409
×0.063	0.063	1.43	0.412	12.0	36.0	0.310	0.248	0.867	0.316
HSS2×1.5×0.120	0.120	2.60	0.750	8.85	13.0	0.396	0.396	0.727	0.492
×0.080 *	0.080	1.81	0.521	15.2	21.5	0.291	0.291	0.747	0.352
×0.060 *	0.060	1.37	0.396	20.8	29.2	0.226	0.226	0.755	0.271
HSS2×1×0.180	0.180	2.99	0.862	1.39	6.94	0.349	0.349	0.636	0.484
×0.120	0.120	2.18	0.630	4.69	13.0	0.290	0.290	0.678	0.380
×0.080 *	0.080	1.53	0.441	8.98	21.5	0.217	0.217	0.701	0.275
×0.060 *	0.060	1.16	0.336	12.5	29.2	0.170	0.170	0.711	0.213
HSS1.5×1×0.120	0.120	1.77	0.510	4.69	8.85	0.137	0.183	0.518	0.237
×0.080 *	0.080	1.25	0.361	8.98	15.2	0.105	0.140	0.539	0.175
×0.060 *	0.060	0.957	0.276	12.5	20.8	0.083	0.111	0.549	0.136

Note 1: For compactness criteria, refer to Table 1-6C.

Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

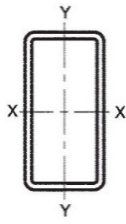
**Table 1-6A (continued)**  
**Rectangular HSS (Roll Formed)**  
**Dimensions and Properties**



**HSS3-  
HSS1.5**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS3×1.5×0.250	0.557	0.743	0.550	0.949	1.88	0.375	1.53	1.33	0.678
×0.180	0.473	0.631	0.581	0.767	2.19	0.690	1.25	1.12	0.696
×0.120	0.366	0.488	0.608	0.568	2.46	0.960	0.914	0.847	0.719
×0.083	0.276	0.368	0.626	0.416	2.63	1.13	0.666	0.632	0.730
×0.060	0.208	0.277	0.635	0.309	2.73	1.23	0.499	0.478	0.732
HSS3×1×0.180	0.173	0.346	0.377	0.438	2.19	0.190	0.546	0.650	0.613
×0.120	0.142	0.284	0.404	0.336	2.46	0.460	0.422	0.519	0.635
×0.080 *	0.107	0.214	0.422	0.242	2.64	0.640	0.307	0.387	0.647
×0.060 *	0.084	0.168	0.429	0.188	2.73	0.730	0.240	0.306	0.649
HSS2.5×1.5×0.250	0.458	0.611	0.537	0.793	1.38	0.375	1.17	1.07	0.595
×0.180	0.394	0.525	0.568	0.648	1.69	0.690	0.963	0.907	0.613
×0.120	0.309	0.412	0.596	0.486	1.96	0.960	0.709	0.695	0.635
×0.083	0.234	0.312	0.613	0.358	2.13	1.13	0.518	0.521	0.647
×0.063	0.183	0.244	0.621	0.276	2.22	1.22	0.403	0.410	0.649
HSS2.5×1×0.120	0.118	0.236	0.397	0.283	1.96	0.460	0.334	0.426	0.552
×0.083	0.092	0.184	0.414	0.212	2.13	0.627	0.250	0.328	0.563
×0.063	0.073	0.147	0.422	0.165	2.22	0.719	0.197	0.261	0.565
HSS2×1.5×0.120	0.252	0.336	0.580	0.403	1.46	0.960	0.512	0.543	0.552
×0.080 *	0.186	0.248	0.597	0.289	1.64	1.14	0.364	0.398	0.563
×0.060 *	0.145	0.193	0.605	0.223	1.73	1.23	0.283	0.313	0.565
HSS2×1×0.180	0.112	0.224	0.360	0.291	1.19	0.190	0.314	0.406	0.446
×0.120	0.095	0.190	0.388	0.230	1.46	0.460	0.247	0.333	0.469
×0.080 *	0.073	0.145	0.406	0.169	1.64	0.640	0.180	0.251	0.480
×0.060 *	0.058	0.115	0.414	0.131	1.73	0.730	0.142	0.200	0.482
HSS1.5×1×0.120	0.072	0.143	0.375	0.178	0.960	0.460	0.163	0.239	0.385
×0.080 *	0.056	0.111	0.392	0.132	1.14	0.640	0.120	0.183	0.397
×0.060 *	0.044	0.089	0.401	0.103	1.23	0.730	0.095	0.147	0.399

— Indicates flat depth or width is too small to establish a workable flat.



**Table 1-6B**  
**Rectangular HSS (Press Braked)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
HSS32×16×0.375	0.375	121	35.0	37.7	80.3	4790	299	11.7	365
HSS32×8×0.375	0.375	100	29.0	16.3	80.3	3280	205	10.6	270
HSS28×8×0.375	0.375	90.0	26.0	16.3	69.7	2320	166	9.45	215
×0.312	0.312	75.4	21.7	20.6	84.7	1960	140	9.50	181
HSS24×16×0.375	0.375	100	29.0	37.7	59.0	2390	199	9.08	237
×0.312	0.312	84.1	24.2	46.3	71.9	2020	168	9.14	199
HSS24×8×0.375	0.375	79.6	23.0	18.3	61.0	1550	129	8.21	166
×0.312	0.312	66.7	19.2	22.6	73.9	1320	110	8.29	140
HSS20×16×0.625	0.625	146	42.1	20.6	27.0	2430	243	7.60	290
×0.500 *	0.500	118	34.1	27.0	35.0	2010	201	7.68	238
×0.375 *	0.375	90.0	26.0	37.7	48.3	1550	155	7.72	182
×0.312 *	0.312	75.4	21.7	46.3	59.1	1310	131	7.77	154
HSS20×12×0.625	0.625	129	37.1	14.2	27.0	1960	196	7.27	242
×0.500 *	0.500	105	30.1	19.0	35.0	1630	163	7.36	199
×0.375 *	0.375	79.6	23.0	27.0	48.3	1260	126	7.40	153
×0.312 *	0.312	66.7	19.2	33.5	59.1	1070	107	7.47	129
×0.250 *	0.250	53.9	15.5	43.0	75.0	873	87.3	7.50	105
HSS20×8×0.625	0.625	111	32.1	7.80	27.0	1490	149	6.81	193
×0.500 *	0.500	90.7	26.1	11.0	35.0	1250	125	6.92	160
×0.375 *	0.375	69.2	20.0	16.3	48.3	976	97.6	6.99	124
×0.312 *	0.312	58.1	16.7	20.6	59.1	829	82.9	7.05	104
×0.250 *	0.250	46.9	13.5	27.0	75.0	678	67.8	7.09	84.9
HSS20×4×0.375	0.375	58.8	17.0	5.67	48.3	687	68.7	6.36	94.1
×0.312	0.312	49.4	14.3	7.82	59.1	587	58.7	6.41	79.8
×0.250	0.250	40.0	11.5	11.0	75.0	483	48.3	6.48	65.1
HSS18×6×0.625	0.625	94.0	27.1	4.60	23.8	949	105	5.92	141
×0.500 *	0.500	76.8	22.1	7.00	31.0	800	88.9	6.02	117
×0.375 *	0.375	58.8	17.0	11.0	43.0	632	70.2	6.10	91.1
×0.312 *	0.312	49.4	14.3	14.2	52.7	539	59.9	6.14	77.2
×0.250 *	0.250	40.0	11.5	19.0	67.0	442	49.1	6.20	63.0

Note 1: For compactness criteria, refer to Table 1-6D.

Note 2: All press braked sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

Note 4: Press braked sections are available in larger sizes and an extended range of thicknesses compared to roll formed sections.

**Table 1-6B (continued)**  
**Rectangular HSS (Press Braked)**  
**Dimensions and Properties**

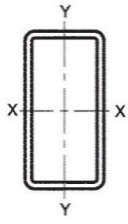


**HSS32-  
HSS18**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS32×16×0.375	1660	208	6.89	227	30.3	14.3	3920	357	7.87
HSS32×8×0.375	365	91.3	3.55	99.4	30.3	6.31	1130	171	6.53
HSS28×8×0.375	322	80.5	3.52	88.0	26.3	6.31	958	149	5.87
×0.312	274	68.5	3.55	74.3	26.6	6.60	810	126	5.89
HSS24×16×0.375	1290	161	6.67	180	22.3	14.3	2640	266	6.53
×0.312	1090	136	6.71	152	22.6	14.6	2220	225	6.56
HSS24×8×0.375	278	69.5	3.48	76.6	22.3	6.31	792	127	5.20
×0.312	237	59.3	3.51	64.7	22.6	6.60	669	108	5.22
HSS20×16×0.625	1730	216	6.41	250	17.2	13.2	3270	347	5.78
×0.500 *	1430	179	6.48	204	17.8	13.8	2660	285	5.82
×0.375 *	1110	139	6.53	157	18.3	14.3	2030	220	5.87
×0.312 *	936	117	6.57	132	18.6	14.6	1710	187	5.89
HSS20×12×0.625	892	149	4.90	170	17.2	9.19	2030	254	5.11
×0.500 *	742	124	4.96	140	17.8	9.75	1660	210	5.15
×0.375 *	579	96.5	5.02	108	18.3	10.3	1270	163	5.20
×0.312 *	491	81.8	5.06	91.1	18.6	10.6	1070	138	5.22
×0.250 *	401	66.8	5.09	74.0	18.9	10.9	865	112	5.24
HSS20×8×0.625	352	88.0	3.31	101	17.2	5.19	980	160	4.44
×0.500 *	297	74.3	3.37	83.9	17.8	5.75	811	134	4.49
×0.375 *	234	58.5	3.42	65.1	18.3	6.31	628	105	4.53
×0.312 *	200	50.0	3.46	55.1	18.6	6.60	531	89.4	4.56
×0.250 *	164	41.0	3.49	44.9	18.9	6.88	432	73.3	4.58
HSS20×4×0.375	49.8	24.9	1.71	28.2	18.3	2.31	166	47.4	3.87
×0.312	43.3	21.7	1.74	24.1	18.6	2.60	143	41.1	3.89
×0.250	36.2	18.1	1.77	19.9	18.9	2.88	118	34.2	3.91
HSS18×6×0.625	163	54.3	2.45	63.6	15.2	3.19	492	101	3.78
×0.500 *	140	46.7	2.52	53.2	15.8	3.75	413	85.9	3.82
×0.375 *	112	37.3	2.57	41.7	16.3	4.31	324	68.4	3.87
×0.312 *	96.1	32.0	2.59	35.5	16.6	4.60	275	58.5	3.89
×0.250 *	79.5	26.5	2.63	29.0	16.9	4.88	225	48.2	3.91

— Indicates flat depth or width is too small to establish a workable flat.





**Table 1-6B (continued)**  
**Rectangular HSS (Press Braked)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
	in.	lb/ft	in. <sup>2</sup>						
HSS16×12×0.625	0.625	111	32.1	14.2	20.6	1140	143	5.96	173
×0.500 *	0.500	90.7	26.1	19.0	27.0	948	119	6.03	142
×0.375 *	0.375	69.2	20.0	27.0	37.7	741	92.6	6.09	110
×0.312 *	0.312	58.1	16.7	33.5	46.3	629	78.6	6.14	93.0
×0.250 *	0.250	46.9	13.5	43.0	59.0	514	64.3	6.17	75.6
HSS16×4×0.375	0.375	48.4	14.0	5.67	37.7	374	46.8	5.17	63.2
×0.312	0.312	40.8	11.8	7.82	46.3	321	40.1	5.22	53.8
×0.250	0.250	33.1	9.54	11.0	59.0	266	33.3	5.28	44.1
×0.180	0.180	24.1	6.96	17.2	83.9	198	24.8	5.33	32.5
HSS14×10×0.625	0.625	94.0	27.1	11.0	17.4	711	102	5.12	125
×0.500 *	0.500	76.8	22.1	15.0	23.0	598	85.4	5.20	104
×0.375 *	0.375	58.8	17.0	21.7	32.3	470	67.1	5.26	80.7
×0.312 *	0.312	49.4	14.3	27.1	39.9	401	57.3	5.30	68.3
×0.250 *	0.250	40.0	11.5	35.0	51.0	328	46.9	5.34	55.7
HSS14×6×0.625	0.625	76.6	22.1	4.60	17.4	487	69.6	4.69	91.7
×0.500	0.500	62.9	18.1	7.00	23.0	415	59.3	4.79	76.8
×0.375	0.375	48.4	14.0	11.0	32.3	331	47.3	4.86	60.2
×0.312	0.312	40.8	11.8	14.2	39.9	284	40.6	4.91	51.2
×0.250	0.250	33.1	9.54	19.0	51.0	234	33.4	4.95	41.9
×0.180	0.180	24.1	6.96	28.3	72.8	174	24.9	5.00	30.9
HSS12×8×0.625	0.625	76.6	22.1	7.80	14.2	406	67.7	4.29	85.0
×0.500 *	0.500	62.9	18.1	11.0	19.0	345	57.5	4.37	71.2
×0.375 *	0.375	48.4	14.0	16.3	27.0	275	45.8	4.43	55.7
×0.312 *	0.312	40.8	11.8	20.6	33.5	235	39.2	4.46	47.4
×0.250 *	0.250	33.1	9.54	27.0	43.0	194	32.3	4.51	38.8
×0.180	0.180	24.1	6.96	39.4	61.7	144	24.0	4.55	28.5
HSS12×4×0.375	0.375	38.0	11.0	5.67	27.0	173	28.8	3.97	38.3
×0.312	0.312	32.1	9.26	7.82	33.5	150	25.0	4.02	32.8
×0.250	0.250	26.1	7.54	11.0	43.0	125	20.8	4.07	27.0
×0.180	0.180	19.1	5.52	17.2	61.7	93.6	15.6	4.12	20.0

Note 1: For compactness criteria, refer to Table 1-6D.

Note 2: All press braked sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

Note 4: Press braked sections are available in larger sizes and an extended range of thicknesses compared to roll formed sections.

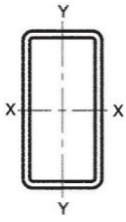
**Table 1-6B (continued)**  
**Rectangular HSS (Press Braked)**  
**Dimensions and Properties**



**HSS16-  
HSS12**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS16×12×0.625	730	122	4.77	142	13.2	9.19	1470	199	4.44
×0.500 *	610	102	4.83	117	13.8	9.75	1210	166	4.49
×0.375 *	477	79.5	4.88	90.6	14.3	10.3	926	129	4.53
×0.312 *	406	67.7	4.93	76.5	14.6	10.6	779	109	4.56
×0.250 *	332	55.3	4.96	62.3	14.9	10.9	631	89.1	4.58
HSS16×4×0.375	39.9	20.0	1.69	22.8	14.3	2.31	128	37.7	3.20
×0.312	34.8	17.4	1.72	19.5	14.6	2.60	110	32.7	3.22
×0.250	29.1	14.6	1.75	16.1	14.9	2.88	91.0	27.3	3.24
×0.180	22.0	11.0	1.78	12.0	15.2	3.19	67.8	20.5	3.27
HSS14×10×0.625	422	84.4	3.95	99.4	11.2	7.19	891	140	3.78
×0.500 *	356	71.2	4.01	82.5	11.8	7.75	735	118	3.82
×0.375 *	281	56.2	4.07	64.2	12.3	8.31	567	92.1	3.87
×0.312 *	240	48.0	4.10	54.4	12.6	8.60	478	78.3	3.89
×0.250 *	197	39.4	4.14	44.3	12.9	8.88	389	64.3	3.91
HSS14×6×0.625	127	42.3	2.40	50.2	11.2	3.19	355	76.9	3.11
×0.500	109	36.3	2.45	42.2	11.8	3.75	298	65.6	3.15
×0.375	88.0	29.3	2.51	33.3	12.3	4.31	234	52.4	3.20
×0.312	75.9	25.3	2.54	28.4	12.6	4.60	199	45.0	3.22
×0.250	62.9	21.0	2.57	23.3	12.9	4.88	163	37.2	3.24
×0.180	47.1	15.7	2.60	17.2	13.2	5.19	120	27.7	3.27
HSS12×8×0.625	216	54.0	3.13	64.3	9.19	5.19	485	91.6	3.11
×0.500 *	184	46.0	3.19	53.9	9.75	5.75	403	77.4	3.15
×0.375 *	147	36.8	3.24	42.3	10.3	6.31	314	61.4	3.20
×0.312 *	126	31.5	3.27	35.9	10.6	6.60	266	52.5	3.22
×0.250 *	104	26.0	3.30	29.4	10.9	6.88	217	43.3	3.24
×0.180	77.7	19.4	3.34	21.7	11.2	7.19	159	32.1	3.27
HSS12×4×0.375	30.0	15.0	1.65	17.3	10.3	2.31	89.6	27.8	2.53
×0.312	26.2	13.1	1.68	14.9	10.6	2.60	77.2	24.2	2.56
×0.250	22.1	11.1	1.71	12.4	10.9	2.88	63.9	20.2	2.58
×0.180	16.8	8.40	1.74	9.22	11.2	3.19	47.7	15.3	2.60

— Indicates flat depth or width is too small to establish a workable flat.



**Table 1-6B (continued)**  
**Rectangular HSS (Press Braked)**  
**Dimensions and Properties**

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	Axis X-X			
						<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>
						in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>
HSS10×6×0.625	0.625	59.3	17.1	4.60	11.0	202	40.4	3.44	52.5
×0.500 *	0.500	49.0	14.1	7.00	15.0	175	35.0	3.52	44.5
×0.375 *	0.375	38.0	11.0	11.0	21.7	142	28.4	3.59	35.3
×0.312 *	0.312	32.1	9.26	14.2	27.1	123	24.6	3.64	30.2
×0.250 *	0.250	26.1	7.54	19.0	35.0	102	20.4	3.68	24.8
×0.180	0.180	19.1	5.52	28.3	50.6	76.2	15.2	3.72	18.4
×0.120	0.120	12.9	3.73	45.0	78.3	52.5	10.5	3.75	12.6
HSS8×4×0.375	0.375	27.6	7.95	5.67	16.3	59.9	15.0	2.74	19.4
×0.312	0.312	23.5	6.76	7.82	20.6	52.5	13.1	2.79	16.8
×0.250	0.250	19.2	5.54	11.0	27.0	44.2	11.1	2.82	13.9
×0.180	0.180	14.1	4.08	17.2	39.4	33.6	8.40	2.87	10.4
×0.120	0.120	9.62	2.77	28.3	61.7	23.5	5.88	2.91	7.20
HSS7×4×0.375	0.375	25.0	7.20	5.67	13.7	42.5	12.1	2.43	15.6
×0.312	0.312	21.3	6.14	7.82	17.4	37.4	10.7	2.47	13.5
×0.250	0.250	17.5	5.04	11.0	23.0	31.7	9.06	2.51	11.3
×0.180	0.180	12.9	3.72	17.2	33.9	24.2	6.91	2.55	8.49
×0.120	0.120	8.78	2.53	28.3	53.3	16.9	4.83	2.58	5.87
HSS6×3×0.250	0.250	14.0	4.04	7.00	19.0	17.4	5.80	2.08	7.46
×0.180	0.180	10.4	3.00	11.7	28.3	13.5	4.50	2.12	5.67
×0.120	0.120	7.12	2.05	20.0	45.0	9.61	3.20	2.17	3.96
HSS6×2×0.250	0.250	12.3	3.54	3.00	19.0	13.3	4.43	1.94	6.02
×0.180	0.180	9.15	2.64	6.11	28.3	10.5	3.50	1.99	4.63
×0.120	0.120	6.29	1.81	11.7	45.0	7.53	2.51	2.04	3.25

Note 1: For compactness criteria, refer to Table 1-6D.

Note 2: All press braked sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel rectangular HSS.

Note 4: Press braked sections are available in larger sizes and an extended range of thicknesses compared to roll formed sections.

**Table 1-6B (continued)**  
**Rectangular HSS (Press Braked)**  
**Dimensions and Properties**



**HSS10-  
HSS6**

Shape	Axis Y-Y				Workable Flat		Torsion		Surface Area ft <sup>2</sup> /ft
	<i>l</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Depth	Width	<i>J</i>	<i>C</i>	
	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	
HSS10×6×0.625	90.5	30.2	2.30	36.7	7.19	3.19	222	52.7	2.44
×0.500 *	78.9	26.3	2.37	31.2	7.75	3.75	188	45.5	2.49
×0.375 *	64.3	21.4	2.42	24.8	8.31	4.31	148	36.6	2.53
×0.312 *	55.7	18.6	2.45	21.3	8.60	4.60	126	31.5	2.56
×0.250 *	46.4	15.5	2.48	17.5	8.88	4.88	104	26.3	2.58
×0.180	34.9	11.6	2.51	13.0	9.19	5.19	76.5	19.6	2.60
×0.120	24.1	8.03	2.54	8.90	9.46	5.46	52.0	13.5	2.62
HSS8×4×0.375	20.1	10.1	1.59	11.9	6.31	2.31	52.5	17.9	1.87
×0.312	17.7	8.85	1.62	10.3	6.60	2.60	45.4	15.7	1.89
×0.250	15.0	7.50	1.65	8.61	6.88	2.88	37.7	13.2	1.91
×0.180	11.5	5.75	1.68	6.47	7.19	3.19	28.2	10.0	1.94
×0.120	8.10	4.05	1.71	4.47	7.46	3.46	19.4	7.02	1.96
HSS7×4×0.375	17.6	8.80	1.56	10.6	5.31	2.31	43.6	15.4	1.70
×0.312	15.6	7.80	1.59	9.18	5.60	2.60	37.7	13.5	1.72
×0.250	13.3	6.65	1.62	7.67	5.88	2.88	31.4	11.5	1.74
×0.180	10.2	5.10	1.66	5.79	6.19	3.19	23.5	8.73	1.77
×0.120	7.19	3.60	1.69	4.01	6.46	3.46	16.2	6.13	1.79
HSS6×3×0.250	5.88	3.92	1.21	4.59	4.88	1.88	15.2	6.96	1.41
×0.180	4.61	3.07	1.24	3.51	5.19	2.19	11.5	5.38	1.44
×0.120	3.30	2.20	1.27	2.46	5.46	2.46	8.01	3.83	1.46
HSS6×2×0.250	2.25	2.25	0.797	2.70	4.88	0.875	6.93	4.22	1.24
×0.180	1.82	1.82	0.830	2.10	5.19	1.19	5.42	3.37	1.27
×0.120	1.34	1.34	0.860	1.49	5.46	1.46	3.86	2.45	1.29

— Indicates flat depth or width is too small to establish a workable flat.



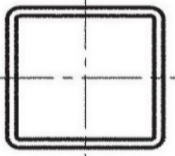
**Table 1-6C**  
**Rectangular HSS (Roll Formed)**  
**Compactness Criteria**

Nominal Wall Thickness, in.	Compactness Criteria for Rectangular HSS							
	Compression		Flexure				Shear	
	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi
	nonslender up to		compact up to		compact up to		$C_v = 1.0$ up to	
	Web Height, in.		Flange Width, in.		Web Height, in.		Web Height, in.	
0.500	16	14	10	10	16	16	16	16
0.375	14	10	10	10	16	16	16	16
0.312	12	8	10	8	16	16	16	16
0.250	10	7	8	6	16	12	16	12
0.180	7	5	6	5	12	9	12	10
0.120	4	3	4	3	8	6	8	6
0.083	3	—	1.5	1.5	4	4	4	4
0.080	3	2	3	2	4	4	4	4
0.063	2.5	—	1.5	1.5	4	2.5	4	2.5
0.060	2	1.5	1.5	1.5	3	3	3	3



**Table 1-6D**  
**Rectangular HSS (Press Braked)**  
**Compactness Criteria**

Nominal Wall Thickness, in.	Compactness Criteria for Rectangular HSS							
	Compression		Flexure				Shear	
	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi
	nonslender up to		compact up to		compact up to		$C_v = 1.0$ up to	
	Web Height, in.		Flange Width, in.		Web Height, in.		Web Height, in.	
0.625	20	18	16	12	20	20	20	20
0.500	20	14	16	12	20	20	20	20
0.375	14	10	12	8	28	20	28	20
0.312	12	8	10	8	24	16	24	16
0.250	10	7	8	6	18	12	18	12
0.180	7	—	6	4	12	8	14	8
0.120	—	—	4	3	8	6	8	6



**Table 1-7A**  
**Square HSS (Roll Formed)**  
**Dimensions and Properties**



HSS12-HSS5

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Workable Flat	Torsion		Surface Area
											<i>J</i>	<i>C</i>	
	in.	lb/ft	in. <sup>2</sup>			in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	ft <sup>2</sup> /ft
HSS12×12×0.500	0.500	76.9	22.2	19.2	19.2	479	79.8	4.65	94.4	9.75	781	122	3.83
	×0.375	59.2	17.1	28.0	28.0	380	63.3	4.71	73.9	10.3	600	95.3	3.89
	×0.312	49.5	14.3	33.7	33.7	321	53.5	4.74	62.1	10.6	507	80.8	3.89
	×0.250 *	40.2	11.6	44.0	44.0	265	44.2	4.78	50.8	10.9	411	66.3	3.93
HSS10×10×0.500	0.500	63.1	18.2	15.2	15.2	267	53.4	3.83	63.7	7.75	442	81.5	3.16
	×0.375	48.8	14.1	22.7	22.7	214	42.8	3.90	50.4	8.31	342	64.6	3.23
	×0.312	40.8	11.8	27.2	27.2	182	36.4	3.93	42.4	8.60	290	55.0	3.23
	×0.250 *	33.3	9.59	36.0	36.0	151	30.2	3.97	34.9	8.88	235	45.2	3.26
HSS9×9×0.500	0.500	56.1	16.2	13.2	13.2	189	42.0	3.42	50.6	6.75	317	64.5	2.83
	×0.375	43.6	12.6	20.0	20.0	154	34.2	3.50	40.3	7.31	246	51.3	2.89
	×0.312	36.5	10.5	24.0	24.0	130	28.9	3.52	33.9	7.60	209	43.8	2.89
	×0.250	29.8	8.59	32.0	32.0	109	24.2	3.56	28.0	7.88	170	36.2	2.93
HSS8×8×0.500	0.500	49.2	14.2	11.2	11.2	129	32.3	3.01	39.0	5.75	218	49.4	2.49
	×0.375	38.4	11.1	17.3	17.3	106	26.5	3.09	31.3	6.31	171	39.8	2.56
	×0.312	32.2	9.28	20.8	20.8	89.7	22.4	3.11	26.4	6.60	145	34.0	2.56
	×0.250 *	26.3	7.59	28.0	28.0	75.1	18.8	3.15	21.9	6.88	119	28.3	2.60
	×0.180 *	19.2	5.54	40.3	40.3	56.0	14.0	3.18	16.2	7.19	87.3	21.0	2.61
HSS7×7×0.500	0.500	42.3	12.2	9.20	9.20	82.5	23.6	2.60	29.0	4.75	142	36.4	2.16
	×0.375	33.2	9.58	14.7	14.7	68.7	19.6	2.68	23.5	5.31	112	29.5	2.23
	×0.312	27.8	8.03	17.6	17.6	58.6	16.7	2.70	19.8	5.60	96.0	25.5	2.23
	×0.250	22.9	6.59	24.0	24.0	49.4	14.1	2.74	16.5	5.88	78.5	21.2	2.26
HSS6×6×0.500	0.500	35.3	10.2	7.20	7.20	48.9	16.3	2.19	20.4	3.75	86.2	25.4	1.83
	×0.375	28.0	8.08	12.0	12.0	41.6	13.9	2.27	16.8	4.31	68.9	21.0	1.89
	×0.312	23.5	6.78	14.4	14.4	35.6	11.9	2.29	14.2	4.60	59.2	18.2	1.89
	×0.250 *	19.4	5.59	20.0	20.0	30.3	10.1	2.33	11.9	4.88	48.7	15.2	1.93
	×0.180 *	14.2	4.10	29.2	29.2	22.9	7.63	2.36	8.89	5.19	36.1	11.5	1.95
	×0.120 *	9.67	2.79	46.4	46.4	16.0	5.33	2.39	6.13	5.46	24.7	7.99	1.97
HSS5×5×0.500	0.500	28.4	8.18	5.20	5.20	26.0	10.4	1.78	13.3	2.75	47.0	16.3	1.49
	×0.375	22.8	6.58	9.33	9.33	22.8	9.12	1.86	11.2	3.31	38.5	13.8	1.56
	×0.312	19.2	5.53	11.2	11.2	19.6	7.84	1.88	9.52	3.60	33.2	12.0	1.56
	×0.250 *	15.9	4.59	16.0	16.0	16.9	6.76	1.92	8.07	3.88	27.5	10.2	1.60
	×0.180 *	11.7	3.38	23.6	23.6	12.9	5.16	1.95	6.06	4.19	20.6	7.79	1.61
	×0.120 *	8.01	2.31	38.0	38.0	9.10	3.64	1.98	4.21	4.46	14.1	5.44	1.64

Note 1: For compactness criteria, refer to Table 1-7C.

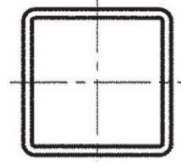
Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel square HSS.



HSS4-HSS1.5

**Table 1-7A (continued)**  
**Square HSS (Roll Formed)**  
**Dimensions and Properties**

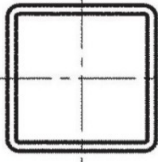


Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Workable Flat	Torsion		Surface Area
											<i>J</i>	<i>C</i>	
											in.	lb/ft	
HSS4×4×0.500	0.500	21.4	6.18	3.20	3.20	11.6	5.80	1.37	7.67	1.75	21.8	9.25	1.16
×0.375	0.375	17.6	5.08	6.67	6.67	10.7	5.35	1.45	6.72	2.31	18.6	8.17	1.23
×0.312	0.312	14.9	4.28	8.01	8.01	9.29	4.65	1.47	5.76	2.60	16.2	7.20	1.23
×0.250 *	0.250	12.4	3.59	12.0	12.0	8.22	4.11	1.51	4.97	2.88	13.6	6.20	1.26
×0.180 *	0.180	9.23	2.66	18.1	18.1	6.36	3.18	1.55	3.77	3.19	10.3	4.80	1.28
×0.120 *	0.120	6.35	1.83	29.7	29.7	4.55	2.28	1.58	2.65	3.46	7.12	3.40	1.30
×0.083	0.083	4.46	1.29	44.8	44.8	3.27	1.64	1.59	1.88	3.63	5.04	2.44	1.31
HSS3.5×3.5×0.250	0.250	10.7	3.09	10.0	10.0	5.29	3.02	1.31	3.69	2.38	8.89	4.58	1.10
×0.180 *	0.180	7.98	2.30	15.3	15.3	4.14	2.37	1.34	2.83	2.69	6.78	3.58	1.11
×0.120 *	0.120	5.51	1.59	25.5	25.5	3.00	1.71	1.37	2.00	2.96	4.72	2.56	1.14
×0.083	0.083	3.89	1.12	38.8	38.8	2.17	1.24	1.39	1.43	3.13	3.35	1.85	1.15
HSS3×3×0.375	0.375	12.4	3.58	4.00	4.00	3.88	2.59	1.04	3.38	1.31	7.06	4.00	0.893
×0.250	0.250	8.98	2.59	8.00	8.00	3.16	2.11	1.10	2.61	1.88	5.40	3.20	0.928
×0.180	0.180	6.74	1.94	12.5	12.5	2.51	1.67	1.14	2.02	2.19	4.17	2.54	0.946
×0.120 *	0.120	4.68	1.35	21.4	21.4	1.84	1.23	1.17	1.45	2.46	2.93	1.84	0.969
×0.080 *	0.080	3.19	0.921	34.0	34.0	1.30	0.867	1.19	1.00	2.64	2.02	1.29	0.980
HSS2.5×2.5×0.250	0.250	7.24	2.09	6.00	6.00	1.69	1.35	0.899	1.71	1.38	2.97	2.07	0.762
×0.180	0.180	5.49	1.58	9.72	9.72	1.38	1.10	0.935	1.35	1.69	2.33	1.68	0.780
×0.120 *	0.120	3.85	1.11	17.2	17.2	1.03	0.824	0.963	0.980	1.96	1.66	1.24	0.802
×0.080 *	0.080	2.64	0.761	27.7	27.7	0.736	0.589	0.983	0.686	2.14	1.15	0.878	0.813
×0.060	0.060	2.00	0.576	37.5	37.5	0.566	0.453	0.991	0.524	2.23	0.885	0.681	0.815
HSS2×2×0.250	0.250	5.51	1.59	4.00	4.00	0.766	0.766	0.694	1.00	0.875	1.39	1.18	0.595
×0.180	0.180	4.24	1.22	6.94	6.94	0.648	0.648	0.729	0.812	1.19	1.13	0.996	0.613
×0.120	0.120	3.02	0.870	13.0	13.0	0.503	0.503	0.760	0.605	1.46	0.821	0.754	0.635
×0.080 *	0.080	2.08	0.601	21.5	21.5	0.365	0.365	0.779	0.429	1.64	0.578	0.545	0.647
×0.060 *	0.060	1.58	0.456	29.2	29.2	0.283	0.283	0.788	0.329	1.73	0.446	0.425	0.649
HSS1.75×1.75×0.180	0.180	3.61	1.04	5.56	5.56	0.408	0.466	0.626	0.594	0.940	0.725	0.720	0.530
×0.120	0.120	2.60	0.750	10.9	10.9	0.325	0.371	0.658	0.451	1.21	0.537	0.557	0.552
×0.083	0.083	1.87	0.539	17.7	17.7	0.247	0.282	0.677	0.334	1.38	0.393	0.420	0.563
×0.063	0.063	1.43	0.412	24.0	24.0	0.193	0.221	0.684	0.258	1.47	0.307	0.332	0.565
HSS1.5×1.5×0.250	0.250	3.78	1.09	2.00	2.00	0.260	0.347	0.488	0.481	0.375	0.500	0.548	0.428
×0.180	0.180	2.99	0.862	4.17	4.17	0.236	0.315	0.523	0.410	0.690	0.430	0.490	0.446
×0.120	0.120	2.18	0.630	8.85	8.85	0.195	0.260	0.556	0.320	0.960	0.327	0.390	0.469
×0.080 *	0.080	1.53	0.441	15.2	15.2	0.146	0.195	0.575	0.232	1.14	0.235	0.290	0.480
×0.060 *	0.060	1.16	0.336	20.8	20.8	0.114	0.152	0.582	0.179	1.23	0.183	0.229	0.482

Note 1: For compactness criteria, refer to Table 1-7C.

Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel square HSS.



**Table 1-7A (continued)**  
**Square HSS (Roll Formed)**  
**Dimensions and Properties**



HSS1.25-HSS1

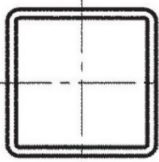
Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Workable Flat	Torsion		Surface Area
											<i>J</i>	<i>C</i>	
	in.	lb/ft	in. <sup>2</sup>			in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	ft <sup>2</sup> /ft
HSS1.25×1.25×0.180	0.180	2.37	0.682	2.78	2.78	0.121	0.194	0.421	0.260	0.440	0.227	0.304	0.363
×0.120	0.120	1.77	0.510	6.77	6.77	0.105	0.168	0.454	0.211	0.710	0.181	0.255	0.385
×0.080 *	0.080	1.25	0.361	12.1	12.1	0.081	0.129	0.473	0.156	0.890	0.132	0.193	0.397
×0.060 *	0.060	0.957	0.276	16.7	16.7	0.064	0.102	0.481	0.122	0.980	0.104	0.155	0.399
HSS1×1×0.180	0.180	1.74	0.502	1.39	1.39	0.050	0.101	0.317	0.143	0.190	0.099	0.162	0.280
×0.120	0.120	1.35	0.390	4.69	4.69	0.048	0.096	0.352	0.125	0.460	0.086	0.147	0.302
×0.080	0.080	0.973	0.281	8.98	8.98	0.039	0.077	0.371	0.095	0.640	0.065	0.116	0.313
×0.060 *	0.060	0.748	0.216	12.5	12.5	0.031	0.062	0.379	0.075	0.730	0.051	0.094	0.315

Note 1: For compactness criteria, refer to Table 1-7C.

Note 2: All roll formed sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel square HSS.





**Table 1-7B**  
**Square HSS (Press Braked)**  
**Dimensions and Properties**



HSS20-HSS7

Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Workable Flat	Torsion		Surface Area
											<i>J</i>	<i>C</i>	
	in.	lb/ft	in. <sup>2</sup>			in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	ft <sup>2</sup> /ft
HSS20×20×0.625	0.625	163	47.1	27.0	27.0	2900	290	7.85	339	17.2	4650	441	6.44
×0.500 *	0.500	132	38.1	35.0	35.0	2390	239	7.92	277	17.8	3780	362	6.49
×0.375 *	0.375	100	29.0	48.3	48.3	1840	184	7.97	212	18.3	2880	279	6.53
HSS16×16×0.625	0.625	129	37.1	20.6	20.6	1430	179	6.21	211	13.2	2330	273	5.11
×0.500 *	0.500	105	30.1	27.0	27.0	1190	149	6.29	173	13.8	1900	225	5.15
×0.375 *	0.375	79.6	23.0	37.7	37.7	924	116	6.34	134	14.3	1460	175	5.20
×0.312 *	0.312	66.7	19.2	46.3	46.3	782	97.8	6.38	113	14.6	1220	147	5.22
HSS14×14×0.625	0.625	111	32.1	17.4	17.4	935	134	5.40	159	11.2	1540	204	4.44
×0.500 *	0.500	90.7	26.1	23.0	23.0	780	111	5.47	131	11.8	1260	169	4.49
×0.375 *	0.375	69.2	20.0	32.3	32.3	609	87.0	5.52	101	12.3	967	132	4.53
×0.312 *	0.312	58.1	16.7	39.9	39.9	518	74.0	5.57	85.4	12.6	814	112	4.56
HSS12×12×0.625	0.625	94.0	27.1	14.2	14.2	568	94.7	4.58	113	9.19	949	145	3.78
×0.500 *	0.500	76.8	22.1	19.0	19.0	478	79.7	4.65	94.2	9.75	782	122	3.82
×0.375 *	0.375	58.8	17.0	27.0	27.0	376	62.7	4.70	73.2	10.3	602	95.1	3.87
×0.312 *	0.312	49.4	14.3	33.5	33.5	320	53.3	4.73	62.0	10.6	508	80.9	3.89
×0.250 *	0.250	40.0	11.5	43.0	43.0	263	43.8	4.78	50.5	10.9	412	66.2	3.91
HSS10×10×0.625	0.625	76.6	22.1	11.0	11.0	312	62.4	3.76	75.9	7.19	533	96.5	3.11
×0.500 *	0.500	62.9	18.1	15.0	15.0	266	53.2	3.83	63.5	7.75	442	81.4	3.15
×0.375 *	0.375	48.4	14.0	21.7	21.7	211	42.2	3.88	49.7	8.31	343	64.4	3.20
×0.312 *	0.312	40.8	11.8	27.1	27.1	181	36.2	3.92	42.3	8.60	290	55.0	3.22
×0.250 *	0.250	33.1	9.54	35.0	35.0	149	29.8	3.95	34.6	8.88	236	45.2	3.24
HSS8×8×0.625	0.625	59.3	17.1	7.80	7.80	148	37.0	2.94	45.9	5.19	259	57.5	2.44
×0.500 *	0.500	49.0	14.1	11.0	11.0	128	32.0	3.01	38.9	5.75	218	49.4	2.49
×0.375 *	0.375	38.0	11.0	16.3	16.3	104	26.0	3.07	30.8	6.31	171	39.6	2.53
×0.312 *	0.312	32.1	9.26	20.6	20.6	89.4	22.4	3.11	26.4	6.60	146	34.2	2.56
×0.250 *	0.250	26.1	7.54	27.0	27.0	74.3	18.6	3.14	21.7	6.88	119	28.2	2.58
×0.180	0.180	19.1	5.52	39.4	39.4	55.7	13.9	3.18	16.1	7.19	87.6	21.0	2.60
HSS7×7×0.500 *	0.500	42.1	12.1	9.00	9.00	82.0	23.4	2.60	28.8	4.75	142	36.3	2.15
×0.375 *	0.375	32.8	9.45	13.7	13.7	67.2	19.2	2.67	23.0	5.31	113	29.6	2.20
×0.312 *	0.312	27.8	8.01	17.4	17.4	58.4	16.7	2.70	19.8	5.60	96.0	25.5	2.22
×0.250 *	0.250	22.7	6.54	23.0	23.0	48.7	13.9	2.73	16.3	5.88	78.8	21.2	2.24
×0.180	0.180	16.6	4.80	33.9	33.9	36.7	10.5	2.77	12.2	6.19	58.2	15.9	2.27

Note 1: For compactness criteria, refer to Table 1-7D.

Note 2: All press braked sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

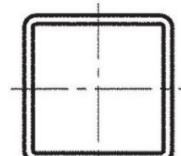
Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel square HSS.

Note 4: Press braked sections are available in larger sizes and an extended range of thicknesses compared to roll formed sections.



HSS6-HSS5

**Table 1-7B (continued)**  
**Square HSS (Press Braked)**  
**Dimensions and Properties**



Shape	Wall Thickness, <i>t</i>	Nominal Wt.	Area, <i>A</i>	<i>b/t</i>	<i>h/t</i>	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	Workable Flat	Torsion		Surface Area
											<i>J</i>	<i>C</i>	
	in.	lb/ft	in. <sup>2</sup>			in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	ft <sup>2</sup> /ft
HSS6×6×0.500 *	0.500	35.2	10.1	7.00	7.00	48.6	16.2	2.19	20.2	3.75	86.0	25.3	1.82
×0.375 *	0.375	27.6	7.95	11.0	11.0	40.5	13.5	2.26	16.4	4.31	69.0	20.8	1.87
×0.312 *	0.312	23.5	6.76	14.2	14.2	35.5	11.8	2.29	14.2	4.60	59.2	18.1	1.89
×0.250 *	0.250	19.2	5.54	19.0	19.0	29.9	9.97	2.32	11.8	4.88	48.8	15.2	1.91
×0.180	0.180	14.1	4.08	28.3	28.3	22.7	7.57	2.36	8.82	5.19	36.3	11.5	1.94
×0.120	0.120	9.62	2.77	45.0	45.0	15.8	5.27	2.39	6.08	5.46	24.8	7.98	1.96
HSS5×5×0.250	0.250	15.7	4.54	15.0	15.0	16.6	6.64	1.91	7.94	3.88	27.6	10.2	1.58
×0.180	0.180	11.6	3.36	22.8	22.8	12.8	5.12	1.95	6.00	4.19	20.7	7.79	1.60
×0.120	0.120	7.95	2.29	36.7	36.7	9.00	3.60	1.98	4.16	4.46	14.2	5.45	1.62

Note 1: For compactness criteria, refer to Table 1-7D.

Note 2: All press braked sections are available in austenitic stainless steel. The sections available in duplex stainless steel are marked \*.

Note 3: The design wall thickness is equal to the nominal wall thickness for stainless steel square HSS.

Note 4: Press braked sections are available in larger sizes and an extended range of thicknesses compared to roll formed sections.



**Table 1-7C**  
**Square HSS (Roll Formed)**  
**Compactness Criteria**

Nominal Wall Thickness, in.	Compactness Criteria for Square HSS							
	Compression		Flexure				Shear	
	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi
	nonslender up to		compact up to		compact up to		$C_v = 1.0$ up to	
	Web Height, in.		Flange Width, in.		Web Height, in.		Web Height, in.	
0.500	12	12	12	12	12	12	12	12
0.375	12	10	12	10	12	12	12	12
0.312	12	9	12	8	12	12	12	12
0.250	10	7	9	6	12	12	12	12
0.180	6	5	6	5	8	8	8	8
0.120	4	3.5	4	3	6	6	6	6
0.083	1.75	1.75	1.75	1.75	4	4	4	4
0.080	3	2	3	2	3	3	3	3
0.063	1.75	1.75	1.75	—	1.75	1.75	1.75	1.75
0.060	2.5	1.5	2.5	1.5	2.5	2.5	2.5	2.5



**Table 1-7D**  
**Square HSS (Press Braked)**  
**Compactness Criteria**

Nominal Wall Thickness, in.	Compactness Criteria for Square HSS							
	Compression		Flexure				Shear	
	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi	$F_y = 30$ ksi	$F_y = 65$ ksi
	nonslender up to		compact up to		compact up to		$C_v = 1.0$ up to	
	Web Height, in.		Flange Width, in.		Web Height, in.		Web Height, in.	
0.625	20	16	20	16	20	20	20	20
0.500	20	14	16	14	20	20	20	20
0.375	16	10	14	10	20	20	20	20
0.312	12	8	12	8	20	16	16	16
0.250	10	7	8	7	12	12	12	12
0.180	7	5	7	5	8	8	8	8
0.120	5	—	—	—	6	6	6	6



HSS7.5-  
HSS3.75

**Table 1-8**  
**Round HSS**  
**Dimensions and Properties**

Shape	Wall Thickness, $t$	Nominal Wt.	Area, $A$	$D/t$	$I$	$S$	$r$	$Z$	Torsion	
									$J$	$C$
	in.	lb/ft	in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	
HSS7.5×0.375	0.375	29.1	8.39	20.0	53.4	14.2	2.52	19.1	107	28.4
×0.250	0.250	19.7	5.69	30.0	37.5	10.0	2.57	13.1	75.0	20.0
×0.180 <sup>f2</sup>	0.180	14.4	4.14	41.7	27.7	7.39	2.59	9.65	55.4	14.8
×0.120 <sup>c2,f2</sup>	0.120	9.65	2.78	62.5	18.9	5.04	2.61	6.54	37.8	10.1
HSS6.25×0.375	0.375	24.0	6.92	16.7	30.0	9.60	2.08	13.0	60.0	19.2
×0.250	0.250	16.3	4.71	25.0	21.2	6.78	2.12	9.01	42.4	13.6
×0.180 <sup>f2</sup>	0.180	11.9	3.43	34.7	15.8	5.06	2.15	6.63	31.6	10.1
×0.120 <sup>c2,f2</sup>	0.120	8.01	2.31	52.1	10.9	3.49	2.17	4.51	21.8	6.98
HSS5×0.250	0.250	12.9	3.73	20.0	10.6	4.24	1.69	5.65	21.2	8.48
×0.180	0.180	9.45	2.73	27.8	7.93	3.17	1.70	4.18	15.9	6.34
×0.120 <sup>f2</sup>	0.120	6.38	1.84	41.7	5.48	2.19	1.73	2.86	11.0	4.38
×0.109 <sup>c2,f2</sup>	0.109	5.81	1.67	45.9	5.01	2.00	1.73	2.61	10.0	4.00
×0.083 <sup>c2,f2</sup>	0.083	4.45	1.28	60.2	3.88	1.55	1.74	2.01	7.76	3.10
HSS4.5×0.250	0.250	11.6	3.34	18.0	7.56	3.36	1.50	4.52	15.1	6.72
×0.180	0.180	8.47	2.44	25.0	5.71	2.54	1.53	3.36	11.4	5.08
×0.148	0.148	7.02	2.02	30.4	4.80	2.13	1.54	2.80	9.60	4.26
×0.120 <sup>f2</sup>	0.120	5.73	1.65	37.5	3.96	1.76	1.55	2.30	7.92	3.52
×0.109 <sup>f2</sup>	0.109	5.21	1.50	41.3	3.63	1.61	1.56	2.10	7.26	3.22
×0.083 <sup>c2,f2</sup>	0.083	3.99	1.15	54.2	2.81	1.25	1.56	1.62	5.62	2.50
HSS4×0.120 <sup>f2</sup>	0.120	5.07	1.46	33.3	2.76	1.38	1.37	1.81	5.52	2.76
×0.109 <sup>f2</sup>	0.109	4.62	1.33	36.7	2.52	1.26	1.38	1.65	5.04	2.52
×0.083 <sup>c2,f2</sup>	0.083	3.54	1.02	48.2	1.96	0.980	1.39	1.27	3.92	1.96
HSS3.75×0.250	0.250	9.53	2.75	15.0	4.23	2.26	1.24	3.07	8.46	4.52
×0.180	0.180	7.00	2.02	20.8	3.22	1.72	1.26	2.30	6.44	3.44
×0.148	0.148	5.81	1.67	25.3	2.72	1.45	1.28	1.92	5.44	2.90
×0.120 <sup>f2</sup>	0.120	4.75	1.37	31.3	2.26	1.21	1.28	1.58	4.52	2.42
×0.109 <sup>f2</sup>	0.109	4.32	1.25	34.4	2.07	1.10	1.29	1.45	4.14	2.20
×0.083 <sup>c2,f2</sup>	0.083	3.32	0.956	45.2	1.61	0.859	1.30	1.12	3.22	1.72

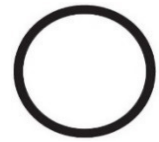
<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

Note 1: Cold formed sections are available both in austenitic and duplex stainless steel.

Note 2: The design wall thickness is equal to the nominal wall thickness for stainless steel round HSS.

**Table 1-8 (continued)**  
**Round HSS**  
**Dimensions and Properties**



**HSS3.5-  
HSS2.75**

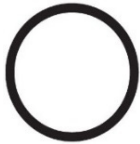
Shape	Wall Thickness, $t$	Nominal Wt.	Area, $A$	$D/t$	$I$	$S$	$r$	$Z$	Torsion	
									$J$	$C$
	in.	lb/ft	in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	
HSS3.5×0.180	0.180	6.51	1.88	19.4	2.59	1.48	1.17	1.99	5.18	2.96
×0.148	0.148	5.40	1.56	23.6	2.19	1.25	1.18	1.66	4.38	2.50
×0.120	0.120	4.42	1.27	29.2	1.82	1.04	1.20	1.37	3.64	2.08
×0.109 <sup>f2</sup>	0.109	4.03	1.16	32.1	1.67	0.954	1.20	1.25	3.34	1.91
×0.083 <sup>f2</sup>	0.083	3.09	0.891	42.2	1.30	0.743	1.21	0.969	2.60	1.49
×0.063 <sup>c2,f2</sup>	0.063	2.34	0.675	56.0	0.997	0.570	1.22	0.739	1.99	1.14
×0.049 <sup>c2,f1,f2</sup>	0.049	1.84	0.531	71.4	0.791	0.452	1.22	0.584	1.58	0.904
HSS3.125×0.250	0.250	7.83	2.26	12.5	2.35	1.50	1.02	2.07	4.70	3.00
×0.180	0.180	5.78	1.67	17.4	1.81	1.16	1.04	1.56	3.62	2.32
×0.120	0.120	3.93	1.13	26.0	1.28	0.819	1.06	1.08	2.56	1.64
×0.109	0.109	3.58	1.03	28.7	1.18	0.755	1.07	0.992	2.36	1.51
×0.083 <sup>f2</sup>	0.083	2.75	0.793	37.7	0.918	0.588	1.08	0.768	1.84	1.18
×0.063 <sup>c2,f2</sup>	0.063	2.09	0.601	50.0	0.705	0.451	1.08	0.586	1.41	0.902
HSS3×0.250	0.250	7.49	2.16	12.0	2.06	1.37	0.977	1.90	4.12	2.74
×0.180	0.180	5.53	1.59	16.7	1.59	1.06	1.00	1.43	3.18	2.12
×0.148	0.148	4.60	1.33	20.3	1.35	0.900	1.01	1.20	2.70	1.80
×0.120	0.120	3.77	1.09	25.0	1.13	0.753	1.02	0.996	2.26	1.51
×0.109	0.109	3.43	0.990	27.5	1.04	0.693	1.02	0.911	2.08	1.39
×0.083 <sup>f2</sup>	0.083	2.64	0.761	36.1	0.810	0.540	1.03	0.706	1.62	1.08
×0.063 <sup>c2,f2</sup>	0.063	2.00	0.577	48.0	0.622	0.415	1.04	0.539	1.24	0.830
×0.049 <sup>c2,f2</sup>	0.049	1.58	0.454	61.2	0.495	0.330	1.04	0.427	0.989	0.660
HSS2.875×0.180	0.180	5.29	1.52	16.0	1.39	0.967	0.956	1.31	2.78	1.93
×0.120	0.120	3.60	1.04	24.0	0.987	0.687	0.974	0.911	1.97	1.37
×0.109	0.109	3.28	0.947	26.4	0.907	0.631	0.979	0.834	1.81	1.26
×0.083 <sup>f2</sup>	0.083	2.52	0.728	34.6	0.710	0.494	0.988	0.647	1.42	0.988
HSS2.75×0.250	0.250	6.81	1.96	11.0	1.55	1.13	0.889	1.57	3.10	2.26
×0.180	0.180	5.04	1.45	15.3	1.21	0.880	0.914	1.19	2.42	1.76
×0.148	0.148	4.20	1.21	18.6	1.03	0.749	0.923	1.00	2.06	1.50
×0.120	0.120	3.44	0.991	22.9	0.859	0.625	0.931	0.831	1.72	1.25
×0.109	0.109	3.14	0.904	25.2	0.790	0.575	0.935	0.761	1.58	1.15
×0.083 <sup>f2</sup>	0.083	2.41	0.695	33.1	0.619	0.450	0.944	0.591	1.24	0.900
×0.065 <sup>f2</sup>	0.065	1.90	0.548	42.3	0.494	0.359	0.949	0.469	0.988	0.718

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

Note 1: Cold formed sections are available both in austenitic and duplex stainless steel.

Note 2: The design wall thickness is equal to the nominal wall thickness for stainless steel round HSS.



HSS2.5-  
HSS1.9

**Table 1-8 (continued)**  
**Round HSS**  
**Dimensions and Properties**

Shape	Wall Thickness, $t$	Nominal Wt.	Area, $A$	$D/t$	$I$	$S$	$r$	$Z$	Torsion	
									$J$	$C$
	in.	lb/ft	in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	
HSS2.5×0.250	0.250	6.13	1.77	10.0	1.13	0.904	0.799	1.27	2.26	1.81
×0.180	0.180	4.55	1.31	13.9	0.888	0.710	0.823	0.971	1.78	1.42
×0.148	0.148	3.79	1.09	16.9	0.759	0.607	0.834	0.820	1.52	1.21
×0.120	0.120	3.11	0.897	20.8	0.637	0.510	0.843	0.680	1.27	1.02
×0.109	0.109	2.84	0.819	22.9	0.586	0.469	0.846	0.624	1.17	0.938
×0.083	0.083	2.19	0.630	30.1	0.461	0.369	0.855	0.485	0.922	0.738
×0.063 <sup>f2</sup>	0.063	1.66	0.479	40.0	0.356	0.285	0.862	0.371	0.711	0.569
×0.049 <sup>c2,f2</sup>	0.049	1.31	0.377	51.0	0.283	0.227	0.867	0.294	0.567	0.454
HSS2.375×0.180	0.180	4.30	1.24	13.2	0.753	0.634	0.779	0.869	1.51	1.27
×0.148	0.148	3.59	1.04	16.0	0.645	0.543	0.788	0.735	1.29	1.09
×0.120	0.120	2.95	0.850	19.8	0.542	0.456	0.799	0.611	1.08	0.912
×0.109	0.109	2.69	0.776	21.8	0.499	0.420	0.802	0.560	0.998	0.840
×0.083	0.083	2.07	0.598	28.6	0.393	0.331	0.811	0.436	0.786	0.662
×0.063 <sup>f2</sup>	0.063	1.57	0.454	38.0	0.304	0.256	0.818	0.334	0.608	0.512
×0.049 <sup>c2,f2</sup>	0.049	1.24	0.358	48.5	0.242	0.204	0.822	0.265	0.484	0.408
HSS2.25×0.180	0.180	4.06	1.17	12.5	0.632	0.562	0.735	0.773	1.26	1.12
×0.148	0.148	3.39	0.977	15.2	0.542	0.482	0.745	0.655	1.08	0.964
×0.120	0.120	2.78	0.803	18.8	0.457	0.406	0.754	0.545	0.914	0.812
×0.109	0.109	2.54	0.733	20.6	0.421	0.374	0.758	0.500	0.842	0.748
×0.083	0.083	1.96	0.565	27.1	0.332	0.295	0.767	0.390	0.664	0.590
×0.063 <sup>f2</sup>	0.063	1.49	0.430	36.0	0.257	0.228	0.773	0.299	0.514	0.456
HSS2×0.180	0.180	3.57	1.03	11.1	0.430	0.430	0.646	0.598	0.860	0.860
×0.148	0.148	2.99	0.861	13.5	0.372	0.372	0.657	0.509	0.744	0.744
×0.120	0.120	2.46	0.709	16.7	0.314	0.314	0.665	0.425	0.628	0.628
×0.109	0.109	2.25	0.648	18.3	0.290	0.290	0.669	0.390	0.580	0.580
×0.083	0.083	1.73	0.500	24.1	0.230	0.230	0.678	0.305	0.460	0.460
×0.063 <sup>f2</sup>	0.063	1.32	0.380	32.0	0.179	0.179	0.686	0.235	0.358	0.358
×0.049 <sup>f2</sup>	0.049	1.04	0.300	40.8	0.143	0.143	0.690	0.187	0.286	0.286
×0.035 <sup>c2,f2</sup>	0.035	0.749	0.216	57.1	0.104	0.104	0.694	0.135	0.208	0.208
HSS1.9×0.148	0.148	2.83	0.815	12.8	0.315	0.332	0.622	0.455	0.630	0.664
×0.120	0.120	2.33	0.671	15.8	0.267	0.281	0.631	0.381	0.534	0.562
×0.109	0.109	2.13	0.613	17.4	0.247	0.260	0.635	0.350	0.494	0.520
×0.083	0.083	1.64	0.474	22.9	0.196	0.206	0.643	0.274	0.392	0.412
×0.060	0.063	1.25	0.361	30.4	0.152	0.160	0.649	0.211	0.304	0.320
×0.049 <sup>f2</sup>	0.049	0.988	0.285	38.8	0.122	0.128	0.654	0.168	0.244	0.256
×0.035 <sup>c2,f2</sup>	0.035	0.711	0.205	54.3	0.089	0.094	0.660	0.122	0.178	0.188

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

Note 1: Cold formed sections are available both in austenitic and duplex stainless steel.

Note 2: The design wall thickness is equal to the nominal wall thickness for stainless steel round HSS.

**Table 1-8 (continued)**  
**Round HSS**  
**Dimensions and Properties**



Shape	Wall Thickness, $t$	Nominal Wt.	Area, $A$	$D/t$	$I$	$S$	$r$	$Z$	Torsion	
									$J$	$C$
	in.	lb/ft	in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>3</sup>	in. <sup>4</sup>	in. <sup>3</sup>	
HSS1.75×0.120	0.120	2.13	0.614	14.6	0.205	0.234	0.578	0.319	0.410	0.468
×0.109	0.109	1.95	0.562	16.1	0.190	0.217	0.581	0.294	0.380	0.434
×0.083	0.083	1.51	0.435	21.1	0.151	0.173	0.589	0.231	0.302	0.346
×0.063	0.063	1.15	0.331	28.0	0.118	0.135	0.597	0.178	0.236	0.270
×0.049 <sup>f2</sup>	0.049	0.908	0.262	35.7	0.095	0.108	0.602	0.142	0.190	0.216
×0.035 <sup>c2,f2</sup>	0.035	0.654	0.189	50.0	0.069	0.079	0.606	0.103	0.139	0.159
HSS1.66×0.148	0.148	2.44	0.703	11.2	0.203	0.245	0.537	0.339	0.406	0.490
×0.120	0.120	2.01	0.581	13.8	0.173	0.208	0.546	0.285	0.346	0.416
×0.109	0.109	1.84	0.531	15.2	0.160	0.193	0.549	0.263	0.320	0.386
×0.083	0.083	1.43	0.411	20.0	0.128	0.154	0.558	0.207	0.256	0.308
×0.063	0.063	1.09	0.314	26.6	0.100	0.120	0.564	0.160	0.200	0.240
HSS1.5×0.120	0.120	1.80	0.520	12.5	0.125	0.167	0.490	0.229	0.250	0.334
×0.109	0.109	1.65	0.476	13.8	0.116	0.155	0.494	0.211	0.232	0.310
×0.083	0.083	1.28	0.369	18.1	0.093	0.124	0.502	0.167	0.186	0.248
×0.063	0.063	0.979	0.282	24.0	0.073	0.097	0.509	0.129	0.146	0.195
×0.049	0.049	0.775	0.223	30.6	0.059	0.079	0.514	0.103	0.118	0.157
×0.035 <sup>f2</sup>	0.035	0.559	0.161	42.9	0.043	0.058	0.518	0.075	0.086	0.115
HSS1.25×0.120	0.120	1.48	0.426	10.4	0.069	0.110	0.402	0.154	0.138	0.220
×0.109	0.109	1.36	0.391	11.5	0.064	0.103	0.405	0.142	0.128	0.206
×0.083	0.083	1.06	0.304	15.1	0.052	0.083	0.414	0.113	0.104	0.167
×0.063	0.063	0.809	0.233	20.0	0.041	0.066	0.421	0.088	0.082	0.132
×0.049	0.049	0.641	0.185	25.5	0.033	0.053	0.425	0.071	0.067	0.107
×0.035 <sup>f2</sup>	0.035	0.463	0.134	35.7	0.025	0.040	0.429	0.052	0.049	0.079
HSS1×0.120	0.120	1.15	0.332	8.33	0.033	0.065	0.314	0.094	0.065	0.131
×0.109	0.109	1.06	0.305	9.17	0.031	0.061	0.317	0.087	0.061	0.123
×0.083	0.083	0.829	0.239	12.0	0.025	0.051	0.325	0.070	0.051	0.101
×0.065	0.065	0.662	0.191	15.4	0.021	0.042	0.332	0.057	0.042	0.084
×0.063	0.063	0.638	0.184	16.0	0.020	0.041	0.332	0.055	0.041	0.081
×0.049	0.049	0.508	0.146	20.4	0.017	0.033	0.337	0.044	0.033	0.066
×0.042	0.042	0.438	0.126	23.8	0.015	0.029	0.339	0.039	0.029	0.058
×0.035	0.035	0.368	0.106	28.6	0.012	0.025	0.342	0.033	0.025	0.050
×0.032 <sup>f2</sup>	0.032	0.337	0.097	31.3	0.011	0.023	0.342	0.030	0.023	0.046

<sup>c1/c2</sup> Shape is slender for compression with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

<sup>f1/f2</sup> Shape exceeds compact limit for flexure with  $F_y = 30$  ksi and  $F_y = 65$  ksi respectively.

Note 1: Cold formed sections are available both in austenitic and duplex stainless steel.

Note 2: The design wall thickness is equal to the nominal wall thickness for stainless steel round HSS.



PIPE

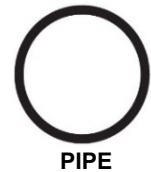
**Table 1-9  
Pipe  
Dimensions and Properties**

Shape	Nominal Wt.	Dimensions		Wall Thickness	Area	D/t	I	S	r	J	Z
		Outside Diameter	Inside Diameter								
	lb/ft	in.	in.	in.	in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	
<b>Standard Weight Pipe Schedule 5S</b>											
Pipe 8 Std.	10.1	8.63	8.41	0.109	2.92	79.2	26.5	6.14	3.01	53.0	7.91
Pipe 6 Std.	7.74	6.63	6.41	0.109	2.23	60.8	11.9	3.59	2.31	23.8	4.64
Pipe 5 Std.	6.48	5.56	5.34	0.109	1.87	51.0	6.94	2.50	1.93	13.9	3.24
Pipe 4 Std.	3.99	4.50	4.33	0.083	1.15	54.2	2.81	1.25	1.56	5.62	1.62
Pipe 3½ Std.	3.54	4.00	3.83	0.083	1.02	48.2	1.96	0.980	1.39	3.92	1.27
Pipe 3 Std.	3.09	3.50	3.33	0.083	0.891	42.2	1.30	0.743	1.21	2.60	0.969
Pipe 2½ Std.	2.52	2.88	2.71	0.083	0.729	34.7	0.714	0.496	0.990	1.43	0.650
Pipe 2 Std.	1.64	2.38	2.25	0.065	0.473	36.6	0.317	0.266	0.819	0.634	0.348
Pipe 1½ Std.	1.30	1.90	1.77	0.065	0.375	29.2	0.158	0.166	0.649	0.316	0.219
Pipe 1¼ Std.	1.13	1.66	1.53	0.065	0.326	25.5	0.104	0.125	0.565	0.208	0.165
Pipe 1 Std.	0.885	1.32	1.19	0.065	0.256	20.3	0.051	0.077	0.445	0.101	0.102
<b>Standard Weight Pipe Schedule 10S</b>											
Pipe 12 Std.	24.7	12.8	12.4	0.180	7.14	71.1	142	22.2	4.46	284	28.7
Pipe 10 Std.	19.0	10.8	10.5	0.165	5.51	65.5	78.0	14.4	3.76	156	18.7
Pipe 8 Std.	13.7	8.63	8.33	0.148	3.94	58.3	35.5	8.23	3.00	71.0	10.6
Pipe 6 Std.	9.48	6.63	6.36	0.134	2.73	49.5	14.4	4.34	2.30	28.8	5.66
Pipe 5 Std.	7.93	5.56	5.29	0.134	2.28	41.5	8.41	3.03	1.92	16.8	3.95
Pipe 4 Std.	5.73	4.50	4.26	0.120	1.65	37.5	3.96	1.76	1.55	7.92	2.30
Pipe 3½ Std.	5.07	4.00	3.76	0.120	1.46	33.3	2.76	1.38	1.37	5.52	1.81
Pipe 3 Std.	4.42	3.50	3.26	0.120	1.27	29.2	1.82	1.04	1.20	3.64	1.37
Pipe 2½ Std.	3.60	2.88	2.64	0.120	1.04	24.0	0.993	0.690	0.977	1.99	0.915
Pipe 2 Std.	2.69	2.38	2.16	0.109	0.778	21.8	0.503	0.423	0.804	1.01	0.563
Pipe 1½ Std.	2.13	1.90	1.68	0.109	0.613	17.4	0.247	0.260	0.635	0.494	0.350
Pipe 1¼ Std.	1.84	1.66	1.44	0.109	0.531	15.2	0.160	0.193	0.549	0.320	0.263
Pipe 1 Std.	1.43	1.32	1.10	0.109	0.415	12.1	0.077	0.116	0.430	0.153	0.160
<b>Standard Weight Pipe Schedule 40S</b>											
Pipe 12 Std.	50.6	12.8	12.1	0.375	14.6	34.1	283	44.2	4.40	566	57.9
Pipe 10 Std.	41.3	10.8	10.1	0.365	12.0	29.6	163	30.2	3.69	326	39.8
Pipe 8 Std.	29.1	8.63	7.99	0.322	8.40	26.8	72.6	16.8	2.94	145	22.2
Pipe 6 Std.	19.4	6.63	6.07	0.280	5.59	23.7	28.2	8.51	2.25	56.4	11.3
Pipe 5 Std.	14.9	5.56	5.04	0.258	4.30	21.6	15.1	5.43	1.87	30.2	7.26
Pipe 4 Std.	11.0	4.50	4.03	0.237	3.17	19.0	7.23	3.21	1.51	14.5	4.31
Pipe 3½ Std.	9.29	4.00	3.55	0.226	2.68	17.7	4.79	2.40	1.34	9.58	3.22
Pipe 3 Std.	7.73	3.50	3.07	0.216	2.23	16.2	3.02	1.73	1.16	6.04	2.33
Pipe 2½ Std.	5.91	2.88	2.47	0.203	1.71	14.2	1.54	1.07	0.949	3.08	1.46
Pipe 2 Std.	3.73	2.38	2.07	0.154	1.08	15.5	0.670	0.563	0.788	1.34	0.764
Pipe 1½ Std.	2.77	1.90	1.61	0.145	0.799	13.1	0.310	0.326	0.623	0.620	0.448
Pipe 1¼ Std.	2.32	1.66	1.38	0.140	0.669	11.9	0.195	0.235	0.540	0.390	0.324
Pipe 1 Std.	1.71	1.32	1.05	0.133	0.496	9.92	0.088	0.134	0.422	0.177	0.188

Note: The design wall thickness is equal to the nominal wall thickness for stainless steel pipes.



**Table 1-9 (continued)  
Pipe  
Dimensions and Properties**



Shape	Nominal Wt.	Dimensions		Wall Thickness	Area	D/t	I	S	r	J	Z
		Outside Diameter	Inside Diameter								
	lb/ft	in.	in.	in.	in. <sup>2</sup>	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	
<b>Standard Weight Pipe Schedule 80S</b>											
Pipe 8 Std.	44.3	8.63	7.63	0.500	12.8	17.3	106	24.6	2.88	212	33.1
Pipe 6 Std.	29.1	6.63	5.77	0.432	8.41	15.3	40.6	12.2	2.20	81.2	16.6
Pipe 5 Std.	21.2	5.56	4.81	0.375	6.11	14.8	20.6	7.41	1.84	41.2	10.1
Pipe 4 Std.	15.3	4.50	3.83	0.337	4.41	13.4	9.61	4.27	1.48	19.2	5.85
Pipe 3½ Std.	12.8	4.00	3.36	0.318	3.68	12.6	6.28	3.14	1.31	12.6	4.32
Pipe 3 Std.	10.5	3.50	2.90	0.300	3.02	11.7	3.89	2.22	1.13	7.78	3.08
Pipe 2½ Std.	7.82	2.88	2.33	0.276	2.26	10.4	1.94	1.35	0.927	3.88	1.88
Pipe 2 Std.	5.12	2.38	1.94	0.218	1.48	10.9	0.874	0.734	0.768	1.75	1.02
Pipe 1½ Std.	3.70	1.90	1.50	0.200	1.07	9.50	0.391	0.412	0.605	0.782	0.581
Pipe 1¼ Std.	3.06	1.66	1.28	0.191	0.881	8.69	0.242	0.292	0.524	0.484	0.414
Pipe 1 Std.	2.22	1.32	0.962	0.179	0.642	7.37	0.107	0.162	0.408	0.214	0.235

Note: The design wall thickness is equal to the nominal wall thickness for stainless steel pipes.

## **STRUCTURAL STAINLESS STEEL DESIGN TABLES** **IN ACCORDANCE WITH AISC DG27: STRUCTURAL STAINLESS STEEL**

This publication presents design data derived in accordance with the American Institute of Steel Construction's Design Guide 27 *Structural Stainless Steel*. The data is presented in an equivalent set of tables to those in the AISC *Steel Construction Manual* for carbon steel sections. Tables cover dimensions and properties, design data for flexural members and design data for compression members. Two strength levels are covered – 30 ksi which corresponds to austenitic stainless steels and 65 ksi which corresponds to duplex stainless steels.

The following structural sections are included in this publication:

- W- and S-shapes
- C- and MC-shapes
- Equal angles
- Rectangular hollow structural sections (HSS)
- Square HSS
- Circular HSS.

Section ranges listed cover sections that are readily available at the time of printing.

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