



W Shapes Dimensions

Shape	Area, A	Depth, d		Web		Flange				Distance			Work- able Gage		
				Thickness, tw	tw 2	Width, bf	Thickness, tf	k		k1	T				
								kdes	kdet			in.		in.	
in. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.				
W16×100	29.5	17.0	17	0.585	9/16	5/16	10.4	10 ³ / ₈	0.985	1	1.39	1 ⁷ / ₈	1 ¹ / ₈	13 ¹ / ₄	5 ¹ / ₂
×89	26.2	16.8	16 ³ / ₄	0.525	1/2	1/4	10.4	10 ³ / ₈	0.875	7/8	1.28	1 ³ / ₄	1 ¹ / ₁₆		
×77	22.6	16.5	16 ¹ / ₂	0.455	7/16	1/4	10.3	10 ¹ / ₄	0.760	3/4	1.16	1 ⁵ / ₈	1 ¹ / ₁₆		
×67 ^c	19.7	16.3	16 ³ / ₈	0.395	3/8	3/16	10.2	10 ¹ / ₄	0.665	1 ¹ / ₁₆	1.07	1 ⁹ / ₁₆	1		
W16×57	16.8	16.4	16 ³ / ₈	0.430	7/16	1/4	7.12	7 ¹ / ₈	0.715	1 ¹ / ₁₆	1.12	1 ³ / ₈	7/8	13 ⁵ / ₈	3 ¹ / ₂ ^g
×50 ^c	14.7	16.3	16 ¹ / ₄	0.380	3/8	3/16	7.07	7 ¹ / ₈	0.630	5/8	1.03	1 ⁵ / ₁₆	1 ³ / ₁₆		
×45 ^c	13.3	16.1	16 ¹ / ₈	0.345	3/8	3/16	7.04	7	0.565	9/16	0.967	1 ¹ / ₄	1 ³ / ₁₆		
×40 ^c	11.8	16.0	16	0.305	5/16	3/16	7.00	7	0.505	1/2	0.907	1 ³ / ₁₆	1 ³ / ₁₆		
×36 ^c	10.6	15.9	15 ⁷ / ₈	0.295	5/16	3/16	6.99	7	0.430	7/16	0.832	1 ¹ / ₈	3/4		
W16×31 ^c	9.13	15.9	15 ⁷ / ₈	0.275	1/4	1/8	5.53	5 ¹ / ₂	0.440	7/16	0.842	1 ¹ / ₈	3/4	13 ⁵ / ₈	3 ¹ / ₂
×26 ^{h,v}	7.68	15.7	15 ³ / ₄	0.250	1/4	1/8	5.50	5 ¹ / ₂	0.345	3/8	0.747	1 ¹ / ₁₆	3/4	13 ⁵ / ₈	3 ¹ / ₂
W14×730 ^h	215	22.4	22 ³ / ₈	3.07	3 ¹ / ₁₆	1 ⁹ / ₁₆	17.9	17 ⁷ / ₈	4.91	4 ¹⁵ / ₁₆	5.51	6 ³ / ₁₆	2 ³ / ₄	10	3-7 ¹ / ₂ -3 ^g
×665 ^h	196	21.6	21 ⁵ / ₈	2.83	2 ¹³ / ₁₆	1 ⁷ / ₁₆	17.7	17 ⁵ / ₈	4.52	4 ¹ / ₂	5.12	5 ¹³ / ₁₆	2 ⁵ / ₈		3-7 ¹ / ₂ -3 ^g
×605 ^h	178	20.9	20 ⁷ / ₈	2.60	2 ⁵ / ₈	1 ⁵ / ₁₆	17.4	17 ³ / ₈	4.16	4 ³ / ₁₆	4.76	5 ⁷ / ₁₆	2 ¹ / ₂		3-7 ¹ / ₂ -3
×550 ^h	162	20.2	20 ¹ / ₄	2.38	2 ³ / ₈	1 ³ / ₁₆	17.2	17 ¹ / ₄	3.82	3 ¹³ / ₁₆	4.42	5 ¹ / ₈	2 ³ / ₈		
×500 ^h	147	19.6	19 ⁵ / ₈	2.19	2 ³ / ₁₆	1 ¹ / ₈	17.0	17	3.50	3 ¹ / ₂	4.10	4 ¹³ / ₁₆	2 ⁵ / ₁₆		
×455 ^h	134	19.0	19	2.02	2	1	16.8	16 ⁷ / ₈	3.21	3 ³ / ₁₆	3.81	4 ¹ / ₂	2 ¹ / ₄		
×426 ^h	125	18.7	18 ⁵ / ₈	1.88	1 ⁷ / ₈	1 ⁵ / ₁₆	16.7	16 ³ / ₄	3.04	3 ¹ / ₁₆	3.63	4 ⁵ / ₁₆	2 ¹ / ₈		
×398 ^h	117	18.3	18 ¹ / ₄	1.77	1 ³ / ₄	7/8	16.6	16 ⁵ / ₈	2.85	2 ⁷ / ₈	3.44	4 ¹ / ₈	2 ¹ / ₈		
×370 ^h	109	17.9	17 ⁷ / ₈	1.66	1 ⁵ / ₈	1 ³ / ₁₆	16.5	16 ¹ / ₂	2.66	2 ¹¹ / ₁₆	3.26	3 ¹⁵ / ₁₆	2 ¹ / ₁₆		
×342 ^h	101	17.5	17 ¹ / ₂	1.54	1 ⁹ / ₁₆	1 ³ / ₁₆	16.4	16 ³ / ₈	2.47	2 ¹ / ₂	3.07	3 ³ / ₄	2		
×311 ^h	91.4	17.1	17 ¹ / ₈	1.41	1 ⁷ / ₁₆	3/4	16.2	16 ¹ / ₄	2.26	2 ¹ / ₄	2.86	3 ⁹ / ₁₆	1 ¹⁵ / ₁₆		
×283 ^h	83.3	16.7	16 ³ / ₄	1.29	1 ⁵ / ₁₆	1 ¹ / ₁₆	16.1	16 ¹ / ₈	2.07	2 ¹ / ₁₆	2.67	3 ³ / ₈	1 ⁷ / ₈		
×257	75.6	16.4	16 ³ / ₈	1.18	1 ³ / ₁₆	5/8	16.0	16	1.89	1 ⁷ / ₈	2.49	3 ³ / ₁₆	1 ¹³ / ₁₆		
×233	68.5	16.0	16	1.07	1 ¹ / ₁₆	9/16	15.9	15 ⁷ / ₈	1.72	1 ³ / ₄	2.32	3	1 ³ / ₄		
×211	62.0	15.7	15 ³ / ₄	0.980	1	1/2	15.8	15 ³ / ₄	1.56	1 ⁹ / ₁₆	2.16	2 ⁷ / ₈	1 ¹¹ / ₁₆		
×193	56.8	15.5	15 ¹ / ₂	0.890	7/8	7/16	15.7	15 ³ / ₄	1.44	1 ⁷ / ₁₆	2.04	2 ³ / ₄	1 ¹¹ / ₁₆		
×176	51.8	15.2	15 ¹ / ₄	0.830	1 ³ / ₁₆	7/16	15.7	15 ⁵ / ₈	1.31	1 ⁵ / ₁₆	1.91	2 ⁵ / ₈	1 ⁵ / ₈		
×159	46.7	15.0	15	0.745	3/4	3/8	15.6	15 ⁵ / ₈	1.19	1 ³ / ₁₆	1.79	2 ¹ / ₂	1 ⁹ / ₁₆		
×145	42.7	14.8	14 ³ / ₄	0.680	1 ¹ / ₁₆	3/8	15.5	15 ¹ / ₂	1.09	1 ¹ / ₁₆	1.69	2 ³ / ₈	1 ⁹ / ₁₆		

^c Shape is slender for compression with $F_y = 50$ ksi.

^g The actual size, combination, and orientation of fastener components should be compared with the geometry of the cross-section to ensure compatibility.

^h Flange thickness greater than 2 in. Special requirements may apply per AISC Specification Section A3.1c.

^v Shape does not meet the h/t_w limit for shear in Specification Section G2.1a with $F_y = 50$ ksi.

W Shapes Properties



W16 – W14

Nom- inal 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	h	I	S	r	Z	I	S	r	Z	J	C_w		
lb/ft	$2t_f$	t_w	in. ⁴	in. ³	in.	in. ³	in. ⁴	in. ³	in.	in. ³	in.	in.	in. ⁴	in. ⁶
100	5.29	24.3	1490	175	7.10	198	186	35.7	2.51	54.9	2.92	16.0	7.73	11900
89	5.92	27.0	1300	155	7.05	175	163	31.4	2.49	48.1	2.88	15.9	5.45	10200
77	6.77	31.2	1110	134	7.00	150	138	26.9	2.47	41.1	2.85	15.8	3.57	8590
67	7.70	35.9	954	117	6.96	130	119	23.2	2.46	35.5	2.82	15.7	2.39	7300
57	4.98	33.0	758	92.2	6.72	105	43.1	12.1	1.60	18.9	1.92	15.7	2.22	2660
50	5.61	37.4	659	81.0	6.68	92.0	37.2	10.5	1.59	16.3	1.89	15.6	1.52	2270
45	6.23	41.1	586	72.7	6.65	82.3	32.8	9.34	1.57	14.5	1.88	15.6	1.11	1990
40	6.93	46.5	518	64.7	6.63	73.0	28.9	8.25	1.57	12.7	1.86	15.5	0.794	1730
36	8.12	48.1	448	56.5	6.51	64.0	24.5	7.00	1.52	10.8	1.83	15.4	0.545	1460
31	6.28	51.6	375	47.2	6.41	54.0	12.4	4.49	1.17	7.03	1.42	15.4	0.461	739
26	7.97	56.8	301	38.4	6.26	44.2	9.59	3.49	1.12	5.48	1.38	15.3	0.262	565
730	1.82	3.71	14300	1280	8.17	1660	4720	527	4.69	816	5.68	17.5	1450	362000
665	1.95	4.03	12400	1150	7.98	1480	4170	472	4.62	730	5.57	17.1	1120	305000
605	2.09	4.39	10800	1040	7.80	1320	3680	423	4.55	652	5.46	16.8	869	258000
550	2.25	4.79	9430	931	7.63	1180	3250	378	4.49	583	5.36	16.4	669	219000
500	2.43	5.21	8210	838	7.48	1050	2880	339	4.43	522	5.26	16.1	514	187000
455	2.62	5.66	7190	756	7.33	936	2560	304	4.38	468	5.17	15.8	395	160000
426	2.75	6.08	6600	706	7.26	869	2360	283	4.34	434	5.11	15.6	331	144000
398	2.92	6.44	6000	656	7.16	801	2170	262	4.31	402	5.06	15.4	273	129000
370	3.10	6.89	5440	607	7.07	736	1990	241	4.27	370	5.00	15.3	222	116000
342	3.31	7.41	4900	558	6.98	672	1810	221	4.24	338	4.94	15.1	178	103000
311	3.59	8.09	4330	506	6.88	603	1610	199	4.20	304	4.87	14.9	136	89100
283	3.89	8.84	3840	459	6.79	542	1440	179	4.17	274	4.81	14.7	104	77700
257	4.23	9.71	3400	415	6.71	487	1290	161	4.13	246	4.75	14.5	79.1	67800
233	4.62	10.7	3010	375	6.63	436	1150	145	4.10	221	4.69	14.3	59.5	59000
211	5.06	11.6	2660	338	6.55	390	1030	130	4.07	198	4.64	14.2	44.6	51500
193	5.45	12.8	2400	310	6.50	355	931	119	4.05	180	4.59	14.0	34.8	45900
176	5.97	13.7	2140	281	6.43	320	838	107	4.02	163	4.55	13.9	26.5	40500
159	6.54	15.3	1900	254	6.38	287	748	96.2	4.00	146	4.51	13.8	19.7	35600
145	7.11	16.8	1710	232	6.33	260	677	87.3	3.98	133	4.47	13.7	15.2	31700