

**Table 1-1
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. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		
W44×335 ^c	98.5	44.0	44	1.03	1	1/2	15.9	16	1.77	1 3/4	2.56	2 5/8	1 5/16	38 3/4	5 1/2
×290 ^c	85.4	43.6	43 5/8	0.865	7/8	7/16	15.8	15 7/8	1.58	1 9/16	2.36	2 7/16	1 1/4	↓	↓
×262 ^c	76.9	43.3	43 1/4	0.785	13/16	7/16	15.8	15 3/4	1.42	1 7/16	2.20	2 1/4	1 3/16	↓	↓
×230 ^{c,v}	67.7	42.9	42 7/8	0.710	11/16	3/8	15.8	15 3/4	1.22	1 1/4	2.01	2 1/16	1 3/16	↓	↓
W40×593 ^h	174	43.0	43	1.79	1 13/16	15/16	16.7	16 3/4	3.23	3 1/4	4.41	4 1/2	2 1/8	34	7 1/2
×503 ^h	148	42.1	42	1.54	1 9/16	13/16	16.4	16 3/8	2.76	2 3/4	3.94	4	2	↓	↓
×431 ^h	127	41.3	41 1/4	1.34	1 5/16	1 1/16	16.2	16 1/4	2.36	2 3/8	3.54	3 5/8	1 7/8	↓	↓
×397 ^h	117	41.0	41	1.22	1 1/4	5/8	16.1	16 1/8	2.20	2 3/16	3.38	3 1/2	1 13/16	↓	↓
×372 ^h	109	40.6	40 5/8	1.16	1 3/16	5/8	16.1	16 1/8	2.05	2 1/16	3.23	3 5/16	1 13/16	↓	↓
×362 ^h	107	40.6	40 1/2	1.12	1 1/8	9/16	16.0	16	2.01	2	3.19	3 1/4	1 3/4	↓	↓
×324	95.3	40.2	40 1/8	1.00	1	1/2	15.9	15 7/8	1.81	1 13/16	2.99	3 1/16	1 11/16	↓	↓
×297 ^c	87.4	39.8	39 7/8	0.930	15/16	1/2	15.8	15 7/8	1.65	1 5/8	2.83	2 15/16	1 11/16	↓	↓
×277 ^c	81.4	39.7	39 3/4	0.830	13/16	7/16	15.8	15 7/8	1.58	1 9/16	2.76	2 7/8	1 5/8	↓	↓
×249 ^c	73.3	39.4	39 3/8	0.750	3/4	3/8	15.8	15 3/4	1.42	1 7/16	2.60	2 11/16	1 9/16	↓	↓
×215 ^c	63.4	39.0	39	0.650	5/8	5/16	15.8	15 3/4	1.22	1 1/4	2.40	2 1/2	1 9/16	↓	↓
×199 ^c	58.5	38.7	38 5/8	0.650	5/8	5/16	15.8	15 3/4	1.07	1 1/16	2.25	2 5/16	1 9/16	↓	↓
W40×392 ^h	115	41.6	41 5/8	1.42	1 7/16	3/4	12.4	12 3/8	2.52	2 1/2	3.70	3 13/16	1 15/16	34	7 1/2
×331 ^h	97.5	40.8	40 3/4	1.22	1 1/4	5/8	12.2	12 1/8	2.13	2 1/8	3.31	3 3/8	1 13/16	↓	↓
×327 ^h	96.0	40.8	40 3/4	1.18	1 3/16	5/8	12.1	12 1/8	2.13	2 1/8	3.31	3 3/8	1 13/16	↓	↓
×294	86.3	40.4	40 3/8	1.06	1 1/16	9/16	12.0	12	1.93	1 15/16	3.11	3 3/16	1 3/4	↓	↓
×278	82.0	40.2	40 1/8	1.03	1	1/2	12.0	12	1.81	1 13/16	2.99	3 1/16	1 3/4	↓	↓
×264	77.6	40.0	40	0.960	15/16	1/2	11.9	11 7/8	1.73	1 3/4	2.91	3	1 11/16	↓	↓
×235 ^c	69.0	39.7	39 3/4	0.830	13/16	7/16	11.9	11 7/8	1.58	1 9/16	2.76	2 7/8	1 5/8	↓	↓
×211 ^c	62.0	39.4	39 3/8	0.750	3/4	3/8	11.8	11 3/4	1.42	1 7/16	2.60	2 11/16	1 9/16	↓	↓
×183 ^c	53.3	39.0	39	0.650	5/8	5/16	11.8	11 3/4	1.20	1 3/16	2.38	2 1/2	1 9/16	↓	↓
×167 ^c	49.2	38.6	38 5/8	0.650	5/8	5/16	11.8	11 3/4	1.03	1	2.21	2 5/16	1 9/16	↓	↓
×149 ^{c,v}	43.8	38.2	38 1/4	0.630	5/8	5/16	11.8	11 3/4	0.830	13/16	2.01	2 1/8	1 1/2	↓	↓

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

^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.

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



W44 - W40

Nom- inal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				<i>r_{ts}</i>	<i>h_o</i>	Torsional Properties	
	<i>b_f</i>	<i>h</i>	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>	<i>I</i>	<i>S</i>	<i>r</i>	<i>Z</i>			<i>J</i>	<i>C_w</i>
	lb/ft	$\frac{b_f}{2t_f}$	$\frac{h}{t_w}$	in. ⁴	in. ³	in.	in. ³	in. ⁴	in. ³	in.	in. ³	in.	in.	in. ⁴
335	4.50	38.0	31100	1410	17.8	1620	1200	150	3.49	236	4.24	42.3	74.7	535000
290	5.02	45.0	27000	1240	17.8	1410	1040	132	3.49	205	4.21	42.0	50.9	461000
262	5.57	49.6	24100	1110	17.7	1270	923	117	3.47	182	4.17	41.9	37.3	405000
230	6.45	54.8	20800	971	17.5	1100	796	101	3.43	157	4.13	41.7	24.9	346000
593	2.58	19.1	50400	2340	17.0	2760	2520	302	3.80	481	4.63	39.8	445	997000
503	2.98	22.3	41600	1980	16.8	2310	2040	249	3.72	394	4.50	39.3	277	789000
431	3.44	25.5	34800	1690	16.6	1960	1690	208	3.65	328	4.41	38.9	177	638000
397	3.66	28.0	32000	1560	16.6	1800	1540	191	3.64	300	4.37	38.8	142	579000
372	3.93	29.5	29600	1460	16.5	1680	1420	177	3.60	277	4.34	38.6	116	528000
362	3.99	30.5	28900	1420	16.5	1640	1380	173	3.60	270	4.33	38.5	109	513000
324	4.40	34.2	25600	1280	16.4	1460	1220	153	3.58	239	4.28	38.4	79.4	448000
297	4.80	36.8	23200	1170	16.3	1330	1090	138	3.54	215	4.23	38.2	61.2	399000
277	5.03	41.2	21900	1100	16.4	1250	1040	132	3.58	204	4.25	38.1	51.5	379000
249	5.55	45.6	19600	993	16.3	1120	926	118	3.55	182	4.21	38.0	38.1	334000
215	6.45	52.6	16700	859	16.2	964	796	101	3.54	156	4.18	37.8	24.8	284000
199	7.39	52.6	14900	770	16.0	869	695	88.2	3.45	137	4.12	37.6	18.3	246000
392	2.45	24.1	29900	1440	16.1	1710	803	130	2.64	212	3.30	39.1	172	306000
331	2.86	28.0	24700	1210	15.9	1430	644	106	2.57	172	3.21	38.7	105	241000
327	2.85	29.0	24500	1200	16.0	1410	640	105	2.58	170	3.21	38.7	103	239000
294	3.11	32.2	21900	1080	15.9	1270	562	93.5	2.55	150	3.16	38.5	76.6	208000
278	3.31	33.3	20500	1020	15.8	1190	521	87.1	2.52	140	3.13	38.4	65.0	192000
264	3.45	35.6	19400	971	15.8	1130	493	82.6	2.52	132	3.12	38.3	56.1	181000
235	3.77	41.2	17400	875	15.9	1010	444	74.6	2.54	118	3.11	38.1	41.3	161000
211	4.17	45.6	15500	786	15.8	906	390	66.1	2.51	105	3.07	38.0	30.4	141000
183	4.92	52.6	13200	675	15.7	774	331	56.0	2.49	88.3	3.04	37.8	19.3	118000
167	5.76	52.6	11600	600	15.3	693	283	47.9	2.40	76.0	2.98	37.6	14.0	99700
149	7.11	54.3	9800	513	15.0	598	229	38.8	2.29	62.2	2.89	37.4	9.36	80000

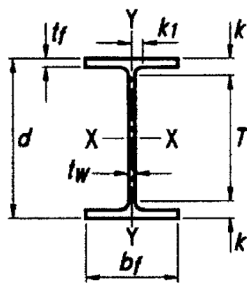


Table 1-1 (continued)
W Shapes
Dimensions

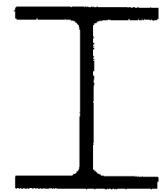
Shape	Area, A	Depth, d		Web			Flange			Distance					
				Thickness, tw	tw 2	Width, bf	Thickness, tf	k		k1	T	Work- able Gage			
								kdes	kdet						
in. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.			
W36×800 ^h	236	42.6	42 1/2	2.38	2 3/8	1 3/16	18.0	18	4.29	4 5/16	5.24	5 9/16	2 3/8	31 3/8	7 1/2
×652 ^h	192	41.1	41	1.97	2	1	17.6	17 5/8	3.54	3 9/16	4.49	4 13/16	2 3/16		
×529 ^h	156	39.8	39 3/4	1.61	1 5/8	1 3/16	17.2	17 1/4	2.91	2 15/16	3.86	4 3/16	2		
×487 ^h	143	39.3	39 3/8	1.50	1 1/2	3/4	17.1	17 1/8	2.68	2 11/16	3.63	4	1 15/16		
×441 ^h	130	38.9	38 7/8	1.36	1 3/8	1 1/16	17.0	17	2.44	2 7/16	3.39	3 3/4	1 7/8		
×395 ^h	116	38.4	38 3/8	1.22	1 1/4	5/8	16.8	16 7/8	2.20	2 3/16	3.15	3 7/16	1 13/16		
×361 ^h	106	38.0	38	1.12	1 1/8	9/16	16.7	16 3/4	2.01	2	2.96	3 5/16	1 3/4		
×330	97.0	37.7	37 5/8	1.02	1	1/2	16.6	16 5/8	1.85	1 7/8	2.80	3 1/8	1 3/4		
×302	88.8	37.3	37 3/8	0.945	15/16	1/2	16.7	16 5/8	1.68	1 11/16	2.63	3	1 11/16		
×282 ^c	82.9	37.1	37 1/8	0.885	7/8	7/16	16.6	16 5/8	1.57	1 9/16	2.52	2 7/8	1 5/8		
×262 ^c	77.0	36.9	36 7/8	0.840	13/16	7/16	16.6	16 1/2	1.44	1 7/16	2.39	2 3/4	1 5/8		
×247 ^c	72.5	36.7	36 5/8	0.800	13/16	7/16	16.5	16 1/2	1.35	1 3/8	2.30	2 5/8	1 5/8		
×231 ^c	68.1	36.5	36 1/2	0.760	3/4	3/8	16.5	16 1/2	1.26	1 1/4	2.21	2 9/16	1 9/16		
W36×256	75.4	37.4	37 3/8	0.960	15/16	1/2	12.2	12 1/4	1.73	1 3/4	2.48	2 5/8	1 5/16	32 1/8	5 1/2
×232 ^c	68.1	37.1	37 1/8	0.870	7/8	7/16	12.1	12 1/8	1.57	1 9/16	2.32	2 7/16	1 1/4		
×210 ^c	61.8	36.7	36 3/4	0.830	13/16	7/16	12.2	12 1/8	1.36	1 3/8	2.11	2 5/16	1 1/4		
×194 ^c	57.0	36.5	36 1/2	0.765	3/4	3/8	12.1	12 1/8	1.26	1 1/4	2.01	2 3/16	1 3/16		
×182 ^c	53.6	36.3	36 3/8	0.725	3/4	3/8	12.1	12 1/8	1.18	1 3/16	1.93	2 1/8	1 3/16		
×170 ^c	50.1	36.2	36 1/8	0.680	1 1/16	3/8	12.0	12	1.10	1 1/8	1.85	2	1 3/16		
×160 ^c	47.0	36.0	36	0.650	5/8	5/16	12.0	12	1.02	1	1.77	1 15/16	1 1/8		
×150 ^c	44.2	35.9	35 7/8	0.625	5/8	5/16	12.0	12	0.940	15/16	1.69	1 7/8	1 1/8		
×135 ^{c,v}	39.7	35.6	35 1/2	0.600	5/8	5/16	12.0	12	0.790	13/16	1.54	1 11/16	1 1/8		
W33×387 ^h	114	36.0	36	1.26	1 1/4	5/8	16.2	16 1/4	2.28	2 1/4	3.07	3 3/16	1 7/16	29 5/8	5 1/2
×354 ^h	104	35.6	35 1/2	1.16	1 3/16	5/8	16.1	16 1/8	2.09	2 1/16	2.88	2 15/16	1 3/8		
×318	93.6	35.2	35 1/8	1.04	1 1/16	9/16	16.0	16	1.89	1 7/8	2.68	2 3/4	1 5/16		
×291	85.7	34.8	34 7/8	0.960	15/16	1/2	15.9	15 7/8	1.73	1 3/4	2.52	2 5/8	1 5/16		
×263	77.5	34.5	34 1/2	0.870	7/8	7/16	15.8	15 3/4	1.57	1 9/16	2.36	2 7/16	1 1/4		
×241 ^c	71.0	34.2	34 1/8	0.830	13/16	7/16	15.9	15 7/8	1.40	1 3/8	2.19	2 1/4	1 1/4		
×221 ^c	65.2	33.9	33 7/8	0.775	3/4	3/8	15.8	15 3/4	1.28	1 1/4	2.06	2 1/8	1 3/16		
×201 ^c	59.2	33.7	33 5/8	0.715	1 1/16	3/8	15.7	15 3/4	1.15	1 1/8	1.94	2	1 3/16		
W33×169 ^c	49.5	33.8	33 7/8	0.670	1 1/16	3/8	11.5	11 1/2	1.22	1 1/4	1.92	2 1/8	1 3/16	29 5/8	5 1/2
×152 ^c	44.8	33.5	33 1/2	0.635	5/8	5/16	11.6	11 5/8	1.06	1 1/16	1.76	1 15/16	1 1/8		
×141 ^c	41.6	33.3	33 1/4	0.605	5/8	5/16	11.5	11 1/2	0.960	15/16	1.66	1 13/16	1 1/8		
×130 ^c	38.3	33.1	33 1/8	0.580	9/16	5/16	11.5	11 1/2	0.855	7/8	1.56	1 3/4	1 1/8		
×118 ^{c,v}	34.7	32.9	32 7/8	0.550	9/16	5/16	11.5	11 1/2	0.740	3/4	1.44	1 5/8	1 1/8		

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

^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.

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



W36 - W33

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	in.	in.	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
800	2.10	13.5	64700	3040	16.6	3650	4200	467	4.22	743	5.14	38.3	1060	1540000
652	2.48	16.3	50600	2460	16.2	2910	3230	367	4.10	581	4.96	37.5	593	1130000
529	2.96	19.9	39600	1990	16.0	2330	2490	289	4.00	454	4.80	36.9	327	846000
487	3.19	21.4	36000	1830	15.8	2130	2250	263	3.96	412	4.74	36.7	258	754000
441	3.48	23.6	32100	1650	15.7	1910	1990	235	3.92	368	4.69	36.4	194	661000
395	3.83	26.3	28500	1490	15.7	1710	1750	208	3.88	325	4.61	36.2	142	575000
361	4.16	28.6	25700	1350	15.6	1550	1570	188	3.85	293	4.58	36.0	109	509000
330	4.49	31.4	23300	1240	15.5	1410	1420	171	3.83	265	4.53	35.8	84.3	456000
302	4.96	33.9	21100	1130	15.4	1280	1300	156	3.82	241	4.53	35.7	64.3	412000
282	5.29	36.2	19600	1050	15.4	1190	1200	144	3.80	223	4.50	35.5	52.7	378000
262	5.75	38.2	17900	972	15.3	1100	1090	132	3.76	204	4.46	35.4	41.6	342000
247	6.11	40.1	16700	913	15.2	1030	1010	123	3.74	190	4.42	35.3	34.7	316000
231	6.54	42.2	15600	854	15.1	963	940	114	3.71	176	4.40	35.2	28.7	292000
256	3.53	33.8	16800	895	14.9	1040	528	86.5	2.65	137	3.25	35.7	52.9	168000
232	3.86	37.3	15000	809	14.8	936	468	77.2	2.62	122	3.21	35.6	39.6	148000
210	4.48	39.1	13200	719	14.6	833	411	67.5	2.58	107	3.18	35.3	28.0	128000
194	4.81	42.4	12100	664	14.6	767	375	61.9	2.56	97.7	3.15	35.2	22.2	116000
182	5.12	44.8	11300	623	14.5	718	347	57.6	2.55	90.7	3.13	35.2	18.5	107000
170	5.47	47.7	10500	581	14.5	668	320	53.2	2.53	83.8	3.11	35.1	15.1	98500
160	5.88	49.9	9760	542	14.4	624	295	49.1	2.50	77.3	3.08	35.0	12.4	90200
150	6.37	51.9	9040	504	14.3	581	270	45.1	2.47	70.9	3.06	34.9	10.1	82200
135	7.56	54.1	7800	439	14.0	509	225	37.7	2.38	59.7	2.99	34.8	7.00	68100
387	3.55	23.7	24300	1350	14.6	1560	1620	200	3.77	312	4.49	33.7	148	459000
354	3.85	25.7	22000	1240	14.5	1420	1460	181	3.74	282	4.44	33.5	115	408000
318	4.23	28.7	19500	1110	14.5	1270	1290	161	3.71	250	4.39	33.3	84.4	357000
291	4.60	31.0	17700	1020	14.4	1160	1160	146	3.68	226	4.35	33.1	65.1	319000
263	5.03	34.3	15900	919	14.3	1040	1040	131	3.66	202	4.31	33.0	48.7	281000
241	5.66	35.9	14200	831	14.1	940	933	118	3.62	182	4.29	32.8	36.2	251000
221	6.20	38.5	12900	759	14.1	857	840	106	3.59	164	4.25	32.7	27.8	224000
201	6.85	41.7	11600	686	14.0	773	749	95.2	3.56	147	4.21	32.5	20.8	198000
169	4.71	44.7	9290	549	13.7	629	310	53.9	2.50	84.4	3.03	32.6	17.7	82400
152	5.48	47.2	8160	487	13.5	559	273	47.2	2.47	73.9	3.01	32.4	12.4	71700
141	6.01	49.6	7450	448	13.4	514	246	42.7	2.43	66.9	2.98	32.3	9.70	64400
130	6.73	51.7	6710	406	13.2	467	218	37.9	2.39	59.5	2.94	32.2	7.37	56600
118	7.76	54.5	5900	359	13.0	415	187	32.6	2.32	51.3	2.89	32.1	5.30	48300

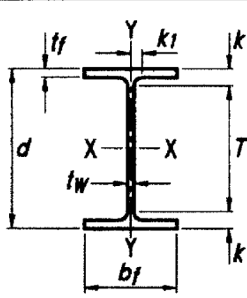


Table 1-1 (continued)
W Shapes
Dimensions

Shape	Area, <i>A</i>	Depth, <i>d</i>		Web			Flange				Distance				
				Thickness, <i>t_w</i>	<i>t_w</i> / 2	Width, <i>b_f</i>	Thickness, <i>t_f</i>	<i>k</i>		<i>k₁</i>	<i>T</i>	Workable Gage			
								<i>k_{des}</i>	<i>k_{det}</i>				in.	in.	
in. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		
W30×391 ^h	115	33.2	33 1/4	1.36	1 3/8	1 1/16	15.6	15 5/8	2.44	2 7/16	3.23	3 3/8	1 1/2	26 1/2	5 1/2
×357 ^h	105	32.8	32 3/4	1.24	1 1/4	5/8	15.5	15 1/2	2.24	2 1/4	3.03	3 1/8	1 7/16	↓	↓
×326 ^h	95.8	32.4	32 3/8	1.14	1 1/8	9/16	15.4	15 3/8	2.05	2 1/16	2.84	2 15/16	1 3/8	↓	↓
×292	85.9	32.0	32	1.02	1	1/2	15.3	15 1/4	1.85	1 7/8	2.64	2 3/4	1 5/16	↓	↓
×261	76.9	31.6	31 5/8	0.930	15/16	1/2	15.2	15 1/8	1.65	1 5/8	2.44	2 9/16	1 5/16	↓	↓
×235	69.2	31.3	31 1/4	0.830	13/16	7/16	15.1	15	1.50	1 1/2	2.29	2 3/8	1 1/4	↓	↓
×211	62.2	30.9	31	0.775	3/4	3/8	15.1	15 1/8	1.32	1 5/16	2.10	2 1/4	1 3/16	↓	↓
×191 ^c	56.3	30.7	30 5/8	0.710	11/16	3/8	15.0	15	1.19	1 3/16	1.97	2 1/16	1 3/16	↓	↓
×173 ^c	51.0	30.4	30 1/2	0.655	5/8	5/16	15.0	15	1.07	1 1/16	1.85	2	1 1/8	↓	↓
W30×148 ^c	43.5	30.7	30 5/8	0.650	5/8	5/16	10.5	10 1/2	1.18	1 3/16	1.83	2 1/16	1 1/8	26 1/2	5 1/2
×132 ^c	38.9	30.3	30 1/4	0.615	5/8	5/16	10.5	10 1/2	1.00	1	1.65	1 7/8	1 1/8	↓	↓
×124 ^c	36.5	30.2	30 1/8	0.585	9/16	5/16	10.5	10 1/2	0.930	15/16	1.58	1 13/16	1 1/8	↓	↓
×116 ^c	34.2	30.0	30	0.565	9/16	5/16	10.5	10 1/2	0.850	7/8	1.50	1 3/4	1 1/8	↓	↓
×108 ^c	31.7	29.8	29 7/8	0.545	9/16	5/16	10.5	10 1/2	0.760	3/4	1.41	1 11/16	1 1/8	↓	↓
×99 ^c	29.1	29.7	29 5/8	0.520	1/2	1/4	10.5	10 1/2	0.670	11/16	1.32	1 9/16	1 1/16	↓	↓
×90 ^{c,v}	26.4	29.5	29 1/2	0.470	1/2	1/4	10.4	10 3/8	0.610	5/8	1.26	1 1/2	1 1/16	↓	↓
W27×539 ^h	159	32.5	32 1/2	1.97	2	1	15.3	15 1/4	3.54	3 9/16	4.33	4 7/16	1 13/16	23 5/8	5 1/2 ^g
×368 ^h	108	30.4	30 3/8	1.38	1 3/8	1 1/16	14.7	14 5/8	2.48	2 1/2	3.27	3 3/8	1 1/2	↓	↓
×336 ^h	98.9	30.0	30	1.26	1 1/4	5/8	14.6	14 1/2	2.28	2 1/4	3.07	3 3/16	1 7/16	↓	↓
×307 ^h	90.4	29.6	29 5/8	1.16	1 3/16	5/8	14.4	14 1/2	2.09	2 1/16	2.88	3	1 7/16	↓	↓
×281	82.9	29.3	29 1/4	1.06	1 1/16	9/16	14.4	14 3/8	1.93	1 15/16	2.72	2 13/16	1 3/8	↓	↓
×258	76.0	29.0	29	0.980	1	1/2	14.3	14 1/4	1.77	1 3/4	2.56	2 11/16	1 5/16	↓	↓
×235	69.4	28.7	28 5/8	0.910	15/16	1/2	14.2	14 1/4	1.61	1 5/8	2.40	2 1/2	1 5/16	↓	↓
×217	64.0	28.4	28 3/8	0.830	13/16	7/16	14.1	14 1/8	1.50	1 1/2	2.29	2 3/8	1 1/4	↓	↓
×194	57.2	28.1	28 1/8	0.750	3/4	3/8	14.0	14	1.34	1 5/16	2.13	2 1/4	1 3/16	↓	↓
×178	52.5	27.8	27 3/4	0.725	3/4	3/8	14.1	14 1/8	1.19	1 3/16	1.98	2 1/16	1 3/16	↓	↓
×161 ^c	47.6	27.6	27 5/8	0.660	11/16	3/8	14.0	14	1.08	1 1/16	1.87	2	1 3/16	↓	↓
×146 ^c	43.1	27.4	27 3/8	0.605	5/8	5/16	14.0	14	0.975	1	1.76	1 7/8	1 1/8	↓	↓
W27×129 ^c	37.8	27.6	27 5/8	0.610	5/8	5/16	10.0	10	1.10	1 1/8	1.70	2	1 1/8	23 5/8	5 1/2
×114 ^c	33.5	27.3	27 1/4	0.570	9/16	5/16	10.1	10 1/8	0.930	15/16	1.53	1 13/16	1 1/8	↓	↓
×102 ^c	30.0	27.1	27 1/8	0.515	1/2	1/4	10.0	10	0.830	13/16	1.43	1 3/4	1 1/16	↓	↓
×94 ^c	27.7	26.9	26 7/8	0.490	1/2	1/4	10.0	10	0.745	3/4	1.34	1 5/8	1 1/16	↓	↓
×84 ^c	24.8	26.7	26 3/4	0.460	7/16	1/4	10.0	10	0.640	5/8	1.24	1 9/16	1 1/16	↓	↓

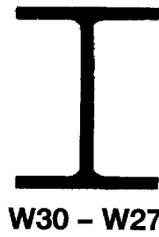
^c Shape is slender for compression with $F_y = 50$ ksi.

^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.

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



Nom- inal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties	
	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. ⁴
391	3.19	19.7	20700	1250	13.4	1450	1550	198	3.67	310	4.37	30.8	173	366000
357	3.45	21.6	18700	1140	13.3	1320	1390	179	3.64	279	4.32	30.6	134	324000
326	3.75	23.4	16800	1040	13.2	1190	1240	162	3.60	252	4.27	30.4	103	287000
292	4.12	26.2	14900	930	13.2	1060	1100	144	3.58	223	4.22	30.2	75.2	250000
261	4.59	28.7	13100	829	13.1	943	959	127	3.53	196	4.16	30.0	54.1	215000
235	5.02	32.2	11700	748	13.0	847	855	114	3.51	175	4.13	29.8	40.3	190000
211	5.74	34.5	10300	665	12.9	751	757	100	3.49	155	4.10	29.6	28.4	166000
191	6.35	37.7	9200	600	12.8	675	673	89.5	3.46	138	4.07	29.5	21.0	146000
173	7.04	40.8	8230	541	12.7	607	598	79.8	3.42	123	4.03	29.4	15.6	129000
148	4.44	41.6	6680	436	12.4	500	227	43.3	2.28	68.0	2.77	29.5	14.5	49400
132	5.27	43.9	5770	380	12.2	437	196	37.2	2.25	58.4	2.75	29.3	9.72	42100
124	5.65	46.2	5360	355	12.1	408	181	34.4	2.23	54.0	2.73	29.2	7.99	38600
116	6.17	47.8	4930	329	12.0	378	164	31.3	2.19	49.2	2.70	29.2	6.43	34900
108	6.89	49.6	4470	299	11.9	346	146	27.9	2.15	43.9	2.66	29.1	4.99	30900
99	7.80	51.9	3990	269	11.7	312	128	24.5	2.10	38.6	2.62	29.0	3.77	26800
90	8.52	57.5	3610	245	11.7	283	115	22.1	2.09	34.7	2.60	28.9	2.84	24000
539	2.15	12.1	25600	1570	12.7	1890	2110	277	3.65	437	4.41	29.0	496	443000
368	2.96	17.3	16200	1060	12.2	1240	1310	179	3.48	279	4.14	27.9	170	255000
336	3.19	18.9	14600	972	12.1	1130	1180	162	3.45	252	4.09	27.7	131	226000
307	3.46	20.6	13100	887	12.0	1030	1050	146	3.41	227	4.04	27.5	101	199000
281	3.72	22.5	11900	814	12.0	936	953	133	3.39	206	4.00	27.4	79.5	178000
258	4.03	24.4	10800	745	11.9	852	859	120	3.36	187	3.96	27.2	61.6	159000
235	4.41	26.2	9700	677	11.8	772	769	108	3.33	168	3.92	27.1	47.0	141000
217	4.71	28.7	8910	627	11.8	711	704	100	3.32	154	3.89	26.9	37.6	128000
194	5.24	31.8	7860	559	11.7	631	619	88.1	3.29	136	3.85	26.8	27.1	111000
178	5.92	32.9	7020	505	11.6	570	555	78.8	3.25	122	3.83	26.6	20.1	98400
161	6.49	36.1	6310	458	11.5	515	497	70.9	3.23	109	3.79	26.5	15.1	87300
146	7.16	39.4	5660	414	11.5	464	443	63.5	3.20	97.7	3.76	26.4	11.3	77200
129	4.55	39.7	4760	345	11.2	395	184	36.8	2.21	57.6	2.66	26.5	11.1	32500
114	5.41	42.5	4080	299	11.0	343	159	31.5	2.18	49.3	2.64	26.4	7.33	27600
102	6.03	47.1	3620	267	11.0	305	139	27.8	2.15	43.4	2.62	26.3	5.28	24000
94	6.70	49.5	3270	243	10.9	278	124	24.8	2.12	38.8	2.59	26.2	4.03	21300
84	7.78	52.7	2850	213	10.7	244	106	21.2	2.07	33.2	2.54	26.1	2.81	17900

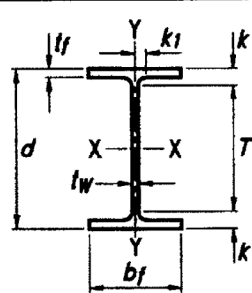
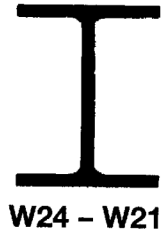


Table 1-1 (continued)
W Shapes
Dimensions

Shape	Area, A	Depth, d	Web				Flange				Distance				
			Thickness, t _w	t _w / 2	Width, b _f	Thickness, t _f	k		k ₁	T	Work- able Gage				
							k _{des}	k _{det}							
in. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.			
W24×370 ^h	109	28.0	28	1.52	1 1/2	3/4	13.7	13 5/8	2.72	2 3/4	3.22	3 5/8	1 9/16	20 3/4	5 1/2
×335 ^h	98.4	27.5	27 1/2	1.38	1 3/8	11/16	13.5	13 1/2	2.48	2 1/2	2.98	3 3/8	1 1/2		
×306 ^h	89.8	27.1	27 1/8	1.26	1 1/4	5/8	13.4	13 3/8	2.28	2 1/4	2.78	3 3/16	1 7/16		
×279 ^h	82.0	26.7	26 3/4	1.16	1 3/16	5/8	13.3	13 1/4	2.09	2 1/16	2.59	3	1 7/16		
×250	73.5	26.3	26 3/8	1.04	1 1/16	9/16	13.2	13 3/8	1.89	1 7/8	2.39	2 13/16	1 3/8		
×229	67.2	26.0	26	0.960	15/16	1/2	13.1	13 3/8	1.73	1 3/4	2.23	2 5/8	1 5/16		
×207	60.7	25.7	25 3/4	0.870	7/8	7/16	13.0	13	1.57	1 9/16	2.07	2 1/2	1 1/4		
×192	56.3	25.5	25 1/2	0.810	13/16	7/16	13.0	13	1.46	1 7/16	1.96	2 3/8	1 1/4		
×176	51.7	25.2	25 1/4	0.750	3/4	3/8	12.9	12 7/8	1.34	1 5/16	1.84	2 1/4	1 3/16		
×162	47.7	25.0	25	0.705	11/16	3/8	13.0	13	1.22	1 1/4	1.72	2 1/8	1 3/16		
×146	43.0	24.7	24 3/4	0.650	5/8	5/16	12.9	12 7/8	1.09	1 1/16	1.59	2	1 1/8		
×131	38.5	24.5	24 1/2	0.605	5/8	5/16	12.9	12 7/8	0.960	15/16	1.46	1 7/8	1 1/8		
×117 ^c	34.4	24.3	24 1/4	0.550	9/16	5/16	12.8	12 3/4	0.850	7/8	1.35	1 3/4	1 1/8		
×104 ^c	30.6	24.1	24	0.500	1/2	1/4	12.8	12 3/4	0.750	3/4	1.25	1 5/8	1 1/16	↓	↓
W24×103 ^c	30.3	24.5	24 1/2	0.550	9/16	5/16	9.00	9	0.980	1	1.48	1 7/8	1 1/8	20 3/4	5 1/2
×94 ^c	27.7	24.3	24 1/4	0.515	1/2	1/4	9.07	9 1/8	0.875	7/8	1.38	1 3/4	1 1/16	↓	↓
×84 ^c	24.7	24.1	24 1/8	0.470	1/2	1/4	9.02	9	0.770	3/4	1.27	1 11/16	1 1/16	↓	↓
×76 ^c	22.4	23.9	23 7/8	0.440	7/16	1/4	8.99	9	0.680	11/16	1.18	1 9/16	1 1/16	↓	↓
×68 ^c	20.1	23.7	23 3/4	0.415	7/16	1/4	8.97	9	0.585	9/16	1.09	1 1/2	1 1/16	↓	↓
W24×62 ^c	18.2	23.7	23 3/4	0.430	7/16	1/4	7.04	7	0.590	9/16	1.09	1 1/2	1 1/16	20 3/4	3 1/2 ^g
×55 ^{c,v}	16.2	23.6	23 5/8	0.395	3/8	3/16	7.01	7	0.505	1/2	1.01	1 7/16	1	20 3/4	3 1/2 ^g
W21×201	59.2	23.0	23	0.910	15/16	1/2	12.6	12 5/8	1.63	1 5/8	2.13	2 1/2	1 5/16	18	5 1/2
×182	53.6	22.7	22 3/4	0.830	13/16	7/16	12.5	12 1/2	1.48	1 1/2	1.98	2 3/8	1 1/4		
×166	48.8	22.5	22 1/2	0.750	3/4	3/8	12.4	12 3/8	1.36	1 3/8	1.86	2 1/4	1 3/16		
×147	43.2	22.1	22	0.720	3/4	3/8	12.5	12 1/2	1.15	1 1/8	1.65	2	1 3/16		
×132	38.8	21.8	21 7/8	0.650	5/8	5/16	12.4	12 1/2	1.04	1 1/16	1.54	1 15/16	1 1/8		
×122	35.9	21.7	21 5/8	0.600	5/8	5/16	12.4	12 3/8	0.960	15/16	1.46	1 13/16	1 1/8		
×111	32.7	21.5	21 1/2	0.550	9/16	5/16	12.3	12 3/8	0.875	7/8	1.38	1 3/4	1 1/8		
×101 ^c	29.8	21.4	21 3/8	0.500	1/2	1/4	12.3	12 1/4	0.800	13/16	1.30	1 11/16	1 1/16	↓	↓

^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.

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



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
370	2.51	14.2	13400	957	11.1	1130	1160	170	3.27	267	3.92	25.3	201	186000
335	2.73	15.6	11900	864	11.0	1020	1030	152	3.23	238	3.86	25.0	152	161000
306	2.94	17.1	10700	789	10.9	922	919	137	3.20	214	3.81	24.9	117	142000
279	3.18	18.6	9600	718	10.8	835	823	124	3.17	193	3.76	24.6	90.5	125000
250	3.49	20.7	8490	644	10.7	744	724	110	3.14	171	3.71	24.5	66.6	108000
229	3.79	22.5	7650	588	10.7	675	651	99.4	3.11	154	3.67	24.3	51.3	96100
207	4.14	24.8	6820	531	10.6	606	578	88.8	3.08	137	3.62	24.1	38.3	84100
192	4.43	26.6	6260	491	10.5	559	530	81.8	3.07	126	3.60	24.0	30.8	76300
176	4.81	28.7	5680	450	10.5	511	479	74.3	3.04	115	3.57	23.9	23.9	68400
162	5.31	30.6	5170	414	10.4	468	443	68.4	3.05	105	3.57	23.8	18.5	62600
146	5.92	33.2	4580	371	10.3	418	391	60.5	3.01	93.2	3.53	23.7	13.4	54600
131	6.70	35.6	4020	329	10.2	370	340	53.0	2.97	81.5	3.49	23.5	9.50	47100
117	7.53	39.2	3540	291	10.1	327	297	46.5	2.94	71.4	3.46	23.4	6.72	40800
104	8.50	43.1	3100	258	10.1	289	259	40.7	2.91	62.4	3.42	23.3	4.72	35200
103	4.59	39.2	3000	245	10.0	280	119	26.5	1.99	41.5	2.40	23.6	7.07	16600
94	5.18	41.9	2700	222	9.87	254	109	24.0	1.98	37.5	2.40	23.4	5.26	15000
84	5.86	45.9	2370	196	9.79	224	94.4	20.9	1.95	32.6	2.37	23.3	3.70	12800
76	6.61	49.0	2100	176	9.69	200	82.5	18.4	1.92	28.6	2.34	23.2	2.68	11100
68	7.66	52.0	1830	154	9.55	177	70.4	15.7	1.87	24.5	2.30	23.1	1.87	9430
62	5.97	50.1	1550	131	9.23	153	34.5	9.80	1.38	15.7	1.75	23.2	1.71	4620
55	6.94	54.6	1350	114	9.11	134	29.1	8.30	1.34	13.3	1.71	23.1	1.18	3870
201	3.86	20.6	5310	461	9.47	530	542	86.1	3.02	133	3.55	21.4	40.9	62000
182	4.22	22.6	4730	417	9.40	476	483	77.2	3.00	119	3.51	21.2	30.7	54400
166	4.57	25.0	4280	380	9.36	432	435	70.0	2.99	108	3.48	21.1	23.6	48500
147	5.44	26.1	3630	329	9.17	373	376	60.1	2.95	92.6	3.45	20.9	15.4	41100
132	6.01	28.9	3220	295	9.12	333	333	53.5	2.93	82.3	3.42	20.8	11.3	36000
122	6.45	31.3	2960	273	9.09	307	305	49.2	2.92	75.6	3.40	20.7	8.98	32700
111	7.05	34.1	2670	249	9.05	279	274	44.5	2.90	68.2	3.37	20.6	6.83	29200
101	7.68	37.5	2420	227	9.02	253	248	40.3	2.89	61.7	3.35	20.6	5.21	26200

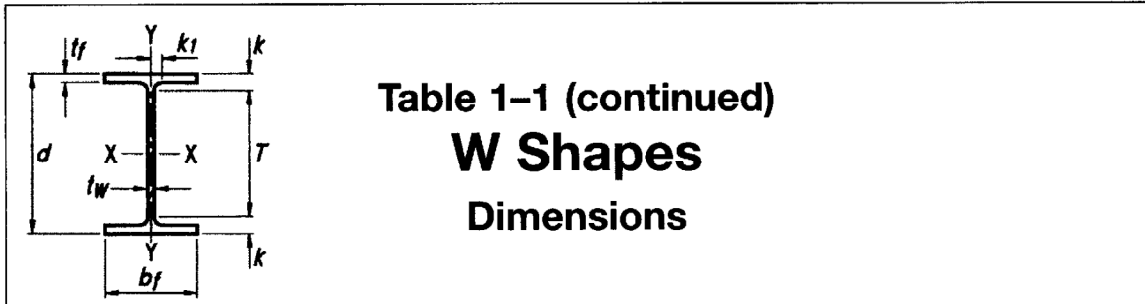


Table 1-1 (continued)
W Shapes
Dimensions

Shape	Area, A	Depth, d		Web			Flange				Distance				
				Thickness, tw	tw 2	Width, bf	Thickness, tf	k		k1	T	Work- able Gage			
								kdes	kdet						
in. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		
W21×93	27.3	21.6	21 ⁵ / ₈	0.580	⁹ / ₁₆	⁵ / ₁₆	8.42	8 ³ / ₈	0.930	¹⁵ / ₁₆	1.43	¹⁵ / ₈	¹⁵ / ₁₆	18 ³ / ₈	5 ¹ / ₂
×83 ^c	24.3	21.4	21 ³ / ₈	0.515	¹ / ₂	¹ / ₄	8.36	8 ³ / ₈	0.835	¹³ / ₁₆	1.34	1 ¹ / ₂	⁷ / ₈	↓	↓
×73 ^c	21.5	21.2	21 ¹ / ₄	0.455	⁷ / ₁₆	¹ / ₄	8.30	8 ¹ / ₄	0.740	³ / ₄	1.24	¹⁷ / ₁₆	⁷ / ₈	↓	↓
×68 ^c	20.0	21.1	21 ¹ / ₈	0.430	⁷ / ₁₆	¹ / ₄	8.27	8 ¹ / ₄	0.685	¹¹ / ₁₆	1.19	¹³ / ₈	⁷ / ₈	↓	↓
×62 ^c	18.3	21.0	21	0.400	³ / ₈	³ / ₁₆	8.24	8 ¹ / ₄	0.615	⁵ / ₈	1.12	¹⁵ / ₁₆	¹³ / ₁₆	↓	↓
×55 ^c	16.2	20.8	20 ³ / ₄	0.375	³ / ₈	³ / ₁₆	8.22	8 ¹ / ₄	0.522	¹ / ₂	1.02	¹³ / ₁₆	¹³ / ₁₆	↓	↓
×48 ^{c,f}	14.1	20.6	20 ⁵ / ₈	0.350	³ / ₈	³ / ₁₆	8.14	8 ¹ / ₈	0.430	⁷ / ₁₆	0.930	¹¹ / ₈	¹³ / ₁₆	↓	↓
W21×57 ^c	16.7	21.1	21	0.405	³ / ₈	³ / ₁₆	6.56	6 ¹ / ₂	0.650	⁵ / ₈	1.15	¹⁵ / ₁₆	¹³ / ₁₆	18 ³ / ₈	3 ¹ / ₂
×50 ^c	14.7	20.8	20 ⁷ / ₈	0.380	³ / ₈	³ / ₁₆	6.53	6 ¹ / ₂	0.535	⁹ / ₁₆	1.04	1 ¹ / ₄	¹³ / ₁₆	↓	↓
×44 ^c	13.0	20.7	20 ⁵ / ₈	0.350	³ / ₈	³ / ₁₆	6.50	6 ¹ / ₂	0.450	⁷ / ₁₆	0.950	¹¹ / ₈	¹³ / ₁₆	↓	↓
W18×311 ^h	91.6	22.3	22 ³ / ₈	1.52	¹ / ₂	³ / ₄	12.0	12	2.74	2 ³ / ₄	3.24	³⁷ / ₁₆	¹³ / ₈	15 ¹ / ₂	5 ¹ / ₂
×283 ^h	83.3	21.9	21 ⁷ / ₈	1.40	¹³ / ₈	¹¹ / ₁₆	11.9	11 ⁷ / ₈	2.50	2 ¹ / ₂	3.00	³³ / ₁₆	¹⁵ / ₁₆	↓	↓
×258 ^h	75.9	21.5	21 ¹ / ₂	1.28	¹¹ / ₄	⁵ / ₈	11.8	11 ³ / ₄	2.30	2 ⁵ / ₁₆	2.70	3	¹ / ₄	↓	↓
×234 ^h	68.8	21.1	21	1.16	¹³ / ₁₆	⁵ / ₈	11.7	11 ⁵ / ₈	2.11	2 ¹ / ₈	2.51	2 ³ / ₄	¹³ / ₁₆	↓	↓
×211	62.1	20.7	20 ⁵ / ₈	1.06	¹¹ / ₁₆	⁹ / ₁₆	11.6	11 ¹ / ₂	1.91	¹¹ / ₁₆	2.31	2 ⁹ / ₁₆	¹³ / ₁₆	↓	↓
×192	56.4	20.4	20 ³ / ₈	0.960	¹⁵ / ₁₆	¹ / ₂	11.5	11 ¹ / ₂	1.75	¹³ / ₄	2.15	2 ⁷ / ₁₆	¹¹ / ₈	15 ¹ / ₈	↓
×175	51.3	20.0	20	0.890	⁷ / ₈	⁷ / ₁₆	11.4	11 ³ / ₈	1.59	¹⁹ / ₁₆	1.99	2 ⁷ / ₁₆	¹¹ / ₄	↓	↓
×158	46.3	19.7	19 ³ / ₄	0.810	¹³ / ₁₆	⁷ / ₁₆	11.3	11 ¹ / ₄	1.44	¹⁷ / ₁₆	1.84	2 ³ / ₈	¹¹ / ₄	↓	↓
×143	42.1	19.5	19 ¹ / ₂	0.730	³ / ₄	³ / ₈	11.2	11 ¹ / ₄	1.32	¹⁵ / ₁₆	1.72	2 ³ / ₁₆	¹³ / ₁₆	↓	↓
×130	38.2	19.3	19 ¹ / ₄	0.670	¹¹ / ₁₆	³ / ₈	11.2	11 ¹ / ₈	1.20	¹³ / ₁₆	1.60	2 ¹ / ₁₆	¹³ / ₁₆	↓	↓
×119	35.1	19.0	19	0.655	⁵ / ₈	⁵ / ₁₆	11.3	11 ¹ / ₄	1.06	¹¹ / ₁₆	1.46	1 ¹⁵ / ₁₆	¹³ / ₁₆	↓	↓
×106	31.1	18.7	18 ³ / ₄	0.590	⁹ / ₁₆	⁵ / ₁₆	11.2	11 ¹ / ₄	0.940	¹⁵ / ₁₆	1.34	1 ¹³ / ₁₆	¹¹ / ₈	↓	↓
×97	28.5	18.6	18 ⁵ / ₈	0.535	⁹ / ₁₆	⁵ / ₁₆	11.1	11 ¹ / ₈	0.870	⁷ / ₈	1.27	¹³ / ₄	¹¹ / ₈	↓	↓
×86	25.3	18.4	18 ³ / ₈	0.480	¹ / ₂	¹ / ₄	11.1	11 ¹ / ₈	0.770	³ / ₄	1.17	¹⁵ / ₈	¹¹ / ₁₆	↓	↓
×76 ^c	22.3	18.2	18 ¹ / ₄	0.425	⁷ / ₁₆	¹ / ₄	11.0	11	0.680	¹¹ / ₁₆	1.08	¹⁹ / ₁₆	¹¹ / ₁₆	↓	↓
W18×71	20.8	18.5	18 ¹ / ₂	0.495	¹ / ₂	¹ / ₄	7.64	7 ⁵ / ₈	0.810	¹³ / ₁₆	1.21	1 ¹ / ₂	⁷ / ₈	15 ¹ / ₂	3 ¹ / ₂ ^g
×65	19.1	18.4	18 ³ / ₈	0.450	⁷ / ₁₆	¹ / ₄	7.59	7 ⁵ / ₈	0.750	³ / ₄	1.15	¹⁷ / ₁₆	⁷ / ₈	↓	↓
×60 ^c	17.6	18.2	18 ¹ / ₄	0.415	⁷ / ₁₆	¹ / ₄	7.56	7 ¹ / ₂	0.695	¹¹ / ₁₆	1.10	¹³ / ₈	¹³ / ₁₆	↓	↓
×55 ^c	16.2	18.1	18 ¹ / ₈	0.390	³ / ₈	³ / ₁₆	7.53	7 ¹ / ₂	0.630	⁵ / ₈	1.03	¹⁵ / ₁₆	¹³ / ₁₆	↓	↓
×50 ^c	14.7	18.0	18	0.355	³ / ₈	³ / ₁₆	7.50	7 ¹ / ₂	0.570	⁹ / ₁₆	0.972	1 ¹ / ₄	¹³ / ₁₆	↓	↓
W18×46 ^c	13.5	18.1	18	0.360	³ / ₈	³ / ₁₆	6.06	6	0.605	⁵ / ₈	1.01	1 ¹ / ₄	¹³ / ₁₆	15 ¹ / ₂	3 ¹ / ₂ ^g
×40 ^c	11.8	17.9	17 ⁷ / ₈	0.315	⁵ / ₁₆	³ / ₁₆	6.02	6	0.525	¹ / ₂	0.927	¹³ / ₁₆	¹³ / ₁₆	↓	↓
×35 ^c	10.3	17.7	17 ³ / ₄	0.300	⁵ / ₁₆	³ / ₁₆	6.00	6	0.425	⁷ / ₁₆	0.827	¹¹ / ₈	³ / ₄	↓	↓

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

^f Shape exceeds compact limit for flexure 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.

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



W21 - W18

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 2 t_f	h t_w	I in. ⁴	S in. ³	r in.	Z in. ³	I in. ⁴	S in. ³	r in.	Z in. ³	in.	in.	J in. ⁴	C_w in. ⁶
93	4.53	32.3	2070	192	8.70	221	92.9	22.1	1.84	34.7	2.24	20.7	6.03	9940
83	5.00	36.4	1830	171	8.67	196	81.4	19.5	1.83	30.5	2.21	20.6	4.34	8630
73	5.60	41.2	1600	151	8.64	172	70.6	17.0	1.81	26.6	2.19	20.5	3.02	7410
68	6.04	43.6	1480	140	8.60	160	64.7	15.7	1.80	24.4	2.17	20.4	2.45	6760
62	6.70	46.9	1330	127	8.54	144	57.5	14.0	1.77	21.7	2.15	20.4	1.83	5960
55	7.87	50.0	1140	110	8.40	126	48.4	11.8	1.73	18.4	2.11	20.3	1.24	4980
48	9.47	53.6	959	93.0	8.24	107	38.7	9.52	1.66	14.9	2.05	20.2	0.803	3950
57	5.04	46.3	1170	111	8.36	129	30.6	9.35	1.35	14.8	1.68	20.4	1.77	3190
50	6.10	49.4	984	94.5	8.18	110	24.9	7.64	1.30	12.2	1.64	20.3	1.14	2570
44	7.22	53.6	843	81.6	8.06	95.4	20.7	6.37	1.26	10.2	1.60	20.2	0.770	2110
311	2.19	10.4	6970	624	8.72	754	795	132	2.95	207	3.53	19.6	176	76200
283	2.38	11.3	6170	565	8.61	676	704	118	2.91	185	3.47	19.4	134	65900
258	2.56	12.5	5510	514	8.53	611	628	107	2.88	166	3.42	19.2	103	57600
234	2.76	13.8	4900	466	8.44	549	558	95.8	2.85	149	3.37	19.0	78.7	50100
211	3.02	15.1	4330	419	8.35	490	493	85.3	2.82	132	3.32	18.8	58.6	43400
192	3.27	16.7	3870	380	8.28	442	440	76.8	2.79	119	3.28	18.6	44.7	38000
175	3.58	18.0	3450	344	8.20	398	391	68.8	2.76	106	3.24	18.5	33.8	33300
158	3.92	19.8	3060	310	8.12	356	347	61.4	2.74	94.8	3.20	18.3	25.2	29000
143	4.25	22.0	2750	282	8.09	322	311	55.5	2.72	85.4	3.17	18.2	19.2	25700
130	4.65	23.9	2460	256	8.03	290	278	49.9	2.70	76.7	3.13	18.1	14.5	22700
119	5.31	24.5	2190	231	7.90	262	253	44.9	2.69	69.1	3.13	17.9	10.6	20300
106	5.96	27.2	1910	204	7.84	230	220	39.4	2.66	60.5	3.10	17.8	7.48	17400
97	6.41	30.0	1750	188	7.82	211	201	36.1	2.65	55.3	3.08	17.7	5.86	15800
86	7.20	33.4	1530	166	7.77	186	175	31.6	2.63	48.4	3.05	17.6	4.10	13600
76	8.11	37.8	1330	146	7.73	163	152	27.6	2.61	42.2	3.02	17.5	2.83	11700
71	4.71	32.4	1170	127	7.50	146	60.3	15.8	1.70	24.7	2.05	17.7	3.49	4700
65	5.06	35.7	1070	117	7.49	133	54.8	14.4	1.69	22.5	2.03	17.6	2.73	4240
60	5.44	38.7	984	108	7.47	123	50.1	13.3	1.68	20.6	2.02	17.5	2.17	3850
55	5.98	41.1	890	98.3	7.41	112	44.9	11.9	1.67	18.5	2.00	17.5	1.66	3430
50	6.57	45.2	800	88.9	7.38	101	40.1	10.7	1.65	16.6	1.98	17.4	1.24	3040
46	5.01	44.6	712	78.8	7.25	90.7	22.5	7.43	1.29	11.7	1.58	17.5	1.22	1720
40	5.73	50.9	612	68.4	7.21	78.4	19.1	6.35	1.27	10.0	1.56	17.4	0.810	1440
35	7.06	53.5	510	57.6	7.04	66.5	15.3	5.12	1.22	8.06	1.52	17.3	0.506	1140

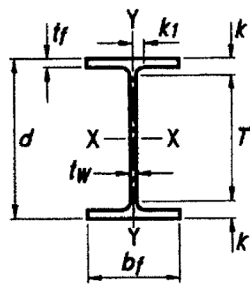
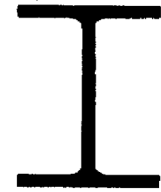


Table 1-1 (continued)
W Shapes
Dimensions

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. ²	in.	in.	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 ⁹
×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 ^{c,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 ⁹
×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 ⁹
×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.
⁹ 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.

**Table 1-1 (continued)
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
	lb/ft	$\frac{b_f}{2t_f}$	$\frac{h}{t_w}$	in. ⁴	in. ³	in.	in. ³	in. ⁴	in. ³	in.	in. ³	in.	in.	in. ⁴
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

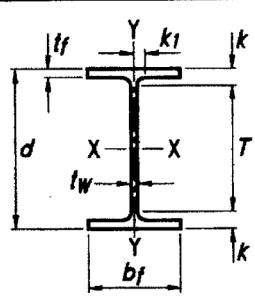
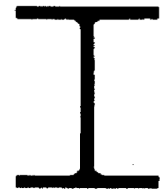


Table 1-1 (continued)
W Shapes
Dimensions

Shape	Area, A in. ²	Depth, d in.	Web				Flange				Distance				
			Thickness, t _w in.	t _w /2 in.	Width, b _f in.	Thickness, t _f in.	k		k ₁ in.	T in.	Work-able Gage in.				
							k _{des} in.	k _{det} in.							
W14×132	38.8	14.7	14 ⁵ / ₈	0.645	5/8	5/16	14.7	14 ³ / ₄	1.03	1	1.63	2 ⁵ / ₁₆	1 ⁹ / ₁₆	10	5 ¹ / ₂
×120	35.3	14.5	14 ¹ / ₂	0.590	9/16	5/16	14.7	14 ⁵ / ₈	0.940	1 ⁵ / ₁₆	1.54	2 ¹ / ₄	1 ¹ / ₂	↓	↓
×109	32.0	14.3	14 ³ / ₈	0.525	1/2	1/4	14.6	14 ⁵ / ₈	0.860	7/8	1.46	2 ³ / ₁₆	1 ¹ / ₂	↓	↓
×99 ^f	29.1	14.2	14 ¹ / ₈	0.485	1/2	1/4	14.6	14 ⁵ / ₈	0.780	3/4	1.38	2 ¹ / ₁₆	1 ⁷ / ₁₆	↓	↓
×90 ^f	26.5	14.0	14	0.440	7/16	1/4	14.5	14 ¹ / ₂	0.710	1 ¹ / ₁₆	1.31	2	1 ⁷ / ₁₆	↓	↓
W14×82	24.0	14.3	14 ¹ / ₄	0.510	1/2	1/4	10.1	10 ¹ / ₈	0.855	7/8	1.45	1 ¹¹ / ₁₆	1 ¹ / ₁₆	10 ⁷ / ₈	5 ¹ / ₂
×74	21.8	14.2	14 ¹ / ₈	0.450	7/16	1/4	10.1	10 ¹ / ₈	0.785	1 ³ / ₁₆	1.38	1 ⁵ / ₈	1 ¹ / ₁₆	↓	↓
×68	20.0	14.0	14	0.415	7/16	1/4	10.0	10	0.720	3/4	1.31	1 ⁹ / ₁₆	1 ¹ / ₁₆	↓	↓
×61	17.9	13.9	13 ⁷ / ₈	0.375	3/8	3/16	10.0	10	0.645	5/8	1.24	1 ¹ / ₂	1	↓	↓
W14×53	15.6	13.9	13 ⁷ / ₈	0.370	3/8	3/16	8.06	8	0.660	1 ¹ / ₁₆	1.25	1 ¹ / ₂	1	10 ⁷ / ₈	5 ¹ / ₂
×48	14.1	13.8	13 ³ / ₄	0.340	5/16	3/16	8.03	8	0.595	5/8	1.19	1 ⁷ / ₁₆	1	↓	↓
×43 ^c	12.6	13.7	13 ⁵ / ₈	0.305	5/16	3/16	8.00	8	0.530	1/2	1.12	1 ³ / ₈	1	↓	↓
W14×38 ^c	11.2	14.1	14 ¹ / ₈	0.310	5/16	3/16	6.77	6 ³ / ₄	0.515	1/2	0.915	1 ¹ / ₄	1 ³ / ₁₆	11 ⁵ / ₈	3 ¹ / ₂ ^g
×34 ^c	10.0	14.0	14	0.285	5/16	3/16	6.75	6 ³ / ₄	0.455	7/16	0.855	1 ³ / ₁₆	3/4	↓	3 ¹ / ₂
×30 ^c	8.85	13.8	13 ⁷ / ₈	0.270	1/4	1/8	6.73	6 ³ / ₄	0.385	3/8	0.785	1 ¹ / ₈	3/4	↓	3 ¹ / ₂
W14×26 ^c	7.69	13.9	13 ⁷ / ₈	0.255	1/4	1/8	5.03	5	0.420	7/16	0.820	1 ¹ / ₈	3/4	11 ⁵ / ₈	2 ³ / ₄ ^g
×22 ^c	6.49	13.7	13 ³ / ₄	0.230	1/4	1/8	5.00	5	0.335	5/16	0.735	1 ¹ / ₁₆	3/4	11 ⁵ / ₈	2 ³ / ₄ ^g
W12×336 ^h	98.8	16.8	16 ⁷ / ₈	1.78	1 ³ / ₄	7/8	13.4	13 ³ / ₈	2.96	2 ¹⁵ / ₁₆	3.55	3 ⁷ / ₈	1 ¹¹ / ₁₆	9 ¹ / ₈	5 ¹ / ₂
×305 ^h	89.6	16.3	16 ³ / ₈	1.63	1 ⁵ / ₈	1 ³ / ₁₆	13.2	13 ¹ / ₄	2.71	2 ¹¹ / ₁₆	3.30	3 ⁵ / ₈	1 ⁵ / ₈	↓	↓
×279 ^h	81.9	15.9	15 ⁷ / ₈	1.53	1 ¹ / ₂	3/4	13.1	13 ¹ / ₈	2.47	2 ¹ / ₂	3.07	3 ³ / ₈	1 ⁵ / ₈	↓	↓
×252 ^h	74.0	15.4	15 ³ / ₈	1.40	1 ³ / ₈	1 ¹ / ₁₆	13.0	13	2.25	2 ¹ / ₄	2.85	3 ¹ / ₈	1 ¹ / ₂	↓	↓
×230 ^h	67.7	15.1	15	1.29	1 ⁵ / ₁₆	1 ¹ / ₁₆	12.9	12 ⁷ / ₈	2.07	2 ¹ / ₁₆	2.67	2 ¹⁵ / ₁₆	1 ¹ / ₂	↓	↓
×210	61.8	14.7	14 ³ / ₄	1.18	1 ³ / ₁₆	5/8	12.8	12 ³ / ₄	1.90	1 ⁷ / ₈	2.50	2 ¹³ / ₁₆	1 ⁷ / ₁₆	↓	↓
×190	55.8	14.4	14 ³ / ₈	1.06	1 ¹ / ₁₆	9/16	12.7	12 ⁵ / ₈	1.74	1 ³ / ₄	2.33	2 ⁵ / ₈	1 ³ / ₈	↓	↓
×170	50.0	14.0	14	0.960	1 ⁵ / ₁₆	1/2	12.6	12 ⁵ / ₈	1.56	1 ⁹ / ₁₆	2.16	2 ⁷ / ₁₆	1 ⁵ / ₁₆	↓	↓
×152	44.7	13.7	13 ³ / ₄	0.870	7/8	7/16	12.5	12 ¹ / ₂	1.40	1 ³ / ₈	2.00	2 ⁵ / ₁₆	1 ¹ / ₄	↓	↓
×136	39.9	13.4	13 ³ / ₈	0.790	1 ³ / ₁₆	7/16	12.4	12 ³ / ₈	1.25	1 ¹ / ₄	1.85	2 ¹ / ₈	1 ¹ / ₄	↓	↓
×120	35.3	13.1	13 ¹ / ₈	0.710	1 ¹ / ₁₆	3/8	12.3	12 ³ / ₈	1.11	1 ¹ / ₈	1.70	2	1 ³ / ₁₆	↓	↓
×106	31.2	12.9	12 ⁷ / ₈	0.610	5/8	5/16	12.2	12 ¹ / ₄	0.990	1	1.59	1 ⁷ / ₈	1 ¹ / ₈	↓	↓
×96	28.2	12.7	12 ³ / ₄	0.550	9/16	5/16	12.2	12 ¹ / ₈	0.900	7/8	1.50	1 ¹³ / ₁₆	1 ¹ / ₈	↓	↓
×87	25.6	12.5	12 ¹ / ₂	0.515	1/2	1/4	12.1	12 ¹ / ₈	0.810	1 ³ / ₁₆	1.41	1 ¹¹ / ₁₆	1 ¹ / ₁₆	↓	↓
×79	23.2	12.4	12 ³ / ₈	0.470	1/2	1/4	12.1	12 ¹ / ₈	0.735	3/4	1.33	1 ⁵ / ₈	1 ¹ / ₁₆	↓	↓
×72	21.1	12.3	12 ¹ / ₄	0.430	7/16	1/4	12.0	12	0.670	1 ¹ / ₁₆	1.27	1 ⁹ / ₁₆	1 ¹ / ₁₆	↓	↓
×65 ^f	19.1	12.1	12 ¹ / ₈	0.390	3/8	3/16	12.0	12	0.605	5/8	1.20	1 ¹ / ₂	1	↓	↓

^c Shape is slender for compression with F_y = 50 ksi.
^f Shape exceeds compact limit for flexure 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.

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



W14 - W12

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
	lb/ft	$\frac{b_f}{2t_f}$	$\frac{h}{t_w}$	in. ⁴	in. ³	in.	in. ³	in. ⁴	in. ³	in.	in. ³	in.	in.	in. ⁴
132	7.15	17.7	1530	209	6.28	234	548	74.5	3.76	113	4.23	13.6	12.3	25500
120	7.80	19.3	1380	190	6.24	212	495	67.5	3.74	102	4.20	13.5	9.37	22700
109	8.49	21.7	1240	173	6.22	192	447	61.2	3.73	92.7	4.17	13.5	7.12	20200
99	9.34	23.5	1110	157	6.17	173	402	55.2	3.71	83.6	4.14	13.4	5.37	18000
90	10.2	25.9	999	143	6.14	157	362	49.9	3.70	75.6	4.11	13.3	4.06	16000
82	5.92	22.4	881	123	6.05	139	148	29.3	2.48	44.8	2.85	13.5	5.07	6710
74	6.41	25.4	795	112	6.04	126	134	26.6	2.48	40.5	2.82	13.4	3.87	5990
68	6.97	27.5	722	103	6.01	115	121	24.2	2.46	36.9	2.80	13.3	3.01	5380
61	7.75	30.4	640	92.1	5.98	102	107	21.5	2.45	32.8	2.78	13.2	2.19	4710
53	6.11	30.9	541	77.8	5.89	87.1	57.7	14.3	1.92	22.0	2.22	13.3	1.94	2540
48	6.75	33.6	484	70.2	5.85	78.4	51.4	12.8	1.91	19.6	2.20	13.2	1.45	2240
43	7.54	37.4	428	62.6	5.82	69.6	45.2	11.3	1.89	17.3	2.18	13.1	1.05	1950
38	6.57	39.6	385	54.6	5.87	61.5	26.7	7.88	1.55	12.1	1.82	13.6	0.798	1230
34	7.41	43.1	340	48.6	5.83	54.6	23.3	6.91	1.53	10.6	1.80	13.5	0.569	1070
30	8.74	45.4	291	42.0	5.73	47.3	19.6	5.82	1.49	8.99	1.77	13.5	0.380	887
26	5.98	48.1	245	35.3	5.65	40.2	8.91	3.55	1.08	5.54	1.31	13.5	0.358	405
22	7.46	53.3	199	29.0	5.54	33.2	7.00	2.80	1.04	4.39	1.27	13.4	0.208	314
336	2.26	5.47	4060	483	6.41	603	1190	177	3.47	274	4.13	13.9	243	57000
305	2.45	5.98	3550	435	6.29	537	1050	159	3.42	244	4.05	13.6	185	48600
279	2.66	6.35	3110	393	6.16	481	937	143	3.38	220	4.00	13.4	143	42000
252	2.89	6.96	2720	353	6.06	428	828	127	3.34	196	3.93	13.2	108	35800
230	3.11	7.56	2420	321	5.97	386	742	115	3.31	177	3.87	13.0	83.8	31200
210	3.37	8.23	2140	292	5.89	348	664	104	3.28	159	3.82	12.8	64.7	27200
190	3.65	9.16	1890	263	5.82	311	589	93.0	3.25	143	3.76	12.6	48.8	23600
170	4.03	10.1	1650	235	5.74	275	517	82.3	3.22	126	3.71	12.5	35.6	20100
152	4.46	11.2	1430	209	5.66	243	454	72.8	3.19	111	3.66	12.3	25.8	17200
136	4.96	12.3	1240	186	5.58	214	398	64.2	3.16	98.0	3.61	12.2	18.5	14700
120	5.57	13.7	1070	163	5.51	186	345	56.0	3.13	85.4	3.56	12.0	12.9	12400
106	6.17	15.9	933	145	5.47	164	301	49.3	3.11	75.1	3.52	11.9	9.13	10700
96	6.76	17.7	833	131	5.44	147	270	44.4	3.09	67.5	3.49	11.8	6.85	9410
87	7.48	18.9	740	118	5.38	132	241	39.7	3.07	60.4	3.46	11.7	5.10	8270
79	8.22	20.7	662	107	5.34	119	216	35.8	3.05	54.3	3.43	11.6	3.84	7330
72	8.99	22.6	597	97.4	5.31	108	195	32.4	3.04	49.2	3.40	11.6	2.93	6540
65	9.92	24.9	533	87.9	5.28	96.8	174	29.1	3.02	44.1	3.38	11.5	2.18	5780

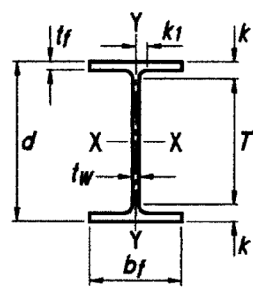


Table 1-1 (continued)
W Shapes
Dimensions

Shape	Area, A in. ²	Depth, d in.		Web			Flange				Distance				Workable Gage in.
				Thickness, tw in.	tw/2 in.	Width, bf in.	Thickness, tf in.	k		k1 in.	T in.				
								kdes in.	kdet in.						
W12x58	17.0	12.2	12 1/4	0.360	3/8	3/16	10.0	10	0.640	5/8	1.24	1 1/2	15/16	9 1/4	5 1/2
x53	15.6	12.1	12	0.345	3/8	3/16	10.0	10	0.575	9/16	1.18	1 3/8	15/16	9 1/4	5 1/2
W12x50	14.6	12.2	12 1/4	0.370	3/8	3/16	8.08	8 1/8	0.640	5/8	1.14	1 1/2	15/16	9 1/4	5 1/2
x45	13.1	12.1	12	0.335	5/16	3/16	8.05	8	0.575	9/16	1.08	1 3/8	15/16	↓	↓
x40	11.7	11.9	12	0.295	5/16	3/16	8.01	8	0.515	1/2	1.02	1 3/8	7/8	↓	↓
W12x35 ^c	10.3	12.5	12 1/2	0.300	5/16	3/16	6.56	6 1/2	0.520	1/2	0.820	1 3/16	3/4	10 1/8	3 1/2
x30 ^c	8.79	12.3	12 3/8	0.260	1/4	1/8	6.52	6 1/2	0.440	7/16	0.740	1 1/8	3/4	↓	↓
x26 ^c	7.65	12.2	12 1/4	0.230	1/4	1/8	6.49	6 1/2	0.380	3/8	0.680	1 1/16	3/4	↓	↓
W12x22 ^c	6.48	12.3	12 1/4	0.260	1/4	1/8	4.03	4	0.425	7/16	0.725	15/16	5/8	10 3/8	2 1/4 ^g
x19 ^c	5.57	12.2	12 1/8	0.235	1/4	1/8	4.01	4	0.350	3/8	0.650	7/8	9/16	↓	↓
x16 ^c	4.71	12.0	12	0.220	1/4	1/8	3.99	4	0.265	1/4	0.565	13/16	9/16	↓	↓
x14 ^{c,v}	4.16	11.9	11 7/8	0.200	3/16	1/8	3.97	4	0.225	1/4	0.525	3/4	9/16	↓	↓
W10x112	32.9	11.4	11 3/8	0.755	3/4	3/8	10.4	10 3/8	1.25	1 1/4	1.75	1 15/16	1	7 1/2	5 1/2
x100	29.4	11.1	11 1/8	0.680	1 1/16	3/8	10.3	10 3/8	1.12	1 1/8	1.62	1 13/16	1	↓	↓
x88	25.9	10.8	10 7/8	0.605	5/8	5/16	10.3	10 1/4	0.990	1	1.49	1 11/16	15/16	↓	↓
x77	22.6	10.6	10 5/8	0.530	1/2	1/4	10.2	10 1/4	0.870	7/8	1.37	1 9/16	7/8	↓	↓
x68	20.0	10.4	10 3/8	0.470	1/2	1/4	10.1	10 1/8	0.770	3/4	1.27	1 7/16	7/8	↓	↓
x60	17.6	10.2	10 1/4	0.420	7/16	1/4	10.1	10 1/8	0.680	11/16	1.18	1 3/8	13/16	↓	↓
x54	15.8	10.1	10 1/8	0.370	3/8	3/16	10.0	10	0.615	5/8	1.12	1 5/16	13/16	↓	↓
x49	14.4	10.0	10	0.340	5/16	3/16	10.0	10	0.560	9/16	1.06	1 1/4	13/16	↓	↓
W10x45	13.3	10.1	10 1/8	0.350	3/8	3/16	8.02	8	0.620	5/8	1.12	1 5/16	13/16	7 1/2	5 1/2
x39	11.5	9.92	9 7/8	0.315	5/16	3/16	7.99	8	0.530	1/2	1.03	1 3/16	13/16	↓	↓
x33	9.71	9.73	9 3/4	0.290	5/16	3/16	7.96	8	0.435	7/16	0.935	1 1/8	3/4	↓	↓
W10x30	8.84	10.5	10 1/2	0.300	5/16	3/16	5.81	5 3/4	0.510	1/2	0.810	1 1/8	1 1/16	8 1/4	2 3/4 ^g
x26	7.61	10.3	10 3/8	0.260	1/4	1/8	5.77	5 3/4	0.440	7/16	0.740	1 1/16	1 1/16	↓	↓
x22 ^c	6.49	10.2	10 1/8	0.240	1/4	1/8	5.75	5 3/4	0.360	3/8	0.660	15/16	5/8	↓	↓
W10x19	5.62	10.2	10 1/4	0.250	1/4	1/8	4.02	4	0.395	3/8	0.695	15/16	5/8	8 3/8	2 1/4 ^g
x17 ^c	4.99	10.1	10 1/8	0.240	1/4	1/8	4.01	4	0.330	5/16	0.630	7/8	9/16	↓	↓
x15 ^c	4.41	10.0	10	0.230	1/4	1/8	4.00	4	0.270	1/4	0.570	13/16	9/16	↓	↓
x12 ^{c,f}	3.54	9.87	9 7/8	0.190	3/16	1/8	3.96	4	0.210	3/16	0.510	3/4	9/16	↓	↓

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

^f Shape exceeds compact limit for flexure 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.

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

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



W12 - W10

Nom- inal Wt.	Compact Section Criteria		Axis X-X				Axis Y-Y				<i>r_{ts}</i>	<i>h_o</i>	Torsional Properties	
	<i>b_f</i> 2 <i>t_f</i>	<i>h</i> <i>t_w</i>	<i>I</i> in. ⁴	<i>S</i> in. ³	<i>r</i> in.	<i>Z</i> in. ³	<i>I</i> in. ⁴	<i>S</i> in. ³	<i>r</i> in.	<i>Z</i> in. ³			<i>J</i> in. ⁴	<i>C_w</i> in. ⁶
58	7.82	27.0	475	78.0	5.28	86.4	107	21.4	2.51	32.5	2.82	11.6	2.10	3570
53	8.69	28.1	425	70.6	5.23	77.9	95.8	19.2	2.48	29.1	2.79	11.5	1.58	3160
50	6.31	26.8	391	64.2	5.18	71.9	56.3	13.9	1.96	21.3	2.25	11.6	1.71	1880
45	7.00	29.6	348	57.7	5.15	64.2	50.0	12.4	1.95	19.0	2.23	11.5	1.26	1650
40	7.77	33.6	307	51.5	5.13	57.0	44.1	11.0	1.94	16.8	2.21	11.4	0.906	1440
35	6.31	36.2	285	45.6	5.25	51.2	24.5	7.47	1.54	11.5	1.79	12.0	0.741	879
30	7.41	41.8	238	38.6	5.21	43.1	20.3	6.24	1.52	9.56	1.77	11.9	0.457	720
26	8.54	47.2	204	33.4	5.17	37.2	17.3	5.34	1.51	8.17	1.75	11.8	0.300	607
22	4.74	41.8	156	25.4	4.91	29.3	4.66	2.31	0.848	3.66	1.04	11.9	0.293	164
19	5.72	46.2	130	21.3	4.82	24.7	3.76	1.88	0.822	2.98	1.02	11.8	0.180	131
16	7.53	49.4	103	17.1	4.67	20.1	2.82	1.41	0.773	2.26	0.982	11.7	0.103	96.9
14	8.82	54.3	88.6	14.9	4.62	17.4	2.36	1.19	0.753	1.90	0.962	11.7	0.0704	80.4
112	4.17	10.4	716	126	4.66	147	236	45.3	2.68	69.2	3.07	10.1	15.1	6020
100	4.62	11.6	623	112	4.60	130	207	40.0	2.65	61.0	3.03	10.0	10.9	5150
88	5.18	13.0	534	98.5	4.54	113	179	34.8	2.63	53.1	2.99	9.85	7.53	4330
77	5.86	14.8	455	85.9	4.49	97.6	154	30.1	2.60	45.9	2.95	9.73	5.11	3630
68	6.58	16.7	394	75.7	4.44	85.3	134	26.4	2.59	40.1	2.91	9.63	3.56	3100
60	7.41	18.7	341	66.7	4.39	74.6	116	23.0	2.57	35.0	2.88	9.54	2.48	2640
54	8.15	21.2	303	60.0	4.37	66.6	103	20.6	2.56	31.3	2.86	9.48	1.82	2320
49	8.93	23.1	272	54.6	4.35	60.4	93.4	18.7	2.54	28.3	2.84	9.42	1.39	2070
45	6.47	22.5	248	49.1	4.32	54.9	53.4	13.3	2.01	20.3	2.27	9.48	1.51	1200
39	7.53	25.0	209	42.1	4.27	46.8	45.0	11.3	1.98	17.2	2.24	9.39	0.976	992
33	9.15	27.1	171	35.0	4.19	38.8	36.6	9.20	1.94	14.0	2.20	9.30	0.583	791
30	5.70	29.5	170	32.4	4.38	36.6	16.7	5.75	1.37	8.84	1.60	10.0	0.622	414
26	6.56	34.0	144	27.9	4.35	31.3	14.1	4.89	1.36	7.50	1.58	9.89	0.402	345
22	7.99	36.9	118	23.2	4.27	26.0	11.4	3.97	1.33	6.10	1.55	9.81	0.239	275
19	5.09	35.4	96.3	18.8	4.14	21.6	4.29	2.14	0.874	3.35	1.06	9.85	0.233	104
17	6.08	36.9	81.9	16.2	4.05	18.7	3.56	1.78	0.845	2.80	1.04	9.78	0.156	85.1
15	7.41	38.5	68.9	13.8	3.95	16.0	2.89	1.45	0.810	2.30	1.01	9.72	0.104	68.3
12	9.43	46.6	53.8	10.9	3.90	12.6	2.18	1.10	0.785	1.74	0.983	9.66	0.0547	50.9

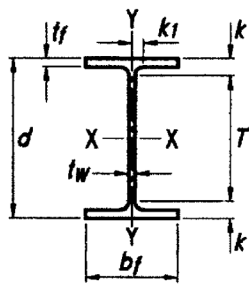


Table 1-1 (continued)
W Shapes
Dimensions

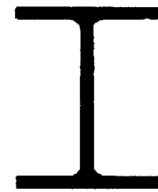
Shape	Area, A	Depth, d	Web		Flange		Distance				Work- able Gage				
			Thickness, tw	tw 2	Width, bf	Thickness, tf	k		k1	T					
							kdes	kdet							
in. ²	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.					
W8×67	19.7	9.00	9	0.570	9/16	5/16	8.28	8 1/4	0.935	15/16	1.33	15/8	15/16	5 3/4	5 1/2
×58	17.1	8.75	8 3/4	0.510	1/2	1/4	8.22	8 1/4	0.810	13/16	1.20	1 1/2	7/8		
×48	14.1	8.50	8 1/2	0.400	3/8	3/16	8.11	8 1/8	0.685	1 1/16	1.08	13/8	13/16		
×40	11.7	8.25	8 1/4	0.360	3/8	3/16	8.07	8 1/8	0.560	9/16	0.954	1 1/4	13/16		
×35	10.3	8.12	8 1/8	0.310	5/16	3/16	8.02	8	0.495	1/2	0.889	13/16	13/16		
×31 ^f	9.12	8.00	8	0.285	5/16	3/16	8.00	8	0.435	7/16	0.829	1 1/8	3/4	↓	↓
W8×28	8.24	8.06	8	0.285	5/16	3/16	6.54	6 1/2	0.465	7/16	0.859	15/16	5/8	6 1/8	4
×24	7.08	7.93	7 7/8	0.245	1/4	1/8	6.50	6 1/2	0.400	3/8	0.794	7/8	9/16	6 1/8	4
W8×21	6.16	8.28	8 1/4	0.250	1/4	1/8	5.27	5 1/4	0.400	3/8	0.700	7/8	9/16	6 1/2	2 3/4 ^g
×18	5.26	8.14	8 1/8	0.230	1/4	1/8	5.25	5 1/4	0.330	5/16	0.630	13/16	9/16	6 1/2	2 3/4 ^g
W8×15	4.44	8.11	8 1/8	0.245	1/4	1/8	4.02	4	0.315	5/16	0.615	13/16	9/16	6 1/2	2 1/4 ^g
×13	3.84	7.99	8	0.230	1/4	1/8	4.00	4	0.255	1/4	0.555	3/4	9/16	↓	↓
×10 ^{c,f}	2.96	7.89	7 7/8	0.170	3/16	1/8	3.94	4	0.205	3/16	0.505	1 1/16	1/2	↓	↓
W6×25	7.34	6.38	6 3/8	0.320	5/16	3/16	6.08	6 1/8	0.455	7/16	0.705	15/16	9/16	4 1/2	3 1/2
×20	5.87	6.20	6 1/4	0.260	1/4	1/8	6.02	6	0.365	3/8	0.615	7/8	9/16	↓	↓
×15 ^f	4.43	5.99	6	0.230	1/4	1/8	5.99	6	0.260	1/4	0.510	3/4	9/16	↓	↓
W6×16	4.74	6.28	6 1/4	0.260	1/4	1/8	4.03	4	0.405	3/8	0.655	7/8	9/16	4 1/2	2 1/4 ^g
×12	3.55	6.03	6	0.230	1/4	1/8	4.00	4	0.280	1/4	0.530	3/4	9/16	↓	↓
×9 ^f	2.68	5.90	5 7/8	0.170	3/16	1/8	3.94	4	0.215	3/16	0.465	1 1/16	1/2	↓	↓
×8.5 ^f	2.52	5.83	5 7/8	0.170	3/16	1/8	3.94	4	0.195	3/16	0.445	1 1/16	1/2	↓	↓
W5×19	5.56	5.15	5 1/8	0.270	1/4	1/8	5.03	5	0.430	7/16	0.730	13/16	7/16	3 1/2	2 3/4 ^g
×16	4.71	5.01	5	0.240	1/4	1/8	5.00	5	0.360	3/8	0.660	3/4	7/16	3 1/2	2 3/4 ^g
W4×13	3.83	4.16	4 1/8	0.280	1/4	1/8	4.06	4	0.345	3/8	0.595	3/4	1/2	2 5/8	2 1/4 ^g

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

^f Shape exceeds compact limit for flexure 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.

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



W8 - W4

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
67	4.43	11.1	272	60.4	3.72	70.1	88.6	21.4	2.12	32.7	2.43	8.07	5.05	1440
58	5.07	12.4	228	52.0	3.65	59.8	75.1	18.3	2.10	27.9	2.39	7.94	3.33	1180
48	5.92	15.9	184	43.2	3.61	49.0	60.9	15.0	2.08	22.9	2.35	7.82	1.96	931
40	7.21	17.6	146	35.5	3.53	39.8	49.1	12.2	2.04	18.5	2.31	7.69	1.12	726
35	8.10	20.5	127	31.2	3.51	34.7	42.6	10.6	2.03	16.1	2.28	7.63	0.769	619
31	9.19	22.3	110	27.5	3.47	30.4	37.1	9.27	2.02	14.1	2.26	7.57	0.536	530
28	7.03	22.3	98.0	24.3	3.45	27.2	21.7	6.63	1.62	10.1	1.84	7.60	0.537	312
24	8.12	25.9	82.7	20.9	3.42	23.1	18.3	5.63	1.61	8.57	1.82	7.53	0.346	259
21	6.59	27.5	75.3	18.2	3.49	20.4	9.77	3.71	1.26	5.69	1.46	7.88	0.282	152
18	7.95	29.9	61.9	15.2	3.43	17.0	7.97	3.04	1.23	4.66	1.43	7.81	0.172	122
15	6.37	28.1	48.0	11.8	3.29	13.6	3.41	1.70	0.876	2.67	1.06	7.80	0.137	51.8
13	7.84	29.9	39.6	9.91	3.21	11.4	2.73	1.37	0.843	2.15	1.03	7.74	0.0871	40.8
10	9.61	40.5	30.8	7.81	3.22	8.87	2.09	1.06	0.841	1.66	1.01	7.69	0.0426	30.9
25	6.68	15.5	53.4	16.7	2.70	18.9	17.1	5.61	1.52	8.56	1.74	5.93	0.461	150
20	8.25	19.1	41.4	13.4	2.66	14.9	13.3	4.41	1.50	6.72	1.70	5.84	0.240	113
15	11.5	21.6	29.1	9.72	2.56	10.8	9.32	3.11	1.45	4.75	1.66	5.73	0.101	76.5
16	4.98	19.1	32.1	10.2	2.60	11.7	4.43	2.20	0.967	3.39	1.13	5.88	0.223	38.2
12	7.14	21.6	22.1	7.31	2.49	8.30	2.99	1.50	0.918	2.32	1.08	5.75	0.0903	24.7
9	9.16	29.2	16.4	5.56	2.47	6.23	2.20	1.11	0.905	1.72	1.06	5.69	0.0405	17.7
8.5	10.1	29.1	14.9	5.10	2.43	5.73	1.99	1.01	0.890	1.56	1.05	5.64	0.0333	15.8
19	5.85	13.7	26.3	10.2	2.17	11.6	9.13	3.63	1.28	5.53	1.45	4.72	0.316	50.9
16	6.94	15.4	21.4	8.55	2.13	9.63	7.51	3.00	1.26	4.58	1.43	4.65	0.192	40.6
13	5.88	10.6	11.3	5.46	1.72	6.28	3.86	1.90	1.00	2.92	1.16	3.82	0.151	14.0