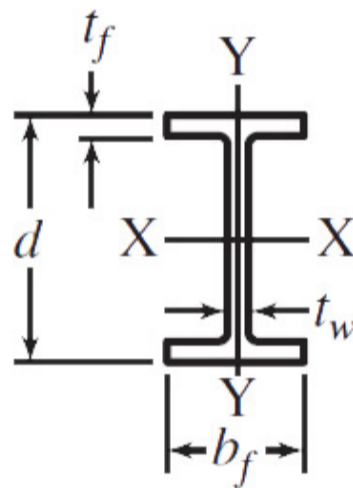


# WIDE FLANGE BEAM DIMENSIONS CHART

**Wide Flange Beam Dimensions Chart** for sizes, dimensions and section properties of steel wide flange beams. Wide flange beams are designated by the letter W followed by the nominal depth in inches and the weight in pounds per foot. Thus W12 × 19 designates a wide flange beam with a depth of 12 inches and a nominal weight of 19 pounds per foot.



**Wide Flange Beam Sizes, Dimensions and Section Properties Chart**

Designation	Nom. Weight, lb/ft	Area,	Depth, d, in	Flange		Web Thickness $t_w$ , in	Axis X-X			Axis Y-Y		
				Width, $b_f$ , in	Thickness, $t_f$ , in		I, $\text{in}^4$	S, $\text{in}^3$	r, in	I, $\text{in}^4$	S, $\text{in}^3$	r, in
W27 x 178	178	52.3	27.81	14.085	1.190	0.725	6990	502	11.6	555	78.8	3.26
W27 x 161	161	47.4	27.59	14.020	1.080	0.66	6280	455	11.5	497	70.9	3.24
W27 x 146	146	42.9	27.38	13.965	0.975	0.605	5630	411	11.4	443	63.5	3.21
W27 x 114	114	33.5	27.29	10.070	0.93	0.57	4090	299	11.0	159	31.5	2.18
W27 x 102	102	30	27.09	10.015	0.83	0.515	3620	267	11.0	139	27.8	2.15
W27 x 94	94	27.7	26.92	9.990	0.745	0.49	3270	243	10.9	124	24.8	2.12
W27 x 84	84	24.8	26.71	9.960	0.64	0.46	2850	213	10.7	106	21.2	2.07
W24 x 162	162	47.7	25	12.955	1.220	0.705	5170	414	10.4	443	68.4	3.05
W24 x 146	146	43	24.74	12.900	1.090	0.65	4580	371	10.3	391	60.5	3.01
W24 x 131	131	38.5	24.48	12.855	0.96	0.605	4020	329	10.2	340	53.0	2.97
W24 x 117	117	34.4	24.26	12.800	0.85	0.55	3540	291	10.1	297	46.5	2.94
W24 x 104	104	30.6	24.06	12.750	0.75	0.5	3100	258	10.1	259	40.7	2.91

W24 x 94	94	27.7	24.31	9.065	0.875	0.515	2700	222	9.87	109	24.0	1.98
W24 x 84	84	24.7	24.1	9.020	0.77	0.47	2370	196	9.79	94.4	20.9	1.95
W24 x 76	76	22.4	23.92	8.990	0.68	0.44	2100	176	9.69	82.5	18.4	1.92
W24 x 68	68	20.1	23.73	8.965	0.585	0.415	1830	154	9.55	70.4	15.7	1.87
W24 x 62	62	18.2	23.74	7.040	0.59	0.43	1550	131	9.23	34.5	9.80	1.38
W24 x 55	55	16.2	23.57	7.005	0.505	0.395	1350	114	9.11	29.1	8.30	1.34
W21 x 147	147	43.2	22.06	12.510	1.150	0.72	3630	329	9.17	376	60.1	2.95
W21 x 132	132	38.8	21.83	12.440	1.035	0.65	3220	295	9.12	333	53.5	2.93
W21 x 122	122	35.9	21.68	12.390	0.96	0.6	2960	273	9.09	305	49.2	2.92
W21 x 111	111	32.7	21.51	12.340	0.875	0.55	2670	249	9.05	274	44.5	2.90
W21 x 101	101	29.8	21.36	12.290	0.8	0.5	2420	227	9.02	248	40.3	2.89
W21 x 93	93	27.3	21.62	8.420	0.93	0.58	2070	192	8.70	92.9	22.1	1.84
W21 x 83	83	24.3	21.43	8.355	0.835	0.515	1830	171	8.67	81.4	19.5	1.83
W21 x 73	73	21.5	21.24	8.295	0.74	0.455	1600	151	8.64	70.6	17.0	1.81
W21 x 68	68	20	21.13	8.270	0.685	0.43	1480	140	8.60	64.7	15.7	1.80
W21 x 62	62	18.3	20.99	8.240	0.615	0.4	1330	127	8.54	57.5	13.9	1.77
W21 x 57	57	16.7	21.06	6.555	0.65	0.405	1170	111	8.36	30.6	9.35	1.35
W21 x 50	50	14.7	20.83	6.530	0.535	0.38	984	94.5	8.18	24.9	7.64	1.30
W21 x 44	44	13	20.66	6.500	0.45	0.35	843	81.6	8.06	20.7	6.36	1.26
W18 x 119	119	35.1	18.97	11.265	1.060	0.655	2190	231	7.90	253	44.9	2.69
W18 x 106	106	31.1	18.73	11.200	0.94	0.59	1910	204	7.84	220	39.4	2.66
W18 x 97	97	28.5	18.59	11.145	0.87	0.535	1750	188	7.82	201	36.1	2.65
W18 x 86	86	25.3	18.39	11.090	0.77	0.48	1530	166	7.77	175	31.6	2.63
W18 x 76	76	22.3	18.21	11.035	0.68	0.425	1330	146	7.73	152	27.6	2.61
W18 x 71	71	20.8	18.47	7.635	0.81	0.495	1170	127	7.50	60.3	15.8	1.70
W18 x 65	65	19.1	18.35	7.590	0.75	0.45	1070	117	7.49	54.8	14.4	1.69
W18 x 60	60	17.6	18.24	7.555	0.695	0.415	984	108	7.47	50.1	13.3	1.69
W18 x 55	55	16.2	18.11	7.530	0.63	0.39	890	98.3	7.41	44.9	11.9	1.67
W18 x 50	50	14.7	17.99	7.495	0.57	0.355	800	88.9	7.38	40.1	10.7	1.65
W18 x 46	46	13.5	18.06	6.060	0.605	0.36	712	78.8	7.25	22.5	7.43	1.29
W18 x 40	40	11.8	17.9	6.015	0.525	0.315	612	68.4	7.21	19.1	6.35	1.27
W18 x 35	35	10.3	17.7	6.000	0.425	0.3	510	57.6	7.04	15.3	5.12	1.22
W16 x 100	100	29.4	16.97	10.425	0.985	0.585	1490	175	7.10	186	35.7	2.51
W16 x 89	89	26.2	16.75	10.365	0.875	0.525	1300	155	7.05	163	31.4	2.49
W16 x 77	77	22.6	16.52	10.295	0.76	0.455	1110	134	7.00	138	26.9	2.47
W16 x 67	67	19.7	16.33	10.235	0.665	0.395	954	117	6.96	119	23.2	2.46
W16 x 57	57	16.8	16.43	7.120	0.715	0.43	758	92.2	6.72	43.1	12.1	1.60
W16 x 50	50	14.7	16.26	7.070	0.63	0.38	659	81.0	6.68	37.2	10.5	1.59
W16 x 45	45	13.3	16.13	7.035	0.565	0.345	586	72.7	6.65	32.8	9.34	1.57

W16 x 40	40	11.8	16.01	6.995	0.505	0.305	518	64.7	6.63	28.9	8.25	1.57
W16 x 36	36	10.6	15.86	6.985	0.43	0.295	448	56.5	6.51	24.5	7.00	1.52
W16 x 31	31	9.12	15.88	5.525	0.44	0.275	375	47.2	6.41	12.4	4.49	1.17
W16 x 26	26	7.68	15.69	5.500	0.345	0.25	301	38.4	6.26	9.59	3.49	1.12
W14 x 730	730	215.0	22.42	17.890	4.910	3.070	14300	1280	8.17	4720	527	4.69
W14 x 665	665	196.0	21.64	17.650	4.520	2.830	12400	1150	7.98	4170	472	4.62
W14 x 605	605	178.0	20.92	17.415	4.160	2.595	10800	1040	7.80	3680	423	4.55
W14 x 550	550	162.0	20.24	17.200	3.820	2.380	9430	931	7.63	3250	378	4.49
W14 x 500	500	147.0	19.60	17.010	3.500	2.190	8210	838	7.48	2880	339	4.43
W14 x 455	455	134.0	19.02	16.835	3.210	2.015	7190	756	7.33	2560	304	4.38
W14 x 426	426	125.0	18.67	16.695	3.035	1.875	6600	707	7.26	2360	283	4.34
W14 x 398	398	117.0	18.29	16.590	2.845	1.770	6000	656	7.16	2170	262	4.31
W14 x 370	370	109	17.92	16.475	2.660	1.655	5440	607	7.07	1990	241	4.27
W14 x 342	342	101.0	17.54	16.360	2.470	1.540	4900	559	6.98	1810	221	4.24
W14 x 311	311	91.4	17.12	16.230	2.260	1.410	4330	506	6.88	1610	199	4.20
W14 x 283	283	83.3	16.74	16.110	2.070	1.290	3840	459	6.79	1440	179	4.17
W14 x 257	257	75.6	16.38	15.995	1.890	1.175	3400	415	6.71	1290	161	4.13
W14 x 233	233	68.5	16.04	15.890	1.720	1.070	3010	375	6.63	1150	145	4.10
W14 x 211	211	62.0	15.72	15.800	1.560	0.980	2660	338	6.55	1030	130	4.07
W14 x 193	193	56.8	15.48	15.710	1.440	0.890	2400	310	6.50	931	119	4.05
W14 x 176	176	51.8	15.22	15.650	1.310	0.830	2140	281	6.43	838	107	4.02
W14 x 159	159	46.7	14.98	15.565	1.190	0.745	1900	254	6.38	748	96.2	4.00
W14 x 145	145	42.7	14.78	15.500	1.090	0.68	1710	232	6.33	677	87.3	3.98
W14 x 132	132	38.8	14.66	14.725	1.030	0.645	1530	209	6.28	548	74.5	3.76
W14 x 120	120	35.3	14.48	14.670	0.94	0.59	1380	190	6.24	495	67.5	3.74
W14 x 109	109	32	14.32	14.605	0.86	0.525	1240	173	6.22	447	61.2	3.73
W14 x 99	99	29.1	14.16	14.565	0.78	0.485	1110	157	6.17	402	55.2	3.71
W14 x 90	90	26.5	14.02	14.520	0.71	0.44	999	143	6.14	362	49.9	3.70
W14 x 82	82	24.1	14.31	10.130	0.855	0.51	882	123	6.05	148	29.3	2.48
W14 x 74	74	21.8	14.17	10.070	0.785	0.45	796	112	6.04	134	26.6	2.48
W14 x 68	68	20	14.04	10.035	0.72	0.415	723	103	6.01	121	24.2	2.46
W14 x 61	61	17.9	13.89	9.995	0.645	0.375	640	92.2	5.98	107	21.5	2.45
W14 x 53	53	15.6	13.92	8.060	0.66	0.37	541	77.8	5.89	57.7	14.3	1.92
W14 x 48	48	14.1	13.79	8.030	0.595	0.34	485	70.3	5.85	51.4	12.8	1.91
W14 x 43	43	12.6	13.66	7.995	0.53	0.305	428	62.7	5.82	45.2	11.3	1.89
W14 x 38	38	11.2	14.1	6.770	0.515	0.31	385	54.6	5.87	26.7	7.88	1.55
W14 x 34	34	10	13.98	6.745	0.455	0.285	340	48.6	5.83	23.3	6.91	1.53
W14 x 30	30	8.85	13.84	6.730	0.385	0.27	291	42.0	5.73	19.6	5.82	1.49
W14 x 26	26	7.69	13.91	5.025	0.42	0.255	245	35.3	5.65	8.91	3.54	1.08

W14 x 22	22	6.49	13.74	5.000	0.335	0.23	199	29.0	5.54	7.00	2.80	1.04
W12 x 336	336	98.8	16.82	13.385	2.955	1.775	4060	483	6.41	1190	177	3.47
W12 x 305	305	89.6	16.32	13.235	2.705	1.625	3550	435	6.29	1050	159	3.42
W12 x 279	279	81.9	15.85	13.140	2.470	1.530	3110	393	6.16	937	143	3.38
W12 x 252	252	74.1	15.41	13.005	2.250	1.395	2720	353	6.06	828	127	3.34
W12 x 230	230	67.7	15.05	12.895	2.070	1.285	2420	321	5.97	742	115	3.31
W12 x 210	210	61.8	14.71	12.790	1.900	1.180	2140	292	5.89	664	104	3.28
W12 x 190	190	55.8	14.38	12.670	1.735	1.060	1890	263	5.82	589	93.0	3.25
W12 x 170	170	50.0	14.03	12.570	1.560	0.960	1650	235	5.74	517	82.3	3.22
W12 x 152	152	44.7	13.71	12.480	1.400	0.870	1430	209	5.66	454	72.8	3.19
W12 x 136	136	39.9	13.41	12.400	1.250	0.79	1240	186	5.58	398	64.2	3.16
W12 x 120	120	35.3	13.12	12.320	1.105	0.71	1070	163	5.51	345	56.0	3.13
W12 x 106	106	31.2	12.89	12.220	0.99	0.61	933	145	5.47	301	49.3	3.11
W12 x 96	96	28.2	12.71	12.160	0.9	0.55	833	131	5.44	270	44.4	3.09
W12 x 87	87	25.6	12.53	12.125	0.81	0.515	740	118	5.38	241	39.7	3.07
W12 x 79	79	23.2	12.38	12.080	0.735	0.47	662	107	5.34	216	35.8	3.05
W12 x 72	72	21.1	12.25	12.040	0.67	0.43	597	97.4	5.31	195	32.4	3.04
W12 x 65	65	19.1	12.12	12.000	0.605	0.39	533	87.9	5.28	174	29.1	3.02
W12 x 58	58	17	12.19	10.010	0.64	0.36	475	78.0	5.28	107	21.4	2.51
W12 x 53	53	15.6	12.06	9.995	0.575	0.345	425	70.6	5.23	95.8	19.2	2.48
W12 x 50	50	14.7	12.19	8.080	0.64	0.37	394	64.7	5.18	56.3	13.9	1.96
W12 x 45	45	13.2	12.06	8.045	0.575	0.335	350	58.1	5.15	50.0	12.4	1.94
W12 x 40	40	11.8	11.94	8.005	0.515	0.295	310	51.9	5.13	44.1	11.0	1.93
W12 x 35	35	10.3	12.5	6.560	0.52	0.3	285	45.6	5.25	24.5	7.47	1.54
W12 x 30	30	8.79	12.34	6.520	0.44	0.26	238	38.6	5.21	20.3	6.24	1.52
W12 x 26	26	7.65	12.22	6.490	0.38	0.23	204	33.4	5.17	17.3	5.34	1.51
W12 x 22	22	6.48	12.31	4.030	0.425	0.26	156	25.4	4.91	4.66	2.31	0.847
W12 x 19	19	5.57	12.16	4.005	0.35	0.235	130	21.3	4.82	3.76	1.88	0.822
W12 x 16	16	4.71	11.99	3.990	0.265	0.22	103	17.1	4.67	2.82	1.41	0.773
W12 x 14	14	4.16	11.91	3.970	0.225	0.2	88.6	14.9	4.62	2.36	1.19	0.753
W10 x 112	112	32.9	11.36	10.415	1.250	0.755	716	126	4.66	236	45.3	2.68
W10 x 100	100	29.4	11.1	10.340	1.120	0.68	623	112	4.60	207	40.0	2.65
W10 x 88	88	25.9	10.84	10.265	0.99	0.605	534	98.5	4.54	179	34.8	2.63
W10 x 77	77	22.6	10.6	10.190	0.87	0.53	455	85.9	4.49	154	30.1	2.60
W10 x 68	68	20	10.4	10.130	0.77	0.47	394	75.7	4.44	134	26.4	2.59
W10 x 60	60	17.6	10.22	10.080	0.68	0.42	341	66.7	4.39	116	23.0	2.57
W10 x 54	54	15.8	10.09	10.030	0.615	0.37	303	60.0	4.37	103	20.6	2.56
W10 x 49	49	14.4	9.98	10.000	0.56	0.34	272	54.6	4.35	93.4	18.7	2.54
W10 x 45	45	13.3	10.1	8.020	0.62	0.35	248	49.1	4.32	53.4	13.3	2.01

W10 x 39	39	11.5	9.92	7.985	0.53	0.315	209	42.1	4.27	45.0	11.3	1.98
W10 x 33	33	9.71	9.73	7.960	0.435	0.29	170	35.0	4.19	36.6	9.20	1.94
W10 x 30	30	8.84	10.47	5.810	0.51	0.3	170	32.4	4.38	16.7	5.75	1.37
W10 x 26	26	7.61	10.33	5.770	0.44	0.26	144	27.9	4.35	14.1	4.89	1.36
W10 x 22	22	6.49	10.17	5.750	0.36	0.24	118	23.2	4.27	11.4	3.97	1.33
W10 x 19	19	5.62	10.24	4.020	0.395	0.25	96.3	18.8	4.14	4.29	2.14	0.874
W10 x 17	17	4.99	10.11	4.010	0.33	0.24	81.9	16.2	4.05	3.56	1.78	0.844
W10 x 15	15	4.41	9.99	4.000	0.27	0.23	68.9	13.8	3.95	2.89	1.45	0.810
W10 x 12	12	3.54	9.87	3.960	0.21	0.19	53.8	10.9	3.90	2.18	1.10	0.785
W8 x 67	67	19.7	9	8.280	0.935	0.57	272	60.4	3.72	88.6	21.4	2.12
W8 x 58	58	17.1	8.75	8.220	0.81	0.51	228	52.0	3.65	75.1	18.3	2.10
W8 x 48	48	14.1	8.5	8.110	0.685	0.4	184	43.3	3.61	60.9	15.0	2.08
W8 x 40	40	11.7	8.25	8.070	0.56	0.36	146	35.5	3.53	49.1	12.2	2.04
W8 x 35	35	10.3	8.12	8.020	0.495	0.31	127	31.2	3.51	42.6	10.6	2.03
W8 x 31	31	9.13	8	7.995	0.435	0.285	110	27.5	3.47	37.1	9.27	2.02
W8 x 28	28	8.25	8.06	6.535	0.465	0.285	98.0	24.3	3.45	21.7	6.63	1.62
W8 x 24	24	7.08	7.93	6.495	0.4	0.245	82.8	20.9	3.42	18.3	5.63	1.61
W8 x 21	21	6.16	8.28	5.270	0.4	0.25	75.3	18.2	3.49	9.77	3.71	1.26
W8 x 18	18	5.26	8.14	5.250	0.33	0.23	61.9	15.2	3.43	7.97	3.04	1.23
W8 x 15	15	4.44	8.11	4.015	0.315	0.245	48.0	11.8	3.29	3.41	1.70	0.876
W8 x 13	13	3.84	7.99	4.000	0.255	0.23	39.6	9.91	3.21	2.73	1.37	0.843
W8 x 10	10	2.96	7.89	3.940	0.205	0.17	30.8	7.81	3.22	2.09	1.06	0.841
W6 x 25	25	7.34	6.38	6.080	0.455	0.32	53.4	16.7	2.70	17.1	5.61	1.52
W6 x 20	20	5.87	6.2	6.020	0.365	0.26	41.4	13.4	2.66	13.3	4.41	1.50
W6 x 16	16	4.74	6.28	4.030	0.405	0.26	32.1	10.2	2.60	4.43	2.20	0.966
W6 x 15	15	4.43	5.99	5.990	0.26	0.23	29.1	9.72	2.56	9.32	3.11	1.46
W6 x 12	12	3.55	6.03	4.000	0.28	0.23	22.1	7.31	2.49	2.99	1.50	0.918
W6 x 9	9	2.68	5.9	3.940	0.215	0.17	16.4	5.56	2.47	2.19	1.11	0.905
W5 x 19	19	5.54	5.15	5.030	0.43	0.27	26.2	10.2	2.17	9.13	3.63	1.28
W5 x 16	16	4.68	5.01	5.000	0.36	0.24	21.3	8.51	2.13	7.51	3.00	1.27
W4 x 13	13	3.83	4.16	4.060	0.345	0.28	11.3	5.46	1.72	3.86	1.90	1.00

Symbols: I = moment of inertia; S = section modulus; r = radius of gyration;

## Supplements:

Link	Usage
<a href="#">Wide Flange I Beam Sizes Calculator</a>	Calculator form of the steel wide flange beam dimensions chart.

## Definitions:

**Second Moment of Area:** The capacity of a cross-section to resist bending.

**Radius of Gyration (Area):** The distance from an axis at which the area of a body may be assumed to be concentrated and the second moment area of this configuration equal to the second moment area of the actual body about the same axis.

**Section Modulus:** The moment of inertia of the area of the cross section of a structural member divided by the distance from the center of gravity to the farthest point of the section; a measure of the flexural strength of the beam.

## Reference:

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- A 6/A 6M - 05a , Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling