

Beams And Columns

- ◆ Universal Beams & Columns
- ◆ Cellular Beams
- ◆ Castellated Beams
- ◆ Structural Tees

Univerasal Beams And Columns

GENERAL

The section sizes of universal beams and columns are given in the tables on the following pages. We have split up the sections in metric and imperial sizes because the sections are rolled after different standard specifications.

The tables cover I-beams, IPE- beams, H-beams and HE-beams. The difference between these beams is that the H/HE-beams have wider flange than the I/IPE-beams and therefore look more like the letter H than the letter I, see Figure 4. In our catalogue we put them all together to make it easier to make the ultimate choice.

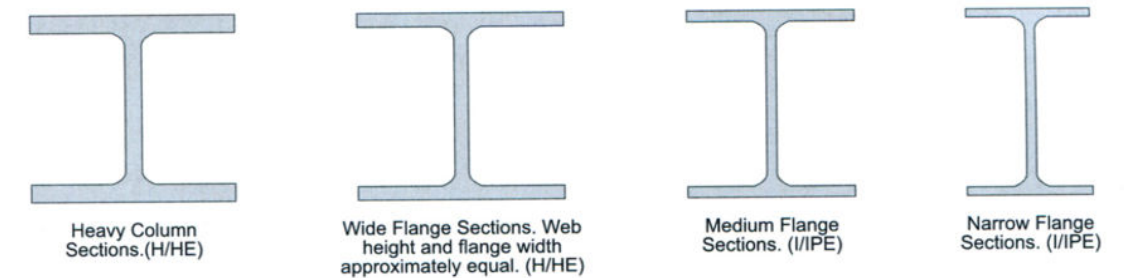


Figure 4-Universal Beams and Columns: Section shapes

The standard specifications used for production of universal beams and columns in this region are listed in this table.

Material	Yield Strength N/mm ²			Tensile Strength N/mm ²	Min. Elongation L ₀ =5.65 √ S ₀	Min. Charpy V-notch. Temp. 20°C	Dimensions & Tolerances
AS 3679.1 (1996)	≤12mm	12-40	≥40mm				
Grade 250	260	250	230	min. 410	22 %	27J	AS 3679.1 (1996)
Grade 300	300	300	300	min. 430	22 %	27J	
Grade 350	360	340	330	min. 480	20 %	27J	
ASTM A36 (2001)	min. 250			400-550	20-21 %	-	ASTM A6 (1997)
ASTM A572 (2001)							
Grade 42	min. 290			min. 415	20-24 %	-	
Grade 50	min. 345			min. 450	18-21 %	-	
Grade 60	min. 415			min. 520	16-18 %	-	
Grade 65	min. 450			min. 550	15-17 %	-	
ASTM A913 (2001)							
Grade 50	min. 345			min. 450	18-21 %	-	
Grade 65	min. 450			min. 550	15-17 %	-	
BS 4360 (1986)(superseded)							BS 4 Part 1 (1993) (superseded)
Grade 43A	min. 275			430-580	22 %	-	
Grade 50B	min. 355			490-640	20 %	27J	
EN 10025 (2004)	≤16mm	16-40	≥40mm	3-100mm		10<t≤150mm	EN 10034 (1993)
S275JR	275	265	255	410-560	17-22 %	27J	
S355JR	355	345	335	490-630	17-22 %	27J	
S420JN	420	400	390	500-660	19 %	27J	
S460JN	460	440	430	530-720	17 %	27J	
JIS 3101 (1995)	≤16mm	16-40	≥40mm	t<100mm			JIS 3192 (1994)
SS400	245	235	215	400-510	17-24 %	-	
SS490	285	275	255	490-610	15-21 %	-	
SS540	400	390	-	min 540	13-17 %	-	
JIS 3106 (1995)	≤16mm	16-40	≥40mm	t<100mm			
SM400A, B	245	235	215	400-510	18-24 %	-	
SM400A, B	325	315	295	490-610	17-23 %	-	
SM490YA, YB	365	355	335	490-610	15-21 %	-	
SM520B	365	355	335	520-640	15-21 %	-	

Table 10 - Universal Beams And Columns: Standard Specifications

ROLLING TOLERANCES - EN 10034: 1993

This European standard specifies tolerances on shape dimensions and mass of structural steel universal beams and columns. These requirements do not apply to taper flange sections.

Section Height (h)

The deviation from nominal on section height measured at the centre line of web thickness shall be within the tolerance given in the following table.

Section Height h (mm)	Tolerance (mm)	
Up to and including 180	+3	-2
Greater than 180 up to and including 400	+4	-2
Greater than 400 up to and including 700	+5	-3
Greater than 700	+5	-5

Flange Width (b)

The deviation from nominal on flange width shall be within the tolerance given in the following table.

Flange width b (mm)	Tolerance (mm)	
Up to and including 110	+4	-1
Greater than 110 up to and including 210	+4	-2
Greater than 210 up to and including 325	+4	-4
Greater than 325	+6	-5

Web Thickness (s)

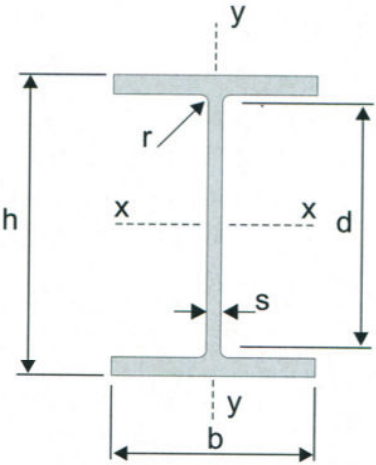
The deviation from nominal on web thickness measured at the mid-point of dimension(h) shall be within the tolerance given in the following table.

Web Thickness s (mm)	Tolerance (mm)	
Less than 7	+0.7	-0.7
7 up to but excluding 10	+1.0	-1.0
10 up to but excluding 20	+1.5	-1.5
20 up to but excluding 30	+2.0	-2.0
40 up to but excluding 60	+2.5	-2.5
60 and over	+3.0	-3.0

Flange Thickness (t)

The deviation from nominal on flange thickness measured at the quarter flange width point shall be within the tolerance given in the following table.

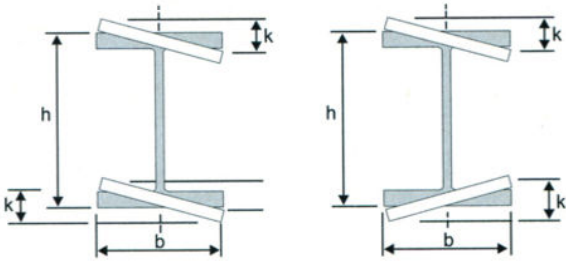
Flange Thickness s (mm)	Tolerance (mm)	
Less than 6.5	+1.5	-0.5
6.5 up to but excluding 10	+2.0	-1.0
10 up to but excluding 20	+2.5	-1.5
20 up to but excluding 30	+2.0	-2.0
30 up to but excluding 40	+2.5	-2.5
40 up to but excluding 60	+3.0	-3.0
60 and over	+4.0	-4.0



Out-Of-Squareness (k+k')

The out-of-squareness of the section shall not exceed the maximum given in the following table.

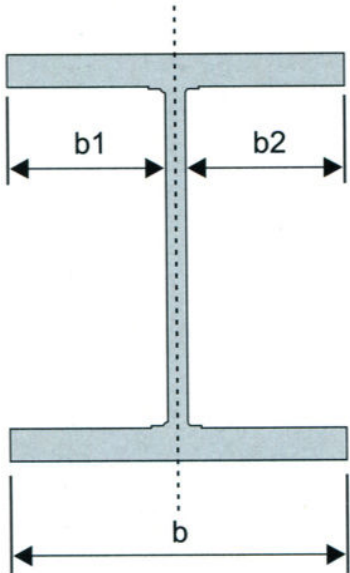
Flange Width b (mm)	Tolerance (mm)
Up to and including 110	1.5
Greater than 325	2% of b (maximum 6.5mm)



Web Off-centre (e) On Mass

The mid-thickness of the web shall not deviate from the mid-width position on the flange by more than the distance(e) given in the following table.

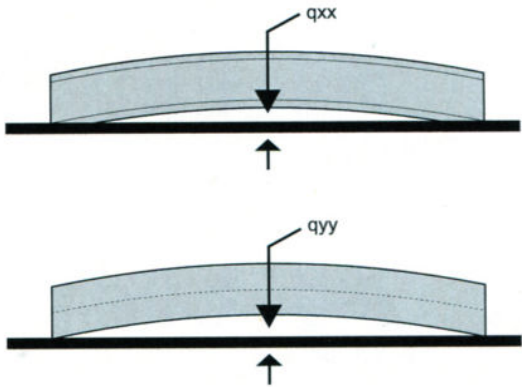
Flange Width b (mm)	Web off-centre where $e=(b_1-b_2)/2$
Up to and including 110	+4
Greater than 110 up to and including 325	+4
Greater than 110 up to and including 325	+4
Greater than 325	+6



Straightness(qxx or qyy)

The straightness shall comply with the requirements given in the following table.

Section Height h (mm)	Tolerance qxx Or qyy On Length L (mm)
Greater than 80 up to and including 180	0.30L
Greater than 180 up to and including 360	0.15L
Greater than 306	0.1L



Tolerance On Mass

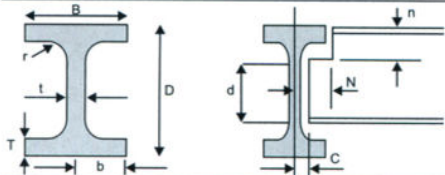
The deviation from the nominal mass of a batch or a piece shall not exceed $\pm 4.0\%$.

The mass deviation is the difference between the actual mass of the batch or a piece and the calculated mass. The calculated mass shall be determined using a density of 7850 kg/m³

Tolerance On Length

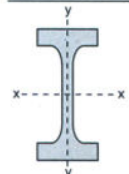
The sections shall be cut to ordered lengths to tolerances of
a. $\pm 50\text{mm}$
or
b. $+100\text{mm}$ where minimum lengths are requested

L represents the longest useable length of the section assuming that the ends of the section have been cut square.



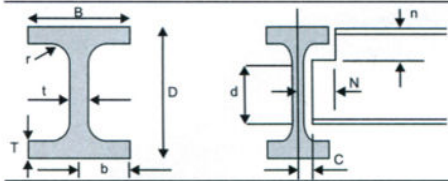
Universal Beams And Columns

Designation Size	Mass Per Metre	Depth Of Section D	Width Of Section B	Thickness		Root Radius r	Depth Between Fillet d	Area Of Section A	Ratios For Local Buckling		Dimensions For Detailing		
				Flange T	Web t				Flange b/T	Web d/t	End Clearance C	N	Notch n
mm	kg/m	mm	mm	mm	mm	mm	mm	cm ²			mm	mm	mm
100x50	9.30	100	50	7	5	8	70	11.8	3.57	14.0	5	33	15
100x100	14.8	100	100	7	5	10	66	19.2	7.14	13.2	5	58	17
	16.9	100	100	8	6	8	68	21.6	6.25	11.3	5	57	16
	17.2	100	100	8	6	10	64	21.9	6.25	10.7	5	57	18
125x60	13.2	125	60	8	6	9	91	16.8	3.75	15.2	5	37	17
125x125	23.6	125	125	9	6.5	8	91	30.0	6.94	14.0	5	69	17
	23.8	125	125	9	6.5	10	87	30.3	6.94	13.4	5	69	19
150x75	14.0	150	75	7	5	8	120	17.8	5.36	24.0	5	45	15
150x100	20.7	148	100	9	6	8	114	26.3	5.36	19.0	5	57	17
	21.1	148	100	9	6	11	108	26.8	5.56	18.0	5	57	20
150x150	31.1	150	150	10	7	8	114	39.6	7.50	16.3	6	82	18
	31.5	150	150	10	7	11	108	40.1	7.50	15.4	6	82	21
	37.4	154	151	12	8	11	108	47.7	6.29	13.5	6	82	23
175x90	18.0	175	90	8	5	8	143	22.9	5.63	28.6	5	53	16
	18.1	175	90	8	5	9	141	23.0	5.63	28.2	5	53	17
175x125	23.3	169	125	8	5.5	12	129	29.7	7.81	23.5	5	70	20
175x175	32.8	171	174	9	6	12	129	41.7	9.67	21.5	5	94	21
	40.2	175	175	11	7.5	12	129	51.2	7.95	17.2	6	94	23
	40.4	175	175	11	7.5	13	127	51.4	7.95	16.9	6	94	24
200x100	17.8	198	99	7	4.5	8	168	22.7	7.07	37.3	4	57	15
	18.2	198	99	7	4.5	11	132	23.2	7.07	36.0	4	57	18
	20.9	200	100	8	5.5	8	168	26.7	6.25	30.5	5	57	16
	21.3	200	100	8	5.5	11	162	27.2	6.25	29.5	5	57	19
200x150	29.9	194	150	9	6	8	160	38.1	8.33	26.7	5	82	17
	30.6	194	150	9	6	13	150	39.0	8.33	25.0	5	82	22
	36.9	198	151	11	7	13	150	47.0	6.86	21.4	6	82	24
200x200	41.4	196	199	10	6.5	13	150	52.7	9.95	23.1	5	106	23
	49.9	200	200	12	8	13	150	63.5	8.33	18.8	6	106	25
	57.8	204	201	14	9	13	150	73.6	7.18	16.7	7	106	27
	65.7	208	202	16	10	13	150	83.7	6.31	15.0	7	106	29
250x125	25.1	248	124	8	5	8	216	32.0	7.75	43.2	5	70	16
	25.7	248	124	8	5	12	208	32.7	7.75	41.6	5	70	20
	29.0	250	125	9	6	8	216	37.0	6.94	36.0	5	70	17
	29.6	250	125	9	6	12	208	37.7	6.94	34.7	5	70	21
250x175	43.6	244	175	11	7	13	196	55.5	7.95	28.0	6	94	24
	44.1	244	175	11	7	16	190	56.2	7.95	27.1	6	94	27
	51.6	248	176	13	8	16	190	65.7	6.77	23.8	6	94	29
	59.1	252	177	15	9	16	190	75.3	5.90	21.1	7	94	31
250x250	66.5	248	249	13	8	16	190	84.7	9.58	23.8	6	131	29
	71.8	250	250	14	9	13	196	91.4	8.93	21.8	7	131	27
	72.4	250	250	14	9	16	190	92.2	8.93	21.1	7	131	30
	98.1	260	253	19	12	16	190	125	6.66	15.8	8	131	35
300x150	25.0	294	148	6	4.5	16	250	32.6	12.3	55.6	4	82	22
	32.0	298	149	8	5.5	13	256	40.8	9.31	46.5	5	82	21
	36.7	300	150	9	6.5	13	256	46.8	8.33	39.4	5	82	22
	41.4	304	150	11	6.5	13	256	52.8	6.82	39.4	5	82	24
	46.2	306	151	12	7.5	13	256	58.8	6.29	34.1	6	82	25
	69.0	318	154	18	11	13	256	87.9	4.28	23.3	8	82	31



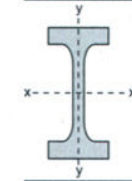
Universal Beams And Columns

Designation Size	Unit Weight	Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	x-x	y-y				
mm	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H	J
													dm ⁶	cm ⁴
100x50	9.3	0.376	188	14.8	3.98	1.12	37.5	5.93	44.1	9.5	0.876	12.7	0.000320	2.03
100x100	14.8	0.570	344	117.0	4.20	2.47	69.0	23.0	78.0	36.0	0.843	12.3	0.00253	3.53
	16.9	0.574	378	134	4.18	2.49	75.6	26.7	86.4	41.0	0.836	11.1	0.00283	4.73
	17.2	0.571	383	134	4.18	2.47	76.5	26.8	87.6	41.2	0.837	10.7	0.00283	5.17
125x60	13.2	0.463	413	29.2	4.95	1.32	66.1	9.75	77.6	15.7	0.872	14.0	0.00100	3.75
125x125	23.6	0.723	840	293	5.29	3.13	134	46.9	152	71.7	0.839	12.8	0.00987	7.91
	23.8	0.720	847	294	5.29	3.11	136	47.0	154	71.9	0.840	12.5	0.00988	8.43
150x75	14.0	0.576	666	49.5	6.11	1.67	88.8	13.2	102	20.8	0.876	20.4	0.00253	2.81
150x100	20.7	0.670	1003	150	6.17	2.39	135	30.1	154	46.4	0.880	15.8	0.00727	6.56
	21.1	0.665	1021	151	6.17	2.37	138	30.1	157	46.7	0.881	15.0	0.00728	7.37
150x150	31.1	0.872	1623	563	6.40	3.77	216	75.1	243	114	0.841	14.1	0.0276	12.5
	31.5	0.867	1641	563	6.39	3.75	219	75.1	246	115	0.842	13.7	0.0276	13.5
	37.4	0.877	2018	690	6.51	3.80	262	91.4	298	140	0.845	11.8	0.0348	22.2
175x90	18.0	0.686	1205	97.5	7.26	2.06	138	21.7	156	33.6	0.885	21.8	0.00680	4.31
	18.1	0.685	1214	97.6	7.26	2.06	139	21.7	157	33.7	0.885	21.4	0.00680	4.50
175x125	23.3	0.806	1529	261	7.18	2.97	181	41.8	202	64.3	0.879	19.1	0.0169	6.76
175x175	32.8	1.01	2304	791	7.43	4.35	269	90.9	298	138	0.845	17.5	0.0519	11.5
	40.2	1.01	2884	984	7.50	4.38	330	112	369	171	0.844	14.7	0.0662	20.4
	40.4	1.01	2895	984	7.50	4.37	331	112	370	172	0.845	14.5	0.0662	21.0
200x100	17.8	0.769	1543	113	8.25	2.24	156	22.9	175	35.5	0.883	28.4	0.0103	3.30
	18.2	0.764	1582	114	8.26	2.22	160	23.0	180	35.7	0.884	26.5	0.0104	3.86
	20.9	0.775	1806	134	8.23	2.24	181	26.7	205	41.6	0.878	24.9	0.0123	5.08
	21.3	0.770	1844	134	8.24	2.22	184	26.8	209	41.9	0.880	23.6	0.0124	5.77
200x150	29.9	0.962	2625	507	8.30	3.65	271	67.6	301	103	0.876	21.2	0.0434	9.32
	30.6	0.954	2690	507	8.30	3.61	277	67.7	309	104	0.878	19.8	0.0434	10.9
	36.9	0.964	3331	633	8.42	3.67	336	83.8	377	128	0.879	16.9	0.0553	18.5
200x200	41.4	1.15	3846	1315	8.54	5.00	392	132	433	201	0.847	18.2	0.114	17.6
	49.9	1.16	4716	1602	8.62	5.02	472	160	525	244	0.846	15.5	0.142	29.8
	57.8	1.17	5603	1897	8.73	5.08	549	189	617	287	0.847	13.6	0.171	45.8
	65.7	1.18	6531	2201	8.83	5.13	628	218	710	332	0.848	12.2	0.203	66.7
250x125	25.1	0.968	3450	255	10.4	2.82	278	41.1	312	63.2	0.884	32.0	0.0367	5.78
	25.7	0.961	3537	255	10.4	2.79	285	41.1	319	63.6	0.886	29.9	0.0367	6.74
	29.0	0.974	3965	294	10.4	2.82	317	47.0	358	72.7	0.880	28.4	0.0426	8.51
	29.6	0.967	4052	294	10.4	2.79	324	47.0	366	73.1	0.881	26.9	0.0427	9.68
250x175	43.6	1.15	6037	984	10.4	4.21	495	112	550	172	0.883	21.3	0.134	21.2
	44.1	1.15	6122	985	10.4	4.19	502	113	558	173	0.884	20.5	0.134	23.2
	51.6	1.16	7308	1184	10.5	4.24	589	135	660	207	0.884	18.0	0.163	36.1
	59.1	1.17	8541	1390	10.7	4.30	678	157	764	241	0.885	16.0	0.195	53.2
250x250	66.5	1.45	9931	3348	10.8	6.29	801	269	883	408	0.850	17.9	0.462	46.7
	71.8	1.46	10750	3648	10.8	6.32	860	292	953	443	0.847	17.1	0.508	55.8
	72.4	1.45	10830	3649	10.8	6.29	867	292	960	444	0.848	16.7	0.508	58.7
	98.1	1.48	15340	5134	11.1	6.41	1180	406	1330	618	0.849	12.8	0.745	141
300x150	25.0	1.14	4940	326	12.3	3.16	336	44.0	375	68.4	0.878	39.7	0.0676	5.51
	32.0	1.16	6318	442	12.4	3.29	424	59.4	475	91.8	0.880	35.6	0.0930	8.65
	36.7	1.16	7210	508	12.4	3.29	481	67.7	542	105	0.876	32.0	0.107	12.4
	41.4	1.17	8578	620	12.7	3.43	564	82.7	633	128	0.888	27.8	0.133	18.8
	46.2	1.18	9514	691	12.7	3.43	622	91.5	702	142	0.884	25.6	0.149	24.9
	69.0	1.21	14820	1100	13.0	3.54	932	143	1070	223	0.884	17.9	0.248	79.0



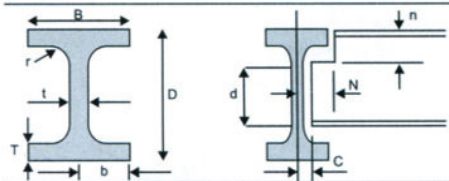
Universal Beams And Columns

Designation Size	Mass Per Metre	Depth Of Section D	Width Of Section B	Thickness		Root Radius r	Depth Between Filletlets d	Area Of Section A	Ratios For Local Buckling		Dimensions For Detailing		
				Flange T	Web t				Flange b/T	Web d/t	End Clearance C	N	Notch n
				mm	mm		mm	cm ²			mm	mm	mm
300x200	48.3	290	199	10	7	18	234	61.5	9.95	33.4	6	106	28
	55.8	294	200	12	8	13	244	71.1	8.33	30.5	6	106	25
	56.8	294	200	12	8	18	234	72.4	8.33	29.3	6	106	30
	65.4	298	201	14	9	18	234	83.4	7.18	26.0	7	106	32
	77.3	304	202	17	10	18	234	98.5	5.94	23.4	7	106	35
300x300	87.0	298	299	14	9	18	234	111	10.7	26.0	7	155	32
	93.0	300	300	15	10	13	244	118	10.0	24.4	7	155	28
	94.0	300	300	15	10	18	234	120	10.0	23.4	7	155	33
	106	304	301	17	11	18	234	135	8.85	21.3	8	155	35
	125	310	303	20	13	18	234	159	7.58	18.0	9	155	38
	130	310	305	20	15	18	234	165	7.63	15.6	10	155	38
	147	312	310	21	20	18	234	187	7.38	11.7	12	155	39
350x175	41.2	346	174	9	6	13	302	52.5	9.67	50.3	5	94	22
	41.4	346	174	9	6	14	300	52.7	9.67	50.0	5	94	23
	49.4	350	175	11	7	13	302	62.9	7.95	43.1	6	94	24
	49.6	350	175	11	7	14	300	63.1	7.95	42.9	6	94	25
	57.8	354	176	13	8	14	300	73.7	6.77	37.5	6	94	27
	66.2	358	177	15	9	14	300	84.3	5.90	33.3	7	94	29
	71.8	360	178	16	10	14	300	91.4	5.56	30.0	7	94	30
	79.7	364	177	18	11	14	300	101	4.92	27.3	8	93	32
350x250	69.2	336	249	12	8	20	272	88.2	10.4	34.0	6	131	32
	78.1	340	250	14	9	13	286	100	8.93	31.8	7	131	27
	79.7	340	250	14	9	20	272	102	8.93	30.2	7	131	34
	94.2	346	251	17	10	20	272	120	7.38	27.2	7	131	37
	108	350	253	19	12	20	272	137	6.66	22.7	8	131	39
350x350	113	344	348	16	10	13	286	144	10.9	28.6	7	179	29
	115	344	354	16	10	20	272	148	11.1	27.2	7	182	36
	135	350	350	19	12	13	286	172	9.21	23.8	8	179	32
	137	350	350	19	12	20	272	174	9.21	22.7	8	179	39
	159	356	353	22	14	20	272	202	8.00	19.4	9	179	42
	181	362	354	25	16	20	272	230	7.08	17.0	10	179	45
400x200	56.1	396	199	11	7	13	348	71.4	9.05	49.7	6	106	24
	56.6	396	199	11	7	16	342	72.2	9.05	48.9	6	106	27
	65.4	400	200	13	8	13	348	83.4	7.69	43.5	6	106	26
	66.0	400	200	13	8	16	342	84.1	7.69	42.8	6	106	29
	75.5	404	201	15	9	16	342	96.2	6.70	38.0	7	106	31
	88.2	410	202	18	10	16	342	112	5.61	34.2	7	106	34
	140	430	208	28	16	16	342	179	3.71	21.4	10	106	44
	187	446	214	36	22	16	342	239	2.97	15.5	13	106	52
400x300	94.3	386	299	14	9	22	314	120	10.7	34.9	7	155	36
	105	390	300	16	10	13	332	133	9.38	33.2	7	155	29
	107	390	300	16	10	22	314	136	9.38	31.4	7	155	38
	127	396	302	19	12	22	314	162	7.95	26.2	8	155	41
	144	402	303	22	13	22	314	184	6.89	24.2	9	155	44
400x400	140	388	402	15	15	22	314	178	13.4	20.9	10	204	37
	147	394	398	18	11	22	314	187	11.1	28.5	8	204	40
	172	400	400	21	13	22	314	219	9.52	24.2	9	204	43
	200	406	403	24	16	22	314	255	8.40	19.6	10	204	46
	232	414	405	28	18	22	314	295	7.23	17.4	11	204	50
	283	428	407	35	20	22	314	361	5.81	15.7	12	204	57
	415	458	417	50	30	22	314	529	4.17	10.5	17	204	72
	605	498	432	70	45	22	314	770	3.09	7.0	25	204	92



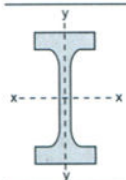
Universal Beams And Columns

Designation Size	Unit Weight	Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	x-x	y-y				
mm	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H	J
													dm ⁶	cm ⁴
300x200	48.3	1.33	9431	1317	12.4	4.63	650	132	721	203	0.882	26.0	0.258	22.8
	55.8	1.35	11110	1602	12.5	4.75	756	160	842	245	0.882	24.0	0.319	31.4
	56.8	1.34	11340	1604	12.5	4.71	771	160	859	247	0.883	22.7	0.319	35.8
	65.4	1.35	13310	1900	12.6	4.77	893	189	1000	291	0.884	20.1	0.383	53.4
	77.3	1.37	16280	2341	12.9	4.88	1071	232	1204	356	0.888	17.2	0.482	87.8
300x300	87.0	1.74	18850	6242	13.0	7.51	1265	418	1389	634	0.850	20.0	1.26	71.3
	93.0	1.76	20190	6753	13.1	7.55	1346	450	1484	683	0.847	19.4	1.37	82.1
	94.0	1.75	20410	6756	13.1	7.51	1361	450	1501	684	0.848	18.8	1.37	88.1
	106	1.76	23380	7733	13.2	7.57	1538	514	1705	781	0.849	16.9	1.59	125
	125	1.78	28130	9282	13.3	7.64	1815	613	2031	932	0.849	14.6	1.95	200
	130	1.78	28630	9470	13.2	7.57	1847	621	2079	949	0.842	14.4	1.99	215
	147	1.79	31370	10450	13.0	7.48	2011	674	2295	1040	0.830	13.0	2.21	298
350x175	41.2	1.35	11040	792	14.5	3.88	638	91.0	712	140	0.881	38.1	0.225	13.2
	41.4	1.35	11100	792	14.5	3.88	641	91.0	716	140	0.882	37.5	0.225	13.6
	49.4	1.36	13500	984	14.6	3.96	771	113	864	173	0.883	32.2	0.283	22.4
	49.6	1.36	13560	985	14.7	3.95	775	113	868	174	0.884	31.8	0.283	23.0
	57.8	1.37	16100	1184	14.8	4.01	909	135	1022	208	0.885	27.6	0.344	36.1
	66.2	1.38	18710	1390	14.9	4.06	1045	157	1180	243	0.886	24.4	0.409	53.6
	71.8	1.39	20240	1508	14.9	4.06	1124	169	1276	263	0.883	22.9	0.446	66.3
	79.7	1.39	22760	1669	15.0	4.06	1250	189	1425	293	0.884	20.6	0.499	91.3
350x250	69.2	1.62	18510	3093	14.5	5.92	1102	248	1215	380	0.881	25.8	0.812	44.6
	78.1	1.64	21230	3649	14.6	6.05	1249	292	1382	445	0.881	24.2	0.969	58.0
	79.7	1.63	21680	3652	14.6	6.00	1275	292	1412	447	0.882	22.8	0.970	66.3
	94.2	1.64	26440	4488	14.8	6.12	1528	358	1699	547	0.886	19.5	1.21	109
	108	1.65	30190	5138	14.8	6.12	1725	406	1935	623	0.882	17.6	1.41	155
350x350	113	2.04	32850	11240	15.1	8.84	1910	646	2092	978	0.848	21.1	3.02	111
	115	2.05	33810	11840	15.1	8.95	1966	669	2153	1014	0.846	20.4	3.18	123
	135	2.05	39847	13583	15.2	8.89	2277	776	2515	1176	0.847	18.0	3.72	186
	137	2.04	40300	13590	15.2	8.84	2303	776	2545	1179	0.849	17.5	3.72	199
	159	2.06	47590	16000	15.3	8.90	2674	909	2979	1382	0.848	15.4	4.46	305
	181	2.07	55190	18500	15.5	8.96	3049	1045	3424	1591	0.848	13.7	5.25	445
400x200	56.1	1.55	19770	1447	16.6	4.50	999	145	1114	223	0.883	36.8	0.536	25.0
	56.6	1.55	20020	1448	16.7	4.48	1011	145	1128	224	0.884	35.6	0.536	27.1
	65.4	1.56	23460	1736	16.8	4.56	1173	174	1313	267	0.885	31.8	0.650	39.6
	66.0	1.56	23710	1737	16.8	4.54	1185	174	1326	268	0.886	30.9	0.650	42.2
	75.5	1.57	27490	2035	16.9	4.60	1361	202	1528	312	0.887	27.4	0.770	62.3
	88.2	1.58	33060	2478	17.2	4.70	1612	245	1815	378	0.891	23.4	0.952	101
	140	1.63	54850	4216	17.5	4.86	2551	405	2941	632	0.887	15.7	1.70	373
	187	1.68	75250	5919	17.8	4.98	3374	553	3968	873	0.883	12.5	2.49	825
400x300	94.3	1.91	33680	6246	16.7	7.21	1745	418	1918	637	0.880	25.8	2.16	79.9
	105	1.94	37860	7204	16.9	7.35	1942	480	2141	730	0.879	24.5	2.52	100
	107	1.92	38680	7210	16.9	7.28	1983	481	2188	733	0.881	23.2	2.52	114
	127	1.94	46660	8735	17.0	7.35	2357	578	2620	884	0.880	20.0	3.10	185
	144	1.95	54420	10220	17.2	7.45	2707	674	3022	1030	0.883	17.7	3.69	272
400x400	140	2.32	48970	16260	16.6	9.55	2524	809	2802	1237	0.830	22.5	5.66	156
	147	2.32	56150	18930	17.3	10.1	2850	951	3118	1441	0.850	20.9	6.69	194
	172	2.34	66620	22420	17.5	10.1	3331	1121	3672	1700	0.850	18.2	8.05	303
	200	2.35	78040	26200	17.5	10.1	3844	1300	4280	1977	0.846	16.1	9.56	462
	232	2.37	92770	31030	17.7	10.2	4482	1532	5026	2331	0.848	14.1	11.6	714
	283	2.41	119200	39360	18.2	10.4	5570	1934	6311	2941	0.854	11.6	15.2	1317
	415	2.49	187100	60530	18.8	10.7	8172	2903	9540	4436	0.853	8.5	25.2	3885
	605	2.60	297900	94360	19.7	11.1	11960	4369	14460	6724	0.852	6.4	43.2	11060



Universal Beams And Columns

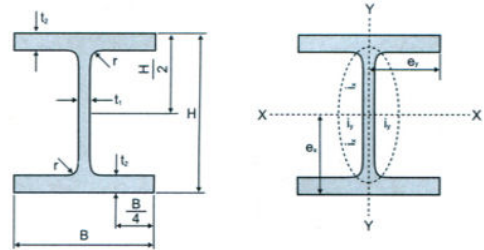
Designation Size	Mass Per Metre	Depth Of Section	Width Of Section	Thickness		Root Radius	Depth Between Fillet	Area Of Section	Ratios For Local Buckling		Dimensions For Detailing		
				Flange T	Web t				Flange b/T	Web d/t	End Clearance C	N	Notch n
mm	kg/m	mm	mm	mm	mm	mm	mm	cm ²			mm	mm	mm
450x200	65.1	446	199	12	8	13	396	83.0	8.29	49.5	6	106	25
	66.2	446	199	12	8	18	386	84.3	8.29	48.3	6	106	30
	74.9	450	200	14	9	13	396	95.4	7.14	44.0	7	106	27
	76.0	450	200	14	9	18	386	96.8	7.14	42.9	7	106	32
	88.9	456	201	17	10	18	386	113	5.91	38.6	7	106	35
	98.9	460	202	19	11	18	386	126	5.32	35.1	8	106	37
	110	460	205	19	14	18	386	140	5.39	27.6	9	106	37
450x300	106	434	299	15	10	24	356	135	9.97	35.6	7	155	39
	121	440	300	18	11	13	378	154	8.33	34.4	8	155	31
	124	440	300	18	11	24	356	157	8.33	32.4	8	155	42
	145	446	302	21	13	24	356	184	7.19	27.4	9	155	45
500x200	77.9	496	199	14	9	13	442	99	7.11	49.1	7	105	27
	79.5	496	199	14	9	20	428	101	7.11	47.6	7	105	34
	88.2	500	200	16	10	13	442	112	6.25	44.2	7	105	29
	89.6	500	200	16	10	20	428	114	6.25	42.8	7	105	36
	102	506	201	19	11	13	442	129	5.29	40.2	8	105	32
	103	506	201	19	11	20	428	131	5.29	38.9	8	105	39
	117	512	202	22	12	20	428	148	4.59	35.7	8	105	42
500x300	111	482	300	15	11	13	426	141	10.0	38.7	8	155	28
	114	482	300	15	11	26	400	146	10.0	36.4	8	155	41
	125	488	300	18	11	13	426	159	8.33	38.7	8	155	31
	128	488	300	18	11	26	400	164	8.33	36.4	8	155	44
	150	494	302	21	13	26	400	191	7.19	30.8	9	155	47
600x200	79.0	592	197	13	8	22	522	101	7.58	65.3	6	105	35
	92.5	596	199	15	10	13	540	118	6.63	54.0	7	105	28
	94.6	596	199	15	10	22	522	120	6.63	52.2	7	105	37
	103	600	200	17	11	13	540	132	5.88	49.1	8	105	30
	106	600	200	17	11	22	522	134	5.88	47.5	8	105	39
	118	606	201	20	12	13	540	150	5.03	45.0	8	105	33
	120	606	201	20	12	22	522	152	5.03	43.5	8	105	42
	134	612	202	23	13	22	522	171	4.39	40.2	9	105	45
	133	582	300	17	12	13	522	169	8.82	43.5	8	154	30
600x300	137	582	300	17	12	28	492	174	8.82	41.0	8	154	45
	147	588	300	20	12	13	522	187	7.50	43.5	8	154	33
	151	588	300	20	12	28	492	192	7.50	41.0	8	154	48
	170	594	302	23	14	13	522	217	6.57	37.3	9	154	36
	175	594	302	23	14	28	492	222	6.57	35.1	9	154	51
	203	602	304	27	16	28	492	259	5.63	30.8	10	154	55
	217	608	304	30	16	28	492	277	5.07	30.8	10	154	58
	166	692	300	20	13	28	596	211	7.50	45.8	9	154	48
	182	700	300	24	13	18	616	232	6.25	47.4	9	154	42
700x300	185	700	300	24	13	28	596	235	6.25	45.8	9	154	52
	215	708	302	28	15	28	596	274	5.39	39.7	10	154	56
	191	792	300	22	14	28	692	243	6.82	49.4	9	153	50
	207	800	300	26	14	18	712	264	5.77	50.9	9	153	44
800x300	210	800	300	26	14	28	692	267	5.77	49.4	9	153	54
	241	808	302	30	16	28	692	308	5.03	43.3	10	153	58
	267	816	303	34	17	28	692	340	4.46	40.7	11	153	62
	210	890	299	23	15	18	808	267	6.50	53.9	10	152	41
	213	890	299	23	15	28	788	271	6.50	52.5	10	152	51
900x300	240	900	300	28	16	18	808	306	5.36	50.5	10	152	46
	243	900	300	28	16	28	788	310	5.36	49.3	10	152	56
	283	912	302	34	18	18	808	360	4.44	44.9	11	152	52
	286	912	302	34	18	28	788	364	4.44	43.8	11	152	62
	304	918	303	37	19	18	808	387	4.09	42.5	12	152	55
	307	918	303	37	19	28	788	391	4.09	41.5	12	152	65
	210	890	299	23	15	18	808	267	6.50	53.9	10	152	41
	213	890	299	23	15	28	788	271	6.50	52.5	10	152	51
	240	900	300	28	16	18	808	306	5.36	50.5	10	152	46
	243	900	300	28	16	28	788	310	5.36	49.3	10	152	56
	283	912	302	34	18	18	808	360	4.44	44.9	11	152	52
	286	912	302	34	18	28	788	364	4.44	43.8	11	152	62
	304	918	303	37	19	18	808	387	4.09	42.5	12	152	55
	307	918	303	37	19	28	788	391	4.09	41.5	12	152	65



Universal Beams And Columns

Designation Size	Unit Weight	Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter u	Torsional Index x	Warping Constant H	Torsional Constant J
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	x-x	y-y				
mm	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁶	cm ⁴
450x200	65.1	1.65	28130	1579	18.4	4.36	1262	159	1423	245	0.876	38.4	0.744	33.9
	66.2	1.64	28700	1581	18.5	4.33	1287	159	1450	247	0.878	36.5	0.744	38.3
	74.9	1.66	32890	1870	18.6	4.43	1462	187	1652	290	0.878	33.6	0.889	51.6
	76.0	1.65	33450	1872	18.6	4.40	1487	187	1679	291	0.879	32.2	0.890	56.9
	88.9	1.67	40400	2308	19.9	4.51	1772	230	2003	356	0.884	27.5	1.11	92.5
	98.9	1.68	45430	2619	19.0	4.56	1975	259	2240	403	0.885	25.0	1.27	126
	110	1.68	47860	2742	18.5	4.43	2081	268	2399	423	0.869	23.9	1.33	152
450x300	106	2.00	46800	6695	18.6	7.04	2157	448	2384	686	0.883	27.0	2.94	104
	121	2.04	54730	8106	18.9	7.26	2488	540	2757	823	0.885	24.9	3.61	141
	124	2.02	56070	8114	18.9	7.18	2549	541	2825	828	0.887	23.4	3.61	163
	145	2.03	66380	9658	19.0	7.24	2977	640	3323	981	0.886	20.5	4.36	253
500x200	77.9	1.75	40840	1843	20.3	4.31	1647	185	1869	288	0.874	37.5	1.07	52.5
	79.5	1.74	41870	1846	20.3	4.27	1688	186	1914	290	0.876	35.2	1.07	60.8
	88.2	1.76	46810	2138	20.4	4.36	1872	214	2130	333	0.875	33.3	1.25	75.9
	89.6	1.75	47850	2142	20.5	4.33	1914	214	2175	335	0.877	31.6	1.25	85.9
	102	1.77	55480	2578	20.7	4.47	2193	257	2496	399	0.880	28.7	1.53	119
	103	1.76	56520	2582	20.7	4.43	2234	257	2541	401	0.881	27.5	1.53	132
	117	1.77	65450	3035	21.0	4.52	2557	300	2913	469	0.884	24.3	1.82	193
500x300	111	2.12	58270	6756	20.3	6.92	2418	450	2696	690	0.877	32.4	3.68	93.9
	114	2.10	60370	6768	20.4	6.82	2505	451	2791	695	0.880	29.4	3.69	118
	125	2.13	68860	8106	20.8	7.14	2822	540	3132	825	0.887	28.0	4.48	143
	128	2.11	70960	8118	20.8	7.05	2908	541	3228	830	0.889	25.9	4.48	172
	150	2.13	83810	9663	20.9	7.11	3393	640	3792	984	0.888	22.8	5.40	265
600x200	79.0	1.92	58240	1665	24.1	4.07	1968	169	2239	265	0.870	45.2	1.40	53.0
	92.5	1.95	66640	1976	23.8	4.10	2236	199	2576	312	0.861	42.9	1.67	69.2
	94.6	1.93	68720	1982	23.9	4.06	2306	199	2651	315	0.864	39.7	1.67	82.4
	103	1.96	75560	2274	24.0	4.16	2519	227	2904	358	0.863	38.4	1.93	97.3
	106	1.94	77630	2280	24.0	4.12	2588	228	2979	361	0.865	36.0	1.94	113
	118	1.97	88320	2716	24.3	4.26	2915	270	3357	426	0.868	33.4	2.33	147
	120	1.95	90400	2723	24.3	4.23	2983	271	3432	429	0.870	31.7	2.34	167
	134	1.97	103500	3178	24.6	4.32	3382	315	3893	498	0.873	28.3	2.76	237
600x300	133	2.32	98950	7659	24.2	6.73	3400	511	3822	786	0.876	35.5	6.11	137
	137	2.29	102700	7675	24.3	6.63	3530	512	3963	793	0.879	32.1	6.13	173
	147	2.33	114400	9009	24.7	6.94	3889	601	4348	921	0.886	31.2	7.27	199
	151	2.30	118100	9025	24.8	6.85	4018	602	4489	928	0.888	28.8	7.28	241
	170	2.35	133600	10570	24.8	6.98	4497	700	5057	1077	0.885	27.3	8.62	304
	175	2.32	137300	10590	24.9	6.90	4624	701	5197	1085	0.887	25.5	8.63	356
	203	2.34	162600	12680	25.1	7.00	5401	834	6101	1292	0.888	22.3	10.5	551
	217	2.35	179300	14090	25.4	7.13	5896	927	6653	1431	0.893	20.5	11.8	702
700x300	166	2.51	172400	9030	28.6	6.53	4984	602	5629	936	0.878	34.3	10.2	260
	182	2.54	197500	10820	29.2	6.83	5643	721	6338	1110	0.887	31.4	12.4	343
	185	2.53	201500	10830	29.3	6.78	5757	722	6464	1116	0.889	30.0	12.4	383
	215	2.55	237100	12890	29.4	6.86	6699	854	7559	1323	0.889	26.3	14.9	588
800x300	191	2.71	253600	9936	32.3	6.39	6405	662	7288	1036	0.873	36.8	14.7	341
	207	2.74	286400	11720	33.0	6.67	7159	781	8098	1210	0.882	33.9	17.6	440
	210	2.72	291700	11740	33.0	6.62	7292	782	8243	1216	0.883	32.5	17.6	486
	241	2.74	339200	13820	33.2	6.70	8397	915	9534	1426	0.883	28.7	20.9	726
	267	2.76	383600	15820	33.6	6.82	9402	1044	10680	1625	0.887	25.8	24.2	1003
900x300	210	2.92	338500	10280	35.6	6.20	7608	687	8750	1079	0.863	42.2	19.3	361
	213	2.90	345300	10290	35.7	6.16	7760	688	8913	1085	0.865	40.2	19.3	403
	240	2.94	404500	12630	36.4	6.43	8989	842	10290	1317	0.872	35.9	24.0	580
	243	2.92	411300	12650	36.4	6.39	9139	843	10450	1324	0.873	34.5	24.0	633
	283	2.97	491000	15660	36.9	6.59	10770	1037	12340	1622	0.876	30.1	30.2	979
	286	2.95	497800	15670	37.0	6.56	10920	1038	12500	1629	0.877	29.3	30.2	1050
	304	2.98	535400	17210	37.2	6.67	11660	1136	13380	1778	0.878	27.9	33.4	1234
	307	2.96	542200	17230	37.2	6.63	11810	1137	13540	1785	0.879	27.2	33.4	1316

Regular Stock



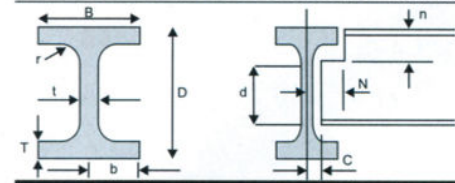
Geometrical moment of inertial $I = Ai^2$
Radius of gyration of area $i = \sqrt{I/A}$
Modulus of section $z = I/e$
(A= sectional area)

According JIS G 3192

Metric Size (SS 400)

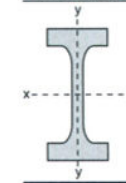
Standard Sectional Dimension					Section Area	Unit Weight	Informative Reference					
							Geometrical Moment Of Inertia		Radius Of Gyration Of Area		Modulus Of Section	
Nominal Dimensional	H x B	t ₁	t ₂	r	A		I _x	I _y	i _x	i _y	Z _x	Z _y
mm	mm	mm	mm	mm	cm ²	kg/m	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³
100x100	100x100	6	8	10	21.90	17.20	383	134	4.18	2.47	76.5	26.7
125x125	125x125	6.5	9	10	30.31	23.80	847	293	5.29	3.11	136	47.0
150x75	150x75	5	7	8	17.85	14.00	666	49.5	6.11	1.66	88.8	13.2
150x100	148x100	6	9	11	26.84	21.10	1020	151	6.17	2.37	138	30.1
150x150	150x150	7	10	11	40.14	31.50	1640	563	6.39	3.75	219	75.1
175x175	175x175	7.5	11	12	51.21	40.20	2880	984	7.50	4.38	330	112
200x100	198x99	4.5	7	11	23.18	18.20	1580	114	8.26	2.21	160	23.0
	200x100	5.5	8	11	27.16	21.30	1840	134	8.24	2.22	184	26.8
200x150	194x150	6	9	12	38.80	30.60	2675	507	8.30	3.60	275.8	67.6
200x200	200x200	8	12	13	63.53	49.90	4720	1600	8.62	5.02	472	160
250x125	248x124	5	8	12	32.68	25.70	3540	255	10.4	2.79	285	41.1
	250x125	6	9	12	37.66	29.60	4050	294	10.4	2.79	324	47.0
250x250	250x250	9	14	16	92.18	72.40	10800	3650	10.8	6.29	867	292
300x150	298x149	5.5	8	13	40.80	32.0	6320	442	12.4	3.29	424	59.3
	300x150	6.5	9	13	46.78	36.70	7210	508	12.4	3.29	481	67.7
300x300	300x300	10	15	18	119.80	94.0	20400	6750	13.1	7.51	1360	450
300x175	346x174	6	9	14	52.68	41.40	11100	792	14.5	3.88	641	91.0
	350x175	7	11	14	63.14	49.60	13600	984	14.7	3.95	775	112
* 350x350	350x350	12	19	20	173.9	137.0	40300	13600	15.2	8.84	2300	776
400x200	396x199	7	11	16	72.16	56.60	20000	1450	16.7	4.48	1010	145
	400x200	8	13	16	84.1	66.0	23700	1740	16.8	4.54	1190	174
* 400x400	400x400	13	21	22	218.7	172	66600	22400	17.5	10.1	3330	1120
450x200	450x200	9	14	18	96.8	76.0	33500	1870	18.6	4.40	1490	187
500x200	500x200	10	16	20	114.2	89.6	47800	2140	20.5	4.33	1910	214
600x200	600x200	11	17	22	134.4	106	77600	2280	24.0	4.12	2590	228
* 600x300	588x300	12	20	28	192.5	151	118000	9020	24.8	6.85	4020	601
* 700x300	700x300	13	24	28	235.5	185	201000	10800	29.3	6.78	5760	722
* 800x300	800x300	14	26	28	267.4	210	292000	11700	33.0	6.62	7290	782
* 900x300	900x300	16	28	28	309.8	243	411000	12600	36.4	6.39	9140	843

NOTE: • Weld beam
• Other sizes which are not mentioned in table above will be supplied as welded condition



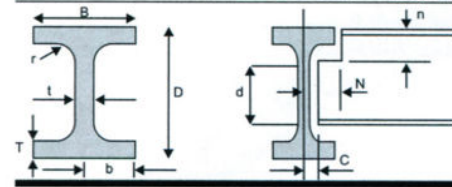
Universal Beams And Columns

Designation Size	Mass Per Metre		Depth Of Section	Width Of Section	Thickness		Root Radius	Depth Between Fillets	Area Of Section	Ratios For Local Buckling		Dimensions For Detailing		
	lb/ft	kg/m	D	B	Flange T	Web t	r	d	A	Flange b/T	Web d/t	End Clearance C	N	Notch n
in(mm)	lb/ft	kg/m	mm	mm	mm	mm	mm	mm	cm ²			mm	mm	mm
W4-4x4 (102x102)	13	19.4	105.7	103.1	8.8	7.1	6.4	75.5	24.7	5.88	10.6	6	58	15
	13.8	21.0	102.0	102.0	9.4	8.0	6.0	71.2	26.1	5.43	8.90	6	57	15
	16.3	24.0	107.0	100.0	12.0	7.9	6.0	71.0	30.9	4.17	8.99	6	56	18
W5-5x3 (127x76)	9	13.0	127.0	76.0	7.6	4.0	7.6	96.6	16.5	5.00	24.2	4	46	15
W5-5x5 (127x127)	16	23.8	127.3	127.0	9.1	6.1	7.6	93.8	30.4	6.95	15.4	5	70	17
	19	28.3	130.8	127.8	10.9	6.9	7.6	93.8	35.8	5.86	13.7	5	70	19
W6-6x3 (152x76)	9	14.0	150.0	75.0	7.0	5.0	8.0	120.0	17.8	5.36	24.0	5	45	15
	12	18.0	155.0	75.0	8.5	6.0	8.0	122.0	21.6	4.41	20.3	5	45	17
W6-6x3 1/2 (152x89)	11	16.0	152.4	88.7	7.7	4.5	7.6	121.8	20.3	5.76	27.1	4	52	15
W6-6x4 (152x102)	9	13.4	149.9	100.1	5.5	4.3	6.4	126.3	17.3	9.17	29.2	4	58	12
	12	17.9	153.2	101.6	7.1	5.8	6.4	126.3	22.9	7.14	21.6	5	58	13
	16	23.8	159.5	102.4	10.2	6.6	6.4	126.4	30.4	5.02	19.2	5	58	17
W6-6x6 (152x152)	15	22.3	152.1	152.1	6.6	5.8	6.4	126.2	28.5	11.5	21.6	5	83	13
	15.7	23.0	152.4	152.2	6.8	5.8	7.6	123.6	29.2	11.2	21.3	5	83	14
	20	30.0	157.6	152.9	9.4	6.5	7.6	123.6	38.3	8.13	19.0	5	83	17
	25	37.0	161.8	154.4	11.5	8.0	7.6	123.6	47.1	6.71	15.5	6	83	19
W7-7x3 1/2 (178x89)	11	16.1	173.0	90.0	7.0	4.5	8.9	141.2	20.4	6.43	31.4	4	53	16
	12	18.1	175.0	90.0	8.0	5.0	8.9	141.2	23.0	5.63	28.2	5	53	17
	15	22.2	179.0	90.0	10.0	6.0	8.9	141.2	28.2	4.50	23.5	5	52	19
W7-7x4 (178x102)	13	19.0	177.8	101.2	7.9	4.8	7.6	146.8	24.3	6.41	30.6	4	58	16
W8-8x4 (203x102)	10	14.9	200.4	100.1	5.2	4.3	7.6	174.7	19.1	9.61	40.4	4	58	13
	13	19.4	202.9	101.6	6.5	5.8	7.6	174.7	24.8	7.84	29.9	5	58	14
	15	22.3	206.0	102.0	8.0	6.2	7.6	174.8	28.6	6.38	28.1	5	58	16
	16	23.1	203.2	101.8	9.3	5.4	7.6	169.4	29.4	5.47	31.4	5	58	17
W8-8x5 1/4 (203x133)	14	21.0	203.0	133.0	6.4	5.0	8.0	174.2	27.1	10.39	34.8	5	74	14
	15	22.3	202.0	133.0	7.0	5.0	8.9	170.2	28.7	9.50	34.0	5	74	16
	17	25.1	203.2	133.2	7.8	5.7	7.6	172.4	32.0	8.54	30.2	5	74	15
	18	26.8	206.8	133.3	8.4	5.8	7.6	174.8	33.9	7.95	29.9	5	74	16
	20	30.0	206.8	133.9	9.6	6.4	7.6	172.4	38.2	6.97	26.9	5	74	17
	21	31.3	210.3	133.9	10.1	6.4	7.6	174.9	39.6	6.63	27.5	5	74	18
W8-8x6 1/2 (203x165)	24	35.7	201.4	165.0	10.1	6.2	10.2	160.8	45.5	8.17	25.9	5	89	20
	28	41.7	204.7	166.0	11.8	7.2	10.2	160.7	53.2	7.03	22.2	6	89	22
W8-8x8 (203x203)	31	46.1	203.2	203.6	11.0	7.2	10.2	160.8	58.7	9.25	22.3	6	108	21
	35	52.0	206.2	204.3	12.5	7.9	10.2	160.8	66.3	8.17	20.4	6	108	23
	40	60.0	209.6	205.8	14.2	9.4	10.2	160.8	76.4	7.25	17.1	7	108	24
	48	71.0	215.8	206.4	17.3	10.0	10.2	160.8	90.4	5.97	16.1	7	108	28
	58	86.1	222.2	209.1	20.5	12.7	10.2	160.8	110	5.10	12.7	8	108	31
	67	99.7	228.6	210.3	23.8	14.5	10.2	160.7	127	4.43	11.1	9	108	34
W10-10x4 (254x102)	12	17.9	250.7	100.6	5.3	4.8	7.6	224.8	22.8	9.44	46.5	4	58	13
	15	22.0	254.0	101.6	6.8	5.7	7.6	225.2	28.0	7.47	39.5	5	58	14
	17	25.2	257.2	101.9	8.4	6.0	7.6	225.2	32.0	6.07	37.5	5	58	16
	19	28.3	260.4	102.2	10.0	6.3	7.6	225.2	36.1	5.11	35.7	5	58	18



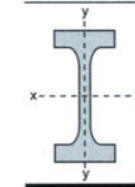
Universal Beams And Columns

Designation Size	Mass Per Mtre		Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
				Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
in(mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H	J
W4-4x4 (102x102)	13	19.4	0.599	472	160	4.38	2.55	89.4	31.1	103	47.8	0.836	10.9	0.00377	6.29
	13.8	21.0	0.586	456	167	4.18	2.53	89.4	32.7	104	50.4	0.827	9.61	0.00357	7.78
	16.3	24.0	0.588	587	200	4.36	2.55	110	40.1	129	61.5	0.844	8.13	0.00452	13.5
W5-5x3 (127x76)	9	13.0	0.537	473	55.8	5.35	1.84	74.6	14.7	84.2	22.6	0.895	16.3	0.00199	2.85
W5-5x5 (127x127)	16	23.8	0.737	892	312	5.42	3.21	140	49.2	158	75.0	0.842	13.0	0.0109	8.00
	19	28.3	0.746	1092	380	5.52	3.25	167	59.4	190	90.6	0.845	11.2	0.0136	13.1
W6-6x3 (152x76)	9	14.0	0.576	666	49.5	6.11	1.67	88.8	13.2	102	20.8	0.876	20.4	0.00253	2.81
	12	18.0	0.584	841	60.2	6.24	1.67	109	16.0	126	25.4	0.875	17.6	0.00323	4.81
W6-6x3 1/2 (152x89)	11	16.0	0.638	834	89.8	6.41	2.10	109	20.2	123	31.2	0.089	19.6	0.00470	3.56
W6-6x4 (152x102)	9	13.4	0.681	683	91.4	6.29	2.30	91.1	18.3	102	28.1	0.873	26.2	0.00477	1.69
	12	17.9	0.690	918	125	6.33	2.33	120	24.5	136	38.0	0.869	20.4	0.00665	3.76
	16	23.8	0.704	1330	183	6.61	2.45	167	35.7	190	55.2	0.882	15.4	0.0102	9.12
W6-6x6 (152x152)	15	22.3	0.890	1210	387	6.51	3.68	159	50.9	177	77.7	0.837	21.4	0.0205	4.21
	15.7	23.0	0.889	1250	400	6.54	3.70	164	52.6	182	80.2	0.840	20.7	0.0212	4.63
	20	30.0	0.901	1748	560	6.76	3.83	222	73.3	248	112	0.849	16.0	0.0308	10.5
	25	37.0	0.912	2210	706	6.85	3.87	273	91.5	309	140	0.848	13.3	0.0399	19.2
W7-7x3 1/2 (178x89)	11	16.1	0.682	1060	85.4	7.20	2.04	123	19.0	138	29.4	0.884	23.9	0.00588	3.15
	12	18.1	0.685	1213	97.6	7.26	2.06	139	21.7	157	33.7	0.885	21.4	0.00680	4.48
	15	22.2	0.691	1529	122	7.36	2.08	171	27.1	195	42.3	0.886	17.8	0.00871	8.16
W7-7x4 (178x102)	13	19.0	0.738	1356	137	7.48	2.37	153	27.0	171	41.6	0.888	22.6	0.00987	4.41
W8-8x4 (203x102)	10	14.9	0.779	1284	87.3	8.19	2.14	128	17.4	145	27.2	0.867	36.3	0.00832	1.78
	13	19.4	0.787	1647	114	8.16	2.14	162	22.4	187	35.3	0.861	29.0	0.0110	3.63
	15	22.3	0.794	1999	142	8.36	2.23	194	27.8	222	43.7	0.869	25.2	0.0139	5.68
	16	23.1	0.790	2105	164	8.46	2.36	207	32.2	234	49.8	0.888	22.5	0.0154	7.02
W8-8x5 1/4 (203x133)	14	21.0	0.914	1980	251	8.55	3.05	195	37.8	218	58.0	0.874	29.9	0.0243	3.74
	15	22.3	0.911	2105	275	8.56	3.09	208	41.3	232	63.4	0.879	27.9	0.0261	4.50
	17	25.1	0.915	2340	308	8.56	3.10	230	46.2	258	70.9	0.877	25.6	0.0294	5.96
	18	26.8	0.922	2578	331	8.72	3.12	249	49.7	279	76.3	0.880	24.5	0.0326	7.13
	20	30.0	0.923	2896	385	8.71	3.17	280	57.5	314	88.2	0.881	21.5	0.0374	10.3
	21	31.3	0.930	3119	405	8.87	3.20	297	60.4	333	92.7	0.885	21.0	0.0405	11.6
W8-8x6 1/2 (203x165)	24	35.7	1.03	3430	757	8.68	4.08	341	91.7	378	140	0.875	19.3	0.0693	14.3
	28	41.7	1.04	4077	901	8.76	4.12	398	109	445	165	0.875	16.8	0.0838	22.4
W8-8x8 (203x203)	31	46.1	1.19	4568	1548	8.82	5.13	450	152	497	231	0.847	17.7	0.143	22.2
	35	52.0	1.20	5259	1778	8.91	5.18	510	174	567	264	0.848	15.8	0.167	31.8
	40	60.0	1.21	6125	2065	8.96	5.20	584	201	656	305	0.846	14.1	0.197	47.2
	48	71.0	1.22	7618	2537	9.18	5.30	706	246	799	374	0.853	11.9	0.250	80.2
	58	86.1	1.24	9449	3128	9.28	5.34	850	299	977	456	0.850	10.2	0.318	137
	67	99.7	1.25	11310	3687	9.44	5.39	990	351	1150	536	0.852	9.0	0.387	211
W10-10x4 (254x102)	12	17.9	0.881	2241	90.8	9.91	1.99	179	18.0	207	28.6	0.851	44.0	0.0137	2.28
	15	22.0	0.890	2841	119	10.1	2.06	224	23.5	259	37.3	0.856	36.4	0.0182	4.15
	17	25.2	0.897	3415	149	10.3	2.15	266	29.2	306	46.0	0.866	31.5	0.0230	6.42
	19	28.3	0.904	4005	179	10.5	2.22	308	34.9	353	54.8	0.874	27.5	0.0280	9.57



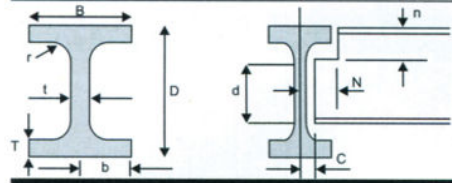
Universal Beams And Columns

Designation Size	Mass Per Metre	Depth Of Section	Width Of Section	Thickness	Root Radius	Depth Between Fillet	Area Of Section	Ratio For Local Buckling	Dimensions For Detailing	End Clearance	Notch n
		D	B	Flange T	Web t	r	A	Flange b/T	Web d/t	C	N
in(mm)	lb/ft kg/m	mm	mm	mm	mm	mm	cm ²			mm	mm
W10-10x5 3/4 (254x146)	16 24.0	253.0	145.0	6.4	5.0	7.6	31.1	11.33	44.8	5	80
	21 31.1	251.4	146.1	8.6	6.0	7.6	39.7	8.49	36.5	5	80
	22 32.7	258.3	146.0	9.1	6.1	7.6	41.8	7.99	36.8	5	80
	25 37.0	256.0	146.4	10.9	6.3	7.6	47.2	6.72	34.8	5	80
	26 38.7	262.4	146.6	11.1	6.6	7.6	48.9	6.60	34.1	5	80
	29 43.0	259.6	147.3	12.7	7.2	7.6	54.8	5.80	30.4	6	80
	30 44.6	265.9	147.6	12.9	7.6	7.6	56.9	5.72	29.5	6	80
W10-10x8 (254x203)	33 49.1	247.1	202.2	11.0	7.4	12.7	62.5	9.19	27.1	6	107
	39 28.0	252.0	202.8	13.4	8.0	12.7	73.8	7.57	25.0	6	107
	42 62.5	249.4	207.0	12.2	12.2	12.7	79.3	8.49	16.4	8	107
	45 67.0	256.5	203.7	15.7	8.9	12.7	85.4	6.49	22.5	6	107
	57 84.8	258.1	211.3	16.5	16.5	12.7	108	6.40	12.1	10	107
W10-10x10 (254x254)	49 73.1	254.1	254.6	14.2	8.6	12.7	93.1	8.96	23.3	6	133
	54 80.4	256.3	254.8	15.6	9.4	12.7	102	8.17	21.2	7	133
	60 88.9	260.3	256.3	17.3	10.3	12.7	113	7.41	19.4	7	133
	68 101.2	264.2	257.3	19.6	11.9	12.7	129	6.58	16.7	8	133
	72 107.1	266.7	258.8	20.5	12.8	12.7	136	6.31	15.6	8	133
	77 114.6	269.2	258.8	22.1	13.5	12.7	146	5.86	14.8	9	133
	88 131	275.3	260.7	25.2	15.4	12.7	167	5.18	13.0	10	133
	89 132	276.3	261.3	25.3	15.3	12.7	168	5.16	13.1	10	133
	100 148.8	281.9	262.6	28.5	17.3	12.7	190	4.62	11.6	11	133
	112 167.1	289.1	265.2	31.7	19.2	12.7	213	4.18	10.4	12	133
W12-12x4 (305x102)	14 20.8	302.5	100.8	5.7	5.1	7.6	26.8	8.83	54.3	5	58
	16 23.8	304.5	101.3	6.7	5.6	7.6	30.4	7.53	49.3	5	58
	16.5 24.8	305.1	101.6	7.0	5.8	7.6	31.6	7.26	47.6	5	58
	19 28.2	308.7	101.8	8.8	6.0	7.6	35.9	5.78	46.0	5	58
	22 32.8	312.7	102.4	10.8	6.6	7.6	41.8	4.74	41.8	5	58
W12-12x5 (305x127)	25 37.0	304.4	123.3	10.7	7.1	8.9	47.2	5.76	37.4	6	68
	28 41.9	307.2	124.3	12.1	8.0	8.9	53.4	5.14	33.2	6	68
	32 48.1	311.0	125.3	14.0	9.0	8.9	61.2	4.48	29.5	7	68
W12-12x6 1/2 (305x165)	21 31.0	306.0	164.0	7.4	5.0	7.6	39.4	11.08	55.0	5	90
	26 38.7	310.4	164.8	9.7	5.8	7.6	49.3	8.54	47.2	5	89
	27 40.3	303.4	165.0	10.2	6.0	8.9	51.3	8.09	44.2	5	90
	30 44.6	313.4	165.6	11.1	6.6	7.6	56.5	7.46	41.8	5	90
	31 46.1	306.6	165.7	11.8	6.7	8.9	58.7	7.02	39.6	5	90
	35 52.1	317.5	166.6	13.2	7.6	7.6	66.7	6.31	36.2	6	89
	36 54.0	310.4	166.9	13.7	7.9	8.9	68.8	6.09	33.6	6	90
W12-12x8 (305x203)	40 59.5	303.3	203.3	13.0	7.5	15.2	75.6	7.82	33.0	6	108
	45 67.0	306.3	204.3	14.6	8.5	15.2	85.2	7.00	29.0	6	108
	50 74.4	309.6	205.2	16.2	9.4	15.2	94.5	6.33	26.3	7	108
W12-12x10 (305x254)	53 78.9	306.3	253.9	14.6	8.8	15.2	100	8.70	28.2	6	133
	58 86.3	309.6	254.3	16.2	9.1	15.2	110	7.85	27.0	7	133



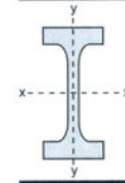
Universal Beams And Columns

Designation Size	Mass Per Mtr	Surface Area Per Mtr	Second Moment Of Area	Radius Of Gyration	Elastic Modulus	Plastic Modulus	Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J
in(mm)	lb/ft kg/m	m ²	cm ⁴	cm ⁴	cm ³	cm ³			dm ⁶	cm ⁴
W10-10x5 3/4 (254x146)	16 24.0	1.06	3477	326	10.6	3.23	275	44.9	308	69.0
	21 31.1	1.06	4413	448	10.5	3.36	351	61.3	393	94.1
	22 32.7	1.08	4917	475	10.8	3.37	381	65.0	426	100
	25 37.0	1.07	5537	571	10.8	3.48	433	78.0	483	119
	26 38.7	1.08	5974	584	11.1	3.45	455	79.6	510	122
	29 43.0	1.08	6544	677	10.9	3.52	504	92.0	566	141
	30 44.6	1.09	7048	692	11.1	3.49	530	93.8	597	144
W10-10x8 (254x203)	33 49.1	1.27	7071	1517	10.6	4.93	572	150	634	229
	39 58.0	1.28	8672	1865	10.8	5.03	688	184	765	280
	42 62.5	1.25	8430	1807	10.3	4.77	676	175	768	271
	45 67.0	1.29	10300	2214	11.0	5.09	803	217	898	331
	57 84.8	1.31	11930	2606	10.5	4.91	925	247	1067	385
W10-10x10 (254x254)	49 73.1	1.49	11410	3908	11.1	6.48	898	307	992	465
	54 80.4	1.49	12590	4304	11.1	6.49	983	338	1091	512
	60 88.9	1.50	14270	4858	11.2	6.55	1096	379	1224	575
	68 101	1.51	16390	5558	11.3	6.57	1241	432	1398	657
	72 107	1.52	17510	5928	11.3	6.59	1313	458	1484	697
	77 115	1.52	18950	6391	11.4	6.61	1408	494	1599	752
	88 131	1.54	22210	7436	11.5	6.67	1613	570	1850	869
	89 132	1.55	22530	7531	11.6	6.69	1631	576	1869	878
	100 149	1.56	25900	8598	11.7	6.73	1838	655	2127	999
	112 167	1.58	30000	9870	11.9	6.81	2075	744	2424	1137
W12-12x4 (305x102)	14 20.8	0.985	3682	97.9	11.7	1.91	243	19.4	286	31.1
	16 23.8	0.990	4274	117	11.9	1.96	281	23.1	329	37.0
	16.5 24.8	0.992	4455	123	11.9	1.97	292	24.2	342	38.8
	19 28.2	1.00	5366	155	12.2	2.08	348	30.5	403	48.5
	22 32.8	1.01	6501	194	12.5	2.15	416	37.9	481	60.0
W12-12x5 (305x127)	25 37.0	1.07	7166	335	12.3	2.67	471	54.4	539	85.3
	28 41.9	1.08	8196	389	12.4	2.70	534	62.6	614	98.4
	32 48.1	1.09	9575	461	12.5	2.74	616	73.6	711	116
W12-12x6 1/2 (305x165)	21 31.0	1.24	6554	544	12.9	3.72	428	66.4	476	102
	26 38.7	1.26	8498	720	13.1	3.82	548	87.4	609	134
	27 40.3	1.24	8503	764	12.9	3.86	560	92.7	623	142
	30 44.6	1.26	9864	841	13.2	3.86	629	102	703	156
	31 46.1	1.25	9899	896	13.0	3.90	646	108	720	166
	35 52.1	1.27	11860	1019	13.3	3.91	747	122	838	188
	36 54.0	1.26	11700	1063	13.0	3.93	754	127	846	196
W12-12x8 (305x203)	40 59.5	1.38	12840	1823	13.0	4.91	847	179	938	274
	45 67.0	1.39	14570	2078	13.1	4.94	952	203	1060	311
	50 74.4	1.40	16350	2337	13.2	4.97	1056	228	1183	349
W12-12x10 (305x254)	53 78.9	1.58	17700	3986	13.3	6.30	1156	314	1276	477
	58 86.3	1.59	19740	4444	13.4	6.36	1275	349	1411	531



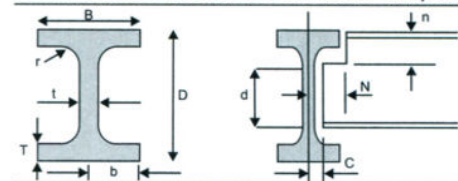
Universal Beams And Columns

Designation Size	Mass Per Metre	Depth Of Section D	Width Of Section B	Thickness Flange T	Web t	Root Radius r	Depth Between Fillets d	Area Of Section A	Ratio For Local Buckling Flange b/T	Web d/t	Dimensions For Detailing End Clearance C	Notch n
in(mm)	lb/ft kg/m	mm	mm	mm	mm	mm	mm	cm ²			mm	mm
W12-12x12 (305x305)	65 96.9	307.9	305.3	15.4	9.9	15.2	246.7	123	9.91	24.9	7	158 31
	72 107.1	311.1	305.8	17.0	10.9	15.2	246.7	136	8.98	22.6	7	157 32
	79 117.9	314.5	307.4	18.7	12.0	15.2	246.7	150	8.22	20.6	8	158 34
	87 129.5	318.3	308.0	20.6	13.1	15.2	246.8	165	7.49	18.9	9	157 36
	92 136.9	320.5	309.2	21.7	13.8	15.2	246.7	174	7.12	17.9	9	158 37
	96 142.8	322.8	308.9	22.9	14.0	15.2	246.7	182	6.76	17.7	9	157 38
	106 158.1	327.1	311.2	25.0	15.8	15.2	246.7	201	6.22	15.6	10	158 40
	120 178.6	333.2	312.9	28.1	18.0	15.2	246.7	228	5.57	13.7	11	157 43
	133 198.1	339.9	314.5	31.4	19.1	15.2	246.7	252	5.01	12.9	12	158 47
	136 202.4	340.6	315.0	31.8	20.1	15.2	246.7	258	4.96	12.3	12	157 47
	152 226.2	348.2	317.0	35.6	22.1	15.2	246.7	289	4.46	11.2	13	157 51
	161 240	352.5	318.4	37.7	23.0	15.2	246.7	306	4.22	10.7	14	158 53
	170 253	356.4	319.3	39.6	24.4	15.2	246.8	323	4.03	10.1	14	157 55
	190 282.9	365.3	322.2	44.1	26.8	15.2	246.7	360	3.65	9.21	15	158 59
	210 312.5	373.6	324.9	48.3	30.0	15.2	246.7	399	3.37	8.23	17	157 63
	130 342	382.3	327.5	52.6	32.6	15.2	246.7	437	3.11	7.57	18	157 68
	252 375	391.4	330.3	57.2	35.4	15.2	246.6	478	2.89	6.97	20	157 72
	278 413.7	402.6	333.8	62.7	38.9	15.2	246.7	529	2.66	6.35	21	157 78
	279 415	402.6	333.8	62.7	38.9	15.2	246.8	528	2.66	6.34	21	157 78
	305 454	414.5	336.2	68.7	41.3	15.2	246.7	578	2.45	5.97	23	157 84
	336 500	427.2	340.0	75.1	45.1	15.2	246.6	638	2.26	5.47	25	157 90
W14-14x5 (356x127)	22 33.1	349.0	125.4	8.5	6.0	10.2	311.3	42.1	7.38	51.9	5	70 19
	26 39.1	353.4	126.0	10.7	6.6	10.2	311.6	49.8	5.89	47.2	5	70 21
W14-14x6 3/4 (356x171)	30 45.0	351.4	171.1	9.7	7.0	10.2	311.6	57.3	8.82	44.5	6	92 20
	34 51.0	355.0	171.5	11.5	7.4	10.2	311.6	64.9	7.46	42.1	6	92 22
	38 57.0	358.0	172.2	13.0	8.1	10.2	311.6	72.6	6.62	38.5	6	92 23
	45 67.1	363.4	173.2	15.7	9.1	10.2	311.6	85.5	5.52	34.2	7	92 26
W14-14x8 (356x203)	43 64.0	347.0	203.1	13.4	7.8	15.2	289.8	81.2	7.58	37.4	6	108 29
	48 71.4	350.3	204.0	15.1	8.6	15.2	289.7	91.2	6.75	33.5	6	108 30
	53 78.9	353.6	204.7	16.7	9.4	15.2	289.8	100	6.13	30.8	7	108 32
W14-14x10 (356x254)	61 90.8	352.8	253.9	16.3	9.5	15.2	289.8	115	7.79	30.4	7	132 32
	68 101.2	356.6	254.8	18.3	10.5	15.2	289.6	129	6.97	27.5	7	132 33
	74 110.1	359.9	255.8	19.9	11.4	15.2	289.6	141	6.41	25.3	8	132 35
	82 122	363.5	257.3	21.7	12.9	15.2	289.7	155	5.92	22.5	8	132 37
W14-14x14 1/2 (356x368)	87 129	355.6	368.6	17.5	10.4	15.2	290.2	164	10.5	27.9	7	189 33
	90 133.9	356.1	368.8	18.0	11.2	15.2	289.6	171	10.2	25.9	8	189 33
	99 147.3	359.7	370.0	19.8	12.3	15.2	289.7	188	9.34	23.5	8	189 35
	103 152.9	362.0	370.5	20.7	12.3	15.2	290.2	195	8.95	23.6	8	189 36
	109 162.2	363.7	371.0	21.8	13.3	15.2	289.6	207	8.49	21.7	9	189 37
	119 177	368.2	372.6	23.8	14.4	15.2	290.2	226	7.83	20.2	9	189 39
	120 178.6	367.8	372.6	23.9	15.0	15.2	289.6	228	7.80	19.3	9	189 39
	132 196.4	372.4	374.0	26.2	16.4	15.2	289.7	250	7.15	17.7	10	189 41
	136 201.9	374.6	374.7	27.0	16.5	15.2	290.2	257	6.94	17.6	10	189 42



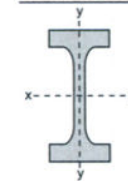
Universal Beams And Columns

Designation Size	Mass Per Mtre		Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
				Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
in(mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H	J
W12-12x12 (305x305)	65	96.9	1.79	22250	7308	13.4	7.69	1445	479	1592	726	0.850	19.3	1.56	91.2
	72	107	1.80	24830	8117	13.5	7.72	1596	531	1767	806	0.850	17.6	1.75	122
	79	118	1.81	27670	9060	13.6	7.77	1760	589	1958	895	0.850	16.2	1.98	161
	87	130	1.82	30810	10030	13.7	7.80	1936	651	2164	990	0.851	14.9	2.22	212
	92	137	1.82	32820	10700	13.7	7.83	2048	692	2297	1053	0.851	14.2	2.39	249
	96	143	1.83	34670	11240	13.8	7.86	2148	728	2413	1106	0.853	13.6	2.53	285
	106	158	1.84	38750	12570	13.9	7.90	2369	808	2680	1230	0.851	12.5	2.87	378
	120	179	1.86	44560	14350	14.0	7.94	2675	917	3053	1399	0.851	11.2	3.34	537
	133	198	1.87	50900	16300	14.2	8.04	2995	1037	3440	1581	0.853	10.2	3.88	734
	136	202	1.87	51790	16560	14.2	8.02	3041	1052	3501	1606	0.852	10.1	3.95	771
	152	226	1.89	59610	18910	14.4	8.09	3424	1193	3975	1823	0.853	9.2	4.62	1074
	161	240	1.91	64200	20320	14.5	8.15	3643	1276	4247	1951	0.854	8.7	5.03	1271
	170	253	1.92	68490	21540	14.6	8.17	3844	1349	4502	2064	0.854	8.4	5.40	1480
	190	283	1.94	78870	24640	14.8	8.27	4318	1529	5105	2342	0.855	7.7	6.35	2034
	210	313	1.96	89270	27660	15.0	8.33	4779	1702	5703	2613	0.855	7.1	7.32	2693
	130	342	1.98	100600	30880	15.2	8.41	5261	1886	6332	2898	0.856	6.6	8.39	3490
	252	375	2.01	113200	34470	15.4	8.49	5783	2087	7020	3211	0.856	6.2	9.62	4495
	278	414	2.04	129600	39040	15.7	8.59	6437	2339	7890	3604	0.857	5.7	11.3	5953
	279	415	2.04	129500	39010	15.7	8.59	6435	2338	7888	3602	0.857	5.7	11.3	5946
	305	454	2.07	147600	43690	16.0	8.69	7122	2599	8807	4006	0.860	5.4	13.1	7719
336	500	2.10	169000	49420	16.3	8.80	7913	2907	9882	4487	0.861	5.0	15.3	10110	
W14-14x5 (356x127)	22	33.1	1.17	8250	280	14.0	2.58	473	44.7	543	70.3	0.863	42.2	0.0813	8.79
	26	39.1	1.18	10170	358	14.3	2.68	576	56.8	659	89.1	0.871	35.2	0.105	15.1
W14-14x6 3/4 (356x171)	30	45.0	1.36	12070	811	14.5	3.76	687	94.8	775	147	0.874	36.8	0.237	15.8
	34	51.0	1.36	14140	968	14.8	3.86	796	113	896	174	0.881	32.1	0.286	23.8
	38	57.0	1.37	16040	1108	14.9	3.91	896	129	1010	199	0.882	28.8	0.330	33.4
	45	67.1	1.38	19460	1362	15.1	3.99	1071	157	1211	243	0.886	24.4	0.412	55.7
W14-14x8 (356x203)	43	64.0	1.46	17760	1874	14.8	4.80	1024	185	1138	283	0.891	25.9	0.521	43.2
	48	71.4	1.47	20170	2140	14.9	4.84	1151	210	1285	322	0.891	23.3	0.601	60.4
	53	78.9	1.48	22480	2391	15.0	4.88	1271	234	1424	359	0.892	21.3	0.679	80.1
W14-14x10 (356x254)	61	90.8	1.68	26540	4451	15.2	6.21	1505	351	1668	534	0.886	21.5	1.26	90.3
	68	101	1.69	30060	5048	15.3	6.26	1686	396	1878	604	0.886	19.4	1.44	126
	74	110	1.69	33120	5569	15.3	6.29	1840	435	2058	665	0.886	18.0	1.64	161
	82	122	1.70	36680	6175	15.4	6.31	2018	480	2270	734	0.884	16.6	1.80	211
W14-14x14 1/2 (356x368)	87	129	2.14	40250	14610	15.6	9.43	2264	793	2479	1199	0.844	19.9	4.18	153
	90	134	2.14	41580	15080	15.6	9.40	2335	818	2565	1238	0.842	19.2	4.31	169
	99	147	2.15	46240	16730	15.7	9.43	2571	904	2838	1370	0.842	17.7	4.83	223
	103	153	2.16	48590	17550	15.8	9.49	2685	948	2965	1435	0.844	17.0	5.11	251
	109	162	2.16	51540	18600	15.8	9.49	2834	1003	3142	1519	0.843	16.2	5.43	296
	119	177	2.17	57120	20530	15.9	9.54	3103	1102	3455	1671	0.844	15.0	6.09	381
	120	179	2.17	57290	20600	15.9	9.51	3115	1106	3475	1678	0.842	14.9	6.09	390
	132	196	2.18	63720	22820	16.0	9.55	3422	1221	3838	1853	0.843	13.7	6.84	511
	136	202	2.19	66260	23690	16.1	9.60	3538	1264	3972	1920	0.844	13.4	7.16	558



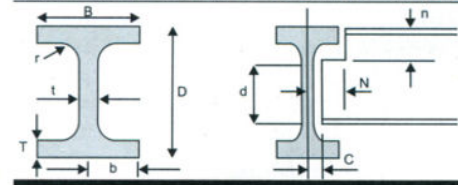
Universal Beams And Columns

Designation Size	Mass Per Metre	Depth Of Section	Width Of Section	Thickness	Root Radius	Depth Between Fillets	Area Of Section	Ratio For Local Buckling	Dimensions For Detailing	End Clearance	Notch n
		D	B	Flange T	Web t	r	A	Flange b/T	Web d/t	C	N
in(mm)	lb/ft kg/m	mm	mm	mm	mm	mm	cm ²			mm	mm
W14-14x16 (356x406)	118 175.6	360.0	396.0	20.0	20.0	15.0	224	9.90	14.5	12	198
	145 215.8	375.4	393.7	27.7	17.3	15.2	275	7.11	16.8	11	198
	158 235.1	381.0	394.8	30.2	18.4	15.2	299	6.54	15.8	11	198
	159 236.6	380.5	395.4	30.2	18.9	15.2	302	6.54	15.3	11	198
	176 261.9	386.6	397.5	33.3	21.1	15.2	334	5.97	13.7	13	198
	193 287.1	393.6	399.0	36.5	22.6	15.2	366	5.47	12.8	13	198
	211 314	399.3	401.3	39.6	24.9	15.2	400	5.06	11.6	14	198
	219 326	403.1	402.0	41.2	25.5	15.2	415	4.88	11.4	15	198
	228 339.9	406.4	403.0	42.9	26.6	15.2	433	4.70	10.9	15	198
	233 346.7	407.4	403.6	43.7	27.2	15.2	442	4.62	10.7	16	198
	257 382.5	416.1	406.3	48.0	29.8	15.2	488	4.23	9.71	17	198
	264 393	419.0	407.0	49.2	30.6	15.2	501	4.14	9.48	17	198
	283 421.1	425.2	409.2	52.6	32.8	15.2	537	3.89	8.84	18	198
	311 462.8	434.8	412.2	57.4	35.8	15.2	590	3.59	8.09	20	198
	314 467	436.6	412.2	58.0	35.8	15.2	595	3.55	8.11	20	198
	342 509	445.5	415.5	62.7	39.1	15.2	649	3.31	7.40	22	198
	370 551	455.6	418.5	67.5	42.1	15.2	702	3.10	6.89	23	198
	398 592.3	464.6	421.4	72.3	45.0	15.2	755	2.92	6.44	24	198
	426 633.9	474.6	424.0	77.0	47.6	15.2	808	2.75	6.10	26	198
	455 677.1	483.1	427.6	81.5	51.2	15.2	863	2.62	5.66	28	198
	500 744.1	497.8	432.1	88.9	55.6	15.2	948	2.43	5.21	30	198
	550 818.5	514.1	436.9	97.0	60.5	15.2	1043	2.25	4.79	32	198
	605 900.3	531.4	442.3	105.6	65.9	15.2	1147	2.09	4.40	35	198
	665 989.6	549.7	448.3	114.8	71.9	15.2	1261	1.92	4.03	38	198
	730 1086	569.5	454.4	124.7	78.0	15.2	1385	1.82	3.72	41	198
W16-16x5 1/2 (406x140)	26 39.0	398.0	141.8	8.6	6.4	10.2	49.7	8.24	56.3	5	78
	31 46.0	403.2	142.2	11.2	6.8	10.2	58.6	6.35	53.0	5	78
W16-16x7 (406x178)	36 54.1	402.6	177.7	10.9	7.7	10.2	69.0	8.15	46.8	6	95
	40 60.1	406.4	177.9	12.8	7.9	10.2	76.5	6.95	45.6	6	95
	45 67.1	409.4	178.8	14.3	8.8	10.2	85.5	6.25	41.0	6	95
	50 74.2	412.8	179.5	16.0	9.5	10.2	94.5	5.61	37.9	7	95
	57 84.8	417.3	180.8	18.2	10.9	10.2	108	4.98	33.0	7	95
W16-16x10 1/4 (406x260)	67 99.7	414.8	260.0	16.9	10.0	10.2	127	7.70	36.0	7	135
	77 114.6	419.6	261.5	19.3	11.6	10.2	146	6.77	31.2	8	135
	89 132.4	425.4	263.3	22.2	13.3	10.2	169	5.92	27.0	9	135
	100 148.8	431.0	264.8	25.0	14.9	10.2	190	5.29	24.3	9	135
W18-18x6 (457x152)	35 52.3	449.8	152.4	10.9	7.6	10.2	66.6	6.99	53.6	6	82
	40 59.8	454.6	152.9	13.3	8.1	10.2	76.2	5.75	50.3	6	82
	45 67.2	458.0	153.8	15.0	9.0	10.2	85.6	5.13	45.3	7	82
	46 68.5	458.7	153.9	15.3	9.1	10.2	87.1	5.03	44.6	7	82
	50 74.2	462.0	154.4	17.0	9.6	10.2	94.5	4.54	42.5	7	82
	55 82.1	465.8	155.3	18.9	10.5	10.2	105	4.11	38.8	7	82
W18-18x7 1/2 (457x191)	41 61	450.0	189.0	10.8	8.1	10.2	76	8.75	50.4	6	750
	45 67.1	453.4	189.9	12.7	8.5	10.2	85.5	7.48	48.0	6	101
	50 74.3	457.0	190.4	14.5	9.0	10.2	94.6	6.57	45.3	7	101
	55 82.0	460.0	191.3	16.0	9.9	10.2	104	5.98	41.2	7	101
	60 89.3	463.4	191.9	17.7	10.5	10.2	114	5.42	38.8	7	101
	65 96.7	466.1	192.8	19.1	11.4	10.2	123	5.06	35.7	8	101
	66 98.3	467.2	192.8	19.6	11.4	10.2	125	4.92	35.8	8	101
	71 105.7	469.1	193.9	20.6	12.6	10.2	134	4.71	32.4	8	101



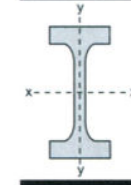
Universal Beams And Columns

Designation Size	Mass Per Mtr	Surface Area Per Mtr	Second Moment Of Area	Radius Of Gyration	Elastic Modulus	Plastic Modulus	Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J
in(mm)	lb/ft kg/m	m ²	cm ⁴	cm ⁴	cm ³	cm ³	cm ³	cm ³	dm ⁶	cm ⁴
W14-14x16 (356x406)	118 176	2.24	51770	20730	15.2	9.61	2876	1047	3235	1603
	145 216	2.26	71240	28180	16.1	10.1	3796	1432	4264	2172
	158 235	2.28	79090	30990	16.3	10.2	4151	1570	4687	2383
	159 237	2.28	79160	31170	16.2	10.2	4161	1577	4702	2394
	176 262	2.29	89040	34860	16.3	10.2	4606	1754	5244	2667
	193 287	2.31	99880	38680	16.5	10.3	5075	1939	5812	2949
	211 314	2.33	110500	42720	16.6	10.3	5537	2129	6387	3243
	219 326	2.34	116400	44660	16.7	10.4	5777	2222	6681	3384
	228 340	2.35	122500	46850	16.8	10.4	6031	2325	6999	3544
	233 347	2.35	125100	47930	16.8	10.4	6141	2375	7140	3621
	257 383	2.37	141500	53750	17.0	10.5	6803	2646	7975	4038
	264 393	2.38	146600	55370	17.1	10.5	6998	2721	8222	4154
	283 421	2.40	159800	60150	17.2	10.6	7516	2940	8887	4492
	311 463	2.42	180100	67130	17.5	10.7	8383	3257	9877	4983
	314 467	2.42	183000	67830	17.5	10.7	8383	3291	10000	5034
	342 509	2.45	203800	75180	17.7	10.8	9151	3619	11010	5543
	370 551	2.47	226900	82670	18.0	10.9	9962	3951	12080	6058
	398 592	2.50	249800	90380	18.2	10.9	10750	4289	13130	6583
	426 634	2.52	274800	98130	18.4	11.0	11580	4629	14240	7108
	455 677	2.55	299400	106600	18.6	11.1	12400	4987	15340	7669
	500 744	2.59	341900	120000	19.0	11.3	13740	5555	17160	8553
	550 819	2.63	382400	135500	19.4	11.4	15260	6202	19260	9560
	605 900	2.67	450600	153100	19.8	11.6	16960	6922	21610	10680
	665 990	2.72	518100	173400	20.3	11.7	18850	7736	24250	11960
	730 1086	2.77	597000	196300	20.8	11.9	20970	8640	27230	13370
W16-16x5 1/2 (406x140)	26 39.0	1.33	12510	410	15.9	2.87	629	57.8	724	90.8
	31 46.0	1.34	15690	538	16.4	3.03	778	75.7	888	118
W16-16x7 (406x178)	36 54.1	1.148	18720	1021	16.5	3.85	930	115	1055	178
	40 60.1	1.49	21600	1203	16.8	3.97	1063	135	1199	209
	45 67.1	1.50	24330	1365	16.9	3.99	1189	153	1346	237
	50 74.2	1.51	27310	1546	17.0	4.04	1323	172	1501	267
	57 84.8	1.52	31520	1794	17.1	4.07	1511	198	1724	309
W16-16x10 1/4 (406x260)	67 99.7	1.83	39730	4951	17.7	6.25	1915	381	2128	581
	77 115	1.84	46110	5758	17.8	6.28	2198	440	2457	673
	89 132	1.86	54060	6768	17.9	6.33	2541	514	2859	788
	100 149	1.87	61830	7754	18.0	6.39	2869	586	3246	899
W18-18x6 (457x152)	35 52.3	1.48	21370	645	17.9	3.11	950	84.7	1096	133
	40 59.8	1.49	25500	795	18.3	3.23	1122	104	1287	163
	45 67.2	1.50	28930	913	18.4	3.27	1263	119	1453	187
	46 68.5	1.50	29530	933	18.4	3.27	1288	121	1482	191
	50 74.2	1.50	32670	1047	18.6	3.33	1414	136	1627	213
	55 82.1	1.51	36590	1185	18.7	3.37	1571	153	1811	240
W18-18x7 1/2 (457x191)	41 61.0	1.62	25380	1218	18.2	3.99	1128	129	1286	201
	45 67.1	1.63	29380	1452	18.5	4.12	1296	153	1471	237
	50 74.3	1.64	33320	1671	18.8	4.20	1458	176	1653	272
	55 82.0	1.65	37050	1871	18.8	4.23	1611	196	1831	304
	60 89.3	1.66	41020	2089	19.0	4.29	1770	218	2014	338
	65 96.7	1.66	44590	2281	19.0	4.30	1913	237	2184	369
	66 98.3	1.67	45730	2347	19.1	4.33	1957	243	2232	379
	71 106	1.67	48760	2507	19.0	4.32	2079	259	2383	404



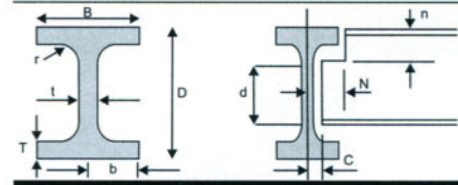
Universal Beams And Columns

Designation Size	Mass Per Metre	Depth Of Section	Width Of Section	Thickness	Root Radius	Depth Between Fillets	Area Of Section	Ratio For Local Buckling	Dimensions For Detailing	End Clearance	Notch
		D	B	Flange T	Web t	r	A	Flange b/T	Web d/t	C	N
in(mm)	lb/ft kg/m	mm	mm	mm	mm	mm	cm ²			mm	mm
W18-18x11 (457x279)	76 113.1	462.5	280.3	17.3	10.8	10.2	144	8.12	37.7	7	145
	86 128	467.1	281.7	19.6	12.1	10.2	163	7.20	33.7	8	145
	97 144.4	472.2	283.1	22.1	13.6	10.2	184	6.40	30.0	9	145
	106 157.7	475.7	284.5	23.9	15.0	10.2	201	5.96	27.2	9	145
	119 177.1	481.8	286.1	26.9	16.6	10.2	226	5.31	24.5	10	145
	130 193.5	489.0	283.5	30.5	17.0	10.2	247	4.65	24.0	11	143
	143 212.8	495.0	285.0	33.5	18.5	10.2	271	4.25	22.0	11	143
	158 235	501.0	287.0	36.6	20.6	10.2	299	3.92	19.8	12	143
	175 260	509.0	289.0	40.4	22.6	10.2	331	3.58	18.1	13	143
W21-21x6 1/2 (533x165)	44 65.5	524.8	165.1	11.4	8.9	12.7	84	7.24	53.6	6	88
	50 74.4	529.1	165.9	13.5	9.7	12.7	95	6.14	49.4	7	88
	57 84.8	534.9	166.5	16.5	10.3	12.7	108	5.04	46.3	7	88
W21-21x8 1/4 (533x210)	48 71.4	523.2	206.8	10.9	8.9	12.7	91	11.62	43.7	6	109
	55 82.2	528.3	208.8	13.2	9.6	12.7	105	7.91	49.6	7	110
	62 92.1	533.1	209.3	15.6	10.1	12.7	117	6.71	47.2	7	110
	68 101	536.7	210.0	17.4	10.8	12.7	129	6.03	44.1	7	110
	73 109	539.5	210.8	18.8	11.6	12.7	139	5.61	41.1	8	110
	82 122	544.5	211.9	21.3	12.7	12.7	155	4.97	37.5	8	110
	83 123.5	544.3	212.2	21.2	13.1	12.7	157	5.00	36.4	9	110
	93 138.4	549.1	213.9	23.6	14.7	12.7	176	4.53	32.3	9	110
W21-21x12 1/4 (533x312)	101 150.3	542.5	312.2	20.3	12.7	12.7	192	7.68	37.5	8	160
	111 165.2	546.4	313.4	22.2	14.0	12.7	211	7.05	34.1	9	160
	122 181.6	550.7	314.7	24.4	15.2	12.7	231	6.45	31.3	10	160
	132 196.4	554.5	316.0	26.3	16.5	12.7	250	6.01	28.9	10	160
	147 218.8	560.3	317.8	29.2	18.3	12.7	279	5.44	26.1	11	160
	166 247	571.0	315.5	34.5	19.1	12.7	315	4.57	25.0	12	158
	182 270.8	577.1	317.8	37.6	21.1	12.7	346	4.23	22.6	13	158
	201 300	585.0	319.0	41.4	23.1	12.7	382	3.85	20.6	14	158
	223 331	593.0	322.0	45.5	25.4	12.7	422	3.54	18.8	15	158
	248 370	603.0	324.0	50.5	26.2	12.7	460	3.21	18.2	15	159
	275 409	613.0	327.0	55.6	31.0	12.7	521	2.94	15.4	18	158
W24-24x7 (610x178)	55 81.9	598.7	177.9	12.8	10.0	12.7	105	6.93	54.6	7	94
	61 91.0	602.5	178.4	15.0	10.6	12.7	116	5.95	51.6	7	94
	62 92.3	603.0	178.8	15.0	10.9	12.7	118	5.96	50.1	7	94
W24-24x9 (610x229)	68 101.2	602.6	227.6	14.8	10.5	12.7	129	7.69	52.2	7	119
	76 113	607.6	228.2	17.3	11.1	12.7	144	6.60	19.3	8	119
	84 125.1	612.2	229.0	19.3	11.9	12.7	158	5.93	46.1	8	119
	94 139.9	617.2	230.2	22.1	13.1	12.7	178	5.21	41.8	9	119
	103 153	623.1	228.6	24.9	14.0	12.7	195	4.59	39.1	9	117
	114 171	628.9	229.9	27.9	15.5	12.7	218	4.12	35.3	10	117
	128 191	635.0	231.5	30.9	17.0	12.7	242	3.75	32.2	11	117
	146 217	643.1	234.1	35.1	19.6	12.7	278	3.33	27.9	12	117
	163 243	651.0	235.9	39.1	21.6	12.7	310	3.02	25.3	13	117
	181 270	658.6	238.5	42.9	23.9	12.7	343	2.78	22.9	14	117
	198 295	667.0	240.5	47.0	25.9	12.7	376	2.56	21.1	15	117
	218 325	675.1	243.1	51.0	28.4	12.7	412	2.38	19.3	16	117
	239 356	685.0	245.6	55.9	31.0	12.7	454	2.20	17.7	18	117
W24-24x12 (610x305)	100 149.1	612.4	304.8	19.7	11.8	16.5	190	7.74	45.8	8	157
	120 179	620.2	307.1	23.6	14.1	16.5	228	6.51	38.3	9	157
	160 238.1	635.8	311.4	31.4	18.4	16.5	303	4.96	29.3	11	157



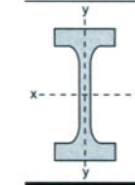
Universal Beams And Columns

Designation Size	Mass Per Metre	Surface Area Per Metre	Second Moment Of Area	Radius Of Gyration	Elastic Modulus	Plastic Modulus	Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H	J
in(mm)	lb/ft kg/m	m ²	cm ⁴	cm ⁴	cm ³	cm ³	cm ³	cm ³	dm ⁶	cm ⁴
W18-18x11 (457x279)	76 113	2.01	55460	6344	19.6	6.64	2398	453	2669	692
	86 128	2.02	63520	7295	19.7	6.69	2720	518	3039	792
	97 144	2.03	72710	8367	19.9	6.74	3079	591	3457	906
	106 158	2.04	79600	9178	19.9	6.76	3347	645	3775	991
	119 177	2.06	91040	10530	20.1	6.82	3779	736	4284	1132
	130 194	2.06	102500	11590	20.4	6.86	4192	818	4761	1257
	143 213	2.08	114400	12960	20.5	6.91	4624	910	5278	1400
	158 235	2.09	127300	14450	20.6	6.95	5083	1007	5839	1554
	175 260	2.11	143700	16300	20.8	7.01	5646	1128	6525	1743
W21-21x6 1/2 (533x165)	44 65.5	1.67	35030	859	20.5	3.20	1335	104	1561	166
	50 74.4	1.68	40810	1032	20.8	3.30	1543	124	1797	199
	57 84.8	1.69	48640	1276	21.2	3.44	1819	153	2107	243
W21-21x8 1/4 (533x210)	48 71	1.85	39917	1611	20.9	4.2	1524	156	1753	244
	55 82.2	1.85	47540	2008	21.3	4.38	1800	192	2059	300
	62 92.1	1.86	55230	2389	21.7	4.51	2072	228	2360	356
	68 101	1.87	61520	2692	21.9	4.57	2292	256	2612	399
	73 109	1.88	66820	2943	21.9	4.60	2477	279	2828	436
	82 122	1.89	76040	3388	22.1	4.67	2793	320	3196	500
	83 123.5	1.89	76240	3389	22.0	4.65	2801	319	3212	500
	93 138	1.90	86170	3868	22.1	4.68	3139	362	3617	569
W21-21x12 1/4 (533x312)	101 150	2.29	100800	10320	22.9	7.33	3715	661	4147	1012
	111 165	2.30	111300	11410	23.0	7.36	4074	728	4565	1117
	122 182	2.31	123300	12680	23.1	7.40	4476	806	5032	1238
	132 196	2.32	134200	13850	23.2	7.44	4842	876	5462	1348
	147 219	2.33	151200	15650	23.3	7.49	5396	985	6116	1519
	166 247	2.34	178000	18110	23.8	7.58	6233	1148	7080	1766
	182 271	2.36	197200	20150	23.9	7.63	6834	1268	7807	1956
	201 300	2.38	220700	22450	24.1	7.67	7547	1408	8670	2175
	223 331	2.40	247700	25390	24.2	7.76	8355	1577	9656	2442
	248 370	2.43	278900	28710	24.6	7.90	9250	1772	10730	2739
	275 409	2.45	316900	32530	24.7	7.91	10340	1990	12120	3096
W24-24x7 (610x178)	55 81.9	1.87	56020	1210	23.2	3.40	1871	136	2200	219
	61 91.0	1.88	63880	1426	23.5	3.51	2120	160	2480	256
	62 92.3	1.88	64580	1436	23.4	3.49	2142	161	2512	258
W24-24x9 (610x229)	68 101	2.07	75780	2915	24.2	4.76	2515	256	2881	400
	76 113	2.08	87320	3434	24.6	4.88	2874	301	3281	469
	84 125	2.09	97540	3872	24.8	4.95	3187	338	3639	528
	94 140	2.11	111800	4505	25.0	5.03	3622	391	4142	611
	103 153	2.11	125000	4972	25.3	5.04	4012	435	4595	680
	114 171	2.12	141400	5670	25.4	5.09	4495	493	5167	773
	128 191	2.14	158400	6415	25.6	5.15	4990	554	5757	871
	146 217	2.16	183900	7544	25.7	5.21	5718	644	6643	1019
	163 243	2.18	207900	8606	25.9	5.27	6386	730	7455	1157
	181 270	2.20	232800	9768	26.1	5.34	7069	819	8299	1304
	198 295	2.22	259400	10980	26.3	5.41	7778	913	9173	1458
	218 325	2.24	287700	12330	26.4	5.47	8522	1014	10110	1625
	239 356	2.27	322200	13950	26.6	5.55	9406	1136	11220	1826
W24-24x12 (610x305)	100 149	2.39	125900	9308	25.7	7.00	4111	611	4594	937
	120 179	2.41	153000	11410	25.9	7.07	4935	743	5547	1144
	160 238	2.45	209500	15840	26.3	7.23	6589	1017	7486	1574



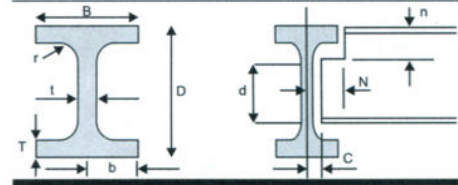
Universal Beams And Columns

Designation Size	Mass Per Metre		Depth Of Section D	Width Of Section B	Thickness		Root Radius r	Depth Between Fillet d	Area Of Section A	Ratios For Local Buckling		Dimensions For Detailing		
	lb/ft	kg/m	mm	mm	Flange T	Web t	mm	mm	cm ²	Flange b/T	Web d/t	End Clearance C	N	Notch n
	in(mm)				mm	mm						mm	mm	mm
W24-24x12 3/4 (610x324)	104	154.8	611.1	323.8	19.1	12.7	12.7	547.6	198	8.50	43.1	8	166	32
	117	174.1	616.2	325.1	21.6	14.0	12.7	547.6	222	7.53	39.2	9	166	34
	131	194.9	621.8	326.5	24.4	15.4	12.7	547.6	249	6.70	35.6	10	166	37
	146	217.3	628.4	327.7	27.7	16.5	12.7	547.6	277	5.92	33.2	10	166	40
	162	241.1	635.0	329.1	31.0	17.9	12.7	547.6	308	5.31	30.6	11	166	44
	176	261.9	641.1	327.4	34.0	19.1	12.7	547.6	333	4.81	28.7	12	164	47
	192	285.7	646.9	328.9	37.1	20.6	12.7	547.3	363	4.44	26.6	12	164	50
	207	308	653.0	330.5	39.9	22.1	12.7	547.8	392	4.14	24.8	13	164	53
	229	341	661.0	333.0	43.9	24.4	16.5	540.2	435	3.79	22.1	14	164	60
	250	372	669.0	335.0	48.0	26.4	16.5	540.0	475	3.49	20.5	15	164	65
	279	415	679.0	338.0	53.1	29.5	16.5	539.8	530	3.18	18.3	17	164	70
	306	455	689.0	340.0	57.9	32.0	16.5	540.2	579	2.94	16.9	18	164	74
W27-27x10 (686x254)	335	498	699.0	343.0	63.0	35.1	13.0	547.0	635	2.72	15.6	20	164	76
	370	551	771.0	347.0	69.1	38.6	13.0	546.8	702	2.51	14.2	21	164	82
	84	125.2	677.9	253.0	16.2	11.7	15.2	615.1	159	7.81	52.6	8	131	31
	94	140.1	683.5	253.7	19.0	12.4	15.2	615.1	178	6.68	49.6	8	131	34
	102	152.4	687.5	254.5	21.0	13.2	15.2	615.1	194	6.06	46.6	9	131	36
	114	170.2	692.9	255.8	23.7	14.5	15.2	615.1	217	5.40	42.4	9	131	39
	129	192	701.8	254.3	27.9	15.5	15.2	615.6	244	4.56	39.7	10	129	43
	143	213	707.9	255.8	31.0	17.0	15.2	615.5	270	4.13	36.2	11	129	46
	159	237	714.0	257.8	34.0	19.1	15.2	615.6	301	3.79	32.2	12	129	49
	182	271	723.9	260.2	39.1	21.6	15.2	615.3	345	3.33	28.5	13	129	54
	201	299	732.0	262.8	42.9	23.9	15.2	615.8	382	3.06	25.8	14	129	58
	221	329	739.9	264.8	47.0	25.9	15.2	615.5	418	2.82	23.8	15	129	62
W27-27x14 (686x356)	247	368	749.8	267.7	52.1	28.9	15.2	615.2	468	2.57	21.3	16	129	67
	271	404	760.0	270.3	56.9	31.5	15.2	615.8	513	2.38	19.5	18	129	72
	302	449	771.9	273.8	63.0	35.1	15.2	615.5	574	2.17	17.5	20	129	78
	146	217.3	695.5	354.7	24.8	15.4	15.2	615.6	277	7.16	40.1	10	180	40
	161	239.6	700.8	356.1	27.4	16.8	15.2	615.5	306	6.49	36.7	10	180	43
	178	264.9	706.4	357.8	30.2	18.4	15.2	615.5	337	5.92	33.4	11	180	45
	194	288.7	714.0	356.4	34.0	19.1	15.2	615.5	368	5.24	32.3	12	179	49
	217	322.9	722.1	358.5	38.1	21.1	15.2	615.5	411	4.70	29.2	13	179	53
	235	349.7	728.0	360.4	40.9	23.1	15.2	615.8	446	4.41	26.6	14	179	56
	258	383.9	736.1	362.5	45.0	24.9	15.2	615.8	489	4.03	24.7	14	179	60
	281	418.2	744.0	364.5	49.0	26.9	15.2	615.6	533	3.72	22.9	15	179	64
	307	456.9	752.1	366.9	53.1	29.5	15.2	615.5	582	3.46	20.9	17	179	68
W30-30x10 1/2 (762x267)	336	500	762.0	369.0	57.9	32.0	15.2	615.8	636	3.19	19.2	18	179	73
	90	133.9	750.0	264.4	15.5	12.0	16.5	686.0	171	8.53	57.2	8	136	32
	99	146.9	754.0	265.2	17.5	12.8	16.5	686.0	187	7.58	53.6	8	136	34
	108	160.7	757.7	266.1	19.3	13.8	16.5	686.1	205	6.89	49.6	9	136	36
	116	173	762.2	266.7	21.6	14.3	16.5	686.0	220	6.17	48.0	9	136	38
	124	184.5	766.3	267.1	23.6	14.9	16.5	686.1	235	5.65	46.2	9	136	40
	132	196.8	769.8	268.0	25.4	15.6	16.5	686.0	251	5.28	44.0	10	136	42
	148	220	779.0	266.2	30.0	16.5	16.5	686.0	281	4.44	41.6	10	135	47
	165	246	785.1	268.1	33.0	18.5	16.5	686.1	312	4.06	37.1	11	135	50
	185	275	793.0	270.1	37.1	20.6	16.5	685.8	351	3.64	33.3	12	135	54
	207	308	801.1	272.7	40.9	23.1	16.5	686.3	392	3.33	29.7	14	135	57
	226	337	809.0	274.6	44.9	24.9	16.5	686.2	428	3.06	27.6	14	135	61
W30-30x10 1/2 (762x267)	246	366	817.1	276.6	48.0	26.9	16.5	688.1	462	2.88	25.6	15	135	65
	269	401	825.0	279.1	53.1	29.5	16.5	685.8	511	2.63	23.2	17	135	70
	295	439	835.2	281.7	57.9	32.0	16.5	686.4	559	2.43	21.5	18	135	74



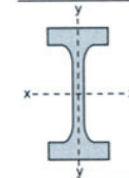
Universal Beams And Columns

Designation Size	Mass Per Mtre		Surface Area Per Mtre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter u	Torsional Index x	Warping Constant H	Torsional Constant J
	lb/ft	kg/m	m ²	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y			dm ⁶	cm ⁴
	in(mm)			cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³				
W24-24x12 3/4 (610x324)	104	155	2.47	129200	10790	25.6	7.39	4227	666	4734	1023	0.880	33.6	9.46	196
	117	174	2.48	147200	12380	25.8	7.47	4776	762	5360	1170	0.882	30.0	10.9	280
	131	195	2.50	167300	14160	25.9	7.55	5383	867	6057	1335	0.883	26.8	12.6	395
	146	217	2.51	190800	16260	26.2	7.66	6074	993	6845	1527	0.886	23.9	14.7	559
	162	241	2.53	215400	18440	26.4	7.74	6784	1121	7670	1726	0.888	21.6	16.8	770
	176	262	2.53	236600	19950	26.6	7.73	7380	1218	8369	1878	0.890	19.9	18.4	995
	192	286	2.55	260400	22030	26.8	7.79	8050	1340	9163	2068	0.890	18.4	20.5	1280
	207	308	2.56	283900	24050	26.9	7.84	8695	1455	9936	2250	0.890	17.2	22.6	1593
	229	341	2.58	319000	27090	27.1	7.90	9652	1627	11090	2523	0.890	15.7	25.8	2162
	250	372	2.60	353900	30170	27.3	7.97	10580	1801	12220	2797	0.890	14.5	29.1	2809
	279	415	2.62	400500	34310	27.5	8.04	11800	2030	13720	3162	0.889	13.2	33.6	3824
	306	455	2.65	445200	38100	27.7	8.11	12920	2241	15120	3498	0.889	12.2	37.9	4940
W27-27x10 (686x254)	335	498	2.68	494700	42580	27.9	8.19	14150	2483	16670	3885	0.889	11.3	42.9	6420
	370	551	2.71	557510	48400	28.2	8.30	15682	2790	18599	4377	0.889	10.4	49.6	8525
	84	125	2.32	118000	4383	27.2	5.24	3481	347	3994	542	0.862	43.9	4.80	116
	94	140	2.33	136300	5184	27.6	5.39	3987	409	4558	638	0.868	38.7	5.72	169
	102	152	2.34	150400	5784	27.8	5.46	4374	455	5000	710	0.871	35.5	6.42	220
	114	170	2.35	170300	6631	28.0	5.53	4916	518	5631	811	0.872	31.8	7.42	308
	129	192	2.36	198000	7670	28.5	5.61	5644	603	6462	943	0.878	27.7	8.71	462
	143	213	2.38	222000	8678	28.7	5.67	6272	678	7204	1063	0.878	25.2	9.94	627
	159	237	2.39	247800	9750	28.7	5.69	6940	756	8016	1191	0.877	23.0	11.3	840
	182	271	2.42	289300	11540	29.0	5.78	7993	887	9282	1402	0.878	20.3	13.5	1260
	201	299	2.44	323800	13060	29.1	5.85	8847	994	10330	1577	0.877	18.6	15.5	1



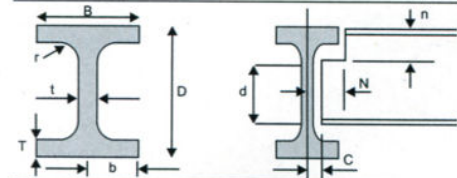
Universal Beams And Columns

Designation Size	Mass Per Metre	Depth Of Section	Width Of Section	Thickness	Root Radius	Depth Between Fillets	Area Of Section	Ratios For Local Buckling	Dimensions For Detailing			
		D	B	Flange T	Web t	r	A	Flange b/T	Web d/t	End Clearance C	N	Notch n
in(mm)	lb/ft kg/m	mm	mm	mm	mm	mm	cm ²			mm	mm	mm
W30-30x15	173 257.5	773.2	380.6	27.1	16.6	16.5	686.1	7.04	41.2	10	192	44
(762x381)	191 284.2	779.3	382.0	30.1	18.0	16.5	686.1	6.35	38.1	11	192	47
	211 314	785.9	383.7	33.4	19.7	16.5	686.1	5.74	34.9	12	192	50
	235 349.7	795.0	382.4	38.1	21.1	16.5	685.8	5.02	32.5	13	191	55
	261 388.4	802.9	384.9	41.9	23.6	16.5	686.1	4.59	29.0	14	191	58
	292 434.5	813.1	387.5	47.0	25.9	16.5	686.1	4.12	26.5	15	191	63
	326 485.1	823.0	390.4	52.1	29.0	16.5	685.9	3.75	23.7	16	191	69
	357 531	833.0	393.0	56.9	31.5	20.0	679.2	3.45	21.6	18	191	77
W33-33x11 1/2	118 175.9	834.9	291.7	18.8	14.0	17.8	761.7	7.76	54.4	9	149	37
(838x292)	130 193.8	840.7	292.4	21.7	14.7	17.8	761.7	6.74	51.8	9	149	40
	141 209.8	845.8	293.0	24.4	15.4	17.8	761.4	6.01	49.5	10	149	42
	152 226.5	850.9	293.8	26.8	16.1	17.8	761.7	5.48	47.3	10	149	45
	169 252	859.0	292.1	31.0	17.0	17.8	761.4	4.71	44.8	11	148	49
	187 278	865.1	294.1	34.0	19.1	17.8	761.5	4.33	39.9	12	148	52
	204 304	871.2	295.7	37.1	20.6	17.8	761.4	3.99	37.0	12	148	55
	219 326	877.1	297.2	39.9	22.1	17.8	761.7	3.72	34.5	13	148	58
	243 362	885.2	299.7	43.9	24.4	17.8	761.8	3.41	31.2	14	148	62
	271 404	895.1	302.1	49.0	26.9	17.8	761.5	3.08	28.3	15	148	67
	301 449	905.0	305.2	54.1	30.0	17.8	761.2	2.82	25.4	17	148	72
	332 494	915.2	308.1	58.9	33.0	17.8	761.8	2.62	23.1	19	148	77
	361 537	925.1	310.6	64.0	35.6	17.8	761.5	2.43	21.4	20	148	82
W33-33x15 3/4	201 299.1	855.5	399.9	29.2	18.2	17.8	761.5	6.85	41.9	11	201	47
(838x400)	221 328.9	861.8	401.4	32.4	19.7	17.8	761.4	6.20	38.7	12	201	50
	241 358.6	868.2	402.8	35.6	21.1	17.8	761.5	5.66	36.1	13	201	53
	263 391.4	877.1	401.4	39.9	22.1	17.8	761.7	5.03	34.5	13	200	58
	291 433.1	884.9	404.0	43.9	24.4	17.8	761.4	4.60	31.2	14	200	62
	318 473.2	893.1	406.0	48.0	26.4	17.8	761.5	4.23	28.8	15	200	66
	354 526.8	903.0	408.9	53.1	29.5	17.8	761.2	3.85	25.8	17	200	71
	387 575.9	913.1	411.5	57.9	32.0	17.8	761.7	3.55	23.8	18	200	76
	424 631	923.0	414.0	63.0	34.1	20.0	757.0	3.29	21.6	20	199	83
	468 697	935.0	418.0	69.1	38.6	20.0	756.8	3.02	19.6	21	200	89
W36-36x12	135 200.9	903.0	303.3	20.2	15.1	19.1	824.4	7.51	54.6	10	154	39
(914x305)	150 224.2	910.4	304.1	23.9	15.9	19.1	824.4	6.36	51.8	10	154	43
	160 238.1	914.7	304.8	25.9	16.5	19.0	824.9	5.88	50.0	10	154	45
	170 253.4	918.4	305.5	27.9	17.3	19.1	824.4	5.47	47.7	11	154	47
	182 270.8	922.8	306.7	30.0	18.4	19.0	824.9	5.12	44.8	11	154	49
	194 289.1	926.6	307.7	32.0	19.5	19.1	824.4	4.81	42.3	12	154	51
	210 312.5	931.9	309.4	34.5	21.1	19.0	824.8	4.48	39.1	13	154	54
	232 345	942.9	307.8	39.9	22.1	19.1	824.9	3.86	37.3	13	153	59
	256 381	950.7	310.3	43.9	24.4	19.1	824.7	3.53	33.8	14	153	63
	286 426	960.9	312.8	48.0	26.9	19.1	826.7	3.26	30.7	15	153	67
	318 474	970.8	315.7	54.1	29.9	19.1	824.4	2.92	27.6	17	153	73
	350 521	980.7	318.8	58.9	33.0	19.1	824.7	2.71	25.0	19	153	78
	387 576	992.9	321.8	65.0	36.1	19.1	824.7	2.48	22.8	20	153	84



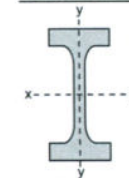
Universal Beams And Columns

Designation Size	Mass Per Metre	Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y					
			U	X	H	J									
in(mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³				
W30-30x15 (762x381)	173	258	3.01	341200	24890	32.3	8.71	8827	1308	9916	2012	0.883	30.3	34.6	635
	191	284	3.02	381700	28000	32.5	8.80	9796	1466	11030	2258	0.885	27.5	39.3	859
	211	314	3.04	427000	31500	32.7	8.87	10870	1642	12270	2531	0.886	25.0	44.6	1161
	235	350	3.05	485900	35570	33.0	8.94	12220	1860	13830	2869	0.889	22.2	50.9	1651
	261	388	3.07	543700	39920	33.1	8.98	13540	2074	15410	3208	0.888	20.3	57.8	2218
	292	435	3.10	618300	45680	33.4	9.09	15210	2358	17380	3653	0.889	18.3	67.0	3090
	326	485	3.12	687600	51790	33.6	9.16	16950	2653	19500	4123	0.888	16.7	77.0	4224
	357	531	3.14	776600	57770	33.9	9.24	18650	2940	21550	4579	0.888	15.3	87.0	5563
W33-33x11 1/2 (838x400)	118	176	2.78	246000	7800	33.1	5.90	5893	535	6808	842	0.856	46.5	13.0	221
	130	194	2.79	279200	9067	33.6	6.06	6642	620	7640	974	0.862	41.6	15.2	306
	141	210	2.80	310200	10250	34.0	6.18	7334	700	8416	1097	0.867	37.9	17.3	404
	152	227	2.81	339700	11360	34.3	6.27	7985	773	9155	1212	0.870	35.0	19.3	514
	169	252	2.82	386500	12920	34.8	6.36	8999	884	10310	1383	0.875	30.9	22.1	735
	187	278	2.84	430400	14470	34.8	6.38	9950	984	11450	1547	0.874	28.3	25.0	983
	204	304	2.85	473000	16050	35.0	6.45	10860	1086	12530	1710	0.874	26.1	27.9	1265
	219	326	2.87	513500	17540	35.1	6.49	11710	1180	13550	1864	0.874	24.4	30.7	1569
	243	362	2.89	573400	19800	35.3	6.56	12960	1321	15060	2095	0.874	22.3	35.0	2095
	271	404	2.91	648200	22660	35.5	6.64	14480	1500	16910	2385	0.875	20.2	40.5	2884
	301	449	2.94	729200	25820	35.7	6.72	16120	1692	18920	2704	0.874	18.4	46.7	3910
	332	494	2.97	810000	28960	35.9	6.79	17700	1880	20890	3018	0.873	17.0	53.1	5088
361	537	2.99	892800	32280	36.1	6.87	19300	2078	22880	3346	0.873	15.8	59.8	6494	
W33-33x15 3/4 (838x400)	201	299	3.24	479800	31180	35.5	9.05	11220	1559	12640	2405	0.881	31.2	53.2	855
	221	329	3.26	534700	34970	35.7	9.13	12410	1742	14020	2690	0.882	28.4	60.1	1146
	241	359	3.27	590000	38800	35.9	9.21	13590	1927	15380	2977	0.884	26.1	67.3	1491
	263	391	3.29	659000	43070	36.3	9.29	15030	2146	17020	3314	0.888	23.6	75.5	2008
	291	433	3.31	735400	48390	36.5	9.36	16620	2396	18910	3709	0.887	21.6	85.6	2687
	318	473	3.33	812500	53680	36.7	9.43	18200	2644	20780	4101	0.888	19.9	95.8	3488
	354	527	3.35	913500	60680	36.9	9.50	20330	2968	23230	4616	0.887	18.1	110	4737
	387	576	3.38	1012000	67480	37.1	9.59	22170	3280	25570	5113	0.887	16.7	123	6135
	424	631	3.40	1120000	74810	37.3	9.64	24260	3614	28140	5652	0.886	15.5	138	7983
	468	697	3.43	1253000	84520	37.6	9.75	26810	4044	31270	6342	0.886	14.2	158	10569
W36-36x12 (914x305)	135	201	2.96	325300	9424	35.7	6.07	7204	621	8351	982	0.854	46.8	18.4	291
	150	224	2.97	376400	11240	36.3	6.27	8269	739	9535	1163	0.861	41.3	22.1	422
	160	238	2.98	406100	12270	36.6	6.36	8879	805	10230	1266	0.864	38.6	24.2	515
	170	253	2.99	436300	13300	36.8	6.42	9501	871	10940	1371	0.866	36.2	26.4	626
	182	271	3.00	470700	14460	36.9	6.47	10200	943	11770	1487	0.866	33.9	28.8	767
	194	289	3.01	504200	15600	37.0	6.51	10880	1014	12570	1601	0.867	31.9	31.2	926
	210	313	3.03	549000	17130	37.1	6.55	11780	1107	13650	1754	0.866	29.7	34.5	1164
	232	345	3.04	625200	19480	37.7	6.66	13260	1266	15340	2000	0.872	26.4	39.7	1648
	256	381	3.06	696900	21980	37.9	6.72	14660	1416	17030	2247	0.872	24.1	45.2	2199
	286	426	3.09	777000	24640	38.1	6.78	16170	1575	18870	2510	0.871	22.2	51.3	2891
	318	474	3.11	884100	28580	38.3	6.89	18210	1810	21350	2895	0.872	19.9	60.0	4091
	350	521	3.14	981300	32080	38.5	6.95	20010	2013	23590	3235	0.871	18.4	68.1	5337
	387	576	3.17	110100	36460	38.8	7.05	22180	2266	26260	3654	0.871	16.8	78.5	7127



Universal Beams And Columns

Designation Size	Mass Per Metre		Depth Of Section	Width Of Section	Thickness		Root Radius	Depth Between Fillets	Area Of Section	Ratios For Local Buckling		Dimensions For Detailing		
	lb/ft	kg/m	D	B	T	t	r	d	A	Flange b/T	Web d/t	End Clearance C	N	Notch n
in(mm)			mm	mm	mm	mm	mm	mm	cm ²			mm	mm	mm
W36-36x16 1/2	230	343.3	911.8	418.5	32.0	19.4	24.1	799.6	437	6.54	41.2	12	210	56
(914x419)	245	364.6	916.4	419.4	34.3	20.3	24.1	799.6	465	6.12	39.4	12	210	58
	260	388	921.0	420.5	36.6	21.4	24.1	799.6	494	5.74	37.4	13	210	61
	280	416.7	927.6	421.5	39.9	22.5	24.1	799.6	532	5.28	35.6	13	210	64
	300	446.4	933.2	423.0	42.7	24.0	24.1	799.7	569	4.96	33.3	14	210	67
	328	488.1	942.1	422.4	47.0	25.9	24.1	799.9	622	4.49	30.9	15	208	71
	359	534.2	950.0	424.9	51.1	28.5	24.1	799.7	680	4.16	28.1	16	208	75
	393	584.8	960.1	427.5	55.9	31.0	24.1	800.1	746	3.83	25.8	17	208	80
	439	653	972.0	431.0	62.0	34.5	24.0	800.0	832	3.48	23.2	19	208	86
	527	784	996.0	437.0	73.9	40.9	24.0	800.2	998	2.96	19.6	22	208	98
	650	967	1028.0	446.0	89.9	50.0	24.0	800.2	1232	2.48	16.0	27	208	114
W40-40x12	149	222	970.3	300.0	21.1	16.0	30.0	868.1	283	7.11	54.3	10	152	51
(1016x305)	167	249	980.2	300.0	26.0	16.5	30.0	868.2	317	5.77	52.6	10	152	56
	183	272	990.1	300.0	31.0	16.5	30.0	868.1	347	4.84	52.6	10	152	61
	211	314	1000.0	300.0	35.9	19.1	30.0	868.2	400	4.18	45.5	12	150	66
	235	349	1008.1	302.0	40.0	21.1	30.0	868.1	445	3.78	41.1	13	150	70
	264	393	1016.0	303.0	43.9	24.4	30.0	868.2	500	3.45	35.6	14	149	74
	278	415	1020.0	304	46.0	26.0	30	868.0	529	3.30	33.4	15	149	76
	294	438	1025.9	305.4	49.0	26.9	30.0	867.9	557	3.12	32.3	15	149	79
	327	487	1036.1	308.5	54.1	30.0	30.0	867.9	620	2.85	28.9	17	149	84
	331	494	1036.0	309.0	54.0	31.0	30	868.0	629	2.86	28.0	18	149	84
	359	535	1046.0	311.4	58.9	33.0	30.0	868.2	681	2.64	26.3	19	149	89
	392	584	1056.0	314.0	64.0	36.0	30	868.0	744	2.45	24.1	20	149	94
W40-40x16	199	296	982	400	27.1	16.5	30	868.0	377	12.12	32.0	10	202	57
(1016x406)	215	321	990	400	31.0	16.5	30	868.0	409	12.12	28.0	10	202	61
	249	371	1000	400	36.1	19.0	30	868.0	472	10.53	24.0	12	201	66
	277	412	1008	402	40.0	21.1	30	868.0	524	9.53	21.7	13	200	70
	297	443	1012	402	41.9	23.6	30	868.2	564	8.52	20.7	14	199	72
	324	483	1020	404	46.0	25.4	30	868.0	615	7.95	18.9	15	199	76
	362	539	1030	407	51.1	28.4	30	867.8	687	7.17	17.0	16	199	81
	397	591	1040	409	55.9	31.0	30	868.2	753	6.60	15.5	18	199	86
	431	642	1048	412	60.0	34.0	30	868.0	818	6.06	14.5	19	199	90
	503	748	1068	417	70.0	39.0	30	868.0	953	5.35	12.4	22	199	100
	593	883	1092	424	82.0	45.5	30	868.0	1125	4.66	10.6	25	199	112
W44-4x16	230	343	1090	400	31.0	18.0	20	988.0	437	11.11	31.9	11	201	51
(1118x406)	262	390	1100	400	36.0	20.0	20	988.0	497	10.00	27.4	12	200	56
	290	433	1108	402	40.0	22.0	20	988.0	551	9.14	24.7	13	200	60
	335	499	1118	405	45.0	26.0	20	988.0	635	7.79	22.0	15	200	65



Universal Beams And Columns

Designation Size	Mass Per Metre		Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
	lb/ft	kg/m	m ²	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	U	X	H	J
in(mm)			cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³				
W30-36x16 1/2	230	343	3.42	625800	39160	37.8	9.46	13730	1871	15480	2890	0.883	30.1	75.8	1193
(914x419)	245	365	3.43	671700	42240	38.0	9.53	14660	2014	16550	3111	0.884	28.3	82.2	1442
	260	388	3.44	719600	45440	38.2	9.59	15630	2161	17670	3341	0.885	26.7	88.9	1734
	280	417	3.45	785700	49870	38.4	9.68	16940	2366	19170	3658	0.887	24.8	98.3	2188
	300	446	3.47	846900	53940	38.6	9.73	18150	2550	20600	3948	0.887	23.3	107	2671
	328	488	3.48	936400	59170	38.8	9.76	19880	2801	22640	4344	0.887	21.4	119	3500
	359	534	3.50	1031000	65450	38.9	9.81	21700	3081	24820	4790	0.886	19.8	132	4508
	393	585	3.53	1144000	73000	39.2	9.89	23840	3415	27390	5320	0.887	18.2	149	5890
	439	653	3.56	1292000	83050	39.4	9.99	26590	3854	30730	6014	0.887	16.5	171	8124
	527	784	3.62	1593000	103300	40.0	10.2	31980	4728	37340	7439	0.887	14.0	218	13730
	650	967	3.70	2033000	133900	40.6	10.4	39540	6003	46810	9504	0.886	11.8	292	24930
W40-40x12	149	222	3.06	408000	9553	38.0	5.81	8409	637	9807	1020	0.850	45.7	21.5	390
(1016x305)	167	249	3.08	481300	11760	39.0	6.09	9821	784	11350	1245	0.861	39.9	26.8	582
	183	272	3.10	554000	14010	40.0	6.36	11190	934	12830	1470	0.873	35.0	32.2	835
	211	314	3.11	644200	16240	40.1	6.37	12880	1083	14850	1713	0.872	30.7	37.7	1264
	235	349	3.13	723100	18470	40.6	6.44	14350	1223	16590	1941	0.872	27.9	43.3	1718
	264	393	3.14	807700	20500	40.2	6.40	15900	1353	18540	2168	0.868	25.5	48.4	2330
	278	415	3.15	853100	21710	40.2	6.41	16728	1428	19571	2298	0.868	24.2	51.1	2713
	294	438	3.17	909900	23450	40.4	6.49	17740	1536	20760	2469	0.868	23.1	56.0	3185
	327	487	3.19	1021000	26730	40.6	6.57	19720	1733	23200	2800	0.867	21.1	64.4	4299
	331	494	3.19	1028000	26820	40.4	6.53	19845	1736	23413	2818	0.867	20.8	64.0	4433
	359	535	3.22	1131000	29970	40.8	6.63	21620	1925	25570	3126	0.866	19.5	73.0	5576
	392	584	3.24	1246100	33430	40.9	6.70	23600	2130	28039	3475	0.869	17.9	81.2	7230
W40-40x16	199	296	3.48	618700	28850	40.5	8.75	12600	1443	14220	2235	0.878	38.0	65.9	762.6
(1016x406)	215	321	3.50	696400	33120	41.3	9.00	14070	1656	15800	2555	0.887	34.3	76.0	1021
	249	371	3.51	812100	38480	41.5	9.03	16240	1924	18330	2976	0.887	29.9	89.4	1575
	277	412	3.53	909800	43410	41.7	9.10	18050	2160	20440	3348	0.887	27.1	101.5	2134
	297	443	3.53	966510	45500	41.4	8.98	19101	2264	21777	3529	0.882	25.8	106.7	2545
	324	483	3.55	1067480	50710	41.7	9.08	20931	2510	23923	3919	0.884	23.7	119.9	3311
	362	539	3.58	1202540	57630	41.8	9.16	23350	2832	26824	4436	0.883	21.5	137.6	4546
	397	591	3.60	1331040	64010	42.1	9.22	25597	3130	29530	4916	0.883	19.8	154.3	5927
	431	642	3.62	1450590	70280	42.1	9.27	27683	3412	32097	5379	0.882	18.5	170.7	7440
	503	748	3.67	1731940	85110	42.6	9.45	32433	4082	37881	6459	0.882	16.1	210.7	11670
	593	883	3.74	2096420	104970	43.2	9.66	38396	4952	45265	7874	0.883	14.0	265.7	18750
W44-4x16	230	343	3.71	867400	33120	44.6	8.71	15920	1656	18060	2568	0.876	38.9	92.7	1037
(1118x406)	262	390	3.73	1005000	38480	45.0	8.80	18280	1924	20780	2988	0.878	33.9	108.7	1564
	290	433	3.75	1126000	43410	45.2	8.87	20320	2160	23160	3362	0.879	30.7	123.5	2130
	335	499	3.77	1294000	49980	45.1	8.87	23150	2468	26600	3870	0.876	27.3	143.4	3135