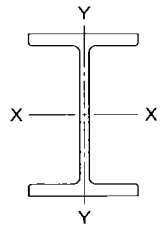
M SHAPES

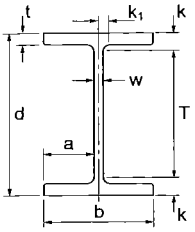


PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	$10^9\ mm^6$
M318												
x18.5	0.179	2 361	37.0	233	126	269	0.830	17.5	18.9	27.3	20.5	20.2
x17.3	0.168	2 213	33.4	211	124	246	0.636	14.3	17.1	22.6	17.2	15.4
M310												
x17.6	0.173	2 240	30.1	197	116	235	0.453	11.6	14.2	18.8	20.8	10.1
x16.1	0.159	2 050	27.7	182	116	216	0.421	10.8	14.3	17.4	16.3	9.39
x14.9	0.147	1 900	25.8	170	116	201	0.440	10.6	15.2	16.9	12.1	9.85
M250												
x13.4	0.132	1 710	16.2	127	97.2	151	0.274	8.05	12.7	13.0	13.1	4.24
x11.9	0.118	1 520	14.4	113	96.9	134	0.242	7.12	12.6	11.4	9.31	3.73
x11.2	0.110	1 430	13.6	108	97.6	126	0.231	6.80	12.7	10.8	7.76	3.57
M200												
x9.7	0.094 3	1 240	7.61	74.9	78.8	87.9	0.149	5.22	11.0	8.36	7.60	1.46
x9.2	0.090 7	1 170	7.30	71.9	78.7	84.4	0.147	5.07	11.2	8.10	6.48	1.45
M150												
x6.6	0.064 2	832	2.99	39.3	59.8	45.7	0.074 7	3.18	9.47	5.05	4.10	0.407
x5.5+	0.054 3	703	2.48	33.0	59.3	38.3	0.073 1	2.87	10.2	4.52	2.21	0.394
M130												
x28.1+	0.276	3 580	10.1	158	53.0	182	3.620	57.1	31.8	87.2	130	12.3
M100												
x8.9	0.087 6	1 150	2.00	41.2	41.9	45.6	0.624	12.9	23.4	19.5	7.63	1.35
x6.1+	0.062 8	775	1.48	29.0	42.6	32.7	0.133	4.66	12.8	7.18	6.12	0.317
M75												
x4.3+	0.045 3	550	0.618	16.3	32.4	18.2	0.102	3.58	13.2	5.45	3.24	0.135

Note: These sections are not available from Canadian mills.

+ This section had no known producer at time of printing.

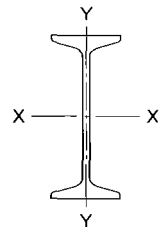


M SHAPES

DIMENSIONS AND SURFACE AREAS

Nominal Mass	Theo-retical Mass	Depth	Flange Width	Flange Thick-ness	Web Thick-ness	Distances				Surface Area (m^2) per metre of length		Imperial Designation
		d	b	t	w	a	T	k	k_1	Total	Minus Top of Top Flange	
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm	mm			
18.5	18.3	318	95	5.8	3.9	46	290	14	10	1.01	0.913	M12.5x12.4
17.3	17.2	317	89	5.4	3.9	43	289	14	10	0.982	0.893	M12.5x11.6
17.6	17.6	305	78	5.7	4.5	37	277	14	10	0.913	0.835	M12x11.8
16.1	16.2	304	78	5.3	4.1	37	276	14	10	0.912	0.834	M12x10.8
14.9	15.0	304	83	4.6	3.8	40	278	13	10	0.932	0.849	M12x10.0
13.4	13.4	254	68	5.2	4.0	32	226	14	10	0.772	0.704	M10x9.0
11.9	12.0	253	68	4.6	3.6	32	225	14	10	0.771	0.703	M10x8.0
11.2	11.2	253	68	4.4	3.3	32	227	13	9	0.771	0.703	M10x7.5
9.7	9.6	203	57	4.8	3.4	27	175	14	10	0.627	0.570	M8x6.5
9.2	9.2	203	58	4.5	3.3	27	177	13	9	0.631	0.573	M8x6.2
6.6	6.5	152	47	4.3	2.9	22	132	10	6	0.486	0.439	M6x4.4
5.5	5.5	150	51	3.3	2.5	24	132	9	6	0.499	0.448	M6x3.7
28.1	28.2	127	127	10.6	8.0	60	85	21	13	0.746	0.619	M5x18.9
8.9	8.9	97	97	4.1	3.3	47	71	13	9	0.575	0.478	M4x6.0
6.1	6.4	102	57	4.3	2.9	27	74	14	10	0.426	0.369	M4x4.08
4.3	4.6	76	57	3.3	2.3	27	50	13	10	0.375	0.318	M3x2.9

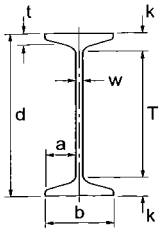
S SHAPES
S610 - S200



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	$10^9\ mm^6$
S610												
x180	1.76	23 000	1 310	4 220	239	5 020	33.9	332	38.5	592	5 330	2 990
x158	1.55	20 100	1 220	3 940	247	4 580	31.6	316	39.7	545	4 210	2 790
S610												
x149	1.46	18 900	996	3 270	229	3 930	19.7	214	32.2	393	3 150	1 700
x134	1.32	17 100	939	3 080	234	3 650	18.6	205	32.9	367	2 520	1 600
x119	1.17	15 200	879	2 880	241	3 360	17.5	197	34.0	342	2 030	1 510
S510												
x143	1.40	18 200	700	2 710	196	3 250	20.7	226	33.7	410	3 490	1 260
x128	1.26	16 300	658	2 550	200	3 010	19.2	214	34.2	378	2 770	1 160
S510												
x112	1.09	14 200	532	2 090	194	2 500	12.3	152	29.4	274	1 900	731
x98.2	0.964	12 500	497	1 950	199	2 290	11.5	145	30.3	253	1 480	684
S460												
x104	1.03	13 300	387	1 690	170	2 050	10.1	127	27.5	238	1 740	487
x81.4	0.800	10 400	335	1 470	180	1 710	8.62	113	28.8	199	983	416
S380												
x74	0.731	9 480	203	1 060	146	1 270	6.49	90.8	26.1	164	884	217
x64	0.627	8 130	187	980	151	1 140	6.01	85.9	27.2	149	641	200
S310												
x74	0.729	9 480	127	833	116	1 000	6.48	93.3	26.2	169	1 160	135
x60.7	0.595	7 740	113	743	121	868	5.56	83.7	26.8	145	721	116
S310												
x52	0.512	6 650	95.8	628	120	736	4.10	63.5	24.8	112	447	86.9
x47	0.465	6 030	91.0	597	123	689	3.88	61.2	25.4	105	372	82.3
S250												
x52	0.513	6 650	61.5	484	96.1	583	3.51	55.8	23.0	103	539	51.2
x38	0.370	4 810	51.4	405	103	465	2.80	47.5	24.1	81.3	250	40.9
S200												
x34	0.336	4 370	27.0	266	78.6	316	1.79	33.8	20.2	60.4	229	16.5
x27	0.269	3 480	24.0	236	82.9	271	1.56	30.7	21.2	52.4	138	14.4

Note: These sections are not available from Canadian mills.

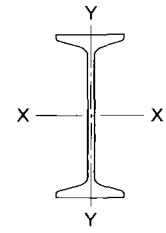


S SHAPES
S610 - S200

DIMENSIONS AND SURFACE AREAS

Nominal Mass	Theo-retical Mass	Depth	Flange Width	Mean Flange Thickness	Web Thickness	Distances			Surface Area (m^2) per metre of length		Imperial Designation
		d	b	t	w	a	T	k	Total	Minus Top of Top Flange	
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm			
180	180.0	622	204	27.7	20.3	92	516	53	2.02	1.82	S24x121
158	157.8	622	200	27.7	15.7	92	516	53	2.01	1.81	S24x106
149	148.7	610	184	22.1	18.9	83	518	46	1.92	1.73	S24x100
134	134.4	610	181	22.1	15.9	83	518	46	1.91	1.73	S24x90
119	119.1	610	178	22.1	12.7	83	518	46	1.91	1.73	S24x80
143	142.9	516	183	23.4	20.3	81	420	48	1.72	1.54	S20x96
128	128.6	516	179	23.4	16.8	81	422	47	1.71	1.54	S20x86
112	111.4	508	162	20.2	16.1	73	420	44	1.63	1.47	S20x75
98.2	98.3	508	159	20.2	12.8	73	420	44	1.63	1.47	S20x66
104	104.7	457	159	17.6	18.1	70	383	37	1.51	1.35	S18x70
81.4	81.5	457	152	17.6	11.7	70	383	37	1.50	1.35	S18x54.7
74	74.6	381	143	15.8	14.0	65	313	34	1.31	1.16	S15x50
64	64.0	381	140	15.8	10.4	65	313	34	1.30	1.16	S15x42.9
74	74.4	305	139	16.7	17.4	61	235	35	1.13	0.992	S12x50
60.7	60.6	305	133	16.7	11.7	61	235	35	1.12	0.986	S12x40.8
52	52.2	305	129	13.8	10.9	59	245	30	1.10	0.975	S12x35
47	47.4	305	127	13.8	8.9	59	245	30	1.10	0.973	S12x31.8
52	52.3	254	126	12.5	15.1	55	200	27	0.982	0.856	S10x35
38	37.8	254	118	12.5	7.9	55	200	27	0.964	0.846	S10x25.4
34	34.3	203	106	10.8	11.2	47	155	24	0.808	0.702	S8x23
27	27.4	203	102	10.8	6.9	48	155	24	0.800	0.698	S8x18.4

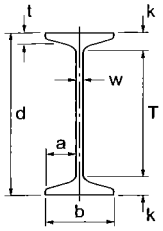
S SHAPES
S150 - S75



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	$10^9\ mm^6$
S150												
x26	0.251	3 270	10.9	143	57.8	173	0.969	21.3	17.2	38.9	152	4.95
x19	0.182	2 360	9.16	121	62.2	138	0.765	18.0	18.0	30.6	68.5	3.90
S130												
x15	0.145	1 880	5.11	80.5	52.0	92.7	0.501	13.2	16.3	22.3	47.0	1.76
S100												
x14.1	0.139	1 800	2.85	55.9	39.7	66.5	0.372	10.5	14.4	18.4	50.1	0.832
x11	0.113	1 450	2.56	50.2	41.8	57.9	0.320	9.40	14.8	15.9	30.4	0.715
S75												
x11	0.110	1 430	1.22	32.0	29.2	38.7	0.246	7.68	13.1	13.6	38.1	0.296
x8	0.083	1 080	1.04	27.4	31.2	31.8	0.187	6.34	13.2	10.6	18.2	0.225

Note: These sections are not available from Canadian mills.

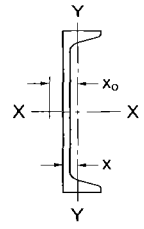


S SHAPES
S150 - S75

DIMENSIONS AND SURFACE AREAS

Nominal Mass	Theo-retical Mass	Depth	Flange Width	Mean Flange Thickness	Web Thickness	Distances			Surface Area (m^2) per metre of length		Imperial Designation
		d	b	t	w	a	T	k	Total	Minus Top of Top Flange	
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm			
26	25.6	152	91	9.1	11.8	40	112	20	0.644	0.553	S6x17.25
19	18.6	152	85	9.1	5.9	40	112	20	0.632	0.547	S6x12.5
15	14.8	127	76	8.3	5.4	35	89	19	0.547	0.471	S5x10
14.1	14.2	102	71	7.4	8.3	31	66	18	0.471	0.400	S4x9.5
11	11.5	102	68	7.4	4.9	32	66	18	0.466	0.398	S4x7.7
11	11.2	76	64	6.6	8.9	28	44	16	0.390	0.326	S3x7.5
8	8.4	76	59	6.6	4.3	27	44	16	0.379	0.320	S3x5.7

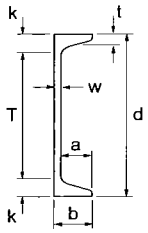
STANDARD CHANNELS (C SHAPES)



PROPERTIES

Designation	Dead Load	Area	Axis X-X			Axis Y-Y				Shear Centre	Torsional Constant	Warping Constant
			I_x	S_x	r_x	I_y	S_y	r_y	x	x_o	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	mm	$10^3\ mm^4$	$10^9\ mm^6$
C380												
x74*	0.730	9 480	168	881	133	4.60	62.4	22.0	20.3	34.9	1 100	131
x60*	0.583	7 610	145	760	138	3.84	55.5	22.5	19.8	39.1	603	109
x50*	0.495	6 430	131	687	143	3.39	51.4	23.0	20.0	42.6	421	95.2
C310												
x45	0.438	5 690	67.3	442	109	2.12	33.6	19.3	17.0	32.4	360	39.9
x37	0.363	4 740	59.9	393	113	1.85	30.9	19.8	17.1	35.9	222	34.6
x31	0.301	3 930	53.5	351	117	1.59	28.1	20.1	17.6	39.3	152	29.3
C250												
x45	0.437	5 690	42.8	337	86.9	1.60	26.8	16.8	16.3	25.3	508	20.5
x37	0.365	4 740	37.9	299	89.4	1.40	24.3	17.1	15.7	28.1	289	18.2
x30	0.291	3 790	32.7	257	93.0	1.16	21.5	17.5	15.4	31.3	153	15.0
x23	0.221	2 900	27.8	219	98.2	0.920	18.8	17.9	15.9	35.7	86.4	11.7
C230												
x30*	0.292	3 790	25.5	222	81.9	1.01	19.3	16.3	14.8	27.7	179	10.5
x22	0.219	2 850	21.3	186	86.6	0.805	16.8	16.8	15.0	32.3	86.6	8.33
x20	0.195	2 540	19.8	173	88.6	0.715	15.6	16.8	15.2	33.7	69.5	7.35
C200												
x28	0.274	3 550	18.2	180	71.6	0.825	16.6	15.2	14.4	25.2	182	6.67
x21	0.200	2 610	14.9	147	75.8	0.627	13.9	15.5	14.0	29.1	77.0	5.04
x17	0.167	2 180	13.5	133	78.7	0.543	12.8	15.8	14.5	32.0	53.8	4.34
C180												
x22*	0.214	2 790	11.3	127	63.7	0.568	12.8	14.3	13.5	24.6	110	3.47
x18	0.178	2 320	10.0	113	65.9	0.476	11.4	14.3	13.2	26.5	66.8	2.90
x15	0.142	1 850	8.86	99.6	69.3	0.404	10.3	14.8	13.8	30.3	41.4	2.46
C150												
x19	0.188	2 470	7.11	93.6	53.9	0.425	10.3	13.2	12.9	22.3	98.9	1.84
x16	0.152	1 990	6.21	81.8	56.1	0.351	9.13	13.3	12.6	24.6	53.4	1.53
x12	0.118	1 550	5.36	70.5	59.1	0.278	7.93	13.5	12.9	27.7	30.6	1.21
C130												
x13	0.130	1 700	3.66	57.6	46.5	0.252	7.20	12.2	12.0	22.3	45.0	0.746
x10	0.097	1 270	3.09	48.6	49.5	0.195	6.14	12.4	12.3	26.1	22.5	0.579
C100												
x11	0.106	1 370	1.91	37.4	37.3	0.174	5.52	11.3	11.5	20.9	34.1	0.320
x9	0.088	1 190	1.68	33.0	38.3	0.146	4.73	11.3	11.1	22.2	20.5	0.281
x8	0.079	1 030	1.61	31.6	39.7	0.132	4.65	11.4	11.6	24.2	16.6	0.246
x7	0.069	852	1.53	30.0	41.4	0.122	4.45	11.7	12.6	27.3	13.3	0.233
C75												
x9	0.087	1 130	0.847	22.3	27.4	0.123	4.31	10.5	11.5	19.4	29.7	0.118
x7	0.072	948	0.749	19.7	28.3	0.095 9	3.67	10.1	10.9	20.3	17.5	0.093 4
x6	0.059	781	0.670	17.6	29.6	0.077 2	3.21	10.1	11.0	22.3	10.9	0.076 8
x5	0.054	665	0.651	17.1	30.4	0.073 7	3.13	10.2	11.4	24.0	9.49	0.074 7

* Not available from Canadian mills

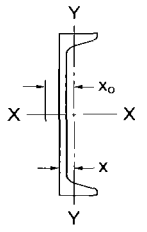


STANDARD CHANNELS (C SHAPES)

DIMENSIONS AND SURFACE AREAS

Nominal Mass	Theo-retical Mass	Depth	Flange Width	Flange Thick-ness	Web Thick-ness	Distances			Surface Area (m^2) per metre of length		Imperial Designation
		d	b	t	w	a	T	k	Total	Minus Top of Top Flange	
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm			
74	74.4	381	94	16.5	18.2	76	309	36	1.10	1.01	C15x50
60	59.4	381	89	16.5	13.2	76	309	36	1.09	1.00	C15x40
50	50.5	381	86	16.5	10.2	76	309	36	1.09	1.00	C15x33.9
45	44.7	305	80	12.7	13.0	67	246	29	0.904	0.824	C12x30
37	37.0	305	77	12.7	9.8	67	246	29	0.898	0.821	C12x25
31	30.7	305	74	12.7	7.2	67	246	29	0.892	0.818	C12x20.7
45	44.5	254	76	11.1	17.1	59	200	27	0.778	0.702	C10x30
37	37.3	254	73	11.1	13.4	60	200	27	0.773	0.700	C10x25
30	29.6	254	69	11.1	9.6	59	200	27	0.765	0.696	C10x20
23	22.6	254	65	11.1	6.1	59	200	27	0.756	0.691	C10x15.3
30	29.8	229	67	10.5	11.4	56	182	23	0.703	0.636	C9x20
22	22.3	229	63	10.5	7.2	56	182	23	0.696	0.633	C9x15
20	19.8	229	61	10.5	5.9	55	182	23	0.690	0.629	C9x13.4
28	27.9	203	64	9.9	12.4	52	159	22	0.637	0.573	C8x18.75
21	20.4	203	59	9.9	7.7	51	159	22	0.627	0.568	C8x13.75
17	17.0	203	57	9.9	5.6	51	159	22	0.623	0.566	C8x11.5
22	21.9	178	58	9.3	10.6	47	136	21	0.567	0.509	C7x14.75
18	18.2	178	55	9.3	8.0	47	136	21	0.560	0.505	C7x12.25
15	14.5	178	53	9.3	5.3	48	136	21	0.557	0.504	C7x9.8
19	19.2	152	54	8.7	11.1	43	113	20	0.498	0.444	C6x13
16	15.5	152	51	8.7	8.0	43	113	20	0.492	0.441	C6x10.5
12	12.0	152	48	8.7	5.1	43	113	20	0.486	0.438	C6x8.2
13	13.3	127	47	8.1	8.3	39	90	18	0.425	0.378	C5x9
10	9.9	127	44	8.1	4.8	39	90	19	0.420	0.376	C5x6.7
11	10.8	102	43	7.5	8.2	35	67	17	0.360	0.317	C4x7.25
9	9.0	102	42	6.9	6.3	36	68	17	0.359	0.317	C4x6.25
8	8.0	102	40	7.5	4.7	35	67	17	0.355	0.315	C4x5.4
7	7.0	102	40	7.5	3.2	37	67	17	0.358	0.318	C4x4.5
9	8.8	76	40	6.9	9.0	31	43	16	0.294	0.254	C3x6
7	7.3	76	37	6.9	6.6	30	43	16	0.287	0.250	C3x5
6	6.0	76	35	6.9	4.3	31	43	16	0.283	0.248	C3x4.1
5	5.5	76	35	6.9	3.4	32	43	16	0.285	0.250	C3x3.5

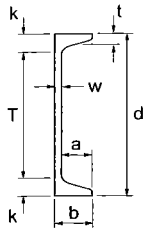
MISCELLANEOUS CHANNELS
MC460 - MC200



PROPERTIES

Designation	Dead Load	Area	Axis X-X			Axis Y-Y				Shear Centre	Torsional Constant	Warping Constant
			I_x	S_x	r_x	I_y	S_y	r_y	x	x_o	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	mm	$10^3\ mm^4$	$10^9\ mm^6$
MC460												
x86*	0.848	11 000	282	1 230	160	7.36	86.4	25.8	21.9	39.6	1 170	290
x77.2*	0.758	9 870	261	1 140	163	6.81	82.8	26.3	21.8	42.1	842	264
x68.2*	0.669	8 710	241	1 050	166	6.18	77.1	26.7	21.9	45.2	605	243
x63.5*	0.623	8 130	231	1 010	169	5.94	76.3	27.1	22.2	46.8	513	227
MC330												
x74*	0.730	9 480	131	792	117	6.81	78.0	26.8	24.7	45.4	1 240	149
x60*	0.582	7 610	113	685	122	5.63	69.0	27.3	24.4	50.6	643	123
x52*	0.511	6 640	105	635	126	5.13	65.8	27.8	24.9	54.1	472	110
x47.3*	0.464	6 030	99.3	602	128	4.69	61.1	27.9	25.4	57.2	393	103
MC310												
x74*	0.731	9 480	112	738	109	7.26	92.7	27.7	26.7	45.5	1 340	111
x67*	0.656	8 500	105	688	111	6.55	86.5	27.7	26.3	47.9	966	101
x60*	0.585	7 610	97.8	641	113	5.92	81.4	27.9	26.3	50.5	708	90.9
x52*	0.510	6 620	90.3	592	117	5.26	76.1	28.2	26.8	54.2	514	80.6
x46*	0.453	5 890	84.4	554	120	4.69	71.6	28.2	27.6	57.2	418	71.5
MC310												
x21.3*	0.210	2 700	32.0	210	108	0.413	9.28	12.3	9.52	20.6	51.0	8.94
MC310												
x15.8*	0.154	2 000	23.0	151	107	0.157	5.04	8.88	6.81	14.0	24.8	3.11
MC250												
x61.2*	0.601	7 810	65.7	518	91.8	6.56	79.6	29.0	27.6	49.7	942	72.7
x50*	0.490	6 370	57.9	456	95.3	5.43	70.9	29.2	27.5	54.4	500	60.0
x42.4*	0.416	5 400	52.6	414	98.7	4.66	64.9	29.4	28.2	58.9	329	51.5
MC250												
x37*	0.365	4 740	45.8	360	98.2	3.02	48.9	25.2	24.2	49.9	264	33.1
x33*	0.321	4 160	42.7	336	101	2.67	45.2	25.3	25.1	53.4	213	29.6
MC250												
x12.5*	0.122	1 590	13.3	104	91.6	0.136	4.41	9.28	7.21	15.6	17.2	1.87
x9.7*	0.096	1 240	9.35	73.6	86.4	0.051 2	2.20	6.40	4.71	8.64	7.80	0.624
MC230												
x37.8*	0.369	4 820	36.6	319	87.3	3.06	48.0	25.3	24.3	49.0	286	27.3
x35.6*	0.347	4 530	35.2	308	88.4	2.88	46.0	25.3	24.4	50.4	246	25.8
MC200												
x33.9*	0.330	4 320	26.2	258	78.3	2.81	44.7	25.6	25.2	51.3	234	19.6
x31.8*	0.310	4 050	25.4	250	79.4	2.66	43.4	25.7	25.7	53.2	203	18.6

* Not available from Canadian mills

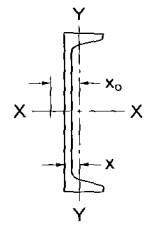


MISCELLANEOUS CHANNELS
MC460 - MC200

DIMENSIONS AND SURFACE AREAS

Nominal Mass	Theo-retical Mass	Depth	Flange Width	Flange Thick-ness	Web Thick-ness	Distances			Surface Area (m^2) per metre of length		Imperial Designation
		d	b	t	w	a	T	k	Total	Minus Top of Top Flange	
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm			
86	86.5	457	107	15.9	17.8	89	385	36	1.31	1.20	MC18x58
77.2	77.2	457	104	15.9	15.2	89	385	36	1.30	1.20	MC18x51.9
68.2	68.2	457	102	15.9	12.7	89	385	36	1.30	1.19	MC18x45.8
63.5	63.6	457	100	15.9	11.4	89	385	36	1.29	1.19	MC18x42.7
74	74.5	330	112	15.5	20.0	92	258	36	1.07	0.956	MC13x50
60	59.3	330	106	15.5	14.2	92	258	36	1.06	0.950	MC13x40
52	52.1	330	103	15.5	11.4	92	258	36	1.05	0.946	MC13x35
47.3	47.3	330	102	15.5	9.5	93	258	36	1.05	0.947	MC13x31.8
74	74.5	305	105	17.8	21.2	84	237	34	0.988	0.883	MC12x50
67	66.9	305	102	17.8	18.0	84	237	34	0.982	0.880	MC12x45
60	59.7	305	99	17.8	15.0	84	237	34	0.976	0.877	MC12x40
52	52.0	305	96	17.8	11.8	84	237	34	0.970	0.874	MC12x35
46	46.2	305	93	17.8	9.4	84	237	34	0.963	0.870	MC12x31
21.3	21.4	305	54	8.0	6.4	48	265	20	0.813	0.759	MC12x14.3
15.8	15.7	305	38	7.8	4.8	33	267	19	0.752	0.714	MC12x10.6
61.2	61.3	254	110	14.6	20.2	90	188	33	0.908	0.798	MC10x41.1
50	50.0	254	104	14.6	14.6	89	188	33	0.895	0.791	MC10x33.6
42.4	42.4	254	100	14.6	10.8	89	188	33	0.886	0.786	MC10x28.5
37	37.2	254	86	14.6	9.7	76	188	33	0.833	0.747	MC10x25
33	32.7	254	84	14.6	7.4	77	188	33	0.829	0.745	MC10x22
12.5	12.4	254	38	7.1	4.3	34	218	18	0.651	0.613	MC10x8.4
9.7	9.8	254	28	5.1	3.9	24	226	14	0.612	0.584	MC10x6.5
37.8	37.7	229	88	14.0	11.4	77	167	31	0.787	0.699	MC9x25.4
35.6	35.4	229	87	14.0	10.2	77	167	31	0.786	0.699	MC9x23.9
33.9	33.6	203	88	13.3	10.8	77	143	30	0.736	0.648	MC8x22.8
31.8	31.6	203	87	13.3	9.5	78	143	30	0.735	0.648	MC8x21.4

MISCELLANEOUS CHANNELS
MC200 - MC75

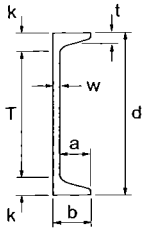


PROPERTIES

Designation	Dead Load	Area	Axis X-X			Axis Y-Y				Shear Centre	Torsional Constant	Warping Constant
			I_x	S_x	r_x	I_y	S_y	r_y	x	x_o	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	mm	$10^3\ mm^4$	$10^9\ mm^6$
MC200												
x29.8*	0.290	3 790	22.4	221	77.1	1.77	32.2	21.7	20.9	41.9	182	12.4
x27.8*	0.271	3 550	21.6	213	78.2	1.66	30.7	21.7	21.1	43.3	157	11.7
MC200												
x12.6*	0.122	1 610	9.52	93.8	77.4	0.247	6.79	12.5	10.7	24.2	23.7	2.11
MC180												
x33.8*	0.330	4 300	19.7	221	67.8	2.92	45.0	26.1	26.1	51.5	257	15.4
x28.4*	0.277	3 620	17.9	201	70.5	2.43	40.4	26.0	26.9	55.9	168	13.0
MC150												
x26.8*	0.261	3 410	12.2	160	60.0	2.36	39.3	26.4	28.0	57.2	156	8.96
x22.8*	0.222	2 900	10.4	137	60.2	1.99	32.4	26.3	26.5	55.7	92.0	7.84
MC150												
x24.3*	0.238	3 090	10.8	142	59.1	1.56	29.7	22.5	23.5	47.1	141	5.90
x22.5*	0.218	2 860	10.2	135	60.1	1.39	27.4	22.1	23.5	48.2	117	5.31
MC150												
x17.9*	0.175	2 280	7.75	102	58.3	0.769	17.0	18.4	17.9	36.1	64.5	2.97
MC150												
x10.4+	0.103	1 341	4.72	62.1	59.4	0.251	7.10	13.7	12.6	27.7	19.1	1.08
x9.7+	0.096	1 250	4.53	59.7	60.3	0.234	6.88	13.7	12.9	28.6	17.0	0.999
MC100												
x20.5*	0.204	2 594	3.78	74.1	37.7	0.882	20.7	18.2	21.3	37.7	164	1.35
MC75												
x10.6*	0.104	1 348	1.12	29.6	28.9	0.277	8.55	14.3	16.5	31.0	37.5	0.243

* Not available from Canadian mills

\+ This section had no known producer at time of printing.

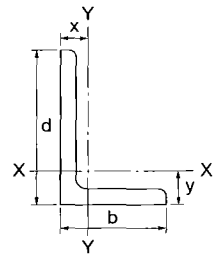


MISCELLANEOUS CHANNELS
MC200 - MC75

DIMENSIONS AND SURFACE AREAS

Nominal Mass	Theo-retical Mass	Depth	Flange Width	Flange Thick-ness	Web Thick-ness	Distances			Surface Area (m^2) per metre of length		Imperial Designation
		d	b	t	w	a	T	k	Total	Minus Top of Top Flange	
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm			
29.8	29.6	203	76	12.7	10.2	66	147	28	0.690	0.614	MC8x20
27.8	27.7	203	75	12.7	9.0	66	147	28	0.688	0.613	MC8x18.7
12.6	12.5	203	47	7.9	4.5	43	165	19	0.585	0.538	MC8x8.5
33.8	33.7	178	91	12.7	12.8	78	122	28	0.694	0.603	MC7x22.7
28.4	28.2	178	87	12.7	8.9	78	122	28	0.686	0.599	MC7x19.1
26.8	26.6	152	88	12.1	9.6	78	98	27	0.637	0.549	MC6x18
22.8	22.6	152	88	9.8	8.6	79	108	22	0.639	0.551	MC6x15.3
24.3	24.2	152	76	12.1	9.5	67	98	27	0.589	0.513	MC6x16.3
22.5	22.3	152	74	12.1	8.0	66	98	27	0.584	0.510	MC6x15.1
17.9	17.9	152	63	9.5	7.9	55	110	21	0.540	0.477	MC6x12
10.4	10.5	152	48	7.4	4.5	44	114	19	0.487	0.439	MC6x7.0
9.7	9.8	152	47	7.4	3.9	43	114	19	0.484	0.437	MC6x6.5
20.5	20.8	102	64	13.0	13.0	51	52	25	0.434	0.370	MC4x13.8
10.6	10.6	76	49	8.9	7.9	41	34	21	0.332	0.283	MC3x7.1

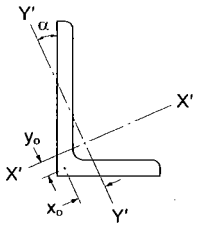
ANGLES
L254 - L178



PROPERTIES ABOUT GEOMETRIC AXES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	x	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	$10^3\ mm^4$	$10^9\ mm^6$
L254x254												
x32*	1.17	15 100	90.5	506	77.3	75.2					5 100	24.1
x29*	1.06	13 700	82.9	460	77.7	74.0					3 740	17.9
x25*	0.944	12 300	74.9	414	78.2	72.9					2 640	12.8
x22*	0.830	10 800	66.7	366	78.6	71.7					1 770	8.71
x19*	0.719	9 310	58.4	318	79.1	70.6					1 140	5.65
L203x203												
x29*	0.831	10 800	40.7	287	61.4	61.2					2 940	8.73
x25*	0.744	9 680	36.9	258	61.8	60.1					2 080	6.27
x22*	0.656	8 500	33.0	229	62.2	58.9					1 400	4.30
x19*	0.566	7 360	28.9	199	62.7	57.8					885	2.76
x16*	0.477	6 200	24.7	169	63.1	56.6					523	1.66
x14*	0.431	5 600	22.5	153	63.3	56.0					382	1.22
x13*	0.385	5 000	20.2	137	63.6	55.5					269	0.865
L203x152												
x25*	0.644	8 390	33.5	247	63.3	67.4	16.0	145	43.7	41.9	1 800	4.37
x22*	0.569	7 420	30.0	219	63.7	66.2	14.4	129	44.1	40.7	1 210	3.00
x19*	0.491	6 410	26.2	190	64.1	65.1	12.7	113	44.5	39.6	768	1.93
x16*	0.415	5 390	22.5	162	64.6	64.0	10.9	95.9	44.9	38.5	454	1.16
x14*	0.375	4 880	20.4	146	64.8	63.4	9.94	87.1	45.2	37.9	332	0.857
x13*	0.335	4 350	18.4	131	65.0	62.8	8.96	78.1	45.4	37.3	234	0.609
x11*	0.294	3 830	16.3	115	65.3	62.2	7.94	68.9	45.6	36.7	157	0.412
L203x102												
x25*	0.547	7 100	29.0	230	63.8	77.2	4.90	65.1	26.3	26.7	1 530	3.46
x22*	0.483	6 280	25.9	204	64.3	76.0	4.43	57.9	26.6	25.5	1 030	2.38
x19*	0.418	5 450	22.8	178	64.7	74.8	3.93	50.6	26.9	24.3	654	1.53
x16*	0.354	4 590	19.5	151	65.2	73.6	3.41	43.3	27.3	23.1	387	0.921
x14*	0.320	4 150	17.8	137	65.4	73.0	3.13	39.4	27.4	22.5	283	0.680
x13*	0.286	3 710	16.0	123	65.7	72.4	2.84	35.4	27.6	21.9	200	0.482
x11*	0.251	3 260	14.2	108	65.9	71.8	2.53	31.4	27.9	21.3	134	0.327
L178x102												
x19*	0.382	4 960	15.8	138	56.4	63.7	3.80	49.9	27.7	25.7	597	1.06
x16*	0.323	4 180	13.6	118	56.8	62.6	3.31	42.7	28.1	24.6	354	0.642
x13	0.261	3 390	11.1	95.6	57.3	61.4	2.75	35.0	28.5	23.4	183	0.338
x11*	0.230	2 980	9.88	84.3	57.5	60.8	2.45	31.0	28.7	22.8	123	0.229
x9.5	0.198	2 570	8.60	73.0	57.8	60.2	2.15	26.9	28.9	22.2	78.0	0.147

* Not available from Canadian mills

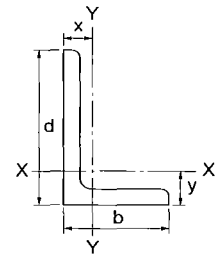


DIMENSIONS AND PROPERTIES ABOUT PRINCIPAL AXES

Mass	d	b	t	Axis X'-X'		Axis Y'-Y'		$\bar{r}_o$	Ω	tan α
				r_x	y_o	r_y	x_o			
kg/m	mm	mm	mm	mm	mm	mm	mm	mm		
119	254	254	31.8	97.4	0.00	49.7	83.8	138	0.630	1.00
108	254	254	28.6	98.0	0.00	49.8	84.4	139	0.629	1.00
96.2	254	254	25.4	98.6	0.00	49.9	85.1	140	0.628	1.00
84.6	254	254	22.2	99.3	0.00	50.1	85.7	140	0.627	1.00
73.1	254	254	19.1	99.9	0.00	50.3	86.3	141	0.627	1.00
84.7	203	203	28.6	77.3	0.00	39.6	66.3	109	0.631	1.00
75.9	203	203	25.4	77.9	0.00	39.7	67.0	110	0.630	1.00
67.0	203	203	22.2	78.5	0.00	39.8	67.6	111	0.629	1.00
57.9	203	203	19.0	79.1	0.00	40.0	68.2	112	0.628	1.00
48.7	203	203	15.9	79.7	0.00	40.1	68.8	113	0.627	1.00
44.0	203	203	14.3	80.0	0.00	40.2	69.2	113	0.626	1.00
39.3	203	203	12.7	80.3	0.00	40.3	69.5	114	0.626	1.00
65.5	203	152	25.4	69.7	34.2	32.4	51.7	98.8	0.606	0.541
57.9	203	152	22.2	70.3	34.2	32.5	52.4	99.6	0.605	0.545
50.1	203	152	19.0	70.9	34.2	32.6	53.1	100	0.604	0.549
42.2	203	152	15.9	71.5	34.3	32.8	53.8	101	0.603	0.553
38.1	203	152	14.3	71.8	34.3	32.9	54.1	102	0.603	0.554
34.1	203	152	12.7	72.1	34.3	33.0	54.5	102	0.603	0.556
29.9	203	152	11.1	72.4	34.3	33.1	54.8	103	0.603	0.558
55.4	203	102	25.4	65.6	59.2	21.6	29.2	95.5	0.523	0.249
49.3	203	102	22.2	66.1	59.3	21.6	30.0	96.2	0.523	0.255
42.5	203	102	19.0	66.6	59.5	21.7	30.8	96.9	0.523	0.260
36.0	203	102	15.9	67.2	59.6	21.9	31.5	97.7	0.523	0.265
32.4	203	102	14.3	67.4	59.7	22.0	31.9	98.0	0.524	0.267
29.0	203	102	12.7	67.7	59.8	22.1	32.2	98.4	0.524	0.269
25.6	203	102	11.1	68.0	59.8	22.2	32.6	98.8	0.524	0.272
38.8	178	102	19.0	58.9	46.5	21.9	32.2	84.6	0.552	0.326
32.7	178	102	15.9	59.4	46.6	22.1	33.0	85.3	0.552	0.331
26.5	178	102	12.7	60.0	46.7	22.2	33.7	86.1	0.552	0.336
23.4	178	102	11.1	60.3	46.8	22.3	34.1	86.5	0.552	0.339
20.2	178	102	9.53	60.6	46.8	22.4	34.4	86.9	0.553	0.341

See *Rolled Structural Shapes* for further information on the properties of angles.

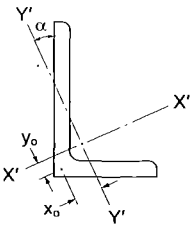
ANGLES
L152 - L127



PROPERTIES ABOUT GEOMETRIC AXES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	x	J	C_w
	kN/m	mm^2	$10^6 mm^4$	$10^3 mm^3$	mm	mm	$10^6 mm^4$	$10^3 mm^3$	mm	mm	$10^3 mm^4$	$10^9 mm^6$
L152x152												
x25*	0.545	7 100	14.6	140	45.5	47.2					1 520	2.46
x22*	0.482	6 280	13.2	124	45.9	46.1					1 030	1.70
x19	0.417	5 450	11.6	108	46.3	45.0					652	1.10
x16	0.353	4 590	9.99	92.3	46.7	43.9					386	0.668
x14*	0.319	4 150	9.12	83.8	46.9	43.3					282	0.494
x13	0.285	3 710	8.22	75.2	47.1	42.7					199	0.352
x11*	0.250	3 270	7.29	66.4	47.4	42.1					134	0.239
x9.5	0.216	2 810	6.36	57.5	47.6	41.5					85.0	0.153
x7.9*	0.181	2 360	5.38	48.4	47.8	41.0					49.4	0.090 2
L152x102												
x22*	0.396	5 150	11.5	117	47.2	53.7	4.10	55.9	28.2	28.7	845	1.08
x19	0.344	4 480	10.1	102	47.6	52.5	3.65	48.9	28.6	27.5	537	0.702
x16	0.291	3 780	8.73	86.8	48.0	51.4	3.17	41.9	28.9	26.4	319	0.427
x14*	0.264	3 430	7.98	78.8	48.2	50.8	2.91	38.2	29.1	25.8	234	0.316
x13	0.236	3 060	7.20	70.7	48.5	50.2	2.64	34.4	29.3	25.2	165	0.226
x11*	0.208	2 700	6.39	62.4	48.7	49.6	2.35	30.4	29.6	24.6	111	0.153
x9.5	0.179	2 330	5.58	54.2	48.9	49.1	2.06	26.5	29.8	24.1	70.5	0.098 8
x7.9	0.150	1 950	4.72	45.6	49.2	48.5	1.76	22.4	30.0	23.5	41.1	0.058 2
L152x89												
x13	0.223	2 900	6.86	69.1	48.6	52.7	1.77	26.1	24.7	21.2	156	0.208
x9.5	0.170	2 210	5.32	52.9	49.1	51.6	1.39	20.2	25.1	20.0	66.8	0.091 1
x7.9	0.142	1 850	4.50	44.6	49.3	51.0	1.19	17.1	25.3	19.4	38.9	0.053 6
L127x127												
x22*	0.396	5 150	7.39	84.7	37.9	39.8					845	0.946
x19	0.344	4 480	6.54	74.0	38.3	38.7					537	0.618
x16	0.291	3 780	5.66	63.3	38.7	37.6					319	0.377
x13	0.236	3 070	4.68	51.7	39.1	36.4					165	0.200
x11*	0.208	2 700	4.17	45.7	39.3	35.8					111	0.136
x9.5	0.179	2 330	3.64	39.7	39.5	35.3					70.5	0.087 8
x7.9	0.150	1 960	3.09	33.5	39.8	34.7					41.1	0.051 8
L127x89												
x19*	0.288	3 750	5.78	69.9	39.3	44.3	2.31	36.2	24.8	25.3	450	0.404
x16*	0.245	3 170	5.01	59.8	39.7	43.2	2.01	31.1	25.2	24.2	268	0.248
x13*	0.199	2 580	4.16	48.9	40.1	42.1	1.68	25.6	25.6	23.0	139	0.132
x9.5	0.151	1 970	3.24	37.6	40.6	40.9	1.33	19.8	26.0	21.9	59.5	0.058 2
x7.9	0.127	1 650	2.75	31.7	40.8	40.3	1.13	16.7	26.2	21.3	34.7	0.034 4
x6.4	0.102	1 330	2.24	25.7	41.0	39.7	0.928	13.6	26.4	20.7	17.9	0.018 0

* Not available from Canadian mills



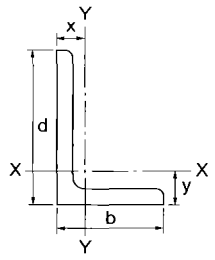
ANGLES
L152 - L127

DIMENSIONS AND PROPERTIES ABOUT PRINCIPAL AXES

Mass	d	b	t	Axis X'-X'		Axis Y'-Y'		$\bar{r}_o$	Ω	tan α
				r_x	y_o	r_y	x_o			
kg/m	mm	mm	mm	mm	mm	mm	mm	mm		
55.7	152	152	25.4	57.1	0.00	29.6	48.8	80.8	0.634	1.00
49.3	152	152	22.2	57.7	0.00	29.6	49.5	81.6	0.632	1.00
42.7	152	152	19.0	58.3	0.00	29.7	50.2	82.5	0.630	1.00
36.0	152	152	15.9	58.9	0.00	29.8	50.8	83.3	0.628	1.00
32.6	152	152	14.3	59.2	0.00	29.9	51.1	83.7	0.628	1.00
29.2	152	152	12.7	59.5	0.00	30.0	51.4	84.2	0.627	1.00
25.6	152	152	11.1	59.8	0.00	30.1	51.7	84.6	0.627	1.00
22.2	152	152	9.53	60.1	0.00	30.2	52.0	85.1	0.626	1.00
18.5	152	152	7.94	60.5	0.00	30.3	52.3	85.5	0.626	1.00
40.3	152	102	22.2	50.5	32.2	21.9	32.9	71.7	0.588	0.427
35.0	152	102	19.0	51.0	32.3	21.9	33.6	72.5	0.586	0.434
29.6	152	102	15.9	51.6	32.3	22.0	34.4	73.3	0.585	0.440
26.8	152	102	14.3	51.8	32.4	22.1	34.7	73.7	0.585	0.443
24.0	152	102	12.7	52.1	32.4	22.2	35.1	74.1	0.585	0.446
21.2	152	102	11.1	52.4	32.4	22.3	35.5	74.5	0.584	0.449
18.2	152	102	9.53	52.7	32.4	22.4	35.8	74.9	0.584	0.451
15.3	152	102	7.94	53.0	32.5	22.5	36.1	75.3	0.584	0.454
22.7	152	88.9	12.7	51.0	39.0	19.3	29.2	73.1	0.556	0.345
17.3	152	88.9	9.53	51.6	39.1	19.5	29.9	73.9	0.557	0.351
14.5	152	88.9	7.94	51.9	39.1	19.6	30.2	74.3	0.557	0.354
40.5	127	127	22.2	47.5	0.00	24.7	40.6	67.2	0.635	1.00
35.1	127	127	19.0	48.1	0.00	24.8	41.3	68.1	0.632	1.00
29.8	127	127	15.9	48.7	0.00	24.8	41.9	68.9	0.630	1.00
24.1	127	127	12.7	49.3	0.00	25.0	42.5	69.8	0.628	1.00
21.3	127	127	11.1	49.6	0.00	25.0	42.8	70.2	0.627	1.00
18.3	127	127	9.53	49.9	0.00	25.1	43.2	70.6	0.627	1.00
15.3	127	127	7.94	50.3	0.00	25.2	43.5	71.1	0.626	1.00
29.3	127	88.9	19.0	42.4	24.9	19.0	29.0	60.2	0.597	0.464
24.9	127	88.9	15.9	43.0	25.0	19.1	29.7	61.0	0.594	0.472
20.2	127	88.9	12.7	43.5	25.0	19.2	30.5	61.8	0.593	0.479
15.4	127	88.9	9.53	44.1	25.0	19.3	31.2	62.6	0.592	0.486
12.9	127	88.9	7.94	44.4	25.1	19.4	31.5	63.0	0.592	0.489
10.4	127	88.9	6.35	44.7	25.1	19.6	31.8	63.4	0.592	0.492

See *Rolled Structural Shapes* for further information on the properties of angles.

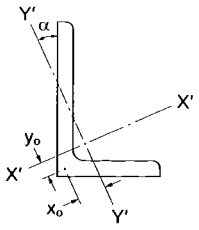
ANGLES
L127 - L89



PROPERTIES ABOUT GEOMETRIC AXES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	x	J	C_w
	kN/m	mm^2	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^3\,mm^4$	$10^9\,mm^6$
L127x76												
x13	0.186	2 420	3.93	47.7	40.3	44.5	1.07	18.8	21.1	19.1	130	0.119
x11*	0.164	2 140	3.51	42.2	40.6	43.9	0.963	16.7	21.3	18.5	87.6	0.081 5
x9.5	0.142	1 850	3.07	36.7	40.8	43.3	0.849	14.6	21.5	17.9	55.9	0.052 7
x7.9	0.119	1 550	2.61	30.9	41.0	42.7	0.727	12.3	21.7	17.3	32.6	0.031 1
x6.4	0.096 2	1 250	2.13	25.0	41.2	42.1	0.598	10.1	21.9	16.7	16.8	0.016 3
L102x102												
x19	0.271	3 510	3.23	46.3	30.3	32.4					423	0.302
x16*	0.230	2 970	2.81	39.8	30.7	31.3					252	0.186
x13	0.187	2 420	2.34	32.6	31.1	30.2					131	0.099 6
x11	0.165	2 140	2.09	28.9	31.3	29.6					87.9	0.068 2
x9.5	0.143	1 850	1.84	25.2	31.5	29.0					56.1	0.044 2
x7.9	0.120	1 550	1.57	21.3	31.7	28.4					32.7	0.026 2
x6.4	0.096 6	1 250	1.28	17.3	31.9	27.9					16.9	0.013 7
L102x89												
x13*	0.174	2 260	2.24	32.0	31.5	31.9	1.58	24.9	26.4	25.4	122	0.081 8
x9.5	0.133	1 720	1.76	24.7	31.9	30.8	1.24	19.2	26.8	24.2	52.3	0.036 4
x7.9	0.112	1 450	1.50	20.9	32.1	30.2	1.06	16.3	27.1	23.6	30.5	0.021 6
x6.4	0.090 2	1 170	1.23	16.9	32.3	29.6	0.872	13.2	27.3	23.1	15.8	0.011 3
L102x76												
x16*	0.199	2 570	2.54	38.0	31.4	35.0	1.20	22.2	21.6	22.1	217	0.128
x13	0.162	2 100	2.12	31.2	31.8	33.9	1.01	18.3	21.9	21.0	113	0.069 2
x9.5	0.124	1 600	1.67	24.1	32.2	32.7	0.800	14.2	22.3	19.8	48.7	0.030 9
x7.9	0.104	1 350	1.42	20.4	32.4	32.1	0.686	12.0	22.5	19.2	28.4	0.018 3
x6.4	0.084 0	1 090	1.17	16.5	32.7	31.6	0.565	9.81	22.7	18.7	14.7	0.009 63
L89x89												
x13	0.161	2 100	1.51	24.4	26.9	26.9					113	0.064 0
x11*	0.142	1 850	1.36	21.7	27.1	26.3					76.0	0.044 0
x9.5	0.123	1 600	1.19	18.9	27.3	25.7					48.5	0.028 6
x7.9	0.104	1 350	1.02	16.0	27.5	25.2					28.3	0.017 0
x6.4	0.083 8	1 090	0.837	13.0	27.7	24.6					14.6	0.008 96

* Not available from Canadian mills

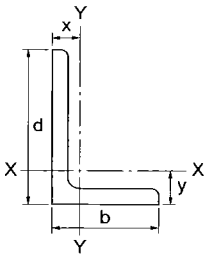


DIMENSIONS AND PROPERTIES ABOUT PRINCIPAL AXES

Mass	d	b	t	Axis X'-X'		Axis Y'-Y'		$\bar{r}_o$	Ω	tan α
				r_x	y_o	r_y	x_o			
kg/m	mm	mm	mm	mm	mm	mm	mm	mm		
19.0	127	76.2	12.7	42.4	31.6	16.5	24.8	60.7	0.562	0.357
16.7	127	76.2	11.1	42.7	31.7	16.5	25.1	61.1	0.562	0.361
14.5	127	76.2	9.53	43.0	31.7	16.6	25.5	61.5	0.562	0.364
12.1	127	76.2	7.94	43.3	31.7	16.7	25.9	61.9	0.562	0.368
9.8	127	76.2	6.35	43.6	31.8	16.8	26.2	62.3	0.562	0.371
27.5	102	102	19.0	38.0	0.00	19.8	32.4	53.7	0.637	1.00
23.4	102	102	15.9	38.5	0.00	19.9	33.0	54.5	0.633	1.00
19.0	102	102	12.7	39.1	0.00	19.9	33.7	55.3	0.630	1.00
16.8	102	102	11.1	39.4	0.00	20.0	34.0	55.8	0.629	1.00
14.6	102	102	9.53	39.7	0.00	20.1	34.3	56.2	0.628	1.00
12.2	102	102	7.94	40.1	0.00	20.2	34.6	56.6	0.627	1.00
9.8	102	102	6.35	40.4	0.00	20.3	34.9	57.1	0.626	1.00
17.6	102	88.9	12.7	36.8	9.16	18.4	30.5	52.0	0.625	0.744
13.5	102	88.9	9.53	37.4	9.15	18.5	31.2	52.8	0.622	0.749
11.4	102	88.9	7.94	37.7	9.15	18.6	31.5	53.3	0.621	0.751
9.2	102	88.9	6.35	38.0	9.15	18.7	31.8	53.7	0.621	0.753
20.2	102	76.2	15.9	34.5	17.3	16.2	25.2	48.8	0.609	0.529
16.4	102	76.2	12.7	35.0	17.3	16.2	25.9	49.6	0.606	0.538
12.6	102	76.2	9.53	35.6	17.3	16.4	26.6	50.4	0.604	0.547
10.7	102	76.2	7.94	35.9	17.3	16.5	27.0	50.9	0.603	0.550
8.6	102	76.2	6.35	36.2	17.3	16.6	27.3	51.3	0.603	0.554
16.5	88.9	88.9	12.7	33.8	0.00	17.3	29.0	47.8	0.632	1.00
14.6	88.9	88.9	11.1	34.1	0.00	17.4	29.3	48.2	0.630	1.00
12.6	88.9	88.9	9.53	34.4	0.00	17.4	29.7	48.7	0.629	1.00
10.7	88.9	88.9	7.94	34.7	0.00	17.5	30.0	49.1	0.627	1.00
8.6	88.9	88.9	6.35	35.0	0.00	17.6	30.3	49.5	0.627	1.00

See *Rolled Structural Shapes* for further information on the properties of angles.

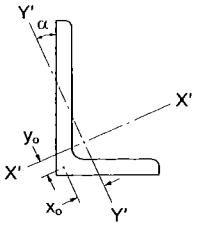
ANGLES
L89 - L76



PROPERTIES ABOUT GEOMETRIC AXES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	x	J	C_w
	kN/m	mm^2	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^3\,mm^4$	$10^9\,mm^6$
L89x76												
x13	0.149	1 940	1.44	23.8	27.3	28.6	0.969	18.0	22.4	22.2	104	0.051 4
x11*	0.132	1 710	1.29	21.2	27.5	28.0	0.871	16.0	22.6	21.7	70.2	0.035 4
x9.5	0.114	1 480	1.13	18.5	27.7	27.4	0.769	14.0	22.8	21.1	44.9	0.023 1
x7.9	0.096 1	1 250	0.970	15.6	27.9	26.9	0.659	11.8	23.0	20.5	26.2	0.013 8
x6.4	0.077 6	1 010	0.796	12.7	28.1	26.3	0.543	9.65	23.2	19.9	13.5	0.007 25
L89x64												
x13	0.137	1 770	1.35	23.1	27.6	30.6	0.568	12.5	17.9	17.9	95.4	0.042 6
x9.5	0.105	1 360	1.07	17.9	28.0	29.5	0.454	9.71	18.3	16.8	41.2	0.019 2
x7.9	0.088 3	1 150	0.912	15.2	28.2	28.9	0.391	8.26	18.5	16.2	24.1	0.011 5
x6.4	0.071 4	929	0.749	12.4	28.4	28.3	0.323	6.75	18.7	15.6	12.5	0.006 04
L76x76												
x13	0.137	1 770	0.923	17.6	22.8	23.7					95.4	0.038 8
x11*	0.121	1 570	0.830	15.6	23.0	23.1					64.4	0.026 8
x9.5	0.105	1 360	0.733	13.7	23.2	22.5					41.2	0.017 5
x7.9	0.088 3	1 150	0.629	11.6	23.4	22.0					24.1	0.010 5
x6.4	0.071 4	929	0.518	9.45	23.6	21.4					12.5	0.005 54
x4.8	0.054 1	703	0.400	7.22	23.9	20.8					5.31	0.002 41
L76x64												
x13*	0.124	1 610	0.867	17.1	23.2	25.4	0.542	12.2	18.3	19.1	86.7	0.030 0
x11*	0.110	1 430	0.780	15.2	23.4	24.8	0.489	10.9	18.5	18.5	58.6	0.020 8
x9.5	0.095 5	1 240	0.690	13.3	23.6	24.3	0.434	9.52	18.7	17.9	37.6	0.013 6
x7.9	0.080 5	1 050	0.592	11.3	23.8	23.7	0.374	8.10	18.9	17.4	22.0	0.008 17
x6.4*	0.065 2	845	0.488	9.20	24.0	23.1	0.309	6.62	19.1	16.8	11.4	0.004 33
x4.8*	0.049 4	643	0.377	7.04	24.2	22.6	0.240	5.08	19.3	16.2	4.85	0.001 89
L76x51												
x13	0.112	1 450	0.800	16.4	23.5	27.5	0.280	7.77	13.9	14.8	78.0	0.024 4
x9.5	0.086 2	1 120	0.638	12.8	23.9	26.4	0.226	6.09	14.2	13.7	33.9	0.011 1
x7.9	0.072 8	942	0.548	10.9	24.1	25.8	0.196	5.20	14.4	13.1	19.9	0.006 67
x6.4	0.059 0	768	0.453	8.88	24.3	25.2	0.163	4.26	14.6	12.5	10.3	0.003 54
x4.8	0.044 8	582	0.350	6.79	24.5	24.6	0.128	3.28	14.8	11.9	4.39	0.001 55

* Not available from Canadian mills

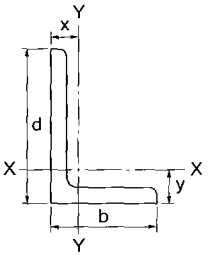


DIMENSIONS AND PROPERTIES ABOUT PRINCIPAL AXES

Mass	d	b	t	Axis X'-X'		Axis Y'-Y'		$\bar{r}_o$	Ω	tan α
				r_x	y_o	r_y	x_o			
kg/m	mm	mm	mm	mm	mm	mm	mm	mm		
15.1	88.9	76.2	12.7	31.5	8.86	15.8	25.8	44.6	0.625	0.714
13.5	88.9	76.2	11.1	31.8	8.85	15.8	26.2	45.0	0.623	0.718
11.7	88.9	76.2	9.53	32.1	8.85	15.9	26.5	45.4	0.622	0.721
9.8	88.9	76.2	7.94	32.4	8.84	15.9	26.8	45.9	0.621	0.724
8.0	88.9	76.2	6.35	32.7	8.84	16.0	27.1	46.3	0.620	0.727
13.9	88.9	63.5	12.7	29.9	16.8	13.6	21.0	42.4	0.600	0.486
10.7	88.9	63.5	9.53	30.5	16.8	13.6	21.7	43.2	0.597	0.496
9.0	88.9	63.5	7.94	30.8	16.8	13.7	22.1	43.7	0.596	0.501
7.3	88.9	63.5	6.35	31.1	16.8	13.8	22.4	44.1	0.596	0.506
14.0	76.2	76.2	12.7	28.6	0.00	14.8	24.5	40.5	0.634	1.00
12.4	76.2	76.2	11.1	28.9	0.00	14.9	24.8	40.9	0.632	1.00
10.7	76.2	76.2	9.53	29.2	0.00	14.9	25.1	41.3	0.630	1.00
9.1	76.2	76.2	7.94	29.5	0.00	15.0	25.5	41.8	0.628	1.00
7.3	76.2	76.2	6.35	29.8	0.00	15.0	25.8	42.2	0.627	1.00
5.5	76.2	76.2	4.76	30.2	0.00	15.1	26.1	42.6	0.626	1.00
12.6	76.2	63.5	12.7	26.4	8.81	13.2	21.1	37.4	0.625	0.667
11.3	76.2	63.5	11.1	26.7	8.80	13.2	21.5	37.8	0.622	0.672
9.8	76.2	63.5	9.53	27.0	8.79	13.3	21.8	38.2	0.620	0.676
8.3	76.2	63.5	7.94	27.3	8.79	13.3	22.2	38.6	0.619	0.680
6.7	76.2	63.5	6.35	27.6	8.79	13.4	22.5	39.1	0.618	0.684
5.1	76.2	63.5	4.76	27.9	8.79	13.5	22.8	39.5	0.617	0.688
11.5	76.2	50.8	12.7	25.0	16.3	10.9	15.9	35.5	0.589	0.414
8.8	76.2	50.8	9.53	25.5	16.4	10.9	16.7	36.3	0.585	0.428
7.4	76.2	50.8	7.94	25.8	16.4	11.0	17.1	36.7	0.584	0.435
6.1	76.2	50.8	6.35	26.1	16.4	11.0	17.5	37.1	0.583	0.440
4.6	76.2	50.8	4.76	26.4	16.4	11.1	17.8	37.5	0.583	0.446

See *Rolled Structural Shapes* for further information on the properties of angles.

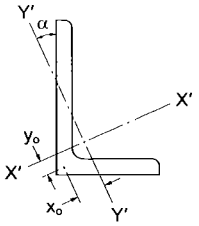
ANGLES
L64 - L38



PROPERTIES ABOUT GEOMETRIC AXES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	x	J	C_w
	kN/m	mm^2	$10^6 mm^4$	$10^3 mm^3$	mm	mm	$10^6 mm^4$	$10^3 mm^3$	mm	mm	$10^3 mm^4$	$10^9 mm^6$
L64x64												
x13	0.112	1 450	0.511	11.9	18.8	20.5					78.0	0.021 2
x9.5	0.086 2	1 120	0.410	9.28	19.1	19.4					33.9	0.009 74
x7.9	0.072 8	942	0.353	7.90	19.3	18.8					19.9	0.005 87
x6.4	0.059 0	768	0.293	6.46	19.5	18.2					10.3	0.003 12
x4.8	0.044 8	581	0.227	4.96	19.8	17.6					4.39	0.001 37
L64x51												
x9.5	0.076 9	1 000	0.380	8.96	19.5	21.1	0.214	5.94	14.6	14.8	30.2	0.007 22
x7.9	0.065 0	845	0.328	7.64	19.7	20.6	0.186	5.08	14.8	14.2	17.7	0.004 36
x6.4	0.052 8	684	0.272	6.25	19.9	20.0	0.155	4.17	15.0	13.6	9.21	0.002 33
x4.8	0.040 1	522	0.212	4.80	20.1	19.4	0.121	3.21	15.2	13.1	3.94	0.001 02
L64x38												
x6.4*	0.046 6	605	0.246	5.96	20.2	22.2	0.067 1	2.35	10.5	9.52	8.13	0.001 86
x4.8*	0.035 5	461	0.192	4.58	20.4	21.6	0.053 0	1.82	10.7	8.94	3.48	0.000 821
L51x51												
x9.5	0.067 5	877	0.199	5.76	15.1	16.2					26.6	0.004 69
x7.9	0.057 2	742	0.173	4.92	15.3	15.6					15.6	0.002 86
x6.4	0.046 6	605	0.145	4.04	15.5	15.0					8.13	0.001 54
x4.8	0.035 5	461	0.113	3.12	15.7	14.5					3.48	0.000 680
x3.2	0.024 1	312	0.079 2	2.14	15.9	13.9					1.05	0.000 213
L51x38												
x6.4	0.040 4	525	0.131	3.87	15.8	16.9	0.063 0	2.28	11.0	10.5	7.05	0.001 07
x4.8	0.030 8	401	0.103	2.99	16.0	16.3	0.049 9	1.77	11.2	9.93	3.02	0.000 477
x3.2	0.021 0	272	0.072 1	2.06	16.3	15.7	0.035 3	1.23	11.4	9.35	0.919	0.000 150
L44x44												
x6.4	0.040 4	525	0.094 9	3.06	13.4	13.4					7.05	0.001 00
x4.8	0.030 9	401	0.074 8	2.36	13.7	12.9					3.03	0.000 448
x3.2	0.021 0	272	0.052 5	1.63	13.9	12.3					0.920	0.000 141
L38x38												
x6.4	0.034 1	444	0.057 7	2.20	11.4	11.8					5.96	0.000 606
x4.8	0.026 2	340	0.045 8	1.71	11.6	11.3					2.57	0.000 273
x4.0*	0.022 1	286	0.039 3	1.45	11.7	11.0					1.51	0.000 164
x3.2	0.017 9	232	0.032 4	1.18	11.8	10.7					0.783	0.000 087

* Not available from Canadian mills

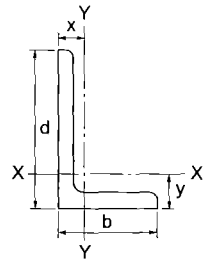


DIMENSIONS AND PROPERTIES ABOUT PRINCIPAL AXES

Mass	d	b	t	Axis X'-X'		Axis Y'-Y'		$\bar{r}_o$	Ω	tan α
				r_x	y_o	r_y	x_o			
kg/m	mm	mm	mm	mm	mm	mm	mm	mm		
11.4	63.5	63.5	12.7	23.5	0.00	12.4	20.0	33.2	0.639	1.00
8.7	63.5	63.5	9.53	24.1	0.00	12.4	20.6	34.0	0.632	1.00
7.4	63.5	63.5	7.94	24.4	0.00	12.4	21.0	34.4	0.630	1.00
6.1	63.5	63.5	6.35	24.7	0.00	12.5	21.3	34.9	0.628	1.00
4.6	63.5	63.5	4.76	25.0	0.00	12.6	21.6	35.3	0.627	1.00
7.9	63.5	50.8	9.53	21.9	8.70	10.7	17.1	31.0	0.618	0.614
6.7	63.5	50.8	7.94	22.2	8.70	10.7	17.4	31.4	0.616	0.620
5.4	63.5	50.8	6.35	22.5	8.70	10.8	17.8	31.9	0.614	0.626
4.2	63.5	50.8	4.76	22.8	8.70	10.9	18.1	32.3	0.612	0.631
4.8	63.5	38.1	6.35	21.2	15.8	8.23	12.4	30.3	0.562	0.357
3.6	63.5	38.1	4.76	21.5	15.8	8.31	12.8	30.7	0.562	0.364
7.0	50.8	50.8	9.53	18.9	0.00	9.89	16.1	26.7	0.637	1.00
5.8	50.8	50.8	7.94	19.2	0.00	9.90	16.4	27.1	0.633	1.00
4.7	50.8	50.8	6.35	19.5	0.00	9.93	16.8	27.6	0.630	1.00
3.6	50.8	50.8	4.76	19.8	0.00	10.0	17.1	28.0	0.628	1.00
2.4	50.8	50.8	3.18	20.1	0.00	10.1	17.4	28.4	0.626	1.00
4.2	50.8	38.1	6.35	17.5	8.53	8.12	13.0	24.7	0.606	0.543
3.1	50.8	38.1	4.76	17.8	8.53	8.18	13.3	25.1	0.604	0.551
2.1	50.8	38.1	3.18	18.0	8.54	8.27	13.7	25.6	0.603	0.558
4.1	44.5	44.5	6.35	16.9	0.00	8.68	14.5	23.9	0.632	1.00
3.1	44.5	44.5	4.76	17.2	0.00	8.73	14.8	24.4	0.629	1.00
2.1	44.5	44.5	3.18	17.5	0.00	8.82	15.2	24.8	0.627	1.00
3.4	38.1	38.1	6.35	14.3	0.00	7.42	12.2	20.2	0.634	1.00
2.7	38.1	38.1	4.76	14.6	0.00	7.45	12.6	20.7	0.630	1.00
2.2	38.1	38.1	3.97	14.8	0.00	7.48	12.7	20.9	0.628	1.00
1.8	38.1	38.1	3.18	14.9	0.00	7.52	12.9	21.1	0.627	1.00

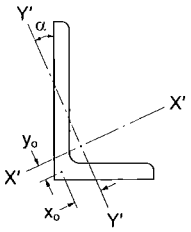
See *Rolled Structural Shapes* for further information on the properties of angles.

ANGLES
L32 - L19



PROPERTIES ABOUT GEOMETRIC AXES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y				Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	x	J	C_w
	kN/m	mm^2	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^3\,mm^4$	$10^9\,mm^6$
L32x32												
x6.4	0.028 0	363	0.032 1	1.49	9.40	10.2					4.89	0.000 334
x4.8	0.021 6	280	0.025 7	1.16	9.58	9.69					2.12	0.000 153
x3.2	0.014 8	192	0.018 4	0.812	9.79	9.12					0.648	0.000 049
L25x25												
x6.4	0.021 7	283	0.015 3	0.915	7.37	8.62					3.79	0.000 156
x4.8	0.016 9	219	0.012 5	0.719	7.54	8.07					1.66	0.000 073
x3.2	0.011 7	151	0.009 05	0.506	7.73	7.52					0.510	0.000 024
L19x19												
x3.2	0.008 57	111	0.003 64	0.276	5.72	5.93					0.375	0.000 010

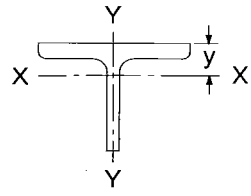


DIMENSIONS AND PROPERTIES ABOUT PRINCIPAL AXES

Mass	d	b	t	Axis X'-X'		Axis Y'-Y'		$\bar{r}_o$	Ω	tan α
				r_x	y_o	r_y	x_o			
kg/m	mm	mm	mm	mm	mm	mm	mm	mm		
2.8	31.8	31.8	6.35	11.8	0.00	6.19	10.0	16.6	0.639	1.00
2.2	31.8	31.8	4.76	12.0	0.00	6.20	10.3	17.0	0.632	1.00
1.5	31.8	31.8	3.18	12.4	0.00	6.25	10.7	17.5	0.628	1.00
2.2	25.4	25.4	6.35	9.17	0.00	4.98	7.70	13.0	0.647	1.00
1.8	25.4	25.4	4.76	9.45	0.00	4.94	8.05	13.4	0.637	1.00
1.2	25.4	25.4	3.18	9.74	0.00	4.97	8.38	13.8	0.630	1.00
0.9	19.1	19.1	3.18	7.18	0.00	3.72	6.14	10.2	0.634	1.00

See *Rolled Structural Shapes* for further information on the properties of angles.

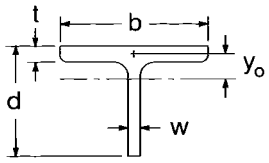
STRUCTURAL TEES
Cut from W Shapes
WT460 - WT345



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y			Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	J	C_w
	kN/m	mm^2	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^6\,mm^4$	$10^3\,mm^3$	mm	$10^3\,mm^4$	$10^9\,mm^6$
WT460											
x224.5	2.20	28 800	533	1 450	137	107	270	1 280	97.2	13 100	76.5
x210	2.06	26 800	497	1 360	136	106	250	1 190	96.8	10 700	62.4
x195	1.90	24 800	460	1 270	136	105	226	1 080	95.7	8 440	49.6
x184	1.79	23 400	434	1 200	136	105	211	1 010	95.1	7 020	41.6
x172	1.68	22 000	408	1 140	137	105	195	933	94.4	5 780	34.6
WT460											
x156.5	1.53	20 000	410	1 200	144	124	85.2	551	65.4	5 750	32.0
x144.5	1.41	18 400	376	1 100	143	122	78.2	508	65.2	4 570	24.9
x135.5	1.33	17 300	353	1 040	143	121	72.6	473	64.8	3 810	20.9
x126.5	1.24	16 200	329	969	143	121	66.8	437	64.3	3 100	17.1
x119	1.17	15 200	309	916	143	121	61.4	403	63.6	2 540	14.4
x111.5	1.10	14 200	292	874	143	122	56.1	369	62.7	2 080	12.4
x100.5	0.986	12 800	265	814	144	126	47.2	311	60.7	1 430	10.0
WT420											
x179.5	1.76	22 800	363	1 080	126	97.5	195	965	92.1	7 530	39.3
x164.5	1.62	21 000	333	997	126	96.9	174	870	91.1	5 780	30.4
x149.5	1.47	19 000	303	912	126	96.1	156	780	90.3	4 320	22.9
WT420											
x113	1.11	14 400	247	778	131	108	56.9	387	62.8	2 560	11.5
x105	1.03	13 400	230	733	131	109	51.3	350	61.8	2 020	9.57
x96.5	0.949	12 400	213	688	131	111	45.1	309	60.5	1 520	7.81
x88	0.863	11 200	196	646	132	114	39.1	268	59.1	1 100	6.35
WT380											
x157	1.55	20 000	254	828	112	86.2	158	822	88.7	5 900	26.0
x142	1.40	18 100	229	750	112	84.8	140	733	87.8	4 360	19.1
x128.5	1.27	16 400	207	684	112	83.9	125	657	87.1	3 250	14.3
WT380											
x98	0.965	12 600	175	613	118	99.0	40.9	305	57.1	2 020	7.63
x92.5	0.906	11 800	165	580	118	99.1	37.5	281	56.5	1 660	6.44
x86.5	0.851	11 000	156	554	119	100	34.4	257	55.7	1 340	5.54
x80.5	0.786	10 200	145	523	119	102	30.4	228	54.5	1 030	4.62
x73.5	0.722	9 400	134	493	120	104	26.4	200	53.1	778	3.83
WT345											
x132.5	1.30	16 800	172	624	101	77.2	116	646	82.7	4 160	15.5
x120	1.18	15 300	156	567	101	76.0	103	580	82.0	3 130	11.5
x108.5	1.07	13 800	140	514	100	74.7	92.6	522	81.5	2 350	8.57

STRUCTURAL TEES
Cut from W Shapes
WT460 - WT345



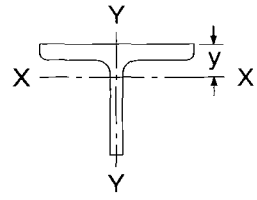
PROPERTIES AND DIMENSIONS

Nominal Mass	Theoretical Mass	Depth d	Flange Width b	Flange Thickness t	Stem Thickness w	β_x	y_o	$\bar{r}_o$	Ω
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm	
224.5	224.3	474	423	42.7	24.0	310	86.0	188	0.792
210	209.7	472	422	39.9	22.5	310	86.0	188	0.791
195	194.0	468	420	36.6	21.3	309	87.1	188	0.785
184	182.8	466	419	34.3	20.3	309	87.8	188	0.782
172	171.7	464	418	32.0	19.3	309	88.6	188	0.778
156.5	156.2	466	309	34.5	21.1	334	107	190	0.686
144.5	144.2	464	308	32.0	19.4	334	106	190	0.688
135.5	135.8	462	307	30.0	18.4	333	106	190	0.685
126.5	126.8	460	306	27.9	17.3	333	107	189	0.683
119	119.0	458	305	25.9	16.5	333	108	190	0.678
111.5	112.0	456	304	23.9	15.9	333	110	191	0.669
100.5	100.6	452	304	20.1	15.2	335	116	195	0.645
179.5	180.0	434	403	35.6	21.1	282	79.7	175	0.793
164.5	165.0	431	401	32.4	19.7	282	80.7	175	0.788
149.5	150.0	428	400	29.2	18.2	282	81.5	175	0.783
113	113.4	426	294	26.8	16.1	305	95.0	173	0.700
105	105.4	423	293	24.4	15.4	305	96.9	174	0.691
96.5	96.8	420	292	21.7	14.7	305	99.9	176	0.677
88	88.0	418	292	18.8	14.0	307	104	179	0.659
157	157.6	393	384	33.4	19.7	250	69.5	159	0.809
142	142.5	390	382	30.1	18.0	250	69.8	159	0.807
128.5	129.3	387	381	27.1	16.6	249	70.4	159	0.803
98	98.4	385	268	25.4	15.6	275	86.3	157	0.698
92.5	92.4	383	267	23.6	14.9	275	87.3	157	0.693
86.5	86.8	381	267	21.6	14.4	275	89.3	159	0.683
80.5	80.2	379	266	19.3	13.8	276	92.2	160	0.669
73.5	73.6	377	265	17.0	13.2	277	95.7	162	0.652
132.5	132.8	353	358	30.2	18.4	222	62.1	144	0.815
120	120.6	351	356	27.4	16.8	222	62.3	144	0.813
108.5	109.5	348	355	24.8	15.4	221	62.3	143	0.812

Note: β_x is positive when the flange is in flexural compression, and negative otherwise.

See S16-14 Clauses 13.3.2 and 13.6 and the Commentary in Part 2 for further information on section properties.

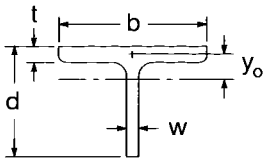
STRUCTURAL TEES
Cut from W Shapes
WT345 - WT265



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y			Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^4$	$10^9\ mm^6$
WT345											
x85	0.834	10 800	121	465	106	87.1	33.1	259	55.3	1 520	4.72
x76	0.746	9 700	107	415	105	85.8	28.9	227	54.6	1 100	3.38
x70	0.685	8 950	99.3	389	106	86.5	25.9	204	53.9	831	2.72
x62.5	0.616	8 000	89.9	359	106	88.3	22.0	174	52.5	584	2.10
WT305											
x120.5	1.19	15 400	123	491	89.2	68.6	92.1	560	77.3	3 840	11.8
x108.5	1.07	13 800	110	444	88.8	67.4	81.6	497	76.7	2 790	8.58
x97.5	0.959	12 400	99.4	408	89.3	67.4	71.2	435	75.6	1 980	6.23
x87	0.854	11 100	88.3	366	89.2	66.5	61.9	381	74.7	1 400	4.40
x77.5	0.760	9 850	78.9	329	89.4	66.1	53.9	333	73.9	975	3.10
WT305											
x70	0.688	8 950	77.8	334	93.3	76.2	22.6	196	50.3	1 090	2.58
x62.5	0.613	7 950	69.0	299	93.1	75.4	19.7	172	49.7	769	1.84
x56.5	0.556	7 250	63.2	278	93.5	76.3	17.1	150	48.7	559	1.43
x50.5	0.499	6 500	57.4	256	94.1	77.8	14.7	129	47.7	389	1.09
WT305											
x46	0.453	5 850	54.8	256	96.5	87.9	7.20	80.5	35.0	354	1.05
x41	0.402	5 250	48.7	231	96.6	89.1	6.04	67.9	34.0	243	0.785
WT265											
x109.5	1.07	14 000	85.0	388	78.1	60.8	78.4	493	75.0	3 200	8.74
x98	0.964	12 500	75.2	345	77.5	59.0	69.3	438	74.4	2 340	6.28
x91	0.891	11 600	69.3	317	77.3	57.9	63.6	404	74.1	1 860	4.94
x82.5	0.811	10 600	62.2	288	76.9	56.7	56.8	363	73.4	1 410	3.70
x75	0.739	9 600	56.5	261	76.7	55.5	51.4	330	73.2	1 080	2.79
WT265											
x69	0.679	8 800	60.2	293	82.6	69.6	19.3	181	46.8	1 250	2.50
x61.5	0.604	7 850	52.6	258	81.9	67.6	16.9	159	46.4	899	1.75
x54.5	0.535	6 950	46.2	227	81.5	66.1	14.8	140	46.1	630	1.20
x50.5	0.498	6 450	43.0	212	81.6	65.9	13.5	128	45.6	507	0.973
x46	0.454	5 900	39.3	196	81.7	66.0	11.9	114	44.9	380	0.754
x41	0.403	5 250	35.0	178	81.9	66.9	10.1	97.0	44.0	258	0.555
WT265											
x42.5	0.416	5 400	37.8	194	83.7	72.7	6.32	76.1	34.2	367	0.675
x37	0.367	4 740	33.7	177	84.1	74.7	5.21	62.7	33.1	239	0.516
x33	0.323	4 200	29.8	159	84.3	76.1	4.29	52.0	32.0	159	0.380

STRUCTURAL TEES
Cut from W Shapes
WT345 - WT265



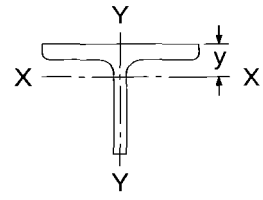
PROPERTIES AND DIMENSIONS

Nominal Mass	Theoretical Mass	Depth d	Flange Width b	Flange Thickness t	Stem Thickness w	β_x	y_o	$\bar{r}_o$	Ω
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm	
85	85.0	347	256	23.6	14.5	245	75.3	141	0.715
76	76.0	344	254	21.1	13.1	244	75.3	140	0.713
70	69.9	342	254	18.9	12.4	244	77.1	141	0.703
62.5	62.8	339	253	16.3	11.7	244	80.2	143	0.685
120.5	120.9	318	329	31.0	17.9	195	53.1	129	0.832
108.5	108.9	314	328	27.7	16.5	194	53.5	129	0.828
97.5	97.8	311	327	24.4	15.4	193	55.2	129	0.818
87	87.1	308	325	21.6	14.0	193	55.7	129	0.813
77.5	77.5	306	324	19.0	12.7	193	56.6	129	0.808
70	70.1	309	230	22.2	13.1	216	65.1	124	0.726
62.5	62.5	306	229	19.6	11.9	215	65.6	124	0.721
56.5	56.7	304	228	17.3	11.2	216	67.7	125	0.708
50.5	50.9	302	228	14.9	10.5	216	70.3	127	0.692
46	46.2	302	179	15.0	10.9	227	80.4	130	0.620
41	41.0	300	178	12.8	10.0	228	82.7	132	0.606
109.5	109.5	280	318	29.2	18.3	163	46.2	118	0.846
98	98.3	277	316	26.3	16.5	163	45.9	117	0.846
91	90.9	276	315	24.4	15.2	163	45.7	116	0.846
82.5	82.7	273	313	22.2	14.0	162	45.6	116	0.845
75	75.4	272	312	20.3	12.7	162	45.4	115	0.845
69	69.2	275	214	23.6	14.7	189	57.8	111	0.730
61.5	61.6	272	212	21.2	13.1	188	57.0	110	0.731
54.5	54.6	270	211	18.8	11.6	188	56.7	109	0.732
50.5	50.8	269	210	17.4	10.9	188	57.2	110	0.728
46	46.3	267	209	15.6	10.2	188	58.2	110	0.719
41	41.1	264	209	13.3	9.5	187	60.2	111	0.704
42.5	42.4	268	166	16.5	10.3	197	64.4	111	0.663
37	37.4	265	166	13.6	9.7	197	67.9	113	0.639
33	32.9	263	165	11.4	8.9	198	70.4	114	0.621

Note: β_x is positive when the flange is in flexural compression, and negative otherwise.

See S16-14 Clauses 13.3.2 and 13.6 and the Commentary in Part 2 for further information on section properties.

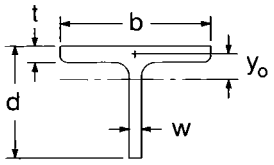
STRUCTURAL TEES
Cut from W Shapes
WT230 - WT205



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y			Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^4$	$10^9\ mm^6$
WT230											
x88.5	0.869	11 300	49.4	260	66.1	51.4	52.5	367	68.2	2 190	4.66
x79	0.773	10 000	43.5	231	65.8	50.1	45.7	322	67.4	1 550	3.25
x72	0.709	9 200	39.0	208	65.1	48.4	41.8	295	67.4	1 220	2.49
x64	0.630	8 150	34.5	185	64.9	47.2	36.7	260	66.9	855	1.74
x56.5	0.555	7 200	30.2	162	64.7	46.0	31.7	226	66.3	589	1.18
WT230											
x53	0.519	6 700	32.8	185	69.8	57.5	12.6	130	43.2	725	1.07
x48.5	0.473	6 150	29.4	166	69.1	55.8	11.4	118	43.1	562	0.802
x44.5	0.438	5 700	27.0	152	68.8	54.8	10.5	109	42.9	452	0.630
x41	0.402	5 250	24.8	141	68.9	54.8	9.31	97.5	42.2	344	0.493
x37	0.364	4 740	22.4	128	68.8	54.1	8.30	87.4	41.9	257	0.366
WT230											
x34	0.336	4 360	21.8	128	70.6	59.2	4.70	61.1	32.8	253	0.323
x30	0.292	3 800	18.8	111	70.4	58.3	3.98	52.0	32.4	167	0.213
x26	0.255	3 320	16.7	102	71.0	60.8	3.17	41.7	30.9	104	0.160
WT205											
x74.5	0.732	9 500	32.2	188	58.2	44.9	38.8	293	63.9	1 600	2.79
x66	0.648	8 450	28.0	165	57.7	43.3	33.7	256	63.3	1 120	1.92
x57	0.561	7 300	23.8	141	57.2	41.6	28.6	219	62.7	740	1.24
x50	0.489	6 350	20.3	121	56.6	39.8	24.8	191	62.5	495	0.810
WT205											
x42.5	0.417	5 400	20.4	127	61.3	49.3	9.02	99.6	40.8	461	0.536
x37	0.368	4 740	17.8	112	61.1	48.2	7.79	86.6	40.4	317	0.366
x33.5	0.331	4 290	15.8	100	60.7	47.3	6.90	77.0	40.1	233	0.265
x30	0.292	3 800	13.9	87.8	60.5	46.1	6.02	67.7	39.9	163	0.180
x27	0.262	3 420	12.8	83.3	61.4	48.1	5.05	57.0	38.5	112	0.139
WT205											
x23	0.227	2 940	11.5	76.3	62.4	51.5	2.57	36.7	29.5	95.6	0.099 0
x19.5	0.192	2 480	9.95	67.9	63.1	53.5	2.02	28.8	28.4	55.0	0.067 5

STRUCTURAL TEES
Cut from W Shapes
WT230 - WT205



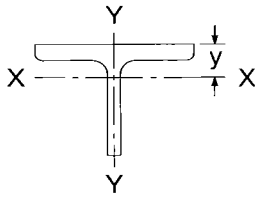
PROPERTIES AND DIMENSIONS

Nominal Mass	Theoretical Mass	Depth d	Flange Width b	Flange Thickness t	Stem Thickness w	β_x	y_o	$\bar{r}_o$	Ω
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm	
88.5	88.6	241	286	26.9	16.6	135	38.0	102	0.862
79	78.8	238	284	23.9	15.0	135	38.1	102	0.859
72	72.3	236	283	22.1	13.6	134	37.3	101	0.863
64	64.3	234	282	19.6	12.2	134	37.4	100	0.861
56.5	56.6	232	280	17.3	10.8	134	37.4	99.9	0.860
53	52.9	235	194	20.6	12.6	158	47.2	94.6	0.752
48.5	48.3	233	193	19.0	11.4	158	46.3	93.7	0.756
44.5	44.7	232	192	17.7	10.5	157	45.9	93.2	0.757
41	41.0	230	191	16.0	9.9	157	46.8	93.4	0.749
37	37.1	229	190	14.5	9.0	157	46.8	93.2	0.747
34	34.3	230	154	15.4	9.1	165	51.5	93.4	0.696
30	29.8	228	153	13.3	8.0	165	51.7	93.2	0.692
26	26.0	225	152	10.8	7.6	165	55.4	95.2	0.661
74.5	74.7	216	265	25.0	14.9	118	32.4	92.3	0.877
66	66.1	213	263	22.2	13.3	117	32.2	91.5	0.876
57	57.2	210	261	19.3	11.6	116	31.9	90.6	0.876
50	49.8	208	260	16.9	10.0	116	31.4	90.0	0.878
42.5	42.5	209	181	18.2	10.9	139	40.2	83.9	0.770
37	37.5	207	180	16.0	9.7	139	40.2	83.6	0.768
33.5	33.7	205	179	14.4	8.8	138	40.1	83.0	0.767
30	29.8	204	178	12.8	7.7	138	39.7	82.6	0.769
27	26.7	202	177	10.9	7.5	138	42.6	84.0	0.743
23	23.1	202	140	11.2	7.0	146	45.9	82.9	0.694
19.5	19.6	200	140	8.8	6.4	147	49.1	84.9	0.665

Note: β_x is positive when the flange is in flexural compression, and negative otherwise.

See S16-14 Clauses 13.3.2 and 13.6 and the Commentary in Part 2 for further information on section properties.

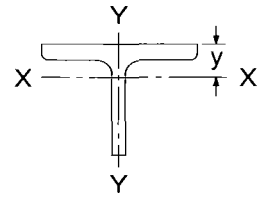
STRUCTURAL TEES
Cut from W Shapes
WT180



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y			Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^4$	$10^9\ mm^6$
WT180											
x543	5.34	69 500	308	1 570	66.7	88.2	981	4 320	119	299 000	1 410
x495	4.86	63 000	259	1 350	64.1	82.7	867	3 870	117	232 000	1 060
x450	4.43	57 500	219	1 160	61.7	77.5	767	3 470	115	180 000	791
x409	4.02	52 500	184	997	59.4	72.4	678	3 100	114	138 000	585
x372	3.65	47 400	156	864	57.4	67.9	600	2 780	112	106 000	434
x338.5	3.33	43 200	134	754	55.8	63.9	534	2 500	111	81 500	325
x317	3.11	40 300	119	677	54.3	61.0	491	2 320	110	68 300	266
x296	2.91	37 800	108	620	53.5	58.6	451	2 140	109	56 400	215
x275.5	2.70	35 200	95.9	557	52.3	55.8	412	1 970	108	45 900	172
x254.5	2.50	32 600	84.8	499	51.1	53.0	377	1 810	108	36 700	135
x231.5	2.27	29 500	73.8	439	50.0	50.1	335	1 630	107	28 100	100
x210.5	2.07	26 800	64.2	387	48.9	47.3	300	1 470	106	21 600	75.5
x191	1.87	24 400	55.4	338	47.7	44.5	268	1 320	105	16 300	56.0
x173.5	1.70	22 100	48.5	300	46.8	42.1	240	1 190	104	12 300	41.6
x157	1.54	20 000	42.6	266	46.2	39.9	213	1 060	103	9 210	30.3
x143.5	1.41	18 300	37.6	236	45.3	37.9	194	972	103	7 220	23.5
x131	1.29	16 700	33.9	215	45.0	36.4	175	880	102	5 500	17.6
x118.5	1.16	15 000	29.1	187	44.0	34.3	155	786	102	4 080	12.8
x108	1.06	13 800	26.2	169	43.6	32.9	141	717	101	3 150	9.79
WT180											
x98	0.964	12 500	24.0	157	43.8	32.7	114	611	95.6	2 560	7.17
x89.5	0.879	11 400	21.6	141	43.5	31.4	103	554	95.2	1 950	5.40
x81	0.794	10 300	18.8	124	42.7	29.8	92.8	500	94.9	1 470	4.00
x73.5	0.723	9 400	17.0	113	42.6	28.9	83.6	452	94.3	1 110	2.98
x67	0.657	8 550	15.2	101	42.2	27.8	75.4	409	94.0	839	2.22
WT180											
x61	0.597	7 750	17.3	118	47.2	35.5	30.7	239	62.9	1 050	1.51
x55	0.540	7 050	15.0	102	46.2	33.5	27.8	218	63.0	799	1.12
x50.5	0.497	6 450	13.7	93.7	46.1	32.7	25.3	199	62.6	626	0.863
x45.5	0.446	5 750	12.1	83.5	45.8	31.7	22.4	176	62.2	456	0.617
WT180											
x39.5	0.388	5 050	11.5	81.2	47.8	35.0	12.1	118	48.9	405	0.394
x36	0.350	4 550	10.3	73.1	47.5	34.2	10.7	105	48.5	300	0.286
x32	0.314	4 060	9.17	65.2	47.4	33.4	9.42	92.8	48.1	218	0.202

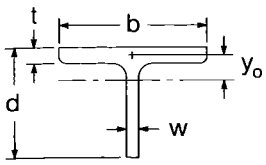
STRUCTURAL TEES
Cut from W Shapes
WT180 - WT155



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y			Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^4$	$10^9\ mm^6$
WT180											
x28.5	0.278	3 620	9.70	69.4	51.9	39.2	5.56	64.7	39.3	166	0.150
x25.5	0.248	3 220	8.73	62.8	52.0	39.0	4.84	56.6	38.7	118	0.107
x22.5	0.221	2 860	7.96	58.6	52.7	40.2	4.09	47.8	37.8	79.4	0.078 4
WT180											
x19.5	0.192	2 480	7.28	54.7	54.0	43.8	1.88	29.3	27.4	74.9	0.056 4
x16.5	0.161	2 100	6.19	47.6	54.5	44.8	1.45	22.9	26.4	42.6	0.035 7
WT155											
x250	2.46	31 800	79.7	513	50.0	58.7	247	1 450	88.0	50 100	130
x227	2.23	28 900	68.2	446	48.6	55.2	218	1 300	86.8	38 300	95.7
x207.5	2.04	26 400	59.6	397	47.4	52.2	195	1 170	85.9	29 500	71.9
x187.5	1.84	23 900	50.5	343	46.0	48.9	172	1 040	84.8	22 300	52.5
x171	1.68	21 800	43.8	302	44.8	46.1	155	946	84.2	17 300	40.0
x156.5	1.54	20 000	38.5	269	43.9	43.8	139	852	83.3	13 400	30.1
x141.5	1.39	18 000	33.1	233	42.8	41.1	123	764	82.6	10 100	22.1
x126.5	1.24	16 200	28.1	202	41.8	38.6	107	673	81.6	7 340	15.6
x113	1.11	14 400	24.3	176	41.0	36.4	94.6	597	81.0	5 350	11.1
x101	0.994	12 800	21.3	156	40.7	34.6	82.9	527	80.1	3 850	7.82
x89.5	0.877	11 400	18.2	135	39.9	32.5	71.9	459	79.4	2 680	5.30
x79	0.772	10 000	15.2	114	38.9	30.3	62.4	402	78.9	1 880	3.63
x71.5	0.702	9 100	13.5	101	38.4	28.9	56.3	365	78.6	1 430	2.72
x64.5	0.635	8 250	12.0	91.8	38.2	27.9	50.2	326	78.0	1 060	1.98
x59	0.576	7 500	10.7	82.0	37.8	26.8	45.1	294	77.6	798	1.46
x53.5	0.525	6 800	9.71	74.7	37.7	26.0	40.6	265	77.2	605	1.09
x48.5	0.475	6 150	8.59	66.6	37.3	25.0	36.4	239	76.9	454	0.804
WT155											
x43	0.423	5 500	7.93	61.5	38.0	26.1	22.3	175	63.6	436	0.559
x39.5	0.387	5 050	7.38	58.1	38.3	26.1	20.0	157	63.0	327	0.413
WT155											
x37	0.363	4 740	7.80	62.3	40.7	29.7	11.7	114	49.9	358	0.332
x33.5	0.325	4 260	6.88	55.3	40.3	28.8	10.3	101	49.5	260	0.236
x30	0.290	3 800	6.05	48.7	40.0	27.7	9.14	90.1	49.2	189	0.167
WT155											
x26	0.257	3 320	6.66	52.9	44.7	33.1	5.13	61.4	39.2	154	0.118
x22.5	0.219	2 840	5.64	45.2	44.5	32.2	4.27	51.5	38.7	95.5	0.072 3
x19.5	0.190	2 470	4.82	39.0	44.2	31.4	3.63	44.0	38.4	62.8	0.046 8

STRUCTURAL TEES
Cut from W Shapes
WT180 - WT155



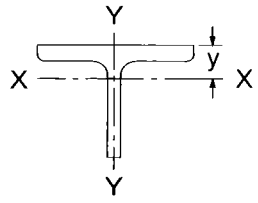
PROPERTIES AND DIMENSIONS

Nominal Mass	Theoretical Mass	Depth d	Flange Width b	Flange Thickness t	Stem Thickness w	β_x	y_o	$\bar{r}_o$	Ω
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm	
28.5	28.3	179	172	13.1	7.9	116	32.6	72.8	0.799
25.5	25.3	178	171	11.6	7.2	116	33.2	72.9	0.793
22.5	22.5	176	171	9.8	6.9	117	35.3	73.8	0.771
19.5	19.6	177	128	10.7	6.5	126	38.5	71.8	0.712
16.5	16.4	175	127	8.5	5.8	127	40.6	72.9	0.690
250	250.4	214	340	75.1	45.1	56.3	21.1	103	0.958
227	227.1	208	336	68.7	41.3	54.9	20.8	102	0.958
207.5	207.7	202	334	62.7	38.9	52.7	20.8	100	0.957
187.5	187.5	196	330	57.2	35.4	50.7	20.3	98.6	0.958
171	171.6	191	328	52.6	32.6	48.4	19.8	97.4	0.959
156.5	156.6	187	325	48.3	30.0	47.7	19.6	96.2	0.958
141.5	141.6	183	322	44.1	26.9	46.7	19.1	95.0	0.960
126.5	126.4	178	319	39.6	24.4	44.9	18.8	93.6	0.960
113	113.4	174	317	35.6	22.1	43.5	18.6	92.6	0.960
101	101.4	171	315	31.8	20.1	43.4	18.7	91.8	0.959
89.5	89.4	167	313	28.1	18.0	41.9	18.5	90.8	0.959
79	78.7	164	310	25.1	15.5	41.3	17.8	89.7	0.961
71.5	71.6	162	309	22.9	14.0	40.7	17.5	89.2	0.962
64.5	64.8	159	308	20.6	13.1	39.2	17.6	88.6	0.960
59	58.7	157	307	18.7	11.9	38.5	17.4	88.1	0.961
53.5	53.5	156	306	17.0	10.9	39.0	17.5	87.7	0.960
48.5	48.4	154	305	15.4	9.9	38.2	17.3	87.2	0.961
43	43.2	155	254	16.3	9.1	61.5	18.0	76.3	0.944
39.5	39.4	153	254	14.6	8.8	60.9	18.8	76.1	0.939
37	37.0	155	205	16.3	9.4	80.5	21.6	67.9	0.899
33.5	33.2	153	204	14.6	8.5	79.9	21.5	67.4	0.898
30	29.6	152	203	13.1	7.5	80.1	21.2	66.9	0.900
26	26.2	159	167	13.2	7.6	98.0	26.5	65.1	0.835
22.5	22.3	157	166	11.2	6.6	97.7	26.6	64.7	0.831
19.5	19.4	155	165	9.7	5.8	97.0	26.5	64.3	0.830

Note: β_x is positive when the flange is in flexural compression, and negative otherwise.

See S16-14 Clauses 13.3.2 and 13.6 and the Commentary in Part 2 for further information on section properties.

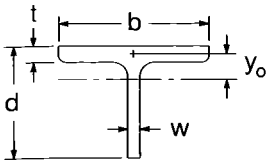
STRUCTURAL TEES
Cut from W Shapes
WT155 - WT100



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y			Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	J	C_w
	kN/m	mm^2	$10^6\,mm^4$	$10^3\,mm^3$	mm	mm	$10^6\,mm^4$	$10^3\,mm^3$	mm	$10^3\,mm^4$	$10^9\,mm^6$
WT155											
x16.5	0.161	2 090	4.92	42.7	48.5	41.7	0.959	18.8	21.4	60.7	0.037 1
x14	0.139	1 800	4.27	37.8	48.6	42.1	0.790	15.5	20.9	37.8	0.025 7
x12	0.117	1 520	3.67	33.8	49.1	44.6	0.578	11.4	19.5	21.2	0.018 5
x10.5	0.104	1 340	3.25	30.3	49.1	45.0	0.491	9.73	19.1	14.6	0.013 6
WT125											
x83.5	0.821	10 600	12.1	106	33.7	30.8	49.4	373	68.0	3 140	4.58
x74.5	0.730	9 500	10.2	91.3	32.9	28.8	43.1	328	67.4	2 250	3.19
x65.5	0.643	8 350	8.73	78.7	32.3	27.0	37.2	285	66.7	1 560	2.15
x57.5	0.563	7 300	7.34	66.8	31.7	25.2	32.0	247	66.2	1 060	1.43
x50.5	0.496	6 450	6.17	57.0	31.0	23.6	27.7	216	65.6	741	0.973
x44.5	0.439	5 700	5.39	50.2	30.7	22.5	24.2	189	65.1	517	0.664
x40	0.393	5 100	4.61	43.2	30.1	21.2	21.6	169	65.0	377	0.477
x36.5	0.358	4 640	4.17	39.2	30.0	20.5	19.4	153	64.6	287	0.356
WT125											
x33.5	0.330	4 290	4.34	41.0	31.8	23.2	11.1	109	51.0	312	0.263
x29	0.286	3 710	3.68	35.5	31.5	22.2	9.42	92.8	50.4	204	0.167
x24.5	0.241	3 130	3.25	32.0	32.2	22.3	7.56	74.9	49.2	120	0.094 9
WT125											
x22.5	0.220	2 850	3.86	36.7	36.7	27.8	3.52	47.5	35.1	130	0.074 1
x19.5	0.190	2 460	3.26	31.3	36.4	26.7	2.97	40.4	34.7	84.1	0.046 7
x16.5	0.160	2 100	2.85	28.1	37.0	27.3	2.36	32.4	33.7	49.1	0.028 4
WT125											
x14	0.140	1 820	2.79	28.7	39.2	32.6	0.888	17.4	22.1	48.2	0.021 6
x12.5	0.124	1 610	2.56	26.8	39.8	33.6	0.746	14.6	21.5	32.5	0.016 6
x11	0.110	1 420	2.27	24.5	39.9	34.6	0.613	12.0	20.7	21.6	0.012 6
x9	0.087 7	1 140	1.83	20.0	40.1	34.8	0.457	9.04	20.0	11.2	0.006 8
WT100											
x50	0.488	6 350	4.61	50.6	27.0	23.9	18.3	174	53.7	1 040	0.949
x43	0.425	5 500	3.80	42.8	26.2	22.2	15.7	150	53.3	694	0.617
x35.5	0.350	4 550	2.86	32.5	25.1	19.8	12.7	123	52.8	407	0.349
x29.5	0.291	3 780	2.39	27.7	25.1	18.7	10.2	99.5	52.0	231	0.191
x26	0.256	3 320	2.00	23.4	24.5	17.5	8.92	87.4	51.8	161	0.130
x23	0.226	2 940	1.79	21.1	24.7	17.0	7.67	75.6	51.2	110	0.086 6
WT100											
x21	0.205	2 660	1.78	21.2	25.9	18.8	4.50	54.2	41.2	111	0.061 7
x18	0.176	2 280	1.48	17.7	25.4	17.7	3.82	46.3	40.9	72.5	0.038 9
WT100											
x15.5	0.154	1 980	1.63	19.4	28.5	21.1	2.05	30.6	32.0	59.4	0.025 0
x13.5	0.131	1 700	1.43	17.3	29.1	21.3	1.65	24.8	31.2	35.5	0.015 1

STRUCTURAL TEES
Cut from W Shapes
WT155 - WT100



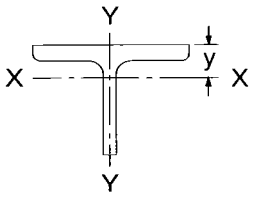
PROPERTIES AND DIMENSIONS

Nominal Mass	Theoretical Mass	Depth d	Flange Width b	Flange Thickness t	Stem Thickness w	β_x	y_o	$\bar{r}_o$	Ω
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm	
16.5	16.4	157	102	10.8	6.6	114	36.3	64.3	0.681
14	14.2	155	102	8.9	6.0	113	37.6	64.9	0.664
12	11.9	153	101	6.7	5.6	115	41.3	67.1	0.621
10.5	10.6	152	101	5.7	5.1	115	42.2	67.5	0.609
83.5	83.8	145	265	31.8	19.2	34.3	14.9	77.4	0.963
74.5	74.5	141	263	28.4	17.3	32.5	14.6	76.4	0.963
65.5	65.6	138	261	25.1	15.4	31.9	14.5	75.6	0.963
57.5	57.4	135	259	22.1	13.5	31.0	14.2	74.7	0.964
50.5	50.6	132	257	19.6	11.9	29.8	13.8	73.9	0.965
44.5	44.8	130	256	17.3	10.7	29.5	13.9	73.4	0.964
40	40.1	128	255	15.6	9.4	28.4	13.4	72.9	0.966
36.5	36.5	127	254	14.2	8.6	28.7	13.4	72.5	0.966
33.5	33.6	129	204	15.7	8.9	52.9	15.4	62.0	0.939
29	29.1	126	203	13.5	8.0	51.6	15.5	61.4	0.937
24.5	24.6	124	202	11.0	7.4	52.3	16.8	61.1	0.925
22.5	22.5	133	148	13.0	7.6	78.6	21.3	55.1	0.851
19.5	19.3	131	147	11.2	6.6	78.1	21.1	54.5	0.850
16.5	16.4	129	146	9.1	6.1	78.3	22.7	54.9	0.829
14	14.2	130	102	10.0	6.4	90.0	27.6	52.9	0.727
12.5	12.7	129	102	8.4	6.1	90.7	29.4	53.9	0.702
11	11.2	127	102	6.9	5.8	90.6	31.1	54.7	0.676
9	8.9	126	101	5.3	4.8	91.3	32.1	55.1	0.660
50	49.8	115	210	23.7	14.5	28.3	12.1	61.3	0.961
43	43.4	111	209	20.6	13.0	25.9	11.9	60.6	0.961
35.5	35.7	108	206	17.4	10.2	25.4	11.1	59.5	0.965
29.5	29.7	105	205	14.2	9.1	24.7	11.6	58.9	0.961
26	26.1	103	204	12.6	7.9	23.6	11.2	58.4	0.963
23	23.0	102	203	11.0	7.2	24.2	11.5	58.0	0.961
21	20.9	103	166	11.8	7.2	41.8	12.9	50.3	0.935
18	18.0	101	165	10.2	6.2	41.0	12.6	49.7	0.936
15.5	15.7	105	134	10.2	6.4	57.1	16.0	45.8	0.877
13.5	13.3	104	133	8.4	5.8	57.9	17.1	45.9	0.862

Note: β_x is positive when the flange is in flexural compression, and negative otherwise.

See S16-14 Clauses 13.3.2 and 13.6 and the Commentary in Part 2 for further information on section properties.

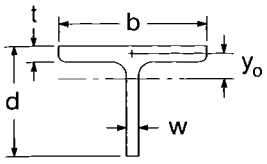
STRUCTURAL TEES
Cut from W Shapes
WT100 - WT50



PROPERTIES

Designation	Dead Load	Area	Axis X-X				Axis Y-Y			Torsional Constant	Warping Constant
			I_x	S_x	r_x	y	I_y	S_y	r_y	J	C_w
	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	mm	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^4$	$10^9\ mm^6$
WT100											
x11	0.110	1 430	1.36	17.5	30.9	25.3	0.710	13.9	22.3	28.1	0.010 2
x9.5	0.095 6	1 240	1.22	16.0	31.3	26.1	0.577	11.3	21.6	18.0	0.007 2
x7.5	0.073 3	955	0.885	11.7	30.5	24.1	0.434	8.69	21.4	8.75	0.003 0
WT75											
x18.5	0.182	2 370	0.947	14.5	20.0	15.5	3.53	45.9	38.7	95.5	0.045 9
x15	0.146	1 900	0.725	11.3	19.6	14.2	2.78	36.3	38.3	49.9	0.023 2
x11	0.109	1 430	0.581	9.38	20.2	14.1	1.93	25.4	36.9	20.6	0.009 1
WT75											
x12	0.117	1 530	0.708	11.3	21.5	17.3	0.913	17.9	24.5	46.0	0.011 4
x9	0.087 9	1 140	0.544	9.16	21.8	17.1	0.629	12.3	23.5	18.3	0.004 7
x7	0.066 5	865	0.395	6.68	21.4	15.8	0.459	9.18	23.0	8.35	0.002 0
WT65											
x14	0.138	1 800	0.426	8.02	15.4	12.4	1.91	29.8	32.7	63.4	0.020 8
x12	0.116	1 520	0.350	6.74	15.3	11.6	1.55	24.5	32.2	38.0	0.012 0
WT50											
x9.5	0.095 1	1 240	0.221	5.28	13.4	11.2	0.803	15.6	25.5	31.2	0.006 3

STRUCTURAL TEES
Cut from W Shapes
WT100 - WT50



PROPERTIES AND DIMENSIONS

Nominal Mass	Theoretical Mass	Depth d	Flange Width b	Flange Thickness t	Stem Thickness w	β_x	y_o	$\bar{r}_o$	Ω
kg/m	kg/m	mm	mm	mm	mm	mm	mm	mm	
11	11.2	103	102	8.0	6.2	67.0	21.3	43.6	0.761
9.5	9.7	102	102	6.5	5.8	67.6	22.8	44.3	0.734
7.5	7.5	100	100	5.2	4.3	66.7	21.5	43.0	0.750
18.5	18.6	81.0	154	11.6	8.1	21.0	9.68	44.6	0.953
15	14.9	78.5	153	9.3	6.6	19.9	9.51	44.0	0.953
11	11.2	76.0	152	6.6	5.8	20.1	10.8	43.4	0.938
12	12.0	80.0	102	10.3	6.6	42.0	12.1	34.8	0.878
9	9.0	76.5	102	7.1	5.8	41.2	13.5	34.8	0.848
7	6.8	75.0	100	5.5	4.3	41.2	13.0	34.0	0.853
14	14.0	65.5	128	10.9	6.9	13.8	6.96	36.8	0.964
12	11.8	63.5	127	9.1	6.1	13.1	7.07	36.3	0.962
9.5	9.7	53.0	103	8.8	7.1	12.1	6.80	29.6	0.947

Note: β_x is positive when the flange is in flexural compression, and negative otherwise.

See S16-14 Clauses 13.3.2 and 13.6 and the Commentary in Part 2 for further information on section properties.

HOLLOW STRUCTURAL SECTIONS

General

Manufacturers of Hollow Structural Sections (HSS) may produce HSS to meet the requirements of either CSA Standard G40.20/G40.21, ASTM Specification A500 or ASTM A1085. The availability of HSS to these standards or specifications varies across the different regions of Canada. Round sections produced in accordance with common pipe specifications may sometimes be used as structural members, but are not classified as HSS.

For information on steel grades, manufacturing tolerances and Class of HSS, see *Standard Mill Practice* in Part 6.

Availability

Since the sections listed in this Handbook are those best suited for structural applications, designers may wish to consult the catalogs of HSS producers supplying HSS to their region of the country for sections not listed herein.

When a particular Hollow Structural Section is listed under both CSA G40 and ASTM A500 steel grades in Part 6, choosing the most readily available grade for a project may depend on the project location. In Ontario, most HSS sizes are available in either G40 and A500 grades. In western Canada, square and rectangular sections are more readily available in G40, while round sections are mainly available in A500. In Atlantic Canada and in Quebec, A500 is the prevalent grade.

A number of sizes are identified with an asterisk (*), denoting imported sections which are produced by non-Canadian mills and may be subject to a cost premium.

HOLLOW STRUCTURAL SECTIONS PRODUCED TO CSA G40.20

General

Hollow Structural Sections (HSS) are produced in Canada to the requirements of the CSA G40.20 Standard to either Class C or Class H, from steel meeting the requirements of the CSA G40.21 material Standard. The common grade of steel used is G40.21-350W.

Manufacture

HSS produced to the CSA G40.20 Standard may be manufactured using either a seamless or a welding process. Seamless products are produced by piercing solid material to form a tube or by an extrusion-type process (but are uncommon). Welded products are manufactured from flat-rolled steel which is formed and joined by various welding processes into a tubular shape. The tubular shape is then either cold-formed or hot-formed to the final shape and, if cold-formed, may be subsequently stress-relieved. Class H sections are either hot-formed to final shape (uncommon today), or are cold-formed to final shape and then stress-relieved. Class C sections are generally more readily available than Class H sections, although Class H sections have greater resistance in axial compression. Outside dimensions for HSS are constant for all sizes in the same size range, with the inside dimensions changing with material thickness.

Properties and Dimensions

The tables of properties and dimensions on the following pages include square, rectangular and round HSS currently produced in Canada. The metric section sizes (e.g. HSS 127×76×6.4) include the outer dimensions (depth × width for rectangular sections) and wall thickness in millimetres.

Section properties given in the following tables for square and rectangular sections are based on an interior corner radius taken equal to the wall thickness, and on an exterior corner radius taken equal to twice the wall thickness.

HOLLOW STRUCTURAL SECTIONS PRODUCED TO ASTM A500

General

ASTM A500 grade C HSS may be the product of choice in some regions of Canada when CSA G40.21-350W HSS may not be available in the quantities and time frame envisaged for a specific project.

Manufacture

HSS manufactured to ASTM Standard A500 Grade C are not equivalent to HSS meeting the requirements of CSA G40.21 grade 350W. Unlike CSA Standard G40.20/G40.21, the ASTM A500 specification has no restriction for mass variation and has a tolerance of ± 10% on the wall thickness. If HSS produced to A500 are offered as a substitute, it would be prudent to assess the influence of the differences that arise from a possible difference in wall thickness and material strengths.

Properties and Dimensions

The tables of properties and dimensions on the following pages, prepared for HSS produced to ASTM A500 Grade C, include a quantity termed the "Design Wall Thickness". In accordance with to CSA S16-14 Clause 5.1.3, this Design Wall Thickness is taken as 90% of the nominal wall thickness. The nominal wall thickness is the thickness that has been published in previous tables as the "wall thickness" and, when rounded, forms the third term of the HSS section size.

With the exception of the Mass and the Dead Load, the values of Properties and Dimensions published in the following tables were computed based on the value of the "Design Wall Thickness".

Information on ASTM A500 Grade C

The following information is taken from ASTM A500-10a, "Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes". For complete information on HSS produced to ASTM A500 Grade C, please refer to the ASTM specification.

Mechanical Properties of ASTM A500 Grade C Steel *

HSS Shape	F_y (min) **	F_u (min)
Round HSS	317 MPa	427 MPa
Square and Rectangular HSS	345 MPa	427 MPa

* Clause 1.2 Note 1: Products manufactured to this specification may not be suitable for those applications such as dynamically loaded elements in welded structures, etc., where low-temperature notch-toughness properties may be important.

** Clause 15.3: The yield strength corresponding to an offset of 0.2% of the gage length or to a total extension under load of 0.5% of the gage length shall be determined.

HOLLOW STRUCTURAL SECTIONS PRODUCED TO ASTM A1085

General

ASTM A1085 was introduced in 2013. HSS produced to A1085 meet requirements comparable to those of CSA G40.20/21-350WT Category 1. The material is required to conform to a minimum average Charpy V-notch impact value of 34 Joules at 4°C, as represented by the test specimen. In addition, a minimum yield stress at 345 MPa and a maximum yield stress of 485 MPa apply.

Manufacture

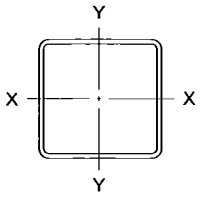
Square and rectangular A1085 HSS meet requirements for minimum and maximum corner radii as a function of wall thickness. See *Standard Mill Practice* in Part 6.

Purchasers of A1085 HSS may specify heat treatment as supplemental requirement S1, which also conforms to the stress-relieved requirement for Class H G40.20 HSS.

Properties and Dimensions

Wall thickness and mass tolerances for ASTM A1085 products are essentially the same as those specified for HSS in CSA G40.20. Section properties provided for CSA G40.20 HSS in Part 6, which are calculated from the nominal wall thickness, depth, width and diameter, may be used for design.

HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Square

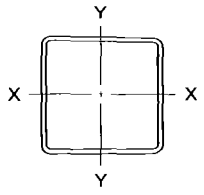


PROPERTIES AND DIMENSIONS

Section	Outside Dimension	Wall Thickness	Mass	Dead Load	Area	I	S	r	Z	Torsional Constant J	Surface Area
mm x mm x mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 559x559											
x19*	558.8	19.05	316	3.10	40 200	1 930	6 900	219	8 070	3 050 000	2.17
HSS 508x508											
x22*	508.0	22.23	329	3.23	41 900	1 620	6 390	197	7 560	2 600 000	1.96
x19*	508.0	19.05	285	2.80	36 300	1 430	5 620	198	6 600	2 270 000	1.97
x16*	508.0	15.88	240	2.36	30 600	1 220	4 810	200	5 610	1 930 000	1.98
x13*	508.0	12.70	194	1.91	24 700	1 000	3 950	201	4 570	1 570 000	1.99
HSS 457x457											
x22*	457.2	22.23	294	2.88	37 400	1 160	5 070	176	6 030	1 870 000	1.75
x19*	457.2	19.05	255	2.50	32 500	1 020	4 470	178	5 280	1 640 000	1.76
x16*	457.2	15.88	215	2.11	27 400	878	3 840	179	4 490	1 390 000	1.77
x13*	457.2	12.70	174	1.71	22 200	723	3 160	181	3 670	1 130 000	1.79
HSS 406x406											
x22*	406.4	22.23	258	2.53	32 900	793	3 900	155	4 670	1 290 000	1.55
x19*	406.4	19.05	224	2.20	28 600	703	3 460	157	4 100	1 130 000	1.56
x16*	406.4	15.88	190	1.86	24 200	606	2 980	158	3 500	965 000	1.57
x13*	406.4	12.70	154	1.51	19 600	500	2 460	160	2 870	788 000	1.58
x9.5*	406.4	9.53	117	1.15	14 900	388	1 910	161	2 200	604 000	1.59
HSS 356x356											
x16*	355.6	15.88	164	1.61	20 900	396	2 230	138	2 640	637 000	1.37
x13*	355.6	12.70	133	1.31	17 000	329	1 850	139	2 170	522 000	1.38
x9.5*	355.6	9.53	102	0.998	13 000	256	1 440	141	1 670	401 000	1.39
x7.9*	355.6	7.94	85.4	0.838	10 900	218	1 220	141	1 410	338 000	1.40
HSS 305x305											
x16	304.8	15.88	139	1.36	17 700	242	1 590	117	1 890	392 000	1.16
x13	304.8	12.70	113	1.11	14 400	202	1 330	118	1 560	323 000	1.18
x9.5	304.8	9.53	86.5	0.849	11 000	158	1 040	120	1 210	250 000	1.19
x7.9	304.8	7.94	72.7	0.714	9 270	135	885	121	1 030	211 000	1.19
x6.4	304.8	6.35	58.7	0.576	7 480	110	723	121	833	171 000	1.20
HSS 254x254											
x16	254.0	15.88	114	1.11	14 500	134	1 050	96.1	1 270	220 000	0.961
x13	254.0	12.70	93.0	0.912	11 800	113	889	97.6	1 060	183 000	0.972
x9.5	254.0	9.53	71.3	0.700	9 090	89.3	703	99.1	825	142 000	0.983
x7.9	254.0	7.94	60.1	0.589	7 650	76.4	601	99.9	701	120 000	0.989
x6.4	254.0	6.35	48.6	0.476	6 190	62.7	494	101	571	97 800	0.994
x4.8	254.0	4.78	36.9	0.362	4 710	48.4	381	101	438	74 800	1.000
HSS 203x203											
x16	203.2	15.88	88.3	0.866	11 200	63.8	628	75.3	774	107 000	0.758
x13	203.2	12.70	72.7	0.713	9 260	54.7	538	76.9	651	90 200	0.769
x9.5	203.2	9.53	56.1	0.551	7 150	43.9	432	78.4	513	70 800	0.780
x7.9	203.2	7.94	47.4	0.465	6 040	37.8	372	79.2	438	60 300	0.786
x6.4	203.2	6.35	38.4	0.377	4 900	31.3	308	79.9	359	49 300	0.791
x4.8	203.2	4.78	29.3	0.288	3 730	24.3	239	80.7	276	37 800	0.796

* Imported section

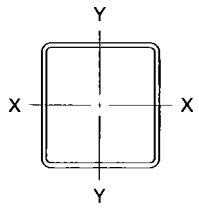
HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Square



PROPERTIES AND DIMENSIONS

Section	Outside Dimension	Wall Thickness	Mass	Dead Load	Area	I	S	r	Z	Torsional Constant J	Surface Area
mm x mm x mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 178x178											
x16	177.8	15.88	75.6	0.742	9 640	40.6	457	64.9	571	69 300	0.657
x13	177.8	12.70	62.6	0.614	7 970	35.2	396	66.5	484	58 800	0.668
x9.5	177.8	9.53	48.5	0.476	6 180	28.6	322	68.0	385	46 500	0.678
x7.9	177.8	7.94	41.1	0.403	5 230	24.8	279	68.8	330	39 800	0.684
x6.4	177.8	6.35	33.4	0.327	4 250	20.6	231	69.6	271	32 600	0.689
x4.8	177.8	4.78	25.5	0.250	3 250	16.1	181	70.3	210	25 100	0.695
HSS 152x152											
x13	152.4	12.70	52.4	0.515	6 680	21.0	276	56.1	342	35 600	0.566
x9.5	152.4	9.53	40.9	0.401	5 210	17.3	227	57.6	275	28 500	0.577
x7.9	152.4	7.94	34.7	0.341	4 430	15.1	198	58.4	237	24 500	0.582
x6.4	152.4	6.35	28.3	0.278	3 610	12.6	166	59.2	196	20 200	0.588
x4.8	152.4	4.78	21.7	0.213	2 760	9.93	130	59.9	152	15 600	0.593
HSS 127x127											
x13	127.0	12.70	42.3	0.415	5 390	11.3	177	45.7	225	19 500	0.464
x9.5	127.0	9.53	33.3	0.327	4 240	9.48	149	47.3	183	15 900	0.475
x7.9	127.0	7.94	28.4	0.279	3 620	8.35	131	48.0	159	13 800	0.481
x6.4	127.0	6.35	23.2	0.228	2 960	7.05	111	48.8	132	11 400	0.486
x4.8	127.0	4.78	17.9	0.175	2 280	5.60	88.1	49.6	103	8 900	0.492
x3.2	127.0	3.18	12.2	0.119	1 550	3.92	61.8	50.3	71.5	6 120	0.497
HSS 102x102											
x13	101.6	12.70	32.2	0.316	4 100	5.10	100	35.3	131	9 070	0.363
x9.5	101.6	9.53	25.7	0.252	3 280	4.45	87.6	36.9	110	7 640	0.374
x7.9	101.6	7.94	22.1	0.217	2 810	3.99	78.5	37.7	96.7	6 710	0.379
x6.4	101.6	6.35	18.2	0.178	2 320	3.42	67.3	38.4	81.4	5 640	0.385
x4.8	101.6	4.78	14.1	0.138	1 790	2.75	54.2	39.2	64.3	4 440	0.390
x3.2	101.6	3.18	9.62	0.094	1 230	1.96	38.5	40.0	44.9	3 080	0.395
HSS 89x89											
x9.5	88.9	9.53	21.9	0.215	2 790	2.80	63.0	31.7	80.5	4 880	0.323
x7.9	88.9	7.94	18.9	0.186	2 410	2.54	57.1	32.5	71.3	4 330	0.328
x6.4	88.9	6.35	15.6	0.153	1 990	2.20	49.5	33.2	60.5	3 670	0.334
x4.8	88.9	4.78	12.2	0.119	1 550	1.79	40.3	34.0	48.2	2 920	0.339
HSS 76x76											
x9.5	76.2	9.53	18.1	0.178	2 310	1.61	42.4	26.5	55.5	2 870	0.272
x7.9	76.2	7.94	15.7	0.154	2 010	1.49	39.1	27.3	49.8	2 590	0.278
x6.4	76.2	6.35	13.1	0.129	1 670	1.31	34.5	28.0	42.8	2 230	0.283
x4.8	76.2	4.78	10.3	0.101	1 310	1.08	28.5	28.8	34.4	1 790	0.288
x3.2	76.2	3.18	7.09	0.070	903	0.790	20.7	29.6	24.5	1 260	0.294
HSS 64x64											
x6.4	63.5	6.35	10.6	0.104	1 350	0.703	22.2	22.8	28.1	1 220	0.232
x4.8	63.5	4.78	8.35	0.082	1 060	0.594	18.7	23.6	23.0	995	0.238
x3.2	63.5	3.18	5.82	0.057	741	0.441	13.9	24.4	16.6	715	0.243

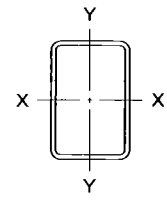
HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Square



PROPERTIES AND DIMENSIONS

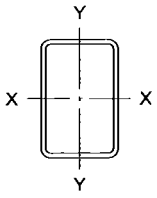
Section	Outside Dimension	Wall Thickness	Mass	Dead Load	Area	I	S	r	Z	Torsional Constant J	Surface Area
mm x mm x mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 51x51											
x6.4	50.8	6.35	8.05	0.079	1 030	0.319	12.6	17.6	16.4	567	0.181
x4.8	50.8	4.78	6.45	0.063	821	0.279	11.0	18.4	13.8	479	0.187
x3.2	50.8	3.18	4.55	0.045	580	0.214	8.42	19.2	10.2	353	0.192
HSS 38x38											
x4.8	38.1	4.78	4.54	0.045	578	0.101	5.30	13.2	6.95	180	0.136
x3.2	38.1	3.18	3.28	0.032	418	0.082 2	4.31	14.0	5.35	139	0.141

HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Rectangular



DIMENSIONS

Section	Outside Dimensions		Wall Thickness	Mass	Dead Load	Area	Surface Area
	Depth	Width					
mm x mm x mm	mm	mm	mm	kg/m	kN/m	mm^2	m^2/m
HSS 305x203							
x16	304.8	203.2	15.88	114	1.11	14 500	0.961
x13	304.8	203.2	12.70	93.0	0.912	11 800	0.972
x9.5	304.8	203.2	9.53	71.3	0.700	9 090	0.983
x7.9	304.8	203.2	7.94	60.1	0.589	7 650	0.989
x6.4	304.8	203.2	6.35	48.6	0.476	6 190	0.994
HSS 305x152							
x16	304.8	152.4	15.88	101	0.991	12 900	0.860
x13	304.8	152.4	12.70	82.8	0.813	10 600	0.871
x9.5	304.8	152.4	9.53	63.7	0.625	8 120	0.882
x7.9	304.8	152.4	7.94	53.7	0.527	6 850	0.887
x6.4	304.8	152.4	6.35	43.5	0.427	5 540	0.893
HSS 254x203							
x16	254.0	203.2	15.88	101	0.991	12 900	0.860
x13	254.0	203.2	12.70	82.8	0.813	10 600	0.871
x9.5	254.0	203.2	9.53	63.7	0.625	8 120	0.882
x7.9	254.0	203.2	7.94	53.7	0.527	6 850	0.887
x6.4	254.0	203.2	6.35	43.5	0.427	5 540	0.893
HSS 254x152							
x16	254.0	152.4	15.88	88.3	0.866	11 200	0.758
x13	254.0	152.4	12.70	72.7	0.713	9 260	0.769
x9.5	254.0	152.4	9.53	56.1	0.551	7 150	0.780
x7.9	254.0	152.4	7.94	47.4	0.465	6 040	0.786
x6.4	254.0	152.4	6.35	38.4	0.377	4 900	0.791
x4.8	254.0	152.4	4.78	29.3	0.288	3 730	0.796
HSS 203x152							
x16	203.2	152.4	15.88	75.6	0.742	9 640	0.657
x13	203.2	152.4	12.70	62.6	0.614	7 970	0.668
x9.5	203.2	152.4	9.53	48.5	0.476	6 180	0.678
x7.9	203.2	152.4	7.94	41.1	0.403	5 230	0.684
x6.4	203.2	152.4	6.35	33.4	0.327	4 250	0.689
x4.8	203.2	152.4	4.78	25.5	0.250	3 250	0.695
HSS 203x102							
x13	203.2	101.6	12.70	52.4	0.515	6 680	0.566
x9.5	203.2	101.6	9.53	40.9	0.401	5 210	0.577
x7.9	203.2	101.6	7.94	34.7	0.341	4 430	0.582
x6.4	203.2	101.6	6.35	28.3	0.278	3 610	0.588
x4.8	203.2	101.6	4.78	21.7	0.213	2 760	0.593
HSS 178x127							
x13	177.8	127.0	12.70	52.4	0.515	6 680	0.566
x9.5	177.8	127.0	9.53	40.9	0.401	5 210	0.577
x7.9	177.8	127.0	7.94	34.7	0.341	4 430	0.582
x6.4	177.8	127.0	6.35	28.3	0.278	3 610	0.588
x4.8	177.8	127.0	4.78	21.7	0.213	2 760	0.593

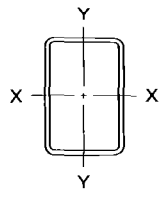


HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Rectangular

PROPERTIES

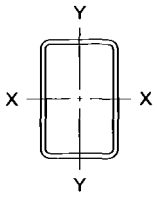
Axis X-X				Axis Y-Y				Torsional Constant	Section
I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	
10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^3 mm^4	mm x mm x mm
									HSS 305x203
174	1 140	110	1 430	92.2	907	79.8	1 080	200 000	x16
147	964	111	1 190	78.2	769	81.2	897	167 000	x13
116	762	113	926	62.1	611	82.7	701	130 000	x9.5
99.3	652	114	786	53.2	524	83.4	596	110 000	x7.9
81.5	535	115	640	43.8	431	84.1	486	89 700	x6.4
									HSS 305x152
141	922	105	1 190	46.5	610	60.1	729	119 000	x16
119	784	106	999	40.0	524	61.5	613	100 000	x13
95.1	624	108	783	32.2	422	62.9	482	79 000	x9.5
81.6	535	109	666	27.7	364	63.7	411	67 400	x7.9
67.1	440	110	544	23.0	301	64.4	337	55 100	x6.4
									HSS 254x203
111	872	92.8	1 080	78.0	767	77.9	925	153 000	x16
94.0	740	94.4	903	66.4	654	79.3	774	127 000	x13
74.8	589	96.0	707	53.0	522	80.8	607	99 600	x9.5
64.2	505	96.8	602	45.5	448	81.6	517	84 600	x7.9
52.8	416	97.6	491	37.5	369	82.3	422	69 000	x6.4
									HSS 254x152
87.8	691	88.3	888	38.9	511	58.8	619	91 900	x16
75.2	592	90.1	747	33.6	442	60.3	522	77 700	x13
60.4	475	91.9	589	27.2	357	61.7	413	61 400	x9.5
52.0	409	92.8	502	23.5	309	62.4	353	52 400	x7.9
42.9	338	93.6	411	19.5	256	63.1	290	42 900	x6.4
33.3	262	94.5	317	15.2	200	63.8	224	33 000	x4.8
									HSS 203x152
49.6	488	71.7	623	31.4	412	57.1	509	65 900	x16
43.0	423	73.4	528	27.3	359	58.6	432	56 000	x13
34.8	343	75.1	420	22.3	292	60.0	344	44 400	x9.5
30.2	297	75.9	359	19.3	253	60.8	295	38 000	x7.9
25.0	246	76.7	295	16.1	211	61.5	243	31 200	x6.4
19.5	192	77.5	228	12.6	165	62.2	188	24 100	x4.8
									HSS 203x102
31.3	308	68.4	405	10.2	201	39.1	246	26 700	x13
25.8	254	70.3	326	8.57	169	40.5	199	21 700	x9.5
22.5	221	71.2	281	7.53	148	41.3	172	18 800	x7.9
18.8	185	72.2	232	6.35	125	42.0	143	15 600	x6.4
14.7	145	73.1	180	5.03	99.0	42.7	111	12 100	x4.8
									HSS 178x127
26.4	297	62.9	378	15.5	244	48.1	298	33 300	x13
21.7	244	64.6	303	12.8	202	49.6	240	26 800	x9.5
18.9	213	65.4	261	11.2	177	50.3	207	23 000	x7.9
15.8	178	66.2	216	9.40	148	51.1	171	19 000	x6.4
12.4	140	67.1	168	7.41	117	51.8	133	14 700	x4.8

HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Rectangular



DIMENSIONS

Section	Outside Dimensions		Wall Thickness	Mass	Dead Load	Area	Surface Area
	Depth	Width					
mm x mm x mm	mm	mm	mm	kg/m	kN/m	mm^2	m^2/m
HSS 152x102							
x13	152.4	101.6	12.70	42.3	0.415	5 390	0.464
x9.5	152.4	101.6	9.53	33.3	0.327	4 240	0.475
x7.9	152.4	101.6	7.94	28.4	0.279	3 620	0.481
x6.4	152.4	101.6	6.35	23.2	0.228	2 960	0.486
x4.8	152.4	101.6	4.78	17.9	0.175	2 280	0.492
x3.2	152.4	101.6	3.18	12.2	0.119	1 550	0.497
HSS 152x76							
x13	152.4	76.2	12.70	37.3	0.365	4 750	0.414
x9.5	152.4	76.2	9.53	29.5	0.290	3 760	0.424
x7.9	152.4	76.2	7.94	25.2	0.248	3 220	0.430
x6.4	152.4	76.2	6.35	20.7	0.203	2 640	0.435
x4.8	152.4	76.2	4.78	16.0	0.157	2 040	0.441
x3.2	152.4	76.2	3.18	10.9	0.107	1 390	0.446
HSS 127x76							
x13	127.0	76.2	12.70	32.2	0.316	4 100	0.363
x9.5	127.0	76.2	9.53	25.7	0.252	3 280	0.374
x7.9	127.0	76.2	7.94	22.1	0.217	2 810	0.379
x6.4	127.0	76.2	6.35	18.2	0.178	2 320	0.385
x4.8	127.0	76.2	4.78	14.1	0.138	1 790	0.390
x3.2	127.0	76.2	3.18	9.62	0.094	1 230	0.395
HSS 102x76							
x9.5	101.6	76.2	9.53	21.9	0.215	2 790	0.323
x7.9	101.6	76.2	7.94	18.9	0.186	2 410	0.328
x6.4	101.6	76.2	6.35	15.6	0.153	1 990	0.334
x4.8	101.6	76.2	4.78	12.2	0.119	1 550	0.339
x3.2	101.6	76.2	3.18	8.35	0.082	1 060	0.345
HSS 102x51							
x9.5	101.6	50.8	9.53	18.1	0.178	2 310	0.272
x7.9	101.6	50.8	7.94	15.7	0.154	2 010	0.278
x6.4	101.6	50.8	6.35	13.1	0.129	1 670	0.283
x4.8	101.6	50.8	4.78	10.3	0.101	1 310	0.288
x3.2	101.6	50.8	3.18	7.09	0.070	903	0.294
HSS 89x64							
x6.4	88.9	63.5	6.35	13.1	0.129	1 670	0.283
x4.8	88.9	63.5	4.78	10.3	0.101	1 310	0.288
HSS 76x51							
x7.9	76.2	50.8	7.94	12.6	0.123	1 600	0.227
x6.4	76.2	50.8	6.35	10.6	0.104	1 350	0.232
x4.8	76.2	50.8	4.78	8.35	0.082	1 060	0.238
x3.2	76.2	50.8	3.18	5.82	0.057	741	0.243

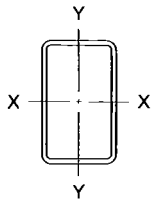


HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Rectangular

PROPERTIES

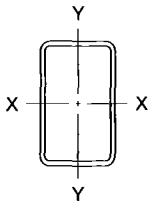
Axis X-X				Axis Y-Y				Torsional Constant	Section
I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	
10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^3 mm^4	mm x mm x mm
									HSS 152x102
14.7	193	52.2	252	7.67	151	37.7	189	17 500	x13
12.4	162	54.0	206	6.51	128	39.2	155	14 400	x9.5
10.9	143	54.9	178	5.76	113	39.9	134	12 500	x7.9
9.19	121	55.7	148	4.88	96.2	40.6	112	10 400	x6.4
7.28	95.6	56.5	116	3.89	76.6	41.3	87.8	8 150	x4.8
5.10	66.9	57.4	80.2	2.74	53.9	42.1	60.8	5 620	x3.2
									HSS 152x76
11.5	152	49.3	207	3.71	97.3	28.0	124	9 960	x13
9.89	130	51.3	171	3.24	85.0	29.4	104	8 450	x9.5
8.78	115	52.3	149	2.91	76.3	30.1	91.1	7 440	x7.9
7.47	98.0	53.2	125	2.50	65.5	30.8	76.6	6 270	x6.4
5.96	78.2	54.1	98.1	2.02	52.9	31.5	60.5	4 950	x4.8
4.20	55.1	55.0	68.1	1.44	37.7	32.2	42.2	3 450	x3.2
									HSS 127x76
7.02	111	41.4	151	3.05	80.0	27.3	104	7 590	x13
6.13	96.5	43.3	126	2.70	70.8	28.7	87.8	6 500	x9.5
5.49	86.4	44.2	111	2.43	63.9	29.4	77.3	5 750	x7.9
4.70	74.1	45.1	93.4	2.10	55.2	30.1	65.3	4 860	x6.4
3.78	59.6	45.9	73.8	1.71	44.8	30.8	51.8	3 850	x4.8
2.69	42.3	46.8	51.5	1.22	32.1	31.6	36.3	2 690	x3.2
									HSS 102x76
3.42	67.4	35.0	87.9	2.16	56.6	27.8	71.6	4 630	x9.5
3.10	61.0	35.9	77.8	1.96	51.5	28.5	63.6	4 120	x7.9
2.69	52.9	36.7	66.0	1.71	44.8	29.3	54.0	3 500	x6.4
2.18	43.0	37.5	52.6	1.39	36.6	30.0	43.1	2 780	x4.8
1.57	30.8	38.4	37.0	1.01	26.4	30.7	30.4	1 950	x3.2
									HSS 102x51
2.39	47.1	32.2	65.6	0.762	30.0	18.2	39.2	2 070	x9.5
2.21	43.6	33.2	58.9	0.714	28.1	18.9	35.5	1 910	x7.9
1.95	38.5	34.2	50.7	0.640	25.2	19.6	30.8	1 670	x6.4
1.61	31.8	35.1	40.8	0.537	21.1	20.3	25.0	1 360	x4.8
1.17	23.1	36.1	29.0	0.397	15.6	21.0	17.9	976	x3.2
									HSS 89x64
1.65	37.1	31.4	47.2	0.968	30.5	24.1	37.3	2 080	x6.4
1.36	30.6	32.3	38.0	0.803	25.3	24.8	30.1	1 680	x4.8
									HSS 76x51
1.02	26.7	25.2	36.0	0.527	20.7	18.1	26.9	1 240	x7.9
0.919	24.1	26.1	31.5	0.479	18.9	18.9	23.6	1 100	x6.4
0.775	20.3	27.0	25.8	0.408	16.1	19.6	19.4	903	x4.8
0.575	15.1	27.8	18.6	0.306	12.0	20.3	14.0	652	x3.2

HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Rectangular



DIMENSIONS

Section	Outside Dimensions		Wall Thickness	Mass	Dead Load	Area	Surface Area
	Depth	Width					
mm x mm x mm	mm	mm	mm	kg/m	kN/m	mm^2	m^2/m
HSS 76x38							
x6.4	76.2	38.1	6.35	9.31	0.091	1 190	0.207
x4.8	76.2	38.1	4.78	7.40	0.073	942	0.212
x3.2	76.2	38.1	3.18	5.18	0.051	660	0.218
HSS 64x38							
x6.4	63.5	38.1	6.35	8.05	0.079	1 030	0.181
x4.8	63.5	38.1	4.78	6.45	0.063	821	0.187
x3.2	63.5	38.1	3.18	4.55	0.045	580	0.192
HSS 51x25							
x4.8	50.8	25.4	4.78	4.54	0.045	578	0.136
x3.2	50.8	25.4	3.18	3.28	0.032	418	0.141

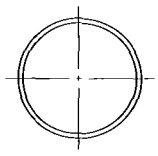


HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Rectangular

PROPERTIES

Axis X-X				Axis Y-Y				Torsional Constant	Section
I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	
10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^3 mm^4	mm x mm x mm
									HSS 76x38
0.722	18.9	24.7	25.9	0.232	12.2	14.0	15.6	622	x6.4
0.620	16.3	25.6	21.4	0.203	10.6	14.7	13.0	529	x4.8
0.467	12.3	26.6	15.6	0.156	8.20	15.4	9.58	392	x3.2
									HSS 64x38
0.439	13.8	20.7	18.8	0.191	10.0	13.6	13.0	474	x6.4
0.384	12.1	21.6	15.8	0.169	8.87	14.3	11.0	407	x4.8
0.294	9.27	22.5	11.7	0.132	6.91	15.1	8.17	304	x3.2
									HSS 51x25
0.150	5.89	16.1	8.21	0.047 6	3.75	9.08	4.91	129	x4.8
0.122	4.81	17.1	6.34	0.040 0	3.15	9.78	3.85	104	x3.2

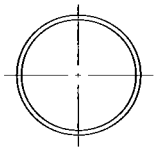
HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Round



PROPERTIES AND DIMENSIONS

Section	Outside Dimension	Wall Thickness	Mass	Dead Load	Area	I	S	r	Z	Torsional Constant J	Surface Area
mm x mm x mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 406											
x16	406.4	15.88	153	1.50	19 500	372	1 830	138	2 420	744 000	1.28
x13	406.4	12.70	123	1.21	15 700	305	1 500	139	1 970	609 000	1.28
x9.5	406.4	9.53	93.3	0.915	11 900	234	1 150	140	1 500	468 000	1.28
x6.4	406.4	6.35	62.6	0.615	7 980	160	786	141	1 020	319 000	1.28
HSS 356											
x13	355.6	12.70	107	1.05	13 700	201	1 130	121	1 490	403 000	1.12
x9.5	355.6	9.53	81.3	0.798	10 400	155	873	122	1 140	310 000	1.12
x6.4	355.6	6.35	54.7	0.537	6 970	106	598	123	775	213 000	1.12
HSS 324											
x13	323.9	12.70	97.5	0.956	12 400	151	930	110	1 230	301 000	1.02
x9.5	323.9	9.53	73.9	0.725	9 410	116	719	111	942	233 000	1.02
x6.4	323.9	6.35	49.7	0.488	6 330	79.9	493	112	640	160 000	1.02
HSS 273											
x13	273.1	12.70	81.6	0.800	10 400	88.3	646	92.2	862	177 000	0.858
x9.5	273.1	9.53	61.9	0.608	7 890	68.6	502	93.2	662	137 000	0.858
x7.9	273.1	7.94	51.9	0.509	6 610	58.2	426	93.8	558	116 000	0.858
x6.4	273.1	6.35	41.8	0.410	5 320	47.4	347	94.3	452	94 700	0.858
x4.8	273.1	4.78	31.6	0.310	4 030	36.3	266	94.9	344	72 500	0.858
HSS 245											
x9.5	244.5	9.53	55.2	0.542	7 030	48.6	398	83.1	526	97 300	0.768
x6.4	244.5	6.35	37.3	0.366	4 750	33.7	276	84.2	360	67 400	0.768
HSS 219											
x13	219.1	12.70	64.6	0.634	8 230	44.0	402	73.1	542	88 000	0.688
x9.5	219.1	9.53	49.3	0.483	6 270	34.5	315	74.2	419	69 000	0.688
x6.4	219.1	6.35	33.3	0.327	4 240	24.0	219	75.3	288	48 100	0.688
x4.8	219.1	4.78	25.3	0.248	3 220	18.5	169	75.8	220	37 000	0.688
HSS 178											
x13	177.8	12.70	51.7	0.507	6 590	22.6	254	58.5	347	45 200	0.559
x9.5	177.8	9.53	39.5	0.388	5 040	17.9	201	59.6	270	35 800	0.559
HSS 168											
x13	168.3	12.70	48.7	0.478	6 210	18.9	225	55.2	308	37 800	0.529
x9.5	168.3	9.53	37.3	0.366	4 750	15.0	179	56.2	241	30 100	0.529
x6.4	168.3	6.35	25.4	0.249	3 230	10.6	126	57.3	167	21 200	0.529
x4.8	168.3	4.78	19.3	0.189	2 460	8.21	97.6	57.8	128	16 400	0.529
HSS 141											
x13	141.3	12.70	40.3	0.395	5 130	10.7	152	45.7	211	21 400	0.444
x9.5	141.3	9.53	31.0	0.304	3 950	8.61	122	46.7	166	17 200	0.444
x6.4	141.3	6.35	21.1	0.207	2 690	6.14	86.9	47.8	116	12 300	0.444

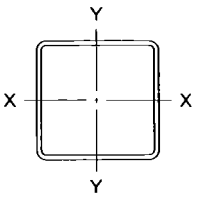
HOLLOW STRUCTURAL SECTIONS
CSA G40.20
Round



PROPERTIES AND DIMENSIONS

Section	Outside Dimension	Wall Thickness	Mass	Dead Load	Area	I	S	r	Z	Torsional Constant J	Surface Area
mm x mm x mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 127											
x9.5	127.0	9.53	27.6	0.271	3 520	6.11	96.2	41.7	132	12 200	0.399
x6.4	127.0	6.35	18.9	0.185	2 410	4.39	69.2	42.7	92.5	8 780	0.399
HSS 89											
x6.4	88.9	6.35	12.9	0.127	1 650	1.41	31.7	29.3	43.4	2 820	0.279
x4.8	88.9	4.78	9.92	0.097	1 260	1.12	25.2	29.8	33.9	2 240	0.279
x3.2	88.9	3.18	6.72	0.066	856	0.788	17.7	30.3	23.4	1 580	0.279
HSS 76											
x6.4	76.2	6.35	10.9	0.107	1 390	0.857	22.5	24.8	31.1	1 710	0.239
x4.8	76.2	4.78	8.42	0.083	1 070	0.687	18.0	25.3	24.4	1 370	0.239
x3.2	76.2	3.18	5.73	0.056	729	0.487	12.8	25.8	17.0	974	0.239
HSS 73											
x6.4	73.0	6.35	10.4	0.102	1 330	0.745	20.4	23.7	28.3	1 490	0.229
x4.8	73.0	4.78	8.04	0.079	1 020	0.599	16.4	24.2	22.3	1 200	0.229
x3.2	73.0	3.18	5.48	0.054	698	0.426	11.7	24.7	15.5	852	0.229
HSS 64											
x6.4	63.5	6.35	8.95	0.088	1 140	0.471	14.8	20.3	20.8	942	0.199
x4.8	63.5	4.78	6.92	0.068	882	0.383	12.0	20.8	16.5	765	0.199
x3.2	63.5	3.18	4.73	0.046	603	0.275	8.66	21.4	11.6	550	0.199
HSS 60											
x6.4	60.3	6.35	8.45	0.083	1 080	0.397	13.2	19.2	18.6	794	0.189
x4.8	60.3	4.78	6.54	0.064	834	0.324	10.7	19.7	14.8	647	0.189
x3.2	60.3	3.18	4.48	0.044	571	0.233	7.74	20.2	10.4	467	0.189
HSS 48											
x4.8	48.3	4.78	5.13	0.050	654	0.157	6.48	15.5	9.09	313	0.152
x3.2	48.3	3.18	3.54	0.035	451	0.115	4.77	16.0	6.48	231	0.152

HOLLOW STRUCTURAL SECTIONS
ASTM A500
Square

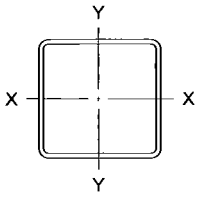


PROPERTIES AND DIMENSIONS

Section	Outside Dimension	Wall Thickness		Mass	Dead Load	Area	I	S	r	Z	Torsional Constant	Surface Area
		Nominal	Design								J	
mm x mm x mm	mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 406x406												
x16*	406.4	15.88	14.29	190	1.86	21 900	554	2 730	159	3 190	878 000	1.58
x13*	406.4	12.70	11.43	154	1.51	17 700	456	2 250	160	2 610	715 000	1.59
x9.5*	406.4	9.53	8.58	117	1.15	13 500	353	1 740	162	2 000	547 000	1.60
HSS 356x356												
x16*	355.6	15.88	14.29	164	1.61	19 000	363	2 040	138	2 410	580 000	1.37
x13*	355.6	12.70	11.43	133	1.31	15 400	301	1 690	140	1 970	474 000	1.38
x9.5*	355.6	9.53	8.58	102	0.998	11 700	233	1 310	141	1 520	363 000	1.39
x7.9*	355.6	7.94	7.15	85.4	0.838	9 830	198	1 110	142	1 280	306 000	1.40
HSS 305x305												
x16	304.8	15.88	14.29	139	1.36	16 100	222	1 460	118	1 730	358 000	1.17
x13	304.8	12.70	11.43	113	1.11	13 100	185	1 210	119	1 430	294 000	1.18
x9.5	304.8	9.53	8.58	86.5	0.849	9 980	144	948	120	1 100	227 000	1.19
x7.9	304.8	7.94	7.15	72.7	0.714	8 380	123	806	121	930	191 000	1.19
x6.4	304.8	6.35	5.72	58.7	0.576	6 760	100	657	122	755	155 000	1.20
HSS 254x254												
x16	254.0	15.88	14.29	114	1.11	13 200	124	973	96.8	1 170	202 000	0.967
x13	254.0	12.70	11.43	93.0	0.912	10 800	104	817	98.2	968	167 000	0.977
x9.5	254.0	9.53	8.58	71.3	0.700	8 230	81.7	643	99.6	752	129 000	0.987
x7.9	254.0	7.94	7.15	60.1	0.589	6 930	69.7	549	100	637	109 000	0.991
x6.4	254.0	6.35	5.72	48.6	0.476	5 600	57.1	449	101	518	88 700	0.996
x4.8	254.0	4.78	4.30	36.9	0.362	4 250	43.9	346	102	396	67 600	1.00
HSS 203x203												
x16	203.2	15.88	14.29	88.3	0.866	10 300	59.5	585	76.1	714	99 000	0.764
x13	203.2	12.70	11.43	72.7	0.713	8 430	50.6	498	77.5	598	82 700	0.774
x9.5	203.2	9.53	8.58	56.1	0.551	6 490	40.4	397	78.9	469	64 600	0.783
x7.9	203.2	7.94	7.15	47.4	0.465	5 480	34.6	341	79.5	399	54 900	0.788
x6.4	203.2	6.35	5.72	38.4	0.377	4 430	28.5	281	80.2	326	44 700	0.793
x4.8	203.2	4.78	4.30	29.3	0.288	3 370	22.1	217	80.9	250	34 300	0.798
HSS 178x178												
x16	177.8	15.88	14.29	75.6	0.742	8 820	38.1	428	65.7	529	64 300	0.662
x13	177.8	12.70	11.43	62.6	0.614	7 270	32.7	368	67.1	446	54 100	0.672
x9.5	177.8	9.53	8.58	48.5	0.476	5 620	26.3	296	68.5	352	42 600	0.682
x7.9	177.8	7.94	7.15	41.1	0.403	4 750	22.7	256	69.2	301	36 300	0.687
x6.4	177.8	6.35	5.72	33.4	0.327	3 850	18.8	212	69.9	247	29 700	0.692
x4.8	177.8	4.78	4.30	25.5	0.250	2 940	14.6	164	70.5	190	22 800	0.696
HSS 152x152												
x13	152.4	12.70	11.43	52.4	0.515	6 110	19.6	258	56.7	317	32 900	0.570
x9.5	152.4	9.53	8.58	40.9	0.401	4 750	16.0	210	58.1	252	26 200	0.580
x7.9	152.4	7.94	7.15	34.7	0.341	4 020	13.9	182	58.8	217	22 400	0.585
x6.4	152.4	6.35	5.72	28.3	0.278	3 270	11.6	152	59.5	178	18 400	0.590
x4.8	152.4	4.78	4.30	21.7	0.213	2 500	9.05	119	60.2	138	14 200	0.595

* Imported section

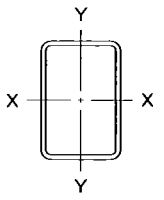
HOLLOW STRUCTURAL SECTIONS
ASTM A500
Square



PROPERTIES AND DIMENSIONS

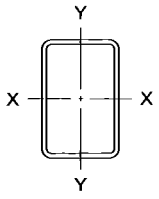
Section	Outside Dimension	Wall Thickness		Mass	Dead Load	Area	I	S	r	Z	Torsional Constant	Surface Area
		Nominal	Design								J	
mm x mm x mm	mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 127x127												
x13	127.0	12.70	11.43	42.3	0.415	4 950	10.6	167	46.3	209	18 100	0.469
x9.5	127.0	9.53	8.58	33.3	0.327	3 870	8.82	139	47.7	169	14 600	0.479
x7.9	127.0	7.94	7.15	28.4	0.279	3 300	7.73	122	48.4	146	12 600	0.483
x6.4	127.0	6.35	5.72	23.2	0.228	2 690	6.49	102	49.1	121	10 400	0.488
x4.8	127.0	4.78	4.30	17.9	0.175	2 060	5.11	80.6	49.8	94.2	8 090	0.493
x3.2	127.0	3.18	2.86	12.2	0.119	1 400	3.57	56.2	50.5	64.8	5 540	0.498
HSS 102x102												
x13	101.6	12.70	11.43	32.2	0.316	3 790	4.88	96.1	35.9	124	8 570	0.367
x9.5	101.6	9.53	8.58	25.7	0.252	3 000	4.19	82.4	37.3	102	7 100	0.377
x7.9	101.6	7.94	7.15	22.1	0.217	2 570	3.72	73.2	38.0	89.3	6 190	0.382
x6.4	101.6	6.35	5.72	18.2	0.178	2 110	3.17	62.3	38.7	74.8	5 170	0.387
x4.8	101.6	4.78	4.30	14.1	0.138	1 630	2.53	49.7	39.4	58.7	4 050	0.392
x3.2	101.6	3.18	2.86	9.62	0.094	1 110	1.78	35.1	40.1	40.8	2 800	0.397
HSS 89x89												
x9.5	88.9	9.53	8.58	21.9	0.215	2 570	2.65	59.6	32.1	75.2	4 570	0.326
x7.9	88.9	7.94	7.15	18.9	0.186	2 210	2.38	53.5	32.8	66.2	4 020	0.331
x6.4	88.9	6.35	5.72	15.6	0.153	1 820	2.05	46.0	33.5	55.8	3 380	0.336
x4.8	88.9	4.78	4.30	12.2	0.119	1 410	1.65	37.1	34.2	44.1	2 660	0.341
HSS 76x76												
x9.5	76.2	9.53	8.58	18.1	0.178	2 130	1.55	40.6	26.9	52.2	2 710	0.275
x7.9	76.2	7.94	7.15	15.7	0.154	1 840	1.41	37.0	27.6	46.5	2 420	0.280
x6.4	76.2	6.35	5.72	13.1	0.129	1 530	1.23	32.2	28.4	39.6	2 060	0.285
x4.8	76.2	4.78	4.30	10.3	0.101	1 190	1.00	26.3	29.0	31.6	1 640	0.290
x3.2	76.2	3.18	2.86	7.09	0.070	818	0.724	19.0	29.7	22.3	1 150	0.295
HSS 64x64												
x6.4	63.5	6.35	5.72	10.6	0.104	1 240	0.664	20.9	23.2	26.2	1 130	0.234
x4.8	63.5	4.78	4.30	8.35	0.082	971	0.552	17.4	23.9	21.2	917	0.239
x3.2	63.5	3.18	2.86	5.82	0.057	673	0.406	12.8	24.6	15.1	652	0.244
HSS 51x51												
x6.4	50.8	6.35	5.72	8.05	0.079	947	0.305	12.0	18.0	15.5	536	0.184
x4.8	50.8	4.78	4.30	6.45	0.063	752	0.262	10.3	18.7	12.8	445	0.188
x3.2	50.8	3.18	2.86	4.55	0.045	527	0.198	7.79	19.4	9.35	323	0.193
HSS 38x38												
x4.8	38.1	4.78	4.30	4.54	0.045	534	0.096 7	5.08	13.5	6.54	170	0.138
x3.2	38.1	3.18	2.86	3.28	0.032	382	0.076 8	4.03	14.2	4.95	129	0.143

HOLLOW STRUCTURAL SECTIONS
ASTM A500
Rectangular



DIMENSIONS

Section	Outside Dimensions		Wall Thickness		Mass	Dead Load	Area	Surface Area
	Depth	Width	Nominal	Design				
mm x mm x mm	mm	mm	mm	mm	kg/m	kN/m	mm^2	m^2/m
HSS 305x203								
x16	304.8	203.2	15.88	14.29	114	1.11	13 200	0.967
x13	304.8	203.2	12.70	11.43	93.0	0.912	10 800	0.977
x9.5	304.8	203.2	9.53	8.58	71.3	0.700	8 230	0.987
x7.9	304.8	203.2	7.94	7.15	60.1	0.589	6 930	0.991
x6.4	304.8	203.2	6.35	5.72	48.6	0.476	5 600	0.996
HSS 305x152								
x16	304.8	152.4	15.88	14.29	101	0.991	11 700	0.865
x13	304.8	152.4	12.70	11.43	82.8	0.813	9 590	0.875
x9.5	304.8	152.4	9.53	8.58	63.7	0.625	7 360	0.885
x7.9	304.8	152.4	7.94	7.15	53.7	0.527	6 200	0.890
x6.4	304.8	152.4	6.35	5.72	43.5	0.427	5 020	0.895
HSS 254x203								
x16	254.0	203.2	15.88	14.29	101	0.991	11 700	0.865
x13	254.0	203.2	12.70	11.43	82.8	0.813	9 590	0.875
x9.5	254.0	203.2	9.53	8.58	63.7	0.625	7 360	0.885
x7.9	254.0	203.2	7.94	7.15	53.7	0.527	6 200	0.890
x6.4	254.0	203.2	6.35	5.72	43.5	0.427	5 020	0.895
HSS 254x152								
x16	254.0	152.4	15.88	14.29	88.3	0.866	10 300	0.764
x13	254.0	152.4	12.70	11.43	72.7	0.713	8 430	0.774
x9.5	254.0	152.4	9.53	8.58	56.1	0.551	6 490	0.783
x7.9	254.0	152.4	7.94	7.15	47.4	0.465	5 480	0.788
x6.4	254.0	152.4	6.35	5.72	38.4	0.377	4 430	0.793
x4.8	254.0	152.4	4.78	4.30	29.3	0.288	3 370	0.798
HSS 203x152								
x16	203.2	152.4	15.88	14.29	75.6	0.742	8 820	0.662
x13	203.2	152.4	12.70	11.43	62.6	0.614	7 270	0.672
x9.5	203.2	152.4	9.53	8.58	48.5	0.476	5 620	0.682
x7.9	203.2	152.4	7.94	7.15	41.1	0.403	4 750	0.687
x6.4	203.2	152.4	6.35	5.72	33.4	0.327	3 850	0.692
x4.8	203.2	152.4	4.78	4.30	25.5	0.250	2 940	0.696
HSS 203x102								
x13	203.2	101.6	12.70	11.43	52.4	0.515	6 110	0.570
x9.5	203.2	101.6	9.53	8.58	40.9	0.401	4 750	0.580
x7.9	203.2	101.6	7.94	7.15	34.7	0.341	4 020	0.585
x6.4	203.2	101.6	6.35	5.72	28.3	0.278	3 270	0.590
x4.8	203.2	101.6	4.78	4.30	21.7	0.213	2 500	0.595
HSS 178x127								
x13	177.8	127.0	12.70	11.43	52.4	0.515	6 110	0.570
x9.5	177.8	127.0	9.53	8.58	40.9	0.401	4 750	0.580
x7.9	177.8	127.0	7.94	7.15	34.7	0.341	4 020	0.585
x6.4	177.8	127.0	6.35	5.72	28.3	0.278	3 270	0.590
x4.8	177.8	127.0	4.78	4.30	21.7	0.213	2 500	0.595

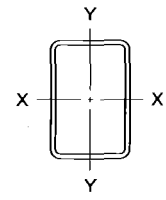


HOLLOW STRUCTURAL SECTIONS
ASTM A500
Rectangular

PROPERTIES

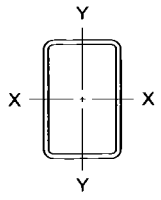
Axis X-X				Axis Y-Y				Torsional Constant	Section
I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	
10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^3 mm^4	mm x mm x mm
									HSS 305x203
161	1 060	111	1 310	85.4	841	80.5	989	184 000	x16
135	886	112	1 090	72.0	709	81.8	821	152 000	x13
106	697	114	843	56.9	560	83.1	638	118 000	x9.5
90.6	594	114	714	48.6	478	83.8	542	100 000	x7.9
74.1	486	115	581	39.9	392	84.4	441	81 400	x6.4
									HSS 305x152
130	856	105	1 100	43.4	569	60.8	672	110 000	x16
110	722	107	915	37.0	485	62.1	562	92 000	x13
87.1	572	109	714	29.6	388	63.4	440	72 100	x9.5
74.5	489	110	606	25.4	333	64.0	375	61 300	x7.9
61.1	401	110	494	21.0	275	64.6	306	50 100	x6.4
									HSS 254x203
103	809	93.6	994	72.4	713	78.6	852	140 000	x16
86.7	682	95.1	827	61.3	603	79.9	709	117 000	x13
68.5	540	96.5	645	48.6	478	81.3	554	90 700	x9.5
58.6	462	97.2	548	41.6	410	81.9	470	76 900	x7.9
48.1	379	97.9	446	34.2	337	82.6	384	62 600	x6.4
									HSS 254x152
81.8	644	89.2	820	36.4	478	59.6	572	85 100	x16
69.6	548	90.8	686	31.2	410	60.8	480	71 400	x13
55.4	436	92.4	538	25.0	329	62.1	378	56 100	x9.5
47.5	374	93.2	458	21.6	283	62.8	322	47 700	x7.9
39.1	308	94.0	374	17.8	234	63.4	264	39 000	x6.4
30.3	238	94.7	287	13.8	182	64.1	203	29 900	x4.8
									HSS 203x152
46.5	457	72.6	577	29.5	387	57.8	472	61 100	x16
39.9	393	74.1	486	25.4	334	59.1	398	51 600	x13
32.1	316	75.6	384	20.5	270	60.5	315	40 600	x9.5
27.7	272	76.3	328	17.7	233	61.1	269	34 700	x7.9
22.9	225	77.1	269	14.7	193	61.8	221	28 400	x6.4
17.8	175	77.8	207	11.4	150	62.4	170	21 800	x4.8
									HSS 203x102
29.2	288	69.2	375	9.63	190	39.7	228	24 800	x13
23.8	235	70.9	299	7.97	157	41.0	183	20 000	x9.5
20.7	204	71.7	257	6.96	137	41.6	158	17 200	x7.9
17.2	169	72.5	211	5.84	115	42.2	131	14 200	x6.4
13.4	132	73.3	164	4.60	90.5	42.9	101	11 000	x4.8
									HSS 178x127
24.7	278	63.6	350	14.5	228	48.7	276	30 800	x13
20.1	226	65.1	279	11.9	187	50.0	221	24 600	x9.5
17.4	196	65.8	239	10.3	163	50.7	190	21 100	x7.9
14.5	163	66.6	197	8.63	136	51.4	156	17 300	x6.4
11.3	127	67.3	152	6.76	106	52.0	121	13 400	x4.8

HOLLOW STRUCTURAL SECTIONS
ASTM A500
Rectangular



DIMENSIONS

Section	Outside Dimensions		Wall Thickness		Mass	Dead Load	Area	Surface Area
	Depth	Width	Nominal	Design				
mm x mm x mm	mm	mm	mm	mm	kg/m	kN/m	mm^2	m^2/m
HSS 152x102								
x13	152.4	101.6	12.70	11.43	42.3	0.415	4 950	0.469
x9.5	152.4	101.6	9.53	8.58	33.3	0.327	3 870	0.479
x7.9	152.4	101.6	7.94	7.15	28.4	0.279	3 300	0.483
x6.4	152.4	101.6	6.35	5.72	23.2	0.228	2 690	0.488
x4.8	152.4	101.6	4.78	4.30	17.9	0.175	2 060	0.493
x3.2	152.4	101.6	3.18	2.86	12.2	0.119	1 400	0.498
HSS 152x76								
x13	152.4	76.2	12.70	11.43	37.3	0.365	4 370	0.418
x9.5	152.4	76.2	9.53	8.58	29.5	0.290	3 440	0.428
x7.9	152.4	76.2	7.94	7.15	25.2	0.248	2 930	0.433
x6.4	152.4	76.2	6.35	5.72	20.7	0.203	2 400	0.438
x4.8	152.4	76.2	4.78	4.30	16.0	0.157	1 840	0.442
x3.2	152.4	76.2	3.18	2.86	10.9	0.107	1 250	0.447
HSS 127x76								
x13	127.0	76.2	12.70	11.43	32.2	0.316	3 790	0.367
x9.5	127.0	76.2	9.53	8.58	25.7	0.252	3 000	0.377
x7.9	127.0	76.2	7.94	7.15	22.1	0.217	2 570	0.382
x6.4	127.0	76.2	6.35	5.72	18.2	0.178	2 110	0.387
x4.8	127.0	76.2	4.78	4.30	14.1	0.138	1 630	0.392
x3.2	127.0	76.2	3.18	2.86	9.62	0.094	1 110	0.397
HSS 102x76								
x9.5	101.6	76.2	9.53	8.58	21.9	0.215	2 570	0.326
x7.9	101.6	76.2	7.94	7.15	18.9	0.186	2 210	0.331
x6.4	101.6	76.2	6.35	5.72	15.6	0.153	1 820	0.336
x4.8	101.6	76.2	4.78	4.30	12.2	0.119	1 410	0.341
x3.2	101.6	76.2	3.18	2.86	8.35	0.082	963	0.346
HSS 102x51								
x9.5	101.6	50.8	9.53	8.58	18.1	0.178	2 130	0.275
x7.9	101.6	50.8	7.94	7.15	15.7	0.154	1 840	0.280
x6.4	101.6	50.8	6.35	5.72	13.1	0.129	1 530	0.285
x4.8	101.6	50.8	4.78	4.30	10.3	0.101	1 190	0.290
x3.2	101.6	50.8	3.18	2.86	7.09	0.070	818	0.295
HSS 89x64								
x6.4	88.9	63.5	6.35	5.72	13.1	0.129	1 530	0.285
x4.8	88.9	63.5	4.78	4.30	10.3	0.101	1 190	0.290
HSS 76x51								
x7.9	76.2	50.8	7.94	7.15	12.6	0.123	1 480	0.229
x6.4	76.2	50.8	6.35	5.72	10.6	0.104	1 240	0.234
x4.8	76.2	50.8	4.78	4.30	8.35	0.082	971	0.239
x3.2	76.2	50.8	3.18	2.86	5.82	0.057	673	0.244

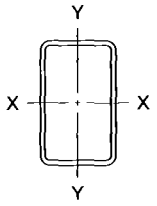


HOLLOW STRUCTURAL SECTIONS
ASTM A500
Rectangular

PROPERTIES

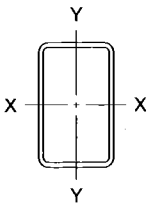
Axis X-X				Axis Y-Y				Torsional Constant	Section
I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	
10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^3 mm^4	mm x mm x mm
									HSS 152x102
13.9	182	52.9	235	7.26	143	38.3	176	16 400	x13
11.5	151	54.5	190	6.08	120	39.6	143	13 300	x9.5
10.1	132	55.3	164	5.34	105	40.3	124	11 500	x7.9
8.45	111	56.0	136	4.50	88.6	40.9	103	9 530	x6.4
6.65	87.3	56.8	106	3.56	70.1	41.6	80.0	7 410	x4.8
4.63	60.8	57.5	72.6	2.49	49.1	42.2	55.1	5 090	x3.2
									HSS 152x76
11.0	144	50.1	194	3.55	93.2	28.5	117	9 430	x13
9.25	121	51.9	158	3.05	80.0	29.8	96.5	7 860	x9.5
8.15	107	52.7	137	2.71	71.2	30.4	84.1	6 880	x7.9
6.89	90.4	53.6	114	2.31	60.7	31.0	70.3	5 760	x6.4
5.45	71.6	54.4	89.4	1.85	48.6	31.7	55.2	4 520	x4.8
3.82	50.1	55.2	61.8	1.31	34.4	32.3	38.3	3 130	x3.2
									HSS 127x76
6.72	106	42.1	142	2.93	77.0	27.8	98.2	7 220	x13
5.76	90.7	43.8	117	2.55	66.9	29.1	81.7	6 070	x9.5
5.12	80.6	44.6	103	2.28	59.8	29.8	71.6	5 320	x7.9
4.35	68.5	45.4	85.8	1.95	51.2	30.4	60.1	4 470	x6.4
3.47	54.6	46.2	67.4	1.57	41.2	31.1	47.3	3 510	x4.8
2.45	38.5	47.0	46.8	1.11	29.3	31.7	33.0	2 440	x3.2
									HSS 102x76
3.24	63.8	35.5	82.1	2.05	53.7	28.2	67.0	4 340	x9.5
2.91	57.2	36.3	72.2	1.84	48.4	28.9	59.0	3 820	x7.9
2.50	49.1	37.0	60.8	1.59	41.7	29.6	49.8	3 220	x6.4
2.01	39.6	37.8	48.1	1.29	33.7	30.2	39.5	2 550	x4.8
1.43	28.1	38.5	33.6	0.919	24.1	30.9	27.6	1 770	x3.2
									HSS 102x51
2.29	45.2	32.8	61.8	0.736	29.0	18.6	37.1	1 980	x9.5
2.09	41.2	33.7	55.0	0.681	26.8	19.2	33.3	1 800	x7.9
1.83	36.0	34.6	46.9	0.602	23.7	19.9	28.6	1 550	x6.4
1.49	29.4	35.4	37.5	0.499	19.6	20.5	23.0	1 250	x4.8
1.08	21.2	36.3	26.4	0.365	14.4	21.1	16.3	890	x3.2
									HSS 89x64
1.54	34.7	31.8	43.7	0.907	28.6	24.4	34.5	1 930	x6.4
1.26	28.3	32.5	34.9	0.744	23.4	25.0	27.6	1 540	x4.8
									HSS 76x51
0.974	25.6	25.7	33.9	0.506	19.9	18.5	25.4	1 170	x7.9
0.867	22.8	26.5	29.4	0.454	17.9	19.1	22.0	1 030	x6.4
0.721	18.9	27.2	23.8	0.380	15.0	19.8	17.9	834	x4.8
0.528	13.9	28.0	17.0	0.281	11.1	20.5	12.8	596	x3.2

HOLLOW STRUCTURAL SECTIONS
ASTM A500
Rectangular



DIMENSIONS

Section	Outside Dimensions		Wall Thickness		Mass	Dead Load	Area	Surface Area
	Depth	Width	Nominal	Design				
mm x mm x mm	mm	mm	mm	mm	kg/m	kN/m	mm^2	m^2/m
HSS 76x38								
x6.4	76.2	38.1	6.35	5.72	9.31	0.091	1 090	0.209
x4.8	76.2	38.1	4.78	4.30	7.40	0.073	861	0.214
x3.2	76.2	38.1	3.18	2.86	5.18	0.051	600	0.219
HSS 64x38								
x6.4	63.5	38.1	6.35	5.72	8.05	0.079	947	0.184
x4.8	63.5	38.1	4.78	4.30	6.45	0.063	752	0.188
x3.2	63.5	38.1	3.18	2.86	4.55	0.045	527	0.193
HSS 51x25								
x4.8	50.8	25.4	4.78	4.30	4.54	0.045	534	0.138
x3.2	50.8	25.4	3.18	2.86	3.28	0.032	382	0.143

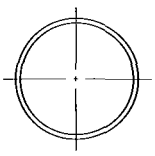


HOLLOW STRUCTURAL SECTIONS
ASTM A500
Rectangular

PROPERTIES

Axis X-X				Axis Y-Y				Torsional Constant	Section
I_x	S_x	r_x	Z_x	I_y	S_y	r_y	Z_y	J	
10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^6 mm^4	10^3 mm^3	mm	10^3 mm^3	10^3 mm^4	mm x mm x mm
									HSS 76x38
0.686	18.0	25.1	24.2	0.222	11.7	14.3	14.6	590	x6.4
0.579	15.2	25.9	19.8	0.191	10.0	14.9	12.1	492	x4.8
0.430	11.3	26.8	14.3	0.145	7.59	15.5	8.79	360	x3.2
									HSS 64x38
0.420	13.2	21.1	17.8	0.183	9.63	13.9	12.3	452	x6.4
0.361	11.4	21.9	14.7	0.159	8.37	14.6	10.2	380	x4.8
0.272	8.56	22.7	10.7	0.122	6.40	15.2	7.51	279	x3.2
									HSS 51x25
0.144	5.65	16.4	7.74	0.046 0	3.63	9.29	4.65	124	x4.8
0.114	4.50	17.3	5.86	0.037 6	2.96	9.93	3.57	97.1	x3.2

HOLLOW STRUCTURAL SECTIONS
ASTM A500
Round

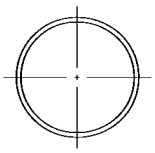


PROPERTIES AND DIMENSIONS

Section	Outside Dimension	Wall Thickness		Mass	Dead Load	Area	I	S	r	Z	Torsional Constant	Surface Area
		Nominal	Design								J	
mm x mm x mm	mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 508												
x13*	508.0	12.70	11.43	155	1.52	17 800	550	2 160	176	2 820	1 100 000	1.60
x9.5*	508.0	9.53	8.58	117	1.15	13 500	420	1 650	177	2 140	840 000	1.60
x6.4*	508.0	6.35	5.72	78.6	0.771	9 030	285	1 120	178	1 440	569 000	1.60
HSS 457												
x13*	457.2	12.70	11.43	139	1.37	16 000	398	1 740	158	2 270	796 000	1.44
x9.5*	457.2	9.53	8.58	105	1.03	12 100	304	1 330	159	1 730	609 000	1.44
x6.4*	457.2	6.35	5.72	70.6	0.693	8 110	207	904	160	1 170	413 000	1.44
HSS 406												
x16	406.4	15.88	14.29	153	1.50	17 600	339	1 670	139	2 200	678 000	1.28
x13	406.4	12.70	11.43	123	1.21	14 200	277	1 360	140	1 780	554 000	1.28
x9.5	406.4	9.53	8.58	93.3	0.915	10 700	212	1 040	141	1 360	424 000	1.28
x6.4	406.4	6.35	5.72	62.6	0.615	7 200	145	711	142	918	289 000	1.28
HSS 356												
x13	355.6	12.70	11.43	107	1.05	12 400	183	1 030	122	1 350	366 000	1.12
x9.5	355.6	9.53	8.58	81.3	0.798	9 350	141	792	123	1 030	282 000	1.12
x6.4	355.6	6.35	5.72	54.7	0.537	6 290	96.2	541	124	700	192 000	1.12
HSS 324												
x13	323.9	12.70	11.43	97.5	0.956	11 200	137	847	111	1 120	274 000	1.02
x9.5	323.9	9.53	8.58	73.9	0.725	8 500	106	653	112	853	211 000	1.02
x6.4	323.9	6.35	5.72	49.7	0.488	5 720	72.4	447	113	579	145 000	1.02
HSS 273												
x13	273.1	12.70	11.43	81.6	0.800	9 400	80.6	590	92.6	783	161 000	0.858
x9.5	273.1	9.53	8.58	61.9	0.608	7 130	62.4	457	93.6	601	125 000	0.858
x7.9	273.1	7.94	7.15	51.9	0.509	5 970	52.9	387	94.1	506	106 000	0.858
x6.4	273.1	6.35	5.72	41.8	0.410	4 800	43.0	315	94.6	409	85 900	0.858
x4.8	273.1	4.78	4.30	31.6	0.310	3 630	32.8	240	95.0	311	65 600	0.858
HSS 245												
x9.5	244.5	9.53	8.58	55.2	0.542	6 360	44.3	362	83.5	478	88 600	0.768
x6.4	244.5	6.35	5.72	37.3	0.366	4 290	30.6	250	84.4	326	61 200	0.768
HSS 219												
x13	219.1	12.70	11.43	64.6	0.634	7 460	40.3	368	73.5	493	80 600	0.688
x9.5	219.1	9.53	8.58	49.3	0.483	5 670	31.5	287	74.5	380	63 000	0.688
x6.4	219.1	6.35	5.72	33.3	0.327	3 830	21.8	199	75.5	260	43 700	0.688
x4.8	219.1	4.78	4.30	25.3	0.248	2 900	16.7	153	76.0	198	33 500	0.688
HSS 178												
x13	177.8	12.70	11.43	51.7	0.507	5 970	20.8	234	59.0	317	41 500	0.559
x9.5	177.8	9.53	8.58	39.5	0.388	4 560	16.4	184	59.9	246	32 700	0.559

* Imported section

HOLLOW STRUCTURAL SECTIONS
ASTM A500
Round



PROPERTIES AND DIMENSIONS

Section	Outside Dimension	Wall Thickness		Mass	Dead Load	Area	I	S	r	Z	Torsional Constant	Surface Area
		Nominal	Design								J	
mm x mm x mm	mm	mm	mm	kg/m	kN/m	mm^2	$10^6\ mm^4$	$10^3\ mm^3$	mm	$10^3\ mm^3$	$10^3\ mm^4$	m^2/m
HSS 168												
x13	168.3	12.70	11.43	48.7	0.478	5 630	17.4	207	55.6	282	34 800	0.529
x9.5	168.3	9.53	8.58	37.3	0.366	4 310	13.8	164	56.6	219	27 500	0.529
x6.4	168.3	6.35	5.72	25.4	0.249	2 920	9.66	115	57.5	151	19 300	0.529
x4.8	168.3	4.78	4.30	19.3	0.189	2 220	7.45	88.6	58.0	116	14 900	0.529
HSS 141												
x13	141.3	12.70	11.43	40.3	0.395	4 660	9.91	140	46.1	193	19 800	0.444
x9.5	141.3	9.53	8.58	31.0	0.304	3 580	7.91	112	47.0	151	15 800	0.444
x6.4	141.3	6.35	5.72	21.1	0.207	2 440	5.61	79.4	48.0	105	11 200	0.444
HSS 127												
x9.5	127.0	9.53	8.58	27.6	0.271	3 190	5.62	88.6	42.0	121	11 200	0.399
x6.4	127.0	6.35	5.72	18.9	0.185	2 180	4.02	63.2	42.9	84.2	8 030	0.399
HSS 89												
x6.4	88.9	6.35	5.72	12.9	0.127	1 490	1.30	29.2	29.5	39.6	2 600	0.279
x4.8	88.9	4.78	4.30	9.92	0.097	1 140	1.03	23.1	29.9	30.8	2 050	0.279
x3.2	88.9	3.18	2.86	6.72	0.066	773	0.716	16.1	30.4	21.2	1 430	0.279
HSS 76												
x6.4	76.2	6.35	5.72	10.9	0.107	1 270	0.792	20.8	25.0	28.5	1 580	0.239
x4.8	76.2	4.78	4.30	8.42	0.083	971	0.630	16.5	25.5	22.3	1 260	0.239
x3.2	76.2	3.18	2.86	5.73	0.056	659	0.444	11.6	25.9	15.4	887	0.239
HSS 73												
x6.4	73.0	6.35	5.72	10.4	0.102	1 210	0.689	18.9	23.9	26.0	1 380	0.229
x4.8	73.0	4.78	4.30	8.04	0.079	928	0.550	15.1	24.3	20.3	1 100	0.229
x3.2	73.0	3.18	2.86	5.48	0.054	630	0.388	10.6	24.8	14.1	776	0.229
HSS 64												
x6.4	63.5	6.35	5.72	8.95	0.088	1 040	0.438	13.8	20.5	19.2	875	0.199
x4.8	63.5	4.78	4.30	6.92	0.068	800	0.352	11.1	21.0	15.1	704	0.199
x3.2	63.5	3.18	2.86	4.73	0.046	545	0.251	7.91	21.5	10.5	502	0.199
HSS 60												
x6.4	60.3	6.35	5.72	8.45	0.083	981	0.369	12.2	19.4	17.1	738	0.189
x4.8	60.3	4.78	4.30	6.54	0.064	756	0.298	9.89	19.9	13.5	597	0.189
x3.2	60.3	3.18	2.86	4.48	0.044	516	0.213	7.08	20.3	9.44	427	0.189
HSS 48												
x4.8	48.3	4.78	4.30	5.13	0.050	594	0.145	6.01	15.6	8.35	290	0.152
x3.2	48.3	3.18	2.86	3.54	0.035	408	0.106	4.38	16.1	5.91	212	0.152
HSS 42												
x3.2	42.2	3.18	2.86	3.06	0.030	353	0.069	3.26	13.9	4.43	137	0.133