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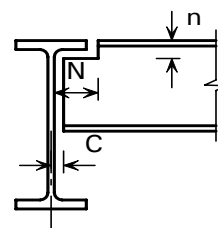
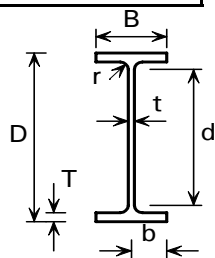
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B.1. TABLES OF DIMENSIONS AND GROSS SECTION PROPERTIES

UNIVERSAL BEAMS

Advance UKB



Dimensions

Section Designation	Mass per Metre kg/m	Depth of Section D mm	Width of Section B mm	Thickness		Root Radius r mm	Depth between Fillets d mm	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange			Flange	Web	End Clearance C mm	Notch		Per Metre m ²	Per Tonne m ²
				t mm	T mm			b/T	d/t		N mm	n mm		
1016x305x487 +	486.7	1036.3	308.5	30.0	54.1	30.0	868.1	2.85	28.9	17	150	86	3.20	6.58
1016x305x437 +	437.0	1026.1	305.4	26.9	49.0	30.0	868.1	3.12	32.3	15	150	80	3.17	7.25
1016x305x393 +	392.7	1015.9	303.0	24.4	43.9	30.0	868.1	3.45	35.6	14	150	74	3.14	8.00
1016x305x349 +	349.4	1008.1	302.0	21.1	40.0	30.0	868.1	3.78	41.1	13	152	70	3.13	8.96
1016x305x314 +	314.3	999.9	300.0	19.1	35.9	30.0	868.1	4.18	45.5	12	152	66	3.11	9.89
1016x305x272 +	272.3	990.1	300.0	16.5	31.0	30.0	868.1	4.84	52.6	10	152	62	3.10	11.4
1016x305x249 +	248.7	980.1	300.0	16.5	26.0	30.0	868.1	5.77	52.6	10	152	56	3.08	12.4
1016x305x222 +	222.0	970.3	300.0	16.0	21.1	30.0	868.1	7.11	54.3	10	152	52	3.06	13.8
914x419x388	388.0	921.0	420.5	21.4	36.6	24.1	799.6	5.74	37.4	13	210	62	3.44	8.87
914x419x343	343.3	911.8	418.5	19.4	32.0	24.1	799.6	6.54	41.2	12	210	58	3.42	9.96
914x305x289	289.1	926.6	307.7	19.5	32.0	19.1	824.4	4.81	42.3	12	156	52	3.01	10.4
914x305x253	253.4	918.4	305.5	17.3	27.9	19.1	824.4	5.47	47.7	11	156	48	2.99	11.8
914x305x224	224.2	910.4	304.1	15.9	23.9	19.1	824.4	6.36	51.8	10	156	44	2.97	13.2
914x305x201	200.9	903.0	303.3	15.1	20.2	19.1	824.4	7.51	54.6	10	156	40	2.96	14.7
838x292x226	226.5	850.9	293.8	16.1	26.8	17.8	761.7	5.48	47.3	10	150	46	2.81	12.4
838x292x194	193.8	840.7	292.4	14.7	21.7	17.8	761.7	6.74	51.8	9	150	40	2.79	14.4
838x292x176	175.9	834.9	291.7	14.0	18.8	17.8	761.7	7.76	54.4	9	150	38	2.78	15.8
762x267x197	196.8	769.8	268.0	15.6	25.4	16.5	686.0	5.28	44.0	10	138	42	2.55	13.0
762x267x173	173.0	762.2	266.7	14.3	21.6	16.5	686.0	6.17	48.0	9	138	40	2.53	14.6
762x267x147	146.9	754.0	265.2	12.8	17.5	16.5	686.0	7.58	53.6	8	138	34	2.51	17.1
762x267x134	133.9	750.0	264.4	12.0	15.5	16.5	686.0	8.53	57.2	8	138	32	2.51	18.7
686x254x170	170.2	692.9	255.8	14.5	23.7	15.2	615.1	5.40	42.4	9	132	40	2.35	13.8
686x254x152	152.4	687.5	254.5	13.2	21.0	15.2	615.1	6.06	46.6	9	132	38	2.34	15.4
686x254x140	140.1	683.5	253.7	12.4	19.0	15.2	615.1	6.68	49.6	8	132	36	2.33	16.6
686x254x125	125.2	677.9	253.0	11.7	16.2	15.2	615.1	7.81	52.6	8	132	32	2.32	18.5
610x305x238	238.1	635.8	311.4	18.4	31.4	16.5	540.0	4.96	29.3	11	158	48	2.45	10.3
610x305x179	179.0	620.2	307.1	14.1	23.6	16.5	540.0	6.51	38.3	9	158	42	2.41	13.5
610x305x149	149.2	612.4	304.8	11.8	19.7	16.5	540.0	7.74	45.8	8	158	38	2.39	16.0
610x229x140	139.9	617.2	230.2	13.1	22.1	12.7	547.6	5.21	41.8	9	120	36	2.11	15.1
610x229x125	125.1	612.2	229.0	11.9	19.6	12.7	547.6	5.84	46.0	8	120	34	2.09	16.7
610x229x113	113.0	607.6	228.2	11.1	17.3	12.7	547.6	6.60	49.3	8	120	30	2.08	18.4
610x229x101	101.2	602.6	227.6	10.5	14.8	12.7	547.6	7.69	52.2	7	120	28	2.07	20.5
610x178x100 +	100.3	607.4	179.2	11.3	17.2	12.7	547.6	5.21	48.5	8	94	30	1.89	18.8
610x178x92 +	92.2	603.0	178.8	10.9	15.0	12.7	547.6	5.96	50.2	7	94	28	1.88	20.4
610x178x82 +	81.8	598.6	177.9	10.0	12.8	12.7	547.6	6.95	54.8	7	94	26	1.87	22.9
533x312x273 +	273.3	577.1	320.2	21.1	37.6	12.7	476.5	4.26	22.6	13	160	52	2.37	8.67
533x312x219 +	218.8	560.3	317.4	18.3	29.2	12.7	476.5	5.43	26.0	11	160	42	2.33	10.7
533x312x182 +	181.5	550.7	314.5	15.2	24.4	12.7	476.5	6.44	31.3	10	160	38	2.31	12.7
533x312x151 +	150.6	542.5	312.0	12.7	20.3	12.7	476.5	7.68	37.5	8	160	34	2.29	15.2

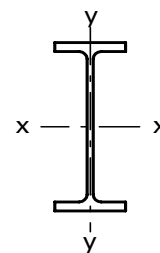
Advance and UKB are trademarks of Corus. A fuller description of the relationship between Universal Beams (UB) and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS 4 sections.

FOR EXPLANATION OF TABLES SEE NOTE 2

UNIVERSAL BEAMS

Advance UKB



Properties

Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	Area of Section
	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x cm ³	Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³	u	x	H dm ⁶	J cm ⁴	A cm ²
1016x305x487 +	1022000	26700	40.6	6.57	19700	1730	23200	2800	0.867	21.1	64.4	4300	620
1016x305x437 +	910000	23400	40.4	6.49	17700	1540	20800	2470	0.868	23.1	56.0	3190	557
1016x305x393 +	808000	20500	40.2	6.40	15900	1350	18500	2170	0.868	25.5	48.4	2330	500
1016x305x349 +	723000	18500	40.3	6.44	14300	1220	16600	1940	0.872	27.9	43.3	1720	445
1016x305x314 +	644000	16200	40.1	6.37	12900	1080	14800	1710	0.872	30.7	37.7	1260	400
1016x305x272 +	554000	14000	40.0	6.35	11200	934	12800	1470	0.873	35.0	32.2	835	347
1016x305x249 +	481000	11800	39.0	6.09	9820	784	11300	1240	0.861	39.8	26.8	582	317
1016x305x222 +	408000	9550	38.0	5.81	8410	636	9810	1020	0.850	45.7	21.5	390	283
914x419x388	720000	45400	38.2	9.59	15600	2160	17700	3340	0.885	26.7	88.9	1730	494
914x419x343	626000	39200	37.8	9.46	13700	1870	15500	2890	0.883	30.1	75.8	1190	437
914x305x289	504000	15600	37.0	6.51	10900	1010	12600	1600	0.867	31.9	31.2	926	368
914x305x253	436000	13300	36.8	6.42	9500	871	10900	1370	0.866	36.2	26.4	626	323
914x305x224	376000	11200	36.3	6.27	8270	739	9530	1160	0.861	41.3	22.1	422	286
914x305x201	325000	9420	35.7	6.07	7200	621	8350	982	0.854	46.8	18.4	291	256
838x292x226	340000	11400	34.3	6.27	7980	773	9160	1210	0.870	35.0	19.3	514	289
838x292x194	279000	9070	33.6	6.06	6640	620	7640	974	0.862	41.6	15.2	306	247
838x292x176	246000	7800	33.1	5.90	5890	535	6810	842	0.856	46.5	13.0	221	224
762x267x197	240000	8170	30.9	5.71	6230	610	7170	958	0.869	33.2	11.3	404	251
762x267x173	205000	6850	30.5	5.58	5390	514	6200	807	0.864	38.1	9.39	267	220
762x267x147	169000	5460	30.0	5.40	4470	411	5160	647	0.858	45.2	7.40	159	187
762x267x134	151000	4790	29.7	5.30	4020	362	4640	570	0.854	49.8	6.46	119	171
686x254x170	170000	6630	28.0	5.53	4920	518	5630	811	0.872	31.8	7.42	308	217
686x254x152	150000	5780	27.8	5.46	4370	455	5000	710	0.871	35.5	6.42	220	194
686x254x140	136000	5180	27.6	5.39	3990	409	4560	638	0.868	38.7	5.72	169	178
686x254x125	118000	4380	27.2	5.24	3480	346	3990	542	0.862	43.9	4.80	116	159
610x305x238	209000	15800	26.3	7.23	6590	1020	7490	1570	0.886	21.3	14.5	785	303
610x305x179	153000	11400	25.9	7.07	4930	743	5550	1140	0.886	27.7	10.2	340	228
610x305x149	126000	9310	25.7	7.00	4110	611	4590	937	0.886	32.7	8.17	200	190
610x229x140	112000	4510	25.0	5.03	3620	391	4140	611	0.875	30.6	3.99	216	178
610x229x125	98600	3930	24.9	4.97	3220	343	3680	535	0.873	34.1	3.45	154	159
610x229x113	87300	3430	24.6	4.88	2870	301	3280	469	0.870	38.0	2.99	111	144
610x229x101	75800	2910	24.2	4.75	2520	256	2880	400	0.864	43.1	2.52	77.0	129
610x178x100 +	72500	1660	23.8	3.60	2390	185	2790	296	0.855	38.7	1.44	95.0	128
610x178x92 +	64600	1440	23.4	3.50	2140	161	2510	258	0.848	42.8	1.24	71.0	117
610x178x82 +	55900	1210	23.2	3.40	1870	136	2190	218	0.843	48.5	1.04	48.8	104
533x312x273 +	199000	20600	23.9	7.69	6890	1290	7870	1990	0.890	15.9	15.0	1290	348
533x312x219 +	151000	15600	23.3	7.48	5400	982	6120	1510	0.884	19.8	11.0	642	279
533x312x182 +	123000	12700	23.1	7.40	4480	806	5040	1240	0.885	23.5	8.77	373	231
533x312x151 +	101000	10300	22.9	7.32	3710	659	4150	1010	0.885	27.9	7.01	216	192

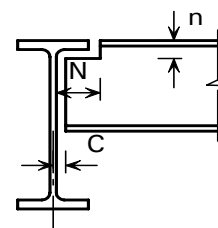
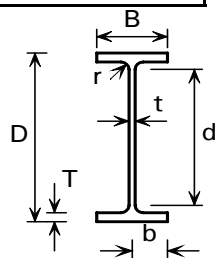
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+ These sections are in addition to the range of BS 4 sections.

FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL BEAMS

Advance UKB



Dimensions

Section Designation	Mass per Metre kg/m	Depth of Section D mm	Width of Section B mm	Thickness		Root Radius r mm	Depth between Fillets d mm	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange			Flange	Web	End Clearance C mm	Notch		Per Metre m ²	Per Tonne m ²
				t mm	T mm			b/T	d/t		N mm	n mm		
533x210x138 +	138.3	549.1	213.9	14.7	23.6	12.7	476.5	4.53	32.4	9	110	38	1.90	13.7
533x210x122	122.0	544.5	211.9	12.7	21.3	12.7	476.5	4.97	37.5	8	110	34	1.89	15.5
533x210x109	109.0	539.5	210.8	11.6	18.8	12.7	476.5	5.61	41.1	8	110	32	1.88	17.2
533x210x101	101.0	536.7	210.0	10.8	17.4	12.7	476.5	6.03	44.1	7	110	32	1.87	18.5
533x210x92	92.1	533.1	209.3	10.1	15.6	12.7	476.5	6.71	47.2	7	110	30	1.86	20.2
533x210x82	82.2	528.3	208.8	9.6	13.2	12.7	476.5	7.91	49.6	7	110	26	1.85	22.5
533x165x85 +	84.8	534.9	166.5	10.3	16.5	12.7	476.5	5.05	46.3	7	90	30	1.69	19.9
533x165x75 +	74.7	529.1	165.9	9.7	13.6	12.7	476.5	6.10	49.1	7	90	28	1.68	22.5
533x165x66 +	65.7	524.7	165.1	8.9	11.4	12.7	476.5	7.24	53.5	6	90	26	1.67	25.4
457x191x161 +	161.4	492.0	199.4	18.0	32.0	10.2	407.6	3.12	22.6	11	102	44	1.73	10.7
457x191x133 +	133.3	480.6	196.7	15.3	26.3	10.2	407.6	3.74	26.6	10	102	38	1.70	12.8
457x191x106 +	105.8	469.2	194.0	12.6	20.6	10.2	407.6	4.71	32.3	8	102	32	1.67	15.8
457x191x98	98.3	467.2	192.8	11.4	19.6	10.2	407.6	4.92	35.8	8	102	30	1.67	17.0
457x191x89	89.3	463.4	191.9	10.5	17.7	10.2	407.6	5.42	38.8	7	102	28	1.66	18.6
457x191x82	82.0	460.0	191.3	9.9	16.0	10.2	407.6	5.98	41.2	7	102	28	1.65	20.1
457x191x74	74.3	457.0	190.4	9.0	14.5	10.2	407.6	6.57	45.3	7	102	26	1.64	22.1
457x191x67	67.1	453.4	189.9	8.5	12.7	10.2	407.6	7.48	48.0	6	102	24	1.63	24.3
457x152x82	82.1	465.8	155.3	10.5	18.9	10.2	407.6	4.11	38.8	7	84	30	1.51	18.4
457x152x74	74.2	462.0	154.4	9.6	17.0	10.2	407.6	4.54	42.5	7	84	28	1.50	20.2
457x152x67	67.2	458.0	153.8	9.0	15.0	10.2	407.6	5.13	45.3	7	84	26	1.50	22.3
457x152x60	59.8	454.6	152.9	8.1	13.3	10.2	407.6	5.75	50.3	6	84	24	1.49	24.9
457x152x52	52.3	449.8	152.4	7.6	10.9	10.2	407.6	6.99	53.6	6	84	22	1.48	28.3
406x178x85 +	85.3	417.2	181.9	10.9	18.2	10.2	360.4	5.00	33.1	7	96	30	1.52	17.8
406x178x74	74.2	412.8	179.5	9.5	16.0	10.2	360.4	5.61	37.9	7	96	28	1.51	20.4
406x178x67	67.1	409.4	178.8	8.8	14.3	10.2	360.4	6.25	41.0	6	96	26	1.50	22.3
406x178x60	60.1	406.4	177.9	7.9	12.8	10.2	360.4	6.95	45.6	6	96	24	1.49	24.8
406x178x54	54.1	402.6	177.7	7.7	10.9	10.2	360.4	8.15	46.8	6	96	22	1.48	27.3
406x140x53 +	53.3	406.6	143.3	7.9	12.9	10.2	360.4	5.55	45.6	6	78	24	1.35	25.3
406x140x46	46.0	403.2	142.2	6.8	11.2	10.2	360.4	6.35	53.0	5	78	22	1.34	29.1
406x140x39	39.0	398.0	141.8	6.4	8.6	10.2	360.4	8.24	56.3	5	78	20	1.33	34.1
356x171x67	67.1	363.4	173.2	9.1	15.7	10.2	311.6	5.52	34.2	7	94	26	1.38	20.6
356x171x57	57.0	358.0	172.2	8.1	13.0	10.2	311.6	6.62	38.5	6	94	24	1.37	24.1
356x171x51	51.0	355.0	171.5	7.4	11.5	10.2	311.6	7.46	42.1	6	94	22	1.36	26.7
356x171x45	45.0	351.4	171.1	7.0	9.7	10.2	311.6	8.82	44.5	6	94	20	1.36	30.2
356x127x39	39.1	353.4	126.0	6.6	10.7	10.2	311.6	5.89	47.2	5	70	22	1.18	30.2
356x127x33	33.1	349.0	125.4	6.0	8.5	10.2	311.6	7.38	51.9	5	70	20	1.17	35.4
305x165x54	54.0	310.4	166.9	7.9	13.7	8.9	265.2	6.09	33.6	6	90	24	1.26	23.3
305x165x46	46.1	306.6	165.7	6.7	11.8	8.9	265.2	7.02	39.6	5	90	22	1.25	27.1
305x165x40	40.3	303.4	165.0	6.0	10.2	8.9	265.2	8.09	44.2	5	90	20	1.24	30.8

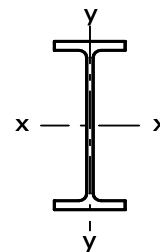
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UNIVERSAL BEAMS

Advance UKB



Properties

Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	u	x	H dm ⁶	J cm ⁴	A cm ²
	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³					
533x210x138 +	86100	3860	22.1	4.68	3140	361	3610	568	0.873	25.0	2.67	250	176
533x210x122	76000	3390	22.1	4.67	2790	320	3200	500	0.877	27.6	2.32	178	155
533x210x109	66800	2940	21.9	4.60	2480	279	2830	436	0.875	30.9	1.99	126	139
533x210x101	61500	2690	21.9	4.57	2290	256	2610	399	0.874	33.2	1.81	101	129
533x210x92	55200	2390	21.7	4.51	2070	228	2360	355	0.872	36.5	1.60	75.7	117
533x210x82	47500	2010	21.3	4.38	1800	192	2060	300	0.864	41.6	1.33	51.5	105
533x165x85 +	48500	1270	21.2	3.44	1820	153	2100	243	0.862	35.5	0.857	73.8	108
533x165x75 +	41100	1040	20.8	3.30	1550	125	1810	200	0.853	41.1	0.691	47.9	95.2
533x165x66 +	35000	859	20.5	3.20	1340	104	1560	166	0.847	47.0	0.566	32.0	83.7
457x191x161 +	79800	4250	19.7	4.55	3240	426	3780	672	0.882	16.4	2.25	515	206
457x191x133 +	63800	3350	19.4	4.44	2660	341	3070	535	0.880	19.6	1.73	292	170
457x191x106 +	48900	2510	19.0	4.32	2080	259	2390	405	0.877	24.4	1.27	146	135
457x191x98	45700	2350	19.1	4.33	1960	243	2230	379	0.881	25.7	1.18	121	125
457x191x89	41000	2090	19.0	4.29	1770	218	2010	338	0.880	28.3	1.04	90.7	114
457x191x82	37100	1870	18.8	4.23	1610	196	1830	304	0.877	30.9	0.922	69.2	104
457x191x74	33300	1670	18.8	4.20	1460	176	1650	272	0.877	33.9	0.818	51.8	94.6
457x191x67	29400	1450	18.5	4.12	1300	153	1470	237	0.872	37.9	0.705	37.1	85.5
457x152x82	36600	1180	18.7	3.37	1570	153	1810	240	0.873	27.4	0.591	89.2	105
457x152x74	32700	1050	18.6	3.33	1410	136	1630	213	0.873	30.1	0.518	65.9	94.5
457x152x67	28900	913	18.4	3.27	1260	119	1450	187	0.869	33.6	0.448	47.7	85.6
457x152x60	25500	795	18.3	3.23	1120	104	1290	163	0.868	37.5	0.387	33.8	76.2
457x152x52	21400	645	17.9	3.11	950	84.6	1100	133	0.859	43.9	0.311	21.4	66.6
406x178x85 +	31700	1830	17.1	4.11	1520	201	1730	313	0.881	24.4	0.728	93.0	109
406x178x74	27300	1550	17.0	4.04	1320	172	1500	267	0.882	27.6	0.608	62.8	94.5
406x178x67	24300	1360	16.9	3.99	1190	153	1350	237	0.880	30.5	0.533	46.1	85.5
406x178x60	21600	1200	16.8	3.97	1060	135	1200	209	0.880	33.8	0.466	33.3	76.5
406x178x54	18700	1020	16.5	3.85	930	115	1050	178	0.871	38.3	0.392	23.1	69.0
406x140x53 +	18300	635	16.4	3.06	899	88.6	1030	139	0.870	34.1	0.246	29.0	67.9
406x140x46	15700	538	16.4	3.03	778	75.7	888	118	0.871	38.9	0.207	19.0	58.6
406x140x39	12500	410	15.9	2.87	629	57.8	724	90.8	0.858	47.5	0.155	10.7	49.7
356x171x67	19500	1360	15.1	3.99	1070	157	1210	243	0.886	24.4	0.412	55.7	85.5
356x171x57	16000	1110	14.9	3.91	896	129	1010	199	0.882	28.8	0.330	33.4	72.6
356x171x51	14100	968	14.8	3.86	796	113	896	174	0.881	32.1	0.286	23.8	64.9
356x171x45	12100	811	14.5	3.76	687	94.8	775	147	0.874	36.8	0.237	15.8	57.3
356x127x39	10200	358	14.3	2.68	576	56.8	659	89.0	0.871	35.2	0.105	15.1	49.8
356x127x33	8250	280	14.0	2.58	473	44.7	543	70.2	0.863	42.2	0.081	8.79	42.1
305x165x54	11700	1060	13.0	3.93	754	127	846	196	0.889	23.6	0.234	34.8	68.8
305x165x46	9900	896	13.0	3.90	646	108	720	166	0.891	27.1	0.195	22.2	58.7
305x165x40	8500	764	12.9	3.86	560	92.6	623	142	0.889	31.0	0.164	14.7	51.3

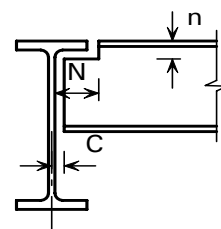
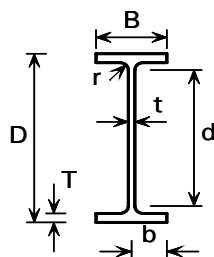
Advance and UKB are trademarks of Corus. A fuller description of the relationship between Universal Beams (UB) and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS 4 sections.

FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL BEAMS

Advance UKB



Dimensions

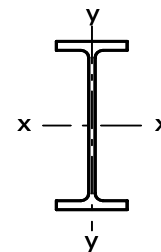
Section Designation	Mass per Metre	Depth of Section	Width of Section	Thickness		Root Radius	Depth between Fillets	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange			Flange	Web	End Clearance	Notch		Per Metre	Per Tonne
											N	n		
	kg/m	D mm	B mm	t mm	T mm	r mm	d mm	b/T	d/t	C mm	N mm	n mm	m ²	m ²
305x127x48	48.1	311.0	125.3	9.0	14.0	8.9	265.2	4.48	29.5	7	70	24	1.09	22.7
305x127x42	41.9	307.2	124.3	8.0	12.1	8.9	265.2	5.14	33.2	6	70	22	1.08	25.8
305x127x37	37.0	304.4	123.4	7.1	10.7	8.9	265.2	5.77	37.4	6	70	20	1.07	28.9
305x102x33	32.8	312.7	102.4	6.6	10.8	7.6	275.9	4.74	41.8	5	58	20	1.01	30.8
305x102x28	28.2	308.7	101.8	6.0	8.8	7.6	275.9	5.78	46.0	5	58	18	1.00	35.5
305x102x25	24.8	305.1	101.6	5.8	7.0	7.6	275.9	7.26	47.6	5	58	16	0.992	40.0
254x146x43	43.0	259.6	147.3	7.2	12.7	7.6	219.0	5.80	30.4	6	82	22	1.08	25.1
254x146x37	37.0	256.0	146.4	6.3	10.9	7.6	219.0	6.72	34.8	5	82	20	1.07	28.9
254x146x31	31.1	251.4	146.1	6.0	8.6	7.6	219.0	8.49	36.5	5	82	18	1.06	34.0
254x102x28	28.3	260.4	102.2	6.3	10.0	7.6	225.2	5.11	35.7	5	58	18	0.904	31.9
254x102x25	25.2	257.2	101.9	6.0	8.4	7.6	225.2	6.07	37.5	5	58	16	0.897	35.7
254x102x22	22.0	254.0	101.6	5.7	6.8	7.6	225.2	7.47	39.5	5	58	16	0.890	40.5
203x133x30	30.0	206.8	133.9	6.4	9.6	7.6	172.4	6.97	26.9	5	74	18	0.923	30.8
203x133x25	25.1	203.2	133.2	5.7	7.8	7.6	172.4	8.54	30.2	5	74	16	0.915	36.5
203x102x23	23.1	203.2	101.8	5.4	9.3	7.6	169.4	5.47	31.4	5	60	18	0.790	34.2
178x102x19	19.0	177.8	101.2	4.8	7.9	7.6	146.8	6.41	30.6	4	60	16	0.738	38.7
152x89x16	16.0	152.4	88.7	4.5	7.7	7.6	121.8	5.76	27.1	4	54	16	0.638	40.0
127x76x13	13.0	127.0	76.0	4.0	7.6	7.6	96.6	5.00	24.2	4	46	16	0.537	41.4

Advance and UKB are trademarks of Corus. A fuller description of the relationship between Universal Beams (UB) and the Advance range of sections manufactured by Corus is given on page A - 42.

FOR EXPLANATION OF TABLES SEE NOTE 2

UNIVERSAL BEAMS

Advance UKB



Properties

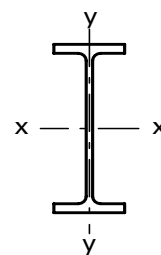
Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter u	Torsional Index x	Warping Constant H dm ⁶	Torsional Constant J cm ⁴	Area of Section A cm ²
	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y					
	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³					
305x127x48	9570	461	12.5	2.74	616	73.6	711	116	0.873	23.3	0.102	31.8	61.2
305x127x42	8200	389	12.4	2.70	534	62.6	614	98.4	0.872	26.5	0.0846	21.1	53.4
305x127x37	7170	336	12.3	2.67	471	54.5	539	85.4	0.872	29.7	0.0725	14.8	47.2
305x102x33	6500	194	12.5	2.15	416	37.9	481	60.0	0.866	31.6	0.0442	12.2	41.8
305x102x28	5370	155	12.2	2.08	348	30.5	403	48.4	0.859	37.4	0.0349	7.40	35.9
305x102x25	4460	123	11.9	1.97	292	24.2	342	38.8	0.846	43.4	0.027	4.77	31.6
254x146x43	6540	677	10.9	3.52	504	92.0	566	141	0.891	21.2	0.103	23.9	54.8
254x146x37	5540	571	10.8	3.48	433	78.0	483	119	0.890	24.3	0.0857	15.3	47.2
254x146x31	4410	448	10.5	3.36	351	61.3	393	94.1	0.880	29.6	0.0660	8.55	39.7
254x102x28	4000	179	10.5	2.22	308	34.9	353	54.8	0.874	27.5	0.0280	9.57	36.1
254x102x25	3410	149	10.3	2.15	266	29.2	306	46.0	0.866	31.5	0.0230	6.42	32.0
254x102x22	2840	119	10.1	2.06	224	23.5	259	37.3	0.856	36.4	0.0182	4.15	28.0
203x133x30	2900	385	8.71	3.17	280	57.5	314	88.2	0.881	21.5	0.0374	10.3	38.2
203x133x25	2340	308	8.56	3.10	230	46.2	258	70.9	0.877	25.6	0.0294	5.96	32.0
203x102x23	2100	164	8.46	2.36	207	32.2	234	49.7	0.888	22.5	0.0154	7.02	29.4
178x102x19	1360	137	7.48	2.37	153	27.0	171	41.6	0.888	22.6	0.0099	4.41	24.3
152x89x16	834	89.8	6.41	2.10	109	20.2	123	31.2	0.890	19.6	0.00470	3.56	20.3
127x76x13	473	55.7	5.35	1.84	74.6	14.7	84.2	22.6	0.895	16.3	0.00200	2.85	16.5

Advance and UKB are trademarks of Corus. A fuller description of the relationship between Universal Beams (UB) and the Advance range of sections manufactured by Corus is given on page A - 42.

FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL BEAMS

Advance UKB



Reduced plastic modulus under axial load

Section Designation	Plastic Modulus Axis x-x	Major Axis Reduced Modulus					Plastic Modulus Axis y-y	Minor Axis Reduced Modulus				
		Lower Values of n		Change Formula At n =	Higher Values of n			Lower Values of n		Change Formula At n =	Higher Values of n	
		K1	K2		K3	K4		K1	K2		K3	K4
	cm ³	K1	K2		K3	K4	cm ³	K1	K2		K3	K4
1016x305x487 +	23200	23200	32000	0.449	3120	9.31	2800	2800	927	0.501	8880	0.0768
1016x305x437 +	20800	20800	28800	0.448	2540	10.3	2470	2470	756	0.496	7910	0.0747
1016x305x393 +	18500	18500	25600	0.453	2060	11.3	2170	2170	615	0.496	7120	0.0641
1016x305x349 +	16600	16600	23500	0.440	1640	12.7	1940	1940	491	0.478	6190	0.0858
1016x305x314 +	14800	14800	20900	0.443	1330	14.0	1710	1710	400	0.477	5570	0.0770
1016x305x272 +	12800	12800	18200	0.441	1000	16.1	1470	1470	304	0.471	4860	0.0720
1016x305x249 +	11300	11300	15200	0.483	837	17.6	1240	1240	256	0.510	4830	-0.0158
1016x305x222 +	9810	9810	12500	0.525	667	19.6	1020	1020	206	0.549	4740	-0.105
914x419x388	17700	17700	28500	0.367	1450	14.7	3340	3340	662	0.399	8330	0.246
914x419x343	15500	15500	24600	0.376	1140	16.5	2890	2890	524	0.405	7460	0.226
914x305x289	12600	12600	17400	0.457	1100	14.5	1600	1600	365	0.491	5290	0.0703
914x305x253	10900	10900	15100	0.462	854	16.4	1370	1370	284	0.492	4670	0.0555
914x305x224	9530	9530	12900	0.480	672	18.4	1160	1160	225	0.506	4280	0.0165
914x305x201	8350	8350	10900	0.509	540	20.4	982	982	181	0.533	4060	-0.0427
838x292x226	9160	9160	13000	0.444	711	16.3	1210	1210	245	0.474	3900	0.0898
838x292x194	7640	7640	10400	0.475	522	18.9	974	974	181	0.500	3510	0.0275
838x292x176	6810	6810	8960	0.498	430	20.7	842	842	150	0.522	3340	-0.0207
762x267x197	7170	7170	10100	0.447	588	15.4	958	958	205	0.478	3100	0.0848
762x267x173	6200	6200	8460	0.467	454	17.5	807	807	159	0.495	2800	0.0474
762x267x147	5160	5160	6830	0.492	330	20.4	647	647	116	0.516	2500	-0.0073
762x267x134	4640	4640	6090	0.505	276	22.2	570	570	97.5	0.526	2360	-0.0414
686x254x170	5630	5630	8120	0.431	460	15.3	811	811	170	0.463	2480	0.118
686x254x152	5000	5000	7130	0.439	370	17.0	710	710	137	0.468	2240	0.102
686x254x140	4560	4560	6390	0.450	312	18.5	638	638	116	0.476	2080	0.0832
686x254x125	3990	3990	5400	0.475	250	20.6	542	542	93.2	0.499	1950	0.0311
610x305x238	7490	7490	12500	0.348	737	12.1	1570	1570	361	0.386	3650	0.291
610x305x179	5550	5550	9220	0.354	423	15.7	1140	1140	210	0.384	2750	0.272
610x305x149	4590	4590	7650	0.356	296	18.6	937	937	147	0.380	2290	0.264
610x229x140	4140	4140	6050	0.422	344	15.0	611	611	128	0.454	1790	0.143
610x229x125	3680	3680	5310	0.429	276	16.6	535	535	103	0.458	1610	0.129
610x229x113	3280	3280	4670	0.442	227	18.3	469	469	85.3	0.468	1500	0.0966
610x229x101	2880	2880	3960	0.466	183	20.3	400	400	69.0	0.490	1410	0.0445
610x178x100 +	2790	2790	3620	0.506	229	16.0	296	296	67.4	0.536	1190	-0.0368
610x178x92 +	2510	2510	3140	0.534	191	17.4	258	258	56.8	0.562	1140	-0.0831
610x178x82 +	2190	2190	2700	0.551	152	19.5	218	218	45.2	0.576	1060	-0.124
533x312x273 +	7870	7870	14300	0.304	946	9.62	1990	1990	525	0.350	4030	0.384
533x312x219 +	6120	6120	10600	0.329	613	11.7	1510	1510	347	0.368	3330	0.329
533x312x182 +	5040	5040	8780	0.330	424	14.0	1240	1240	242	0.362	2730	0.329
533x312x151 +	4150	4150	7260	0.332	295	16.6	1010	1010	170	0.359	2270	0.320

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+ These sections are in addition to the range of BS 4 sections.

$n = F/(A p_y)$, where F is the Factored axial load, A is the gross cross sectional area and p_y is the design strength of the section.

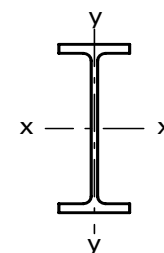
For lower values of n, the reduced plastic modulus, $S_r = K1 - K2.n^2$, for both major and minor axis bending.

For higher values of n, the reduced plastic modulus, $S_r = K3(1-n)(K4+n)$, for both major and minor axis bending.

FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL BEAMS

Advance UKB



Reduced plastic modulus under axial load

Section Designation	Plastic Modulus Axis x-x	Major Axis Reduced Modulus					Plastic Modulus Axis y-y	Minor Axis Reduced Modulus				
		Lower Values of n		Change Formula At n =	Higher Values of n			Lower Values of n		Change Formula At n =	Higher Values of n	
	K1	K2	K3		K4	K1	K2	K3	K4			
	cm ³						cm ³					
533x210x138 +	3610	3610	5270	0.419	362	12.3	568	568	141	0.459	1640	0.147
533x210x122	3200	3200	4730	0.411	283	13.9	500	500	110	0.446	1410	0.165
533x210x109	2830	2830	4160	0.419	229	15.4	436	436	89.5	0.450	1280	0.140
533x210x101	2610	2610	3850	0.420	198	16.5	399	399	77.5	0.449	1200	0.133
533x210x92	2360	2360	3390	0.433	164	18.1	355	355	64.2	0.460	1100	0.116
533x210x82	2060	2060	2870	0.459	132	20.0	300	300	52.2	0.483	1040	0.050
533x165x85 +	2100	2100	2830	0.479	175	15.5	243	243	54.5	0.510	884	0.018
533x165x75 +	1810	1810	2340	0.511	137	17.4	200	200	42.8	0.539	833	-0.0520
533x165x66 +	1560	1560	1970	0.534	106	19.7	166	166	33.4	0.558	768	-0.101
457x191x161 +	3780	3780	5890	0.374	532	8.52	672	672	216	0.430	1660	0.239
457x191x133 +	3070	3070	4720	0.385	367	10.1	535	535	150	0.433	1370	0.217
457x191x106 +	2390	2390	3620	0.399	235	12.5	405	405	97.1	0.438	1110	0.184
457x191x98	2230	2230	3430	0.390	203	13.4	379	379	83.6	0.426	996	0.209
457x191x89	2010	2010	3090	0.394	169	14.6	338	338	70.1	0.427	918	0.192
457x191x82	1830	1830	2730	0.407	141	15.9	304	304	58.8	0.438	845	0.177
457x191x74	1650	1650	2490	0.407	118	17.4	272	272	49.0	0.435	771	0.167
457x191x67	1470	1470	2150	0.425	96.2	19.1	237	237	40.3	0.451	720	0.128
457x152x82	1810	1810	2630	0.428	177	12.8	240	240	59.2	0.466	729	0.118
457x152x74	1630	1630	2330	0.435	145	14.1	213	213	48.3	0.469	657	0.111
457x152x67	1450	1450	2040	0.450	119	15.5	187	187	40.0	0.482	611	0.0780
457x152x60	1290	1290	1790	0.455	94.9	17.2	163	163	31.9	0.483	546	0.0675
457x152x52	1100	1100	1460	0.488	72.8	19.6	133	133	24.7	0.513	509	-0.00231
406x178x85 +	1730	1730	2730	0.381	163	12.9	313	313	71.2	0.417	816	0.215
406x178x74	1500	1500	2350	0.383	124	14.7	267	267	54.1	0.415	698	0.216
406x178x67	1350	1350	2080	0.392	102	16.1	237	237	44.6	0.421	639	0.196
406x178x60	1200	1200	1850	0.393	82.2	17.9	209	209	36.0	0.420	572	0.191
406x178x54	1050	1050	1550	0.425	67.0	19.7	178	178	29.6	0.449	546	0.123
406x140x53 +	1030	1030	1460	0.443	80.4	16.2	139	139	28.3	0.473	447	0.0890
406x140x46	888	888	1260	0.442	60.4	18.6	118	118	21.3	0.468	383	0.0871
406x140x39	724	724	965	0.490	43.5	21.7	90.8	90.8	15.5	0.513	359	-0.0185
356x171x67	1210	1210	2010	0.353	106	13.7	243	243	50.3	0.387	582	0.272
356x171x57	1010	1010	1630	0.370	76.5	16.0	199	199	36.8	0.399	507	0.233
356x171x51	896	896	1420	0.379	61.4	17.8	174	174	29.7	0.405	458	0.216
356x171x45	775	775	1170	0.406	48.0	20.0	147	147	23.4	0.429	423	0.159
356x127x39	659	659	939	0.440	49.2	16.9	89.0	89.0	17.5	0.468	290	0.0829
356x127x33	543	543	739	0.473	35.3	19.8	70.2	70.2	12.7	0.497	261	0.0127
305x165x54	846	846	1500	0.325	70.9	14.1	196	196	38.1	0.356	432	0.329
305x165x46	720	720	1290	0.323	52.0	16.3	166	166	28.1	0.350	365	0.332
305x165x40	623	623	1100	0.331	39.9	18.5	142	142	21.7	0.355	323	0.312

Advance and UKB are trademarks of Corus. A fuller description of the relationship between Universal Beams (UB) and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS 4 sections.

$n = F/(A p_y)$, where F is the Factored axial load, A is the gross cross sectional area and p_y is the design strength of the section.

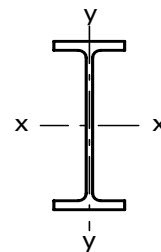
For lower values of n, the reduced plastic modulus, $S_r = K1 - K2.n^2$, for both major and minor axis bending.

For higher values of n, the reduced plastic modulus, $S_r = K3(1-n)(K4+n)$, for both major and minor axis bending.

FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL BEAMS

Advance UKB



Reduced plastic modulus under axial load

Section Designation	Plastic Modulus Axis x-x	Major Axis Reduced Modulus					Plastic Modulus Axis y-y	Minor Axis Reduced Modulus				
		Lower Values of n		Change Formula At n =	Higher Values of n			Lower Values of n		Change Formula At n =	Higher Values of n	
	K1	K2	K3		K4	K1	K2	K3	K4			
	cm ³						cm ³					
305x127x48	711	711	1040	0.416	74.7	11.7	116	116	30.1	0.457	334	0.147
305x127x42	614	614	891	0.424	57.4	13.3	98.4	98.4	23.2	0.460	295	0.127
305x127x37	539	539	784	0.426	45.1	14.9	85.4	85.4	18.3	0.458	260	0.119
305x102x33	481	481	662	0.460	42.7	14.3	60.0	60.0	14.0	0.494	202	0.0583
305x102x28	403	403	537	0.487	31.7	16.5	48.4	48.4	10.4	0.516	183	-0.00185
305x102x25	342	342	430	0.534	24.6	18.6	38.8	38.8	8.18	0.560	178	-0.100
254x146x43	566	566	1040	0.308	51.0	13.0	141	141	28.9	0.341	296	0.365
254x146x37	483	483	884	0.313	38.0	14.9	119	119	21.8	0.342	255	0.352
254x146x31	393	393	657	0.354	27.0	17.5	94.1	94.1	15.7	0.380	229	0.266
254x102x28	353	353	517	0.420	31.9	13.7	54.8	54.8	12.5	0.454	163	0.132
254x102x25	306	306	427	0.451	25.1	15.4	46.0	46.0	9.95	0.482	152	0.0700
254x102x22	259	259	344	0.489	19.3	17.4	37.3	37.3	7.72	0.517	144	-0.0130
203x133x30	314	314	570	0.314	27.2	13.5	88.2	88.2	17.6	0.346	190	0.346
203x133x25	258	258	449	0.334	19.2	15.9	70.9	70.9	12.6	0.362	164	0.299
203x102x23	234	234	400	0.339	21.2	13.1	49.7	49.7	10.6	0.373	116	0.288
178x102x19	171	171	308	0.320	14.6	13.8	41.6	41.6	8.30	0.351	93.4	0.316
152x89x16	123	123	229	0.304	11.6	12.3	31.2	31.2	6.76	0.338	66.9	0.346
127x76x13	84.2	84.2	170	0.271	8.96	10.7	22.6	22.6	5.36	0.308	44.8	0.400

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$n = F/(A p_y)$, where F is the Factored axial load, A is the gross cross sectional area and p_y is the design strength of the section.

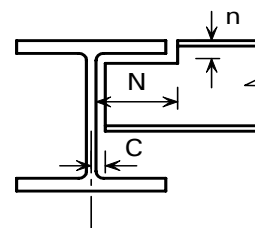
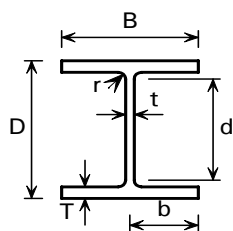
For lower values of n, the reduced plastic modulus, $S_r = K1 - K2.n^2$, for both major and minor axis bending.

For higher values of n, the reduced plastic modulus, $S_r = K3(1-n)(K4+n)$, for both major and minor axis bending.

FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL COLUMNS

Advance UKC



Dimensions

Section Designation	Mass per Metre kg/m	Depth of Section D mm	Width of Section B mm	Thickness		Root Radius r mm	Depth between Fillets d mm	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange			Flange	Web	End Clearance C mm	Notch		Per Metre m ²	Per Tonne m ²
				t mm	T mm			b/T	d/t		N mm	n mm		
356x406x634	633.9	474.6	424.0	47.6	77.0	15.2	290.2	2.75	6.10	26	200	94	2.52	3.98
356x406x551	551.0	455.6	418.5	42.1	67.5	15.2	290.2	3.10	6.89	23	200	84	2.47	4.48
356x406x467	467.0	436.6	412.2	35.8	58.0	15.2	290.2	3.55	8.11	20	200	74	2.42	5.18
356x406x393	393.0	419.0	407.0	30.6	49.2	15.2	290.2	4.14	9.48	17	200	66	2.38	6.06
356x406x340	339.9	406.4	403.0	26.6	42.9	15.2	290.2	4.70	10.9	15	200	60	2.35	6.91
356x406x287	287.1	393.6	399.0	22.6	36.5	15.2	290.2	5.47	12.8	13	200	52	2.31	8.05
356x406x235	235.1	381.0	394.8	18.4	30.2	15.2	290.2	6.54	15.8	11	200	46	2.28	9.70
356x368x202	201.9	374.6	374.7	16.5	27.0	15.2	290.2	6.94	17.6	10	190	44	2.19	10.8
356x368x177	177.0	368.2	372.6	14.4	23.8	15.2	290.2	7.83	20.2	9	190	40	2.17	12.3
356x368x153	152.9	362.0	370.5	12.3	20.7	15.2	290.2	8.95	23.6	8	190	36	2.16	14.1
356x368x129	129.0	355.6	368.6	10.4	17.5	15.2	290.2	10.5	27.9	7	190	34	2.14	16.6
305x305x283	282.9	365.3	322.2	26.8	44.1	15.2	246.7	3.65	9.21	15	158	60	1.94	6.86
305x305x240	240.0	352.5	318.4	23.0	37.7	15.2	246.7	4.22	10.7	14	158	54	1.91	7.96
305x305x198	198.1	339.9	314.5	19.1	31.4	15.2	246.7	5.01	12.9	12	158	48	1.87	9.44
305x305x158	158.1	327.1	311.2	15.8	25.0	15.2	246.7	6.22	15.6	10	158	42	1.84	11.6
305x305x137	136.9	320.5	309.2	13.8	21.7	15.2	246.7	7.12	17.90	9	158	38	1.82	13.3
305x305x118	117.9	314.5	307.4	12.0	18.7	15.2	246.7	8.22	20.6	8	158	34	1.81	15.4
305x305x97	96.9	307.9	305.3	9.9	15.4	15.2	246.7	9.91	24.9	7	158	32	1.79	18.5
254x254x167	167.1	289.1	265.2	19.2	31.7	12.7	200.3	4.18	10.4	12	134	46	1.58	9.46
254x254x132	132.0	276.3	261.3	15.3	25.3	12.7	200.3	5.16	13.1	10	134	38	1.55	11.7
254x254x107	107.1	266.7	258.8	12.8	20.5	12.7	200.3	6.31	15.6	8	134	34	1.52	14.2
254x254x89	88.9	260.3	256.3	10.3	17.3	12.7	200.3	7.41	19.4	7	134	30	1.50	16.9
254x254x73	73.1	254.1	254.6	8.6	14.2	12.7	200.3	8.96	23.3	6	134	28	1.49	20.4
203x203x127 +	127.5	241.4	213.9	18.1	30.1	10.2	160.8	3.55	8.88	11	108	42	1.28	10.0
203x203x113 +	113.5	235.0	212.1	16.3	26.9	10.2	160.8	3.94	9.87	10	108	38	1.27	11.2
203x203x100 +	99.6	228.6	210.3	14.5	23.7	10.2	160.8	4.44	11.1	9	108	34	1.25	12.6
203x203x86	86.1	222.2	209.1	12.7	20.5	10.2	160.8	5.10	12.7	8	110	32	1.24	14.4
203x203x71	71.0	215.8	206.4	10.0	17.3	10.2	160.8	5.97	16.1	7	110	28	1.22	17.2
203x203x60	60.0	209.6	205.8	9.4	14.2	10.2	160.8	7.25	17.1	7	110	26	1.21	20.2
203x203x52	52.0	206.2	204.3	7.9	12.5	10.2	160.8	8.17	20.4	6	110	24	1.20	23.1
203x203x46	46.1	203.2	203.6	7.2	11.0	10.2	160.8	9.25	22.3	6	110	22	1.19	25.8
152x152x51 +	51.2	170.2	157.4	11.0	15.7	7.6	123.6	5.01	11.2	8	84	24	0.935	18.3
152x152x44 +	44.0	166.0	155.9	9.5	13.6	7.6	123.6	5.73	13.0	7	84	22	0.924	21.0
152x152x37	37.0	161.8	154.4	8.0	11.5	7.6	123.6	6.71	15.5	6	84	20	0.912	24.7
152x152x30	30.0	157.6	152.9	6.5	9.4	7.6	123.6	8.13	19.0	5	84	18	0.901	30.0
152x152x23	23.0	152.4	152.2	5.8	6.8	7.6	123.6	11.20	21.3	5	84	16	0.889	38.7

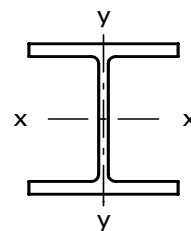
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+ These sections are in addition to the range of BS 4 sections.

FOR EXPLANATION OF TABLES SEE NOTE 2

UNIVERSAL COLUMNS

Advance UKC



Properties

Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	Area of Section
	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x cm ³	Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³					
356x406x634	275000	98100	18.4	11.0	11600	4630	14200	7110	0.843	5.46	38.8	13700	808
356x406x551	227000	82700	18.0	10.9	9960	3950	12100	6060	0.841	6.05	31.1	9240	702
356x406x467	183000	67800	17.5	10.7	8380	3290	10000	5030	0.839	6.86	24.3	5810	595
356x406x393	147000	55400	17.1	10.5	7000	2720	8220	4150	0.837	7.86	18.9	3550	501
356x406x340	123000	46900	16.8	10.4	6030	2330	7000	3540	0.836	8.85	15.5	2340	433
356x406x287	99900	38700	16.5	10.3	5070	1940	5810	2950	0.835	10.2	12.3	1440	366
356x406x235	79100	31000	16.3	10.2	4150	1570	4690	2380	0.834	12.1	9.54	812	299
356x368x202	66300	23700	16.1	9.60	3540	1260	3970	1920	0.844	13.4	7.16	558	257
356x368x177	57100	20500	15.9	9.54	3100	1100	3460	1670	0.844	15.0	6.09	381	226
356x368x153	48600	17600	15.8	9.49	2680	948	2960	1430	0.844	17.0	5.11	251	195
356x368x129	40200	14600	15.6	9.43	2260	793	2480	1200	0.844	19.9	4.18	153	164
305x305x283	78900	24600	14.8	8.27	4320	1530	5110	2340	0.855	7.65	6.35	2030	360
305x305x240	64200	20300	14.5	8.15	3640	1280	4250	1950	0.854	8.74	5.03	1270	306
305x305x198	50900	16300	14.2	8.04	3000	1040	3440	1580	0.854	10.2	3.88	734	252
305x305x158	38700	12600	13.9	7.90	2370	808	2680	1230	0.851	12.5	2.87	378	201
305x305x137	32800	10700	13.7	7.83	2050	692	2300	1050	0.851	14.2	2.39	249	174
305x305x118	27700	9060	13.6	7.77	1760	589	1960	895	0.850	16.2	1.98	161	150
305x305x97	22200	7310	13.4	7.69	1450	479	1590	726	0.850	19.3	1.56	91.2	123
254x254x167	30000	9870	11.9	6.81	2080	744	2420	1140	0.851	8.49	1.63	626	213
254x254x132	22500	7530	11.6	6.69	1630	576	1870	878	0.850	10.3	1.19	319	168
254x254x107	17500	5930	11.3	6.59	1310	458	1480	697	0.848	12.4	0.898	172	136
254x254x89	14300	4860	11.2	6.55	1100	379	1220	575	0.850	14.5	0.717	102	113
254x254x73	11400	3910	11.1	6.48	898	307	992	465	0.849	17.3	0.562	57.6	93.1
203x203x127 +	15400	4920	9.75	5.50	1280	460	1520	704	0.854	7.38	0.549	427	162
203x203x113 +	13300	4290	9.59	5.45	1130	404	1330	618	0.853	8.11	0.464	305	145
203x203x100 +	11300	3680	9.44	5.39	988	350	1150	534	0.852	9.02	0.386	210	127
203x203x86	9450	3130	9.28	5.34	850	299	977	456	0.850	10.2	0.318	137	110
203x203x71	7620	2540	9.18	5.30	706	246	799	374	0.853	11.9	0.250	80.2	90.4
203x203x60	6120	2060	8.96	5.20	584	201	656	305	0.846	14.1	0.197	47.2	76.4
203x203x52	5260	1780	8.91	5.18	510	174	567	264	0.848	15.8	0.167	31.8	66.3
203x203x46	4570	1550	8.82	5.13	450	152	497	231	0.847	17.7	0.143	22.2	58.7
152x152x51 +	3230	1020	7.04	3.96	379	130	438	199	0.848	10.1	0.061	48.8	65.2
152x152x44 +	2700	860	6.94	3.92	326	110	372	169	0.848	11.5	0.050	31.7	56.1
152x152x37	2210	706	6.85	3.87	273	91.5	309	140	0.848	13.3	0.040	19.2	47.1
152x152x30	1750	560	6.76	3.83	222	73.3	248	112	0.849	16.0	0.031	10.5	38.3
152x152x23	1250	400	6.54	3.70	164	52.6	182	80.1	0.840	20.7	0.021	4.63	29.2

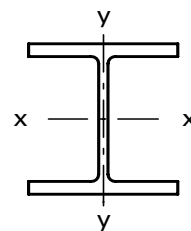
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FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL COLUMNS

Advance UKC



Reduced plastic modulus under axial load

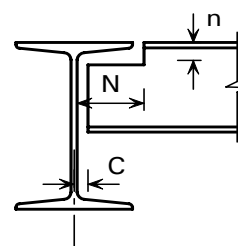
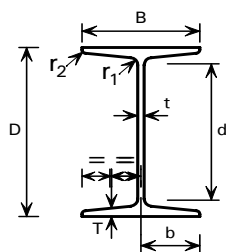
Section Designation	Plastic Modulus Axis x-x cm ³	Major Axis Reduced Modulus					Plastic Modulus Axis y-y cm ³	Minor Axis Reduced Modulus				
		Lower Values Of n		Change Formula At n =	Higher Values Of n			Lower Values Of n		Change Formula At n =	Higher Values Of n	
		K1	K2		K3	K4		K1	K2		K3	K4
356x406x634	14200	14200	34300	0.189	3850	3.98	7110	7110	3440	0.280	10600	0.616
356x406x551	12100	12100	29300	0.192	2940	4.43	6060	6060	2700	0.273	9130	0.610
356x406x467	10000	10000	24700	0.193	2150	5.05	5030	5030	2030	0.263	7630	0.607
356x406x393	8220	8220	20500	0.196	1540	5.81	4150	4150	1500	0.256	6380	0.599
356x406x340	7000	7000	17600	0.197	1160	6.56	3540	3540	1150	0.250	5460	0.597
356x406x287	5810	5810	14800	0.198	839	7.58	2950	2950	851	0.243	4590	0.592
356x406x235	4690	4690	12100	0.197	566	9.06	2380	2380	587	0.234	3700	0.595
356x368x202	3970	3970	10000	0.206	441	9.92	1920	1920	441	0.241	3060	0.575
356x368x177	3460	3460	8870	0.204	343	11.1	1670	1670	347	0.235	2680	0.570
356x368x153	2960	2960	7730	0.202	257	12.8	1430	1430	263	0.228	2300	0.573
356x368x129	2480	2480	6470	0.203	182	15.0	1200	1200	189	0.226	1920	0.573
305x305x283	5110	5110	12100	0.206	1010	5.54	2340	2340	887	0.272	3670	0.579
305x305x240	4250	4250	10200	0.208	735	6.34	1950	1950	664	0.265	3100	0.569
305x305x198	3440	3440	8310	0.210	505	7.48	1580	1580	467	0.258	2530	0.568
305x305x158	2680	2680	6390	0.218	325	9.13	1230	1230	309	0.257	2020	0.548
305x305x137	2300	2300	5480	0.220	245	10.4	1050	1050	236	0.254	1740	0.542
305x305x118	1960	1960	4690	0.222	183	11.9	895	895	179	0.252	1500	0.533
305x305x97	1590	1590	3820	0.223	124	14.3	726	726	123	0.248	1230	0.529
254x254x167	2420	2420	5910	0.203	428	6.20	1140	1140	392	0.261	1790	0.579
254x254x132	1870	1870	4610	0.206	270	7.59	878	878	255	0.252	1390	0.574
254x254x107	1480	1480	3610	0.212	179	9.15	697	697	173	0.251	1130	0.560
254x254x89	1220	1220	3100	0.206	125	10.8	575	575	123	0.237	923	0.570
254x254x73	992	992	2520	0.208	85.1	12.9	465	465	85.3	0.235	763	0.553
203x203x127 +	1520	1520	3620	0.202	307	5.37	704	704	272	0.270	1090	0.590
203x203x113 +	1330	1330	3220	0.204	248	5.87	618	618	224	0.264	977	0.574
203x203x100 +	1150	1150	2780	0.207	192	6.57	534	534	176	0.261	851	0.570
203x203x86	977	977	2380	0.209	145	7.45	456	456	136	0.257	738	0.559
203x203x71	799	799	2040	0.200	99.0	8.85	374	374	94.7	0.239	590	0.580
203x203x60	656	656	1550	0.223	70.9	10.3	305	305	69.6	0.258	514	0.530
203x203x52	567	567	1390	0.216	53.8	11.7	264	264	53.3	0.246	440	0.541
203x203x46	497	497	1200	0.222	42.3	13.1	231	231	42.4	0.249	392	0.526
152x152x51 +	438	438	966	0.234	67.5	7.22	199	199	62.4	0.287	338	0.516
152x152x44 +	372	372	828	0.235	50.5	8.23	169	169	47.4	0.281	289	0.512
152x152x37	309	309	693	0.236	35.9	9.61	140	140	34.3	0.275	241	0.508
152x152x30	248	248	564	0.236	24.0	11.6	112	112	23.3	0.267	195	0.501
152x152x23	182	182	368	0.276	14.0	14.9	80.1	80.1	14.0	0.303	157	0.418

Advance and UKC are trademarks of Corus. A fuller description of the relationship between Universal Columns (UC) and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS 4 sections.

FOR EXPLANATION OF TABLES SEE NOTE 3

JOISTS

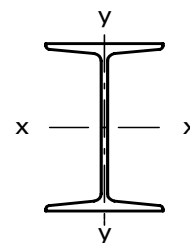


Dimensions

Section Designation	Mass per Metre kg/m	Depth of Section D mm	Width of Section B mm	Thickness		Radii		Depth between Fillets d mm	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange	Root	Toe		Flange	Web	End Clearance C mm	Notch		Per Metre m ²	Per Tonne m ²
				t mm	T mm	r ₁ mm	r ₂ mm		b/T	d/t		N mm	n mm		
254x203x82	82.0	254.0	203.2	10.2	19.9	19.6	9.7	166.6	5.11	16.3	7	104	44	1.21	14.8
254x114x37	37.2	254.0	114.3	7.6	12.8	12.4	6.1	199.3	4.46	26.2	6	60	28	0.899	24.2
203x152x52	52.3	203.2	152.4	8.9	16.5	15.5	7.6	133.2	4.62	15.0	6	78	36	0.932	17.8
152x127x37	37.3	152.4	127.0	10.4	13.2	13.5	6.6	94.3	4.81	9.07	7	66	30	0.737	19.8
127x114x29	29.3	127.0	114.3	10.2	11.5	9.9	4.8	79.5	4.97	7.79	7	60	24	0.646	22.0
127x114x27	26.9	127.0	114.3	7.4	11.4	9.9	5.0	79.5	5.01	10.7	6	60	24	0.650	24.2
127x76x16	16.5	127.0	76.2	5.6	9.6	9.4	4.6	86.5	3.97	15.4	5	42	22	0.512	31.0
114x114x27	27.1	114.3	114.3	9.5	10.7	14.2	3.2	60.8	5.34	6.40	7	60	28	0.618	22.8
102x102x23	23.0	101.6	101.6	9.5	10.3	11.1	3.2	55.2	4.93	5.81	7	54	24	0.549	23.9
102x44x7	7.5	101.6	44.5	4.3	6.1	6.9	3.3	74.6	3.65	17.3	4	28	14	0.350	46.6
89x89x19	19.5	88.9	88.9	9.5	9.9	11.1	3.2	44.2	4.49	4.65	7	46	24	0.476	24.4
76x76x15	15.0	76.2	80.0	8.9	8.4	9.4	4.6	38.1	4.76	4.28	6	42	20	0.419	27.9
76x76x13	12.8	76.2	76.2	5.1	8.4	9.4	4.6	38.1	4.54	7.47	5	42	20	0.411	32.1

FOR EXPLANATION OF TABLES SEE NOTE 2

JOISTS

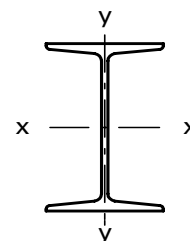


Properties

Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter u	Torsional Index x	Warping Constant H dm ⁶	Torsional Constant J cm ⁴	Area of Section A cm ²
	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y					
	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³					
254x203x82	12000	2280	10.7	4.67	947	224	1080	371	0.888	11.0	0.312	152	105
254x114x37	5080	269	10.4	2.39	400	47.1	459	79.1	0.885	18.7	0.0392	25.2	47.3
203x152x52	4800	816	8.49	3.50	472	107	541	176	0.890	10.7	0.0711	64.8	66.6
152x127x37	1820	378	6.19	2.82	239	59.6	279	99.8	0.867	9.33	0.0183	33.9	47.5
127x114x29	979	242	5.12	2.54	154	42.3	181	70.8	0.853	8.77	0.00807	20.8	37.4
127x114x27	946	236	5.26	2.63	149	41.3	172	68.2	0.868	9.31	0.00788	16.9	34.2
127x76x16	571	60.8	5.21	1.70	90.0	16.0	104	26.4	0.891	11.8	0.00210	6.72	21.1
114x114x27	736	224	4.62	2.55	129	39.2	151	65.8	0.839	7.92	0.00601	18.9	34.5
102x102x23	486	154	4.07	2.29	95.6	30.3	113	50.6	0.836	7.42	0.00321	14.2	29.3
102x44x7	153	7.82	4.01	0.907	30.1	3.51	35.4	6.03	0.872	14.9	0.000178	1.25	9.50
89x89x19	307	101	3.51	2.02	69.0	22.8	82.7	38.0	0.830	6.58	0.00158	11.5	24.9
76x76x15	172	60.9	3.00	1.78	45.2	15.2	54.2	25.8	0.820	6.42	0.000700	6.83	19.1
76x76x13	158	51.8	3.12	1.79	41.5	13.6	48.7	22.4	0.853	7.21	0.000595	4.59	16.2

FOR EXPLANATION OF TABLES SEE NOTE 3

JOISTS



Reduced plastic modulus under axial load

Section Designation	Plastic Modulus Axis x-x	Major Axis Reduced Modulus						Plastic Modulus Axis y-y	Minor Axis Reduced Modulus				
		Lower Values Of n		Change Formula		Higher Values Of n			Lower Values Of n		Change Formula At n =	Higher Values Of n	
		K1	K2	At n ₁ =	At n ₂ =	K3	K4		K1	K2		K3	K4
	cm ³							cm ³					
254x203x82	1080	1080	2680	0.195	0.504	134	8.88	371	371	107	0.248	597	0.548
254x114x37	459	459	737	0.354	0.576	49.0	11.3	79.1	79.1	22.1	0.408	190	0.236
203x152x52	541	541	1250	0.213	0.490	72.7	8.30	176	176	54.5	0.272	292	0.511
152x127x37	279	279	542	0.256	0.533	44.4	7.15	99.8	99.8	37.0	0.334	186	0.412
127x114x29	181	181	342	0.262	0.542	30.5	6.77	70.8	70.8	27.5	0.347	132	0.407
127x114x27	172	172	396	0.208	0.507	25.6	7.48	68.2	68.2	23.1	0.275	112	0.523
127x76x16	104	104	198	0.272	0.500	14.6	8.18	26.4	26.4	8.75	0.337	50.3	0.388
114x114x27	151	151	313	0.234	0.557	26.0	6.58	65.8	65.8	26.0	0.315	121	0.420
102x102x23	113	113	226	0.239	0.534	21.2	6.04	50.6	50.6	21.2	0.329	90.8	0.428
102x44x7	35.4	35.4	52.5	0.391	0.575	5.07	8.52	6.03	6.03	2.22	0.460	16.1	0.143
89x89x19	82.7	82.7	163	0.240	0.515	17.4	5.36	38.0	38.0	17.4	0.340	67.9	0.416
76x76x15	54.2	54.2	103	0.250	0.533	11.4	5.37	25.8	25.8	12.0	0.354	47.4	0.404
76x76x13	48.7	48.7	129	0.170	0.463	8.66	6.15	22.4	22.4	8.66	0.239	34.2	0.576

$n = F/(A p_y)$, where F is the Factored axial load, A is the gross cross sectional area and p_y is the design strength of the section.

For values of n lower than n_1 , the reduced plastic modulus, $S_{rx} = S_{rx1} = K1-K2.n^2$, for major axis bending.

For values of n higher than n_2 , the reduced plastic modulus, $S_{rx} = S_{rx2} = K3(1-n)(K4+n)$, for major axis bending.

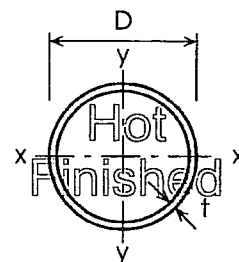
For values of n between n_1 and n_2 , the reduced plastic modulus, $S_{rx} = S_{rx1} + (S_{rx2} - S_{rx1})(n-n_1)/(n_2-n_1)$, for major axis bending.

For lower values of n, the reduced plastic modulus, $S_{ry} = K1 - K2.n^2$, for minor axis bending.

For higher values of n, the reduced plastic modulus, $S_{ry} = K3(1-n)(K4+n)$, for minor axis bending.

FOR EXPLANATION OF TABLES SEE NOTE 3

HOT-FINISHED CIRCULAR HOLLOW SECTIONS



DIMENSIONS AND PROPERTIES

Section Designation		Mass per Metre kg/m	Area of Section A cm ²	Ratio for Local Buckling D/t	Second Moment of Area I cm ⁴	Radius of Gyration r cm	Elastic Modulus Z cm ³	Plastic Modulus S cm ³	Torsional Constants		Surface Area	
Outside Diameter D mm	Thickness t mm								J cm ⁴	C cm ³	Per Metre m ²	Per Tonne m ²
26.9	3.2 ~	1.87	2.38	8.41	1.70	0.846	1.27	1.81	3.41	2.53	0.0845	45.2
42.4	3.2 ~	3.09	3.94	13.3	7.62	1.39	3.59	4.93	15.2	7.19	0.133	43.0
48.3	3.2 ~	3.56	4.53	15.1	11.6	1.60	4.80	6.52	23.2	9.59	0.152	42.7
	4.0 ~	4.37	5.57	12.1	13.8	1.57	5.70	7.87	27.5	11.4	0.152	34.8
	5.0 ~	5.34	6.80	9.66	16.2	1.54	6.69	9.42	32.3	13.4	0.152	28.5
60.3	3.2 ~	4.51	5.74	18.8	23.5	2.02	7.78	10.4	46.9	15.6	0.189	41.9
	5.0 ~	6.82	8.69	12.1	33.5	1.96	11.1	15.3	67.0	22.2	0.189	27.7
76.1	2.9 ^	5.24	6.67	26.2	44.7	2.59	11.8	15.5	89.0	23.5	0.239	45.6
	3.2 ~	5.75	7.33	23.8	48.8	2.58	12.8	17.0	97.6	25.6	0.239	41.6
	4.0 ~	7.11	9.06	19.0	59.1	2.55	15.5	20.8	118	31.0	0.239	33.6
	5.0 ~	8.77	11.2	15.2	70.9	2.52	18.6	25.3	142	37.3	0.239	27.3
88.9	3.2 ~	6.76	8.62	27.8	79.2	3.03	17.8	23.5	158	35.6	0.279	41.3
	4.0 ~	8.38	10.7	22.2	96.3	3.00	21.7	28.9	193	43.3	0.279	33.3
	5.0 ~	10.4	13.2	17.8	116	2.97	26.2	35.2	233	52.4	0.279	27.0
	6.3 ~	12.8	16.3	14.1	140	2.93	31.5	43.1	280	63.1	0.279	21.7
114.3	3.2 ~	8.77	11.2	35.7	172	3.93	30.2	39.5	345	60.4	0.359	40.9
	3.6	9.83	12.5	31.8	192	3.92	33.6	44.1	384	67.2	0.359	36.5
	5.0	13.5	17.2	22.9	257	3.87	45.0	59.8	514	89.9	0.359	26.6
	6.3	16.8	21.4	18.1	313	3.82	54.7	73.6	625	109	0.359	21.4
139.7	5.0	16.6	21.2	27.9	481	4.77	68.8	90.8	961	138	0.439	26.4
	6.3	20.7	26.4	22.2	589	4.72	84.3	112	1180	169	0.439	21.2
	8.0 ~	26.0	33.1	17.5	720	4.66	103	139	1440	206	0.439	16.9
	10.0 ~	32.0	40.7	14.0	862	4.60	123	169	1720	247	0.439	13.7
168.3	5.0 ~	20.1	25.7	33.7	856	5.78	102	133	1710	203	0.529	26.3
	6.3 ~	25.2	32.1	26.7	1050	5.73	125	165	2110	250	0.529	21.0
	8.0 ~	31.6	40.3	21.0	1300	5.67	154	206	2600	308	0.529	16.7
	10.0 ~	39.0	49.7	16.8	1560	5.61	186	251	3130	372	0.529	13.6
193.7	5.0 ~	23.3	29.6	38.7	1320	6.67	136	178	2640	273	0.609	26.1
	6.3 ~	29.1	37.1	30.7	1630	6.63	168	221	3260	337	0.609	20.9
	8.0 ~	36.6	46.7	24.2	2020	6.57	208	276	4030	416	0.609	16.6
	10.0 ~	45.3	57.7	19.4	2440	6.50	252	338	4880	504	0.609	13.4

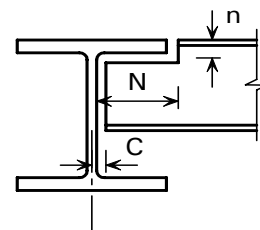
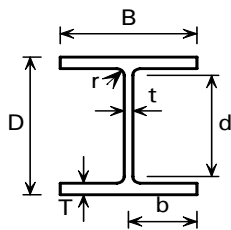
~ Check availability in S275.

^ Check availability in S355.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

UNIVERSAL BEARING PILES

Advance UKBP



Dimensions

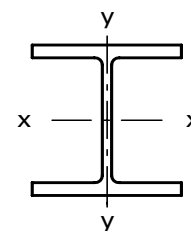
Section Designation	Mass per Metre kg/m	Depth of Section D mm	Width of Section B mm	Thickness		Root Radius r mm	Depth between Fillets d mm	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange			Flange	Web	End Clearance C mm	Notch		Per Metre m ²	Per Tonne m ²
				t mm	T mm			b/T	d/t		N mm	n mm		
356x368x174	173.9	361.4	378.5	20.3	20.4	15.2	290.2	9.28	14.3	12	190	36	2.17	12.5
356x368x152	152.0	356.4	376.0	17.8	17.9	15.2	290.2	10.5	16.3	11	190	34	2.16	14.2
356x368x133	133.0	352.0	373.8	15.6	15.7	15.2	290.2	11.9	18.6	10	190	32	2.14	16.1
356x368x109	108.9	346.4	371.0	12.8	12.9	15.2	290.2	14.4	22.7	8	190	30	2.13	19.5
305x305x223	222.9	337.9	325.7	30.3	30.4	15.2	246.7	5.36	8.14	17	158	46	1.89	8.49
305x305x186	186.0	328.3	320.9	25.5	25.6	15.2	246.7	6.27	9.67	15	158	42	1.86	10.0
305x305x149	149.1	318.5	316.0	20.6	20.7	15.2	246.7	7.63	12.0	12	158	36	1.83	12.3
305x305x126	126.1	312.3	312.9	17.5	17.6	15.2	246.7	8.89	14.1	11	158	34	1.82	14.4
305x305x110	110.0	307.9	310.7	15.3	15.4	15.2	246.7	10.1	16.1	10	158	32	1.80	16.4
305x305x95	94.9	303.7	308.7	13.3	13.3	15.2	246.7	11.6	18.5	9	158	30	1.79	18.9
305x305x88	88.0	301.7	307.8	12.4	12.3	15.2	246.7	12.5	19.9	8	158	28	1.78	20.3
305x305x79	78.9	299.3	306.4	11.0	11.1	15.2	246.7	13.8	22.4	8	158	28	1.78	22.5
254x254x85	85.1	254.3	260.4	14.4	14.3	12.7	200.3	9.10	13.9	9	134	28	1.50	17.6
254x254x71	71.0	249.7	258.0	12.0	12.0	12.7	200.3	10.8	16.7	8	134	26	1.49	20.9
254x254x63	63.0	247.1	256.6	10.6	10.7	12.7	200.3	12.0	18.9	7	134	24	1.48	23.5
203x203x54	53.9	204.0	207.7	11.3	11.4	10.2	160.8	9.11	14.2	8	110	22	1.20	22.2
203x203x45	44.9	200.2	205.9	9.5	9.5	10.2	160.8	10.8	16.9	7	110	20	1.19	26.4

Advance and UKBP are trademarks of Corus. A fuller description of the relationship between Universal Bearing Piles (UBP) and the Advance range of sections manufactured by Corus is given on page A - 42.

FOR EXPLANATION OF TABLES SEE NOTE 2

UNIVERSAL BEARING PILES

Advance UKBP



Properties

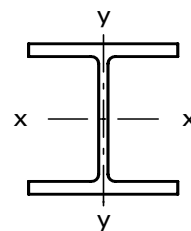
Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y					
	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H dm ⁶	J cm ⁴	A cm ²
356x368x174	51000	18500	15.2	9.13	2820	976	3190	1500	0.822	15.8	5.37	330	221
356x368x152	44000	15900	15.1	9.05	2470	845	2770	1290	0.821	17.9	4.55	223	194
356x368x133	38000	13700	15.0	8.99	2160	732	2410	1120	0.823	20.1	3.87	151	169
356x368x109	30600	11000	14.9	8.90	1770	592	1960	903	0.822	24.2	3.05	84.6	139
305x305x223	52700	17600	13.6	7.87	3120	1080	3650	1680	0.826	9.55	4.15	943	284
305x305x186	42600	14100	13.4	7.73	2600	881	3000	1370	0.827	11.1	3.24	560	237
305x305x149	33100	10900	13.2	7.58	2080	691	2370	1070	0.828	13.5	2.42	295	190
305x305x126	27400	9000	13.1	7.49	1760	575	1990	885	0.828	15.7	1.95	182	161
305x305x110	23600	7710	13.0	7.42	1530	496	1720	762	0.830	17.7	1.65	122	140
305x305x95	20000	6530	12.9	7.35	1320	423	1470	648	0.830	20.2	1.38	80.0	121
305x305x88	18400	5980	12.8	7.31	1220	389	1360	595	0.830	21.6	1.25	64.2	112
305x305x79	16400	5330	12.8	7.28	1100	348	1220	531	0.834	23.8	1.11	46.9	100
254x254x85	12300	4220	10.6	6.24	966	324	1090	498	0.826	15.6	0.607	81.8	108
254x254x71	10100	3440	10.6	6.17	807	267	904	409	0.826	18.4	0.486	48.4	90.4
254x254x63	8860	3020	10.5	6.13	717	235	799	360	0.827	20.5	0.421	34.3	80.2
203x203x54	5030	1710	8.55	4.98	493	164	557	252	0.827	15.8	0.158	32.7	68.7
203x203x45	4100	1380	8.46	4.92	410	134	459	206	0.828	18.6	0.126	19.2	57.2

Advance and UKBP are trademarks of Corus. A fuller description of the relationship between Universal Bearing Piles (UBP) and the Advance range of sections manufactured by Corus is given on page A - 42.

FOR EXPLANATION OF TABLES SEE NOTE 3

UNIVERSAL BEARING PILES

Advance UKBP



Reduced plastic modulus under axial load

Section Designation	Plastic Modulus Axis x-x cm ³	Major Axis Reduced Modulus					Plastic Modulus Axis y-y cm ³	Minor Axis Reduced Modulus				
		Lower Values Of n		Change Formula At n =	Higher Values Of n			Lower Values Of n		Change Formula At n =	Higher Values Of n	
		K1	K2		K3	K4		K1	K2		K3	K4
356x368x174	3190	3190	6040	0.294	324	11.4	1500	1500	339	0.331	3010	0.394
356x368x152	2770	2770	5270	0.295	249	12.8	1290	1290	263	0.328	2620	0.390
356x368x133	2410	2410	4600	0.295	192	14.5	1120	1120	204	0.324	2280	0.386
356x368x109	1960	1960	3760	0.296	130	17.5	903	903	139	0.320	1870	0.380
305x305x223	3650	3650	6650	0.296	619	6.75	1680	1680	597	0.361	3320	0.395
305x305x186	3000	3000	5500	0.298	437	7.89	1370	1370	428	0.353	2740	0.387
305x305x149	2370	2370	4380	0.301	285	9.60	1070	1070	283	0.346	2180	0.378
305x305x126	1990	1990	3690	0.302	206	11.2	885	885	207	0.340	1830	0.371
305x305x110	1720	1720	3210	0.303	158	12.7	762	762	159	0.336	1590	0.366
305x305x95	1470	1470	2750	0.305	118	14.5	648	648	120	0.334	1380	0.358
305x305x88	1360	1360	2530	0.307	102	15.6	595	595	104	0.334	1280	0.351
305x305x79	1220	1220	2300	0.303	82.4	17.3	531	531	84.3	0.328	1140	0.354
254x254x85	1090	1090	2040	0.300	113	11.2	498	498	115	0.338	1030	0.375
254x254x71	904	904	1700	0.300	79.2	13.3	409	409	81.8	0.332	851	0.370
254x254x63	799	799	1520	0.298	62.7	14.8	360	360	65.1	0.327	752	0.369
203x203x54	557	557	1050	0.298	56.8	11.3	252	252	57.9	0.335	518	0.378
203x203x45	459	459	862	0.301	39.8	13.4	206	206	40.9	0.332	431	0.367

Advance and UKBP are trademarks of Corus. A fuller description of the relationship between Universal Bearing Piles (UBP) and the Advance range of sections manufactured by Corus is given on page A - 42.

$n = F/(A p_y)$, where F is the Factored axial load, A is the gross cross sectional area and p_y is the design strength of the section.

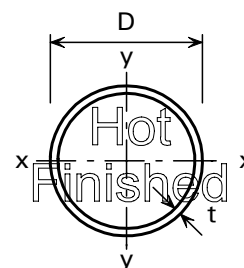
For lower values of n , the reduced plastic modulus, $S_r = K1 - K2.n^2$, for both major and minor axis bending.

For higher values of n , the reduced plastic modulus, $S_r = K3(1-n)(K4+n)$, for both major and minor axis bending.

FOR EXPLANATION OF TABLES SEE NOTE 3

HOT-FINISHED CIRCULAR HOLLOW SECTIONS

Celsius® CHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Outside Diameter	Thickness										Per Metre	Per Tonne
D	t	kg/m	A	D/t	I	r	Z	S	J	C	m ²	m ²
mm	mm		cm ²		cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³		
26.9	3.2	1.87	2.38	8.41	1.70	0.846	1.27	1.81	3.41	2.53	0.085	45.2
33.7	2.6	1.99	2.54	13.0	3.09	1.10	1.84	2.52	6.19	3.67	0.106	53.1
	3.2	2.41	3.07	10.5	3.60	1.08	2.14	2.99	7.21	4.28	0.106	44.0
	4.0	2.93	3.73	8.43	4.19	1.06	2.49	3.55	8.38	4.97	0.106	36.1
42.4	2.6	2.55	3.25	16.3	6.46	1.41	3.05	4.12	12.9	6.10	0.133	52.2
	3.2	3.09	3.94	13.3	7.62	1.39	3.59	4.93	15.2	7.19	0.133	43.1
	4.0	3.79	4.83	10.6	8.99	1.36	4.24	5.92	18.0	8.48	0.133	35.2
	5.0	4.61	5.87	8.48	10.5	1.33	4.93	7.04	20.9	9.86	0.133	28.9
48.3	3.2	3.56	4.53	15.1	11.6	1.60	4.80	6.52	23.2	9.59	0.152	42.6
	4.0	4.37	5.57	12.1	13.8	1.57	5.70	7.87	27.5	11.4	0.152	34.7
	5.0	5.34	6.80	9.66	16.2	1.54	6.69	9.42	32.3	13.4	0.152	28.4
60.3	3.2	4.51	5.74	18.8	23.5	2.02	7.78	10.4	46.9	15.6	0.189	42.0
	4.0	5.55	7.07	15.1	28.2	2.00	9.34	12.7	56.3	18.7	0.189	34.1
	5.0	6.82	8.69	12.1	33.5	1.96	11.1	15.3	67.0	22.2	0.189	27.8
76.1	2.9	5.24	6.67	26.2	44.7	2.59	11.8	15.5	89.5	23.5	0.239	45.7
	3.2	5.75	7.33	23.8	48.8	2.58	12.8	17.0	97.6	25.6	0.239	41.6
	4.0	7.11	9.06	19.0	59.1	2.55	15.5	20.8	118	31.0	0.239	33.6
	5.0	8.77	11.2	15.2	70.9	2.52	18.6	25.3	142	37.3	0.239	27.3
88.9	3.2	6.76	8.62	27.8	79.2	3.03	17.8	23.5	158	35.6	0.279	41.3
	4.0	8.38	10.7	22.2	96.3	3.00	21.7	28.9	193	43.3	0.279	33.3
	5.0	10.3	13.2	17.8	116	2.97	26.2	35.2	233	52.4	0.279	27.0
	6.3	12.8	16.3	14.1	140	2.93	31.5	43.1	280	63.1	0.279	21.8
114.3	3.2	8.77	11.2	35.7	172	3.93	30.2	39.5	345	60.4	0.359	41.0
	3.6	9.83	12.5	31.8	192	3.92	33.6	44.1	384	67.2	0.359	36.5
	4.0	10.9	13.9	28.6	211	3.90	36.9	48.7	422	73.9	0.359	33.0
	5.0	13.5	17.2	22.9	257	3.87	45.0	59.8	514	89.9	0.359	26.6
	6.3	16.8	21.4	18.1	313	3.82	54.7	73.6	625	109	0.359	21.4
139.7	5.0	16.6	21.2	27.9	481	4.77	68.8	90.8	961	138	0.439	26.4
	6.3	20.7	26.4	22.2	589	4.72	84.3	112	1177	169	0.439	21.2
	8.0	26.0	33.1	17.5	720	4.66	103	139	1441	206	0.439	16.9
	10.0	32.0	40.7	14.0	862	4.60	123	169	1724	247	0.439	13.7
168.3	5.0	20.1	25.7	33.7	856	5.78	102	133	1710	203	0.529	26.3
	6.3	25.2	32.1	26.7	1050	5.73	125	165	2110	250	0.529	21.0
	8.0	31.6	40.3	21.0	1300	5.67	154	206	2600	308	0.529	16.7
	10.0	39.0	49.7	16.8	1560	5.61	186	251	3130	372	0.529	13.5
	12.5	48.0	61.2	13.5	1870	5.53	222	304	3740	444	0.529	11.0
193.7	5.0	23.3	29.6	38.7	1320	6.67	136	178	2640	273	0.609	26.2
	6.3	29.1	37.1	30.7	1630	6.63	168	221	3260	337	0.609	20.9
	8.0	36.6	46.7	24.2	2020	6.57	208	276	4030	416	0.609	16.6
	10.0	45.3	57.7	19.4	2440	6.50	252	338	4880	504	0.609	13.4
	12.5	55.9	71.2	15.5	2930	6.42	303	411	5870	606	0.609	10.9

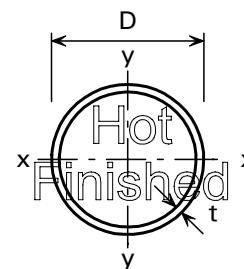
Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Circular Hollow Sections (HFCHS) and the

Celsius® range of sections manufactured by Corus is given on page A - 44.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED CIRCULAR HOLLOW SECTIONS

Celsius® CHS



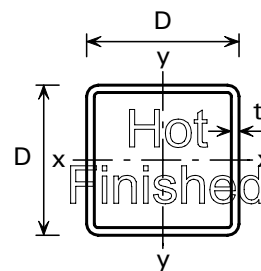
Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Outside Diameter	Thickness										Per Metre	Per Tonne
D	t	kg/m	A	D/t	I	r	Z	S	J	C	m ²	m ²
mm	mm		cm ²		cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³		
219.1	5.0	26.4	33.6	43.8	1930	7.57	176	229	3860	352	0.688	26.1
	6.3	33.1	42.1	34.8	2390	7.53	218	285	4770	436	0.688	20.8
	8.0	41.6	53.1	27.4	2960	7.47	270	357	5920	540	0.688	16.5
	10.0	51.6	65.7	21.9	3600	7.40	328	438	7200	657	0.688	13.3
	12.5	63.7	81.1	17.5	4350	7.32	397	534	8690	793	0.688	10.8
	14.2	71.8	91.4	15.4	4820	7.26	440	597	9640	880	0.688	9.59
	16.0	80.1	102	13.7	5300	7.20	483	661	10600	967	0.688	8.59
244.5	8.0	46.7	59.4	30.6	4160	8.37	340	448	8320	681	0.768	16.5
	10.0	57.8	73.7	24.5	5070	8.30	415	550	10100	830	0.768	13.3
	12.5	71.5	91.1	19.6	6150	8.21	503	673	12300	1010	0.768	10.7
	14.2	80.6	103	17.2	6840	8.16	559	754	13700	1120	0.768	9.52
	16.0	90.2	115	15.3	7530	8.10	616	837	15100	1230	0.768	8.52
273.0	6.3	41.4	52.8	43.3	4700	9.43	344	448	9390	688	0.858	20.7
	8.0	52.3	66.6	34.1	5850	9.37	429	562	11700	857	0.858	16.4
	10.0	64.9	82.6	27.3	7150	9.31	524	692	14300	1050	0.858	13.2
	12.5	80.3	102	21.8	8700	9.22	637	849	17400	1270	0.858	10.7
	14.2	90.6	115	19.2	9700	9.16	710	952	19400	1420	0.858	9.46
	16.0	101	129	17.1	10700	9.10	784	1060	21400	1570	0.858	8.46
323.9	6.3	49.3	62.9	51.4	7930	11.2	490	636	15900	979	1.02	20.6
	8.0	62.3	79.4	40.5	9910	11.2	612	799	19800	1220	1.02	16.3
	10.0	77.4	98.6	32.4	12200	11.1	751	986	24300	1500	1.02	13.1
	12.5	96.0	122	25.9	14800	11.0	917	1210	29700	1830	1.02	10.6
	14.2	108	138	22.8	16600	11.0	1030	1360	33200	2050	1.02	9.38
	16.0	121	155	20.2	18400	10.9	1140	1520	36800	2270	1.02	8.38
355.6	14.2	120	152	25.0	22200	12.1	1250	1660	44500	2500	1.12	9.34
	16.0	134	171	22.2	24700	12.0	1390	1850	49300	2770	1.12	8.34
406.4	6.3	62.2	79.2	64.5	15800	14.1	780	1010	31700	1560	1.28	20.5
	8.0	78.6	100	50.8	19900	14.1	978	1270	39700	1960	1.28	16.2
	10.0	97.8	125	40.6	24500	14.0	1210	1570	49000	2410	1.28	13.1
	12.5	121	155	32.5	30000	13.9	1480	1940	60100	2960	1.28	10.5
	14.2	137	175	28.6	33700	13.9	1660	2190	67400	3320	1.28	9.30
	16.0	154	196	25.4	37400	13.8	1840	2440	74900	3690	1.28	8.29
457.0	8.0	88.6	113	57.1	28400	15.9	1250	1610	56900	2490	1.44	16.2
	10.0	110	140	45.7	35100	15.8	1540	2000	70200	3070	1.44	13.0
	12.5	137	175	36.6	43100	15.7	1890	2470	86300	3780	1.44	10.5
	14.2	155	198	32.2	48500	15.7	2120	2790	96900	4240	1.44	9.26
	16.0	174	222	28.6	54000	15.6	2360	3110	108000	4720	1.44	8.25
508.0	10.0	123	156	50.8	48500	17.6	1910	2480	97000	3820	1.60	13.0
	12.5	153	195	40.6	59800	17.5	2350	3070	120000	4710	1.60	10.4
	14.2	173	220	35.8	67200	17.5	2650	3460	134000	5290	1.60	9.23
	16.0	194	247	31.8	74900	17.4	2950	3870	150000	5900	1.60	8.22

Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Circular Hollow Sections (HFCHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.
FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED SQUARE HOLLOW SECTIONS

Celsius® SHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling $d/t^{(1)}$	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Size	Thickness										Per Metre	Per Tonne
D x D mm	t mm	kg/m	A cm ²		I cm ⁴	r cm	Z cm ³	S cm ³	J cm ⁴	C cm ³	m ²	m ²
40 x 40	3.0	3.41	4.34	10.3	9.78	1.50	4.89	5.97	15.7	7.10	0.152	44.7
	3.2	3.61	4.60	9.50	10.2	1.49	5.11	6.28	16.5	7.42	0.152	42.0
	4.0	4.39	5.59	7.00	11.8	1.45	5.91	7.44	19.5	8.54	0.150	34.1
	5.0	5.28	6.73	5.00	13.4	1.41	6.68	8.66	22.5	9.60	0.147	27.8
50 x 50	3.0	4.35	5.54	13.7	20.2	1.91	8.08	9.70	32.1	11.8	0.192	44.2
	3.2	4.62	5.88	12.6	21.2	1.90	8.49	10.2	33.8	12.4	0.192	41.5
	4.0	5.64	7.19	9.50	25.0	1.86	9.99	12.3	40.4	14.5	0.190	33.6
	5.0	6.85	8.73	7.00	28.9	1.82	11.6	14.5	47.6	16.7	0.187	27.3
	6.3	8.31	10.6	4.94	32.8	1.76	13.1	17.0	55.2	18.8	0.184	22.1
60 x 60	3.0	5.29	6.74	17.0	36.2	2.32	12.1	14.3	56.9	17.7	0.232	43.9
	3.2	5.62	7.16	15.8	38.2	2.31	12.7	15.2	60.2	18.6	0.232	41.2
	4.0	6.90	8.79	12.0	45.4	2.27	15.1	18.3	72.5	22.0	0.230	33.3
	5.0	8.42	10.7	9.00	53.3	2.23	17.8	21.9	86.4	25.7	0.227	27.0
	6.3	10.3	13.1	6.52	61.6	2.17	20.5	26.0	102	29.6	0.224	21.7
	8.0	12.5	16.0	4.50	69.7	2.09	23.2	30.4	118	33.4	0.219	17.5
70 x 70	3.6	7.40	9.42	16.4	68.6	2.70	19.6	23.3	108	28.7	0.271	36.6
	5.0	9.99	12.7	11.0	88.5	2.64	25.3	30.8	142	36.8	0.267	26.7
	6.3	12.3	15.6	8.11	104	2.58	29.7	36.9	169	42.9	0.264	21.5
	8.0	15.0	19.2	5.75	120	2.50	34.2	43.8	200	49.2	0.259	17.3
80 x 80	3.6	8.53	10.9	19.2	105	3.11	26.2	31.0	164	38.5	0.311	36.4
	4.0	9.41	12.0	17.0	114	3.09	28.6	34.0	180	41.9	0.310	32.9
	5.0	11.6	14.7	13.0	137	3.05	34.2	41.1	217	49.8	0.307	26.6
	6.3	14.2	18.1	9.70	162	2.99	40.5	49.7	262	58.7	0.304	21.3
	8.0	17.5	22.4	7.00	189	2.91	47.3	59.5	312	68.3	0.299	17.1
90 x 90	3.6	9.66	12.3	22.0	152	3.52	33.8	39.7	237	49.7	0.351	36.3
	4.0	10.7	13.6	19.5	166	3.50	37.0	43.6	260	54.2	0.350	32.8
	5.0	13.1	16.7	15.0	200	3.45	44.4	53.0	316	64.8	0.347	26.4
	6.3	16.2	20.7	11.3	238	3.40	53.0	64.3	382	77.0	0.344	21.2
	8.0	20.1	25.6	8.25	281	3.32	62.6	77.6	459	90.5	0.339	16.9

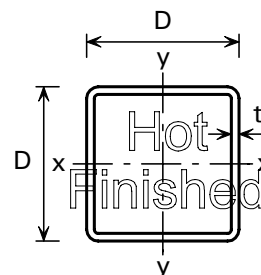
Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Square Hollow Sections (HFSHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation $d = D - 3t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED SQUARE HOLLOW SECTIONS

Celsius® SHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling $d/t^{(1)}$	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Size	Thickness										Per Metre	Per Tonne
D x D mm	t mm	kg/m	A cm ²		I cm ⁴	r cm	Z cm ³	S cm ³	J cm ⁴	C cm ³	m ²	m ²
100 x 100	4.0	11.9	15.2	22.0	232	3.91	46.4	54.4	361	68.2	0.390	32.7
	5.0	14.7	18.7	17.0	279	3.86	55.9	66.4	439	81.8	0.387	26.3
	6.3	18.2	23.2	12.9	336	3.80	67.1	80.9	534	97.8	0.384	21.1
	8.0	22.6	28.8	9.50	400	3.73	79.9	98.2	646	116	0.379	16.8
	10.0	27.4	34.9	7.00	462	3.64	92.4	116	761	133	0.374	13.6
120 x 120	5.0	17.8	22.7	21.0	498	4.68	83.0	97.6	777	122	0.467	26.2
	6.3	22.2	28.2	16.0	603	4.62	100	120	950	147	0.464	20.9
	8.0	27.6	35.2	12.0	726	4.55	121	146	1160	176	0.459	16.6
	10.0	33.7	42.9	9.00	852	4.46	142	175	1380	206	0.454	13.5
	12.5	40.9	52.1	6.60	982	4.34	164	207	1620	236	0.448	11.0
140 x 140	5.0	21.0	26.7	25.0	807	5.50	115	135	1250	170	0.547	26.1
	6.3	26.1	33.3	19.2	984	5.44	141	166	1540	206	0.544	20.8
	8.0	32.6	41.6	14.5	1200	5.36	171	204	1890	249	0.539	16.5
	10.0	40.0	50.9	11.0	1420	5.27	202	246	2270	294	0.534	13.4
	12.5	48.7	62.1	8.20	1650	5.16	236	293	2700	342	0.528	10.8
150 x 150	5.0	22.6	28.7	27.0	1000	5.90	134	156	1550	197	0.587	26.0
	6.3	28.1	35.8	20.8	1220	5.85	163	192	1910	240	0.584	20.8
	8.0	35.1	44.8	15.8	1490	5.77	199	237	2350	291	0.579	16.5
	10.0	43.1	54.9	12.0	1770	5.68	236	286	2830	344	0.574	13.3
	12.5	52.7	67.1	9.00	2080	5.57	277	342	3380	402	0.568	10.8
160 x 160	5.0	24.1	30.7	29.0	1230	6.31	153	178	1890	226	0.627	26.0
	6.3	30.1	38.3	22.4	1500	6.26	187	220	2330	275	0.624	20.7
	8.0	37.6	48.0	17.0	1830	6.18	229	272	2880	335	0.619	16.5
	10.0	46.3	58.9	13.0	2190	6.09	273	329	3480	398	0.614	13.3
	12.5	56.6	72.1	9.80	2580	5.98	322	395	4160	467	0.608	10.7
	14.2	63.3	80.7	8.27	2810	5.90	351	436	4580	508	0.603	9.53
180 x 180	6.3	34.0	43.3	25.6	2170	7.07	241	281	3360	355	0.704	20.7
	8.0	42.7	54.4	19.5	2660	7.00	296	349	4160	434	0.699	16.4
	10.0	52.5	66.9	15.0	3190	6.91	355	424	5050	518	0.694	13.2
	12.5	64.4	82.1	11.4	3790	6.80	421	511	6070	613	0.688	10.7
	14.2	72.2	92.0	9.68	4150	6.72	462	566	6710	670	0.683	9.46
	16.0	80.2	102	8.25	4500	6.64	500	621	7340	724	0.679	8.46
200 x 200	5.0	30.4	38.7	37.0	2450	7.95	245	283	3760	362	0.787	25.9
	6.3	38.0	48.4	28.7	3010	7.89	301	350	4650	444	0.784	20.6
	8.0	47.7	60.8	22.0	3710	7.81	371	436	5780	545	0.779	16.3
	10.0	58.8	74.9	17.0	4470	7.72	447	531	7030	655	0.774	13.2
	12.5	72.3	92.1	13.0	5340	7.61	534	643	8490	778	0.768	10.6
	14.2	81.1	103	11.1	5870	7.54	587	714	9420	854	0.763	9.41
	16.0	90.3	115	9.50	6390	7.46	639	785	10300	927	0.759	8.40

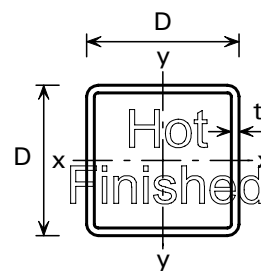
Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Square Hollow Sections (HFSHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation $d = D - 3t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED SQUARE HOLLOW SECTIONS

Celsius® SHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling $d/t^{(1)}$	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Size	Thickness										Per Metre	Per Tonne
D x D mm	t mm	kg/m	A cm ²		I cm ⁴	r cm	Z cm ³	S cm ³	J cm ⁴	C cm ³	m ²	m ²
250 x 250	6.3	47.9	61.0	36.7	6010	9.93	481	556	9240	712	0.984	20.5
	8.0	60.3	76.8	28.3	7460	9.86	596	694	11500	880	0.979	16.3
	10.0	74.5	94.9	22.0	9060	9.77	724	851	14100	1070	0.974	13.1
	12.5	91.9	117	17.0	10900	9.66	873	1040	17200	1280	0.968	10.5
	14.2	103	132	14.6	12100	9.58	967	1160	19100	1410	0.963	9.31
	16.0	115	147	12.6	13300	9.50	1060	1280	21100	1550	0.959	8.31
260 x 260	6.3	49.9	63.5	38.3	6790	10.3	522	603	10400	773	1.02	20.5
	8.0	62.8	80.0	29.5	8420	10.3	648	753	13000	956	1.02	16.2
	10.0	77.7	98.9	23.0	10200	10.2	788	924	15900	1160	1.01	13.1
	12.5	95.8	122	17.8	12400	10.1	951	1130	19400	1390	1.01	10.5
	14.2	108	137	15.3	13700	9.99	1060	1260	21700	1540	1.00	9.30
	16.0	120	153	13.3	15100	9.91	1160	1390	23900	1690	0.999	8.29
300 x 300	6.3	57.8	73.6	44.6	10500	12.0	703	809	16100	1040	1.18	20.5
	8.0	72.8	92.8	34.5	13100	11.9	875	1010	20200	1290	1.18	16.2
	10.0	90.2	115	27.0	16000	11.8	1070	1250	24800	1580	1.17	13.0
	12.5	112	142	21.0	19400	11.7	1300	1530	30300	1900	1.17	10.5
	14.2	126	160	18.1	21600	11.6	1440	1710	33900	2110	1.16	9.25
	16.0	141	179	15.8	23900	11.5	1590	1900	37600	2330	1.16	8.25
350 x 350	8.0	85.4	109	40.8	21100	13.9	1210	1390	32400	1790	1.38	16.2
	10.0	106	135	32.0	25900	13.9	1480	1720	39900	2190	1.37	13.0
	12.5	131	167	25.0	31500	13.7	1800	2110	48900	2650	1.37	10.4
	14.2	148	189	21.6	35200	13.7	2010	2360	54900	2960	1.36	9.21
	16.0	166	211	18.9	38900	13.6	2230	2630	61000	3260	1.36	8.20
400 x 400	10.0	122	155	37.0	39100	15.9	1960	2260	60100	2900	1.57	12.9
	12.5	151	192	29.0	47800	15.8	2390	2780	73900	3530	1.57	10.4
	14.2	170	217	25.2	53500	15.7	2680	3130	83000	3940	1.56	9.18
	16.0	191	243	22.0	59300	15.6	2970	3480	92400	4360	1.56	8.17
	20.0 ^	235	300	17.0	71500	15.4	3580	4250	112000	5240	1.55	6.58

Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Square Hollow Sections (HFSHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.

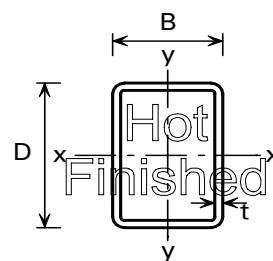
(1) For local buckling calculation $d = D - 3t$.

^ SAW process (single longitudinal seam weld, slightly proud)

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED RECTANGULAR HOLLOW SECTIONS

Celsius® RHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness			d/t ⁽¹⁾	b/t ⁽¹⁾	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	Per Metre	Per Tonne
D x B mm	t mm	kg/m	A cm ²			cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ²	m ²
50x30	3.2	3.61	4.60	12.6	6.38	14.2	6.20	1.76	1.16	5.68	4.13	7.25	5.00	14.2	6.80	0.152	42.1
60x40	3.0	4.35	5.54	17.0	10.3	26.5	13.9	2.18	1.58	8.82	6.95	10.9	8.19	29.2	11.2	0.192	44.1
	4.0	5.64	7.19	12.0	7.00	32.8	17.0	2.14	1.54	10.9	8.52	13.8	10.3	36.7	13.7	0.190	33.7
	5.0	6.85	8.73	9.00	5.00	38.1	19.5	2.09	1.50	12.7	9.77	16.4	12.2	43.0	15.7	0.187	27.3
80x40	3.2	5.62	7.16	22.0	9.50	57.2	18.9	2.83	1.63	14.3	9.46	18.0	11.0	46.2	16.1	0.232	41.3
	4.0	6.90	8.79	17.0	7.00	68.2	22.2	2.79	1.59	17.1	11.1	21.8	13.2	55.2	18.9	0.230	33.3
	5.0	8.42	10.7	13.0	5.00	80.3	25.7	2.74	1.55	20.1	12.9	26.1	15.7	65.1	21.9	0.227	27.0
	6.3	10.3	13.1	9.70	3.35	93.3	29.2	2.67	1.49	23.3	14.6	31.1	18.4	75.6	24.8	0.224	21.7
90x50	8.0	12.5	16.0	7.00	2.00	106	32.1	2.58	1.42	26.5	16.1	36.5	21.2	85.8	27.4	0.219	17.5
	3.6	7.40	9.42	22.0	10.9	98.3	38.7	3.23	2.03	21.8	15.5	27.2	18.0	89.4	25.9	0.271	36.6
	5.0	9.99	12.7	15.0	7.00	127	49.2	3.16	1.97	28.3	19.7	36.0	23.5	116	32.9	0.267	26.7
	6.3	12.3	15.6	11.3	4.94	150	57.0	3.10	1.91	33.3	22.8	43.2	28.0	138	38.1	0.264	21.5
100x50	3.0	6.71	8.54	30.3	13.7	110	36.8	3.58	2.08	21.9	14.7	27.3	16.8	88.4	25.0	0.292	43.5
	3.2	7.13	9.08	28.3	12.6	116	38.8	3.57	2.07	23.2	15.5	28.9	17.7	93.4	26.4	0.292	41.0
	4.0	8.78	11.2	22.0	9.50	140	46.2	3.53	2.03	27.9	18.5	35.2	21.5	113	31.4	0.290	33.0
	5.0	10.8	13.7	17.0	7.00	167	54.3	3.48	1.99	33.3	21.7	42.6	25.8	135	36.9	0.287	26.6
	6.3	13.3	16.9	12.9	4.94	197	63.0	3.42	1.93	39.4	25.2	51.3	30.8	160	42.9	0.284	21.4
	8.0	16.3	20.8	9.50	3.25	230	71.7	3.33	1.86	46.0	28.7	61.4	36.3	186	48.9	0.279	17.1
100x60	3.6	8.53	10.9	24.8	13.7	145	64.8	3.65	2.44	28.9	21.6	35.6	24.9	142	35.6	0.311	36.5
	5.0	11.6	14.7	17.0	9.00	189	83.6	3.58	2.38	37.8	27.9	47.4	32.9	188	45.9	0.307	26.5
	6.3	14.2	18.1	12.9	6.52	225	98.1	3.52	2.33	45.0	32.7	57.3	39.5	224	53.8	0.304	21.4
	8.0	17.5	22.4	9.50	4.50	264	113	3.44	2.25	52.8	37.8	68.7	47.1	265	62.2	0.299	17.1
120x60	3.6	9.66	12.3	30.3	13.7	227	76.3	4.30	2.49	37.9	25.4	47.2	28.9	183	43.3	0.351	36.3
	5.0	13.1	16.7	21.0	9.00	299	98.8	4.23	2.43	49.9	32.9	63.1	38.4	242	56.0	0.347	26.5
	6.3	16.2	20.7	16.0	6.52	358	116	4.16	2.37	59.7	38.8	76.7	46.3	290	65.9	0.344	21.2
	8.0	20.1	25.6	12.0	4.50	425	135	4.08	2.30	70.8	45.0	92.7	55.4	344	76.6	0.339	16.9
120x80	5.0	14.7	18.7	21.0	13.0	365	193	4.42	3.21	60.9	48.2	74.6	56.1	401	77.9	0.387	26.3
	6.3	18.2	23.2	16.0	9.70	440	230	4.36	3.15	73.3	57.6	91.0	68.2	487	92.9	0.384	21.1
	8.0	22.6	28.8	12.0	7.00	525	273	4.27	3.08	87.5	68.1	111	82.6	587	110	0.379	16.8
	10.0	27.4	34.9	9.00	5.00	609	313	4.18	2.99	102	78.1	131	97.3	688	126	0.374	13.6
150x100	5.0	18.6	23.7	27.0	17.0	739	392	5.58	4.07	98.5	78.5	119	90.1	807	127	0.487	26.2
	6.3	23.1	29.5	20.8	12.9	898	474	5.52	4.01	120	94.8	147	110	986	153	0.484	21.0
	8.0	28.9	36.8	15.8	9.50	1090	569	5.44	3.94	145	114	180	135	1200	183	0.479	16.6
	10.0	35.3	44.9	12.0	7.00	1280	665	5.34	3.85	171	133	216	161	1430	214	0.474	13.4
	12.5	42.8	54.6	9.00	5.00	1490	763	5.22	3.74	198	153	256	190	1680	246	0.468	10.9
150x125	4.0	16.6	21.2	34.5	28.3	714	539	5.80	5.04	95.2	86.3	112	98.9	949	133	0.540	32.5
	5.0	20.6	26.2	27.0	22.0	870	656	5.76	5.00	116	105	138	121	1160	162	0.537	26.1
	6.3	25.6	32.6	20.8	16.8	1060	798	5.70	4.94	141	128	169	149	1430	196	0.534	20.9
	8.0	32.0	40.8	15.8	12.6	1290	966	5.62	4.87	172	155	208	183	1750	237	0.529	16.5
	10.0	39.2	49.9	12.0	9.50	1530	1140	5.53	4.78	204	183	251	221	2100	279	0.524	13.4
	12.5	47.7	60.8	9.00	7.00	1780	1330	5.42	4.67	238	212	299	262	2490	324	0.518	10.9

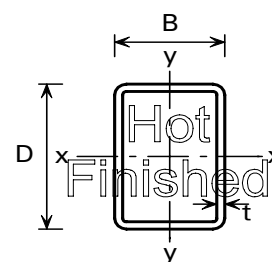
Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Rectangular Hollow Sections (HFRHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation $d = D - 3t$ and $b = B - 3t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED RECTANGULAR HOLLOW SECTIONS

Celsius® RHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness			d/t ⁽¹⁾	b/t ⁽¹⁾	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	Per Metre	Per Tonne
D x B mm	t mm	kg/m	A cm ²			cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			m ²	m ²
160x80	4.0	14.4	18.4	37.0	17.0	612	207	5.77	3.35	76.5	51.7	94.7	58.3	493	88.1	0.470	32.6
	5.0	17.8	22.7	29.0	13.0	744	249	5.72	3.31	93.0	62.3	116	71.1	600	106	0.467	26.2
	6.3	22.2	28.2	22.4	9.70	903	299	5.66	3.26	113	74.8	142	86.8	730	127	0.464	20.9
	8.0	27.6	35.2	17.0	7.00	1090	356	5.57	3.18	136	89.0	175	106	883	151	0.459	16.6
	10.0	33.7	42.9	13.0	5.00	1280	411	5.47	3.10	161	103	209	125	1040	175	0.454	13.5
200x100	5.0	22.6	28.7	37.0	17.0	1500	505	7.21	4.19	149	101	185	114	1200	172	0.587	26.0
	6.3	28.1	35.8	28.7	12.9	1830	613	7.15	4.14	183	123	228	140	1480	208	0.584	20.8
	8.0	35.1	44.8	22.0	9.50	2230	739	7.06	4.06	223	148	282	172	1800	251	0.579	16.5
	10.0	43.1	54.9	17.0	7.00	2660	869	6.96	3.98	266	174	341	206	2160	295	0.574	13.3
	12.5	52.7	67.1	13.0	5.00	3140	1000	6.84	3.87	314	201	408	245	2540	341	0.568	10.8
200x120	5.0	24.1	30.7	37.0	21.0	1690	762	7.40	4.98	168	127	205	144	1650	210	0.627	26.0
	6.3	30.1	38.3	28.7	16.0	2070	929	7.34	4.92	207	155	253	177	2030	255	0.624	20.7
	8.0	37.6	48.0	22.0	12.0	2530	1130	7.26	4.85	253	188	313	218	2500	310	0.619	16.5
	10.0	46.3	58.9	17.0	9.00	3030	1340	7.17	4.76	303	223	379	263	3000	367	0.614	13.3
	14.2	63.3	80.7	11.1	5.45	3910	1690	6.96	4.58	391	282	503	346	3920	464	0.603	9.53
200x150	8.0	41.4	52.8	22.0	15.8	2970	1890	7.50	5.99	297	253	359	294	3640	398	0.679	16.4
	10.0	51.0	64.9	17.0	12.0	3570	2260	7.41	5.91	357	302	436	356	4410	475	0.674	13.2
250x120	10.0	54.1	68.9	22.0	9.00	5310	1640	8.78	4.88	425	273	539	318	4090	468	0.714	13.2
	12.5	66.4	84.6	17.0	6.60	6330	1930	8.65	4.77	506	321	651	381	4880	549	0.708	10.7
	14.2	74.5	94.9	14.6	5.45	6960	2090	8.56	4.70	556	349	722	421	5360	597	0.703	9.44
250x150	5.0	30.4	38.7	47.0	27.0	3360	1530	9.31	6.28	269	204	324	228	3280	337	0.787	25.9
	6.3	38.0	48.4	36.7	20.8	4140	1870	9.25	6.22	331	250	402	283	4050	413	0.784	20.6
	8.0	47.7	60.8	28.3	15.8	5110	2300	9.17	6.15	409	306	501	350	5020	506	0.779	16.3
	10.0	58.8	74.9	22.0	12.0	6170	2760	9.08	6.06	494	367	611	426	6090	605	0.774	13.2
	12.5	72.3	92.1	17.0	9.00	7390	3270	8.96	5.96	591	435	740	514	7330	717	0.768	10.6
	14.2	81.1	103	14.6	7.56	8140	3580	8.87	5.88	651	477	823	570	8100	784	0.763	9.41
	16.0	90.3	115	12.6	6.38	8880	3870	8.79	5.80	710	516	906	625	8870	849	0.759	8.41
250x200	10.0	66.7	84.9	22.0	17.0	7610	5370	9.47	7.95	609	537	731	626	9890	835	0.874	13.1
	12.5	82.1	105	17.0	13.0	9150	6440	9.35	7.85	732	644	888	760	12000	997	0.868	10.6
	14.2	92.3	118	14.6	11.1	10100	7100	9.28	7.77	809	710	990	846	13300	1100	0.863	9.35
260x140	5.0	30.4	38.7	49.0	25.0	3530	1350	9.55	5.91	272	193	331	216	3080	326	0.787	25.9
	6.3	38.0	48.4	38.3	19.2	4360	1660	9.49	5.86	335	237	411	267	3800	399	0.784	20.6
	8.0	47.7	60.8	29.5	14.5	5370	2030	9.40	5.78	413	290	511	331	4700	488	0.779	16.3
	10.0	58.8	74.9	23.0	11.0	6490	2430	9.31	5.70	499	347	624	402	5700	584	0.774	13.2
	12.5	72.3	92.1	17.8	8.20	7770	2880	9.18	5.59	597	411	756	485	6840	690	0.768	10.6
	14.2	81.1	103	15.3	6.86	8560	3140	9.10	5.52	658	449	840	537	7560	754	0.763	9.41
	16.0	90.3	115	13.3	5.75	9340	3400	9.01	5.44	718	486	925	588	8260	815	0.759	8.41
300x100	8.0	47.7	60.8	34.5	9.50	6310	1080	10.2	4.21	420	216	546	245	3070	387	0.779	16.3
	10.0	58.8	74.9	27.0	7.00	7610	1280	10.1	4.13	508	255	666	296	3680	458	0.774	13.2
	14.2	81.1	103	18.1	4.04	10000	1610	9.85	3.94	669	321	896	390	4760	578	0.763	9.41

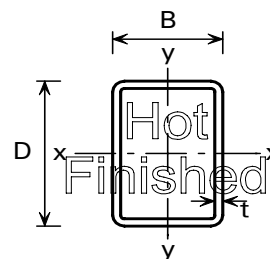
Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Rectangular Hollow Sections (HFRHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation d = D - 3t and b = B - 3t.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED RECTANGULAR HOLLOW SECTIONS

Celsius® RHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness			d/t ⁽¹⁾	b/t ⁽¹⁾	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	Per Metre	Per Tonne
D x B mm	t mm	kg/m	A cm ²			cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			m ²	m ²
300x150	8.0	54.0	68.8	34.5	15.8	8010	2700	10.8	6.27	534	360	663	407	6450	613	0.879	16.3
	10.0	66.7	84.9	27.0	12.0	9720	3250	10.7	6.18	648	433	811	496	7840	736	0.874	13.1
	12.5	82.1	105	21.0	9.00	11700	3860	10.6	6.07	779	514	986	600	9450	874	0.868	10.6
	14.2	92.3	118	18.1	7.56	12900	4230	10.5	6.00	862	564	1100	666	10500	959	0.863	9.35
	16.0	103	131	15.8	6.38	14200	4600	10.4	5.92	944	613	1210	732	11500	1040	0.859	8.34
300x200	6.3	47.9	61.0	44.6	28.7	7830	4190	11.3	8.29	522	419	624	472	8480	681	0.984	20.5
	8.0	60.3	76.8	34.5	22.0	9720	5180	11.3	8.22	648	518	779	589	10600	840	0.979	16.2
	10.0	74.5	94.9	27.0	17.0	11800	6280	11.2	8.13	788	628	956	721	12900	1020	0.974	13.1
	12.5	91.9	117	21.0	13.0	14300	7540	11.0	8.02	952	754	1170	877	15700	1220	0.968	10.5
	14.2	103	132	18.1	11.1	15800	8330	11.0	7.95	1060	833	1300	978	17500	1340	0.963	9.35
300x250	5.0	42.2	53.7	57.0	47.0	7410	5610	11.7	10.2	494	449	575	508	9770	697	1.09	25.8
	6.3	52.8	67.3	44.6	36.7	9190	6950	11.7	10.2	613	556	716	633	12200	862	1.08	20.5
	8.0	66.5	84.8	34.5	28.3	11400	8630	11.6	10.1	761	690	896	791	15200	1070	1.08	16.2
	10.0	82.4	105	27.0	22.0	13900	10500	11.5	10.0	928	840	1100	971	18600	1300	1.07	13.0
	12.5	102	130	21.0	17.0	16900	12700	11.4	9.89	1120	1010	1350	1190	22700	1560	1.07	10.5
350x150	5.0	38.3	48.7	67.0	27.0	7660	2050	12.5	6.49	437	274	543	301	5160	477	0.987	25.8
	6.3	47.9	61.0	52.6	20.8	9480	2530	12.5	6.43	542	337	676	373	6390	586	0.984	20.5
	8.0	60.3	76.8	40.8	15.8	11800	3110	12.4	6.36	673	414	844	464	7930	721	0.979	16.2
	10.0	74.5	94.9	32.0	12.0	14300	3740	12.3	6.27	818	498	1040	566	9630	867	0.974	13.1
	12.5	91.9	117	25.0	9.00	17300	4450	12.2	6.17	988	593	1260	686	11600	1030	0.968	10.5
350x250	5.0	46.1	58.7	67.0	47.0	10600	6360	13.5	10.4	607	509	716	569	12200	817	1.19	25.8
	6.3	57.8	73.6	52.6	36.7	13200	7890	13.4	10.4	754	631	892	709	15200	1010	1.18	20.4
	8.0	72.8	92.8	40.8	28.3	16400	9800	13.3	10.3	940	784	1120	888	19000	1250	1.18	16.2
	10.0	90.2	115	32.0	22.0	20100	11900	13.2	10.2	1150	955	1380	1090	23400	1530	1.17	13.0
	12.5	112	142	25.0	17.0	24400	14400	13.1	10.1	1400	1160	1690	1330	28500	1840	1.17	10.4
400x120	5.0	39.8	50.7	77.0	21.0	9520	1420	13.7	5.30	476	237	612	259	4090	430	1.03	25.9
	6.3	49.9	63.5	60.5	16.0	11800	1740	13.6	5.24	590	291	762	320	5040	527	1.02	20.4
	8.0	62.8	80.0	47.0	12.0	14600	2130	13.5	5.17	732	356	952	397	6220	645	1.02	16.2
	10.0	77.7	98.9	37.0	9.00	17800	2550	13.4	5.08	891	425	1170	483	7510	771	1.01	13.0
	12.5	95.8	122	29.0	6.60	21600	3010	13.3	4.97	1080	502	1430	583	8980	911	1.01	10.5
400x120	14.2	108	137	25.2	5.45	23900	3290	13.2	4.89	1200	549	1590	646	9890	996	1.00	9.26
	16.0	120	153	22.0	4.50	26300	3560	13.1	4.82	1320	593	1760	709	10800	1080	0.999	8.33

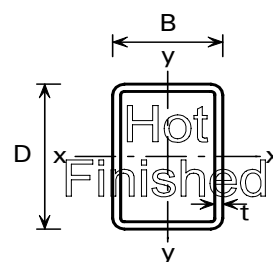
Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Rectangular Hollow Sections (HFRHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation d = D - 3t and b = B - 3t.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED RECTANGULAR HOLLOW SECTIONS

Celsius® RHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness			d/t ⁽¹⁾	b/t ⁽¹⁾	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	Per Metre	Per Tonne
D x B mm	t mm	kg/m	A cm ²			cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			m ²	m ²
400x150	5.0	42.2	53.7	77.0	27.0	10700	2320	14.1	6.57	534	309	671	337	6130	547	1.09	25.8
	6.3	52.8	67.3	60.5	20.8	13300	2850	14.0	6.51	663	380	836	418	7600	673	1.08	20.5
	8.0	66.5	84.8	47.0	15.8	16500	3510	13.9	6.43	824	468	1050	521	9420	828	1.08	16.2
	10.0	82.4	105	37.0	12.0	20100	4230	13.8	6.35	1010	564	1290	636	11500	998	1.07	13.0
	12.5	102	130	29.0	9.00	24400	5040	13.7	6.24	1220	672	1570	772	13800	1190	1.07	10.5
	14.2	115	146	25.2	7.56	27100	5550	13.6	6.16	1360	740	1760	859	15300	1310	1.06	9.22
	16.0	128	163	22.0	6.38	29800	6040	13.5	6.09	1490	805	1950	947	16800	1430	1.06	8.28
400x200	8.0	72.8	92.8	47.0	22.0	19600	6660	14.5	8.47	978	666	1200	743	15700	1140	1.18	16.2
	10.0	90.2	115	37.0	17.0	23900	8080	14.4	8.39	1200	808	1480	911	19300	1380	1.17	13.0
	12.5	112	142	29.0	13.0	29100	9740	14.3	8.28	1450	974	1810	1110	23400	1660	1.17	10.4
	14.2	126	160	25.2	11.1	32400	10800	14.2	8.21	1620	1080	2030	1240	26100	1830	1.16	9.21
	16.0	141	179	22.0	9.50	35700	11800	14.1	8.13	1790	1180	2260	1370	28900	2010	1.16	8.23
400x300	8.0	85.4	109	47.0	34.5	25700	16500	15.4	12.3	1290	1100	1520	1250	31000	1750	1.38	16.2
	10.0	106	135	37.0	27.0	31500	20200	15.3	12.2	1580	1350	1870	1540	38200	2140	1.37	12.9
	12.5	131	167	29.0	21.0	38500	24600	15.2	12.1	1920	1640	2300	1880	46800	2590	1.37	10.5
	14.2	148	189	25.2	18.1	43000	27400	15.1	12.1	2150	1830	2580	2110	52500	2890	1.36	9.19
	16.0	166	211	22.0	15.8	47500	30300	15.0	12.0	2380	2020	2870	2350	58300	3180	1.36	8.19
450x250	8.0	85.4	109	53.3	28.3	30100	12100	16.6	10.6	1340	971	1620	1080	27100	1630	1.38	16.2
	10.0	106	135	42.0	22.0	36900	14800	16.5	10.5	1640	1190	2000	1330	33300	1990	1.37	12.9
	12.5	131	167	33.0	17.0	45000	18000	16.4	10.4	2000	1440	2460	1630	40700	2410	1.37	10.5
	14.2	148	189	28.7	14.6	50300	20000	16.3	10.3	2240	1600	2760	1830	45600	2680	1.36	9.19
	16.0	166	211	25.1	12.6	55700	22000	16.2	10.2	2480	1760	3070	2030	50500	2950	1.36	8.19
500x200	8.0	85.4	109	59.5	22.0	34000	8140	17.7	8.65	1360	814	1710	896	21100	1430	1.38	16.2
	10.0	106	135	47.0	17.0	41800	9890	17.6	8.56	1670	989	2110	1100	25900	1740	1.37	12.9
	12.5	131	167	37.0	13.0	51000	11900	17.5	8.45	2040	1190	2590	1350	31500	2100	1.37	10.5
	14.2	148	189	32.2	11.1	56900	13200	17.4	8.38	2280	1320	2900	1510	35200	2320	1.36	9.19
	16.0	166	211	28.3	9.50	63000	14500	17.3	8.30	2520	1450	3230	1670	38900	2550	1.36	8.19
500x300	8.0	97.9	125	59.5	34.5	43700	20000	18.7	12.6	1750	1330	2100	1480	42600	2200	1.58	16.1
	10.0	122	155	47.0	27.0	53800	24400	18.6	12.6	2150	1630	2600	1830	52500	2700	1.57	12.9
	12.5	151	192	37.0	21.0	65800	29800	18.5	12.5	2630	1990	3200	2240	64400	3280	1.57	10.4
	14.2	170	217	32.2	18.1	73700	33200	18.4	12.4	2950	2220	3590	2520	72200	3660	1.56	9.18
	16.0	191	243	28.3	15.8	81800	36800	18.3	12.3	3270	2450	4010	2800	80300	4040	1.56	8.17
	20.0 ^	235	300	22.0	12.0	98800	44100	18.2	12.1	3950	2940	4890	3410	97400	4840	1.55	6.58

Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Rectangular Hollow Sections (HFRHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.

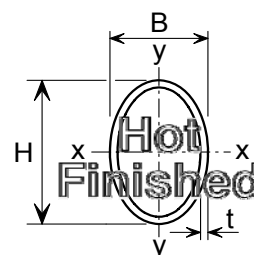
(1) For local buckling calculation d = D - 3t and b = B - 3t.

^ SAW process (single longitudinal seam weld, slightly proud)

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

HOT-FINISHED ELLIPTICAL HOLLOW SECTIONS

Celsius® OHS



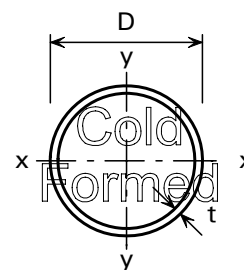
Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	Per Metre	Per Tonne
H x B mm	t mm	kg/m	A cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ²	m ²
150 x 75	4.0	10.7	13.6	301	101	4.70	2.72	40.1	26.9	56.1	34.4	303	60.1	0.363	33.9
150 x 75	5.0	13.3	16.9	367	122	4.66	2.69	48.9	32.5	68.9	42.0	367	72.2	0.363	27.4
150 x 75	6.3	16.5	21.0	448	147	4.62	2.64	59.7	39.1	84.9	51.5	443	86.3	0.363	22.0
200 x 100	5.0	17.9	22.8	897	302	6.27	3.64	89.7	60.4	125	76.8	905	135	0.484	27.1
200 x 100	6.3	22.3	28.4	1100	368	6.23	3.60	110	73.5	155	94.7	1110	163	0.484	21.7
200 x 100	8.0	28.0	35.7	1360	446	6.17	3.54	136	89.3	193	117	1350	197	0.484	17.3
200 x 100	10.0	34.5	44.0	1640	529	6.10	3.47	164	106	235	141	1610	232	0.484	14.0
250 x 125	6.3	28.2	35.9	2210	742	7.84	4.55	176	119	246	151	2220	265	0.605	21.5
250 x 125	8.0	35.4	45.1	2730	909	7.78	4.49	219	145	307	188	2730	323	0.605	17.1
250 x 125	10.0	43.8	55.8	3320	1090	7.71	4.42	265	174	376	228	3290	385	0.605	13.8
250 x 125	12.5	53.9	68.7	4000	1290	7.63	4.34	320	207	458	276	3920	453	0.605	11.2
300 x 150	8.0	42.8	54.5	4810	1620	9.39	5.44	321	215	449	275	4850	481	0.726	17.0
300 x 150	10.0	53.0	67.5	5870	1950	9.32	5.37	391	260	551	336	5870	577	0.726	13.7
300 x 150	12.5	65.5	83.4	7120	2330	9.24	5.29	475	311	674	409	7050	686	0.726	11.1
300 x 150	16.0	82.5	105	8730	2810	9.12	5.17	582	374	837	503	8530	818	0.726	8.81
400 x 200	8.0	57.6	73.4	11700	3970	12.6	7.35	584	397	811	500	11900	890	0.969	16.8
400 x 200	10.0	71.5	91.1	14300	4830	12.5	7.28	717	483	1000	615	14500	1080	0.969	13.5
400 x 200	12.5	88.6	113	17500	5840	12.5	7.19	877	584	1230	753	17600	1300	0.969	10.9
400 x 200	16.0	112	143	21700	7140	12.3	7.07	1090	714	1540	936	21600	1580	0.969	8.64
500 x 250	10.0	90	115	28539	9682	15.8	9.2	1142	775	1585	976	28950	1739	1.21	13.5
500 x 250	12.5	112	142	35000	11800	15.7	9.10	1400	943	1960	1200	35300	2110	1.21	10.8
500 x 250	16.0	142	180	43700	14500	15.6	8.98	1750	1160	2460	1500	43700	2590	1.21	8.55

Celsius® is a trademark of Corus. A fuller description of the relationship between Hot Finished Elliptical Hollow Sections (HFEHS) and the Celsius® range of sections manufactured by Corus is given on page A - 44.
FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

COLD-FORMED CIRCULAR HOLLOW SECTIONS

Hybox® CHS



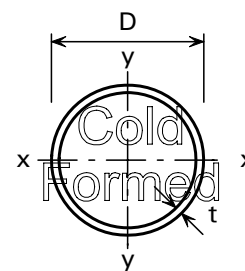
Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Outside Diameter	Thickness								J	C	Per Metre	Per Tonne
D	t		A	D/t	I	r	Z	S	cm ⁴	cm ³	m ²	m ²
mm	mm	kg/m	cm ²		cm ⁴	cm	cm ³	cm ³				
33.7	3.0	2.27	2.89	11.2	3.44	1.09	2.04	2.84	6.88	4.08	0.106	46.6
42.4	4.0	3.79	4.83	10.6	8.99	1.36	4.24	5.92	18.0	8.48	0.133	35.2
48.3	3.0	3.35	4.27	16.1	11.0	1.61	4.55	6.17	22.0	9.11	0.152	45.3
48.3	3.5	3.87	4.93	13.8	12.4	1.59	5.15	7.04	24.9	10.3	0.152	39.2
48.3	4.0	4.37	5.57	12.1	13.8	1.57	5.70	7.87	27.5	11.4	0.152	34.7
60.3	3.0	4.24	5.40	20.1	22.2	2.03	7.37	9.86	44.4	14.7	0.189	44.7
60.3	4.0	5.55	7.07	15.1	28.2	2.00	9.34	12.7	56.3	18.7	0.189	34.1
76.1	3.0	5.41	6.89	25.4	46.1	2.59	12.1	16.0	92.2	24.2	0.239	44.2
76.1	4.0	7.11	9.06	19.0	59.1	2.55	15.5	20.8	118	31.0	0.239	33.6
88.9	3.0	6.36	8.10	29.6	74.8	3.04	16.8	22.1	150	33.6	0.279	43.9
88.9	3.5	7.37	9.39	25.4	85.7	3.02	19.3	25.5	171	38.6	0.279	37.9
88.9	4.0	8.38	10.7	22.2	96.3	3.00	21.7	28.9	193	43.3	0.279	33.3
88.9	5.0	10.3	13.2	17.8	116	2.97	26.2	35.2	233	52.4	0.279	27.0
88.9	6.3	12.8	16.3	14.1	140	2.93	31.5	43.1	280	63.1	0.279	21.8
114.3	3.0	8.23	10.5	38.1	163	3.94	28.4	37.2	325	56.9	0.359	43.6
114.3	3.5	9.56	12.2	32.7	187	3.92	32.7	43.0	374	65.5	0.359	37.5
114.3	4.0	10.9	13.9	28.6	211	3.90	36.9	48.7	422	73.9	0.359	33.0
114.3	5.0	13.5	17.2	22.9	257	3.87	45.0	59.8	514	89.9	0.359	26.6
114.3	6.0	16.0	20.4	19.1	300	3.83	52.5	70.4	600	105	0.359	22.4
139.7	4.0	13.4	17.1	34.9	393	4.80	56.2	73.7	786	112	0.439	32.8
139.7	5.0	16.6	21.2	27.9	481	4.77	68.8	90.8	961	138	0.439	26.4
139.7	6.0	19.8	25.2	23.3	564	4.73	80.8	107	1130	162	0.439	22.2
139.7	8.0	26.0	33.1	17.5	720	4.66	103	139	1440	206	0.439	16.9
139.7	10.0	32.0	40.7	14.0	862	4.60	123	169	1720	247	0.439	13.7
168.3	4.0	16.2	20.6	42.1	697	5.81	82.8	108	1390	166	0.529	32.6
168.3	5.0	20.1	25.7	33.7	856	5.78	102	133	1710	203	0.529	26.3
168.3	6.0	24.0	30.6	28.1	1010	5.74	120	158	2020	240	0.529	22.0
168.3	8.0	31.6	40.3	21.0	1300	5.67	154	206	2600	308	0.529	16.7
168.3	10.0	39.0	49.7	16.8	1560	5.61	186	251	3130	372	0.529	13.5
168.3	12.5	48.0	61.2	13.5	1870	5.53	222	304	3740	444	0.529	11.0
193.7	4.0	18.7	23.8	48.4	1070	6.71	111	144	2150	222	0.609	32.5
193.7	4.5	21.0	26.7	43.0	1200	6.69	124	161	2400	247	0.609	29.0
193.7	5.0	23.3	29.6	38.7	1320	6.67	136	178	2640	273	0.609	26.2
193.7	6.0	27.8	35.4	32.3	1560	6.64	161	211	3120	322	0.609	21.9
193.7	8.0	36.6	46.7	24.2	2020	6.57	208	276	4030	416	0.609	16.6
193.7	10.0	45.3	57.7	19.4	2440	6.50	252	338	4880	504	0.609	13.4
193.7	12.5	55.9	71.2	15.5	2930	6.42	303	411	5870	606	0.609	10.9
219.1	4.5	23.8	30.3	48.7	1750	7.59	159	207	3490	319	0.688	28.9
219.1	5.0	26.4	33.6	43.8	1930	7.57	176	229	3860	352	0.688	26.1
219.1	6.0	31.5	40.2	36.5	2280	7.54	208	273	4560	417	0.688	21.8
219.1	8.0	41.6	53.1	27.4	2960	7.47	270	357	5920	540	0.688	16.5
219.1	10.0	51.6	65.7	21.9	3600	7.40	328	438	7200	657	0.688	13.3
219.1	12.0	61.3	78.1	18.3	4200	7.33	383	515	8400	767	0.688	11.2
219.1	12.5	63.7	81.1	17.5	4350	7.32	397	534	8690	793	0.688	10.8
219.1	16.0	80.1	102	13.7	5300	7.20	483	661	10600	967	0.688	8.59

Hybox® is a trademark of Corus. A fuller description of the relationship between Cold Formed Circular Hollow Sections (CFCHS) and the Hybox® range of sections manufactured by Corus is given on page A - 44.
FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

COLD-FORMED CIRCULAR HOLLOW SECTIONS

Hybox® CHS



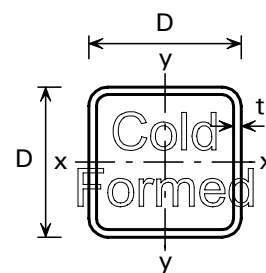
Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Outside Diameter	Thickness										Per Metre	Per Tonne
D	t	kg/m	A	D/t	I	r	Z	S	J	C	m ²	m ²
mm	mm		cm ²		cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³		
244.5	5.0	29.5	37.6	48.9	2700	8.47	221	287	5400	441	0.768	26.0
244.5	6.0	35.3	45.0	40.8	3200	8.43	262	341	6400	523	0.768	21.8
244.5	8.0	46.7	59.4	30.6	4160	8.37	340	448	8320	681	0.768	16.5
244.5	10.0	57.8	73.7	24.5	5070	8.30	415	550	10100	830	0.768	13.3
244.5	12.0	68.8	87.7	20.4	5940	8.23	486	649	11900	972	0.768	11.2
244.5	12.5	71.5	91.1	19.6	6150	8.21	503	673	12300	1010	0.768	10.7
244.5	16.0	90.2	115	15.3	7530	8.10	616	837	15100	1230	0.768	8.52
273.0	5.0	33.0	42.1	54.6	3780	9.48	277	359	7560	554	0.858	26.0
273.0	6.0	39.5	50.3	45.5	4490	9.44	329	428	8970	657	0.858	21.7
273.0	8.0	52.3	66.6	34.1	5850	9.37	429	562	11700	857	0.858	16.4
273.0	10.0	64.9	82.6	27.3	7150	9.31	524	692	14300	1050	0.858	13.2
273.0	12.0	77.2	98.4	22.8	8400	9.24	615	818	16800	1230	0.858	11.1
273.0	12.5	80.3	102	21.8	8700	9.22	637	849	17400	1270	0.858	10.7
273.0	16.0	101	129	17.1	10700	9.10	784	1060	21400	1570	0.858	8.46
323.9	5.0	39.3	50.1	64.8	6370	11.3	393	509	12700	787	1.02	25.9
323.9	6.0	47.0	59.9	54.0	7570	11.2	468	606	15100	935	1.02	21.6
323.9	8.0	62.3	79.4	40.5	9910	11.2	612	799	19800	1220	1.02	16.3
323.9	10.0	77.4	98.6	32.4	12200	11.1	751	986	24300	1500	1.02	13.1
323.9	12.0	92.3	118	27.0	14300	11.0	884	1170	28600	1770	1.02	11.0
323.9	12.5	96.0	122	25.9	14800	11.0	917	1210	29700	1830	1.02	10.6
323.9	16.0	121	155	20.2	18400	10.9	1140	1520	36800	2270	1.02	8.38
355.6	5.0	43.2	55.1	71.1	8460	12.4	476	615	16900	952	1.12	25.8
355.6	6.0	51.7	65.9	59.3	10100	12.4	566	733	20100	1130	1.12	21.6
355.6	8.0	68.6	87.4	44.5	13200	12.3	742	967	26400	1490	1.12	16.3
355.6	10.0	85.2	109	35.6	16200	12.2	912	1200	32400	1830	1.12	13.1
355.6	12.0	102	130	29.6	19100	12.2	1080	1420	38300	2150	1.12	11.0
355.6	12.5	106	135	28.4	19900	12.1	1120	1470	39700	2230	1.12	10.6
355.6	16.0	134	171	22.2	24700	12.0	1390	1850	49300	2770	1.12	8.34
406.4	6.0	59.2	75.5	67.7	15100	14.2	745	962	30300	1490	1.28	21.5
406.4	8.0	78.6	100	50.8	19900	14.1	978	1270	39700	1960	1.28	16.2
406.4	10.0	97.8	125	40.6	24500	14.0	1210	1570	49000	2410	1.28	13.1
406.4	12.0	117	149	33.9	28900	14.0	1420	1870	57900	2850	1.28	10.9
406.4	12.5	121	155	32.5	30000	13.9	1480	1940	60100	2960	1.28	10.5
406.4	16.0	154	196	25.4	37400	13.8	1840	2440	74900	3690	1.28	8.29
457.0	6.0	66.7	85.0	76.2	21600	15.9	946	1220	43200	1890	1.44	21.5
457.0	8.0	88.6	113	57.1	28400	15.9	1250	1610	56900	2490	1.44	16.2
457.0	10.0	110	140	45.7	35100	15.8	1540	2000	70200	3070	1.44	13.0
457.0	12.0	132	168	38.1	41600	15.7	1820	2380	83100	3640	1.44	10.9
457.0	12.5	137	175	36.6	43100	15.7	1890	2470	86300	3780	1.44	10.5
457.0	16.0	174	222	28.6	54000	15.6	2360	3110	108000	4720	1.44	8.25
508.0	6.0	74.3	94.6	84.7	29800	17.7	1170	1510	59600	2350	1.60	21.5
508.0	8.0	98.6	126	63.5	39300	17.7	1550	2000	78600	3090	1.60	16.2
508.0	10.0	123	156	50.8	48500	17.6	1910	2480	97000	3820	1.60	13.0
508.0	12.0	147	187	42.3	57500	17.5	2270	2950	115000	4530	1.60	10.9
508.0	12.5	153	195	40.6	59800	17.5	2350	3070	120000	4710	1.60	10.4
508.0	16.0	194	247	31.8	74900	17.4	2950	3870	150000	5900	1.60	8.22

Hybox® is a trademark of Corus. A fuller description of the relationship between Cold Formed Circular Hollow Sections (CFCHS) and the Hybox® range of sections manufactured by Corus is given on page A - 44.
FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

COLD-FORMED SQUARE HOLLOW SECTIONS

Hybox® SHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling $d/t^{(1)}$	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Size	Thickness										Per Metre	Per Tonne
D x D mm	t mm	kg/m	A cm ²		I cm ⁴	r cm	Z cm ³	S cm ³	J cm ⁴	C cm ³	m ²	m ²
25x25	2.0	1.36	1.74	7.50	1.48	0.924	1.19	1.47	2.53	1.80	0.093	68.3
	2.5	1.64	2.09	5.00	1.69	0.899	1.35	1.71	2.97	2.07	0.091	55.7
	3.0	1.89	2.41	3.33	1.84	0.874	1.47	1.91	3.33	2.27	0.090	47.4
30x30	2.5	2.03	2.59	7.00	3.16	1.10	2.10	2.61	5.40	3.20	0.111	54.8
	3.0	2.36	3.01	5.00	3.50	1.08	2.34	2.96	6.15	3.58	0.110	46.5
40x40	2.0	2.31	2.94	15.0	6.94	1.54	3.47	4.13	11.3	5.23	0.153	66.4
	2.5	2.82	3.59	11.0	8.22	1.51	4.11	4.97	13.6	6.21	0.151	53.7
	3.0	3.30	4.21	8.33	9.32	1.49	4.66	5.72	15.8	7.07	0.150	45.3
	4.0	4.20	5.35	5.00	11.1	1.44	5.54	7.01	19.4	8.48	0.146	34.8
50x50	2.5	3.60	4.59	15.0	16.9	1.92	6.78	8.07	27.5	10.2	0.191	53.1
	3.0	4.25	5.41	11.7	19.5	1.90	7.79	9.39	32.1	11.8	0.190	44.7
	4.0	5.45	6.95	7.50	23.7	1.85	9.49	11.7	40.4	14.4	0.186	34.2
	5.0	6.56	8.36	5.00	27.0	1.80	10.8	13.7	47.5	16.6	0.183	27.9
60x60	3.0	5.19	6.61	15.0	35.1	2.31	11.7	14.0	57.1	17.7	0.230	44.3
	4.0	6.71	8.55	10.0	43.6	2.26	14.5	17.6	72.6	22.0	0.226	33.7
	5.0	8.13	10.4	7.00	50.5	2.21	16.8	20.9	86.4	25.6	0.223	27.4
70x70	2.5	5.17	6.59	23.0	49.4	2.74	14.1	16.5	78.5	21.2	0.271	52.5
	3.0	6.13	7.81	18.3	57.5	2.71	16.4	19.4	92.4	24.7	0.270	44.0
	3.5	7.06	8.99	15.0	65.1	2.69	18.6	22.2	106	28.0	0.268	38.0
	4.0	7.97	10.1	12.5	72.1	2.67	20.6	24.8	119	31.1	0.266	33.4
	5.0	9.70	12.4	9.00	84.6	2.62	24.2	29.6	142	36.7	0.263	27.1
80x80	3.0	7.07	9.01	21.7	87.8	3.12	22.0	25.8	140	33.0	0.310	43.8
	3.5	8.16	10.4	17.9	99.8	3.10	25.0	29.5	161	37.6	0.308	37.7
	4.0	9.22	11.7	15.0	111	3.07	27.8	33.1	180	41.8	0.306	33.2
	5.0	11.3	14.4	11.0	131	3.03	32.9	39.7	218	49.7	0.303	26.9
	6.0	13.2	16.8	8.33	149	2.98	37.3	45.8	252	56.6	0.299	22.7
90x90	3.0	8.01	10.2	25.0	127	3.53	28.3	33.0	201	42.5	0.350	43.6
	3.5	9.26	11.8	20.7	145	3.51	32.2	37.9	232	48.5	0.348	37.6
	4.0	10.5	13.3	17.5	162	3.48	36.0	42.6	261	54.2	0.346	33.0
	5.0	12.8	16.4	13.0	193	3.43	42.9	51.4	316	64.7	0.343	26.7
	6.0	15.1	19.2	10.0	220	3.39	49.0	59.5	368	74.2	0.339	22.5
100x100	3.0	8.96	11.4	28.3	177	3.94	35.4	41.2	279	53.2	0.390	43.5
	4.0	11.7	14.9	20.0	226	3.89	45.3	53.3	362	68.1	0.386	32.9
	5.0	14.4	18.4	15.0	271	3.84	54.2	64.6	441	81.7	0.383	26.6
	6.0	17.0	21.6	11.7	311	3.79	62.3	75.1	514	94.1	0.379	22.3
	8.0	21.4	27.2	7.50	366	3.67	73.2	91.1	645	114	0.366	17.1
120x120	4.0	14.2	18.1	25.0	402	4.71	67.0	78.3	637	101	0.466	32.7
	5.0	17.5	22.4	19.0	485	4.66	80.9	95.4	778	122	0.463	26.4
	6.0	20.7	26.4	15.0	562	4.61	93.7	112	913	141	0.459	22.1
	8.0	26.4	33.6	10.0	677	4.49	113	138	1160	175	0.446	16.9
	10.0	31.8	40.6	7.00	777	4.38	129	162	1380	203	0.437	13.7

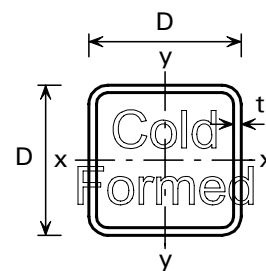
Hybox® is a trademark of Corus. A fuller description of the relationship between Cold Formed Square Hollow Sections (CFSHS) and the Hybox® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation $d = D - 5t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

COLD-FORMED SQUARE HOLLOW SECTIONS

Hybox® SHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratio for Local Buckling $d/t^{(1)}$	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area	
Size	Thickness										Per Metre	Per Tonne
D x D mm	t mm	kg/m	A cm ²		I cm ⁴	r cm	Z cm ³	S cm ³	J cm ⁴	C cm ³	m ²	m ²
140x140	4.0	16.8	21.3	30.0	652	5.52	93.1	108	1020	140	0.546	32.6
	5.0	20.7	26.4	23.0	791	5.48	113	132	1260	170	0.543	26.2
	6.0	24.5	31.2	18.3	920	5.43	131	155	1480	198	0.539	22.0
	8.0	31.4	40.0	12.5	1130	5.30	161	194	1900	248	0.526	16.7
	10.0	38.1	48.6	9.00	1310	5.20	187	230	2270	291	0.517	13.6
150x150	4.0	18.0	22.9	32.5	808	5.93	108	125	1270	162	0.586	32.5
	5.0	22.3	28.4	25.0	982	5.89	131	153	1550	197	0.583	26.2
	6.0	26.4	33.6	20.0	1150	5.84	153	180	1830	230	0.579	21.9
	8.0	33.9	43.2	13.8	1410	5.71	188	226	2360	289	0.566	16.7
	10.0	41.3	52.6	10.0	1650	5.61	220	269	2840	341	0.557	13.5
160x160	4.0	19.3	24.5	35.0	987	6.34	123	143	1540	185	0.626	32.5
	5.0	23.8	30.4	27.0	1200	6.29	150	175	1900	226	0.623	26.1
	6.0	28.3	36.0	21.7	1410	6.25	176	206	2240	264	0.619	21.9
	8.0	36.5	46.4	15.0	1740	6.12	218	260	2900	334	0.606	16.6
	10.0	44.4	56.6	11.0	2050	6.02	256	311	3490	395	0.597	13.4
180x180	5.0	27.0	34.4	31.0	1740	7.11	193	224	2720	290	0.703	26.1
	6.0	32.1	40.8	25.0	2040	7.06	226	264	3220	340	0.699	21.8
	8.0	41.5	52.8	17.5	2550	6.94	283	336	4190	432	0.686	16.5
	10.0	50.7	64.6	13.0	3020	6.84	335	404	5070	515	0.677	13.4
	12.0	58.5	74.5	10.0	3320	6.68	369	454	5870	584	0.658	11.3
	12.5	60.5	77.0	9.40	3410	6.65	378	467	6050	600	0.656	10.8
200x200	5.0	30.1	38.4	35.0	2410	7.93	241	279	3760	362	0.783	26.0
	6.0	35.8	45.6	28.3	2830	7.88	283	330	4460	426	0.779	21.8
	8.0	46.5	59.2	20.0	3570	7.76	357	421	5820	544	0.766	16.5
	10.0	57.0	72.6	15.0	4250	7.65	425	508	7070	651	0.757	13.3
	12.0	66.0	84.1	11.7	4730	7.50	473	576	8230	743	0.738	11.2
	12.5	68.3	87.0	11.0	4860	7.47	486	594	8500	765	0.736	10.8
250x250	6.0	45.2	57.6	36.7	5670	9.92	454	524	8840	681	0.979	21.6
	8.0	59.1	75.2	26.3	7230	9.80	578	676	11600	878	0.966	16.3
	10.0	72.7	92.6	20.0	8710	9.70	697	822	14200	1060	0.957	13.2
	12.0	84.8	108	15.8	9860	9.55	789	944	16700	1230	0.938	11.1
	12.5	88.0	112	15.0	10200	9.52	813	975	17300	1270	0.936	10.6
300x300	6.0	54.7	69.6	45.0	9960	12.0	664	764	15400	997	1.18	21.6
	8.0	71.6	91.2	32.5	12800	11.8	853	991	20300	1290	1.17	16.3
	10.0	88.4	113	25.0	15500	11.7	1040	1210	25000	1570	1.16	13.1
	12.0	104	132	20.0	17800	11.6	1180	1400	29500	1830	1.14	11.0
	12.5	108	137	19.0	18300	11.6	1220	1450	30600	1890	1.14	10.6
350x350	8.0	84.2	107	38.8	20700	13.9	1180	1370	32600	1790	1.37	16.2
	10.0	104	133	30.0	25200	13.8	1440	1680	40100	2180	1.36	13.0
	12.0	123	156	24.2	29100	13.6	1660	1950	47600	2550	1.34	10.9
	12.5	127	162	23.0	30000	13.6	1720	2020	49400	2640	1.34	10.5
400x400	8.0	96.7	123	45.0	31300	15.9	1560	1800	48900	2360	1.57	16.2
	10.0	120	153	35.0	38200	15.8	1910	2210	60400	2890	1.56	13.0
	12.0	141	180	28.3	44300	15.7	2220	2590	71800	3400	1.54	10.9
	12.5	147	187	27.0	45900	15.7	2290	2680	74600	3520	1.54	10.5

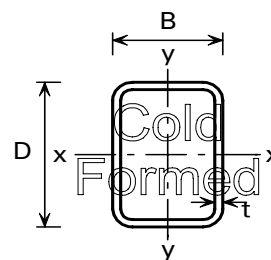
Hybox® is a trademark of Corus. A fuller description of the relationship between Cold Formed Square Hollow Sections (CFSHS) and the Hybox® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation $d = D - 5t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

COLD-FORMED RECTANGULAR HOLLOW SECTIONS

Hybox® RHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness					Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y			Per Metre	Per Tonne
D x B mm	t mm	kg/m	A cm ²	d/t ⁽¹⁾	b/t ⁽¹⁾	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	J cm ⁴	C cm ³	m ²	m ²
50 x 25	2.0	2.15	2.74	20.0	7.50	8.38	2.81	1.75	1.01	3.35	2.25	4.26	2.62	7.06	3.92	0.143	66.6
50 x 25	3.0	3.07	3.91	11.7	3.33	11.2	3.67	1.69	0.969	4.47	2.93	5.86	3.56	9.64	5.18	0.140	45.5
50 x 30	2.5	2.82	3.59	15.0	7.00	11.3	5.05	1.77	1.19	4.52	3.37	5.70	3.98	11.7	5.72	0.151	53.7
	3.0	3.30	4.21	11.7	5.00	12.8	5.70	1.75	1.16	5.13	3.80	6.57	4.58	13.5	6.49	0.150	45.3
	4.0	4.20	5.35	7.50	2.50	15.3	6.69	1.69	1.12	6.10	4.46	8.05	5.58	16.5	7.71	0.146	34.8
60 x 30	3.0	3.77	4.81	15.0	5.00	20.5	6.80	2.06	1.19	6.83	4.53	8.82	5.39	17.5	7.95	0.170	45.0
	4.0	4.83	6.15	10.0	2.50	24.7	8.06	2.00	1.14	8.23	5.37	10.9	6.62	21.5	9.52	0.166	34.5
60 x 40	3.0	4.25	5.41	15.0	8.33	25.4	13.4	2.17	1.58	8.46	6.72	10.5	7.94	29.3	11.2	0.190	44.7
	4.0	5.45	6.95	10.0	5.00	31.0	16.3	2.11	1.53	10.3	8.14	13.2	9.89	36.7	13.7	0.186	34.2
	5.0	6.56	8.36	7.00	3.00	35.3	18.4	2.06	1.48	11.8	9.21	15.4	11.5	42.8	15.6	0.183	27.9
70 x 40	3.0	4.72	6.01	18.3	8.33	37.3	15.5	2.49	1.61	10.7	7.75	13.4	9.05	36.5	13.2	0.210	44.5
	4.0	6.08	7.75	12.5	5.00	46.0	18.9	2.44	1.56	13.1	9.44	16.8	11.3	45.8	16.2	0.206	33.9
70 x 50	3.0	5.19	6.61	18.3	11.7	44.1	26.1	2.58	1.99	12.6	10.4	15.4	12.2	53.6	17.1	0.230	44.3
	4.0	6.71	8.55	12.5	7.50	54.7	32.2	2.53	1.94	15.6	12.9	19.5	15.4	68.1	21.2	0.226	33.7
80 x 40	3.0	5.19	6.61	21.7	8.33	52.3	17.6	2.81	1.63	13.1	8.78	16.5	10.2	43.9	15.3	0.230	44.3
	4.0	6.71	8.55	15.0	5.00	64.8	21.5	2.75	1.59	16.2	10.7	20.9	12.8	55.2	18.8	0.226	33.7
	5.0	8.13	10.4	11.0	3.00	75.1	24.6	2.69	1.54	18.8	12.3	24.7	15.0	65.0	21.7	0.223	27.4
80 x 50	3.0	5.66	7.21	21.7	11.7	61.1	29.4	2.91	2.02	15.3	11.8	18.8	13.6	65.0	19.7	0.250	44.1
	4.0	7.34	9.35	15.0	7.50	76.4	36.5	2.86	1.98	19.1	14.6	24.0	17.2	82.7	24.6	0.246	33.6
	5.0	8.91	11.4	11.0	5.00	89.2	42.3	2.80	1.93	22.3	16.9	28.5	20.5	98.4	28.7	0.243	27.2
80 x 60	3.0	6.13	7.81	21.7	15.0	70.0	44.9	3.00	2.40	17.5	15.0	21.2	17.4	88.3	24.1	0.270	44.0
	4.0	7.97	10.1	15.0	10.0	87.9	56.1	2.94	2.35	22.0	18.7	27.0	22.1	113	30.3	0.266	33.4
	5.0	9.70	12.4	11.0	7.00	103	65.7	2.89	2.31	25.8	21.9	32.2	26.4	136	35.7	0.263	27.1
90 x 50	3.0	6.13	7.81	25.0	11.7	81.9	32.7	3.24	2.05	18.2	13.1	22.6	15.0	76.7	22.4	0.270	44.0
	4.0	7.97	10.1	17.5	7.50	103	40.7	3.18	2.00	22.8	16.3	28.8	19.1	97.7	28.0	0.266	33.4
	5.0	9.70	12.4	13.0	5.00	121	47.4	3.12	1.96	26.8	18.9	34.4	22.7	116	32.7	0.263	27.1
100 x 40	3.0	6.13	7.81	28.3	8.33	92.3	21.7	3.44	1.67	18.5	10.8	23.7	12.4	59.0	19.4	0.270	44.0
	4.0	7.97	10.1	20.0	5.00	116	26.7	3.38	1.62	23.1	13.3	30.3	15.7	74.5	24.0	0.266	33.4
	5.0	9.70	12.4	15.0	3.00	136	30.8	3.31	1.58	27.1	15.4	36.1	18.5	87.9	27.9	0.263	27.1
100 x 50	3.0	6.60	8.41	28.3	11.7	106	36.1	3.56	2.07	21.3	14.4	26.7	16.4	88.6	25.0	0.290	43.9
	4.0	8.59	10.9	20.0	7.50	134	44.9	3.50	2.03	26.8	18.0	34.1	20.9	113	31.3	0.286	33.3
	5.0	10.5	13.4	15.0	5.00	158	52.5	3.44	1.98	31.6	21.0	40.8	25.0	135	36.8	0.283	27.0
	6.0	12.3	15.6	11.7	3.33	179	58.7	3.38	1.94	35.8	23.5	46.9	28.5	154	41.4	0.279	22.8
100 x 60	3.0	7.07	9.01	28.3	15.0	121	54.6	3.66	2.46	24.1	18.2	29.6	20.8	122	30.6	0.310	43.8
	3.5	8.16	10.4	23.6	12.1	137	61.9	3.63	2.44	27.4	20.6	33.8	23.8	139	34.8	0.308	37.7
	4.0	9.22	11.7	20.0	10.0	153	68.7	3.60	2.42	30.5	22.9	37.9	26.6	156	38.7	0.306	33.2
	5.0	11.3	14.4	15.0	7.00	181	80.8	3.55	2.37	36.2	26.9	45.6	31.9	188	45.8	0.303	26.9
100 x 80	6.0	13.2	16.8	11.7	5.00	205	91.2	3.49	2.33	41.1	30.4	52.5	36.6	216	51.9	0.299	22.7
	3.0	8.01	10.2	28.3	21.7	149	106	3.82	3.22	29.8	26.4	35.4	30.4	196	41.9	0.350	43.6
	4.0	10.5	13.3	20.0	15.0	189	134	3.77	3.17	37.9	33.5	45.6	39.2	254	53.4	0.346	33.0
	5.0	12.8	16.4	15.0	11.0	226	160	3.72	3.12	45.2	39.9	55.1	47.2	308	63.7	0.343	26.7

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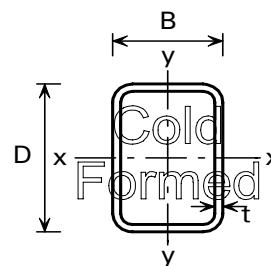
+ These sections are in addition to the range of BS EN 10219-2 sections

(1) For local buckling calculation $d = D - 5t$ and $b = B - 5t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

COLD-FORMED RECTANGULAR HOLLOW SECTIONS

Hybox® RHS



Dimensions and properties

Section Designation		Mass per Metre	Area of Section	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness					Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y			Per Metre	Per Tonne
D x B mm	t mm	kg/m	A cm ²	d/t ⁽¹⁾	b/t ⁽¹⁾	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	J cm ⁴	C cm ³	m ²	m ²
120 x 40	3.0	7.07	9.01	35.0	8.33	148	25.8	4.05	1.69	24.7	12.9	32.2	14.6	74.6	23.5	0.310	43.8
	4.0	9.22	11.7	25.0	5.00	187	31.9	3.99	1.65	31.1	15.9	41.2	18.5	94.2	29.2	0.306	33.2
	5.0	11.3	14.4	19.0	3.00	221	36.9	3.92	1.60	36.8	18.5	49.4	22.0	111	34.1	0.303	26.9
120 x 60	3.0	8.01	10.2	35.0	15.0	189	64.4	4.30	2.51	31.5	21.5	39.2	24.2	156	37.1	0.350	43.6
	3.5	9.26	11.8	29.3	12.1	216	73.1	4.28	2.49	35.9	24.4	44.9	27.7	179	42.2	0.348	37.6
	4.0	10.5	13.3	25.0	10.0	241	81.2	4.25	2.47	40.1	27.1	50.5	31.1	201	47.0	0.346	33.0
	5.0	12.8	16.4	19.0	7.00	287	96.0	4.19	2.42	47.8	32.0	60.9	37.4	242	55.8	0.343	26.7
	6.0	15.1	19.2	15.0	5.00	328	109	4.13	2.38	54.7	36.3	70.6	43.1	280	63.6	0.339	22.5
120 x 80	4.0	11.7	14.9	25.0	15.0	295	157	4.44	3.24	49.1	39.3	59.8	45.2	331	64.9	0.386	32.9
	5.0	14.4	18.4	19.0	11.0	353	188	4.39	3.20	58.9	46.9	72.4	54.7	402	77.8	0.383	26.6
	6.0	17.0	21.6	15.0	8.33	406	215	4.33	3.15	67.7	53.8	84.3	63.5	469	89.4	0.379	22.3
	8.0	21.4	27.2	10.0	5.00	476	252	4.18	3.04	79.3	62.9	102	76.9	584	108	0.366	17.1
140 x 80	3.0	9.90	12.6	41.7	21.7	334	141	5.15	3.35	47.8	35.3	58.2	39.6	317	59.7	0.430	43.4
	4.0	13.0	16.5	30.0	15.0	430	180	5.10	3.30	61.4	45.1	75.5	51.3	412	76.5	0.426	32.8
	5.0	16.0	20.4	23.0	11.0	517	216	5.04	3.26	73.9	54.0	91.8	62.2	501	91.8	0.423	26.5
	6.0	18.9	24.0	18.3	8.33	597	248	4.98	3.21	85.3	62.0	107	72.4	584	106	0.419	22.2
	8.0	23.9	30.4	12.5	5.00	708	293	4.82	3.10	101	73.3	131	88.4	731	129	0.406	17.0
	10.0	28.7	36.6	9.00	3.00	804	330	4.69	3.01	115	82.6	152	103	851	147	0.397	13.8
150 x 100	3.0	11.3	14.4	45.0	28.3	461	248	5.65	4.15	61.4	49.5	73.5	55.8	507	81.4	0.490	43.3
	4.0	14.9	18.9	32.5	20.0	595	319	5.60	4.10	79.3	63.7	95.7	72.5	662	105	0.486	32.7
	5.0	18.3	23.4	25.0	15.0	719	384	5.55	4.05	95.9	76.8	117	88.3	809	127	0.483	26.3
	6.0	21.7	27.6	20.0	11.7	835	444	5.50	4.01	111	88.8	137	103	948	147	0.479	22.1
	8.0	27.7	35.2	13.8	7.50	1010	536	5.35	3.90	134	107	169	128	1210	182	0.466	16.8
	10.0	33.4	42.6	10.0	5.00	1160	614	5.22	3.80	155	123	199	150	1430	211	0.457	13.7
160 x 80	4.0	14.2	18.1	35.0	15.0	598	204	5.74	3.35	74.7	50.9	92.9	57.4	494	88.0	0.466	32.7
	5.0	17.5	22.4	27.0	11.0	722	244	5.68	3.30	90.2	61.0	113	69.7	601	106	0.463	26.4
	6.0	20.7	26.4	21.7	8.33	836	281	5.62	3.26	105	70.2	132	81.3	702	122	0.459	22.1
	8.0	26.4	33.6	15.0	5.00	1000	335	5.46	3.16	125	83.7	163	100	882	150	0.446	16.9
180 x 80	4.0	15.5	19.7	40.0	15.0	802	227	6.37	3.39	89.1	56.7	112	63.5	578	99.6	0.506	32.7
	5.0	19.1	24.4	31.0	11.0	971	272	6.31	3.34	108	68.1	137	77.2	704	120	0.503	26.3
	6.0	22.6	28.8	25.0	8.33	1130	314	6.25	3.30	125	78.5	160	90.2	823	139	0.499	22.1
	8.0	28.9	36.8	17.5	5.00	1360	377	6.08	3.20	151	94.1	198	111	1040	170	0.486	16.8
	10.0	35.0	44.6	13.0	3.00	1570	429	5.94	3.10	174	107	234	131	1210	196	0.477	13.6
180 x 100	4.0	16.8	21.3	40.0	20.0	926	374	6.59	4.18	103	74.8	126	84.0	854	127	0.546	32.6
	5.0	20.7	26.4	31.0	15.0	1120	452	6.53	4.14	125	90.4	154	103	1050	154	0.543	26.2
	6.0	24.5	31.2	25.0	11.7	1310	524	6.48	4.10	146	105	181	120	1230	179	0.539	22.0
	8.0	31.4	40.0	17.5	7.50	1600	637	6.32	3.99	178	127	226	150	1570	222	0.526	16.7
	10.0	38.1	48.6	13.0	5.00	1860	736	6.19	3.89	207	147	268	177	1860	260	0.517	13.6

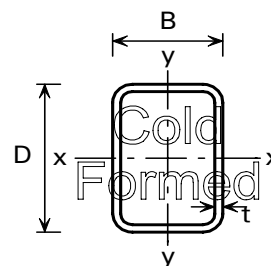
Hybox® is a trademark of Corus. A fuller description of the relationship between Cold Formed Rectangular Hollow Sections (CFRHS) and the Hybox® range of sections manufactured by Corus is given on page A - 44.

(1) For local buckling calculation $d = D - 5t$ and $b = B - 5t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

COLD-FORMED RECTANGULAR HOLLOW SECTIONS

Hybox® RHS



Dimensions and properties

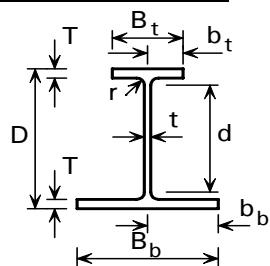
Section Designation		Mass per Metre	Area of Section	Ratios for Local Buckling		Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area	
Size	Thickness															Per Metre	Per Tonne
D x B mm	t mm	kg/m	A cm ²	d/t ⁽¹⁾	b/t ⁽¹⁾	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x cm ³	Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³	J cm ⁴	C cm ³	m ²	m ²
200 x 100	4.0	18.0	22.9	45.0	20.0	1200	411	7.23	4.23	120	82.2	148	91.7	985	142	0.586	32.5
	5.0	22.3	28.4	35.0	15.0	1460	497	7.17	4.19	146	99.4	181	112	1210	172	0.583	26.2
	6.0	26.4	33.6	28.3	11.7	1700	577	7.12	4.14	170	115	213	132	1420	200	0.579	21.9
	8.0	33.9	43.2	20.0	7.50	2090	705	6.95	4.04	209	141	267	165	1810	250	0.566	16.7
	10.0	41.3	52.6	15.0	5.00	2440	818	6.82	3.94	244	164	318	195	2150	292	0.557	13.5
200 x 120	4.0	19.3	24.5	45.0	25.0	1350	618	7.43	5.02	135	103	164	115	1350	172	0.626	32.5
	5.0	23.8	30.4	35.0	19.0	1650	750	7.37	4.97	165	125	201	141	1650	210	0.623	26.1
	6.0	28.3	36.0	28.3	15.0	1930	874	7.32	4.93	193	146	237	166	1950	245	0.619	21.9
	8.0	36.5	46.4	20.0	10.0	2390	1080	7.17	4.82	239	180	298	209	2510	308	0.606	16.6
	10.0	44.4	56.6	15.0	7.00	2810	1260	7.04	4.72	281	210	356	250	3010	364	0.597	13.4
200 x 150	4.0	21.2	26.9	45.0	32.5	1580	1020	7.67	6.16	158	136	187	154	1940	219	0.686	32.4
	5.0	26.2	33.4	35.0	25.0	1940	1250	7.62	6.11	193	166	230	189	2390	267	0.683	26.1
	6.0	31.1	39.6	28.3	20.0	2270	1460	7.56	6.06	227	194	271	223	2830	313	0.679	21.8
	8.0	40.2	51.2	20.0	13.8	2830	1820	7.43	5.95	283	242	344	283	3670	396	0.666	16.5
	10.0	49.1	62.6	15.0	10.0	3350	2140	7.31	5.85	335	286	413	339	4430	471	0.657	13.4
250 x 150	5.0	30.1	38.4	45.0	25.0	3300	1510	9.28	6.27	264	201	320	225	3290	337	0.783	26.0
	6.0	35.8	45.6	36.7	20.0	3890	1770	9.23	6.23	311	236	378	266	3890	396	0.779	21.8
	8.0	46.5	59.2	26.3	13.8	4890	2220	9.08	6.12	391	296	482	340	5050	504	0.766	16.5
	10.0	57.0	72.6	20.0	10.0	5830	2630	8.96	6.02	466	351	582	409	6120	602	0.757	13.3
	12.0	66.0	84.1	15.8	7.50	6460	2930	8.77	5.90	517	390	658	463	7090	684	0.738	11.2
300 x 100	12.5	68.3	87.0	15.0	7.00	6630	3000	8.73	5.87	531	400	678	477	7320	704	0.736	10.8
	6.0	35.8	45.6	45.0	11.7	4780	842	10.2	4.30	318	168	411	188	2400	306	0.779	21.8
	8.0	46.5	59.2	32.5	7.50	5980	1050	10.0	4.20	399	209	523	238	3080	385	0.766	16.5
	10.0	57.0	72.6	25.0	5.00	7110	1220	9.90	4.11	474	245	631	285	3680	455	0.757	13.3
	12.5	68.3	87.0	19.0	3.00	8010	1370	9.59	3.97	534	275	732	330	4290	521	0.736	10.8
300 x 200	6.0	45.2	57.6	45.0	28.3	7370	3960	11.3	8.29	491	396	588	446	8120	651	0.979	21.6
	8.0	59.1	75.2	32.5	20.0	9390	5040	11.2	8.19	626	504	757	574	10600	838	0.966	16.3
	10.0	72.7	92.6	25.0	15.0	11300	6060	11.1	8.09	754	606	921	698	13000	1010	0.957	13.2
	12.0	84.8	108	20.0	11.7	12800	6850	10.9	7.96	853	685	1060	801	15200	1170	0.938	11.1
	12.5	88.0	112	19.0	11.0	13200	7060	10.8	7.94	879	706	1090	828	15800	1200	0.936	10.6
400 x 200	8.0	71.6	91.2	45.0	20.0	19000	6520	14.4	8.45	949	652	1170	728	15800	1130	1.17	16.3
	10.0	88.4	113	35.0	15.0	23000	7860	14.3	8.36	1150	786	1430	888	19400	1370	1.16	13.1
	12.0	104	132	28.3	11.7	26200	8980	14.1	8.24	1310	898	1660	1030	22800	1590	1.14	11.0
	12.5	108	137	27.0	11.0	27100	9260	14.1	8.22	1360	926	1710	1060	23600	1640	1.14	10.6
450 x 250	8.0	84.2	107	51.3	26.3	29300	11900	16.5	10.5	1300	953	1590	1060	27200	1630	1.37	16.2
	10.0	104	133	40.0	20.0	35700	14500	16.4	10.4	1590	1160	1950	1300	33500	1980	1.36	13.0
	12.0	123	156	32.5	15.8	41100	16700	16.2	10.3	1830	1330	2260	1520	39600	2310	1.34	10.9
	12.5	127	162	31.0	15.0	42500	17200	16.2	10.3	1890	1380	2350	1570	41100	2390	1.34	10.5
500 x 300	8.0	96.7	123	57.5	32.5	42800	19600	18.6	12.6	1710	1310	2060	1460	42800	2200	1.57	16.2
	10.0	120	153	45.0	25.0	52300	23900	18.5	12.5	2090	1600	2540	1790	52700	2690	1.56	13.0
	12.0	141	180	36.7	20.0	60600	27700	18.3	12.4	2420	1850	2960	2090	62600	3160	1.54	10.9
	12.5	147	187	35.0	19.0	62700	28700	18.3	12.4	2510	1910	3070	2170	65000	3270	1.54	10.5

Hybox® is a trademark of Corus. A fuller description of the relationship between Cold Formed Rectangular Hollow Sections (CFRHS) and the Hybox® range of sections manufactured by Corus is given on page A - 44.

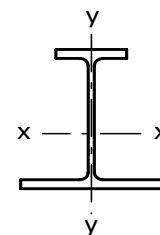
(1) For local buckling calculation $d = D - 5t$ and $b = B - 5t$.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

ASB (ASYMMETRIC BEAMS)



Dimensions and properties

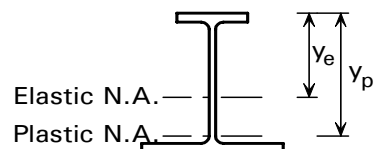
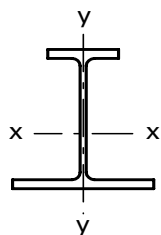


Section Designation	Mass per Metre	Depth of Section	Width of Flange		Thickness		Root Radius	Depth between Fillets	Ratios for Local Buckling			Second Moment of Area		Surface Area	
			Top	Bottom	Web	Flange			Flanges		Web	Axis x-x	Axis y-y	Per Metre	Per Tonne
			B _t	B _b	t	T			b _t /T	b _b /T	d/t	cm ⁴	cm ⁴	m ²	m ²
	kg/m	mm	mm	mm	mm	mm	mm	mm	b _t /T	b _b /T	d/t				
300 ASB 249 ^	249	342	203	313	40.0	40.0	27.0	208	2.54	3.91	5.20	52900	13200	1.59	6.38
300 ASB 196	196	342	183	293	20.0	40.0	27.0	208	2.29	3.66	10.4	45900	10500	1.55	7.93
300 ASB 185 ^	185	320	195	305	32.0	29.0	27.0	208	3.36	5.26	6.50	35700	8750	1.53	8.29
300 ASB 155	155	326	179	289	16.0	32.0	27.0	208	2.80	4.52	13.0	34500	7990	1.51	9.71
300 ASB 153 ^	153	310	190	300	27.0	24.0	27.0	208	3.96	6.25	7.70	28400	6840	1.50	9.81
280 ASB 136 ^	136	288	190	300	25.0	22.0	24.0	196	4.32	6.82	7.84	22200	6260	1.46	10.7
280 ASB 124	124	296	178	288	13.0	26.0	24.0	196	3.42	5.54	15.1	23500	6410	1.46	11.8
280 ASB 105	105	288	176	286	11.0	22.0	24.0	196	4.00	6.50	17.8	19200	5300	1.44	13.7
280 ASB 100 ^	100	276	184	294	19.0	16.0	24.0	196	5.75	9.19	10.3	15500	4250	1.43	14.2
280 ASB 74	73.6	272	175	285	10.0	14.0	24.0	196	6.25	10.2	19.6	12200	3330	1.40	19.1

^ Sections are fire engineered with thick webs.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

ASB (ASYMMETRIC BEAMS)



Properties (Continued)

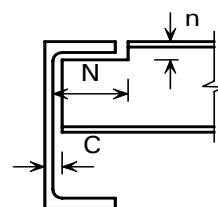
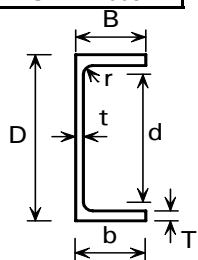
Section Designation	Radius of Gyration		Elastic Modulus			Neutral Axis Position		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x	Axis x-x	Axis y-y	Elastic	Plastic	Axis x-x	Axis y-y					
	cm	cm	Top cm ³	Bottom cm ³	cm ³	y _e cm	y _p cm	cm ³	cm ³					
300 ASB 249 ^	12.9	6.40	2760	3530	843	19.2	22.6	3760	1510	0.820	6.80	2.00	2000	318
300 ASB 196	13.6	6.48	2320	3180	714	19.8	28.1	3060	1230	0.840	7.86	1.50	1180	249
300 ASB 185 ^	12.3	6.10	1980	2540	574	18.0	21.0	2660	1030	0.820	8.56	1.20	871	235
300 ASB 155	13.2	6.35	1830	2520	553	18.9	27.3	2360	950	0.840	9.40	1.07	620	198
300 ASB 153 ^	12.1	5.93	1630	2090	456	17.4	20.4	2160	817	0.820	9.97	0.895	513	195
280 ASB 136 ^	11.3	6.00	1370	1770	417	16.3	19.2	1810	741	0.810	10.2	0.710	379	174
280 ASB 124	12.2	6.37	1360	1900	445	17.3	25.7	1730	761	0.830	10.5	0.721	332	158
280 ASB 105	12.0	6.30	1150	1610	370	16.8	25.3	1440	633	0.830	12.1	0.574	207	133
280 ASB 100 ^	11.0	5.76	995	1290	289	15.6	18.4	1290	511	0.810	13.2	0.451	160	128
280 ASB 74	11.4	5.96	776	1060	234	15.7	21.3	978	403	0.830	16.7	0.338	72.0	93.7

^ Sections are fire engineered with thick webs.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

PARALLEL FLANGE CHANNELS

Advance UKPFC



Dimensions

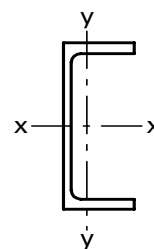
Section Designation	Mass per Metre kg/m	Depth of Section D mm	Width of Section B mm	Thickness		Root Radius r mm	Depth between Fillets d mm	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange			Flange	Web	End Clearance C mm	Notch		Per Metre m ²	Per Tonne m ²
				t mm	T mm			b/T	d/t		N mm	n mm		
430x100x64	64.4	430	100	11.0	19.0	15	362	5.26	32.9	13	96	36	1.23	19.0
380x100x54	54.0	380	100	9.5	17.5	15	315	5.71	33.2	12	98	34	1.13	20.9
300x100x46	45.5	300	100	9.0	16.5	15	237	6.06	26.3	11	98	32	0.969	21.3
300x90x41	41.4	300	90	9.0	15.5	12	245	5.81	27.2	11	88	28	0.932	22.5
260x90x35	34.8	260	90	8.0	14.0	12	208	6.43	26.0	10	88	28	0.854	24.5
260x75x28	27.6	260	75	7.0	12.0	12	212	6.25	30.3	9	74	26	0.796	28.8
230x90x32	32.2	230	90	7.5	14.0	12	178	6.43	23.7	10	90	28	0.795	24.7
230x75x26	25.7	230	75	6.5	12.5	12	181	6.00	27.8	9	76	26	0.737	28.7
200x90x30	29.7	200	90	7.0	14.0	12	148	6.43	21.1	9	90	28	0.736	24.8
200x75x23	23.4	200	75	6.0	12.5	12	151	6.00	25.2	8	76	26	0.678	28.9
180x90x26	26.1	180	90	6.5	12.5	12	131	7.20	20.2	9	90	26	0.697	26.7
180x75x20	20.3	180	75	6.0	10.5	12	135	7.14	22.5	8	76	24	0.638	31.4
150x90x24	23.9	150	90	6.5	12.0	12	102	7.50	15.7	9	90	26	0.637	26.7
150x75x18	17.9	150	75	5.5	10.0	12	106	7.50	19.3	8	76	24	0.579	32.4
125x65x15	14.8	125	65	5.5	9.5	12	82.0	6.84	14.9	8	66	22	0.489	33.1
100x50x10	10.2	100	50	5.0	8.5	9	65.0	5.88	13.0	7	52	18	0.382	37.5

Advance and UKPFC are trademarks of Corus. A fuller description of the relationship between Parallel Flange Channels (PFC) and the Advance range of sections manufactured by Corus is given on page A - 42.

FOR EXPLANATION OF TABLES SEE NOTE 2

PARALLEL FLANGE CHANNELS

Advance UKPFC



Properties

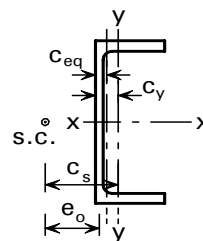
Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y					
	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H dm ⁶	J cm ⁴	A cm ²
430x100x64	21900	722	16.3	2.97	1020	97.9	1220	176	0.917	22.5	0.219	63.0	82.1
380x100x54	15000	643	14.8	3.06	791	89.2	933	161	0.933	21.2	0.150	45.7	68.7
300x100x46	8230	568	11.9	3.13	549	81.7	641	148	0.944	17.0	0.0813	36.8	58.0
300x90x41	7220	404	11.7	2.77	481	63.1	568	114	0.934	18.4	0.0581	28.8	52.7
260x90x35	4730	353	10.3	2.82	364	56.3	425	102	0.943	17.2	0.0379	20.6	44.4
260x75x28	3620	185	10.1	2.30	278	34.4	328	62.0	0.932	20.5	0.0203	11.7	35.1
230x90x32	3520	334	9.27	2.86	306	55.0	355	98.9	0.949	15.1	0.0279	19.3	41.0
230x75x26	2750	181	9.17	2.35	239	34.8	278	63.2	0.945	17.3	0.0153	11.8	32.7
200x90x30	2520	314	8.16	2.88	252	53.4	291	94.5	0.952	12.9	0.0197	18.3	37.9
200x75x23	1960	170	8.11	2.39	196	33.8	227	60.6	0.956	14.7	0.0107	11.1	29.9
180x90x26	1820	277	7.40	2.89	202	47.4	232	83.5	0.950	12.8	0.0141	13.3	33.2
180x75x20	1370	146	7.27	2.38	152	28.8	176	51.8	0.945	15.3	0.00754	7.34	25.9
150x90x24	1160	253	6.18	2.89	155	44.4	179	76.9	0.937	10.8	0.00890	11.8	30.4
150x75x18	861	131	6.15	2.40	115	26.6	132	47.2	0.945	13.1	0.00467	6.10	22.8
125x65x15	483	80.0	5.07	2.06	77.3	18.8	89.9	33.2	0.942	11.1	0.00194	4.72	18.8
100x50x10	208	32.3	4.00	1.58	41.5	9.89	48.9	17.5	0.942	10.0	0.000491	2.53	13.0

Advance and UKPFC are trademarks of Corus. A fuller description of the relationship between Parallel Flange Channels (PFC) and the Advance range of sections manufactured by Corus is given on page A - 42.

FOR EXPLANATION OF TABLES SEE NOTE 3

PARALLEL FLANGE CHANNELS

Advance UKPFC



Major axis plastic modulus under axial load

Section Designation	Area of Section A cm ²	Dimension				Plastic Modulus Axis x-x cm ³	Major Axis Reduced Modulus				
		e _o cm	C _s cm	C _y cm	C _{eq} cm		Lower Values of n		Change Formula at n =	Higher Values of n	
							K1	K2		K3	K4
430x100x64	82.1	3.27	5.34	2.62	0.954	1220	1220	1530	0.525	168	9.48
380x100x54	68.7	3.48	5.79	2.79	0.904	933	933	1240	0.477	118	10.1
300x100x46	58.0	3.68	6.29	3.05	1.31	641	641	934	0.414	84.1	9.35
300x90x41	52.7	3.18	5.33	2.60	0.879	568	568	772	0.459	77.2	9.24
260x90x35	44.4	3.32	5.66	2.74	1.14	425	425	615	0.418	54.7	9.55
260x75x28	35.1	2.62	4.37	2.10	0.676	328	328	441	0.470	41.2	10.1
230x90x32	41.0	3.46	6.01	2.92	1.69	355	355	559	0.370	46.6	9.11
230x75x26	32.7	2.78	4.75	2.30	1.03	278	278	411	0.408	35.6	9.55
200x90x30	37.9	3.60	6.37	3.12	2.24	291	291	512	0.318	39.8	8.51
200x75x23	29.9	2.91	5.09	2.48	1.53	227	227	372	0.352	29.7	9.04
180x90x26	33.2	3.64	6.48	3.17	2.36	232	232	424	0.304	30.6	8.76
180x75x20	25.9	2.87	4.98	2.41	1.34	176	176	280	0.368	22.4	9.42
150x90x24	30.4	3.71	6.69	3.30	2.66	179	179	356	0.269	25.7	7.88
150x75x18	22.8	2.99	5.29	2.58	1.81	132	132	236	0.314	17.3	8.88
125x65x15	18.8	2.56	4.53	2.25	1.55	89.9	89.9	161	0.310	13.6	7.64
100x50x10	13.0	1.94	3.43	1.73	1.18	48.9	48.9	84.5	0.319	8.45	6.69

Advance and UKPFC are trademarks of Corus. A fuller description of the relationship between Parallel Flange Channels (PFC) and the Advance range of sections manufactured by Corus is given on page A - 42.

e_o is the distance from the centre of the web to the shear centre.

C_s is the distance from the centroidal axis to the shear centre.

C_y is the distance from the back of the web to the centroidal axis.

C_{eq} is the distance from the back of the web to the equal area axis.

$n = F/(A_g \cdot p_y)$, where F is the Factored axial load, A_g is the gross cross sectional area and p_y is the design strength of the section.

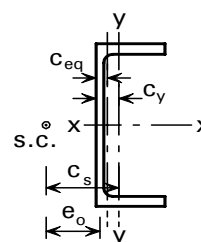
For lower values of n, the reduced plastic modulus, S_r = K1 - K2.n²

For higher values of n, the reduced plastic modulus, S_r = K3(1-n)(K4+n)

FOR EXPLANATION OF TABLES SEE NOTE 3

PARALLEL FLANGE CHANNELS

Advance UKPFC



Minor axis plastic modulus under axial load

Section Designation	Dimension <
------------------------	--

Advance and UKPFC are trademarks of Corus. A fuller description of the relationship between Parallel Flange Channels (PFC) and the Advance range of sections manufactured by Corus is given on page A - 42.

C_y is the distance from the back of the web to the centroidal axis.

$n = F/(A_g p_y)$, where F is the Factored axial load, A_g is the gross cross sectional area and p_y is the design strength of the section.

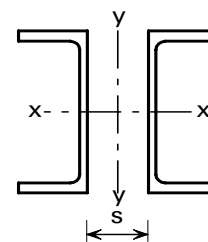
For axial load and moment inducing stresses of the same kind towards back of web, the reduced plastic modulus, $S_r = K1 + K2.n.(K3-n)$

For axial load and moment inducing stresses of the opposite kind towards back of web, the reduced plastic modulus, $S_r = K1 - K2.n.(K3+n)$

FOR EXPLANATION OF TABLES SEE NOTE 3

TWO PARALLEL FLANGE CHANNELS LACED

TWO Advance UKPFC LACED



Dimensions and properties

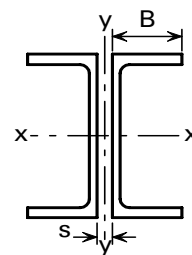
Composed of Two Channels	Total Mass per Metre	Total Area	Space between Webs	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus	
				Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y
	kg/m	cm ²	s mm	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³
430x100x64	129	164	270	43900	44100	16.3	16.4	2040	1880	2440	2650
380x100x54	108	137	235	30100	30400	14.8	14.9	1580	1400	1870	2000
300x100x46	91.1	116	170	16500	16600	11.9	12.0	1100	898	1280	1340
300x90x41	82.8	105	175	14400	14400	11.7	11.7	962	811	1140	1200
260x90x35	69.7	88.8	145	9460	9560	10.3	10.4	727	588	849	886
260x75x28	55.2	70.3	155	7240	7190	10.1	10.1	557	472	656	692
230x90x32	64.3	81.9	120	7040	7190	9.27	9.37	612	479	709	731
230x75x26	51.3	65.4	135	5500	5720	9.17	9.35	478	401	557	592
200x90x30	59.4	75.7	90.0	5050	5030	8.16	8.15	505	372	583	577
200x75x23	46.9	59.7	105	3930	3910	8.11	8.09	393	306	454	462
180x90x26	52.1	66.4	75.0	3640	3730	7.40	7.49	404	292	464	459
180x75x20	40.7	51.8	90.0	2740	2770	7.27	7.31	304	231	352	358
150x90x24	47.7	60.8	45.0	2320	2380	6.18	6.26	310	212	357	338
150x75x18	35.7	45.5	65.0	1720	1810	6.15	6.30	230	168	264	265
125x65x15	29.5	37.6	50.0	966	1010	5.07	5.18	155	112	180	178
100x50x10	20.4	26.0	40.0	415	427	4.00	4.05	83.1	61.0	97.7	97.1

Advance and UKPFC are trademarks of Corus. A fuller description of the relationship between Parallel Flange Channels (PFC) and the Advance range of sections manufactured by Corus is given on page A - 42.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

TWO PARALLEL FLANGE CHANNELS BACK TO BACK

TWO Advance UKPFC BACK TO BACK



Dimensions and properties

Composed of Two Channels	Total Mass per Metre kg/m	Total Area cm ²	Properties about Axis x-x				Radius of Gyration r_y about Axis y-y (cm)				
			I_x cm ⁴	r_x cm	Z_x cm ³	S_x cm ³	Space between webs, s (mm)				
							0	8	10	12	15
430x100x64	129	164	43900	16.3	2040	2440	3.96	4.23	4.31	4.38	4.49
380x100x54	108	137	30100	14.8	1580	1870	4.14	4.42	4.49	4.57	4.68
300x100x46	91.1	116	16500	11.9	1100	1280	4.37	4.66	4.73	4.81	4.92
300x90x41	82.8	105	14400	11.7	962	1140	3.80	4.08	4.16	4.23	4.35
260x90x35	69.7	88.8	9460	10.3	727	849	3.93	4.22	4.29	4.37	4.48
260x75x28	55.2	70.3	7240	10.1	557	656	3.11	3.40	3.47	3.55	3.66
230x90x32	64.3	81.9	7040	9.27	612	709	4.09	4.38	4.46	4.53	4.65
230x75x26	51.3	65.4	5500	9.17	478	557	3.29	3.58	3.66	3.73	3.85
200x90x30	59.4	75.7	5050	8.16	505	583	4.25	4.55	4.63	4.71	4.83
200x75x23	46.9	59.7	3930	8.11	393	454	3.44	3.74	3.82	3.89	4.01
180x90x26	52.1	66.4	3640	7.40	404	464	4.29	4.59	4.67	4.75	4.87
180x75x20	40.7	51.8	2740	7.27	304	352	3.39	3.68	3.76	3.84	3.95
150x90x24	47.7	60.8	2320	6.18	310	357	4.39	4.69	4.77	4.85	4.98
150x75x18	35.7	45.5	1720	6.15	230	264	3.52	3.82	3.90	3.98	4.10
125x65x15	29.5	37.6	966	5.07	155	180	3.05	3.36	3.44	3.52	3.64
100x50x10	20.4	26.0	415	4.00	83.1	97.7	2.34	2.65	2.73	2.82	2.94

Advance and UKPFC are trademarks of Corus. A fuller description of the relationship between Parallel Flange Channels (PFC) and the Advance range of sections manufactured by Corus is given on page A - 42.

Properties about y axis:

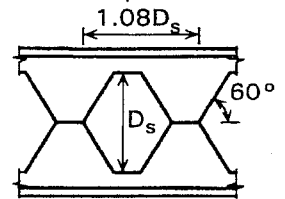
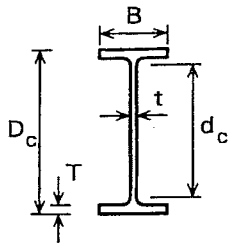
$$I_y = (\text{Total Area}) \cdot (r_y)^2$$

$$Z_y = I_y / (B + 0.5s)$$

where s is the space between webs.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

CASTELLATED UNIVERSAL BEAMS



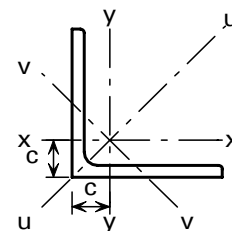
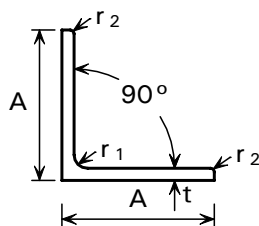
DIMENSIONS AND PROPERTIES

Section Designation		Mass per Metre	Depth of Section	Width of Section	Thickness		Depth between Fillets	Pitch 1.08 x D _s	Net Second Moment of Area		Net Radius of Gyration	
Original	Castellated				Web	Flange			Axis x-x	Axis y-y	Axis x-x	Axis y-y
914x419x388	1371x419x388	388.0	1378.0	420.5	21.4	36.6	1256.6	987.1	1670000	45400	64.8	10.7
914x419x343	1371x419x343	343.3	1368.8	418.5	19.4	32.0	1256.6	987.1	1450000	39100	64.6	10.6
914x305x289	1371x305x289	289.1	1383.6	307.7	19.5	32.0	1281.4	987.1	1160000	15600	64.5	7.47
914x305x253	1371x305x253	253.4	1375.4	305.5	17.3	27.9	1281.4	987.1	1010000	13300	64.3	7.38
914x305x224	1371x305x224	224.2	1367.4	304.1	15.9	23.9	1281.4	987.1	873000	11200	64.0	7.26
914x305x201	1371x305x201	200.9	1360.0	303.3	15.1	20.2	1281.4	987.1	757000	9410	63.6	7.10
838x292x226	1257x292x226	226.5	1269.9	293.8	16.1	26.8	1180.7	905.0	781000	11400	59.4	7.16
838x292x194	1257x292x194	193.8	1259.7	292.4	14.7	21.7	1180.7	905.0	645000	9060	59.0	6.99
838x292x176	1257x292x176	175.9	1253.9	291.7	14.0	18.8	1180.7	905.0	570000	7790	58.7	6.86
762x267x197	1143x267x197	196.8	1150.8	268.0	15.6	25.4	1067.0	823.0	554000	8160	53.8	6.53
762x267x173	1143x267x173	173.0	1143.2	266.7	14.3	21.6	1067.0	823.0	475000	6840	53.5	6.42
762x267x147	1143x267x147	146.9	1135.0	265.2	12.8	17.5	1067.0	823.0	392000	5450	53.2	6.27
762x267x134	1143x267x134	133.9	1131.0	264.4	12.0	15.5	1067.0	823.0	351000	4780	53.0	6.19
686x254x170	1029x254x170	170.2	1035.9	255.8	14.5	23.7	958.1	740.9	393000	6620	48.5	6.30
686x254x152	1029x254x152	152.4	1030.5	254.5	13.2	21.0	958.1	740.9	348000	5780	48.4	6.23
686x254x140	1029x254x140	140.1	1026.5	253.7	12.4	19.0	958.1	740.9	316000	5180	48.2	6.17
686x254x125	1029x254x125	125.2	1020.9	253.0	11.7	16.2	958.1	740.9	274000	4380	47.9	6.06
610x305x238	915x305x238	238.1	940.8	311.4	18.4	31.4	845.0	658.8	478000	15800	44.0	8.00
610x305x179	915x305x179	179.0	925.2	307.1	14.1	23.6	845.0	658.8	352000	11400	43.6	7.85
610x305x149	915x305x149	149.2	917.4	304.8	11.8	19.7	845.0	658.8	291000	9300	43.4	7.77
610x229x140	915x229x140	139.9	922.2	230.2	13.1	22.1	852.6	658.8	258000	4500	43.2	5.71
610x229x125	915x229x125	125.1	917.2	229.0	11.9	19.6	852.6	658.8	228000	3930	43.1	5.65
610x229x113	915x229x113	113.0	912.6	228.2	11.1	17.3	852.6	658.8	203000	3430	42.9	5.58
610x229x101	915x229x101	101.2	907.6	227.6	10.5	14.8	852.6	658.8	176000	2910	42.7	5.48
533x210x122	800x210x122	122.0	811.0	211.9	12.7	21.3	743.0	575.6	175000	3380	37.9	5.28
533x210x109	800x210x109	109.0	806.0	210.8	11.6	18.8	743.0	575.6	154000	2940	37.8	5.22
533x210x101	800x210x101	101.0	803.2	210.0	10.8	17.4	743.0	575.6	142000	2690	37.7	5.19
533x210x92	800x210x92	92.1	799.6	209.3	10.1	15.6	743.0	575.6	128000	2390	37.6	5.14
533x210x82	800x210x82	82.2	794.8	208.8	9.6	13.2	743.0	575.6	110000	2010	37.4	5.03
457x191x98	686x191x98	98.3	695.7	192.8	11.4	19.6	636.1	493.6	105000	2340	32.6	4.86
457x191x89	686x191x89	89.3	691.9	191.9	10.5	17.7	636.1	493.6	94600	2090	32.5	4.82
457x191x82	686x191x82	82.0	688.5	191.3	9.9	16.0	636.1	493.6	85600	1870	32.3	4.78
457x191x74	686x191x74	74.3	685.5	190.4	9.0	14.5	636.1	493.6	77200	1670	32.3	4.75
457x191x67	686x191x67	67.1	681.9	189.9	8.5	12.7	636.1	493.6	68200	1450	32.1	4.69
457x152x82	686x152x82	82.1	694.3	155.3	10.5	18.9	636.1	493.6	84300	1180	32.4	3.83
457x152x74	686x152x74	74.2	690.5	154.4	9.6	17.0	636.1	493.6	75500	1050	32.3	3.80
457x152x67	686x152x67	67.2	686.5	153.8	9.0	15.0	636.1	493.6	67000	911	32.1	3.74
457x152x60	686x152x60	59.8	683.1	152.9	8.1	13.3	636.1	493.6	59200	794	32.0	3.71
457x152x52	686x152x52	52.3	678.3	152.4	7.6	10.9	636.1	493.6	49800	644	31.8	3.62

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

EQUAL ANGLES

Advance UKA - Equal Angles



Dimensions and properties

Section Designation		Mass per Metre	Radius		Area of Section	Dimension	Second Moment of Area			Radius of Gyration			Elastic Modulus	Torsional Constant	Equivalent Slenderness Coefficient
Size	Thickness		Root	Toe			Axis x-x, y-y	Axis u-u	Axis v-v	Axis x-x, y-y	Axis u-u	Axis v-v	Axis x-x, y-y		
A x A mm	t mm	kg/m	r ₁ mm	r ₂ mm	cm ²	c cm	cm ⁴	cm ⁴	cm ⁴	cm	cm	cm	cm ³	J cm ⁴	φ _a
200x200	24	71.1	18.0	9.00	90.6	5.84	3330	5280	1380	6.06	7.64	3.90	235	182	2.50
	20	59.9	18.0	9.00	76.3	5.68	2850	4530	1170	6.11	7.70	3.92	199	107	3.05
	18	54.3	18.0	9.00	69.1	5.60	2600	4150	1050	6.13	7.75	3.90	181	78.9	3.43
	16	48.5	18.0	9.00	61.8	5.52	2340	3720	960	6.16	7.76	3.94	162	56.1	3.85
150x150	18 +	40.1	16.0	8.00	51.2	4.38	1060	1680	440	4.55	5.73	2.93	99.8	58.6	2.48
	15	33.8	16.0	8.00	43.0	4.25	898	1430	370	4.57	5.76	2.93	83.5	34.6	3.01
	12	27.3	16.0	8.00	34.8	4.12	737	1170	303	4.60	5.80	2.95	67.7	18.2	3.77
	10	23.0	16.0	8.00	29.3	4.03	624	990	258	4.62	5.82	2.97	56.9	10.8	4.51
120x120	15 +	26.6	13.0	6.50	34.0	3.52	448	710	186	3.63	4.57	2.34	52.8	27.0	2.37
	12	21.6	13.0	6.50	27.5	3.40	368	584	152	3.65	4.60	2.35	42.7	14.2	2.99
	10	18.2	13.0	6.50	23.2	3.31	313	497	129	3.67	4.63	2.36	36.0	8.41	3.61
	8 +	14.7	13.0	6.50	18.8	3.24	259	411	107	3.71	4.67	2.38	29.5	4.44	4.56
100x100	15 +	21.9	12.0	6.00	28.0	3.02	250	395	105	2.99	3.76	1.94	35.8	22.3	1.92
	12	17.8	12.0	6.00	22.7	2.90	207	328	85.7	3.02	3.80	1.94	29.1	11.8	2.44
	10	15.0	12.0	6.00	19.2	2.82	177	280	73.0	3.04	3.83	1.95	24.6	6.97	2.94
	8	12.2	12.0	6.00	15.5	2.74	145	230	59.9	3.06	3.85	1.96	19.9	3.68	3.70
90x90	12 +	15.9	11.0	5.50	20.3	2.66	149	235	62.0	2.71	3.40	1.75	23.5	10.5	2.17
	10	13.4	11.0	5.50	17.1	2.58	127	201	52.6	2.72	3.42	1.75	19.8	6.20	2.64
	8	10.9	11.0	5.50	13.9	2.50	104	166	43.1	2.74	3.45	1.76	16.1	3.28	3.33
	7	9.61	11.0	5.50	12.2	2.45	92.6	147	38.3	2.75	3.46	1.77	14.1	2.24	3.80
80x80	10	11.9	10.0	5.00	15.1	2.34	87.5	139	36.4	2.41	3.03	1.55	15.4	5.45	2.33
	8	9.63	10.0	5.00	12.3	2.26	72.2	115	29.9	2.43	3.06	1.56	12.6	2.88	2.94
75x75	8	8.99	9.00	4.50	11.4	2.14	59.1	93.8	24.5	2.27	2.86	1.46	11.0	2.65	2.76
	6	6.85	9.00	4.50	8.73	2.05	45.8	72.7	18.9	2.29	2.89	1.47	8.41	1.17	3.70
70x70	7	7.38	9.00	4.50	9.40	1.97	42.3	67.1	17.5	2.12	2.67	1.36	8.41	1.69	2.92
	6	6.38	9.00	4.50	8.13	1.93	36.9	58.5	15.3	2.13	2.68	1.37	7.27	1.09	3.41
65x65	7	6.83	9.00	4.50	8.73	2.05	33.4	53.0	13.8	1.96	2.47	1.26	7.18	1.58	2.67
60x60	8	7.09	8.00	4.00	9.03	1.77	29.2	46.1	12.2	1.80	2.26	1.16	6.89	2.09	2.14
	6	5.42	8.00	4.00	6.91	1.69	22.8	36.1	9.44	1.82	2.29	1.17	5.29	0.922	2.90
	5	4.57	8.00	4.00	5.82	1.64	19.4	30.7	8.03	1.82	2.30	1.17	4.45	0.550	3.48
50x50	6	4.47	7.00	3.50	5.69	1.45	12.8	20.3	5.34	1.50	1.89	0.968	3.61	0.755	2.38
	5	3.77	7.00	3.50	4.80	1.40	11.0	17.4	4.55	1.51	1.90	0.973	3.05	0.450	2.88
	4	3.06	7.00	3.50	3.89	1.36	8.97	14.2	3.73	1.52	1.91	0.979	2.46	0.240	3.57
45x45	5	3.06	7.00	3.50	3.90	1.25	7.14	11.4	2.94	1.35	1.71	0.870	2.20	0.304	2.84
40x40	5	2.97	6.00	3.00	3.79	1.16	5.43	8.60	2.26	1.20	1.51	0.773	1.91	0.352	2.26
	4	2.42	6.00	3.00	3.08	1.12	4.47	7.09	1.86	1.21	1.52	0.777	1.55	0.188	2.83
35x35	4	2.09	5.00	2.50	2.67	1.00	2.95	4.68	1.23	1.05	1.32	0.678	1.18	0.158	2.50
30x30	4	1.78	5.00	2.50	2.27	0.878	1.80	2.85	0.754	0.892	1.12	0.577	0.850	0.137	2.07
	3	1.36	5.00	2.50	1.74	0.835	1.40	2.22	0.585	0.899	1.13	0.581	0.649	0.0613	2.75
25x25	4	1.45	3.50	1.75	1.85	0.762	1.02	1.61	0.430	0.741	0.931	0.482	0.586	0.1070	1.75
	3	1.12	3.50	1.75	1.42	0.723	0.803	1.27	0.334	0.751	0.945	0.484	0.452	0.0472	2.38
20x20	3	0.882	3.50	1.75	1.12	0.598	0.392	0.618	0.165	0.590	0.742	0.383	0.279	0.0382	1.81

Advance and UKA are trademarks of Corus. A fuller description of the relationship between Angles and the Advance range of sections manufactured by Corus is given on page A - 42.

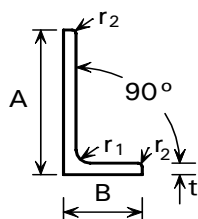
+ These sections are in addition to the range of BS EN 10056-1 sections.

c is the distance from the back of the leg to the centre of gravity.

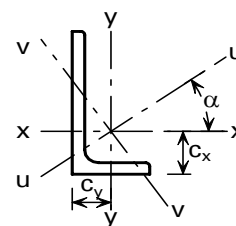
FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

UNEQUAL ANGLES

Advance UKA - Unequal Angles



Dimensions and properties



Section Designation		Mass per Metre	Radius		Dimension		Second Moment of Area				Radius of Gyration			
Size	Thickness		Root	Toe			Axis x-x	Axis y-y	Axis u-u	Axis v-v	Axis x-x	Axis y-y	Axis u-u	Axis v-v
A x B mm	t mm	kg/m	r ₁ mm	r ₂ mm	c _x cm	c _y cm	cm ⁴	cm ⁴	cm ⁴	cm ⁴	cm	cm	cm	cm
200x150	18 +	47.1	15.0	7.50	6.33	3.85	2380	1150	2920	623	6.29	4.37	6.97	3.22
	15	39.6	15.0	7.50	6.21	3.73	2020	979	2480	526	6.33	4.40	7.00	3.23
	12	32.0	15.0	7.50	6.08	3.61	1650	803	2030	430	6.36	4.44	7.04	3.25
200x100	15	33.8	15.0	7.50	7.16	2.22	1760	299	1860	193	6.40	2.64	6.59	2.12
	12	27.3	15.0	7.50	7.03	2.10	1440	247	1530	159	6.43	2.67	6.63	2.14
	10	23.0	15.0	7.50	6.93	2.01	1220	210	1290	135	6.46	2.68	6.65	2.15
150x90	15	33.9	12.0	6.00	5.21	2.23	761	205	841	126	4.74	2.46	4.98	1.93
	12	21.6	12.0	6.00	5.08	2.12	627	171	694	104	4.77	2.49	5.02	1.94
	10	18.2	12.0	6.00	5.00	2.04	533	146	591	88.3	4.80	2.51	5.05	1.95
150x75	15	24.8	12.0	6.00	5.52	1.81	713	119	753	78.6	4.75	1.94	4.88	1.58
	12	20.2	12.0	6.00	5.40	1.69	588	99.6	623	64.7	4.78	1.97	4.92	1.59
	10	17.0	12.0	6.00	5.31	1.61	501	85.6	531	55.1	4.81	1.99	4.95	1.60
125x75	12	17.8	11.0	5.50	4.31	1.84	354	95.5	391	58.5	3.95	2.05	4.15	1.61
	10	15.0	11.0	5.50	4.23	1.76	302	82.1	334	49.9	3.97	2.07	4.18	1.61
	8	12.2	11.0	5.50	4.14	1.68	247	67.6	274	40.9	4.00	2.09	4.21	1.63
100x75	12	15.4	10.0	5.00	3.27	2.03	189	90.2	230	49.5	3.10	2.14	3.42	1.59
	10	13.0	10.0	5.00	3.19	1.95	162	77.6	197	42.2	3.12	2.16	3.45	1.59
	8	10.6	10.0	5.00	3.10	1.87	133	64.1	162	34.6	3.14	2.18	3.47	1.60
100x65	10 +	12.3	10.0	5.00	3.36	1.63	154	51.0	175	30.1	3.14	1.81	3.35	1.39
	8 +	9.94	10.0	5.00	3.27	1.55	127	42.2	144	24.8	3.16	1.83	3.37	1.40
	7 +	8.77	10.0	5.00	3.23	1.51	113	37.6	128	22.0	3.17	1.83	3.39	1.40
100x50	8	8.97	8.00	4.00	3.60	1.13	116	19.7	123	12.8	3.19	1.31	3.28	1.06
	6	6.84	8.00	4.00	3.51	1.05	89.9	15.4	95.4	9.92	3.21	1.33	3.31	1.07
80x60	7	7.36	8.00	4.00	2.51	1.52	59.0	28.4	72.0	15.4	2.51	1.74	2.77	1.28
80x40	8	7.07	7.00	3.50	2.94	0.963	57.6	9.61	60.9	6.34	2.53	1.03	2.60	0.838
	6	5.41	7.00	3.50	2.85	0.884	44.9	7.59	47.6	4.93	2.55	1.05	2.63	0.845
75x50	8	7.39	7.00	3.50	2.52	1.29	52.0	18.4	59.6	10.8	2.35	1.40	2.52	1.07
	6	5.65	7.00	3.50	2.44	1.21	40.5	14.4	46.6	8.36	2.37	1.42	2.55	1.08
70x50	6	5.41	7.00	3.50	2.23	1.25	33.4	14.2	39.7	7.92	2.20	1.43	2.40	1.07
65x50	5	4.35	6.00	3.00	1.99	1.25	23.2	11.9	28.8	6.32	2.05	1.47	2.28	1.07
60x40	6	4.46	6.00	3.00	2.00	1.01	20.1	7.12	23.1	4.16	1.88	1.12	2.02	0.855
	5	3.76	6.00	3.00	1.96	0.972	17.2	6.11	19.7	3.54	1.89	1.13	2.03	0.860
60x30	5	3.36	5.00	2.50	2.17	0.684	15.6	2.63	16.5	1.71	1.91	0.784	1.97	0.633
50x30	5	2.96	5.00	2.50	1.73	0.741	9.36	2.51	10.3	1.54	1.57	0.816	1.65	0.639
45x30	4	2.25	4.50	2.25	1.48	0.740	5.78	2.05	6.65	1.18	1.42	0.850	1.52	0.640
40x25	4	1.93	4.00	2.00	1.36	0.623	3.89	1.16	4.35	0.700	1.26	0.687	1.33	0.534
40x20	4	1.77	4.00	2.00	1.47	0.480	3.59	0.600	3.80	0.393	1.26	0.514	1.30	0.417
30x20	4	1.46	4.00	2.00	1.03	0.541	1.59	0.553	1.81	0.330	0.925	0.546	0.988	0.421
	3	1.12	4.00	2.00	0.990	0.502	1.25	0.437	1.43	0.256	0.935	0.553	1.00	0.424

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+ These sections are in addition to the range of BS EN 10056-1 sections.

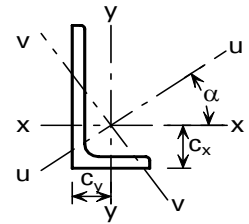
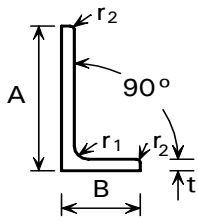
c_x is the distance from the back of the short leg to the centre of gravity.

c_y is the distance from the back of the long leg to the centre of gravity.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

UNEQUAL ANGLES

Advance UKA - Unequal Angles



Dimensions and properties (continued)

Section Designation		Elastic Modulus		Angle Axis x-x to Axis u-u Tan α	Torsional Constant J cm ⁴	Equivalent Slenderness Coefficient		Mono-symmetry Index ψ_a	Area of Section cm ²
Size A x B mm	Thickness t mm	Axis x-x cm ³	Axis y-y cm ³			Min ϕ_a	Max ϕ_a		
200x150	18 +	174	103	0.549	67.9	2.93	3.72	4.60	60.0
	15	147	86.9	0.551	39.9	3.53	4.50	5.55	50.5
	12	119	70.5	0.552	20.9	4.43	5.70	6.97	40.8
200x100	15	137	38.5	0.260	34.3	3.54	5.17	9.19	43.0
	12	111	31.3	0.262	18.0	4.42	6.57	11.5	34.8
	10	93.2	26.3	0.263	10.66	5.26	7.92	13.9	29.2
150x90	15	77.7	30.4	0.354	26.8	2.58	3.59	5.96	33.9
	12	63.3	24.8	0.358	14.1	3.24	4.58	7.50	27.5
	10	53.3	21.0	0.360	8.30	3.89	5.56	9.03	23.2
150x75	15	75.2	21.0	0.253	25.1	2.62	3.74	6.84	31.7
	12	61.3	17.1	0.258	13.2	3.30	4.79	8.60	25.7
	10	51.6	14.5	0.261	7.80	3.95	5.83	10.4	21.7
125x75	12	43.2	16.9	0.354	11.6	2.66	3.73	6.23	22.7
	10	36.5	14.3	0.357	6.87	3.21	4.55	7.50	19.1
	8	29.6	11.6	0.360	3.62	4.00	5.75	9.43	15.5
100x75	12	28.0	16.5	0.540	10.05	2.10	2.64	3.46	19.7
	10	23.8	14.0	0.544	5.95	2.54	3.22	4.17	16.6
	8	19.3	11.4	0.547	3.13	3.18	4.08	5.24	13.5
100x65	10 +	23.2	10.5	0.410	5.61	2.52	3.43	5.45	15.6
	8 +	18.9	8.54	0.413	2.96	3.14	4.35	6.86	12.7
	7 +	16.6	7.53	0.415	2.02	3.58	5.00	7.85	11.2
100x50	8	18.2	5.08	0.258	2.61	3.30	4.80	8.61	11.4
	6	13.8	3.89	0.262	1.14	4.38	6.52	11.6	8.71
80x60	7	10.7	6.34	0.546	1.66	2.92	3.72	4.78	9.38
80x40	8	11.4	3.16	0.253	2.05	2.61	3.73	6.85	9.01
	6	8.73	2.44	0.258	0.899	3.48	5.12	9.22	6.89
75x50	8	10.4	4.95	0.430	2.14	2.36	3.18	4.92	9.41
	6	8.01	3.81	0.435	0.935	3.18	4.34	6.60	7.19
70x50	6	7.01	3.78	0.500	0.899	2.96	3.89	5.44	6.89
65x50	5	5.14	3.19	0.577	0.498	3.38	4.26	5.08	5.54
60x40	6	5.03	2.38	0.431	0.735	2.51	3.39	5.26	5.68
	5	4.25	2.02	0.434	0.435	3.02	4.11	6.34	4.79
60x30	5	4.07	1.14	0.257	0.382	3.15	4.56	8.26	4.28
50x30	5	2.86	1.11	0.352	0.340	2.51	3.52	5.99	3.78
45x30	4	1.91	0.910	0.436	0.166	2.85	3.87	5.92	2.87
40x25	4	1.47	0.619	0.380	0.142	2.51	3.48	5.75	2.46
40x20	4	1.42	0.393	0.252	0.131	2.57	3.68	6.86	2.26
30x20	4	0.807	0.379	0.421	0.1096	1.79	2.39	3.95	1.86
	3	0.621	0.292	0.427	0.0486	2.40	3.28	5.31	1.43

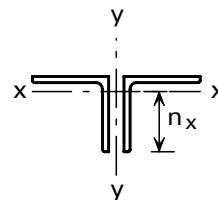
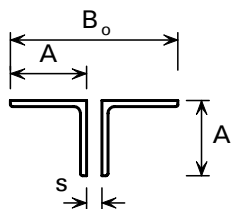
Advance and UKA are trademarks of Corus. A fuller description of the relationship between Angles and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS EN 10056-1 sections.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

EQUAL ANGLES BACK TO BACK

Advance UKA - Equal Angles BACK TO BACK



Dimensions and properties

Composed of Two Angles		Total Mass per Metre	Distance	Total Area	Properties about Axis x-x			Radius of Gyration r _y about Axis y-y (cm)				
					I _x	r _x	Z _x	Space between angles, s, (mm)				
A x A mm	t mm							kg/m	n _x cm	cm ²	cm ⁴	cm
200x200	24	142	14.2	181	6660	6.06	470	8.42	8.70	8.77	8.84	8.95
	20	120	14.3	153	5700	6.11	398	8.34	8.62	8.69	8.76	8.87
	18	109	14.4	138	5200	6.13	362	8.31	8.58	8.65	8.72	8.83
	16	97.0	14.5	124	4680	6.16	324	8.27	8.54	8.61	8.68	8.79
150x150	18 +	80.2	10.6	102	2120	4.55	200	6.32	6.60	6.67	6.75	6.86
	15	67.6	10.8	86.0	1800	4.57	167	6.24	6.52	6.59	6.66	6.77
	12	54.6	10.9	69.6	1470	4.60	135	6.18	6.45	6.52	6.59	6.70
	10	46.0	11.0	58.6	1250	4.62	114	6.13	6.40	6.47	6.54	6.64
120x120	15 +	53.2	8.48	68.0	896	3.63	106	5.06	5.34	5.42	5.49	5.60
	12	43.2	8.60	55.0	736	3.65	85.4	4.99	5.27	5.35	5.42	5.53
	10	36.4	8.69	46.4	626	3.67	72.0	4.94	5.22	5.29	5.36	5.47
	8 +	29.4	8.76	37.6	518	3.71	59.0	4.93	5.20	5.27	5.34	5.45
100x100	15 +	43.8	6.98	56.0	500	2.99	71.6	4.25	4.54	4.62	4.69	4.81
	12	35.6	7.10	45.4	414	3.02	58.2	4.19	4.47	4.55	4.62	4.74
	10	30.0	7.18	38.4	354	3.04	49.2	4.14	4.43	4.50	4.57	4.69
	8	24.4	7.26	31.0	290	3.06	39.8	4.11	4.38	4.46	4.53	4.64
90x90	12 +	31.8	6.34	40.6	298	2.71	47.0	3.80	4.09	4.16	4.24	4.36
	10	26.8	6.42	34.2	254	2.72	39.6	3.75	4.04	4.11	4.19	4.30
	8	21.8	6.50	27.8	208	2.74	32.2	3.71	3.99	4.06	4.13	4.25
	7	19.2	6.55	24.4	185	2.75	28.2	3.69	3.96	4.04	4.11	4.22
80x80	10	23.8	5.66	30.2	175	2.41	30.8	3.36	3.65	3.72	3.80	3.92
	8	19.3	5.74	24.6	144	2.43	25.2	3.31	3.60	3.67	3.75	3.86
75x75	8	18.0	5.36	22.8	118	2.27	22.0	3.12	3.41	3.49	3.56	3.68
	6	13.7	5.45	17.5	91.6	2.29	16.8	3.07	3.35	3.43	3.50	3.62
70x70	7	14.8	5.03	18.8	84.6	2.12	16.8	2.89	3.18	3.26	3.33	3.45
	6	12.8	5.07	16.3	73.8	2.13	14.5	2.87	3.16	3.23	3.31	3.42
65x65	7	13.7	4.45	17.5	66.8	1.96	14.4	2.83	3.14	3.21	3.29	3.42
60x60	8	14.2	4.23	18.1	58.4	1.80	13.8	2.52	2.82	2.90	2.97	3.10
	6	10.8	4.31	13.8	45.6	1.82	10.6	2.48	2.77	2.85	2.92	3.04
	5	9.14	4.36	11.6	38.8	1.82	8.90	2.45	2.74	2.81	2.89	3.01
50x50	6	8.94	3.55	11.4	25.6	1.50	7.22	2.09	2.38	2.46	2.54	2.66
	5	7.54	3.60	9.60	22.0	1.51	6.10	2.06	2.35	2.43	2.51	2.63
	4	6.12	3.64	7.78	17.9	1.52	4.92	2.04	2.32	2.40	2.48	2.60

Advance and UKA are trademarks of Corus. A fuller description of the relationship between Angles and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS EN 10056-1 sections.

Properties about y-y axis:

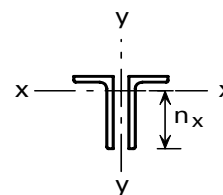
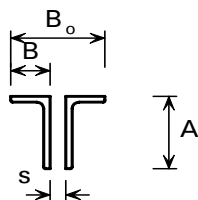
$$I_y = (\text{Total Area}) \cdot (r_y)^2$$

$$Z_y = I_y / (0.5B_o)$$

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

UNEQUAL ANGLES BACK TO BACK

Advance UKA - Unequal Angles BACK TO BACK



Dimensions and properties

Composed of Two Angles		Total Mass per Metre kg/m	Distance n_x cm	Total Area cm^2	Properties about Axis x-x			Radius of Gyration r_y about Axis y-y (cm)				
A x B mm	t mm				I_x cm^4	r_x cm	Z_x cm^3	Space between angles, s, (mm)				
								0	8	10	12	15
200x150	18 +	94.2	13.7	120	4750	6.29	348	5.84	6.11	6.18	6.25	6.36
	15	79.2	13.8	101	4040	6.33	294	5.77	6.04	6.11	6.18	6.28
	12	64.0	13.9	81.6	3300	6.36	238	5.72	5.98	6.05	6.12	6.22
200x100	15	67.5	12.8	86.0	3520	6.40	274	3.45	3.72	3.79	3.86	3.97
	12	54.6	13.0	69.6	2880	6.43	222	3.39	3.65	3.72	3.79	3.90
	10	46.0	13.1	58.4	2440	6.46	186	3.35	3.61	3.67	3.74	3.85
150x90	15	53.2	9.79	67.8	1522	4.74	155	3.32	3.60	3.67	3.75	3.86
	12	43.2	9.92	55.0	1250	4.77	127	3.27	3.55	3.62	3.69	3.80
	10	36.4	10.0	46.4	1070	4.80	107	3.23	3.50	3.57	3.64	3.75
150x75	15	49.6	9.48	63.4	1430	4.75	150	2.65	2.94	3.01	3.09	3.21
	12	40.4	9.60	51.4	1180	4.78	123	2.59	2.87	2.94	3.02	3.14
	10	34.0	9.69	43.4	1000	4.81	103	2.56	2.83	2.90	2.97	3.08
125x75	12	35.6	8.19	45.4	708	3.95	86.4	2.76	3.04	3.11	3.19	3.30
	10	30.0	8.27	38.2	604	3.97	73.0	2.72	2.99	3.07	3.14	3.26
	8	24.4	8.36	31.0	494	4.00	59.2	2.68	2.95	3.02	3.09	3.20
100x75	12	30.8	6.73	39.4	378	3.10	56.0	2.95	3.24	3.31	3.39	3.51
	10	26.0	6.81	33.2	324	3.12	47.6	2.91	3.19	3.27	3.34	3.46
	8	21.2	6.90	27.0	266	3.14	38.6	2.87	3.15	3.22	3.29	3.41
100x65	10 +	24.6	6.64	31.2	308	3.14	46.4	2.43	2.72	2.79	2.87	2.99
	8 +	19.9	6.73	25.4	254	3.16	37.8	2.39	2.67	2.74	2.82	2.93
	7 +	17.5	6.77	22.4	226	3.17	33.2	2.37	2.65	2.72	2.79	2.91
100x50	8	17.9	6.40	22.8	232	3.19	36.4	1.73	2.02	2.09	2.17	2.29
	6	13.7	6.49	17.4	180	3.21	27.6	1.69	1.97	2.04	2.12	2.24
80x60	7	14.7	5.49	18.8	118	2.51	21.4	2.31	2.59	2.67	2.74	2.86
80x40	8	14.1	5.06	18.0	115	2.53	22.8	1.41	1.71	1.79	1.87	2.00
	6	10.8	5.15	13.8	89.8	2.55	17.5	1.37	1.66	1.74	1.82	1.94
75x50	8	14.8	4.98	18.8	104	2.35	20.8	1.90	2.19	2.27	2.35	2.47
	6	11.3	5.06	14.4	81.0	2.37	16.0	1.86	2.14	2.22	2.30	2.42
70x50	6	10.8	4.77	13.8	66.8	2.20	14.0	1.90	2.19	2.26	2.34	2.46
65x50	5	8.70	4.51	11.1	46.4	2.05	10.3	1.93	2.21	2.28	2.36	2.48
60x40	6	8.92	4.00	11.4	40.2	1.88	10.1	1.51	1.80	1.88	1.96	2.09
	5	7.52	4.04	9.58	34.4	1.89	8.50	1.49	1.78	1.86	1.94	2.06

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+ These sections are in addition to the range of BS EN 10056-1 sections.

Properties about y-y axis:

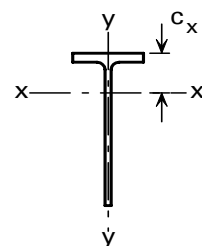
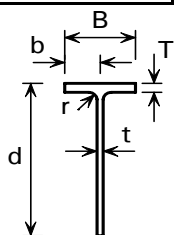
$$I_y = (\text{Total Area}) \cdot (r_y)^2$$

$$Z_y = I_y / (0.5B_o)$$

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL BEAMS

Advance UKT split from Advance UKB



Dimensions and properties

Section Designation	Cut from Universal Beam	Mass per Metre kg/m	Width of Section B mm	Depth of Section d mm	Thickness		Root Radius r mm	Ratios for Local Buckling		Dimension Cx cm	Second Moment of Area	
					Web t mm	Flange T mm		Flange b/T	Web d/t		Axis x-x cm ⁴	Axis y-y cm ⁴
305x457x127	914x305x253	126.7	305.5	459.1	17.3	27.9	19.1	5.47	26.5	12.0	32700	6650
305x457x112	914x305x224	112.1	304.1	455.1	15.9	23.9	19.1	6.36	28.6	12.1	29100	5620
305x457x101	914x305x201	100.4	303.3	451.4	15.1	20.2	19.1	7.51	29.9	12.5	26400	4710
292x419x113	838x292x226	113.3	293.8	425.4	16.1	26.8	17.8	5.48	26.4	10.8	24600	5680
292x419x97	838x292x194	96.9	292.4	420.3	14.7	21.7	17.8	6.74	28.6	11.1	21300	4530
292x419x88	838x292x176	87.9	291.7	417.4	14.0	18.8	17.8	7.76	29.8	11.4	19600	3900
267x381x99	762x267x197	98.4	268.0	384.8	15.6	25.4	16.5	5.28	24.7	9.89	17500	4090
267x381x87	762x267x173	86.5	266.7	381.0	14.3	21.6	16.5	6.17	26.6	9.98	15500	3430
267x381x74	762x267x147	73.5	265.2	376.9	12.8	17.5	16.5	7.58	29.4	10.2	13200	2730
267x381x67	762x267x134	66.9	264.4	374.9	12.0	15.5	16.5	8.53	31.2	10.3	12100	2390
254x343x85	686x254x170	85.1	255.8	346.4	14.5	23.7	15.2	5.40	23.9	8.67	12100	3320
254x343x76	686x254x152	76.2	254.5	343.7	13.2	21.0	15.2	6.06	26.0	8.61	10800	2890
254x343x70	686x254x140	70.0	253.7	341.7	12.4	19.0	15.2	6.68	27.6	8.63	9910	2590
254x343x63	686x254x125	62.6	253.0	338.9	11.7	16.2	15.2	7.81	29.0	8.85	8980	2190
305x305x119	610x305x238	119.0	311.4	317.9	18.4	31.4	16.5	4.96	17.3	7.11	12400	7920
305x305x90	610x305x179	89.5	307.1	310.0	14.1	23.6	16.5	6.51	22.0	6.69	9040	5700
305x305x75	610x305x149	74.6	304.8	306.1	11.8	19.7	16.5	7.74	25.9	6.45	7410	4650
229x305x70	610x229x140	69.9	230.2	308.5	13.1	22.1	12.7	5.21	23.5	7.61	7740	2250
229x305x63	610x229x125	62.5	229.0	306.0	11.9	19.6	12.7	5.84	25.7	7.54	6900	1970
229x305x57	610x229x113	56.5	228.2	303.7	11.1	17.3	12.7	6.60	27.4	7.58	6270	1720
229x305x51	610x229x101	50.6	227.6	301.2	10.5	14.8	12.7	7.69	28.7	7.78	5690	1460
178x305x50 +	610x178x100	50.1	179.2	303.7	11.3	17.2	12.7	5.21	26.9	8.57	5890	829
178x305x46 +	610x178x92	46.1	178.8	301.5	10.9	15.0	12.7	5.96	27.7	8.78	5450	718
178x305x41 +	610x178x82	40.9	177.9	299.3	10.0	12.8	12.7	6.95	29.9	8.88	4840	603
312x267x136 +	533x312x272	136.6	320.2	288.8	21.1	37.6	12.7	4.26	13.7	6.28	10600	10300
312x267x110 +	533x312x219	109.4	317.4	280.4	18.3	29.2	12.7	5.43	15.3	6.09	8530	7790
312x267x91 +	533x312x182	90.7	314.5	275.6	15.2	24.4	12.7	6.44	18.1	5.78	6890	6330
312x267x75 +	533x312x151	75.3	312.0	271.5	12.7	20.3	12.7	7.68	21.4	5.54	5620	5140

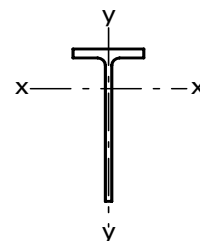
Advance, UKT and UKB are trademarks of Corus. A fuller description of the relationship between Structural Tees and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS 4 sections

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL BEAMS

Advance UKT split from Advance UKB



Properties (continued)

Section Designation	Radius of Gyration		Elastic Modulus			Plastic Modulus		Buckling Parameter	Torsional Index	Mono- symmetry Index	Warping Constant (*)	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x		Axis y-y	Axis x-x	Axis y-y						
			Flange cm ³	Toe cm ³									
305x457x127	14.2	6.42	2720	965	435	1730	685	0.656	18.1	0.749	17000	313	161
305x457x112	14.3	6.27	2400	871	369	1570	582	0.666	20.6	0.753	12400	211	143
305x457x101	14.4	6.07	2110	808	311	1460	491	0.685	23.4	0.759	9820	146	128
292x419x113	13.1	6.27	2280	776	387	1380	606	0.640	17.5	0.742	11500	257	144
292x419x97	13.1	6.06	1930	689	310	1240	487	0.660	20.8	0.747	7830	153	123
292x419x88	13.2	5.90	1720	644	267	1160	421	0.675	23.2	0.751	6320	111	112
267x381x99	11.8	5.71	1770	613	305	1090	479	0.641	16.6	0.741	7620	202	125
267x381x87	11.9	5.58	1550	550	257	986	404	0.654	19.0	0.745	5450	134	110
267x381x74	11.9	5.40	1300	481	206	867	324	0.670	22.6	0.749	3600	79.5	93.6
267x381x67	11.9	5.30	1180	445	181	806	285	0.679	24.9	0.753	2850	59.2	85.3
254x343x85	10.5	5.53	1390	464	259	826	406	0.624	15.9	0.731	4720	154	108
254x343x76	10.5	5.46	1250	417	227	743	355	0.627	17.7	0.732	3420	110	97.0
254x343x70	10.5	5.39	1150	388	204	691	319	0.633	19.3	0.734	2720	84.3	89.2
254x343x63	10.6	5.24	1010	358	173	643	271	0.651	21.9	0.740	2090	57.9	79.7
305x305x119	9.03	7.23	1740	501	509	894	787	0.483	10.6	0.662	11300	391	152
305x305x90	8.91	7.07	1350	372	371	656	572	0.484	13.8	0.664	4710	170	114
305x305x75	8.83	7.00	1150	307	305	538	469	0.483	16.4	0.666	2690	99.8	95.0
229x305x70	9.32	5.03	1020	333	196	592	306	0.613	15.3	0.727	2560	108	89.1
229x305x63	9.31	4.97	915	299	172	531	268	0.617	17.1	0.728	1840	76.9	79.7
229x305x57	9.33	4.88	826	275	150	489	235	0.626	19.0	0.731	1400	55.5	72.0
229x305x51	9.40	4.76	732	255	128	456	200	0.644	21.6	0.736	1080	38.3	64.4
178x305x50 +	9.60	3.60	688	270	92.5	490	148	0.694	19.4	0.768	1230	47.3	63.9
178x305x46 +	9.64	3.50	621	255	80.3	468	129	0.710	21.5	0.774	1050	35.3	58.7
178x305x41 +	9.64	3.40	545	230	67.8	425	109	0.722	24.3	0.778	780	24.3	52.1
312x267x136 +	7.81	7.69	1690	469	644	857	993	0.247	7.96	0.613	17300	642	174
312x267x110 +	7.82	7.48	1400	389	491	696	757	0.332	9.93	0.617	8730	320	139
312x267x91 +	7.72	7.40	1190	317	403	562	619	0.324	11.7	0.618	4920	186	116
312x267x75 +	7.65	7.32	1010	260	330	458	505	0.326	14.0	0.619	2780	108	95.9

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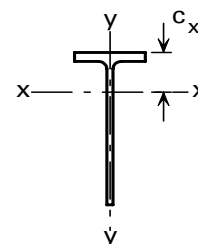
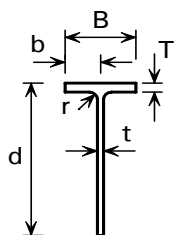
+ These sections are in addition to the range of BS 4 sections

(*) Note units are cm⁶ and not dm⁶.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL BEAMS

Advance UKT split from Advance UKB



Dimensions and properties

Section Designation	Cut from Universal Beam	Mass per Metre kg/m	Width of Section B mm	Depth of Section d mm	Thickness		Root Radius r mm	Ratios for Local Buckling		Dimension Cx cm	Second Moment of Area	
					Web t mm	Flange T mm		Flange b/T	Web d/t		Axis x-x cm ⁴	Axis y-y cm ⁴
210x267x69 +	533x210x138	69.1	213.9	274.5	14.7	23.6	12.7	4.53	18.7	6.94	5990	1930
210x267x61	533x210x122	61.0	211.9	272.2	12.7	21.3	12.7	4.97	21.4	6.66	5160	1690
210x267x55	533x210x109	54.5	210.8	269.7	11.6	18.8	12.7	5.61	23.3	6.61	4600	1470
210x267x51	533x210x101	50.5	210.0	268.3	10.8	17.4	12.7	6.03	24.8	6.53	4250	1350
210x267x46	533x210x92	46.0	209.3	266.5	10.1	15.6	12.7	6.71	26.4	6.55	3880	1190
210x267x41	533x210x82	41.1	208.8	264.1	9.6	13.2	12.7	7.91	27.5	6.75	3530	1000
165x267x43 +	533x165x85	42.3	166.5	267.1	10.3	16.5	12.7	5.05	25.9	7.23	3750	637
165x267x37 +	533x165x75	37.3	165.9	264.5	9.7	13.6	12.7	6.10	27.3	7.46	3350	520
165x267x33 +	533x165x66	32.8	165.1	262.4	8.9	11.4	12.7	7.24	29.5	7.59	2960	429
191x229x81 +	457x191x161	80.7	199.4	246.0	18.0	32.0	10.2	3.12	13.7	6.22	5160	2130
191x229x67 +	457x191x133	66.6	196.7	240.3	15.3	26.3	10.2	3.74	15.7	5.96	4180	1670
191x229x53 +	457x191x106	52.9	194.0	234.6	12.6	20.6	10.2	4.71	18.6	5.73	3260	1260
191x229x49	457x191x98	49.1	192.8	233.5	11.4	19.6	10.2	4.92	20.5	5.53	2970	1170
191x229x45	457x191x89	44.6	191.9	231.6	10.5	17.7	10.2	5.42	22.1	5.47	2680	1040
191x229x41	457x191x82	41.0	191.3	229.9	9.9	16.0	10.2	5.98	23.2	5.47	2470	935
191x229x37	457x191x74	37.1	190.4	228.4	9.0	14.5	10.2	6.57	25.4	5.38	2220	836
191x229x34	457x191x67	33.5	189.9	226.6	8.5	12.7	10.2	7.48	26.7	5.46	2030	726
152x229x41	457x152x82	41.0	155.3	232.8	10.5	18.9	10.2	4.11	22.2	5.96	2600	592
152x229x37	457x152x74	37.1	154.4	230.9	9.6	17.0	10.2	4.54	24.1	5.88	2330	523
152x229x34	457x152x67	33.6	153.8	228.9	9.0	15.0	10.2	5.13	25.4	5.91	2120	456
152x229x30	457x152x60	29.9	152.9	227.2	8.1	13.3	10.2	5.75	28.0	5.84	1880	397
152x229x26	457x152x52	26.1	152.4	224.8	7.6	10.9	10.2	6.99	29.6	6.04	1670	322
178x203x43 +	406x178x85	42.6	181.9	208.6	10.9	18.2	10.2	5.00	19.1	4.91	2030	915
178x203x37	406x178x74	37.1	179.5	206.3	9.5	16.0	10.2	5.61	21.7	4.76	1740	773
178x203x34	406x178x67	33.5	178.8	204.6	8.8	14.3	10.2	6.25	23.3	4.73	1570	682
178x203x30	406x178x60	30.0	177.9	203.1	7.9	12.8	10.2	6.95	25.7	4.64	1400	602
178x203x27	406x178x54	27.0	177.7	201.2	7.7	10.9	10.2	8.15	26.1	4.83	1290	511
140x203x27 +	406x140x53	26.6	143.3	203.3	7.9	12.9	10.2	5.55	25.7	5.16	1320	317
140x203x23	406x140x46	23.0	142.2	201.5	6.8	11.2	10.2	6.35	29.6	5.02	1120	269
140x203x20	406x140x39	19.5	141.8	198.9	6.4	8.6	10.2	8.24	31.1	5.32	979	205

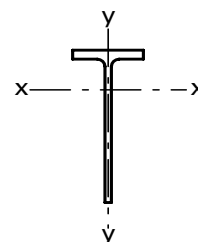
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+ These sections are in addition to the range of BS 4 sections

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL BEAMS

Advance UKT split from Advance UKB



Properties (continued)

Section Designation	Radius of Gyration		Elastic Modulus			Plastic Modulus		Buckling Parameter	Torsional Index	Mono- symmetry Index	Warping Constant (*)	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x		Axis y-y	Axis x-x	Axis y-y						
			Flange cm ³	Toe cm ³									
210x267x69 +	8.24	4.68	862	292	181	520	284	0.609	12.5	0.719	2490	125	88.1
210x267x61	8.15	4.67	775	251	160	446	250	0.600	13.8	0.719	1660	88.9	77.7
210x267x55	8.14	4.60	697	226	140	401	218	0.605	15.5	0.721	1200	63.0	69.4
210x267x51	8.12	4.57	650	209	128	371	200	0.606	16.6	0.722	951	50.3	64.3
210x267x46	8.14	4.51	593	193	114	343	178	0.613	18.3	0.724	737	37.7	58.7
210x267x41	8.21	4.38	523	179	96.1	320	150	0.634	20.8	0.730	565	25.7	52.3
165x267x43 +	8.34	3.44	519	192	76.6	346	122	0.672	17.7	0.758	670	36.8	54.0
165x267x37 +	8.39	3.30	449	176	62.7	321	100	0.693	20.6	0.765	514	23.9	47.6
165x267x33 +	8.41	3.20	390	159	52.0	291	83.1	0.708	23.6	0.771	378	15.9	41.9
191x229x81 +	7.09	4.55	830	281	213	507	336	0.573	8.24	0.699	3780	256	103
191x229x67 +	7.01	4.44	702	231	170	414	267	0.576	9.82	0.702	2130	146	84.9
191x229x53 +	6.96	4.32	569	184	130	328	203	0.583	12.2	0.706	1070	72.6	67.4
191x229x49	6.88	4.33	536	167	122	296	189	0.573	12.9	0.705	835	60.5	62.6
191x229x45	6.87	4.29	491	152	109	269	169	0.576	14.1	0.706	628	45.2	56.9
191x229x41	6.88	4.23	452	141	97.8	250	152	0.583	15.5	0.709	494	34.5	52.2
191x229x37	6.86	4.20	413	127	87.8	225	136	0.583	16.9	0.709	365	25.8	47.3
191x229x34	6.90	4.12	372	118	76.5	209	119	0.597	18.9	0.713	280	18.5	42.7
152x229x41	7.05	3.37	436	150	76.3	267	120	0.634	13.7	0.740	534	44.5	52.3
152x229x37	7.03	3.33	397	135	67.8	242	107	0.636	15.1	0.742	396	32.9	47.2
152x229x34	7.04	3.27	359	125	59.3	223	93.3	0.646	16.8	0.745	305	23.8	42.8
152x229x30	7.02	3.23	322	111	52.0	199	81.5	0.648	18.8	0.746	217	16.9	38.1
152x229x26	7.08	3.11	276	102	42.3	183	66.6	0.671	22.0	0.753	161	10.7	33.3
178x203x43 +	6.11	4.11	413	127	101	226	157	0.556	12.2	0.694	538	46.3	54.3
178x203x37	6.06	4.04	365	109	86.1	194	133	0.555	13.8	0.696	350	31.3	47.2
178x203x34	6.07	3.99	332	100	76.3	177	118	0.561	15.2	0.698	262	23.0	42.8
178x203x30	6.04	3.97	301	89.0	67.6	157	104	0.561	16.9	0.699	186	16.6	38.3
178x203x27	6.13	3.85	268	84.6	57.5	150	89.1	0.588	19.2	0.705	146	11.5	34.5
140x203x27 +	6.23	3.06	256	87.0	44.3	155	69.5	0.636	17.1	0.739	148	14.4	34.0
140x203x23	6.19	3.03	224	74.2	37.8	132	59.0	0.633	19.5	0.740	93.7	9.49	29.3
140x203x20	6.28	2.87	184	67.2	28.9	121	45.4	0.668	23.8	0.750	66.3	5.33	24.8

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+ These sections are in addition to the range of BS 4 sections

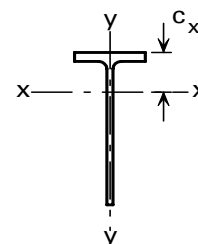
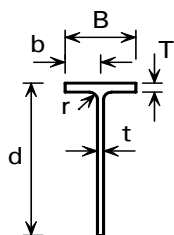
(*) Note units are cm⁶ and not dm⁶.

– Indicates that no values of u and x are given, as lateral torsional buckling due to bending about the x-x axis is not possible, because the second moment of area about the y-y axis exceeds the second moment of area about the x-x axis.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL BEAMS

Advance UKT split from Advance UKB



Dimensions and properties

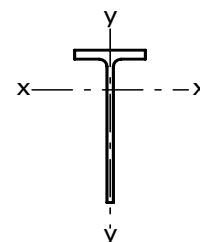
Section Designation	Cut from Universal Beam	Mass per Metre kg/m	Width of Section B mm	Depth of Section d mm	Thickness		Root Radius r mm	Ratios for Local Buckling		Dimension c _x cm	Second Moment of Area	
					Web t mm	Flange T mm		Flange b/T	Web d/t		Axis x-x cm ⁴	Axis y-y cm ⁴
171x178x34	356x171x67	33.5	173.2	181.6	9.1	15.7	10.2	5.52	20.0	4.00	1150	681
171x178x29	356x171x57	28.5	172.2	178.9	8.1	13.0	10.2	6.62	22.1	3.97	986	554
171x178x26	356x171x51	25.5	171.5	177.4	7.4	11.5	10.2	7.46	24.0	3.94	882	484
171x178x23	356x171x45	22.5	171.1	175.6	7.0	9.7	10.2	8.82	25.1	4.05	798	406
127x178x20	356x127x39	19.5	126.0	176.6	6.6	10.7	10.2	5.89	26.8	4.43	728	179
127x178x17	356x127x33	16.5	125.4	174.4	6.0	8.5	10.2	7.38	29.1	4.56	626	140
165x152x27	305x165x54	27.0	166.9	155.1	7.9	13.7	8.9	6.09	19.6	3.21	642	531
165x152x23	305x165x46	23.0	165.7	153.2	6.7	11.8	8.9	7.02	22.9	3.07	536	448
165x152x20	305x165x40	20.1	165.0	151.6	6.0	10.2	8.9	8.09	25.3	3.03	468	382
127x152x24	305x127x48	24.0	125.3	155.4	9.0	14.0	8.9	4.48	17.3	3.94	662	231
127x152x21	305x127x42	20.9	124.3	153.5	8.0	12.1	8.9	5.14	19.2	3.87	573	194
127x152x19	305x127x37	18.5	123.4	152.1	7.1	10.7	8.9	5.77	21.4	3.78	501	168
102x152x17	305x102x33	16.4	102.4	156.3	6.6	10.8	7.6	4.74	23.7	4.14	487	97.1
102x152x14	305x102x28	14.1	101.8	154.3	6.0	8.8	7.6	5.78	25.7	4.20	420	77.7
102x152x13	305x102x25	12.4	101.6	152.5	5.8	7.0	7.6	7.26	26.3	4.43	377	61.5
146x127x22	254x146x43	21.5	147.3	129.7	7.2	12.7	7.6	5.80	18.0	2.64	343	339
146x127x19	254x146x37	18.5	146.4	127.9	6.3	10.9	7.6	6.72	20.3	2.55	292	285
146x127x16	254x146x31	15.5	146.1	125.6	6.0	8.6	7.6	8.49	20.9	2.66	259	224
102x127x14	254x102x28	14.1	102.2	130.1	6.3	10.0	7.6	5.11	20.7	3.24	277	89.3
102x127x13	254x102x25	12.6	101.9	128.5	6.0	8.4	7.6	6.07	21.4	3.32	250	74.3
102x127x11	254x102x22	11.0	101.6	126.9	5.7	6.8	7.6	7.47	22.3	3.45	223	59.7
133x102x15	203x133x30	15.0	133.9	103.3	6.4	9.6	7.6	6.97	16.1	2.11	154	192
133x102x13	203x133x25	12.5	133.2	101.5	5.7	7.8	7.6	8.54	17.8	2.10	131	154

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FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL BEAMS

Advance UKT split from Advance UKB



Properties (continued)

Section Designation	Radius of Gyration		Elastic Modulus			Plastic Modulus		Buckling Parameter	Torsional Index	Mono- symmetry Index	Warping Constant (*)	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x		Axis y-y	Axis x-x	Axis y-y						
			Flange	Toe									
cm	cm	cm ³	cm ³	cm ³	cm ³	cm ³	cm ³	u	x	ψ	H cm ⁶	J cm ⁴	A cm ²
171x178x34	5.20	3.99	288	81.5	78.6	145	121	0.500	12.2	0.672	249	27.8	42.7
171x178x29	5.21	3.91	248	70.9	64.4	125	99.4	0.514	14.4	0.676	154	16.6	36.3
171x178x26	5.21	3.86	224	63.9	56.5	113	87.1	0.521	16.1	0.677	110	11.9	32.4
171x178x23	5.28	3.76	197	59.1	47.4	104	73.3	0.546	18.4	0.683	79.2	7.90	28.7
127x178x20	5.41	2.68	164	55.0	28.4	98.0	44.5	0.632	17.6	0.739	57.1	7.53	24.9
127x178x17	5.45	2.58	137	48.6	22.3	87.2	35.1	0.655	21.1	0.746	38.0	4.38	21.1
165x152x27	4.32	3.93	200	52.2	63.7	92.8	97.8	0.389	11.8	0.636	128	17.3	34.4
165x152x23	4.27	3.91	174	43.7	54.1	77.1	82.8	0.380	13.6	0.636	78.6	11.1	29.4
165x152x20	4.27	3.86	155	38.6	46.3	67.6	70.9	0.393	15.5	0.638	52.0	7.35	25.7
127x152x24	4.65	2.74	168	57.1	36.8	102	58.0	0.602	11.7	0.714	104	15.8	30.6
127x152x21	4.63	2.70	148	49.9	31.3	88.9	49.2	0.606	13.3	0.716	69.2	10.5	26.7
127x152x19	4.61	2.67	132	43.8	27.2	77.9	42.7	0.606	14.9	0.718	47.4	7.36	23.6
102x152x17	4.82	2.15	118	42.3	19.0	75.8	30.0	0.656	15.8	0.749	36.8	6.08	20.9
102x152x14	4.84	2.08	100.0	37.4	15.3	67.5	24.2	0.673	18.7	0.756	25.2	3.69	17.9
102x152x13	4.88	1.97	85.0	34.8	12.1	63.9	19.4	0.705	21.8	0.766	20.4	2.37	15.8
146x127x22	3.54	3.52	130	33.2	46.0	59.5	70.5	0.202	10.6	0.613	64.9	11.9	27.4
146x127x19	3.52	3.48	115	28.5	39.0	50.7	59.7	0.233	12.2	0.616	41.0	7.65	23.6
146x127x16	3.61	3.36	97.4	26.2	30.6	46.0	47.1	0.376	14.8	0.623	24.5	4.26	19.8
102x127x14	3.92	2.22	85.5	28.3	17.5	50.4	27.4	0.607	13.8	0.720	21.0	4.77	18.0
102x127x13	3.95	2.15	75.3	26.2	14.6	46.9	23.0	0.628	15.8	0.727	15.9	3.20	16.0
102x127x11	3.99	2.06	64.5	24.1	11.7	43.5	18.6	0.656	18.2	0.736	12.0	2.06	14.0
133x102x15	2.84	3.17	73.1	18.8	28.7	33.5	44.1	-	10.7	0.569	21.7	5.13	19.1
133x102x13	2.86	3.10	62.4	16.2	23.1	28.7	35.5	-	12.8	0.572	12.6	2.97	16.0

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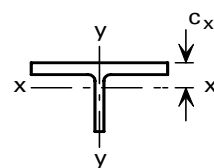
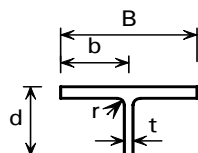
(*) Note units are cm⁶ and not dm⁶.

– Indicates that no values of u and x are given, as lateral torsional buckling due to bending about the x-x axis is not possible, because the second moment of area about the y-y axis exceeds the second moment of area about the x-x axis.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL COLUMNS

Advance UKT split from Advance UKC



Dimensions

Section Designation	Cut from Universal Column	Mass per Metre kg/m	Width of Section B mm	Depth of Section d mm	Thickness		Root Radius r mm	Ratios for Local Buckling		Dimension c _x cm
					Web t mm	Flange T mm		Flange b/T	Web d/t	
406x178x118	356x406x235	117.5	394.8	190.4	18.4	30.2	15.2	6.54	10.3	3.40
368x178x101	356x368x202	100.9	374.7	187.2	16.5	27.0	15.2	6.94	11.3	3.29
368x178x89	356x368x177	88.5	372.6	184.0	14.4	23.8	15.2	7.83	12.8	3.09
368x178x77	356x368x153	76.5	370.5	180.9	12.3	20.7	15.2	8.95	14.7	2.88
368x178x65	356x368x129	64.5	368.6	177.7	10.4	17.5	15.2	10.5	17.1	2.69
305x152x79	305x305x158	79.0	311.2	163.5	15.8	25.0	15.2	6.22	10.3	3.04
305x152x69	305x305x137	68.4	309.2	160.2	13.8	21.7	15.2	7.12	11.6	2.86
305x152x59	305x305x118	58.9	307.4	157.2	12.0	18.7	15.2	8.22	13.1	2.69
305x152x49	305x305x97	48.4	305.3	153.9	9.9	15.4	15.2	9.91	15.5	2.50
254x127x84	254x254x167	83.5	265.2	144.5	19.2	31.7	12.7	4.18	7.53	3.07
254x127x66	254x254x132	66.0	261.3	138.1	15.3	25.3	12.7	5.16	9.03	2.70
254x127x54	254x254x107	53.5	258.8	133.3	12.8	20.5	12.7	6.31	10.4	2.45
254x127x45	254x254x89	44.4	256.3	130.1	10.3	17.3	12.7	7.41	12.6	2.21
254x127x37	254x254x73	36.5	254.6	127.0	8.6	14.2	12.7	8.96	14.8	2.05
203x102x64 +	203x203x127	63.7	213.9	120.7	18.1	30.1	10.2	3.55	6.67	2.73
203x102x57 +	203x203x113	56.7	212.1	117.5	16.3	26.9	10.2	3.94	7.21	2.56
203x102x50 +	203x203x100	49.8	210.3	114.3	14.5	23.7	10.2	4.44	7.88	2.38
203x102x43	203x203x86	43.0	209.1	111.0	12.7	20.5	10.2	5.10	8.74	2.20
203x102x36	203x203x71	35.5	206.4	107.8	10.0	17.3	10.2	5.97	10.8	1.95
203x102x30	203x203x60	30.0	205.8	104.7	9.4	14.2	10.2	7.25	11.1	1.89
203x102x26	203x203x52	26.0	204.3	103.0	7.9	12.5	10.2	8.17	13.0	1.75
203x102x23	203x203x46	23.0	203.6	101.5	7.2	11.0	10.2	9.25	14.1	1.69
152x76x26 +	152x152x51	25.6	157.4	85.1	11.0	15.7	7.6	5.01	7.74	1.79
152x76x22 +	152x152x44	22.0	155.9	83.0	9.5	13.6	7.6	5.73	8.74	1.66
152x76x19	152x152x37	18.5	154.4	80.8	8.0	11.5	7.6	6.71	10.1	1.53
152x76x15	152x152x30	15.0	152.9	78.7	6.5	9.4	7.6	8.13	12.1	1.41
152x76x12	152x152x23	11.5	152.2	76.1	5.8	6.8	7.6	11.2	13.1	1.39

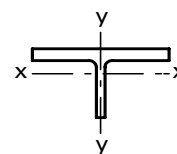
Advance, UKT and UKC are trademarks of Corus. A fuller description of the relationship between Structural Tees and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS 4 sections

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

STRUCTURAL TEES CUT FROM UNIVERSAL COLUMNS

Advance UKT split from Advance UKC



Properties

Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus			Plastic Modulus		Mono- symmetry Index	Warping Constant (*)	Torsional Constant	Area of Section
	Axis x-x cm ⁴	Axis y-y cm ⁴	Axis x-x cm	Axis y-y cm	Axis x-x		Axis y-y cm ³	Axis x-x cm ³	Axis y-y cm ³				
					Flange cm ³	Toe cm ³							
406x178x118	2860	15500	4.37	10.2	843	183	785	367	1190	0.165	12700	405	150
368x178x101	2460	11800	4.38	9.60	749	160	632	312	960	0.216	7840	278	129
368x178x89	2090	10300	4.30	9.54	676	136	551	263	835	0.212	5270	190	113
368x178x77	1730	8780	4.22	9.49	601	114	474	216	717	0.209	3390	125	97.4
368x178x65	1420	7310	4.16	9.43	527	94.1	396	175	600	0.207	2010	76.2	82.2
305x152x79	1530	6280	3.90	7.90	503	115	404	225	615	0.268	3650	188	101
305x152x69	1290	5350	3.84	7.83	450	97.7	346	188	526	0.263	2340	124	87.2
305x152x59	1080	4530	3.79	7.77	401	82.8	295	156	448	0.262	1470	80.3	75.1
305x152x49	858	3650	3.73	7.69	343	66.5	239	123	363	0.258	806	45.5	61.7
254x127x84	1200	4930	3.36	6.81	391	105	372	220	569	0.261	4540	312	106
254x127x66	871	3770	3.22	6.69	323	78.3	288	159	439	0.250	2200	159	84.1
254x127x54	676	2960	3.15	6.59	276	62.1	229	122	348	0.245	1150	85.9	68.2
254x127x45	524	2430	3.04	6.55	237	48.5	190	94.0	288	0.242	660	51.1	56.7
254x127x37	417	1950	2.99	6.48	204	39.2	153	74.0	233	0.236	359	28.8	46.5
203x102x64 +	637	2460	2.80	5.50	233	68.2	230	145	352	0.279	2050	212	81.2
203x102x57 +	540	2140	2.73	5.45	211	58.8	202	123	309	0.270	1430	152	72.3
203x102x50 +	453	1840	2.67	5.39	190	50.0	175	103	267	0.266	951	104	63.4
203x102x43	373	1560	2.61	5.34	169	41.9	150	84.6	228	0.257	605	68.1	54.8
203x102x36	280	1270	2.49	5.30	143	31.8	123	63.6	187	0.254	343	40.0	45.2
203x102x30	244	1030	2.53	5.20	129	28.4	100	54.3	153	0.245	195	23.5	38.2
203x102x26	200	889	2.46	5.18	115	23.4	87.0	44.5	132	0.243	128	15.8	33.1
203x102x23	177	774	2.45	5.13	105	20.9	76.0	39.0	115	0.242	87.2	11.0	29.4
152x76x26 +	141	511	2.08	3.96	79.0	21.0	64.9	41.4	99.5	0.281	122	24.3	32.6
152x76x22 +	116	430	2.04	3.92	70.0	17.5	55.2	34.0	84.4	0.281	76.7	15.8	28.0
152x76x19	93.1	353	1.99	3.87	60.7	14.2	45.7	27.1	69.8	0.277	44.9	9.54	23.5
152x76x15	72.2	280	1.94	3.83	51.4	11.2	36.7	20.9	55.8	0.269	23.7	5.24	19.1
152x76x12	58.5	200	2.00	3.70	41.9	9.41	26.3	16.9	40.1	0.278	9.78	2.30	14.6

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+ These sections are in addition to the range of BS 4 sections

(*) Note units are cm^6 and not dm^6 .

Values of u and x are not given, as lateral torsional buckling due to bending about the x - x axis is not possible, because the second moment of area about the y - y axis exceeds the second moment of area about the x - x axis.

FOR EXPLANATION OF TABLES SEE NOTES 2 AND 3

NON-PRELOADED ORDINARY BOLTS

Grade 4.6 bolts

Diameter of Bolt mm	Tensile Stress Area A_t mm^2	Tension Capacity		Shear Capacity		Bearing Capacity in kN (Minimum of P_{bb} and P_{bs}) End distance equal to 2 x bolt diameter. Thickness in mm of ply passed through.										
		Nominal $0.8A_t p_t$ P_{nom}	Exact $A_t p_t$ P_t	Single Shear P_s	Double Shear $2P_s$											
		kN	kN	kN	kN	5	6	7	8	9	10	12	15	20	25	30
12	84.3	16.2	20.2	13.5	27.0	27.6	33.1	38.6	44.2	49.7	55.2	66.2	82.8	110	138	166
16	157	30.1	37.7	25.1	50.2	36.8	44.2	51.5	58.9	66.2	73.6	88.3	110	147	184	221
20	245	47.0	58.8	39.2	78.4	46.0	55.2	64.4	73.6	82.8	92.0	110	138	184	230	276
22	303	58.2	72.7	48.5	97.0	50.6	60.7	70.8	81.0	91.1	101	121	152	202	253	304
24	353	67.8	84.7	56.5	113	55.2	66.2	77.3	88.3	99.4	110	132	166	221	276	331
27	459	88.1	110	73.4	147	62.1	74.5	86.9	99.4	112	124	149	186	248	311	373
30	561	108	135	89.8	180	69.0	82.8	96.6	110	124	138	166	207	276	345	414

Values in **bold** are less than the single shear capacity of the bolt.

Values in *italic* are greater than the double shear capacity of the bolt.

Bearing values assume standard clearance holes.

If oversize or short slotted holes are used, bearing values should be multiplied by 0.7.

If long slotted or kidney shaped holes are used, bearing values should be multiplied by 0.5.

If appropriate, shear capacity must be reduced for large packings, large grip lengths and long joints.

FOR EXPLANATION OF TABLES SEE NOTE 11.1

Grade 8.8 bolts

Diameter of Bolt mm	Tensile Stress Area A_t mm^2	Tension Capacity		Shear Capacity		Bearing Capacity in kN (Minimum of P_{bb} and P_{bs}) End distance equal to 2 x bolt diameter. Thickness in mm of ply passed through.										
		Nominal $0.8A_t p_t$ P_{nom}	Exact $A_t p_t$ P_t	Single Shear P_s	Double Shear $2P_s$											
		kN	kN	kN	kN	5	6	7	8	9	10	12	15	20	25	30
12	84.3	37.8	47.2	31.6	63.2	27.6	33.1	38.6	44.2	49.7	55.2	66.2	82.8	110	138	166
16	157	70.3	87.9	58.9	118	36.8	44.2	51.5	58.9	66.2	73.6	88.3	110	147	184	221
20	245	110	137	91.9	184	46.0	55.2	64.4	73.6	82.8	92.0	110	138	184	230	276
22	303	136	170	114	227	50.6	60.7	70.8	81.0	91.1	101	121	152	202	253	304
24	353	158	198	132	265	55.2	66.2	77.3	88.3	99.4	110	132	166	221	276	331
27	459	206	257	172	344	62.1	74.5	86.9	99.4	112	124	149	186	248	311	373
30	561	251	314	210	421	69.0	82.8	96.6	110	124	138	166	207	276	345	414

Values in **bold** are less than the single shear capacity of the bolt.

Values in *italic* are greater than the double shear capacity of the bolt.

Bearing values assume standard clearance holes.

If oversize or short slotted holes are used, bearing values should be multiplied by 0.7.

If long slotted or kidney shaped holes are used, bearing values should be multiplied by 0.5.

If appropriate, shear capacity must be reduced for large packings, large grip lengths and long joints.

FOR EXPLANATION OF TABLES SEE NOTE 11.1

NON-PRELOADED ORDINARY BOLTS

Grade 10.9 bolts

Diameter of Bolt mm	Tensile Stress Area A_t mm ²	Tension Capacity		Shear Capacity		Bearing Capacity in kN (Minimum of P_{bb} and P_{bs}) End distance equal to 2 x bolt diameter. Thickness in mm of ply passed through.										
		Nominal $0.8A_t p_t$ P_{nom} kN	Exact $A_t p_t$ P_t kN	Single Shear P_s kN	Double Shear $2P_s$ kN											
						5	6	7	8	9	10	12	15	20	25	30
12	84.3	47.2	59.0	33.7	67.4	27.6	33.1	38.6	44.2	49.7	55.2	66.2	82.8	<i>110</i>	<i>138</i>	<i>166</i>
16	157	87.9	110	62.8	126	36.8	44.2	51.5	58.9	66.2	73.6	88.3	110	<i>147</i>	<i>184</i>	<i>221</i>
20	245	137	172	98.0	196	46.0	55.2	64.4	73.6	82.8	92.0	110	138	184	230	276
22	303	170	212	121	242	50.6	60.7	70.8	81.0	91.1	101	121	152	202	253	304
24	353	198	247	141	282	55.2	66.2	77.3	88.3	99.4	110	132	166	221	276	331
27	459	257	321	184	367	62.1	74.5	86.9	99.4	112	124	149	186	248	311	373
30	561	314	393	224	449	69.0	82.8	96.6	110	124	138	166	207	276	345	414

Values in **bold** are less than the single shear capacity of the bolt.

Values in *italic* are greater than the double shear capacity of the bolt.

Bearing values assume standard clearance holes.

If oversize or short slotted holes are used, bearing values should be multiplied by 0.7.

If long slotted or kidney shaped holes are used, bearing values should be multiplied by 0.5.

If appropriate, shear capacity must be reduced for large packings, large grip lengths and long joints.

FOR EXPLANATION OF TABLES SEE NOTE 11.1