

Technical Specification References

Classification	Specification	Designation of Grade	Mechanical Properties				Chemical Composition %										Impact Properties	
			Tensile Strength		Yield Strength Min.	Elongation Min.		C	Si	Mn	P	S	Mo	Al	CEV	Cu	Test Temperature	Min average absorbed energy for standard test piece
			N/mm ²			CHS	RHS or SHS											
			t < 3mm	3mm ≤ t ≤ 40mm	N/mm ²	%	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Cold formed welded structural hollow sections of non-alloy and fine grain steels	BS EN 10219	S235JRH	360-510	360-510	235	24	0.17	-	1.40	0.045	0.045	-	-	0.35	-	20	27	
		S275J0H	430-580	410-560	275	20	0.20	-	1.50	0.040	0.040	-	-	0.40	-	0	27	
		S275J2H	430-580	410-560	275	20	0.20	-	1.50	0.035	0.035	-	-	0.40	-	-20	27	
		S355J0H	510-680	470-630	355	20	0.22	0.55	1.60	0.040	0.040	-	-	0.45	-	0	27	
		S355J2H	510-680	470-630	355	20	0.22	0.55	1.60	0.035	0.035	-	-	0.45	-	-20	27	
Structural Steel Hollow Sections for Australian Standard	AS 1163	C 250	320	320	250	22	18	0.12	0.05	0.50	0.040	0.030	0.10	0.10	0.25	-	-	
		C 250 L0	320	320	250	22	18	0.12	0.05	0.50	0.040	0.030	0.10	0.10	0.25	-	0	
		C 350	430	430	350	20	16	0.20	0.25	1.60	0.040	0.030	0.10	0.10	0.39	-	-	
		C 350 L0	430	430	350	20	16	0.20	0.25	1.60	0.040	0.030	0.10	0.10	0.39	-	0	
		C 450	500	500	450	16	14	0.20	0.45	1.60	0.040	0.030	0.35	0.10	0.39	-	-	
		C 450 L0	500	500	450	16	14	0.20	0.45	1.60	0.040	0.030	0.35	0.10	0.39	-	0	
Carbon Steel Square Pipes for General Structural Purposes	JIS G 3466	STKR 400	400	400	245	-	23 (N1)	0.25	-	-	0.04	0.04	-	-	-	-	-	
		STKR 490	490	490	325	-	23 (N1)	0.18	0.55	1.50	0.04	0.04	-	-	-	-	-	
Carbon Steel Tubes For General	JIS G 3444	STK 290	290	290	-	30 (N1) 20 (N2)	-	-	-	0.050	0.050	-	-	-	-	-	-	
		STK 400	400	400	235	23 (N2) 18 (N2)	-	0.250	-	-	0.040	0.040	-	-	-	-	-	
		STK 500	500	500	355	15 (N1) 10 (N2)	-	0.300 to 1.00	0.300	0.350	0.040	0.040	-	-	-	-	-	
		STK 540	540	540	390	20 (N1) 16 (N2)	-	0.230	1.500	0.550	0.040	0.040	-	-	-	-	-	
Cold-Formed Welded Carbon Steel Structural	SHS & RHS	ASTM A-500	Grade A	310	310	270	As specified in ASTM A500 Specification	0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
			Grade B	400	400	315		0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
			Grade C	425	425	345		0.27	-	1.35	0.045	0.045	-	-	-	0.18 min	-	-
			Grade D	400	400	250		0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
	CHS		Grade A	310	310	230		0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
			Grade B	400	400	290		0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
			Grade C	425	425	315		0.27	-	1.35	0.045	0.045	-	-	-	0.18 min	-	-
			Grade D	400	400	250		0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
Lipped Channels & Plain Channels	JIS G 3350	SSC 400	400-540	245	21 (N2)	0.25	-	-	0.05	0.05	-	-	-	-	-			
High Tensile C Purlin	Equivalent to ASTM A446 Gr. B			450	345	12	0.40	-	-	0.20	0.04	-	-	-	-			

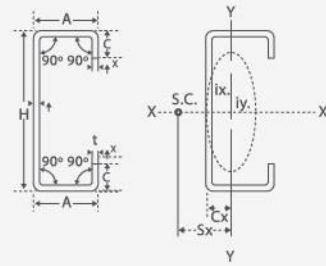
NOTES :

- a) The impact properties of steel qualities JR and J0 are verified by laboratory testing only when specified at the time of the inquiry and order.
- b) The steel qualities J0 and J2 can be produced upon request with extra cost.
- c) (N1) Test piece No. 11 and 12
- d) (N2) Test piece No. 5
 - When the tensile test is carried out on No. 5 and 12 test piece for the tube under 8mm in wall thickness, the minimum elongation value shall be determined by reducing 1.5% per 1mm of decrease in wall thickness from the values given in the Table above and rounding off the value obtained to integer in accordance with JIS Z 8401.
- e) t - thickness
 CHS - Circular Hollow Sections
 RHS - Rectangular Hollow Sections
 SHS - Square Hollow Sections

Tolerances - JIS G 3350 & SS 104

Tolerances	Lipped channels & Plain Channels		
		JIS G 3350	SS 104
Outside Dimension	Height (H) - Under 150mm Height (H) - 150mm or over to 300mm, excl. Height (H) - 300mm or over Side (A) Lip (C)	$\pm 1.5\text{mm}$ $\pm 2.0\text{mm}$ $\pm 3.0\text{mm}$ $\pm 1.5\text{mm}$ $\pm 2.0\text{mm}$	$\pm 1.5\text{mm}$ $\pm 2.0\text{mm}$ $\pm 3.0\text{mm}$ $\pm 1.5\text{mm}$ $\pm 1.0\text{mm}$
Thickness	Wall Thickness	Tolerances	
	1.6mm 2.0mm, 2.3mm 2.8mm 3.0mm, 3.2mm 4.0mm, 4.5mm 6.0mm	$\pm 0.22\text{mm}$ $\pm 0.25\text{mm}$ $\pm 0.28\text{mm}$ $\pm 0.30\text{mm}$ $\pm 0.45\text{mm}$ $\pm 0.60\text{mm}$	
Tolerances of Length	7m or under Over 7m	+40mm, -0mm For each increase of 1m or its fraction in length, add 5mm to the tolerances on plus side given	
Out of Roundness	-		
Concavity / Convexity	-		
Squareness of Size	Angle between adjacent plate parts $\pm 1.5^\circ$		
External Corner Profile	-		
Twist	-		
Straightness	2mm/m		
Mass	mass < 600kg : $\pm 10\%$ 600kg \leq mass < 2000kg : $\pm 7.5\%$ 2000kg \geq mass : $\pm 5\%$		

Lipped Channels

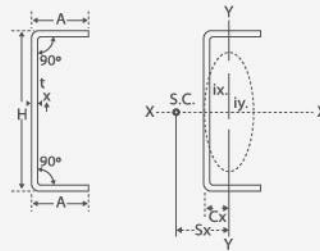


JIS G 3350 SSC 400

Dimension mm (in)		Sectional Area	Calculated Weight	Centre of Gravity		Secondary Moment of Area		Radius of Gyration of Area		Modulus of Section		Centre of Shear	
HxAxC	t			Cx	Cy	Ix	Iy	ix	iy	Zx	Zy	Sx	Sy
		cm ²	kg/m	cm	cm	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm	cm
75x45x15 (3x1 3/4x3/5)	1.6	2.952	2.32	0	1.72	27.1	8.71	3.03	1.72	7.24	3.13	4.1	0
	2.0	3.637	2.86	0	1.72	33.0	10.5	3.01	1.70	8.79	3.76	4.0	0
	2.3	4.137	3.25	0	1.72	37.1	11.8	3.00	1.69	9.90	4.24	4.0	0
100x50x20 (4x2x3/4)	2.3	5.172	4.06	0	1.86	80.7	19.0	3.95	1.92	16.1	6.06	4.4	0
	3.0	6.608	5.19	0	1.86	101	23.4	3.91	1.88	20.2	7.45	4.4	0
	4.0	8.548	6.71	0	1.86	127	28.7	3.85	1.83	25.4	9.13	4.3	0
	4.5	9.469	7.43	0	1.86	139	30.9	3.82	1.81	27.7	9.82	4.3	0
125x50x20 (5x2x3/4)	2.3	5.747	4.51	0	1.69	137	20.6	4.88	1.89	21.9	6.22	4.1	0
	3.0	7.358	5.78	0	1.69	172	25.4	4.83	1.83	27.5	7.56	4.1	0
	4.0	9.548	7.50	0	1.68	217	31.1	4.77	1.81	34.7	9.38	4.0	0
	4.5	10.59	8.32	0	1.68	238	33.5	4.74	1.78	38.0	10.0	4.0	0
150x65x20 (6x2 1/2x3/4)	2.3	7.012	5.50	0	2.12	248	41.1	5.94	2.42	33.0	9.37	5.2	0
	3.0	9.008	7.07	0	2.11	314	51.1	5.90	2.38	41.9	11.7	5.1	0
	4.0	11.75	9.22	0	2.11	401	63.7	5.84	2.33	53.5	14.5	5.0	0
	4.5	13.07	10.3	0	2.10	441	69.2	5.82	2.30	58.8	15.7	5.0	0
175x75x20 (7x3x3/4)	2.3	8.047	6.32	0	2.35	389	61.0	6.96	2.75	44.5	11.8	5.7	0
	3.0	10.36	8.13	0	2.34	495	76.4	6.91	2.72	56.6	14.8	5.7	0
	4.0	13.55	10.6	0	2.33	636	95.9	6.85	2.66	72.7	18.6	5.6	0
	4.5	15.09	11.8	0	2.33	702	105	6.82	2.63	80.3	20.2	5.6	0
200x75x20 (8x3x3/4)	2.3	8.622	6.77	0	2.20	531	63.7	7.85	2.72	53.1	12.0	5.5	0
	3.0	11.11	8.72	0	2.19	676	79.8	7.80	2.68	67.6	15.0	5.4	0
	4.0	14.55	11.4	0	2.19	871	100	7.74	2.62	87.1	18.9	5.3	0
	4.5	16.22	12.7	0	2.19	963	109	7.71	2.60	96.3	20.6	5.3	0
200x75x25 (8x3x1)	2.3	8.852	6.95	0	2.33	545	69.7	7.85	2.81	54.5	13.5	5.8	0
	3.0	11.41	8.96	0	2.33	694	87.5	7.80	2.77	69.4	16.9	5.7	0
	4.0	14.95	11.7	0	2.32	895	110	7.74	2.72	89.5	21.3	5.7	0
	4.5	16.67	13.1	0	2.32	990	121	7.71	2.69	99.0	23.3	5.6	0
225x75x20 (9x3x3/4)	2.3	9.197	7.22	0	2.07	700	66.1	8.72	2.68	62.2	12.2	5.2	0
	3.0	11.86	9.31	0	2.06	892	82.7	8.67	2.64	79.3	15.2	5.1	0
	4.0	15.55	12.2	0	2.06	1151	104	8.61	2.58	102	19.1	5.1	0
	4.5	17.34	13.6	0	2.05	1274	113	8.57	2.56	113	20.8	5.0	0
225x75x25 (9x3x1)	2.3	9.427	7.40	0	2.20	718	72.4	8.73	2.77	63.9	13.7	5.5	0
	3.0	12.16	9.54	0	2.19	917	90.9	8.68	2.73	81.5	17.1	5.5	0
	4.0	15.95	12.5	0	2.19	1184	115	8.62	2.68	105	21.6	5.4	0
	4.5	17.79	14.0	0	2.19	1310	125	8.58	2.65	116	23.6	5.3	0
250x75x20 (10x3x3/4)	2.3	9.772	7.67	0	1.95	897	68.1	9.58	2.64	71.8	12.3	5.0	0
	3.0	12.61	9.90	0	1.95	1145	85.3	9.53	2.60	91.6	15.4	4.9	0
	4.0	16.55	13.0	0	1.95	1480	107	9.46	2.54	118	19.3	4.9	0
	4.5	18.47	14.5	0	1.95	1639	117	9.42	2.52	131	21.0	4.8	0
250x75x25 (10x3x1)	2.3	10.00	7.85	0	2.08	921	74.8	9.60	2.73	73.7	13.8	5.3	0
	3.0	12.91	10.1	0	2.08	1177	93.8	9.55	2.70	94.1	17.3	5.2	0
	4.0	16.95	13.3	0	2.07	1522	118	9.48	2.64	122	21.8	5.1	0
	4.5	18.92	14.9	0	2.07	1690	129	9.44	2.62	135	23.8	5.1	0

NOTE: Available in Hot Rolled & Galvanized Material

Plain Channels

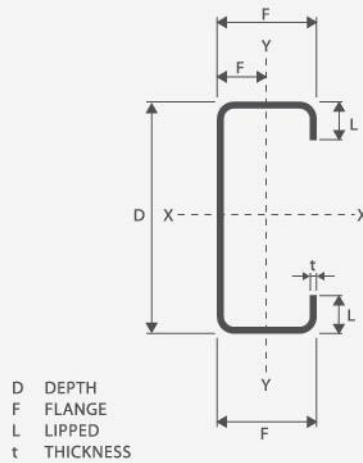


JIS G 3350 SSC 400

Dimension mm (in)		Sectional Area	Calculated Weight	Centre of Gravity		Secondary Moment of Area		Radius of Gyration of Area		Modulus of Section		Centre of Shear	
				Cx	Cy	Ix	Iy	ix	iy	Zx	Zy	Sx	Sy
HxAxA	t	cm ²	kg/m	cm	cm	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm	cm
100x50x50	2.3	4.426	3.47	0	1.36	69.6	11.1	3.97	1.58	14.0	3.04	3.1	0
	3.0	5.704	4.48	0	1.39	88.5	14.1	3.94	1.57	17.7	3.90	3.1	0
	4.0	7.474	5.87	0	1.43	113	18.2	5.89	1.56	22.6	5.09	3.0	0
	4.5	8.334	6.54	0	1.46	125	20.1	3.87	1.55	24.9	5.67	3.0	0
125x50x50	2.3	5.001	3.93	0	1.21	117	11.9	4.85	1.54	18.8	3.13	2.8	0
	3.0	6.454	5.07	0	1.24	149	15.1	4.81	1.53	23.9	4.03	2.8	0
	4.0	8.474	6.65	0	1.29	192	19.5	4.76	1.52	30.7	5.26	2.8	0
	4.5	9.459	7.43	0	1.31	212	21.6	4.73	1.51	33.9	5.85	2.8	0
150x65x65	2.3	6.266	4.92	0	1.61	218	25.9	5.90	2.03	29.1	5.30	3.8	0
	3.0	8.104	6.36	0	1.64	279	33.2	5.87	2.02	37.2	6.83	3.8	0
	4.0	10.67	8.38	0	1.69	361	43.1	5.82	2.01	48.2	8.96	3.8	0
	4.5	11.93	9.37	0	1.71	400	47.9	5.79	2.00	53.4	10.0	3.7	0
175x75x75	2.3	7.301	5.73	0	1.83	347	40.2	6.89	2.35	39.6	7.10	4.4	0
	3.0	9.454	7.42	0	1.86	445	51.7	6.086	2.34	50.8	9.17	4.4	0
	4.0	12.47	9.79	0	1.91	578	67.4	6.81	2.32	66.1	12.1	4.3	0
	4.5	13.96	11.0	0	1.93	643	75.0	6.78	2.32	73.4	13.5	4.3	0
200x75x75	2.3	7.876	6.18	0	1.71	473	41.8	7.75	2.30	47.3	7.22	4.1	0
	3.0	10.20	8.01	0	1.74	608	53.7	7.72	2.29	60.8	9.32	4.1	0
	4.0	13.47	10.6	0	1.78	792	70.1	7.67	2.28	79.2	12.3	4.1	0
	4.5	15.08	11.8	0	1.80	881	78.0	7.64	2.27	88.1	13.7	4.1	0
225x75x75	4.5	16.21	12.7	0	1.70	1166	80.6	8.48	2.23	104	13.9	3.9	0
	4.0	14.47	11.4	0	1.67	1048	72.4	8.51	2.24	93.1	12.4	3.9	0
	3.0	10.95	8.60	0	1.63	803	55.5	8.56	2.25	71.3	9.45	3.9	0
	2.3	8.451	6.63	0	1.60	624	43.2	8.60	2.26	55.5	7.31	3.9	0
250x75x75	4.5	17.33	13.6	0	1.60	1502	82.9	9.31	2.19	120	14.1	3.7	0
	4.0	15.47	12.1	0	1.58	1348	74.5	9.33	2.19	108	12.6	3.7	0
	3.0	11.70	9.19	0	1.54	1032	57.0	9.39	2.21	82.5	9.56	3.7	0
	2.3	9.026	7.09	0	1.50	802	44.3	9.43	2.22	64.2	7.40	3.8	0

NOTE: Available in Hot Rolled & Galvanized Material

High Tensile C Purlin



C Section Identification	Section Dimension				Area mm ²	Mass per Unit Length kg/m	Second Moment of Area		Section Modulus		Radius of Gyration		Centre of Gravity Fy mm
	D	F	L	t			Ix	Iy	Zx	Zy	Rx	Ry	
	mm	mm	mm	mm			10 ⁶ mm ⁴	10 ⁶ mm ⁴	10 ² mm ³	10 ³ mm ³	mm	mm	
ALP 1016	102	51	16	1.6	373	3.05	0.60	0.14	11.77	4.11	40.6	19.5	18.24
ALP 1020	102	51	16	2.0	442	3.72	0.76	0.18	14.84	5.46	41.6	20.3	18.60
ALP 1025	102	51	16	2.5	534	4.60	0.95	0.22	18.56	7.01	42.7	20.9	19.05
ALP 1216	127	51	16	1.6	408	3.20	1.00	0.15	15.72	4.29	50.0	19.4	11.08
ALP 1220	127	51	16	2.0	510	3.94	1.25	0.19	19.67	5.49	50.1	19.5	16.42
ALP 1225	127	51	16	2.5	638	4.89	1.56	0.24	24.56	7.13	50.1	19.6	17.35
ALP 1516	153	71	16	1.6	512	4.01	1.99	0.34	26.30	6.90	62.3	25.8	21.69
ALP 1520	153	71	16	2.0	598	4.92	2.48	0.41	32.42	8.61	64.4	26.2	23.36
ALP 1525	153	71	16	2.5	731	6.01	3.11	0.50	40.65	10.24	65.2	26.3	24.11
ALP 2016	203	71	16	1.6	572	4.70	3.80	0.37	37.44	7.09	80.8	25.1	19.18
ALP 2020	203	71	16	2.0	698	5.74	4.75	0.45	46.80	9.39	82.5	25.4	20.16
ALP 2025	203	71	16	2.5	855	7.03	5.94	0.16	58.52	12.23	83.4	26.8	20.80

TOLERANCE

DEPTH (D) : ± 1mm

FLANGE(F) : ± 1.5mm

LENGTH : ± 3mm