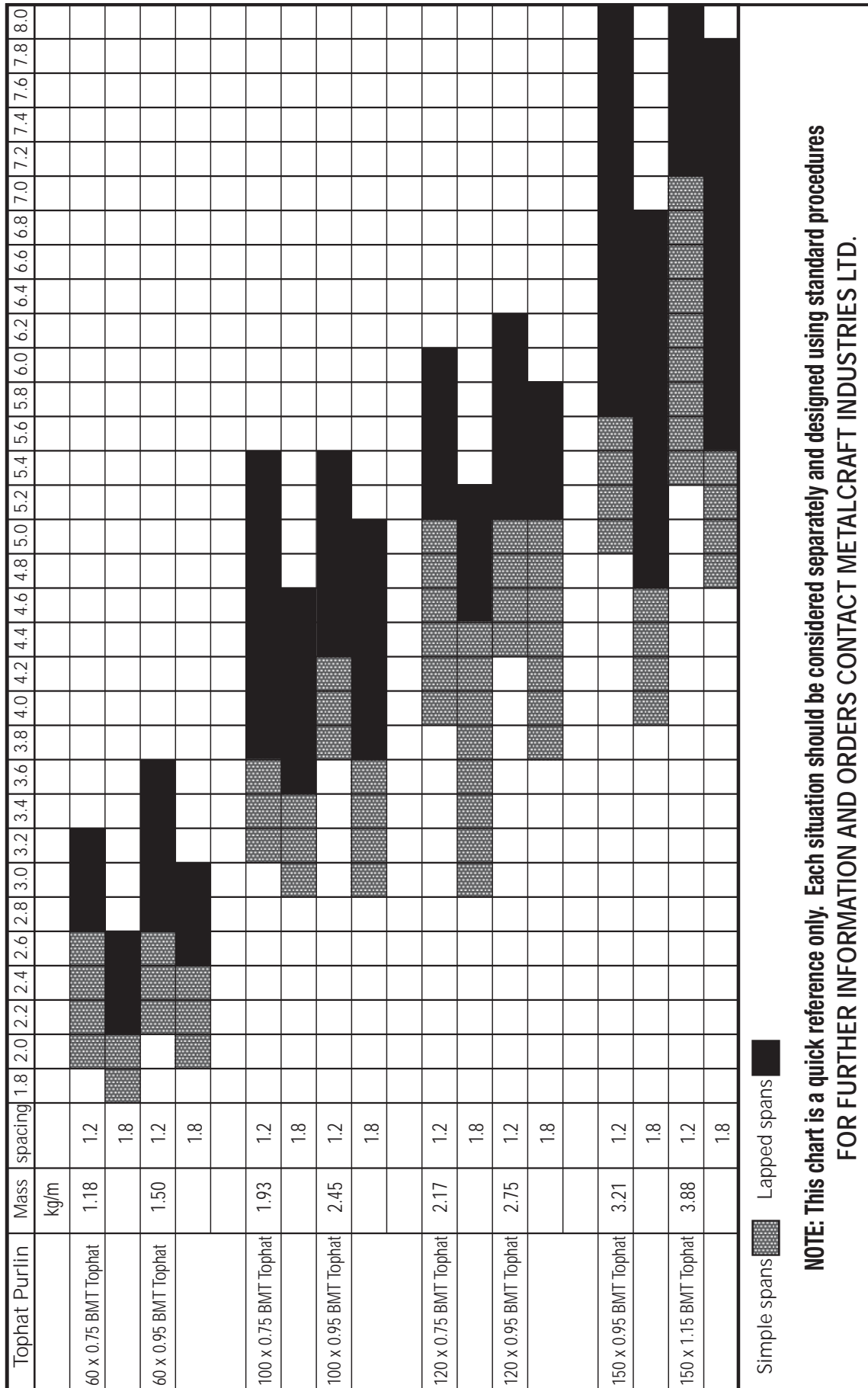


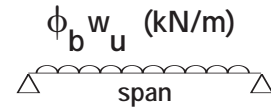
MS TOPHATS

MS Tophats Section Typical Economic Usage Span Chart Guide



MS TOPHATS STRENGTH LOAD SPAN TABLE

UNIFORMLY DISTRIBUTED LOAD = $\phi_b w_u$ (kN/m)



SINGLE SPAN

Span (m)	60 x 0.75			60 x 0.95			100 x 0.75			100 x 0.95			120 x 0.75		
	$\phi_b w_u$ (kN/m)		w_s kN/m	$\phi_b w_u$ (kN/m)		w_s kN/m	$\phi_b w_u$ (kN/m)		w_s kN/m	$\phi_b w_u$ (kN/m)		w_s kN/m	$\phi_b w_u$ (kN/m)		w_s kN/m
Load	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl
2.0	2.30	1.56	0.88	3.08	2.11	1.16	4.54	3.10	3.90						
2.2	1.90	1.29	0.66	2.55	1.75	0.87	3.76	2.66	2.93						
2.4	1.60	1.08	0.51	2.14	1.47	0.67	3.16	2.24	2.26	4.72	2.58	3.08	3.82	2.67	3.34
2.6	1.36	0.92	0.40	1.83	1.25	0.53	2.69	1.91	1.78	4.02	2.38	2.42	3.26	2.27	2.62
2.8	1.18	0.80	0.32	1.57	1.08	0.42	2.32	1.64	1.42	3.47	2.21	1.94	2.81	1.96	2.10
3.0				1.37	0.94	0.34	2.02	1.43	1.16	3.02	2.00	1.58	2.45	1.71	1.71
3.2				1.20	0.83	0.28	1.78	1.26	0.95	2.66	1.76	1.30	2.15	1.50	1.41
3.4							1.57	1.11	0.79	2.35	1.56	1.08	1.90	1.33	1.17
3.6							1.40	0.99	0.67	2.10	1.39	0.91	1.70	1.19	0.99
3.8							1.26	0.89	0.57	1.88	1.25	0.78	1.52	1.06	0.84
4.0							1.14	0.81	0.49	1.70	1.13	0.67	1.38	0.96	0.72
4.2							1.03	0.73	0.42	1.54	1.02	0.58	1.25	0.87	0.62
4.4							0.94	0.67	0.37	1.40	0.93	0.50	1.14	0.79	0.54
4.6							0.86	0.61	0.32	1.28	0.85	0.44	1.04	0.73	0.47
4.8							0.79	0.56	0.28	1.18	0.78	0.39	0.96	0.67	0.42
5.0										1.09	0.72	0.34	0.88	0.61	0.37
5.2										1.01	0.67	0.30	0.81	0.57	0.33
5.4										0.93	0.62	0.27	0.75	0.53	0.29
5.6												0.24	0.70	0.49	0.26
5.8															
6.0															
6.2															
6.4															
6.6															
6.8															
7.0															
7.2															
7.4															
7.6															
7.8															
8.0															
8.2															
8.4															
8.6															
8.8															
9.0															
Fixings Steel/Timber Cold Formed	2/12 g 2/12 g / 1.2 mm			2/12 g 2/12 g / 1.2 mm			4/12 g 2/12 g / 1.5 mm			4/12 g 2/12 g / 1.5 mm			4/14 g 2/14 g / 1.5 mm		

Steel/ Timber Fixings = Number and gauge of Tek screws fixing to G300 hot rolled steel a minimum of 3mm thick or type T17 tek screws a minimum of 37mm into timber.

Cold Formed Fixings = Number and gauge of screws and minimum thickness of G450 cold formed support member.

Outward Loads = Must be adjusted if support member thickness or grades are lower.

The above loads assume the Top Flange is fully restrained by the sheeting.

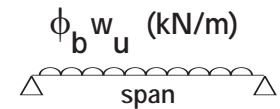
w_s = Uniformly distributed serviceability load for deflection limit

= Span (kN/m)
150

$\phi_b w_u$ = Dependable strength load resistance applied at the centroid (kN/m)

MS TOPHATS STRENGTH LOAD SPAN TABLE

UNIFORMLY DISTRIBUTED LOAD = $\phi_b w_u$ (kN/m)



SINGLE SPAN

Span (m)	120 x 0.95			150 x 0.95			150 x 1.15			150 x 1.55		
	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl
Load	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl
2.0												
2.2												
2.4												
2.6	4.85	3.43	3.73									
2.8	4.18	2.96	2.99									
3.0	3.64	2.58	2.43	4.57	3.07	3.91						
3.2	3.20	2.26	2.00	4.02	2.78	3.22						
3.4	2.84	2.01	1.67	3.56	2.46	2.69	4.93	2.71	3.73			
3.6	2.53	1.79	1.41	3.18	2.20	2.26	4.39	2.56	3.01			
3.8	2.27	1.61	1.19	2.85	1.97	1.93	3.94	2.42	2.56	6.41	3.93	3.51
4.0	2.05	1.45	1.02	2.57	1.78	1.65	3.56	2.30	2.19	5.78	3.55	3.01
4.2	1.86	1.31	0.88	2.33	1.62	1.43	3.23	2.19	1.90	5.24	3.22	2.60
4.4	1.69	1.20	0.77	2.13	1.47	1.24	2.94	2.09	1.65	4.78	2.93	2.26
4.6	1.55	1.10	0.67	1.95	1.35	1.09	2.69	1.91	1.44	4.37	2.68	1.98
4.8	1.42	1.01	0.59	1.79	1.24	0.96	2.47	1.75	1.27	4.02	2.46	1.74
5.0	1.31	0.93	0.52	1.65	1.14	0.85	2.28	1.62	1.12	3.70	2.27	1.54
5.2	1.21	0.86	0.47	1.52	1.05	0.75	2.11	1.50	1.00	3.42	2.10	1.37
5.4	1.12	0.79	0.42	1.41	0.98	0.67	1.95	1.39	0.89	3.17	1.95	1.22
5.6	1.05	0.74	0.37	1.31	0.91	0.60	1.82	1.29	0.80	2.95	1.81	1.10
5.8	0.97	0.69	0.34	1.22	0.85	0.54	1.69	1.20	0.72	2.75	1.69	0.99
6.0	0.91	0.64	0.30	1.14	0.79	0.49	1.58	1.12	0.65	2.57	1.58	0.89
6.2	0.85	0.60	0.28	1.07	0.74	0.44	1.48	1.05	0.59	2.41	1.48	0.81
6.4				1.00	0.70	0.40	1.39	0.99	0.54	2.26	1.39	0.74
6.6				0.94	0.65	0.37	1.31	0.93	0.49	2.12	1.30	0.67
6.8				0.89	0.62	0.34	1.23	0.87	0.45	2.00	1.23	0.61
7.0				0.84	0.58	0.31	1.16	0.83	0.41	1.89	1.16	0.56
7.2				0.79	0.55	0.28	1.10	0.78	0.38	1.78	1.09	0.52
7.4							1.04	0.74	0.35	1.69	1.04	0.48
7.6							0.99	0.70	0.32	1.60	0.98	0.44
7.8							0.94	0.66	0.30	1.52	0.93	0.41
8.0							0.89	0.63	0.27	1.45	0.89	0.38
8.2										1.38	0.84	0.35
8.4										1.31	0.80	0.33
8.6										1.25	0.77	0.30
8.8												
9.0												
Fixings Steel/Timber Cold Formed	2/14 g 2/14 g / 1.5 mm			2/14 g 2/14 g / 1.5 mm			2/14 g 2/14 g / 1.5 mm			2/14 g 4/14 g / 1.5 mm		

Steel/ Timber Fixings = Number and gauge of Tek screws fixing to G300 hot rolled steel a minimum of 3mm thick or type T17 tek screws a minimum of 37mm into timber.

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The above loads assume the Top Flange is fully restrained by the sheeting.

w_s = Uniformly distributed serviceability load for deflection limit

= Span (kN/m)
150

$\phi_b w_u$ = Dependable strength load resistance applied at the centroid (kN/m)

MS TOPHATS STRENGTH LOAD SPAN TABLE

UNIFORMLY DISTRIBUTED LOAD = $\phi_b w_u$ (kN/m)

$\phi_b w_u$ (kN/m)

LAPPED SPAN



Span (m)	60 x 0.75			60 x 0.95			100 x 0.75			100 x 0.95			120 x 0.75		
	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl	$\phi_b w_u$ (kN/m)	w_s kN/m	Defl
Load	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl
2.0	3.37	2.40	1.89	4.58	2.48	2.46	7.38	3.36	8.27						
2.2	2.69	2.10	1.42	3.65	2.25	1.85	6.10	3.05	8.22						
2.4	2.16	1.76	1.09	2.94	2.07	1.43	5.13	2.80	4.79	7.67	4.20	6.43	5.14	4.60	7.26
2.6	1.76	1.50	0.86	2.39	1.19	1.12	4.37	2.58	3.77	6.54	3.88	5.06	4.74	4.5	5.71
2.8	1.44	1.29	0.69	1.96	1.75	0.90	3.77	2.40	3.02	5.64	3.60	4.05	4.41	3.94	4.57
3.0	1.19	1.13	0.56	1.61	1.53	0.73	3.28	2.24	2.45	4.91	3.36	3.29	3.97	3.68	3.72
3.2	1.05	0.99	0.46	1.42	1.34	0.60	2.88	2.10	2.02	4.31	3.15	2.71	3.49	3.45	3.06
3.4	0.93	0.88	0.38	1.26	1.19	0.50	2.56	1.98	1.68	3.82	2.96	2.26	3.09	3.24	2.55
3.6	0.83	0.78	0.32	1.12	1.06	0.42	2.28	1.87	1.42	3.41	2.80	1.90	2.76	2.89	2.15
3.8				1.01	0.95	0.36	2.05	1.77	1.21	3.06	2.65	1.62	2.48	2.59	1.83
4.0				0.91	0.86	0.31	1.85	1.68	1.03	2.76	2.52	1.39	2.24	2.34	1.57
4.2							1.67	1.60	0.89	2.50	2.40	1.20	2.03	2.12	1.36
4.4							1.53	1.53	0.78	2.28	2.27	1.04	1.85	1.93	1.18
4.6							1.40	1.46	0.68	2.09	2.07	0.91	1.69	1.77	1.03
4.8							1.28	1.36	0.60	1.92	1.90	0.80	1.55	1.63	0.91
5.0							1.18	1.25	0.53	1.77	1.76	0.71	1.43	1.50	0.80
5.2							1.09	1.16	0.47	1.63	1.62	0.63	1.32	1.39	0.71
5.4							1.01	1.07	0.42	1.52	1.50	0.56	1.23	1.28	0.64
5.6							0.94	1.00	0.38	1.41	1.40	0.51	1.14	1.19	0.57
5.8							0.88	0.93	0.34	1.31	1.30	0.46	1.06	1.11	0.51
6.0							0.82	0.87	0.31	1.23	1.22	0.41	0.99	1.04	0.46
6.2										1.15	1.14	0.37	0.93	0.97	0.42
6.4										1.08	1.07	0.34	0.87	0.91	0.38
6.6										1.01	1.01	0.31	0.82	0.86	0.35
6.8										0.96	0.95	0.28	0.77	0.81	0.32
7.0													0.73	0.76	0.29
7.2													0.69	0.72	0.27
7.4															
7.6															
7.8															
8.0															
8.2															
8.4															
8.6															
8.8															
9.0															
Fixings Steel/Timber Cold Formed	2/12 g 4/12 g / 1.2 mm			2/12 g 4/12 g / 1.2 mm			4/12 g 4/12 g / 1.5 mm			4/12 g 6/12 g / 1.5 mm			4/14 g 6/14 g / 1.5 mm		

Steel/ Timber Fixings = Number and gauge of Tek screws fixing to G300 hot rolled steel a minimum of 3mm thick or type T17 tek screws a minimum of 37mm into timber.

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The above loads assume the Top Flange is fully restrained by the sheeting.

Total lap length shall be 15% of the maximum adjacent span.

60 MS Tophat Lap ends to be fixed with 2 Tek screws (one in each web)

100/120/150 MS Tophat Lap ends to be fixed with 4 Tek screws (one in each web and flange).

w_s = Uniformly distributed serviceability load for deflection limit

= $\frac{\text{Span} (kN/m)}{150}$

$\phi_b w_u$ = Dependable strength load resistance applied at the centroid (kN/m)

MS TOPHATS STRENGTH LOAD SPAN TABLE

UNIFORMLY DISTRIBUTED LOAD = $\phi_b w_u$ (kN/m)

$\phi_b w_u$ (kN/m)

LAPPED SPAN



Span (m)	120 x 0.95			150 x 0.95			150 x 1.15			150 x 1.55			
	$\phi_b w_u$ (kN/m)		w_s kN/m	$\phi_b w_u$ (kN/m)		w_s kN/m	$\phi_b w_u$ (kN/m)		w_s kN/m	$\phi_b w_u$ (kN/m)		w_s kN/m	
	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward	Defl	Inward	Outward Steel/Timber	Outward Cold Formed	Defl
2.0													
2.2													
2.4													
2.6													
2.8	6.79	3.94	6.25										
3.0	5.92	3.68	5.08										
3.2	5.20	3.45	4.19	6.18	3.45	6.98							
3.4	4.61	3.25	3.49	5.79	3.25	5.82							
3.6	4.11	3.07	2.94	5.16	3.07	4.90	7.14	4.09	6.29				
3.8	3.69	2.91	2.50	4.63	2.91	4.17	6.41	3.87	5.35	10.41	5.05	3.87	7.28
4.0	3.33	2.75	2.15	4.18	2.76	3.58	5.78	3.68	4.58	9.40	4.80	3.68	6.24
4.2	3.02	2.63	1.85	3.79	2.63	3.09	5.25	3.50	3.96	8.52	4.57	3.50	5.39
4.4	2.75	2.51	1.61	3.46	2.51	2.69	4.78	3.35	3.44	7.77	4.36	3.53	4.69
4.6	2.52	2.40	1.41	3.16	2.40	2.35	4.37	3.20	3.01	7.10	4.17	3.20	4.11
4.8	2.31	2.30	1.24	2.90	2.30	2.07	4.02	3.07	2.65	6.52	4.00	3.07	3.61
5.0	2.13	2.21	1.10	2.68	2.21	1.83	3.70	2.94	2.35	6.01	3.84	2.94	3.20
5.2	1.97	2.08	0.98	2.47	2.12	1.63	3.42	2.83	2.09	5.56	3.69	2.83	2.84
5.4	1.83	1.93	0.87	2.29	2.04	1.45	3.17	2.73	1.86	5.16	3.56	2.73	2.54
5.6	1.70	1.80	0.78	2.13	1.97	1.30	2.95	2.63	1.67	4.67	3.43	2.63	2.28
5.8	1.58	1.67	0.70	1.99	1.90	1.17	2.75	2.54	1.50	4.35	3.31	2.54	2.05
6.0	1.48	1.56	0.64	1.86	1.84	1.06	2.57	2.45	1.36	4.06	3.20	2.45	1.85
6.2	1.39	1.47	0.58	1.74	1.78	0.96	2.41	2.37	1.23	3.81	3.10	2.37	1.68
6.4	1.30	1.38	0.52	1.63	1.70	0.87	2.26	2.30	1.12	3.57	3.00	2.30	1.52
6.6	1.22	1.29	0.48	1.54	1.59	0.80	2.12	2.23	1.02	3.36	2.91	2.23	1.39
6.8	1.15	1.22	0.44	1.45	1.50	0.73	2.00	2.12	0.93	3.16	2.82	2.16	1.27
7.0	1.09	1.15	0.40	1.37	1.42	0.67	1.89	2.00	0.86	2.99	2.74	2.10	1.17
7.2	1.03	1.09	0.37	1.29	1.34	0.61	1.79	1.89	0.79	2.82	2.67	2.04	1.07
7.4	0.97	1.03	0.34	1.22	1.27	0.56	1.69	1.79	0.72	2.67	2.53	1.99	0.99
7.6	0.92	0.98	0.31	1.16	1.20	0.52	1.60	1.69	0.67	2.53	2.40	1.94	0.91
7.8	0.88	0.93	0.29	1.10	1.14	0.48	1.52	1.61	0.62	2.41	2.27	1.89	0.84
8.0	0.83	0.88	0.27	1.05	1.09	0.45	1.45	1.53	0.57	2.29	2.16	1.84	0.78
8.2				0.99	1.03	0.42	1.38	1.46	0.53	2.18	2.06	1.80	0.72
8.4				0.95	0.98	0.39	1.31	1.39	0.49	2.07	1.96	1.75	0.67
8.6				0.90	0.94	0.36	1.25	1.32	0.46	1.98	1.87	1.71	0.63
8.8							1.20	1.25	0.43	1.89	1.79	1.67	0.59
9.0							1.14	1.21	0.40	1.81	1.71	1.64	0.55
Fixings Steel/Timber Cold Formed	4/14 g 6/14 g / 1.5 mm			4/14 g 6/14 g / 1.5 mm			6/14 g 8/14 g / 1.5 mm			6/12 g 8/14 g / 1.5 mm			

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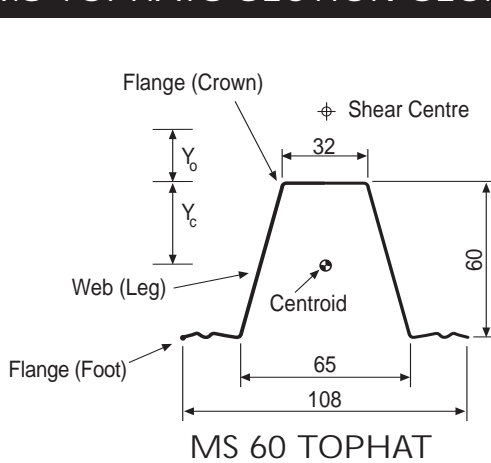
w_s = Uniformly distributed serviceability load for deflection limit

= $\frac{\text{Span}}{150}$ (kN/m)

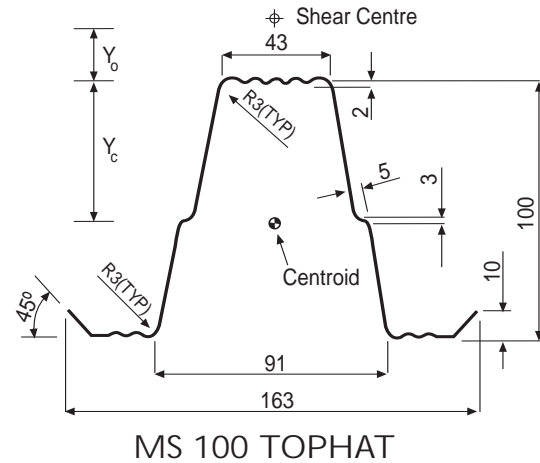
$\phi_b w_u$ = Dependable strength load resistance applied at the centroid (kN/m)

MS TOPHATS SECTION GEOMETRY & PROPERTIES

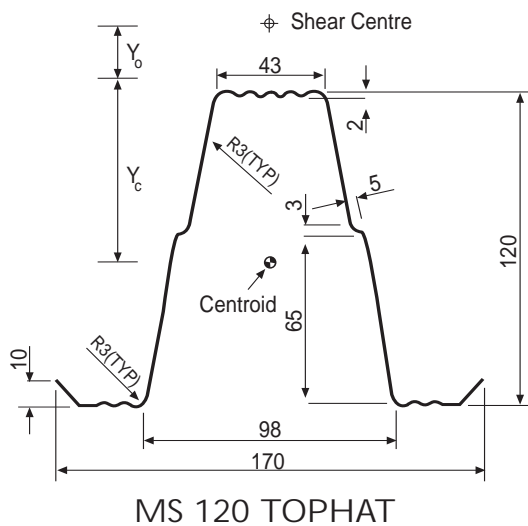
MS TOPHATS SECTION GEOMETRY



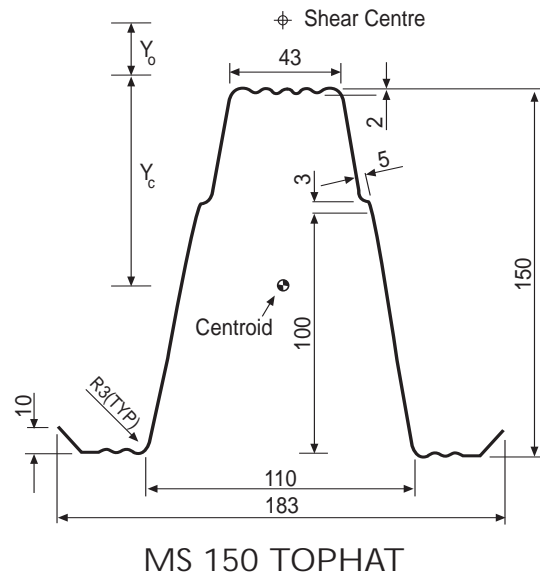
MS 60 TOPHAT



MS 100 TOPHAT



MS 120 TOPHAT



MS 150 TOPHAT

MS TOPHATS SECTION PROPERTIES

Code	Thickness	Area	Mass	Second Moment Area (Full)		Section Modulus		Radius of Gyration		Centre of Gravity		Shear Centre	Torsion Constant	Warping Constant	Mono-Symmetry Constant
				I_x	I_y	Z_x	Z_y	r_x	r_y	Y_c	Y_o				
	t(BMT)	mm ²	kg/m	10 ² mm ⁴	10 ⁶ mm ⁴	10 ³ mm ³	10 ³ mm ³	mm	mm	mm	mm	mm ⁴	10 ⁹ mm ⁶	mm	
60 MS Tophat 0.75 BMT	0.75	150	1.18	0.078	0.119	2.45	2.20	22.8	28.1	31.7	44.2	28.2	16.05	110	
60 MS Tophat 0.95 BMT	0.95	190	1.50	0.098	0.151	3.09	2.78	22.8	28.1	31.7	44.2	57.3	20.33	110	
100 MS Tophat 0.75 BMT	0.75	248	1.93	0.388	0.439	6.30	5.39	37.1	42.2	55.2	67.4	46.5	238.61	158	
100 MS Tophat 0.95 BMT	0.95	314	2.45	0.428	0.556	7.75	6.83	37.0	42.2	55.2	67.4	94.5	302.24	158	
120 MS Tophat 0.75 BMT	0.75	278	2.17	0.527	0.519	8.03	6.13	43.7	43.3	65.6	82.3	52.1	363.31	184	
120 MS Tophat 0.95 BMT	0.95	352	2.75	0.667	0.657	10.16	7.76	43.6	43.3	65.6	82.3	105.9	460.20	184	
150 MS Tophat 0.95 BMT	0.95	410	3.21	1.160	0.878	14.30	9.60	53.3	46.3	81.1	103.9	123.5	758.37	225	
150 MS Tophat 1.15 BMT	1.15	497	3.88	1.400	1.060	17.30	11.62	53.2	46.3	81.1	103.9	219.1	918.02	225	
150 MS Tophat 1.55 BMT	1.55	670	5.23	1.890	1.430	23.32	15.66	53.2	46.3	81.1	103.9	536.5	1237.33	225	

MS TOPHATS FLOOR JOIST SPANS

SINGLE SPAN AND DOUBLE SPAN

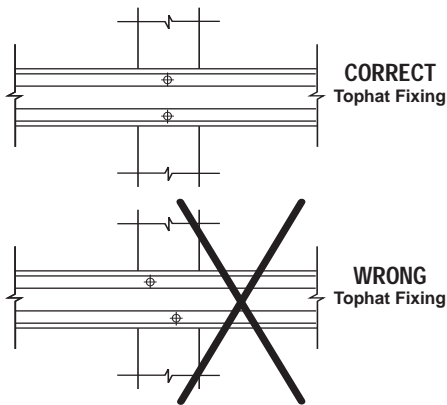


Code	Spacing					
	400		450		600	
	Single	Double	Single	Double	Single	Double
60 MS Tophat 0.75 BMT	1.05	1.25	1.00	1.20	0.95	1.10
60 MS Tophat 0.95 BMT	1.15	1.35	1.10	1.30	1.05	1.20
100 MS Tophat 0.75 BMT	1.80	2.20	1.75	2.05	1.65	1.90
100 MS Tophat 0.95 BMT	2.00	2.40	1.90	2.25	1.80	2.05
120 MS Tophat 0.75 BMT	2.20	2.60	2.10	2.45	1.90	2.20
120 MS Tophat 0.95 BMT	2.40	2.90	2.30	2.70	2.10	2.40
150 MS Tophat 0.95 BMT	2.90	3.60	2.80	3.30	2.50	2.90
150 MS Tophat 1.15 BMT	3.20	3.90	3.00	3.60	2.70	3.20
150 MS Tophat 1.55 BMT	3.60	4.30	3.40	4.10	3.00	3.60

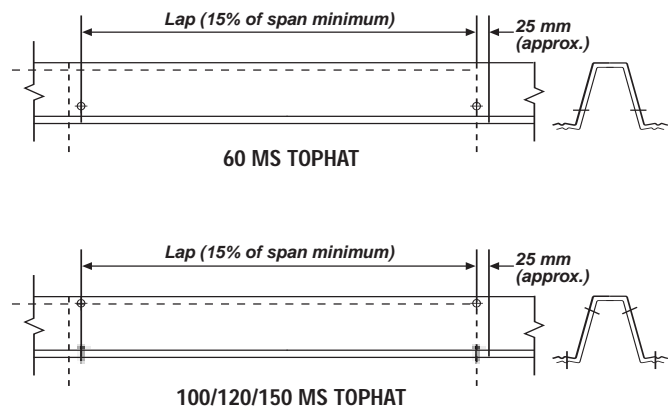
Spans are based on limiting floor vibrations and are capable of carrying live loads of at least 4kPa

FIXING DETAILS & ASSEMBLY EXAMPLES

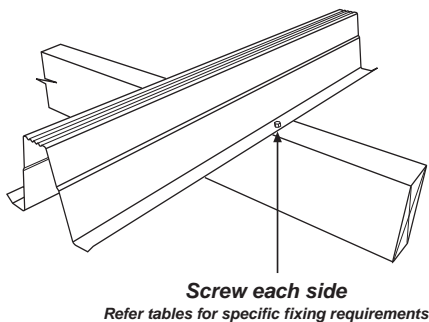
FIXING TO SUPPORT DETAIL



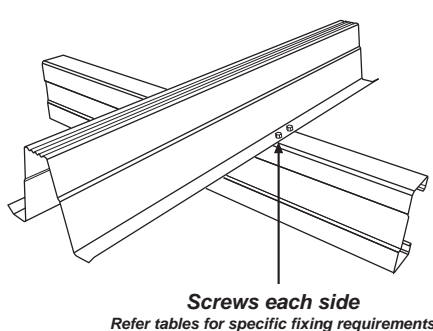
TYPICAL FIXING – LAPPED SECTION



TIMBER/STEEL TYPICAL SCREWED FIXINGS



COLD FORMED TYPICAL SCREWED FIXINGS (Steel / Timber and Cold Formed)



STRAPPED FIXING

