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# **Steel Tables**

**R. AGOR**

**Birla Publications Pvt. Ltd.**

NAME : VISHAL G. NARAYANKAR

NARAYANKAR VISHAL G

**BIRLA'S**  
**M.K.S. & S.I. UNITS**

**STEEL**  
**TABLES**

By :  
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# SYMBOLS

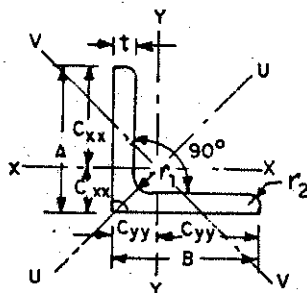
Letter symbols used in this handbook shall have the meaning assigned to them as indicated below :

$a$	=	Sectional area in sq cm	$r_{uu}$	=	Radius of gyration about the U-U axis
$b$	=	Width of flange	$I_w$	=	Radius of gyration about the V-V axis
$A$	=	The longer leg of an unequal angle or one of the legs in the case of an equal angle	$r_{xx}$	=	Radius of gyration about the X-X axis
			$R_{yy}$	=	Radius of gyration about the Y-Y
$b$	=	The shorter leg of an unequal angle or one of the legs in the case of an equal angle	$S$	=	Maximum allowable shear in the web
			$t$	=	Thickness of angles, plates, etc.
$C_{xx}$	=	The lesser of the two extreme fibre distances from the X-X axis	$t_c$	=	Mean thickness of compression flange
$C_{yy}$	=	The lesser of the two extreme fibre distances from the Y-Y axis	$t_f$	=	Thickness of flange at the centre of the outstand
$D$	=	Slope of flange	$t_t$	=	Mean thickness of tension flange
$D$	=	The outstand of the bulb in the case of bulb angles	$t_2$	=	Thickness of web
$e_{xz}$	=	Distance of extreme fibre from the X-X axis	$w$	=	Calculated weight in kg per m ( = 0.785 a )
	=	Distance of extreme fibre from the Y-Y axis	$Z_c$	=	Modulus of extreme fibre of the compression flange
$g$	=	Rivet gauge distance in the flange	$Z_1$	=	Modulus of section based on the distance of extreme fibre of the tension flange
$g_1$	=	Rivet gauge distance in the web	$Z_{xx}$	=	Modulus of section about the X-X axis
$h$	=	Overall depth of section	$Z_{yy}$	=	Modulus of section about the Y-Y axis
$I_{mm}$	=	Moment of inertia about the U-U axis	Y-Y axis =	A line parallel to the axis of the web of the section (in the case of beams, channels and tee bars) or parallel to the axis of the longer flange (in the case of unequal angles and bulb angles) or either flange (in the case of equal angles) and passing through the centre of gravity of the profile of the section	
$I_{vv}$	=	Moment of inertia about the V-V axis			
$I_{xx}$	=	Moment of inertia about the X-X axis	X-X axis =	A line passing through the centre of gravity of the profile of the section, and at right angles to the Y-Y axis.	
$I_x$	=	Product of inertia about the X-X and Y-Y axis			
$I_{yy}$	=	Moment of inertia about the Y-Y axis	U-U and V-V axis =	Lines passing through the centre of gravity of the profile of the section, representing the principal axis of the section	
$M$	=	Maximum allowable moment			
$r_1$	=	Radius at root of the flange			
$r_2$	=	Radius at toe of the flange			
$r_3$	=	Radius of bulb corners in the case of bulb angles			

TABLE 1

## ROLLED STEEL EQUAL ANGLES

## DIMENSIONS AND PROPERTIES



Designation & size $A \times B$	Thickness $t$ mm	Sectional Area $a$ $\text{cm}^2$	Weight per Metre ( $w$ )		Centre of Gravity $C_{xx}=C_{yy}$ cm	Distance of Extreme Fibre $e_{xx}=e_{yy}$ cm
			Kg.	N		
ISA 2020	3.0	1.12	0.9	8.8	0.59	1.41
	4.0	1.45	1.1	10.8	0.63	1.37
ISA 2525	3.0	1.41	1.1	10.8	0.71	1.79
	4.0	1.84	1.4	13.7	0.75	1.75
	5.0	2.25	1.8	17.7	0.79	1.71
ISA 3030	3.0	1.73	1.4	13.7	0.83	2.17
	4.0	2.26	1.8	17.7	0.87	2.13
	5.0	2.77	2.2	21.6	0.92	2.08
ISA 3535	3.0	2.03	1.6	15.7	0.95	2.55
	4.0	2.66	2.1	20.6	1.00	2.50
	5.0	3.27	2.6	25.5	1.04	2.46
	6.0	3.86	3.0	29.4	1.08	2.42
ISA 4040	3.0	2.34	1.8	17.7	1.08	2.92
	4.0	3.07	2.4	23.5	1.12	2.88
	5.0	3.78	3.0	29.4	1.16	2.84
	6.0	4.47	3.5	34.3	1.20	2.80
ISA 4545	3.0	2.64	2.1	20.6	1.20	3.30
	4.0	3.47	2.7	26.5	1.25	3.25
	5.0	4.28	3.4	33.4	1.29	3.21
	6.0	5.07	4.0	39.2	1.33	3.17
ISA 5050	3.0	2.95	2.3	22.6	1.32	3.68
	4.0	3.88	3.0	29.4	1.37	3.63
	5.0	4.79	3.8	37.3	1.41	3.59
	6.0	5.68	4.5	44.1	1.45	3.55
ISA 5555	5.0	5.27	4.1	40.2	1.53	3.97
	6.0	6.26	4.9	48.1	1.57	3.93
	8.0	8.18	6.4	62.8	1.65	3.85
	10.0	10.02	7.9	77.5	1.72	3.78
ISA 6060	5.0	5.75	4.5	44.1	1.65	4.35
	6.0	6.84	5.4	53.0	1.69	4.31
	8.0	8.96	7.0	68.7	1.77	4.23
	10.0	11.00	8.6	84.4	1.85	4.15
ISA 6565	5.0	6.25	4.9	48.1	1.77	1.73
	6.0	7.44	5.8	56.9	1.81	4.69
	8.0	9.76	7.7	75.5	1.89	4.61
	10.0	12.00	9.4	92.2	1.97	4.53

(Continued)

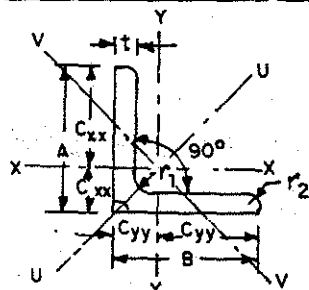


TABLE 1 (Contd.)

## ROLLED STEEL EQUAL ANGLES

## DIMENSIONS AND PROPERTIES

Moments of Inertia			Radii of Gyration			Modulus of Section	Radius at Root	Radius at Toe	Product of Inertia	Designation & Size
$I_{xx} = I_{yy}$ cm <sup>4</sup>	$I_{uu}$ cm <sup>4</sup>	$I_{vv}$ cm <sup>4</sup>	$r_{xx} = r_{yy}$ cm	$r_{uu}$ cm	$r_{vv}$ cm	$Z_{xx} = Z_{yy}$ cm <sup>3</sup>	$r_1$ mm	$r_2$ mm	$I_{xy}$ cm <sup>4</sup>	A x B
0.4	0.6	0.2	0.58	0.73	0.37	0.3	4.0	2.5	0.2	ISA 2020
0.5	0.8	0.2	0.58	0.72	0.37	0.4			0.3	
0.8	1.2	0.3	0.73	0.93	0.47	0.4	4.5	3.0	0.4	ISA 2525
1.0	1.6	0.4	0.73	0.91	0.47	0.6			0.6	
1.2	1.8	0.5	0.72	0.91	0.47	0.7			0.7	
1.4	2.2	0.6	0.89	1.13	0.57	0.6	5.0	3.0	0.8	ISA 3030
1.8	2.8	0.7	0.89	1.12	0.57	0.8			1.0	
2.1	3.4	0.9	0.88	1.11	0.57	1.0			1.2	
2.3	3.6	0.9	1.05	1.33	0.67	0.9	5.0	3.0	1.3	ISA 3535
2.9	4.7	1.2	1.05	1.32	0.67	1.2			1.7	
3.5	5.6	1.5	1.04	1.31	0.67	1.4			2.1	
4.1	6.5	1.7	1.03	1.29	0.67	1.7			2.4	
3.4	5.5	1.4	1.21	1.54	0.77	1.2	5.5	3.0	2.0	ISA 4040
4.5	7.1	1.8	1.21	1.53	0.77	1.6			2.6	
5.4	8.6	2.2	1.20	1.51	0.77	1.9			3.2	
6.3	10.0	2.6	1.19	1.50	0.77	2.3			3.7	
5.0	8.0	2.0	1.38	1.74	0.87	1.5	5.5	3.0	2.9	ISA 4545
6.5	10.4	2.6	1.37	1.73	0.87	2.0			3.8	
7.9	12.6	3.2	1.36	1.72	0.87	2.5			4.6	
9.2	14.6	3.8	1.35	1.70	0.87	2.9			5.4	
6.9	11.1	2.8	1.53	1.94	0.97	1.9	6.0	3.0	4.1	ISA 5050
9.1	14.5	3.6	1.53	1.93	0.97	2.5			5.3	
11.0	17.6	4.5	1.52	1.92	0.97	3.1			5.5	
12.9	20.6	5.3	1.51	1.90	0.96	3.6			7.6	
14.7	23.5	5.9	1.67	2.11	1.06	3.7	6.5	4.0	8.6	ISA 5555
17.3	27.5	7.0	1.66	2.10	1.06	4.4			10.1	
22.0	34.9	9.1	1.64	2.07	1.06	5.7			12.8	
26.3	41.5	11.2	1.62	2.03	1.06	7.0			15.1	
19.2	30.6	7.7	1.82	2.31	1.16	4.4	6.5	4.5	11.3	ISA 6060
22.6	36.0	9.1	1.82	2.29	1.15	5.2			13.3	
29.0	46.0	11.9	1.80	2.27	1.15	6.8			16.9	
34.8	54.9	14.6	1.78	2.23	1.15	8.4			20.1	
24.7	39.4	9.9	1.99	2.51	1.26	5.2	6.5	4.5	14.5	ISA 6565
29.1	46.5	11.7	1.98	2.50	1.26	6.2			17.2	
37.4	59.5	15.3	1.96	2.47	1.25	8.1			22.0	
45.0	71.3	18.8	1.94	2.44	1.25	9.9			26.2	

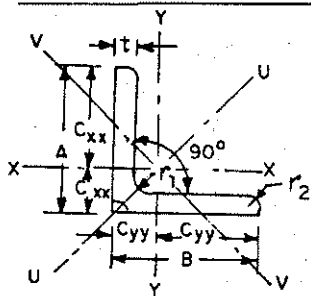
(Continued)



TABLE 1 (Contd.)

## ROLLED STEEL EQUAL ANGLES

## DIMENSIONS AND PROPERTIES



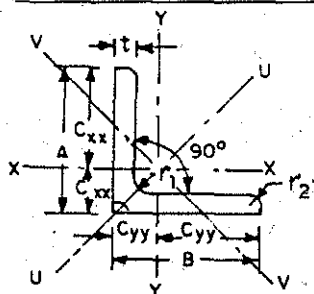
Designation & Size A x B	Thickness t mm	Sectional Area a cm <sup>2</sup>	Weight per Metre (W)		Centre of Gravity C <sub>xx</sub> = C <sub>yy</sub> cm	Distance of Extreme Fibre e <sub>xx</sub> = e <sub>yy</sub> cm
			kg	N		
ISA 7070	5.0	6.77	5.3	52.0	1.89	5.11
	6.0	8.06	6.3	61.8	1.94	5.06
	8.0	10.58	8.3	81.4	2.02	4.98
	10.0	13.02	10.2	100.1	2.10	4.90
ISA 7575	5.0	7.27	5.7	55.9	2.02	5.48
	6.0	8.66	6.8	66.7	2.06	5.44
	8.0	11.38	8.9	87.3	2.14	5.36
	10.0	14.02	11.0	107.9	2.22	5.28
ISA 8080	6.0	9.29	7.3	71.6	2.18	5.82
	8.0	12.21	9.6	94.2	2.27	5.73
	10.0	15.05	11.8	115.8	2.34	5.66
	12.0	17.81	14.0	137.3	2.42	5.58
ISA 9090	6.0	10.47	8.2	80.4	2.42	6.58
	8.0	13.79	10.8	105.9	2.51	6.49
	10.0	17.03	13.4	131.5	2.59	6.41
	12.0	20.19	15.8	155.0	2.66	6.34
ISA 100100	6.0	11.67	9.2	90.2	2.67	7.33
	8.0	15.39	12.1	118.7	2.76	7.24
	10.0	19.03	14.9	146.2	2.84	7.16
	12.0	22.59	17.7	173.6	2.92	7.08
ISA 110110	8.0	17.02	13.4	131.5	3.00	8.00
	10.0	21.06	16.5	161.9	3.08	7.92
	12.0	25.02	19.6	192.3	3.16	7.84
	15.0	30.81	24.2	237.4	3.27	7.73
ISA 130130	8.0	20.22	15.9	156.0	3.50	9.50
	10.0	25.06	19.7	193.3	3.58	9.42
	12.0	29.82	23.4	229.6	3.66	9.34
	15.0	36.81	28.9	283.5	3.78	9.22
ISA 150150	10.0	29.03	22.8	223.7	4.06	10.94
	12.0	34.59	27.2	266.8	4.14	10.86
	15.0	42.78	33.6	329.6	4.26	10.74
	18.0	50.79	39.9	391.4	4.38	10.62
ISA 200200	12.0	46.61	36.6	359.0	5.36	14.64
	15.0	57.80	45.4	445.4	5.49	14.51
	18.0	68.81	54.0	529.7	5.61	14.39
	25.0	93.80	73.6	722.0	5.88	14.12

(Continued)

TABLE 1 (Contd.)

## ROLLED STEEL EQUAL ANGLES

## DIMENSIONS AND PROPERTIES



Moments of Inertia			Radii of Gyration			Modulus of Section	Radius at Root	Radius at Toe	Product of Inertia	Designation
$I_{xx} = I_{yy}$	$I_{uu}$	$I_{vv}$	$r_{xx} = r_{yy}$	$r_{uu}$	$r_{vv}$	$Z_{xx} = Z_{yy}$	$r_1$	$r_2$	$I_{xy}$	$A \times B$
cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm	cm	cm <sup>3</sup>	mm	mm	cm <sup>4</sup>	
31.1	49.8	12.5	2.15	2.71	1.36	6.1	7.0	4.5	18.4	ISA 7070
36.8	58.8	14.8	2.14	2.70	1.36	7.3			21.7	
47.4	75.5	19.3	2.12	2.67	1.35	9.5			27.9	
57.2	90.7	23.7	2.10	2.64	1.35	11.7			33.3	
38.7	61.9	15.5	2.31	2.92	1.46	7.1	7.0	4.5	22.8	ISA 7575
45.7	73.1	18.4	2.30	2.91	1.46	8.4			27.0	
59.0	94.1	24.0	2.28	2.88	1.45	11.0			34.8	
71.4	113.3	29.4	2.26	2.84	1.45	13.5			41.7	
56.0	89.6	22.5	2.46	3.11	1.56	9.6	8.0	4.5	33.0	ISA 8080
72.5	115.6	29.4	2.44	3.08	1.55	12.6			42.7	
87.7	139.5	36.0	2.41	3.04	1.55	15.5			51.4	
101.9	161.4	42.4	2.39	3.01	1.54	18.3			59.2	
80.1	128.1	32.0	2.77	3.50	1.75	12.2	8.5	5.5	47.2	ISA 9090
104.2	166.4	42.0	2.75	3.47	1.75	16.0			61.5	
126.7	201.9	51.6	2.73	3.44	1.74	19.8			74.5	
147.9	234.9	60.9	2.71	3.41	1.74	23.3			86.5	
111.3	178.1	44.5	3.09	3.91	1.95	15.2	8.5	5.5	65.7	ISA 100100
145.1	231.8	58.4	3.07	3.88	1.95	20.0			85.8	
177.0	282.2	71.8	3.05	3.85	1.94	24.7			104.4	
207.0	329.3	84.7	3.03	3.82	1.94	29.2			121.6	
195.0	311.7	78.2	3.38	4.28	2.14	24.4	10.0	6.0	115.1	ISA 110110
238.4	380.5	96.3	3.36	4.25	2.14	30.1			140.6	
279.6	445.3	113.8	3.34	4.22	2.13	35.7			164.5	
337.4	535.4	139.3	3.31	4.17	2.13	43.7			197.0	
328.3	525.1	131.4	4.03	5.10	2.55	34.5	10.0	6.0	194.2	ISA 130130
402.7	643.4	162.1	4.01	5.07	2.54	42.7			238.3	
473.8	755.9	191.8	3.99	5.03	2.54	50.7			279.9	
574.6	914.2	235.0	3.95	4.98	2.53	62.3			337.8	
622.4	995.4	249.4	4.63	5.86	2.93	56.9	12.0	8.0	368.2	ISA 150150
735.4	1174.8	296.0	4.61	5.83	2.93	67.7			435.0	
896.8	1429.7	363.8	4.58	5.78	2.92	83.5			529.1	
1048.9	1668.2	429.5	4.54	5.73	2.91	98.7			616.0	
1788.9	2862.0	715.9	6.20	7.84	3.92	122.2	15.0	10.0	1058.9	ISA 200200
2197.7	3511.8	883.7	6.17	7.79	3.91	151.4			1301.2	
2588.7	4130.8	1046.5	6.13	7.75	3.90	179.9			1530.5	
3436.3	5460.9	1411.6	6.05	7.63	3.88	243.3			2015.7	

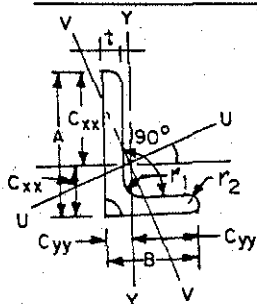


TABLE 2

## ROLLED STEEL UNEQUAL ANGLES

## DIMENSIONS AND PROPERTIES

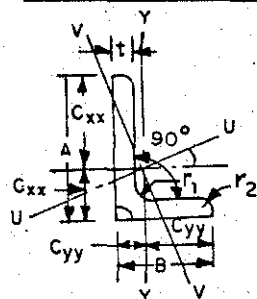
Designation & Size $A \times B$	Thick- ness $t$ mm	Sectional Area $a$ $\text{cm}^2$	Weight per Metre $w$ kg N	Centre of Gravity		Distance of Extreme Fibre		Moment of Inertia				
				$C_{xx}$ cm	$C_{yy}$ cm	$e_{xx}$ cm	$e_{yy}$ cm	$I_{xx}$ $\text{cm}^4$	$I_{yy}$ $\text{cm}^4$	$I_{uv}$ $\text{cm}^4$	$I_{vy}$ $\text{cm}^4$	
ISA 3020	3.0	1.41	1.1	10.8	0.98	0.49	2.02	1.51	1.2	0.4	1.4	0.2
	4.0	1.84	1.4	13.7	1.02	0.53	1.98	1.47	1.5	0.5	1.8	0.3
	5.0	2.25	1.8	17.7	1.06	0.57	1.94	1.43	1.9	0.6	2.1	0.4
ISA 4025	3.0	1.88	1.5	14.7	1.30	0.57	2.70	1.93	3.0	0.9	3.3	0.5
	4.0	2.46	1.9	18.6	1.35	0.62	2.65	1.88	3.8	1.1	4.3	0.7
	5.0	3.02	2.4	23.5	1.39	0.66	2.61	1.84	4.6	1.4	5.1	0.8
	6.0	3.56	2.8	27.5	1.43	0.69	2.57	1.81	5.4	1.6	5.9	1.0
ISA 4530	3.0	2.18	1.7	16.7	1.42	0.69	3.08	2.31	4.4	1.5	5.0	0.9
	4.0	2.86	2.2	21.6	1.47	0.73	3.03	2.27	5.7	2.0	6.5	1.1
	5.0	3.52	2.8	27.5	1.51	0.77	2.99	2.23	6.9	2.4	7.9	1.4
	6.0	4.16	3.3	32.4	1.55	0.81	2.95	2.19	8.0	2.8	9.2	1.7
ISA 5030	3.0	2.34	1.8	17.7	1.63	0.65	3.37	2.35	5.9	1.6	6.5	1.0
	4.0	3.07	2.4	23.5	1.68	0.70	3.33	2.30	7.7	2.1	8.5	1.2
	5.0	3.78	3.0	29.4	1.72	0.74	3.28	2.26	9.3	2.5	10.3	1.5
	6.0	4.47	3.5	34.3	1.76	0.78	3.24	2.22	10.9	2.9	11.9	1.8
ISA 6040	5.0	4.76	3.7	36.3	1.95	0.96	4.05	3.04	16.9	6.0	19.5	3.4
	6.0	5.65	4.4	43.2	1.99	1.00	4.01	3.00	19.9	7.0	22.8	4.0
	8.0	7.37	5.8	56.9	2.07	1.08	3.93	2.92	25.4	8.0	29.0	5.2
ISA 6545	5.0	5.26	4.1	40.2	2.07	1.08	4.43	3.42	22.1	8.6	25.9	4.8
	6.0	6.25	4.9	48.1	2.11	1.12	4.39	3.38	26.0	10.1	30.4	5.7
	8.0	8.17	6.4	62.8	2.19	1.20	4.31	3.30	33.2	12.8	38.7	7.4
ISA 7045	5.0	5.52	4.3	42.2	2.27	1.04	4.73	3.46	27.2	8.8	30.9	5.1
	6.0	6.56	5.2	51.0	2.32	1.09	4.68	3.41	32.0	10.3	36.3	6.0
	8.0	8.58	6.7	65.7	2.40	1.16	4.60	3.34	41.0	13.1	46.3	7.8
	10.0	10.52	8.3	81.4	2.48	1.24	4.52	3.26	49.3	15.6	55.4	9.5
ISA 7550	5.0	6.02	4.7	46.1	2.39	1.16	5.11	3.84	34.1	12.2	39.4	6.9
	6.0	7.16	5.6	54.9	2.44	1.20	5.06	3.80	40.3	14.3	46.4	8.2
	8.0	9.38	7.4	72.6	2.52	1.28	4.98	3.72	51.8	18.3	59.4	10.6
	10.0	11.52	9.0	88.3	2.60	1.36	4.90	3.64	62.3	21.8	71.2	12.9
ISA 8050	5.0	6.27	4.9	48.1	2.60	1.12	5.40	3.88	40.6	12.3	45.7	7.2
	6.0	7.46	5.9	57.9	2.64	1.16	5.36	3.84	48.0	14.4	53.9	8.5
	8.0	9.78	7.7	75.5	2.73	1.24	5.27	3.76	61.9	18.5	69.3	11.0
	10.0	12.02	9.4	92.2	2.81	1.32	5.19	3.68	74.7	22.1	83.3	13.5

(Continued)

TABLE 2 (Contd.)

## ROLLED STEEL UNEQUAL ANGLES

## DIMENSIONS AND PROPERTIES



Radii of Gyration				Moduli of Section		$\tan \alpha$	Radius at Root $r_1$	Radius at Toe $r_2$	Product of Inertia $I_{xy}$	Designation & size A x B
$r_{xx}$	$r_{yy}$	$r_{uv}$	$r_{vw}$	$Z_{xx}$	$Z_{yy}$		mm	mm	cm <sup>4</sup>	
cm	cm	cm	cm	cm <sup>3</sup>	cm <sup>3</sup>					
0.92	0.54	0.99	0.41	0.6	0.3	0.43	4.5	3.0	0.4	ISA 3020
0.92	0.54	0.98	0.41	0.8	0.4	0.42			0.5	
0.91	0.53	0.97	0.41	1.0	0.4	0.41			0.6	
1.25	0.68	1.33	0.52	1.1	0.5	0.38	5.0	3.0	0.9	ISA 4025
1.25	0.68	1.32	0.52	1.4	0.6	0.38			1.2	
1.24	0.67	1.31	0.52	1.8	0.7	0.37			1.4	
1.23	0.66	1.29	0.52	2.1	0.9	0.37			1.6	
1.42	0.84	1.52	0.63	1.4	0.7	0.44	5.0	3.0	1.5	ISA 4530
1.41	0.84	1.51	0.63	1.9	0.9	0.43			1.9	
1.40	0.83	1.50	0.63	2.3	1.1	0.43			2.3	
1.39	0.82	1.49	0.63	2.7	1.3	0.42			2.7	
1.59	0.82	1.67	0.65	1.7	0.7	0.36	5.5	3.0	1.7	ISA 5030
1.58	0.82	1.66	0.63	2.3	0.9	0.36			2.3	
1.57	0.81	1.65	0.63	2.8	1.1	0.35			2.7	
1.56	0.80	1.64	0.63	3.4	1.3	0.35			3.1	
1.89	1.12	2.02	0.85	4.2	2.0	0.44	6.0	4.0	5.8	ISA 6040
1.88	1.11	2.01	0.85	5.0	2.3	0.43			6.8	
1.86	1.10	1.98	0.84	6.5	3.0	0.42			8.5	
2.05	1.28	2.22	0.96	5.0	2.5	0.47	6.0	4.0	8.0	ISA 6545
2.04	1.27	2.21	0.95	5.9	3.0	0.47			9.4	
2.02	1.25	2.18	0.95	7.7	3.9	0.46			11.8	
2.22	1.26	2.36	0.96	5.7	2.5	0.41	6.5	4.0	8.9	ISA 7045
2.21	1.25	2.35	0.96	6.8	3.0	0.41			10.5	
2.19	1.24	2.32	0.95	8.9	3.9	0.40			13.2	
2.16	1.22	2.29	0.95	10.9	4.8	0.39			15.5	
2.38	1.42	2.56	1.07	6.7	3.2	0.44	6.5	4.0	11.8	ISA 7550
2.37	1.41	2.55	1.07	8.0	3.8	0.44			13.9	
2.35	1.40	2.52	1.06	10.4	4.9	0.43			17.7	
2.33	1.38	2.49	1.06	12.7	6.0	0.42			20.9	
2.55	1.40	2.70	1.07	7.5	3.2	0.39	7.0	4.5	12.9	ISA 8070
2.54	1.39	2.69	1.07	9.0	3.8	0.39			15.2	
2.52	1.37	2.66	1.06	11.7	4.9	0.38			19.3	
2.49	1.36	2.63	1.06	14.4	6.0	0.38			22.9	

(Continued)

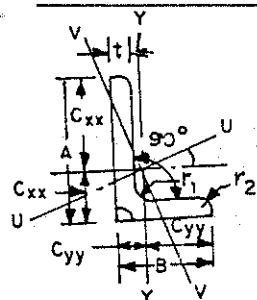


TABLE 2 (Contd.)

## ROLLED STEEL UNEQUAL ANGLES

## DIMENSIONS AND PROPERTIES

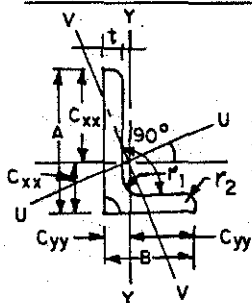
Designation & Size $A \times B$	Thick- ness $t$ mm	Sectional Area $a$ cm <sup>2</sup>	Weight per Metre (W)		Centre of Gravity		Distance of Extreme Fibre		Moment of Inertia			
			kg	N	$C_{xx}$ cm	$C_{yy}$ cm	$e_{xx}$ cm	$e_{yy}$ cm	$I_{xx}$ cm <sup>4</sup>	$I_{yy}$ cm <sup>4</sup>	$I_{uv}$ cm <sup>4</sup>	$I_{vv}$ cm <sup>4</sup>
ISA 9060	6.0	8.65	6.8	66.7	2.87	1.39	6.13	4.61	70.6	25.2	81.5	14.3
	8.0	11.37	8.9	87.3	2.96	1.48	6.04	4.52	91.5	32.4	105.3	18.6
	10.0	14.01	11.0	107.9	3.04	1.55	5.96	4.45	110.9	39.1	127.3	22.8
	12.0	16.57	13.0	127.5	3.12	1.63	5.88	4.37	129.1	45.2	147.5	26.8
ISA 10065	6.0	9.55	7.5	73.6	3.19	1.47	6.81	5.03	96.7	32.4	110.6	18.6
	8.0	12.57	9.9	97.1	3.28	1.55	6.72	4.93	125.9	41.9	143.6	24.2
	10.0	15.51	12.2	119.7	3.37	1.63	6.63	4.87	153.2	50.7	174.2	29.7
ISA 10075	6.0	10.14	8.0	78.5	3.01	1.78	6.99	5.72	100.9	48.7	124.0	25.6
	8.0	13.36	10.5	103.0	3.10	1.87	6.90	5.63	131.6	63.3	161.3	33.6
	10.0	16.50	13.0	131.4	3.19	1.95	6.81	5.55	160.4	76.9	196.1	41.2
	12.0	19.56	15.4	151.1	3.27	2.03	6.73	5.47	187.5	89.5	228.4	48.6
ISA 12575	6.0	11.66	9.2	90.3	4.05	1.59	8.45	5.91	187.8	51.6	208.9	30.5
	8.0	15.38	12.1	118.7	4.15	1.68	8.35	5.82	245.5	67.2	272.8	40.0
	10.0	19.02	14.9	146.2	4.24	1.76	8.26	5.74	300.3	81.6	332.9	49.1
ISA 12595	6.0	12.86	10.1	99.1	3.70	2.22	8.80	7.28	203.2	102.1	252.3	52.9
	8.0	16.98	13.3	130.5	3.80	2.31	8.70	7.19	266.0	133.3	329.7	69.6
	10.0	21.02	16.5	161.9	3.88	2.39	8.62	7.11	325.8	162.7	402.9	85.6
	12.0	24.98	19.6	192.3	3.96	2.47	8.54	7.03	382.6	190.4	472.0	101.0
ISA 15075	8.0	17.42	13.7	134.4	5.23	1.53	9.77	5.97	407.2	70.2	432.8	44.5
	10.0	21.56	16.9	165.8	5.32	1.61	9.68	5.89	499.1	85.3	529.8	54.6
	12.0	25.62	20.1	197.2	5.41	1.69	9.59	5.81	587.0	99.5	622.2	64.3
ISA 150115	8.0	20.58	16.2	158.9	4.46	2.73	10.54	8.77	465.7	238.9	581.2	123.3
	10.0	25.52	20.0	196.2	4.55	2.82	10.45	8.68	573.3	293.4	714.3	152.4
	12.0	30.38	23.8	233.5	4.64	2.90	10.36	8.60	676.5	345.3	841.4	180.4
	15.0	37.52	29.5	289.4	4.76	3.02	10.24	8.48	823.5	418.6	1020.9	221.2
ISA 200100	10.0	29.03	22.8	223.7	6.96	2.01	13.04	7.99	1210.0	209.2	1286.7	132.5
	12.0	34.59	27.2	266.8	7.05	2.10	12.95	7.90	1431.7	246.2	1521.0	156.8
	15.0	42.78	33.6	329.6	7.18	2.22	12.82	7.78	1750.5	298.1	1856.7	191.9
ISA 200150	10.0	34.00	26.7	261.9	5.99	3.51	14.01	11.49	1377.9	669.6	1696.6	350.8
	12.0	40.56	31.8	312.0	6.08	3.60	13.92	11.40	1634.9	793.2	2010.8	417.2
	15.0	50.25	39.4	386.5	6.20	3.72	13.80	11.28	2005.6	969.9	2461.9	513.6
	18.0	59.76	46.9	460.1	6.33	3.84	13.67	11.16	2359.4	1136.9	2889.5	606.9

(Continued)

TABLE 2 (Contd.)

## ROLLED STEEL UNEQUAL ANGLES

## DIMENSIONS AND PROPERTIES



Radii of Gyration				Moduli of Section		$\tan \alpha$	Radius at Root $r_1$ mm	Radius at Toe $r_2$ mm	Product of Inertia $I_{xy}$ $\text{cm}^4$	Designation & Size A x B
$r_{xx}$ cm	$r_{yy}$ cm	$r_{xx'}$ cm	$r_{yy'}$ cm	$Z_{xx}$ $\text{cm}^3$	$Z_{yy}$ $\text{cm}^3$					
2.86	1.71	3.07	1.28	11.5	5.5	0.44	7.5	5.0	24.5	ISA 9060
2.84	1.69	3.04	1.28	15.1	7.2	0.44			31.5	
2.81	1.67	3.01	1.27	18.6	8.8	0.43			37.8	
2.79	1.65	2.98	1.27	22.0	10.3	0.42			43.3	
3.18	1.84	3.40	1.39	14.2	6.4	0.42	8.0	5.5	32.5	ISA 10065
3.16	1.83	3.38	1.39	18.7	8.5	0.42			42.0	
3.14	1.81	3.35	1.38	23.1	10.4	0.41			50.7	
3.15	2.19	3.50	1.59	14.4	8.5	0.55	8.5	6.0	41.0	ISA 10075
3.14	2.18	3.48	1.59	19.1	11.2	0.55			53.4	
3.12	2.16	3.45	1.58	23.6	13.8	0.55			64.7	
3.10	2.14	3.42	1.58	27.9	16.3	0.54			74.9	
4.01	2.10	4.23	1.62	22.2	8.7	0.37	9.0	6.0	56.7	ISA 12575
4.00	2.09	4.21	1.61	29.4	11.5	0.36			74.0	
3.97	2.07	4.18	1.61	36.3	14.2	0.36			89.9	
3.97	2.82	4.43	2.03	23.1	14.0	0.57	9.0	6.0	84.5	ISA 12595
3.96	2.80	4.41	2.02	30.6	18.5	0.57			110.6	
3.94	2.78	4.38	2.02	37.8	22.9	0.57			135.0	
3.91	2.76	4.35	2.01	44.8	27.1	0.56			157.7	
4.83	2.01	4.98	1.60	41.7	11.8	0.27	10.0	6.0	95.5	ISA 15075
4.81	1.99	4.96	1.59	51.6	14.5	0.26			116.2	
4.79	1.97	4.93	1.58	61.2	17.1	0.26			135.2	
4.76	3.41	5.31	2.45	44.2	27.2	0.58	11.0	7.5	195.9	ISA 150115
4.74	3.39	5.29	2.44	54.9	33.8	0.58			241.0	
4.72	3.37	5.26	2.44	65.3	40.2	0.58			283.6	
4.69	3.34	5.22	2.43	80.4	49.4	0.57			342.8	
6.46	2.68	6.66	2.14	92.8	26.2	0.27	12.0	8.0	284.8	ISA 200100
6.43	2.67	6.63	2.13	110.6	31.1	0.26			335.3	
6.40	2.64	6.59	2.12	136.5	38.3	0.26			405.4	
6.37	4.44	7.06	3.21	98.3	58.3	0.56	13.5	9.5	564.1	ISA 200150
6.35	4.42	7.04	3.21	117.4	69.6	0.56			669.1	
6.32	4.39	7.00	3.20	145.4	86.0	0.55			818.5	
6.28	4.36	6.95	3.19	172.5	101.9				958.1	

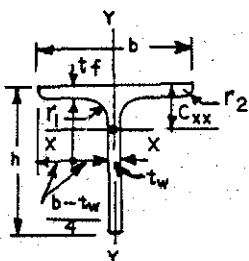


TABLE 3

## ROLLED STEEL TEE BARS

## DIMENSIONS AND PROPERTIES

Designation	Size $b \times h$	Weight per Metre (W)		Sectional Area $a$ $\text{cm}^2$	Depth of Section $h$ mm	Width of Flange $b$ mm	Thickness of Flange $t_f$ mm	Thickness of Web $t_w$ mm	Centre of Gravity $C_{xx}$ cm	Moments of Inertia	
		kg	N							$I_{xx}$ $\text{cm}^4$	$I_{yy}$ $\text{cm}^4$
ISNT 20	20 x 20	0.9	8.8	1.13	20	20	3.0	3.0	0.60	0.4	0.2
ISNT 30	30 x 30	1.4	13.7	1.75	30	30	3.0	3.0	0.83	1.4	0.6
ISNT 40	40 x 40	3.5	34.3	4.48	40	40	6.0	6.0	1.20	6.3	3.0
ISNT 50	50 x 50	4.5	44.1	5.70	50	50	6.0	6.0	1.44	12.7	5.9
ISNT 60	60 x 60	5.4	53.0	6.90	60	60	6.0	6.0	1.67	22.5	10.1
ISNT 80	80 x 80	9.6	94.2	12.25	80	80	8.0	8.0	2.23	71.2	32.3
ISNT 100	100 x 100	15.0	147.2	19.10	100	100	10.0	10.0	2.79	173.8	79.9
ISNT 150	150 x 150	22.8	223.7	29.08	150	150	10.0	10.0	3.95	603.8	267.5
ISHT 75	100 x 75	15.3	150.1	19.49	75	150	9.0	8.4	1.62	96.2	230.2
ISHT 100	250 x 100	20.0	196.2	25.47	100	200	9.0	7.8	1.91	193.8	497.3
ISHT 125	250 x 125	27.4	268.8	34.85	125	250	9.7	8.8	2.37	415.4	1005.8
ISHT 150	250 x 150	29.4	288.4	37.42	150	250	10.6	7.6	2.66	573.7	1096.8
ISST 100	50 x 100	8.1	79.5	10.37	100	50	10.0	5.8	3.03	99.0	9.6
ISST 150	75 x 150	15.7	154.0	19.96	150	75	11.6	8.0	4.75	450.2	37.0
ISST 200	165 x 200	28.4	278.6	36.22	200	165	12.5	8.0	4.78	1267.8	358.2
ISST 250	182 x 250	37.5	367.9	47.75	250	180	14.1	9.2	6.40	2774.4	532.0
ISLT 50	50 x 50	4.0	39.2	5.11	50	50	6.4	4.0	1.19	9.9	6.4
ISLT 75	80 x 75	7.1	69.7	9.04	75	80	6.8	4.8	1.72	41.9	27.6
ISLT 100	100 x 100	12.7	124.6	16.16	100	100	10.8	5.7	2.13	116.6	75.0
ISJT 75	50 x 75	3.5	34.3	4.50	75	50	4.8	3.0	2.00	24.8	4.6
ISJT 87.5	50 x 87.5	4.0	39.2	5.14	87.5	50	4.8	3.2	2.50	39.0	4.8
ISJT 100	60 x 100	5.0	49.0	6.32	100	60	5.0	3.4	2.81	63.5	8.6
ISJT 112.5	80 x 112.5	6.4	62.8	8.14	112.5	80	5.0	3.7	3.01	101.6	20.2

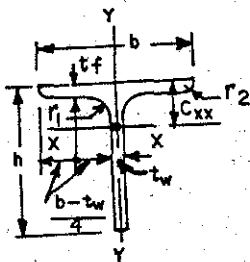
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In ISNT sections, the taper of one degree is divided equally between the web and the flange.

TABLE 3 (Contd.)

## ROLLED STEEL TEE BARS

## DIMENSIONS AND PROPERTIES



Radii of Gyration		Moduli of Section		Radius at Root	Radius at Toe	Slope of Flange	Designation
$r_{xx}$ cm	$r_{yy}$ cm	$Z_{xx}$ cm <sup>3</sup>	$Z_{yy}$ cm <sup>3</sup>	$r_1$ mm	$r_2$ mm	$D$ degrees	
0.59	0.39	0.3	0.2	4.0	3.0	91	ISNT 20
0.89	0.57	0.6	0.4	5.0	3.5	91	ISNT 30
1.18	0.82	2.2	1.5	5.5	4.0	91	ISNT 40
1.50	1.02	3.6	2.4	6.0	4.0	91	ISNT 50
1.81	1.21	5.2	3.4	6.5	4.5	91	ISNT 60
2.41	1.62	12.3	8.1	8.0	5.5	91	ISNT 80
3.02	2.05	24.1	16.0	9.0	6.0	91	ISNT 100
4.56	3.03	54.6	35.7	10.0	7.0	91	ISNT 150
2.22	3.44	16.4	30.1	8.0	4.0	94	ISHT 75
2.76	4.42	24.0	49.3	9.0	4.5	94	ISHT 100
3.45	5.37	41.0	79.9	10.0	5.0	94	ISHT 125
3.92	5.41	46.5	87.7	11.0	5.5	94	ISHT 150
3.09	0.96	14.2	3.8	8.0	4.0	98	ISST 100
4.75	1.36	43.9	9.9	9.0	4.5	98	ISST 150
5.92	3.15	83.3	43.4	16.0	8.0	98	ISST 200
7.62	3.34	149.2	59.1	17.0	8.5	98	ISST 250
1.39	1.12	2.6	2.5	7.0	3.0	91.5	ISLT 50
2.15	1.75	7.2	6.9	9.5	3.0	91.5	ISLT 75
2.69	2.15	14.8	15.0	11.0	5.5	98	ISLT 100
2.35	1.01	4.5	1.8	5.0	1.5	91.5	ISJT 75
2.75	0.97	6.2	1.9	5.0	1.5	91.5	ISJT 87.5
3.17	1.17	8.8	2.9	5.0	1.5	91.5	ISJT 100
3.53	1.58	12.3	5.1	6.5	1.5	91.5	ISJT 112.5

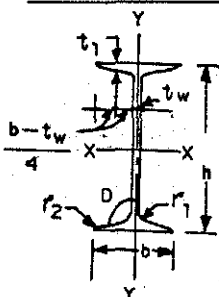
ISNT sections, the taper of one degree is divided equally between the web and the flange.



TABLE 4

## ROLLED STEEL BEAMS

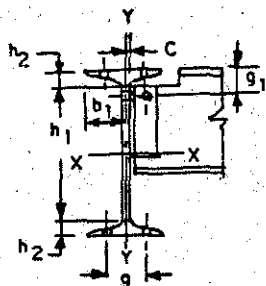
## DIMENSIONS AND PROPERTIES



Designation	Weight per Metre (W)		Sectional Area	Depth of Section	Width of Flange	Thickness of Flange	Thickness of Web	Moments of Inertia		Radii of Gyration	
	kg	N	a cm <sup>2</sup>	h mm	b mm	t <sub>f</sub> mm	t <sub>w</sub> mm	I <sub>xx</sub> cm <sup>4</sup>	I <sub>yy</sub> cm <sup>4</sup>	r <sub>xx</sub> cm	r <sub>yy</sub> cm
ISJB 150	7.1	69.7	9.01	150	50	4.6	3.0	322.1	9.2	5.98	1.01
ISJB 175	8.1	79.5	10.28	175	50	4.8	3.2	479.3	9.7	6.83	0.97
ISJB 200	9.9	97.1	12.64	200	60	5.0	3.4	780.7	17.3	7.86	1.17
ISJB 225	12.8	125.6	16.28	225	80	5.0	3.7	1308.5	40.5	8.97	1.58
ISLB 75	6.1	59.8	7.71	75	50	5.0	3.7	72.7	10.0	3.07	1.14
ISLB 100	8.0	78.5	10.21	100	50	6.4	4.0	168.0	12.7	4.06	1.12
ISLB 125	11.9	116.7	15.12	125	75	6.5	4.4	406.8	43.4	5.19	1.69
ISLB 150	14.2	139.3	18.08	150	80	6.8	4.8	688.2	55.2	6.17	1.75
ISLB 175	16.7	163.8	21.30	175	90	6.9	5.1	1096.2	79.6	7.17	1.93
ISLB 200	19.8	194.2	25.27	200	100	7.3	5.4	1696.6	115.4	8.19	2.13
ISLB 225	23.5	230.5	29.92	225	100	8.6	5.8	2501.9	112.7	9.15	1.94
ISLB 250	27.9	273.7	35.53	250	125	8.2	6.1	3717.8	193.4	10.23	2.33
ISLB 275	33.0	323.7	42.02	275	140	8.8	6.4	5375.3	287.0	11.31	2.61
ISLB 300	37.7	369.8	48.08	300	150	9.4	6.7	7332.9	376.2	12.35	2.90
ISLB 325	43.1	422.8	54.90	325	165	9.8	7.0	9874.6	510.8	13.41	3.05
ISLB 350	49.5	485.6	63.01	350	165	11.4	7.4	13158.3	631.9	14.45	3.17
ISLB 400	56.9	558.2	72.43	400	165	12.5	8.0	19306.3	716.4	16.33	3.15
ISLB 450	65.3	640.6	83.14	450	170	13.4	8.6	27536.1	853.0	18.20	3.20
ISLB 500	75.0	735.8	95.50	500	180	14.1	9.2	38579.0	1063.9	20.10	3.34
ISLB 550	86.3	846.6	109.97	550	190	15.0	9.9	53161.6	1335.1	21.99	3.48
ISLB 600	99.5	976.1	126.69	600	210	15.5	10.5	72867.6	1821.9	23.98	3.79
ISMB 100	11.5	112.8	14.60	100	75	7.2	4.0	257.5	40.8	4.20	1.67
ISMB 125	13.0	127.5	16.60	125	75	7.6	4.4	449.0	43.7	5.20	1.62
ISMB 150	14.9	146.2	19.00	150	80	7.6	4.8	728.4	52.6	6.18	1.66
ISMB 175	19.3	189.3	24.62	175	90	8.6	5.5	1272.0	85.0	7.19	1.86
ISMB 200	25.4	249.2	32.33	200	100	10.8	5.7	2235.4	150.0	8.32	2.15
ISMB 225	31.2	306.1	39.72	225	110	11.8	6.5	3441.8	218.3	9.31	2.34
ISMB 250	37.3	365.9	47.55	250	125	12.5	6.9	5131.6	334.5	10.39	2.65
ISMB 300	44.2	433.6	56.26	300	140	12.4	7.5	8603.6	453.9	12.37	2.84
ISMB 350	52.4	514.0	66.71	350	140	14.2	8.1	13630.3	537.7	14.29	2.84
ISMB 400	61.6	604.3	78.46	400	140	16.0	8.9	20458.4	622.1	16.15	2.82
ISMB 450	72.4	710.2	92.27	450	150	17.4	9.4	30390.8	834.0	18.15	3.01
ISMB 500	86.9	852.5	110.74	500	180	17.2	10.2	45218.3	1369.8	20.21	3.52

(Continued)

TABLE 4 (Contd.)



## ROLLED STEEL BEAMS

## DIMENSIONS AND PROPERTIES

Moduli of Section		Radius at Root	Radius at Toe	Slope of Flange	Connection Details						Maximum size of Flange Rivet	Designation
$Z_{xx}$	$Z_{yy}$	$r_1$	$r_2$	$D$	$h_1$	$h_2$	$b_1$	$C$	$g^*$	$g_1$ (Min)	mm	
cm <sup>3</sup>	cm <sup>3</sup>	mm	mm	degrees	mm	mm	mm	mm	mm	mm	mm	
42.9	3.7	5.0	1.5	91.5	130.4	9.80	23.50	3.00	30	45	6	ISJB 150
54.8	3.9	5.0	1.5	91.5	155.0	10.00	23.40	3.10	30	45	6	ISJB 175
78.1	5.8	5.0	1.5	91.5	179.5	10.25	28.38	3.20	30	45	6	ISJB 200
116.3	10.1	6.5	1.5	91.5	201.5	11.95	38.15	3.35	40	45	12	ISJB 225
19.4	4.0	6.5	2.0	91.5	51.7	11.65	23.15	3.35	30	—	6	ISLB 75
33.6	5.1	7.0	3.0	91.5	73.0	13.50	23.00	3.50	30	50	6	ISLB 100
65.1	11.6	8.0	3.0	91.5	95.4	14.80	35.30	3.70	35	50	12	ISLB 125
91.8	13.8	9.5	3.0	91.5	116.9	16.55	37.60	3.90	40	50	12	ISLB 150
125.3	17.7	9.5	3.0	91.5	141.6	16.70	42.45	4.05	50	50	12	ISLB 175
169.7	23.1	9.5	3.0	91.5	165.7	17.15	47.30	4.20	55	50	16	ISLB 200
222.4	22.5	12.0	6.0	98	180.3	22.35	47.18	4.45	55	55	16	ISLB 225
297.4	30.9	13.0	6.5	98	202.6	23.70	59.45	4.55	65	60	22	ISLB 250
392.4	41.0	14.0	7.0	98	223.7	25.65	66.80	4.70	80	60	22	ISLB 275
488.9	50.2	15.0	7.5	98	245.1	27.45	71.65	4.85	90	60	22	ISLB 300
607.7	61.9	16.0	8.0	98	266.5	29.25	79.00	5.00	100	65	25	ISLB 325
751.9	76.6	16.0	8.0	98	288.3	30.85	78.80	5.20	100	65	25	ISLB 350
965.3	86.8	16.0	8.0	98	336.2	31.90	78.50	5.50	100	65	25	ISLB 400
1223.8	100.4	16.0	8.0	98	384.0	33.00	80.70	5.80	100	70	25	ISLB 450
1543.2	118.2	17.0	8.5	98	430.2	34.90	85.40	6.10	100	70	28	ISLB 500
1933.2	140.5	18.0	9.0	98	476.1	36.95	90.05	6.45	100	70	32	ISLB 550
2428.9	173.5	20.0	10.0	98	520.0	39.90	99.75	6.75	140,100	75	25,32	ISLB 600
51.5	10.9	9.0	4.5	98	65.0	17.50	35.50	3.50	35	55	12	ISMB 100
71.8	11.7	9.0	4.5	98	89.2	17.90	35.30	3.70	35	55	12	ISMB 125
96.9	13.1	9.0	4.5	98	113.9	18.05	37.60	3.90	40	55	12	ISMB 150
145.4	18.9	10.0	5.0	98	134.5	20.25	42.25	4.25	50	55	12	ISMB 175
223.5	30.0	11.0	5.5	98	152.7	23.65	47.15	4.35	55	60	16	ISMB 200
305.9	39.7	12.0	6.0	98	173.3	25.85	51.75	4.75	60	60	20	ISMB 225
410.5	53.5	13.0	6.5	98	194.1	27.95	59.05	4.95	65	65	22	ISMB 250
573.6	64.8	14.0	7.0	98	241.5	29.25	66.25	5.25	80	65	22	ISMB 300
778.9	76.8	14.0	7.0	98	288.0	31.00	65.95	5.55	80	65	22	ISMB 350
1022.9	88.9	14.0	7.0	98	334.4	32.80	65.55	5.95	80	70	22	ISMB 400
1350.7	111.2	15.0	7.5	98	379.2	35.40	70.30	6.20	90	70	22	ISMB 450
1808.7	152.2	17.0	8.5	98	424.1	37.95	84.90	6.60	100	75	28	ISMB 500

(Continued)

\*The value of 'g' are meant for one row of rivets only.

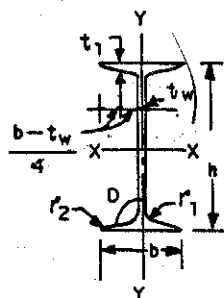


TABLE 4 (Contd.)

## ROLLED STEEL BEAMS

## DIMENSIONS AND PROPERTIES

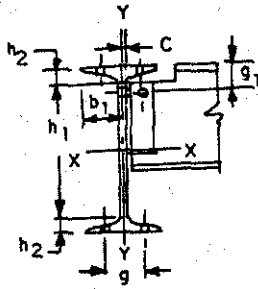
Designation	Weight per Metre (W)		Sectional Area a	Depth of Section h	Width of Flange b	Thickness of Flange $t_f$	Thickness of Web $t_w$	Moment of Inertia		Radii of Gyration	
	kg	N						$I_{xx}$	$I_{yy}$	$r_{xx}$	$r_{yy}$
	cm <sup>2</sup>	mm	mm	mm	mm	mm	mm	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm
ISMB 550	103.7	1017.3	132.11	550	190	19.3	11.2	64893.6	1833.8	22.16	3.73
ISMB 600	122.6	1202.7	156.21	600	210	20.8	12.0	91813.0	2651.0	24.24	4.12
ISWB 150	17.0	166.8	21.67	150	100	7.0	5.4	839.1	94.8	6.22	2.09
ISWB 175	22.1	216.8	28.11	175	125	7.4	5.8	1509.4	188.6	7.33	2.59
ISWB 200	28.8	282.5	36.71	200	140	9.0	6.1	2624.5	328.8	8.46	2.99
ISWB 225	33.9	332.6	43.24	225	150	9.9	6.4	3920.5	448.6	9.52	3.22
ISWB 250	40.9	401.2	52.05	250	200	9.0	6.7	5943.1	857.5	10.69	4.06
ISWB 300	48.1	471.9	61.33	300	200	10.0	7.4	9821.6	990.1	12.66	4.02
ISWB 350	56.9	558.2	72.50	350	200	11.4	8.0	15521.7	1175.9	14.63	4.03
ISWB 400	66.7	654.3	85.01	400	200	13.0	8.6	23426.7	1388.0	16.60	4.04
ISWB 450	79.4	778.9	101.15	450	200	15.4	9.2	35057.6	1706.7	18.63	4.11
ISWB 500	95.2	933.9	121.22	500	250	14.7	9.9	52290.9	2987.8	20.77	4.96
ISWB 550	112.5	1103.6	143.34	550	250	17.6	10.5	74906.1	3740.6	22.86	5.11
ISWB 600	133.7	1311.6	170.38	600	250	21.3	11.2	106198.5	4702.5	24.97	5.25
ISWB 600	145.1	1423.4	184.86	600	250	23.6	11.8	115626.6	5298.3	25.01	5.35
ISHB 150	27.1	265.9	34.48	150	150	9.0	5.4	1455.6	431.7	6.50	3.54
ISHB 150	30.6	300.2	38.98	150	150	9.0	8.4	1540.0	460.3	6.29	3.44
ISHB 150	34.6	339.4	44.08	150	150	9.0	11.8	1635.6	494.9	6.09	3.35
ISHB 200	37.3	365.9	47.54	200	200	9.0	6.1	3608.4	967.1	8.71	4.51
ISHB 200	40.0	392.4	50.94	200	200	9.0	7.8	3721.8	994.6	8.55	4.42
ISHB 225	43.1	422.8	54.94	225	225	9.1	6.5	5279.5	1353.8	9.80	4.96
ISHB 225	46.8	459.1	59.66	225	225	9.1	8.6	5478.8	1396.6	9.58	4.84
ISHB 250	51.0	500.3	64.96	250	250	9.7	6.9	7736.5	1961.3	10.91	5.49
ISHB 250	54.7	536.6	69.71	250	250	9.7	8.8	7983.9	2011.7	10.70	5.37
ISHB 300	58.8	576.8	74.85	300	250	10.6	7.6	12545.2	2193.6	12.95	5.41
ISHB 300	63.0	618.0	80.25	300	250	10.6	9.4	12950.2	2246.7	12.70	5.29
ISHB 350	67.4	661.2	85.91	350	250	11.6	8.3	19159.7	2451.4	14.93	5.34
ISHB 350	72.4	710.2	92.21	350	250	11.6	10.1	19802.8	2510.5	14.65	5.22
ISHB 400	77.4	759.3	98.66	400	250	12.7	9.1	28083.5	2728.3	16.87	5.26
ISHB 400	82.2	806.4	104.66	400	250	12.7	10.6	28823.5	2783.0	16.61	5.16
ISHB 450	87.2	855.4	111.14	450	250	13.7	9.8	39210.8	2985.2	18.78	5.18
ISHB 450	92.5	907.4	117.89	450	250	13.7	11.3	40349.9	3045.0	18.50	5.08

(Continued)

TABLE 4 (Contd.)

## ROLLED STEEL BEAMS

## DIMENSIONS AND PROPERTIES



Moduli of Section		Radius at Root	Radius at Toe	Slope of Flange	Connection Details						Maximum Size of Flange Rivet	Designation
$Z_{xx}$	$Z_{yy}$	$r_1$	$r_2$	$D$	$h_1$	$h_2$	$b_1$	$C$	$g$	$g_1$ (Min)	mm	
cm <sup>4</sup>	cm <sup>3</sup>	mm	mm	degrees	mm	mm	mm	mm	mm	mm	mm	
2359.8	193.0	18.0	9.0	98	467.5	41.25	89.40	7.10	100	75	32	ISMB 550
3060.4	252.5	20.0	10.0	98	509.7	45.15	99.00	7.50	140,100	80	25,32	ISMB 600
111.9	19.0	8.0	4.0	96	116.6	16.70	47.30	4.20	55	55	16	ISWB 150
172.5	30.2	8.0	4.0	96	139.5	17.75	59.60	4.40	65	55	22	ISWB 175
262.5	47.0	9.0	4.5	96	158.8	20.60	66.95	4.55	80	55	22	ISWB 200
348.5	59.8	9.0	4.5	96	181.4	21.80	71.80	4.70	90	55	22	ISWB 225
475.4	85.7	10.0	5.0	96	203.8	23.10	96.65	4.85	140,100	60	22,32	ISWB 250
654.8	99.0	11.0	5.5	96	250.1	24.95	96.30	5.20	140,100	60	22,32	ISWB 300
887.0	117.6	12.0	6.0	96	295.5	27.25	96.00	5.50	140,100	60	22,32	ISWB 350
1171.3	138.8	13.0	6.5	96	340.5	29.75	95.70	5.80	140,100	65	22,32	ISWB 400
1558.1	170.7	14.0	7.0	96	384.0	33.00	95.40	6.10	140,100	70	22,32	ISWB 450
2091.6	239.0	15.0	7.5	96	431.0	34.50	120.05	6.45	140	70	32	ISWB 500
2723.9	299.2	16.0	8.0	96	473.4	38.30	119.75	6.75	140	75	32	ISWB 550
3540.0	376.2	17.0	8.5	96	514.2	42.90	119.40	7.10	140	80	32	ISWB 600
3854.2	423.9	18.0	9.0	96	507.9	46.05	119.10	7.40	140	80	32	ISWB 600
194.1	57.6	8.0	4.0	94	112.0	19.0	72.30	4.20	90	55	22	ISHB 150
205.3	60.2	8.0	4.0	94	112.0	19.0	70.80	5.70	90	55	22	ISHB 150
218.1	63.2	8.0	4.0	94	112.0	19.0	69.10	7.40	90	55	22	ISHB 150
360.8	96.7	9.0	4.5	94	158.4	20.8	96.95	4.55	140,100	55	22,32	ISHB 200
372.2	98.6	9.0	4.5	94	158.4	20.8	96.10	5.40	140,100	55	22,32	ISHB 200
469.3	120.3	10.0	5.0	94	180.5	22.2	109.25	4.75	140	55	28	ISHB 225
487.0	123.0	10.0	5.0	94	180.5	22.2	108.20	5.80	140	55	28	ISHB 225
618.9	156.9	10.0	5.0	94	203.5	23.2	121.55	4.95	140	60	32	ISHB 250
638.7	159.7	10.0	5.0	94	203.5	23.2	120.60	5.90	140	60	32	ISHB 250
836.3	175.5	11.0	5.5	94	249.8	25.1	121.20	5.30	140	60	32	ISHB 300
863.3	178.4	11.0	5.5	94	249.8	25.1	120.30	6.20	140	60	32	ISHB 300
1094.8	196.1	12.0	6.0	94	296.0	27.0	120.85	5.65	140	60	32	ISHB 350
1131.6	199.4	12.0	6.0	94	296.0	27.0	119.95	6.55	140	60	32	ISHB 350
1404.2	218.3	14.0	7.0	94	340.1	29.9	120.45	6.05	140	65	32	ISHB 400
1444.2	221.3	14.0	7.0	94	340.1	29.9	119.70	6.80	140	65	32	ISHB 400
1742.7	238.8	15.0	7.5	94	386.2	31.9	120.10	6.40	140	65	32	ISHB 450
1793.3	242.1	15.0	7.5	94	386.2	31.9	119.35	7.15	140	65	32	ISHB 450

The value of 'g' are meant for one row of rivets only.

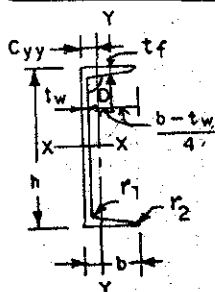


TABLE 5

## ROLLED STEEL CHANNELS

## DIMENSIONS AND PROPERTIES

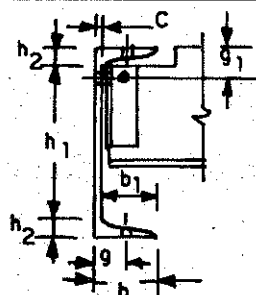
Designation	Weight per Metre (W)		Sectional Area	Depth of Section	Width of Flange	Thick-ness of Flange	Thick-ness of Web	Centre of Gravity	Moments of Inertia		Radii of Gyration	
	kg	N							$I_{zz}$	$I_{yy}$	$r_{xx}$	$r_{yy}$
			cm <sup>2</sup>	mm	mm	mm	mm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm
ISJC 100	5.8	56.9	7.41	100	45	5.1	3.0	1.40	123.8	14.9	4.09	1.42
ISJC 125	7.9	77.5	10.07	125	50	6.6	3.0	1.64	270.0	25.7	5.18	1.60
ISJC 150	9.9	97.1	12.65	150	55	6.9	3.6	1.66	471.1	37.9	6.10	1.73
ISJC 175	11.2	109.9	14.24	175	60	6.9	3.6	1.75	719.9	50.5	7.11	1.88
ISJC 200	13.9	136.4	17.77	200	70	7.1	4.1	1.97	1161.2	84.2	8.08	2.18
ISLC 75	5.7	55.9	7.26	75	40	6.0	3.7	1.35	66.1	11.5	3.02	1.26
ISLC 100	7.9	77.5	10.02	100	50	6.4	4.0	1.62	164.7	24.8	4.06	1.57
ISLC 125	10.7	105.0	13.67	125	65	6.6	4.4	2.04	356.8	57.2	5.11	2.05
ISLC 150	14.4	141.3	18.36	150	75	7.8	4.8	2.38	697.2	103.2	6.16	2.37
ISLC 175	17.6	172.7	22.40	175	75	9.5	5.1	2.40	1148.4	126.5	7.16	2.38
ISLC 200	20.6	202.1	26.22	200	75	10.8	5.5	2.35	1725.5	146.9	8.11	2.37
ISLC 225	24.0	235.4	30.53	225	90	10.2	5.8	2.46	2547.9	209.5	9.14	2.62
ISLC 250	28.0	274.7	35.65	250	100	10.7	6.1	2.70	3687.9	298.4	10.17	2.89
ISLC 300	33.1	324.7	42.11	300	100	11.6	6.7	2.55	6047.9	346.0	11.98	2.87
ISLC 350	38.8	380.6	49.47	350	100	12.5	7.4	2.41	9312.6	394.6	13.72	2.82
ISLC 400	45.7	448.3	58.25	400	100	14.0	8.0	2.36	13989.5	460.4	15.50	2.81
ISMC 75	6.8	66.7	8.67	75	40	7.3	4.4	1.31	76.0	12.6	2.96	1.21
ISMC 100	9.2	90.3	11.70	100	50	7.5	4.7	1.53	186.7	25.9	4.00	1.49
ISMC 125	12.7	124.6	16.19	125	65	8.1	5.0	1.94	416.4	59.9	5.07	1.92
ISMC 150	16.4	160.9	20.88	150	75	9.0	5.4	2.22	779.4	102.3	6.11	2.21
ISMC 175	19.1	187.4	24.38	175	75	10.2	5.7	2.20	1223.3	121.0	7.08	2.23
ISMC 200	22.1	216.8	28.21	200	75	11.4	6.1	2.17	1819.3	140.4	8.03	2.23
ISMC 225	25.9	254.1	33.01	225	80	12.4	6.4	2.30	2694.6	187.2	9.03	2.38
ISMC 250	30.4	298.2	38.67	350	80	14.1	7.1	2.30	3816.8	219.1	9.94	2.38
ISMC 300	35.8	351.2	45.64	300	90	13.6	7.6	2.36	6362.6	310.8	11.81	2.61
ISMC 350	42.1	413.0	53.66	350	100	13.5	8.1	2.44	10008.0	430.6	13.66	2.83
ISMC 400	49.4	484.6	62.93	400	100	15.3	8.6	2.42	15032.8	504.8	15.48	2.83

(Continued)

TABLE 5 (Contd.)

## ROLLED STEEL CHANNELS

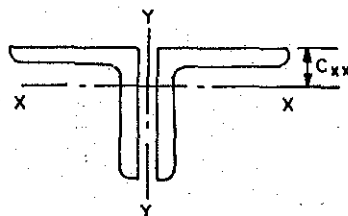
## DIMENSIONS AND PROPERTIES



Moduli of Section		Radius at Root $r_1$	Radius at Toe $r_2$	Slope of Flange $D$	Connection Details						Maximum Size of Flange Rivet	Designation
$Z_{xx}$	$Z_{yy}$				$h_1$	$h_2$	$b_1/2$	$C$	$g^*$	$g_1$ (Min)		
cm <sup>3</sup>	cm <sup>3</sup>	mm	mm	degrees	mm	mm	mm	mm	mm	mm	mm	
24.8	4.8	6.0	2.0	91.5	77.0	11.5	21.0	4.5	25	50	12	ISJC 100
43.2	7.6	6.0	2.5	91.5	98.9	13.1	23.5	4.5	28	50	16	ISJC 125
62.8	9.9	7.0	3.0	91.5	121.2	14.4	25.7	5.1	30	50	20	ISJC 150
82.3	11.9	7.0	3.0	91.5	146.1	14.5	28.2	5.1	35	50	20	ISJC 175
116.1	16.7	8.0	3.5	91.5	168.5	15.8	33.0	5.6	40	50	22	ISJC 200
17.6	4.3	6.0	2.0	91.5	50.4	12.3	18.2	5.2	21	—	12	ISLC 75
32.9	7.3	6.0	2.0	91.5	74.3	12.8	23.0	5.5	28	50	16	ISLC 100
57.1	12.8	7.0	2.5	91.5	96.6	14.2	30.3	5.9	35	50	22	ISLC 125
93.0	20.2	8.0	3.5	91.5	117.0	16.5	35.1	6.3	40	50	25	ISLC 150
131.3	24.8	8.0	4.0	91.5	138.6	18.2	35.0	6.6	40	55	25	ISLC 157
172.6	28.5	8.5	4.5	91.5	160.0	20.0	34.8	7.0	40	55	25	ISLC 200
226.5	32.0	11.0	5.5	96	175.9	24.5	42.1	7.3	50	60	28	ISLC 225
295.0	40.9	11.0	5.5	96	198.9	25.5	47.0	7.6	60	60	28	ISLC 250
403.2	46.4	12.0	6.0	96	245.4	27.3	46.7	8.2	60	60	28	ISLC 300
532.1	52.0	13.0	6.0	96	291.9	29.1	46.3	8.9	60	65	28	ISLC 350
699.5	60.2	14.0	7.0	96	337.1	31.4	46.0	9.5	60	65	28	ISLC 400
20.3	4.7	8.5	4.5	96	41.4	16.8	17.8	5.9	21	—	12	ISMC 75
37.3	7.5	9.0	4.5	96	64.0	18.0	22.7	6.2	28	50	16	ISMC 100
66.6	13.1	9.5	5.0	96	85.4	19.8	30.0	6.5	35	55	22	ISMC 125
103.9	19.4	10.0	5.0	96	106.7	21.7	34.8	6.9	40	55	25	ISMC 150
139.8	22.8	10.5	5.5	96	128.4	23.3	34.7	7.2	40	55	25	ISMC 175
181.9	26.3	11.0	5.5	96	150.2	24.9	34.5	7.6	40	60	25	ISMC 200
239.5	32.8	12.0	6.0	96	170.9	27.1	36.8	7.9	45	60	25	ISMC 225
305.3	38.4	12.0	6.0	96	192.5	28.7	36.5	8.6	45	65	25	ISMC 250
424.2	46.8	13.0	6.5	96	240.7	29.6	41.2	9.1	50	65	28	ISMC 300
571.9	57.0	14.0	7.0	96	288.1	30.9	46.0	9.6	60	65	28	ISMC 350
754.1	66.6	15.0	7.5	96	332.8	33.6	45.7	10.1	60	70	28	ISMC 400

\*The Values of 'g' are meant for one row of rivets only.

TABLE 6

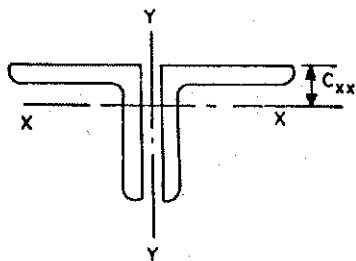


# PROPERTIES OF TWO EQUAL ANGLES BACK TO BACK

Designation	Size of Each Angle	Thickness	Weight per Metre (W)		Sectional Area a	Moment of Inertia I <sub>xx</sub>	Modulus of Section Z <sub>xx</sub>	Radius of Gyration r <sub>xx</sub>
	A × B	t						
	mm mm	mm	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
ISA 5050	50 × 50	3.0	4.6	45.1	5.90	13.8	3.8	1.53
		4.0	6.0	58.9	7.76	18.2	5.0	1.53
		5.0	7.6	74.6	9.58	22.0	6.2	1.52
		6.0	9.0	88.3	11.36	25.8	7.2	1.51
ISA 5555	55 × 55	5.0	8.2	80.4	10.54	29.4	7.4	1.67
		6.0	9.8	96.1	12.52	34.6	8.8	1.66
		8.0	12.8	125.6	16.36	44.0	11.4	1.64
		10.0	15.8	155.0	20.04	52.6	14.0	1.62
ISA 6060	60 × 60	5.0	9.0	88.3	11.50	38.4	8.8	1.82
		6.0	10.8	105.9	13.68	45.2	10.4	1.82
		8.0	14.0	137.3	17.92	58.0	13.6	1.80
		10.0	17.2	168.7	22.00	69.6	16.8	1.78
ISA 6565	65 × 65	5.0	9.8	96.1	12.50	49.4	10.4	1.99
		6.0	11.6	113.8	14.88	58.2	12.4	1.98
		8.0	15.4	151.1	19.52	74.8	16.2	1.96
		10.0	18.8	184.4	24.00	90.0	19.8	1.94
ISA 7070	70 × 70	5.0	10.6	104.0	13.54	62.2	12.2	2.15
		6.0	12.6	123.6	16.12	73.6	14.6	2.14
		8.0	16.6	162.8	21.16	94.8	19.0	2.12
		10.0	20.4	200.1	26.04	114.4	23.4	2.10
ISA 7575	75 × 75	5.0	11.4	111.8	14.54	77.4	14.2	2.31
		6.0	13.6	133.4	17.32	91.4	16.8	2.30
		8.0	17.8	174.6	22.76	118.0	22.0	2.28
		10.0	22.0	215.8	28.04	142.8	27.0	2.26
ISA 8080	80 × 80	6.0	14.6	143.2	18.58	112.0	19.2	2.46
		8.0	19.2	188.4	24.42	145.0	25.2	2.44
		10.0	23.6	231.5	30.10	175.4	31.0	2.41
		12.0	28.0	274.7	35.62	203.8	36.6	2.39

(Continued)

TABLE 6 (contd.)



# PROPERTIES OF TWO EQUAL ANGLES BACK TO BACK

Distance of Centre of Gravity  $C_{xx}$  cm	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
	0.0	0.6	1.0	1.4	1.8	2.2	
1.32	2.02	2.22	2.38	2.53	2.69	2.86	ISA 5050
1.37	2.06	2.26	2.42	2.57	2.74	2.91	
1.41	2.07	2.28	2.44	2.60	2.76	2.93	
1.45	2.09	2.31	2.46	2.63	2.79	2.96	
1.53	2.26	2.48	2.63	2.79	2.95	3.12	ISA 5555
1.57	2.28	2.50	2.65	2.81	2.98	3.14	
1.65	2.33	2.55	2.70	2.87	3.03	3.20	
1.72	2.36	2.59	2.75	2.91	3.08	3.30	
1.65	2.46	2.67	2.82	2.98	3.14	3.30	ISA 6060
1.69	2.48	2.70	2.85	3.00	3.16	3.33	
1.77	2.52	2.74	2.89	3.06	3.22	3.39	
1.85	2.57	2.79	2.95	3.11	3.28	3.44	
1.77	2.66	2.87	3.02	3.17	3.33	3.49	ISA 6565
1.81	2.68	2.89	3.04	3.20	3.35	3.52	
1.89	2.72	2.94	3.09	3.25	3.41	3.57	
1.97	2.76	2.98	3.14	3.30	3.46	3.63	
1.89	2.86	3.06	3.21	3.36	3.52	3.68	ISA 7070
1.94	2.88	3.10	3.24	3.40	3.55	3.72	
2.02	2.93	3.14	3.29	3.45	3.61	3.77	
2.10	2.97	3.19	3.34	3.50	3.66	3.82	
2.02	3.07	3.27	3.42	3.57	3.72	3.88	ISA 7575
2.06	3.08	3.29	3.44	3.59	3.75	3.91	
2.14	3.12	3.34	3.49	3.64	3.80	3.96	
2.22	3.17	3.38	3.54	3.69	3.85	4.01	
2.18	3.28	3.49	3.63	3.79	3.94	4.10	ISA 8080
2.27	3.33	3.54	3.69	3.84	4.00	4.16	
2.34	3.36	3.58	3.73	3.88	4.04	4.20	
2.42	3.40	3.62	3.77	3.93	4.09	4.26	

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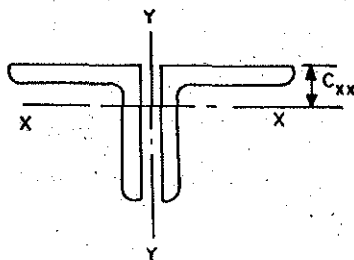



TABLE 6 (Contd.)

# PROPERTIES OF TWO EQUAL ANGLES BACK TO BACK

Designation	Size of Each Angles	Thickness	Weight per Metre (W)		Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	A × B	t			a	I <sub>xx</sub>	Z <sub>xx</sub>	r <sub>xx</sub>
	mm mm	mm	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
ISA 9090	90 × 90	6.0	16.4	160.9	20.94	160.2	24.4	2.77
		8.0	21.6	211.9	27.58	208.4	32.0	2.75
		10.0	26.8	262.9	34.06	253.4	39.6	2.73
		12.0	31.6	310.0	40.38	295.8	46.6	2.71
ISA 100100	100 × 100	6.0	18.4	180.5	23.34	222.6	30.4	3.09
		8.0	24.2	237.4	30.78	290.2	40.0	3.07
		10.0	29.8	292.3	38.06	354.0	49.4	3.05
		12.0	35.4	347.3	45.18	414.0	58.4	3.03
ISA 110110	110 × 110	8.0	26.8	262.9	34.04	390.0	48.8	3.38
		10.0	38.0	372.8	42.12	476.8	60.2	3.36
		12.0	39.2	384.6	50.04	559.2	71.4	3.34
		15.0	48.4	474.8	61.62	674.8	87.4	3.31
ISA 130130	130 × 130	8.0	31.8	312.0	40.44	656.6	69.0	4.03
		10.0	39.4	386.5	50.12	805.4	85.4	4.01
		12.0	46.8	459.1	59.64	947.6	101.4	3.99
		15.0	57.8	567.0	73.62	1149.2	124.6	3.95
ISA 150150	150 × 150	10.0	45.6	447.3	58.06	1244.8	113.8	4.63
		12.0	54.4	533.7	69.18	1470.8	135.4	4.61
		15.0	67.2	659.2	85.56	1793.6	167.0	4.58
		18.0	79.8	782.8	101.58	2097.8	197.4	4.54
ISA 200200	200 × 200	12.0	73.2	718.1	93.22	3577.8	244.4	6.20
		15.0	90.8	890.7	115.60	4395.4	302.8	6.17
		18.0	108.0	1059.5	137.62	5177.4	359.8	6.13
		25.0	147.2	1444.0	187.60	6872.6	486.6	6.05

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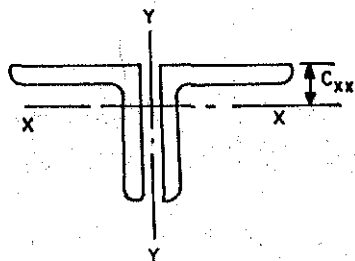


TABLE 6 (Contd.)

# PROPERTIES OF TWO EQUAL ANGLES BACK TO BACK

Distance of Centre of Gravity $C_{xx}$  cm	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
	0.0	0.6	1.0	1.4	1.8	2.2	
2.42	3.68	3.88	4.02	4.17	4.32	4.48	ISA 9090
2.51	3.72	3.93	4.08	4.23	4.38	4.54	
2.59	3.76	3.97	4.12	4.27	4.43	4.59	
2.66	3.79	4.01	4.16	4.31	4.47	4.63	
2.67	4.08	4.28	4.43	4.57	4.72	4.87	ISA 100100
2.76	4.13	4.33	4.48	4.63	4.78	4.93	
2.84	4.17	4.38	4.52	4.67	4.83	4.98	
2.92	4.20	4.41	4.56	4.71	4.87	5.02	
3.00	4.52	4.73	4.87	5.01	5.16	5.32	ISA 110110
3.08	4.56	4.77	4.91	5.06	5.21	5.37	
3.16	4.60	4.81	4.96	5.11	5.26	5.41	
3.27	4.65	4.87	5.02	5.17	5.32	5.48	
3.50	5.34	5.54	5.68	5.82	5.97	6.12	ISA 130130
3.58	5.37	5.58	5.72	5.86	6.01	6.16	
3.66	5.41	5.62	5.76	5.91	6.06	6.21	
3.78	5.46	5.67	5.82	5.97	6.12	6.27	
4.06	6.15	6.36	6.50	6.64	6.78	6.93	ISA 150150
4.14	6.20	6.40	6.54	6.68	6.83	6.98	
4.26	6.25	6.46	6.60	6.75	6.90	7.05	
4.38	6.31	6.52	6.67	6.82	6.97	7.12	
5.36	8.19	9.39	8.53	8.67	8.81	8.96	ISA 200200
5.49	8.26	8.46	8.60	8.74	8.88	9.02	
5.61	8.31	8.52	8.66	8.80	8.94	9.09	
5.88	8.44	8.65	8.79	8.94	9.09	9.24	

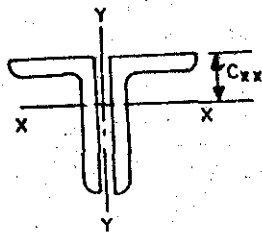


TABLE 7

# PROPERTIES OF TWO UNEQUAL ANGLES BACK TO BACK

(LONGER LEGS BACK TO BACK)

Designation	Size of	Thickness	Weight per		Sectional	Moment	Modulus	Radius				
	Each Angles		Metre						Area	of	of	of
	A × B		t	(W)					a	Inertia	Section	Gyrations
	mm mm	mm	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm				
ISA 6545	65 × 45	5.0	8.2	80.4	10.52	44.2	10.0	2.05				
		6.0	9.8	96.1	12.50	52.0	11.8	2.04				
		8.0	12.8	125.6	16.34	66.4	15.4	2.02				
ISA 7045	70 × 45	5.0	8.6	84.4	11.04	54.4	11.4	2.22				
		6.0	10.4	102.0	13.12	64.0	13.6	2.21				
		8.0	13.4	131.5	17.16	82.0	17.8	2.19				
		10.0	16.6	162.8	21.04	98.6	21.8	2.16				
ISA 7550	75 × 50	5.0	9.4	92.2	12.04	68.2	13.4	2.38				
		6.0	11.2	109.9	14.32	80.6	16.0	2.37				
		8.0	14.8	145.2	18.76	103.6	20.8	2.35				
		10.0	18.0	176.6	23.04	124.6	25.4	2.33				
ISA 8050	80 × 50	5.0	9.8	96.1	12.54	81.2	15.0	2.55				
		6.0	11.8	115.8	14.92	96.0	18.0	2.54				
		8.0	15.4	151.1	19.56	123.8	23.4	2.52				
		10.0	18.8	184.4	24.04	149.4	28.8	2.49				
ISA 9060	90 × 60	6.0	13.6	133.4	17.30	141.2	23.0	2.86				
		8.0	17.8	174.6	22.74	183.0	30.2	2.84				
		10.0	22.0	215.8	28.02	221.8	37.2	2.81				
		12.0	26.0	255.1	33.14	258.2	44.0	2.79				
ISA 10065	100 × 65	6.0	15.0	147.2	19.10	193.4	28.4	3.18				
		8.0	19.8	192.2	25.14	251.8	37.4	3.16				
		10.0	24.4	239.4	31.02	306.4	46.2	3.14				
ISA 10075	100 × 75	6.0	16.0	157.0	20.28	201.8	28.8	3.15				
		8.0	21.0	206.0	26.72	263.2	38.2	3.14				
		10.0	26.0	255.1	33.00	320.8	47.2	3.12				
		12.0	30.8	302.2	39.12	375.0	55.8	3.10				

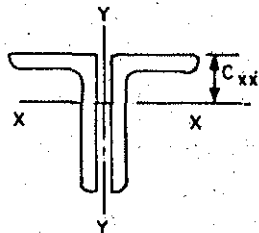


TABLE 7 (Contd.)

 PROPERTIES OF TWO UNEQUAL  
ANGLES BACK TO BACK

(LONGER LEGS BACK TO BACK)

Distance of Centre of Gravity $C_{XX}$  cm	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
	0.0	0.6	1.0	1.4	1.8	2.2	
2.07	1.67	1.88	2.03	2.19	2.36	2.53	ISA 6545
2.11	1.69	1.91	2.06	2.22	2.39	2.56	
2.19	1.73	1.95	2.11	2.28	2.44	2.62	
2.27	1.64	1.84	1.99	2.15	2.31	2.48	ISA 7045
2.32	1.66	1.87	2.02	2.18	2.35	2.52	
2.40	1.69	1.91	2.07	2.23	2.40	2.58	
2.48	1.74	1.96	2.12	2.29	2.46	2.64	
2.39	1.84	2.04	2.19	2.34	2.50	2.67	ISA 7550
2.44	1.85	2.06	2.21	2.37	2.53	2.70	
2.52	1.89	2.11	2.26	2.42	2.59	2.76	
2.60	1.93	2.16	2.31	2.48	2.65	2.82	
2.60	1.79	1.99	2.14	2.30	2.46	2.62	ISA 8050
2.64	1.81	2.02	2.16	2.32	2.48	2.65	
2.73	1.85	2.06	2.22	2.38	2.54	2.71	
2.81	1.89	2.11	2.27	2.43	2.60	2.77	
2.87	2.20	2.40	2.55	2.70	2.86	3.02	ISA 9060
2.96	2.24	2.45	2.60	2.76	2.92	3.08	
3.04	2.28	2.49	2.64	2.80	2.97	3.13	
3.12	2.32	2.54	2.70	2.86	3.02	3.19	
3.19	2.36	2.55	2.70	2.85	3.00	3.16	ISA 10065
3.28	2.40	2.60	2.75	2.90	3.06	3.22	
3.37	2.43	2.64	2.79	2.95	3.11	3.27	
3.01	2.82	3.02	3.16	3.31	3.46	3.62	ISA 10075
3.10	2.87	3.07	3.22	3.37	3.52	3.68	
3.19	2.91	3.12	3.27	3.42	3.58	3.74	
3.27	2.95	3.16	3.31	3.47	3.63	3.79	

(Continued)

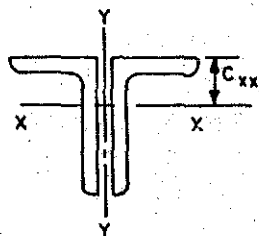


TABLE 7 (Contd.)

# PROPERTIES OF TWO UNEQUAL ANGLES BACK TO BACK

(LONGER LEGS BACK TO BACK)

Designation	Size of Each Angle	Thickness	Weight per Metre (W)		Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	A x B	t			o	I <sub>xx</sub>	Z <sub>xx</sub>	r <sub>xy</sub>
	mm mm	mm	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
ISA 12575	125 x 75	6.0	18.4	180.5	23.32	375.6	44.4	4.01
		8.0	24.2	237.4	30.76	491.0	58.8	4.00
		10.0	29.8	292.3	38.04	600.6	72.6	3.97
ISA 12595	125 x 95	6.0	20.2	198.2	25.72	406.4	46.2	3.97
		8.0	26.6	260.9	33.96	532.0	61.2	3.96
		10.0	33.0	323.7	42.04	651.6	75.6	3.94
		12.0	39.2	384.6	49.96	765.2	89.6	3.91
ISA 15075	150 x 75	8.0	27.4	268.8	34.84	814.4	83.4	4.83
		10.0	33.8	331.6	43.12	998.2	103.2	4.81
		12.0	40.2	394.4	51.24	1174.0	122.4	4.79
ISA 150115	150 x 115	8.0	32.4	317.8	41.16	931.4	88.4	4.76
		10.0	40.0	392.4	51.04	1146.6	109.8	4.74
		12.0	47.6	467.0	60.76	1353.0	130.6	4.72
		15.0	59.0	578.8	75.04	1647.0	160.8	4.69
ISA 200100	200 x 100	10.0	45.6	447.3	58.06	2420.0	185.6	6.46
		12.0	54.4	533.7	69.18	2863.4	221.2	6.43
		15.0	67.2	659.2	85.56	3501.0	273.0	6.40
ISA 200150	200 x 150	10.0	53.4	523.9	68.00	2755.8	196.6	6.37
		12.0	63.6	623.9	81.12	3269.8	234.8	6.35
		15.0	78.8	773.0	100.50	4011.2	290.8	6.32
		18.0	93.8	920.2	119.52	4718.8	345.0	6.29

(Continued)

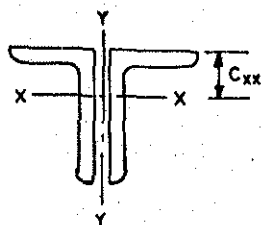


TABLE 7 (Contd.)

# PROPERTIES OF TWO UNEQUAL ANGLES BACK TO BACK

(LONGER LEGS BACK TO BACK)

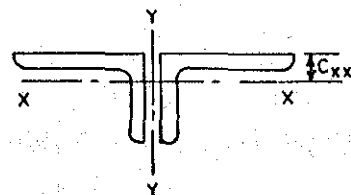
Distance of Centre of Gravity, $C_{xx}$ cm	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
	0.0	0.6	1.0	1.4	1.8	2.2	
4.05	2.64	2.83	2.97	3.11	3.26	3.41	ISA 12575
4.15	2.68	2.88	3.02	3.17	3.32	3.48	
4.24	2.72	2.92	3.07	3.22	3.37	3.53	
3.70	3.59	3.78	3.92	4.06	4.20	4.35	ISA 12595
3.80	3.63	3.83	3.97	4.11	4.26	4.41	
3.88	3.67	3.87	4.01	4.16	4.31	4.46	
3.96	3.70	3.91	4.05	4.20	4.36	4.51	
5.23	2.52	2.72	2.86	3.00	3.15	3.31	ISA 15075
5.32	2.56	2.76	2.90	3.05	3.20	3.36	
5.41	2.60	2.80	2.95	3.10	3.25	3.42	
4.46	4.37	4.56	4.69	4.83	4.98	5.14	ISA 150115
4.55	4.41	4.61	4.75	4.89	5.03	5.18	
4.64	4.45	4.65	4.79	4.93	5.08	5.23	
4.76	4.50	4.71	4.85	5.00	5.15	5.30	
6.96	3.35	3.54	3.68	3.81	3.96	4.11	ISA 200100
7.05	3.40	3.59	3.73	3.87	4.01	4.17	
7.81	3.45	3.65	3.79	3.94	4.09	4.24	
5.99	5.66	5.85	5.98	6.12	6.26	6.40	ISA 200150
6.08	5.70	5.90	6.03	6.17	6.31	6.45	
6.20	5.76	5.96	6.09	6.23	6.38	6.52	
6.33	5.81	6.01	6.15	6.30	6.44	6.59	


(Continued)

TABLE 8

# PROPERTIES OF TWO UNEQUAL ANGLES BACK TO BACK

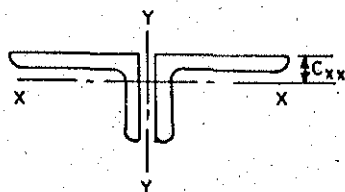
(SHORTER LEGS BACK TO BACK)



Designation	Size of Each Angle	Thickness  <i>t</i>	Weight per Meter (w)		Sectional Area  <i>a</i>	Moment of Inertia  <i>I<sub>xx</sub></i>	Modulus of Section  <i>Z<sub>xx</sub></i>	Radius of Gyration  <i>r<sub>xx</sub></i>
	<i>A</i> × <i>B</i>							
	mm mm		kg	N				
ISA 6545	65 × 45	5.0	8.2	80.4	10.52	17.2	5.0	1.28
		6.0	9.8	96.1	12.50	20.2	6.0	1.27
		8.0	12.8	125.6	16.34	25.6	7.8	1.25
ISA 7045	70 × 45	5.0	8.6	108.4	11.04	17.6	5.0	1.26
		6.0	10.4	102.0	13.12	20.6	6.0	1.25
		8.0	13.4	131.5	17.16	26.2	7.8	1.24
		10.0	16.6	162.8	21.04	31.2	9.6	1.22
ISA 7550	75 × 50	5.0	9.4	92.2	12.04	24.4	6.4	1.42
		6.0	11.2	109.9	14.32	28.6	7.6	1.41
		8.0	14.8	145.2	18.76	36.6	9.8	1.40
		10.0	18.0	176.6	23.04	43.6	12.0	1.38
ISA 8050	80 × 50	5.0	9.8	96.1	12.54	24.6	6.4	1.40
		6.0	11.8	115.8	14.92	28.8	7.6	1.39
		8.0	15.4	151.1	19.56	37.0	9.8	1.37
		10.0	18.8	184.4	24.04	44.2	12.0	1.36
ISA 3060	90 × 60	6.0	13.6	133.4	17.30	50.4	11.0	1.71
		8.0	17.8	174.6	22.74	64.8	14.4	1.69
		10.0	22.0	215.8	28.02	78.2	17.6	1.67
		12.0	26.0	255.1	33.14	90.4	20.6	1.65
ISA 10065	100 × 65	6.0	15.0	147.2	19.10	64.8	12.8	1.84
		8.0	19.8	194.2	25.14	83.8	17.0	1.83
		10.0	24.4	239.4	31.02	101.4	20.8	1.81
ISA 10075	100 × 75	6.0	16.0	157.0	20.28	97.4	17.0	2.19
		8.0	21.0	206.0	26.72	126.6	22.4	2.18
		10.0	26.0	255.1	33.00	153.8	27.6	2.16
		12.0	30.8	302.1	39.12	179.0	32.6	2.14

(Continued)

TABLE 8 (Contd.)



# PROPERTIES OF TWO UNEQUAL ANGLES BACK TO BACK

(SHORTER LEGS BACK TO BACK)

Distance of Centre of Gravity $C_{xx}$  cm	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
	0.0	0.6	1.0	1.4	1.8	2.2	
1.08	2.91	3.13	3.29	3.45	3.61	3.78	ISA 6545
1.12	2.93	3.16	3.31	3.47	3.64	3.80	
1.20	2.98	3.20	3.36	3.52	3.69	3.86	
1.04	3.17	3.40	3.55	3.71	3.87	4.04	ISA 7045
1.09	3.20	3.43	3.58	3.74	3.90	4.07	
1.16	3.25	3.47	3.63	3.79	3.96	4.13	
1.24	3.29	3.52	3.68	3.85	4.01	4.18	
1.16	3.37	3.59	3.74	3.90	4.06	4.22	ISA 7550
1.20	3.40	3.62	3.78	3.94	4.10	4.26	
1.28	3.45	3.67	3.83	3.99	4.15	4.32	
1.36	3.49	3.72	3.88	4.04	4.20	4.37	
1.12	3.64	3.86	4.01	4.17	4.33	4.49	ISA 8050
1.16	3.66	3.88	4.04	4.19	4.36	4.52	
1.24	3.71	3.94	4.09	4.25	4.42	4.58	
1.32	3.76	3.99	4.14	4.31	4.47	4.64	
1.39	4.05	4.27	4.42	4.52	4.73	4.89	ISA 9060
1.48	4.10	4.32	4.47	4.63	4.79	4.95	
1.55	4.14	4.37	4.52	4.68	4.84	5.01	
1.63	4.19	4.41	4.57	4.73	4.89	5.06	
1.47	4.51	4.72	4.87	5.03	5.18	5.34	ISA 10065
1.55	4.56	4.78	4.93	5.08	5.24	5.40	
1.63	4.61	4.83	4.99	5.14	5.30	5.46	
1.78	4.36	4.57	4.72	4.87	5.02	5.18	ISA 10075
1.87	4.41	4.63	4.78	4.93	5.08	5.24	
1.95	4.44	4.68	4.83	4.99	5.14	5.29	
2.03	4.50	4.73	4.88	5.03	5.19	5.36	

(Continued)



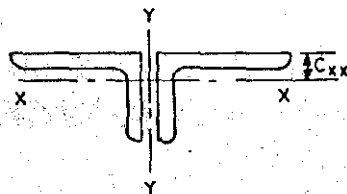


TABLE 8 (Contd.)

# PROPERTIES OF TWO UNEQUAL ANGLES BACK TO BACK

(SHORTER LEGS BACK TO BACK)

Designation	Size of Each Angle	Thickness	Weight per Metre (W)		Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyrat
	$A \times B$	$t$			$a$	$I_{xx}$	$Z_{xx}$	$Y_{xx}$
	mm mm	mm	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
ISA 12575	125 x 75	6.0	18.4	180.5	23.32	103.2	17.4	2.10
		8.0	24.2	237.4	30.76	134.4	23.0	2.09
		10.0	29.8	292.3	38.04	163.2	28.4	2.07
ISA 12595	125 x 95	6.0	20.2	198.2	25.72	204.2	28.0	2.82
		8.0	26.6	260.9	33.96	266.6	37.0	2.80
		10.0	33.0	323.7	42.04	325.4	45.8	2.78
		12.0	39.2	384.6	49.96	380.8	54.2	2.76
ISA 15075	150 x 75	8.0	27.4	268.8	34.84	140.4	23.6	2.01
		10.0	33.8	331.6	43.12	170.6	29.0	1.99
		12.0	40.2	394.4	51.24	199.0	34.2	1.97
ISA 150115	150 x 115	8.0	32.4	317.8	41.16	477.8	54.4	3.41
		10.0	40.0	392.4	51.04	586.8	67.6	3.39
		12.0	47.6	467.0	60.76	690.6	80.4	3.37
		15.0	59.0	578.8	75.04	837.2	98.8	3.34
ISA 200100	200 x 100	10.0	45.6	447.3	58.06	418.4	52.4	2.68
		12.0	54.4	533.7	69.18	492.4	62.2	2.67
		15.0	67.2	659.2	85.56	596.2	76.6	2.64
ISA 200150	200 x 150	10.0	53.4	523.9	68.00	1339.2	116.6	4.44
		12.0	63.6	623.9	81.12	1586.4	139.2	4.42
		15.0	78.8	773.0	100.50	1939.8	172.0	4.39
		18.0	93.8	920.2	119.52	2273.8	203.8	4.36

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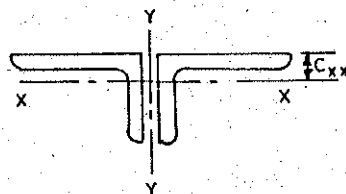


TABLE 8 (Contd.)

 PROPERTIES OF TWO UNEQUAL  
 ANGLES BACK TO BACK

(SHORTER LEGS BACK TO BACK)

Distance of Centre of Gravity $C_{xx}$  cm	Radii of Gyration About Y-Y, in cm						Designation
	Distance, Back to Back of Angles, in cm						
	0.0	0.6	1.0	1.4	1.8	2.2	
1.59	5.71	5.92	6.07	6.22	6.37	6.53	ISA 12575
1.68	5.76	5.98	6.13	6.28	6.44	6.60	
1.76	5.81	6.03	6.18	6.34	6.50	6.66	
2.22	5.43	5.64	5.78	5.93	6.08	6.23	ISA 12595
2.31	5.49	5.70	5.84	5.99	6.14	6.30	
2.39	5.53	5.74	5.89	6.04	6.19	6.35	
2.47	5.57	5.78	5.93	6.09	6.24	6.40	
1.53	7.12	7.35	7.50	7.65	7.81	7.96	ISA 15075
1.61	7.17	7.40	7.55	7.71	7.86	8.02	
1.69	7.22	7.45	7.61	7.76	7.92	8.08	
2.73	6.52	6.73	6.87	7.02	7.17	7.32	ISA 150115
2.82	6.57	6.78	6.93	7.07	7.22	7.37	
2.90	6.62	6.83	6.98	7.13	7.28	7.43	
3.02	6.68	6.90	7.04	7.19	7.35	7.50	
2.01	9.49	9.72	9.87	10.02	10.17	10.33	ISA 200100
2.10	9.54	9.77	9.92	10.07	10.23	10.38	
2.22	9.62	9.84	9.99	10.15	10.31	10.46	
3.51	8.74	8.95	9.09	9.23	9.38	9.53	ISA 200150
3.60	8.79	9.00	9.14	9.29	9.44	9.58	
3.72	8.85	9.06	9.21	9.36	9.50	9.65	
3.84	8.92	9.13	9.28	9.43	9.58	9.73	

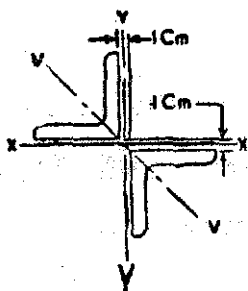


TABLE 9

## PROPERTIES OF STARRED ANGLES

TWO EQUAL ANGLES STARRED  
Space between Parallel Faces = 1 cm

Size	Total Area	Least Radius of Gyration	Size	Total Area	Least Radius of Gyration
$A \times B \times t$	$a$	$r_{vv}$	$A \times B \times t$	$a$	$r_{vv}$
mm mm mm	cm <sup>2</sup>	cm	mm mm mm	cm <sup>2</sup>	cm
50 x 50 x 3.0	5.90	1.94	80 x 80 x 10.0	30.10	3.04
4.0	7.76	1.93	12.0	35.62	3.01
5.0	9.58	1.92			
6.0	11.36	1.90	90 x 90 x 6.0	20.94	3.50
			8.0	27.58	3.47
55 x 55 x 5.0	10.54	2.11	10.0	34.06	3.44
6.0	12.52	2.10	12.0	40.38	3.41
8.0	16.36	2.07			
10.0	20.04	2.03	100 x 100 x 6.0	23.34	3.91
60 x 60 x 5.0	11.50	2.31	8.0	30.78	3.88
6.0	13.68	2.29	10.0	38.06	3.85
8.0	17.92	2.27	12.0	45.18	3.82
10.0	22.00	2.23			
65 x 65 x 5.0	12.50	2.51	110 x 110 x 8.0	34.04	4.28
6.0	14.88	2.50	10.0	42.12	4.25
8.0	19.52	2.47	12.0	50.04	4.22
10.0	24.00	2.44	15.0	61.62	4.17
70 x 70 x 5.0	13.54	2.71	130 x 130 x 8.0	40.44	5.10
6.0	16.12	2.70	10.0	50.12	5.07
8.0	21.16	2.67	12.0	59.64	5.03
10.0	26.04	2.64	15.0	73.62	4.98
75 x 75 x 5.0	14.54	2.92	150 x 150 x 10.0	58.06	5.86
6.0	17.32	2.91	12.0	69.18	5.83
8.0	22.76	2.88	15.0	85.56	5.78
10.0	28.04	2.84	18.0	101.58	5.73
80 x 80 x 6.0	18.58	3.11	200 x 200 x 12.0	93.22	7.84
8.0	24.42	3.08	15.0	115.60	7.79
			18.0	137.62	7.75
			20.0	187.60	7.63

(Continued)

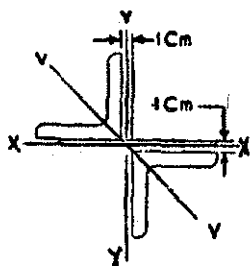


TABLE 10

## PROPERTIES OF STARRED ANGLES

TWO UNEQUAL ANGLES STARRED  
Space Between Parallel Faces = 1 cm

Size	Total Area a	Least Radius of Gyration $r_{vv}$	Size	Total Area a	Least Radius of Gyration $r_{vv}$
$A \times B \times t$			$A \times B \times t$		
mm mm mm	cm <sup>2</sup>	cm	mm mm mm	cm <sup>2</sup>	cm
65 x 45 x 5.0	10.52	1.81	100 x 75 x 10.0	33.00	2.98
6.0	12.50	1.81	12.0	39.12	2.97
8.0	16.34	1.80			
70 x 45 x 5.0	11.04	1.79	125 x 75 x 6.0	23.32	2.84
6.0	13.12	1.80	8.0	30.76	2.86
8.0	17.16	1.79	10.0	38.04	2.86
10.0	21.04	1.79			
75 x 50 x 5.0	12.04	2.00	125 x 95 x 6.0	25.72	3.76
6.0	14.32	2.00	8.0	33.96	3.77
8.0	18.76	1.99	10.0	42.04	3.77
10.0	23.04	1.99	12.0	49.96	3.76
80 x 50 x 5.0	12.54	1.97	150 x 75 x 8.0	34.84	2.72
6.0	14.92	1.97	10.0	43.12	2.73
8.0	19.56	1.97	12.0	51.24	2.74
10.0	24.04	1.97			
90 x 60 x 6.0	17.30	2.36	150 x 115 x 8.0	41.16	4.52
8.0	22.74	2.37	10.0	51.04	4.53
10.0	28.02	2.37	12.0	60.76	4.54
12.0	33.14	2.36	15.0	75.04	4.53
100 x 65 x 6.0	19.10	2.53	200 x 100 x 10.0	58.06	3.55
8.0	25.14	2.54	12.0	69.18	3.57
10.0	31.02	2.54	15.0	85.56	3.59
100 x 75 x 6.0	20.28	2.97	200 x 150 x 10.0	68.00	5.83
8.0	26.72	2.98	12.0	81.12	5.84
			15.0	100.50	5.85
			18.0	119.52	5.86

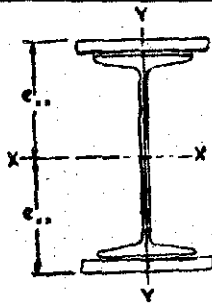


TABLE 11

# SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (GIRDERS)

Composed of			Weight		Sectional Area	Mean Thickness of Flanges	Extreme Fibre Distance	Gross Moments of Inertia		Least Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum allowable Shear
Joist	Cover	Plates	per Meter (W)										
Designation	Width	Thickness			o	e <sub>xx</sub>	I <sub>xx</sub>	I <sub>yy</sub>	r <sub>v v</sub>	Z <sub>xx</sub>	M	S	
	mm	mm	kg	N									
ISWB 150	160.0	10.0	42.1	413.0	53.67	14.4	8.50	2889.8	777.5	3.81	340.0	5.4	7.7
		12.0	47.2	463.0	60.07	16.4	8.70	3363.1	914.0	3.90	386.6	6.1	
		16.0	57.2	561.1	72.87	20.4	9.10	4377.2	1187.1	4.04	481.0	7.6	
		20.0	67.3	660.2	85.67	24.4	9.50	5484.4	1460.1	4.13	577.3	9.1	
		25.0	79.8	782.8	101.67	29.4	10.00	7005.8	1801.5	4.21	700.6	11.0	
ISWB 175	200.0	10.0	53.5	524.8	68.11	14.6	9.75	4935.2	1521.9	4.73	506.2	8.0	9.6
		12.0	59.7	585.7	76.11	16.6	9.95	5711.3	1788.6	4.85	574.0	9.0	
		16.0	72.3	709.3	92.11	20.6	10.35	7360.0	2321.9	5.02	711.1	11.2	
		20.0	84.9	832.9	108.11	24.6	10.75	9141.1	2855.3	5.14	850.3	13.4	
		25.0	100.6	986.9	128.11	29.6	11.25	11561.5	3521.9	5.24	1027.7	16.2	
ISMB 200	160.0	10.0	50.5	495.4	64.33	16.8	11.00	5766.1	832.7	3.60	524.2	8.3	10.8
		12.0	55.5	544.5	70.73	18.8	11.20	6554.6	969.2	3.70	585.2	9.2	
		16.0	65.6	643.5	83.53	22.8	11.60	8218.3	1242.3	3.86	708.5	11.2	
		20.0	75.6	741.6	96.33	26.8	12.00	10000.7	1515.3	3.97	833.4	13.1	
		25.0	88.2	865.2	112.33	31.8	12.50	12402.1	1856.7	4.07	992.2	15.6	
ISWB 200	200.0	10.0	60.2	590.6	76.71	16.3	11.00	7037.8	1662.1	4.66	639.8	10.1	11.5
		12.0	66.5	652.4	84.71	18.3	11.20	8023.5	1928.8	4.77	716.4	11.3	
		16.0	79.1	776.0	100.71	22.3	11.60	10103.1	2462.1	4.94	871.0	13.7	
		20.0	91.6	898.6	116.71	26.3	12.00	12331.2	2995.5	5.07	1027.6	16.2	
		25.0	107.3	1052.6	136.71	31.3	12.50	15332.8	3662.1	5.18	1226.6	19.3	
ISMB 225	160.0	10.0	56.3	552.3	71.72	18.1	12.25	7862.4	901.0	3.54	641.8	10.1	13.8
		12.0	61.3	601.4	78.12	20.1	12.45	8838.5	1037.5	3.64	709.9	11.2	
		16.0	71.4	700.4	90.92	24.1	12.85	10887.0	1310.6	3.80	847.2	13.3	
		20.0	81.4	798.5	103.72	28.1	13.25	13067.0	1583.6	3.91	986.2	15.5	
		25.0	94.0	922.1	119.72	33.1	13.75	15983.5	1925.0	4.01	1162.4	18.3	
ISWB 225	200.0	10.0	65.3	640.6	83.24	17.4	12.25	9446.2	1781.9	4.63	771.1	12.1	13.6
		12.0	71.6	702.4	91.24	19.4	12.45	10666.4	2048.8	4.74	856.7	13.5	
		16.0	84.2	826.0	107.24	23.4	12.85	13227.0	2581.9	4.91	1029.3	16.2	
		20.0	96.7	948.6	123.24	27.4	13.25	15952.0	3115.3	5.03	1203.9	19.0	
		25.0	112.4	1102.6	143.24	32.4	13.75	19597.6	3781.9	5.14	1425.3	22.4	
ISMB 250	200.0	10.0	68.7	673.9	87.55	17.8	13.50	11894.9	1667.8	4.36	881.1	13.9	16.3
		12.0	75.0	735.8	95.55	19.8	13.70	13374.6	1934.5	4.50	976.3	15.4	
		16.0	87.6	859.4	111.55	23.8	14.10	16466.2	2467.8	4.70	1167.8	18.4	
		20.0	100.1	982.0	127.55	27.8	14.50	19738.3	3001.2	4.85	1361.3	21.4	
		25.0	115.8	1136.0	147.55	32.8	15.00	24089.9	3667.8	4.99	1606.0	25.3	

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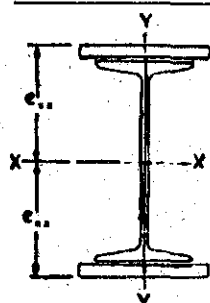


TABLE 11 (Contd.)

## SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (GIRDERS)

Joist Designation	Composed of		Weight per Metre (W)		Sectional Area $a$ cm <sup>2</sup>	Mean Thickness of Flanges mm	Extreme Fibre Distance $e_{xx}$ cm	Gross Moments of Inertia		Least Radius of Gyration $r_{yy}$ cm	Modulus of Section $Z_{xx}$	Maximum Allowable Moment $M$ kg.m × 10 <sup>3</sup>	Maximum Allowable Shear $S$ kg × 10 <sup>3</sup>
	Width mm	Thickness mm	kg	N				$I_{xx}$ cm <sup>4</sup>	$I_{yy}$ cm <sup>4</sup>				
ISWB 250	320.0	10.0	91.1	893.7	116.05	15.6	13.50	16764.4	6318.8	7.38	1241.8	19.6	15.8
		12.0	101.1	991.8	128.85	17.6	13.70	19132.0	7411.1	7.58	1396.5	22.0	
		16.0	121.2	1189.0	154.45	21.6	14.10	24078.5	9595.6	7.88	1707.7	26.9	
		20.0	141.3	1386.2	180.05	25.6	14.50	29313.8	11780.2	8.09	2021.6	31.8	
		25.0	166.5	1633.4	212.05	30.6	15.00	36276.0	14510.8	8.27	2418.4	38.1	
ISMB 300	200.0	10.0	75.6	741.6	96.26	18.7	16.00	18216.9	1787.2	4.31	1138.6	17.9	21.3
		12.0	81.8	802.5	104.26	20.7	16.20	20290.6	2053.9	4.44	1252.5	19.7	
		16.0	94.4	926.1	120.26	24.7	16.60	24594.2	2587.2	4.64	1481.6	23.3	
		20.0	107.0	1049.7	136.26	28.7	17.00	29110.3	3120.6	4.79	1712.4	27.0	
		25.0	122.7	1203.7	156.26	33.7	17.50	35061.9	3787.2	4.92	2003.5	31.6	
ISWB 300	320.0	10.0	98.4	965.3	125.33	16.2	16.00	25202.9	6451.4	7.17	1575.2	24.8	21.0
		12.0	108.4	1063.4	138.13	18.2	16.20	28520.9	7543.7	7.39	1760.5	27.7	
		16.0	128.5	1260.6	163.73	22.2	16.60	35406.6	9728.2	7.71	2132.9	33.6	
		20.0	148.6	1457.8	189.33	26.2	17.00	42632.3	11912.8	7.93	2507.8	39.5	
		25.0	173.7	1704.0	221.33	31.2	17.50	52154.5	14643.4	8.13	2980.3	46.9	
ISWB 350	200.0	10.0	83.8	822.1	106.71	19.9	18.50	26593.6	1871.0	4.19	1437.5	22.6	26.8
		12.0	90.0	882.9	114.71	21.9	18.70	29361.3	2137.7	4.32	1570.1	24.7	
		16.0	102.6	1006.5	130.71	25.9	19.10	35076.9	2671.0	4.52	1836.5	28.9	
		20.0	115.2	1130.1	146.71	29.9	19.50	41037.0	3204.4	4.67	2104.5	33.1	
		25.0	130.9	1284.1	166.71	34.9	20.00	48838.6	3871.0	4.82	2441.9	38.5	
ISWB 350	320.0	10.0	107.2	1051.6	136.50	17.1	18.50	36263.0	6637.2	6.97	1960.2	30.9	26.5
		12.0	117.2	1149.7	149.30	19.1	18.70	40691.4	7729.5	7.20	2176.0	34.3	
		16.0	137.3	1346.9	174.90	23.1	19.10	49836.3	9914.0	7.53	2609.2	41.1	
		20.0	157.4	1544.1	200.50	27.1	19.50	59372.4	12098.6	7.77	3044.7	48.0	
		25.0	182.5	1790.3	232.50	32.1	20.00	71855.0	14829.2	7.99	3592.8	56.6	
ISMB 400	200.0	10.0	93.0	912.3	118.46	21.2	21.00	37271.7	1955.4	4.06	1774.8	28.0	33.6
		12.0	99.3	974.1	126.46	23.2	21.20	40833.4	2222.1	4.19	1926.1	30.3	
		16.0	111.3	1091.9	142.46	27.2	21.60	48161.0	2755.4	4.40	2229.7	35.1	
		20.0	124.4	1220.4	158.46	31.2	22.00	55765.1	3288.8	4.56	2534.8	39.9	
		25.0	140.1	1374.4	178.46	36.2	22.50	65666.7	3955.4	4.71	2918.5	46.0	
ISWB 400	320.0	10.0	162.1	1590.2	206.46	43.2	23.20	80287.3	4888.8	4.87	3460.7	54.5	
		12.0	172.1	1680.2	226.46	45.2	23.40	88888.8	5444.4	5.00	3888.8	60.0	

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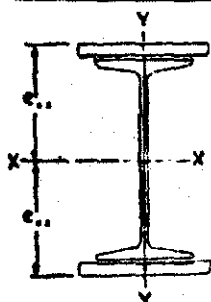


TABLE 11 (Contd.)

# SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (GIRDERS)

Composed of			Weight per Metre (W)		Sectional Area	Mean Thickness of Flange	Extreme Fibre Distance	Gross Moment of Inertia		Least Radius of Gyration	Modulus of Section	Maximum Allowable moment	Maximum Allowable shear
Designation	Width	Thickness	kg	N	$a$	$t$	$e_{xx}$	$I_{xx}$	$I_{yy}$	$r_{yy}$	$Z_{xx}$	$M$	$S$
	mm	mm			cm <sup>2</sup>	mm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm <sup>3</sup> kg.m × 10 <sup>3</sup>	kg × 10 <sup>3</sup>	
ISWB 400	320.0	10.0	117.0	1147.8	149.01	18.1	21.00	50328.0	6849.3	6.78	2396.6	37.7	32.5
		12.0	127.0	1245.9	161.81	20.1	21.20	56026.8	7941.6	7.01	2642.8	41.6	
		16.0	147.1	1443.0	187.41	24.1	21.60	67750.9	10126.1	7.35	3136.6	49.4	
		20.0	167.2	1640.2	213.01	28.1	22.00	79917.4	12310.7	7.60	3632.6	57.2	
		25.0	192.3	1886.5	345.01	33.1	22.50	95760.0	15041.3	7.84	4256.0	67.0	
		32.0	227.5	2231.8	289.01	40.1	23.20	119153.0	18864.3	8.07	5135.9	80.9	
ISMB 450	200.0	10.0	103.8	1018.3	132.27	23.0	23.50	51554.1	2167.3	4.05	2193.8	34.6	40.0
		12.0	110.1	1080.1	140.27	25.0	23.70	56009.8	2434.0	4.17	2363.3	37.2	
		16.0	122.7	1203.7	156.27	29.0	24.10	65149.4	2967.3	4.36	2703.3	42.6	
		20.0	135.2	1326.3	172.27	33.0	24.50	74597.5	3500.7	4.51	3044.8	48.0	
		25.0	150.9	1480.3	192.27	38.0	25.00	86849.1	4167.3	4.66	3474.0	54.7	
		32.0	172.9	1696.1	220.27	45.0	25.70	104843.7	5100.7	4.81	4079.5	64.3	
ISWB 450	320.0	10.0	129.6	1271.4	165.15	19.6	23.50	68918.9	7168.0	6.59	2932.7	46.2	39.1
		12.0	139.7	1370.5	177.95	21.6	23.70	76048.1	8260.3	6.81	3208.8	50.5	
		16.0	159.8	1567.6	203.55	25.6	24.10	90671.4	10444.8	7.16	3762.3	59.3	
		20.0	179.9	1764.8	229.15	29.6	24.50	105788.3	12629.4	7.42	4317.9	68.0	
		25.0	205.0	2011.0	261.15	34.6	25.00	125390.9	15360.0	7.67	5015.6	79.0	
		32.0	240.2	2356.4	305.95	41.6	25.70	154182.3	19183.0	7.92	5999.3	94.5	
ISMB 500	250.0	10.0	126.2	1238.0	160.74	22.4	26.00	77735.0	3974.0	4.97	2989.8	47.1	48.2
		12.0	134.0	1314.5	170.74	24.4	26.20	84547.1	4494.8	5.13	3227.0	50.8	
		16.0	149.7	1468.6	190.74	28.4	26.60	98486.6	5536.5	5.39	3702.5	58.3	
		20.0	165.4	1622.6	210.74	32.4	27.00	112851.6	6578.1	5.59	4179.7	65.8	
		25.0	185.1	1815.8	235.74	37.4	27.50	131416.2	7880.2	5.78	4778.8	75.3	
		32.0	212.5	2084.6	270.74	44.4	28.20	158564.4	9703.1	5.99	5622.9	88.6	
ISWB 500	400.0	10.0	158.0	1550.0	201.22	19.2	26.00	104317.6	13654.5	8.24	4012.2	47.4	46.8
		12.0	170.5	1672.6	217.22	21.2	26.20	115217.0	15787.8	8.53	4397.6	50.4	
		16.0	195.6	1918.8	249.22	25.2	26.60	137520.1	20054.5	8.97	5169.9	56.2	
		20.0	220.8	2166.0	281.22	29.2	27.00	160504.2	24321.1	9.30	5944.6	62.1	
		25.0	252.2	2474.1	321.22	34.2	27.50	190207.6	29654.5	9.61	6916.6	69.5	
		32.0	296.1	2904.7	377.22	41.2	28.20	233644.7	37121.1	9.82	8285.3	79.9	
		40.0	346.4	3398.2	441.22	49.2	29.00	285997.6	45654.5	10.17	9862.0	92.0	

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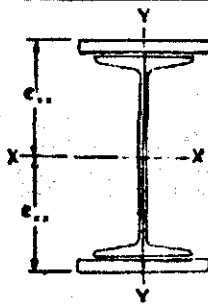


TABLE 11 (Contd.)

## SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (GIRDERS)

Composed of		Weight per		Sectional Area	Mean Thickness of Flanges	Extreme Fibre Distance	Gross Moment of Inertia		Least Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear	
Joist	Cover Plates	Metre (W)					$I_{xx}$	$I_{yy}$					
Designation	Width	Thickness			$a$	$e_{xx}$			$I_{xx}$	$I_{yy}$	$r_{yy}$	$Z_{xx}$	$M$
	mm	mm	kg	N	cm <sup>2</sup>	mm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm <sup>3</sup>	kg.m x 10 <sup>3</sup>	kg x 10 <sup>3</sup>
ISMB 550	250.0	10.0	143.0	1402.8	82.11	24.7	28.50	104097.8	4438.0	4.94	3652.6	57.5	58.2
		12.0	150.8	1479.3	192.11	26.7	28.70	112277.4	4958.8	5.08	3912.1	61.6	
		16.0	166.5	1633.4	212.11	30.7	29.10	128981.9	6000.5	5.32	4432.4	69.8	
		20.0	182.2	1787.4	232.11	34.7	29.50	146151.9	7042.1	5.51	4954.3	78.0	
		25.0	201.8	1979.7	257.11	39.7	30.00	168279.0	8344.2	5.70	5609.3	88.3	
		32.0	229.3	2249.4	292.11	46.7	30.70	200519.7	10167.1	5.90	6531.6	102.9	
		40.0	260.7	2557.5	332.11	54.7	31.50	239210.3	12250.5	6.07	7594.0	119.6	
ISWB 550	400.0	10.0	175.3	1719.7	223.34	21.0	28.50	137632.8	14407.3	8.03	4829.2	76.1	54.6
		12.0	187.9	1843.3	239.34	23.0	28.70	150720.2	16540.6	8.31	5251.6	82.7	
		16.0	213.0	2089.5	271.34	27.0	29.10	177447.3	20807.3	8.76	6097.8	96.0	
		20.0	238.1	2335.8	303.34	31.0	29.50	204919.4	25073.9	9.09	6946.4	109.4	
		25.0	269.5	2643.8	343.34	36.0	30.00	240322.3	30407.3	9.41	8010.8	126.2	
		32.0	313.5	3075.4	399.34	43.0	30.70	291907.9	37873.9	9.74	9508.4	149.8	
		40.0	363.7	3567.9	463.34	51.0	31.50	353812.8	46407.3	10.06	11232.2	176.9	
ISMB 600	320.0	10.0	172.9	1696.1	220.21	23.6	31.00	151354.3	8112.3	6.07	4882.4	76.9	68.0
		12.0	182.9	1794.2	233.01	25.6	31.20	163734.7	9204.6	6.29	5247.9	82.7	
		16.0	203.0	1991.4	258.61	29.6	31.60	188975.6	11389.1	6.64	5980.2	94.2	
		20.0	223.1	2188.6	284.21	33.6	32.00	214863.7	13573.7	6.91	6714.5	105.8	
		25.0	248.2	2434.8	316.21	38.6	32.50	248146.3	16304.3	7.18	7635.3	120.3	
		32.0	283.4	2780.2	361.01	45.6	33.20	296492.9	20127.3	7.47	8930.5	140.7	
		40.0	323.6	3174.5	412.21	53.6	34.00	354298.3	24496.3	7.71	10420.5	164.1	
ISWB 600	400.0	10.0	196.5	1927.7	250.38	23.3	31.00	180625.2	15369.2	7.83	5826.6	91.8	63.5
		12.0	209.1	2051.3	266.38	25.3	31.20	196100.6	17502.5	8.11	6285.3	99.0	
		16.0	234.2	2297.5	298.38	29.3	31.60	227651.7	21769.2	8.54	7204.2	113.5	
		20.0	259.3	2543.7	330.38	33.3	32.00	260011.8	26035.8	8.88	8125.4	128.0	
		25.0	290.7	2851.8	370.38	38.3	32.50	301615.2	31369.2	9.20	9280.5	146.2	
		32.0	334.7	3283.4	426.38	45.3	33.20	362048.3	38835.3	9.54	10905.1	171.8	
		40.0	384.9	3775.9	490.38	53.3	34.00	434305.2	47369.2	9.83	12773.7	201.2	
ISWB 600	400.0	10.0	207.9	2039.5	264.86	24.8	31.00	190053.3	15965.0	7.76	6130.8	96.6	66.9
		12.0	220.5	2163.1	280.86	26.8	31.20	205528.7	18098.3	8.03	6587.5	103.8	
		16.0	245.6	2409.3	312.86	30.8	41.60	237079.8	22365.0	8.45	7502.5	118.2	
		20.0	270.7	2655.6	344.86	34.8	32.00	269439.9	26631.6	8.79	8420.0	132.6	
		25.0	302.1	2963.6	384.86	39.8	32.50	311043.3	31965.0	9.11	9570.6	150.7	
		32.0	346.1	3395.2	440.86	46.8	33.20	371476.4	39431.6	9.46	11189.0	176.2	
		40.0	396.3	3887.7	504.86	54.8	34.00	443733.3	47965.0	9.75	13051.0	205.6	

- Note** (1) The properties given in this Table are based on the gross area of the section.  
 (2) The mean thickness of flange is computed according to Note 2 in Table II of IS : 800-1956.  
 (3) The maximum allowable moment is computed on the basis of the allowable stress specified in 9.2.1. of IS : 800-1956 and the gross modulus of section ( $Z_{xx}$ ) given in this Table.  
 (4) The maximum allowable shear is computed on the basis of the allowable shear stress specified in 9.3.2. and the effective sectional area defined in 20.6.2.2. of IS : 800-1956.



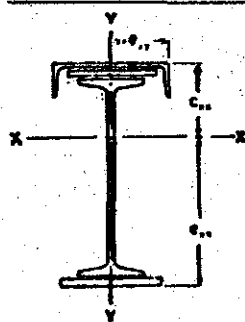


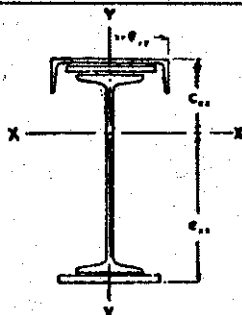
TABLE 12

# SINGLE JOIST WITH CHANNEL AND PLATES ON BOTH FLANGES (GIRDERS)

Y										Sectional Area	Centre of Gravity C <sub>xx</sub>	Mean Thickness of Flanges	
Joist		Top Flange		Bottom Flange		Weight per Metre (W)		a	Top			Bottom	
Designa- tion	w	Channel	Plate	Plate									
	kg N	Designa- tion	w kg N	Width x Thick- ness mm mm	Width x Thick- ness mm mm	kg	N	cm <sup>2</sup>	cm	mm	mm		
ISMB 600	122.6	ISMC 400	49.4	320 x 10.0	320 x 20.0	247.4	2427.0	315.14	29.18	27.5	33.6		
	1202.7		484.6	12.0	25.0	265.0	2599.7	337.54	30.46	29.1	38.6		
				16.0	32.0	292.6	2870.4	372.74	31.84	32.3	45.6		
				20.0	40.0	322.7	3165.7	411.14	33.34	35.5	53.6		
			ISMC 350	42.1	250 x 10.0	320 x 20.0	234.6	2301.4	298.87	30.62	27.7	33.6	
				413.0	12.0	25.0	251.1	2463.3	319.87	32.00	29.2	38.6	
					16.0	32.0	276.6	2713.4	352.27	33.53	32.0	45.6	
					20.0	40.0	304.5	2987.1	387.87	35.17	34.9	53.6	
			ISMC 400	49.4	—	320 x 10.0	197.1	1933.6	251.14	27.62	19.5	23.6	
				484.6	—	12.0	202.2	1983.6	257.54	28.47	—	25.6	
					—	16.0	212.2	2081.7	270.34	30.07	—	29.6	
					—	20.0	222.3	2180.8	283.14	31.55	—	33.6	
		ISMC 350	42.1	—	320 x 10.0	189.9	1862.9	241.87	28.55	20.6	23.6		
			413.0	—	12.0	194.9	1912.0	248.27	29.41	—	25.6		
				—	16.0	204.9	2010.1	261.07	31.02	—	29.6		
				—	20.0	215.0	2109.2	273.87	32.50	—	33.6		
		ISMC 300	35.8	—	250 x 10.0	178.1	1747.2	226.85	28.41	22.2	27.5		
			351.2	—	12.0	182.0	1785.4	231.85	29.13	—	29.5		
				—	16.0	189.9	1862.9	241.85	30.49	—	33.5		
				—	20.0	197.7	1939.4	251.85	31.77	—	37.5		
	SWB 600	133.7	ISMC 400	49.4	320 x 10.0	320 x 20.0	258.5	2535.9	329.31	29.30	29.9	36.6	
		1311.6		484.6	12.0	25.0	276.1	2708.5	351.71	30.52	31.5	41.6	
					16.0	32.0	303.7	2979.3	386.91	31.86	34.7	48.6	
					20.0	40.0	333.9	3275.6	425.31	33.32	37.9	56.6	
		ISMC 350	42.1	250 x 10.0	320 x 20.0	245.7	2410.3	313.04	30.68	30.5	36.6		
			413.0	12.0	25.0	262.2	2572.2	334.04	32.00	31.9	41.6		
				16.0	32.0	287.7	2822.3	366.44	33.49	34.7	48.6		
				20.0	40.0	315.6	3096.0	402.04	35.09	37.6	56.6		
		ISMC 400	49.4	—	320 x 10.0	208.3	2043.4	265.31	27.79	21.9	26.6		
			484.6	—	12.0	213.3	2092.5	271.71	28.60	—	28.6		
				—	16.0	223.3	2190.6	284.51	30.11	—	32.6		
		ISMC 350	42.1	—	320 x 10.0	201.0	1971.8	256.04	28.68	23.3	26.6		
			413.0	—	12.0	206.0	2020.9	262.44	29.49	—	28.6		
				—	16.0	216.1	2119.9	275.24	31.01	—	32.6		

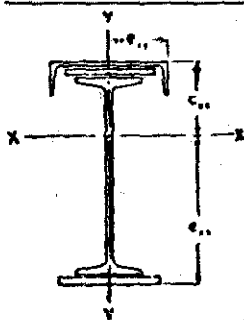
TABLE 12(Contd.)

## SINGLE JOIST WITH CHANNEL AND PLATES ON BOTH FLANGES (GIRDERS)



Extreme Fibre Distances		Gross Moment of Inertia			Radius of Gyration	Moduli of Section		Maximum Allowable Moment	Maximum Allowable Shear
$e_{xx}$	$e_{yy}$	$I_{xx}$	Whole Section	Top Flange Only		$Z_c$	$Z_t$		
cm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm <sup>3</sup>	cm <sup>3</sup>	kg.m x 10 <sup>3</sup>	kg x 10 <sup>3</sup>
34.68	20.00	235892.2	25925.8	19138.6	9.07	8084.1	6801.9	107.1	68.0
34.10		260866.4	27837.3	19684.9	9.08	8564.4	7649.9	120.5	
33.82		299883.3	30841.0	20777.3	9.10	9418.8	8866.7	139.7	
33.52		343302.5	34177.8	21869.7	9.11	10297.7	10241.0	161.3	
33.19	17.50	222893.7	19422.4	12635.4	8.06	7278.4	6716.5	105.8	
32.51		245424.1	21048.2	12896.0	8.11	7670.7	7548.1	118.9	
32.08		280290.7	23480.5	13417.0	8.16	8358.6	8738.1	137.6	
31.64		318880.7	26185.8	13938.0	8.22	9066.2	10079.2	158.7	
34.24	20.00	170351.8	20464.5	16407.8	9.03	6167.7	4975.2	78.4	
33.59		177711.4	21010.6	16408.0	9.03	6241.4	5291.1	83.3	
32.39		191631.5	22102.9	16408.2	9.04	6372.2	5916.9	93.2	
31.31		204609.7	23195.1	16408.4	9.05	6486.1	6534.2	102.9	
33.26	17.50	163968.8	15389.7	11333.2	7.98	5743.0	4930.1	77.6	
32.60		170907.2	15935.8	11333.3	8.01	5811.0	5242.7	82.6	
31.39		184002.1	17028.1	11333.5	8.08	5931.9	5861.7	92.3	
30.31		196179.3	18120.3	11333.7	8.13	6037.1	6471.5	101.9	
33.35	15.00	150938.0	10315.7	7687.8	6.74	5313.3	4525.5	71.3	
32.83		156412.7	10576.1	7687.9	6.75	5369.7	4764.2	75.0	
31.87		166872.3	11096.9	7688.1	6.77	5472.2	5236.8	82.5	
30.99		176746.1	11617.8	7688.2	6.79	5563.7	5702.9	89.8	
34.56	20.00	250375.1	27977.3	20164.4	9.22	7546.7	7243.6	114.1	63.5
34.04		275280.7	29888.8	20710.7	9.22	9018.8	8088.1	127.4	
33.80		314274.1	30892.5	21803.0	9.22	9863.7	9298.5	146.5	
33.54		357691.1	36169.5	22895.4	9.22	10734.4	10665.2	168.0	
33.13	17.50	237298.3	21473.9	13661.2	8.28	7735.2	7162.1	112.8	
32.51		259809.6	23099.7	13921.7	8.32	8120.1	7990.7	125.9	
32.12		294693.4	25532.0	14442.7	8.35	8799.5	9174.7	144.5	
31.72		333342.5	28237.3	14963.7	8.38	9499.9	10508.6	165.5	
34.07	20.00	184878.1	22516.0	17433.7	9.21	6652.0	5426.9	85.5	
33.46		192173.4	23062.1	17433.8	9.21	6719.9	5743.0	90.5	
32.35		206025.4	24154.4	17434.0	9.21	6841.9	6369.1	100.3	
33.13	17.50	178422.6	17441.2	12359.0	8.25	6222.0	5384.9	84.8	
32.52		185319.0	17987.3	12359.1	8.28	6284.8	5698.0	89.7	
31.40		198388.2	19079.6	12359.3	8.33	6397.9	6317.8	99.5	

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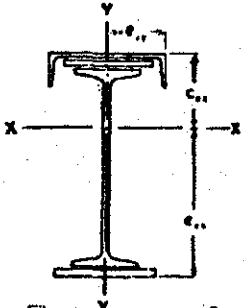
**TABLE 12 (cont.)**

## SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)

Composed of								Sectional Area	Centre of Gravity	Mean Thickness of Flanges	
Joist		Top Flange		Bottom Flange		Weight Per Metre (W)		a	C <sub>xx</sub>	Top	Bottom
Designation	W	Channel	Plate	Plate							
		Designation	Width x Thickness	Width x Thickness							
	kg N		Kg N	mm	mm	Kg	N		cm	mm	mm
ISWB 600	145.1 1423.4	ISMC 400	49.4	320 x 10.0	320 x 20.0	269.9	2647.7	343.79	29.40	31.4	38.4
			484.6	12.0	25.0	287.5	2820.4	366.19	30.58	33.0	43.4
				16.0	32.0	315.1	3091.1	401.39	31.88	36.2	50.4
				20.0	40.0	345.2	3386.4	439.79	33.31	39.4	58.4
		ISMC 350	42.1	250 x 10.0	320 x 20.0	257.1	2522.2	327.52	30.73	32.1	38.4
			413.0	12.0	25.0	273.6	2684.0	348.52	32.00	33.5	43.4
				16.0	32.0	299.0	2933.2	380.92	33.45	36.4	50.4
				20.0	40.0	327.0	3207.9	416.52	35.01	39.2	58.4
		ISMC 400	49.4	—	320 x 10.0	219.6	2154.3	279.79	27.95	23.4	28.4
			484.6	—	12.0	224.7	2204.3	286.19	28.71	30.4	
				—	16.0	234.7	2302.4	298.99	20.15	34.4	
				—							
	ISMC 350	42.1	—	320 x 10.0	212.4	2083.6	270.52	28.79	25.0	28.4	
		413.0	—	12.0	217.4	2132.7	276.92	29.56	30.4		
			—	16.0	227.4	2230.8	289.72	31.00	34.4		
			—								
ISMC 550	103.7 1017.3	ISMC 350	42.1	250 x 10.0	320 x 20.0	215.7	2116.0	274.77	28.15	25.7	31.5
			413.0	12.0	25.0	232.2	2277.9	295.77	29.52	27.1	36.5
				16.0	32.0	257.6	2527.1	328.17	31.05	30.0	43.5
				20.0	40.0	285.6	2801.7	363.77	32.66	32.9	51.5
		ISMC 350	42.1	—	320 x 10.0	170.9	1676.5	217.77	26.05	18.6	21.5
			413.0	—	12.0	176.0	1726.6	224.17	26.93	23.5	
				—	16.0	186.0	1824.7	236.97	28.57	27.5	
				—							
		ISMC 300	35.8	—	250 x 10.0	159.2	1561.8	202.75	25.88	19.8	24.7
			351.2	—	12.0	163.1	1600.0	207.75	26.63	26.7	
				—	16.0	170.9	1676.5	217.75	28.03	30.7	
				—							
	ISMC 250	30.4	—	250 x 10.0	153.7	1507.8	195.78	26.67	21.8	24.7	
		298.2	—	12.0	157.6	1546.1	200.78	27.42	26.7		
			—	16.0	165.5	1623.6	210.78	28.83	30.7		
			—								

TABLE 12 (Contd.)

## SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)



Extreme Fibre Distances		Gross Moments of Inertia			Radius of Gyration	Moduli of Section		Maximum Allowable Moment	Maximum Allowable Shear
$e_{xx}$	$e_{yy}$	$I_{xx}$	Whole Section	Top Flange only	$r_{yy}$	$Z_c$	$Z_t$	M	
cm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm <sup>3</sup>	cm <sup>3</sup>	kg.m × 10 <sup>3</sup>	kg × 10 <sup>4</sup>
34.46	20.00	259894.4	28573.1	20462.3	9.12	8839.0	7542.6	118.8	66.9
33.98		284747.6	30484.6	21008.5	9.12	9310.2	8381.0	132.0	
33.78		323707.2	33488.3	22100.9	9.13	10152.9	9583.7	150.9	
33.55		367122.2	36765.1	23193.3	9.14	11022.5	10941.4	172.3	
33.08	17.50	246744.1	22069.7	13959.1	8.21	8030.0	7458.5	117.5	
32.51		269237.7	23695.5	14219.6	8.25	8414.6	8280.8	130.4	
32.16		304137.8	26127.8	14740.6	8.28	9092.7	9456.6	148.9	
31.80		342843.2	28833.1	15261.6	8.32	9792.7	10781.2	169.8	
33.91	20.00	194435.4	23111.8	17731.6	9.09	6956.1	5734.1	90.3	
33.35		201671.9	23657.9	17731.7	9.09	7023.9	6047.5	95.2	
32.31		215461.2	24750.2	17731.9	9.10	7146.7	6668.2	105.0	
33.02	17.50	187913.1	18037.0	12656.9	8.17	6526.9	5691.0	89.6	
32.45		194771.1	18583.1	12657.0	8.19	6589.9	6001.4	94.9	
31.41		207816.8	19675.4	12657.2	8.24	6704.1	6615.9	104.2	
30.66	17.50	175306.3	18605.2	12226.8	8.23	6226.9	5718.3	90.1	58.2
29.98		194503.9	20231.0	12487.4	8.27	6587.8	6486.7	102.2	
29.56		224235.2	22663.3	13008.4	8.31	7222.0	7585.5	119.5	
29.15		257183.8	25368.6	13529.3	8.35	7874.2	8823.3	139.0	
30.76	17.50	125214.8	14572.5	10924.6	8.18	4806.7	4070.7	64.1	
30.08		131135.8	15118.6	10924.7	8.21	4869.3	4359.7	68.7	
28.84		142237.4	16210.9	10924.9	8.27	4979.2	4931.4	77.7	
30.88	15.00	114276.0	9498.5	7279.2	6.84	4415.2	3700.9	58.3	
30.33		118958.7	9758.7	7279.3	6.85	4467.4	3921.9	51.8	
29.33		127852.8	10279.7	7279.5	6.87	4561.3	4359.1	68.7	
30.04	12.50	110209.4	6952.7	4733.5	5.96	4132.7	3668.5	57.8	
29.49		114639.0	17213.1	4733.6	5.99	4181.1	3087.2	61.2	
28.48		123036.8	7733.9	4733.8	6.06	4268.1	4319.7	68.0	

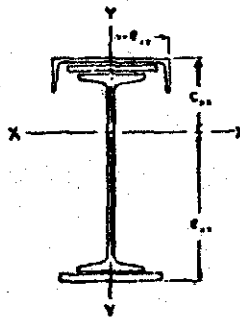


TABLE 12 (cont.)

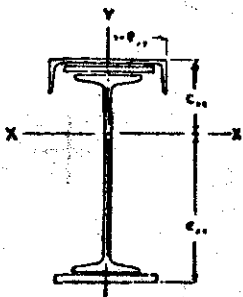
## SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)

Y		Composed of				Weight per Metre		Sectional Area	Centre of Gravity	Mean Thickness of Flanges			
Joist		Top Flange						a					
Designation	w	Channel	Plate	Plate						Top	Bottom		
		Designation	W	Width x Thickness	Width x Thickness								
	kg		kg	mm	mm	mm	mm	kg	N	cm <sup>2</sup>	cm	mm	mm
ISWB 550	112.5	ISMC 400	49.4	320 x 10.0	320 x 20.0	237.3	2327.9	302.27	26.82	27.6	33.8		
	1103.6												
		ISMC 350	42.1	250 x 10.0	320 x 20.0	224.5	2202.3	286.00	28.20	27.8	33.8		
		ISMC 400	49.4	—	320 x 10.0	187.0	1834.5	238.27	25.27	19.6	23.8		
	ISMC 350	42.1	—	320 x 10.0	179.8	1763.8	229.00	26.16	20.7	23.8			
ISMC 500	86.9	ISMC 350	42.1	250 x 10.0	320 x 20.0	198.9	1951.2	253.40	25.70	24.1	29.7		
	852.5												
		ISMC 350	42.1	—	320 x 10.0	154.2	1512.7	196.40	23.58	17.0	19.7		
		ISMC 300	35.8	—	250 x 10.0	142.4	1396.9	181.38	23.39	17.9	23.4		
	ISMC 250	30.4	—	250 x 10.0	136.9	1343.0	174.41	24.17	19.5	22.4			

(Continued)

TABLE 12 (Contd.)

## SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)



Extreme Fibre Distances		Gross Moments of Inertia			Radius of Gyration	Moduli of Section		Maximum Allowable Moment	Maximum Allowable Shear
$e_{xx}$	$e_{yy}$	$I_{xx}$	$I_{yy}$		$r_{yy}$	$Z_{xx}$	$Z_{yy}$	$M$	$S$
cm	cm	cm <sup>4</sup>	Whole Section	Top Flange Only	cm	cm <sup>3</sup>	cm <sup>3</sup>	kg.m × 10 <sup>3</sup>	kg × 10 <sup>3</sup>
32.04	20.00	196231.3	27015.4	19683.5	9.45	7316.2	6124.8	96.5	54.6
31.50		217525.8	28926.9	20229.8	9.44	7752.1	6905.6	108.8	
31.26		250843.9	31930.6	21322.1	9.42	8532.7	8023.9	126.4	
31.01		288010.6	35207.4	22414.5	9.40	9336.9	9286.6	146.3	
30.61	17.50	185333.2	20512.0	13180.3	8.47	6572.4	6054.4	95.4	
29.99		204516.4	22137.8	13440.8	8.49	6927.0	6820.5	107.4	
29.60		234261.8	24570.1	13961.7	8.51	7554.1	7914.6	124.7	
29.22		267256.6	27275.4	14482.7	8.53	8200.2	9146.8	144.1	
31.59	20.00	140570.2	21554.1	16952.8	9.51	5562.9	4449.7	70.1	
30.96		146829.6	22100.2	16952.9	9.50	5626.0	4742.3	74.7	
29.81		156641.3	23192.5	16953.0	9.49	5738.0	5321.3	83.8	
30.65	17.50	135281.9	16479.3	11878.1	8.48	5171.2	4413.9	69.5	
30.01		141168.7	17025.4	11878.2	8.50	5229.1	4703.5	74.1	
28.86		152250.6	18117.7	11878.3	8.54	5331.9	5276.4	83.1	
28.11	17.50	136749.0	18141.2	11994.9	8.46	5320.9	4864.8	76.6	48.2
27.45		152873.0	19767.0	12255.4	8.49	5649.5	5569.0	87.7	
27.05		177877.9	22199.3	12776.3	8.51	6228.8	6575.2	103.6	
26.68		205641.6	24904.6	13297.3	8.53	6825.0	7707.9	121.4	
28.23	17.50	94789.4	14108.5	10692.7	8.48	4020.0	3357.7	52.9	
27.54		99764.0	14654.6	10692.8	8.50	4076.4	3623.0	57.1	
26.29		109026.6	15746.9	10692.9	8.55	4174.0	4147.1	65.3	
28.37	15.00	85756.4	9034.5	7047.3	7.06	3666.9	3022.4	47.6	
27.81		89701.3	9294.9	7047.4	7.06	3714.3	3225.6	50.8	
26.78		97147.3	9815.7	7047.5	7.07	3798.3	3627.2	57.1	
27.54	12.50	82476.9	6488.7	4501.6	6.10	3411.7	2995.3	47.2	
26.97		86189.0	6749.1	4501.6	6.13	3455.2	3196.3	50.3	
25.93		93179.0	7269.9	4501.8	6.20	3532.3	3593.4	56.6	

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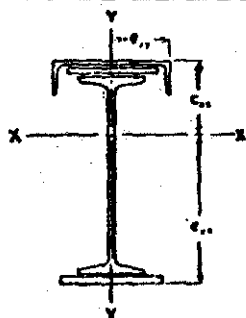


TABLE 12 (Contd.)

# SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)

Joist		Composed of		Weight per Metre (W)		Sectional Area a	Centre of Gravity C <sub>XX</sub>	Mean Thickness of Flanges			
Designation	w	Channel	Plate	Plate				Top	Bottom		
		Designation	Width x Thickness	Width x Thickness							
	Kg N	Kg N	mm mm	mm mm	kg N	N	cm <sup>2</sup>	cm	mm mm		
ISWB 500	95.2 933.9	ISMC 400	49.4	320 x 10.0	320 x 20.0	219.9	2157.2	280.15	24.40	25.8	31.5
			484.6	12.0	25.0	237.5	2329.9	302.55	25.63	27.4	36.5
				16.0	32.0	265.1	2600.6	337.75	26.95	30.6	43.5
				20.0	40.0	295.3	2896.9	376.15	28.37	33.8	51.5
		ISMC 350	42.1	250 x 10.0	320 x 20.0	207.1	2031.7	263.88	25.74	25.7	31.5
			413.0	12.0	25.0	223.6	2193.5	284.88	27.06	27.2	36.5
				16.0	32.0	249.1	2443.7	317.28	28.52	30.0	43.5
				20.0	40.0	277.0	2717.4	352.88	30.06	32.9	51.5
		ISMC 400	49.4	—	320 x 10.0	169.7	1664.8	216.15	22.81	17.8	21.5
			484.6	—	12.0	174.7	1713.8	222.55	23.65	—	23.5
				—	16.0	184.7	1811.9	235.35	25.21	—	27.5
				—	—	—	—	—	—	—	—
		ISMC 350	42.1	—	320 x 10.0	162.4	1593.1	206.88	23.69	21.5	21.5
			413.0	—	12.0	167.4	1642.2	213.28	24.54	18.6	23.5
				—	16.0	177.5	1741.3	226.08	26.11	27.5	27.5
				—	—	—	—	—	—	—	—
ISMB 450	72.4 710.2	ISMC 300	35.8	—	250 x 10.0	127.9	1254.7	162.91	20.93	16.3	20.4
			351.2	—	12.0	131.8	1293.0	167.91	21.71	—	22.4
				—	16.0	139.7	1370.5	177.91	23.14	—	26.4
				—	—	—	—	—	—	—	—
		ISMC 250	30.4	—	250 x 10.0	122.4	1200.7	155.94	21.71	17.5	20.4
			298.2	—	12.0	126.3	1239.0	160.94	22.49	—	22.4
				—	16.0	134.2	1316.5	170.94	23.93	—	26.4
				—	—	—	—	—	—	—	—
		ISMC 225	25.9	—	200 x 10.0	114.0	1118.3	145.28	21.57	18.0	23.0
			254.1	—	12.0	117.2	1149.7	149.28	22.25	—	25.0
				—	16.0	123.5	1211.5	157.28	23.51	—	29.0
				—	—	—	—	—	—	—	—

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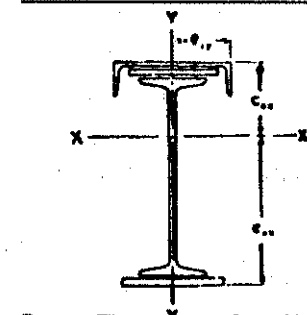


TABLE 12 (Contd.)

## SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)

Extreme Fibre Distance		Gross Moments of Inertia			Radius of Gyration	Moduli of Section		Maximum Allowable Moment	Maximum Allowable Shear
$e_{xx}$	$e_{yy}$	$I_{xx}$	$I_{yy}$	$I_{yy}$	$r_{yy}$	$Z_c$	$Z_t$	M	S
cm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm <sup>3</sup>	cm <sup>3</sup>	kg.m × 10 <sup>3</sup>	kg × 10 <sup>3</sup>
29.46	20.00	152781.2	26262.6	19307.2	9.68	6262.3	5185.5	81.7	46.8
28.93		170717.9	28174.1	19853.4	9.65	6661.7	5900.4	92.9	
28.71		198797.6	31177.8	20945.7	9.61	7377.1	6923.9	109.1	
28.49		230194.5	34454.6	22038.1	9.57	8114.6	8079.2	127.2	
28.07	17.50	143834.0	19759.2	12803.9	8.65	5587.0	5124.9	80.7	
27.45		159945.7	21385.0	13064.4	8.66	5911.3	5826.3	91.8	
27.09		184963.8	23817.3	13585.3	8.66	6485.6	6827.6	107.5	
26.75		212768.9	26522.6	14106.2	8.67	7077.7	7954.5	125.3	
29.05	20.00	106172.6	20801.3	16576.5	9.81	4654.5	3654.9	57.6	
28.41		111454.1	21347.4	16576.5	9.79	4712.8	3922.9	61.8	
27.25		121362.3	22439.7	16576.6	9.76	4815.0	4452.9	70.1	
28.12	17.50	101911.5	15726.5	11501.7	8.72	4301.4	3624.5	57.1	
27.47		106854.4	16272.6	11501.8	8.73	4354.4	3889.8	61.3	
26.30		116100.2	17364.9	11501.9	8.76	4447.3	4413.8	69.5	
25.83	15.00	62983.5	8498.7	6779.4	7.22	3008.6	2438.8	38.4	40.0
25.25		66244.2	8759.1	6779.5	7.22	3051.8	2623.1	41.3	
24.22		72359.1	9279.9	6779.6	7.22	3127.4	2987.2	47.0	
25.00	12.50	60394.7	5952.9	4233.7	6.18	2781.6	2416.0	38.1	
24.42		63446.4	6213.3	4233.8	6.21	2820.9	2598.3	40.9	
23.38		69152.5	6734.1	4233.8	6.28	2889.5	2958.0	46.6	
25.07	11.25	55138.5	4195.3	3111.5	5.37	2556.1	2199.5	34.6	
24.59		57604.5	4328.6	3111.5	5.38	2589.5	2342.2	36.9	
23.73		62272.6	4595.3	3111.6	5.41	2649.1	2623.8	41.3	

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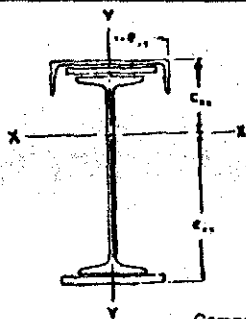


TABLE 12 (Contd.)

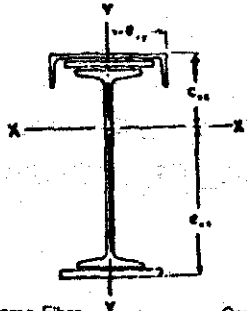
# SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)

Joist		Composed of		Top Flange		Bottom Flange		Weight per Metre (W)		Sectional Area	Centre of Gravity $C_{xx}$	Mean Thickness of Flanges	
Designation	W	Channel	Plate	Designation	w	Width x Thickness	Width x Thickness			a	$C_{xx}$	Top	Bottom
	kg							kg	N	cm <sup>2</sup>	cm	mm	mm
ISWB 450	79.4 778.9	ISMC 350	42.1	250 x 10.0	320 x 20.0	191.4	1877.6	243.81	23.31	24.0	29.6		
			413.0	12.0	25.0	207.9	2039.5	264.81	24.60	25.5	34.6		
				16.0	32.0	233.3	2288.7	297.21	26.02	28.3	41.6		
				20.0	40.0	261.3	2563.4	332.81	27.51	31.2	49.6		
		ISMC 350	42.1	—	320 x 10.0	146.6	1438.1	186.81	21.26	16.9	19.6		
			413.0	—	12.0	151.7	1488.2	193.21	22.10		21.6		
				—	16.0	161.7	1586.3	206.01	23.66		25.6		
		ISMC 300	35.8	—	250 x 10.0	134.9	1323.4	171.79	21.05	17.9	22.3		
			351.2	—	12.0	138.8	1361.6	176.79	21.78		24.3		
				—	16.0	146.6	1438.1	186.79	23.14		28.3		
ISMC 400	61.6 604.3	ISMC 300	35.8	—	250 x 10.0	117.0	1447.8	149.10	18.56	15.1	19.0		
			351.2	—	12.0	121.0	1187.0	154.10	19.32		21.0		
				—	16.0	128.8	1263.5	164.10	20.71		25.0		
		ISMC 250	30.4	—	250 x 10.0	111.6	1094.8	142.13	19.31	16.1	19.0		
			298.2	—	12.0	115.5	1133.1	147.13	20.07		21.0		
				—	16.0	123.3	1209.6	157.13	21.47		25.0		
		ISMC 225	25.9	—	200 x 10.0	103.2	1012.4	131.47	19.15	16.4	21.2		
			254.1	—	12.0	106.3	1042.8	135.47	19.82		23.2		
				—	16.0	112.6	1104.6	143.47	21.06		27.2		
		ISMC 200	22.1	—	200 x 10.0	99.4	975.1	126.67	19.74	17.3	21.2		
			216.8	—	12.0	102.6	1006.5	130.67	20.41		23.2		
				—	16.0	108.9	1068.3	138.67	21.66		27.2		
ISWB 400	66.7 654.3	ISMC 350	42.1	250 x 10.0	320 x 20.0	178.7	1753.0	227.67	20.90	22.7	28.1		
			413.0	12.0	25.0	195.2	1914.9	248.67	22.14	24.1	33.1		
				16.0	32.0	220.6	2164.1	281.07	23.51	27.0	40.1		
				20.0	40.0	248.6	2438.8	316.67	24.94	29.8	48.1		
		ISMC 350	42.1	—	320 x 10.0	134.0	1314.5	170.67	18.88	15.5	18.1		
			413.0	—	12.0	139.0	1363.6	177.07	19.71		20.1		
				—	16.0	149.0	1461.7	189.87	21.23		24.1		
		ISMC 300	35.8	—	250 x 10.0	122.2	1198.8	155.65	18.66	16.3	20.4		
			351.2	—	12.0	126.1	1237.0	160.65	19.38		22.4		
				—	16.0	134.0	1314.5	170.65	20.71		26.4		

(Continued)

TABLE 12 (Contd.)

## SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)



Extreme Fibre Distances		Gross Moments of Inertia			Radius of Gyration	Moduli of Section		Maximum Allowable Moment	Maximum Allowable Shear
$e_{xx}$	$e_{yy}$	$I_{xx}$	$I_{yy}$	$I_{yy}$	$r_{yy}$	$Z_{xx}$	$Z_c$	$M$	$S$
cm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm <sup>3</sup>	cm <sup>3</sup>	kg.m × 10 <sup>3</sup>	kg × 10 <sup>3</sup>
25.50	17.50	109500.7	18478.1	12163.4	8.71	4898.2	4293.6	67.6	39.1
24.91		122801.8	20103.9	12423.9	8.71	4992.8	4929.0	77.6	
24.59		143501.0	22536.2	12944.8	8.71	5514.9	5835.9	91.9	
24.30		166568.3	25241.5	13465.7	8.71	6053.8	6856.0	108.0	
25.55	17.50	75002.0	14445.4	10861.2	8.79	3528.7	2934.9	46.2	
24.91		79074.8	14991.5	10861.3	8.81	3577.3	3175.0	50.0	
23.75		86641.2	16083.8	10861.4	8.84	3661.2	3648.8	57.5	
25.71	15.00	67695.9	9371.4	7215.8	7.39	3215.3	2633.5	41.5	
25.18		70931.4	9631.8	7215.9	7.38	3256.1	2817.5	44.4	
24.22		77026.0	10152.6	7215.9	7.37	3328.3	3180.6	50.1	
23.20	15.00	46011.0	8086.8	6573.5	7.36	2478.4	1983.7	31.2	33.6
22.64		48636.3	8347.2	6573.6	7.36	2517.3	2148.3	33.8	
21.65		53534.8	8868.0	6573.6	7.35	2584.7	2473.0	39.0	
22.40	12.50	44012.4	5541.0	4027.8	6.24	2279.6	1964.6	30.9	
21.84		46458.3	5801.4	4027.8	6.28	2314.6	2127.4	33.5	
20.84		51006.2	6322.2	4027.9	6.34	2375.2	2448.0	38.6	
22.49	11.25	39864.9	3783.4	2905.6	5.36	2081.3	1772.9	27.9	
22.02		41845.3	3916.7	2905.6	5.38	2111.2	1900.4	29.9	
21.18		25574.7	4183.4	2905.7	5.40	2164.1	2151.7	33.9	
21.87	10.00	38502.0	2908.1	2030.3	4.79	1950.4	1760.5	27.7	
21.40		40373.6	3041.4	2030.3	4.82	1977.9	1886.8	29.7	
20.55		43890.0	3308.1	2030.4	4.88	2026.4	2135.6	33.6	
22.91	17.50	82554.2	18159.4	12004.0	8.93	3950.5	3602.9	56.7	32.5
22.37		93305.3	19785.2	12264.5	8.92	4214.7	4170.7	65.7	
22.10		110096.2	22217.5	12785.4	8.89	4683.6	4981.0	78.5	
21.87		128882.1	24922.8	13306.3	8.87	5168.7	5891.8	92.8	
22.93	17.50	54778.9	14126.7	10701.9	9.10	2901.7	2388.8	37.6	
22.30		58051.2	14672.8	10701.9	9.10	2945.2	2603.3	41.0	
21.18		64094.3	15765.1	10702.0	9.11	3019.4	3025.8	47.7	
23.10	15.00	49009.6	9052.7	7056.5	7.63	2626.8	2121.4	33.4	
22.58		51617.6	9313.1	7056.5	7.61	2663.5	2285.9	36.0	
21.65		56503.2	9833.9	7056.6	7.59	2727.7	2610.4	41.1	

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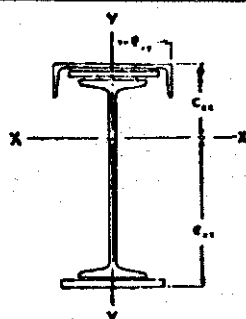


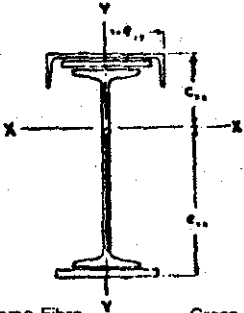
TABLE 12 (Contd.)

# SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)

Joist		Composed of		Top Flange		Bottom Flange		Weight per Metre (W)	Sectional Area a	Centre of Gravity C <sub>xx</sub>	Mean Thickness of Flanges	
		Designation	w	Channel	Plate	Plate	Top				Bottom	
Designa- tion	kg/N	Designa- tion	kg/N	Width x Thick- ness mm	Width x Thick- ness mm	Width x Thick- ness mm			cm <sup>2</sup>	cm	mm	mm
							kg	N				
ISMB 350	52.4	ISMC 300	35.8	—	250 x 10.0	107.8	1057.5	137.35	16.25	14.2	18.0	
	514.0		351.2	—	12.0	111.7	1095.8	142.35	16.98	20.0		
	—		—	16.0	119.6	1173.3	152.35	18.30	24.0			
		ISMC 250	30.4	—	250 x 10.0	102.3	1003.6	130.38	16.94	15.0	18.0	
			298.2	—	12.0	106.3	1042.8	135.38	17.68	20.0		
			—	—	16.0	114.1	1119.3	145.38	19.01	24.0		
		ISMC 225	25.9	—	200 x 10.0	94.0	922.1	119.72	16.78	15.2	19.9	
			254.1	—	12.0	97.1	952.6	123.72	17.42	21.9		
			—	—	16.0	103.4	1014.4	131.72	18.62	25.9		
		ISMC 200	22.1	—	200 x 10.0	90.2	884.9	114.92	17.33	16.0	19.9	
			216.8	—	12.0	93.4	916.3	118.92	17.98	21.9		
			—	—	16.0	99.6	977.1	126.92	19.18	25.9		
ISWB 350	56.9	ISMC 350	42.1	250	10.0	320 x 20.0	168.9	1656.9	215.16	18.51	21.8	27.1
	558.2		413.0	—	12.0	25.0	185.4	1818.8	236.16	19.68	23.2	32.1
	—		—	16.0	32.0	210.8	2067.9	268.56	20.98	26.0	39.1	
	—		—	20.0	40.0	238.8	2342.6	304.16	22.32	28.9	47.1	
		ISMC 350	42.1	—	320 x 10.0	124.2	1218.4	158.16	16.57	14.6	17.1	
			413.0	—	12.0	129.2	1267.4	164.56	17.36	19.1		
			—	—	16.0	139.2	1365.6	177.36	18.79	23.1		
		ISMC 300	35.8	—	250 x 10.0	112.4	1102.6	143.14	16.33	15.2	19.1	
			351.2	—	12.0	116.3	1140.9	148.14	17.07	21.1		
			—	—	16.0	124.1	1217.4	158.14	18.30	25.1		

TABLE 12 (Contd.)

## SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES (GIRDERS)



Extreme Fibre Distance		Gross Moments of Inertia			Radius of Gyration	Moduli of Section		Maximum Allowable Moment	Maximum Allowable Shear
$e_{xx}$	$e_{yy}$	$I_{xx}$	Whole Section	Top Flange Only	$r_{yy}$	$Z_c$	$Z_t$	$M$	$S$
cm	cm	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm	cm <sup>3</sup>	cm <sup>3</sup>	kg-m × 10 <sup>3</sup>	kg × 10 <sup>3</sup>
20.51	15.00	33028.1	8202.4	6631.4	7.73	2032.1	1610.6	25.4	26.8
19.98		35076.8	8462.8	6631.4	7.71	2066.2	1755.3	27.6	
19.06		38883.2	8983.6	6631.5	7.68	2124.6	2040.2	32.1	
19.77	12.50	31530.5	5656.6	4085.6	6.59	1861.0	1595.5	25.1	
19.23		33431.2	5917.0	4085.6	6.61	1891.3	1738.2	27.4	
18.30		36948.2	6437.8	4085.7	6.65	1943.3	2019.4	31.8	
19.86	11.25	28360.0	3899.0	2963.4	5.71	1690.2	1428.0	22.5	
19.42		29902.1	4032.3	2963.4	5.71	1716.1	1540.1	24.3	
18.62		32793.3	4299.0	2963.5	5.71	1761.5	1760.8	27.7	
19.28	10.00	27350.1	3023.7	2088.1	5.13	1578.2	1418.6	22.3	
18.83		28802.0	3157.0	2088.1	5.15	1601.7	1529.7	24.1	
18.03		31516.1	3423.7	2088.2	5.19	1643.1	1748.1	27.5	
20.30	17.50	61114.9	17947.3	11898.0	9.13	3301.0	3011.2	47.4	26.5
19.83		69579.5	19573.1	12158.5	9.10	3534.9	3509.5	55.3	
19.63		82872.0	22005.4	12679.3	9.05	3950.7	4220.9	66.5	
19.49		97826.0	24710.7	13200.2	9.01	4382.5	5020.0	79.1	
20.24	17.50	39357.4	13914.6	10595.9	9.38	2375.6	1944.3	30.6	
19.65		41902.9	14460.7	10595.9	9.37	2413.9	2132.3	33.6	
18.62		46583.1	15553.0	10596.0	9.36	2479.0	2502.0	39.4	
20.43	15.00	34941.9	8840.6	6950.5	7.86	2139.2	1710.7	26.9	
19.93		36977.4	9101.0	6950.5	7.84	2171.7	1855.1	29.2	
19.06		40774.6	9621.8	6950.6	7.80	2228.1	2139.3	33.7	

- NOTE : (1) The properties given in this Table are based on the gross area of the section.  
 (2) The mean thickness of flanges is computed according to Note 2 in Table II of IS : 800-1956.  
 (3) The maximum allowable moment is computed on the basis of allowable stress specified in 9.2.1. of IS 800-1956 and gross modulus of section ( $Z_t$ ) given in this Table.  
 (4) The maximum allowable shear is computed on the basis of the allowable shear stress specified in 9.3.2 and the effective sectional area defined in 20.6.2.2. of IS : 800-1956.

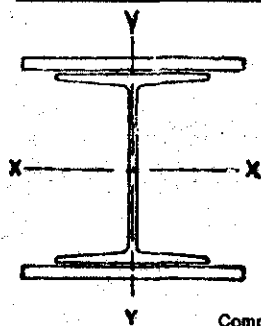


TABLE 13

# SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (COLUMNS)

Y		Compsed of		Weight per Metre (W)	Sectional Area a	Moduli of Section		Radii of Gyration			
One Steel Joist		Plates Each Flange to Form				Z <sub>xx</sub>	Z <sub>yy</sub>	r <sub>xx</sub>	r <sub>yy</sub>		
Designation	w	Width	Thickness								
	kg	N	mm	mm	kg	N	cm <sup>2</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm
ISHB 150	27.1	265.9	250	12.0	74.2	727.9	94.48	620.6	284.5	7.56	6.14
				16.0	89.9	881.9	114.48	767.5	367.9	7.81	6.34
				20.0	105.6	1035.9	134.48	917.3	451.2	8.05	6.48
				25.0	125.2	1228.2	159.48	1109.1	555.4	8.34	6.60
				32.0	152.7	1498.0	194.48	1387.1	701.2	8.74	6.71
				40.0	184.1	1806.0	234.48	1719.3	867.9	9.18	6.80
ISHB 150	30.6	300.2	250	12.0	77.7	762.2	98.98	630.3	286.8	7.44	6.02
				16.0	93.4	916.3	118.98	776.7	370.2	7.71	6.24
				20.0	109.1	1070.3	138.98	926.1	453.5	7.96	6.39
				25.0	128.7	1262.5	163.98	1117.5	557.7	8.26	6.52
				32.0	156.2	1532.3	198.98	1395.0	703.5	8.66	6.65
				40.0	187.6	1840.4	238.98	1726.7	870.2	9.12	6.75
ISHB 150	34.6	339.4	250	12.0	81.7	801.5	104.08	641.3	289.6	7.32	5.90
				16.0	97.4	955.5	124.08	787.2	372.9	7.60	6.13
				20.0	113.1	1109.5	144.08	936.2	456.3	7.86	6.29
				25.0	132.7	1301.8	169.08	1127.1	560.4	8.16	6.44
				32.0	160.2	1571.6	204.08	1403.9	706.3	8.58	6.58
				40.0	191.6	1879.6	240.08	1735.0	872.9	9.04	6.69
ISHB 200	37.3	365.9	250	12.0	84.4	828.0	107.54	924.8	327.4	9.81	6.17
				16.0	100.1	982.0	127.54	1117.0	410.7	10.08	6.34
				20.0	115.8	1136.0	147.54	1311.8	494.0	10.33	6.47
				25.0	135.4	1328.3	172.54	1559.5	598.2	10.63	6.58
				32.0	162.9	1598.0	207.54	1914.7	744.0	11.04	6.69
				40.0	194.3	1906.1	247.54	2333.9	910.7	11.49	6.78
ISHB 200	40.0	392.4	250	12.0	87.1	854.4	110.94	934.9	329.6	9.72	6.09
				16.0	102.8	1008.5	130.94	1126.7	412.9	9.99	6.28
				20.0	118.5	1162.5	150.94	1321.3	496.2	10.25	6.41
				25.0	138.1	1354.8	175.94	1568.6	600.4	10.56	6.53
				32.0	165.6	1624.5	210.94	1923.3	746.2	10.97	6.65
				40.0	197.0	1932.6	250.94	2342.0	912.9	11.43	6.74

(Continued)

NOTE : Properties given in this Table are based on the gross area of the section.

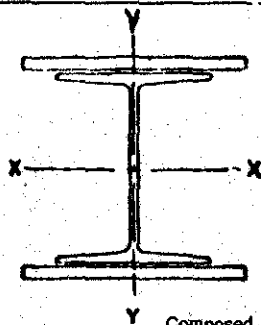


TABLE 13 (contd.)

## SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (COLUMNS)

Y		Composed of		Weight per Metre		Sectional Area	Moduli of Section		Radii of Gyration		
One Steel Joist		Plates									
		Each Flange to Form									
Designation	w	Width	Thickness	(W)		a					
	kg	N	mm	mm	kg	N	cm <sup>2</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm
ISHB 225	431.1	422.8	320	12.0	103.4	1014.4	131.74	1291.0	494.2	11.05	7.75
				16.0	123.5	1211.5	157.34	1569.7	630.7	11.32	8.01
				20.0	143.6	1408.7	182.94	1851.3	767.3	11.58	8.14
ISHB 225	43.1	422.8	320	25.0	168.1	1649.1	214.94	2208.2	937.9	11.89	8.36
				32.0	203.9	2000.3	259.74	2717.7	1176.9	12.30	8.51
				40.0	244.1	2394.6	310.94	3315.7	1449.9	12.75	8.64
ISHB 225	46.8	459.1	320	12.0	107.1	1050.7	136.46	1307.0	496.9	10.92	7.63
				16.0	127.2	1247.8	162.06	1585.2	633.4	11.21	7.91
				20.0	147.3	1445.0	187.66	1866.4	770.0	11.48	8.10
				25.0	172.4	1691.2	219.66	2222.7	940.6	11.80	8.28
				32.0	207.6	2036.6	264.46	2731.5	1179.6	12.22	8.45
ISHB 225	46.8	459.1	320	40.0	247.8	2430.9	315.66	3328.8	1452.6	12.68	8.58
ISHB 250	51.0	500.3	320	12.0	111.3	1091.9	141.76	1527.4	532.2	12.15	7.75
				16.0	131.4	1289.0	167.36	1834.9	668.7	12.43	8.00
				20.0	151.5	1486.2	192.96	2145.3	806.2	12.70	8.17
				25.0	176.6	1732.4	224.96	2538.0	975.9	13.01	8.39
				32.0	211.8	2077.8	269.76	3097.3	1214.8	13.43	8.49
ISHB 250	51.0	500.3	320	40.0	252.8	2480.0	320.96	3751.6	1487.9	13.89	8.61
ISHB 250	54.7	536.6	320	12.0	115.0	1128.2	146.51	1545.5	535.3	12.02	7.65
				16.0	135.1	1325.3	172.11	1852.4	671.9	12.32	7.90
				20.0	155.2	1522.5	197.71	2162.4	808.4	12.59	8.09
				25.0	180.3	1768.7	229.71	2554.5	979.1	12.92	8.26
				32.0	215.5	2114.1	274.51	3113.1	1218.0	13.34	8.43
ISHB 250	54.7	536.6	320	40.0	255.7	2508.4	325.71	3766.6	1491.1	13.81	8.56
ISHB 250	51.0	500.3	400	12.0	126.4	1240.0	160.96	1768.1	738.1	12.27	9.63
				16.0	151.5	1486.2	192.96	2156.4	951.4	12.55	9.93
				20.0	176.6	1732.4	224.96	2548.3	1164.4	12.82	10.18
				25.0	208.0	2040.5	264.96	3043.5	1431.4	13.13	10.39
				32.0	252.0	2472.1	320.96	3748.4	1804.7	13.54	10.60
				40.0	302.2	2964.6	384.96	4572.3	2231.0	14.00	10.77

(Continued)

NOTE : Properties given in this Table are based on the gross area of the section.

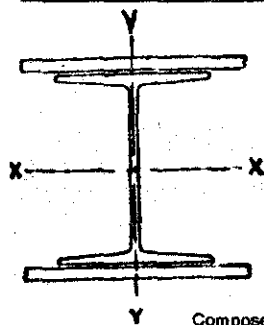


TABLE 13 (Contd.)

# SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (COLUMNS)

Y Composed of				Weight per Metre  (W)	Sectional Area  a	Moduli of Sectional Radii of Gyration					
Steel Joist		Plates				Z <sub>xx</sub>	Z <sub>yy</sub>	r <sub>xx</sub>	r <sub>yy</sub>		
Designation	w	Width	Thickness			cm <sup>2</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm	
	kg	N	mm			mm	kg	N			
ISHB 250	54.7	536.6	400	12.0	130.1	1276.3	165.71	1786.1	740.6	12.15	9.45
				16.0	155.2	1522.5	197.71	2174.0	953.9	12.45	9.82
				20.0	180.3	1768.7	229.71	2565.3	1167.3	12.73	10.08
				25.0	211.7	2076.8	269.71	3060.0	1433.9	13.05	10.31
				32.0	255.7	2508.4	325.71	3764.2	1807.3	13.47	10.53
				40.0	305.9	3000.9	389.71	4587.3	2233.9	13.94	10.71
ISHB 300	58.8	576.8	320	12.0	119.0	1167.4	151.65	1928.7	546.7	14.35	7.59
				16.0	139.1	1364.6	177.25	2297.0	683.2	14.67	7.85
				20.0	159.2	1561.8	202.85	2668.0	819.8	14.95	8.04
				25.0	184.4	1809.0	234.85	3135.9	990.4	15.29	8.21
				32.0	219.5	2153.3	279.65	3799.7	1229.4	15.73	8.39
				40.0	259.7	2547.7	330.85	4572.1	1302.4	16.20	8.52
ISHB 300	63.0	618.0	320	12.0	123.3	1209.6	157.05	1953.7	550.0	14.20	7.49
				16.0	143.4	1406.8	182.65	2321.4	686.6	14.53	7.76
				20.0	163.5	1603.9	208.25	2691.8	823.1	14.82	7.95
				25.0	188.6	1850.2	240.25	3159.0	993.8	15.17	8.14
				32.0	223.8	2195.5	285.05	3822.0	1232.7	15.62	8.32
				40.0	264.0	2589.8	336.25	4593.4	1505.8	16.11	8.46
ISHB 300	58.8	576.8	400	12.0	134.1	1315.5	170.8	2217.2	749.7	14.50	9.37
				16.0	159.2	1561.8	202.85	2682.3	963.0	14.82	9.74
				20.0	184.4	1809.0	234.85	3150.5	1176.3	15.10	10.01
				25.0	215.8	2117.0	274.85	3740.7	1443.0	15.43	10.25
				32.0	259.7	2547.7	330.85	4577.3	1816.3	15.87	10.48
				40.0	310.0	3041.1	394.85	5550.1	2243.0	16.34	10.66
ISHB 300	63.0	618.0	400	12.0	138.4	1357.7	176.25	2242.2	752.3	14.36	9.24
				16.0	163.5	1603.9	208.25	2706.7	965.7	14.69	9.63
				20.0	188.6	1850.2	240.25	3174.3	1179.0	14.99	9.91
				25.0	220.0	2158.2	280.25	3763.8	1445.7	15.33	10.16
				32.0	264.0	2589.8	336.25	4599.6	1819.0	15.78	10.40
				40.0	314.2	3082.3	400.25	5571.4	2245.7	16.26	10.59

(Continued)

NOTE : Properties given in this Table are based on the gross area of the section.

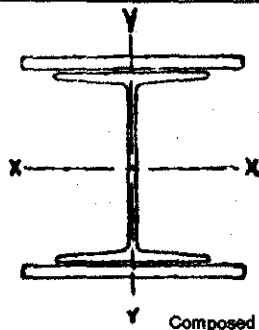


TABLE 13 (Contd.)

## SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (COLUMNS)

Composed of				Weight per Metre  (W)	Sectional Area  a	Moduli of Section		Radii of Gyration			
One Steel Joist		Plates Each Flange to Form				Z <sub>xx</sub>	Z <sub>yy</sub>	r <sub>xx</sub>	r <sub>yy</sub>		
Designation	w	Width	Thickness								
	kg	N	mm	mm	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm
ISHB 350	67.4	661.2	320	12.0	127.7	1252.7	162.71	2370.6	562.8	16.51	7.44
				16.0	147.8	1449.9	188.31	2799.7	699.3	16.85	7.71
				20.0	167.9	1647.1	213.91	3231.3	835.9	17.16	7.91
				25.0	193.0	1893.3	245.91	3774.7	1006.5	17.52	8.09
				32.0	228.2	2238.6	290.71	4543.4	1245.5	17.99	8.28
			40.0	268.4	2633.0	341.91	5434.7	1518.5	18.49	8.43	
ISHB 350	72.4	710.2	320	12.0	132.7	1301.8	169.01	2404.9	566.5	16.31	7.32
				16.0	152.8	1499.0	194.61	2833.4	703.0	16.68	7.60
				20.0	172.9	1696.1	220.21	3264.3	839.6	17.00	7.81
ISHB 350	72.4	710.2	320	25.0	198.0	1942.4	252.21	3906.8	1010.2	17.37	8.01
				32.0	233.2	2287.7	297.01	4574.4	1249.2	17.86	8.20
				40.0	273.3	2681.1	348.21	5464.6	1522.2	18.37	8.36
ISHB 350	67.4	661.2	400	12.0	142.8	1400.9	181.91	2707.0	762.6	16.68	9.16
				16.0	167.9	1647.1	213.91	3248.8	975.9	17.03	9.55
				20.0	193.0	1893.3	245.91	3793.5	1189.2	17.34	9.83
				25.0	224.4	2201.4	285.91	4478.8	1455.9	17.70	10.09
				32.0	268.4	2633.0	341.91	5447.8	1829.2	18.16	10.34
			40.0	318.6	3125.5	405.91	6570.5	2255.9	18.66	10.54	
ISHB 350	72.4	710.2	400	12.0	147.7	1448.9	188.21	2741.4	765.5	16.50	9.02
				16.0	172.9	1696.1	220.21	3282.5	978.9	16.87	9.43
				20.0	198.0	1942.4	252.21	3826.5	1192.2	17.20	9.72
				25.0	229.4	2250.4	292.21	4511.0	1458.9	17.57	9.99
				32.0	273.3	2681.1	348.21	5478.9	1832.2	18.05	10.26
			40.0	323.6	3174.5	412.21	6600.4	2258.9	18.55	10.47	
ISHB 400	77.4	759.3	320	12.0	137.7	1350.8	175.46	2862.4	580.1	18.60	7.27
				16.0	157.8	1548.0	201.06	3352.2	716.7	18.98	7.55
				20.0	177.9	1745.2	226.66	3844.3	853.2	19.32	7.76
				25.0	203.0	1991.4	258.66	4463.0	1023.9	19.70	7.96
				32.0	238.2	2336.7	303.46	5336.6	1262.8	20.20	8.16
			40.0	278.4	2731.1	354.66	6347.0	1535.9	20.72	8.32	

(Continued)

NOTE : Properties given in this Table are based on the gross area of the section.



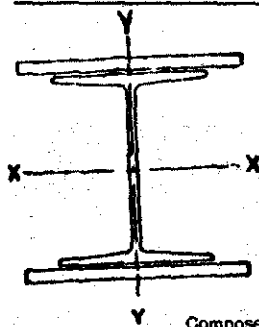


TABLE 13 (Contd.)

## SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (COLUMNS)

Y		Composed of		Weight per Metre		Sectional Area		Moduli of Section Radii of Gyration			
One Steel Joist		Plates		(W)		a		Z <sub>xx</sub>	Z <sub>yy</sub>	r <sub>xx</sub>	r <sub>yy</sub>
Each Flange to Form											
Designation	W	Width	Thick-ness								
	kg	N	mm	mm	kg	N	cm <sup>2</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm
ISHB 400	82.2	806.4	320	12.0	142.4	1396.9	181.46	2697.3	583.5	18.40	7.17
				16.0	162.5	1594.1	207.06	3386.5	720.1	18.80	7.46
				20.0	182.6	1791.3	232.66	3877.9	856.6	19.15	7.68
				25.0	207.8	2038.5	264.66	4495.9	1027.3	19.55	7.88
				32.0	242.9	2382.8	309.46	5368.5	1266.2	20.06	8.09
			40.0	283.1	2777.2	360.66	6377.9	1539.3	20.60	8.26	
ISHB 400	77.4	759.3	400	12.0	152.8	1499.0	194.66	3246.9	776.4	18.80	8.93
				16.0	177.9	1745.2	226.66	3865.2	989.7	19.19	9.35
				20.0	203.0	1991.4	258.66	4486.2	1203.1	19.53	9.64
				25.0	234.4	2299.5	298.66	5266.7	1469.7	19.92	9.92
				32.0	278.4	2731.1	354.66	6368.2	1843.1	20.41	10.19
			40.0	328.6	3223.6	418.66	7641.3	2269.7	20.93	10.41	
ISHB 400	82.2	806.4	400	12.0	157.5	1545.1	200.66	3281.8	779.2	18.62	8.81
				16.0	182.6	1791.3	232.66	3899.5	992.5	19.03	9.24
				20.0	207.8	2038.5	264.66	4519.9	1205.8	19.38	9.55
				25.0	239.2	2346.6	304.66	5299.6	1472.5	19.78	9.83
				32.0	283.1	2777.2	360.66	6400.1	1845.8	20.29	10.12
			40.0	333.4	3270.7	424.66	7672.1	2272.5	20.82	10.35	
ISHB 450	87.2	855.4	320	12.0	147.5	1447.0	187.94	3384.0	596.2	20.66	7.12
				16.0	167.6	1644.2	213.54	3934.6	732.7	21.07	7.41
				20.0	187.7	1841.3	239.14	4487.4	869.2	21.44	7.63
				25.0	212.8	2087.6	271.14	5181.8	1039.9	21.86	7.83
				32.0	248.0	2432.9	315.94	6160.9	1278.8	22.39	8.05
			40.0	288.2	2827.2	367.14	7291.2	1551.9	22.94	8.22	
ISHB 450	92.5	907.4	320	12.0	152.8	1499.0	194.69	3432.1	599.9	20.44	7.02
				16.0	172.9	1696.1	220.29	3981.9	736.4	20.87	7.31
				20.0	193.0	1893.3	245.89	4533.9	873.0	21.25	7.54
				25.0	218.1	2139.6	277.89	5227.3	1043.6	21.69	7.75
				32.0	253.3	2484.9	322.69	6205.2	1282.6	22.23	7.97
			40.0	293.5	2879.2	373.89	7334.2	1555.6	22.80	8.16	

(Continued)

NOTE : Properties given in this Table are based on the gross area of the section.

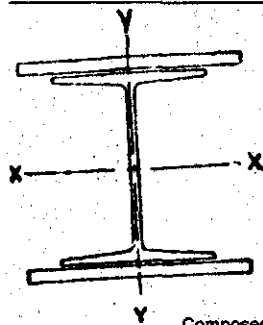


TABLE 13 (Contd.)

## SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES (COLUMNS)

Composed of				Weight per Metre  (W)	Sectional Area  a	Moduli of Section		Radii of Gyration			
One Steel Joist		Plates Each Flange to Form				$Z_{xx}$	$Z_{yy}$	$r_{xx}$	$r_{yy}$		
Designation	W	Width	Thickness								
	kg	N	mm	mm	kg	N	cm <sup>2</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm
ISHB 450	87.2	855.4	400	12.0	162.6	1595.1	207.14	3816.4	789.3	20.90	8.73
				16.0	187.7	1841.3	239.14	4511.5	1002.6	21.32	9.16
				20.0	212.8	2087.6	271.14	5209.1	1215.9	21.70	9.47
				25.0	244.2	2395.6	311.14	6085.1	1482.6	22.11	9.76
				32.0	288.2	2827.2	367.14	7319.7	1855.9	22.64	10.05
				40.0	338.4	3319.7	431.14	8744.1	2282.6	23.18	10.29
ISHB 450	92.5	907.4	400	12.0	167.9	1647.1	213.89	3864.5	792.2	20.69	8.61
				16.0	193.0	1893.3	245.89	4558.8	1005.6	21.14	9.04
				20.0	218.1	2139.6	277.89	5255.6	1218.9	21.53	9.37
				25.0	249.5	2447.6	317.89	6130.7	1485.6	21.96	9.67
				32.0	293.5	2879.2	373.89	7364.0	1858.9	22.50	9.97
				40.0	343.7	3371.7	437.89	8787.0	2285.6	23.96	10.22

NOTE : Properties given in this Table are based on the gross area of the section.

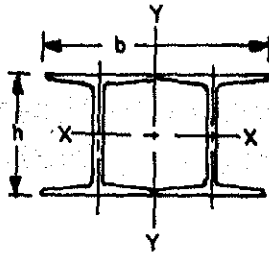


TABLE 14

## TWO JOISTS OF SAME SIZE WITH FLANGES BUTTING AND WELDED (COLUMNS)

Nominal Size		Composed of Two Joists Each of the Same Size		Weight per Metre $w$		Sectional Area	Moments of Inertia		Moduli of Section		Radii of Gyration		
$h \times b$		Designation	$W$			$a$	$I_{xx}$	$I_{yy}$	$Z_{xx}$	$Z_{yy}$	$r_{xx}$	$r_{yy}$	
mm	mm		kg	N	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm
150 × 300		ISHB 150	27.9	265.8	54.2	531.7	68.96	2911.2	4742.4	388.2	316.2	6.50	8.29
150 × 300		ISHB 150	30.6	300.2	61.2	600.4	77.96	3080.0	5483.0	410.6	358.4	6.29	8.39
150 × 300		ISHB 150	34.6	339.4	69.2	678.8	88.16	3271.2	6381.0	436.2	408.0	6.09	8.51
200 × 400		ISHB 200	37.3	365.9	74.6	731.8	95.08	7216.8	11442.2	721.6	572.1	8.71	10.97
200 × 400		ISHB 200	40.0	392.4	80.0	784.8	101.88	7443.6	12351.1	744.4	612.4	8.55	11.01
225 × 450		ISHB 225	43.1	422.8	86.2	845.6	109.88	10559.0	16614.3	938.6	738.4	9.80	12.30
225 × 450		ISHB 225	46.8	459.1	93.6	918.2	119.32	10957.6	18177.8	974.0	800.4	9.58	12.34
250 × 500		ISHB 250	51.0	500.3	102.0	1000.6	129.92	15473.0	24222.6	1237.8	968.7	10.91	13.65
250 × 500		ISHB 250	54.7	536.6	109.4	1073.2	139.42	15967.8	26104.2	1277.4	1037.7	10.70	13.69
300 × 500		ISHB 300	58.8	576.8	117.6	1153.6	149.70	25090.4	27777.8	1672.6	1111.1	12.95	13.62
300 × 500		ISHB 300	63.0	618.1	126.0	1236.1	160.50	25900.4	29934.0	1726.6	1188.8	12.70	13.66
350 × 500		ISHB 350	67.4	661.2	134.8	1322.4	171.82	38319.4	31749.7	2189.7	1270.0	14.93	13.59
350 × 500		ISHB 350	72.4	710.3	144.8	1420.5	184.42	39605.6	34253.1	2263.2	1360.3	14.65	13.63
400 × 500		ISHB 400	77.4	759.3	154.8	1518.6	197.32	56167.0	36287.8	2808.4	1451.5	16.87	13.56
400 × 500		ISHB 400	82.2	806.4	164.4	1612.8	209.32	57647.0	38665.9	2888.4	1537.4	16.61	13.59
450 × 500		ISHB 450	87.2	855.4	174.4	1710.9	222.28	78421.6	40701.6	3485.4	1628.1	18.78	13.53
450 × 500		ISHB 450	92.5	907.4	185.0	1814.8	235.78	80699.8	43374.0	3586.6	1724.6	18.50	13.56

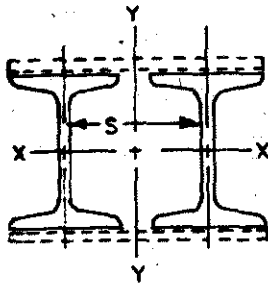


TABLE 15

## TWO JOISTS OF SAME SIZE LACED OR BATTENED (COLUMNS)

	Designation	ISHB 150	ISHB 150	ISHB 150
	W, Kg	27.1	30.6	34.6
	N	265.8	300.2	339.4
	Weight per Metre, kg	54.2	61.2	69.2
	N	531.7	600.4	678.8
	Sectional Area, cm <sup>2</sup>	68.96	77.96	88.16
	Moment of Inertia, $I_{xx}$ cm <sup>4</sup>	2911.2	3080.0	3271.2
	Modulus of Section, $Z_{xx}$ cm <sup>3</sup>	388.2	410.6	436.2
	Radius of Gyration, $r_{xx}$ cm	6.50	6.29	6.09

Spacing Between C to C of Beams S	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$
cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
15.0	4742.3	316.2	8.29	—	—	—	—	—	—
17.5	6143.1	378.0	9.44	6889.4	420.1	9.40	7739.5	467.1	9.37
20.0	7759.3	443.4	10.61	8716.6	493.9	10.57	9805.8	550.3	10.55
22.5	9591.1	511.5	11.79	10787.4	570.8	11.76	12147.5	637.0	11.74
25.0	11638.3	581.9	12.99	13101.8	650.2	12.96	14764.8	726.6	12.94
27.5	13901.1	654.2	14.20	15659.9	731.8	14.17	17657.5	818.6	14.15
30.0	16379.3	728.0	15.41	18461.6	815.1	15.39	20825.8	912.6	15.37
35.0	21982.3	879.3	17.85	24795.8	985.9	17.83	27988.8	1105.4	17.82
40.0	28447.3	1034.4	20.31	32104.6	1161.1	20.29	36253.8	1303.2	20.28

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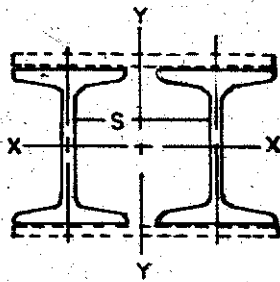


TABLE 15 (Contd.)

## TWO JOISTS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation	ISHB 200	ISHB 200	ISHB 225
W kg	37.3	40.0	43.1
N	365.9	392.4	422.8
Weight per Metre, kg	74.6	80.0	86.2
N	731.8	784.8	845.6
Sectional Area, cm <sup>2</sup>	95.08	101.88	109.88
Moment of Inertia, $I_{xx}$ cm <sup>4</sup>	7216.8	7443.6	10559.0
Modulus of Section $Z_{xx}$ cm <sup>3</sup>	721.6	744.4	938.6
Radius of Gyration, $r_{xx}$ cm	8.71	8.55	9.80

Spacing Between C to C of Beam S	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$
cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
20.0	11442.3	572.1	10.97	—	—	—	—	—	—
22.5	13967.8	657.3	12.12	14883.3	697.6	12.09	16614.4	738.4	12.30
25.0	16790.5	746.2	13.29	17907.9	792.9	13.26	19876.4	836.9	13.45
27.5	19910.3	838.3	14.47	21250.8	891.6	14.44	23481.9	939.3	14.62
30.0	23327.3	933.1	15.66	24912.1	993.1	15.64	27430.7	1045.0	15.80
35.0	31052.5	1129.2	18.07	33189.9	1203.2	18.05	36358.4	1264.6	18.19
40.0	39966.3	1332.2	20.50	42741.1	1420.7	20.48	46659.7	1493.1	20.61
45.0	50068.5	1540.6	22.95	53565.9	1643.9	22.93	58334.4	1728.4	23.04
50.0	61359.3	1753.1	25.40	65664.1	1871.6	25.39	71382.7	1969.2	25.49
55.0	—	—	—	—	—	—	—	—	—
60.0	—	—	—	—	—	—	—	—	—

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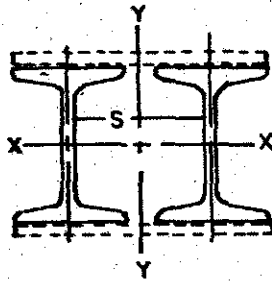


TABLE 15 (Contd.)

TWO JOISTS OF SAME SIZE LACED  
OR BATTENED (COLUMNS)

ISHB 225			ISHB 250			ISHB 250			ISHB 300		
46.8			51.0			54.7			58.8		
459.1			500.3			536.6			576.8		
93.6			102.0			109.4			117.6		
918.2			1000.6			1073.2			1153.6		
119.32			129.92			139.42			149.70		
10957.6			15473.0			15967.8			25090.4		
974.0			1237.8			1277.4			1672.6		
9.58			10.91			10.70			12.95		
Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$
cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
21436.9	898.6	13.40	24222.5	968.9	13.65	—	—	—	27777.8	1111.1	13.62
25352.1	1009.8	14.58	28485.5	1085.2	14.81	30382.4	1153.3	14.76	32689.8	1245.3	14.78
29640.1	1124.6	15.76	33154.5	1205.6	15.97	35392.9	1282.6	15.93	38069.6	1384.4	15.95
39334.9	1363.2	18.16	43710.5	1457.0	18.34	46720.7	1552.4	18.31	50232.8	1674.4	18.32
50521.1	1611.3	20.58	55890.5	1719.7	20.74	59791.4	1834.4	20.71	64267.1	1977.5	20.72
63198.9	1866.8	23.01	69694.5	1991.3	23.16	74604.7	2125.8	23.13	80172.8	2290.7	23.14
77368.1	2128.1	25.46	85122.5	2269.9	25.60	91160.9	2424.8	25.57	97949.6	2612.0	25.58
—	—	—	—	—	—	—	—	—	117597.8	2939.9	28.03
—	—	—	—	—	—	—	—	—	139117.1	3273.3	30.48

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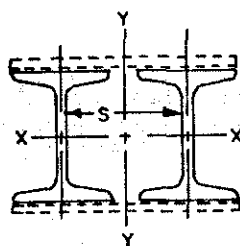


TABLE 15 (Contd.)

## TWO JOISTS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation	ISHB 300	ISHB 350	ISHB 350
w, kg	63.0	67.4	72.4
N	618.0	661.2	710.2
Weight per Metre, kg	126.0	134.8	144.8
N	1236.1	1322.4	1420.5
Sectional Area, cm <sup>2</sup>	160.50	171.82	184.42
Moment of Inertia, $I_{xx}$ cm <sup>4</sup>	25900.4	38319.4	39605.6
Modulus of Section, $Z_{xx}$ cm <sup>3</sup>	1726.6	2189.6	2263.2
Radius of Gyration, $r_{xx}$ cm	12.70	14.93	14.65

Spacing Between C to C of Beams S	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$
cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
25.0	—	—	—	31749.7	1270.0	13.59	—	—	—
27.5	34837.9	1322.6	14.77	37387.5	1424.3	14.75	39887.9	1514.3	14.71
30.0	40605.8	1471.8	15.91	43562.3	1584.1	15.92	46515.5	1686.0	15.88
35.0	53646.5	1782.9	18.28	57522.7	1917.4	18.30	61499.7	2043.9	18.26
40.0	68693.3	2107.8	20.69	73630.8	2265.6	20.70	78789.0	2417.6	20.67
45.0	85746.5	2443.6	23.11	91886.7	2625.3	23.13	98383.7	2803.8	23.10
50.0	104805.8	2788.1	25.55	112290.3	2994.4	25.56	120283.5	3199.9	25.54
55.0	125871.5	3139.7	28.00	134841.7	3371.0	28.01	144488.7	3604.1	27.99
60.0	148943.3	3497.1	30.46	159540.8	3753.9	30.47	170999.0	4015.0	30.45
65.0	—	—	—	—	—	—	—	—	—
70.0	—	—	—	—	—	—	—	—	—

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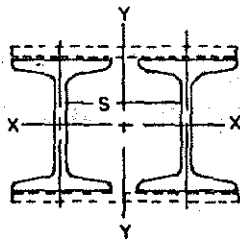


TABLE 15 (Contd.)

TWO JOISTS OF SAME SIZE LACED  
OR BATTENED (COLUMNS)

ISHB 400			ISHB 400			ISHB 450			ISHB 450		
77.4			82.2			87.2			92.5		
759.3			806.4			855.4			907.4		
154.8			164.4			174.4			185.0		
1518.6			1612.8			1710.9			1814.8		
197.32			209.32			222.28			235.78		
56167.0			57647.0			78421.6			80699.8		
2808.4			2888.4			3485.4			3586.6		
16.87			16.61			18.78			18.50		
Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm
36287.9	1451.5	13.56	—	—	—	40701.7	1628.1	13.53	—	—	—
42762.4	1629.0	14.72	45140.5	171.7	14.69	47995.3	1828.4	14.69	50667.2	1924.7	14.66
49853.6	1812.9	15.89	52662.9	1909.8	15.86	55983.5	2035.8	15.87	59140.5	2144.7	15.84
55885.9	2196.2	18.27	69670.2	2316.5	18.24	74043.7	2468.1	18.25	78297.6	2603.4	18.22
84384.6	2596.5	20.68	89293.9	2741.2	20.65	94882.5	2919.5	20.66	100402.0	3082.2	20.64
105349.9	3010.0	23.11	111534.2	3179.9	23.08	118499.7	3385.7	23.09	125453.6	3576.7	23.07
128781.6	3434.2	25.55	136390.9	3629.8	25.53	144895.5	3863.9	25.53	153452.5	4083.9	25.51
154679.9	3867.0	28.00	163864.2	4088.9	27.98	174069.7	4351.7	27.99	184398.6	4601.3	27.97
183044.6	4306.9	30.46	193953.9	4555.6	30.44	206022.5	4847.6	30.44	218292.0	5127.2	30.47
213875.9	4752.8	32.92	226660.2	5028.5	32.91	240753.7	5350.1	32.91	255132.6	5660.2	32.89
247173.6	5203.7	35.39	261982.9	5506.7	35.38	278263.5	5858.2	35.38	294920.5	6199.1	35.37

Note : The properties given in this Table are based on the gross area of the section.



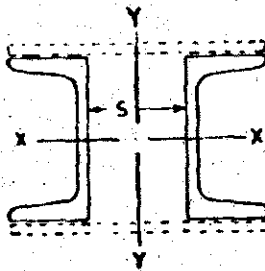


TABLE 16

# TWO CHANNELS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation		ISJC 100		ISJC 125		ISJC 150			
Weight, kg		11.6		15.8		19.8			
N		113.8		155.0		194.2			
Area, cm <sup>2</sup>		14.82		20.14		25.30			
Moment of Inertia $I_{xx}$ cm <sup>4</sup>		247.6		540.0		942.2			
Modulus of Section $Z_{xx}$ cm <sup>3</sup>		49.6		86.4		125.6			
Radius of Gyration $r_{xx}$ cm		4.09		5.18		6.10			
Spacing Between Webs $S$  mm	Moment of Inertia $I_{yy}$  cm <sup>4</sup>	Modulus of Section $Z_{yy}$  cm <sup>3</sup>	Radius of Gyration $r_{yy}$  cm	Moment of Inertia $I_{yy}$  cm <sup>4</sup>	Modulus of Section $Z_{yy}$  cm <sup>3</sup>	Radius of Gyration $r_{yy}$  cm	Moment of Inertia $I_{yy}$  cm <sup>4</sup>	Modulus of Section $Z_{yy}$  cm <sup>3</sup>	Radius of Gyration $r_{yy}$  cm
0.0	58.8	13.1	1.99	105.6	21.1	2.29	145.5	26.5	2.40
5.0	70.1	14.8	2.18	123.3	23.5	2.47	168.1	29.2	2.58
10.0	83.3	16.7	2.37	143.6	26.1	2.67	193.8	32.3	2.77
15.0	98.3	18.7	2.58	166.4	28.9	2.87	222.7	35.6	2.97
20.0	115.2	20.9	2.79	191.8	32.0	3.09	254.8	39.6	3.17
25.0	133.9	23.3	3.01	219.6	35.1	3.30	290.0	43.0	3.39
30.0	154.4	25.7	3.23	250.0	38.5	3.52	328.4	46.9	3.60
35.0	176.9	28.3	3.45	282.9	41.9	3.75	370.0	51.0	3.82
40.0	201.1	30.9	3.68	318.2	45.5	3.98	414.7	55.3	4.05
45.0	227.2	33.7	3.92	356.2	49.1	4.21	462.6	59.7	4.38
50.0	255.2	36.5	4.15	396.5	52.9	4.44	513.6	64.2	4.51
60.0	316.7	42.2	4.62	485.0	60.6	4.91	625.2	73.6	4.97
70.0	385.6	48.2	5.10	583.5	68.6	5.38	749.4	83.3	5.44
80.0	462.0	54.3	5.58	692.0	76.9	5.86	886.3	93.3	5.92
90.0	545.7	60.6	6.07	810.7	85.3	6.34	1035.8	103.6	6.40
100.0	636.8	67.0	6.56	939.4	93.9	6.83	1198.0	114.1	6.88
120.0	841.3	80.1	7.53	1227.0	111.5	7.81	1560.3	135.7	7.85
140.0	1075.5	93.5	8.52	1554.8	129.6	8.79	1973.2	157.9	8.83
160.0	1339.3	107.1	9.51	1923.0	147.9	9.77	2436.7	180.5	9.81
180.0	1632.7	120.9	10.50	2331.4	166.5	10.76	2950.8	203.5	10.80
200.0	1955.8	134.9	11.49	2780.2	185.3	11.75	3515.5	226.8	11.79
220.0	2308.5	148.9	12.48	3269.2	204.3	12.74	4130.8	250.3	12.78
240.0	2690.9	163.1	13.47	3798.4	223.4	13.73	4796.7	274.1	13.77
260.0	3102.9	177.3	14.47	4368.0	242.7	14.73	5513.2	298.0	14.76
280.0	3544.5	191.6	15.47	4977.8	262.0	15.72	6280.3	322.1	15.76
300.0	4015.8	205.9	16.46	5628.0	281.4	16.72	7098.0	346.2	16.75
320.0	4516.7	220.3	17.46	6318.4	300.9	17.71	7966.3	370.5	17.74
340.0	5047.3	234.8	18.46	7049.0	320.4	18.71	8885.1	394.9	18.74
360.0	5607.5	249.2	19.45	7820.0	340.0	19.70	9854.6	419.3	19.74
380.0	6197.3	263.7	20.45	8631.2	359.6	20.70	10874.7	443.9	20.73
400.0	6816.8	278.2	21.45	9482.8	379.3	21.70	11945.4	468.4	21.73

(Continued)

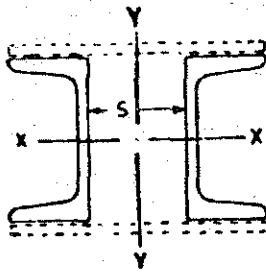


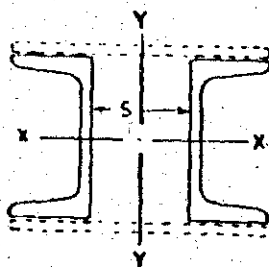
TABLE 16 (Contd.)

TWO CHANNELS OF SAME SIZE  
LACED OR BATTENED (COLUMNS)

	Designation	ISJC 175	ISJC 200	ISJC 75					
	Weight, kg	22.4	27.8	11.4					
	N	219.7	272.7	111.8					
	Area, cm <sup>2</sup>	28.48	35.54	14.52					
	Moment of Inertia $I_{xx}$ cm <sup>4</sup>	1439.8	2322.4	132.2					
	Modulus of Section $Z_{xx}$ cm <sup>3</sup>	164.6	232.2	35.2					
	Radius of Gyration $r_{xx}$ cm	7.11	8.08	3.02					
Spacing Between Webs S	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$
mm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
0.0	188.2	31.4	2.57	306.3	43.8	2.94	49.5	12.4	1.85
5.0	214.9	34.4	2.75	343.6	47.4	3.11	60.2	14.2	2.04
10.0	245.2	37.7	2.93	385.2	51.0	3.29	72.7	16.2	2.24
15.0	279.0	41.3	3.13	431.3	55.7	3.48	87.0	18.3	2.45
20.0	316.4	45.2	3.33	481.9	60.2	3.68	103.2	20.6	2.67
25.0	357.3	49.3	3.54	536.9	65.1	3.89	121.2	23.1	2.89
30.0	401.8	53.6	3.76	596.3	70.2	4.10	140.9	25.6	3.12
35.0	449.9	58.0	3.97	660.2	75.5	4.31	162.5	28.3	3.35
40.0	501.5	62.7	4.20	728.5	80.9	4.53	186.0	31.0	3.58
45.0	556.7	67.5	4.42	801.3	86.6	4.75	211.2	33.8	3.81
50.0	615.4	72.4	4.65	878.5	92.5	4.97	238.2	36.6	4.05
60.0	743.6	82.6	5.11	1046.3	104.6	5.43	297.8	42.5	4.53
70.0	886.0	93.3	5.58	1231.8	117.3	5.89	364.5	48.6	5.01
80.0	1042.6	104.3	6.05	1435.1	130.5	6.35	438.6	54.8	5.50
90.0	1213.5	115.6	6.53	1656.1	144.0	6.83	519.9	61.2	5.98
100.0	1398.6	127.1	7.01	1895.0	157.9	7.30	608.5	67.6	6.47
120.0	1811.6	151.0	7.98	2425.9	186.6	8.26	807.4	80.7	7.46
140.0	2281.5	175.5	8.95	3028.0	216.3	9.23	1035.4	94.1	8.44
160.0	2808.4	200.6	9.93	3701.1	246.7	10.20	1292.4	107.7	9.43
180.0	3392.2	226.1	10.91	4445.3	277.8	11.18	1578.4	121.4	10.43
200.0	4033.0	252.1	11.90	5260.6	309.4	12.17	1893.5	135.3	11.42
220.0	4730.8	278.3	12.88	6147.0	341.5	13.15	2237.6	149.2	12.41
240.0	5485.5	304.8	13.88	7104.4	373.9	14.14	2610.8	163.2	13.41
260.0	6297.2	331.4	14.87	8132.9	406.6	15.13	3013.0	177.2	14.41
280.0	7165.8	358.3	15.86	9232.6	439.6	16.12	3444.2	191.3	15.40
300.0	8091.4	385.3	16.86	10403.2	472.9	17.11	3904.5	205.5	16.40
320.0	9074.0	412.5	17.85	11645.0	506.3	18.10	4393.8	219.7	17.40
340.0	10113.5	439.7	18.84	12957.9	539.9	19.09	4912.2	233.9	18.39
360.0	11210.0	467.1	19.84	14341.8	573.7	20.09	5459.6	248.2	19.39
380.0	12363.4	494.5	20.84	15796.8	607.6	21.08	6036.1	262.4	20.39
400.0	13573.8	522.1	21.83	17322.9	641.6	22.08	6641.5	276.7	21.39

(Continued)

TABLE 16 (Contd.)



## TWO CHANNELS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation		ISLC 100		ISLC 125		ISLC 150			
Weight, Kg		15.8		21.4		28.8			
N		155.0		209.9		282.5			
Area, cm <sup>2</sup>		20.04		27.34		36.72			
Moment of Inertia $I_{xx}$ , cm <sup>4</sup>		329.4		713.6		1394.4			
Modulus of Section $Z_{xx}$ , cm <sup>3</sup>		65.9		114.2		186.0			
Radius of Gyration $r_{xx}$ , cm		4.06		5.11		6.16			
Spacing Between Webs S mm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm
0.0	102.2	20.4	2.26	228.2	35.1	2.89	414.4	55.3	3.36
5.0	119.7	22.8	2.44	257.8	38.2	3.07	460.4	59.4	3.54
10.0	139.7	25.4	2.64	290.8	41.5	3.30	511.0	63.9	3.73
15.0	162.2	28.2	2.84	327.2	45.1	3.46	566.1	68.6	3.93
20.0	187.2	31.2	3.06	367.1	49.0	3.66	625.9	73.6	4.13
25.0	214.7	34.4	3.27	410.3	52.9	3.87	690.3	78.9	4.34
30.0	244.7	37.6	3.49	457.0	57.1	4.09	759.2	84.4	4.55
35.0	277.2	41.1	3.72	507.1	61.5	4.31	832.7	90.0	4.76
40.0	312.2	44.6	3.95	560.6	66.0	4.53	910.9	95.9	4.98
45.0	349.7	48.2	4.18	617.6	70.6	4.75	993.6	101.9	5.20
50.0	389.8	52.0	4.41	677.9	75.3	4.98	1080.9	108.1	5.43
60.0	477.3	59.7	4.88	808.9	85.2	5.44	1269.2	120.9	5.88
70.0	574.9	67.6	5.36	953.5	95.4	5.91	1476.0	140.6	6.34
80.0	682.6	75.8	5.84	1111.8	105.9	6.38	1701.1	147.9	6.81
90.0	800.2	84.2	6.32	1253.8	116.7	6.85	1944.5	162.0	7.28
100.0	927.8	92.8	6.80	1469.4	127.8	7.33	2206.3	176.5	7.75
120.0	1213.2	110.3	7.78	1881.7	150.5	8.30	2785.0	206.3	8.71
140.0	1538.7	128.2	8.76	2348.7	174.0	9.27	3437.2	237.0	9.68
160.0	1904.2	146.5	9.75	2870.3	198.0	10.25	4162.8	268.6	10.65
180.0	2309.8	165.0	10.74	3446.6	222.4	12.28	4961.8	300.7	11.62
200.0	2756.5	183.7	11.73	4077.7	247.1	12.21	5834.3	333.4	12.61
220.0	3241.3	202.6	12.72	4763.3	272.2	13.20	6780.2	366.5	13.59
240.0	3767.1	221.6	13.71	5503.7	297.5	14.19	7799.5	400.0	14.57
260.0	4333.0	240.7	14.70	6298.8	323.0	15.18	8892.3	433.8	15.56
280.0	4939.0	259.9	15.70	7148.5	348.7	16.17	10058.5	467.8	16.55
300.0	5585.1	279.3	16.69	8052.9	374.6	17.16	11298.2	502.1	17.54
320.0	6271.3	298.6	17.69	9012.0	400.5	18.16	12404.9	527.9	18.38
340.0	6997.6	318.1	18.69	10025.7	426.6	19.15	13997.9	571.3	19.52
360.0	7763.9	337.6	19.68	11094.2	452.8	20.14	15457.8	606.2	20.52
380.0	8570.3	357.1	20.68	12217.3	479.1	21.14	16991.3	641.2	21.51
400.0	9416.8	376.7	21.68	13395.1	505.5	22.13	18598.1	676.3	22.51

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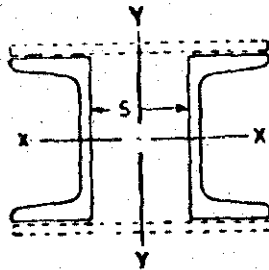


TABLE 16 (Contd.)

TWO CHANNELS OF SAME SIZE  
LACED OR BATTENED (COLUMNS)

Designation		ISLC 175		ISLC 200		ISLC 225			
Weight, kg		35.2		41.2		48.0			
N		345.3		404.2		470.9			
Area, cm <sup>2</sup>		44.80		52.44		61.06			
Moment of Inertia $I_{xx}$ cm <sup>4</sup>		2296.8		3451.0		5095.8			
Modulus of Section $Z_{xx}$ cm <sup>3</sup>		262.6		345.2		453.0			
Radius of Gyration $r_{xx}$ cm		7.16		8.11		9.14			
Spacing Between Webs S	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$
mm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
0.0	511.0	68.1	3.38	583.4	77.8	3.34	788.5	87.6	3.59
5.0	567.6	73.2	3.56	648.3	83.6	3.52	867.4	93.0	3.77
10.0	629.1	78.7	3.75	719.7	90.0	3.70	954.0	100.4	3.95
15.0	697.5	84.5	3.95	797.7	96.7	3.90	1048.2	107.5	4.14
20.0	770.9	90.7	4.15	882.3	103.8	4.10	1150.0	115.0	4.34
25.0	849.8	97.1	4.36	973.4	111.2	4.31	1259.4	122.9	4.54
30.0	934.4	103.8	4.57	1071.1	119.0	4.52	1376.5	131.1	4.75
35.0	1024.6	110.8	4.78	1175.3	127.1	4.73	1501.2	139.6	4.96
40.0	1120.3	117.9	5.00	1286.1	135.4	3.95	1633.6	148.5	5.17
45.0	1221.7	125.3	5.22	1403.4	143.9	5.17	1773.6	157.6	5.39
50.0	1328.6	132.9	5.45	1527.3	152.7	5.40	1921.2	167.1	5.61
60.0	1559.4	148.5	5.90	1794.8	170.9	5.85	2239.3	186.6	6.06
70.0	1812.5	164.8	6.36	2088.4	189.9	6.31	2587.9	207.0	6.51
80.0	2088.0	181.6	6.83	2408.3	209.4	6.78	2967.1	228.2	6.97
90.0	2385.9	198.8	7.30	2754.4	229.5	7.25	3376.8	250.1	7.44
100.0	2706.2	216.5	7.77	3126.7	250.1	7.72	3817.1	272.6	7.91
120.0	3414.1	252.9	8.73	3950.0	292.6	8.68	4789.2	319.7	8.86
140.0	4211.5	290.5	9.70	4878.2	336.4	9.64	5883.4	367.7	9.82
160.0	5098.6	328.9	10.67	5911.3	381.4	10.62	7099.7	417.6	10.78
180.0	6075.2	368.3	11.64	7049.3	427.2	11.59	8438.1	468.8	11.76
200.0	7141.4	408.1	12.63	8292.1	473.8	12.57	9898.7	521.0	12.73
220.0	8297.3	448.5	13.61	9639.8	521.1	13.56	11481.3	574.1	13.71
240.0	9542.7	489.4	14.59	11092.4	568.8	14.54	13186.1	627.9	14.70
260.0	10877.8	530.6	15.58	12649.8	617.1	15.53	15013.0	682.4	15.68
280.0	12302.4	572.9	16.57	14312.2	665.7	16.52	16962.1	737.5	16.87
300.0	13816.1	614.1	17.56	16079.4	714.6	17.51	19033.2	793.1	17.66
320.0	15420.5	656.2	18.55	17951.5	763.9	18.50	21226.5	849.1	18.64
340.0	17113.9	698.5	19.54	19928.5	813.4	19.49	23541.9	905.5	19.64
360.0	18897.0	741.1	20.54	22104.4	863.2	20.49	25979.4	962.2	20.62
380.0	20769.6	783.8	21.53	24197.1	913.1	21.48	28539.1	1019.3	21.62
400.0	22731.8	826.6	22.53	26488.8	963.2	22.48	31220.8	1076.6	22.61
450.0	—	—	—	—	—	—	38459.5	1220.9	25.10
500.0	—	—	—	—	—	—	46461.4	1366.5	27.58

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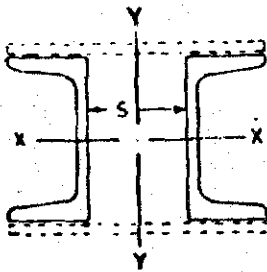


TABLE 16 (Contd.)

## TWO CHANNELS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation		ISLC 250		ISLC 300		ISLC 350			
Weight kg		56.0		66.2		77.6			
N		549.4		649.4		761.3			
Area, cm <sup>2</sup>		71.30		84.22		98.94			
Moment of Inertia $I_{xx}$ cm <sup>4</sup>		7375.0		12095.8		18625.2			
Modulus of Section $Z_{xx}$ cm <sup>2</sup>		590.0		806.4		1064.2			
Radius of Gyration $r_{xx}$ cm		10.17		11.98		13.72			
Spacing Between Webs $S$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$	Moment of Inertia $I_{yy}$	Modulus of Section $Z_{yy}$	Radius of Gyration $r_{yy}$
mm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
0.0	1116.6	111.7	3.96	1239.6	124.0	3.84	1363.9	136.4	3.71
5.0	1217.3	118.8	4.13	1352.3	131.9	4.01	1489.3	145.3	3.88
10.0	1326.9	126.4	4.31	1475.5	140.5	4.19	1627.0	155.0	4.06
15.0	1445.4	134.5	4.50	1609.2	149.7	4.37	1777.2	165.3	4.24
20.0	1572.9	143.0	4.70	1753.4	159.4	4.56	1939.7	176.3	4.43
25.0	1709.3	151.9	4.90	1908.1	169.6	4.76	2114.6	188.0	4.62
30.0	1854.5	161.3	5.10	2073.4	180.3	4.96	2301.8	200.2	4.82
35.0	2008.7	171.0	5.31	2249.2	191.4	5.17	2501.4	212.9	5.03
40.0	2171.8	181.0	5.52	2435.6	203.0	5.38	2713.4	226.1	5.24
45.0	2343.8	191.3	5.73	2632.4	214.9	5.59	2937.7	239.8	5.45
50.0	2524.8	202.0	5.95	2839.8	227.2	5.81	3174.5	254.0	5.66
60.0	2913.3	224.1	6.39	3286.2	252.8	6.25	3685.0	283.5	6.10
70.0	3337.6	247.2	6.84	3774.7	279.6	6.69	4245.0	314.4	6.55
80.0	3797.5	271.2	7.30	4305.2	307.5	7.15	4854.5	346.7	7.00
90.0	4293.0	296.1	7.76	4877.9	336.4	7.61	5513.4	380.2	7.46
100.0	4824.2	321.6	8.23	5492.8	366.2	8.08	6221.8	414.8	7.93
120.0	5993.5	374.6	9.17	6848.7	428.0	9.02	7787.0	486.7	8.87
140.0	7305.4	429.7	10.12	8373.1	492.5	9.97	9550.1	561.8	9.82
160.0	8759.9	486.7	11.08	10065.9	559.2	9.93	11511.1	639.5	10.79
180.0	10357.1	545.1	12.05	11927.2	627.7	11.90	13670.0	719.5	11.75
200.0	12096.8	604.8	13.03	13956.9	697.8	12.87	16026.8	801.3	12.73
220.0	13979.1	665.7	14.00	16155.0	769.3	13.85	18581.4	884.8	13.70
240.0	16004.0	727.5	14.98	18521.6	841.9	14.83	21333.9	969.7	14.68
260.0	18171.5	790.1	15.96	21056.6	915.5	15.81	24284.3	1055.8	15.67
280.0	20481.7	853.4	16.95	23760.1	990.0	16.80	27432.6	1143.0	16.65
300.0	22934.4	917.4	17.93	26632.0	1065.3	17.78	30778.7	1231.1	16.64
320.0	25529.7	981.9	18.92	29672.3	1141.2	18.77	34322.7	1320.1	18.63
340.0	28267.6	1046.9	19.91	32881.1	1217.8	19.76	38064.7	1409.8	19.61
360.0	31148.1	1112.4	20.90	36258.3	1294.9	20.75	42004.4	1500.2	20.60
380.0	34171.3	1178.3	21.89	39804.0	1372.6	21.74	46142.1	1591.1	21.60
400.0	37337.0	1244.6	22.88	43518.1	1450.6	22.73	50477.7	1682.6	22.59
450.0	45875.2	1411.5	25.37	53540.3	1647.4	25.21	62182.3	1913.3	25.07
500.0	55304.6	1580.1	27.85	64615.2	1846.1	27.70	75123.6	2146.4	27.56
550.0	—	—	—	76742.9	2046.5	30.19	89301.7	2381.4	30.04
600.0	—	—	—	89923.3	2248.1	32.68	104716.6	2617.9	32.53

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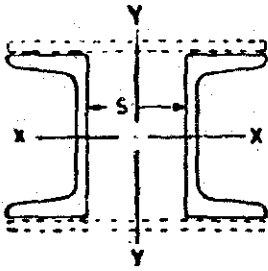


TABLE 16 (Contd.)

## TWO CHANNELS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation		ISLC 400	ISMC 75	ISMC 100		
Weight, kg		91.4	13.6	18.4		
N		896.6	133.4	180.5		
Area, cm <sup>2</sup>		116.50	17.34	23.40		
Moment of Inertia $I_{xx}$ cm <sup>4</sup>		27979.0	152.0	373.4		
Modulus of Section $Z_{xx}$ cm <sup>3</sup>		1399.0	40.6	74.6		
Radius of Gyration $r_{xx}$ cm		15.50	2.96	4.00		
Spacing Between Webs S mm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm	Moment of Inertia $I_{yy}$ cm <sup>4</sup>	Modulus of Section $Z_{yy}$ cm <sup>3</sup>	Radius of Gyration $r_{yy}$ cm
0.0	1569.7	157.0	3.67	55.0	13.7	1.78
5.0	1714.4	167.3	3.84	67.4	15.9	1.97
10.0	1873.7	178.4	4.01	82.0	18.2	2.17
15.0	2047.6	190.5	4.19	98.8	20.8	2.39
20.0	2236.0	203.3	4.38	117.7	23.5	2.61
25.0	2439.0	216.8	4.58	136.8	26.4	2.83
30.0	2656.6	231.0	4.78	162.1	29.5	3.06
35.0	2888.7	245.8	4.98	187.6	32.6	3.29
40.0	3135.4	261.3	5.19	215.2	35.9	3.52
45.0	3396.7	277.3	5.40	245.0	39.2	3.76
50.0	3672.5	293.8	5.61	276.9	42.6	4.00
60.0	4267.8	328.3	6.05	347.3	49.6	4.48
70.0	4921.4	364.5	6.50	426.4	56.9	4.96
80.0	5633.2	402.4	6.95	514.1	64.3	5.45
90.0	6403.2	441.6	7.41	610.5	71.8	5.93
100.0	7231.6	482.1	7.88	715.6	79.5	6.42
120.0	9062.9	566.4	8.82	951.8	95.2	7.41
140.0	11127.3	654.5	9.77	1222.6	111.1	8.40
160.0	13424.7	745.8	10.74	1528.2	127.3	9.39
180.0	15955.1	839.7	11.70	1868.4	143.7	10.38
200.0	18718.5	935.9	12.68	2243.3	160.2	11.37
220.0	21714.8	1034.0	13.65	2652.8	176.9	12.37
240.0	24944.2	1133.8	14.63	3097.1	193.6	13.36
260.0	28406.6	1235.1	15.62	3576.0	210.4	14.36
280.0	32102.0	1337.6	16.60	5089.6	227.2	15.36
300.0	36030.4	1441.2	17.59	4637.9	244.1	16.35
320.0	40191.7	1545.8	18.57	4220.9	261.0	17.35
340.0	44586.1	1651.3	19.56	5838.5	278.0	18.35
360.0	49213.5	1757.6	20.55	6490.9	295.0	19.35
380.0	54073.9	1864.6	21.54	7177.9	312.1	20.35
400.0	59167.3	1972.2	22.54	7899.6	329.1	21.34
450.0	72920.1	2243.7	25.02	—	—	—
500.0	88129.2	2518.0	27.50	—	—	—
550.0	104794.5	2794.5	29.99	—	—	—
600.0	122916.1	3072.9	32.48	—	—	—

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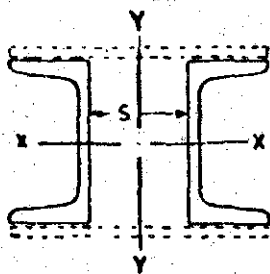


TABLE 16 (Contd.)

## TWO CHANNELS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation		ISMC 125		ISMC 150		ISMC 175			
Weight, kg		25.4		32.8		38.2			
		249.2		321.8		374.7			
Area, cm <sup>2</sup>		32.38		41.76		48.76			
Moment of Inertia $I_{xx}$ , cm <sup>4</sup>		832.8		1558.8		2446.6			
Modulus of Section $Z_{xx}$ , cm <sup>3</sup>		133.2		207.8		279.6			
Radius of Gyration $r_{xx}$ , cm		5.07		6.11		7.08			
Spacing Between Webs	Moment of Inertia	Modulus of Section	Radius of Gyration	Moment of Inertia	Modulus of Section	Radius of Gyration	Moment of Inertia	Modulus of Section	Radius of Gyration
$S$	$I_{yy}$	$Z_{yy}$	$r_{yy}$	$I_{yy}$	$Z_{yy}$	$r_{yy}$	$I_{yy}$	$Z_{yy}$	$r_{yy}$
mm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm	cm <sup>4</sup>	cm <sup>3</sup>	cm
0.0	241.7	37.2	2.73	410.4	54.7	3.13	478.0	63.7	3.13
5.0	275.1	40.8	2.91	459.4	59.3	3.32	534.7	69.0	3.31
10.0	312.6	44.7	3.11	513.6	64.2	3.51	597.5	74.7	3.50
15.0	354.1	48.8	3.31	573.0	69.4	3.70	666.3	80.8	3.70
20.0	399.7	53.3	3.51	637.6	75.0	3.91	741.3	87.2	3.90
25.0	449.3	58.0	3.72	707.4	80.8	4.12	822.4	94.0	4.11
30.0	503.0	62.9	3.94	782.5	86.9	4.33	909.5	101.1	4.32
35.0	560.7	68.0	4.16	862.8	93.3	4.55	1002.8	108.4	4.53
40.0	622.5	73.2	4.38	948.3	99.8	4.77	1102.1	116.0	4.75
45.0	688.3	78.7	4.61	1039.0	106.6	4.99	1207.6	123.9	4.98
50.0	758.1	84.2	4.84	1134.9	113.5	5.21	1319.1	131.9	5.20
60.0	910.0	95.8	5.30	1342.5	127.9	5.67	1560.5	148.6	5.66
70.0	1078.0	107.8	5.77	1570.9	142.8	6.13	1826.2	166.0	6.12
80.0	1262.3	120.2	6.24	1820.2	158.3	6.60	2116.3	184.0	6.59
90.0	1462.7	133.0	6.72	2090.4	174.2	7.08	2430.8	202.6	7.06
100.0	1679.3	146.0	7.20	2381.5	190.5	7.55	2769.7	221.6	7.54
120.0	2161.2	172.9	8.17	3026.3	224.2	8.51	3520.6	260.8	8.50
140.0	2707.7	200.6	9.14	3754.6	258.9	9.48	4369.0	301.3	9.47
160.0	3319.1	228.9	10.12	4566.4	294.6	10.46	5315.0	342.9	10.44
180.0	3995.2	257.8	11.11	5461.7	331.0	11.44	6358.5	385.4	11.42
200.0	4736.0	287.0	12.09	6440.6	368.0	12.42	7499.4	428.5	12.40
220.0	5541.6	316.7	13.08	7502.9	405.6	13.40	8737.9	472.8	13.39
240.0	6412.0	346.6	14.07	8648.8	443.5	14.39	10074.0	516.6	14.37
260.0	7374.1	378.2	15.09	9878.2	481.9	15.38	11507.5	561.3	15.36
280.0	8347.0	407.2	16.06	11191.2	520.5	16.37	13038.6	606.9	16.35
300.0	9411.7	437.8	17.05	12587.6	559.4	17.36	14667.2	651.9	17.34
320.0	10541.1	468.5	18.04	14067.6	598.6	18.35	16393.3	697.6	18.34
340.0	11735.3	499.4	19.04	15631.1	638.0	19.35	18216.9	743.5	19.33
360.0	12994.2	530.4	20.03	17278.1	677.6	20.34	20138.0	789.7	20.32
380.0	14317.9	561.5	21.03	19008.6	717.3	21.34	22156.7	836.1	21.32
400.0	15706.4	592.7	22.02	20822.7	757.2	22.33	24272.9	882.7	22.31

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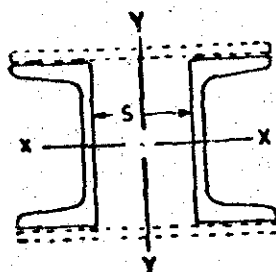


TABLE 16 (Contd.)

## TWO CHANNELS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation		ISMC 200		ISMC 225		ISMC 250			
Weight, kg		44.2		51.8		60.8			
N		433.6		508.1		596.4			
Area, cm <sup>2</sup>		56.42		66.02		77.34			
Moment of Inertia $I_{xx}$ , cm <sup>4</sup>		3638.6		5389.2		7633.6			
Modulus of Section $Z_{xx}$ , cm <sup>3</sup>		363.8		479.0		610.6			
Radius of Gyration $r_{xx}$ , cm		8.03		9.03		9.94			
Spacing Between Webs $s$  mm	Moment of Inertia $I_{yy}$  cm <sup>4</sup>	Modulus of Section $Z_{yy}$  cm <sup>3</sup>	Radius of Gyration $r_{yy}$  cm	Moment of Inertia $I_{yy}$  cm <sup>4</sup>	Modulus of Section $Z_{yy}$  cm <sup>3</sup>	Radius of Gyration $r_{yy}$  cm	Moment of Inertia $I_{yy}$  cm <sup>4</sup>	Modulus of Section $Z_{yy}$  cm <sup>3</sup>	Radius of Gyration $r_{yy}$  cm
0.0	546.5	72.9	3.11	723.6	90.5	3.31	847.3	105.9	3.31
5.0	611.2	78.9	3.29	803.7	97.4	3.49	941.1	114.1	3.49
10.0	683.0	85.4	3.48	892.0	104.9	3.68	1044.5	122.9	3.68
15.0	761.9	92.3	3.67	988.6	113.0	3.87	1157.7	132.3	3.87
20.0	847.8	99.7	3.88	1093.4	121.5	4.07	1280.4	142.3	4.07
25.0	940.7	107.5	4.08	1206.4	130.4	4.27	1412.9	152.7	4.27
30.0	1040.7	115.6	4.29	1327.7	139.8	4.48	1555.0	163.7	4.48
35.0	1147.8	124.1	4.51	1457.3	149.5	4.70	1706.8	175.1	4.70
40.0	1261.9	132.8	4.73	1595.1	159.5	4.92	1868.2	186.8	4.91
45.0	1383.0	141.9	4.95	1741.2	169.9	5.14	2039.3	199.0	5.14
50.0	1511.3	151.1	5.18	1895.5	180.5	5.36	2220.1	211.4	5.36
60.0	1788.8	170.4	5.63	2228.9	202.6	5.81	2610.7	237.3	5.81
70.0	2094.6	190.4	6.09	2595.3	225.7	6.27	3039.9	264.3	6.27
80.0	2428.6	211.2	6.56	2994.7	249.6	6.74	3507.8	292.3	6.73
90.0	2790.9	232.6	7.03	3427.2	274.2	7.20	4014.4	321.2	7.20
100.0	3181.3	254.5	7.51	3892.6	299.4	7.68	4559.6	350.7	7.68
120.0	4046.8	299.8	8.47	4922.5	351.6	8.63	5766.2	411.9	8.63
140.0	5025.1	346.6	9.44	6084.5	405.6	9.60	7127.3	475.2	9.60
160.0	6116.3	394.6	10.41	7378.5	461.2	10.57	8643.2	540.2	10.57
180.0	7320.3	443.7	11.39	8804.5	517.9	11.55	10313.7	606.7	11.55
200.0	8637.1	493.5	12.37	10362.6	575.7	12.53	12139.0	674.4	12.53
220.0	10066.8	544.2	13.36	12052.7	634.4	13.51	14118.9	743.1	13.51
240.0	11609.3	595.3	14.34	13874.8	693.7	14.50	16253.5	812.7	14.50
260.0	13264.7	647.1	15.33	15829.0	753.8	15.48	18542.7	883.0	15.48
280.0	15032.9	699.2	16.32	17915.3	814.3	16.47	20986.7	953.9	16.47
300.0	16913.9	751.7	17.31	20133.5	875.4	17.46	23585.3	1025.4	17.46
320.0	18907.8	804.6	18.31	22483.8	936.8	18.45	26338.6	1097.4	18.45
340.0	21014.5	857.7	19.30	24966.2	998.6	19.45	29246.6	1169.9	19.45
360.0	23234.1	911.1	20.29	27580.6	1060.8	20.44	32309.2	1242.7	20.44
380.0	25566.5	964.8	21.29	30327.0	1123.2	21.43	35526.6	1315.8	21.43
400.0	28011.7	1018.6	22.28	33205.5	1185.9	22.43	38898.6	1389.2	22.43
450.0	—	—	—	40979.3	1343.6	24.91	48005.4	1573.9	24.91
500.0	—	—	—	49578.4	1502.4	27.40	58078.9	1760.0	27.40

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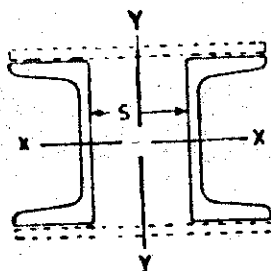


TABLE 16 (Contd.)

## TWO CHANNELS OF SAME SIZE LACED OR BATTENED (COLUMNS)

Designation		ISMC 300		ISMC 350		ISMC 400			
Weight, kg		71.6		84.2		98.8			
		702.4		826.0		969.2			
Area, cm <sup>2</sup>		91.28		107.32		125.86			
Moment of Inertia $I_{xx}$ , cm <sup>4</sup>		12725.2		20016.0		30165.6			
Modulus of Section $Z_{xx}$ , cm <sup>3</sup>		848.4		1143.8		1508.2			
Radius of Gyration $r_{xx}$ , cm		11.81		13.66		15.48			
Spacing Between Webs $S$ mm	Moment of Inertia $I_{yy}$ , cm <sup>4</sup>	Modulus of Section $Z_{yy}$ , cm <sup>3</sup>	Radius of Gyration $r_{yy}$ , cm	Moment of Inertia $I_{yy}$ , cm <sup>4</sup>	Modulus of Section $Z_{yy}$ , cm <sup>3</sup>	Radius of Gyration $r_{yy}$ , cm	Moment of Inertia $I_{yy}$ , cm <sup>4</sup>	Modulus of Section $Z_{yy}$ , cm <sup>3</sup>	Radius of Gyration $r_{yy}$ , cm
0.0	1130.0	125.6	3.52	1500.1	150.0	3.74	1746.7	174.7	3.73
5.0	1243.4	134.4	3.69	1637.8	159.8	3.91	1906.8	186.0	3.89
10.0	1368.2	144.0	3.87	1788.8	170.4	4.08	2082.7	198.4	4.07
15.0	1504.5	154.3	4.06	1953.3	181.7	4.27	2274.4	211.6	4.25
20.0	1652.1	165.2	4.25	2131.2	193.7	4.46	2481.7	225.6	4.44
25.0	1811.2	176.7	4.45	2322.5	206.4	4.65	2704.8	240.4	4.64
30.0	1991.6	188.7	4.66	2527.2	219.8	4.85	2943.6	256.0	4.84
35.0	2163.5	201.3	4.87	2745.3	233.6	5.06	3198.2	272.2	5.04
40.0	2356.8	214.3	5.08	2976.9	248.1	5.27	3468.5	289.0	5.25
45.0	2561.5	227.7	5.30	3221.8	263.0	5.48	3754.5	306.5	5.46
50.0	2777.6	241.5	5.52	3480.2	278.4	5.69	4056.2	324.5	5.68
60.0	3244.0	270.3	5.96	4037.2	310.6	6.13	4706.9	362.1	6.12
70.0	3756.1	300.5	6.41	4647.8	344.3	6.58	5420.5	401.5	6.56
80.0	4313.8	331.8	6.87	5312.1	379.4	7.04	6197.1	442.6	7.02
90.0	4917.2	364.2	7.34	6030.1	415.9	7.50	7036.6	485.3	7.48
100.0	5566.2	397.6	7.81	6801.7	453.4	7.96	7939.0	529.3	7.94
120.0	7001.1	466.7	8.76	8506.0	531.6	8.90	9932.6	620.8	8.88
140.0	8618.6	538.7	9.72	10424.9	613.2	9.86	12178.0	716.4	9.84
160.0	10418.6	612.9	10.66	12558.4	697.7	10.82	14675.0	815.3	10.80
180.0	12401.2	689.0	11.66	14906.6	784.6	11.79	17423.8	917.0	11.77
200.0	14566.4	766.7	12.63	17469.4	873.5	12.76	20424.3	1021.2	12.74
220.0	16914.1	845.7	13.61	20246.8	964.1	13.74	23676.5	1127.5	13.72
240.0	19444.4	925.9	14.60	23238.9	1056.3	14.72	27180.5	1235.5	14.70
260.0	22157.3	1007.1	15.58	26445.6	1149.8	15.70	30936.1	1345.0	15.68
280.0	25052.7	1089.2	16.57	29867.0	1244.5	16.68	34943.5	1456.0	16.66
300.0	28130.6	1172.1	17.56	33503.0	1340.1	17.67	39202.6	1568.1	17.65
320.0	31391.1	1255.6	18.54	37353.6	1436.7	18.66	43713.4	1681.3	18.64
340.0	34834.2	1339.8	19.54	41418.9	1534.0	19.65	47476.5	1795.4	19.63
360.0	38459.9	1424.4	20.53	45698.8	1632.1	20.64	53490.2	1910.4	20.62
380.0	42268.1	1509.6	21.52	50193.4	1730.8	21.63	58756.2	2026.1	21.61
400.0	46258.8	1595.1	22.51	54902.6	1830.1	22.62	64273.9	2142.5	22.60
450.0	57034.4	1810.6	25.00	67614.6	2080.4	25.10	79169.5	2436.0	25.08
500.0	68951.0	2026.0	27.48	81668.2	2333.4	27.59	95638.2	2732.5	27.57
550.0	82008.6	2246.8	29.97	97063.2	2588.4	30.07	113680.3	3031.5	30.05
600.0	96207.2	2466.9	32.47	113799.8	2845.0	32.56	133295.6	3332.4	32.54

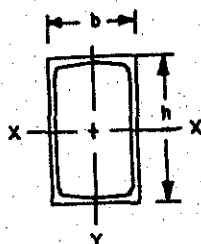


TABLE 17

# DOUBLE CHANNELS WITH FLANGES BUTTING AND WELDED TOE TO TOE (COLUMNS)

Nominal Size	Composed of Two Channels, Each of Same size	Weight per Metre (W)		Sectional Area	Moment of Inertia		Moduli of Section		Radii of Gyration			
h x b	Designation	w					$I_{xx}$	$I_{yy}$	$Z_{xx}$	$Z_{yy}$	$r_{xx}$	$r_{yy}$
mm mm		kg/m	N/m	kg	N	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>2</sup>	cm <sup>3</sup>	cm	cm
100 x 90	ISJC 100	5.8	56.9	11.6	113.8	14.82	247.6	172.2	49.6	38.3	4.09	3.41
125 x 100	ISJC 125	7.9	77.5	15.8	155.0	20.14	540.0	278.8	66.4	55.8	5.18	3.72
150 x 110	ISJC 150	9.9	97.1	19.8	194.2	25.30	942.2	448.9	125.6	81.6	6.10	4.21
175 x 120	ISJC 175	11.2	109.9	22.4	219.7	28.48	1439.8	615.4	164.6	102.6	7.11	4.65
200 x 140	ISJC 200	13.9	136.4	27.8	272.7	35.54	2322.4	1067.6	232.2	152.5	8.08	5.48
75 x 80	ISLC 75	5.7	55.9	11.4	111.8	14.52	132.2	125.0	35.2	31.2	3.02	2.93
100 x 100	ISLC 100	7.9	77.5	15.8	155.0	20.04	329.4	278.5	65.8	55.7	4.06	3.73
125 x 130	ISLC 125	10.7	105.0	21.4	209.9	27.34	713.6	658.2	114.2	101.3	5.11	4.91
150 x 150	ISLC 150	14.4	141.3	28.8	282.5	36.72	1394.4	1169.0	186.0	155.9	6.16	5.64
175 x 150	ISLC 175	17.6	172.7	35.2	345.3	44.80	2296.8	1418.3	262.6	189.1	7.16	5.63
200 x 150	ISLC 200	20.6	202.1	41.2	404.2	52.44	3451.0	1684.6	245.2	224.6	8.11	5.67
225 x 150	ISLC 225	24.0	235.4	48.0	470.9	61.06	5095.8	3030.6	453.0	336.7	9.14	7.05
250 x 200	ISLC 250	28.0	274.9	56.0	549.8	71.30	7375.0	4396.4	590.0	439.6	10.17	7.85
300 x 200	ISLC 300	33.1	324.7	66.2	649.4	84.22	12095.8	5366.4	806.4	536.6	11.98	7.98
350 x 200	ISLC 350	38.8	380.6	77.6	761.3	98.94	18625.2	6489.0	1064.2	648.9	13.72	8.10
400 x 200	ISLC 400	45.7	448.3	91.4	896.6	116.50	27979.0	7720.9	1399.0	772.1	15.50	8.14
75 x 80	ISMC 75	6.8	66.7	13.6	133.4	17.34	152.0	150.7	40.6	37.7	2.96	2.95
100 x 100	ISMC 100	9.2	90.3	18.4	180.5	23.40	373.4	333.6	74.6	66.7	4.00	3.78
125 x 130	ISMC 125	12.7	124.6	25.4	249.2	32.38	838.8	793.1	133.2	122.0	5.07	4.95
150 x 150	ISMC 150	16.4	160.9	32.8	321.8	41.76	1558.8	1368.8	207.8	182.5	6.11	5.73
175 x 150	ISMC 175	19.1	187.4	38.2	374.7	48.76	2446.6	1611.7	279.6	214.9	7.08	5.75
200 x 150	ISMC 200	22.1	216.8	44.2	433.6	56.42	3638.6	1863.6	363.8	251.2	8.03	5.78
225 x 160	ISMC 225	25.9	254.1	51.8	508.2	66.02	5389.2	2519.4	479.0	314.9	9.03	6.18
250 x 160	ISMC 250	30.4	298.2	60.8	596.4	77.34	7633.6	2951.0	610.6	368.9	9.94	6.18
380 x 180	ISMC 300	35.8	351.2	71.6	702.4	91.28	12725.2	4646.1	848.4	516.2	11.81	7.13
350 x 200	ISMC 350	42.1	413.0	84.2	826.0	107.32	20016.0	6994.9	1143.8	699.5	13.66	8.07
400 x 200	ISMC 400	49.4	484.6	98.8	969.2	125.86	30165.6	8241.1	1508.2	824.1	15.48	8.09

TABLE 18

## EDGE DISTANCE OF HOLES

Diameter of Hole	Distance to Sheared or Hand Flame Cut Edge	Distance to Rolled, Machine Flame Cut, Sawn or Planed Edge
mm	mm	mm
13.5 and below	19	17
15.5	25	22
17.5	29	25
19.5	32	29
21.5	32	29
23.5	38	32
25.5	44	38
29.0	51	44
32.0	57	51
35.0	57	51

TABLE 19

PERMISSIBLE STRESS  $\sigma_{ac}$  (N/mm<sup>2</sup>) IN AXIAL COMPRESSION FOR  
STEELS WITH VARIOUS YIELD STRESS

$\frac{f_y}{\lambda}$	220	230	240	250	260	280	300	320	340	360	380	400	420	450	480	510	540
10	132	138	144	150	156	168	180	192	204	215	227	239	251	269	287	305	323
20	131	137	142	148	154	166	177	189	201	212	224	235	246	263	280	297	314
30	128	134	140	145	151	162	172	183	194	204	215	225	236	251	266	280	295
40	124	129	134	139	145	154	164	174	183	192	201	210	218	231	243	255	267
50	118	123	127	132	136	145	153	161	168	176	183	190	197	207	216	225	233
60	111	115	118	122	126	133	139	146	152	158	163	168	173	180	187	193	199
70	102	106	109	112	115	120	125	130	135	139	142	147	150	155	160	164	168
80	93	96	98	101	103	107	111	115	118	121	124	127	129	133	136	139	141
90	85	87	88	90	92	95	98	101	103	105	108	109	111	114	116	118	119
100	76	78	79	80	82	84	86	88	90	92	93	94	96	97	99	100	101
110	68	69	71	72	73	74	76	77	79	80	81	82	83	84	85	86	87
120	61	62	63	64	64	66	67	67	69	70	71	71	72	73	73	74	75
130	55	55	56	57	57	58	59	60	61	61	62	62	63	63	64	64	65
140	49	50	50	51	51	52	53	53	54	54	54	55	55	56	56	56	57
150	44	45	45	45	46	46	47	47	48	48	48	49	49	49	49	50	50
160	40	40	41	41	41	42	42	42	43	43	43	43	43	44	44	44	44
170	36	36	37	37	36	37	38	38	38	38	39	39	39	39	39	39	39
180	33	33	33	33	33	34	34	34	34	35	35	35	35	35	35	35	35
190	30	30	30	30	30	30	31	31	31	31	31	31	32	32	32	32	32
200	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
210	25	25	25	25	25	25	26	26	26	26	26	26	26	26	26	26	26
220	23	23	23	23	23	23	23	24	24	24	24	24	24	24	24	24	24
230	21	21	21	21	21	21	22	21	22	22	22	22	22	22	22	22	22
240	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
250	18	18	18	18	18	18	18	18	18	19	19	19	19	19	19	19	19

TABLE 20

# AREAS OF GROUPS OF ROUND BARS (AREA In $\text{cm}^2$ )

Diam mm	Number of bars									
	1	2	3	4	5	6	7	8	9	10
5	0.20	0.39	0.59	0.79	0.98	1.18	1.37	1.57	1.77	1.96
6	0.28	0.56	0.85	1.13	1.41	1.70	1.98	2.26	2.54	2.83
7	0.38	0.77	1.15	1.54	1.92	2.31	2.69	3.08	3.46	3.85
8	0.50	1.00	1.51	2.01	2.51	3.01	3.52	4.02	4.52	5.03
10	0.79	1.57	2.36	3.14	3.96	4.71	5.50	6.28	7.07	7.85
12	1.13	2.26	3.39	4.52	5.65	6.79	7.92	9.05	10.18	11.31
14	1.54	3.08	4.62	6.16	7.70	9.24	10.78	12.32	13.85	15.39
16	2.01	4.02	6.03	8.04	10.05	12.06	14.07	16.08	18.10	20.11
18	2.54	5.09	7.63	10.18	12.72	15.26	17.81	20.36	22.90	25.45
20	3.14	6.28	9.42	12.57	15.71	18.84	21.99	25.14	28.28	31.42
22	3.80	7.60	11.40	15.21	19.01	22.81	26.61	30.41	34.21	38.01
24	4.52	9.05	13.57	18.10	22.62	27.14	31.67	36.19	40.72	45.24
26	5.31	10.62	15.93	21.24	26.55	31.86	37.17	42.47	47.78	53.09
28	6.16	12.31	18.47	24.63	30.79	36.94	43.10	49.26	55.42	61.58
30	7.07	14.14	21.21	28.27	35.34	42.41	49.48	56.55	63.62	70.69
32	8.04	16.08	24.13	32.17	40.21	48.26	56.30	64.34	72.38	80.42
34	9.08	18.16	27.24	36.32	45.40	54.48	63.56	72.63	81.71	90.74
36	10.18	20.36	30.54	40.72	50.90	61.07	71.25	81.43	91.61	101.79
38	11.34	22.68	34.02	45.36	56.70	68.04	79.38	90.73	102.07	113.41
40	12.57	25.13	37.70	50.26	62.83	75.40	87.96	100.53	113.10	125.66
45	15.90	31.81	47.71	63.62	79.52	95.43	111.33	127.23	143.14	159.04
50	19.64	39.27	58.91	78.54	98.15	117.81	137.45	157.08	176.72	196.35

TABLE 21

# PERIMETER OF ROUND BARS

Dia. of bars (mm)	Perimeter in cms	Dia. of bars (mm)	Perimeter in cms
5	1.57	24	7.54
6	1.89	26	8.17
7	2.20	28	8.80
8	2.51	30	9.42
10	3.14	32	10.05
12	3.77	34	10.68
14	4.40	36	11.31
16	5.03	38	11.94
18	5.65	40	12.57
20	6.28	45	14.14
22	6.91	50	15.71

TABLE 22

## ROUND BARS

Designation		Diameter	Cross-Sectional Area	*Weight per Metre		Perimeter
				kg	N	
ISRO	5	5.0	0.20	0.2	2.0	1.6
ISRO	6	6.0	0.28	0.2	2.0	1.9
ISRO	8	8.0	0.50	0.4	3.9	2.5
ISRO	10	10.0	0.79	0.6	5.9	3.1
ISRO	12	12	1.13	0.9	8.8	3.8
ISRO	16	16	2.01	1.6	15.7	5.0
ISRO	20	20	3.14	2.5	24.5	6.3
ISRO	25	25	4.91	3.8	37.3	7.8
ISRO	28	28	6.16	4.8	47.1	8.8
ISRO	32	32	8.04	6.3	61.8	10.1
ISRO	36	36	10.18	8.0	78.5	11.3
ISRO	40	40	12.57	9.9	97.1	12.6
ISRO	45	45	15.90	12.5	122.6	14.1
ISRO	50	50	19.64	15.4	151.1	15.7
ISRO	56	56	24.63	19.3	189.3	17.6
ISRO	63	63	31.17	24.5	240.3	19.8
ISRO	71	71	39.59	31.1	305.1	22.3
ISRO	80	80	50.26	39.5	387.5	25.1
ISRO	90	90	63.26	49.9	489.5	28.3
ISRO	100	100	78.54	61.7	605.3	31.4
ISRO	110	110	95.03	74.6	731.8	34.6
ISRO	125	125	122.72	96.3	944.7	39.3
ISRO	140	140	153.94	120.8	1185.0	44.0
ISRO	160	160	201.06	157.8	1548.0	50.3
ISRO	180	180	254.47	199.8	1960.0	56.6
ISRO	200	200	314.16	246.6	2419.2	62.8

TABLE 23

## SQUARE BARS

Designation		Side Width	Cross-Sectional Area	*Weight per Metre		Perimeter
				kg	N	
ISSQ	5	5.0	0.25	0.2	2.0	2.0
ISSQ	6	6.0	0.36	0.3	2.9	2.4
ISSQ	8	8.0	0.64	0.5	4.9	3.2
ISSQ	10	10.0	1.00	0.8	7.8	4.0
ISSQ	12	12	1.44	1.1	10.8	4.8
ISSQ	16	16	2.56	2.0	19.6	6.4
ISSQ	20	20	4.00	3.1	30.4	8.0
ISSQ	25	25	6.25	4.9	48.1	10.0
ISSQ	32	32	10.24	8.0	78.5	12.8
ISSQ	40	40	16.00	12.6	123.6	16.0
ISSQ	50	50	25.00	19.6	192.3	20.0
ISSQ	63	63	39.69	31.2	306.1	25.2
ISSQ	80	80	64.00	50.2	492.5	32.0
ISSQ	100	100	100.00	78.5	770.1	40.0

\*The weights per metre of bars given in the table are calculated on the basis that steel weight is 7.85 g/cm<sup>3</sup> and are rounded off to one decimal place in kg.

TABLE 24

## MILD STEEL FLATS

Thickness <i>t</i> mm	3.0		4.0		5.0		6.0		8.0		10.0		12	
Width <i>b</i> mm	Weight per metre length (W)													
	kg	N	kg	N	kg	N	kg	N	kg	N	kg	N	kg	N
10	0.2	2.0	0.3	2.9	0.5	4.9	—	—	—	—	—	—	—	—
15	0.4	3.9	0.5	4.9	0.6	5.9	0.7	6.9	0.9	8.8	—	—	—	—
20	0.5	4.9	0.6	5.9	0.8	7.8	0.9	8.8	1.3	12.8	1.6	15.7	—	—
25	0.6	5.9	0.8	7.8	1.0	9.8	1.2	11.8	1.6	15.7	2.0	19.6	2.4	23.5
30	0.7	6.9	0.9	8.8	1.2	11.8	1.4	13.7	1.9	18.6	2.4	23.5	2.8	27.5
35	0.8	7.8	1.1	10.8	1.4	13.7	1.6	15.7	2.2	21.6	2.8	27.5	3.3	32.4
40	0.9	8.8	1.3	12.8	1.6	15.7	1.9	18.6	2.5	24.5	3.1	30.4	3.8	37.3
45	1.1	10.8	1.4	13.7	1.8	17.7	2.1	20.6	2.8	27.5	3.5	34.3	4.2	41.2
50	1.2	11.8	1.6	15.7	2.0	19.6	2.4	23.5	3.1	30.4	3.9	38.3	4.7	46.1
55	1.3	12.8	1.7	16.7	2.2	21.6	2.6	25.5	3.4	33.4	4.3	42.2	5.2	51.0
60	1.4	13.7	1.9	18.6	2.4	23.5	2.8	27.5	3.8	37.3	4.7	46.1	5.6	54.9
65	—	—	—	—	—	—	3.1	30.4	4.1	40.2	5.1	50.0	6.1	59.8
70	—	—	—	—	—	—	3.3	32.4	4.4	43.2	5.5	54.0	6.6	64.7
75	—	—	—	—	—	—	3.5	34.3	4.7	46.1	5.9	57.9	7.1	69.7
80	—	—	—	—	—	—	3.8	37.3	5.0	49.1	6.3	61.8	7.5	73.6
90	—	—	—	—	—	—	4.2	41.2	5.6	54.9	7.1	69.7	8.5	83.4
100	—	—	—	—	—	—	4.7	46.1	6.3	61.8	7.8	76.5	9.4	92.2
110	—	—	—	—	—	—	5.2	51.0	6.9	67.7	8.6	84.4	10.4	102.0
120	—	—	—	—	—	—	5.6	54.9	7.5	73.6	9.4	92.2	11.3	110.9
130	—	—	—	—	—	—	—	—	8.2	80.4	10.2	100.1	12.2	119.7
140	—	—	—	—	—	—	—	—	8.8	86.3	11.0	107.9	13.2	129.5
150	—	—	—	—	—	—	—	—	9.4	92.2	11.8	116.6	14.1	138.3
200	—	—	—	—	—	—	—	—	—	—	15.7	154.0	18.8	184.4
250	—	—	—	—	—	—	—	—	—	—	19.6	192.3	23.6	231.5
300	—	—	—	—	—	—	—	—	—	—	—	—	28.3	277.6
400	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(Continued)

(Continued)

Note. The weight per metre values are calculated on the basis that steel weighs 7.85 g/cm<sup>2</sup> and are rounded off to one decimal place in kg.

TABLE 24 (Contd.)

## MILD STEEL FLATS

16		18		20		25		32		40		Thickness t mm
Weight per metre length (W)												Width b mm
kg	N	kg	N	kg	N	kg	N	kg	N	kg	N	
—	—	—	—	—	—	—	—	—	—	—	—	10
—	—	—	—	—	—	—	—	—	—	—	—	15
—	—	—	—	—	—	—	—	—	—	—	—	20
—	—	—	—	—	—	—	—	—	—	—	—	25
3.8	37.3	—	—	—	—	—	—	—	—	—	—	30
4.4	43.2	5.0	49.1	5.5	—	—	—	—	—	—	—	35
5.0	49.1	5.6	54.9	6.3	61.8	—	—	—	—	—	—	40
5.6	54.9	6.4	62.8	7.1	69.7	—	—	—	—	—	—	45
6.3	61.8	7.1	69.7	7.8	76.5	9.8	96.1	—	—	—	—	50
6.9	67.7	7.8	76.5	8.6	84.4	10.8	105.9	—	—	—	—	55
7.5	73.6	8.5	83.4	9.4	92.2	11.8	115.8	15.1	148.1	—	—	60
8.2	80.4	9.2	90.3	10.2	100.1	12.8	125.6	16.3	159.9	20.4	200.1	65
8.8	86.3	9.9	97.1	11.0	107.9	13.7	134.4	17.6	172.7	22.2	215.8	70
9.4	92.2	10.6	104.0	11.8	115.8	14.7	144.2	18.8	184.4	23.6	231.5	75
10.0	98.1	11.3	110.9	12.6	123.6	15.7	154.0	20.1	197.2	25.1	246.2	80
11.3	110.9	12.7	124.6	14.1	138.3	17.7	173.6	22.6	221.7	28.3	277.6	90
12.6	123.6	14.1	138.3	15.7	154.0	19.6	192.3	25.1	246.2	31.4	308.0	100
13.6	135.4	15.5	152.0	17.3	169.7	21.6	211.9	27.6	270.8	34.5	338.4	110
15.4	148.1	17.9	166.8	18.8	184.4	23.6	231.5	30.1	295.3	37.7	369.8	120
16.3	159.9	18.4	180.5	20.4	200.1	25.5	250.2	32.7	320.8	40.8	400.2	130
17.6	172.7	19.8	194.2	22.0	215.8	27.5	269.8	35.2	345.3	44.0	431.6	140
18.8	184.4	21.2	208.0	23.6	231.5	29.4	288.4	37.7	369.8	47.1	462.1	150
25.1	246.2	28.3	277.6	31.4	308.0	39.2	384.6	50.2	492.5	62.8	616.1	200
31.4	308.0	35.3	346.3	39.2	384.6	49.1	481.7	62.8	616.1	78.5	770.1	250
37.7	369.8	42.4	415.9	47.1	462.1	58.9	577.8	75.4	739.7	94.2	924.1	300
50.2	492.5	56.5	554.3	62.8	616.1	78.5	970.1	100.5	985.9	125.6	1232.1	400

**Note.** The weight per metre values are calculated on the basis that steel weighs  $7.85 \text{ g/cm}^2$  and are rounded off to one decimal place in kg.



TABLE 25

## MILD STEEL FLATS

Thickness <i>t</i> mm	3.0	4.0	5.0	6.0	8.0	10.0	12
Width <i>b</i> mm	Cross-Sectional Area in cm <sup>2</sup>						
10	0.30	0.40	0.50	0.60	—	—	—
15	0.45	0.60	0.75	0.90	1.20	—	—
20	0.60	0.80	1.00	1.20	1.60	2.00	—
25	0.75	1.00	1.25	1.50	2.00	2.50	3.00
30	0.90	1.20	1.50	1.80	2.40	3.00	3.60
35	1.05	1.40	1.75	2.10	2.80	3.50	4.20
40	1.20	1.60	2.00	2.40	3.20	4.00	4.80
45	1.35	1.80	2.25	2.70	3.60	4.50	5.40
50	1.50	2.00	2.50	3.00	4.00	5.00	6.00
55	1.65	2.20	2.75	3.30	4.40	5.50	6.60
60	1.80	2.40	3.00	3.60	4.80	6.00	7.20
65	—	—	—	3.90	5.20	6.50	7.80
70	—	—	—	4.20	5.60	7.00	8.40
75	—	—	—	4.50	6.00	7.50	9.00
80	—	—	—	4.80	6.40	8.00	9.00
90	—	—	—	5.40	7.20	9.00	10.80
100	—	—	—	6.00	8.00	10.00	12.00
110	—	—	—	—	8.80	11.00	13.20
120	—	—	—	—	9.60	12.00	14.40
130	—	—	—	—	10.40	13.00	15.60
140	—	—	—	—	11.20	14.00	16.80
150	—	—	—	—	12.00	15.00	18.00
200	—	—	—	—	—	20.00	24.00
250	—	—	—	—	—	25.00	30.00
300	—	—	—	—	—	—	36.00
400	—	—	—	—	—	—	—

(Continued)

TABLE 25 (Contd.)

## MILD STEEL FLATS

16	18	20	25	32	40	Thickness <i>t</i> mm
Cross-Sectional Area in cm <sup>2</sup>						Width <i>b</i> mm
—	—	—	—	—	—	10
—	—	—	—	—	—	15
—	—	—	—	—	—	20
—	—	—	—	—	—	25
4.80	—	—	—	—	—	30
5.60	6.30	7.00	—	—	—	35
6.40	7.20	8.00	—	—	—	40
7.20	8.10	9.00	—	—	—	45
8.00	9.00	10.00	12.50	—	—	50
8.80	9.90	11.00	13.75	—	—	55
9.60	10.80	12.00	15.00	19.20	—	60
10.40	11.70	13.00	16.25	20.80	26.00	65
11.20	12.60	14.00	17.50	22.40	28.00	70
12.00	13.50	15.00	18.75	24.00	30.00	75
12.80	14.40	16.00	20.00	25.60	32.00	80
14.40	16.20	18.00	22.50	28.80	36.00	90
16.00	18.00	20.00	25.00	32.00	40.00	100
17.60	19.80	22.00	27.50	35.20	44.00	110
19.20	21.60	24.00	30.00	38.40	48.00	120
20.80	23.40	26.00	32.50	41.60	52.00	130
22.40	25.20	28.00	35.00	44.80	56.00	140
24.00	27.00	30.00	37.50	48.00	60.00	150
32.00	36.00	40.00	50.00	64.00	80.00	200
40.00	45.00	50.00	62.50	80.00	100.00	250
48.00	54.00	60.00	75.00	96.00	120.00	300
64.00	72.00	80.00	100.00	128.00	160.00	400

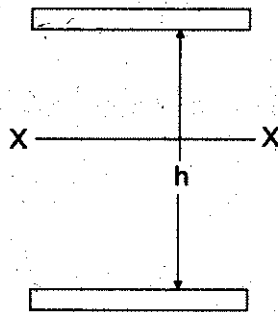


TABLE 26

# **MOMENT OF INERTIA OF TWO FLANGES PER CENTIMETRE WIDTH ABOUT THE X-X AXIS**

Thickness of Each Flange - mm	9.0	10.0	11	12	14	16	18	20	22	25
Depth h - cm	Moment of Inertia in cm <sup>4</sup>									
7.5	31.9	36.3	40.9	45.7	55.9	66.9	78.8	91.6	105.3	127.6
8.0	35.8	40.6	45.8	51.1	62.3	74.4	87.4	101.3	116.2	140.4
10.0	53.6	60.7	68.0	75.6	91.4	108.3	126.3	145.3	165.5	197.9
12.5	80.9	91.3	101.9	112.9	135.7	159.7	185.0	211.6	239.5	283.9
15.0	113.9	128.2	142.8	157.8	188.7	221.1	255.0	290.3	327.2	385.4
16.0	128.6	144.7	161.0	177.8	212.4	248.5	286.1	325.3	366.1	430.4
17.5	152.5	171.3	190.5	210.1	250.5	293.2	336.2	381.6	428.7	502.6
20.0	196.7	220.7	245.1	270.0	321.0	373.9	428.7	485.3	543.9	635.4
22.5	246.5	276.3	306.5	337.3	400.3	465.3	532.4	601.6	672.9	783.9
25.0	302.0	338.2	374.9	412.2	488.3	566.7	647.4	730.3	815.6	947.9
27.5	363.1	406.3	450.1	494.4	585.1	678.1	773.5	871.6	972.1	1127.6
30.0	429.8	480.7	532.2	584.4	690.6	799.5	911.1	1025.3	1142.3	1322.9
32.0	487.2	544.7	602.8	661.6	781.3	903.9	1029.2	1157.3	1283.4	1490.4
32.5	502.1	561.3	621.1	681.7	804.9	930.9	1059.8	1191.6	1326.3	1533.9
35.0	580.1	648.2	717.0	786.6	927.9	1072.3	1219.8	1370.3	1524.0	1760.4
40.0	752.9	840.7	929.3	1018.8	1200.2	1385.1	1573.5	1765.3	1960.7	2260.4
45.0	948.2	1058.2	1169.1	1281.0	1507.5	1737.9	1972.2	2210.3	2452.4	2822.9
50.0	1166.0	1300.7	1436.4	1573.2	1849.8	2130.7	2415.9	2705.3	2999.1	3447.9
55.0	1406.3	1568.2	1731.2	1895.4	2227.1	2563.5	2904.6	3250.3	3600.8	4135.4
60.0	1669.1	1860.7	2053.5	2247.6	2639.4	3036.3	3438.3	3845.3	4257.5	4885.4
63.0	1837.6	2048.2	2260.1	2473.3	2903.6	3339.2	3780.1	4226.3	4677.9	5365.4
83.0	2945.3	3280.7	3617.7	3956.4	4638.6	5327.5	6032.1	6725.3	7434.3	8510.4
100.0	4581.5	5100.7	5621.9	6145.2	7197.8	8258.7	9327.9	10405.3	11491.1	13135.4
125.0	7133.0	7938.2	8745.9	9556.2	11184.3	12822.7	14471.7	16130.3	17799.6	20322.9
160.0	11650.1	12960.7	14274.5	15591.6	18235.4	20892.3	23562.3	26245.3	28941.5	33010.4
200.0	18162.5	20200.7	22242.9	24289.2	28393.8	32514.7	36651.9	40805.3	44975.1	51260.4
250.0	28328.0	31500.7	34678.4	37861.2	44241.8	50642.7	57063.9	63505.3	69967.1	79697.9

**Note.** To obtain the Moment of Inertia of two Flanges of a particular width, multiply the value obtained from the Table by that width.

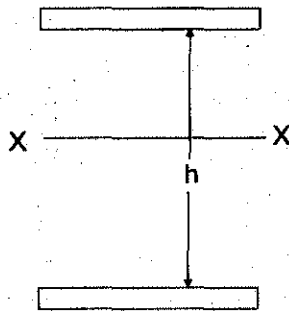


TABLE 26 (Contd.)

# **MOMENT OF INERTIA OF TWO FLANGES PER CENTIMETRE WIDTH ABOUT THE X-X AXIS**

28	32	36	40	45	50	56	63	71	80	Thickness of each Flange mm
Moment of Inertia in cm <sup>4</sup>										Depth h cm
152.2	188.6	229.6	275.2	339.2	411.3	509.8	641.6	816.4	1046.3	7.5
167.0	206.2	250.0	298.7	366.8	443.3	547.2	685.8	866.6	1109.3	8.0
233.0	284.2	340.7	402.7	488.2	583.3	710.7	878.6	1097.7	1381.3	10.0
331.4	399.8	474.4	555.2	665.4	786.5	946.6	1155.0	1423.4	1766.3	12.5
447.2	535.4	630.5	732.7	870.8	1020.8	1217.5	1470.8	1793.5	2201.3	15.0
498.5	595.3	699.3	810.7	960.8	1123.3	1335.6	1608.1	1951.5	2389.3	16.0
580.6	691.0	809.2	935.2	1104.2	1286.5	1523.4	1826.0	2208.0	2686.3	17.5
731.4	866.6	1010.3	1162.7	1365.8	1583.3	1864.3	2220.5	2666.8	3221.3	20.0
899.8	1062.2	1234.0	1415.2	1595.2	1911.5	2240.2	2654.4	3170.0	3806.3	22.5
1085.6	1277.8	1480.1	1692.7	1973.2	2270.8	2651.1	3127.7	3717.6	4441.3	25.0
1289.0	1513.4	1748.8	1995.2	2319.2	2661.5	3097.0	3640.4	4309.6	5126.3	27.5
1509.8	1769.0	2039.9	2322.7	2693.2	3083.3	3577.9	4192.4	4945.9	5861.3	30.0
1699.1	1987.9	2289.0	2602.7	3012.8	3443.3	3987.8	4662.4	5484.4	6485.3	32.5
1748.2	2044.6	2353.6	2675.2	3095.4	3536.5	4093.8	4783.8	5626.6	6646.3	35.0
2004.0	2340.2	2689.7	3052.7	3525.8	4020.8	4644.7	5414.6	6351.7	7481.3	37.5
2568.2	2991.4	3429.5	3882.7	4470.8	5083.3	5851.5	6794.3	7935.0	9301.3	40.0
3202.4	3722.6	4259.3	4812.7	5528.2	6270.8	7198.3	8331.5	9695.8	11321.3	45.0
3906.6	4533.8	5179.1	5842.7	6698.2	7583.3	8685.1	10026.2	11634.1	13541.3	50.0
4680.8	5425.0	6188.9	6972.7	7980.8	9020.8	10311.9	11878.4	13749.9	15961.3	55.0
5525.0	6396.2	7288.7	8202.7	9375.8	10583.3	12078.7	13888.1	16043.2	18581.3	60.0
6065.2	7017.4	7991.8	8988.7	10266.8	11580.8	13206.0	15169.5	17504.4	20249.3	63.0
9601.8	11081.0	12587.9	14122.7	16080.8	18083.3	20545.9	23501.9	26991.4	31061.3	80.0
14798.6	17045.8	19327.1	21642.7	24585.8	27583.3	31253.1	35635.7	40779.6	46741.3	100.0
22869.6	26301.8	29776.1	33292.7	37748.2	42270.8	47787.1	54346.7	62006.1	70841.3	125.0
37109.0	42620.2	48184.7	53802.7	60900.8	68083.3	76814.7	87157.1	99184.2	112981.3	160.0
57582.6	66069.8	74632.1	83242.7	94110.8	105083.3	118389.1	134104.7	152320.6	173141.3	200.0
89474.6	102581.3	115771.1	129042.7	145748.2	162583.3	182957.1	206964.2	234716.1	266341.3	250.0

**Note.** To obtain the Moment of Inertia of two Flanges of a particular width, multiply the value obtained from the Table by that width.

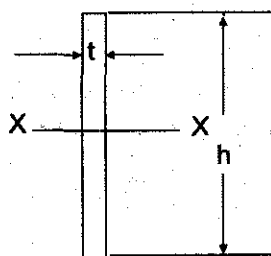


TABLE 27

# MOMENT OF INERTIA OF ONE WEB PLATE ABOUT ITS X-X AXIS

Thickness $t$ mm	6.0	7.0	8.0	9.0	10.0	11	12
Depth $h$ cm	Moment of Inertia in $\text{cm}^4$						
8.0	25.6	29.9	34.1	38.4	42.7	46.9	51.2
10.0	50.0	58.3	66.7	75.0	83.3	91.7	100.0
12.5	97.7	113.9	130.2	146.5	162.8	179.0	195.3
16.0	204.8	238.9	273.1	307.2	341.3	375.5	409.6
20.0	400.0	466.7	533.3	600.0	666.7	733.3	800.0
25.0	781.2	911.5	1041.7	1171.9	1302.1	1432.3	1562.5
32.0	1638.4	1911.5	2184.5	2457.6	2730.7	3003.7	3276.8
40.0	3200.0	3733.3	4266.7	4800.0	5333.3	5866.7	6400.0
50.0	6250.0	7291.7	8333.3	9375.0	10416.7	11458.3	12500.0
63.0	12502.4	14586.1	16669.8	18753.5	20837.2	22921.1	25004.7
80.0	25600.0	29866.7	34133.3	38400.0	42666.7	46933.3	51200.0
100.0	50000.0	58333.3	66666.7	75000.0	83333.3	91666.7	100000.0
125.0	97656.2	113932.3	130208.3	146484.4	162760.4	179036.5	195312.5
160.0	204800.0	238933.3	273066.7	307200.0	341333.3	375466.7	409600.0
200.0	400000.0	466666.7	533333.3	600000.0	666666.7	733333.3	800000.0
250.0	781250.0	911458.3	1041666.7	1171875.0	1302083.3	1432291.7	1562500.0

Thickness $t$ mm	14	16	18	20	22	25
Depth $h$ cm	Moment of Inertia in $\text{cm}^4$					
8.0	59.7	68.3	76.8	85.3	93.9	106.7
10.0	116.7	133.3	150.0	166.7	183.3	208.3
12.5	227.9	260.4	294.6	325.5	358.1	406.9
16.0	477.9	546.1	614.4	682.7	750.9	853.3
20.0	933.3	1066.7	1200.0	1333.3	1466.7	1666.7
25.0	1822.9	2083.3	2343.8	2604.2	2864.6	3255.2
32.0	3822.9	4369.1	4915.2	5461.3	6007.5	6826.7
40.0	7466.7	8533.3	9600.0	10666.7	11733.3	13333.3
50.0	14583.3	16666.7	18750.0	20833.3	22916.7	26041.7
63.0	29172.2	33339.6	37507.0	41674.5	45842.0	52093.1
80.0	59733.3	68266.7	76800.0	85333.3	93866.7	106666.7
100.0	116666.7	133333.3	150000.0	166666.7	183333.3	208333.3
125.0	227864.4	260416.7	292968.8	325520.8	358072.9	406901.0
160.0	477866.7	546133.3	614400.0	682666.7	750933.3	853333.3
200.0	933333.3	1066666.7	1200000.0	1333333.3	1466666.7	1666666.7
250.0	1822916.7	2083333.3	2234375.0	2604166.7	2864583.3	3255208.3

**TABLE 28**  
**REDUCTION FOR AREA FOR RIVET HOLES**

Diameter of Rivet mm	12	14	16	18	20	22	24
Rivet Hole Diameter mm	13.5	15.5	17.5	19.5	21.5	23.5	25.5
Thickness of Metal mm	Area of Rivet Holes in cm <sup>2</sup>						
5.0	0.68	0.78	0.88	0.98	1.08	1.18	1.28
6.0	0.81	0.93	1.05	1.17	1.29	1.41	1.53
8.0	1.08	1.24	1.40	1.56	1.72	1.88	2.04
10.0	1.35	1.55	1.75	1.95	2.15	2.35	2.58
12.0	1.62	1.86	2.10	2.34	2.58	2.82	3.06
14.0	1.89	2.17	2.45	2.73	3.01	3.29	3.57
16.0	2.16	2.48	2.80	3.12	3.44	3.76	4.08
18.0	2.43	2.79	3.15	3.51	3.87	4.23	4.59
20.0	2.70	3.10	3.50	3.90	4.30	4.70	5.10
22.0	2.97	3.41	3.85	4.29	4.73	5.17	5.61
25.0	3.38	3.88	4.38	4.88	5.38	5.88	6.38
28.0	3.78	4.34	4.90	5.46	6.02	6.58	7.14
32.0	4.32	4.96	5.60	6.24	6.89	7.52	8.16
36.0	4.86	5.58	6.30	7.02	7.74	8.46	9.18
40.0	5.40	6.20	7.00	7.80	8.60	9.40	10.20
45.0	6.08	6.98	7.88	8.78	9.68	10.58	11.48
50.0	6.75	7.75	8.75	9.75	10.75	11.75	12.75
56.0	7.56	8.68	9.80	10.92	12.04	13.16	14.28
63.0	8.50	9.76	11.02	12.28	13.54	14.80	16.06
Diameter of Rivet mm	27	30	33	36	39	42	48
Rivet Hole Diameter mm	29.0	32.0	35.0	38.0	41.0	44.0	50.0
Thickness of Metal mm	Area of Rivet Holes in cm <sup>2</sup>						
5.0	1.45	1.60	1.75	1.90	2.05	2.20	2.50
6.0	1.76	1.92	2.10	2.28	2.46	2.64	3.00
8.0	2.32	2.56	2.80	3.04	3.28	3.52	4.00
10.0	2.90	3.20	3.50	3.80	4.10	4.40	5.00
12.0	3.48	3.84	4.20	4.56	4.92	5.28	6.00
14.0	4.06	4.48	4.90	5.32	5.74	6.16	7.00
16.0	4.64	5.12	5.60	6.08	6.56	7.04	8.00
18.0	5.22	5.76	6.30	6.84	7.38	7.92	9.00
20.0	5.80	6.40	7.00	7.60	8.20	8.80	10.00
22.0	6.38	7.04	7.70	8.36	9.02	9.68	11.00
25.0	7.25	8.00	8.75	9.50	10.25	11.00	12.50
28.0	8.12	8.96	9.80	10.64	11.48	12.32	14.00
32.0	9.28	10.24	11.20	12.16	13.12	14.08	16.00
36.0	10.44	11.52	12.60	13.68	14.76	15.84	18.00
40.0	11.60	12.80	14.00	15.20	16.40	17.60	20.00
45.0	13.05	14.40	15.75	17.10	18.45	19.80	22.50
50.0	14.50	16.00	17.50	19.00	20.50	22.00	25.00
56.0	16.24	17.92	19.60	21.28	22.96	24.64	28.00
63.0	18.27	20.16	22.05	23.94	25.83	27.72	31.50

TABLE 29

## STRIP

Thickness <i>t</i> mm	1.60		1.80		2.00		2.24		2.50		2.80		3.15			
Width <i>b</i> mm	Weight per metre (W)															
	kg		N		kg		N		kg		N		kg		N	
100	1.3	12.8	1.4	13.7	1.6	15.7	1.8	17.7	2.0	19.6	2.2	21.6	2.5	24.5		
125	1.6	15.7	1.8	17.7	2.0	19.6	2.2	21.6	2.4	23.5	2.7	26.5	3.1	30.4		
160	2.0	19.6	2.3	22.6	2.5	24.5	2.8	27.5	3.1	30.4	3.5	34.3	4.0	39.2		
200	2.5	24.5	2.8	27.5	3.1	30.4	3.5	34.3	3.9	38.3	4.4	43.2	4.9	48.1		
250	3.1	30.4	3.5	34.3	3.9	38.3	4.4	43.2	4.9	48.1	5.5	54.0	6.2	60.8		
320	4.0	39.2	4.5	44.1	5.0	49.0	5.6	54.9	6.3	61.8	7.0	68.7	7.0	77.5		
400	5.0	49.0	5.6	54.9	6.3	61.8	7.0	68.7	7.8	76.5	8.8	86.3	9.9	97.1		
500	6.3	61.8	7.1	69.7	7.8	76.5	8.8	86.3	9.8	96.1	11.0	107.9	12.4	121.6		
650	8.2	80.4	9.2	90.3	10.2	100.1	11.4	111.8	12.8	125.6	14.3	140.3	16.3	157.9		
800	10.0	98.1	11.3	110.9	12.6	123.6	14.1	138.3	15.7	154.0	17.6	172.7	19.3	194.2		
950	—	—	13.4	131.5	14.9	146.2	16.7	163.8	18.6	182.5	20.9	205.0	23.5	230.5		
1050	—	—	—	—	16.5	161.9	18.5	181.5	20.6	202.1	23.1	226.6	26.0	255.1		
1150	—	—	—	—	—	—	20.2	198.2	22.6	221.7	25.3	248.2	28.4	278.6		
1250	—	—	—	—	—	—	—	—	24.5	240.3	27.5	269.8	30.9	303.1		
1300	—	—	—	—	—	—	—	—	—	—	28.6	280.6	32.1	314.9		
1450	—	—	—	—	—	—	—	—	—	—	—	—	35.8	351.2		
1550	—	—	—	—	—	—	—	—	—	—	—	—	38.3	375.7		

(Continued)

(Continued)

Note. Combinations denoted by dashes are not manufactured.

TABLE 29 (Contd.)

STRIP

3.55		4.00		4.50		5.0		6.0		8.0		10.0		Thickness <i>t</i> mm
Weight per metre (W)														Width <i>b</i> mm
kg	N	kg	N	kg	N	kg	N	kg	N	kg	N	kg	N	
2.8	27.5	3.1	30.4	3.5	34.3	3.9	38.3	4.7	46.1	6.3	61.8	7.8	76.5	100
3.5	34.3	3.9	38.3	4.4	43.2	4.9	48.1	5.9	57.9	7.8	76.5	9.8	96.1	125
4.5	44.1	5.0	49.1	5.6	54.9	6.3	61.8	7.5	73.6	10.0	98.1	12.6	123.6	160
5.6	54.9	6.3	61.8	7.1	69.7	7.8	76.6	9.4	92.2	12.6	123.6	15.7	154.0	200
7.0	68.7	7.8	76.5	8.8	86.3	9.8	96.1	11.8	115.8	15.7	154.0	19.6	192.3	250
8.9	87.3	10.0	98.1	11.3	110.9	12.6	123.6	15.1	148.1	20.1	197.2	25.1	246.2	320
11.1	108.0	12.6	123.6	14.1	138.3	15.7	154.0	18.8	184.4	25.1	246.2	31.4	308.0	400
13.9	136.4	15.7	154.0	17.7	173.6	19.6	192.3	23.6	231.5	31.4	308.0	39.2	384.6	500
18.1	177.6	20.4	200.1	23.0	225.6	25.5	250.2	30.6	300.2	40.8	400.2	51.0	500.3	650
22.3	216.6	25.1	246.2	28.3	277.6	31.4	308.0	37.7	369.8	50.2	492.5	62.8	616.1	800
26.5	260.0	29.6	292.3	33.6	329.6	37.3	365.9	44.7	438.5	59.7	585.7	74.6	731.8	950
29.3	287.4	33.0	323.7	37.1	364.0	41.2	404.2	49.5	485.6	65.9	646.5	82.4	808.3	1050
32.0	313.0	36.1	354.1	40.6	398.3	45.1	442.4	54.2	531.7	72.2	708.3	90.3	885.8	1150
34.8	341.4	39.2	384.6	44.2	433.6	49.1	481.7	58.9	577.8	78.5	770.1	98.1	962.4	1250
36.2	355.1	40.8	400.2	45.9	450.3	51.0	500.3	61.2	600.4	81.6	800.5	102.0	1000.6	1300
40.4	396.3	46.5	446.4	51.2	502.3	56.9	558.2	68.3	670.0	91.1	893.7	113.8	1116.4	1450
43.2	423.6	48.7	447.7	54.7	536.6	60.8	596.4	73.0	716.1	97.3	954.5	121.7	1193.9	1550



TABLE 30

## SHEET

Size mm x mm	Standard Nominal Thickness (mm)	0.40	0.50	0.63	0/80	0.90	1.00	1.12	1.25	1.40
	Standard Nominal Surface Area in m <sup>2</sup>	Weight in kg								
2800 x 600	1.68	5.3	6.6	8.3	10.6	11.9	13.2	14.8	16.5	18.5
750	2.10	6.6	8.2	10.4	13.2	14.8	16.5	18.5	20.6	23.1
900	2.52	7.9	9.9	12.5	15.8	17.8	19.8	22.2	24.7	27.7
1000	2.80	8.8	11.0	13.8	17.6	19.8	22.0	24.6	27.5	30.8
1100	3.08	9.7	12.1	15.2	19.3	21.8	24.2	27.1	30.2	33.8
1200	3.36	10.6	13.2	16.6	21.1	23.7	26.4	29.5	33.0	36.9
1250	3.50	11.0	13.7	17.3	22.0	24.7	27.5	30.8	34.3	38.5
1400	3.92	12.3	15.4	19.4	24.6	27.7	30.8	34.5	38.5	43.1
1500	4.20	13.2	16.5	20.8	26.4	29.7	33.0	36.9	41.2	46.2
3200 x 600	1.92	6.0	7.5	9.5	12.1	13.6	15.1	16.9	18.8	21.1
750	2.40	7.5	9.4	11.9	15.1	17.0	18.8	21.1	23.6	26.4
900	2.88	9.0	11.3	14.2	18.1	20.3	22.6	25.3	28.3	31.7
1000	3.20	10.0	12.6	15.8	20.1	22.6	25.1	28.1	31.4	35.2
1100	3.52	11.1	13.8	17.4	22.1	24.9	27.6	30.9	34.5	38.7
1200	3.48	12.1	15.1	19.0	24.1	27.1	30.1	33.8	37.7	42.2
1250	4.00	12.6	15.7	19.8	25.1	28.3	31.4	35.2	39.2	44.0
1400	4.84	14.1	17.6	22.2	28.1	31.7	35.2	39.4	44.0	49.2
1500	4.80	15.1	18.8	23.7	30.1	33.9	37.7	42.2	47.1	52.8
3600 x 600	2.16	6.8	8.5	10.7	13.6	15.3	17.0	19.0	21.2	23.7
750	2.70	8.5	10.6	13.4	17.0	19.1	21.2	23.7	26.5	29.7
900	3.24	10.2	12.7	16.0	20.3	22.9	25.4	28.5	31.8	35.6
1000	3.60	11.3	14.1	17.8	22.6	25.4	28.3	31.7	35.3	39.6
1100	3.96	12.4	15.5	19.6	24.9	28.0	31.1	34.8	38.9	43.5
1200	4.32	13.6	17.0	21.4	27.1	30.5	33.9	38.0	42.4	47.5
1250	4.50	14.1	17.7	22.3	28.3	31.8	35.3	39.6	44.2	49.5
1400	5.04	15.8	19.8	24.9	31.7	35.6	39.6	44.3	49.5	55.4
1500	5.40	17.0	21.2	26.7	33.9	38.2	42.4	47.5	53.0	59.3
4000 x 600	2.40	7.5	9.4	11.9	15.1	17.0	18.8	21.1	23.6	26.4
750	3.00	9.4	11.8	14.8	18.8	21.2	23.6	26.4	29.4	33.0
900	3.60	11.3	14.1	17.8	22.6	25.4	28.3	31.7	35.3	39.6
1000	4.00	12.6	15.7	19.8	25.1	28.3	31.4	35.2	39.2	44.0
1100	4.40	13.8	17.3	21.8	27.6	31.1	34.5	38.7	43.2	48.4
1200	4.80	15.1	18.8	23.7	30.1	33.9	37.7	42.2	47.1	52.8
1250	5.00	15.7	19.6	24.7	31.4	35.3	39.2	44.0	49.1	55.0
1400	5.60	17.6	22.0	27.7	35.2	39.6	44.0	49.2	55.0	61.5
1500	6.00	18.8	23.6	29.7	37.7	42.4	47.1	52.8	58.9	65.9

(Continued)

TABLE 30 (Contd.)

SHEET

1.60	1.80	2.00	2.24	2.50	2.80	3.15	3.55	4.00	Standard Nominal Thickness (mm)	Size mm x mm
Weight in kg									Standard Nominal Surface Area in m <sup>2</sup>	
21.1	23.7	26.4	29.5	33.0	36.9	41.5	46.8	52.8	1.68	2800 x 600
26.4	29.7	33.0	36.9	41.2	46.2	51.9	58.5	65.9	2.10	750
31.7	35.6	39.6	44.3	49.5	55.4	62.3	70.2	79.1	2.52	900
35.2	39.6	44.0	49.2	55.0	61.5	69.2	78.0	87.9	2.80	1000
38.7	43.5	48.4	54.2	60.4	67.7	76.2	85.8	96.7	3.08	1100
42.2	47.5	52.8	59.1	65.9	73.9	83.1	93.6	105.5	3.36	1200
44.0	49.5	55.0	61.5	68.7	76.9	86.5	97.5	109.9	3.50	1250
49.2	55.4	61.5	68.9	76.9	86.2	96.9	109.2	123.1	3.92	1400
52.8	59.3	65.9	73.9	82.4	92.3	103.8	117.0	131.9	4.20	1500
24.1	27.1	30.1	33.8	37.7	42.2	47.5	53.5	60.3	1.92	3200 x 600
30.1	33.9	37.7	42.2	47.1	52.8	59.3	66.9	75.4	2.40	750
36.2	40.7	45.2	50.6	56.5	63.3	71.2	80.3	90.4	2.88	900
40.2	45.2	50.2	56.3	62.8	70.3	79.1	89.2	100.5	3.20	1000
44.2	49.7	55.3	61.9	69.1	77.4	87.0	98.1	110.5	3.52	1100
48.2	54.3	60.3	67.5	75.4	84.4	95.0	110.7	120.8	3.84	1200
50.2	56.5	62.8	70.3	78.5	87.9	98.9	111.5	125.6	4.00	1250
56.3	63.3	70.3	78.8	87.9	98.5	110.8	124.8	140.7	4.48	1400
60.3	67.8	75.4	84.4	94.2	105.5	118.7	133.8	150.7	4.80	1500
27.1	30.5	33.9	38.0	42.4	47.5	53.4	60.2	67.8	2.16	3600 x 600
33.9	38.2	42.4	47.5	53.0	59.3	66.8	75.2	84.8	2.70	750
40.7	45.8	50.9	57.0	63.6	71.2	80.1	90.3	101.7	3.24	900
45.2	50.9	56.5	63.3	70.6	79.1	89.0	100.3	113.0	3.60	1000
49.7	56.0	62.2	69.6	77.7	87.0	97.9	110.4	124.3	3.96	1100
54.3	61.0	67.8	75.0	84.8	95.0	106.8	120.4	135.6	4.32	1200
56.5	63.6	70.6	79.1	88.3	98.9	111.3	125.4	141.3	4.50	1250
63.3	71.2	79.1	88.8	98.9	110.8	124.6	140.5	158.3	4.04	1400
67.8	76.3	84.8	95.0	106.0	118.7	133.5	150.5	169.6	5.40	1500
30.1	33.9	37.7	42.2	47.1	52.8	59.3	66.9	75.4	2.40	4000 x 600
37.7	42.4	47.1	52.8	58.9	65.9	74.2	83.6	94.2	3.00	750
45.2	50.9	56.5	63.3	70.6	79.1	89.0	100.3	113.0	3.60	900
50.2	56.5	62.8	70.3	78.5	87.9	89.0	11.5	125.6	4.00	1000
55.3	62.2	69.1	77.4	86.4	96.7	108.8	122.6	138.2	4.40	1100
60.3	67.8	75.4	84.4	94.2	105.5	118.7	133.8	150.7	4.80	1200
62.3	70.6	78.5	87.9	98.1	109.9	123.6	139.3	157.0	5.00	1250
70.3	79.1	87.9	98.5	109.1	123.1	138.5	156.1	175.8	5.40	1400
75.4	84.8	94.2	105.5	117.8	131.9	148.4	167.2	188.4	6.00	1500

**TABLE 31**  
**SAFE LOADS FOR SINGLE ANGLE STRUTS**  
 SINGLE BOLTED OR SINGLE RIVETED END CONNECTIONS

Effective Lengths in Metres		0.50	1.00	1.50	2.00	2.50	3.00	3.50
EQUAL ANGLES	Size A x B x t	Safe Loads in kg						
	mm mm mm							
EQUAL ANGLES	50 x 50 x 4.0	3637.1	2657.8	1462.0	792.3	—	—	—
	5.0	4490.1	3281.2	1804.9	978.1	—	—	—
	6.0	5315.3	3847.6	2094.8	1130.3	—	—	—
	55 x 55 x 5.0	4989.6	3923.0	2318.3	1305.4	798.9	—	—
	6.0	5927.0	4659.9	2753.8	1550.6	949.0	—	—
	8.0	7744.8	6089.2	3598.4	2026.2	1240.1	—	—
	10.0	9486.9	7458.9	4407.8	2482.0	1519.0	—	—
	60 x 60 x 5.0	5483.8	4573.6	2922.7	1729.6	1060.9	—	—
	6.0	6519.2	5410.4	3430.3	2018.5	1238.0	—	—
	8.0	8539.8	7087.4	4493.4	2644.1	1621.8	—	—
	10.0	10484.1	8701.1	5516.5	3246.1	1991.0	—	—
	65 x 65 x 5.0	—	5218.0	3585.0	2226.9	1393.8	925.0	—
	6.0	—	6212.4	4267.6	2650.9	1659.1	1101.1	—
	8.0	—	8120.3	5533.9	3416.0	2137.4	1415.2	—
	10.0	—	9984.0	4804.0	4200.0	2428.0	1740.0	—
	70 x 70 x 5.0	—	5838.4	4292.2	2801.4	1769.9	1195.4	—
	6.0	—	6950.9	5110.0	3335.2	2106.1	1411.3	—
	8.0	—	9097.7	6647.4	4324.0	2724.4	1827.2	—
	10.0	—	11195.9	8180.5	5321.3	3352.6	2248.6	—
	75 x 75 x 6.0	—	7655.4	5953.8	4020.0	2643.9	1782.2	1259.2
	8.0	—	10041.7	7766.8	5221.1	3423.1	2303.3	1629.6
	10.0	—	12371.2	9568.6	6432.4	4217.2	2837.6	2007.7

(Continued)

TABLE 31 (Contd.)

# SAFE LOADS FOR SINGLE ANGLE STRUTS

## SINGLE BOLTED OR SINGLE RIVETED END CONNECTIONS

Effective Lengths in Metres		1.00	1.50	2.00	2.50	3.00	3.50
EQUAL ANGLES	Size A x B x t	Safe Loads in kg					
	mm mm mm						
	80 x 80 x 6.0	8347.1	6804.0	4787.1	3242.2	2212.9	1574.7
	8.0	10953.6	8892.5	6228.3	4210.0	2870.6	2042.7
	10.0	13501.4	10960.9	7677.0	5189.2	3538.3	2517.9
	12.0	15952.4	12896.2	8990.5	6066.1	4131.9	2940.4
	60 x 40 x 5.0	2776.0	1358.5	725.9	—	—	—
	6.0	3295.1	1612.5	861.6	—	—	—
	8.0	4227.4	2044.4	1090.8	—	—	—
	65 x 45 x 5.0	3563.1	1939.9	1046.7	—	—	—
	6.0	4185.0	2253.1	1212.5	—	—	—
	8.0	5470.6	2945.3	1585.0	—	—	—
	70 x 45 x 5.0	3739.2	2035.8	1098.6	—	—	—
	6.0	4443.7	2419.3	1305.4	—	—	—
	8.0	5745.2	3093.1	1664.5	—	—	—
	10.0	7044.2	3792.5	2040.9	—	—	—
	75 x 50 x 6.0	5371.4	3194.1	1808.6	1110.2	—	—
	8.0	6982.5	4126.3	2323.4	1422.0	—	—
	10.0	8575.5	5067.6	2853.5	1746.4	—	—
	80 x 50 x 6.0	5596.5	3327.9	1884.4	1157.8	—	—
	8.0	7280.2	4302.2	2422.5	1482.6	—	—
	10.0	8947.7	5287.6	2977.4	1822.9	—	—
	90 x 60 x 6.0	9559.9	6667.4	4193.3	2623.1	1751.0	—
	10.0	11739.0	8125.8	5080.0	3178.9	2115.5	—
	12.0	13884.0	9610.6	6008.3	3759.7	2502.1	—

Note 1—The safe loads given in this Table are tabulated for ratio of slenderness up to but not exceeding 250.

2—The values on the right side of the zig-zag dotted line are for ratio of slenderness exceeding 180.

3—This Table is based on the requirements specified in 18.9.1.1 of IS : 800-1956.

**TABLE 32**  
**SAFE LOADS FOR SINGLE ANGLE STRUTS**  
 DOUBLE BOLTED OR DOUBLE RIVETED OR WELDED END CONNECTIONS

Effective Lengths in Metres		1.0	1.5	2.0	2.5	3.0	3.5
EQUAL ANGLES	Size A x B x C	Safe Loads in kg					
	mm mm mm						
EQUAL ANGLES	50 x 50 x 4.0	3323.2	1826.3	991.0	—	—	—
	5.0	4102.6	2254.7	1223.4	—	—	—
	6.0	4810.4	2617.9	1414.3	—	—	—
	55 x 55 x 5.0	4906.4	2898.0	1636.3	995.5	—	—
	6.0	5828.1	3442.4	1943.7	1182.5	—	—
	8.0	7615.6	4498.2	2539.9	1545.2	—	—
	10.0	9328.6	5510.0	3111.2	1892.8	—	—
	60 x 60 x 5.0	5717.2	3653.6	2160.3	1327.1	—	—
	6.0	6764.1	4288.0	2521.2	1547.9	—	—
	8.0	8860.5	5617.0	3302.7	2027.6	—	—
	10.0	10877.9	6895.9	4054.6	2489.3	—	—
	65 x 65 x 5.0	6516.9	4482.5	2785.6	1744.4	1153.8	—
	6.0	7757.7	5336.0	3316.0	2076.5	1373.4	—
	8.0	10140.6	6919.8	4274.9	2674.2	1766.6	—
	10.0	12468.0	8508.0	5256.0	3288.0	2172.0	—
	70 x 70 x 5.0	7292.6	5365.2	3497.4	2213.8	1481.3	—
	6.0	8682.2	6387.6	4163.8	2635.6	1763.5	—
	8.0	11362.9	8309.5	5396.9	3411.0	2281.0	—
	10.0	13983.5	10225.9	6641.5	4197.6	2807.1	—
	75 x 75 x 6.0	9563.2	7444.1	5026.3	3301.2	2230.8	1571.8
	8.0	12544.2	9710.6	6528.7	4275.5	2882.6	2034.7
	10.0	15454.2	11963.3	8043.3	5267.3	3551.3	2506.8
	80 x 80 x 6.0	10430.8	8508.7	5984.6	4056.9	2774.0	1963.0
	8.0	13687.4	11120.9	7785.1	5267.4	3597.1	2544.6
	10.0	16871.0	13707.5	9595.9	6492.6	4433.7	3136.4
	12.0	19934.7	16128.7	11238.1	7588.8	5175.6	3660.0

(Continued)

TABLE 32 (Contd.)

## SAFE LOADS FOR SINGLE ANGLE STRUTS

DOUBLE BOLTED OR DOUBLE RIVETED OR WELDED END CONNECTIONS

Effective Lengths in Metres		1.5	2.0	2.5	3.0	3.5	4.0	4.5
Size A × B × C		Safe Loads in kg						
EQUAL ANGLES	mm mm mm							
	90 × 90 × 8.0	13761.0	10454.2	7472.8	5244.3	3778.5	2798.0	—
	10.0	16932.9	12815.1	9143.4	6398.2	4608.3	3409.4	—
	12.0	20074.9	15193.0	10840.0	7585.4	5463.4	4042.0	—
	100 × 100 × 8.0	16270.3	13253.9	9914.2	7317.9	5269.5	3979.9	3054.9
	10.0	20072.8	16299.2	12160.2	8957.4	6443.6	4860.3	3735.6
	12.0	23827.9	19348.3	14435.0	10633.1	7649.0	5769.5	4434.4
	110 × 110 × 8.0	18677.7	15969.9	12531.8	9495.5	7146.7	5386.8	4141.0
	10.0	23111.2	19760.6	15506.5	11749.4	8843.1	6665.5	5123.9
	12.0	27409.4	23386.2	18304.6	13858.6	10408.3	7843.8	6029.8
	15.0	33752.4	28798.1	22540.6	17065.7	12817.0	9658.9	7425.2
	130 × 130 × 10.0	—	26222.8	22481.3	18176.0	14402.0	11362.2	8853.7
	12.0	—	31203.6	26751.5	21628.4	17137.6	13520.4	10535.4
	15.0	—	38451.7	32900.8	26547.4	21011.1	16549.8	12883.5
	150 × 150 × 12.0	—	38232.3	34614.2	29840.8	24686.9	20190.2	16502.9
	15.0	—	47242.0	42720.1	36773.7	30382.4	24829.5	20273.4
	18.0	—	56036.6	50607.2	43501.6	35898.4	29310.9	23906.9
	200 × 100 × 15.0	—	67735.8	64938.3	61169.7	56094.9	49910.9	43419.4
	18.0	—	80604.0	77259.9	72745.9	66863.1	59259.2	51518.0
	25.0	—	109783.5	105187.3	98940.2	90545.1	80339.7	69949.7

Effective Lengths in Metres		1.0	1.5	2.0	2.5	3.0	3.5
Size A × B × C		Safe Loads in kg					
EQUAL ANGLES	mm mm mm						
	110 × 110 × 8.0	3266.6	—	—	—	—	—
	10.0	4066.7	—	—	—	—	—
	12.0	4778.8	—	—	—	—	—
	15.0	5884.7	—	—	—	—	—
	130 × 130 × 10.0	7119.5	5721.2	4716.3	—	—	—
	12.0	8471.9	6807.9	5612.1	—	—	—
	15.0	10365.7	8330.1	6861.4	—	—	—
	150 × 150 × 12.0	13282.6	10654.3	8983.0	6333.4	—	—
	15.0	16307.7	13330.2	11020.1	7764.6	—	—
	18.0	19218.9	15714.4	12971.6	9147.3	—	—
	200 × 200 × 15.0	37385.0	32079.0	27622.6	19917.9	15039.6	11542.7
	18.0	44327.4	38038.2	32719.2	23560.5	17794.3	13658.8
	25.0	59938.2	51449.3	44151.7	31780.7	23956.5	18412.9

(Continued)

TABLE 32 (Contd.)

# SAFE LOADS FOR SINGLE ANGLE STRUTS

## DOUBLE BOLTED OR DOUBLE RIVETED OR WELDED END CONNECTIONS

Effective Lengths in Metres			1.0	1.5	2.0	2.5	3.0	3.5
UNEQUAL ANGLES	Size A x B x C			Safe Loads in kg				
	mm mm mm							
UNEQUAL ANGLES	60 x 40 x 5.0			3471.0	1697.4	903.9	—	—
	6.0			4120.0	2014.8	1072.9	—	—
	8.0			5285.8	2555.2	1360.5	—	—
	65 x 45 x 5.0			4454.7	2424.3	1309.7	—	—
	6.0			5232.5	2817.5	1516.9	—	—
	8.0			6839.9	3683.0	1982.9	—	—
	70 x 45 x 5.0			4674.9	2544.2	1374.5	—	—
	6.0			5555.7	3023.5	1633.4	—	—
	8.0			7183.2	3867.9	2082.4	—	—
	10.0			8807.3	4742.4	2553.2	—	—
	75 x 50 x 6.0			6718.2	3694.6	2266.1	1382.6	—
	8.0			8732.8	5158.1	2912.5	1771.9	—
	10.0			10725.1	6334.8	3577.0	2176.1	—
	80 x 50 x 6.0			6999.7	4161.9	2361.1	1440.5	—
	8.0			9105.2	5378.0	3036.7	1847.4	—
	10.0			11190.6	6609.8	3732.2	2270.6	—
	90 x 60 x 8.0			11939.6	8336.5	5240.4	3285.9	2179.6
	10.0			14660.1	10161.5	6352.1	3980.2	2636.7
	12.0			17338.8	12018.2	7512.8	4707.5	3118.5
	100 x 65 x 8.0			13657.3	10227.0	6733.7	4282.6	2891.1
	10.0			16805.1	12510.4	8211.0	5212.9	3509.9
	100 x 75 x 8.0			15067.4	12438.2	8861.7	6077.5	4148.3
	10.0			18582.3	15279.0	10840.5	7405.2	5055.6
	12.0			22028.5	18112.6	12850.9	8778.5	5993.2
								2935.2
								3580.5
								4244.5

(Continued)

TABLE 32 (Contd.)

## SAFE LOADS FOR SINGLE ANGLE STRUTS

DOUBLE BOLTED OR DOUBLE RIVETED OR WELDED END CONNECTIONS

Effective Lengths in Metres		1.0	1.5	2.0	2.5	3.0	3.5
Size A x B x C		Safe Loads in kg					
mm mm mm							
UNEQUAL ANGLES	125 x 75 x 10.0	21513.5	17892.1	12849.9	8878.5	6057.9	4304.2
	125 x 95 x 10.0	—	22552.4	18754.0	14278.9	10676.1	7811.0
	12.0	—	26746.1	22184.7	16846.5	12577.4	9182.6
	150 x 75 x 12.0	28853.2	23724.1	16832.3	11498.3	7850.0	5559.5
	150 x 115 x 12.0	—	34444.8	31133.4	26190.0	20831.6	16353.6
	15.0	—	42498.9	38360.4	32207.2	25577.4	20065.7
	200 x 100 x 15.0	—	46779.9	39828.2	31092.5	23524.7	17625.4
	200 x 150 x 15.0	—	—	56757.4	52767.5	47029.0	40230.2
	18.0	—	—	67451.1	62664.3	55780.0	47658.6
Effective Lengths in Metres		4.0	4.5	5.0	5.5	6.0	7.0
Size A x B x C		Safe Loads in kg					
mm mm mm							
UNEQUAL ANGLES	125 x 75 x 10.0	3185.8	—	—	—	—	—
	125 x 95 x 10.0	5891.9	4508.8	3552.4	—	—	—
	12.0	6924.5	5300.8	4171.7	—	—	—
	150 x 75 x 12.0	—	—	—	—	—	—
	150 x 115 x 12.0	12695.8	9873.5	7874.5	6355.5	5213.2	—
	15.0	15552.0	12096.4	9631.4	7777.9	6374.6	—
	200 x 100 x 15.0	13283.2	10207.3	8081.1	—	—	—
	200 x 150 x 15.0	33642.4	27898.8	23160.2	19004.6	15003.6	11205.8
	18.0	39824.1	33023.4	27364.1	22451.8	18675.0	13230.9

Note 1—The safe loads give in this Table are tabulated for ratio of slenderness up to but not exceeding 250.

2—The values on the right side of the zig-zag dotted lines are for ratio of slenderness exceeding 180.

3—This Table is based on the requirements specified in 18.9.1.1 of IS : 800-1956.



**TABLE 33**  
**AREAS OF ROUND BARS IN SLABS PER METRE**  
**WIDTH FOR DIFFERENT SPACINGS**

Dia. of bars (mm)	Spacing of bars (cm)												
	6	8	10	12	14	16	18	20	22	24	26	28	30
5	3.27	2.45	1.96	1.64	1.40	1.23	1.09	0.98	0.89	0.82	0.75	0.70	0.65
6	4.71	3.53	2.83	2.63	2.02	1.76	1.57	1.41	1.28	1.18	1.09	1.01	0.94
7	6.41	4.81	3.85	3.20	2.75	2.40	2.17	1.92	1.75	1.60	1.48	1.37	1.28
8	8.37	6.28	5.02	4.19	3.59	3.14	2.79	2.51	2.28	2.09	1.93	1.79	1.67
10	13.09	9.82	7.85	6.54	5.61	4.91	4.36	3.93	3.57	3.27	3.02	2.80	2.62
11	15.84	11.88	9.50	7.92	6.79	5.94	5.28	4.75	4.32	3.96	3.65	3.39	3.17
12	18.85	14.14	11.31	9.42	8.08	7.07	6.28	5.65	5.14	4.71	4.35	4.04	3.77
14	26.65	19.24	15.39	12.83	11.00	9.62	8.55	7.70	7.00	6.41	5.92	5.50	5.13
16	33.54	25.13	20.10	16.76	14.36	12.56	11.18	10.05	9.14	8.38	7.73	7.18	7.70
18	42.41	31.80	25.44	21.20	18.17	15.90	14.14	12.75	11.56	10.60	9.78	9.08	8.48
20	52.36	39.27	31.41	26.18	22.44	19.64	17.45	15.71	14.29	13.09	12.08	11.22	10.47
22	—	47.51	38.01	31.67	27.15	23.75	21.12	19.00	17.28	15.84	14.62	13.57	13.67
25	—	61.36	49.08	40.90	35.06	30.68	27.27	24.54	22.31	20.45	18.88	17.53	16.36