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HANDBOOK
FOR
STRUCTURAL ENGINEERS

1. STRUCTURAL STEEL SECTIONS
(Revised)

BUREAU OF INDIAN STANDARDS

STRUCTURAL ENGINEERS' HANDBOOK No. 1

(Revised)

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(Revised)

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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CONTENTS

CONTENTS—*Continued*

FOREWORD

Steel, which is a very important basic raw material for industrialization, had been receiving considerable attention from the Planning Commission even from the very early stages of the country's First Five Year Plan period. The Planning Commission not only envisaged an increase in production capacity in the country, but also considered the question of even greater importance, namely the taking of urgent measures for the conservation of available resources. Its expert committees came to the conclusion that a good proportion of the steel consumed by the structural steel industry in India could be saved if higher efficiency procedures were adopted in the production and use of steel. The Planning Commission, therefore, recommended to the Government of India that the Indian Standards Institution should take up a Steel Economy Project and prepare a series of Indian Standard Specifications and Codes of Practice in the field of steel production and utilization.

Over nine years of continuous study in India and abroad, and the deliberations at numerous sittings of committees, panels and study groups, have resulted in the formulation of a number of Indian Standards in the field of steel production, design and use, a list of which is included in Appendix A.

The published basic Indian Standards on hot rolled structural sections are :

IS : 808-1957 Specification for Rolled Steel Beam, Channel and Angle Sections

IS : 1161-1958 Specification for Steel Tubes for Structural Purposes

IS : 1173-1957 Specification for Rolled Steel Sections, Tee Bars

IS : 1252-1958 Specification for Rolled Steel Sections, Bulb Angles

IS : 1730-1961 Dimensions for Steel Plate, Sheet and Strip for Structural and General Engineering Purposes

IS : 1731-1961 Dimensions for Steel Flats for Structural and General Engineering Purposes

IS : 1732-1961 Dimensions for Round and Square Steel Bars for Structural and General Engineering Purposes

IS : 1863-1961 Dimensions for Rolled Steel Bulb Plates

IS : 1864-1963 Dimensions for Angle Sections with Legs of Unequal Width and Thickness

IS : 2314-1963 Specification for Steel Sheet Piling Sections

The design and fabrication of steel structures is covered by the following published basic Indian Standards:

IS : 800-1962 Code of Practice for Use of Structural Steel in General Building Construction (*Revised*)

IS : 801-1958 Code of Practice for Use of Cold Formed Light Gauge Steel Sections in Structures

IS : 806-1958 Code of Practice for Use of Steel Tubes in General Building Construction

IS : 816-1956 Code of Practice for Use of Metal Arc Welding for General Construction in Mild Steel

In order to reduce the work involved in design computations, and to facilitate the use of the Indian Standard Code of Practice for Use of Structural Steel in General Building Construction [IS : 800-1962 (*Revised*)], it is proposed to make available a number of design handbooks showing typical designs of different types of structures. This revised Handbook, which gives the properties of structural steel sections, was first issued in 1959. This is the first revision of the Handbook. Other handbooks for the structural engineers proposed to be published in the series in due course are expected to cover the following subjects :

1) Application of plastic theory in design of steel structures,
2) Designing and detailing welded joints and connections,
3) Design of rigid frame structures in steel,
4) Economy of steel through choice of fabrication methods,
5) Functions of good design in steel economy,
6) High strength bolting in steel structures,
7) Large span shed type buildings in steel,
8) Light-weight open web steel joist construction,
9) Multi-storey steel framed structures for offices and residences,
10) Roof trusses in steel,
11) Single-storey industrial and mill type buildings in steel,
12) Steel transmission towers,
13) Steelwork in cranes and hoists,
14) Structural use of light gauge sections, and
15) Structural use of tubular sections.

This Handbook is based on the following Indian Standards :

IS : 800-1956 Code of Practice for Use of Structural Steel in General Building Construction

IS : 808-1957 Specification for Rolled Steel Beam, Channel and Angle Sections

IS : 1136-1958 Preferred Sizes for Wrought Metal Products

IS : 1138-1958 Sizes of Metal Strip, Sheet, Bars (Round and Square), Flats and Plate (for Structural and General Engineering Purposes)

IS : 1173-1957 Specification for Rolled Steel Sections, Tee Bars

IS : 1252-1958 Specification for Rolled Steel Sections, Bulb Angles

IS : 1730-1961 Dimensions for Steel Plate, Sheet and Strip for Structural and General Engineering Purposes

IS : 1731-1961 Dimensions for Steel Flats for Structural and General Engineering Purposes

IS : 1732-1961 Dimensions for Round and Square Steel Bars for Structural and General Engineering Purposes

IS : 1929-1961 Specification for Rivets for General Purposes (12 to 48 mm Diameter)

The first edition of this Handbook, which had been processed by Structurals Sectional Committee, SMDC 6, was approved for publication by the Structural and Metals Division Council of ISI.

At the time of the earlier edition of the Handbook, the last four standards mentioned above had not been published. In the present revised edition, changes required in the light of the provisions in these standards have been incorporated in Tables VII, VIII, IX, X, XIX, XXIII, XXIX, XXX and XXXI with the approval of SMDC 6, the present composition of which is given in Appendix B.

In view of the decision of the Government of India to change over to the metric system, all values in this Handbook have been specified in the metric system.

No handbook of this type can be made complete for all times. As designers, detailers and fabricators begin to use it, they will be able to suggest modifications and additions for improving its utility. They are requested to send such valuable suggestions, which ISI will receive with appreciation and gratitude.

INTRODUCTION

Users of structural steel have now available to them various handbooks which facilitate designing, detailing and fabrication practices. These handbooks are based on the existing standards for hot-rolled steel products in inch system. With the formulation of Indian Standards for higher efficiency hot-rolled steel sections, listed in Appendix A, it was pointed out by the producers and users of steel in India that it was essential to make available a suitable handbook to guide the users of the new Indian Standards. This Handbook which was first published in 1959 is the result of an attempt to meet that demand.

The matter contained in the Handbook is arranged from the point of view of maximum convenience in using the Handbook in the design office. Broadly speaking, the contents have been grouped as follows:

Section A	Structural Shapes and Other Steel Products (Tables I-X);
Section B	Beams, Channels and Compound Sections Used as Girders (Tables XI-XXIII);
Section C	Angles, Single and Double, Used as Struts and Ties (Tables XXIV-XXXI); and
Section D	Beams, Channels and Other Compound Sections Used as Columns (Tables XXXII-XXXVIII).

The requirements laid down in IS : 800-1956 Code of Practice for Use of Structural Steel in General Building Construction, have been taken note of in working out the properties contained in this Handbook. References to the appropriate clauses of IS : 800-1956, with the help of which the properties have been worked out, have been included in suitable footnotes.

The rivet gauge distances given in Tables I, II and XXXI are computed in accordance with **25.2** and **25.4** of IS : 800-1956. In arriving at the various gauge distances, an attempt has been made to accommodate the largest possible size of rivet in every section. It will be noticed that in case of beams, the rivet gauges have been kept the same, in most cases, irrespective of the width of flange. This has been done to enable the use of multiple punches in fabricating shops, as it would enable the use of the same punch for a number of beam sections. In the case of beams and channels, the gauge distances in webs have been given only for guidance. The actual gauge distance in the web will depend on the type of end connections. It may be specially noted that the values of g_1, given in Tables I and II, are the minimum values.

The rivet gauge distances can be changed, depending upon the rivet size. This should, however, be done only with the specific understanding between the fabricator and the design office.

The allowable loads given in Tables XII and XIII are for beams and channels, used as girders. It is assumed here that the beams and channels have adequate lateral supports for the compression flange.

Note — Supports which give effective lateral restraint are adequate lateral supports. Restraint against torsion at the ends may generally be deemed to be provided by rigidity of the section in the case of rolled steel beams bearing on a seating or connected to another member by web cleats and by bearing stiffeners in the case of plate girders.

The mean thickness of flanges given in different tables has been arrived at based on the gross area of each flange. The gross area of each flange has been assumed to be equal to the area of additional plate plus the area of flange of the rolled section (width of flange × thickness of flange). In the case of Tables XV and XVI, where channels have been used for the top flange, only the web area of the channel is included in computing the gross area of the flange.

The present fabrication and design office practice in the country is to take the diameter of the rivet hole $\frac{1}{16}$ in. (or 1·6 mm) more than the normal diameter of rivet. The continental practice is to assume the diameter of the hole to be bigger than the nominal diameter of the rivet by 1 mm. In this Handbook, wherever the diameter of hole is considered; it is taken as 1 mm more than the nominal diameter of the rivet. It is expected that with improved methods of fabrication, it will be possible to achieve this in this country also.

SYMBOLS

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

a = Sectional area in sq cm

b = Width of flange

A = The longer leg of an unequal angle or one of the legs in the case of an equal angle

B = The shorter leg of an unequal angle or one of the legs in the case of an equal angle

C_{xx} = The lesser of the two extreme fibre distances from the X-X axis

C_{yy} = The lesser of the two extreme fibre distances from the Y-Y axis

D = Slope of flange

D = The outstand of the bulb in the case of bulb angles

e_{xx} = Distance of extreme fibre from the X-X axis

e_{yy} = Distance of extreme fibre from the Y-Y axis

g = Rivet gauge distance in the flange

g_1 = Rivet gauge distance in the web

h = Overall depth of section

I_{uu} = Moment of inertia about the U-U axis

I_{vv} = Moment of inertia about the V-V axis

I_{xx} = Moment of inertia about the X-X axis

I_{xy} = Product of inertia about the X-X and Y-Y axes

I_{yy} = Moment of inertia about the Y-Y axis

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

r_{uu} = Radius of gyration about the U-U axis

r_{vv} = Radius of gyration about the V-V axis

r_{xx} = Radius of gyration about the X-X axis

r_{yy} = Radius of gyration about the Y-Y axis

S = Maximum allowable shear in the web

t = Thickness of angles, plates, etc

t_c = Mean thickness of compression flange

t_f = Thickness of flange at the centre of of the outstand

t_t = Mean thickness of tension flange

t_w = Thickness of web

w = Calculated weight in kg per m (= 0·785 a)

Z_c = Modulus of section based on the distance of extreme fibre of the compression flange

Z_t = Modulus of section based on the distance of extreme fibre of the tension flange

Z_{xx} = Modulus of section about the X-X axis

Z_{yy} = Modulus of section about the Y-Y 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

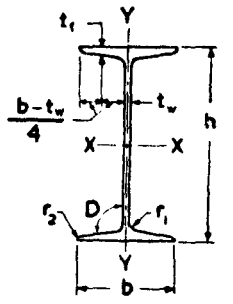
X-X axis = A line passing through the centre of gravity of the profile of the section, and at right angles to the Y-Y axis

U-U and V-V axes = Lines passing through the centre of gravity of the profile of the section, representing the principal axes of the section

SECTION A
STRUCTURAL SHAPES AND OTHER STEEL PRODUCTS
(TABLES I-X)

TABLE I ROLLED STEEL BEAMS

DIMENSIONS AND PROPERTIES



Designation	Weight per Metre	Sectional Area	Depth of Section	Width of Flange	Thickness of Flange	Thickness of Web	Moments of Inertia		Radii of Gyration	
	w	a	h	b	t_f	t_w	I_{xx}	I_{yy}	r_{xx}	r_{yy}
	kg	cm^2	mm	mm	mm	mm	cm^4	cm^4	cm	cm
ISJB 150	7·1	9·01	150	50	4·6	3·0	322·1	9·2	5·98	1·01
ISJB 175	8·1	10·28	175	50	4·8	3·2	479·3	9·7	6·83	0·97
ISJB 200	9·9	12·64	200	60	5·0	3·4	780·7	17·3	7·86	1·17
ISJB 225	12·8	16·28	225	80	5·0	3·7	1 308·5	40·5	8·97	1·58
ISLB 75	6·1	7·71	75	50	5·0	3·7	72·7	10·0	3·07	1·14
ISLB 100	8·0	10·21	100	50	6·4	4·0	168·0	12·7	4·06	1·12
ISLB 125	11·9	15·12	125	75	6·5	4·4	406·8	43·4	5·19	1·69
ISLB 150	14·2	18·08	150	80	6·8	4·8	688·2	55·2	6·17	1·75
ISLB 175	16·7	21·30	175	90	6·9	5·1	1 096·2	79·6	7·17	1·93
ISLB 200	19·8	25·27	200	100	7·3	5·4	1 696·6	115·4	8·19	2·13
ISLB 225	23·5	29·92	225	100	8·6	5·8	2 501·9	112·7	9·15	1·94
ISLB 250	27·9	35·53	250	125	8·2	6·1	3 717·8	193·4	10·23	2·33
ISLB 275	33·0	42·02	275	140	8·8	6·4	5 375·3	287·0	11·31	2·61
ISLB 300	37·7	48·08	300	150	9·4	6·7	7 332·9	376·2	12·35	2·80
ISLB 325	43·1	54·90	325	165	9·8	7·0	9 874·6	510·8	13·41	3·05
ISLB 350	49·5	63·01	350	165	11·4	7·4	13 158·3	631·9	14·45	3·17
ISLB 400	56·9	72·43	400	165	12·5	8·0	19 306·3	716·4	16·33	3·15
ISLB 450	65·3	83·14	450	170	13·4	8·6	27 536·1	853·0	18·20	3·20
ISLB 500	75·0	95·50	500	180	14·1	9·2	38 579·0	1 063·9	20·10	3·34
ISLB 550	86·3	109·97	550	190	15·0	9·9	53 161·6	1 335·1	21·99	3·48
ISLB 600	99·5	126·69	600	210	15·5	10·5	72 867·6	1 821·9	23·98	3·79
ISMB 100	11·5	14·60	100	75	7·2	4·0	257·5	40·8	4·20	1·67
ISMB 125	13·0	16·60	125	75	7·6	4·4	449·0	43·7	5·20	1·62
ISMB 150	14·9	19·00	150	80	7·6	4·8	726·4	52·6	6·18	1·66
ISMB 175	19·3	24·62	175	90	8·6	5·5	1 272·0	85·0	7·19	1·86
ISMB 200	25·4	32·33	200	100	10·8	5·7	2 235·4	150·0	8·32	2·15
ISMB 225	31·2	39·72	225	110	11·8	6·5	3 441·8	218·3	9·31	2·34
ISMB 250	37·3	47·55	250	125	12·5	6·9	5 131·6	334·5	10·39	2·65
ISMB 300	44·2	56·26	300	140	12·4	7·5	8 603·6	453·9	12·37	2·84
ISMB 350	52·4	66·71	350	140	14·2	8·1	13 630·3	537·7	14·29	2·84
ISMB 400	61·6	78·46	400	140	16·0	8·9	20 458·4	622·1	16·15	2·82
ISMB 450	72·4	92·27	450	150	17·4	9·4	30 390·8	834·0	18·15	3·01
ISMB 500	86·9	110·74	500	180	17·2	10·2	45 218·3	1 369·8	20·21	3·52

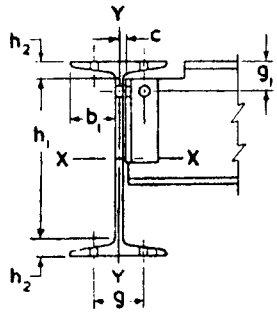


TABLE I ROLLED STEEL BEAMS

DIMENSIONS AND PROPERTIES

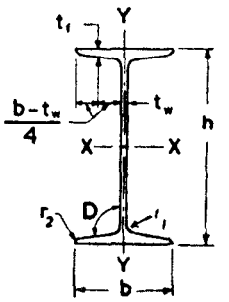
Moduli of Section		Radius at Root	Radius at Toe	Slope of Flange	Connection Details						Maximum Size of Flange Rivet	Designation
Z_{xx}	Z_{yy}	r_1	r_2	D	h_1	h_2	b_1	C	g	g_1 (*Min*)		
cm^3	cm^3	mm	mm	degrees	mm	mm	mm	mm	mm	mm	mm	
42·9	3·7	5·0	1·5	91·5	130·4	9·80	23·50	3·00	30	45	6	**ISJB 150**
54·8	3·9	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	201·1	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	47·10	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**
1 223·8	100·4	16·0	8·0	98	384·0	33·00	80·70	5·80	100	70	25	**ISLB 450**
1 543·2	118·2	17·0	8·5	98	430·2	34·90	85·40	6·10	100	70	28	**ISLB 500**
1 933·2	140·5	18·0	9·0	98	476·1	36·95	90·05	6·45	100	70	32	**ISLB 550**
2 428·9	173·5	20·0	10·0	98	520·2	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**
1 022·9	88·9	14·0	7·0	98	334·4	32·80	65·55	5·95	80	70	22	**ISMB 400**
1 350·7	111·2	15·0	7·5	98	379·2	35·40	70·30	6·20	90	70	22	**ISMB 450**
1 808·7	152·2	17·0	8·5	98	424·1	37·95	84·90	6·60	100	75	28	**ISMB 500**

(Continued)

TABLE I ROLLED STEEL BEAMS

DIMENSIONS AND PROPERTIES

(Continued)



Designation	Weight per Metre	Sectional Area	Depth of Section	Width of Flange	Thickness of Flange	Thickness of Web	Moments of Inertia		Radii of Gyration	
	w	a	h	b	t_f	t_w	I_{xx}	I_{yy}	r_{xx}	r_{yy}
	kg	cm^2	mm	mm	mm	mm	cm^4	cm^4	cm	cm
ISMB 550	103·7	132·11	550	190	19·3	11·2	64 893·6	1 833·8	22·16	3·73
ISMB 600	122·6	156·21	600	210	20·8	12·0	91 813·0	2 651·0	24·24	4·12
ISWB 150	17·0	21·67	150	100	7·0	5·4	839·1	94·8	6·22	2·09
ISWB 175	22·1	28·11	175	125	7·4	5·8	1 509·4	188·6	7·33	2·59
ISWB 200	28·8	36·71	200	140	9·0	6·1	2 624·5	328·8	8·46	2·99
ISWB 225	33·9	43·24	225	150	9·9	6·4	3 920·5	448·6	9·52	3·22
ISWB 250	40·9	52·05	250	200	9·0	6·7	5 943·1	857·5	10·69	4·06
ISWB 300	48·1	61·33	300	200	10·0	7·4	9 821·6	990·1	12·66	4·02
ISWB 350	56·9	72·50	350	200	11·4	8·0	15 521·7	1 175·9	14·63	4·03
ISWB 400	66·7	85·01	400	200	13·0	8·6	23 426·7	1 388·0	16·60	4·04
ISWB 450	79·4	101·15	450	200	15·4	9·2	35 057·6	1 706·7	18·63	4·11
ISWB 500	95·2	121·22	500	250	14·7	9·9	52 290·9	2 987·8	20·77	4·96
ISWB 550	112·5	143·34	550	250	17·6	10·5	74 906·1	3 740·6	22·86	5·11
ISWB 600	133·7	170·38	600	250	21·3	11·2	106 198·5	4 702·5	24·97	5·25
ISWB 600	145·1	184·86	600	250	23·6	11·8	115 626·6	5 298·3	25·01	5·35
ISHB 150	27·1	34·48	150	150	9·0	5·4	1 455·6	431·7	6·50	3·54
ISHB 150	30·6	38·98	150	150	9·0	8·4	1 540·0	460·3	6·29	3·44
ISHB 150	34·6	44·08	150	150	9·0	11·8	1 635·6	494·9	6·09	3·35
ISHB 200	37·3	47·54	200	200	9·0	6·1	3 608·4	967·1	8·71	4·51
ISHB 200	40·0	50·94	200	200	9·0	7·8	3 721·8	994·6	8·55	4·42
ISHB 225	43·1	54·94	225	225	9·1	6·5	5 279·5	1 353·8	9·80	4·96
ISHB 225	46·8	59·66	225	225	9·1	8·6	5 478·8	1 396·6	9·58	4·84
ISHB 250	51·0	64·96	250	250	9·7	6·9	7 736·5	1 961·3	10·91	5·49
ISHB 250	54·7	69·71	250	250	9·7	8·8	7 983·9	2 011·7	10·70	5·37
ISHB 300	58·8	74·85	300	250	10·6	7·6	12 545·2	2 193·6	12·95	5·41
ISHB 300	63·0	80·25	300	250	10·6	9·4	12 950·2	2 246 7	12·70	5·29
ISHB 350	67·4	85·91	350	250	11·6	8·3	19 159·7	2 451·4	14·93	5·34
ISHB 350	72·4	92·21	350	250	11·6	10·1	19 802·8	2 510·5	14·65	5·22
ISHB 400	77·4	98·66	400	250	12·7	9·1	28 083·5	2 728·3	16·87	5·26
ISHB 400	82·2	104·66	400	250	12·7	10·6	28 823·5	2 783·0	16·61	5·16
ISHB 450	87·2	111·14	450	250	13·7	9·8	39 210·8	2 985·2	18·78	5·18
ISHB 450	92·5	117·89	450	250	13·7	11·3	40 349·9	3 045·0	18·50	5·08

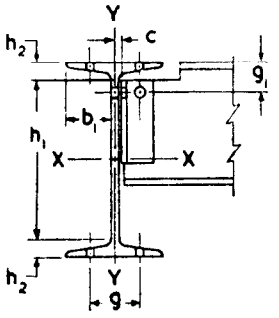


TABLE I ROLLED STEEL BEAMS

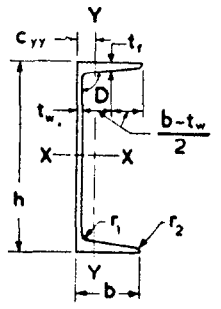
DIMENSIONS AND PROPERTIES

(Continued)

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*)		
cm³	cm³	mm	mm	degrees	mm	mm	mm	mm	mm	mm	mm	
2 359·8	193·0	18·0	9·0	98	467·5	41·25	89·40	7·10	100	75	32	**ISMB 550**
3 060·4	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**
1 171·3	138·8	13·0	6·5	96	340·5	29·75	95·70	5·80	140, 100	65	22, 32	**ISWB 400**
1 558·1	170·7	14·0	7·0	96	384·0	33·00	95·40	6·10	140, 100	70	22, 32	**ISWB 450**
2 091·6	239·0	15·0	7·5	96	431·0	34·50	120·05	6·45	140	70	32	**ISWB 500**
2 723·9	299·2	16·0	8·0	96	473·4	38·30	119·75	6·75	140	75	32	**ISWB 550**
3 540·0	376·2	17·0	8·5	96	514·2	42·90	119·40	7·10	140	80	32	**ISWB 600**
3 854·2	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**
1 094·8	196·1	12·0	6·0	94	296·0	27·0	120·85	5·65	140	60	32	**ISHB 350**
1 131·6	199·4	12·0	6·0	94	296·0	27·0	119·95	6·55	140	60	32	**ISHB 350**
1 404·2	218·3	14·0	7·0	94	340·1	29·9	120·45	6·05	140	65	32	**ISHB 400**
1 444·2	221·3	14·0	7·0	94	340·1	29·9	119·70	6·80	140	65	32	**ISHB 400**
1 742·7	238·8	15·0	7·5	94	386·2	31·9	120·10	6·40	140	65	32	**ISHB 450**
1 793·3	242·1	15·0	7·5	94	386·2	31·9	119·35	7·15	140	65	32	**ISHB 450**

TABLE II ROLLED STEEL CHANNELS

DIMENSIONS AND PROPERTIES



Designation	Weight per Metre	Sectional Area	Depth of Section	Width of Flange	Thickness of Flange	Thickness of Web	Centre of Gravity	Moments of Inertia		Radii of Gyration	
	w	a	h	b	t_f	t_w	c_{yy}	I_{xx}	I_{yy}	r_{xx}	r_{yy}
	kg	cm^2	mm	mm	mm	mm	cm	cm^4	cm^4	cm	cm
ISJC 100	5·8	7·41	100	45	5·1	3·0	1·40	123·8	14·9	4·09	1·42
ISJC 125	7·9	10·07	125	50	6·6	3·0	1·64	270·0	25·7	5·18	1·60
ISJC 150	9·9	12·65	150	55	6·9	3·6	1·66	471·1	37·9	6·10	1·73
ISJC 175	11·2	14·24	175	60	6·9	3·6	1·75	719·9	50·5	7·11	1·88
ISJC 200	13·9	17·77	200	70	7·1	4·1	1·97	1 161·2	84·2	8·08	2·18
ISLC 75	5·7	7·26	75	40	6·0	3·7	1·35	66·1	11·5	3·02	1·26
ISLC 100	7·9	10·02	100	50	6·4	4·0	1·62	164·7	24·8	4·06	1·57
ISLC 125	10·7	13·67	125	65	6·6	4·4	2·04	356·8	57·2	5·11	2·05
ISLC 150	14·4	18·36	150	75	7·8	4·8	2·38	697·2	103·2	6·16	2·37
ISLC 175	17·6	22·40	175	75	9·5	5·1	2·40	1 148·4	126·5	7·16	2·38
ISLC 200	20·6	26·22	200	75	10·8	5·5	2·35	1 725·5	146·9	8·11	2·37
ISLC 225	24·0	30·53	225	90	10·2	5·8	2·46	2 547·9	209·5	9·14	2·62
ISLC 250	28·0	35·65	250	100	10·7	6·1	2·70	3 687·9	298·4	10·17	2·89
ISLC 300	33·1	42·11	300	100	11·6	6·7	2·55	6 047·9	346·0	11·98	2·87
ISLC 350	38·8	49·47	350	100	12·5	7·4	2·41	9·312·6	394·6	13·72	2·82
ISLC 400	45·7	58·25	400	100	14·0	8·0	2·36	13 989·5	460·4	15·50	2·81
ISMC 75	6·8	8·67	75	40	7·3	4·4	1·31	76·0	12·6	2·96	1·21
ISMC 100	9·2	11·70	100	50	7·5	4·7	1·53	186·7	25·9	4·00	1·49
ISMC 125	12·7	16·19	125	65	8·1	5·0	1·94	416·4	59·9	5·07	1·92
ISMC 150	16·4	20·88	150	75	9·0	5·4	2·22	779·4	102·3	6·11	2·21
ISMC 175	19·1	24·38	175	75	10·2	5·7	2·20	1 223·3	121·0	7·08	2·23
ISMC 200	22·1	28·21	200	75	11·4	6·1	2·17	1 819·3	140·4	8·03	2·23
ISMC 225	25·9	33·01	225	80	12·4	6·4	2·30	2 694·6	187·2	9·03	2·38
ISMC 250	30·4	38·67	250	80	14·1	7·1	2·30	3 816·8	219·1	9·94	2·38
ISMC 300	35·8	45·64	300	90	13·6	7·6	2·36	6 362·6	310·8	11·81	2·61
ISMC 350	42·1	53·66	350	100	13·5	8·1	2·44	10 008·0	430·6	13·66	2·83
ISMC 400	49·4	62·93	400	100	15·3	8·6	2·42	15 082·8	504·8	15·48	2·83

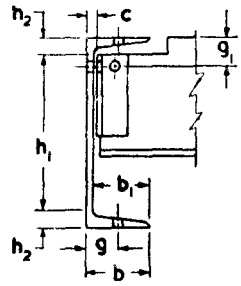


TABLE II ROLLED STEEL CHANNELS

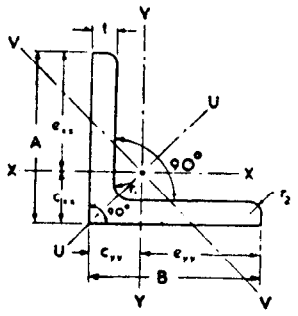
DIMENSIONS AND PROPERTIES

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	$b_1/2$	C	g	g_1 (*Min*)		
cm^3	cm^3	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**

Note — Values of 'g' are meant for one row of rivets only. In sufficiently wide flanges, if two rows are desirable, different gauges will have to be adopted.

TABLE III ROLLED STEEL EQUAL ANGLES

DIMENSIONS AND PROPERTIES



Designation	Size	Thickness	Sectional Area	Weight per Metre	Centre of Gravity	Distance of Extreme Fibre
	$A \times B$	t	a	w	$C_{xx}=C_{yy}$	$e_{xx}=e_{yy}$
	mm mm	mm	cm²	kg	cm	cm
ISA 2020	20×20	3·0	1·12	0·9	0·59	1·41
		4·0	1·45	1·1	0·63	1·37
ISA 2525	25×25	3·0	1·41	1·1	0·71	1·79
		4·0	1·84	1·4	0·75	1·75
		5·0	2·25	1·8	0·79	1·71
ISA 3030	30×30	3·0	1·73	1·4	0·83	2·17
		4·0	2·26	1·8	0·87	2·13
		5·0	2·77	2·2	0·92	2·08
ISA 3535	35×35	3·0	2·03	1·6	0·95	2·55
		4·0	2·66	2·1	1·00	2·50
		5·0	3·27	2·6	1·04	2·46
		6·0	3·86	3·0	1·08	2·42
ISA 4040	40×40	3·0	2·34	1·8	1·08	2·92
		4·0	3·07	2·4	1·12	2·88
		5·0	3·78	3·0	1·16	2·84
		6·0	4·47	3·5	1·20	2·80
ISA 4545	45×45	3·0	2·64	2·1	1·20	3·30
		4·0	3·47	2·7	1·25	3·25
		5·0	4·28	3·4	1·29	3·21
		6·0	5·07	4·0	1·33	3·17
ISA 5050	50×50	3·0	2·95	2·3	1·32	3·68
		4·0	3·88	3·0	1·37	3·63
		5·0	4·79	3·8	1·41	3·59
		6·0	5·68	4·5	1·45	3·55
ISA 5555	55×55	5·0	5·27	4·1	1·53	3·97
		6·0	6·26	4·9	1·57	3·93
		8·0	8·18	6·4	1·65	3·85
		10·0	10·02	7·9	1·72	3·78
ISA 6060	60×60	5·0	5·75	4·5	1·65	4·35
		6·0	6·84	5·4	1·69	4·31
		8·0	8·96	7·0	1·77	4·23
		10·0	11·00	8·6	1·85	4·15
ISA 6565	65×65	5·0	6·25	4·9	1·77	4·73
		6·0	7·44	5·8	1·81	4·69
		8·0	9·76	7·7	1·89	4·61
		10·0	12·00	9·4	1·97	4·53

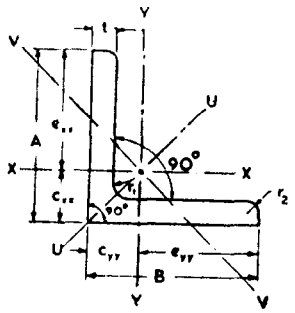


TABLE III ROLLED STEEL EQUAL ANGLES

DIMENSIONS AND PROPERTIES

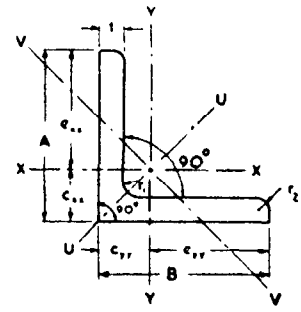
Moments of Inertia			Radii of Gyration			Modulus of Section	Radius at Root	Radius at Toe	Product of Inertia	Designation
$I_{xx}=I_{yy}$	I_{uu}	I_{vv}	$r_{xx}=r_{yy}$	r_{uu}	r_{vv}	$Z_{xx}=Z_{yy}$	r_1	r_2	I_{xy}	
cm⁴	cm⁴	cm⁴	cm	cm	cm	cm³	mm	mm	cm⁴	
0·4	0·6	0·2	0·58	0·73	0·37	0·3	4·0	2·5	0·2	**ISA 2020**
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			6·5	
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 III ROLLED STEEL EQUAL ANGLES

DIMENSIONS AND PROPERTIES

(Continued)



Designation	Size	Thickness	Sectional Area	Weight per Metre	Centre of Gravity	Distance of Extreme Fibre
	$A \times B$	t	a	w	$C_{xx}=C_{yy}$	$e_{xx}=e_{yy}$
	mm mm	mm	cm^2	kg	cm	cm
ISA 7070	70×70	5·0	6·77	5·3	1·89	5·11
		6·0	8·06	6·3	1·94	5·06
		8·0	10·58	8·3	2·02	4·98
		10·0	13·02	10·2	2·10	4·90
ISA 7575	75×75	5·0	7·27	5·7	2·02	5·48
		6·0	8·66	6·8	2·06	5·44
		8·0	11·38	8·9	2·14	5·36
		10·0	14·02	11·0	2·22	5·28
ISA 8080	80×80	6·0	9·29	7·3	2·18	5·82
		8·0	12·21	9·6	2·27	5·73
		10·0	15·05	11·8	2·34	5·66
		12·0	17·81	14·0	2·42	5·58
ISA 9090	90×90	6·0	10·47	8·2	2·42	6·58
		8·0	13·79	10·8	2·51	6·49
		10·0	17·03	13·4	2·59	6·41
		12·0	20·19	15·8	2·66	6·34
ISA 100100	100×100	6·0	11·67	9·2	2·67	7·33
		8·0	15·39	12·1	2·76	7·24
		10·0	19·03	14·9	2·84	7·16
		12·0	22·59	17·7	2·92	7·08
ISA 110110	110×110	8·0	17·02	13·4	3·00	8·00
		10·0	21·06	16·5	3·08	7·92
		12·0	25·02	19·6	3·16	7·84
		15·0	30·81	24·2	3·27	7·73
ISA 130130	130×130	8·0	20·22	15·9	3·50	9·50
		10·0	25·06	19·7	3·58	9·42
		12·0	29·82	23·4	3·66	9·34
		15·0	36·81	28·9	3·78	9·22
ISA 150150	150×150	10·0	29·03	22·8	4·06	10·94
		12·0	34·59	27·2	4·14	10·86
		15·0	42·78	33·6	4·26	10·74
		18·0	50·79	39·9	4·38	10·62
ISA 200200	200×200	12·0	46·61	36·6	5·36	14·64
		15·0	57·80	45·4	5·49	14·51
		18·0	68·81	54·0	5·61	14·39
		25·0	93·80	73·6	5·88	14·12

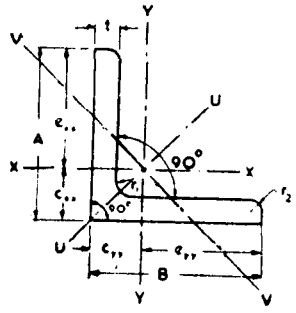


TABLE III ROLLED STEEL EQUAL ANGLES

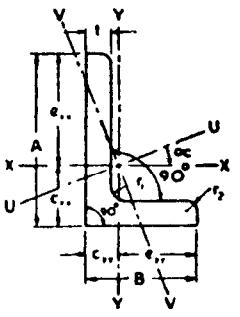
DIMENSIONS AND PROPERTIES

(Continued)

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}	
cm⁴	cm⁴	cm⁴	cm	cm	cm	cm³	mm	mm	cm⁴	
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	1 174·8	296·0	4·61	5·83	2·93	67·7			435·0	
896·8	1 429·7	363·8	4·58	5·78	2·92	83·5			529·1	
1 048·9	1 668·2	429·5	4·54	5·73	2·91	98·7			616·0	
1 788·9	2 862·0	715·9	6·20	7·84	3·92	122·2	15·0	10·0	1 058·9	**ISA 200200**
2 197·7	3 511·8	883·7	6·17	7·79	3·91	151·4			1 301·2	
2 588·7	4 130·8	1 046·5	6·13	7·75	3·90	179·9			1 530·5	
3 436·3	5 460·9	1 411·6	6·05	7·63	3·88	243·3			2 015·7	

TABLE IV ROLLED STEEL UNEQUAL ANGLES

DIMENSIONS AND PROPERTIES



Designation	Size	Thickness	Sectional Area	Weight per Metre	Centre of Gravity		Distance of Extreme Fibre		Moments of Inertia			
	A×B	t	a	w	C_{xx}	C_{yy}	e_{xx}	e_{yy}	I_{xx}	I_{yy}	I_{uu}	I_{vv}
	mm mm	mm	cm²	kg	cm	cm	cm	cm	cm⁴	cm⁴	cm⁴	cm⁴
ISA 3020	30×20	3·0	1·41	1·1	0·98	0·49	2·02	1·51	1·2	0·4	1·4	0·2
		4·0	1·84	1·4	1·02	0·53	1·98	1·47	1·5	0·5	1·8	0·3
		5·0	2·25	1·8	1·06	0·57	1·94	1·43	1·9	0·6	2·1	0·4
ISA 4025	40×25	3·0	1·88	1·5	1·30	0·57	2·70	1·93	3·0	0·9	3·3	0·5
		4·0	2·46	1·9	1·35	0·62	2·65	1·88	3·8	1·1	4·3	0·7
		5·0	3·02	2·4	1·39	0·66	2·61	1·84	4·6	1·4	5·1	0·8
		6·0	3·56	2·8	1·43	0·69	2·57	1·81	5·4	1·6	5·9	1·0
ISA 4530	45×30	3·0	2·18	1·7	1·42	0·69	3·08	2·31	4·4	1·5	5·0	0·9
		4·0	2·86	2·2	1·47	0·73	3·03	2·27	5·7	2·0	6·5	1·1
		5·0	3·52	2·8	1·51	0·77	2·99	2·23	6·9	2·4	7·9	1·4
		6·0	4·16	3·3	1·55	0·81	2·95	2·19	8·0	2·8	9·2	1·7
ISA 5030	50×30	3·0	2·34	1·8	1·63	0·65	3·37	2·35	5·9	1·6	6·5	1·0
		4·0	3·07	2·4	1·68	0·70	3·33	2·30	7·7	2·1	8·5	1·2
		5·0	3·78	3·0	1·72	0·74	3·28	2·26	9·3	2·5	10·3	1·5
		6·0	4·47	3·5	1·76	0·78	3·24	2·22	10·9	2·9	11·9	1·8
ISA 6040	60×40	5·0	4·76	3·7	1·95	0·96	4·05	3·04	16·9	6·0	19·5	3·4
		6·0	5·65	4·4	1·99	1·00	4·01	3·00	19·9	7·0	22·8	4·0
		8·0	7·37	5·8	2·07	1·08	3·93	2·92	25·4	8·0	29·0	5·2
ISA 6545	65×45	5·0	5·26	4·1	2·07	1·08	4·43	3·42	22·1	8·6	25·9	4·8
		6·0	6·25	4·9	2·11	1·12	4·39	3·38	26·0	10·1	30·4	5·7
		8·0	8·17	6·4	2·19	1·20	4·31	3·30	33·2	12·8	38·7	7·4
ISA 7045	70×45	5·0	5·52	4·3	2·27	1·04	4·73	3·46	27·2	8·8	30·9	5·1
		6·0	6·56	5·2	2·32	1·09	4·68	3·41	32·0	10·3	36·3	6·0
		8·0	8·58	6·7	2·40	1·16	4·60	3·34	41·0	13·1	46·3	7·8
		10·0	10·52	8·3	2·48	1·24	4·52	3·26	49·3	15·6	55·4	9·5
ISA 7550	75×50	5·0	6·02	4·7	2·39	1·16	5·11	3·84	34·1	12·2	39·4	6·9
		6·0	7·16	5·6	2·44	1·20	5·06	3·80	40·3	14·3	46·4	8·2
		8·0	9·38	7·4	2·52	1·28	4·98	3·72	51·8	18·3	59·4	10·6
		10·0	11·52	9·0	2·60	1·36	4·90	3·64	62·3	21·8	71·2	12·9
ISA 8050	80×50	5·0	6·27	4·9	2·60	1·12	5·40	3·88	40·6	12·3	45·7	7·2
		6·0	7·46	5·9	2·64	1·16	5·36	3·84	48·0	14·4	53·9	8·5
		8·0	9·78	7·7	2·73	1·24	5·27	3·76	61·9	18·5	69·3	11·0
		10·0	12·02	9·4	2·81	1·32	5·19	3·68	74·7	22·1	83·3	13·5

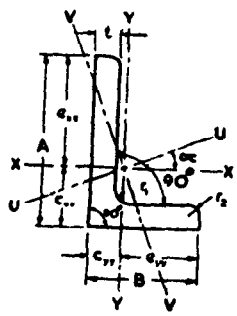


TABLE IV ROLLED STEEL UNEQUAL ANGLES

DIMENSIONS AND PROPERTIES

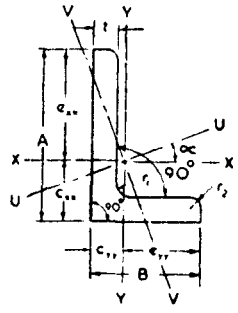
Radii of Gyration				Moduli of Section		tan α	Radius at Root	Radius at Toe	Product of Inertia	Designation
r_{xx}	r_{yy}	r_{uu}	r_{vv}	Z_{xx}	Z_{yy}		r_1	r_2	I_{xy}	
cm	cm	cm	cm	cm^3	cm^3		mm	mm	cm^4	
0·92	0·54	0·99	0·41	0·6	0·3	0·43	4·5	3·0	0·4	**ISA 3020**
0·92	0·54	0·98	0·41	0·8	0·4	0·42			0·5	
0·91	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 8050**
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 IV ROLLED STEEL UNEQUAL ANGLES

DIMENSIONS AND PROPERTIES

(Continued)



Designation	Size	Thickness	Sectional Area	Weight per Metre	Centre of Gravity		Distance of Extreme Fibre		Moments of Inertia			
	$A \times B$	t	a	w	C_{xx}	C_{yy}	e_{xx}	e_{yy}	I_{xx}	I_{yy}	I_{uu}	I_{vv}
	mm mm	mm	cm^2	kg	cm	cm	cm	cm	cm^4	cm^4	cm^4	cm^4
ISA 9060	90×60	6·0	8·65	6·8	2·87	1·39	6·13	4·61	70·6	25·2	81·5	14·3
		8·0	11·37	8·9	2·96	1·48	6·04	4·52	91·5	32·4	105·3	18·6
		10·0	14·01	11·0	3·04	1·55	5·96	4·45	110·9	39·1	127·3	22·8
		12·0	16·57	13·0	3·12	1·63	5·88	4·37	129·1	45·2	147·5	26·8
ISA 10065	100×65	6·0	9·55	7·5	3·19	1·47	6·81	5·03	96·7	32·4	110·6	18·6
		8·0	12·57	9·9	3·28	1·55	6·72	4·93	125·9	41·9	143·6	24·2
		10·0	15·51	12·2	3·37	1·63	6·63	4·87	153·2	50·7	174·2	29·7
ISA 10075	100×75	6·0	10·14	8·0	3·01	1·78	6·99	5·72	100·9	48·7	124·0	25·6
		8·0	13·36	10·5	3·10	1·87	6·90	5·63	131·6	63·3	161·3	33·6
		10·0	16·50	13·0	3·19	1·95	6·81	5·55	160·4	76·9	196·1	41·2
		12·0	19·56	15·4	3·27	2·03	6·73	5·47	187·5	89·5	228·4	48·6
ISA 12575	125×75	6·0	11·66	9·2	4·05	1·59	8·45	5·91	187·8	51·6	208·9	30·5
		8·0	15·38	12·1	4·15	1·68	8·35	5·82	245·5	67·2	272·8	40·0
		10·0	19·02	14·9	4·24	1·76	8·26	5·74	300·3	81·6	332·9	49·1
ISA 12595	125×95	6·0	12·86	10·1	3·70	2·22	8·80	7·28	203·2	102·1	252·3	52·9
		8·0	16·98	13·3	3·80	2·31	8·70	7·19	266·0	133·3	329·7	69·6
		10·0	21·02	16·5	3·88	2·39	8·62	7·11	325·8	162·7	402·9	85·6
		12·0	24·98	19·6	3·96	2·47	8·54	7·03	382·6	190·4	472·0	101·0
ISA 15075	150×75	8·0	17·42	13·7	5·23	1·53	9·77	5·97	407·2	70·2	432·8	44·5
		10·0	21·56	16·9	5·32	1·61	9·68	5·89	499·1	85·3	529·8	54·6
		12·0	25·62	20·1	5·41	1·69	9·59	5·81	587·0	99·5	622·2	64·3
ISA 150115	150×115	8·0	20·58	16·2	4·46	2·73	10·54	8·77	465·7	238·9	581·2	123·3
		10·0	25·52	20·0	4·55	2·82	10·45	8·68	573·3	293·4	714·3	152·4
		12·0	30·38	23·8	4·64	2·90	10·36	8·60	676·5	345·3	841·4	180·4
		15·0	37·52	29·5	4·76	3·02	10·24	8·48	823·5	418·6	1 020·9	221·2
ISA 200100	200×100	10·0	29·03	22·8	6·96	2·01	13·04	7·99	1 210·0	209·2	1 286·7	132·5
		12·0	34·59	27·2	7·05	2·10	12·95	7·90	1 431·7	246·2	1 521·0	156·8
		15·0	42·78	33·6	7·18	2·22	12·82	7·78	1 750·5	298·1	1 856·7	191·9
ISA 200150	200×150	10·0	34·00	26·7	5·99	3·51	14·01	11·49	1 377·9	669·6	1 696·6	350·8
		12·0	40·56	31·8	6·08	3·60	13·92	11·40	1 634·9	793·2	2 010·8	417·2
		15·0	50·25	39·4	6·20	3·72	13·80	11·28	2 005·6	969·9	2 461·9	513·6
		18·0	59·76	46·9	6·33	3·84	13·67	11·16	2 359·4	1 136·9	2 889·5	606·9

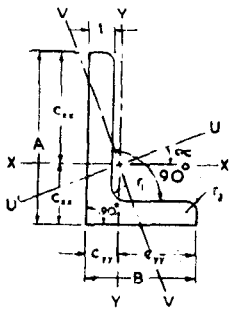


TABLE IV ROLLED STEEL UNEQUAL ANGLES

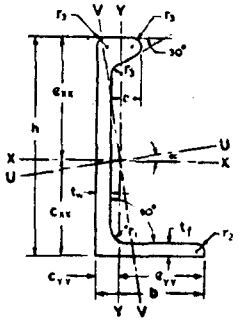
DIMENSIONS AND PROPERTIES

(Continued)

Radii of Gyration				Moduli of Section		tan α	Radius at Root	Radius at Toe	Product of Inertia	Designation
r_{xx}	r_{yy}	r_{uu}	r_{vv}	Z_{xx}	Z_{yy}		r_1	r_2	I_{xy}	
cm	cm	cm	cm	cm^3	cm^3		mm	mm	cm^4	
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 V ROLLED STEEL BULB ANGLES

DIMENSIONS AND PROPERTIES



Designation	Weight per Metre	Sectional Area	Size	Thickness of Web	Thickness of Flange		Radius at Root	Radius at Toe	Radius at Bulb Corners	Centre of Gravity	
	w	a	$h \times b$	t_w	t_f	D	r_1	r_2	r_3	C_{xx}	C_{yy}
	kg	cm^2	mm × mm	mm	mm	mm	mm	mm	mm	cm	cm
ISBA 100	8·6	10·94	100 × 65	6·0	6·0	13	10·0	5·0	4·0	3·92	1·43
ISBA 100	9·6	12·17	100 × 65	7·0	6·5	13	10·0	5·0	4·0	3·95	1·43
ISBA 125	12·2	15·60	125 × 75	7·0	7·0	16	11·0	5·5	5·0	5·06	1·60
ISBA 125	13·4	17·11	125 × 75	8·0	7·5	16	11·0	5·5	5·0	5·08	1·61
ISBA 150	16·1	20·45	150 × 75	8·0	8·0	20	11·0	5·5	6·0	6·52	1·55
ISBA 150	18·8	23·94	150 × 75	10·0	9·0	20	11·0	5·5	6·0	6·53	1·57
ISBA 175	20·0	25·54	175 × 90	8·0	9·0	23	13·5	6·5	7·0	7 44	1·89
ISBA 175	23·3	29·66	175 × 90	10·0	10·0	23	13·5	6·5	7·0	7·46	1·90
ISBA 175	26·5	33·74	175 × 90	12·0	11·0	23	13·5	6·5	7·0	7·49	1·92
ISBA 200	28·2	35·95	200 × 90	11·0	11·0	26	13·5	6·5	8·0	8·87	1·86
ISBA 200	33·6	42·76	200 × 90	14·0	12·5	26	13·5	6·5	8·0	8·89	1·91
ISBA 225	31·4	39·94	225 × 90	11·0	11·0	29	13·5	6·5	9·0	10·40	1·80
ISBA 225	37·3	47·50	225 × 90	14·0	12·5	29	13·5	6·5	9·0	10·37	1·85
ISBA 250	34·9	44·41	250 × 90	11·0	11·0	33	13·5	6·5	10·0	12·07	1·78
ISBA 250	39·2	49·96	250 × 90	13·0	12·0	33	13·5	6·5	10·0	11·99	1·81
ISBA 275	40·9	52·13	275 × 90	12·0	12·0	36	13·5	6·5	11·0	13·54	1·80
ISBA 275	45·6	58·15	275 × 90	14·0	13·0	36	13·5	6·5	11·0	13·45	1·83
ISBA 300	47·5	60·47	300 × 90	13·0	13·0	39	13·5	6·5	12·0	15·02	1·82
ISBA 300	52·6	66·96	300 × 90	15·0	14·0	39	13·5	6·5	12·0	14·92	1·86

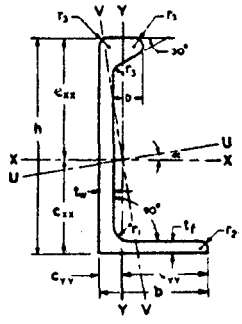


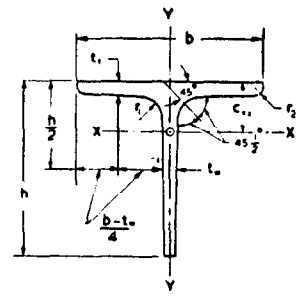
TABLE V ROLLED STEEL BULB ANGLES

DIMENSIONS AND PROPERTIES

Distance of Extreme Fibres		tan x	Moments of Inertia				Radii of Gyration				Moduli of Section		Designation
e_{xx}	e_{yy}		I_{xx}	I_{yy}	I_{uu} (Max)	I_{vv} (Min)	r_{xx}	r_{yy}	r_{uu} (Max)	r_{vv} (Min)	Z_{xx}	Z_{yy}	
cm	cm		cm^4	cm^4	cm^4	cm^4	cm	cm	cm	cm	cm^3	cm^3	
6·08	5·07	0·291	142·9	33·0	153·0	22·8	3·61	1·74	3·74	1·44	23·5	6·5	**ISBA 100**
6·05	5·07	0·288	154·7	35·7	165·4	24·9	3·56	1·71	3·69	1·43	25·6	7·0	**ISBA 100**
7·44	5·90	0·248	321·8	60·4	338·9	43·3	4·54	1·97	4·66	1·67	43·2	10·2	**ISBA 125**
7·42	5·89	0·246	344·5	64·6	362·4	46·6	4·49	1·94	4·60	1·65	46·4	11·0	**ISBA 125**
8·48	5·95	0·167	612·6	71·4	626·1	55·9	5·47	1·87	5·54	1·65	72·2	12·0	**ISBA 150**
8·47	5·93	0·162	686·4	79·8	702·9	63·4	5·36	1·83	5·42	1·63	81·1	13·5	**ISBA 150**
10·06	7·11	0·185	1 073·0	137·2	1 106·1	104·1	6·48	2·32	6·58	2·02	106·6	19·3	**ISBA 175**
10·04	7·10	0·181	1 192·9	152·3	1 288·0	117·2	6·34	2·27	6·43	1·99	118·8	21·4	**ISBA 175**
10·01	7·08	0·177	1 310·0	166·5	1 346·8	129·7	6·23	2·22	6·32	1·96	130·9	23·5	**ISBA 175**
11·13	7·14	0·136	1 879·6	172·0	1 911·6	140·1	7·23	2·19	7·29	1·97	168·9	24·1	**ISBA 200**
11·11	7·09	0·131	2 131·2	193·6	2 165·0	159·8	7·06	2·13	7·12	1·93	191·8	27·3	**ISBA 200**
12·10	7·20	0·103	2 662·8	178·9	2 689·3	152·4	8·17	2·12	8·21	1·95	220·1	24·9	**ISBA 225**
12·13	7·15	0·098	3 016·6	201·9	3 043·9	174·6	7·97	2·06	8·01	1·92	248·7	28·2	**ISBA 225**
12·93	7·22	0·075	3 683·4	188·0	3 703·0	168·4	9·11	2·06	9·13	1·95	284·8	26·0	**ISBA 250**
13·01	7·19	0·072	4 006·4	204·7	4 026·3	184·8	8·96	2·02	8·98	1·92	308·0	28·5	**ISBA 250**
13·96	7·21	0·057	5 161·9	213·0	5 178·0	197·0	9·95	2·02	9·97	1·94	369·7	29·6	**ISBA 275**
14·05	7·17	0·054	5 582·2	230·6	5 598·2	214·7	9·80	1·99	9·81	1·92	397·4	32·2	**ISBA 275**
15·02	7·18	0·042	7 033·9	241·2	7 046·2	228·8	10·79	2·00	10·80	1·95	468·4	33·6	**ISBA 300**
15·08	7·14	0·040	7 568·8	260·0	7 580·8	248·0	10·63	1·97	10·64	1·92	501·9	36·4	**ISBA 300**

TABLE VI ROLLED STEEL TEE BARS

DIMENSIONS AND PROPERTIES



Designation	Weight per Metre	Sectional Area	Depth of Section	Width of Flange	Thickness of Flange	Thickness of Web	Centre of Gravity	Moments of Inertia	
	w	a	h	b	t_f	t_w	C_{xx}	I_{xx}	I_{yy}
	kg	cm^2	mm	mm	mm	mm	cm	cm^4	cm^4
ISNT 20	0·9	1·13	20	20	3·0	3·0	0·60	0·4	0·2
ISNT 30	1·4	1·75	30	30	3·0	3·0	0·83	1·4	0·6
ISNT 40	3·5	4·48	40	40	6·0	6·0	1·20	6·3	3·0
ISNT 50	4·5	5·70	50	50	6·0	6·0	1·44	12·7	5·9
ISNT 60	5·4	6·90	60	60	6·0	6·0	1·67	22·5	10·1
ISNT 80	9·6	12·25	80	80	8·0	8·0	2·23	71·2	32·3
ISNT 100	15·0	19·10	100	100	10·0	10·0	2·79	173·8	79·9
ISNT 150	22·8	29·08	150	150	10·0	10·0	3·95	603·8	267·5
ISHT 75	15·3	19·49	75	150	9·0	8·4	1·62	96·2	230·2
ISHT 100	20·0	25·47	100	200	9·0	7·8	1·91	193·8	497·3
ISHT 125	27·4	34·85	125	250	9·7	8·8	2·37	415·4	1 005·8
ISHT 150	29·4	37·42	150	250	10·6	7·6	2·66	573·7	1 096·8
ISST 100	8·1	10·37	100	50	10·0	5·8	3·03	99·0	9·6
ISST 150	15·7	19·96	150	75	11·6	8·0	4·75	450·2	37·0
ISST 200	28·4	36·22	200	165	12·5	8·0	4·78	1 267·8	358·2
ISST 250	37·5	47·75	250	180	14·1	9·2	6·40	2·774·4	532·0
ISLT 50	4·0	5·11	50	50	6·4	4·0	1·19	9·9	6·4
ISLT 75	7·1	9·04	75	80	6·8	4·8	1·72	41·9	27·6
ISLT 100	12·7	16·16	100	100	10·8	5·7	2·13	116·6	75·0
ISJT 75	3·5	4·50	75	50	4·6	3·0	2·00	24·8	4·6
ISJT 87·5	4·0	5·14	87·5	50	4·8	3·2	2·50	39·0	4·8
ISJT 100	5·0	6·32	100	60	5·0	3·4	2·81	63·5	8·6
ISJT 112·5	6·4	8·14	112·5	80	5·0	3·7	3·01	101·6	20·2

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

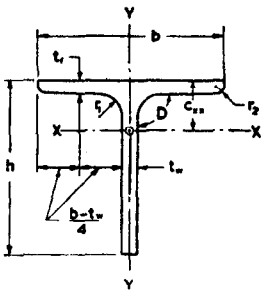


TABLE VI ROLLED STEEL TEE BARS

DIMENSIONS AND PROPERTIES

Radii of Gyration		Moduli of Section		Radius at Root	Radius at Toe	Slope of Flange	Designation
r_{xx}	r_{yy}	Z_{xx}	Z_{yy}	r_1	r_2	D	
cm	cm	cm^3	cm^3	mm	mm	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**

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

TABLE VII PLATES

Width b mm	900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500
Length l mm	SURFACE AREA IN m^2											
2 000	1·80	2·00	2·20	2·40	2·50	2·80	3·00	3·20	3·60	4·00	4·40	5·00
2 200	1·98	2·20	2·42	2·64	2·75	3·08	3·30	3·52	3·96	4·40	4·84	5·50
2 500	2·25	2·50	2·75	3·00	3·125	3·50	3·75	4·00	4·50	5·00	5·50	6·25
2 800	2·52	2·80	3·08	3·36	3·50	3·92	4·20	4·48	5·04	5·60	6·16	7·00
3 200	2·88	3·20	3·52	3·84	4·00	4·48	4·80	5·12	5·76	6·40	7·04	8·00
3 600	3·24	3·60	3·96	4·32	4·50	5·04	5·40	5·76	6·48	7·20	7·92	9·00
4 000	3·60	4·00	4·40	4·80	5·00	5·60	6·00	6·40	7·20	8·00	8·80	10·00
4 500	4·05	4·50	4·95	5·40	5·625	6·30	6·75	7·20	8·10	9·00	9·90	11·25
5 000	4·50	5·00	5·50	6·00	6·25	7·00	7·50	8·00	9·00	10·00	11·00	12·50
5 600	5·04	5·60	6·16	6·72	7·00	7·84	8·40	8·96	10·08	11·20	12·32	14·00
6 300	5·67	6·30	6·93	7·56	7·875	8·82	9·45	10·08	11·34	12·60	13·86	15·75
7 100	6·39	7·10	7·81	8·52	8·875	9·94	10·65	11·36	12·78	14·20	15·62	17·75
8 000	7·20	8·00	8·80	9·60	10·000	11·20	12·00	12·80	14·40	16·00	17·60	20·00
9 000	8·10	9·00	9·90	10·80	11·25	12·60	13·50	14·40	16·20	18·00	19·80	22·50
10 000	9·00	10·00	11·00	12·00	12·50	14·00	15·00	16·00	18·00	20·00	22·00	25·00
11 000	9·90	11·00	12·10	13·20	13·75	15·40	16·50	17·60	19·80	22·00	24·20	27·50
12 500	11·25	12·50	13·75	15·00	15·625	17·50	18·75	20·00	22·50	25·00	27·50	31·25
	WEIGHT IN kg — 5-mm Plate											
2 000	70·6	78·5	86·4	94·2	98·1	109·9	117·8	125·6	141·3	157·0	172·7	196·2
2 200	77·7	86·4	95·0	103·6	107·9	120·9	129·5	138·2	155·4	172·7	190·0	215·9
2 500	88·3	98·1	107·9	117·8	122·7	137·4	147·2	157·0	176·6	196·2	215·9	245·3
2 800	98·9	109·9	120·9	131·9	137·4	153·9	164·8	175·8	197·8	219·8	241·8	274·8
3 200	113·0	125·6	138·2	150·7	157·0	175·8	188·4	201·0	226·1	251·2	276·3	314·0
3 600	127·2	141·3	155·4	169·6	176·6	197·8	212·0	226·1	254·3	282·6	310·9	353·2
4 000	141·3	157·0	172·7	188·4	196·2	219·8	235·5	251·2	282·6	314·0	345·4	392·5
4 500	159·0	176·6	194·3	212·0	220·8	247·3	264·9	282·6	317·9	353·2	388·6	441·6
5 000	176·6	196·2	215·9	235·5	245·3	274·8	294·4	314·0	353·2	392·5	431·8	490·6
5 600	197·8	219·8	241·8	263·8	274·8	307·7	329·7	351·7	395·6	439·6	483·6	549·5
6 300	222·5	247·3	272·0	296·7	309·1	346·2	370·9	395·6	445·1	494·6	544·0	618·2
7 100	250·8	278·7	306·5	334·4	348·3	390·1	418·0	445·9	501·6	557·4	613·1	696·7
8 000	282·6	314·0	345·4	376·8	392·5	439·6	471·0	502·4	565·2	628·0	690·8	785·0
9 000	317·9	353·2	388·6	423·9	441·6	494·6	529·9	565·2	635·8	706·5	777·2	883·1
10 000	353·2	392·5	431·8	471·0	490·6	549·5	588·8	628·0	706·5	785·0	863·5	981·2
11 000	388·6	431·8	474·9	518·1	539·7	604·4	647·6	690·8	777·2	863·5	949·8	1 079·4
12 500	441·6	490·6	539·7	588·8	613·3	686·9	735·9	785·0	883·1	981·2	1 079·4	1 226·6

(Continued)

TABLE VII PLATES — (*Continued*)

900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500	Width *b* mm
					WEIGHT IN kg							**Length** *l* mm
					6-mm Plate							
84·8	94·2	103·6	113·0	117·8	131·9	141·3	150·7	169·6	188·4	207·2	235·5	**2 000**
93·3	103·6	114·0	124·3	129·5	145·1	155·4	165·8	186·5	207·2	228·0	259·0	**2 200**
106·0	117·8	129·5	141·3	147·2	164·8	176·6	188·4	212·0	235·5	259·0	294·4	**2 500**
118·7	131·9	145·1	158·3	164·9	184·6	197·8	211·0	237·4	263·8	290·1	329·7	**2 800**
135·6	150·7	165·8	180·9	188·4	211·0	226·1	241·2	271·3	301·4	331·6	376·8	**3 200**
152·6	169·6	186·5	203·5	212·0	237·4	254·3	271·3	305·2	339·1	373·0	423·9	**3 600**
169·6	188·4	207·2	226·1	235·5	263·8	282·6	301·4	339·1	376·8	414·5	471·0	**4 000**
190·8	212·0	233·1	254·3	264·9	296·7	317·9	339·1	381·5	423·9	466·3	529·9	**4 500**
212·0	235·5	259·0	282·6	294·4	329·7	353·2	376·8	423·9	471·0	518·1	588·8	**5 000**
237·4	263·8	290·1	316·5	329·7	369·3	395·6	422·0	474·8	527·5	580·3	659·4	**5 600**
267·1	296·7	326·4	356·1	370·9	415·4	445·1	474·8	534·1	593·5	652·8	741·8	**6 300**
301·0	334·4	367·9	401·3	418·0	468·2	501·6	535·1	601·9	668·8	735·7	836·0	**7 100**
339·1	376·8	414·5	452·2	471·0	527·5	565·2	602·9	678·2	753·6	829·0	942·0	**8 000**
381·5	423·9	466·3	508·7	529·9	593·5	635·8	678·2	763·0	847·8	932·6	1 059·8	**9 000**
423·9	471·0	518·1	565·2	588·8	659·4	706·5	753·6	847·8	942·0	1 036·2	1 177·5	**10 000**
466·3	518·1	569·9	621·7	647·6	725·3	777·2	829·0	932·6	1 036·2	1 139·8	1 295·2	**11 000**
529·9	588·8	647·6	706·5	735·9	824·2	883·1	942·0	1 059·8	1 177·5	1 295·2	1 471·9	**12 500**
					8-mm Plate							
113·0	125·6	138·2	150·7	157·0	175·8	188·4	201·0	226·1	251·2	276·3	314·0	**2 000**
124·3	138·2	152·0	165·8	172·7	193·4	207·2	221·1	248·7	276·3	304·0	345·4	**2 200**
141·3	157·0	172·7	188·4	196·2	219·8	235·5	251·2	282·6	314·0	345·4	392·4	**2 500**
158·3	175·8	193·4	211·0	219·8	246·2	263·8	281·3	316·5	351·7	386·8	439·6	**2 800**
180·9	201·0	221·1	241·2	251·2	281·3	301·4	321·5	361·7	401·9	442·1	502·4	**3 200**
203·5	226·1	248·7	271·3	282·6	316·5	339·1	361·7	406·9	452·2	497·4	565·2	**3 600**
226·1	251·2	276·3	301·4	314·0	351·7	376·8	401·9	452·2	502·4	552·6	628·0	**4 000**
254·3	282·6	310·9	339·1	353·2	395·6	423·9	452·2	508·7	565·2	621·7	706·5	**4 500**
282·6	314·0	345·4	376·8	392·5	439·6	471·0	502·4	565·2	628·0	690·8	785·0	**5 000**
316·5	351·7	386·8	422·0	439·6	492·4	527·5	562·7	633·0	703·4	773·7	879·2	**5 600**
356·1	395·6	435·2	474·8	494·6	553·9	593·5	633·0	712·2	791·3	870·4	989·1	**6 300**
401·3	445·9	490·5	535·1	557·4	624·2	668·8	713·4	802·6	891·8	980·9	1 114·7	**7 100**
452·2	502·4	552·6	602·9	628·0	703·4	753·6	803·8	904·3	1 004·8	1 105·3	1 256·0	**8 000**
508·7	565·2	621·7	678·2	706·5	791·3	847·8	904·3	1 017·4	1 130·4	1 243·4	1 413·0	**9 000**
565·2	628·0	690·8	753·6	785·0	879·2	942·0	1 004·8	1 130·4	1 256·0	1 381·6	1 570·0	**10 000**
621·7	690·8	759·9	829·0	863·5	967·1	1 036·2	1 105·3	1 243·4	1 381·6	1 519·8	1 727·0	**11 000**
706·5	785·0	863·5	942·0	981·2	1 099·0	1 177·5	1 256·0	1 413·0	1 570·0	1 727·0	1 962·5	**12 500**

(*Continued*)

TABLE VII PLATES — (*Continued*)

Width *b* mm	900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500
Length mm	**WEIGHT IN kg**											
	10-mm Plate											
2 000	141·3	157·0	172·7	188·4	196·2	219·8	235·5	251·2	282·6	314·0	345·4	392·5
2 200	155·4	172·7	190·0	207·2	215·9	241·8	259·0	276·3	310·9	345·4	379·9	431·8
2 500	176·6	196·2	215·9	235·5	245·3	274·8	294·4	314·0	353·2	392·5	431·8	490·6
2 800	197·8	219·8	241·8	263·8	274·8	307·7	329·7	351·7	395·6	439·6	483·6	549·5
3 200	226·1	251·2	276·3	301·4	314·0	351·7	376·8	401·9	452·2	502·4	552·6	628·0
3 600	254·3	282·6	310·9	339·1	353·2	395·6	423·9	452·2	508·7	565·2	621·7	706·5
4 000	282·6	314·0	345·4	376·8	392·5	439·6	471·0	502·4	565·2	628·0	690·8	785·0
4 500	317·9	353·2	388·6	423·9	441·6	494·6	529·9	565·2	635·8	706·5	777·2	883·1
5 000	353·2	392·5	431·8	471·0	490·6	549·5	588·8	628·0	706·5	785·0	863·5	981·2
5 600	395·6	439·6	483·6	527·5	549·5	615·4	659·4	703·4	791·3	879·2	967·1	1 099·0
6 300	445·1	494·6	544·0	593·5	618·2	692·4	741·8	791·3	890·2	989·1	1 088·0	1 236·4
7 100	501·6	557·4	613·1	668 8	696·7	780·3	836·0	891·8	1 003·2	1 114·7	1 226·2	1 393·4
8 000	565·2	628·0	690·8	753·6	785·0	879·2	942·0	1 004·8	1 130·4	1 256·0	1 381·6	1 570·0
9 000	635·8	706·5	777·2	847·8	883·1	989·1	1 059·8	1 130·4	1 271·7	1 413·0	1 554·3	1 766·2
10 000	706·5	785·0	863·5	942·0	981·2	1 099·0	1 177·5	1 256·0	1 413·0	1 570·0	1 727·0	1 962·5
11 000	777·2	863·5	949·8	1 036·2	1 079·4	1 208·9	1 295·2	1 381·6	1 554·3	1 727·0	1 899·7	2 158·8
12 500	883·1	981·2	1 079·1	1 177·5	1 226·6	1 373·8	1 471·9	1 570·0	1 766·2	1 962·5	2 158·8	2 453·1
	12-mm Plate											
2 000	169·6	188·4	207·2	226·1	235·5	263·8	282·6	301·4	339·1	376·8	414·5	471·0
2 200	186·5	207·2	228 0	248·7	259·0	290·1	310·9	331·6	373·0	414·5	455·9	518·1
2 500	212·0	235·5	259·0	282·6	294·4	329·7	353·2	376·8	423·9	471·0	518·1	588·8
2 800	237·4	263·8	290·1	316·5	329·7	369·3	395·6	422·0	474·8	527·5	580·3	659·4
3 200	271·3	301·4	331·6	361·7	376·8	422·0	452·2	482·3	542·6	602·9	663·2	753·6
3 600	305·2	339·1	373·0	406·9	423·9	474·8	508·7	542·6	610·4	678·2	746·1	847·8
4 000	339·1	376·8	414·5	452·2	471·0	527·5	565·2	602·9	678·2	753·6	829·0	942·0
4 500	381·5	423·9	466·3	508·7	529·9	593·5	635·8	678·2	763·0	847·8	932·6	1 059·8
5 000	423·9	471·0	518·1	565·2	588·8	659·4	706·5	753·6	847·8	942·0	1 036·2	1 177·5
5 600	474·8	527·5	580·3	633·0	659·4	738·5	791·3	844·0	949·5	1 055·0	1 160·5	1 318·8
6 300	534·1	593·5	652·8	712·2	741·8	830·8	890·2	949·5	1 068·2	1 186·9	1 305·6	1 483·6
7 100	601·9	668·8	735·7	802·6	836·0	936·3	1 003·2	1 070·1	1 203·9	1 337·6	1 471·4	1 672 0
8 000	678·2	753·6	829·0	904·3	942·0	1 055·0	1 130·4	1 205·8	1 356·5	1 507·2	1 657·9	1 884·0
9 000	763·0	847·8	932·6	1 017·4	1 059·8	1 186·9	1 271·7	1 356·5	1 526·0	1 695·6	1 865·2	2 119·5
10 000	847·8	942·0	1 036·2	1 130·4	1 177·5	1 318·8	1 413·0	1 507·2	1 695·6	1 884·0	2 072·4	2 355·0
11 000	932·6	1 036·2	1 139·8	1 243·4	1 295·2	1 450·7	1 554·3	1 657·9	1 865·2	2 072·4	2 279·6	2 590·5
12 500	1 059·8	1 177·5	1 295·2	1 413·0	1 471·9	1 648·5	1 766·2	1 884·0	2 119·5	2 355·0	2 590·5	2 943·8

(*Continued*)

TABLE VII PLATES — (*Continued*)

900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500	Width *b* mm
					WEIGHT IN kg							**Length** *l* mm
					14-mm Plate							
197·8	219·8	241·8	263·8	274·8	307·7	329·7	351·7	395·6	439·6	483·6	549·5	**2 000**
217·6	241·8	266·0	290·1	302·2	338·5	362·7	386·8	435·2	483·6	531·9	604·4	**2 200**
247·3	274·8	302·2	329·7	343·4	384·6	412·1	439·6	494·6	549·5	604·4	686·9	**2 500**
276·9	307·7	338·5	369·3	384·7	430·8	461·6	492·4	553·9	615·4	677·0	769·3	**2 800**
316·5	351·7	386·8	422·0	439·6	492·4	527·5	562·7	633·0	703·4	773·7	879·2	**3 200**
356·1	395·6	435·2	474·8	494·6	553·9	593·5	633·0	712·2	791·3	870·4	989·1	**3 600**
395·6	439·6	483·6	527·5	549·5	615·4	659·4	703·4	791·3	879·2	967·1	1 099·0	**4 000**
445·1	494·6	544·0	593·5	618·2	692·4	741·8	791·3	890·2	989·1	1 088·0	1 236·4	**4 500**
494·6	549·5	604·4	659·4	686·9	769·3	824·2	879·2	989·1	1 099·0	1 208·9	1 373·8	**5 000**
553·9	615·4	677·0	738·5	769·3	861·6	923·2	984·7	1 107·8	1 230·9	1 354·0	1 538·6	**5 600**
623·1	692·4	761·6	830·8	865·5	969·3	1 038·6	1 107·8	1 246·3	1 384·7	1 523·2	1 730·9	**6 300**
702·3	780·3	858·3	936·3	975·4	1 092·4	1 170·4	1 248·5	1 404·5	1 560·6	1 716·6	1 950·7	**7 100**
791·3	879·2	967·1	1 055·0	1 099·0	1 230·9	1 318·8	1 406·7	1 582·6	1 758·4	1 934·2	2 198·0	**8 000**
890·2	989·1	1 088·0	1 186·9	1 236·4	1 384·7	1 483·6	1 582·6	1 780·4	1 978·2	2 176·0	2 472·8	**9 000**
989·1	1 099·0	1 208·9	1 318·8	1 373·8	1 538·6	1 648·5	1 758·4	1 978·2	2 198·0	2 417·8	2 747·5	**10 000**
1 088·0	1 208·9	1 329·8	1 450·7	1 511·1	1 692·5	1 813·4	1 934·2	2 176·0	2 417·8	2 659·6	3 022·2	**11 000**
1 236·4	1 373·8	1 511·1	1 648·5	1 717·2	1 923·2	2 060·6	2 198·0	2 472·8	2 747·5	3 022·2	3 434·4	**12 500**
					16-mm Plate							
226·1	251·2	276·3	301·4	314·0	351·7	376·8	401·9	452·2	502·4	552·6	628·0	**2 000**
248·7	276·3	304·0	331·6	345·4	386·8	414·5	442·1	497·4	552·6	607·9	690·8	**2 200**
282·6	314·0	345·4	376·8	392·5	439·6	471·0	502·2	565·2	628·0	690·8	785·0	**2 500**
316·5	351·7	386·8	422·0	439·6	492·4	527·5	562·7	633·0	703·4	773·7	879·2	**2 800**
361·7	401·9	442·1	482·3	502·4	562·7	602·9	643·1	723·5	803·8	884·2	1 004·8	**3 200**
406·9	452·2	497·4	542·6	565·2	633·0	678·2	723·5	813·9	904·3	994·8	1 130·4	**3 600**
452·2	502·4	552·6	602·9	628·0	703·4	753·6	803·8	904·3	1 004·8	1 105·3	1 256·0	**4 000**
508·7	565·2	621·7	678·2	706·5	791·3	847·8	904·3	1 017·4	1 130·4	1 243·4	1 413·0	**4 500**
565·2	628·0	690·8	753·6	785·0	879·2	942·0	1 004·8	1 130·4	1 256·0	1 381·6	1 570·0	**5 000**
633·0	703·4	773·7	844·0	879·2	984·7	1 055·0	1 125·4	1 266·0	1 406·7	1 547·4	1 758·4	**5 600**
712·2	791·3	870·4	949·5	989·1	1 107·8	1 186·9	1 266·0	1 424·3	1 582·6	1 740·8	1 978·2	**6 300**
802·6	891·8	980·9	1 070·1	1 114·7	1 248·5	1 337·6	1 426·8	1 605·2	1 783·5	1 961·9	2 229·4	**7 100**
904·3	1 004·8	1 105·3	1 205·8	1 256·0	1 406·7	1 507·2	1 607·7	1 808·6	2 009·6	2 210·6	2 512·0	**8 000**
1 017·4	1 130·4	1 243·4	1 356·5	1 413·0	1 582·6	1 695·6	1 808·6	2 034·7	2 260·8	2 486·9	2 826·0	**9 000**
1 130·4	1 256·0	1 381·6	1 507·2	1 570·0	1 758·4	1 884·0	2 009·6	2 260·8	2 512·0	2 763·2	3 140·0	**10 000**
1 243·4	1 381·6	1 519·8	1 657·9	1 727·0	1 934·2	2 072·4	2 210·6	2 486·9	2 763·2	3 039·5	3 454·0	**11 000**
1 413·0	1 570·0	1 727·0	1 884·0	1 962·5	2 198·0	2 355·0	2 512·0	2 826·0	3 140·0	3 454·0	3 925·0	**12 500**

(*Continued*)

TABLE VII PLATES — (*Continued*)

Width *b* mm	900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500
Length *l* mm	WEIGHT IN kg											
	18-mm Plate											
2 000	254·3	282·6	310·9	339·1	353·2	395·6	423·9	452·2	508·7	565·2	621·7	706·5
2 200	279·8	310·9	341·9	373·0	388·6	435·2	466·3	497·4	559·5	621·7	683·9	777·2
2 500	317·9	353·2	388·6	423·9	441·6	494·6	529·9	565·2	635·8	706·5	777·2	883·1
2 800	356·1	395·6	435·2	474·8	494·6	553·9	593·5	633·0	712·2	791·3	870·4	989·1
3 200	406·9	452·2	497·4	542·6	565·2	633·0	678·2	723·5	813·9	904·3	994·8	1 130·4
3 600	457·8	508·7	559·5	610·4	635·8	712·2	763·0	813·9	915·6	1 017·4	1 119·1	1 271·7
4 000	508·7	565·2	621·7	678·2	706·5	791·3	847·8	904·3	1 017·4	1 130·4	1 243·4	1 413·0
4 500	572·3	635·8	699·4	763·0	794·8	890·2	953·8	1 017·4	1 144·5	1 271·7	1 398·9	1 589·6
5 000	635·8	706·5	777·2	847·8	883·1	989·1	1 059·8	1 130·4	1 271·7	1 413·0	1 554·3	1 766·2
5 600	712·2	791·3	870·4	949·5	989·1	1 107·8	1 186·9	1 266·0	1 424·3	1 582·6	1 740·8	1 978·2
6 300	801·2	890·2	979·2	1 068·2	1 112·7	1 246·3	1 335·3	1 424·3	1 602·3	1 780·4	1 958·4	2 225·5
7 100	902·9	1 003·2	1 103·6	1 203·9	1 254·0	1 404·5	1 504·8	1 605·2	1 805·8	2 006·5	2 207·1	2 508·1
8 000	1 017·4	1 130·4	1 243·4	1 356·5	1 413·0	1 582·6	1 695·6	1 808·6	2 034·7	2 260·8	2 486·9	2 826·0
9 000	1 144·5	1 271·7	1 398·9	1 526·0	1 589·6	1 780·4	1 907·6	2 034·7	2 289·1	2 543·4	2 797·7	3 179·2
10 000	1 271·7	1 413·0	1 554·3	1 695·6	1 766·2	1 978·2	2 119·5	2 260·8	2 543·4	2 826·0	3 108·6	3 532·5
11 000	1 398·9	1 554·3	1 709·7	1 865·2	1 942·9	2 176·0	2 331·4	2 486·9	2 797·7	3 108·6	3 419·5	3 885·8
12 500	1 589·6	1 766·2	1 942·9	2 119·5	2 207·8	2 472·8	2 649·4	2 826·0	3 179·2	3 532·5	3 885·8	4 415·6
	20-mm Plate											
2 000	282·6	314·0	345·4	376·8	392·5	439·6	471·0	502·4	565·2	628·0	690·8	785·0
2 200	310·9	345·4	379·9	414·5	431·8	483·6	518·1	552·6	621·7	690·8	759·9	863·5
2 500	353·2	392·5	431·8	471·0	490·6	549·5	588·8	628·0	706·5	785·0	863·5	981·2
2 800	395·6	439·6	483·6	527·5	549·5	615·4	659·4	703·4	791·3	879·2	967·1	1 099·0
3 200	452·2	502·4	552·6	602·9	628·0	703·4	753·6	803·8	904·3	1 004·8	1 105·3	1 256·0
3 600	508·7	565·2	621·7	678·2	706·5	791·3	847·8	904·3	1 017·4	1 130·4	1 243·4	1 413·0
4 000	565·2	628·0	690·8	753·6	785·0	879·2	942·0	1 004·8	1 130·4	1 256·0	1 381·6	1 570·0
4 500	635·8	706·5	777·2	847·8	883·1	989·1	1 059·8	1 130·4	1 271·7	1 413·0	1 554·3	1 766·2
5 000	706·5	785·0	863·5	942·0	981·2	1 099·0	1 177·5	1 256·0	1 413·0	1 570·0	1 727·0	1 962·5
5 600	791·3	879·2	967·1	1 055·0	1 099·0	1 230·9	1 318·8	1 406·7	1 582·6	1 758·4	1 934·2	2 198·0
6 300	890·2	989·1	1 088·0	1 186·9	1 236·4	1 384·7	1 483·6	1 582·6	1 780·4	1 978·2	2 176·0	2 472·8
7 100	1 003·2	1 114·7	1 226·2	1 337·6	1 393·4	1 560·6	1 672·0	1 783·5	2 006·5	2 229·4	2 452·4	2 786·8
8 000	1 130·4	1 256·0	1 381·6	1 507·2	1 570·0	1 758·4	1 834·0	2 009·6	2 260·8	2 512·0	2 763·2	3 140·0
9 000	1 271·7	1 413·0	1 554·3	1 695·6	1 766·2	1 978·2	2 119·5	2 260·8	2 543·4	2 826·0	3 108·6	3 532·5
10 000	1 413·0	1 570·0	1 727·0	1 834·0	1 962·5	2 198·0	2 355·0	2 512·0	2 826·0	3 140·0	3 454·0	3 925·0
11 000	1 554·3	1 727·0	1 899·7	2 072·4	2 158·8	2 417·8	2 590·5	2 763·2	3 108·6	3 454·0	3 799·4	4 317·5
12 500	1 766·2	1 962·5	2 158·8	2 355·0	2 453·1	2 747·5	2 943·8	3 140·0	3 532·5	3 925·0	4 317·5	4 906·2

(*Continued*)

TABLE VII PLATES—(*Continued*)

900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500	Width *b* mm
					WEIGHT IN kg							Length *l* mm
					22-mm Plate							
310·9	345·4	379·9	414·5	431·8	483·6	518·1	552·6	621·7	690·8	759·9	863·5	2 000
341·9	379·9	417·9	455·9	474·9	531·9	569·9	607·9	683·9	759·9	835·9	949·8	2 200
388·6	431·8	474·9	518·1	539·7	604·4	647·6	690·8	777·2	863·5	949·9	1 079·4	2 500
435·2	483·6	531·9	580·3	604·4	677·0	725·3	773·7	870·4	967·1	1 063·8	1 208·9	2 800
497·4	552·6	607·9	663·2	690·8	773·7	829·0	884·2	994·8	1 105·3	1 215·8	1 381·6	3 200
559·5	621·7	683·9	746·1	777·2	870·4	932·6	994·8	1 119·1	1 243·4	1 367·8	1 554·3	3 600
621·7	690·8	759·9	829·0	863·5	967·1	1 036·2	1 105·3	1 243·4	1 381·6	1 519·8	1 727·0	4 000
699·4	777·2	854·9	932·6	971·4	1 088·0	1 165·7	1 243·4	1 398·9	1 554·3	1 709·7	1 942·9	4 500
777·2	863·5	949·8	1 036·2	1 079·4	1 208·9	1 295·2	1 381·6	1 554·3	1 727·0	1 899·7	2 158·8	5 000
870·4	967·1	1 063·8	1 160·5	1 208·9	1 354·0	1 450·7	1 547·4	1 740·8	1 934·2	2 127·7	2 417·8	5 600
979·2	1 088·0	1 196·8	1 305·6	1 360·0	1 523·2	1 632·0	1 740·8	1 958·4	2 176·0	2 393·6	2 720·0	6 300
1 103·6	1 226·2	1 348·8	1 471·4	1 532·7	1 716·6	1 839·3	1 961·9	2 207·1	2 452·3	2 697·6	3 065·4	7 100
1 243·4	1 381·6	1 519·8	1 657·9	1 727·0	1 934·2	2 072·4	2 210·6	2 486·9	2 763·2	3 039·5	3 454·0	8 000
1 398·9	1 554·3	1 709·7	1 865·2	1 942·9	2 176·0	2 331·4	2 486·9	2 797·7	3 108·6	3 419·5	3 885·8	9 000
1 554·3	1 727·0	1 899·7	2 072·4	2 158·8	2 417·8	2 590·5	2 763·2	3 108·6	3 454·0	3 799·4	4 317·5	10 000
1 709·7	1 899·7	2 089·7	2 279·6	2 374·6	2 659·6	2 849·6	3 039·5	3 419·5	3 799·4	4 179·3	4 749·2	11 000
1 942·9	2 158·8	2 374·6	2 590·5	2 698·4	3 022·2	3 238·1	3 454·0	3 885·8	4 317·5	4 749·2	5 396·9	12 500
					25-mm Plate							
353·2	392·5	431·8	471·0	490·6	549·5	588·8	628·0	706·5	785·0	863·5	981·2	2 000
388·6	431·8	474·9	518·1	539·7	604·4	647·6	690·8	777·2	863·5	949·8	1 079·4	2 200
441·6	490·6	539·7	588·8	613·3	686·9	735·9	785·0	883·1	981·2	1 079·4	1 226·6	2 500
494·6	549·5	604·4	659·4	686·9	769·3	824·2	879·2	989·1	1 099·0	1 208·9	1 373·8	2 800
565·2	628·0	690·8	753·6	785·0	879·2	942·0	1 004·8	1 130·4	1 256·0	1 381·6	1 570·0	3 200
635·8	706·5	777·2	847·8	883·1	989·1	1 059·8	1 130·4	1 271·7	1 413·0	1 554·3	1 766·2	3 600
706·5	785·0	863·5	942·0	981·2	1 099·0	1 177·5	1 256·0	1 413·0	1 570·0	1 727·0	1 962·5	4 000
794·8	883·1	971·4	1 059·8	1 103·9	1 236·4	1 324·7	1 413·0	1 589·6	1 766·2	1 942·9	2 207·8	4 500
883·1	981·2	1 079·4	1 177·5	1 226·6	1 373·8	1 471·9	1 570·0	1 766·2	1 962·5	2 158·8	2 453·1	5 000
989·1	1 099·0	1 208·9	1 318·8	1 373·8	1 538·6	1 648·5	1 758·4	1 978·2	2 198·0	2 417·8	2 747·5	5 600
1 112·7	12 36·4	1 360·0	1 483·6	1 545·5	1 730·9	1 854·6	1 978·2	2 225·5	2 472·8	2 720·0	3 090·9	6 300
1 254·0	1 393·4	1 532·7	1 672·0	1 741·7	1 950·7	2 090·1	2 229·4	2 508·1	2 786·8	3 065·4	3 483·4	7 100
1 413·0	1 570·0	1 727·0	1 884·0	1 962·5	2 198·0	2 355·0	2 512·0	2 826·0	3 140·0	3 454·0	3 925·0	8 000
1 589·6	1 766·2	1 948·9	2 119·5	2 207·8	2 472·8	2 649·4	2 826·0	3 179·2	3 532·5	3 885·8	4 415·6	9 000
1 766·2	1 962·5	2 158·8	2 355·0	2 453·1	2 747·5	2 943·8	3 140·0	3 532·5	3 925·0	4 317·5	4 906·2	10 000
1 942·9	2 158·8	2 374·6	2 590·5	2 698·4	3 022·3	3 238·1	3 454·0	3 885·8	4 317·5	4 749·2	5 396·9	11 000
2 207·8	2 453·1	2 698·4	2 943·8	3 066·4	3 434·4	3 679·7	3 925·0	4 415·6	4 906·2	5 396·9	6 132·8	12 500

(*Continued*)

TABLE VII PLATES — (*Continued*)

Width *b* mm	900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500
Length mm	WEIGHT IN kg											
	28-mm Plate											
2 000	395·6	439·6	483·6	527·5	549·5	615·4	659·4	703·4	791·3	879·2	967·1	1 099·0
2 200	435·2	483·6	531·9	580·3	604·4	677·0	725·3	773·7	870·4	967·1	1 063·8	1 208·9
2 500	494·6	549·5	604·4	659·4	686·9	769·3	824·2	879·2	989·1	1 099·0	1 208·9	1 373·8
2 800	553·9	615·4	677·0	738·5	769·3	861·6	923·2	984·7	1 107·8	1 230·9	1 354·0	1 538·6
3 200	633·0	703·4	773·7	844·0	879·2	984·7	1 055·0	1 125·4	1 266·0	1 406·7	1 547·4	1 758·4
3 600	712·2	791·3	870·4	949·5	989·1	1 107·8	1 186·9	1 266·0	1 424·3	1 582·6	1 740·8	1 978·2
4 000	791·3	879·2	967·1	1 055·0	1 099·0	1 230·9	1 318·8	1 406·7	1 582·6	1 758·4	1 934·2	2 198·0
4 500	890·2	989·1	1 088·0	1 187·0	1 236·4	1 384·7	1 483·6	1 582·6	1 780·4	1 978·2	2 176·0	2 472·8
5 000	989·1	1 099·0	1 208·9	1 318·8	1 373·8	1 538·6	1 648·5	1 758·4	1 978·2	2 198·0	2 417·8	2 747·5
5 600	1 107·8	1 230·9	1 354·0	1 477·0	1 538·6	1 723·2	1 846·3	1 969·4	2 215·6	2 461·8	2 707·9	3 077·2
6 300	1 246·3	1 384·7	1 523·2	1 661·7	1 730·9	1 938·6	2 077·1	2 215·6	2 492·5	2 769·5	3 046·4	3 461·9
7 100	1 404·5	1 560·6	1 716·6	1 872·7	1 950·7	2 184·8	2 340·9	2 496·9	2 809·0	3 121·2	3 433·3	3 901·5
8 000	1 582·6	1 758·4	1 934·2	2 110·1	2 198·0	2 461·8	2 637·6	2 813·4	3 165·1	3 516·8	3 868·5	4 396·0
9 000	1 780·4	1 978·2	2 176·0	2 373·8	2 472·8	2 769·5	2 967·3	3 165·1	3 560·8	3 956·4	4 352·0	4 945·5
10 000	1 978·2	2 198·0	2 417·8	2 637·6	2 747·5	3 077·2	3 297·0	3 516·8	3 956·4	4 396·0	4 835·6	5 495·0
11 000	2 176·0	2 417·8	2 659·6	2 901·4	3 022·2	3 384·9	3 626·7	3 868·5	4 352·0	4 835·6	5 319·2	6 044·5
12 500	2 472·8	2 747·5	3 022·2	3 297·0	3 434·4	3 846·5	4 121·2	4 396·0	4 945·5	5 495·0	6 044·5	—
	32-mm Plate											
2 000	452·2	502·4	552·6	602·9	628·0	703·4	753·6	803·8	904·3	1 004·8	1 105·3	1 256·0
2 200	497·4	552·6	607·9	663·2	690·8	773·7	829·0	884·2	994·8	1 105·3	1 215·8	1 381·6
2 500	565·2	628·0	690·8	753·6	785·0	879·2	942·0	1 004·8	1 130·4	1 256·0	1 381·6	1 570·0
2 800	633·0	703·4	773·7	844·0	879·2	984·7	1 055·0	1 125·4	1 266·0	1 406·7	1 547·4	1 758·4
3 200	723·5	803·8	884·2	964·6	1 004·8	1 125·4	1 205·8	1 286·1	1 446·9	1 607·7	1 768·4	2 009·6
3 600	813·9	904·3	994·8	1 085·2	1 130·4	1 266·0	1 356·5	1 446·9	1 627·8	1 808·6	1 989·5	2 260·8
4 000	904·3	1 004·8	1 105·3	1 205·8	1 256·0	1 406·7	1 507·2	1 607·7	1 808·6	2 009·6	2 210·6	2 512·0
4 500	1 017·4	1 130·4	1 243·4	1 356·5	1 413·0	1 582·2	1 695·6	1 808·6	2 034·7	2 260·8	2 486·9	2 826·0
5 000	1 130·4	1 256·0	1 381·6	1 507·2	1 570·0	1 758·4	1 884·0	2 009·6	2 260·8	2 512·0	2 763·2	3 140·0
5 600	1 266·0	1 406·7	1 547·4	1 688·1	1 758·4	1 969·4	2 110·1	2 250·8	2 532·1	2 813·4	3 094·8	3 516·8
6 300	1 424·3	1 582·6	1 740·8	1 899·1	1 978·2	2 215·6	2 373·8	2 532·1	2 848·6	3 165·1	3 481·6	3 956·4
7 100	1 605·2	1 783·5	1 961·9	2 140·2	2 229·4	2 496·9	2 675·3	2 853·6	3 210·3	3 567·0	3 923·7	4 458·8
8 000	1 808·6	2 009·6	2 210·6	2 411·5	2 512·0	2 813·4	3 014·4	3 215·4	3 617·3	4 019·2	4 421·1	5 024·0
9 000	2 034·7	2 260·8	2 486·9	2 713·0	2 826·0	3 165·1	3 391·2	3 617·3	4 069·4	4 521·6	4 973·8	5 652·0
10 000	2 260·8	2 512·0	2 763·2	3 014·4	3 140·0	3 516·8	3 768·0	4 019·2	4 521·6	5 024·0	5 526·4	6 280·0
11 000	2 486·9	2 763·2	3 039·5	3 315·8	3 454·0	3 868·5	4 144·8	4 421·1	4 973·8	5 526·4	6 079·0	—
12 500	2 826·0	3 140·0	3 454·0	3 768·0	3 925·0	4 396·0	4 710·0	5 024·0	5 652·0	6 280·0	—	—

(*Continued*)

TABLE VII PLATES — (*Continued*)

900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500	Width *b* mm
					WEIGHT IN kg							**Length** *l* mm
					36-mm Plate							
508·7	565·2	621·7	678·2	706·5	791·3	847·8	904·3	1 017·4	1 130·4	1 243·3	1 413·0	2 000
559·5	621·7	683·9	746·1	777·2	870·4	932·6	994·8	1 119·1	1 243·4	1 367·8	1 554·3	2 200
635·8	706·5	777·2	847·8	883·1	989·1	1 059·8	1 130·4	1 271·7	1 413·0	1 554·3	1 766·2	2 500
712·2	791·3	870·4	949·5	989·1	1 107·8	1 186·9	1 266·0	1 424·3	1 582·6	1 740·8	1 978·2	2 800
813·9	904·3	994·8	1 085·2	1 130·4	1 266·0	1 356·5	1 446·9	1 627·8	1 808·6	1 989·5	2 260·8	3 200
915·6	1 017·4	1 119·0	1 220·8	1 271·7	1 424·3	1 526·0	1 627·8	1 831·2	2 034·7	2 238·2	2 543·4	3 600
1 017·4	1 130·4	1 243·4	1 356·5	1 413·0	1 582·6	1 695·6	1 808·6	2 034·7	2 260·8	2 486·9	2 826·0	4 000
1 144·5	1 271·7	1 398·9	1 526·0	1 589·6	1 780·4	1 907·6	2 034·7	2 289·1	2 543·4	2 797·7	3·179·2	4 500
1 271·7	1 413·0	1 554·3	1 695·6	1 766·2	1 978·2	2 119·5	2 260·8	2 543·4	2 826·0	3 108·6	3 532·5	5 000
1 424·3	1 582·6	1 740·8	1 899·1	1 978·2	2 215·6	2 373·8	2 532·0	2 848·6	3 165·1	3 481·6	3 956·4	5 600
1 602·3	1 780·4	1 958·4	2 136·4	2 225·5	2 492·5	2 670·6	2 848·6	3 204·7	3 560·8	3 916·8	4 451·0	6 300
1 805·8	2 006·5	2 207·1	2 407·8	2 508·1	2 809·0	3 009·7	3 210·3	3 611·6	4 012·9	4 414·2	5 016·2	7 100
2 034·7	2 260·8	2 486·9	2 713·0	2 826·0	3 165·1	3 391·2	3 617·3	4 069·4	4 521·6	4 973·8	5 652·0	8 000
2 289·1	2 543·4	2 797·7	3 052·1	3 179·2	3 560·8	3 815·1	4 069·4	4 578·1	5 086·8	5 595·5	6 358·5	9 000
2 543·4	2 826·0	3 108·6	3 391·2	3 532·5	3 956·4	4 239·0	4 521·6	5 086·8	5 652·0	6 217·2	—	10 000
2 797·7	3 108·6	3 419·5	3 730·3	3 885·8	4 352·0	4 662·9	4 973·8	5 595·5	6 217·2	—	—	11 000
3 179·2	3 532·5	3 885·8	4 239·0	4 415·6	4 945·5	5 298·8	5 652·0	6 358·5	—	—	—	12 500
					40-mm Plate							
565·2	628·0	690·8	753·6	785·0	879·2	942·0	1 004·8	1 130·4	1 256·0	1 381·6	1 570·0	2 000
621·7	690·8	759·9	829·0	863·5	967·1	1 036·2	1 105·3	1 243·4	1 381·6	1 519·8	1 727·0	2 200
706·5	785·0	863·5	942·0	981·2	1 099·0	1 177·5	1 256·0	1 413·0	1 570·0	1 727·0	1 962·5	2 500
791·3	879·2	967·1	1 055·0	1 099·0	1 230·9	1 318·8	1 406·7	1 582·6	1 758·4	1 934·2	2 198·0	2 800
904·3	1 004·8	1 105·3	1 205·8	1 256·0	1 406·7	1 507·2	1 607·7	1 808·6	2 009·6	2 210·6	2 512·0	3 200
1 017·4	1 130·4	1 243·4	1 356·5	1 413·0	1 582·6	1 695·6	1 808·6	2 034·7	2 260·8	2 486·9	2 826·0	3 600
1 130·4	1 256·0	1 381·6	1 507·2	1 570·0	1 758·4	1 884·0	2 009·6	2 260·8	2 512·0	2 763·2	3 140·0	4 000
1 271·7	1 413·0	1 554·3	1 695·6	1 766·2	1 978·2	2 119·5	2 260·8	2 543·4	2 826·0	3 108·6	3 532·5	4 500
1 413·0	1 570·0	1 727·0	1 884·0	1 962·5	2 198·0	2 355·0	2 512·0	2 826·0	3 140·0	3 154·0	3 925·0	5 000
1 582·6	1 758·4	1 934·2	2 110·1	2 198·0	2 461·8	2 637·6	2 813·4	3 165·1	3 516·8	3 868·5	4 396·0	5 600
1 780·4	1 978·2	2 176·0	2 373·8	2 472·8	2 769·5	2 967·3	3 165·1	3 560·8	3 956·4	4 352·0	4 945·5	6 300
2 006·5	2 229·4	2 452·3	2 675·3	2 786·8	3 121·2	3 344·1	3 567·0	4 012·9	4 458·8	4 904·7	5 573·5	7 100
2 260·8	2 512·0	2 763·2	3 014·4	3 140·0	3 516·8	3 768·0	4 019·2	4 521·6	5 024·0	5 526·4	6 280·0	8 000
2 543·4	2 826·0	3 108·6	3 391·2	3 532·5	3 956·4	4 239·0	4 521·6	5 086·8	5 652·0	6 217·2	—	9 000
2 826·0	3 140·0	3 454·0	3 768·0	3 925·0	4 396·0	4 710·0	5 024·0	5 652·0	6 280·0	—	—	10 000
3 108·6	3 454·0	3 799·4	4 144·8	4 317·5	4 835·6	5 181·0	5 526·4	6 217·2	—	—	—	11 000
3 532·5	3 925·0	4 317·5	4 710·0	4 906·2	5 495·0	5 887·5	6 280·0	—	—	—	—	12 500

(*Continued*)

TABLE VII PLATES — (*Continued*)

Width *b* mm	900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500
Length *l* mm	WEIGHT IN kg											
	45-mm Plate											
2 000	635·8	706·5	777·2	847·8	883·1	989·1	1 059·8	1 130·4	1 271·7	1 413·0	1 554·3	1 766·2
2 200	699·4	777·2	854·9	932·6	971·4	1 088·0	1 165·7	1 243·4	1 398·9	1 554·3	1 709·7	1 942·9
2 500	794·8	883·1	971·4	1 059·8	1 103·9	1 236·4	1 324·7	1 413·0	1 589·6	1 766·2	1 942·9	2 207·8
2 800	890·2	989·1	1 088·0	1 186·9	1 236·4	1 384·7	1 483·6	1 582·6	1 780·4	1 978·2	2 176·0	2 472·8
3 200	1 017·4	1 130·4	1 243·4	1 356·5	1 413·0	1 582·6	1 695·6	1 808·6	2 034·7	2 260·8	2 486·9	2 826·0
3 600	1 144·5	1 271·7	1 398·9	1 526·0	1 589·6	1 780·4	1 907·6	2 034·7	2 289·1	2 543·4	2 797·7	3 179·2
4 000	1 271·7	1 413·0	1 554·3	1 695·6	1 766·2	1 978·2	2 119·5	2 260·8	2 543·4	2 826·0	3 108·6	3 532·5
4 500	1 430·7	1 589·6	1 748·6	1 907·6	1 987·0	2 225·5	2 384·4	2 543·4	2 861·3	3 179·2	3 497·2	3 974·1
5 000	1 589·6	1 766·2	1 942·9	2 119·5	2 207·8	2 472·8	2 649·4	2 826·0	2 179·2	3 532·5	3 885·8	4 415·6
5 600	1 780·4	1 978·2	2 176·0	2 373·8	2 472·8	2 769·5	2 967·3	3 165·1	3 560·8	3 956·4	4 352·0	4 945·5
6 300	2 002·9	2 225·5	2 448·0	2 670·6	2 781·8	3 115·7	3 338·2	3 560·8	4 005·9	4 451·0	4 816·0	5 563·7
7 100	2 257·3	2 508·0	2 758·9	3 009·7	3 135·1	3 511·3	3 762·1	4 012·9	4 514·5	5 016·2	5 517·8	6 270·2
8 000	2 543·4	2 826·0	3 108·6	3 391·2	3 532·5	3 956·1	4 239·0	4 521·6	5 086·8	5 652·0	6 217·2	—
9 000	2 861·3	3 179·2	3 497·2	3 815·1	3 974·1	4 451·0	4 768·9	5 086·8	5 722·6	6 358·5	—	—
10 000	3 179·2	3 532·5	3 885·8	4 239·0	4 415·6	4 945·5	5 298·8	5 652·0	6 358·5	—	—	—
11 000	3 497·2	3 885·8	4 274·3	4 662·9	4 857·2	5 440·1	5 828·6	6 217·2	—	—	—	—
12 500	3 974·1	4 415·6	4 857·2	5 298·8	5 519·5	6 181·9	—	—	—	—	—	—
	50-mm Plate											
2 000	706·5	785·0	863·5	942·0	981·2	1 099·0	1 177·5	1 256·0	1 413·0	1 570·0	1 727·0	1 962·5
2 200	777·2	863·5	949·8	1 036·2	1 079·4	1 208·9	1 295·2	1 381·6	1 554·3	1 727·0	1 899·7	2 158·8
2 500	883·1	981·2	1 079·4	1 177·5	1 226·6	1 373·8	1 471·9	1 570·0	1 766·2	1 962·5	2 158·8	2 453·1
2 800	989·1	1 099·0	1 208·9	1 318·8	1 373·8	1 538·6	1 648·5	1 758·4	1 978·2	2 198·0	2 417·8	2 747·5
3 200	1 130·4	1 256·0	1 381·6	1 507·2	1 570·0	1 758·4	1 884·0	2 009·6	2 260·8	2 512·0	2 763·2	3 140·0
3 600	1 271·7	1 413·0	1 554·3	1 695·6	1 766·2	1 978·2	2 119·5	2 260·8	2 543·4	2 826·0	3 108·6	3 532·5
4 000	1 413·0	1 570·0	1 727·0	1 884·0	1 962·5	2 198·5	2 355·0	2 512·0	2 826·0	3 140·0	3 454·0	3 925·0
4 500	1 589·6	1 766·2	1 942·9	2 119·5	2 207·8	2 472·8	2 649·4	2 826·0	3 179·2	3 532·5	3 885·8	4 415·6
5 000	1 766·2	1 962·5	2 158·8	2 355·0	2 453·1	2 747·5	2 943·8	3 140·0	3 532·5	3 925·0	4 317·5	4 906·2
5 600	1 978·2	2 198·0	2 417·8	2 637·6	2 747·5	3 077·2	3 297·0	3 516·8	3 956·4	4 396·0	4 835·6	5 495·0
6 300	2 225·5	2 472·8	2 720·0	2 967·3	3 090·9	3 461·8	3 709·1	3 956·4	4 451·0	4 945·5	5 440·0	6 181·9
7 100	2 508·1	2 786·8	3 065·4	3 344·1	3 483·4	3 901·4	4 180·1	4 458·8	5 016·2	5 573·5	6 130·8	—
8 000	2 826·0	3 140·0	3 454·0	3 768·0	3 925·0	4 396·0	4 710·0	5 024·0	5 652·0	6 280·0	—	—
9 000	3 179·2	3 532·5	3 885·8	4 239·0	4 415·6	4 945·5	5 298·8	5 652·0	6 358·5	—	—	—
10 000	3 532·5	3 925·0	4 317·5	4 710·0	4 906·2	5 495·0	5 887·5	6 280·0	—	—	—	—
11 000	3 885·8	4 317·5	4 749·2	5 181·0	5 396·9	6 044·5	6 476·2	—	—	—	—	—
12 500	4 415·6	4 906·2	5 396·9	5 887·5	6 132·8	—	—	—	—	—	—	—

(*Continued*)

TABLE VII PLATES — (*Continued*)

900	1 000	1 100	1 200	1 250	1 400	1 500	1 600	1 800	2 000	2 200	2 500	Width *b* mm
					WEIGHT IN kg							Length *l* mm
					56-mm Plate							
791·3	879·2	967·1	1 055·0	1 099·0	1 230·9	1 318·8	1 406·7	1 582·6	1 758·4	1 934·2	2 198·0	2 000
870·4	967·1	1 063·8	1 160·5	1 208·9	1 354·0	1 450·7	1 547·4	1 740·8	1 934·2	2 127·7	2 417·8	2 200
989·1	1 099·0	1 208·9	1 318·8	1 373·8	1 538·6	1 648·5	1 758·4	1 978·2	2 198·0	2 417·8	2 747·5	2 500
1 107·8	1 230·9	1 354·0	1 477·1	1 538·6	1 723·2	1 846·3	1 969·4	2 215·6	2 461·8	2 707·9	3 077·2	2 800
1 266·0	1 406·7	1 547·4	1 688·1	1 758·4	1 969·4	2 110·1	2 250·8	2 532·1	2 813·4	3 094·8	3 516·8	3 200
1 424·3	1 582·6	1 740·8	1 899·1	1 978·2	2 215·6	2 373·8	2 532·1	2 848·6	3 165·1	3 481·6	3 956·4	3 600
1 582·6	1 758·4	1 934·2	2 110·1	2 198·0	2 461·8	2 637·6	2 813·4	3 165·1	3 516·8	3 868·5	4 396·0	4 000
1 780·4	1 978·2	2 176·0	2 373·8	2 472·8	2 769·5	2 967·3	3 165·1	3 560·8	3 956·4	4 352·0	4 945·5	4 500
1 978·2	2 198·0	2 417·8	2 637·6	2 747·5	3 077·2	3 297·0	3 516·8	3 956·4	4 396·0	4 835·6	5 495·0	5 000
2 215·6	2 461·8	2 707·9	2 954·1	3 077·2	3 446·5	3 692·6	3 938·8	4 431·2	4 923·5	5 415·9	6 154·4	5 600
2 492·5	2 769·5	3 046·4	3 323·4	3 461·9	3 877·3	4 154·2	4 431·2	4 985·1	5 540·0	6 092·9	—	6 300
2 809·0	3 121·2	3 433·3	3 745·4	3 901·4	4 369·6	4 681·7	4 993·9	5 618·1	6 242·3	—	—	7 100
3 165·1	3 516·8	3 868·5	4 220·2	4 396·0	4 923·5	5 275·2	5 626·9	6 330·2	—	—	—	8 000
3 560·8	3 956·4	4 352·0	4 747·7	4 945·5	5 539·0	5 934·6	6 330·2	—	—	—	—	9 000
3 956·4	4 396·0	4 835·6	5 275·2	5 495·0	6 154·4	—	—	—	—	—	—	10 000
4 352·0	4 835·6	5 319·2	5 802·7	6 044·5	—	—	—	—	—	—	—	11 000
4 945·5	5 495·0	6 044·5	—	—	—	—	—	—	—	—	—	12 500
					63-mm Plate							
890·2	989·1	1 088·0	1 186·9	1 236·4	1 384·7	1 483·6	1 582·6	1 780·4	1 978·2	2 176·0	2 472·8	2 000
979·2	1 088·0	1 196·8	1 305·6	1 360·0	1 523·2	1 632·0	1 740·8	1 958·4	2 176·0	2 393·6	2 720·0	2 200
1 112·7	1 236·4	1 360·0	1 483·6	1 545·5	1 730·9	1 854·6	1 978·2	2 225·5	2 472·8	2 720·0	3 090·9	2 500
1 246·3	1 384·7	1 523·2	1 661·7	1 730·9	1 938·6	2 077·1	2 215·6	2 492·5	2 769·5	3 046·4	3 461·8	2 800
1 424·3	1 582·6	1 740·8	1 899·1	1 978·2	2 215·6	2 373·8	2 532·1	2 848·6	3 165·1	3 481·6	3 956·4	3 200
1 602·3	1 780·4	1 958·4	2 136·5	2 225·5	2 492·5	2 670·6	2 848·6	3 204·7	3 560·8	3 916·8	4 451·0	3 600
1 780·4	1 978·2	2 176·0	2 373·8	2 472·8	2 769·5	2 967·3	3 165·1	3 560·8	3 956·4	4 352·0	4 945·5	4 000
2 002·9	2 225·5	2 448·0	2 670·6	2 781·8	3 115·7	3 338·2	3 560·8	4 005·9	4 451·0	4 896·0	5 563·7	4 500
2 225·5	2 472·8	2 720·0	2 967·3	3 090·9	3 461·8	3 709·1	3 956·4	4 451·5	4 945·5	5 440·0	6 181·9	5 000
2 492·5	2 769·5	3 046·4	3 323·4	3 461·8	3 877·3	4 154·2	4 431·2	4 985·1	5 539·0	6 092·9	—	5 600
2 804·1	3 115·7	3 427·2	3 738·8	3 894·6	4 361·9	4 673·5	4 985·1	5 608·2	6 231·3	—	—	6 300
3 160·2	3 511·3	3 862·4	4 213·6	4 389·1	4 915·8	5 267·0	5 618·1	6 320·3	—	—	—	7 100
3 560·8	3 956·4	4 352·0	4 747·7	4 945·5	5 539·0	5 934·6	6 330·2	—	—	—	—	8 000
4 005·9	4 451·0	4 896·0	5 341·1	5 563·7	6 231·3	—	—	—	—	—	—	9 000
4 451·0	4 945·5	5 440·0	5 934·6	6 181·9	—	—	—	—	—	—	—	10 000
4 896·0	5 440·0	5 984·1	—	—	—	—	—	—	—	—	—	11 000
5 563·7	6 181·9	—	—	—	—	—	—	—	—	—	—	12 500

TABLE VIII SHEET AND STRIP

SHEET

Size mm × mm	Standard Nominal Surface Area in m^2	Standard Nominal Thickness in mm: 0·40	0·50	0·63	0·80	0·90	1·00	1·12	1·25	1·40
		Weight in kg								
1 800 × 600	1·08	3·4	4·2	5·3	6·8	7·6	8·5	9·5	10·6	11·9
750	1·35	4·2	5·3	6·7	8·5	9·5	10·6	11·9	13·2	14·8
900	1·62	5·1	6·4	8·0	10·2	11·4	12·7	14·2	15·9	17·8
1 000	1·80	5·7	7·1	8·9	11·3	12·7	14·2	15·8	17·7	19·8
1 100	1·98	6·2	7·8	9·8	12·4	14·0	15·6	17·4	19·4	21·8
1 200	2·16	6·8	8·5	10·7	13·6	15·3	17·0	19·0	21·2	23·7
1 250	2·25	7·1	8·8	11·1	14·1	15·9	17·6	19·8	22·1	24·7
1 400	2·52	7·9	9·9	12·5	15·8	17·8	19·8	22·2	24·7	27·7
1 500	2·70	8·5	0·6	13·4	17·0	19·1	21·2	23·8	26·5	29·7
2 000 × 600	1·20	3·8	4·7	5·9	7·5	8·5	9·4	10·6	11·8	13·2
750	1·50	4·7	5·9	7·4	9·4	10·6	11·8	13·2	14·7	16·5
900	1·80	5·7	7·1	8·9	11·3	12·7	14·1	15·8	17·7	19·8
1 000	2·00	6·3	7·8	9·9	12·6	14·1	15·7	17·6	19·6	22·0
1 100	2·20	6·9	8·6	10·9	13·8	15·5	17·3	19·3	21·6	24·2
1 200	2·40	7·5	9·4	11·9	15·1	17·0	18·8	21·1	23·6	26·4
1 250	2·50	7·8	9·8	12·4	15·7	17·7	19·6	22·0	24·5	27·5
1 400	2·80	8·8	11·0	13·8	17·6	19·8	22·0	24·6	27·5	30·8
1 500	3·00	9·4	11·8	14·8	18·8	21·2	23·6	26·4	29·4	33·0
2 200 × 600	1·32	4·1	5·2	6·5	8·3	9·3	10·4	11·6	13·0	14·5
750	1·65	5·2	6·5	8·2	10·4	11·7	13·0	14·5	16·2	18·1
900	1·98	6·2	7·8	9·8	12·4	14·0	15·5	17·4	19·4	21·8
1 000	2·20	6·9	8·6	10·9	13·8	15·5	17·3	19·3	21·6	24·2
1 100	2·42	7·6	9·5	12·0	15·2	17·1	19·0	21·3	23·7	26·6
1 200	2·64	8·3	10·4	13·1	16·6	18·7	20·7	23·2	25·9	29·0
1 250	2·75	8·6	10·8	13·6	17·3	19·4	21·6	24·2	27·0	30·2
1 400	3·08	9·7	12·1	15·2	19·3	21·8	24·2	27·1	30·2	33·8
1 500	3·30	10·4	13·0	16·3	20·7	23·3	25·9	29·0	32·4	36·3
2 500 × 600	1·50	4·7	5·9	7·4	9·4	10·6	11·8	13·2	14·7	16·5
750	1·875	5·9	7·4	9·3	11·8	13·2	14·7	16·5	18·4	20·6
900	2·25	7·1	8·8	11·1	14·1	15·9	17·7	19·8	22·1	24·7
1 000	2·50	7·8	9·8	12·4	15·7	17·7	19·6	22·0	24·5	27·5
1 100	2·75	8·6	10·8	13·6	17·3	19·4	21·6	24·2	27·0	30·2
1 200	3·00	9·4	11·8	14·8	18·8	21·2	23·6	26·4	29·4	33·0
1 250	3·125	9·8	12·3	15·5	19·6	22·1	24·5	27·5	30·7	34·3
1 400	3·50	11·0	13·7	17·3	22·0	24·7	27·5	30·8	34·3	38·5
1 500	3·75	11·8	14·7	18·5	23·6	26·5	29·4	33·0	36·8	41·2

(*Continued*)

TABLE VIII SHEET AND STRIP — (*Continued*)

SHEET

1·60	1·80	2·00	2·24	2·50	2·80	3·15	3·55	4·00	Standard Nominal Thickness in mm	
Weight in kg									Standard Nominal Surface Area in m^2	Size mm × mm
13·6	15·3	17·0	19·0	21·2	23·7	26·7	30·1	33·9	1·08	1 800 × 600
17·0	19·1	21·2	23·7	26·5	29·7	33·4	37·6	42·4	1·35	750
20·3	22·9	25·4	28·5	31·8	35·6	40·1	45·1	50·9	1·62	900
22·6	25·4	28·3	31·7	35·3	39·6	44·5	50·2	56·5	1·80	1 000
24·9	28·0	31·1	34·8	38·9	43·5	49·0	55·2	62·2	1·98	1 100
27·1	30·5	33·9	38·0	42·4	47·5	53·4	60·2	67·8	2·16	1 200
28·3	31·8	35·3	39·6	44·2	49·5	55·6	62·7	70·6	2·25	1 250
31·7	35·6	39·6	44·3	49·5	55·4	62·3	70·2	79·1	2·52	1 400
33·9	38·2	42·4	47·5	53·0	59·3	66·8	75·2	84·8	2·70	1 500
15·1	17·0	18·8	21·1	23·6	26·4	29·7	33·4	37·7	1·20	2 000 × 600
18·8	21·2	23·6	26·4	29·4	33·0	37·1	41·8	47·1	1·50	750
22·6	25·4	28·3	31·7	35·3	39·6	44·5	50·2	56·5	1·80	900
25·1	28·3	31·4	35·2	39·2	44·0	49·5	55·7	62·8	2·00	1 000
27·6	31·1	34·5	38·7	43·2	48·4	54·4	61·3	69·1	2·20	1 100
30·1	33·9	37·7	42·2	47·1	52·8	59·3	66·9	75·4	2·40	1 200
31·4	35·3	39·2	44·0	49·1	55·0	61·8	69·7	78·5	2·50	1 250
35·2	39·6	44·0	49·2	55·0	61·5	69·2	78·0	87·9	2·80	1 400
37·7	42·4	47·1	52·8	58·9	65·9	74·2	83·6	94·2	3·00	1 500
16·6	18·7	20·7	23·2	25·9	29·0	32·6	36·8	41·4	1·32	2 200 × 600
20·7	23·3	25·9	29·0	32·4	36·3	40·8	46·0	51·8	1·65	750
24·9	28·0	31·1	34·8	38·9	43·5	49·0	55·2	62·2	1·98	900
27·6	31·1	34·5	38·7	43·2	48·4	54·4	61·3	69·1	2·20	1 000
30·4	34·2	38·0	42·6	47·5	53·2	59·8	67·4	76·0	2·42	1 100
33·2	37·3	41·4	46·4	51·8	58·0	65·3	73·6	82·9	2·64	1 200
34·5	38·9	43·2	48·4	54·0	60·4	68·0	76·6	86·4	2·75	1 250
38·7	43·5	48·4	54·2	60·4	67·7	76·2	85·8	96·7	3·08	1 400
41·4	46·6	51·8	58·0	64·8	72·5	81·6	92·0	103·6	3·30	1 500
18·8	21·2	23·6	26·4	29·4	33·0	37·1	41·8	47·1	1·50	2 500 × 600
23·6	26·5	29·4	33·0	36·8	41·2	46·4	52·3	58·9	1·875	750
28·3	31·8	35·3	39·6	44·2	49·5	55·6	62·7	70·6	2·25	900
31·4	35·3	39·2	44·0	49·1	55·0	61·8	69·7	78·5	2·50	1 000
34·5	38·9	43·2	48·4	54·0	60·4	68·0	76·6	86·4	2·75	1 100
37·7	42·4	47·1	52·8	58·9	65·9	74·2	83·6	94·2	3·00	1 200
39·2	44·2	49·1	55·0	61·3	68·7	77·3	87·1	98·1	3·125	1 250
44·0	49·5	55·0	61·5	68·7	76·9	86·5	97·5	109·9	3·50	1 400
47·1	53·0	58·9	65·9	73·6	82·4	92·7	104·5	117·8	3·75	1 500

(*Continued*)

TABLE VIII SHEET AND STRIP — (*Continued*)

SHEET

Size mm × mm	Standard Nominal Surface Area in m^2	Standard Nominal Thickness in mm: 0·40	0·50	0·63	0·80	0·90	1·00	1·12	1·25	1·40
		Weight in kg								
2 800 × 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
1 000	2·80	8·8	11·0	13·8	17·6	19·8	22·0	24·6	27·5	30·8
1 100	3·08	9·7	12·1	15·2	19·3	21·8	24·2	27·1	30·2	33·8
1 200	3·36	10·6	13·2	16·6	21·1	23·7	26·4	29·5	33·0	36·9
1 250	3·50	11·0	13·7	17·3	22·0	24·7	27·5	30·8	34·3	38·5
1 400	3·92	12·3	15·4	19·4	24·6	27·7	30·8	34·5	38·5	43·1
1 500	4·20	13·2	16·5	20·8	26·4	29·7	33·0	36·9	41·2	46·2
3 200 × 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
1 000	3·20	10·0	12·6	15·8	20·1	22·6	25·1	28·1	31·4	35·2
1 100	3·52	11·1	13·8	17·4	22·1	24·9	27·6	30·9	34·5	38·7
1 200	3·84	12·1	15·1	19·0	24·1	27·1	30·1	33·8	37·7	42·2
1 250	4·00	12·6	15·7	19·8	25·1	28·3	31·4	35·2	39·2	44·0
1 400	4·48	14·1	17·6	22·2	28·1	31·7	35·2	39·4	44·0	49·2
1 500	4·80	15·1	18·8	23·7	30·1	33·9	37·7	42·2	47·1	52·8
3 600 × 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
1 000	3·60	11·3	14·1	17·8	22·6	25·4	28·3	31·7	35·3	39·6
1 100	3·96	12·4	15·5	19·6	24·9	28·0	31·1	34·8	38·9	43·5
1 200	4·32	13·6	17·0	21·4	27·1	30·5	33·9	38·0	42·4	47·5
1 250	4·50	14·1	17·7	22·3	28·3	31·8	35·3	39·6	44·2	49·5
1 400	5·04	15·8	19·8	24·9	31·7	35·6	39·6	44·3	49·5	55·4
1 500	5·40	17·0	21·2	26·7	33·9	38·2	42·4	47·5	53·0	59·3
4 000 × 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
1 000	4·00	12·6	15·7	19·8	25·1	28·3	31·4	35·2	39·2	44·0
1 100	4·40	13·8	17·3	21·8	27·6	31·1	34·5	38·7	43·2	48·4
1 200	4·80	15·1	18·8	23·7	30·1	33·9	37·7	42·2	47·1	52·8
1 250	5·00	15·7	19·6	24·7	31·4	35·3	39·2	44·0	49·1	55·0
1 400	5·60	17·6	22·0	27·7	35·2	39·6	44·0	49·2	55·0	61·5
1 500	6·00	18·8	23·6	29·7	37·7	42·4	47·1	52·8	58·9	65·9

(*Continued*)

TABLE VIII SHEET AND STRIP — (*Continued*)

SHEET

1·60	1·80	2·00	2·24	2·50	2·80	3·15	3·55	4·00	Standard Nominal Thickness in mm	
Weight in kg									Standard Nominal Surface Area in m^2	Size mm × mm
21·1	23·7	26·4	29·5	33·0	36·9	41·5	46·8	52·8	1·68	2 800 × 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	1 000
38·7	43·5	48·4	54·2	60·4	67·7	76·2	85·8	96·7	3·08	1 100
42·2	47·5	52·8	59·1	65·9	73·9	83·1	93·6	105·5	3·36	1 200
44·0	49·5	55·0	61·5	68·7	76·9	86·5	97·5	109·9	3·50	1 250
49·2	55·4	61·5	68·9	76·9	86·2	96·9	109·2	123·1	3·92	1 400
52·8	59·3	65·9	73·9	82·4	92·3	103·8	117·0	131·9	4·20	1 500
24·1	27·1	30·1	33·8	37·7	42·2	47·5	53·5	60·3	1·92	3 200 × 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	1 000
44·2	49·7	55·3	61·9	69·1	77·4	87·0	98·1	110·5	3·52	1 100
48·2	54·3	60·3	67·5	75·4	84·4	95·0	110·7	120·6	3·84	1 200
50·2	56·5	62·8	70·3	78·5	87·9	98·9	111·5	125·6	4·00	1 250
56·3	63·3	70·3	78·8	87·9	98·5	110·8	124·8	140·7	4·48	1 400
60·3	67·8	75·4	84·4	94·2	105·5	118·7	133·8	150·7	4·80	1 500
27·1	30·5	33·9	38·0	42·4	47·5	53·4	60·2	67·8	2·16	3 600 × 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	1 000
49·7	56·0	62·2	69·6	77·7	87·0	97·9	110·4	124·3	3·96	1 100
54·3	61·0	67·8	76·0	84·8	95·0	106·8	120·4	135·6	4·32	1 200
56·5	63·6	70·6	79·1	88·3	98·9	111·3	125·4	141·3	4·50	1 250
63·3	71·2	79·1	88·6	98·9	110·8	124·6	140·5	158·3	5·04	1 400
67·8	76·3	84·8	95·0	106·0	118·7	133·5	150·5	169·6	5·40	1 500
30·1	33·9	37·7	42·2	47·1	52·8	59·3	66·9	75·4	2·40	4 000 × 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	98·9	111·5	125·6	4·00	1 000
55·3	62·2	69·1	77·4	86·4	96·7	108·8	122·6	138·2	4·40	1 100
60·3	67·8	75·4	84·4	94·2	105·5	118·7	133·8	150·7	4·80	1 200
62·8	70·6	78·5	87·9	98·1	109·9	123·6	139·3	157·0	5·00	1 250
70·3	79·1	87·9	98·5	109·9	123·1	138·5	156·1	175·8	5·60	1 400
75·4	84·8	94·2	105·5	117·8	131·9	148·4	167·2	188·4	6·00	1 500

(*Continued*)

TABLE VIII SHEET AND STRIP

(Continued)

STRIP

Thickness *t* mm	1·60	1·80	2·00	2·24	2·50	2·80	3·15
Width *b* mm	Weight in kg/m						
100	1·3	1·4	1·6	1·8	2·0	2·2	2·5
125	1·6	1·8	2·0	2·2	2·4	2·7	3·1
160	2·0	2·3	2·5	2·8	3·1	3·5	4·0
200	2·5	2·8	3·1	3·5	3·9	4·4	4·9
250	3·1	3·5	3·9	4·4	4·9	5·5	6·2
320	4·0	4·5	5·0	5·6	6·3	7·0	7·9
400	5·0	5·6	6·3	7·0	7·8	8·8	9·9
500	6·3	7·1	7·8	8·8	9·8	11·0	12·4
650	8·2	9·2	10·2	11·4	12·8	14·3	16·1
800	10·0	11·3	12·6	14·1	15·7	17·6	19·8
950	—	13·4	14·9	16·7	18·6	20·9	23·5
1 050	—	—	16·5	18·5	20·6	23·1	26·0
1 150	—	—	—	20·2	22·6	25·3	28·4
1 250	—	—	—	—	24·5	27·5	30·9
1 300	—	—	—		—	28·6	32·1
1 450	—	—	—	—	—	—	35·8
1 550	—	—		—	—	—	38·3

(Continued)

Note — Combinations denoted by dashes are not manufactured.

TABLE VIII SHEET AND STRIP

(Continued)

STRIP

3·55	4·00	4·50	5·0	6·0	8·0	10·0	Thickness *t* mm
Weight in kg/m							Width *b* mm
2·8	3·1	3·5	3·9	4·7	6·3	7·8	100
3·5	3·9	4·4	4·9	5·9	7·8	9·8	125
4·5	5·0	5·6	6·3	7·5	10·0	12·6	160
5·6	6·3	7·1	7·8	9·4	12·6	15·7	200
7·0	7·8	8·8	9·8	11·8	15·7	19·6	250
8·9	10·0	11·3	12·6	15·1	20·1	25·1	320
11·1	12·6	14·1	15·7	18·8	25·1	31·4	400
13·9	15·7	17·7	19·6	23·6	31·4	39·2	500
18·1	20·4	23·0	25·5	30·6	40·8	51·0	650
22·3	25·1	28·3	31·4	37·7	50·2	62·8	800
26·5	29·8	33·6	37·3	44·7	59·7	74·6	950
29·3	33·0	37·1	41·2	49·5	65·9	82·4	1 050
32·0	36·1	40·6	45·1	54·2	72·2	90·3	1 150
34·8	39·2	44·2	49·1	58·9	78·5	98·1	1 250
36·2	40·8	45·9	51·0	61·2	81·6	102·0	1 300
40·4	45·5	51·2	56·9	68·3	91·1	113·8	1 450
43·2	48·7	54·7	60·8	73·0	97·3	121·7	1 550

TABLE IX MILD STEEL FLATS

Thickness *t* mm	3·0	4·0	5·0	6·0	8·0	10·0	12
Width *b* mm	Weight in kg/m Length						
10	0·2	0·3	0·5	—	—	—	—
15	0·4	0·5	0·6	0·7	0·9	—	—
20	0·5	0·6	0·8	0·9	1·3	1·6	—
25	0·6	0·8	1·0	1·2	1·6	2·0	2·4
30	0·7	0·9	1·2	1·4	1·9	2·4	2·8
35	0·8	1·1	1·4	1·6	2·2	2·8	3·3
40	0·9	1·3	1·6	1·9	2·5	3·1	3·8
45	1·1	1·4	1·8	2·1	2·8	3·5	4·2
50	1·2	1·6	2·0	2·4	3·1	3·9	4·7
55	1·3	1·7	2·2	2·6	3·4	4·3	5·2
60	1·4	1·9	2·4	2·8	3·8	4·7	5·6
65	—	—	—	3·1	4·1	5·1	6·1
70	—	—	—	3·3	4·4	5·5	6·6
75	—	—	—	3·5	4·7	5·9	7·1
80	—	—	—	3·8	5·0	6·3	7·5
90	—	—	—	4·2	5·6	7·1	8·5
100	—	—	—	4·7	6·3	7·8	9·4
110	—	—	—	5·2	6·9	8·6	10·4
120	—	—	—	5·6	7·5	9·4	11·3
130	—	—	—	—	8·2	10·2	12·2
140	—	—	—	—	8·8	11·0	13·2
150	—	—	—	—	9·4	11·8	14·1
200	—	—	—	—	—	15·7	18·8
250	—	—	—	—	—	19·6	23·6
300	—	—	—	—	—	—	28·3
400	—	—	—	—	—	—	—

(*Continued*

Note — The weight per metre values are calculated on the basis that steel weighs 7·85 g/cm³ and are rounded off to one decimal place in kg.

TABLE IX MILD STEEL FLATS — (*Continued*)

16	18	20	25	32	40	Thickness *t* mm
Weight in kg/m Length						Width *b* mm
—	—	—	—	—	—	10
—	—	—	—	—	—	15
—	—	—	—	—	—	20
—	—	—	—	—	—	25
3·8	—	—	—	—	—	30
4·4	5·0	5·5	—	—	—	35
5·0	5·6	6·3	—	—	—	40
5·6	6·4	7·1	—	—	—	45
6·3	7·1	7·8	9·8	—	—	50
6·9	7·8	8·6	10·8	—	—	55
7·5	8·5	9·4	11·8	15·1	—	60
8·2	9·2	10·2	12·8	16·3	20·4	65
8·8	9·9	11·0	13·7	17·6	22·0	70
9·4	10·6	11·8	14·7	18·8	23·6	75
10·0	11·3	12·6	15·7	20·1	25·1	80
11·3	12·7	14·1	17·7	22·6	28·3	90
12·6	14·1	15·7	19·6	25·1	31·4	100
13·8	15·5	17·3	21·6	27·6	34·5	110
15·1	17·0	18·8	23·6	30·1	37·7	120
16·3	18·4	20·4	25·5	32·7	40·8	130
17·6	19·8	22·0	27·5	35·2	44·0	140
18·8	21·2	23·6	29·4	37·7	47·1	150
25·1	28·3	31·4	39·2	50·2	62·8	200
31·4	35·3	39·2	49·1	62·8	78·5	250
37·7	42·4	47·1	58·9	75·4	94·2	300
50·2	56·5	62·8	78·5	100·5	125·6	400

(Continued)

Note — The weight per metre values are calculated on the basis that steel weighs 7·85 g/cm³ and are rounded off to one decimal place in kg.

TABLE IX MILD STEEL FLATS — (*Continued*)

Thickness t mm	3·0	4·0	5·0	6·0	8·0	10·0	12
Width b mm	**Cross-Sectional Area in cm²**						
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 IX MILD STEEL FLATS—(*Continued*)

16	18	20	25	32	40	Thickness *t* mm
Cross-Sectional Area in cm^2						Width *b* 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 X BARS

ROUND BARS

Designation	Diameter	Cross-Sectional Area	*Weight per Metre	Perimeter
	mm	cm^2	kg	cm
ISRO 5	5·0	0·20	0·2	1·6
ISRO 6	6·0	0·28	0·2	1·9
ISRO 8	8·0	0·50	0·4	2·5
ISRO 10	10·0	0·79	0·6	3·1
ISRO 12	12	1·13	0·9	3·8
ISRO 16	16	2·01	1·6	5·0
ISRO 20	20	3·14	2·5	6·3
ISRO 25	25	4·91	3·8	7·8
ISRO 28	28	6·16	4·8	9·8
ISRO 32	32	8·04	6·3	10·1
ISRO 36	36	10·18	8·0	11·3
ISRO 40	40	12·57	9·9	12·6
ISRO 45	45	15·90	12·5	14·1
ISRO 50	50	19·64	15·4	15·7
ISRO 56	56	24·63	19·3	17·6
ISRO 63	63	31·17	24·5	19·8
ISRO 71	71	39·59	31·1	22·3
ISRO 80	80	50·26	39·5	25·1
ISRO 90	90	63·26	49·9	28·3
ISRO 100	100	78·54	61·7	31·4
ISRO 110	110	95·03	74·6	34·6
ISRO 125	125	122·72	96·3	39·3
ISRO 140	140	153·94	120·8	44·0
ISRO 160	160	201·06	157·8	50·3
ISRO 180	180	254·47	199·8	56·6
ISRO 200	200	314·16	246·6	62·8

SQUARE BARS

Designation	Side Width	Cross-Sectional Area	*Weight per Metre	Perimeter
	mm	cm^2	kg	cm
ISSQ 5	5·0	0·25	0·2	2·0
ISSQ 6	6·0	0·36	0·3	2·4
ISSQ 8	8·0	0·64	0·5	3·2
ISSQ 10	10·0	1·00	0·8	4·0
ISSQ 12	12	1·44	1·1	4·8
ISSQ 16	16	2·56	2·0	6·4
ISSQ 20	20	4·00	3·1	8·0
ISSQ 25	25	6·25	4·9	10·0
ISSQ 32	32	10·24	8·0	12·8
ISSQ 40	40	16·00	12·6	16·0
ISSQ 50	50	25·00	19·6	20·0
ISSQ 63	63	39·69	31·2	25·2
ISSQ 80	80	64·00	50·2	32·0
ISSQ 100	100	100·00	78·5	40·0

*The weights per metre of bars given in the table are calculated on the basis that steel weighs 7·85 g/cm^3 and are rounded off to one decimal place in kg.

SECTION B
BEAMS, CHANNELS AND COMPOUND SECTIONS USED AS GIRDERS
(TABLES XI-XXIII)

TABLE XI ECONOMY IN THE SELECTION OF BEAMS AND CHANNELS USED AS FLEXURAL MEMBERS BASED ON SECTION MODULI

Modulus of Section Z_{xx}	Designation	Weight per Metre w	Shear Carrying Capacity S	Modulus of Section Z_{xx}	Designation	Weight per Metre w	Shear Carrying Capacity S	Modulus of Section Z_{xx}	Designation	Weight per Metre w	Shear Carrying Capacity S
cm^3		kg	$kg \times 10^3$	cm^3		kg	$kg \times 10^3$	cm^3		kg	$kg \times 10^3$
3 854·2	*ISWB 600	145·1	66·9	532·1	*ISLC 350	38·8	24·5	116·3	*ISJB 225	12·8	7·9
3 540·0	*ISWB 600	133·7	63·5	488·9	*ISLB 300	37·7	19·0	116·1	ISJC 200	13·9	7·7
3 060·4	*ISMB 600	122·6	68·0					111·9	ISWB 150	17·0	7·7
				475·4	ISWB 250	40·9	15·8				
2 723·9	*ISWB 550	112·5	54·6	424·2	*ISMC 300	35·8	21·5	103·9	ISMC 150	16·4	7·7
2 428·9	*ISLB 600	99·5	59·5	410·5	ISMB 250	37·3	16·3	96·9	ISMB 150	14·9	6·8
2 359·8	ISMB 550	103·7	58·2					93·0	ISLC 150	14·4	6·8
				403·2	*ISLC 300	33·1	19·0				
2 091·6	*ISWB 500	95·2	46·8	392·4	*ISLB 275	33·0	16·6	91·8	ISLB 150	14·2	6·8
1 933·2	*ISLB 550	86·3	51·5	348·5	ISWB 225	33·9	13·6	82·3	*ISJC 175	11·2	6·0
1 808·7	ISMB 500	86·9	48·2					78·1	ISJB 200	9·9	6·4
				305·9	*ISMB 225	31·2	13·8				
1 558·1	*ISWB 450	79·4	39·1	305·3	*ISMC 250	30·4	16·8	71·8	ISMB 125	13·0	5·2
1 543·2	*ISLB 500	75·0	43·5	297·4	*ISLB 250	27·9	14·4	66·6	ISMC 125	12·7	5·9
1 350·7	*ISMB 450	72·4	40·0					65·1	ISLB 125	11·9	5·2
				295·0	ISLC 250	28·0	14·4				
1 223·8	*ISLB 450	65·3	36·6	262·5	ISWB 200	28·8	11·5	62·8	ISJC 150	9·9	5·1
1 171·3	ISWB 400	66·7	32·5					57·1	ISLC 125	10·7	5·2
1 022·9	*ISMB 400	61·6	33·6	239·5	*ISMC 225	25·9	13·6	54·8	*ISJB 175	8·1	5·3
				226·5	*ISLC 225	24·0	12·3				
965·3	*ISLB 400	56·9	30·2	223·5	ISMB 200	25·4	10·8	51·5	ISMB 100	11·5	3·8
887·0	ISWB 350	56·9	26·5					43·2	*ISJC 125	7·9	3·5
778·9	*ISMB 350	52·4	26·8	222·4	*ISLB 225	23·5	12·3	42·9	*ISJB 150	7·1	4·3
				181·9	*ISMC 200	22·1	11·5				
754·1	*ISMC 400	49·4	32·5	172·6	*ISLC 200	20·6	10·4	37·3	ISMC 100	9·2	4·4
751·9	ISLB 350	49·5	24·5	172·5	*ISWB 175	22·1	9·6	33·6	ISLB 100	8·0	3·8
699·5	*ISLC 400	45·7	30·2	169·7	*ISLB 200	19·8	10·2	32·9	ISLC 100	7·9	3·8
654·8	ISWB 300	48·1	21·0	145·4	*ISMB 175	19·3	9·1	24·8	*ISJC 100	5·8	2·8
607·7	*ISLB 325	43·1	21·5					20·3	ISMC 75	6·8	3·1
573·6	ISMB 300	44·2	21·3	139·8	*ISMC 175	19·1	9·4	19·4	ISLB 75	6·1	2·6
				131·3	*ISLC 175	17·6	8·4				
571·9	*ISMC 350	42·1	26·8	125·3	*ISLB 175	16·7	8·4	17·6	*ISLC 75	5·7	2·6

Note — For using this table, proceed as follows:

i) Find, in the column headed 'Modulus of Section', the value equal to or, failing that, the value next higher to the required value of Z_{xx}.

ii) If the section opposite this selected value in the next column headed 'Designation' bears an asterisk, choose it, as it is the lightest beam in the series to serve the requirement. Otherwise, proceed higher up and choose the first section bearing the asterisk, as all sections above the section opposite to the selected value also satisfy the requirement with regard to Z_{xx}.

iii) If conditions require that the section must not exceed a certain depth, proceed up the column until the section with the required depth is reached. Check up to see that no lighter beam with an asterisk, of the same depth, appears higher up.

iv) Check up the selected section for web capacity in shear. Also, make proper provision in cases of eccentric loading or any other special conditions of loading.

v) It is assumed in this table that the compression flanges of the section so chosen have adequate lateral support.

TABLE XII ALLOWABLE UNIFORM LOADS ON BEAMS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE

Designation	ISLB 600	ISMB 600	ISWB 600	ISWB 600	Deflection in cm for ISLB 600, ISMB 600, ISWB 600 and ISWB 600	ISLB 550	ISMB 550	ISWB 550	Deflection in cm for ISLB 550, ISMB 550 and ISWB 550
$h \times b$ mm × mm	600 × 210	600 × 210	600 × 250	600 × 250		550 × 190	550 × 190	550 × 250	
w kg/m	99·5	122·6	133·7	145·1		86·3	103·7	112·5	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**								
1·0	306·0	385·6	446·0	485·6	0·03	243·6	297·3	343·2	0·03
1·5	204·0	257·1	297·4	323·8	0·06	162·4	198·2	228·8	0·06
2·0	153·0	192·8	223·0	242·8	0·10	121·8	148·6	171·6	0·11
2·5	122·4	154·2	178·4	194·3	0·16	97·4	118·9	137·3	0·18
3·0	102·0	128·6	148·7	161·9	0·23	81·2	99·1	114·4	0·26
3·5	87·4	110·2	127·4	138·8	0·32	69·6	85·0	98·1	0·35
4·0	76·5	96·4	111·5	121·4	0·42	60·9	74·3	85·8	0·45
4·5	68·0	85·7	99·1	107·9	0·53	54·1	66·1	76·3	0·58
5·0	61·2	77·1	89·2	97·2	0·65	48·7	59·4	68·6	0·71
5·5	55·6	70·1	81·1	88·3	0·79	44·3	54·1	62·4	0·86
6·0	51·0	64·3	74·4	81·0	0·94	40·6	49·6	57·2	1·02
6·5	47·1	59·3	68·6	74·7	1·10	37·5	45·7	52·8	1·20
7·0	43·7	55·1	63·7	69·4	1·28	34·8	42·5	49·0	1·39
7·5	40·8	51·4	59·5	64·8	1·46	32·5	39·6	45·8	1·60
8·0	38·2	48·2	55·8	60·7	1·67	30·4	37·2	42·9	1·82
8·5	36·0	45·4	52·5	57·1	1·88	28·7	35·0	40·3	2·05
9·0	34·0	42·8	49·6	54·0	2·11	27·0	33·0	38·1	2·30
9·5	32·2	40·6	47·0	51·1	2·35	25·6	31·3	36·1	2·56
10·0	30·6	38·6	44·6	48·6	2·60	24·4	29·7	34·3	2·84
10·5	29·1	36·7	42·5	46·2	2·87	23·2	28·3	32·7	3·13
11·0	27·8	35·0	40·6	44·2	3·15	22·2	27·0	31·2	3·44
11·5	26·6	33·5	38·8	42·2	3·44	21·2	25·9	30·0	3·76
12·0	25·5	32·2	37·2	40·5	3·75	20·3	24·8	28·6	4·09
12·5	24·5	30·8	35·7	38·9	4·07	19·5	23·8	27·5	4·44
13·0	23·6	29·6	34·3	37·4	4·40	18·8	22·8	26·4	4·80
13·5	22·7	28·6	33·0	36·0	4·75	—	—	—	—
14·0	21·8	27·6	31·8	34·7	5·10	—	—	—	—
14·5	21·1	26·6	30·8	33·5	5·48	—	—	—	—
15·0	20·4	25·7	29·8	32·4	5·86	—	—	—	—
Z_{xx}, cm^3	2 428·9	3 060·4	3 540·0	3 854·2		1 933·2	2 359·8	2 723·9	
S, kg × 10^3	59·5	68·0	63·5	66·9		51·5	58·2	54·6	
L_u, metres	4·5	5·0	6·0	6·5		4·0	4·5	6·0	
R, kg × 10^3	2·0	2·3	2·1	2·2		1·9	2·1	2·0	
B', cm	30·0	30·0	30·0	30·0		27·5	27·5	27·5	

(*Continued*)

Note 1 — Loads above the full line can be allowed provided the webs are strengthened suitably for Shear.

Note 2 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 3 — Symbols.

S = Maximum Web Shear

L_u = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XII ALLOWABLE UNIFORM LOADS ON BEAMS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE

(Continued)

Designation	ISLB 500	ISMB 500	ISWB 500	Deflection in cm for ISLB 500, ISMB 500 and ISWB 500	ISLB 450	ISMB 450	ISWB 450	Deflection in cm for ISLB 450, ISMB 450 and ISWB 450
$h \times b$ mm × mm	500 × 180	500 × 180	500 × 250		450 × 170	450 × 150	450 × 200	
w kg/m	75·0	86·9	95·2		65·3	72·4	79·4	
Span in Metres	Allowable Uniform Loads in kg × 10^3							
1·0	194·4	227·9	263·5	0·03	154·2	170·2	196·3	0·03
1·5	129·6	151·9	175·7	0·07	102·8	113·5	130·9	0·08
2·0	97·2	114·0	131·8	0·12	77·1	85·1	98·2	0·14
2·5	77·8	91·2	105·4	0·20	61·7	68·1	78·5	0·22
3·0	64·8	76·0	87·8	0·28	51·4	56·8	65·4	0·31
3·5	55·6	65·1	75·3	0·38	44·1	48·6	56·1	0·43
4·0	48·6	57·0	65·9	0·50	38·6	42·6	49·1	0·56
4·5	43·2	50·6	58·6	0·63	34·3	37·8	43·6	0·70
5·0	38·9	45·6	52·7	0·78	30·8	34·0	39·2	0·87
5·5	35·4	41·4	47·9	0·95	28·0	30·9	35·7	1·05
6·0	32·4	38·0	43·9	1·13	25·7	28·4	32·7	1·25
6·5	29·9	35·1	40·5	1·32	23·7	26·2	30·2	1·47
7·0	27·8	32·6	37·6	1·53	22·0	24·3	28·0	1·70
7·5	25·9	30·4	35·1	1·76	20·6	22·7	26·2	1·95
8·0	24·3	28·5	33·0	2·00	19·3	21·3	24·6	2·22
8·5	22·9	26·8	31·0	2·26	18·1	20·0	23·1	2·51
9·0	21·6	25·3	29·3	2·53	17·2	18·9	21·8	2·81
9·5	20·5	24·0	27·7	2·82	16·2	17·9	20·7	3·13
10·0	19·4	22·8	26·3	3·13	15·4	17·0	19·6	3·47
10·5	18·5	21·7	25·1	3·45	14·7	16·2	18·7	3·83
11·0	17·7	20·7	24·0	3·78	14·0	15·4	17·8	4·20
11·5	16·9	19·8	22·9	4·13	—	—	—	—
12·0	16·2	19·0	22·0	4·50	—	—	—	—
Z_{xx}, cm^3	1 543·2	1 808·7	2 091·6		1 223·8	1 350·7	1 558·1	
S, kg × 10^3	43·5	48·2	46·8		36·6	40·0	39·1	
L_u, metres	4·0	4·0	5·5		4·0	3·5	4·5	
R, kg × 10^3	1·7	1·9	1·9		1·6	1·8	1·7	
B', cm	25·0	25·0	25·0		22·5	22·5	22·5	

(Continued)

Note 1 — Loads above the full line can be allowed provided the webs are strengthened suitably for Shear.

Note 2 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 3 — Symbols:

S = Maximum Web Shear.

L_u = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XII ALLOWABLE UNIFORM LOADS ON BEAMS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE

(Continued)

Designation	ISLB 400	ISMB 400	ISWB 400	Deflection in cm for ISLB 400, ISMB 400 and ISWB 400	ISLB 350	ISMB 350	ISWB 350	Deflection in cm for ISLB 350, ISMB 350 and ISWB 350
$h \times b$ mm × mm	400 × 165	400 × 140	400 × 200		350 × 165	350 × 140	350 × 200	
w kg/m	56·9	61·6	66·7		49·5	52·4	56·9	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**							
1·0	121·6	128·9	147·6	0·04	94·7	98·1	111·8	0·04
1·5	81·1	85·9	98·4	0·09	63·2	65·4	74·5	0·10
2·0	60·8	64·4	73·8	0·16	47·4	49·0	55·9	0·18
2·5	48·7	51·6	59·0	0·24	37·9	39·3	44·7	0·28
3·0	40·6	43·0	49·2	0·35	31·6	32·7	37·2	0·40
3·5	34·8	36·8	42·2	0·48	27·1	28·0	31·9	0·55
4·0	30·4	32·2	36·9	0·62	23·7	24·5	28·0	0·71
4·5	27·0	28·6	32·8	0·79	21·1	21·8	24·8	0·90
5·0	24·4	25·8	29·5	0·98	19·0	19·6	22·4	1·12
5·5	22·1	23·4	26·8	1·18	17·2	17·8	20·3	1·35
6·0	20·3	21·5	24·6	1·41	15·8	16·4	18·6	1·61
6·5	18·7	19·8	22·7	1·65	14·6	15·1	17·2	1·89
7·0	17·4	18·4	21·1	1·91	13·6	14·0	16·0	2·19
7·5	16·2	17·2	19·7	2·20	12·6	13·1	14·9	2·51
8·0	15·2	16·1	18·4	2·50	11·8	12·2	14·0	2·86
8·5	14·3	15·2	17·4	2·82	11·1	11·5	13·1	3·23
9·0	13·5	14·3	16·4	3·16	10·6	10·9	12·4	3·62
9·5	12·8	13·6	15·5	3·53	—	—	—	—
10·0	12·2	12·9	14·8	3·91	—	—	—	—
Z_{xx}, cm³	965·3	1 022·9	1 171·3		751·9	778·9	887·0	
S, kg × 10^3	30·2	33·6	32·5		24·5	26·8	26·5	
L_u, metres	3·5	3·5	4·5		3·5	3·5	4·5	
R, kg × 10^3	1·5	1·7	1·6		1·4	1·5	1·5	
B', cm	20·0	20·0	20·0		17·5	17·5	17·5	

(Continued)

Note 1 — Loads above the full line can be allowed provided the webs are strengthened suitably for Shear.

Note 2 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 3 — Symbols:

S = Maximum Web Shear.

L_u = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XII ALLOWABLE UNIFORM LOADS ON BEAMS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE

(Continued)

Designation	ISLB 325	Deflection in cm for ISLB 325	ISLB 300	ISMB 300	ISWB 300	Deflection in cm for ISLB 300, ISMB 300 and ISWB 300	ISLB 275	Deflection in cm for ISLB 275
$h \times b$ mm × mm	325 × 165		300 × 150	300 × 140	300 × 200		275 × 140	
w kg/m	43·1		37·7	44·2	48·1		33·0	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**							
1·0	76·6	0·05	61·6	72·3	82·5	0·05	49·4	0·06
1·5	51·0	0·11	41·1	48·2	55·0	0·12	33·0	0·13
2·0	38·3	0·19	30·8	36·2	41·2	0·21	24·7	0·23
2·5	30·6	0·30	24·6	28·9	33·0	0·33	19·8	0·36
3·0	25·5	0·43	20·6	24·1	27·5	0·47	16·5	0·51
3·5	21·9	0·59	17·6	20·6	23·6	0·64	14·1	0·70
4·0	19·2	0·77	15·4	18·1	20·6	0·83	12·4	0·91
4·5	17·0	0·97	13·7	16·1	18·3	1·05	11·0	1·15
5·0	15·3	1·20	12·3	14·4	16·5	1·30	9·9	1·42
5·5	13·9	1·45	11·2	13·1	15·0	1·58	9·0	1·72
6·0	12·8	1·73	10·3	12·0	13·8	1·88	8·2	2·05
6·5	11·8	2·03	9·5	11·1	12·7	2·20	—	—
7·0	11·0	2·36	8·8	10·3	11·8	2·55	—	—
Z_{xx}, cm^3	607·7		488·9	973·6	654·8		392·4	
S, kg × 10^3	21·5		19·0	21·3	21·0		16·6	
L_u, metres	3·5		3·5	3·5	4·5		3·0	
R, kg × 10^3	1·3		1·3	1·4	1·4		1·2	
B', cm	16·3		15·0	15·0	15·0		13·8	

(Continued)

Note 1 — Loads above the full line can be allowed provided the webs are strengthened suitably for Shear.
Note 2 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.
Note 3 — Symbols:
S = Maximum Web Shear.
L_u = Length of Span up to which tabulated loads are safe with or without lateral support.
R = Increase in Bearing Capacity for every additional centimetre of Bearing.
B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XII ALLOWABLE UNIFORM LOADS ON BEAMS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE — (*Continued*)

Designation	ISLB 250	ISMB 250	ISWB 250	Deflection in cm for ISLB 250, ISMB 250 and ISWB 250	ISJB 225	ISLB 225	ISMB 225	ISWB 225	Deflection in cm for ISJB 225, ISLB 225, ISMB 225 and ISWB 225
$h \times b$ mm × mm	250 × 125	250 × 125	250 × 200		225 × 80	225 × 100	225 × 110	225 × 150	
w kg/m	27·9	37·3	40·9		12·8	23·5	31·2	33·9	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**								
1·0	37·5	51·7	59·9	0·06	14·7	28·0	38·5	43·9	0·07
1·5	25·0	34·5	39·9	0·14	9·8	18·7	25·7	29·3	0·16
2·0	18·8	25·8	30·0	0·25	7·4	14·0	19·2	22·0	0·28
2·5	15·0	20·7	24·0	0·39	5·9	11·2	15·4	17·6	0·43
3·0	12·5	17·2	20·0	0·56	4·9	9·4	12·8	14·6	0·62
3·5	10·7	14·8	17·1	0·77	4·2	8·0	11·0	12·5	0·85
4·0	9·4	12·9	15·0	1·00	3·7	7·0	9·6	11·0	1·11
4·5	8·3	11·5	13·3	1·27	3·3	6·2	8·6	9·8	1·41
5·0	7·5	10·4	12·0	1·56	2·9	5·6	7·7	8·8	1·74
5·5	6·8	9·4	10·9	1·89	—	—	—	—	—
6·0	6·2	8·6	10·0	2·25	—	—	—	—	—
Z_{xx}, cm^3	297·4	410·5	475·4		116·3	222·4	305·9	348·5	
S, kg × 10^3	14·4	16·3	15·8		7·9	12·3	13·8	13·6	
L_u, metres	3·0	3·5	5·0		1·5	2·5	3·0	4·0	
R, kg × 10^3	1·2	1·3	1·3		0·7	1·1	1·2	1·2	
B', cm	12·5	12·5	12·5		11·3	11·3	11·3	11·3	

Designation	ISJB 200	ISLB 200	ISMB 200	ISWB 200	Deflection in cm for ISJB 200, ISLB 200, ISMB 200 and ISWB 200	ISJB 175	ISLB 175	ISMB 175	ISWB 175	Deflection in cm for ISJB 175, ISLB 175, ISMB 175 and ISWB 175
$h \times b$ mm × mm	200 × 60	200 × 100	200 × 100	200 × 140		175 × 50	175 × 90	175 × 90	175 × 125	
w kg/m	9·9	19·8	25·4	28·8		8·1	16·7	19·3	22·1	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**									
1·0	9·8	21·4	28·2	33·1	0·08	6·9	15·8	18·3	21·7	0·09
1·5	6·6	14·3	18·8	22·1	0·18	4·6	10·5	12·2	14·5	0·20
2·0	4·9	10·7	14·1	16·6	0·31	3·4	7·9	9·2	10·8	0·36
2·5	3·9	8·6	11·3	13·2	0·49	2·8	6·3	7·3	8·7	0·56
3·0	3·3	7·2	9·4	11·0	0·70	2·3	5·2	6·1	7·2	0·80
3·5	2·8	6·1	8·0	9·4	0·96	2·0	4·5	5·2	6·2	1·09
4·0	2·4	5·4	7·0	8·3	1·25	1·7	4·0	4·6	5·4	1·43
4·5	2·2	4·8	6·3	7·4	1·58	—	—	—	—	—
5·0	2·0	4·3	5·6	6·6	1·95	—	—	—	—	—
Z_{xx}, cm^3	78·1	169·7	223·5	262·5		54·8	125·3	145·4	172·5	
S, kg × 10^3	6·4	10·2	10·8	11·5		5·3	8·4	9·1	9·6	
L_u, metres	1·0	2·5	3·0	3·5		1·0	2·0	2·5	3·0	
R, kg × 10^3	0·6	1·0	1·1	1·2		0·6	1·0	1·0	1·1	
B', cm	10·0	10·0	10·0	10·0		8·8	8·8	8·8	8·8	

(*Continued*)

Note 1 — Loads above the full line can be allowed provided the webs are strengthened suitably for Shear.

Note 2 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 3 — Symbols:

S = Maximum Web Shear.

L_u = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XII ALLOWABLE UNIFORM LOADS ON BEAMS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE — (*Continued*)

Designation	ISJB 150	ISLB 150	ISMB 150	ISWB 150	Deflection in cm for ISJB 150, ISLB 150, ISMB 150 and ISWB 150	ISLB 125	ISMB 125	Deflection in cm for ISLB 125 and ISMB 125
$h \times b$ mm × mm	150×50	150×80	150×80	150×100		125×75	125×75	
w kg/m	7·1	14·2	14·9	17·0		11·9	13·0	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**							
1·0	5·4	11·6	12·2	14·1	0·10	8·2	9·0	0·12
1·5	3·6	7·7	8·1	9·4	0·23	5·5	6·0	0·28
2·0	2·7	5·8	6·1	7·0	0·42	4·1	4·5	0·50
2·5	2·2	4·6	4·9	5·6	0·65	3·3	3·6	0·78
3·0	1·8	3·8	4·0	4·7	0·94	2·8	3·0	1·12
3·5	1·5	3·3	3·5	4·0	1·28	—	—	—
4·0	1·4	2·9	3·0	3·5	1·67	—	—	—
Z_{xx}, cm³	42·9	91·8	96·9	111·9		65·1	71·8	
S, kg × 10^3	4·3	6·8	6·8	7·7		5·2	5·2	
L_w, metres	1·0	2·0	2·0	2·5		2·0	2·5	
R, kg × 10^3	0·6	0·9	0·9	1·0		0·8	0·8	
B', cm	7·5	7·5	7·5	7·5		6·3	6·3	

Designation	ISLB 100	ISMB 100	Deflection in cm for ISLB 100 and ISMB 100	ISLB 75	Deflection in cm for ISLB 75
$h \times b$ mm × mm	100×50	100×75		75×50	
w kg/m	8·0	11·5		6·1	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**				
1·0	4·2	6·5	0·16	2·4	0·21
1·5	2·8	4·3	0·35	1·6	0·47
2·0	2·1	3·3	0·62	1·2	0·83
2·5	1·7	2·6	0·98	—	—
3·0	1·4	2·2	1·41	—	—
Z_{xx}, cm³	33·6	51·5		19·4	
S, kg × 10^3	3·8	3·8		2·6	
L_w, metres	1·5	2·5		1·5	
R, kg × 10^3	0·8	0·8		0·7	
B', cm	5·0	5·0		3·8	

Note 1 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 2 — Symbols:

S = Maximum Web Shear.

L_w = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XIII ALLOWABLE UNIFORM LOADS ON CHANNELS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE

Designation	ISLC 400	ISMC 400	Deflection in cm for	ISLC 350	ISMC 350	Deflection in cm for	ISLC 300	ISMC 300	Deflection in cm for
$h \times b$ mm × mm	400 × 100	400 × 100	ISLC 400 and	350 × 100	350 × 100	ISLC 350 and	300 × 100	300 × 90	ISLC 300 and
w kg/m	45·7	49·4	ISMC 400	38·8	42·1	ISMC 350	33·1	35·8	ISMC 300
Span in Metres	**Allowable Uniform Loads in kg × 10^3**								
1·0	83·9	90·5	0·04	63·9	68·6	0·04	48·4	50·9	0·05
1·5	56·0	60·3	0·08	42·6	45·8	0·10	32·3	33·9	0·11
2·0	42·0	45·2	0·15	31·9	34·3	0·17	24·2	25·5	0·20
2·5	33·6	36·2	0·23	25·5	27·5	0·27	19·4	20·4	0·31
3·0	28·0	30·2	0·33	21·3	22·9	0·38	16·1	17·0	0·45
3·5	24·0	25·9	0·46	18·2	19·6	0·52	13·8	14·5	0·61
4·0	21·0	22·6	0·60	16·0	17·2	0·68	12·1	12·7	0·79
4·5	18·7	20·1	0·75	14·2	15·3	0·86	10·8	11·3	1·00
5·0	16·8	18·1	0·93	12·8	13·7	1·06	9·7	10·2	1·24
5·5	15·3	16·5	1·13	11·6	12·5	1·29	8·8	9·3	1·50
6·0	14·0	15·1	1·34	10·6	11·4	1·53	8·1	8·5	1·79
6·5	12·9	13·9	1·57	9·8	10·6	1·80	7·4	7·8	2·10
7·0	12·0	12·9	1·82	9·1	9·8	2·08	6·9	7·3	2·43
7·5	11·2	12·1	2·09	8·5	9·2	2·39	—	—	—
8·0	10·5	11·3	2·38	8·0	8·6	2·72	—	—	—
8·5	9·9	10·6	2·69	7·5	8·1	3·07	—	—	—
9·0	9·3	10·1	3·01	7·1	7·6	3·44	—	—	—
Z_{xx}, cm³	699·5	754·1		532·1	571·9		403·2	424·2	
S, kg × 10^3	30·2	32·5		24·5	26·8		19·0	21·5	
L_u, metres	2·5	2·5		2·5	2·5		2·5	2·5	
R, kg × 10^3	1·5	1·6		1·4	1·5		1·3	1·4	
B', cm	20·0	20·0		17·5	17·5		15·0	15·0	

(*Continued*)

Note 1 — Loads above the full line can be allowed provided the webs are strengthened suitably for Shear.

Note 2 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 3 — Symbols:

S = Maximum Web Shear.

L_u = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XIII ALLOWABLE UNIFORM LOADS ON CHANNELS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE — (*Continued*)

Designation	ISLC 250	ISMC 250	Deflection in cm for	ISLC 225	ISMC 225	Deflection in cm for
$h \times b$ mm × mm	250 × 100	250 × 80	ISLC 250 and	225 × 90	225 × 80	ISLC 225 and
w kg/m	28·0	30·4	ISMC 250	24·0	25·9	ISMC 225
Span in Metres	**Allowable Uniform Loads in kg × 10^3**					
1·0	35·4	36·6	0·06	27·2	28·7	0·07
1·5	23·6	24·4	0·13	18·1	19·2	0·15
2·0	17·7	18·3	0·24	13·6	14·4	0·26
2·5	14·2	14·7	0·37	10·9	11·5	0·41
3·0	11·8	12·2	0·54	9·1	9·6	0·60
3·5	10·1	10·5	0·73	7·8	8·2	0·81
4·0	8·8	9·2	0·95	6·8	7·2	1·06
4·5	7·9	8·1	1·21	6·0	6·4	1·34
5·0	7·1	7·3	1·49	5·4	5·7	1·65
5·5	6·4	6·7	1·80	—	—	—
6·0	5·9	6·1	2·14	—	—	—
Z_{xx}, cm^3	295·0	305·3		226·5	239·5	
S, kg × 10^3	14·4	16·8		12·3	13·6	
L_u, metres	2·5	2·5		2·5	2·5	
R, kg × 10^3	1·2	1·3		1·1	1·2	
B', cm	12·5	12·5		11·2	11·2	

Designation	ISJC 200	ISLC 200	ISMC 200	Deflection in cm for	ISJC 175	ISLC 175	ISMC 175	Deflection in cm for
$h \times b$ mm × mm	200 × 70	200 × 75	200 × 75	ISJC 200, ISLC 200 and	175 × 60	175 × 75	175 × 75	ISJC 175, ISLC 175 and
w kg/m	13·9	20·6	22·1	ISMC 200	11·2	17·6	19·1	ISMC 175
Span in Metres	**Allowable Uniform Loads in kg × 10^3**							
1·0	13·9	20·7	21·8	0·07	9·9	15·8	16·8	0·08
1·5	9·3	13·8	14·6	0·17	6·6	10·5	11·2	0·19
2·0	7·0	13·4	10·9	0·30	4·9	7·9	8·4	0·34
2·5	5·6	8·3	8·7	0·46	4·0	6·3	6·7	0·53
3·0	4·6	6·9	7·3	0·67	3·3	5·3	5·6	0·77
3·5	4·0	5·9	6·2	0·91	2·8	4·5	4·8	1·04
4·0	3·5	5·2	5·5	1·19	2·5	3·9	4·2	1·36
4·5	3·1	4·6	4·9	1·51	—	—	—	—
5·0	2·8	4·1	4·4	1·86	—	—	—	—
Z_{xx}, cm^3	116·1	172·6	181·9		82·3	131·3	139·8	
S, kg × 10^3	7·7	10·4	11·5		6·0	8·4	9·4	
L_u, metres	1·5	2·0	2·5		1·5	2·0	2·5	
R, kg × 10^3	0·8	1·0	1·2		0·7	1·0	1·1	
B', cm	10·0	10·0	10·0		8·8	8·8	8·8	

(*Continued*)

Note 1 — Loads above the full line can be allowed provided the webs are strengthened suitably for Shear.

Note 2 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 3 — Symbols:

S = Maximum Web Shear.

L_u = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XIII ALLOWABLE UNIFORM LOADS ON CHANNELS WITH ADEQUATE LATERAL SUPPORT FOR COMPRESSION FLANGE — (*Continued*)

Designation	ISJC 150	ISLC 150	ISMC 150	Deflection in cm for ISJC 150, ISLC 150 and ISMC 150	ISJC 125	ISLC 125	ISMC 125	Deflection in cm for ISJC 125, ISLC 125 and ISMC 125
$h \times b$ mm × mm	150 × 55	150 × 75	150 × 75		125 × 50	125 × 65	125 × 65	
w kg/m	9·9	14·4	16·4		7·9	10·7	12·7	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**							
1·0	7·5	11·2	12·5	0·10	5·2	6·9	8·0	0·12
1·5	5·0	7·4	8·3	0·22	3·5	4·6	5·3	0·27
2·0	3·8	5·6	6·2	0·40	2·6	3·4	4·0	0·48
2·5	3·0	4·5	5·0	0·62	2·1	2·7	3·2	0·74
3·0	2·5	3·7	4·2	0·89	1·7	2·3	2·7	1·07
3·5	2·2	3·2	3·6	1·22	—	—	—	—
4·0	1·9	2·8	3·1	1·59	—	—	—	—
Z_{xx}, cm^3	62·8	93·0	103·9		43·2	57·1	66·6	
S, kg × 10^3	5·1	6·8	7·7		3·5	5·2	5·9	
L_u, metres	1·5	2·0	2·5		1·5	2·0	2·0	
R, kg × 10^3	0·7	0·9	1·0		0·6	0·8	0·9	
B', cm	7·5	7·5	7·5		6·2	6·2	6·2	

Designation	ISJC 100	ISLC 100	ISMC 100	Deflection in cm for ISJC 100, ISLC 100 and ISMC 100	ISLC 75	ISMC 75	Deflection in cm for ISLC 75 and ISMC 75
$h \times b$ mm × mm	100 × 45	100 × 50	100 × 50		75 × 40	75 × 40	
w kg/m	5·8	7·9	9·2		5·7	6·8	
Span in Metres	**Allowable Uniform Loads in kg × 10^3**						
1·0	3·0	3·9	4·5	0·15	2·1	2·4	0·20
1·5	2·0	2·6	3·0	0·33	1·4	1·6	0·45
2·0	1·5	2·0	2·2	0·60	1·1	1·2	0·79
2·5	1·2	1·6	1·8	0·93	—	—	—
3·0	1·0	1·3	1·5	1·34	—	—	—
Z_{xx}, cm^3	24·8	32·9	37·3		17·6	20·3	
S, kg × 10^3	2·8	3·8	4·4		2·6	3·1	
L_u, metres	1·0	1·5	2·0		1·5	2·0	
R, kg × 10^3	0·6	0·8	0·9		0·7	0·8	
B', cm	5·0	5·0	5·0		3·8	3·8	

Note 1 — In the case of loads below the dotted line, the deflection exceeds the limit of 1/325 of the Span.

Note 2 — Symbols:

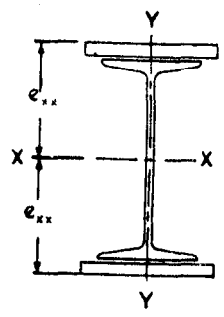
S = Maximum Web Shear.

L_u = Length of Span up to which tabulated loads are safe with or without lateral support.

R = Increase in Bearing Capacity for every additional centimetre of Bearing.

B' = Length of Bearing to develop a Bearing Capacity of S.

TABLE XIV SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS GIRDERS



Composed of			Weight per Metre	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 Designation	Cover Plates Width	Thickness	w	a		e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
	mm	mm	kg	cm^2	mm	cm	cm^4	cm^4	cm	cm^3	kg-m$\times 10^3$	kg$\times 10^3$
ISWB 150	160·0	10·0	42·1	53·67	14·4	8·50	2 889·8	777·5	3·81	340·0	5·4	7·7
		12·0	47·2	60·07	16·4	8·70	3 363·1	914·0	3·90	386·6	6·1	
		16·0	57·2	72·87	20·4	9·10	4 377·2	1 187 1	4·04	481·0	7·6	
		20·0	67·3	85·67	24·4	9·50	5 484·4	1 460·1	4·13	577·3	9·1	
		25·0	79·8	101·67	29·4	10·00	7 005·8	1 801·5	4·21	700·6	11·0	
ISWB 175	200·0	10·0	53·5	68·11	14·6	9·75	4 935·2	1 521·9	4·73	506·2	8·0	9·6
		12·0	59·7	76·11	16·6	9·95	5 711·3	1 788·6	4·85	574·0	9·0	
		16·0	72·3	92·11	20·6	10·35	7 360·0	2 321·9	5·02	711·1	11·2	
		20·0	84·9	108·11	24·6	10·75	9 141·1	2 855·3	5·14	850·3	13·4	
		25·0	100·6	128·11	29·6	11·25	11 561·5	3 521·9	5·24	1 027·7	16·2	
ISMB 200	160·0	10·0	50·5	64 33	16·8	11·00	5 766·1	832·7	3·60	524·2	8·3	10·8
		12·0	55·5	70·73	18·8	11·20	6 554·6	969·2	3·70	585·2	9·2	
		16·0	65·6	83·53	22·8	11·60	8 218·3	1 242·3	3·86	708·5	11·2	
		20·0	75·6	96·33	26·8	12·00	10 000·7	1 515·3	3·97	833·4	13·1	
		25·0	88·2	112·33	31·8	12·50	12 402·1	1 856·7	4·07	992·2	15·6	
ISWB 200	200·0	10·0	60·2	76·71	16·3	11·00	7 037·8	1 662·1	4·66	639·8	10·1	11·5
		12·0	66·5	84·71	18·3	11·20	8 023·5	1 928·8	4·77	716·4	11·3	
		16·0	79·1	100·71	22·3	11·60	10 103·1	2 462·1	4·94	871·0	13·7	
		20·0	91·6	116·71	26·3	12·00	12 331·2	2 995·5	5·07	1 027·6	16·2	
		25·0	107·3	136·71	31·3	12·50	15 332·8	3 662·1	5·18	1 226·6	19·3	
ISMB 225	160·0	10·0	56·3	71·72	18·1	12·25	7 862·4	901·0	3·54	641·8	10·1	13·8
		12·0	61·3	78·12	20·1	12·45	8 838·5	1 037·5	3·64	709·9	11·2	
		16·0	71·4	90·92	24·1	12·85	10 887·0	1 310·6	3·80	847·2	13·3	
		20·0	81·4	103·72	28·1	13·25	13 067·0	1 583·6	3·91	986·2	15·5	
		25·0	94·0	119·72	33·1	13·75	15 983·5	1 925·0	4·01	1 162·4	18·3	
ISWB 225	200·0	10·0	65·3	83·24	17·4	12·25	9 446·2	1 781·9	4·63	771·1	12·1	13·6
		12·0	71·6	91·24	19·4	12·45	10 666·4	2 048·6	4·74	856·7	13·5	
		16·0	84·2	107·24	23·4	12·85	13 227·0	2 581·9	4·91	1 029·3	16·2	
		20·0	96·7	123·24	27·4	13·25	15 952·0	3 115·3	5·03	1 203·9	19·0	
		25·0	112·4	143·24	32·4	13·75	19 597·6	3 781·9	5·14	1 425·3	22·4	
ISMB 250	200 0	10·0	68·7	87·55	17·8	13·50	11 894·9	1 667·8	4·36	881·1	13·9	16·3
		12·0	75·0	95·55	19·8	13·70	13 374·6	1 934·5	4·50	976·3	15·4	
		16·0	87·6	111·55	23·8	14·10	16 466·2	2 467·8	4·70	1 167·8	18·4	
		20·0	100·1	127·55	27·8	14·50	19 738·3	3 001·2	4·85	1 361·3	21·4	
		25·0	115·8	147·55	32·8	15·00	24 089·9	3 667·8	4·99	1 606·0	25·3	

(Continued)

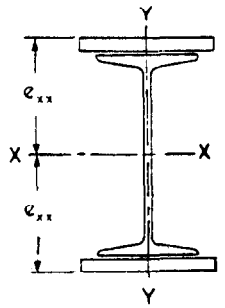
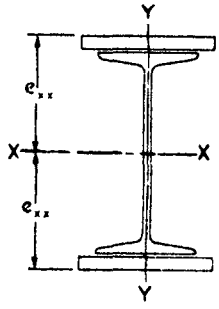


TABLE XIV SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS GIRDERS—(*Continued*)

Composed of			Weight per Metre	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 Designation	Cover Plates Width	Thickness	w	a		e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
	mm	mm	kg	cm²	mm	cm	cm⁴	cm⁴	cm	cm³	kg-m × 10³	kg × 10³
ISWB 250	320·0	10·0	91·1	116·05	15·6	13·50	16 764·4	6 318·8	7·38	1 241·8	19·6	15·8
		12·0	101·1	128·85	17·6	13·70	19 132·0	7 411·1	7·58	1 396·5	22·0	
		16·0	121·2	154·45	21·6	14·10	24 078·5	9 595·6	7·88	1 707·7	26·9	
		20·0	141·3	180·05	25·6	14·50	29 313·8	11 780·2	8·09	2 021·6	31·8	
		25·0	166·5	212·05	30·6	15·00	36 276·0	14 510·8	8·27	2 418·4	38·1	
ISMB 300	200·0	10·0	75·6	96·26	18·7	16·00	18 216·9	1 787·2	4·31	1 138·6	17·9	21·3
		12·0	81·8	104·26	20·7	16·20	20 290·6	2 053·9	4·44	1 252·5	19·7	
		16·0	94·4	120·26	24·7	16·60	24 594·2	2 587·2	4·64	1 481·6	23·3	
		20·0	107·0	136·26	28·7	17·00	29 110·3	3 120·6	4·79	1 712·4	27·0	
		25·0	122·7	156·26	33·7	17·50	35 061·9	3 787·2	4·92	2 003·5	31·6	
		32·0	144·6	185·26	40·7	18·20	43 984·5	4 720·6	5·06	2 416·7	38·1	
ISWB 300	320·0	10·0	98·4	125·33	16·2	16·00	25 202·9	6 451·4	7·17	1 575·2	24·8	21·0
		12·0	108·4	138·13	18·2	16·20	28 520·9	7 543·7	7·39	1 760·5	27·7	
		16·0	128·5	163·73	22·2	16·60	35 406·6	9 728·2	7·71	2 132·9	33·6	
		20·0	148·6	189·33	26·2	17·00	42 632·3	11 912·8	7·93	2 507·8	39·5	
		25·0	173·7	221·33	31·2	17·50	52 154·5	14 643·4	8·13	2 980·3	46·9	
		32·0	208·9	266·13	38·2	18·20	66 431·1	18 466·4	8·33	3 650·1	57·5	
ISMB 350	200·0	10·0	83·8	106·71	19·9	18·50	26 593·6	1 871·0	4·19	1 437·5	22·6	26·8
		12·0	90·0	114·71	21·9	18·70	29 361·3	2 137·7	4·32	1 570·1	24·7	
		16·0	102·6	130·71	25·9	19·10	35 076·9	2 671·0	4·52	1 836·5	28·9	
		20·0	115·2	146·71	29·9	19·50	41 037·0	3 204·4	4·67	2 104·5	33·1	
		25·0	130·9	166·71	34·9	20·00	48 838·6	3 871·0	4·82	2 441·9	38·5	
		32·0	152·8	194·71	41·9	20·70	60 435·2	4 804·4	4·97	2 919·6	46·0	
ISWB 350	320·0	10·0	107·2	136·50	17·1	18·50	36 263·0	6 637·2	6·97	1 960·2	30·9	26·5
		12·0	117·2	149·30	19·1	18·70	40 691·4	7 729·5	7·20	2 176·0	34·3	
		16·0	137·3	174·90	23·1	19·10	49 836·3	9 914·0	7·53	2 609·2	41·1	
		20·0	157·4	200·50	27·1	19·50	59 372·4	12 098·6	7·77	3 044·7	48·0	
		25·0	182·5	232·50	32·1	20·00	71 855·0	14 829·2	7·99	3 592·8	56·6	
		32·0	217·7	277·30	39·1	20·70	90 409·6	18 652·2	8·20	4 367·6	68·8	
ISMB 400	200·0	10·0	93·0	118·46	21·2	21·00	37 271·7	1 955·4	4·06	1 774·8	28·0	33·6
		12·0	99·3	126·46	23·2	21·20	40 833·4	2 222·1	4·19	1 926·1	30·3	
		16·0	111·3	142·46	27·2	21·60	48 161·0	2 755·4	4·40	2 229·7	35·1	
		20·0	124·4	158·46	31·2	22·00	55 765·1	3 288·8	4·56	2 534·8	39·9	
		25·0	140·1	178·46	36·2	22·50	65 666·7	3 955·4	4·71	2 918·5	46·0	
		32·0	162·1	206·46	43·2	23·20	80 287·3	4 888·8	4·87	3 460·7	54·5	

(*Continued*)

TABLE XIV SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS GIRDERS — (*Continued*)



Composed of			Weight per Metre	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											
Designation	Width	Thickness	w	a		e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
	mm	mm	kg	cm^2	mm	cm	cm^4	cm^4	cm	cm^3	kg-m × 10^3	kg × 10^3
ISWB 400	320·0	10·0	117·0	149·01	18·1	21·00	50 328·0	6 849·3	6·78	2 396·6	37·7	32·5
		12·0	127·0	161·81	20·1	21·20	56 026·8	7 941·6	7·01	2 642·8	41·6	
		16·0	147·1	187·41	24·1	21·60	67 750·9	10 126·1	7·35	3 136·6	49·4	
		20·0	167·2	213·01	28·1	22·00	79 917·4	12 310·7	7·60	3 632·6	57·2	
		25·0	192·3	345·01	33·1	22·50	95 760·0	15 041·3	7·84	4 256·0	67·0	
		32·0	227·5	289·81	40·1	23·20	119 153·0	18 864·3	8·07	5 135·9	80·9	
		40·0	267·7	341·01	48·1	24·00	147 672·0	23 233·3	8·25	6 153·0	96·9	
ISMB 450	200·0	10·0	103·8	132·27	23·0	23·50	51 554·1	2 167·3	4·05	2 193·8	34·6	40·0
		12·0	110·1	140·27	25·0	23·70	56 009·8	2 434·0	4·17	2 363·3	37·2	
		16·0	122·7	156·27	29·0	24·10	65 149·4	2 967·3	4·36	2 703·3	42·6	
		20·0	135·2	172·27	33·0	24·50	74 597·5	3 500·7	4·51	3 044·8	48·0	
		25·0	150·9	192·27	38·0	25·00	86 849·1	4 167·3	4·66	3 474·0	54·7	
		32·0	172·9	220·27	45·0	25·70	104 843·7	5 100·7	4·81	4 079·5	64·3	
		40·0	198·0	252·27	53·0	26·50	126 644·1	6 167·3	4·94	4 779·0	75·3	
ISWB 450	320·0	10·0	129·6	165·15	19·6	23·50	68 918·9	7 168·0	6·59	2 932·7	46·2	39·;
		12·0	139·7	177·95	21·6	23·70	76 048·1	8 260·3	6·81	3 208·8	50·5	
		16·0	159·8	203·55	25·6	24·10	90 671·4	10 444·8	7·16	3 762·3	59·3	
		20·0	179·9	229·15	29·6	24·50	105 788·3	12 629·4	7·42	4 317·9	68·0	
		25·0	205·0	261·15	34·6	25·00	125 390·9	15 360·0	7·67	5 015·6	79·0	
		32·0	240·2	305·95	41·6	25·70	154 182·3	19 183·0	7·92	5 999·3	94·5	
		40·0	280·4	357·15	49·6	26·50	189 062·9	23 552·0	8·12	7 134·5	112·4	
ISMB 500	250·0	10·0	126·2	160·74	22·4	26·00	77 735·0	3 974·0	4·97	2 989·8	47·1	48·2
		12·0	134·0	170·74	24·4	26·20	84 547·1	4 494·8	5·13	3 227·0	50·8	
		16·0	149·7	190·74	28·4	26·60	98 486·6	5 536·5	5·39	3 702·5	58·3	
		20·0	165·4	210·74	32·4	27·00	112 851·6	6 578·1	5·59	4 179·7	65·8	
		25·0	185·1	235·74	37·4	27·50	131 416·2	7 880·2	5·78	4 778·8	75·3	
		32·0	212·5	270·74	44·4	28·20	158 564·4	9 703·1	5·99	5 622·9	88·6	
		40·0	243·9	310·74	52·4	29·00	191 285·0	11 786·5	6·16	6 596·0	103·9	
ISWB 500	400·0	10·0	158·0	201·22	19·2	26·00	104 317·6	13 654·5	8·24	4 012·2	47·4	46·8
		12·0	170·5	217·22	21·2	26·20	115 217·0	15 787·8	8·53	4 397·6	50·4	
		16·0	195·6	249·22	25·2	26·60	137 520·1	20 054·5	8·97	5 169·9	56·2	
		20·0	220·8	281·22	29·2	27·00	160 504·2	24 321·1	9·30	5 944·6	62·1	
		25·0	252·2	321·22	34·2	27·50	190 207·6	29 654·5	9·61	6 916·6	69·5	
		32·0	296·1	377·22	41·2	28·20	233 644·7	37 121·1	9·82	8 285·3	79·9	
		40·0	346·4	441·22	49·2	29·00	285 997·6	45 654·5	10·17	9 862·0	92·0	

(*Continued*)

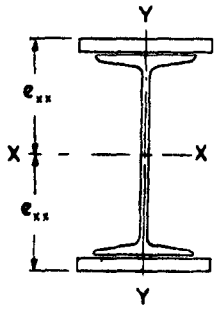


TABLE XIV SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS GIRDERS — (*Continued*)

Composed of			Weight per Metre	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											
Designation	Width	Thickness	w	a		e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
	mm	mm	kg	cm^2	mm	cm	cm^4	cm^4	cm	cm^3	kg-m × 10^3	kg × 10^3
ISMB 550	250·0	10·0	143·0	182·11	24·7	28·50	104 097·8	4 438·0	4·94	3 652·6	57·5	58·2
		12·0	150·8	192·11	26·7	28·70	112 277·4	4 958·8	5·08	3 912·1	61·6	
		16·0	166·5	212·11	30·7	29·10	128 981·9	6 000·5	5·32	4 432·4	69·8	
		20·0	182·2	232·11	34·7	29·50	146 151·9	7 042·1	5·51	4 954·3	78·0	
		25·0	201·8	257·11	39·7	30·00	168 279·0	8 344·2	5·70	5 609·3	88·3	
		32·0	229·3	292·11	46·7	30·70	200 519·7	10 167·1	5·90	6 531·6	102·9	
		40·0	260·7	332·11	54·7	31·50	239 210·3	12 250·5	6·07	7 594·0	119·6	
ISWB 550	400·0	10·0	175·3	223·34	21·0	28·50	137 632·8	14 407·3	8·03	4 829·2	76·1	54·6
		12·0	187·9	239·34	23·0	28·70	150 720·2	16 540·6	8·31	5 251·6	82·7	
		16·0	213·0	271·34	27·0	29·10	177 447·3	20 807·3	8·76	6 097·8	96·0	
		20·0	238·1	303·34	31·0	29·50	204 919·4	25 073·9	9·09	6 946·4	109·4	
		25·0	269·5	343·34	36·0	30·00	240 322·8	30 407·3	9·41	8 010·8	126·2	
		32·0	313·5	399·34	43·0	30·70	291 907·9	37 873·9	9·74	9 508·4	149·8	
		40·0	363·7	463·34	51·0	31·50	353 812·8	46 407·3	10·06	11 232·2	176·9	
ISMB 600	320·0	10·0	172·9	220·21	23·6	31·00	151 354·3	8 112·3	6·07	4 882·4	76·9	68·0
		12·0	182·9	233·01	25·6	31·20	163 734·7	9 204·6	6·29	5 247·9	82·7	
		16·0	203·0	258·61	29·6	31·60	188 975·6	11 389·1	6·64	5 980·2	94·2	
		20·0	223·1	284·21	33·6	32·00	214 863·7	13 573·7	6·91	6 714·5	105·8	
		25·0	248·2	316·21	38·6	32·50	248 146·3	16 304·3	7·18	7 635·3	120·3	
		32·0	283·4	361·01	45·6	33·20	296 492·9	20 127·3	7·47	8 930·5	140·7	
		40·0	323·6	412·21	53·6	34·00	354 298·3	24 496·3	7·71	10 420·5	164·1	
ISWB 600	400·0	10·0	196·5	250·38	23·3	31·00	180 625·2	15 369·2	7·83	5 826·6	91·8	63·5
		12·0	209·1	266·38	25·3	31·20	196 100·6	17 502·5	8·11	6 285·3	99·0	
		16·0	234·2	298·38	29·3	31·60	227 651·7	21 769·2	8·54	7 204·2	113·5	
		20·0	259·3	330·38	33·3	32·00	260 011·8	26 035·8	8·88	8 125·4	128·0	
		25·0	290·7	370·38	38·3	32·50	301 615·2	31 369·2	9·20	9 280·5	146·2	
		32·0	334·7	426·38	45·3	33·20	362 048·3	38 835·8	9·54	10 905·1	171·8	
		40·0	384·9	490·38	53·3	34·00	434 305·2	47 369·2	9·83	12 773·7	201·2	
ISWB 600	400·0	10·0	207·9	264·86	24·8	31·00	190 053·3	15 965·0	7·76	6 130·8	96·6	66·9
		12·0	220·5	280·86	26·8	31·20	205 528·7	18 098·3	8·03	6 587·5	103·8	
		16·0	245·6	312·86	30·8	41·60	237 079·8	22 365·0	8·45	7 502·5	118·2	
		20·0	270·7	344·86	34·8	32·00	269 439·9	26 631·6	8·79	8 420·0	132·6	
		25·0	302·1	384·86	39·8	32·50	311 043·3	31 965·0	9·11	9 570·6	150·7	
		32·0	346·1	440·86	46·8	33·20	371 476·4	39 431·6	9·46	11 189·0	176·2	
		40·0	396·3	504·86	54·8	34·00	443 733·3	47 965·0	9·75	13 051·0	205·6	

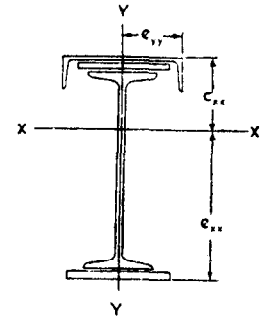
Note 1 — The properties given in this Table are based on the gross area of the section.

Note 2 — The mean thickness of flange is computed according to Note 2 in Table II of IS : 800-1956.

Note 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.

Note 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 XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS



Composed of								Weight per Metre	Sectional Area	Centre of Gravity C_{xx}	Mean Thickness of Flanges	
Joist		Top Flange				Bottom Flange						
Designation	w	Channel		Plate		Plate						
		Designation	w	Width	Thickness	Width	Thickness				Top	Bottom
	kg		kg	mm	mm	mm	mm	kg	cm^2	cm	mm	mm
ISMB 600	122·6	ISMC 400	49·4	320	10·0	320	20·0	247·4	315·14	29·18	27·5	33·6
					12·0		25·0	265·0	337·54	30·46	29·1	38·6
					16·0		32·0	292·6	372·74	31·84	32·3	45·6
					20·0		40·0	322·7	411·14	33·34	35·5	53·6
		ISMC 350	42·1	250	10·0	320	20·0	234·6	298·87	30·62	27·7	33·6
					12·0		25·0	251·1	319·87	32·00	29·2	38·6
					16·0		32·0	276·5	352·27	33·53	32·0	45·6
					20·0		40·0	304·5	387·87	35·17	34·9	53·6
		ISMC 400	49·4	—		320	10·0	197·1	251·14	27·62	19·5	23·6
				—			12·0	202·2	257·54	28·47		25·6
				—			16·0	212·2	270·34	30·07		29·6
				—			20·0	222·3	283·14	31·55		33·6
		ISMC 350	42·1	—		320	10·0	189·9	241·87	28·55	20·6	23·6
				—			12·0	194·9	248·27	29·41		25·6
				—			16·0	204·9	261·07	31·02		29·6
				—			20·0	215·0	273·87	32·50		33·6
		ISMC 300	35·8	—		250	10·0	178·1	226·85	28·41	22·2	27·5
				—			12·0	182·0	231·85	29·13		29·5
				—			16·0	189·9	241·85	30·49		33·5
				—			20·0	197·7	251·85	31·77		37·5
ISWB 600	133·7	ISMC 400	49·4	320	10·0	320	20·0	258·5	329·31	29·30	29·9	36·6
					12·0		25·0	276·1	351·71	30·52	31·5	41·6
					16·0		32·0	303·7	386·91	31·86	34·7	48·6
					20·0		40·0	333·9	425·31	33·32	37·9	56·6
		ISMC 350	42·1	250	10·0	320	20·0	245·7	313·04	30·68	30·5	36·6
					12·0		25·0	262·2	334·04	32·00	31·9	41·6
					16·0		32·0	287·7	366·44	33·49	34·7	48·6
					20·0		40·0	315·6	402·04	35·09	37·6	56·6
		ISMC 400	49·4	—		320	10·0	208·3	265·31	27·79	21·9	26·6
				—			12·0	213·3	271·71	28·60		28·6
				—			16·0	223·3	284·51	30·11		32·6
		ISMC 350	42·1	—		320	10·0	201·0	256·04	28·68	23·3	26·6
				—			12·0	206·0	262·44	29·49		28·6
				—			16·0	216·1	275·24	31·01		32·6

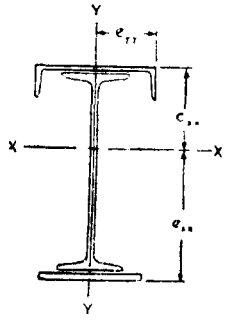


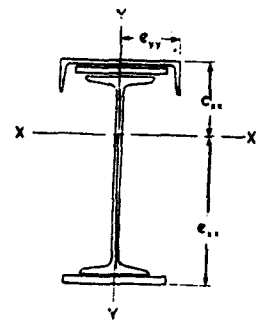
TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

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} Whole Section	I_{yy} Top Flange Only	r_{yy}	Z_{xx} Z_c	Z_{xx} Z_t	M	S
cm	cm	cm⁴	cm⁴	cm⁴	cm	cm³	cm³	kg-m × 10³	kg × 10³
34·68	20·00	235 892·2	25 925·8	19 138·6	9·07	8 084·1	6 801·9	107·1	68·0
34·10		260 866·4	27 837·3	19 684·9	9·08	8 564·4	7 649·9	120·5	
33·82		299 883·3	30 841·0	20 777·3	9·10	9 418·8	8 866·7	139·7	
33·52		343 302·5	34 177·8	21 869·7	9·11	10 297·7	10 241·0	161·3	
33·19	17·50	222 893·7	19 422·4	12 635·4	8·06	7 278·4	6 716·5	105·8	
32·51		245 424·1	21 048·2	12 896·0	8·11	7 670·7	7 548·1	118·9	
32·08		280 290·7	23 480·5	13 417·0	8·16	8 358·6	8 738·1	137·6	
31·64		318 880·7	26 185·8	13 938·0	8·22	9 066·2	10 079·2	158·7	
34·24	20·00	170 351·8	20 464·5	16 407·8	9·03	6 167·7	4 975·2	78·4	
33·59		177 711·4	21 010·6	16 408·0	9·03	6 241·4	5 291·1	83·3	
32·39		191 631·5	22 102·9	16 408·2	9·04	6 372·2	5 916·9	93·2	
31·31		204 609·7	23 195·1	16 408·4	9·05	6 486·1	6 534·2	102·9	
33·26	17·50	163 968·8	15 389·7	11 333·2	7·98	5 743·0	4 930·1	77·6	
32·60		170 907·2	15 935·8	11 333·3	8·01	5 811·0	5 242·7	82·6	
31·39		184 002·1	17 028·1	11 333·5	8·08	5 931·9	5 861·7	92·3	
30·31		196 179·3	18 120·3	11 333·7	8·13	6 037·1	6 471·5	101·9	
33·35	15·00	150 938·0	10 315·7	7 687·8	6·74	5 313·3	4 525·5	71·3	
32·83		156 412·7	10 576·1	7 687·9	6·75	5 369·7	4 764·2	75·0	
31·87		166 872·3	11 096·9	7 688·1	6·77	5 472·2	5 236·8	82·5	
30·99		176 746·1	11 617·8	7 688·2	6·79	5 563·7	5 702·9	89·8	
34·56	20·00	250 375·1	27 977·3	20 164·4	9·22	7 546·7	7 243·6	114·1	63·5
34·04		275 280·7	29 888·8	20 710·7	9·22	9 018·8	8 088·1	127·4	
33·80		314 274·1	30 892·5	21 803·0	9·22	9 863·7	9 298·5	146·5	
33·54		357 691·1	36 169·5	22 895·4	9·22	10 734·4	10 665·2	168·0	
33·13	17·50	237 298·3	21 473·9	13 661·2	8·28	7 735·2	7 162·1	112·8	
32·51		259 809·6	23 099·7	13 921·7	8·32	8 120·1	7 990·7	125·9	
32·12		294 693·4	25 532·0	14 442·7	8·35	8 799·5	9 174·7	144·5	
31·72		333 342·5	28 237·3	14 963·7	8·38	9 499·9	10 508·6	165·5	
34·07	20·00	184 878·1	22 516·0	17 433·7	9·21	6 652·0	5 426·9	85·5	
33·46		192 173·4	23 062·1	17 433·8	9·21	6 719·9	5 743·0	90·5	
32·35		206 025·4	24 154·4	17 434·0	9·21	6 841·9	6 369·1	100·3	
33·13	17·50	178 422·6	17 441·2	12 359·0	8·25	6 222·0	5 384·9	84·8	
32·52		185 319·0	17 987·3	12 359·1	8·28	6 284·8	5 698·0	89·7	
31·40		198 388·2	19 079·6	12 359·3	8·33	6 397·9	6 317·8	99·5	

(Continued)

TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

(Continued)



Composed of								Weight per Metre	Sectional Area	Centre of Gravity C_{xx}	Mean Thickness of Flanges	
Joist		Top Flange				Bottom Flange						
Designation	w	Channel		Plate		Plate					Top	Bottom
		Designation	w	Width	Thickness	Width	Thickness					
	kg		kg	mm	mm	mm	mm	kg	cm^2	cm	mm	mm
ISWB 600	145·1	**ISMC 400**	49·4	320 ×	10·0	320 ×	20·0	269·9	343·79	29·40	31·4	38·4
					12·0		25·0	287·5	366·19	30·58	33·0	43·4
					16·0		32·0	315·1	401·39	31·88	36·2	50·4
					20·0		40·0	345·2	439·79	33·31	39·4	58·4
		ISMC 350	42·1	250 ×	10·0	320 ×	20·0	257·1	327·52	30·73	32·1	38·4
					12·0		25·0	273·6	348·52	32·00	33·5	43·4
					16·0		32·0	299·0	380·92	33·45	36·4	50·4
					20·0		40·0	327·0	416·52	35·01	39·2	58·4
		ISMC 400	49·4	—		320 ×	10·0	219·6	279·79	27·95	23·4	28·4
				—			12·0	224·7	286·19	28·71		30·4
				—			16·0	234·7	298·99	30·15		34·4
		ISMC 350	42·1	—		320 ×	10·0	212·4	270·52	28·79	25·0	28·4
				—			12·0	217·4	276·92	29·56		30·4
				—			16·0	227·4	289·72	31·00		34·4
ISMB 550	103·7	**ISMC 350**	42·1	250 ×	10·0	320 ×	20·0	215·7	274·77	28·15	25·7	31·5
					12·0		25·0	232·2	295·77	29·52	27·1	36·5
					16·0		32·0	257·6	328·17	31·05	30·0	43·5
					20·0		40·0	285·6	363·77	32·66	32·9	51·5
		ISMC 350	42·1	—		320 ×	10·0	170·9	217·77	26·05	18·6	21·5
				—			12·0	176·0	224·17	26·93		23·5
				—			16·0	186·0	236 97	28·57		27·5
		ISMC 300	35·8	—		250 ×	10·0	159·2	202·75	25·88	19·8	24·7
				—			12·0	163·1	207·75	26·63		26·7
				—			16·0	170·9	217·75	28·03		30·7
		ISMC 250	30·4	—		250 ×	10·0	153·7	195·78	26·67	21·8	24·7
				—			12·0	157·6	200·78	27·42		26·7
				—			16·0	165·5	210·78	28·83		30·7

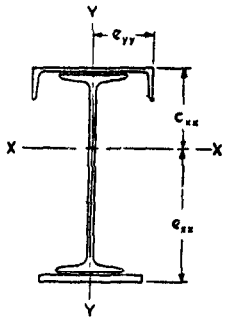


TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

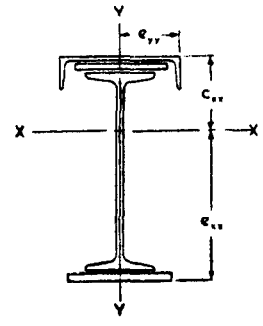
(Continued)

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}			
			Whole Section	Top Flange Only		Z_c	Z_t	M	S
cm	cm	cm^4	cm^4	cm^4	cm	cm^3	cm^3	kg-m × 10^3	kg × 10^3
34·46	20·00	259 894·4	28 573·1	20 462·3	9·12	8 839·0	7 542·6	118·8	66·9
33·98		284 747·6	30 484·6	21 008·5	9·12	9 310·2	8 381·0	132·0	
33·78		323 707·2	33 488·3	22 100·9	9·13	10 152·9	9 583·7	150·9	
33·55		367 122·2	36 765·1	23 193·3	9·14	11 022·5	10 941·4	172·3	
33·08	17·50	246 744·1	22 069·7	13 959·1	8·21	8 030·0	7 458·5	117·5	
32·51		269 237·7	23 695·5	14 219·6	8·25	8 414·6	8 280·8	130·4	
32·16		304 137·8	26 127·8	14 740·6	8·28	9 092·7	9 456·6	148·9	
31·80		342 843·2	28 833·1	15 261·6	8·32	9 792·7	10 781·2	169·8	
33·91	20·00	194 435·4	23 111·8	17 731·6	9·09	6 956·1	5 734·1	90·3	
33·35		201 671·9	23 657·9	17 731·7	9·09	7 023·9	6 047·5	95·2	
32·31		215 461·2	24 750·2	17 731·9	9·10	7 146·7	6 668·2	105·0	
33·02	17·50	187 913·1	18 037·0	12 656·9	8·17	6 526·9	5 691·0	89·6	
32·45		194 771·1	18 583·1	12 657·0	8·19	6 589·9	6 001·4	94·5	
31·41		207 816·8	19 675·4	12 657·2	8·24	6 704·1	6 615·9	104·2	
30·66	17·50	175 306·3	18 605·2	12 226·8	8·23	6 226·9	5 718·3	90·1	58·2
29·98		194 503·9	20 231·0	12 487·4	8·27	6 587·8	6 486·7	102·2	
29·56		224 235·2	22 663·3	13 008·4	8·31	7 222·0	7 585·5	119·5	
29·15		257 183·8	25 368·6	13 529·3	8·35	7 874·2	8 823·3	139·0	
30·76	17·50	125 214·8	14 572·5	10 924·6	8·18	4 806·7	4 070·7	64·1	
30·08		131 135·8	15 118·6	10 924·7	8·21	4 869·3	4 359·7	68·7	
28·84		142 237·4	16 210·9	10 924·9	8·27	4 979·2	4 931·4	77·7	
30·88	15·00	114 276·0	9 498·5	7 279·2	6·84	4 415·2	3 700·9	58·3	
30·33		118 958·7	9 758·7	7 279·3	6·85	4 467·4	3 921·9	61·8	
29·33		127 852·8	10 279·7	7 279·5	6·87	4 561·3	4 359·1	68·7	
30·04	12·50	110 209·4	6 952·7	4 733·5	5·96	4 132·7	3 668·5	57·8	
29·49		114 639·0	17 213·1	4 733·6	5·99	4 181·1	3 887·2	61·2	
28·48		123 036·8	7 733·9	4 733·8	6·06	4 268·1	4 319·7	68·0	

(Continued)

TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

(Continued)



Composed of								Weight per Metre	Sectional Area	Centre of Gravity C_{xx}	Mean Thickness of Flanges	
Joist		Top Flange				Bottom Flange						
Designation	w	Channel		Plate		Plate						
		Designation	w	Width	Thickness	Width	Thickness				Top	Bottom
	kg		kg	mm	mm	mm	mm	kg	cm^2	cm	mm	mm
ISWB 550	112·5	ISMC 400	49·4	320 ×	10·0	320 ×	20·0	237·3	302·27	26·82	27·6	33·8
					12·0		25·0	254·9	324·67	28·06	29·2	38·8
					16·0		32·0	282·5	359·87	29·40	32·4	45·8
					20·0		40·0	312·6	398·27	30·85	35·6	53·8
		ISMC 350	42·1	250 ×	10·0	320 ×	20·0	224·5	286·00	28·20	27·8	33·8
					12·0		25·0	241·0	307·00	29·52	29·2	38·8
					16·0		32·0	266·4	339·40	31·01	32·1	45·8
					20·0		40·0	294·4	375·00	32·59	35·0	53·8
		ISMC 400	49·4	—		320 ×	10·0	187·0	238·27	25·27	19·6	23·8
				—			12·0	192·1	244·67	26·10		25·8
				—			16·0	202·1	257·47	27·65		29·8
		ISMC 350	42·1	—		320 ×	10·0	179·8	229·00	26·16	20·7	23·8
				—			12·0	184·8	235·40	27·00		25·8
				—			16·0	194·8	248·20	28·55		29·8
ISMB 500	86·9	ISMC 350	42·1	250 ×	10·0	320 ×	20·0	198·9	253·40	25·70	24·1	29·7
					12·0		25·0	215·4	274·40	27·06	25·5	34·7
					16·0		32·0	240·8	306·80	28·56	28·4	41·7
					20·0		40·0	268·8	342·40	30·13	31·2	49·7
		ISMC 350	42·1	—		320 ×	10·0	154·2	196·40	23·58	17·0	19·7
				—			12·0	159·2	202·80	24·47		21·7
				—			16·0	169·2	215·60	26·12		25·7
		ISMC 300	35·8	—		250 ×	10·0	142·4	181·38	23·39	17·9	22·4
				—			12·0	146·3	186·38	24·15		24·4
				—			16·0	154·2	196·38	25·58		28·4
		ISMC 250	30·4	—		250 ×	10·0	136·9	174·41	24·17	19·5	22·4
				—			12·0	140·8	179·41	24·94		24·4
				—			16·0	148·7	189·41	26·38		28·4

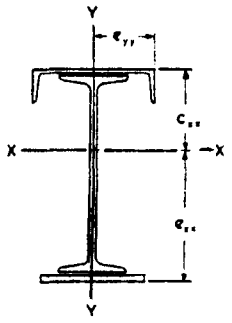


TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

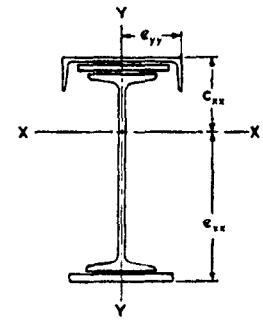
(Continued)

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}		M	S
			Whole Section	Top Flange Only		Z_c	Z_t		
cm	cm	cm^4	cm^4	cm^4	cm	cm^3	cm^3	kg-m × 10^3	kg × 10^3
32·04	20·00	196 231·3	27 015·4	19 683·5	9·45	7 316·2	6 124·8	96·5	54·6
31·50		217 525·8	28 926·9	20 229 8	9·44	7 752·1	6 905·6	108·8	
31·26		250 843·9	31 930·6	21 322·1	9·42	8 532·7	8 023·9	126·4	
31·01		288 010·6	35 207·4	22 414·5	9·40	9 336·9	9 286·6	146·3	
30·61	17·50	185 333·2	20 512·0	13 180·3	8·47	6 572·4	6 054·4	95·4	
29·99		204 516·4	22 137·8	13 440·8	8·49	6 927·0	6 820·5	107·4	
29·60		234 261·8	24 570·1	13 961·7	8·51	7 554·1	7 914·6	124·7	
29·22		267 256·6	27 275·4	14 482·7	8·53	8 200·2	9 146·8	144·1	
31·59	20·00	140 570·2	21 554·1	16 952·8	9·51	5 562·9	4 449·7	70·1	
30·96		146 829·6	22 100·2	16 952·9	9·50	5 626·0	4 742·3	74·7	
29·81		158 641·3	23 192·5	16 953·0	9·49	5 738·0	5 321·3	83·8	
30·65	17·50	135 281·9	16 479·3	11 878·1	8·48	5 171·2	4 413·9	69·5	
30·01		141 168·7	17 025·4	11 878·2	8·50	5 229·1	4 703·5	74·1	
28·86		152 250·6	18 117·7	11 878·3	8·54	5 331·9	5 276·4	83·	
28·11	17·50	136 749·0	18 141·2	11 994·9	8·46	5 320·9	4 864·8	76·6	48·2
27·45		152 873·0	19 767·0	12 255·4	8·49	5 649·5	5 569·0	87·7	
27·05		177 877·9	22 199·3	12 776·3	8·51	6 228·8	6 575·2	103·6	
26·68		205 641·6	24 904·6	13 297·3	8·53	6 825·0	7 707·9	121·4	
28·23	17·50	94 789·4	14 108·5	10 692·7	8·48	4 020·0	3 357·7	52·9	
27·54		99 764·0	14 654·6	10 692·8	8·50	4 076·4	3 623·0	57·1	
26·29		109 026·6	15 746·9	10 692·9	8·55	4 174·0	4 147·1	65·3	
28·37	15·00	85 756·4	9 034·5	7 047·3	7·06	3 666·9	3 022·4	47·6	
27·81		89 701·3	9 294·9	7 047·4	7·06	3 714·3	3 225·6	50·8	
26·78		97 147·3	9 815·7	7 047·5	7·07	3 798·3	3 627·2	57·1	
27·54	12·50	82 476·9	6 488·7	4 501·6	6·10	3 411·7	2 995·3	47·2	
26·97		86 189·0	6 749·1	4 501·6	6·13	3 455·2	3 196·3	50·3	
25·93		93 179·0	7 269·9	4 501·8	6·20	3 532 3	3 593·4	56·6	

(Continued)

TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

(Continued)



Composed of								Weight per Metre	Sectional Area	Centre of Gravity C_{xx}	Mean Thickness of Flanges	
Joist		Top Flange				Bottom Flange						
		Channel		Plate		Plate						
Designation	w	Designation	w	Width	Thickness	Width	Thickness				Top	Bottom
	kg		kg	mm	mm	mm	mm	kg	cm^2	cm	mm	mm
ISWB 500	95·2	ISMC 400	49·4	320 ×	10·0	320 ×	20·0	219·9	280·15	24·40	25·8	31·5
					12·0		25·0	237·5	302·55	25·63	27·4	36·5
					16·0		32·0	265·1	337·75	26·95	30·6	43·5
					20·0		40·0	295·3	376·15	28·37	33·8	51·5
		ISMC 350	42·1	250 ×	10·0	320 ×	20·0	207·1	263·88	25·74	25·7	31·5
					12·0		25·0	223·6	284·88	27·06	27·2	36·5
					16·0		32·0	249·1	317·28	28·52	30·0	43·5
					20·0		40·0	277·0	352·88	30·06	32·9	51·5
		ISMC 400	49·4	—		320 ×	10·0	169·7	216·15	22·81	17·8	21·5
				—			12·0	174·7	222·55	23·65		23·5
				—			16·0	184·7	235·35	25·21		27·5
		ISMC 350	42·1	—		320 ×	10·0	162·4	206·88	23·69	21·5	21·5
				—			12·0	167·4	213·28	24·54	18·6	23·5
				—			16·0	177·5	226·08	26·11	27·5	27·5
ISMB 450	72·4	ISMC 300	35·8	—		250 ×	10·0	127·9	162·91	20·93	16·3	20·4
				—			12·0	131·8	167·91	21·71		22·4
				—			16·0	139·7	177·91	23·14		26·4
		ISMC 250	30·4	—		250 ×	10·0	122·4	155·94	21·71	17·5	20·4
				—			12·0	126·3	160·94	22·49		22·4
				—			16·0	134·2	170·94	23·93		26·4
		ISMC 225	25·9	—		200 ×	10·0	114·0	145·28	21·57	18·0	23·0
				—			12·0	117·2	149·28	22·25		25·0
				—			16·0	123·5	157·28	23·51		29·0

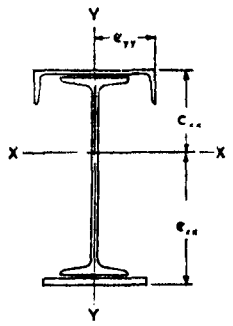


TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

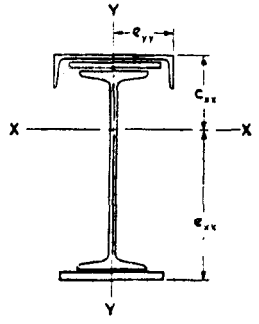
(Continued)

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} Whole Section	I_{yy} Top Flange Only	r_{yy}	Z_{xx} Z_c	Z_{xx} Z_t	M	S
cm	cm	cm^4	cm^4	cm^4	cm	cm^3	cm^3	kg-m × 10^3	kg × 10^3
29·46	20·00	152 781·2	26 262·6	19 307·2	9·68	6 262·3	5 185·5	81·7	46·8
28·93		170 717·9	28 174·1	19 853·4	9·65	6 661·7	5 900·4	92·9	
28·71		198 797·6	31 177·8	20 945·7	9·61	7 377·1	6 923·9	109·1	
28·49		230 194·5	34 454·6	22 038·1	9·57	8 114·6	8 079·2	127·2	
28·07	17·50	143 834·0	19 759·2	12 803·9	8·65	5 587·0	5 124·9	80·7	
27·45		159 945·7	21 385·0	13 064·4	8·66	5 911·3	5 826·3	91·8	
27·09		184 963·8	23 817·3	13 585·3	8·66	6 485·6	6 827·6	107·5	
26·75		212 768·9	26 522·6	14 106·2	8·67	7 077·7	7 954·5	125·3	
29·05	20·00	106 172·6	20 801·3	16 576·5	9·81	4 654·5	3 654·9	57·6	
28·41		111 454·1	21 347·4	16 576·5	9·79	4 712·8	3 922·9	61·8	
27·25		121 362·3	22 439·7	16 576·6	9·76	4 815·0	4 452·9	70·1	
28·12	17·50	101 911·5	15 726·5	11 501·7	8·72	4 301·4	3 624·5	57·1	
27·47		106 854·4	16 272·6	11 501·8	8·73	4 354·4	3 889·8	61·3	
26·30		116 100·2	17 364·9	11 501·9	8·76	4 447·3	4 413·8	69·5	
25·83	15·00	62 983·5	8 498·7	6 779·4	7·22	3 008·6	2 438·8	38·4	40·0
25·25		66 244·2	8 759·1	6 779·5	7·22	3 051·8	2 623·1	41·3	
24·22		72 359·1	9 279·9	6 779·6	7·22	3 127·4	2 987·2	47·0	
25·00	12·50	60 394·7	5 952·9	4 233·7	6·18	2 781·6	2 416·0	38·1	
24·42		63 446·4	6 213·3	4 233·8	6·21	2 820·9	2 598·3	40·9	
23·38		69 152·5	6 734·1	4 233·8	6·28	2 889·5	2 958·0	46·6	
25·07	11·25	55 138·5	4 195·3	3 111·5	5·37	2 556·1	2 199·5	34·6	
24·59		57 604·5	4 328·6	3 111·5	5·38	2 589·5	2 342·2	36·9	
23·73		62 272·6	4 595·3	3 111·6	5·41	2 649·1	2 623·8	41·3	

(Continued)

TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

(Continued)



Composed of								Weight per Metre	Sectional Area	Centre of Gravity C_{xx}	Mean Thickness of Flanges	
Joist		Top Flange				Bottom Flange						
Designation	w	Channel		Plate		Plate					Top	Bottom
		Designation	w	Width	Thickness	Width	Thickness					
	kg		kg	mm	mm	mm	mm	kg	cm^2	cm	mm	mm
ISWB 450	79·4	**ISMC 350**	42·1	250 ×	10·0	320 ×	20·0	191·4	243·81	23·31	24·0	29·6
					12·0		25·0	207·9	264·81	24·60	25·5	34·6
					16·0		32·0	233·3	297·21	26·02	28·3	41·6
					20·0		40·0	261·3	332·81	27·51	31·2	49·6
		ISMC 350	42·1	—		320 ×	10·0	146·6	186·81	21·26	16·9	19·6
				—			12·0	151·7	193·21	22·10		21·6
				—			16·0	161·7	206·01	23·66		25·6
		ISMC 300	35·8	—		250 ×	10·0	134·9	171·79	21·05	17·9	22·3
				—			12·0	138·8	176·79	21·78		24·3
				—			16·0	146·6	186·79	23·14		28·3
ISMB 400	61·6	**ISMC 300**	35·8	—		250 ×	10·0	117·0	149·10	18·56	15·1	19·0
				—			12 0	121·0	154·10	19·32		21·0
				—			16·0	128·8	164·10	20·71		25·0
		ISMC 250	30·4	—		250 ×	10·0	111·6	142·13	19·31	16·1	19·0
				—			12·0	115·5	147·13	20·07		21·0
				—			16·0	123·3	157·13	21·47		25·0
		ISMC 225	25·9	—		200 ×	10·0	103·2	131·47	19·15	16·4	21·2
				—			12·0	106·3	135·47	19·82		23·2
				—			16·0	112·6	143·47	21·06		27·2
		ISMC 200	22·1	—		200 ×	10·0	99·4	126·67	19·74	17·3	21·2
				—			12·0	102·6	130·67	20·41		23·2
				—			16·0	108·9	138·67	21·66		27·2
ISWB 400	66·7	**ISMC 350**	42·1	250 ×	10·0	320 ×	20·0	178·7	227·67	20·90	22·7	28·1
					12·0		25·0	195·2	248·67	22·14	24·1	33·1
					16·0		32·0	220·6	281·07	23·51	27·0	40·1
					20·0		40·0	248·6	316·67	24·94	29·8	48·1
		ISMC 350	42·1	—		320 ×	10·0	134·0	170·67	18·88	15·5	18·1
				—			12·0	139·0	177·07	19·71		20·1
				—			16·0	149·0	189·87	21·23		24·1
		ISMC 300	35·8	—		250 ×	10·0	122·2	155·65	18·66	16·3	20·4
				—			12·0	126·1	160·65	19·38		22·4
				—			16·0	134·0	170·65	20·71		26·4

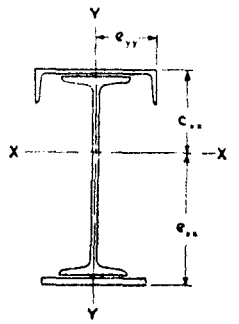


TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

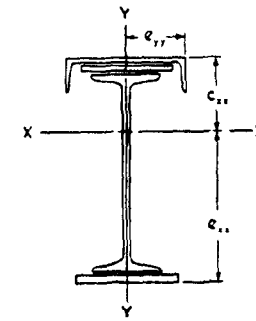
(Continued)

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}			
			Whole Section	Top Flange Only		Z_c	Z_t	M	S
cm	cm	cm^4	cm^4	cm^4	cm	cm^3	cm^3	$kg\text{-}m \times 10^3$	$kg\text{-} \times 10^3$
25·50	17·50	109 500·7	18 478·1	12 163·4	8·71	4 698·2	4 293·6	67·6	39·1
24·91		122 801·8	20 103·9	12 423·9	8·71	4 992·8	4 929·0	77·6	
24·59		143 501·0	22 536·2	12 944·8	8·71	5 514·9	5 835·9	91·9	
24·30		166 568·3	25 241·5	13 465 7	8·71	6 053·8	6 856·0	108·0	
25·55	17 50	75 002·0	14 445·4	10 861·2	8·79	3 528·7	2 934·9	46·2	
24·91		79 074·8	14 991·5	10 861·3	8·81	3 577·3	3 175·0	50·0	
23·75		86 641·2	16 083·8	10 861·4	8·84	3 661·2	3 648·8	57 5	
25·71	15·00	67 695·9	9 371·4	7 215·8	7·39	3 215·3	2 633·5	41 5	
25·18		70 931·4	9 631·8	7 215 9	7·38	3 256·1	2 817·5	44 4	
24·22		77 026·0	10 152 6	7 215 9	7·37	3 328·3	3 180·6	50·1	
23·20	15·00	46 011·0	8 086·8	6 573·5	7·36	2 478·4	1 983·7	31·2	33·6
22·64		48 636·3	8 347·2	6 573·6	7·36	2 517 3	2 148·3	33·8	
21·65		53 534·8	8 868·0	6 573·6	7·35	2 584·7	2 473·0	39·0	
22·40	12·50	44 012·4	5 541·0	4 027·8	6·24	2 279·6	1 964·6	30·9	
21·84		46 458·3	5 801·4	4 027·8	6·28	2 314·6	2 127·4	33·5	
20·84		51 006·2	6 322·2	4 027·9	6·34	2 375·2	2 448·0	38·6	
22·49	11·25	39 864·9	3 783·4	2 905·6	5·36	2 081·3	1 772·9	27·9	
22·02		41 845·3	3 916·7	2 905·6	5·38	2 111·2	1 900·4	29·9	
21·18		25 574·7	4 183·4	2 905·7	5·40	2 164·1	2 151·7	33·9	
21·87	10·00	38 502·0	2 908·1	2 030·3	4·79	1 950·4	1 760·5	27·7	
21·40		40 373·6	3 041·4	2 030·3	4·82	1 977·9	1 886·8	29·7	
20·55		43 890·0	3 308·1	2 030·4	4·88	2 026·4	2 135·6	33·6	
22·91	17·50	82 554·2	18 159·4	12 004·0	8·93	3 950·5	3 602·9	56·7	32·5
22·37		93 305·3	19 785·2	12 264·5	8·92	4 214·7	4 170·7	65·7	
22·10		110 096·2	22 217·5	12 785·4	8·89	4 683·6	4 981·0	78·5	
21·87		128 882·1	24 922·8	13 306·3	8·87	5 168·7	5 891·8	92·8	
22·93	17·50	54 778·9	14 126·7	10 701·9	9·10	2 901·7	2 388·8	37·6	
22·30		58 051·2	14 672·8	10 701·9	9·10	2 945·2	2 603·3	41·0	
21·18		64 094·3	15 765·1	10 702·0	9·11	3 019·4	3 025·8	47·7	
23·10	15·00	49 009·6	9 052·7	7 056·5	7·63	2 626·8	2 121·4	33·4	
22·58		51 617·6	9 313·1	7 056·5	7·61	2 663·5	2 285·9	36·0	
21·65		56 503·2	9 833·9	7 056·6	7·59	2 727·7	2 610·4	41·1	

(Continued)

TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

(*Continued*)



Composed of								Weight per Metre	Sectional Area	Centre of Gravity C_{xx}	Mean Thickness of Flanges	
Joist		Top Flange				Bottom Flange						
		Channel		Plate		Plate						
Designation	w	Designation	w	Width	Thickness	Width	Thickness				Top	Bottom
	kg		kg	mm	mm	mm	mm	kg	cm^2	cm	mm	mm
ISMB 350	52·4	ISMC 300	35·8	—		250 ×	10·0	107·8	137·35	16·25	14·2	18·0
				—			12·0	111·7	142·35	16·98		20·0
				—			16·0	119·6	152·35	18·30		24·0
		ISMC 250	30·4	—		250 ×	10·0	102·3	130·38	16·94	15·0	18·0
				—			12·0	106·3	135·38	17·68		20·0
				—			16·0	114·1	145·38	19·01		24·0
		ISMC 225	25·9	—		200 ×	10·0	94·0	119·72	16·78	15·2	19·9
				—			12·0	97·1	123·72	17·42		21·9
				—			16·0	103·4	131·72	18·62		25·9
		ISMC 200	22·1	—		200 ×	10·0	90·2	114·92	17·33	16·0	19·9
				—			12·0	93·4	118·92	17·98		21·9
				—			16·0	99·6	126·92	19·18		25·9
ISWB 350	56·9	ISMC 350	42·1	250 ×	10·0	320 ×	20·0	168·9	215·16	18·51	21·8	27·1
					12·0		25·0	185·4	236·16	19·68	23·2	32·1
					16·0		32·0	210·8	268·56	20·98	26·0	39·1
					20·0		40·0	238·8	304·16	22·32	28·9	47·1
		ISMC 350	42·1	—		320 ×	10·0	124·2	158·16	16·57	14·6	17·1
				—			12·0	129·2	164·56	17·36		19·1
				—			16·0	139·2	177·36	18·79		23·1
		ISMC 300	35·8	—		250 ×	10·0	112·4	143·14	16·33	15·2	19·1
				—			12·0	116·3	148·14	17·07		21·1
				—			16·0	124·1	158·14	18·30		25·1

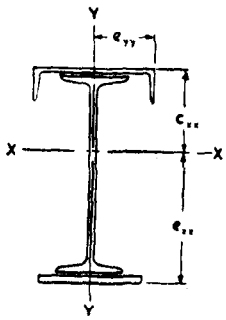


TABLE XV SINGLE JOIST WITH CHANNEL AND PLATES ON THE FLANGES TO BE USED AS GIRDERS

(Continued)

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}			
			Whole Section	Top Flange Only		Z_c	Z_t	M	S
cm	cm	cm^4	cm^4	cm^4	cm	cm^3	cm^3	$kg\text{-}m \times 10^3$	$kg \times 10^3$
20·51	15·00	33 028·1	8 202·4	6 631·4	7·73	2 032·1	1 610·6	25·4	26·8
19·98		35 076·8	8 462·8	6 631·4	7·71	2 066·2	1 755·3	27·6	
19·06		38 883·2	8 983·6	6 631·5	7·68	2 124·6	2 040·2	32·1	
19·77	12·50	31 530·5	5 656·6	4 085·6	6·59	1 861·0	1 595·1	25·1	
19·23		33 431·2	5 917·0	4 085·6	6·61	1 891·3	1 738·2	27·4	
18·30		36 948·2	6 437·8	4 085·7	6·65	1 943·3	2 019·4	31·8	
19·86	11·25	28 360·0	3 899·0	2 963·4	5·71	1 690·2	1 428·0	22·5	
19·42		29 902·1	4 032·3	2 963·4	5·71	1 716·1	1 540·1	24·3	
18·62		32 793·3	4 299·0	2 963·5	5·71	1 761·5	1 760·8	27·7	
19·28	10·00	27 350·1	3 023·7	2 088·1	5·13	1 578·2	1 418·6	22·3	
18·83		28 802·0	3 157·0	2 088·1	5·15	1 601·7	1 529·7	24·1	
18·03		31 516·1	3 423·7	2 088·2	5·19	1 643·1	1 748·1	27·5	
20·30	17·50	61 114·9	17 947·3	11 898·0	9·13	3 301·0	3 011·2	47·4	26·5
19·83		69 579·5	19 573·1	12 158·5	9·10	3 534·9	3 509·5	55·3	
19·63		82 872·0	22 005·4	12 679·3	9·05	3 950·7	4 220·9	66·5	
19·49		97 828·0	24 710·7	13 200·2	9·01	4 382·5	5 020·0	79·1	
20·24	17·50	39 357·4	13 914·6	10 595·9	9·38	2 375·6	1 944·3	30·6	
19·65		41 902·9	14 460·7	10 595·9	9·37	2 413·9	2 132·3	33·6	
18·62		46 583·1	15 553·0	10 596·0	9·36	2 479·0	2 502·0	39·4	
20·43	15·00	34 941·9	8 840·6	6 950·5	7·86	2 139·2	1 710·7	26·9	
19·93		36 977·4	9 101·0	6 950·5	7·84	2 171·7	1 855·1	29·2	
19·06		40 774·6	9 621·8	6 950·6	7·80	2 228·1	2 139·3	33·7	

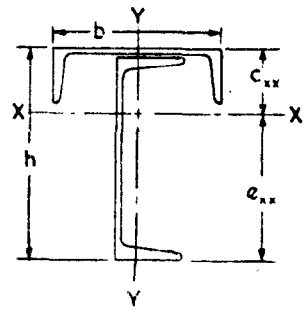
Note 1 — The properties given in this Table are based on the gross area of the section.

Note 2 — The mean thickness of flanges is computed according to Note 2 in Table II of IS : 800-1956.

Note 3 — The maximum allowable moment is computed on the basis of the allowable stress specified in **9.2.1** of IS : 800-1956 and gross modulus of section (Z_t) given in this Table.

Note 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 XVI SINGLE CHANNEL WITH ANOTHER CHANNEL ON THE TOP FLANGE



Nominal Size	Composed of		Weight per Metre	Sectional Area	Mean Thickness of Flanges	
	Vertical Channel	Top Flange Channel			Top	Bottom
$h \times b$					t_c	t_f
mm × mm	Designation	Designation	kg	cm^2	mm	mm
75×75	ISMC 75	ISMC 75	13·6	17·34	8·3	7·3
75×75		ISLC 75	12·5	15·93	7·6	7·3
100×100	ISMC 100	ISMC 100	18·4	23·40	8·4	7·5
100×100		ISLC 100	17·1	21·72	7·8	7·5
125×125	ISMC 125	ISMC 125	25·4	32·38	9·2	8·1
125×125		ISLC 125	23·4	29·86	8·6	8·1
125×100		ISMC 100	21·9	27·89	10·0	8·1
125×100		ISLC 100	20·6	26·21	9·3	8·1
150×150	ISMC 150	ISMC 150	32·8	41·76	9·9	9·0
150×150		ISLC 150	30·8	39·24	9·3	9·0
150×125		ISMC 125	29·1	37·07	10·4	9·0
150×125		ISLC 125	27·1	34·55	9·8	9·0
175×175	ISMC 175	ISMC 175	38·2	48·76	10·1	10·2
175×175		ISLC 175	36·7	46·78	9·5	10·2
175×150		ISMC 150	35·5	45·26	10·5	10·2
175×150		ISLC 150	33·5	42·74	9·9	10·2
175×125		ISMC 125	31·8	40·57	11·1	10·2
175×125		ISLC 125	29·8	38·05	10·5	10·2
200×200	ISMC 200	ISMC 200	44·2	56·42	10·4	11·4
200×200		ISLC 200	42·7	54·43	9·8	11·4
200×175		ISMC 175	41·2	52·59	10·6	11·4
200×175		ISLC 175	39·7	50·61	10·0	11·4
200×150		ISMC 150	38·5	49·09	11·1	11·4
200×150		ISLC 150	36·5	46·57	10·5	11·4
225×225	ISMC 225	ISMC 225	51·8	66·02	10·8	12·4
225×225		ISLC 225	49·9	63·54	10·2	12·4
225×200		ISMC 200	48·0	61·22	11·1	12·4
225×200		ISLC 200	46·5	59·23	10·5	12·4
225×175		ISMC 175	45·0	57·39	11·4	12·4
225×175		ISLC 175	43·5	55·41	10·8	12·4

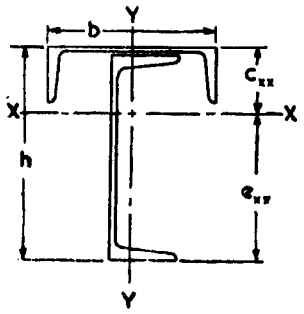


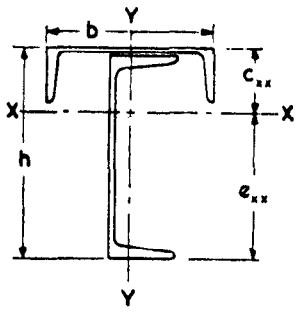
TABLE XVI SINGLE CHANNEL WITH ANOTHER CHANNEL ON THE TOP FLANGE

Extreme Fibre Distances		Gross Moments of Inertia		Radius of Gyration	Moduli of Section Z_{xx}		Maximum Allowable Moment
C_{xx}	e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_c	Z_t	M
cm	cm	cm^4	cm^4	cm	cm^3	cm^3	kg-m × 10^3
2·75	5·19	124·6	88·6	2·26	45·3	24·0	0·4
2·86	5·01	117·8	78·7	2·22	41·2	23·5	0·4
3·50	6·97	303·4	212·6	3·01	86·7	43·5	0·7
3·66	6·74	288·6	190·6	2·96	78·9	42·8	0·6
4·34	8·66	663·6	476·3	3·84	152·7	76·7	1·2
4·56	8·38	633·9	416·7	3·74	139·0	75·7	1·1
4·54	8·43	625·2	246·6	2·97	137·6	74·2	1·1
4·73	8·17	597·8	224·6	2·93	126·5	73·1	1·1
5·13	10·41	1 235·3	881·7	4·59	240·8	118·7	1·8
5·36	10·12	1 189·0	799·5	4·51	221·8	117·5	1·8
5·35	10·15	1 174·2	518·7	3·74	219·3	115·7	1·7
5·61	9·83	1 124·2	459·1	3·65	200·5	114·3	1·7
5·76	12·31	1 962·3	1 344·3	5·25	340·7	159·4	2·4
5·98	12·03	1 899·2	1 269·4	5·21	317·8	157·8	2·4
6·03	12·01	1 887·8	900·4	4·46	313·2	157·2	2·4
6·29	11·69	1 817·9	818·2	4·38	289·1	155·5	2·3
6·33	11·67	1 803·1	537·4	3·64	284·7	154·5	2·3
6·62	11·32	1 728·3	477·8	3·54	261·0	152·7	2·3
6·39	14·22	2 964·4	1 959·7	5·89	463·9	208·5	3·1
6·60	13·95	2 879·9	1 865·9	5·86	436·4	206·4	3·1
6·69	13·88	2 856·5	1 363·7	5·09	427·0	205·8	3·1
6·92	13·59	2 767·0	1 288·8	5·05	399·8	203·6	3·1
7·00	13·54	2 752·2	919·8	4·33	393·1	203·3	3·0
7·29	13·19	2 652·2	837·6	4·24	364·0	201·0	3·0
7·10	16·04	4 399·7	2 881·8	6·61	620·1	274·2	4·1
7·33	15·75	4 296·6	2 735·1	6·56	586·3	272·8	4·1
7·39	15·72	4 263·2	2 006·5	5·72	576·5	271·3	4·1
7·62	15·43	4 146·5	1 912·7	5·68	544·4	268·7	4·1
7·73	15·34	4 113·4	1 410·5	4·96	531·9	268·2	4·0
7·98	15·03	3 990·2	1 335·6	4·91	500·3	265·4	4·0

(Continued)

TABLE XVI SINGLE CHANNEL WITH ANOTHER CHANNEL ON THE TOP FLANGE

(Continued)



Nominal Size	Composed of		Weight per Metre	Sectional Area	Mean Thickness of Flanges	
	Vertical Channel	Top Flange Channel			Top	Bottom
$h \times b$					t_e	t_f
mm × mm	Designation	Designation	kg	cm²	mm	mm
250 × 250	**ISMC 250**	**ISMC 250**	60·8	77·34	11·6	14·1
250 × 250		**ISLC 250**	58·4	74·32	10·6	14·1
250 × 225		**ISMC 225**	56·3	71·68	11·4	14·1
250 × 225		**ISLC 225**	54·4	69·20	10·8	14·1
250 × 200		**ISMC 200**	52·5	66·88	11·7	14·1
250 × 200		**ISLC 200**	51·0	64·89	11·1	14·1
300 × 300	**ISMC 300**	**ISMC 300**	71·6	91·28	11·7	13·6
300 × 300		**ISLC 300**	68·9	87·75	10·8	13·6
300 × 250		**ISMC 250**	66·2	84·31	12·0	13·6
300 × 250		**ISLC 250**	63·8	81·29	11·0	13·6
300 × 225		**ISMC 225**	61·7	78·65	11·8	13·6
300 × 225		**ISLC 225**	59·8	76·17	11·2	13·6
350 × 350	**ISMC 350**	**ISMC 350**	84·2	107·32	12·0	13·5
350 × 350		**ISLC 350**	80·9	103·13	11·3	13·5
350 × 300		**ISMC 300**	77·9	99·30	12·1	13·5
350 × 300		**ISLC 300**	75·2	95·77	11·2	13·5
350 × 250		**ISMC 250**	72·5	92·33	12·5	13·5
350 × 250		**ISLC 250**	70·1	89·31	11·5	13·5
400 × 400	**ISMC 400**	**ISMC 400**	98·8	125·86	12·4	15·3
400 × 400		**ISLC 400**	95·1	121·18*	11·8	15·3
400 × 350		**ISMC 350**	91·5	116·59	12·5	15·3
400 × 350		**ISLC 350**	88·2	112·40	11·8	15·3
400 × 300		**ISMC 300**	85·2	108·57	12·7	15·3
400 × 300		**ISLC 300**	82·5	105·04	11·8	15·3

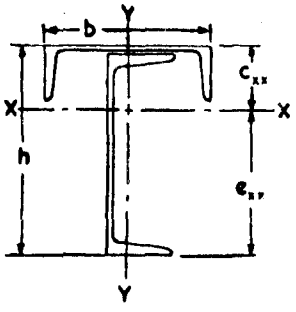


TABLE XVI SINGLE CHANNEL WITH ANOTHER CHANNEL ON THE TOP FLANGE

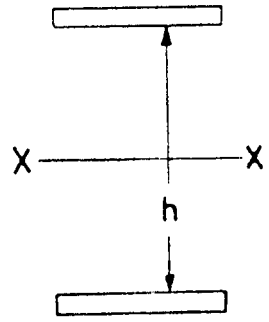
(Continued)

Extreme Fibre Distances		Gross Moments of Inertia		Radius of Gyration	Moduli of Section Z_{xx}		Maximum Allowable Moment
C_{xx}	e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_c	Z_t	M
cm	cm	cm^4	cm^4	cm	cm^3	cm^3	kg-m × 10^3
7·76	17·96	6 337·3	4 035·9	7·22	817·2	353·0	5·3
8·12	17·49	6 125·4	3 906·6	7·25	754·7	350·2	5·3
8·15	17·49	6 096·6	2 913·7	6·38	748·2	348·5	5·2
8·39	17·19	5 950·5	2 767·0	6·32	708·8	346·3	5·2
8·50	17·11	5 909·4	2 038·4	5·52	695·6	345·3	5·2
8·73	16·82	5 752·6	1 944·6	5·47	659·2	341·9	5·1
9·06	21·70	10 771·0	6 673·4	8·55	1 188·8	496·4	7·4
9·37	21·30	10 478·7	6 358·7	8·51	1 117·9	492·0	7·4
9·56	21·15	10 346·1	4 127·6	7·00	1 082·4	489·2	7·3
9·95	20·66	9 997·0	3 998·3	7·01	1 004·9	483·8	7·3
10·04	20·60	9 958·6	3 005·4	6·18	991·8	483·5	7·3
10·32	20·26	9 721·0	2 858·7	6·13	941·8	479·8	7·2
10·38	25·44	17 195·9	10 438·6	9·86	1 657·4	676·1	10·1
10·65	25·09	16 852·7	9 743·2	9·72	1 582·9	671·6	10·1
10·95	24·81	16 553·9	6 793·2	8·28	1 511·5	667·3	10·0
11·30	24·37	16 110·6	6 478·5	8·22	1 425·5	661·1	9·9
11·55	24·16	15 915·9	4 247·4	6·78	1 378·4	658·7	9·9
11·96	23·65	15 392·9	4 118·1	6·79	1 287·1	650·8	9·8
11·64	29·22	26 286·8	15 587·6	11·13	2 258·3	899·6	13·5
11·94	28·86	25 829·2	14 494·3	10·94	2 164·0	894·9	13·4
12·36	28·45	25 287·2	10 512·8	9·50	2 046·7	888·7	13·3
12·67	28·07	24 783·3	9 817·4	9·35	1 955·7	883·0	13·2
13·03	27·73	24 349·9	6 867·4	7·95	1 869·5	878·0	13·2
13·41	27·26	23 712·1	6 552·7	7·90	1 768·7	869·7	13·0

Note 1 — The centres of gravity of both the channels lie in Y-Y axis.

Note 2 — The moment of inertia about Y-Y axis of the top flange area above the neutral axis can be computed by adding I_{xx} of top channel and $\frac{1}{4}I_{yy}$ of vertical channel (see Table II for values of I_{xx} and I_{yy}).

TABLE XVII 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 cm⁴**									
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	1 127·6
30·0	429·8	480·7	532·2	584·4	690·6	799·5	911·1	1 025·3	1 142·3	1 322·9
32·0	487·2	544·7	602·8	661·6	781·3	903·9	1 029·2	1 157·3	1 288·4	1 490·4
32·5	502·1	561·3	621·1	681·7	804·9	930·9	1 059·8	1 191·6	1 326·3	1 533·9
35·0	580·1	648·2	717·0	786·6	927·9	1 072·3	1 219·8	1 370·3	1 524·0	1 760·4
40·0	752·9	840·7	929·3	1 018·8	1 200·2	1 385·1	1 573·5	1 765·3	1 960·7	2 260·4
45·0	948·2	1 058·2	1 169·1	1 281·0	1 507·5	1 737·9	1 972·2	2 210·3	2 452·4	2 822·9
50·0	1 166·0	1 300·7	1 436·4	1 573·2	1 849·8	2 130·7	2 415·9	2 705·3	2 999·1	3 447·9
55·0	1 406·3	1 568·2	1 731·2	1 895·4	2 227·1	2 563·5	2 904·6	3 250·3	3 600·8	4 135·4
60·0	1 669·1	1 860·7	2 053·5	2 247·6	2 639·4	3 036·3	3 438·3	3 845·3	4 257·5	4 885·4
63·0	1 837·6	2 048·2	2 260·1	2 473·3	2 903·6	3 339·2	3 780·1	4 226·3	4 677·9	5 365·4
80·0	2 945·3	3 280·7	3 617·7	3 956·4	4 638·6	5 327·5	6 032·1	6 725·3	7 434·3	8 510·4
100·0	4 581·5	5 100·7	5 621·9	6 145·2	7 197·8	8 258·7	9 327·9	10 405·3	11 491·1	13 135·4
125·0	7 133·0	7 938·2	8 745·9	9 556·2	11 184·3	12 822·7	14 471·7	16 130·3	17 799·6	20 322·9
160·0	11 650·1	12 960·7	14 274·5	15 591·6	18 235·4	20 892·3	23 562·3	26 245·3	28 941·5	33 010·4
200·0	18 162·5	20 200·7	22 242·9	24 289·2	28 393·8	32 514·7	36 651·9	40 805·3	44 975·1	51 260·4
250·0	28 328·0	31 500·7	34 678·4	37 861·2	44 241·8	50 642·7	57 063·9	63 505·3	69 967·1	79 697·9

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

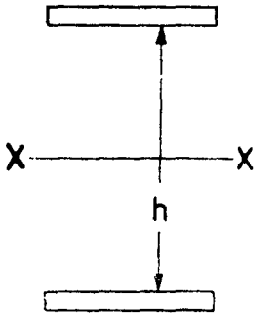
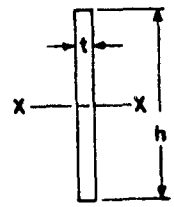


TABLE XVII MOMENT OF INERTIA OF TWO FLANGES PER CENTIMETRE WIDTH ABOUT THE *X-X* AXIS

28	32	36	40	45	50	56	63	71	80	Thickness of each Flange mm
Moment of Inertia in cm^4										Depth h cm
152·2	188·6	229·6	275·2	339·2	411·5	509·8	641·6	816·4	1 046·3	7·5
167·0	206·2	250·0	298·7	366·8	443·3	547·2	685·8	866·6	1 109·3	8·0
233·0	284·2	340·7	402·7	488·2	583·3	710·7	878·6	1 097·7	1 381·3	10·0
331·4	399·8	474·4	555·2	665·4	786·5	946·6	1 155·0	1 423·4	1 766·3	12·5
447·2	535·4	630·5	732·7	870·8	1 020·8	1 217·5	1 470·8	1 793·5	2 201·3	15·0
498·5	595·3	699·3	810·7	960·8	1 123·3	1 335·6	1 608·1	1 951·5	2 389·3	16·0
580·6	691·0	809·2	935·2	1 104·2	1 286·5	1 523·4	1 826·0	2 208·0	2 686·3	17·5
731·4	866·6	1 010·3	1 162·7	1 365·8	1 583 3	1 864·3	2 220·5	2 666·8	3 221·3	20·0
899·8	1 062·2	1 234·0	1 415·2	1 595·2	1 911·5	2 240·2	2 654·4	3 170·0	3 806·3	22·5
1 085·6	1 277·8	1 480·1	1 692·7	1 973·2	2 270·8	2 651·1	3 127·7	3 717·6	4 441·3	25·0
1 289·0	1 513·4	1 748·8	1 995 2	2 319·2	2 661·5	3 097·0	3 640·4	4 309·6	5 126·3	27·5
1 509·8	1 769·0	2 039·9	2 322·7	2 693·2	3 083·3	3 577·9	4 192·4	4 945·9	5 861·3	30·0
1 699·1	1 987·9	2 289·0	2 602·7	3 012·8	3 443·3	3 987·8	4 662·4	5 484·4	6 485·3	32·0
1 748·2	2 044·6	2 353·6	2 675·2	3 095·4	3 536·5	4 093·8	4 783·8	5 626·6	6 646·3	32·5
2 004·0	2 340·2	2 689·7	3 052·7	3 525·8	4 020·8	4 644·7	5 414·6	6 351·7	7 481·3	35·0
2 568·2	2 991·4	3 429·5	3 882·7	4 470·8	5 083·3	5 851·5	6 794·3	7 935·0	9 301·3	40·0
3 202·4	3 722·6	4 259·3	4 812·7	5 528·2	6 270·8	7 198·3	8 331·5	9 695·8	11 321·3	45·0
3 906·6	4 533·8	5 179·1	5 842·7	6 698·2	7 583·3	8 685·1	10 026·2	11 634·1	13 541·3	50·0
4 680·8	5 425·0	6 188·9	6 972·7	7 980·8	9 020·8	10 311·9	11 878·4	13 749·9	15 961·3	55·0
5 525·0	6 396·2	7 288·7	8 202·7	9 375·8	10 583·3	12 078·7	13 888·1	16 043·2	18 581·3	60·0
6 065·2	7 017·4	7 991·8	8 988·7	10 266·8	11 580·8	13 206·0	15 169·5	17 504·4	20 249·3	63·0
9 601·8	11 081·0	12 587·9	14 122·7	16 080·8	18 083·3	20 545·9	23 501·9	26 991·4	31 061·3	80·0
14 798·6	17 045·8	19 327·1	21 642·7	24 585·8	27 583·3	31 253·1	35 635·7	40 779·6	46 741·3	100·0
22 869·6	26 301·8	29 776·1	33 292·7	37 748·2	42 270·8	47 787·1	54 346·7	62 006·1	70 841·3	125·0
37 109·0	42 620·2	48 184·7	53 802·7	60 900·8	68 083·3	76 814·7	87 157·1	99 184·2	112 981·3	160·0
57 582·6	66 069·8	74 623·1	83 242·7	94 110·8	105 083·3	118 389·1	134 104·7	152 320·6	173 141·3	200·0
89 474·6	102 581·3	115 771·1	129 042·7	145 748·2	162 583·3	182 957·1	206 964·2	234 716·1	266 341·3	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 XVIII 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 cm⁴						
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	1 041·7	1 171·9	1 302·1	1 432·3	1 562·5
32·0	1 638·4	1 911·5	2 184·5	2 457·6	2 730·7	3 003·7	3 276·8
40·0	3 200·0	3 733·3	4 266·7	4 800·0	5 333·3	5 866·7	6 400·0
50·0	6 250·0	7 291·7	8 333·3	9 375·0	10 416·7	11 458·3	12 500·0
63·0	12 502·4	14 586·1	16 669·8	18 753·5	20 837·2	22 921·1	25 004·7
80·0	25 600 0	29 866·7	34 133·3	38 400·0	42 666·7	46 933·3	51 200·0
100·0	50 000·0	58 333·3	66 666·7	75 000·0	83 333·3	91 666·7	100 000·0
125·0	97 656·2	113 932·3	130 208·3	146 484·4	162 760·4	179 036·5	195 312·5
160·0	204 800 0	238 933·3	273 066·7	307 200·0	341 333·3	375 466·7	409 600·0
200·0	400 000·0	466 666·7	533 333·3	600 000·0	666 666·7	733 333·3	800 000·0
250·0	781 250·0	911 458·3	1 041 666·7	1 171 875·0	1 302 083·3	1 432 291·7	1 562 500·0

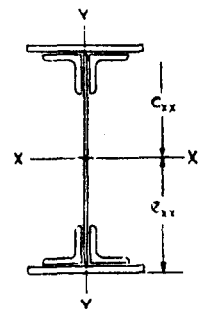
Thickness t mm	14	16	18	20	22	25
Depth h cm	Moment of Inertia in cm⁴					
8·0	59·7	68·3	76·8	85·3	93·9	106·7
10·0	116·7	133·3	150·0	166·7	183·3	208·3
12·5	227·9	260·4	294·6	325·5	358·1	406·9
16·0	477·9	546·1	614·4	682·7	750·9	853·3
20·0	933·3	1 066·7	1 200·0	1 333·3	1 466·7	1 666·7
25·0	1 822·9	2 083·3	2 343·8	2 604·2	2 864·6	3 255·2
32·0	3 822·9	4 369·1	4 915·2	5 461·3	6 007·5	6 826·7
40·0	7 466·7	8 533·3	9 600·0	10 666·7	11 733·3	13 333·3
50·0	14 583·3	16 666·7	18 750·0	20 833·3	22 916·7	26 041·7
63·0	29 172·2	33 339·6	37 507·0	41 674·5	45 842·0	52 093·1
80·0	59 733·3	68 266·7	76 800·0	85 333·3	93 866·7	106 666·7
100·0	116 666·7	133 333·3	150 000·0	166 666·7	183 333·3	208 333·3
125·0	227 864·6	260 416·7	292 968·8	325 520·8	358 072·9	406 901·0
160·0	477 866·7	546 133·3	614 400·0	682 666·7	750 933·3	853 333·3
200·0	933 333·3	1 066 666·7	1 200 000·0	1 333 333·3	1 466 666·7	1 666 666·7
250·0	1 822 916·7	2 083 333·3	2 234 375·0	2 604 166·7	2 864 583·3	3 255 208·3

TABLE XIX 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^2**						
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	2·55
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	6·88	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^2**						
5·0	1·45	1·60	1·75	1·90	2·05	2·20	2·50
6·0	1·74	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 XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)



Composed of								Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles				Flange Plates				
Width	Thickness	A × B × t				Width	Thickness	w	a	$t_c = t_t$
mm	mm	mm		mm		mm	mm	kg	cm²	mm
800	12·0	150	×	150	× 18·0	400	0·0	234·8	299·16	18·0
							12·0	310·2	395·16	26·0
							16·0	335·3	427·16	30·0
							20·0	360·4	459·16	34·0
							25·0	391·8	499·16	39·0
							32·0	435·8	555·16	46·0
							40·0	486·0	619·16	54·0
800	12·0	150	×	150	× 18·0	500	0·0	234·8	299·16	18·0
							12·0	329·0	419·16	23·2
							16·0	360·4	459·16	27·2
							20·0	391·8	499·16	31·2
							25·0	431·1	549·16	36·2
							32·0	486·0	619·16	43·2
							40·0	548·8	699·16	51·2
800	16·0	150	×	50	× 18·0	400	0·0	260·0	331·16	18·0
							12·0	335·3	427·16	26·2
							16·0	360·4	459·16	30·2
							20·0	385·6	491·16	34·2
							25·0	417·0	531·16	39·2
							32·0	460·9	587·16	46·2
							40·0	511·2	651·16	54·2
800	16·0	150	×	150	× 18·0	500	0·0	260·0	331·16	18·0
							12·0	354·2	451·16	23·4
							16·0	385·6	491·16	27·4
							20·0	417·0	531·16	31·4
							25·0	456·2	581·16	36·4
							32·0	511·2	651·16	43·4
							40·0	574·0	731·16	51·4

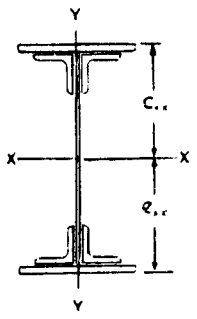


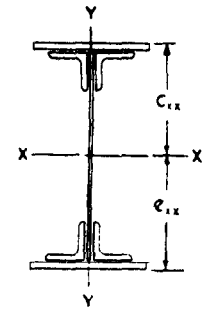
TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{yx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	kg-m $\times 10^3$	kg $\times 10^3$
40·0	313 161·8	9 245·6	5·56	7 829·0	117·4	90·7
41·2	471 415·9	22 045·6	7·47	11 442·1	171·6	
41·6	526 263·1	26 312·2	7·85	12 650·6	189·8	
42·0	582 175·2	30 578·9	8·16	13 861·3	207·9	
42·5	653 578·5	35 912·2	8·48	15 378·3	230·7	
43·2	756 403·6	43 378·9	8·84	17 509·3	262·6	
44·0	878 068·5	51 912·2	9·16	19 956·1	299·3	
40·0	313 161·8	9 245·6	5·56	7 829·0	117·5	90·7
41·2	510 979·4	34 245·6	9·04	12 402·4	186·0	
41·6	579 538·4	42 578·9	9·63	13 931·2	209·0	
42·0	649 428·5	50 912·2	10·10	15 462·6	231·9	
42·5	738 682·7	61 328·9	10·57	17 380·8	260·7	
43·2	867 214·1	75 912·2	11·07	20 074·4	301·1	
44·0	1 019 295·2	92 578·9	11·51	23 165·8	347·5	
40·0	330 228·5	9 674·2	5·40	8 255·7	123·8	121·0
41·2	488 482·6	22 474·2	7·25	11 856·4	177·8	
41·6	543 329·7	26 740·8	7·63	13 060 8	195·9	
42·0	599 241·8	31 007·5	7·95	14 267·7	214·0	
42·5	670 645·2	36 340·8	8·27	15 779·9	236·7	
43·2	773 470·3	43 807·5	8·64	17 904·4	268·6	
44·0	895 135·2	52 340·8	8·97	20 344·0	305·2	
40·0	330 228·5	9 674·2	5·40	8 255·7	123·8	121·0
41·2	528 046·1	34 674·2	8·77	12 816·7	192·2	
41·6	596 605·0	43 007·5	9·36	14 341·5	215·1	
42·0	666 495·2	51 340·8	9·83	15 868·9	238·0	
42·5	755 749·3	61 757·5	10·31	17 782·3	266·7	
43·2	884 280·8	76 340·8	10·83	20 469·5	307·0	
44·0	1 036 361·8	93 007·5	11·28	23 553 7	353·3	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of								Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles $A \times B \times t$				Flange Plates				
Width	Thickness					Width	Thickness	w	a	$t_c = t_t$
mm	mm	mm	×	mm	× mm	mm	mm	kg	cm²	mm
1 000	12·0	150	×	150	× 18·0	400	0·0	253·7	323·16	18·0
							12·0	329·0	419·16	26·0
							16·0	354·2	451·16	30·0
							20·0	379·3	483·16	34·0
							25·0	410·7	523·16	39·0
							32·0	454·6	579·16	46·0
							40·0	504·9	643·16	54·0
1 000	12·0	150	×	150	× 18·0	500	0·0	253·7	323·16	18·0
							12·0	347·9	443·16	23·2
							16·0	379·3	483·16	27·2
							20·0	410·7	523·16	31·2
							25·0	449·9	573·16	36·2
							32·0	504·9	643·16	43·2
							40·0	567·7	723·16	51·2
1 000	16·0	150	×	150	× 18·0	400	0·0	285·1	363·16	18·0
							12·0	360·4	459·16	26·2
							16·0	385·6	491·16	30·2
							20·0	410·7	523·16	34·2
							25·0	442·1	563·16	39·2
							32·0	486·0	619·16	46·2
							40·0	536·3	683·16	54·2
1 000	16·0	150	×	150	× 18·0	500	0·0	285·1	363·16	18·0
							12·0	379·3	483·16	23·4
							16·0	410·7	523·16	27·4
							20·0	442·1	563·16	31·4
							25·0	481·3	613·16	36·4
							32·0	536·3	683·16	43·4
							40·0	599·1	763·16	51·4

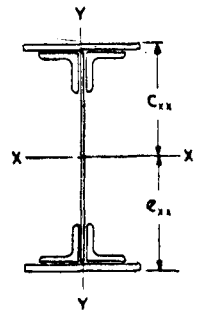


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

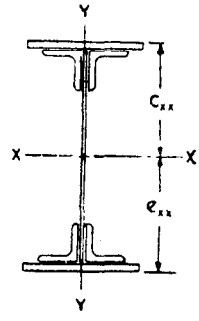
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	$kg\text{-}m \times 10^3$	$kg \times 10^3$
50·0	527 009·0	9 248·4	5·35	10 540·2	158·1	113·4
51·2	772 815·1	22 048·4	7·25	15 094·0	226·4	
51·6	857 358·2	26 315·1	7·64	16 615·5	249·2	
52·0	943 222·4	30 581·8	7·96	18 138·9	272·1	
52·5	1 052 425·7	35 915·1	8·29	20 046·2	300·7	
53·2	1 208 842·8	43 381·8	8·65	22 722·6	340·8	
54·0	1 392 715·7	51 915·1	8·98	25 791·0	386·9	
50·0	527 009·0	9 248·4	5·35	10 540·2	158·1	113·4
51·2	834 266·6	34 248·4	8·79	16 294·3	244·4	
51·6	939 945·6	42 581·8	9·39	18 216·0	273·2	
52·0	1 047 275·7	50 915·1	9·87	20 139·9	302·1	
52·5	1 183 779·9	61 331·8	10·34	22 548·2	338·2	
53·2	1 379 301·3	75 915·1	10·86	25 926·7	388·9	
54·0	1 609 142·4	92 581·8	11·31	29 798·9	447·0	
50·0	560 342·4	9 681·0	5·16	11 206·9	168·1	151·2
51·2	806 148·4	22 481·0	7·00	15 745·1	246·3	
51·6	890 691·6	26 747·7	7·38	17 261·5	258·9	
52·0	976 555·7	31 014·3	7·70	18 779·9	281·7	
52·5	1 085 759·0	36 347·7	8·03	20 681·1	310·2	
53·2	1 242 176·2	43 814·3	8·41	23 349·2	350·2	
54·0	1 426 049·0	52 347·7	8·75	26 408·3	396·1	
50·0	560 342·4	9 681·0	5·16	11 206·9	168·1	151·2
51·2	867 600·0	34 681·0	8·47	17 352·0	260·3	
51·6	973 278·9	43 014·3	9·07	19 465·6	292·0	
52·0	1 080 609·0	51 347·7	9·55	21 612·2	324·2	
52·5	1 217 113·2	61 764·3	10·04	24 342·3	365·1	
53·2	1 412 634·6	76 347·7	10·57	28 252·7	423·8	
54·0	1 642 475·7	93 014·3	11·04	32 849·5	492·7	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of								Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles				Flange Plates				
Width	Thickness	$A \times B \times t$				Width	Thickness	w	a	$t_f = t_f$
mm	mm	mm		mm	mm	mm	mm	kg	cm^2	mm
1 250	12·0	150	×	150	× 18·0	400	0·0	277·2	353·16	18·0
							12·0	352·6	449·16	26·0
							16·0	377·7	481·16	30·0
							20·0	402·8	513·16	34·0
							25·0	434·2	553·16	39·0
							32·0	478·2	609·16	46·0
							40·0	528·4	673·16	54·0
1 250	12·0	150	×	150	× 18·0	500	0·0	277·2	353·16	18·0
							12·0	371·4	473·16	23·2
							16·0	402·8	513·16	27·2
							20·0	434·2	553·16	31·2
							25·0	473·5	603·16	36·2
							32·0	528·4	673·16	43·2
							40·0	591·2	753·16	51·2
1 250	16·0	150	×	150	× 18·0	400	0·0	316·5	403·16	18·0
							12·0	391·8	499·16	26·2
							16·0	417·0	531·16	30·2
							20·0	442·1	563·16	34·2
							25·0	473·5	603·16	39·2
							32·0	517·4	659·16	46·2
							40·0	567·7	723·16	54·2
1 250	16·0	150	×	150	× 18·0	500	0·0	316·5	403·16	18·0
							12·0	410·7	523·16	23·4
							16·0	442·1	563·16	27·4
							20·0	473·5	603·16	31·4
							25·0	512·7	653·16	36·4
							32·0	567·7	723·16	43·4
							40·0	630·5	803·16	51·4

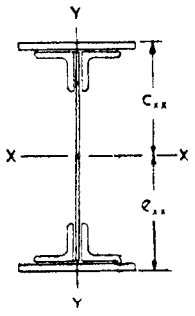


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

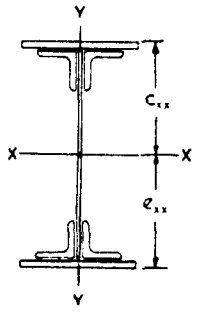
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	kg-m × 10^3	kg × 10^3
62·5	885 769·3	9 252·0	5·12	14 172·3	212·6	141·8
63·7	1 268 015·3	22 052·0	7·01	19 906·0	298·6	
64·1	1 398 678·5	26 318·7	7·40	21 820·3	227·3	
64·5	1 530 982·6	30 585·4	7·72	23 736·2	356·0	
65·0	1 698 685·9	35 918·7	8·06	26 133·6	392·0	
65·7	1 937 843·1	43 385·4	8·44	29 495·3	442·4	
66·5	2 217 475·9	51 918·7	8·78	33 345·5	500·2	
62·5	885 769·3	9 252·0	5·12	14 172·3	212·6	141·8
63·7	1 363 576·9	34 252·0	8·51	21 406·2	321·1	
64·1	1 526 905·8	42 585·4	9·11	23 820·7	357·3	
64·5	1 692 285·9	50 918·7	9·59	26 237·0	393·6	
65·0	1 901 915·1	61 335·4	10·08	29 260·2	438·9	
65·7	2 200 861·5	75 918·7	10·62	33 498·7	502·5	
66·5	2 550 402·6	92 585·4	11·09	38 351·9	575·3	
62·5	950 873·4	9 689·5	4·90	15 214·0	228·2	189·0
63·7	1 333 119·5	22 489·5	6·71	20 928·1	313·9	
64·1	1 463 782·6	26 756·2	7·10	22 835·9	342·5	
64·5	1 596 086·8	31 022·9	7·42	24 745·5	371·2	
65·0	1 763 790·1	36 356·2	7·76	27 135·2	407·0	
65·7	2 002 947·2	43 822·9	8·15	30 486·3	457·3	
66·5	2 282 580·1	52 356·2	8·51	34 324·5	514·9	
62·5	950 873·4	9 689·5	4·90	15 214·0	228·2	189·0
63·7	1 428 681·0	34 689·5	7·96	22 428·3	336·4	
64·1	1 592 010·0	43 022·9	8·74	24 836·3	372·5	
64·5	1 757 390·1	51 356·2	9·23	27 246·4	408·7	
65·0	1 967 019·3	61 772·9	9·72	30 261·3	453·9	
65·7	2 265 965·7	76 356·2	10·28	34 489·6	517·3	
66·5	2 615 506·8	93 022·9	10·76	39 330·9	590·0	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of								Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles				Flange Plates				
Width	Thickness	A × B × t				Width	Thickness	w	a	$t_c = t_t$
mm	mm	mm		mm	mm	mm	mm	kg	cm²	mm
1 600	12·0	150	×	150	× 18·0	400	0·0	10·2	395·16	18·0
							12·0	385·6	491·16	26·0
							16·0	410·7	523·16	30·0
							20·0	435·8	555·16	34·0
							25·0	467·2	595·16	39·0
							32·0	511·2	651·16	46·0
							40·0	561·4	715·16	54·0
1 600	12·0	150	×	150	× 18·0	500	0·0	310·2	395·16	18·0
							12·0	404·2	515·16	23·2
							16·0	435·8	555·16	27·2
							20·0	467·2	595·16	31·2
							25·0	506·5	645·16	36·2
							32·0	561·4	715·16	43·2
							40·0	624·2	795·16	51·2
1 600	12·0	200	×	200	× 18·0	500	0·0	366·8	467·24	18·0
							12·0	461·0	587·24	26·8
							16·0	492·4	627·24	30·8
							20·0	523·8	667·24	34·8
							25·0	563·0	717·24	39·8
							32·0	618·0	787·24	46·8
							40·0	680·8	867·24	54·8
1 600	16·0	150	×	150	× 18·0	400	0·0	360·4	459·16	18·0
							12·0	435·8	555·16	26·2
							16·0	460·9	587·16	30·2
							20·0	486·0	619·16	34·2
							25·0	517·4	659·16	39·2
							32·0	561·4	715·16	46·2
							40·0	611·6	779·16	54·2

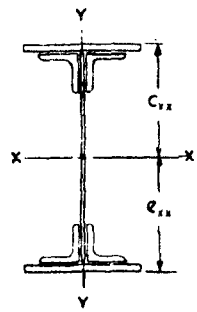


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

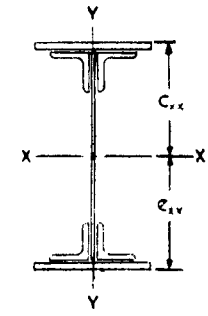
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	kg-m x 10^3	kg x 10^3
80·0	1 575 542·6	9 257·1	4·84	19 694·3	295·4	181·4
81·2	2 199 204·7	22 057·1	6·70	27 083·8	406·3	
81·6	2 411 235·8	26 323·8	7·09	29 549·5	443·2	
82·0	2 625 355·9	30 590·4	7·42	32 016·5	480·2	
82·5	2 895 959·2	35 923·8	7·77	35 102·5	526·5	
83·2	3 280 352·4	43 390·4	8·16	39 427·3	591·4	
84·0	3 727 649·2	51 923·8	8·52	44 376·8	665·7	
80·0	1 575 542·6	9 257·1	4·84	19 694·3	295·4	181·4
81·2	2 355 120·2	34 257·1	8·15	29 003·9	435·1	
81·6	2 620 159·1	42 590·4	8·76	32 109·8	481·6	
82·0	2 887 809·2	50 923·8	9·25	35 217·2	328·3	
82·5	3 226 063·4	61 340·4	9·75	39 103·8	586·6	
83·2	3 706 554·8	75 923·8	10·30	44 549·9	668·2	
84·0	4 265 675·9	92 590·4	10·79	50 781·9	761·7	
80·0	1 943 097·8	20 992·2	6·70	24 288·7	364·3	181·4
81·2	2 722 675·4	45 992·2	8·85	33 530·5	503·0	
81·6	2 987 714·3	54 325·6	9·31	36 614·1	549·2	
82·0	3 255 364·4	62 658·9	9·69	39 699·6	595·5	
82·5	3 593 618·6	73 075·6	10·09	43 559·0	653·4	
83·2	4 074 110·0	87 658·9	10·55	48 967·7	734·5	
84·0	4 633 231·1	104 325·6	10·97	55 157·5	827·4	
80·0	1 712 075·9	9 701·5	4·60	21 400·9	321·0	241·9
81·2	2 335 738·0	22 501·5	6·37	28 765·2	431·5	
81·6	2 547 769·1	26 768·2	6·75	31 222·7	468·3	
82·0	2 761 889·2	31 034·8	7·08	33 681·6	505·2	
82·5	3 032 492·6	36 368·2	7·43	36 757·5	551·4	
83·2	3 416 885·7	43 834·8	7·33	41 068·3	616·0	
84·0	3 864 182·6	52 368·2	8·20	46 002·2	690·0	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of								Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles				Flange Plates				
Width	Thickness	$A \times B \times t$				Width	Thickness	w	a	$t_c = t_t$
mm	mm	mm		mm		mm	mm	kg	cm^2	mm
1 600	16·0	150	×	150	× 18·0	500	0·0	360·4	459·16	18·0
							12·0	454·6	579·16	23·4
							16·0	486·0	619 16	27·4
							20·0	517·4	659·16	31·4
							25·0	556·7	709·16	36·4
							32·0	611·6	779·16	43·4
							40·0	674·4	859·16	51·4
1 600	16·0	200	×	200	× 18·0	500	0·0	417·0	531·24	18·0
							12·0	511·2	651·24	27·0
							16·0	542·6	691·24	31·0
							20·0	574·0	731·24	35·0
							25·0	613·3	781·24	40·0
							32·0	668·2	851·24	47·0
							40·0	731·0	931·24	55·0
800	12·0	200	×	100	× 15·0	500	0·0	209·7	267·12	12·4
							12·0	303·9	387·12	24·4
							16·0	335·3	427·12	28·4
							20·0	366·7	467·12	32·4
							25·0	405·9	517·12	37·4
							32·0	460·9	587·12	44·4
							40·0	523·7	667·12	52·4
800	12·0	200	×	100	× 15·0	550	0·0	209·7	267·12	11·2
							12·0	313·3	399·12	23·2
							16·0	347·8	443·12	27·2
							20·0	382·4	487·12	31·2
							25·0	425·6	542·12	36·2
							32·0	486·0	619·12	43·2
							40·0	555·1	707·12	51·2

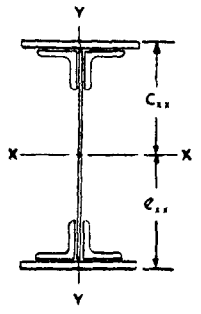


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

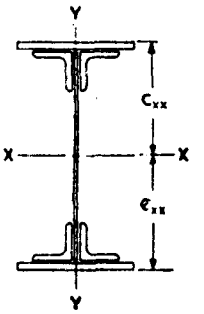
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	kg-m x 10^3	kg x 10^3
80·0	1 712 075·9	9 701·5	4·60	21 400·9	321·0	241·9
81·2	2 491 653·5	34 701·5	7·74	30 685·4	460·3	
81·6	2 756 692·4	43 034·8	8·34	33 783·0	506·7	
82·0	3 024 342·6	51 368·2	8·83	36 882·2	553·2	
82·5	3 362 596·7	61 784·8	9·33	40 758·7	611·4	
83·2	3 843 088·2	76 368·2	9·90	46 191·0	692·9	
84·0	4 402 209·2	93 034·8	10·41	52 407·3	786·1	
80·0	2 079 631·1	21 718·5	6·39	25 995·4	389·9	241·9
81·2	2 859 208·7	46 718·5	8·47	35 211·9	528·2	
81·6	3 124 247·6	55 051·8	8·92	38 287·3	574·3	
82·0	3 391 897·8	63 385·2	9·31	41 364·6	620·5	
82·5	3 730 151·9	73 801·8	9·72	45 214·0	678·2	
83·2	4 210 643·4	88 385·2	10·19	50 608·7	759·1	
84·0	4 769 764·4	105 051·8	10·89	56 782·9	851·7	
40·0	296 636·8	17 371·1	8·06	7 415·9	111·2	90·7
41·2	494 454·4	42 371·1	10·46	12 001·3	180·0	
41·6	563 013·4	50 704·5	10·90	13 534·0	203·0	
42·0	632 903·5	59 037·8	11·24	15 069·1	226·0	
42·5	722 157·7	69 454·5	11·59	16 991·9	254·9	
43·2	850 689·1	84 037·8	11·96	19 691·9	295·4	
44·0	1 002 770·2	100 704·5	12·29	22 790·2	341·9	
40·0	296 636·8	17 371·1	8·06	7 415·9	111·2	90·7
41·2	514 236·2	50 646·1	11·26	12 481·5	187·2	
41·6	589 651·0	61 737·8	11·80	14 174·3	212·6	
42·0	666 530·2	72 829·5	12·23	15 869·8	238·0	
42·5	764 709·8	86 694·1	12·65	17 993·2	269·9	
43·2	906 094·3	106 104·5	13·09	20 974·4	314·6	
44·0	1 073 383·5	128 287·8	13·47	24 395·1	365·9	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of									Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles A × B × t					Flange Plates				
Width	Thickness						Width	Thickness			
									w	a	$t_c = t_t$
mm	mm	mm		mm		mm	mm	mm	kg	cm²	mm
800	16·0	200	×	100	×	15·0	500	0·0	234·8	299·12	12·5
								12·0	329·0	419·12	24·5
								16·0	360·4	459·12	28·5
								20·0	391·8	499·12	32·5
								25·0	431·1	549·12	37·5
								32·0	486·0	619·12	44·5
								40·0	548·8	699·12	52·5
800	16·0	200	×	100	×	15·0	550	0·0	234·8	299·12	11·3
								12·0	338·4	431·12	23·3
								16·0	373·0	475·12	27·3
								20·0	407·5	519·12	31·3
								25·0	450·7	574·12	36·3
								32·0	511·1	651·12	43·3
								40·0	580·2	739·12	51·3
1 000	12·0	200	×	100	×	15·0	500	0·0	228·5	291·12	12·4
								12·0	322·7	411·12	24·4
								16·0	354·1	451·12	28·4
								20·0	385·5	491·12	32·4
								25·0	424·8	541·12	37·4
								32·0	479·7	611·12	44·4
								40·0	542·5	691·12	52·4
1 000	12·0	200	×	100	×	15·0	550	0·0	228·5	291·12	11·2
								12·0	332·1	423·12	23·2
								16·0	366·7	467·12	27·2
								20·0	401·2	511·12	31·2
								25·0	444·4	566·12	36·2
								32·0	504·8	643·12	43·2
								40·0	573·9	731·12	51·2

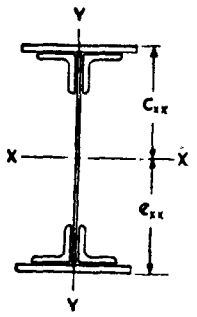


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

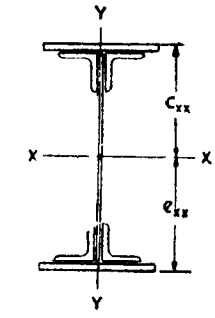
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	kg-m × 10^3	kg × 10^3
40·0	313 703·5	17 926·3	7·74	7 842·6	117·6	121·0
41·2	511 521·1	42 926·3	10·12	12 415·6	186·2	
41·6	580 080·0	51 259·6	10·57	13 944·2	209·2	
42·0	649 970·2	59 593·0	10·93	15 475·5	232·1	
42·5	739 224·3	70 009·6	11·29	17 393·5	260·9	
43·2	867 755·8	84 593·0	11·69	20 086·9	301·3	
44·0	1 019 836·8	101 259·6	12·03	23 178·1	347·7	
40·0	313 703·5	17 926·3	7·74	7 842·6	117·6	121·0
41·2	531 302·9	51 201·3	10·90	12 895·7	193·4	
41·6	606 717·7	62 293·0	11·45	14 584·6	218·8	
42·0	683 596·8	73 384·6	11·89	16 276·1	244·1	
42·5	781 776·4	87 249·2	12·33	18 394·7	275·9	
43·2	923 161·0	106 659·6	12·80	21 369·5	320·5	
44·0	1 090 450·2	128 843·0	13·20	24 783·0	371·7	
50·0	491 847·1	17 374·0	7·73	9 836·9	147·6	113·4
51·2	799 104·7	42 374·0	10·15	15 607·5	234·1	
51·6	904 783·6	50 707·4	10·60	17 534·6	263·0	
52·0	1 012 113·8	59 040·7	10·96	19 463·7	292·0	
52·5	1 148 617·9	69 457·4	11·33	21 878·4	328·2	
53·2	1 344 139·4	84 040·7	11·73	25 265·8	379·0	
54·0	1 573 980·4	100 707·4	12·07	29 147·8	437·2	
50·0	491 847·1	17 374·0	7·73	9 836·9	147·6	113·4
51·2	829 830·5	50 649·0	10·94	16 207·6	243·1	
51·6	946 077·3	61 740·7	11·50	18 334·8	275·0	
52·0	1 064 140·4	72 832·4	11·94	20 464·2	307·0	
52·5	1 214 295·0	86 696·9	12·38	23 129·4	346·9	
53·2	1 429 368·6	106 107·4	12·84	26 867·8	403·0	
54·0	1 682 193·8	128 290·7	13·25	31 151·7	467·3	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of								Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles				Flange Plates				
Width	Thickness	$A \times B \times t$				Width	Thickness	w	a	$t_c = t_t$
mm	mm	mm		mm	mm	mm	mm	kg	cm^2	mm
1 000	16·0	200	×	100	× 15·0	500	0·0	259·9	331·12	12·5
							12·0	354·1	451·12	24·5
							16·0	385·5	491·12	28·5
							20·0	416·9	531·12	32·5
							25·0	456·2	581·12	37·5
							32·0	511·1	651·12	44·5
							40·0	573·9	731·12	52·5
1 000	16·0	200	×	100	× 15·0	550	0·0	259·9	331·12	11·3
							12·0	363·5	463·12	23·3
							16·0	398·1	507·12	27·3
							20·0	432·6	551·12	31·3
							25·0	475·8	606·12	36·3
							32·0	536·2	683·12	43·3
							40·0	605·3	771·12	51·3
1 250	12·0	200	×	100	× 15·0	500	0·0	252·1	321·12	12·4
							12·0	346·3	441·12	24·4
							16·0	377·7	481·12	28·4
							20·0	409·1	521·12	32·4
							25·0	448·3	571·12	37·4
							32·0	503·3	641·12	44·4
							40·0	566·1	721·12	52·4
1 250	12·0	200	×	100	× 15·0	550	0·0	252·1	321·12	11·2
							12·0	355·7	453·12	23·2
							16·0	390·2	497·12	27·2
							20·0	424·8	541·12	31·2
							25·0	468·0	596·12	36·2
							32·0	528·4	673·12	43·2
							40·0	597·5	761·12	51·2

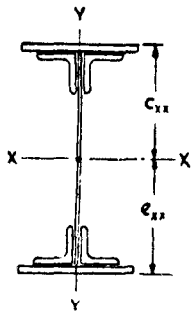


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

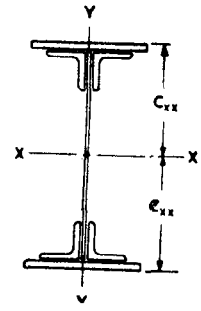
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	$kg\text{-}m \times 10^3$	$kg \times 10^3$
50·0	525 180·4	17 933·1	7·36	10 503·6	157·6	151·2
51·2	832 438·0	42 933·1	9·76	16 258·6	243·9	
51·6	938 117·0	51 266·5	10·22	18 180·6	272·7	
52·0	1 045 447·1	59 599·8	10·59	20 104·8	301·6	
52·5	1 181 951·3	70 016·5	10·98	22 513·4	337·7	
53·2	1 377 472·7	84 599·8	11·40	25 892·3	388·4	
54·0	1 607 313·8	101 266·5	11·77	29 765·1	446·5	
50·0	525 180·4	17 933·1	7·36	10 503·6	157·6	151·2
51·2	863 163·8	51 208·1	10·52	16 858·7	252·9	
51·6	979 410·6	62 299·8	11·08	18 980·8	284·7	
52·0	1 097 473·8	73 391·5	11·54	21 105·3	316·6	
52·5	1 247 628·4	87 256·0	12·00	23 764·4	356·5	
53·2	1 462 701·9	106 666·5	12·50	27 494·4	412·4	
54·0	1 715 527·1	128 849·8	12·95	31 769·0	476·5	
62·5	818 299·9	17 377·6	7·36	13 092·8	196·4	141·8
63·7	1 296 107·5	42 377·6	9·80	20 347·1	305·2	
64·1	1 459 436·5	50 711·0	10·27	22 768·1	341·5	
64·5	1 624 816·6	59 044·3	10·64	25 191·0	377·9	
65·0	1 834 445·8	69 461·0	11·03	28 222·2	423·3	
65·7	2 133 392·2	84 044·3	11·45	32 471·7	487·1	
66·5	2 482 933·3	100 711·0	11·82	37 337·3	560·1	
62·5	818 299·9	17 377·6	7·36	13 092·8	196·4	141·8
63·7	1 343 888·3	50 652·6	10·57	21 097·1	316·5	
64·1	1 523 550·1	61 744·3	11·14	23 768·3	356·5	
64·5	1 705 468·3	72 836·0	11·60	26 441·4	396·6	
65·0	1 936 060·4	86 700·5	12·06	29 785·5	446·8	
65·7	2 264 901·4	106 111·0	12·56	34 473·4	517·1	
66·5	2 649 396·6	128 294·3	12·98	39 840·6	597·6	

(Continued)

TABLE XX ATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of									Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles					Flange Plates				
Width	Thickness	$A \times B \times t$					Width	Thickness			
									w	a	$t_c = t_t$
mm	mm	mm		mm		mm	mm	mm	kg	cm^2	mm
1 250	16·0	200	×	100	×	15·0	500	0·0	291·3	371·12	12·5
								12·0	385·5	491·12	24·5
								16·0	416·9	531·12	28·5
								20·0	448·3	571·12	32·5
								25·0	487·6	621·12	37·5
								32·0	542·5	691·12	44·5
								40·0	605·3	771·12	52·5
1 250	16·0	200	×	100	×	15·0	550	0·0	291·3	371·12	11·3
								12·0	394·9	503·12	23·3
								16·0	429·5	547·12	27·3
								20·0	464·0	591·12	31·3
								25·0	507·2	646·12	36·3
								32·0	567·6	723·12	43·3
								40·0	636·7	811·12	51·3
1 600	12·0	200	×	100	×	15·0	500	0·0	285·0	363·12	12·4
								12·0	379·2	483·12	24·4
								16·0	410·6	523·12	28·4
								20·0	442·0	563·12	32·4
								25·0	481·3	613·12	37·4
								32·0	536·2	683·12	44·4
								40·0	599·0	763·12	52·4
1 600	12·0	200	×	150	×	18·0	500	0·0	338·4	431·04	14·8
								12·0	432·6	551·04	26·8
								16·0	464·0	591·04	30·8
								20·0	495·4	631·04	34·8
								25·0	534·6	681·04	39·8
								32·0	589·6	751·04	46·8
								40·0	652·4	831·04	54·8

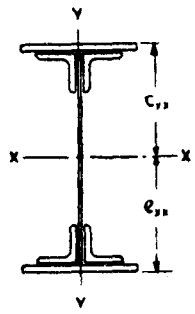


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

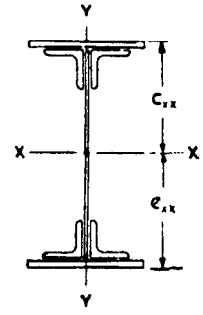
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	kg-m $\times 10^3$	kg $\times 10^3$
62·5	883 404·1	17 941·7	6·95	14 134·5	212·0	189·0
63·7	1 361 211·7	42 941·7	9·35	21 369·1	320·5	
64·1	1 524 540·6	51 275·0	9·83	23 783·8	356·8	
64·5	1 689 920·8	59 608·3	10·22	26 200·3	393·0	
65·0	1 899 549·9	70 025·0	10·62	29 223·8	438·4	
65·7	2 198 496·4	84 608·3	11·06	33 462·7	501·9	
66·5	2 548 037 4	101 275·0	11·46	38 316·4	574·7	
62·5	883 404·1	17 941·7	6·95	14 134·5	212·0	189·0
63·7	1 408 992·5	51 216·7	10·09	22 119·2	331·8	
64·1	1 588 654·3	62 308·3	10·67	24 784·0	371·8	
64·5	1 770 572·4	73 400·0	11·14	27 450·7	411·8	
65·0	2 001 164·5	87 264·0	11·62	30 787·1	461·8	
65·7	2 330 005·6	106 676·0	12·15	35 464·3	532·0	
66·5	2 714 500·8	128 858·3	12·60	40 819·6	612·3	
80·0	1 446 021·9	17 382·7	6·92	18 075·3	271·1	158·8
81·2	2 225 599·5	42 382·7	9·37	27 048·9	411·1	
81·6	2 490 638·5	50 716·0	9·85	30 522·5	457·8	
82·0	2 758 288·6	59 049·3	10·24	33 637·7	504·6	
82·5	3 096 542·8	69 466·0	10·64	37 533·9	563·0	
83·2	3 577 034·2	84 049·3	11·09	42 993·2	644·9	
84·0	4 136 155·3	100 716·0	11·49	49 239·9	738·6	
80·0	1 800 662·2	20 940·5	6·97	22 508·3	337·6	158·8
81·2	2 580 239·8	45 940·5	9·13	31 776·4	476·6	
81·6	2 845 278·7	54 273·8	9·58	34 868·6	523·0	
82·0	3 112 928·9	62 607·2	9·96	37 962·5	569·4	
82·5	3 451 183·0	73 023·8	10·35	41 832·5	627·5	
83·2	3 931 674·5	87 607·2	10·80	47 255·7	708·8	
84·0	4 490 795·5	104 273·8	11·20	53 461·9	801·9	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of								Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles				Flange Plates				
Width	Thickness	$A \times B \times t$				Width	Thickness			
								w	a	$t_f = t$
mm	mm	mm		mm		mm.	mm	kg	cm^2	mm
1 600	12·0	200	×	100	× 15·0	550	0·0	285·0	363·12	11·2
							12·0	388·7	495·12	23·2
							16·0	423·2	539·12	27·2
							20·0	457·7	583·12	31·2
							25·0	500·9	638·12	36·2
							32·0	561·4	715·12	43·2
							40·0	630·4	803·12	51·2
1 600	12·0	200	×	150	× 18·0	550	0·0	338·4	431·04	13·5
							12·0	442·0	563·04	25·5
							16·0	476·5	607·04	29·5
							20·0	511·1	651·04	33·5
							25·0	554·2	706·04	38·5
							32·0	614·7	783·04	45·5
							40·0	683·8	871·04	53·5
1 600	16·0	200	×	100	× 15·0	500	0·0	335·3	427·12	12·5
							12·0	429·5	547·12	24·5
							16·0	460·9	587·12	28·5
							20·0	492·3	627·12	32·5
							25·0	531·5	677·12	37·5
							32·0	586·5	747·12	44·5
							40·0	649·3	827·12	52·5

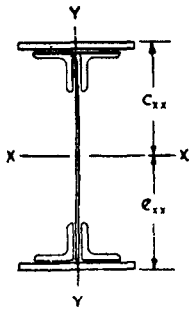


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

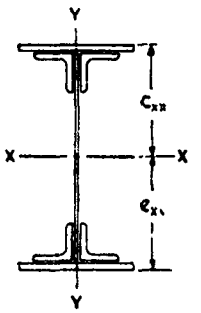
(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	kg-m $\times 10^3$	kg $\times 10^3$
80·0	1 446 021·9	17 382·7	6·92	18 075·3	271·1	158·8
81·2	2 303 557·3	50 657·7	10·12	28 368·9	425·5	
81·6	2 595 100·1	61 749·3	10·70	31 802·7	477·0	
82·0	2 889 515·3	72 841·1	11·18	35 238·0	528·6	
82·5	3 261 594·8	86 705·6	11·66	39 534·5	593·0	
83·2	3 790 135·4	106 116·0	12·18	45 554·5	683·3	
84·0	4 405 168·6	128 299·3	12·64	52 442·5	786·6	
80·0	1 800 662·2	20 940·5	6·97	22 508·3	337·6	158·8
81·2	2 658 197·6	51 245·5	9·54	32 736·4	491·0	
81·6	2 949 740·4	65 307·2	10·37	36 148·8	542·2	
82·0	3 244 155·5	76 398·8	10·83	39 562·9	593·4	
82·5	3 616 235·1	90 263·4	11·31	43 833·2	657·5	
83·2	4 144 775·7	109 673·8	11·83	49 817·0	747·3	
84·0	4 759 808·9	131 857·2	12·30	56 664·4	850·0	
80·0	1 582 555·3	17 953·6	6·48	19 781·9	296·7	211·7
81·2	2 362 132·9	42 953·6	8·86	29 090·3	436·4	
81·6	2 627 171·8	51 286·9	9·35	32 195·7	482·9	
82·0	2 894 821·9	59 620·3	9·75	35 302·7	529·5	
82·5	3 233 076·1	70 036·9	10·17	39 188·8	587·8	
83·2	3 713 567·5	84 620·3	10·64	44 634·2	669·5	
84·0	4 272 688·6	101 286·9	11·07	50 865·3	763·0	

(Continued)

TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)



Composed of									Weight per Metre	Sectional Area	Mean Thickness of Flanges
Web Plate		Flange Angles					Flange Plates				
Width	Thickness	A × B × t					Width	Thickness			
									w	a	$t_c = t_t$
mm	mm	mm		mm		mm	mm	mm	kg	cm^2	mm
1 600	16·0	200	×	150	×	18·0	500	0·0	388·6	495·04	15·0
								12·0	482·8	615·04	27·0
								16·0	514·2	655·04	31·0
								20·0	545·6	695·04	35·0
								25·0	584·9	745·04	40·0
								32·0	639·8	815·04	47·0
								40·0	702·6	895·04	55·0
1 600	16·0	200	×	100	×	15·0	550	0·0	335·3	427·12	11·3
								12·0	438·9	559·12	23·3
								16·0	473·4	603·12	27·3
								20·0	508·0	647·12	31·3
								25·0	551·2	702·12	36·3
								32·0	611·6	779·12	43·3
								40·0	680·7	867·12	51·3
1 600	16·0	200	×	150	×	18·0	550	0·0	388·6	495·04	13·6
								12·0	492·2	627·04	25·6
								16·0	526·8	671·04	29·6
								20·0	561·3	715·04	33·6
								25·0	604·5	770·04	38·6
								32·0	664·9	847·04	45·6
								40·0	734·0	935·04	53·6

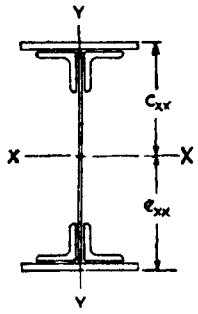


TABLE XX PLATE AND ANGLE GIRDERS (WITH FLANGE PLATES)

(Continued)

Distance of Extreme Fibre	Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
e_{xx}	I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm	cm^4	cm^4	cm	cm^3	$kg\text{-}m \times 10^3$	$kg \times 10^3$
80·0	1 937 195·5	21 644·3	6·61	24 214·9	363·2	211·7
81·2	2 716 773·1	46 644·3	8·71	33 457·8	501·9	
81·6	2 981 812·1	54 977·6	9·16	36 541·8	548·1	
82·0	3 249 462·2	63 310·9	9·54	39 627·6	594·4	
82·5	3 587 716·4	73 727·6	9·95	43 487·5	652·3	
83·2	4 068 207·8	88 310·9	10·41	48 896·7	733·5	
84·0	4 627 328·9	104 977·6	10·83	55 087·2	826·3	
80·0	1 582 555·3	17 953·6	6·48	19 781·9	296·7	211·7
81·2	2 440 090·6	51 228·6	9·57	30 050·4	450·8	
81·6	2 731 633·4	62 320·3	10·16	33 475·9	502·1	
82·0	3 026 048·6	73 411·9	10·65	36 903·0	553·5	
82·5	3 398 128·2	87 276·5	11·15	41 189·4	617·8	
83·2	3 926 668·7	106 686·9	11·70	47 195·5	707·9	
84·0	4 541 701·9	128 870·3	12·19	54 067·9	811·0	
80·0	1 937 195·5	21 644·3	6·61	24 214·9	363·2	211·7
81·2	2 794 730·9	54 919·3	9·36	34 417·9	516·3	
81·6	3 086 273·7	66 010·9	9·92	37 822·0	567·3	
82·0	3 380 688·9	77 102·6	10·38	41 227·9	618·4	
82·5	3 752 768·5	90 967·2	10·87	45 488·1	682·3	
83·2	4 281 309·0	110 377·6	11·42	51 458·0	771·9	
84·0	4 896 342·2	132 560·9	11·91	58 289·8	874·3	

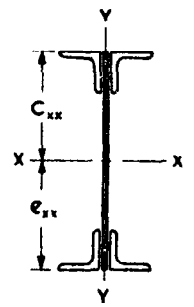
Note 1 — The properties given in this Table are based on the gross area of the section.

Note 2 — The mean thickness of flanges is computed according to Note 2 in Table II of IS : 800-1956.

Note 3 — The maximum allowable moment is computed on the basis of the allowable stress specified in 9.2.1 of IS : 800-1956 and gross modulus of section (Z_{xx}) given in this Table.

Note 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 XXI PLATE AND ANGLE GIRDERS (WITHOUT FLANGE PLATES)



Composed of			Weight per Metre	Sectional Area	Mean Thickness of Flanges	Distance of Extreme Fibre
Web Plate		Flange Angles				
Width	Thick-ness	$A \times B \times t$	w	a		e_{xx}
mm	mm	mm mm mm	kg	cm^2	mm	cm
800	10·0	100 × 100 × 10·0	122·6	156·12	10·0	40·0
		100 × 100 × 12·0	133·7	170·36	12·0	
		150 × 150 × 10·0	154·0	196·12	10·0	
		150 × 150 × 12·0	171·4	218·36	12·0	
1 000	10·0	100 × 100 × 10·0	138·3	176·12	10·0	50·0
		100 × 100 × 12·0	149·4	190·36	12·0	
		150 × 150 × 10·0	169·7	216·12	10·0	
		150 × 150 × 12·0	187·1	238·36	12·0	
1 250	10·0	100 × 100 × 10·0	157·9	201·12	10·0	62·5
		100 × 100 × 12·0	169·1	215·36	12·0	
		150 × 150 × 10·0	189·3	241·12	10·0	
		150 × 150 × 12·0	206·7	263·36	12·0	
1 600	10·0	100 × 100 × 10·0	185·4	236·12	10·0	80·0
		100 × 100 × 12·0	196·5	250·36	12·0	
		150 × 150 × 10·0	216·8	276·12	10·0	
		150 × 150 × 12·0	234·2	298·36	12·0	
		150 × 150 × 15·0	307·1	391·20	15·0	
800	10·0	150 × 115 × 10·0	142·9	182·08	10·0	40·0
		150 × 115 × 12·0	158·2	201·52	12·0	
		200 × 100 × 15·0	197·1	251·12	15·0	
1 000	10·0	150 × 115 × 10·0	158·6	202·08	10·0	50·0
		150 × 115 × 12·0	173·9	221·52	12·0	
		200 × 100 × 15·0	212·8	271·12	15·0	
1 250	10·0	150 × 115 × 10·0	178·3	227·08	10·0	62·5
		150 × 115 × 12·0	193·5	246·52	12·0	
		200 × 100 × 15·0	232·5	296·12	15·0	
1 600	10·0	150 × 115 × 10·0	205·7	262·08	10·0	80·0
		150 × 115 × 12·0	221·0	281·52	12·0	
		200 × 100 × 15·0	259·9	331·12	15·0	

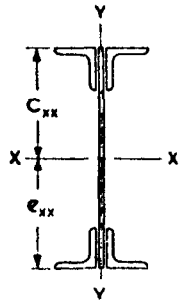


TABLE XXI PLATE AND ANGLE GIRDERS (WITHOUT FLANGE PLATES)

Gross Moments of Inertia		Radius of Gyration	Modulus of Section	Maximum Allowable Moment	Maximum Allowable Shear
I_{xx}	I_{yy}	r_{yy}	Z_{xx}	M	S
cm^4	cm^4	cm	cm^3	$kg\text{-}m \times 10^3$	$kg \times 10^3$
148 486·2	1 563·8	3·16	3 712·2	55·7	75·6
167 733·0	1 891·6	3·33	4 193·3	62·9	
195 146·6	4 910·8	5·00	4 878·7	73·2	
223 530·9	5 927·1	5·21	5 588·3	83·8	
253 337·2	1 565·5	2·98	5 066·7	76·0	94·5
284 446·7	1 893·2	3·15	5 688·9	85·3	
330 892·3	4 912·5	4·77	6 617·8	99·3	
377 265·3	5 928·8	4·99	7 545·3	113·2	
434 403·5	1 567·6	2·79	6 950·5	104·3	118·1
484 346·2	1 895·3	2·97	7 749·5	116·2	
561 826·9	4 914·6	4·51	8 989·2	134·8	
636 940·9	5 930·9	4·75	10 191·1	152·9	
795 234·4	1 570·5	2·58	9 940·4	149·1	151·2
879 019·6	1 898·2	2·75	10 987·7	164·8	
1 013 473·5	4 917·5	4·22	12 668·4	190·0	
1 140 500·7	5 933·8	4·46	14 256·3	213·8	
1 633 686·4	17 099·6	6·61	20 421·1	306·3	
184 950·8	3 425·0	4·34	4 623·8	69·4	75·6
211 309·2	4 117·4	4·52	5 282·7	79·2	
288 103·5	8 274·7	5·74	7 202·6	108·0	
311 732·2	3 426·7	4·12	6 234·6	93·5	94·5
354 295·7	4 119·1	4·31	7 085·9	106·3	
475 180·4	8 276·3	5·52	9 503·6	142·6	
527 512·6	3 428·8	3·89	8 440·2	126·6	118·1
595 800·1	4 121·2	4·09	9 532·8	140·0	
785 747·9	8 278·4	5·29	12 572·0	188·6	
950 572·2	3 431·7	3·62	11 882·2	178·2	151·2
1 065 079·2	4 124·1	3·83	13 313·5	199·7	
1 377 755·3	8 281·3	5·00	17 221·9	258·3	

Note 1 — The properties given in this Table are based on the gross area of the section.

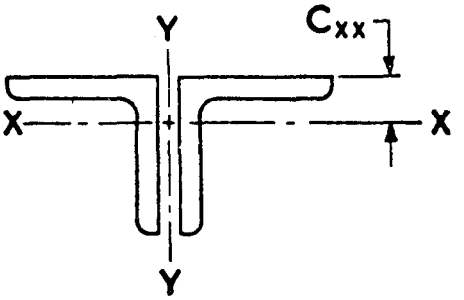
Note 2 — The mean thickness of flanges is computed according to Note 2 in Table II of IS : 800-1956.

Note 3 — The maximum allowable moment is computed on the basis of the allowable stress specified in **9.2.1** of IS : 800-1956 and gross modulus of section (Z_{xx}) given in this Table.

Note 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 XXII PROPERTIES OF TWO ANGLES BACK TO BACK

EQUAL ANGLES



Designation	Size of Each Angle	Thickness	Weight per Metre	Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	$A \times B$	t	w	a	I_{xx}	Z_{xx}	r_{xx}
	mm mm	mm	kg	cm^2	cm^4	cm^3	cm
ISA 5050	50 × 50	3·0	4·6	5·90	13·8	3·8	1·53
		4·0	6·0	7·76	18·2	5·0	1·53
		5·0	7·6	9·58	22·0	6·2	1·52
		6·0	9·0	11·36	25·8	7·2	1·51
ISA 5555	55 × 55	5·0	8·2	10·54	29·4	7·4	1·67
		6·0	9·8	12·52	34·6	8·8	1·66
		8·0	12·8	16·36	44·0	11·4	1·64
		10·0	15·8	20·04	52·6	14·0	1·62
ISA 6060	60 × 60	5·0	9·0	11·50	38·4	8·8	1·82
		6·0	10·8	13·68	45·2	10·4	1·82
		8·0	14·0	17·92	58·0	13·6	1·80
		10·0	17·2	22·00	69·6	16·8	1·78
ISA 6565	65 × 65	5·0	9·8	12·50	49·4	10·4	1·99
		6·0	11·6	14·88	58·2	12·4	1·98
		8·0	15·4	19·52	74·8	16·2	1·96
		10·0	18·8	24·00	90·0	19·8	1·94
ISA 7070	70 × 70	5·0	10·6	13·54	62·2	12·2	2·15
		6·0	12·6	16·12	73·6	14·6	2·14
		8·0	16·6	21·16	94·8	19·0	2·12
		10·0	20·4	26·04	114·4	23·4	2·10
ISA 7575	75 × 75	5·0	11·4	14·54	77·4	14·2	2·31
		6·0	13·6	17·32	91·4	16·8	2·30
		8·0	17·8	22·76	118·0	22·0	2·28
		10·0	22·0	28·04	142·8	27·0	2·26
ISA 8080	80 × 80	6·0	14·6	18·58	112·0	19·2	2·46
		8·0	19·2	24·42	145·0	25·2	2·44
		10·0	23·6	30·10	175·4	31·0	2·41
		12·0	28·0	35·62	203·8	36·6	2·39

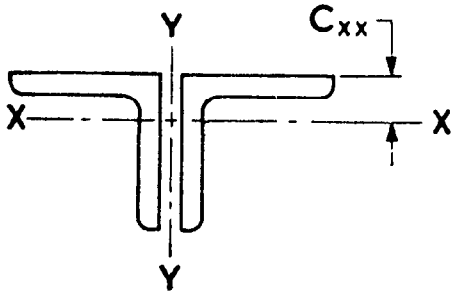


TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

EOUAL ANGLES

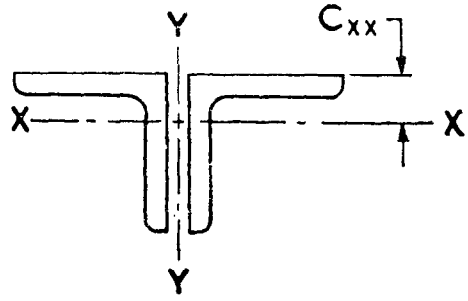
Distance of Centre of Gravity	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
c_{xx}	0·0	0·6	1·0	1·4	1·8	2·2	
cm							
1·32	2·02	2·22	2·38	2·53	2·69	2·86	ISA 5050
1·37	2·06	2·26	2·42	2·57	2·74	2·91	
1·41	2·07	2·28	2·44	2·60	2·76	2·93	
1·45	2·09	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	

(Continued)

TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

EQUAL ANGLES



Designation	Size of Each Angle	Thickness	Weight per Metre	Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	$A \times B$	t	w	a	I_{xx}	Z_{xx}	r_{xx}
	mm mm	mm	kg	cm^2	cm^4	cm^3	cm
ISA 9090	90×90	6·0	16·4	20·94	160·2	24·4	2·77
		8·0	21·6	27·58	208·4	32·0	2·75
		10·0	26·8	34·06	253·4	39·6	2·73
		12·0	31·6	40·38	295·8	46·6	2·71
ISA 100100	100×100	6·0	18·4	23·34	222·6	30·4	3·09
		8·0	24·2	30·78	290·2	40·0	3·07
		10·0	29·8	38·06	354·0	49·4	3·05
		12·0	35·4	45·18	414·0	58·4	3·03
ISA 110110	110×110	8·0	26·8	34·04	390·0	48·8	3·36
		10·0	38·0	42·12	476·8	60·2	3·36
		12·0	39·2	50·04	559·2	71·4	3·34
		15·0	48·4	61·62	674·8	87·4	3·31
ISA 130130	130×130	8·0	31·8	40·44	656·6	69·0	4·03
		10·0	39·4	50·12	805·4	85·4	4·01
		12·0	46·8	59·64	947·6	101·4	3·99
		15·0	57·8	73·62	1 149·2	124·6	3·95
ISA 150150	150×150	10·0	45·6	58·06	1 244·8	113·8	4·63
		12·0	54·4	69·18	1 470·8	135·4	4·61
		15·0	67·2	85·56	1 793·6	167·0	4·58
		18·0	79·8	101·58	2 097·8	197·4	4·54
ISA 200200	200×200	12·0	73·2	93·22	3 577·8	244·4	6·20
		15·0	90·8	115·60	4 395·4	302·8	6·17
		18·0	108·0	137·62	5 177·4	359·8	6·13
		25·0	147·2	187·60	6 872·6	486·6	6·05

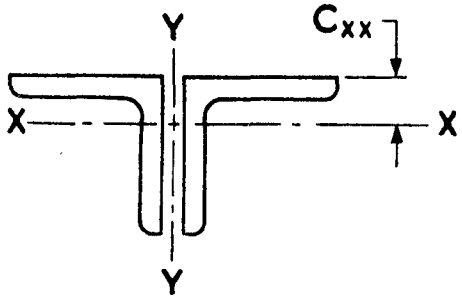


TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

EQUAL ANGLES

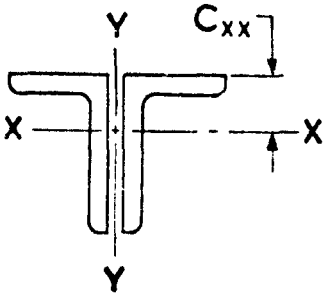
Distance of Centre of Gravity	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
C_{xx}	0·0	0·6	1·0	1·4	1·8	2·2	
cm							
2·42	3·68	3·88	4·02	4·17	4·32	4·48	**ISA 9090**
2·51	3·72	3·93	4·08	4·23	4·38	4·54	
2·59	3·76	3·97	4·12	4·27	4·43	4·59	
2·66	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	8·39	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	

(Continued)

TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

UNEQUAL ANGLES (LONGER LEGS BACK TO BACK)



Designation	Size of Each Angle	Thickness	Weight per Metre	Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	$A \times B$	t	w	a	I_{xx}	Z_{xx}	r_{xx}
	mm mm	mm	kg	cm^2	cm^4	cm^3	cm
ISA 6545	65 × 45	5·0	8·2	10·52	44·2	10·0	2·05
		6·0	9·8	12·50	52·0	11·8	2·04
		8·0	12·8	16·34	66·4	15·4	2·02
ISA 7045	70 × 45	5·0	8·6	11·04	54·4	11·4	2·22
		6·0	10·4	13·12	64·0	13·6	2·21
		8·0	13·4	17·16	82·0	17·8	2·19
		10·0	16·6	21·04	98·6	21·8	2·16
ISA 7550	75 × 50	5·0	9·4	12·04	68·2	13·4	2·38
		6·0	11·2	14·32	80·6	16·0	2·37
		8·0	14·8	18·76	103·6	20·8	2·35
		10·0	18·0	23·04	124·6	25·4	2·33
ISA 8050	80 × 50	5·0	9·8	12·54	81·2	15·0	2·55
		6·0	11·8	14·92	96·0	18·0	2·54
		8·0	15·4	19·56	123·8	23·4	2·52
		10·0	18·8	24·04	149·4	28·8	2·49
ISA 9060	90 × 60	6·0	13·6	17·30	141·2	23·0	2·86
		8·0	17·8	22·74	183·0	30·2	2·84
		10·0	22·0	28·02	221·8	37·2	2·81
		12·0	26·0	33·14	258·2	44·0	2·79
ISA 10065	100 × 65	6·0	15·0	19·10	193·4	28·4	3·18
		8·0	19·8	25·14	251·8	37·4	3·16
		10·0	24·4	31·02	306·4	46·2	3·14
ISA 10075	100 × 75	6·0	16·0	20·28	201·8	28·8	3·15
		8·0	21·0	26·72	263·2	38·2	3·14
		10·0	26·0	33·00	320·8	47·2	3·12
		12·0	30·8	39·12	375·0	55·8	3·10

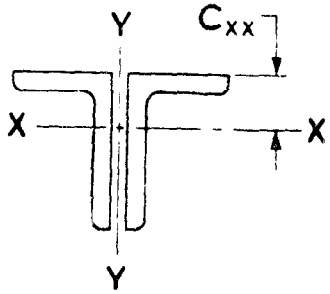


TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

UNEQUAL ANGLES (LONGER LEGS BACK TO BACK)

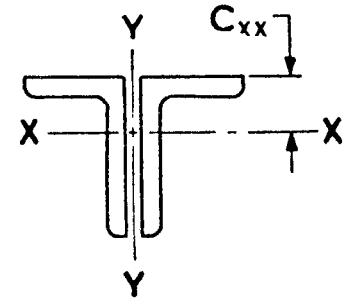
Distance of Centre of Gravity	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
C_{xx}	0·0	0·6	1·0	1·4	1·8	2·2	
cm							
2·07	1·67	1·88	2·03	2·19	2·36	2·53	**ISA 6545**
2·11	1·69	1·91	2·06	2·22	2·39	2·56	
2·19	1·73	1·95	2·11	2·28	2·44	2·62	
2·27	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 XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

UNEQUAL ANGLES (LONGER LEGS BACK TO BACK)



Designation	Size of Each Angle	Thickness	Weight per Metre	Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	$A \times B$	t	w	a	I_{xx}	Z_{xx}	r_{xx}
	mm mm	mm	kg	cm^2	cm^4	cm^3	cm
ISA 12575	125×75	6·0	18·4	23·32	375·6	44·4	4·01
		8·0	24·2	30·76	491·0	58·8	4·00
		10·0	29·8	38·04	600·6	72·6	3·97
ISA 12595	125×95	6·0	20·2	25·72	406·4	46·2	3·97
		8·0	26·6	33·96	532·0	61·2	3·96
		10·0	33·0	42·04	651·6	75·6	3·94
		12·0	39·2	49·96	765·2	89·6	3·91
ISA 15075	150×75	8·0	27·4	34·84	814·4	83·4	4·83
		10·0	33·8	43·12	998·2	103·2	4·81
		12·0	40·2	51·24	1 174·0	122·4	4·79
ISA 150115	150×115	8·0	32·4	41·16	931·4	88·4	4·76
		10·0	40·0	51·04	1 146·6	109·8	4·74
		12·0	47·6	60·76	1 353·0	130·6	4·72
		15·0	59·0	75·04	1 647·0	160·8	4·69
ISA 200100	200×100	10·0	45·6	58·06	2 420·0	185·6	6·46
		12·0	54·4	69·18	2 863·4	221·2	6·43
		15·0	67·2	85·56	3 501·0	273·0	6·40
ISA 200150	200×150	10·0	53·4	68·00	2 755·8	196·6	6·37
		12·0	63·6	81·12	3 269·8	234·8	6·35
		15·0	78·8	100·50	4 011·2	290·8	6·32
		18·0	93·8	119·52	4 718·8	345·0	6·28

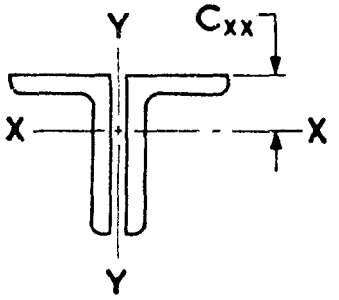


TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

UNEQUAL ANGLES (LONGER LEGS BACK TO BACK)

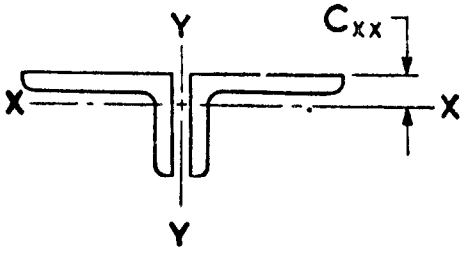
Distance of Centre of Gravity	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
C_{xx}	0·0	0·6	1·0	1·4	1·8	2·2	
cm							
4·05	2·64	2·83	2·97	3·11	3·26	3·41	ISA 12575
4·15	2·68	2·88	3·02	3·17	3·32	3·48	
4·24	2·72	2·92	3·07	3·22	3·37	3·53	
3·70	3·59	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 XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

UNEQUAL ANGLES (SHORTER LEGS BACK TO BACK)



Designation	Size of Each Angle	Thickness	Weight per Metre	Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	$A \times B$	t	w	a	I_{xx}	Z_{xx}	r_{xx}
	mm mm	mm	kg	cm^2	cm^4	cm^3	cm
ISA 6545	65 × 45	5·0	8·2	10·52	17·2	5·0	1·28
		6·0	9·8	12·50	20·2	6·0	1·27
		8·0	12·8	16 34	25·6	7·8	1·25
ISA 7045	70 × 45	5·0	8·6	11·04	17·6	5·0	1·26
		6·0	10·4	13·12	20·6	6·0	1·25
		8·0	13·4	17·16	26·2	7·8	1·24
		10·0	16·6	21·04	31·2	9·6	1·22
ISA 7550	75 × 50	5·0	9·4	12·04	24·4	6·4	1·42
		6·0	11·2	14·32	28·6	7·6	1·41
		8·0	14·8	18·76	36·6	9·8	1·40
		10·0	18·0	23·04	43·6	12·0	1·38
ISA 8050	80 × 50	5·0	9·8	12·54	24·6	6·4	1·40
		6·0	11·8	14·92	28 8	7·6	1·39
		8·0	15·4	19·56	37·0	9·8	1·37
		10·0	18·8	24·04	44·2	12·0	1·36
ISA 9060	90 × 60	6·0	13·6	17·30	50 4	11·0	1·71
		8·0	17·8	22·74	64·8	14·4	1·69
		10·0	22·0	28·02	78·2	17·6	1·67
		12·0	26·0	33·14	90·4	20·6	1·65
ISA 10065	100 × 65	6·0	15·0	19·10	64·8	12·8	1·84
		8·0	19·8	25 14	83·8	17·0	1·83
		10·0	24·4	31·02	101·4	20·8	1·81
ISA 10075	100 × 75	6·0	16·0	20·28	97·4	17·0	2·19
		8·0	21·0	26·72	126·6	22·4	2·18
		10·0	26·0	33·00	153·8	27·6	2·16
		12·0	30·8	39·12	179·0	32·6	2·14

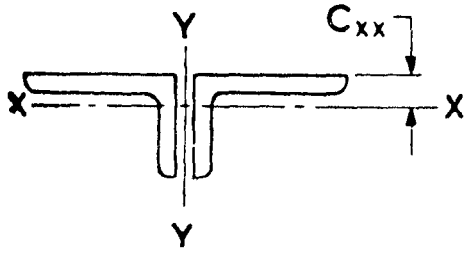


TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

UNEQUAL ANGLES (SHORTER LEGS BACK TO BACK)

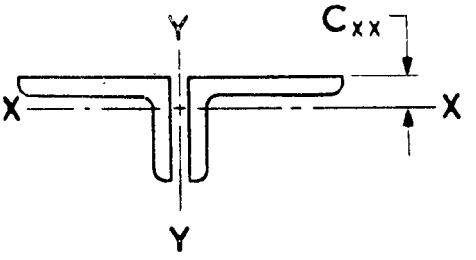
Distance of Centre of Gravity	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
C_{xx}	0·0	0·6	1·0	1·4	1·8	2·2	
cm							
1·08	2·91	3·13	3·29	3·45	3·61	3·78	ISA 6545
1·12	2·93	3·16	3·31	3·47	3·64	3·80	
1·20	2·98	3·20	3·36	3·52	3·69	3·86	
1·04	3·17	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 XXII PROPERTIES OF TWO ANGLES BACK TO BACK

(Continued)

UNEQUAL ANGLES (SHORTER LEGS BACK TO BACK)



Designation	Size of Each Angle	Thickness	Weight per Metre	Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
	$A \times B$	t	w	a	I_{xx}	Z_{xx}	r_{xx}
	mm mm	mm	kg	cm^2	cm^4	cm^3	cm
ISA 12575	125 × 75	6·0	18·4	23·32	103·2	17·4	2·10
		8·0	24·2	30·76	134·4	23·0	2·09
		10·0	29·8	38·04	163·2	28·4	2·07
ISA 12595	125 × 95	6·0	20·2	25·72	204·2	28·0	2·82
		8·0	26·6	33·96	266·6	37·0	2·80
		10·0	33·0	42·04	325·4	45·8	2·78
		12·0	39·2	49·96	380·8	54·2	2·76
ISA 15075	150 × 75	8·0	27·4	34·84	140·4	23·6	2·01
		10·0	33·8	43·12	170·6	29·0	1·99
		12·0	40·2	51·24	199·0	34·2	1·97
ISA 150115	150 × 115	8·0	32·4	41·16	477·8	54·4	3·41
		10·0	40·0	51·04	586·8	67·6	3·39
		12·0	47·6	60·76	690·6	80·4	3·37
		15·0	59·0	75·04	837·2	98·8	3·34
ISA 200100	200 × 100	10·0	45·6	58·06	418·4	52·4	2·68
		12·0	54·4	69·18	492·4	62·2	2·67
		15·0	67·2	85·56	596·2	76·6	2·64
ISA 200150	200 × 150	10·0	53·4	68·00	1 339·2	116·6	4·44
		12·0	63·6	81·12	1 586·4	139·2	4·42
		15·0	78·8	100·50	1 939·8	172·0	4·39
		18·0	93·8	119·52	2 273·8	203·8	4·36

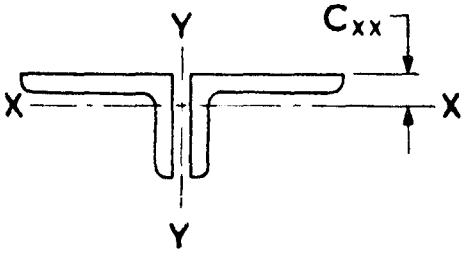


TABLE XXII PROPERTIES OF TWO ANGLES BACK TO BACK

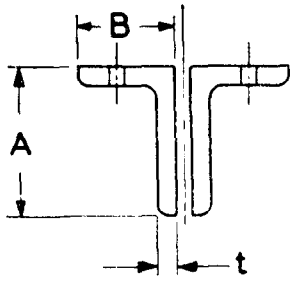
(Continued)

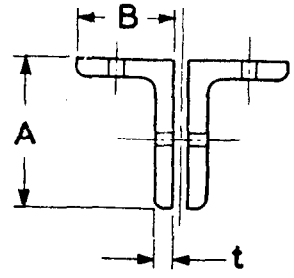
UNEQUAL ANGLES (SHORTER LEGS BACK TO BACK)

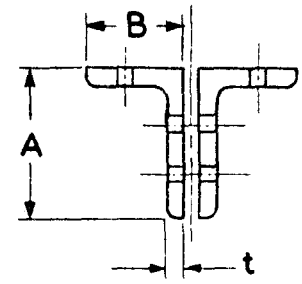
Distance of Centre of Gravity	Radii of Gyration About Y-Y Axis, in cm						Designation
	Distance, Back to Back of Angles, in cm						
C_{xx}	0·0	0·6	1·0	1·4	1·8	2·2	
cm							
1·59	5·71	5·92	6·07	6·22	6·37	6·53	ISA 12575
1·68	5·76	5·98	6·13	6·28	6·44	6·60	
1·76	5·81	6·03	6·18	6·34	6·50	6·66	
2·22	5·43	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 XXIII NET AREA OF GIRDER FLANGE ANGLES

TWO ANGLES — NET AREA IN sq cm







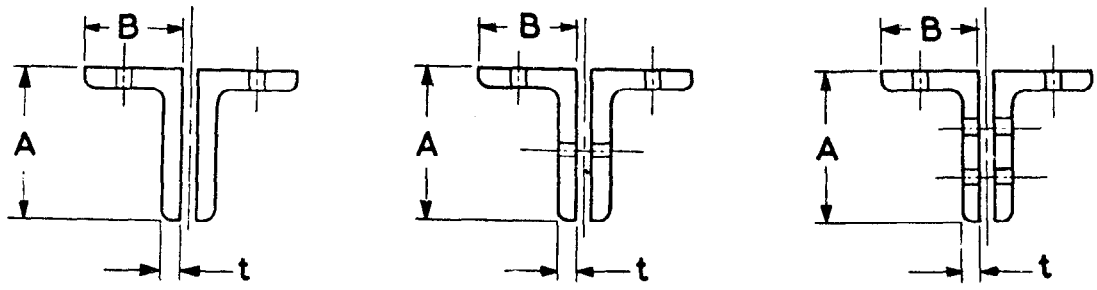
Size of Each Angle	Thickness	Diameter of Rivet in mm											
		2 Holes Out				4 Holes Out				6 Holes Out			
A × B	t												
mm mm	mm	20	22	24	27	20	22	24	27	20	22	24	27
100 × 100	6	20·76	20·52	20·28	19·86	18·18	17·70	17·22	16·38	—	—	—	—
	8	27·34	27·02	26·70	26·14	23·90	23·26	22·62	21·50	—	—	—	—
	10	33·76	33·36	32·96	32·26	29·46	28·66	27·86	26·46	—	—	—	—
	12	40·02	39·54	39·06	38·22	34·86	33·90	32·94	31·26	—	—	—	—
110 × 110	8	30·60	30·28	29·96	29·40	27·16	26·52	25·88	24·76	—	—	—	—
	10	37·82	37·42	37·02	36·32	33·52	32·72	31·92	30·52	—	—	—	—
	12	44·88	44·40	43·92	43·08	39·72	38·76	37·80	36·12	—	—	—	—
	15	55·17	54·57	53·97	52·92	48·72	47·52	46·32	44·22	—	—	—	—
130 × 130	8	37·00	36·68	36·36	35·80	33·56	32·92	32·28	31·16	30·12	—	—	—
	10	45·82	45·42	45·02	44·32	41·52	40·72	39·92	38·52	37·22	—	—	—
	12	54·48	54·00	53·52	52·68	49·32	48·36	47·40	45·72	44·16	—	—	—
	15	67·17	66·57	65·97	64·92	60·72	59·52	58·32	56·22	54·27	—	—	—
150 × 150	10	53·76	53·36	52·96	52·26	49·46	48·66	47·86	46·46	45·16	43·96	—	—
	12	64·02	63·54	63·06	62·22	58·86	57·90	56·94	55·26	53·70	52·26	—	—
	15	79·11	78·51	77·91	76·86	72·66	71·46	70·26	68·16	66·21	64·41	—	—
	18	93·84	93·12	92·40	91·14	86·10	84·66	83·22	80·70	78·36	76·20	—	—
200 × 200	12	88·06	87·58	87·10	86·26	82·90	81·94	80·98	79·30	77·74	76·30	74·86	72·34
	15	109·15	108·55	107·95	106·90	102·70	101·50	100·30	98·20	96·25	94·45	92·65	89·50
	18	129·83	129·16	128·44	127·18	122·14	120·70	119·26	116·74	114·40	112·24	110·08	106·30
	25	176·85	175·85	174·85	173·10	166·10	164·10	162·10	158·60	155·35	152·35	149·35	144·10
100 × 75	6	17·70	17·46	17·22	16·80	15·12	14·64	14·16	13·32	—	—	—	—
	8	23·28	22·96	22·64	22·08	19·84	19·20	18·56	17·44	—	—	—	—
	10	28·70	28·30	27·90	27·20	24·40	23·60	22·80	21·40	—	—	—	—
	12	33·96	33·48	33·00	32·16	28·80	27·84	26·88	25·20	—	—	—	—

(Continued)

TABLE XXIII NET AREA OF GIRDER FLANGE ANGLES

(Continued)

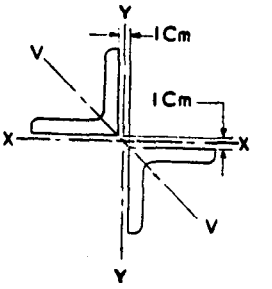
TWO ANGLES — NET AREA IN sq cm



Size of Each Angle	Thick-ness	Diameter of Rivet in mm											
		2 Holes Out				4 Holes Out				6 Holes Out			
A × B	t												
mm mm	mm	20	22	24	27	20	22	24	27	20	22	24	27
125×75	6	20·74	20·50	20·26	19·84	18·16	17·68	17·20	16·36	15·58	—	—	—
	8	27·32	27·00	26·68	26·12	23·88	23·24	22·60	21·48	20·44	—	—	—
	10	33·74	33·34	32·94	32·24	29·44	28·64	27·84	26·44	25·14	—	—	—
125×95	6	23·14	22·90	22·66	22·24	20·56	20·08	19·60	18·76	17·98	—	—	—
	8	30·52	30·20	29·88	29·32	27·08	26·44	25·80	24·68	23·64	—	—	—
	10	37·74	37·34	36·94	36·24	33·44	32·64	31·84	30·44	29·14	—	—	—
	12	44·80	44·32	43·84	43·00	39·64	38·68	37·72	36·04	34·48	—	—	—
150×75	8	31·40	31·08	30·76	30·20	27·96	27·32	26·68	25·56	24·52	23·56	—	—
	10	38·82	38·42	38·02	37·32	34·52	33·72	32·92	31·52	30·22	29·02	—	—
	12	46·08	45·60	45·12	44·28	40·92	39·96	39·00	37·32	35·76	34·32	—	—
150×115	8	37·72	37·40	37·08	36·52	34·28	33·64	33·00	31·88	30·84	29·88	—	—
	10	46·74	46·34	45·94	45·24	42·44	41·64	40·84	39·44	38·14	36·94	—	—
	12	55·60	55·12	54·64	53·80	50·44	49·48	48·52	46·84	45·28	43·84	—	—
	15	68·59	67·99	67·39	66·34	62·14	60 94	59·74	57·64	55·69	53·89	—	—
200×100	10	53·76	53·36	52·96	52·26	49·46	48·66	47·86	46·46	45·16	43·96	42·76	40·66
	12	64·02	63·54	63·06	62·22	58·86	57·90	56·94	55·26	53·70	52·26	50·82	48·30
	15	79·11	78·51	77·91	76·86	72·66	71·46	70·26	68·16	66·21	64·41	62·61	59·45
200×150	10	63·70	63·30	62·90	62·20	59·40	58·60	57·80	56·40	55·10	53·90	52·70	50·60
	12	75·96	75·48	75·00	74·16	70·80	69·84	68·88	67·20	65·64	64·20	62·76	60·24
	15	94·05	93·45	92·85	91·80	87·60	86·40	85·20	83·10	81·15	79·35	77·55	74·40
	18	111·78	111·06	110·34	109·08	104·04	102·60	101·16	98·64	96·30	94·14	91·98	88·20

SECTION C
ANGLES, SINGLE AND DOUBLE, USED AS STRUTS AND TIES (TABLES XXIV-XXXI)

TABLE XXIV PROPERTIES OF STARRED ANGLES



TWO EQUAL ANGLES STARRED

Space Between Parallel Faces = 1 cm

Size $A \times B \times t$	Total Area	Least Radius of Gyration r_{vv}
mm mm mm	cm^2	cm
50 × 50 × 3·0	5·90	1·94
4·0	7·76	1·93
5·0	9·58	1·92
6·0	11·36	1·90
55 × 55 × 5·0	10·54	2·11
6·0	12·52	2·10
8·0	16·36	2·07
10·0	20·04	2·03
60 × 60 × 5·0	11·50	2·31
6·0	13·68	2·29
8·0	17·92	2·27
10·0	22·00	2·23
65 × 65 × 5·0	12·50	2·51
6·0	14·88	2·50
8·0	19·52	2·47
10·0	24·00	2·44
70 × 70 × 5·0	13·54	2·71
6·0	16·12	2·70
8·0	21·16	2·67
10·0	26·04	2·64
75 × 75 × 5·0	14·54	2·92
6·0	17·32	2·91
8·0	22·76	2·88
10·0	28·04	2·84
80 × 80 × 6·0	18·58	3·11
8·0	24·42	3·08
80 × 80 × 10·0	30·10	3·04
12·0	35·62	3·01
90 × 90 × 6·0	20·94	3·50
8·0	27·58	3·47
10·0	34·06	3·44
12·0	40·38	3·41
100 × 100 × 6·0	23·34	3·91
8·0	30·78	3·98
10·0	38·06	3·85
12·0	45·18	3·82
110 × 110 × 8·0	34·04	4·28
10·0	42·12	4·25
12·0	50·04	4·22
15·0	61·62	4·17
130 × 130 × 8·0	40·44	5·10
10·0	50·12	5·07
12·0	59·64	5·03
15·0	73·62	4·98
150 × 150 × 10·0	58·06	5·86
12·0	69·18	5·83
15·0	85·56	5·78
18·0	101·58	5·73
200 × 200 × 12·0	93·22	7·84
15·0	115·60	7·79
18·0	137·62	7·75
20·0	187·60	7·63

(Continued)

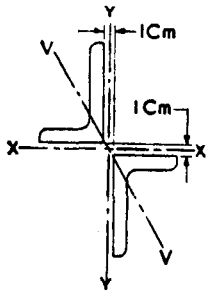


TABLE XXIV PROPERTIES OF STARRED ANGLES

(Continued)

TWO UNEQUAL ANGLES STARRED

Space Between Parallel Faces = 1 cm

Size $A \times B \times t$ mm mm mm	Total Area cm²	Least Radius of Gyration r_{vv} cm
65 × 45 × 5·0	10·52	1·81
6·0	12·50	1·81
8·0	16·34	1·80
70 × 45 × 5·0	11·04	1·79
6·0	13·12	1·80
8·0	17·16	1·79
10·0	21·04	1·79
75 × 50 × 5·0	12·04	2·00
6·0	14·32	2·00
8·0	18·76	1·99
10·0	23·04	1·99
80 × 50 × 5·0	12·54	1·97
6·0	14·92	1·97
8·0	19·56	1·97
10·0	24·04	1·97
90 × 60 × 6·0	17·30	2·36
8·0	22·74	2·37
10·0	28·02	2·37
12·0	33·14	2·36
100 × 65 × 6·0	19·10	2·53
8·0	25·14	2·54
10·0	31·02	2·54
100 × 75 × 6·0	20·28	2·97
8·0	26·72	2·98
100 × 75 × 10·0	33·00	2·98
12·0	39·12	2·97
125 × 75 × 6·0	23·32	2·84
8·0	30·76	2·86
10·0	38·04	2·86
125 × 95 × 6·0	25·72	3·76
8·0	33·96	3·77
10·0	42·04	3·77
12·0	49·96	3·76
150 × 75 × 8·0	34·84	2·72
10·0	43·12	2·73
12·0	51·24	2·74
150 × 115 × 8·0	41·16	4·52
10·0	51·04	4·53
12·0	60·76	4·54
15·0	75·04	4·53
200 × 100 × 10·0	58·06	3·55
12·0	69·18	3·57
15·0	85·56	3·59
200 × 150 × 10·0	68·00	5·83
12·0	81·12	5·84
15·0	100·50	5·85
18·0	119·52	5·86

TABLE XXV 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
	Size $A \times B \times t$ (mm mm mm)	Safe Loads in kg						
EQUAL ANGLES	50 × 50 × 4·0	3 637·1	2 657·8	1 462·0	792·3	—	—	—
	5·0	4 490·1	3 281·2	1 804·9	978·1	—	—	—
	6·0	5 315·3	3 847·6	2 094·8	1 130·3	—	—	—
	55 × 55 × 5·0	4 989·6	3 923·0	2 318·3	1 305·4	798·9	—	—
	6·0	5 927·0	4 659·9	2 753·8	1 550·6	949·0	—	—
	8·0	7 744·8	6 089·2	3 598·4	2 026·2	1 240·1	—	—
	10·0	9 486·9	7 458·9	4 407·8	2 482·0	1 519·0	—	—
	60 × 60 × 5·0	5 483·8	4 573·6	2 922·7	1 729·6	1 060·9	—	—
	6·0	6 519·2	5 410·4	3 430·3	2 018·5	1 238·0	—	—
	8·0	8 539 8	7 087·4	4 493·4	2 644·1	1 621·8	—	—
	10·0	10 484·1	8 701·0	5 516·5	3 246·1	1 991·0	—	—
	65 × 65 × 5·0	—	5 218·8	3 585·0	2 226·9	1 393·8	925·0	—
	6·0	—	6 212·4	4 267·6	2 650·9	1 659·1	1 101·1	—
	8·0	—	8 120·3	5 533·9	3 416·0	2 137·4	1 415·2	—
	10·0	—	9 984·0	6 804·0	4 200·0	2 628·0	1 740·0	—
	70 × 70 × 5·0	—	5 838·4	4 292·2	2 801·4	1 769·0	1 185·4	—
	6·0	—	6 950·9	5 110·0	3 335·2	2 106·1	1 411·3	—
	8·0	—	9 097·7	6 647·4	4 324·0	2 724·4	1 827·2	—
	10·0	—	11 195·9	8 180·5	5 321·3	3 352·6	2 248·6	—
	75 × 75 × 6·0	—	7·655·4	5 953·8	4 020·0	2 643·9	1 782·2	1 259·2
	8·0	—	10 041·7	7 766·8	5 221·1	3 423·1	2 303·3	1 629·6
	10·0	—	12 371·2	9 568·6	6 432·4	4 217·2	2 837·6	2 007·7

(Continued)

TABLE XXV SAFE LOADS FOR SINGLE ANGLE STRUTS

(*Continued*)

SINGLE BOLTED OR SINGLE RIVETED END CONNECTIONS

	Effective Lengths in Metres	1·00	1·50	2·00	2·50	3·00	3·50
	Size $A \times B \times t$ (mm mm mm)	Safe Loads in kg					
EQUAL ANGLES	80 × 80 × 6·0	8 347·1	6 804·0	4 787·1	3 242·2	2 212·9	1 574·7
	8·0	10 953·6	8 892·5	6 228·3	4 210·0	2 870·6	2 042·7
	10·0	13 501·4	10 960·9	7 677·0	5 189·2	3 538·3	2 517·9
	12·0	15 952·4	12 896·2	8 990·5	6 066·1	4 131·9	2 940·4
UNEQUAL ANGLES	60 × 40 × 5·0	2 776·0	1 358·5	725·9	—	—	—
	6·0	3 295·1	1 612·5	861·6	—	—	—
	8·0	4 227·4	2 044·4	1 090·8	—	—	—
	65 × 45 × 5·0	3 563·1	1 939·9	1 046·7	—	—	—
	6·0	4 185·0	2 253·1	1 212·5	—	—	—
	8·0	5 470·6	2 945·3	1 585·0	—	—	—
	70 × 45 × 5·0	3 739·2	2 035·8	1 098 5	—	—	—
	6·0	4 443·7	2 419·3	1 305·4	—	—	—
	8·0	5 745·2	3 093·1	1 664·5	—	—	—
	10·0	7 044·2	3 792·5	2 040·9	—	—	—
	75 × 50 × 6·0	5 371·4	3 194·1	1 808·6	1 111·2	—	—
	8·0	6 982·5	4 126·3	2 323·4	1 422·0	—	—
	10·0	8 575·5	5 067·6	2 853·5	1 746·4	—	—
	80 × 50 × 6·0	5 596·5	3 327·9	1 884·4	1 157·8	—	—
	8·0	7 280·2	4 302·2	2 422·5	1 482·6	—	—
	10·0	8 947·7	5 287·6	2 977·4	1 822·?	—	—
	90 × 60 × 8·0	9 559·9	6 667·4	4 193·3	2 623·1	1 751·0	—
	10·0	11 739·0	8 125·8	5 080·0	3 178·9	2 115·5	—
	12·0	13 884·0	9 610·6	6 008·3	3 759·7	2 502·1	—

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

Note 2 — The values on the right side of the zigzag dotted line are for ratio of slenderness exceeding 180.

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

TABLE XXVI 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 $A \times B \times t$ mm mm mm	Safe Loads in kg					
EQUAL ANGLES	50 × 50 × 4·0	3 323·2	1 826·3	991·0	—	—	—
	5·0	4 102·6	2 254·7	1 223·4	—	—	—
	6·0	4 810·4	2 617·9	1 414·3	—	—	—
	55 × 55 × 5·0	4 906·4	2 898·0	1 636·3	995·5	—	—
	6·0	5 828·1	3 442·4	1 943·7	1 182·5	—	—
	8·0	7 615·6	4 498·2	2 539·9	1 545·2	—	—
	10·0	9 328·6	5 510·0	3 111·2	1 892·8	—	—
	60 × 60 × 5·0	5 717·2	3 653·6	2 160·3	1 327·1	—	—
	6·0	6 764·1	4 288·0	2 521·2	1 547·9	—	—
	8·0	8 860·5	5 617·0	3 302·7	2 027·6	—	—
	10·0	10 877·9	6 895·9	4 054·6	2 489·3	—	—
	65 × 65 × 5·0	6 516·9	4 482·5	2 785·6	1 744·4	1 153·8	—
	6·0	7 757·7	5 336·0	3 316·0	2 076·5	1 373·4	—
	8·0	10 140·6	6 919·8	4 274·9	2 674·2	1 766·6	—
	10·0	12 468·0	8 508·0	5 256·0	3 288·0	2 172·0	—
	70 × 70 × 5·0	7 292·6	5 365·2	3 497·4	2 213·8	1 481·3	—
	6·0	8 682·2	6 387·6	4 163·8	2 635·6	1 763·5	—
	8·0	11 362·9	8 309·5	5 396·9	3 411·0	2 281·0	—
	10·0	13 983·5	10 225·9	6 641·5	4 197·6	2 807·1	—
	75 × 75 × 6·0	9 563·2	7 444·1	5 026·3	3 301·2	2 230·8	1 571·8
	8·0	12 544·2	9 710·6	6 528·7	4 275·5	2 882·6	2 034·7
	10·0	15 454·2	11 963·3	8 043·3	5 267·3	3 551·3	2 506·8
	80 × 80 × 6·0	10 430·8	8 508·7	5 984·6	4 056·9	2 774·0	1 963·0
	8·0	13 687·4	11 120·9	7 785·1	5 267·4	3 597·1	2 544·6
	10·0	16 871·0	13 707·5	9 595·9	6 492·6	4 433·7	3 136·4
	12·0	19 934·7	16 128·7	11 238·1	7 588·8	5 175·6	3 660·0

(Continued)

TABLE XXVI SAFE LOADS FOR SINGLE ANGLE STRUTS

(Continued)

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 $A \times B \times t$ (mm mm mm)	Safe Loads in kg						
EQUAL ANGLES	90 × 90 × 8·0	13 761·0	10 454·2	7 472·8	5 244·3	3 778·5	2 798·0	—
	10·0	16 932·9	12 815·1	9 143·4	6 398·2	4 606·3	3 409·4	—
	12·0	20 074·9	15 193·0	10 840·0	7 585·4	5 463·4	4 042·0	—
	100 × 100 × 8·0	16 270·3	13 253·9	9 914·2	7 317·9	5 269·5	3 979·9	3 054·9
	10·0	20 072·8	16 299·2	12 160·2	8 957·4	6 443·6	4 860·3	3 735·6
	12·0	23 827·9	19 348·3	14 435·0	10 633·1	7 649·0	5 769·5	4 434·4
	110 × 110 × 8·0	18 677·7	15 969·9	12 531·8	9 495·5	7 146·7	5 386·8	4 141·0
	10·0	23 111·2	19 760·6	15 506·5	11 749·4	8 843·1	6 665·5	5 123·9
	12·0	27 409·4	23 386·2	18 304·6	13 858·6	10 408·3	7 843·8	6 029·8
	15·0	33 752·4	28 798·1	22 540·6	17 065·7	12 817·0	9 658·9	7 425·2
	130 × 130 × 10·0	—	26 222·8	22 481·3	18 176·0	14 402·0	11 362·2	8 853·7
	12·0	—	31 203·6	26 751·5	21 628·4	17 137·6	13 520·4	10 535·4
	15·0	—	38 451·7	32 900·8	26 547·4	21 011·1	16 549·8	12 883·5
	150 × 150 × 12·0	—	38 232·3	34 614·2	29 870·8	24 686·9	20 190·2	16 502·9
	15·0	—	47 242·0	42 720·1	36 773·7	30 382·4	24 829·5	20 273·4
	18·0	—	56 036·6	50 607·2	43 501·6	35 898·4	29 310·9	23 906·9
	200 × 200 × 15·0	—	67 735·8	64 938·3	61 169·7	56 094·9	49 910·3	43 419·4
	18·0	—	80 604·0	77 259·9	72 745·9	66 663·1	59 259·2	51 518·0
	25·0	—	109 783·5	105 187·3	98 940·2	90 545·1	80 339·7	69 949·7

	Effective Lengths in Metres	5·0	5·5	6·0	7·0	8·0	9·0
	Size $A \times B \times t$ (mm mm mm)	Safe Loads in kg					
EQUAL ANGLES	110 × 110 × 8·0	3 286·6	—	—	—	—	—
	10·0	4 066·7	—	—	—	—	—
	12·0	4 778·8	—	—	—	—	—
	15·0	5 884·7	—	—	—	—	—
	130 × 130 × 10·0	7 119·5	5 721·2	4 716·3	—	—	—
	12·0	8 471·9	6 807·9	5 612·1	—	—	—
	15·0	10 365·7	8 330·1	6 861·4	—	—	—
	150 × 150 × 12·0	13 282·6	10 854·3	8 983·0	6 333·4	—	—
	15·0	16 307·7	13 330·2	11 020·1	7 764·6	—	—
	18·0	19 218·9	15 714·4	12 971·6	9 147·3	—	—
	200 × 200 × 15·0	37 385·0	32 079·0	27 622·6	19 917·9	15 039·6	11 542·7
	18·0	44 327·4	38 038·2	32 719·2	23 560·5	17 794·3	13 658·8
	25·0	59 938·2	51 449·3	44 151·7	31 760·7	23 956·5	18 412·9

(Continued)

TABLE XXVI SAFE LOADS FOR SINGLE ANGLE STRUTS

(*Continued*)

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 $A \times B \times t$ mm mm mm			Safe Loads in kg			
UNEQUAL ANGLES	60 × 40 × 5·0	3 471·0	1 697·4	903·9	—	—	—
	6·0	4 120·0	2 014·8	1 072·9	—	—	—
	8·0	5 285·8	2 555·2	1 360·5	—	—	—
	65 × 45 × 5·0	4 454·7	2 424·3	1 309·7	—	—	—
	6·0	5 232·5	2 817·5	1 516·9	—	—	—
	8·0	6 839·9	3 683·0	1 982·9	—	—	—
	70 × 45 × 5·0	4 674·9	2 544·2	1 374·5	—	—	—
	6·0	5 555·7	3 023·5	1 633·4	—	—	—
	8·0	7 183·2	3 867·9	2 082·4	—	—	—
	10·0	8 807·3	4 742·4	2 553·2	—	—	—
	75 × 50 × 6·0	6 718·2	3 994·6	2 266·1	1 382·6	—	—
	8·0	8 732·8	5 158·1	2 912·5	1 771·9	—	—
	10·0	10 725·1	6 334·8	3 577·0	2 176·1	—	—
	80 × 50 × 6·0	6 999·7	4 161·9	2 361·1	1 440·5	—	—
	8·0	9 105·2	5 378·0	3 036·7	1 847·4	—	—
	10·0	11 190·6	6 609·8	3 732·2	2 270·6	—	—
	90 × 60 × 8·0	11 939·6	8 336·5	5 240·4	3 285·9	2 179·6	—
	10·0	14 660·1	10 161·5	6 352·1	3 980·2	2 636·7	—
	12·0	17 338·8	12 018·2	7 512·8	4 707·5	3 118·5	—
	100 × 65 × 8·0	13 657·3	10 227·0	6 733·7	4 282·6	2 891·1	—
	10·0	16 805·1	12 510·4	8 211·0	5 212·9	3 509·9	—
	100 × 75 × 8·0	15 067·4	12 438·2	8 861·7	6 077·5	4 148·3	2 935·2
	10·0	18 582·3	15 279·0	10 840·5	7 405·2	5 055·6	3 580·5
	12·0	22 028·5	18 113·6	12 850·9	8 778·5	5 993·2	4 244·5

(*Continued*)

TABLE XXVI SAFE LOADS FOR SINGLE ANGLE STRUTS

(Continued)

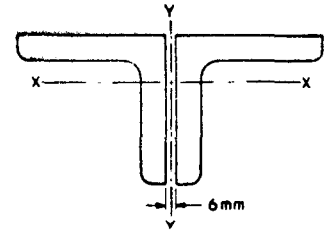
DOUBLE BOLTED OR DOUBLE RIVETED OR WELDED END CONNECTIONS

	Effective Lengths in Metres	1·0	1·5	2·0	2·5	3·0	3·5
	Size $A \times B \times t$ (mm mm mm)	Safe Loads in kg					
UNEQUAL ANGLES	125× 75×10·0	21 513·5	17 892·1	12 849·9	8 878·5	6 057·9	4 304·2
	125× 95×10·0	—	22 552·4	18 754·0	14 278·9	10 676·1	7 811·0
	12·0	—	26 746·1	22 184·7	16 846·5	12 577·4	9 182·6
	150× 75×12·0	28 853·2	23 724·1	16 832·3	11 498·3	7 850·0	5 559·5
	150×115×12·0	—	34 444·8	31 133·4	26 190·6	20 831·6	16 353·6
	15·0	—	42 498·9	38 360·4	32 207·2	25 577·4	20 065·7
	200×100×15·0	—	46 779·9	39 828·2	31 092·5	23 524·7	17 625·4
	200×150×15·0	—	—	56 757·4	52 767·5	47 029·0	40 230·2
	18·0	—	—	67 451·1	62 664·3	55 780·0	47 658·6

	Effective Lengths in Metres	4·0	4·5	5·0	5·5	6·0	7·0
	Size $A \times B \times t$ (mm mm mm)	Safe Loads in kg					
UNEQUAL ANGLES	125× 75×10·0	3 185·8	—	—	—	—	—
	125× 95×10·0	5 891·9	4 508·8	3 552·4	—	—	—
	12·0	6 924·5	5 300·8	4 171·7	—	—	—
	150× 75×12·0	—	—	—	—	—	—
	150×115×12·0	12 695·8	9 873·5	7 874·5	6 355·5	5 213·2	—
	15·0	15 552·0	12 096·4	9 631·4	7 777·9	6 374·6	—
	200×100×15·0	13 283·2	10 207·3	8 081·1	—	—	—
	200×150×15·0	33 642·4	27 898·8	23 160·2	19 004·6	15 803·6	11 205·8
	18·0	39 824·1	33 023·4	27 364·1	22 451·8	18 675·0	13 230·9

Note 1 — The safe loads given in this Table are tabulated for ratio of slenderness up to but not exceeding 250.
Note 2 — The values on the right side of the zigzag dotted lines are for ratio of slenderness exceeding 180.
Note 3 — This Table is based on the requirements specified in **18.9.1.1** of IS : 800-1956.

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS



EQUAL ANGLES

Space Between Back to Back of Angles = 6 mm

Size of Each Angle (mm) $A \times B$		200 × 200			150 × 150			
Area,	cm^2	115·60	137·62	187·60	58·06	69·18	85·56	101·58
Weight per Metre, kg		90·8	108·0	147·2	45·6	54·4	67·2	79·8
Radii of Gyration	r_{xx}, cm	6·17	6·13	6·05	4·63	4·61	4·58	4·54
	r_{yy}, cm	8·46	8·52	8·65	6·36	6·40	6·46	6·52
Thickness, mm		15·0	18·0	25·0	10·0	12·0	15·0	18·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	3·0	136 292·4	162 157·6	220 786·4	65 021·4	77 391·7	95 562·0	113 210·9
	3·5	133 148·1	158 331·8	215 308·5	61 833·9	73 545·8	90 702·2	107 288·8
	4·0	129 437·3	153 845·4	209 042·7	57 653·6	68 509·0	84 379·3	99 609·3
	4·5	124 928·9	148 340·6	201 144·7	52 677·8	62 524·9	76 875·7	90 538·3
	5·0	119 241·4	141 432·1	191 352·0	47 197·0	55 945·9	68 653·3	80 644·4
	5·5	112 501·9	133 353·8	180 002 2	41 768·4	49 463·7	60 602·1	71 106·0
	6·0	104 837·6	124 078·2	167 132·8	36 763·6	43 507·3	53 295·3	62 441·2
	6·5	96 687·8	114 265·9	153 419·3	32 322·0	38 256·5	46 844·1	54 853·2
	7·0	88 468·7	104 439·8	139 949·6	28 553·9	33 746·0	41 214·3	48 098·1
	7·5	80 538·5	95 012 8	127 136·5	24 843·9	29 353·1	35 832·5	41 800·2
	8·0	73 140·1	86 205·2	115 223·9	21 708·6	25 624·3	31 229·4	36 345·3
	9·0	60 551·3	71 300·9	95 000·6	16 953·5	20 013·8	24 401·7	28 401·8
	10·0	49 407·4	58 075·6	77 103·6	13 330·6	15 731·5	19 165·4	22 296·8
	11·0	40 240·4	47 148·6	62 620·9	10 775·9	12 701·4	15 460·7	18 010·1
	12·0	33 709·0	39 579·5	52 396·7	—	—	—	—
Y-Y AXIS	6·0	126 300·0	150 763·7	206 485·8	54 052·8	64 743 8	80 691·8	96 521·0
	7·0	117 825·9	140 847·3	193 667·1	46 126·3	55 382·9	69 269·7	83 141·0
	8·0	107 407·5	128 627·6	177 539·1	38 510 6	46 316 0	58 067·2	69 854·0
	9·0	95 623·3	114 755·7	159 082·7	31 929·7	38 412·2	48 241·8	58 199·1
	10·0	83 746·6	100 684·2	140 096·1	26 410·4	31 883·3	40 189·9	48 597·6
	11·0	72 808·6	87 670·4	122 385·7	21 662·6	26 163·0	32 999·7	39 978·9
	12·0	63 341·4	76 231·8	106 562·3	18 027·1	21 757·1	27 415·2	33 138·8
	14·0	47 399·3	57 246·1	80 399·1	12 758·6	15 427·1	19 497·1	23 633·9
	16·0	35 717·4	43 144·2	60 613·2	—	—	14 435·3	17 508·5
	18·0	27 439·0	33 160·6	46 847·9	—	—	—	—
	20·0	21 712·9	26 284·1	37 087·3	—	—	—	—

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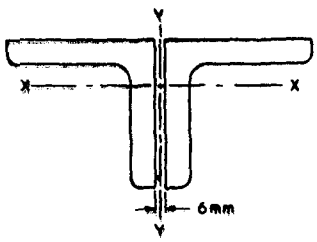


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

EQUAL ANGLES

Space Between Back to Back of Angles = 6 mm

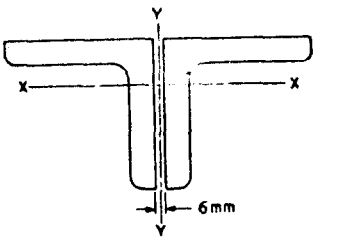
Size of Each Angle (mm) A×B		130×130			110×110			
Area,	cm^2	50·12	59·64	73·62	34·04	42·12	50·04	61·62
Weight per Metre, kg		39·4	46·8	57·8	26·8	33·0	39·2	48·4
Radii of Gyration	r_{xx}, cm	4·01	3·99	3·95	3·38	3·36	3·34	3·31
	r_{yy}, cm	5·58	5·62	5·67	4·73	4·77	4·81	4·87
Thickness, mm		10·0	12·0	15·0	8·0	10·0	12·0	15·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	2·0	58 956·2	70 106·8	86 407·8	38 907·7	48 088·4	57 065·6	70 135·9
	2·5	56 645·6	67 321·6	82 910·8	36 579·4	45 152·6	53 512·8	65 649·9
	3·0	53 608·4	63 659·7	78 250·7	33 219·6	40 944·9	48 453·7	59 260·0
	3·5	49 448·4	58 650·0	71 926·7	29 015·7	35 671·4	42 103·7	51 323·3
	4·0	44 411·3	52 590·6	64 248·2	24 617·7	30 208·5	35 583·4	43 275·7
	4·5	38 888·1	45 988·4	56 046·9	20 686·1	25 360·5	29 843·9	36 314·1
	5·0	33 680·6	39 779·9	48 368·3	17 408·1	21 316·9	25 060·0	30 347·8
	5·5	29 029·5	34 251·3	41 551·1	14 436·4	17 656·7	20 726·6	25 054·7
	6·0	25 120·1	29 623·2	35 882·4	11 971·9	14 603·0	17 098·7	20 685·8
	6·5	21 416·3	25 239·6	30 537·6	10 164·3	12 425·4	14 571·6	17 598·7
	7·0	18 323·9	21 553·9	25 995·2	8 601·9	10 487·9	12 274·8	14 813·4
	7·5	15 842·9	18 661·4	22 557·2	7 359·4	8 996·8	10 553·4	12 743·0
	8·0	13 813·1	16 251·9	19 612·4	6 375·7	7 775·4	9 102·3	10 986·8
Y-Y AXIS	4·0	54 533·6	65 071·5	80 597·3	34 248·3	42 592·9	50 853·0	63 075·7
	5·0	48 608·3	58 115·0	72 153·5	28 362·0	35 426·5	42 476·2	53 008·1
	6·0	40 948·6	49 132·7	61 266·6	22 292·3	27 937·7	33 604·5	42 129·2
	7·0	33 378·0	40 138·5	50 186·1	17 396·2	21 839·1	26 312·0	33 063·9
	8·0	27 003·9	32 498·3	40 670·6	13 324·0	16 791·3	20 304·6	25 647·3
	9·0	21 622·7	26 079·0	32 815·8	10 386·3	13 077·9	15 803·9	19 944·1
	10·0	17 226·5	20 856·2	26 287·9	8 190·0	10 322·3	12 525·0	15 896·9
	11·0	14 192·8	17 156·4	21 584·6	6 642·6	8 375·3	10 139·1	12 832·6
	12·0	11 621·4	14 047·9	17 673·5	—	—	8 298·2	10 521·6
	14·0	—	9 925·5	12 510·9	—	—	—	—

(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)



EQUAL ANGLES

Space Between Back to Back of Angles = 6 mm

Size of Each Angle (mm) A × B		100 × 100			90 × 90			
Area,	cm^2	30·78	38·06	45·18	20·94	27·58	34·06	40·38
Weight per Metre,	kg	24·2	29·8	35·4	16·4	21·6	26·8	31·6
Radii of Gyration	r_{xx}, cm	3·07	3·05	3·03	2·77	2·75	2·73	2·71
	r_{yy}, cm	4·33	4·38	4·41	3·88	3·93	3·97	4·01
Thickness,	mm	8·0	10·0	12·0	6·0	8·0	10·0	12·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	2·0	34 424·4	42 497·8	50 366·7	22 719·9	29 838·8	36 743·9	43 432·7
	2·5	31 663 4	39 003·9	46 124·3	20 205·0	26 463·0	32 489·8	38 292·4
	3·0	27 791·3	34 162·7	40 309·6	16 963·5	22 149·5	27 111·8	31 859·8
	3·5	23 408·2	28 701·0	33 776·6	13 795·3	17 968·4	21 941·5	25 709·9
	4·0	19 326·8	23 669·5	27 817·3	11 152·6	14 515·4	17 707·8	20 731·1
	4·5	15 990·2	19 555·2	22 946·9	8 910·0	11 569·8	14 077·0	16 438·7
	5·0	13 032·3	15 905·3	18 632·2	7 084·0	9 206·2	11 216·0	13 111·4
	5·5	10 588·3	12 898·5	15 126·3	5 833·9	7 556·9	9 182·6	10 704·7
	6·0	8 883·1	10 028·1	12 664·0	4 776·4	6 189·0	7 510·2	8 770·5
	6·5	7 884·1	9 001·2	10 531·5	—	—	—	—
	7·0	6 279·1	7 650·1	8 950·2	—	—	—	—
	7·5	5 358·8	6 531·1	7 635·4	—	—	—	—
Y-Y AXIS	4·0	29 156·5	36 385·7	43 425·5	17 934·6	23 943·5	29 880·0	35 779·5
	5·0	23 021·2	28 897·6	34 605·3	13 379·8	17 979·7	22 549·0	27 133·8
	6·0	17 518·9	22 089·9	26 521·3	9 856·5	13 312·9	16 760·4	20 240·3
	7·0	13 220·6	16 712·7	20 138·8	7 090·2	9 621·3	12 169·1	14 761·0
	8·0	9 967·3	12 597·7	15 145·2	5 349·0	7 262·2	9 178·0	11 128·6
	9·0	7 708·6	9 802·8	11 826·1	4 110·1	5 570·7	7 036·8	8 525·1
	10·0	6 100·6	7 740·6	9 329·0	—	—	—	6 703·0
	11·0	—	—	7 495·7	—	—	—	—

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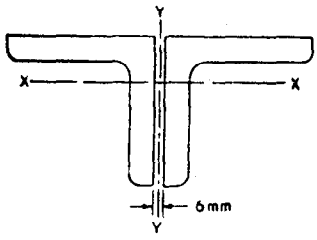


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

EQUAL ANGLES

Space Between Back to Back of Angles = 6 mm

Size of Each Angle (mm) $A \times B$		80×80				75×75			
Area,	cm^2	18·58	24·42	30·10	35·62	14·54	17·32	22·76	28·04
Weight per Metre,	kg	14·6	19·2	23·6	28·0	11·4	13·6	17·8	22·0
Radii of Gyration	r_{xx}, cm	2·46	2·44	2·41	2·39	2·31	2·30	2·28	2·26
	r_{yy}, cm	3·49	3·54	3·58	3·62	3·27	3·29	3·34	3·38
Thickness,	mm	6·0	8·0	10·0	12·0	5·0	6·0	8·0	10·0

	Effective Length in Metres	Safe Concentric Loads in kg							
X-X AXIS	2·0	19 130·0	25 025·6	30 626·8	36 065·2	14 417·9	17 127·7	22 382·2	27 417·5
	2·5	16 155·3	21 052·5	25 609·1	30 027·7	11 789·0	13 970·3	18 164·8	22 143·2
	3·0	12 887·1	16 744·8	20 275·4	23 701·5	9 174·7	10 657·9	14 083·9	17 118·4
	3·5	10 131·7	13 145·3	15 880·8	18 533·1	7 121·7	8 412·3	10 870·2	13 159·2
	4·0	7 890·9	10 205·1	12 265·8	14 262·2	5 410·3	6 384·2	8 225·5	9 929·0
	4·5	6 131·4	7 936·5	9 544·7	11 106·3	4 225·3	4 986·4	6 427·4	7 761·5
	5·0	4 908·8	6 329·7	7 573·2	8 776·8	3 322·4	3 919·5	5 045·9	6 098·7
	5·5	3 953·8	5 108·7	6 128·4	7 116·9	2 684·1	3 164·4	4 074·0	4 923·8
	6·0	3 247·8	4 190·5	5 017·7	—	—	—	—	—
Y-Y AXIS	4·0	14 034·0	18 785·8	23 481·2	28 165·6	10 041·8	12 063·6	16 183·7	20 279·9
	5·0	10 022·1	13 468·7	16 897·5	20 386·7	6 997·8	8 433·9	11 398·1	14 340·4
	6·0	7 022·8	9 513·9	12 017·5	14 557·7	4 771·3	5 749·2	7 776·8	9 861·1
	7·0	5 059·0	6 867·7	8 677·9	10 515·6	3 405·8	4 111·1	5 582·1	7 085·7
	8·0	3 744·7	5 079·9	6 413·5	7 765·6	2 523·6	3 047·3	4 140·3	5 251·8
	9·0	—	—	—	5 956·0	—	—	—	—

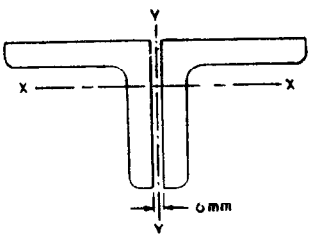
(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(*Continued*)

EQUAL ANGLES

Space Between Back to Back of Angles = 6 mm



Size of Each Angle (mm) A×B			70×70				65×65			
Area,		cm^2	13·54	16·12	21·16	26·04	12·50	14·88	19·52	24·00
Weight per Metre,		kg	10·6	12·6	16·6	20·4	9·8	11·6	15·4	18·8
Radii of Gyration	r_{xx},	cm	2·15	2·14	2·12	2·10	1·99	1·98	1·96	1·94
	r_{yy},	cm	3·06	3·10	3·14	3·19	2·87	2·89	2·94	2·98
Thickness,		mm	5·0	6·0	8·0	10·0	5·0	6·0	8·0	10·0
			Safe Concentric Loads in kg							
X-X AXIS	Effective Length in Metres	1·0	—	—	—	—	14 688·8	17 472·1	22 883·3	28 089·6
		1·5	—	—	—	—	13 328·8	15 832·3	20 681·4	25 315·2
		2·0	12 753·3	15 125·4	19 700·0	24 047·9	10 993·8	13 020·0	16 900·4	20 556·0
		2·5	10 033·1	11 869·2	15 379·1	18 675·9	8 306·2	9 413·4	12 674·3	15 336·0
		3·0	7 613·5	8 993·3	11 635·9	14 111·1	6 180·0	7 288·2	9 375·5	11 296·8
		3·5	5 728·3	6 768·8	8 717·9	10 520·2	4 492·5	5 285·4	6 767·6	8 126·4
		4·0	4 324·7	5 102·0	6 570·2	7 929·2	3 387·5	3 986·4	5 110·3	6 129·6
		4·5	3 332·2	3 922·0	5 048·8	6 085·5	—	—	—	—
		5·0	2 641·7	3 112·8	3 997·1	4 780·9	—	—	—	—
Y-Y AXIS		2·0	—	—	—	—	13 741·5	16 388·0	21 594·7	26 642·9
		3·0	—	—	—	—	10 546·1	12 649·9	16 901·1	21 072·7
		4·0	8 461·1	10 278·8	13 767·3	17 353·2	7 043·2	8 486·1	11 458·5	14 399·5
		5·0	5 695·3	6 954·9	9 366·7	11 923·4	4 589·8	5 548·0	7 548·0	9 559·1
		6·0	3 879·9	4 749·7	6 401·6	8 137·5	3 085·3	3 737·3	5 409·5	6 479·4
		7·0	2 741·6	3 359·2	4 531·2	5 764·1	2 184·5	2 640·6	3 603·8	4 576·6

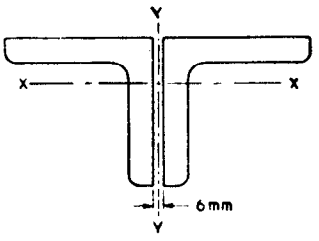


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

EQUAL ANGLES

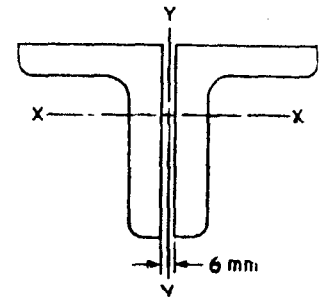
Space Between Back to Back of Angles = 6 mm

60 × 60				55 × 55				50 × 50		
11·50	13·68	17·92	22·0	10·54	12·52	16·36	20·04	7·76	9·58	11·36
9·0	10·8	14·0	17·2	8·2	9·8	12·8	15·8	6·0	7·6	9·0
1·82 2·67	1·82 2·70	1·80 2·74	1·78 2·79	1·67 2·48	1·66 2·50	1·64 2·55	1·62 2·59	1·53 2·26	1·52 2·28	1·51 2·31
5·0	6·0	8·0	10·0	5·0	6·0	8·0	10·0	4·0	5·0	6·0
Safe Concentric Loads in kg										
13 319·3	15 844·2	20 715·5	25 383·6	12 019·8	14 260·3	18 583·3	22 699·3	8 671·8	10 688·4	12 653·9
11 748·4	13 975·5	18 188·8	22 182·6	10 205·9	12 069·3	15 622·2	18 947·8	6 986·3	8 573·1	10 104·7
9 154·0	10 889·3	14 074·4	17 043·4	7 495·0	8 829·1	11 347·3	13 661·3	4 849·2	5 928·1	6 959·4
6 643·6	7 902·9	10 158·8	12 238·6	5 278·4	6 201·2	7 919·9	9 470·9	3 264·6	3 977·6	4 653·1
4 753·0	5 653·9	7 239·7	8 676·8	3 601·5	4 225·5	5 398·8	6 460·9	2 223·2	2 705·4	3 160·4
3 433·9	4 084·8	5 229·1	6 265·6	2 585·5	3 029·8	3 857·7	4 599·2	1 571·4	1 911·2	2 233·4
2 535·8	3 016·4	3 863·6	4 633·2	1 917·2	2 247·3	2 859·7	3 404·8	—	—	—
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—
12 294·1	14 691·8	19 359·7	23 937·3	10 902·1	13 008·3	17 149·4	21 150·2	7 588·0	9 421·2	11 264·8
8 909·1	10 744·9	14 327·9	17 974·2	7 392·3	8 876·7	11 930·3	14 927·0	4 737·6	5 928·0	7 168·5
5 751·4	6 978·3	9 373·7	11 853·3	4 547·2	5 483·8	7 478·8	9 457·2	2 748·1	3 462·6	4 227·6
3 625·9	4 410·0	5 941·6	7561·5	2 837·0	3 430·5	4 687·9	5 936·6	1 688·0	2 123·7	2 596·0
2 421·5	2 948·8	3 986·4	5 101·2	1 875·1	2 266·1	3 107·4	3 944·8	—	—	—
—	—	—	—	—	—	—	—	—	—	—

(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)



UNEQUAL ANGLES, LONGER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

Size of Each Angle (mm) A × B		200 × 150				200 × 100		
Area,	cm^2	68·00	81·12	100·50	119·52	58·06	69·18	85·56
Weight per Metre,	kg	53·4	63·6	78·8	93·8	45·6	54·4	67·2
Radii of Gyration	r_{xx}, cm	6·37	6·35	6·32	6·28	6·46	6·43	6·40
	r_{yy}, cm	5·85	5·90	5·96	6·01	3·54	3·59	3·65
Thickness,	mm	10·0	12·0	15·0	18·0	10·0	12·0	15·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	3·0	80 403·2	95 892·0	118 750·8	141 045·6	68 731·4	81 867·6	101 208·9
	3·5	78 757·6	93 904·5	116 238·3	138 093·4	67 407·7	80 248·8	99 172·6
	4·0	76 724·4	91 454·7	113 183·1	134 400·2	65 718·1	78 221·8	96 640·0
	4·5	74 405·6	88 656·0	109 635·4	130 061·7	63 831·2	75 966·6	93 790·6
	5·0	71 257·2	84 884·0	104 942·1	124 456·2	61 212·7	72 791·2	89 846·6
	5·5	67 544·4	80 422·4	99 334·2	117 655·5	58 176·1	69 117·7	85 234·9
	6·0	63 389·6	75 417·3	93 063·0	110 077·9	54 756·4	64 994·6	80 075·6
	6·5	58 874·4	70 006·6	86 299·4	101 926·7	51 005·7	60 484·1	74 445·8
	7·0	54 128·0	64 328·2	79 244·2	93 512·4	47 005·4	55 696·8	68 499·3
	7·5	49 531·2	58 836·3	72 400·2	85 325·3	43 109·6	51 047·9	62 732·6
	8·0	45 206·4	53 677·1	66 028·5	77 759·7	39 405·3	46 634·2	57 282·4
	9·0	37 488·4	44 502·4	54 732·3	64 433·2	32 734·2	38 685·5	47 502·9
	10·0	31 035·2	36 779·8	45 104·4	52 911·5	27 270·8	32 189·5	39 434·6
	11·0	25 459·2	30 160·4	36 984·0	43 361·9	22 393·7	26 426·8	32 358·8
	12·0	21 182·0	25 106·6	30 793·2	36 154·8	18 602·4	21 964·6	26 908·6
Y-Y AXIS	3·0	79 654·1	95 149·6	118 066·6	140 577·4	58 340·4	70 102·1	87 546·6
	3·5	77 561·8	92 674·8	115 031·4	137 011·7	51 869·5	62 594·6	78 553·5
	4·0	75 127·8	89 820·5	111 567·1	132 961·9	44 662·6	54 152·9	68 333·2
	4·5	71 886·5	86 068·3	107 085·8	127 795·1	37 899·4	46 125·7	58 439·8
	5·0	67 973·8	81 511·8	101 602·8	121 432·1	32 005·1	39 027·3	49 658·8
	5·5	63 488·8	76 274·8	95 280·1	114 073·8	27 071·1	33 169·0	42 337·0
	6·0	58 560·2	70 486·4	88 241·7	105 820·7	22 619·8	27 784·9	35 562·5
	6·5	53 410·2	64 372·2	80 737·9	96 983·0	19 026·6	23 272·2	29 861·6
	7·0	48 411·9	58 460·0	73 458·7	88 365·5	16 328·3	20 065·3	25 693·8
	7·5	43 804·2	52 952·1	66 618·7	80 215·0	13 906·8	17 105·4	22 037·0
	8·0	39 580·1	47 884·2	60 298·0	72 657·2	12 077·8	14 826·5	18 992·0
	9·0	32 336·6	39 220·8	49 532·3	59 819·5	—	—	14 586·2
	10·0	26 015·5	31 603·8	40 028·7	48 455·1	—	—	—
	11·0	21 262·5	25 304·4	32 610·6	39 406·2	—	—	—
	12·0	17 585·8	21 401·9	27 132·3	32 875·8	—	—	—

(Continued)

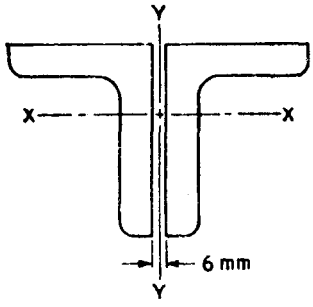


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

UNEQUAL ANGLES, LONGER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

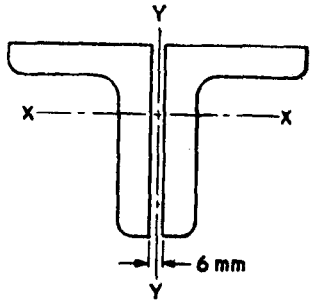
Size of Each Angle (mm) $A \times B$		150 × 115				150 × 75		
Area,	cm^2	41·16	51·04	60·76	75·04	34·84	43·12	51·24
Weight per Metre,	kg	32·4	40·0	47·6	59·0	27·4	33·8	40·2
Radii of Gyration	r_{xx}, cm	4·76	4·74	4·72	4·69	4·83	4·81	4·79
	r_{yy}, cm	4·56	4·61	4·65	4·71	2·72	2·76	2·80
Thickness,	mm	8·0	10·0	12·0	15·0	8·0	10·0	12·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	2·0	49 128·6	60 900·9	72 474·5	89 462·7	41 630·3	51 506·8	61 185·7
	2·5	48 029·6	59 517·7	70 803·6	87 354·1	40 752·3	50 403·0	59 853·4
	3·0	46 399·7	57 481·2	68 361·1	84 292·4	39 407·5	48 725·6	57 850·0
	3·5	44 337·6	54 883·3	65 225·9	80 345·3	37 749·1	46 642·9	55 334·1
	4·0	41 571·6	51 417·7	61 051·6	75 107·5	35 491·5	43 818·5	51 942·0
	4·5	38 250·0	47 263·0	56 063·3	68 856·7	32 774·0	40 425·0	47 873·5
	5·0	34 537·4	42 628·6	50 503·7	61 923·0	29 708·1	36 600·3	43 297·8
	5·5	30 758·9	37 927·8	44 895·6	54 966·8	26 537·6	32 667·7	38 609·3
	6·0	27 215·0	33 533·3	39 664·1	48 498·4	23 537·9	28 959·4	34 197·6
	6·5	24 016·9	29 572·6	34 949·2	42 697·8	20 816·9	25 591·7	30 206·0
	7·0	21 263·3	26 178·4	30 939·0	37 782·6	18 444·3	22 672·5	26 757·5
	7·5	18 641·4	22 906·8	27 020·0	32 905·0	16 263·3	19 660·2	23 514·0
	8·0	16 336·4	20 068·9	23 672·1	28 837·9	14 260·0	17 498·1	20 608·7
Y-Y AXIS	2·0	48 960·2	60 765·9	72 388·0	89 491·3	37 494·0	46 719·0	55 829·6
	2·5	47 689·3	59 245·8	70 630·6	87 415·4	33 137·4	41 489·6	49 812·6
	3·0	45 921·6	57 097·5	68 113·9	84 381·3	27 609·7	34 780·9	42 038·7
	3·5	43 553·4	54 258·6	64 825·7	80 485·7	22 313·5	28 251·7	34 305·2
	4·0	40 477·6	50 543·4	60 495·4	75 305·3	18 000·0	22 829·2	27 764·8
	4·5	36 835·0	46 130·2	55 338·6	69 112·3	14 293·1	18 217·3	22 256·5
	5·0	32 850·7	41 276·4	49 641·6	62 223·3	11 392·7	14 490·8	17 765·6
	5·5	28 982·8	36 492·0	43 977·8	55 286·0	9 315·6	11 914·9	14 625·4
	6·0	25 469·4	32 100·2	38 743·3	48 823·3	7 623·8	9 756·4	11 975·5
	6·5	22 380·2	28 225·8	34 057·6	43 010·7	6 374·2	8 172·8	10 039·4
	7·0	19 657·9	24 894·9	30 120·0	38 066·3	—	—	8 454·6
	7·5	17 089·0	21 655·4	26 213·0	33 217·4	—	—	—
	8·0	14 876·8	18 904·3	22 930·7	29 097·4	—	—	—
	9·0	11 624·5	14 764·4	17 902·6	22 702·2	—	—	—
	10·0	9 124·5	11 606·1	14 088·5	17 893·0	—	—	—
	11·0	7 369·1	9 372·9	11 394·8	14 502·5	—	—	—

(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)



UNEQUAL ANGLES, LONGER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

Size of Each Angle (mm) A × B			125 × 95				125 × 75		
Area,		cm^2	25·72	33·96	42·04	49·96	23·32	30·76	38·04
Weight per Metre,		kg	20·2	26·6	33·0	39·2	18·4	24·2	29·8
Radii of Gyration	r_{xx},	cm	3·97	3·96	3·94	3·91	4·01	4·00	3·97
	r_{yy},	cm	3·78	3·83	3·87	3·91	2·83	2·88	2·92
Thickness,		mm	6·0	8·0	10·0	12·0	6·0	8·0	10·0
			Safe Concentric Loads in kg						
X-X AXIS	Effective Length in Metres	2·0	30 210·7	39 875·8	49 325·5	58 548·1	27 431·3	36 173·8	44 681·8
		2·5	28 999·3	38 266·1	47 316·0	56 130·1	26 356·3	34 743·4	42 890·1
		3·0	27 396·9	36 133·4	44 638·1	52 872·7	24 942·1	32 867·1	40 520·2
		3·5	25 210·7	33 233·3	41 005·8	48 486·2	23 007·5	30 298·6	37 286·8
		4·0	22 564·2	29 715·0	36 591·6	43 140·5	20 663·9	27 191·8	33 372·5
		4·5	19 706·7	25 933·3	31 900·0	37 530·0	18 094·0	23 792·9	29 146·2
		5·0	17 026·6	22 396·6	27 515·2	32 314·1	15 671·0	20 593·8	25 182·5
		5·5	14 645·0	19 251·9	23 622·3	27 727·8	13 506·9	17 742·4	21 660·0
		6·0	12 656·8	16 633·6	20 393·6	23 875·9	11 688·0	15 349·2	18 719·5
		6·5	10 776·7	14 157·9	17 345·7	20 293·8	9 964·6	13 079·2	15 938·8
		7·0	9 189·8	12 062·6	14 756·0	17 216·2	8 525·8	11 165·9	13 591·7
		7·5	7 965·5	10 463·1	12 818·0	14 998·0	7 371·5	9 674·0	11 781·0
		8·0	6 931·5	9 097·9	11 136·4	12 999·6	6 427·0	8 428·2	10 251·8
Y-Y AXIS	Effective Length in Metres	2·0	29 977·3	39 665·6	49 184·8	58 548·1	25 513·0	33 846·3	42 008·7
		2·5	28 657·8	37 962·1	47 113·5	56 130·1	22 829·3	30 452·4	37 985·3
		3·0	26 819·4	35 619·2	44 294·8	52 872·7	19 368·1	26 051·1	32 699·8
		3·5	24 317·8	32 449·3	40 499·4	48 486·2	15 856·9	21 436·8	27 015·2
		4·0	21 404·2	28 689·1	35 906·5	43 140·5	12 848·0	17 437·5	22 078·3
		4·5	18 446·1	24 809·7	31 151·6	37 530·0	10 354·9	14 176·5	18 028·4
		5·0	15 788·1	21 262·6	26 751·2	32 314·1	8 292·9	11 382·1	14 501·1
		5·5	13 528·3	18 249·5	22 965·9	27 727·8	6 811·6	9 316·9	11 852·8
		6·0	11 464·6	15 566·8	19 685·8	23 875·9	5 577·5	7 659·2	9 797·6
		6·5	9 717·0	13 192·3	16 707·1	20 293·8	4 678·8	6 416·9	8 170·8
		7·0	8 291·4	11 226·8	14 168·0	17 216·2	3 946·7	5 417·2	6 905·0
		7·5	7 177·9	9 759·0	12 353·2	14 998·0	—	—	—
		8·0	6 174·4	8 400·6	10 671·6	12 999·6	—	—	—

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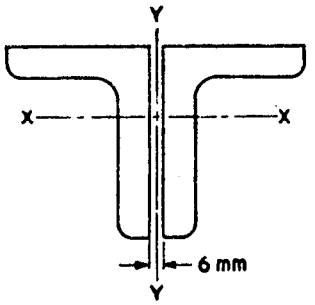


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

UNEQUAL ANGLES, LONGER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

Size of Each Angle (mm) $A \times B$		100×75				100×65		
Area,	cm^2	20·28	26·72	33·00	39·12	19·10	25·14	31·02
Weight per Metre,	kg	16·0	21·0	26·4	30·8	15·0	19·8	24·4
Radii of Gyration	r_{xx}, cm	3·15	3·14	3·12	3·10	3·18	3·16	3·14
	r_{yy}, cm	3·02	3·07	3·12	3·16	2·55	2·60	2·64
Thickness,	mm	6·0	8·0	10·0	12·0	6·0	8·0	10·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	2·0	22 821·1	30 046·6	37 052·4	43 853·5	21 541·0	28 312·7	34 882·0
	2·5	21 146·0	27 823·5	34 257·3	40 465·7	20 001·5	26 251·2	32 301·1
	3·0	18 728·6	24 609·1	30 224·7	35 630·5	17 782·1	23 279·6	28 569·4
	3·5	15 927·9	20 905·7	25 617·9	30 122·4	15 175·0	19 822·9	24 270·0
	4·0	13 259·1	17 384·0	21 258·6	24 942·9	12 669·0	16 517·0	20 181·6
	4·5	10 989·7	14 404·8	17 608·8	20 655·4	10 503·1	13 691·2	16 722·9
	5·0	9 038·8	11 828·9	14 411·1	16 876·4	8 688·6	11 282·8	13 732·6
	5·5	7 410·3	9 694·0	11 797·5	13 774·2	7 126·2	9 251·5	11 254·1
	6·0	6 175·3	8 082·8	9 853·8	11 524·8	5 930·6	7 702·9	9 383·6
	6·5	5 171·4	6 760·2	8 217·0	9 584·4	4 981·3	6 458·5	7 848·1
	7·0	4 372·4	5 720·8	6 972·9	8 152·6	4 196·3	5 455·4	6 641·4
	7·5	3 743·7	4 895·1	5 953·2	6 959·4	3 608·0	4 678·6	5 682·9
Y-Y AXIS	2·0	22 589·0	29 883·2	37 052·4	44 056·1	20 021·7	26 576·8	33 006·2
	2·5	20 664·8	27 486·4	34 257·3	40 850·2	17 195·2	23 026·3	28 787·0
	3·0	18 039·0	24 126·2	30 224·7	36 226·1	13 928·4	18 822·1	23 690·8
	3·5	15 094·6	20 321·7	25 617·9	30 844·9	11 049·2	15 014·4	18 975·3
	4·0	12 423·6	16 778·0	21 258·6	25 701·8	8 731·3	11 955·0	15 192·3
	4·5	10 240·6	13 881·6	17 608·8	21 303·6	6 810·8	9 365·6	11 938·5
	5·0	8 307·3	11 312·8	14 411·1	17 557·5	5 473·1	7 507·2	9 556·0
	5·5	6 749·1	9 191·2	11 797·5	14 394·7	4 399·7	6 041·3	7 724·0
	6·0	5 642·7	7 711·2	9 853·8	11 987·6	3 627·9	4 991·3	6 373·2
	6·5	4 693·7	6 409·0	8 217·0	10 050·4	—	4 148·1	5 306·3
	7·0	3 987·1	5 450·2	6 972·9	8 487·6	—	—	—
	7·5	3 399·9	4 652·5	5 953·2	7 278·3	—	—	—

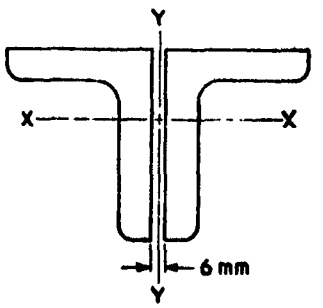
(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

UNEQUAL ANGLES, LONGER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm



Size of Each Angle (mm) $A \times B$		90 × 60			
Area,	cm^2	17·30	22·74	28·02	33·14
Weight per Metre,	kg	13·6	17·8	22·0	26·0
Radii of Gyration	r_{xx}, cm	2·86	2·84	2·81	2·79
	r_{yy}, cm	2·40	2·45	2·49	2·54
Thickness,	mm	6·0	8·0	10·0	12·0

	Effective Length in Metres	Safe Concentric Loads in kg			
X-X AXIS	1·0	—	—	—	—
	1·5	—	—	—	—
	2·0	19 000·6	24 911·7	30 572·6	36 059·6
	2·5	17 050·9	22 312·5	27 302·7	32 139·2
	3·0	14 538·9	18 962·9	23 082·9	27 075·4
	3·5	11 940·5	15 540·5	18 857·5	22 071·2
	4·0	9 688·0	12 595·7	15 268·1	17 855·8
	4·5	7 857·7	10 176·2	12 253·1	14 296·6
	5·0	6 302·4	8 152·3	9 798·6	11 390·2
	5·5	5 165·8	6 692·4	8 061·4	9 385·2
	6·0	4 231·6	5 480·3	6 598·7	7 685·2
	6·5	3 555·2	4 600·3	5 534·0	6 439·1
	7·0	2 999·8	3 879·4	4 662·5	—
Y-Y AXIS	1·0	—	—	—	—
	1·5	—	—	—	—
	2·0	17 559·5	23 359·5	29 048·0	34 678·8
	2·5	14 651·7	19 689·1	24 669·5	29 728·9
	3·0	11 582·4	15 682·7	19 759·5	24 034·9
	3·5	9 065·2	12 321·8	15 568·7	19 044·0
	4·0	6 989·2	9 581·4	12 180·9	15 024·7
	4·5	5 440·8	7 447·6	9 457·9	11 709·1
	5·0	4 307·7	5 952·3	7 610·0	9 414·4
	5·5	3 488·8	4 798·6	6 114·9	7 566·4
	6·0	2 854·5	3 937·7	5 028·4	6 236·3

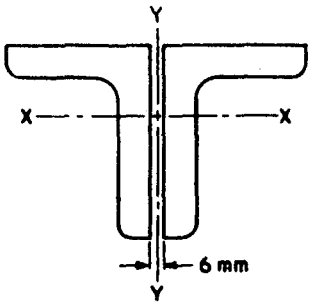


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

UNEQUAL ANGLES, LONGER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

80 × 50				75 × 50			
12·54	14·92	19·56	24·04	12·04	14·32	18·76	23·04
9·8	11·8	15·4	18·8	9·4	11·2	14·8	18·0
2·55 1·99	2·54 2·02	2·52 2·06	2·49 2·11	2·38 2·04	2·37 2·06	2·35 2·11	2·33 2·16
5·0	6·0	8·0	10·0	5·0	6·0	8·0	10·0
Safe Concentric Loads in kg							
15 040·5	17 890·6	23 444·6	28 790·3	14 370·9	17 086·6	22 369·4	27 454·5
14 348·3	17 059·5	22 331·7	27 381·6	13 572·7	16 127·2	21 084·4	25 841·7
13 145·7	15 612·3	20 395·2	24 922·3	12 160·4	14 426·0	18 801·3	22 970·9
11 289·8	13 384·7	17 420·1	21 164·8	10 102·8	11 960·1	15 518·3	18 872·1
9 144·2	10 821·5	14 028·4	16 953·0	7 960·8	9 408·2	12 165·9	14 741·0
7 254·4	8 574·5	11 088·6	13 356·6	6 219·9	7 344·7	9 481·3	11 467·0
5 732·0	6 764·7	8 717·9	10 450·2	4 778·7	5 630·6	7 241·4	8 734·5
4 471·8	5 271·2	6 781·5	8 113·5	3 721·6	4 387·6	5 650·5	6 819·8
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
14 735·7	17 562·2	23 065·2	28 408·9	14 185·0	16 886·2	22 169·3	27 282·8
13 371·1	16 007·4	21 152·0	26 241·3	12 969·2	15 485·5	20 477·8	25 351·7
11 029·3	13 311·9	17 763·9	22 291·6	10 839·3	13 005·1	17 395·6	21 783·9
8 333·3	10 134·8	13 658·0	17 357·9	8 293·9	9 999·1	13 545·5	17 179·3
6 199·8	7 578·0	10 273·2	13 123·9	6 220·4	7 521·1	10 241·4	13 061·1
4 506·5	5 544·9	7 579·4	9 809·0	4 570·7	5 548·9	7 654·6	9 852·2
3 398·2	4 182·6	5 724·1	7 391·1	3 450·1	4 190·6	5 767·8	7 427·4
2 605·0	3 199·7	4 376·1	5 677·1	2 634·6	3 203·8	4 430·2	5 737·0
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

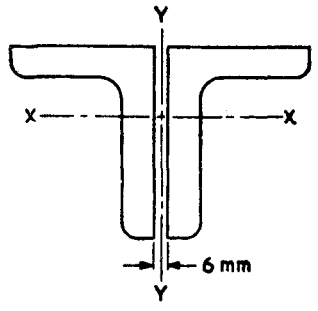
(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

UNEQUAL ANGLES, LONGER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm



Size of Each Angle (mm) $A \times B$		70 × 45				65 × 45		
Area,	cm^2	11·04	13·12	17·16	21·04	10·52	12·50	16·34
Weight per Metre,	kg	8·6	10·4	13·4	16·6	8·2	9·8	12·8
Radii of Gyration	r_{xx}, cm	2·22	2·21	2·19	2·16	2·05	2·04	2·02
	r_{yy}, cm	1·84	1·87	1·91	1·96	1·88	1·91	1·95
Thickness,	mm	5·0	6·0	8·0	10·0	5·0	6·0	8·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	1·0	13 103·4	15 566·9	20 343·2	24 913·5	12 399·9	14 727·5	19 233·8
	1·5	12 234·5	14 522·5	18 949·8	23 150·3	11 354·2	13 465·0	17 531·2
	2·0	10 668·0	12 633·2	16 405·0	19 893·3	9 512·2	11 253·8	14 578·5
	2·5	8 528·4	10 077·5	13 029·6	15 687·4	7 296·7	8 611·2	11 099·8
	3·0	6 552·2	7 730·3	9 959·7	11 927·6	5 480·9	6 457·5	8 299·1
	3·5	4 993·4	5 876·4	7 535·0	8 996·7	4 035·5	4 745·0	6 071·9
	4·0	3 747·0	4 416·2	5 680·0	6 783·3	3 046·6	3 581·2	4 580·1
	4·5	2 935·5	3 451·9	4 420·4	5 239·0	2 327·0	2 735·0	3 504·9
Y-Y AXIS	1·0	12 310·2	15 264·9	20 034·6	24 665·8	12 250·7	14 594·0	19 140·4
	1·5	11 349·6	13 611·5	17 977·7	22 291·2	10 943·5	13 095·6	17 273·9
	2·0	8 905·0	10 786·3	14 449·8	18 217·2	8 702·1	10 525·8	14 071·7
	2·5	6 495·1	7 921·9	10 702·4	13 662·3	6 405·1	7 796·0	10 525·9
	3·0	4 664·2	5 717·9	7 823·0	10 106·1	4 635·1	5 698·6	7 770·3
	3·5	3 370·6	4 141·1	5 645·0	7 294·9	3 356·1	4 112·0	5 595·0
	4·0	2 497·9	3 078·4	4 216·7	5 507·3	2 497·0	3 071·6	4 225·8
	4·5	1 917·6	2 361·2	3 249·3	4 225·2	1 916·9	2 367·0	3 244·1

(Continued)

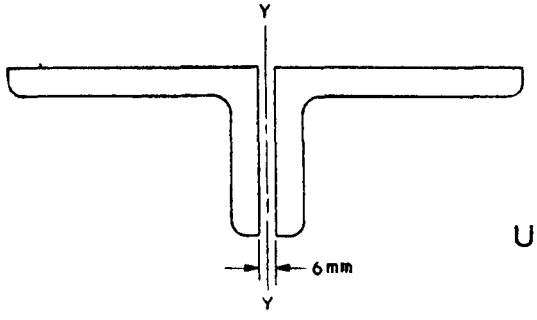


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

UNEQUAL ANGLES, SHORTER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

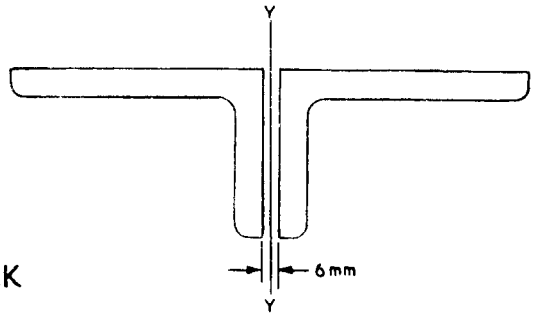
Size of Each Angle (mm) $A \times B$		200 × 150		200 × 100	150 × 115		
Area,	cm^2	100·50	119·52	85·56	51·04	60·76	75·04
Weight per Metre,	kg	78·8	93·8	67·2	40·0	47·6	59·0
Radii of Gyration	r_{xx}, cm	4·39	4·36	2·64	3·39	3·37	3·34
	r_{yy}, cm	9·06	9·13	9·84	6·78	6·83	6·90
Thickness,	mm	15·0	18·0	15·0	10·0	12·0	15·0

	Effective Length in Metres	Safe Concentric Loads in kg					
X-X AXIS	2·0	—	—	—	58 369·3	69 412·2	85 575·6
	2·5	—	—	—	54 913·9	65 213·7	80 247·8
	3·0	111 052·5	131 830·6	65 342·2	49 906·9	59 186·3	72 661·2
	3·5	104 580·3	123 942·2	52 337·1	43 644·3	51 627·8	63 138·7
	4·0	96 248·8	113 842·8	41 907·3	37 070·4	43 759·4	53 360·9
	4·5	86 600·8	102 237·4	32 932·0	31 159·9	36 753·7	44 753·9
	5·0	76 530·8	90 213·7	26 361·0	26 234·6	30 914·7	37 580·0
	5·5	67 063·6	78 931·0	21 304·4	21 773·7	25 622·5	31 081·6
	6·0	58 551·3	68 831·6	17 582·6	18 073·3	21 217·4	25 641·2
	7·0	44 350·6	52 015·1	—	12 989·7	15 244·7	18 407·3
	8·0	33 406·2	39 214·5	—	9 626·1	11 301·4	13 649·8
Y-Y AXIS	4·0	—	—	—	58 369·3	69 580·2	86 093·7
	5·0	—	—	—	54 913·9	65 565·0	81 303·1
	6·0	111 942·3	133 382·8	97 187·8	49 906·9	59 696·5	74 208·0
	7·0	106 042·6	126 529·3	93 370·3	43 644·3	52 365·9	65 367·4
	8·0	98 413·5	117 621·2	88 095·5	37 070·4	44 578·4	55 822·2
	9·0	89 394·5	107 068·2	81 697·3	31 159·9	37 514·5	47 043·5
	10·0	79 573·1	95 519·4	74 396·9	26 234·6	31 627·0	39 728·8
	11·0	70 132·8	84 284·7	66 704·1	21 773·7	26 286·2	33 132·9
	12·0	61 566·6	74 080·0	59 343·2	18 073·3	21 887·6	27 659·7
	14·0	47 375·2	57 204·9	46 659·4	12 989·7	15 740·9	19 908·4
	16·0	35 775·8	43 307·1	36 340·1	9 626·1	11 660·1	14 739·4

(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)



UNEQUAL ANGLES, SHORTER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

Size of Each Angle (mm) A × B		150 × 75		125 × 95			125 × 75	
Area,	cm^2	43·12	51·24	33·96	42·04	49·96	30·76	38·04
Weight per Metre,	kg	33·8	40·2	26·6	33·0	39·2	24·2	29·8
Radii of Gyration	r_{xx}, cm	1·99	1·97	2·80	2·78	2·76	2·09	2·07
	r_{yy}, cm	7·40	7·45	5·70	5·74	5·78	5·98	6·03
Thickness,	mm	10·0	12·0	8·0	10·0	12·0	8·0	10·0

	Effective Length in Metres	Safe Concentric Loads in kg						
X-X AXIS	2·0	37 924·0	44 599·3	37 002·8	45 676·5	54 131·7	28 290·0	34 696·3
	2·5	28 653·2	33 536·6	33 012·5	40 673·7	48 071·5	21 910·3	26 738·3
	3·0	21 318·5	24 856·5	27 860·8	34 203·7	40 297·7	16 542·7	20 138·4
	3·5	15 497·3	17 985·2	22 736·2	27 847·3	32 733·8	12 300·9	14 900·3
	4·0	11 685·5	13 573·5	18 402·9	22 520·8	26 448·8	9 277·2	11 244·6
	4·5	8 956·0	10 406·8	14 752·2	18 014·1	21 108·1	7 114·8	8 608·5
	5·0	—	—	11 773·9	14 323·0	16 791·6	5 613·7	6 790·1
	5·5	—	—	9 692·2	11 809·0	13 803·9	—	
	6·0	—	—	7 936·5	9 669·2	11 305·9	—	—
Y-Y AXIS	4·0	50 079·8	59 577·3	37 252·9	46 215·3	55 023·1	34 176·3	42 353·5
	5·0	47 786·3	56 882·6	33 397·0	41 528·1	49 568·4	31 159·7	38 724·2
	6·0	44 466·0	53 040·3	28 429·9	35 468·6	42 472·2	27 100·3	33 784·4
	7·0	40 052·7	47 865·1	23 324·6	29 158·3	34 984·6	22 587·4	28 250·7
	8·0	35 006·5	41 929·4	18 912·1	23 687·6	28 492·2	18 553·4	23 244·1
	9·0	30 019·7	36 003·1	15 310·6	19 235·6	23 190·1	15 255·1	19 152·3
	10·0	25 593·5	30 743·0	12 274·5	15 436·4	18 627·6	12 339·6	15 529·0
	11·0	21 806·5	26 290·9	10 067·6	12 643·9	15 238·0	10 045·7	12 630·5
	12·0	18 411·1	22 162·5	8 243·3	10 376·4	12 548·1	8 366·5	10 544·1
	14·0	13 313·6	16 041·9	—	—	—	—	—
	16·0	9 878·0	11 916·6	—	—	—	—	—

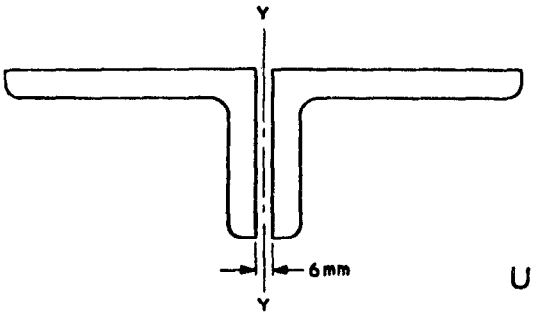


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

UNEQUAL ANGLES, SHORTER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

100×75			100×65		90×60			
26·72	33·00	39·12	25·14	31·02	17·30	22·74	28·02	33·14
21·0	26·0	30·8	19·8	24·4	13·6	17·8	22·0	26·0
2·18 4·63	2·16 4·68	2·14 4·73	1·83 4·78	1·81 4·83	1·71 4·27	1·69 4·32	1·67 4·37	1·65 4·41
8·0	10·0	12·0	8·0	10·0	6·0	8·0	10·0	12·0
Safe Concentric Loads in kg								
25 450·8 20 168·3	31 201·5 24 604·8	36 706·3 28 304·1	20 144·7 14 659·1	24 527·5 17 752·7	12 719·0 9 027·1	16 445·6 11 629·2	19 925·0 14 032·4	23 178·1 16 232·0
15 888·0	18 707·7	21 825·0	10 506·0	12 677·9	6 252·2	7 997·7	9 574·4	11 062·1
11 628·5	14 110·8	16 426·5	7 592·3	9 157·1	4 498·0	5 746·4	6 873·3	7 917·1
8 766·8 6 805·6	10 639·2 8 217·0	12 381·5 9 517·9	5 616·3 4 314·0	6 762·4 5 186·5	3 332·0 —	4 259·2 —	5 096·8 —	5 869·1 —
5 378·7	6 507·6	7 554·1	—	—	—	—	—	—
— —	— —	— —	— —	— —	— —	— —	— —	— —
26 532·2 21 720·1 16 920·2 13 139·7	32 987·3 27 163·8 21 257·9 16 551·6	39 359·4 32 594·7 25 619·1 19 992·3	25 454·0 21 194·0 16 727·4 13 081·3	31 600·9 26 450·0 20 958·2 16 423·1	16 201·1 12 697·8 9 617·2 7 230·3	21 500·2 16 955·6 12 891·1 9 723·9	26 738·8 21 211·6 16 200·4 12 246·6	31 853·0 25 383·4 19 453·6 14 772·0
9 990·7	12,625·2	15 312·4	10 067·2	12 695·8	5 449·5	7 330·7	9 234·7	11 109·2
7 801·4 6 136·0	9 854·3 7 760·9	11 936·3 9 412·3	7 839·5 6 194·1	9 878·6 7 844·4	4 189·1 3 322·2	5 662·3 4 484·0	7 177·3 5 669·4	8 674·6 6 842·9
4 959·1	6 283·8	7 633 9	5 022·0	6 344·0	—	—	—	5 498·2
—	—	—	—	—	—	—	—	—
— —	— —	— —	— —	— —	— —	— —	- —	— —

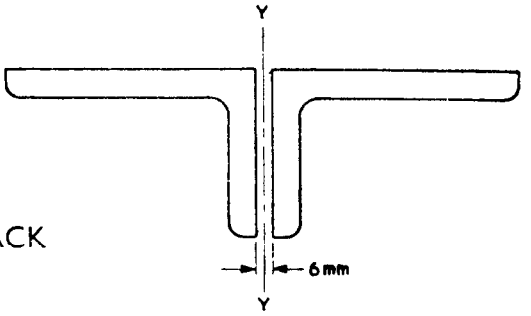
(Continued)

TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

(Continued)

UNEQUAL ANGLES, SHORTER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm



Size of Each Angle (mm) A × B		80 × 50				75 × 50			
Area,	cm^2	12·54	14·92	19·56	24·04	12·04	14·32	18·76	23·04
Weight per Metre,	kg	9·8	11·8	15·4	18·8	9·4	11·2	14·8	18·0
Radii of Gyration	r_{xx}, cm	1·40	1·39	1·37	1·36	1·42	1·41	1·40	1·38
	r_{yy}, cm	3·86	3·88	3·94	3·99	3·59	3·62	3·67	3·72
Thickness,	mm	5·0	6·0	8·0	10·0	5·0	6·0	8·0	10·0

	Effective Length in Metres	Safe Concentric Loads in kg							
X-X AXIS	1·0	13 663·6	16 210·6	21 130·7	25 895·9	13 189·8	15 646·0	20 440·9	24 963·8
	1·5	10 287·8	12 138·9	15 638·2	19 051·7	10 040·2	11 845·5	15 390·7	18 584·1
	2·0	6 795·4	7 992·6	10 231·8	12 419·1	6 669·0	7 845·9	10 166·0	12 197·4
	2·5	4 347·6	5 083·2	6 486·1	7 861·1	4 316·3	5 050·7	6 504·1	7 743·7
	3·0	2 930·6	3 431·6	4 352·1	5 260·0	2 901·6	3 399·6	4 384·2	5 214·0
	3·5	2 069·1	—	—	—	2 054·0	2 402·9	3 095·4	—
Y-Y AXIS	2·0	—	—	—	—	13 911·5	16 569·7	21 758·1	26 782·9
	3·0	—	—	—	—	12 200·5	14 582·3	19 256·1	23 831·5
	4·0	10 680·6	12 778·6	17 025·9	21 197·7	9 424·7	11 323·2	15 082·5	18 823·9
	5·0	7 946·4	9 533·3	12 801·3	16 035·3	6 792·3	8 195·9	10 987·7	13 794·0
	6·0	5 841·3	7 022·9	9 487·9	11 940·8	4 835·7	5 852·5	7 883·2	9 939·9
	7·0	4 206·2	5 051·9	6 865·1	8 689·0	3 492·1	4 227·5	5 696·4	7 193·4
	8·0	3 163·1	3 811·2	5 180·7	6 550·8	2 580·4	3 121·9	4 218·0	5 342·3
	9·0	2 432·7	2 928·5	3 973·6	5 021·3	—	—	—	—

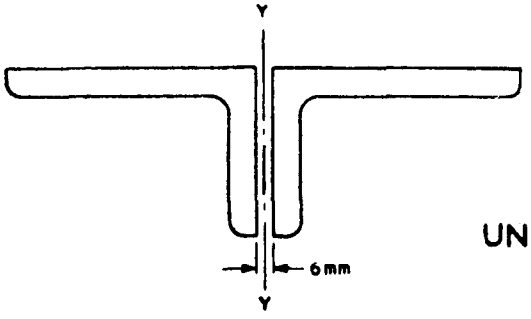


TABLE XXVII SAFE LOADS FOR DOUBLE ANGLES BACK TO BACK STRUTS

UNEQUAL ANGLES, SHORTER LEGS BACK TO BACK

Space Between Back to Back of Angles = 6 mm

70 × 45				65 × 45			60 × 40		
11·04	13·12	17·16	21·04	10·52	12·50	16·34	9·52	11·30	14·74
8·6	10·4	13·4	16·6	8·2	9·8	12·8	7·4	8·8	11·6
1·26 3·40	1·25 3·43	1·24 3·47	1·22 3·52	1·28 3·13	1·27 3·16	1·25 3·20	1·12 1·12	1·11 1·11	1·10 1·10
5·0	6·0	8·0	10·0	5·0	6·0	8·0	5·0	6·0	8·0
Safe Concentric Loads in kg									
11 511·4	13 631·7	17 750·3	21 561·8	11 047·1	13 080·0	16 977·3	9 254·4	10 919·2	14 143·0
7 917·9	9 302·1	12 036·0	14 427·1	7 713·3	9 066·2	11 585·1	5 732·0	6 706·6	8 620·0
4 920·5	5 746·6	7 402·8	8 792·6	4 848·7	5 667·5	7 156·9	3 300·6	3 835·2	4 920·2
3 081·3	3 594·9	4 619·5	5 453·6	3 040·3	3 551·2	4 477·2	2 033·5	2 367·4	3 029·1
2 038·0	2 374·7	3 052·8	3 610·5	2 016·7	2 352·5	2 957·5	—	—	—
—	—	—	—	—	—	—	—	—	—
12 632·4	15 036·7	19 708·4	24 226·6	11 820·6	14 077·2	18 456·4	—	—	—
10 816·0	12 926·6	17 031·7	21 068·7	9 662·3	11 575·3	15 292·2	—	—	—
8 050·8	9 683·7	12 863·9	16 068·8	6 810·8	8 212·5	10 939·6	—	—	—
5 703·8	6 879·7	9 171·1	11 503·1	4 624·2	5 610·1	7 530·7	—	—	—
3 936·7	4 773·6	6 406·2	8 097·5	3 162·1	3 830·4	5 138·9	—	—	—
2 830·1	3 434·2	4 612·8	5 841·5	2 237·8	2 712·0	3 643·8	—	—	—
2 097·0	2 543·3	3 414·2	4 322·8	—	—	2 696·1	—	—	—
—	—	—	—	—	—	—	—	—	—

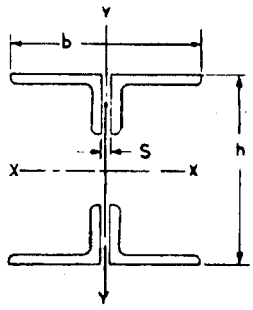
Note 1 — The safe loads given in this Table are tabulated for ratio of slenderness up to but not exceeding 250.

Note 2 — The values below the zigzag dotted lines are for ratio of slenderness exceeding 180.

Note 3 — This Table is based on the requirements specified in 18.9.1.2 of IS : 800-1956.

Note 4 — For double angle struts connected to both sides of the gusset by a single rivet or bolt, the allowable loads shall be 0·8 times the values given in this Table.

TABLE XXVIII PROPERTIES OF STRUTS MADE UP OF FOUR UNEQUAL ANGLES LACED



Nominal Size	Composed of Four Unequal Angles Each of Size	Weight per Metre	Sectional Area	Space Between Angles	Radii of Gyration		Moduli of Section	
$h \times b$	$A \times B \times t$			S	r_{xx}	r_{yy}	Z_{xx}	Z_{yy}
mm mm	mm mm mm	kg	cm^2	cm	cm	cm	cm^3	cm^3
130 × 130	60 × 40 × 5·0	14·8	19·04	1·0	5·65	3·09	93·6	28·0
	6·0	17·6	22·60		5·61	3·12	109·5	33·8
	8·0	23·2	29·48		5·53	3·17	138·6	45·6
140 × 140	65 × 45 × 5·0	16·4	21·04	1·0	6·06	3·29	110·3	32·5
	6·0	19·6	25·00		6·02	3·31	129·3	39·2
	8·0	25·6	32·68		5·93	3·36	164·4	52·8
150 × 150	70 × 45 × 5·0	17·2	22·08	1·0	6·58	3·55	127·6	37·1
	6·0	20·8	26·24		6·53	3·58	149·2	44·9
	8·0	26·8	34·32		6·46	3·63	190·9	60·4
	10·0	33·2	42·08		6·38	3·68	228·2	76·1
160 × 160	75 × 50 × 5·0	18·8	24·08	1·0	6·99	3·74	146·9	42·2
	6·0	22·4	28·64		6·95	3·78	172·7	51·1
	8·0	29·6	37·52		6·86	3·83	220·9	68·7
	10·0	36·0	46·08		6·78	3·88	264·9	86·5
170 × 170	80 × 50 × 5·0	19·6	25·08	1·0	7·51	4·01	166·5	47·5
	6·0	23·6	29·84		7·47	4·04	195·9	57·2
	8·0	30·8	39·12		7·39	4·09	251·3	77·1
	10·0	37·6	48·08		7·31	4·14	302·0	97·1
190 × 190	90 × 60 × 6·0	27·2	34·60	1·0	8·29	4·42	250·2	71·1
	8·0	35·6	45·48		8·20	4·47	321·6	95·8
	10·0	44·0	56·04		8·12	4·52	389·3	120·6
	12·0	52·0	66·28		8·04	4·57	451·2	145·8
210 × 210	100 × 65 × 6·0	30·0	38·20	1·0	9·22	4·87	309·0	86·4
	8·0	39·6	50·28		9·13	4·93	399·5	116·4
	10·0	48·8	62·04		9·05	4·99	484·2	146·9

(Continued)

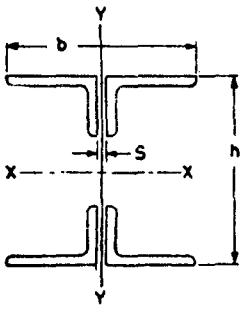


TABLE XXVIII PROPERTIES OF STRUTS MADE UP OF FOUR UNEQUAL ANGLES LACED

(Continued)

Nominal Size	Composed of Four Unequal Angles Each of Size	Weight per Metre	Sectional Area	Space Between Angles	Radii of Gyration		Moduli of Section	
$h \times b$	$A \times B \times t$			S	r_{xx}	r_{yy}	Z_{xx}	Z_{yy}
mm mm	mm mm mm	kg	cm²	cm	cm	cm	cm³	cm³
210×210	100×75 × 6·0	32·0	40·56	1·0	8·99	4·72	312·3	86·0
	8·0	42·0	53·44		8·90	4·78	403·2	116·1
	10·0	52·0	66·00		8·82	4·83	488·8	146·7
	12·0	61·6	78·24		8·74	4·88	568·7	177·3
260×260	125×75 × 6·0	36·8	46·64	1·0	11·60	6·07	483·0	132·1
	8·0	48·4	61·52		11·51	6·13	627·1	177·9
	10·0	59·6	76·08		11·43	6·19	764·5	223·9
260×260	125×95 × 6·0	40·4	51·44	1·0	11·14	5·78	491·2	132·3
	8·0	53·2	67·92		11·05	5·84	638·1	178·4
	10·0	66·0	84·08		10·97	5·89	778·1	224·3
	12·0	78·4	99·92		10·89	5·93	910·8	270·6
310×310	150×75 × 8·0	54·8	69·68	1·0	14·11	7·50	895·5	252·7
	10·0	67·6	86·24		14·03	7·55	1 095·5	317·3
	12·0	80·4	102·48		13·95	7·61	1 286·6	382·4
310×310	150×115× 8·0	64·8	82·32	1·0	13·22	6·87	927·7	250·8
	10·0	80·0	102·08		13·13	6·93	1 134·6	315·9
	12·0	95·2	121·52		13·04	6·98	1 333·8	381·7
	15·0	118·0	150·08		12·92	7·04	1 616·1	480·4
410×410	200×100× 10·0	91·2	116·12	1·0	18·68	9·87	1 977·4	551·3
	12·0	108·8	138·36		18·59	9·92	2 333·1	664·1
	15·0	134·4	171·12		18·47	10·00	2 847·5	833·9
410×410	200×150× 10·0	106·8	136·00	1·0	17·56	9·09	2 045·7	548·3
	12·0	127·2	162·24		17·47	9·14	2 415·1	661·7
	15·0	157·6	201·00		17·35	9·21	2 950·0	831·5
	18·0	187·6	239·04		17·22	9·28	3 458·3	1 004·3

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)

EQUAL ANGLES

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
50×50× 3·0	2·3	2·95	0·97	0	—	2·57	3·6
				1	17·5	1·91	2·7
4·0	3·0	3·88	0·97	0	—	3·38	4·8
				1	17·5	2·49	3·5
5·0	3·8	4·79	0·97	0	—	4·17	5·9
				1	17·5	3·06	4·4
6·0	4·5	5·68	0·96	0	—	4·94	7·0
				1	17·5	3·62	5·1
55×55× 5·0	4·1	5·27	1·06	0	—	4·59	6·5
				1	21·5	3·22	4·6
6·0	4·9	6·26	1·06	0	—	5·45	7·7
				1	21·5	3·80	5·4
8·0	6·4	8·18	1·06	0	—	7·12	10·1
				1	21·5	4·92	7·0
10 0	7·9	10·02	1·06	0	—	8·72	12·4
				1	21·5	5·97	8·5
60×60× 5·0	4·5	5·75	1·16	0	—	5·00	7·1
				1	21·5	3·64	5·2
6·0	5·4	6·84	1·15	0	—	5·95	8·5
				1	21·5	4·32	6·1
8·0	7·0	8·96	1·15	0	—	7·80	11·1
				1	21·5	5·62	8·0
10·0	8·6	11·00	1·15	0	—	9·57	13·6
				1	21·5	6·84	9·7
65×65× 5·0	4·9	6·25	1·26	0	—	5·44	7·7
				1	21·5	4·09	5·8
6·0	5·8	7·44	1·26	0	—	6·48	9·2
				1	21·5	4·85	6·9
8·0	7·7	9·76	1·25	0	—	8·49	12·1
				1	21·5	6·33	9·0
10·0	9·4	12·00	1·25	0	—	10·44	14·8
				1	21·5	7·73	11·0

(Continued)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG) — (*Continued*)

EQUAL ANGLES

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
70×70× 5·0	5·3	6·77	1·36	0	—	5·89	8·4
				1	21·5	4·55	6·5
6·0	6·3	8·06	1·36	0	—	7·02	10·0
				1	21·5	5·40	7·7
8·0	8·3	10·58	1·35	0	—	9·21	13·1
				1	21·5	7·05	10·0
10·0	10·2	13·02	1·35	0	—	11·33	16·1
				1	21·5	8·64	12·3
75×75× 5·0	5·7	7·27	1·46	0	—	6·33	9·0
				1	21·5	4·99	7·1
6·0	6·8	8·66	1·46	0	—	7·54	10·7
				1	21·5	5·93	8·4
8·0	8·9	11·38	1·45	0	—	9·90	14·1
				1	21·5	7·76	11·0
10·0	11·0	14·02	1·45	0	—	12·20	17·3
				1	21·5	9·52	13·5
80×80× 6·0	7·3	9·29	1·56	0	—	8·09	11·5
				1	21·5	6·48	9·2
8·0	9·6	12·21	1·55	0	—	10·63	15·1
				1	21·5	8·49	12·1
10·0	11·8	15·05	1·55	0	—	13·10	18·6
				1	21·5	10·42	14·8
12·0	14·0	17·81	1·54	0	—	15·50	22·0
				1	21·5	12·29	17·5
90×90× 6·0	8·2	10·47	1·75	0	—	9·11	12·9
				1	21·5	7·52	10·7
8·0	10·8	13·79	1·75	0	—	12·00	17·0
				1	21·5	9·88	14·0
10·0	13·4	17·03	1·74	0	—	14·82	21·0
				1	21·5	12·16	17·3
12·0	15·8	20·19	1·74	0	—	17·57	25·0
				1	21·5	14·38	20·4

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG) — (*Continued*)

EQUAL ANGLES

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
100 × 100 × 6·0	9·2	11·67	1·95	0	—	10·16	14·4
				1	21·5	8·57	12·2
				2	13·5	8·15	11·6
8·0	12·1	15·39	1·95	0	—	13·40	19·0
				1	21·5	11·28	16·0
				2	13·5	10·71	15·2
10·0	14·9	19·03	1·94	0	—	16·56	23·5
				1	21·5	13·92	19·8
				2	13·5	13·21	18·8
12·0	17·7	22·59	1·94	0	—	19·66	27·9
				1	21·5	16·48	23·4
				2	13·5	15·63	22·2
110 × 110 × 8·0	13·4	17·02	2·14	0	—	14·81	21·0
				1	21·5	12·71	18·0
				2	13·5	12·14	17·2
10·0	16·5	21·06	2·14	0	—	18·33	26·0
				1	21·5	15·69	22·3
				2	13·5	14·99	21·3
12·0	19·6	25·02	2·13	0	—	21·78	30·9
				1	21·5	18·61	26·4
				2	13·5	17·77	25·2
15·0	24·2	30·81	2·13	0	—	26·82	38·1
				1	21·5	22·86	32·5
				2	13·5	21·80	31·0
130 × 130 × 8·0	15·9	20·22	2·55	0	—	17·60	25·0
				1	21·5	15·50	22·0
				2	21·5	13·28	18·9
10·0	19·7	25·06	2·54	0	—	21·81	31·0
				1	21·5	19·19	27·2
				2	21·5	16·40	23·3

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG) — (*Continued*)

EQUAL ANGLES

Composed of One Angle of Size $A \times B \times t$	Weight per Metre w	Gross Area	Minimum Radius of Gyration	Holes Deducted No.	Holes Deducted Dia	Effective Area	Allowable Load
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^2$
130 × 130 × 12·0	23·4	29·82	2·54	0	—	25·95	36·9
				1	21·5	22·81	32·4
				2	21·5	19·46	27·6
15·0	28·9	36·81	2·53	0	—	32·04	45·5
				1	21·5	28·10	39·9
				2	21·5	23·92	34·0
150 × 150 × 10·0	22·8	29·03	2·93	0	—	25·27	35·9
				1	23·5	22·40	31·8
				2	23·5	19·38	27·5
12·0	27·2	34·59	2·93	0	—	30·11	42·8
				1	23·5	26·67	37·9
				2	23·5	23·04	32·7
15·0	33·6	42·78	2·92	0	—	37·23	52·9
				1	23·5	32·94	46·8
				2	23·5	28·39	40·3
18·0	39·9	50·79	2·91	0	—	44·21	62·8
				1	23·5	39·05	55·4
				2	23·5	33·59	47·7
200 × 200 × 12·0	36·6	46·61	3·92	0	—	40·57	57·6
				1	29	36·34	51·6
				2	29	31·89	45·3
15·0	45·4	57·80	3·91	0	—	50·31	71·4
				1	29	45·02	63·9
				2	29	39·46	56·0
18·0	54·0	68·81	3·90	0	—	59·89	85·0
				1	29	53·54	76·0
				2	29	46·86	66·5
25·0	73·6	93·80	3·88	0	—	81·64	115·9
				1	29	72·82	103·4
				2	29	63·53	90·2

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of One Angle of Size $A \times B \times t$	Weight per Metre w	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
mm mm mm	kg	cm^2	cm		mm	cm^2	kg × 10^3
50×30× 3·0	1·8	2·34	0·65	0	—	1·79	2·5
4·0	2·4	3·07	0·63	0	—	2·35	3·3
5·0	3·0	3·78	0·63	0	—	2·88	4·1
6·0	3·5	4·47	0·63	0	—	3·40	4·8
60×40× 5·0	3·7	4·76	0·85	0	—	3·75	5·3
6·0	4·4	5·65	0·85	0	—	4·45	6·3
8·0	5·8	7·37	0·84	0	—	5·79	8·2
65×45× 5·0	4·1	5·26	0·96	0	—	4·20	6·0
6·0	4·9	6·25	0·95	0	—	4·98	7·1
8·0	6·4	8·17	0·95	0	—	6·50	9·2
70×45× 5·0	4·3	5·52	0·96	0	—	4·31	6·1
6·0	5·2	6·56	0·96	0	—	5·12	7·3
8·0	6·7	8·58	0·95	0	—	6·68	9·5
10·0	8 3	10·52	0·95	0	—	8·16	11·6
75×50× 5·0	4·7	6·02	1·07	0	—	4·76	6·8
				1	17·5	3·48	4·9
6·0	5·6	7·16	1·07	0	—	5·65	8·0
				1	17·5	4·12	5·8
8·0	·4	9·38	1·06	0	—	7·39	10·5
				1	17·5	5·33	7·6
10·0	9·0	11·52	1·06	0	—	9·05	12·9
				1	17·5	6·47	9·2
80×50× 5·0	4·9	6·27	1·07	0	—	4·86	6·9
				1	17·5	3·55	5·0
6·0	5·9	7·46	1·07	0	—	5·77	8·2
				1	17·5	4·20	6·0

(Continued)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
80 x 50 x 8·0	7·7	9·78	1·06	0	—	7·55	10·7
				1	17·5	5·44	7·7
10·0	9·4	12·02	1·06	0	—	9·25	13·1
				1	17·5	6·61	9·4
90 x 60 x 6·0	6·8	8·65	1·28	0	—	6·83	9·7
				1	21·5	4·95	7·0
8·0	8·9	11·37	1·28	0	—	8·96	12·7
				1	21·5	6·44	9·2
10·0	11·0	14·01	1·27	0	—	11·02	15·7
				1	21·5	7·86	11·2
12·0	13·0	16·57	1·27	0	—	13·02	18·5
				1	21·5	9·20	13·1
100 x 65 x 6·0	7·5	9·55	1·39	0	—	7·49	10·6
				1	21·5	5·61	8·0
8·0	9·9	12·57	1·39	0	—	9·84	14·0
				1	21·5	7·32	10·4
10·0	12·2	15·51	1·38	0	—	12·12	17·2
				1	21·5	8·96	12·7
100 x 75 x 5·0	8·0	10·14	1·59	0	—	8·28	11·8
				1	21·5	6·51	9·2
8·0	10·5	13·36	1·59	0	—	10·89	15·5
				1	21·5	8·54	12·1
10·0	13·0	16·50	1·58	0	—	13·44	19·1
				1	21·5	10·49	14·9
12·0	15·4	19·56	1·58	0	—	15·92	22·6
				1	21·5	12·36	17·6

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
125×75× 6·0	9·2	11·66	1·62	0	—	8·93	12·7
				1	21·5	7·02	10·0
8·0	12·1	15·38	1·61	0	—	11·76	16·7
				1	21·5	9·20	13·1
10·0	14·9	19·02	1·61	0	—	14·52	20·6
				1	21·5	11·30	16·0
125×95× 6·0	10·1	12·86	2·03	0	—	10·54	15·0
				1	21·5	8·81	12·5
8·0	13·3	16·98	2·02	0	—	13·90	19·7
				1	21·5	11·59	16·5
10·0	16·5	21·02	2·02	0	—	17·20	24·4
				1	21·5	14·31	20·3
12·0	19·6	24·98	2·01	0	—	20·42	29·0
				1	21·5	16·95	24·1
150×75× 8·0	13·7	17·42	1·60	0	—	12·53	17·8
				1	21·5	9·77	13·9
10·0	16·9	21·56	1·59	0	—	15·46	22·0
				1	21·5	12·00	17·0
12·0	20·1	25·62	1·58	0	—	18·32	26·0
				1	21·5	14·14	20·1
150×115× 8·0	16·2	20·58	2·45	0	—	16·90	24·0
				1	21·5	14·61	20·8
				2	13·5	14·00	19·9
10·0	20·0	25·52	2·44	0	—	20·54	29·2
				1	21·5	18·08	25·7
				2	13·5	17·32	24·6

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
150 × 115 × 12·0	23·8	30·38	2·44	0	—	24·91	35·4
				1	21·5	21·48	30·5
				2	13·5	20·56	29·2
15·0	29·5	37·52	2·43	0	—	30·74	43·7
				1	21·5	26·45	37·6
				2	13·5	25·29	35·9
200 × 100 × 10·0	22·8	29·03	2·14	0	—	20·87	29·6
				1	21·5	17·49	24·8
				2	13·5	16·56	23·5
12·0	27·2	34·59	2·13	0	—	24·82	35·3
				1	21·5	20·75	29·5
				2	13·5	19·63	27·9
15·0	33·6	42·78	2·12	0	—	30·61	43·5
				1	21·5	25·49	36·2
				2	13·5	24·09	34·2
200 × 150 × 10·0	26·7	34·00	3·21	0	—	27·76	39·4
				1	23·5	24·64	35·0
				2	23·5	21·30	30·2
12·0	31·8	40·56	3·2	0	—	33·10	47·0
				1	23·5	29·35	41·7
				2	23·5	25·33	36·0
15·0	39·4	50·25	3·20	0	—	40·98	58·2
				1	23·5	36·29	51·5
				2	23·5	31·25	44·4
18·0	46·9	59·76	3·19	0	—	48·70	69·2
				1	23·5	43·06	61·2
				2	23·5	37·01	52·6

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
50 × 30 × 3·0	1·8	2·34	0·65	0	—	2·19	3·1
				1	17·5	1·60	2·3
4·0	2·4	3·07	0·63	0	—	2·88	4·1
				1	17·5	2·09	3·0
5·0	3·0	3·78	0·63	0	—	3·54	5·0
				1	17·5	2·57	3·6
6·0	3·5	4·47	0·63	0	—	4·20	6·0
				1	17·5	3·02	4·3
60 × 40 × 5·0	3·7	4·76	0·85	0	—	4·41	6·3
				1	21·5	3·18	4·5
6·0	4·4	5·65	0·85	0	—	5·24	7·4
				1	21·5	3·77	5·3
8·0	5·8	7·37	0·84	0	—	6·84	9·7
				1	21·5	4·88	6·9
65 × 45 × 5·0	4·1	5·26	0·96	0	—	4·85	6·9
				1	21·5	3·62	5·1
6·0	4·9	6·25	0·95	0	—	5·77	8·2
				1	21·5	4·29	6·1
8·0	6·4	8·17	0·95	0	—	7·54	10·7
				1	21·5	5·57	7·9
70 × 45 × 5·0	4·3	5·52	0·96	0	—	5·13	7·3
				1	21·5	3·92	5·6
6·0	5·2	6·56	0·96	0	—	6·10	8·7
				1	21·5	4·65	6·6
8·0	6·7	8·58	0·95	0	—	7·99	11·3
				1	21·5	6·06	8·6
10·0	8·3	10·52	0·95	0	—	9·81	13·9
				1	21·5	7·39	10·5

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
75×50× 5·0	4·7	6·02	1·07	0	—	5·57	7·9
				1	21·5	4·36	6·2
6·0	5·6	7·16	1·07	0	—	6·63	9·4
				1	21·5	5·17	7·3
8·0	7·4	9·38	1·06	0	—	8·70	12·4
				1	21·5	6·75	9·6
10·0	9·0	11·52	1·06	0	—	10·69	15·2
				1	21·5	8·26	11·7
80×50× 5·0	4·9	6·27	1·07	0	—	5·85	8·3
				1	21·5	4·65	6·6
6·0	5·9	7·46	1·07	0	—	6·96	9·9
				1	21·5	5·52	7·8
8·0	7·7	9·78	1·06	0	—	9·13	13·0
				1	21·5	7·22	10·2
10·0	9·4	12·02	1·06	0	—	11·24	16·0
				1	21·5	8·84	12·6
90×60× 6·0	6·8	8·65	1·28	0	—	8·01	11·4
				1	21·5	6·56	9·3
8·0	8·9	11·37	1·28	0	—	10·54	15·0
				1	21·5	8·60	12·2
10·0	11·0	14·01	1·27	0	—	12·99	18·5
				1	21·5	10·58	15·0
12·0	13·0	16·57	1·27	0	—	15·38	21·8
				1	21·5	12·48	17·7
100×65× 6·0	7·5	9·55	1·39	0	—	11·02	15·6
				1	21·5	7·43	10·5
				2	13·5	7·05	10·0

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
100×65× 8·0	9·9	12·57	1·39	0	—	11·68	16·6
				1	21·5	9·76	13·9
				2	13·5	9·26	13·1
10·0	12·2	15·51	1·38	0		14·42	20·5
				1	21·5	12·03	17·1
				2	13·5	11·39	16·2
100×75× 6·0	8·0	10·14	1·59	0	—	9·25	13·1
				1	21·5	7·77	11·0
				2	13·5	7·38	10·5
8·0	10·5	13·36	1·59	0	—	12·19	17·3
				1	21·5	10·22	14·5
				2	13·5	9·70	13·8
10·0	13·0	16·50	1·58	0	—	15·06	21·4
				1	21·5	12·60	17·9
				2	13·5	11·95	17·0
12·0	15·4	19·56	1·58	0	—	17·87	25·4
				1	21·5	14·91	21·2
				2	13·5	14·13	20·1
125×75× 6·0	9·2	11·66	1·62	0	—	10·92	15·5
				1	21·5	9·50	13·5
				2	21·5	8·03	11·4
8·0	12·1	15·38	1·61	0	—	14·41	20·5
				1	21·5	12·52	17·8
				2	21·5	10·57	15·0
10·0	14·9	19·02	1·61	0	—	17·83	25·3
				1	21·5	15·47	22·0
				2	21·5	13·03	18·5

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of One Angle of Size $A \times B \times t$	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
125×95× 6·0	10·1	12·86	2·03	0	—	11·70	16·6
				1	21·5	10·23	14·5
				2	21·5	8·68	12·3
8·0	13·3	16·98	2·02	0	—	15·46	22·0
				1	21·5	13·49	19·2
				2	21·5	11·43	16·2
10·0	16·5	21·02	2·02	0	—	19·15	27·2
				1	21·5	16·69	23·7
				2	21·5	14·10	20·0
12·0	19·6	24·98	2·01	0	—	22·76	32·3
				1	21·5	19·81	28·1
				2	21·5	16·71	23·7
150×75× 8·0	13·7	17·42	1·60	0	—	16·59	23·6
				1	23·5	14·58	20·7
				2	23·5	12·51	17·8
10·0	16·9	21·56	1·59	0	—	20·54	29·2
				1	23·5	18·03	25·6
				2	23·5	15·45	21·9
12·0	20·1	25·62	1·58	0	—	24·42	34·7
				1	23·5	21·41	30·4
				2	23·5	18·32	26·0
150×115× 8·0	16·2	20·58	2·45	0	—	18·71	26·6
				1	23·5	16·56	23·5
				2	23·5	14·31	20·3
10·0	20·0	25·52	2·44	0	—	23·21	33·0
				1	23·5	20·52	29·1
				2	23·5	17·72	25·2

(*Continued*)

TABLE XXIX SINGLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of One Angle of Size	Weight per Metre	Gross Area	Minimum Radius of Gyration	Holes Deducted		Effective Area	Allowable Load
				No.	Dia		
$A \times B \times t$	w						
mm mm mm	kg	cm^2	cm		mm	cm^2	$kg \times 10^3$
150 × 115 × 12·0	23·8	30·38	2·44	0	—	27·64	39·2
				1	23·5	24·41	34·7
				2	23·5	21·04	29·9
15·0	29·5	37·52	2·43	0	—	34·15	48·5
				1	23·5	30·12	42·8
				2	23·5	25·91	36·8
200 × 100 × 10·0	22·8	29·03	2·14	0	—	27·64	39·3
				1	29	24·54	34·8
				2	29	21·37	30·3
12·0	27·2	34·59	2·13	0	—	32·95	46·8
				1	29	29·23	41·5
				2	29	25·43	36·1
15·0	33·6	42·78	2·12	0	—	40·78	57·9
				1	29	36·13	51·3
				2	29	31·38	44·6
200 × 150 × 10·0	26·7	34·00	3·21	0	—	31·01	44·0
				1	29	27·71	39·3
				2	29	24·28	34·5
12·0	31·8	40·56	3·21	0	—	37·00	52·5
				1	29	33·04	46·9
				2	29	28·93	41·1
15·0	39·4	50·25	3·20	0	—	45·85	65·1
				1	29	40·90	58·1
				2	29	35·77	50·8
18·0	46·9	59·76	3·19	0	—	54·55	77·5
				1	29	48·61	69·0
				2	29	42·45	60·3

Note 1 — The diameters of the holes deducted are assumed to be one millimetre larger than the corresponding rivet sizes.

Note 2 — The maximum allowable load is computed on the basis of the allowable stress specified in **9.1.1** and the effective sectional area defined in **19.3.1** of IS : 800-1956.

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)

EQUAL ANGLES

Composed of Two Angles Each of Size $A \times B \times t$	Weight per Metre w	Sectional Area a	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
			No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
50 × 50 × 3·0	4·6	5·90	0	—	5·90	8·4	0	—	5·41	7·7
			1	17·5	4·85	6·9	1	17·5	4·15	5·9
4·0	6·0	7·76	0	—	7·76	11·0	0	—	7·11	10·1
			1	17·5	6·36	9·0	1	17·5	5·44	7·7
5·0	7·6	9·58	0	—	9·58	13·6	0	—	8·78	12·5
			1	17·5	·83	11·1	1	17·5	6·68	9·5
6·0	9·0	11·36	0	—	11·36	16·1	0	—	10·41	14·8
			1	17·5	9·26	13·1	1	17·5	7·89	11·2
55 × 55 × 5·0	8·2	10·54	0	—	10·54	15·0	0	—	9·66	13·7
			1	21·5	8·39	11·9	1	21·5	7·06	10·0
6·0	9·8	12·52	0	—	12·52	17·8	0	—	11·48	16·3
			1	21·5	9·94	14·1	1	21·5	8·35	11·9
8·0	12·8	16·36	0	—	16·36	23·2	0	—	15·00	21·3
			1	21·5	12·92	18·3	1	21·5	10·82	15·4
10·0	15·8	20·04	0	—	20·04	28·5	0	—	18·37	26·1
			1	21·5	15·74	22·4	1	21·5	13·14	18·7
60 × 60 × 5·0	9·0	11·50	0	—	11·50	16·3	0	—	10·54	15·0
			1	21·5	9·35	13·3	1	21·5	7·96	11·3
6·0	10·8	13·68	0	—	13·68	19·4	0	—	12·54	17·8
			1	21·5	11·10	15·8	1	21·5	9·44	13·4
8·0	14·0	17·92	0	—	17·92	25·4	0	—	16·43	23·3
			1	21·5	14·48	20·6	1	21·5	12·28	17·4
10·0	17·2	22·00	0	—	22·00	31·2	0	—	20·17	28·6
			1	21·5	17·70	25·1	1	21·5	14·98	21·3
65 × 65 × 5·0	9·8	12·50	0	—	12·50	17·8	0	—	11·46	16·3
			1	21·5	10·35	14·7	1	21·5	8·89	12·6
6·0	11·6	14·88	0	—	14·88	21·1	0	—	13·64	19·4
			1	21·5	12·30	17·5	1	21·5	10·56	15·0
8·0	15·4	19·52	0	—	19·52	27·7	0	—	17·89	25·4
			1	21·5	16·08	22·8	1	21·5	13·78	19·6
10·0	18·8	24·00	0	—	24·00	34·1	0	—	22·00	31·2
			1	21·5	19·70	28·0	1	21·5	16·85	23·9

(Continued)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG) — (*Continued*)

EQUAL ANGLES

Composed of Two Angles Each of Size	Weight per Metre	Sectional Area	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
$A \times B \times t$	w	a	No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
70 × 70 × 5·0	10·6	13·54	0	—	13·54	19·2	0	—	12·41	17·6
			1	21·5	11·39	16·2	1	21·5	9·86	14·0
6·0	12·6	16·12	0	—	16·12	22·9	0	—	14·78	21·0
			1	21·5	13·54	19·2	1	21·5	11·71	16·6
8·0	16·6	21·16	0	—	21·16	30·0	0	—	19·40	27·5
			1	21·5	17·72	25·2	1	21·5	15·30	21·7
10·0	20·4	26·04	0	—	26·04	37·0	0	—	23·87	33·9
			1	21·5	21·74	30·9	1	21·5	18·75	26·6
75 × 75 × 5·0	11·4	14 54	0	—	14·54	20·6	0	—	13·33	18·9
			1	21·5	12·39	17·6	1	21·5	10·78	15·3
6·0	13·6	17·32	0	—	17·32	24·6	0	—	15·88	22·5
			1	21·5	14·74	20·9	1	21·5	12·82	18·2
8·0	17·8	22·76	0	—	22·76	32·3	0	—	20·86	29·6
			1	21·5	19·32	27·4	1	21·5	16·78	23·8
10·0	22·0	28·04	0	—	28·04	39·8	0	—	25·70	36·5
			1	21·5	23·74	33·7	1	21·5	20·60	29·3
80 × 80 × 6·0	14·6	18·58	0	—	18·58	26·4	0	—	17·03	24·2
			1	21·5	16·00	22·7	1	21·5	13·98	19·9
8·0	19·2	24·42	0	—	24·42	34·7	0	—	22·38	31·8
			1	21·5	20·98	29·8	1	21·5	18·32	26·0
10·0	23·6	30·10	0	—	30·10	42·7	0	—	27·59	39·2
			1	21·5	25·80	36·6	1	21·5	22·51	32·0
12·0	28·0	35·62	0	—	35·62	50·6	0	—	32·65	46·4
			1	21·5	30·46	43·3	1	21·5	26·55	37·7
90 × 90 × 6·0	16·4	20·94	0	—	20·94	29·7	0	—	19·20	27·3
			1	21·5	18·36	26·1	1	21·5	16·16	23·0
8·0	21·6	27·58	0	—	27·58	39·2	0	—	25·28	35·9
				21·5	24·14	34·3	1	21·5	21·24	30·2
10·0	26·8	34·06	0	—	34·06	48·4	0	—	31·22	44·3
			1	21·5	29·76	42·3	1	21·5	26·16	37·2
12·0	31·6	40·38	0	—	40·38	57·3	0	—	37·02	52·6
			1	21·5	35·22	50·0	1	21·5	30·94	43·9

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG) — (*Continued*)

EQUAL ANGLES

Composed of Two Angles Each of Size $A \times B \times t$	Weight per Metre w	Sectional Area a	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
			No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
100×100× 6·0	18·4	23·34	0	—	23·34	33·1	0	—	21·40	30·4
			1	21·5	20·76	29·5	1	21·5	18·38	26·1
			2	13·5	20·10	28·5	2	13·5	17·57	24·9
8·0	24·2	30·78	0	—	30·78	43·7	0	—	28·22	40·1
			1	21·5	27·34	38·8	1	21·5	24·19	34·3
			2	13·5	26·46	37·6	2	13·5	23·11	32·8
10·0	29·8	38·06	0	—	38·06	54·0	0	—	34·89	49·5
			1	21·5	33·76	47·9	1	21·5	29·85	42·4
			2	13·5	32·66	46·4	2	13·5	28·51	40·5
12·0	35·4	45·18	0	—	45·18	64·2	0	—	41·42	58·8
			1	21·5	40·02	56·8	1	21·5	35·37	50·2
			2	13·5	38·70	55·0	2	13·5	33·75	47·9
110×110× 8·0	26·8	34·04	0	—	34·04	48·3	0	—	31·20	44·3
			1	21·5	30·60	43·5	1	21·5	27·19	38·6
			2	13·5	29·72	42·2	2	13·5	26·12	37·1
10·0	33·0	42·12	0	—	42·12	59·8	0	—	38·61	54·8
			1	21·5	37·82	53·7	1	21·5	33·59	47·7
			2	13·5	36·72	52·1	2	13·5	32·26	45·8
12·0	39·2	50·04	0	—	50·04	71·1	0	—	45·87	65·1
			1	21·5	44·88	63·7	1	21·5	39·84	56·6
			2	13·5	43·56	61·9	2	13·5	38·24	54·3
15·0	48·4	61·62	0	—	61·62	87·5	0	—	56·48	80·2
			1	21·5	55·17	78·3	1	21·5	48·95	69·5
			2	13·5	53·52	76·0	2	13·5	46·95	66·7
130×130× 8·0	31·8	40·44	0	—	40·44	57·4	0	—	37·07	52·6
			1	21·5	37·00	52·5	1	21·5	33·07	47·0
			2	21·5	33·56	47·7	2	21·5	28·86	41·0
10·0	39·4	50·12	0	—	50·12	71·2	0	—	45·94	65·2
			1	21·5	45·82	65·1	1	21·5	40·95	58·1
			2	21·5	41·52	59·0	2	21·5	35·67	50·7

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG) — (*Continued*)

EQUAL ANGLES

Composed of Two Angles Each of Size $A \times B \times t$	Weight per Metre w	Sectional Area a	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
			No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	kg × 10^3		mm	cm^2	kg × 10^3
130 × 130 × 12·0	46·8	59·64	0	—	59·64	84·7	0	—	54·67	77·6
			1	21·5	54·48	77·4	1	21·5	48·67	69·1
			2	21·5	49·32	70·0	2	21·5	42·34	60·1
15·0	57·8	73·62	0	—	73·62	104·5	0	—	67·48	95·8
			1	21·5	67·17	95·4	1	21·5	59·98	85·2
			2	21·5	60·72	86·2	2	21·5	52·05	73·9
150 × 150 × 10·0	45·6	58·06	0	—	58·06	82·4	0	—	53·22	75·6
			1	23·5	53·36	75·8	1	23·5	47·77	67·8
			2	23·5	48·66	69·1	2	23·5	42·03	59·7
12·0	54·4	69·18	0	—	69·18	98·2	0	—	63·42	90·0
			1	23·5	63·54	90·2	1	23·5	56·86	80·8
			2	23·5	57·90	82·2	2	23·5	49·98	71·0
15·0	67·2	85·56	0	—	85·56	121·5	0	—	78·43	111·4
			1	23·5	78·51	111·5	1	23·5	70·24	99·7
			2	23·5	71·46	101·5	2	23·5	61·63	87·5
18·0	79·8	101·58	0	—	101·58	144·2	0	—	93·12	132·2
			1	23·5	93·12	132·2	1	23·5	83·29	118·3
			2	23·5	84·66	120·2	2	23·5	72·94	103·6
200 × 200 × 12·0	73·2	93·22	0	—	93·22	132·4	0	—	85·45	121·3
			1	29	86·26	122·5	1	29	77·39	109·9
			2	29	79·30	112·6	2	29	68·96	97·9
15·0	90·8	115·60	0	—	115·60	164·2	0	—	105·97	150·5
			1	29	106·90	151·8	1	29	95·88	136·2
			2	29	98·20	139·4	2	29	85·34	121·2
18·0	108·0	137·62	0	—	137·62	195·4	0	—	126·15	179·1
			1	29	127·18	180·6	1	29	114·05	162·0
			2	29	116·74	165·8	2	29	101·39	144·0
25·0	147·2	187·60	0	—	187·60	266·4	0	—	171·97	244·2
			1	29	173·10	245·8	1	29	155·16	220·3
			2	29	158·60	225·2	2	29	137·54	195·3

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of Two Angles Each of Size	Weight per Metre	Sectional Area	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
A×B×t	w	a	No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
50 × 30 × 3·0	3·6	4·68	0	—	4·68	6·6	0	—	3·94	5·6
4·0	4·8	6·14	0	—	6·14	8·7	0	—	5·16	7·3
5·0	6·0	7·56	0	—	7·56	10·7	0	—	6·34	9·0
6·0	7·0	8·94	0	—	8·94	12·7	0	—	7·48	10·6
60 × 40 × 5·0	7·4	9·52	0	—	9·52	13·5	0	—	8·17	11·6
6·0	8·8	11·30	0	—	11·30	16·0	0	—	9·69	13·8
8·0	11·6	14·74	0	—	14·74	20·9	0	—	12·61	17·9
65 × 45 × 5·0	8·2	10·52	0	—	10·52	14·9	0	—	9·10	12·9
6·0	9·8	12·50	0	—	12·50	17·8	0	—	10·80	15·3
8·0	12·8	16·34	0	—	16·34	23·2	0	—	14·10	20·0
70×45× 5·0	8·6	11·04	0	—	11·04	15·7	0	—	9·41	13·4
6·0	10·4	13·12	0	—	13·12	18·6	0	—	11·17	15·9
8·0	13·4	17·16	0	—	17·16	24·4	0	—	14·59	20·7
10·0	16·6	21·04	0	—	21·04	29·9	0	—	17·85	25·3
75 × 50 × 5·0	9·4	12·04	0	—	12·04	17·1	0	—	10·34	14·7
			1	17·5	10·29	14·6	1	17·5	7·93	11·3
6·0	11·2	14·32	0	—	14·32	20·3	0	—	12·29	17·5
			1	17·5	12·22	17·4	1	17·5	9·39	13·3
8·0	14·8	18·76	0	—	18·76	26·6	0	—	16·08	22·8
			1	17·5	15·96	22·7	1	17·5	12·18	17·3
10·0	18·0	23·04	0	—	23·04	32·7	0	—	19·71	28·0
			1	17·5	19·54	27·7	1	17·5	14·82	21·0
80 × 50 × 5·0	9·8	12·54	0	—	12·54	17·8	0	—	10·63	15·1
			1	17·5	10·79	15·3	1	17·5	8·15	11·6
6·0	11·8	14·92	0	—	14·92	21·2	0	—	12·64	17·9
			1	17·5	12·82	18·2	1	17·5	9·65	13·7

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of Two Angles Each of Size $A \times B \times t$	Weight per Metre	Sectional Area	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
			No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
80×50× 8·0	15·4	19·56	0	—	19·56	27·8	0	—	16·54	23·5
			1	17·5	16·76	23·8	1	17·5	12·53	17·8
10·0	18·8	24·04	0	—	24·04	34·1	0	—	20·29	28·8
			1	17·5	20·54	29·2	1	17·5	15·25	21·7
90×60× 6·0	13·6	17·30	0	—	17·30	24·6	0	—	14·86	21·1
			1	21·5	14·72	20·9	1	21·5	11·29	16·0
8·0	17·8	22·74	0	—	22·74	32·3	0	—	19·51	27·7
			1	21·5	19·30	27·4	1	21·5	14·72	20·9
10·0	22·0	28·02	0	—	28·02	39·8	0	—	24·00	34·1
			1	21·5	23·72	33·7	1	21·5	18·00	25·6
12·0	26·0	33·14	0	—	33·14	47·1	0	—	28·36	40·3
			1	21·5	27·98	39·7	1	21·5	21·11	30·0
100×65× 6·0	15·0	19·10	0	—	19·10	27·1	0	—	16·32	23·2
			1	21·5	16·52	23·5	1	21·5	12·75	18·1
8·0	19·8	25·14	0	—	25·14	35·7	0	—	21·46	30·5
			1	21·5	21·70	30·8	1	21·5	16·68	23·7
10·0	24·4	31·02	0	—	31·02	44·0	0	—	26·45	37·6
			1	21·5	26·72	37·9	1	21·5	20·44	29·0
100×75× 6·0	16·0	20·28	0	—	20·28	28·8	0	—	17·81	25·3
			1	21·5	17·70	25·1	1	21·5	14·47	20·5
8·0	21·0	26·72	0	—	26·72	37·9	0	—	23·45	33·3
			1	21·5	23·28	33·1	1	21·5	18·99	27·0
10·0	26·0	33·00	0	—	33·00	46·9	0	—	28·94	41·1
			1	21·5	28·70	40·8	1	21·5	23·35	33·2
12·0	30·8	39·12	0	—	39·12	55·6	0	—	34·29	48·7
			1	21·5	33·96	48·2	1	21·5	27·56	39·1

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(Continued)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of Two Angles Each of Size	Weight per Metre	Sectional Area	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
$A \times B \times t$	w	a	No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
125×75× 6·0	18·4	23·32	0	—	23·32	33·1	0	—	19·61	27·8
			1	21·5	20·74	29·5	1	21·5	15·97	22·7
8·0	24·2	30·76	0	—	30·76	43·7	0	—	25·84	36·7
			1	21·5	27·32	38·8	1	21·5	20·96	29·8
10·0	29·8	38·04	0	—	38·04	54·0	0	—	31·91	45·3
			1	21·5	33·74	47·9	1	21·5	25·80	36·6
125×95× 6·0	20·2	25·72	0	—	25·72	36·5	0	—	22·65	32·2
			1	21·5	23·14	32·9	1	21·5	19·37	27·5
8·0	26·6	33·96	0	—	33·96	48·2	0	—	29·89	42·4
			1	21·5	30·52	43·3	1	21·5	25·52	36·2
10·0	33·0	42·04	0	—	42·04	59·7	0	—	36·98	52·5
			1	21·5	37·74	53·6	1	21·5	31·51	44·7
12·0	39·2	49·96	0	—	49·96	70·9	0	—	43·93	62·4
			1	21·5	44·80	63·6	1	21·5	37·35	53·0
150×75× 8·0	27·4	34·84	0	—	34·84	49·5	0	—	28·05	39·8
			1	21·5	31·40	44·6	1	21·5	22·74	32·3
10·0	33·8	43·12	0	—	43·12	61·2	0	—	34·62	49·2
			1	21·5	38·82	55·1	1	21·5	27·97	39·7
12·0	40·2	51·24	0	—	51·24	72·8	0	—	41·06	58·3
			1	21·5	46·08	65·4	1	21·5	33·04	46·9
150×115× 8·0	32·4	41·16	0	—	41·16	58·4	0	—	36·29	51·5
			1	21·5	37·72	53·6	1	21·5	31·97	45·4
			2	13·5	36·84	52·3	2	13·5	30·81	43·8
10·0	40·0	51·04	0	—	51·04	72·5	0	—	44·99	63·9
			1	21·5	46·74	66·4	1	21·5	39·58	56·2
			2	13·5	45·64	64·8	2	13·5	38·13	54·1

(Continued)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of Two Angles Each of Size	Weight per Metre	Sectional Area	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
$A \times B \times t$	w	a	No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
150×115×12·0	47·6	60·76	0	—	60·76	86·3	0	—	53·53	76·0
			1	21·5	55·60	79·0	1	21·5	47·04	66·8
			2	13·5	54·28	77·1	2	13·5	45·29	64·3
15·0	59·0	75·04	0	—	75·04	106·6	0	—	66·08	93·8
			1	21·5	68·59	97·4	1	21·5	57·94	82·3
			2	13·5	66·94	95·1	2	13·5	55·76	79·2
200×100×10·0	45·6	58·06	0	—	58·06	82·4	0	—	46·71	66·3
			1	21·5	53·76	76·3	1	21·5	40·24	57·1
			2	13·5	52·66	74·8	2	13·5	38·45	54·6
12·0	54·4	69·18	0	—	69·18	98·2	0	—	55·58	78·9
			1	21·5	64·02	90·8	1	21·5	47·79	67·9
			2	13·5	62·70	89·0	2	13·5	45·63	64·8
15·0	67·2	85·56	0	—	85·56	121·5	0	—	68·58	97·4
			1	21·5	79·11	112·3	1	21·5	58·81	83·5
			2	13·5	77·46	110·0	2	13·5	56·08	79·6
200×150×10·0	53·4	68·00	0	—	68·00	96·6	0	—	59·73	84·3
			1	23·5	63·30	89·9	1	23·5	53·82	76·4
			2	23·5	58·60	83·2	2	23·5	47·50	67·4
12·0	63·6	81·12	0	—	81·12	115·2	0	—	71·24	101·2
			1	23·5	75·48	107·2	1	23·5	64·14	91·1
			2	23·5	69·84	99·2	2	23·5	56·54	80·3
15·0	78·8	100·50	0	—	100·50	142·7	0	—	88·22	125·3
			1	23·5	93·45	132·7	1	23·5	79·34	112·7
			2	23·5	86·40	122·7	2	23·5	69·81	99·1
18·0	93·8	119·52	0	—	119·52	169·7	0	—	104·86	148·9
			1	23·5	111·06	157·7	1	23·5	94·19	133·8
			2	23·5	102·60	145·7	2	23·5	82·73	117·5

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (SHORTER LEG CONNECTED)

Composed of Two Angles Each of Size $A \times B \times t$	Weight per Metre w	Sectional Area a	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
			No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
50×30× 3·0	3·6	4·68	0	—	4·68	6·6	0	—	4·50	6·4
			1	17·5	3·63	5·2	1	17·5	2·28	3·2
4·0	4·8	6·14	0	—	6·14	8·7	0	—	5·90	8·4
			1	17·5	4·74	6·7	1	17·5	2·92	4·1
5·0	6·0	7·56	0	—	7·56	10·7	0	—	7·27	10·3
			1	17·5	5·81	8·3	1	17·5	3·51	5·0
6·0	7·0	8·94	0	—	8·94	12·7	0	—	8·60	12·2
			1	17·5	6·84	9·7	1	17·5	4·05	5·7
60×40× 5·0	7·4	9·52	0	—	9·52	13·5	0	—	9·09	12·9
			1	21·5	7·37	10·5	1	21·5	4·97	7·1
6·0	8·8	11·30	0	—	11·30	16·0	0	—	10·79	15·3
			1	21·5	8·72	12·4	1	21·5	5·82	8·3
8·0	11·6	14·74	0	—	14·74	20·9	0	—	14·08	20·0
			1	21·5	11·30	16·0	1	21·5	7·40	10·5
65×45× 5·0	8·2	10·52	0	—	10·52	14·9	0	—	10·01	14·2
			1	21·5	8·37	11·9	1	21·5	6·04	8·6
6·0	9·8	12·50	0	—	12·50	17·8	0	—	11·90	16·9
			1	21·5	9·92	14·1	1	21·5	7·12	10·1
8·0	12·8	16·34	0	—	16·34	23·2	0	—	15·56	22·1
			1	21·5	12·90	18·3	1	21·5	9·14	13·0
70×45× 5·0	8·6	11·04	0	—	11·04	15·7	0	—	10·56	15·0
			1	21·5	8·89	12·6	1	21·5	6·25	8·9
6·0	10·4	13·12	0	—	13·12	18·6	0	—	12·56	17·8
			1	21·5	10·54	15·0	1	21·5	7·37	10·5
8·0	13·4	17·16	0	—	17·16	24·4	0	—	16·43	23·3
			1	21·5	13·72	19·5	1	21·5	9·46	13·4
10·0	16·6	21·04	0	—	21·04	29·9	0	—	20·16	28·6
			1	21·5	16·74	23·8	1	21·5	11·38	16·2

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of Two Angles Each of Size	Weight per Metre	Sectional Area	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
$A \times B \times t$	w	a	No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
75×50× 5·0	9·4	12·04	0	—	12·04	17·1	0	—	11·49	16·3
			1	21·5	9·89	14·0	1	21·5	9·14	13·0
6·0	11·2	14·32	0	—	14·32	20·3	0	—	13·67	19·4
			1	21·5	11·74	16·7	1	21·5	10·85	15·4
8·0	14·8	18·76	0	—	18·76	26·6	0	—	17·91	25·4
			1	21·5	15·32	21·8	1	21·5	14·16	20·1
10·0	18·0	23·04	0	—	23·04	32·7	0	—	22·01	31·3
			1	21·5	18·74	26·6	1	21·5	17·33	24·6
80×50× 5·0	9·8	12·54	0	—	12·54	17·8	0	—	12·02	17·1
			1	21·5	10·39	14·8	1	21·5	9·70	13·8
6·0	11·8	14·92	0	—	14·92	21·2	0	—	14·30	20·3
			1	21·5	12·34	17·5	1	21·5	11·52	16·4
8·0	15·4	19·56	0	—	19·56	27·8	0	—	18·76	26·6
			1	21·5	16·12	22·9	1	21·5	15·05	21·4
10·0	18·8	24·04	0	—	24·04	34·1	0	—	23·07	32·8
			1	21·5	19·74	28·0	1	21·5	18·44	26·2
90×60× 6·0	13·6	17·30	0	—	17·30	24·6	0	—	16·51	23·4
			1	21·5	14·72	20·9	1	21·5	13·70	19·5
8·0	17·8	22·74	0	—	22·74	32·3	0	—	21·71	30·8
			1	21·5	19·30	27·4	1	21·5	17·97	25·5
10·0	22·0	28·02	0	—	28·02	39·8	0	—	26·76	38·0
			1	21·5	23·72	33·7	1	21·5	22·09	31·4
12·0	26·0	33·14	0	—	33·14	47·1	0	—	31·66	45·0
			1	21·5	27·98	39·7	1	21·5	26·07	37·0
100×65× 6·0	15·0	19·10	0	—	19·10	27·1	0	—	18·26	25·9
			1	21·5	16·52	23·5	1	21·5	15·47	22·0
			2	13·5	15·86	22·5	2	13·5	14·74	20·9

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of Two Angles Each of Size	Weight per Metre	Sectional Area	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
A×B×t	w	a	No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
100×65× 8·0	19·8	25·14	0	—	25·14	35·7	0	—	24·04	34·1
			1	21·5	21·70	30·8	1	21·5	20·33	28·9
			2	13·5	20·82	29·6	2	13·5	19·35	27·5
10·0	24·4	31·02	0	—	31·02	44·0	0	—	29·67	42·1
			1	21·5	26·72	37·9	1	21·5	25·03	35·5
			2	13·5	25·62	36·4	2	13·5	23·82	33·8
100×75× 6·0	16·0	20·28	0	—	20·28	28·8	0	—	19·16	27·2
			1	21·5	17·70	25·1	1	21·5	16·32	23·2
			2	13·5	17·04	24·2	2	13·5	15·57	22·1
8·0	21·0	26·72	0	—	26·72	37·9	0	—	25·26	35·9
			1	21·5	23·28	33·1	1	21·5	21·46	30·5
			2	13·5	22·40	31·8	2	13·5	20·46	29·1
10·0	26·0	33·00	0	—	33·00	46·9	0	—	31·20	44·3
			1	21·5	28·70	40·8	1	21·5	26·46	37·6
			2	13·5	27·60	39·2	2	13·5	25·21	35·8
12·0	30·8	39·12	0	—	39·12	55·6	0	—	37·00	52·5
			1	21·5	33·96	48·2	1	21·5	31·31	44·5
			2	13·5	32·64	46·3	2	13·5	29·81	42·3
125×75× 6·0	18·4	23·32	0	—	23·32	33·1	0	—	22·41	31·8
			1	21·5	20·74	29·5	1	21·5	19·65	27·9
			2	21·5	18·16	25·8	2	21·5	16·82	23·9
8·0	24·2	30·76	0	—	30·76	43·7	0	—	29·56	42·0
			1	21·5	27·32	38·8	1	21·5	25·90	36·8
			2	21·5	23·88	33·9	2	21·5	22·13	31·4
10·0	29·8	38·04	0	—	38·04	54·0	0	—	36·57	51·9
			1	21·5	33·74	47·9	1	21·5	31·99	45·4
			2	21·5	29·44	41·8	2	21·5	27·28	38·7

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of Two Angles Each of Size $A \times B \times t$	Weight per Metre w	Sectional Area a	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
			No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
125×95× 6·0	20·2	25·72	0	—	25·72	36·5	0	—	24·27	34·5
			1	21·5	23·14	32·9	1	21·5	21·43	30·4
			2	21·5	20·56	29·2	2	21·5	18·47	26·2
8·0	26·6	33·96	0	—	33·96	48·2	0	—	32·06	45·5
			1	21·5	30·52	43·3	1	21·5	28·27	40·1
			2	21·5	27·08	38·5	2	21·5	24·32	34·5
10·0	33·0	42·04	0	—	42·04	59·7	0	—	39·69	56·4
			1	21·5	37·74	53·6	1	21·5	34·96	49·6
			2	21·5	33·44	47·5	2	21·5	30·03	42·6
12·0	39·2	49·96	0	—	49·96	70·9	0	—	47·18	67·0
			1	21·5	44·80	63·6	1	21·5	41·50	58·9
			2	21·5	39·64	56·3	2	21·5	35·58	50·5
150×75× 8·0	27·4	34·84	0	—	34·84	49·5	0	—	33·83	48·0
			1	23·5	31·08	44·1	1	23·5	29·89	42·4
			2	23·5	27·32	38·8	2	23·5	25·89	36·8
10·0	33·8	43·12	0	—	43·12	61·2	0	—	41·88	59·5
			1	23·5	38·42	54·6	1	23·5	36·96	52·5
			2	23·5	33·72	47·9	2	23·5	31·96	45·4
12·0	40·2	51·24	0	—	51·24	72·8	0	—	49·78	70·7
			1	23·5	45·60	64·8	1	23·5	43·89	62·3
			2	23·5	39·96	56·7	2	23·5	37·89	53·8
150×115× 8·0	32·4	41·16	0	—	41·16	58·4	0	—	38·81	55·1
			1	23·5	37·40	53·1	1	23·5	34·67	49·2
			2	23·5	33·64	47·8	2	23·5	30·38	43·1
10·0	40·0	51·04	0	—	51·04	72·5	0	—	48·14	68·4
			1	23·5	46·34	65·8	1	23·5	42·96	61·0
			2	23·5	41·64	59·1	2	23·5	37·60	53·4
12·0	47·6	60·76	0	—	60·76	86·3	0	—	57·32	81·4
			1	23·5	55·12	78·3	1	23·5	51·11	72·6
			2	23·5	49·48	70·3	2	23·5	44·68	63·4

(*Continued*)

TABLE XXX DOUBLE ANGLES USED AS TIES (CONNECTED BY ONE LEG)—(*Continued*)

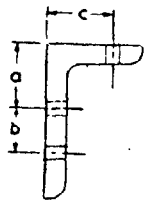
UNEQUAL ANGLES (LONGER LEG CONNECTED)

Composed of Two Angles Each of Size $A \times B \times t$	Weight per Metre w	Sectional Area a	Angles on Both Sides of the Gusset				Angles on One Side of the Gusset			
			Holes Deducted		Effective Area	Allowable Load	Holes Deducted		Effective Area	Allowable Load
			No.	Dia			No.	Dia		
mm mm mm	kg	cm^2		mm	cm^2	$kg \times 10^3$		mm	cm^2	$kg \times 10^3$
150 × 115 × 15·0	59·0	75·04	0	—	75·04	106·6	0	—	70·81	100·5
			1	23·5	67·99	96·5	1	23·5	63·05	89·5
			2	23·5	60·94	86·5	2	23·5	55·01	78·1
200 × 100 × 10·0	45·6	58·06	0	—	58·06	82·4	0	—	56·37	80·0
			1	29	52·26	74·2	1	29	50·31	71·4
			2	29	46·46	66·0	2	29	44·14	62·7
12·0	54·4	69·18	0	—	69·18	98·2	0	—	67·18	95·4
			1	29	62·22	88·4	1	29	59·91	85·1
			2	29	55·26	78·5	2	29	52·52	74·6
15·0	67·2	85·56	0	—	85·56	121·5	0	—	83·10	118·0
			1	29	76·86	109·1	1	29	74·03	105·1
			2	29	68·16	96·8	2	29	64·78	92·0
200 × 150 × 10·0	53·4	68·00	0	—	68·00	96·6	0	—	64·24	91·2
			1	29	52·20	88·3	1	29	57·89	82·2
			2	29	56·40	80·1	2	29	51·33	72·9
12·0	63·6	81·12	0	—	81·12	115·2	0	—	76·65	108·8
			1	29	74·16	105·3	1	29	69·02	98·0
			2	29	67·20	95·4	2	29	61·16	86·8
15·0	78·8	100·50	0	—	100·50	142·7	0	—	94·99	134·9
			1	29	91·80	130·4	1	29	85·46	121·3
			2	29	83·10	118·0	2	29	75·63	107·4
18·0	93·8	119·52	0	—	119·52	169·7	0	—	112·99	160·4
			1	29	109·08	154·9	1	29	101·55	144·2
			2	29	98·64	140·1	2	29	89·76	127·5

Note 1 — The diameters of the holes deducted are assumed to be one millimetre larger than the corresponding rivet sizes.

Note 2 — The maximum allowable load is computed on the basis of the allowable stress specified in **9.1.1** and the effective sectional area defined in **19.3.2** and **19.3.3** of **IS : 800-1956**.

TABLE XXXI RIVET GAUGE DISTANCES IN LEGS OF ANGLES



Leg Size	Double Row of Rivets		Single Row of Rivets	Maximum Rivet Size for Double Row of Rivets
	a	*b*	*c*	
mm	mm	mm	mm	mm
200	75	85	115	27
150	55	65	90	22
130	50	55	80	20
125	45	55	75	20
115	45	50	70	12
110	45	45	65	12
100	40	40	60	12
95	—	—	55	—
90	—	—	50	—
80	—	—	45	—
75	—	—	40	—
70	—	—	40	—
65	—	—	35	—
60	—	—	35	—
55	—	—	30	—
50	—	—	28	—
45	—	—	25	—
40	—	—	21	—
35	—	—	19	—
30	—	—	17	—
25	—	—	15	—
20	—	—	12	—

SECTION D
BEAMS, CHANNELS AND OTHER COMPOUND SECTIONS USED AS COLUMNS
(TABLES XXXII-XXXVIII)

TABLE XXXII SAFE CONCENTRIC LOADS ON ROLLED STEEL COLUMN SECTIONS

H-BEAMS TO BE USED AS COLUMNS

Designation		ISHB 150			ISHB 200		ISHB 225		ISHB 250	
Size (mm) h b		150 × 150	150 × 150	150 × 150	200 × 200	200 × 200	225 × 225	225 × 225	250 × 250	250 × 250
Sectional Area, cm^2		34·48	38·98	44·08	47·54	50·94	44·94	59·66	64·96	69·71
Weignt per Metre, kg		27·1	30·6	34·6	37·3	40·0	43·1	46·8	51·0	54·7
Radii of Gyration	r_{xx}, cm	6·50	6·29	6·09	8·71	8·55	9·80	9·58	10·91	10·70
	r_{yy}, cm	3·54	3·44	3·35	4·51	4·42	4·96	4·84	5·49	5·37
X-X AXIS Effective Length in Metres		Safe Concentric Loads in kg								
	4·0	39 084·4	43 849·0	49 199·4	56 333·3	60 265·9	65 719·5	71 242·5	78 212·2	83 840·9
	5·0	36 450·7	40 617·2	45 132·1	54 639·7	58 350·4	64 407·6	69 689·3	76 989·0	82 480·6
	6·0	32 681·7	35 950·0	39 507·4	52 421·3	55 879·4	62 349·0	67 353·3	75 224·8	80 454·5
	7·0	28 119·8	30 557·4	33 170·0	49 268·3	52 240·3	59 861·0	64 426·4	72 919·1	77 882·3
	8·0	23 608·2	25 423·9	27 343·9	45 241·8	47 750·7	56 436·8	60 480·2	70 050·9	74 581·2
	9·0	19 651·0	21 068·5	22 582·2	40 616·6	42 644·8	52 289·4	55 737·4	66 327·4	70 364·8
	10·0	16 396·6	17 315·2	18 362·0	35 827·5	37 448·6	47 569·1	50 411·6	61 921·8	65 408·9
	11·0	13 479·0	14 191·1	14 893·7	31 343·0	32 633·5	42 616·6	44 955·4	56 947·7	59 884·2
	12·0	11 182·1	11 830·7	12 494·8	27 326·6	28 368·2	37 889·5	39 819·4	51 648·5	54 130·8
	13·0	9 447·5	9 899·7	10 389·0	23 935·3	24 783·0	33 577·3	35 171·6	46 527·8	48 600·9
	14·0	7 967·5	8 374·8	8 826·1	20 644·4	21 339·4	29 769·6	31 152·9	41 785·6	43 501·0
	15·0	6 845·6	7 168·4	7 533·8	17 902·9	18 411·7	26 389·1	27 377·1	37 471·0	38 889·7
	16·0	5 901·4	—	—	15 566·0	16 083·9	23 148·8	23 996·8	33 719·0	34 980·7
	17·0	—	—	—	13 759·5	14 148·2	20 365·9	20 998·6	30 108·7	31 009·9
	18·0	—	—	—	12 076·3	12 365·0	17 993·4	18 683·7	26 800·5	27 609·1
	19·0	—	—	—	10 671·0	10 980·4	16 129·9	16 665·7	23 871·8	24 497·5
	20·0	—	—	—	9 544·0	9 808·8	14 380·8	14 777·5	21 353·6	22 062·2
	22·0	—	—	—	—	—	11 593·5	11 974·3	17 477·5	17 927·8
	24·0	—	—	—	—	—	9 513·6	—	14 294·1	14 736·8
	26·0	—	—	—	—	—	—	—	11 965·9	12 283·9

(Continued)

TABLE XXXII SAFE CONCENTRIC LOADS ON ROLLED STEEL COLUMN SECTIONS

(*Continued*)

H-BEAMS TO BE USED AS COLUMNS

Designation		ISHB 150			ISHB 200		ISHB 225		ISHB 250	
Size (mm) $h \times b$		150 × 150	150 × 150	150 × 150	200 × 200	200 × 200	225 × 225	225 × 225	250 × 250	250 × 250
Sectional Area, cm^2		34·48	38·98	44·08	47·54	50·94	54·94	59·66	64·96	69·71
Weight per Metre, kg		27·1	30·6	34·6	37·3	40·0	43·1	46·8	51·0	54·7
Radii of Gyration	r_{xx}, cm	6·50	6·29	6·09	8·71	8·55	9·80	9·58	10·91	10·70
	r_{yy}, cm	3·54	3·44	3·35	4·51	4·42	4·96	4·84	5·49	5·37

Y-Y AXIS — Effective Length in Metres	Safe Concentric Loads in kg								
2·0	39 741·6	44 698·4	50 299·7	56 496·5	60 440·3	65 779·7	71 299·7	78 237·8	83 861·1
2·5	37 731·5	42 184·2	47 196·5	54 975·3	58 703·3	64 527·0	69 802·2	77 029·6	82 508·8
3·0	34 645·5	38 477·2	42 766·4	52 893·0	56 385·5	62 521·7	67 517·2	75 308·1	80 508·1
3·5	30 804·4	33 854·1	37 207·9	50 064·4	53 171·2	60 142·8	64 689·3	73 028·0	77 956·7
4·0	26 522·0	28 884·2	31 477·5	46 418·1	49 050·1	56 829·9	60 853·2	70 228·3	74 694·3
4·5	22 508·5	24 331·3	26 417·1	42 110·9	44 210·8	52 797·3	56 217·6	66 571·0	70 518·6
5·0	19 015·7	20 538·6	22 194·3	37 442·5	39 127·0	48 171·4	50 985·4	62 238·2	65 611·1
5·5	16 078·0	17 100·5	18 368·1	32 973·7	34 333·6	43 259·8	45 562·3	57 320·7	60 124·9
6·0	13 433·4	14 274·5	15 172·3	28 923·3	30 013·8	38 534·9	40 431·6	52 052·4	54 380·8
6·5	11 299·1	12 068·2	12 919·8	25 400·6	26 315·6	34 205·6	35 766·2	46 953·1	48 852·8
7·0	9 695·8	10 271·2	10 892·2	22 910·7	22 816·0	30 337·9	31 691·4	42 204·5	43 743·0
7·5	8 258·0	8 758·8	9 353·8	19 296·5	19 795·3	27 008·5	27 968·6	37 878·2	39 135·2
8·0	7 171·8	7 605·0	8 079·9	16 748·3	17 146·4	23 701·1	24 520·3	34 084·5	35 210·5
8·5	6 234·0	6 614·9	—	14 794·4	15 210·7	20 910·2	21 513·4	30 505·2	31 264·0
9·0	—	—	—	13 092·5	13 402·3	18 410·4	19 079·3	27 146·8	27 835·2
9·5	—	—	—	11 528·4	11 828·3	16 542·4	17 056·8	24 210·6	24 712·2
10·0	—	—	—	10 292·4	10 570·0	14 789·8	15 165·6	21 612·2	22 230·5
11·0	—	—	—	8 310·0	8 496·8	11 894·5	12 260·1	17 727·6	18 089·7
12·0	—	—	—	—	—	9 773·8	10 040·9	14 512·1	14 855·2
13·0	—	—	—	—	—	—	—	12 154·0	12 387·5

(*Continued*)

TABLE XXXII SAFE CONCENTRIC LOADS ON ROLLED STEEL COLUMN SECTIONS

(*Continued*)

H-BEAMS TO BE USED AS COLUMNS

Designation		ISHB 300		ISHB 350		ISHB 400		ISHB 450	
Size (mm) $h \times b$		300 × 250	300 × 250	350 × 250	350 × 250	400 × 250	400 × 250	450 × 250	450 × 250
Sectional Area, cm^2		74·85	80·25	85·91	92·21	98·66	104·66	111·14	117·89
Weight per Metre, kg		58·8	63·0	67·4	72·4	77·4	82·2	87·2	92·5
Radii of Gyration	r_{xx}, cm	12·95	12·70	14·93	14·65	16·87	16·61	18·78	18·50
	r_{yy}, cm	5·41	5·29	5·34	5·22	5·26	5·16	5·18	5·08

X-X AXIS	Effective Length in Metres	Safe Concentric Loads in kg							
	4·0	90 898·0	97 367·9	104 714·6	112 351·1	120 529·0	127 824·0	136 016·5	144 243·2
	5·0	89 857·6	96 230·5	103 926·9	111 441·9	120 002·7	127 247·3	135 483·9	143 669·7
	6·0	88 627·6	94 860·6	102 884·7	110 273·7	118 982·1	126 113·1	134 756·4	142 838·1
	7·0	86 931·2	92 895·4	101 618·8	108 889·0	117 870·4	124 889·2	133 691·1	141 691·0
	8·0	84 770·6	90 476·5	99 921·9	106 909·5	116 583·8	123 502·9	132 510·4	140 391·1
	9·0	82 343·1	87 704·4	97 835·9	104 564·3	114 834·6	121 503·7	131 208·4	138 989·1
	10·0	78 996·8	83 976·2	95 419·2	101 920·7	112 729·3	119 222·4	129 401·1	136 918·1
	11·0	75 105·8	79 558·1	92 465·3	98 480·0	110 315·8	116 576·0	127 270·6	134 624·0
	12·0	70 724·9	74 612·3	89 028·5	94 537·3	107 669·6	113 530·0	124 880·1	131 985·8
	13·0	65 910·2	69 253·9	84 885·5	90 005·5	104 219·2	109 812·4	122 394·6	129 255·2
	14·0	60 766·1	63 635·7	80 386·1	84 909·4	100 385·5	105 511·6	119 049·9	125 495·5
	15·0	55 752·9	58 201·5	75 585·9	79 553·0	96 174·8	100 939·5	115 558·3	121 570·1
	16·0	50 968·2	53 103·4	70 464·7	73 951·2	91 438·5	95 709·7	111 315·8	116 981·9
	17·0	46 478 4	48 359·1	65 443·1	68 516·4	86 538·8	90 332·3	106 991·0	112 148·4
	18·0	42 374·7	44 025·6	60 528·4	63 288·5	81 333·8	84 724·4	102 079·1	106 859·3
	19·0	38 824·1	40 234·3	55 982·6	58 316·1	76 206·6	79 254·4	97 089·0	101 379·0
	20·0	35 322·8	36 383·0	51 708·8	53 824·5	71 177·2	73 865·4	91 822·0	95 707·6
	22·0	29 011·2	29 839·1	44 232·8	45 916·8	61 869·3	64 115·0	81 526·2	34 680·1
	24·0	24 093·0	24 835·8	37 299·9	38 590·4	53 810·5	55 684·6	71 953·8	74 522·4
	26·0	20 335·5	20 851·1	31 573·1	32 446·0	46 752·0	48 055·0	63 354·1	65 518·2
	28·0	17 146·7	17 579·2	27 006·5	27 883·9	40 206·6	41 265·1	56 062·5	57 855·3
	30·0	14 733·9	15 101·5	23 297·7	23 943·7	34 550·4	35 365·9	48 852·6	50 335·8
	32·0	12 697·1	—	20 068·5	20 633·6	30 295·4	31 136·8	42 805·4	43 976·1
	34·0	—	—	17 572·1	18 077·3	26 576·7	27 202·4	37 393·2	38 566·0
	36·0	—	—	15 395·0	15 844·1	23 268·8	23 844·8	33 406·6	34 341·0

(*Continued*)

TABLE XXXII SAFE CONCENTRIC LOADS ON ROLLED STEEL COLUMN SECTIONS

(Continued)

H-BEAMS TO BE USED AS COLUMNS

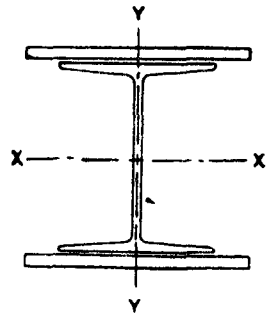
Designation		ISHB 300		ISHB 350		ISHB 400		ISHB 450	
Size (mm) $h \times b$		300 × 250	300 × 250	350 × 250	350 × 250	400 × 250	400 × 250	450 × 250	450 × 250
Sectional Area, cm^2		74·85	80·25	85·91	92·21	98·66	104·66	111·14	117·89
Weight per Metre, kg		58·8	63·0	67·4	72·4	77·4	82·2	87·2	92·5
Radii of Gyration	r_{xx}, cm	12·95	12·70	14·93	14·65	16·87	16·61	18·78	18·50
	r_{yy}, cm	5·41	5·29	5·34	5·22	5·26	5·16	5·18	5·08
Y-Y AXIS — Effective Length in Metres		Safe Concentric Loads in kg							
	2·0	90 082·0	96 452·5	103 315·4	110 744·2	118 549·9	125 612·9	133 423·6	141 361·9
	2·5	88 644·9	94 855·5	101 631·5	108 863·1	116 556·9	123 436·0	131 123·0	138 839·1
	·0	86 556·5	92 432·0	99 123·0	105 958·5	113 528·1	120 013·6	127 533·2	134 795·4
	3·5	83 854·5	89 406·5	95 935·7	102 390·0	109 759·2	115 869·1	123 165·3	129 985·5
	4·0	80 448·8	85 458·2	91 846·4	97 641·2	104 806·5	110 269·8	117 297·2	123 360·1
	4·5	76 055·1	80 450·6	86 623·1	91 684·4	98 561·3	103 309·9	109 973·0	115 202·1
	5·0	70 875·5	74 592·4	80 480·5	84 741·0	91 260·5	95 209·2	101 448·6	105 759·1
	5·5	65 059·6	68 108·2	73 650·6	77 115·2	83 209·8	86 386·4	92 135·1	95 538·1
	6·0	58 921·9	61 439·4	66 554·5	69 388·0	74 981·6	77 553·1	82 788·2	85 505·6
	6·5	52 978·8	55 075·6	59 741·8	62 085·0	67 167·7	69 264·0	73 985·9	76 180·5
	7·0	47 514·8	49 233·4	53 461·8	55 409·0	59 995·1	61 728·5	65 961·6	67 751·4
	7·5	42 567·2	44 001·1	47 791·7	49 507·5	53 621·7	55 145·4	58 937·5	60 501·1
	8·0	38 308·2	39 442·9	42 963·6	44 177·8	47 968·5	49 012·3	52 447·0	53 451·3
	8·5	34 101·7	34 868·6	38 058·1	39 050·9	42 413·9	43 318·8	46 356·5	47 238·5
	9·0	30 359·2	31 008·6	33 882·9	34 643·3	37 668·4	38 326·5	41 055·1	41 650·5
	9·5	26 998·4	27 445·5	30 059·9	30 724·4	33 337·2	34 119·2	36 498·4	37 276·8
	10·0	24 214·0	24 821·3	27 087·4	27 755·2	30 150·5	30 749·1	32 919·7	33 492·5
	11·0	19 760·4	20 078·6	21 993·0	22 342·5	24 329·6	24 741·6	26 484·7	26 914·3
	12·0	16 197·5	16 555·6	18 092·6	18 460·4	20 097·0	20 419·2	21 872·4	22 186·9
	13·0	13 510·4	13 787·0	15 077·2	15 353·0	16 732·7	—	—	—

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

Note 2 — The values below the zigzag dotted lines are for ratio of slenderness exceeding 180.

Note 3 — This Table is based on the requirements specified in **9.1.2** of IS : 800-1956.

TABLE XXXIII SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS COLUMNS



Composed of				Weight per Metre	Sectional Area	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	mm	mm	kg	cm^2	cm^3	cm^3		cm
ISHB 150	27·1	250	12·0	74·2	94·48	620·6	284·5	7·56	6·14
			16·0	89·9	114·48	767·5	367·9	7·81	6·34
			20·0	105·6	134·48	917·3	451·2	8·05	6·48
			25·0	125·2	159·48	1 109·1	555·4	8·34	6·60
			32·0	152·7	194·48	1 387·1	701·2	8·74	6·71
			40·0	184·1	234·48	1 719·3	867·9	9·18	6·80
ISHB 150	30·6	250	12·0	77·7	98·98	630·3	286·8	7·44	6·02
			16·0	93·4	118·98	776·7	370·2	7·71	6·24
			20·0	109·1	138·98	926·1	453·5	7·96	6·39
			25·0	128·7	163·98	1 117·5	557·7	8·26	6·52
			32·0	156·2	198·98	1 395·0	703·5	8·66	6·65
			40·0	187·6	238·98	1 726·7	870·2	9·12	6·75
ISHB 150	34·6	250	12·0	81·7	104·08	641·3	289·6	7·32	5·90
			16·0	97·4	124·08	787·2	372·9	7·60	6·13
			20·0	113·1	144·08	936·2	456·3	7·86	6·29
			25·0	132·7	169·08	1 127·1	560·4	8·16	6·44
			32·0	160·2	204·08	1 403·9	706·3	8·58	6·58
			40·0	191·6	240·08	1 735·0	872·9	9·04	6·69
ISHB 200	37·3	250	12·0	84·4	107·54	924·8	327·4	9·81	6·17
			16·0	100·1	127·54	1 117·0	410·7	10·08	6·34
			20·0	115·8	147·54	1 311·8	494·0	10·33	6·47
			25·0	135·4	172·54	1 559·5	598·2	10·63	6·58
			32·0	162·9	207·54	1 914·7	744·0	11·04	6·69
			40·0	194·3	247·54	2 333·9	910·7	11·49	6·78
ISHB 200	40·0	250	12·0	87·1	110·94	934·9	329·6	9·72	6·09
			16·0	102·8	130·94	1 126·7	412·9	9·99	6·28
			20·0	118·5	150·94	1 321·3	496·2	10·25	6·41
			25·0	138·1	175·94	1 568·6	600·4	10·56	6·53
			32·0	165·6	210·94	1 923·3	746·2	10·97	6·65
			40·0	197·0	250·94	2 342·0	912·9	11·43	6·74
ISHB 225	43·1	320	12·0	103·4	131·74	1 291·0	494·2	11·05	7·75
			16·0	123·5	157·34	1 569·7	630·7	11·32	8·01
			20·0	143·6	182·94	1 851·3	767·3	11·58	8·19

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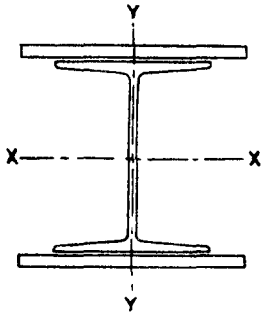


TABLE XXXIII SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS COLUMNS

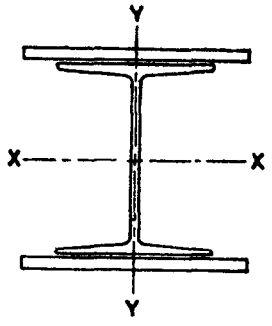
(Continued)

Composed of				Weight per Metre	Sectional Area	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	mm	mm	kg	cm^2	cm^3	cm^3	cm	cm
ISHB 225	43·1	320	25·0	168·7	214·94	2 208·2	937·9	11·89	8·36
			32·0	203·9	259·74	2 717·7	1 176·9	12·30	8·51
			40·0	244·1	310·94	3 315·7	1 449·9	12·75	8·64
ISHB 225	46·8	320	12·0	107·1	136·46	1 307·0	496·9	10·92	7·63
			16·0	127·2	162·06	1 585·2	633·4	11·21	7·91
			20·0	147·3	187·66	1 866·4	770·0	11·48	8·10
			25·0	172·4	219·66	2 222·7	940·6	11·80	8·28
			32·0	207·6	264·46	2 731·5	1 179·6	12·22	8·45
			40·0	247·8	315·66	3 328·8	1 452·6	12·68	8·58
ISHB 250	51·0	320	12·0	111·3	141·76	1 527·4	532·2	12·15	7·75
			16·0	131·4	167·36	1 834·9	668·7	12·43	8·00
			20·0	151·5	192·96	2 145·3	806·2	12·70	8·17
			25·0	176·6	224·96	2 538·0	975·9	13·01	8·39
			32·0	211·8	269·76	3 097·3	1 214·8	13·43	8·49
			40·0	252·8	320·96	3 751·6	1 487·9	13·89	8·61
ISHB 250	54·7	320	12·0	115·0	146·51	1 545·5	535·3	12·02	7·65
			16·0	135·1	172·11	1 852·4	671·9	12·32	7·90
			20·0	155·2	197·71	2 162·4	808·4	12·59	8·09
			25·0	180·3	229·71	2 554·5	979·1	12·92	8·26
			32·0	215·5	274·51	3 113·1	1 218·0	13·34	8·43
			40·0	255·7	325·71	3 766·6	1 491·1	13·81	8·56
ISHB 250	51·0	400	12·0	126 4	160·96	1 768·1	738·1	12·27	9·63
			16·0	151·5	192·96	2 156·4	951·4	12·55	9·93
			20·0	176·6	224·96	2 548·3	1 164·7	12·82	10·18
			25·0	208·0	264·96	3 043·5	1 431·4	13·13	10·39
			32·0	252·0	320·96	3 748·4	1 804·7	13·54	10·60
			40·0	302·2	384·96	4 572·3	2 231·4	14·00	10·77
ISHB 250	54·7	400	12·0	130·1	165·71	1 786·1	740·6	12·15	9·45
			16·0	155·2	197·71	2 174·0	953·9	12·45	9·82
			20·0	180·3	229·71	2 565·3	1 167·3	12·73	10·08
			25·0	211·7	269·71	3 060·0	1 433·9	13·05	10·31
			32·0	255·7	325·71	3 764·2	1 807·3	13·47	10·53
			40·0	305·9	389·71	4 587·3	2 233·9	13·94	10·71

(Continued)

TABLE XXXIII SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS COLUMNS

(*Continued*)



Composed of				Weight per Metre	Sectional Area	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	mm	mm	kg	cm²	cm³	cm³	cm	cm
ISHB 300	58·8	320	12·0	119·0	151·65	1 928·7	546·7	14·35	7·59
			16·0	139·1	177·25	2 297·0	683·2	14·67	7·85
			20·0	159·2	202 85	2 668·0	819·8	14·95	8·04
			25·0	184·4	234·85	3 135·9	990·4	15·29	8·21
			32·0	219·5	279·65	3 799·7	1 229·4	15·73	8·39
			40·0	259·7	330·85	4 572·1	1 302·4	16·20	8·52
ISHB 300	63·0	320	12·0	123·3	157·05	1 953·7	550·0	14·20	7·49
			16·0	143·4	182·65	2 321·4	686·6	14·53	7·76
			20·0	163·5	208·25	2 691·8	823·1	14·82	7·95
			25·0	188·6	240·25	3 159·0	993·8	15·17	8·14
			32·0	223·8	285·05	3 822·0	1 232·7	15·62	8·32
			40·0	264·0	336·25	4 593·4	1 505·8	16·11	8·46
ISHB 300	58·8	400	12·0	134·1	170·8	2 217·2	749·7	14·50	9·37
			16·0	159·2	202·85	2 682·3	963·0	14·82	9·74
			20·0	184·4	234·85	3 150·5	1 176·3	15·10	10·01
			25·0	215·8	274·85	3 740·7	1 443·0	15·43	10·25
			32·0	259·7	330·85	4 577·3	1 816·3	15·87	10·48
			40·0	310·0	394·85	5 550·1	2 243·0	16·34	10·66
ISHB 300	63·0	400	12·0	138·4	176·25	2 242·2	752·3	14·36	9·24
			16·0	163·5	208·25	2 706·7	965·7	14·69	9·63
			20·0	188·6	240·25	3 174·3	1 179·0	14·99	9·91
			25·0	220·0	280·25	3 763·8	1 445·7	15·33	10·16
			32·0	264·0	336·25	4 599·6	1 819·0	15·78	10·40
			40·0	314·2	400·25	5 571·4	2 245·7	16·26	10·59
ISHB 350	67·4	320	12·0	127·7	162·71	2 370·6	562·8	16·51	7·44
			16·0	147·8	188·31	2 799·7	699·3	16·85	7·71
			20·0	167·9	213·91	3 231·3	835·9	17·16	7·91
			25·0	193·0	245·91	3 774·7	1 006·5	17·52	8·09
			32·0	228·2	290·71	4 543·4	1 245·5	17·99	8·28
			40·0	268·4	341·91	5 434·7	1 518·5	18·49	8·43
ISHB 350	72·4	320	12·0	132·7	169·01	2 404·9	566·5	16·31	7·32
			16·0	152·8	194·61	2 833·4	703·0	16·68	7·60
			20·0	172·9	220·21	3 264·3	839·6	17·00	7·81

(*Continued*)

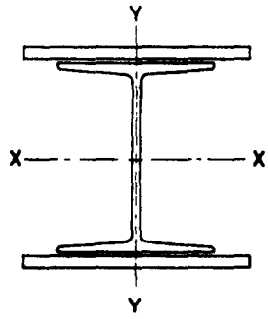


TABLE XXXIII SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS COLUMNS

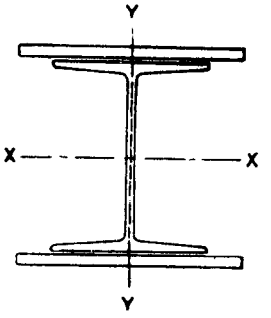
(Continued)

Composed of				Weight per Metre	Sectional Area	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	mm	mm	kg	cm²	cm³	cm³	cm	cm
ISHB 350	72·4	320	25·0	198·0	252·21	3 906·8	1 010·2	17·37	8·01
			32·0	233·2	297·01	4 574·4	1 249·2	17·86	8·20
			40·0	273·3	348·21	5 464·6	1 522·2	18·37	8·36
ISHB 350	67·4	400	12·0	142·8	181·91	2 707·0	762·6	16·68	9·16
			16·0	167·9	213·91	3 248·8	975·9	17·03	9·55
			20·0	193·0	245·91	3 793·5	1 189·2	17·34	9·83
			25·0	224·4	285·91	4 478·8	1 455·9	17·70	10·09
			32·0	268·4	341·91	5 447·8	1 829·2	18·16	10·34
			40·0	318·6	405·91	6 570·5	2 255·9	18·66	10·54
ISHB 350	72·4	400	12·0	147·7	188·21	2 741·4	765·5	16·50	9·02
			16·0	172·9	220·21	3 282·5	978·9	16·87	9·43
			20·0	198·0	252·21	3 826·5	1 192·2	17·20	9·72
			25·0	229·4	292·21	4 511·0	1 458·9	17·57	9·99
			32·0	273·3	348·21	5 478·9	1 832·2	28·05	10·26
			40·0	323·6	412·21	6 600·4	2 258·9	18·55	10·47
ISHB 400	77·4	320	12·0	137·7	175·46	2 862·4	580·1	18·60	7·27
			16·0	157·8	201·06	3 352·2	716·7	18·98	7·55
			20·0	177·9	226·66	3 844·3	853·2	19·32	7·76
			25·0	203·0	258·66	4 463·0	1 023·9	19·70	7·96
			32·0	238·2	303·46	5 336·6	1 262·8	20·20	8·16
			40·0	278·4	354·66	6 347·0	1 535·9	20·72	8 32
ISHB 400	82·2	320	12·0	142·4	181·46	2 897·3	583·5	18·40	7·17
			16·0	162 5	207·06	3 386·5	720·1	18·80	7·46
			20·0	182·6	232·66	3 877·9	856·6	19·15	7·68
			25·0	207·8	264·66	4 495·9	1 027·3	19·55	7·88
			32·0	242·9	309·46	5 368·5	1 266·2	20·06	8·09
			40·0	283·1	360·66	6 377·9	1 539·3	20·60	8·26
ISHB 400	77·4	400	12·0	152·8	194·66	3 246·9	776·4	18·80	8·93
			16·0	177·9	226·66	3 865·2	989·7	19·19	9·35
			20·0	203·0	258·66	4 486·2	1 203·1	19·53	9·64
			25·0	234·4	298·66	5 266·7	1 469·7	19·92	9·92
			32·0	278·4	354·66	6 368·2	1 843·1	20·41	10·19
			40·0	328·6	418·66	7 641·3	2 269·7	20·93	10·41

(Continued)

TABLE XXXIII SINGLE JOIST WITH ADDITIONAL PLATES ON BOTH FLANGES TO BE USED AS COLUMNS

(*Continued*)



Composed of				Weight per Metre	Sectional Area	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	mm	mm	kg	cm^2	cm^3	cm^3	cm	cm
ISHB 400	82·2	400	12·0	157·5	200·66	3 281·8	779·2	18·62	8·81
			16·0	182·6	232·66	3 899·5	992·5	19·03	9·24
			20·0	207·8	264·66	4 519·9	1 205·8	19·38	9·55
			25·0	239·2	304·66	5 299·6	1 472·5	19·78	9·83
			32·0	283·1	360·66	6 400·1	1 845·8	20·29	10·12
			40·0	333·4	424·66	7 672·1	2 272·5	20·82	10·35
ISHB 450	87·2	320	12·0	147·5	187·94	3 384·0	596·2	20·66	7·12
			16·0	167·6	213·54	3 934·6	732·7	21·07	7·41
			20·0	187·7	239·14	4 487·4	869·2	21·44	7·63
			25·0	212·8	271·14	5 181·8	1 039·9	21·86	7·83
			32·0	248·0	315·94	6 160·9	1 278·8	22·39	8·05
			40·0	288·2	367·14	7 291·2	1 551·9	22·94	8·22
ISHB 450	92·5	320	12·0	152·8	194·69	3 432·1	599·9	20·44	7·02
			16·0	172·9	220·29	3 981·9	736·4	20·87	7·31
			20·0	193·0	245·89	4 533·9	873·0	21·25	7·54
			25·0	218·1	277·89	5 227·3	1 043·6	21·69	7·75
			32·0	253·3	322·69	6 205·2	1 282·6	22·23	7·97
			40·0	293·5	373·89	7 334·2	1 555·6	22·80	8·16
ISHB 450	87·2	400	12·0	162·6	207·14	3 816·4	789·3	20·90	8·73
			16·0	187·7	239·14	4 511·5	1 002·6	21·32	9·16
			20·0	212·8	271·14	5 209·1	1 215·9	21·70	9·47
			25·0	244·2	311·14	6 085·1	1 482·6	22·11	9·76
			32·0	288·2	367·14	7 319·7	1 855·9	22·64	10·05
			40·0	338·4	431·14	8 744·1	2 282·6	23·18	10·29
ISHB 450	92·5	400	12·0	167·9	213·89	3 864·5	792·2	20·69	8·61
			16·0	193·0	245·89	4 558·8	1 005·6	21·14	9·04
			20·0	218·1	277·89	5 255·6	1 218·9	21·53	9·37
			25·0	249·5	317·89	6 130·7	1 485·6	21·96	9·67
			32·0	293·5	373·89	7 364·0	1 858·9	22·50	9·97
			40·0	343·7	437·89	8 787·0	2 285·6	23·06	10·22

Note — Properties given in this Table are based on the gross area of the section.

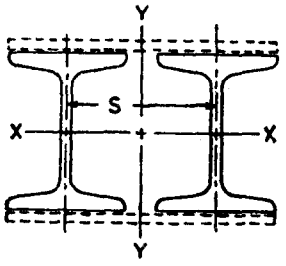


TABLE XXXIV DOUBLE JOISTS LACED OR BATTENED TO BE USED AS COLUMNS

COMPOSED OF TWO ISHB SECTIONS OF SAME SIZE

Designation	ISHB 150	ISHB 150	ISHB 150
w, kg	27·1	30·6	34·6
Weight per Metre, kg	54·2	61·2	69·2
Sectional Area, cm^2	68·96	77·96	88·16
Moment of Inertia, I_{xx}, cm^4	2 911·2	3 080·0	3 271·2
Modulus of Section, Z_{xx}, cm^3	388·2	410·6	436·2
Radius of Gyration, r_{xx}, cm	6·50	6·29	6·09

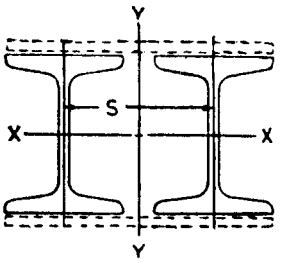
Spacing Between C to C of Beams	Moment of Inertia	Modulus of Section	Radius of Gyration	Moment of Inertia	Modulus of Section	Radius of Gyration	Moment of Inertia	Modulus of Section	Radius of Gyration
S	I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}
cm	cm^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
15·0	4 742·3	316·2	8·29	—	—	—	—	—	—
17·5	6 143·1	378·0	9·44	6 889·4	420·1	9·40	7 739·5	467·1	9·37
20·0	7 759·3	443·4	10·61	8 716·6	493·9	10·57	9 805·8	550·3	10·55
22·5	9 591·1	511·5	11·79	10 787·4	570·8	11·76	12 147·5	637·0	11·74
25·0	11 638·3	581·9	12·99	13 101·8	650·2	12·96	14 764·8	726·6	12·94
27·5	13 901·1	654·2	14·20	15 659·9	731·8	14·17	17 657·5	818·6	14·15
30·0	16 379·3	728·0	15·41	18 461·6	815·1	15·39	20 825·8	912·6	15·37
35·0	21 982·3	879·3	17·85	24 795·8	985·9	17·83	27 988·8	1 105·4	17·82
40·0	28 447·3	1 034·4	20·31	32 104·6	1 161·1	20·29	36 253·8	1 303·2	20·28

(Continued)

TABLE XXXIV DOUBLE JOISTS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO ISHB SECTIONS OF SAME SIZE



Designation	ISHB 200	ISHB 200	ISHB 225
w, kg	37·3	40·0	43·1
Weight per Metre, kg	74·6	80·0	86·2
Sectional Area, cm^2	95·08	101·88	109·88
Moment of Inertia, I_{xx}, cm^4	7 216·8	7 443·6	10 559·0
Modulus of Section Z_{xx}, cm^3	721·6	744·4	938·6
Radius of Gyration, r_{xx}, cm	8·71	8·55	9·80

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
20·0	11 442·3	572·1	10·97	—	—	—	—	—	—
22·5	13 967·8	657·3	12·12	14 883·3	697·6	12·09	16 614·4	738·4	12·30
25·0	16 790·5	746·2	13·29	17 907·9	792·9	13·26	19 876·4	836·9	13·45
27·5	19 910·3	838·3	14·47	21 250·8	891·6	14·44	23 481·9	939·3	14·62
30·0	23 327·3	933·1	15·66	24 912·1	993·1	15·64	27 430·1	1 045·0	15·80
35·0	31 052·5	1 129·2	18·07	33 189·9	1 203·2	18·05	36 358·4	1 264·6	18·19
40·0	39 966·3	1 332·2	20·50	42 741·1	1 420·7	20·48	46 659·7	1 493·1	20·61
45·0	50 068·5	1 540·6	22·95	53 565·9	1 643·9	22·93	58 334·4	1 728·4	23·04
50·0	61 359·3	1 753·1	25·40	65 664·1	1 871·6	25·39	71 382·7	1 969·2	25·49
55·0	—	—	—	—	—	—	—	—	—
60·0	—	—	—	—	—	—	—	—	—

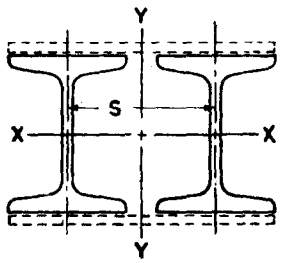


TABLE XXXIV DOUBLE JOISTS LACED OR BATTENED TO BE USED AS COLUMNS

COMPOSED OF TWO ISHB SECTIONS OF SAME SIZE

ISHB 225	ISHB 250	ISHB 250	ISHB 300
46·8	51·0	54·7	58·8
93·6	102·0	109·4	117·6
119·32	129·92	139·42	149·70
10 957·6	15 473·0	15 967·8	25 090·4
974·0	1 237·8	1 277·4	1 672·6
9·58	10·91	10·70	12·95

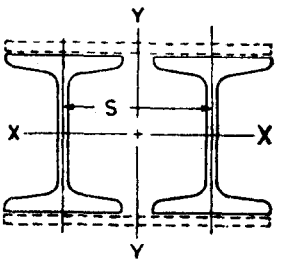
Moment of Inertia	Modulus of Section	Radius of Gyration	Moment of Inertia	Modulus of Section	Radius of Gyration	Moment of Inertia	Modulus of Section	Radius of Gyration	Moment of Inertia	Modulus of Section	Radius of Gyration
I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}
cm⁴	cm³	cm	cm⁴	cm³	cm	cm⁴	cm³	cm	cm⁴	cm³	cm
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
21 436·9	898·6	13·40	24 222·5	968·9	13·65	—	—	—	27 777·8	1 111·1	13·62
25 352·1	1 009·8	14·58	28 485·5	1 085·2	14·81	30 382·4	1 153·3	14·76	32 689·8	1 245·3	14·78
29 640·1	1 124·6	15·76	33 154·5	1 205·6	15·97	35 392·9	1 282·6	15·93	38 069·6	1 384·4	15·95
39 334·9	1 363·2	18·16	43 710·5	1 457·0	18·34	46 720·7	1 552·4	18·31	50 232·8	1 674·4	18·32
50 521·1	1 611·3	20·58	55 890·5	1 719·7	20·74	59 791·4	1 834·4	20·71	64 267·1	1 977·5	20·72
63 198·9	1 866·8	23·01	69 694·5	1 991·3	23·16	74 604·7	2 125·8	23·13	80 172·8	2 290·7	23·14
77 368·1	2 128·1	25·46	85 122·5	2 269·9	25·60	91 160·9	2 424·8	25·57	97 949·6	2 612·0	25·58
—	—	—	—	—	—	—	—	—	117 597·8	2 939·9	28·03
—	—	—	—	—	—	—	—	—	139 117·1	3 273·3	30·48

(Continued)

TABLE XXXIV DOUBLE JOISTS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO ISHB SECTIONS OF SAME SIZE



Designation	ISHB 300	ISHB 350	ISHB 350
w, kg	63·0	67·4	72·4
Weight per Metre, kg	126·0	134·8	144·8
Sectional Area, cm^2	160·50	171·82	184·42
Moment of Inertia, I_{xx}, cm^4	25 900·4	38 319·4	39 605·6
Modulus of Section, Z_{xx}, cm^3	1 726·6	2 189·6	2 263·2
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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
25·0	—	—	—	31 749·7	1 270·0	13·59	—	—	—
27·5	34 837·9	1 322·6	14·77	37 387·5	1 424·3	14·75	39 887·9	1 514·3	14·71
30·0	40 605·8	1 471·8	15·91	43 562·3	1 584·1	15·92	46 515·5	1 686·0	15·88
35·0	53 646·5	1 782·9	18·28	57 522·7	1 917·4	18·30	61 499·7	2 043·9	18·26
40·0	68 693·3	2 107·8	20·69	73 630·8	2 265·6	20·70	78 789·0	2 417·6	20·67
45·0	85 746·5	2 443·6	23·11	91 886·7	2 625·3	23·13	98 383·7	2 803·8	23·10
50·0	104 805·8	2 788·1	25·55	112 290·3	2 994·4	25·56	120 283·5	3 199·9	25·54
55·0	125 871·5	3 139·7	28·00	134 841·7	3 371·0	28·01	144 488·7	3 604·1	27·99
60·0	148 943·3	3 497·1	30·46	159 540·8	3 753·9	30·47	170 999·0	4 015·0	30·45
65·0	—	—	—	—	—	—	—	—	—
70·0	—	—	—	—	—	—	—	—	—

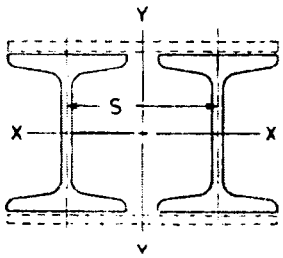


TABLE XXXIV DOUBLE JOISTS LACED OR BATTENED TO BE USED AS COLUMNS

COMPOSED OF TWO ISHB SECTIONS OF SAME SIZE

ISHB 400	ISHB 400	ISHB 450	ISHB 450
77·4	82·2	87·2	92·5
154·8	164·4	174·4	185·0
197·32	209·32	222·28	235·78
56 167·0	57 647·0	78 421·6	80 699·8
2 808·4	2 888·4	3 485·4	3 586·6
16·87	16·61	18·78	18·50

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	Moment of Inertia	Modulus of Section	Radius of Gyration
I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}	I_{yy}	Z_{yy}	r_{yy}
cm^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
36 287·9	1 451·5	13·56	—	—	—	40 701·7	1 628·1	13·53	—	—	—
42 762·4	1 629·0	14·72	45 140·5	1 714·7	14·69	47 995·3	1 828·4	14·69	50 667·2	1 924·7	14·66
49 853·6	1 812·9	15·89	52 662·9	1 909·8	15·86	55 983·5	2 035·8	15·87	59 140·5	2 144·7	15·84
65 885·9	2 196·2	18·27	69 670·2	2 316·5	18·24	74 043·7	2 468·1	18·25	78 297·6	2 603·4	18·22
84 384·6	2 596·5	20·68	89 293·9	2 741·2	20·65	94 882·5	2 919·5	20·66	100 402·0	3 082·2	20·64
105 349·9	3 010·0	23·11	111 534·2	3 179·9	23·08	118 499·7	3 385·7	23·09	125 453·6	3 576·7	23·07
128 781·6	3 434·2	25·55	136 390·9	3 629·8	25·53	144 895·5	3 863·9	25·53	153 452·5	4 083·9	25·51
154 679·9	3 867·0	28·00	163 864·2	4 088·9	27·98	174 069·7	4 351·7	27·99	184 398·6	4 601·3	27·97
183 044·6	4 306·9	30·46	193 953·9	4 555·6	30·44	206 022·5	4 847·6	30·44	218 292·0	5 127·2	30·43
213 875·9	4 752·8	32·92	226 660·2	5 028·5	32·91	240 753·7	5 350·1	32·91	255 132·6	5 660·2	32·89
247 173·6	5 203·7	35·39	261 982·9	5 506·7	35·38	278 263·5	5 858·2	35·38	294 920·5	6 199·1	35·37

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

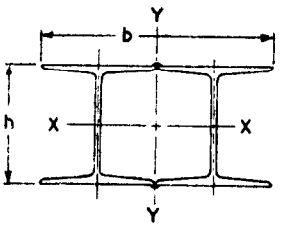


TABLE XXXV DOUBLE JOISTS WITH FLANGES BUTTING AND WELDED TOE TO TOE TO BE USED AS COLUMNS

Nominal Size	Composed of Two Joists Each of the Same Size		Weight per Metre	Sectional Area	Moments of Inertia		Moduli of Section		Radii of Gyration	
$h \times b$	Designation	w	w	a	I_{xx}	I_{yy}	Z_{xx}	Z_{yy}	r_{xx}	r_{yy}
mm mm		kg	kg	cm^2	cm^4	cm^4	cm^3	cm^3	cm	cm
150×300	ISHB 150	27·1	54·2	68·96	2 911·2	4 742·4	388·2	316·2	6·50	8·29
150×300	ISHB 150	30·6	61·2	77·96	3 080·0	5 483·0	410·6	358·4	6·29	8·39
150×300	ISHB 150	34·6	69·2	88·16	3 271·2	6 381·0	436·2	408·0	6·09	8·51
200×400	ISHB 200	37·3	74·6	95·08	7 216·8	11 442·2	721·6	572·1	8·71	10·97
200×400	ISHB 200	40·0	80·0	101·88	7 443·6	12 351·1	744·4	612·4	8·55	11·01
225×450	ISHB 225	43·1	86·2	109·88	10 559·0	16 614·3	938·6	738·4	9·80	12·30
225×450	ISHB 225	46·8	93·6	119·32	10 957·6	18 177·8	974·0	800·4	9·58	12·34
250×500	ISHB 250	51·0	102·0	129·92	15 473·0	24 222·6	1 237·8	968·7	10·91	13·65
250×500	ISHB 250	54·7	109·4	139·42	15 967·8	26 140·2	1 277·4	1 037·7	10·70	13·69
300×500	ISHB 300	58·8	117·6	149·70	25 090·4	27 777·8	1 672·6	1 111·1	12·95	13·62
300×500	ISHB 300	63·0	126·0	160·50	25 900·4	29 934·0	1 726·6	1 188·8	12·70	13·66
350×500	ISHB 350	67·4	134·8	171·82	38 319·4	31 749·7	2 189·6	1 270·0	14·93	13·59
350×500	ISHB 350	72·4	144·8	184·42	39 605·6	34 253·1	2 263·2	1 360·3	14·65	13·63
400×500	ISHB 400	77·4	154·8	197·32	56 167·0	36 287·8	2 808·4	1 451·5	16·87	13·56
400×500	ISHB 400	82·2	164·4	209·32	57 647·0	38 665·9	2 888·4	1 537·4	16·61	13·59
450×500	ISHB 450	87·2	174·4	222·28	78 421·6	40 701·6	3 485·4	1 628·1	18·78	13·53
450×500	ISHB 450	92·5	185·0	235·78	80 699·8	43 374·0	3 586·6	1 724·6	18·50	13·56

TABLE XXXVI SAFE CONCENTRIC LOADS ON CHANNEL SECTIONS TO BE USED AS COLUMNS

	Designation	ISLC 400	ISMC 400	ISLC 350	ISMC 350	ISLC 300	ISMC 300	ISLC 250
	Area, cm^2	58·25	62·93	49·47	53·66	42·11	45·64	35·65
	Weight per Metre, kg	45·7	49·4	38·8	42·1	33·1	35·8	28·0
	Radii of Gyration r_{xx}, cm	15·50	15·48	13·72	13·66	11·98	11·81	10·17
	Radii of Gyration r_{yy}, cm	2·81	2·83	2·82	2·83	2·87	2·61	2·89
				Safe Concentric Loads in kg				
X-X AXIS	4·0	71 051·8	76 758·5	60 193·2	65 285·2	50 948·9	55 180·3	42 751·6
	5·0	70 595·2	76 262·4	59 581·8	64 612·8	50 286·9	54 442·1	41 990·0
	6·0	69 918·8	75 530·6	58 858·9	63 821·5	49 508·7	53 540·5	40 769·7
	7·0	69 122·1	74 667·5	57 995·0	62 863·8	48 243·3	52 149·2	39 318·9
	8·0	68 163·8	73 625·2	56 697·0	61 449·6	46 806·6	50 546·1	37 321·6
	9·0	66 810·9	72 161·7	55 232·7	59 845·9	44 963·4	48 441·4	34 859·7
	10·0	65 300·1	70 524·5	53 475·6	57 903·6	42 699·5	45 884·0	32 009·2
	11·0	63 625·9	68 703·8	51 337·0	55 549·1	40 084·4	42 943·9	28 925·1
	12·0	61 408·6	66 305·3	48 740·9	52 720·8	37 162·7	39 692·3	25 890·8
Y-Y AXIS	2·0	63 556·6	68 865·4	54 050·9	58 704·0	46 291·5	48 328·2	39 261·3
	2·5	56 758·8	61 608·5	48 317·3	52 533·1	41 596·3	41 943·2	35 371·9
	3·0	47 986·4	52 263·4	40 921·6	44 564·6	35 528·2	34 344·1	30 306·1
	3·5	39 202·2	42 792·4	33 466·5	36 488·8	29 207·5	27 425·1	24 965·7
	4·0	31 740·4	34 668·1	27 104·6	29 561·3	23 729·0	21 866·1	20 331·2
	4·5	25 472·7	27 940·9	21 796·5	23 825·0	19 269·5	17 146·9	16 548·7
	5·0	20 370·0	22 377·9	17 448·1	19 081·5	15 462·8	13 737·6	13 293·9
	5·5	16 758·5	18 381·9	14 341·4	15 674·1	12 666·7	11 058·6	10 873·2
	6·0	13 717·9	15 052·9	11 744·2	12 835·5	10 392·7	9 137·1	8 955·3

Effective Length in Metres

(Continued)

TABLE XXXVI SAFE CONCENTRIC LOADS ON CHANNEL SECTIONS TO BE USED AS COLUMNS

(*Continued*)

	Designation	ISMC 250	ISLC 225	ISMC 225	ISLC 200	ISMC 200	ISLC 175	ISMC 175
	Area, cm^2	38·67	30·53	33·01	26·22	28·21	22·40	24·38
	Weight per Metre, kg	30·4	24·0	25·9	20·6	22·1	17·6	19·1
	Radii of Gyration r_{xx}, cm	9·94	9·14	9·03	8·11	8·03	7·16	7·08
	Radii of Gyration r_{yy}, cm	2·38	2·62	2·38	2·37	2·23	2·38	2·23
				Safe Concentric Loads in kg				
X-X AXIS	4·0	46 306·1	36 322·1	39 233·9	30 873·8	33 186·6	25 869·4	28 100·6
	5·0	45 433·9	35 386·2	38 181·5	29 708·8	31 890·9	24 611·0	26 689·8
	6·0	44 025·0	34 080·3	36 737·8	28 173·4	30 189·0	22 660·9	24 497·8
	7·0	42 363·3	32 335·6	34 780·5	26 050·7	27 853·2	20 217·1	21 780·6
	8·0	40 043·7	30 066·0	32 254·9	23 473·7	25 025·1	17 474·4	18 754·3
	9·0	37 219·5	27 376·7	29 271·9	20 625·2	21 922·4	14 873·2	15 914·4
	10·0	33 976·5	24 431·9	26 032·3	17 905·5	18 990·7	12 574·9	13 446·6
	11·0	30 521·8	21 561·3	30 521·8	15 469·6	16 373·0	10 681·4	11 367·4
	12·0	27 195·8	18 954·1	27 195·8	13 403·8	14 171·6	8 943·2	9 498·3
Y-Y AXIS	2·0	39 056·7	32 380·1	33 340·1	26 414·0	27 344·0	22 624·0	23 631·5
	2·5	32 448·0	28 148·7	27 698·7	21 898·9	21 916·3	18 795·8	18 940·8
	3·0	25 568·6	23 089·8	21 826·2	17 226·5	16 863·9	14 810·9	14 574·4
	3·5	19 976·9	18 455·4	17 053·0	13 448·2	12 880·7	11 571·8	11 131·9
	4·0	15 348·1	14 736·8	13 101·7	10 309·7	9 676·0	8 890·6	8 362·3
	4·5	11 952·9	11 561·7	10 203·4	8 033·8	7 577·2	6 923·8	6 548·5
	5·0	9 427·7	9 259·7	8 047·8	6 337·4	5 969·2	5 461·1	5 158·8
	5·5	7 652·8	7 455·4	6 532·7	5 141·7	4 807·0	4 433·0	4 154·4
	6·0	—	6 167·1	—	—	—	—	—

Effective Length in Metres

(*Continued*)

TABLE XXXVI SAFE CONCENTRIC LOADS ON CHANNEL SECTIONS TO BE USED AS COLUMNS

(Continued)

	Designation	ISLC 150	ISMC 150	ISLC 125	ISMC 125	ISLC 100	ISMC 100	ISLC 75	ISMC 75
	Area, cm^2	18·36	20·88	13·67	16·19	10·02	11·70	7·26	8·67
	Weight per Metre, kg	14·4	16·4	10·7	12·7	7·9	9·2	5·7	6·8
	Radii of Gyration r_{xx}, cm	6·16	6·11	5·11	5·07	4·06	4·00	3·02	2·96
	Radii of Gyration r_{yy}, cm	2·37	2·21	2·05	1·92	1·57	1·49	1·26	1·21
		Safe Concentric Loads in kg							
X-X AXIS	4·0	20 549·8	23 323·8	14 342·0	16 926·9	8 980·6	10 342·8	4 447·5	5 146·0
	5·0	18 921·5	21 418·7	12 328·5	14 497·5	6 854·6	7 833·2	2 973·9	3 403·1
	6·0	16 626·1	18 769·9	9 995·7	11 709·4	5 133·2	5 838·3	2 020·0	2 305·3
	7·0	14 022·0	15 779·6	7 934·0	9 272·4	3 764·1	4 253·0	1 427·3	1 627·1
	8·0	11 585·6	13 016·1	6 274·7	7 309·4	2 840·3	3 205·8	—	—
	9·0	9 590·8	10 757·4	4 896·8	5 693·7	2 170·8	2 457·0	—	—
	10·0	7 822·8	8 755·0	3 933·9	4 579·1	1 712·5	1 930·5	—	—
	11·0	6 365·7	7 096·9	3 162·8	3 679·8	—	—	—	—
	12·0	5 335·8	5 961·7	2 608·5	3 032·3	—	—	—	—
Y-Y AXIS	2·0	18 495·9	20 105·4	12 360·4	13 711·3	6 519·0	7 020·0	3 235·8	3 563·4
	2·5	15 334·3	16 037·9	9 481·5	10 175·4	4 435·9	4 660·1	2 026·3	2 203·9
	3·0	12 062·5	12 302·5	7 122·1	7 462·0	3 031·0	3 159·0	1 340·2	1 459·2
	3·5	9 416·8	9 352·2	5 243·8	5 378·3	2 145·3	2 231·2	—	—
	4·0	7 219·2	7 028·2	3 958·8	4 031·3	—	—	—	—
	4·5	5 625·5	5 493·5	3 023·8	3 103·6	—	—	—	—
	5·0	4 437·6	4 332·6	2 389·5	—	—	—	—	—
	5·5	3 600·4	3 482·8	—	—	—	—	—	—

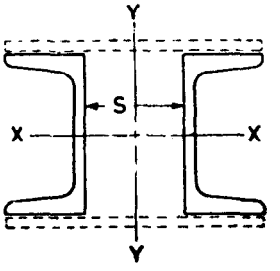
Effective Length in Metres

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

Note 2 — The values below the zigzag dotted lines are for ratio of slenderness exceeding 180.

Note 3 — This Table is based on the requirements specified in 9.1.2 of IS : 800-1956.

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS



COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISJC 100	ISJC 125	ISJC 150
Weight, kg	11·6	15·8	19·8
Area, cm^2	14·82	20·14	25·30
Moment of Inertia I_{xx}, cm^4	247·6	540·0	942·2
Modulus of Section Z_{xx}, cm^3	49·6	86·4	125·6
Radius of Gyration r_{xx}, cm	4·09	5·18	6·10

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
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	39·2	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	4·28
50·0	255·2	36·5	4·15	396·6	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	1 035·8	103·6	6·40
100·0	636·8	67·0	6·56	939·4	93·9	6·83	1 198·0	114·1	6·88
120·0	841·3	80·1	7·53	1 227·0	111·5	7·81	1 560·3	135·7	7·85
140·0	1 075·5	93·5	8·52	1 554·8	129·6	8·79	1 973·2	157·9	8·83
160·0	1 339·3	107·1	9·51	1 923·0	147·9	9·77	2 436·7	180·5	9·81
180·0	1 632·7	120·9	10·50	2 331·4	166·5	10·76	2 950·8	203·5	10·80
200·0	1 955·8	134·9	11·49	2 780·2	185·3	11·75	3 515·5	226·8	11·79
220·0	2 308·5	148·9	12·48	3 269·2	204·3	12·74	4 130·8	250·3	12·78
240·0	2 690·9	163·1	13·47	3 798·4	223·4	13·73	4 796·7	274·1	13·77
260·0	3 102 9	177·3	14·47	4 368·0	242·7	14·73	5 513·2	298·0	14·76
280·0	3 544·5	191·6	15·47	4 977·8	262·0	15·72	6 280·3	322·1	15·76
300·0	4 015·8	205·9	16·46	5 628·0	281·4	16·72	7 098·0	346·2	16·75
320·0	4 516·7	220·3	17·46	6 318·4	300·9	17·71	7 966·3	370·5	17·74
340·0	5 047·3	234·8	18·46	7 049·0	320·4	18·71	8 885·1	394·9	18·74
360·0	5 607·5	249·2	19 45	7 820·0	340·0	19·70	9 854·6	419·3	19·74
380·0	6 197·3	263·7	20·45	8 631·2	359·6	20·70	10 874·7	443·9	20·73
400·0	6 816·8	278·2	21·45	9 482·8	379·3	21·70	11 945·4	468·4	21·73

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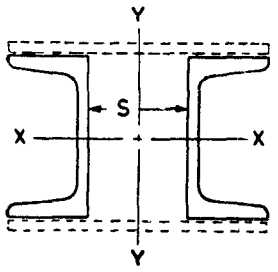

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISJC 175	ISJC 200	ISLC 75
Weight, kg	22·4	27·8	11·4
Area, cm^2	28·48	35·54	14·52
Moment of Inertia I_{xx}, cm^4	1 439·8	2 322·4	132·2
Modulus of Section Z_{xx}, cm^3	164·6	232·2	35·2
Radius of Gyration r_{xx}, cm	7·11	8·08	3·02

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
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	1 046·3	104·6	5·43	297·8	42·5	4·53
70·0	886·0	93·3	5·58	1 231·8	117·3	5·89	364 5	48·6	5·01
80·0	1 042·6	104·3	6·05	1 435·1	130·5	6·35	438·6	54·8	5·50
90·0	1 213·5	115·6	6·53	1 656·1	144·0	6·83	519 9	61·2	5·98
100·0	1 398·6	127·1	7·01	1 895·0	157 9	7·30	608·5	67·6	6·47
120·0	1 811·6	151·0	7·98	2 425·9	186·6	8·26	807·4	80·7	7·46
140·0	2 281 5	175·5	8·95	3 028·0	216·3	9·23	1 035·4	94·1	8·44
160·0	2 808·4	200·6	9·93	3 701·1	246·7	10·20	1 292·4	107·7	9·43
180·0	3 392·2	226·1	10·91	4 445·3	277·8	11·18	1 578·4	121·4	10·43
200·0	4 033·0	252·1	11·90	5 260·6	309·4	12·17	1 893·5	135·3	11·42
220·0	4 730·8	278·3	12·89	6 147·0	341·5	13·15	2 237·6	149·2	12·41
240·0	5 485·5	304·8	13·88	7 104·4	373·9	14·14	2 610·8	163·2	13·41
260·0	6 297·2	331·4	14·87	8 132·9	406·6	15·13	3 013·0	177·2	14·41
280·0	7 165·8	358·3	15·86	9 232·6	439·6	16·12	3 444·2	191·3	15·40
300·0	8 091·4	385·3	16·86	10 403·2	472·9	17·11	3 904·5	205·5	16·40
320·0	9 074·0	412·5	17·85	11 645·0	506·3	18·10	4 393·8	219·7	17·40
340·0	10 113·5	439·7	18·84	12 957·9	539 9	19·09	4 912·2	233·9	18·39
360·0	11 210·0	467·1	19·84	14 341·8	573·7	20·09	5 459·6	248·2	19·39
380·0	12 363·4	494·5	20·84	15 796·8	607·6	21·08	6 036·1	262·4	20·39
400·0	13 573·8	522·1	21·83	17 322·9	641·6	22·08	6 641·5	276·7	21·39

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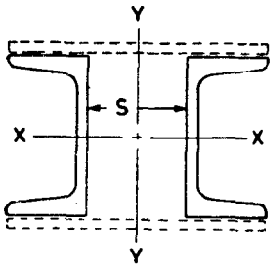

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISJC 175	ISJC 200	ISLC 75
Weight, kg	22·4	27·8	11·4
Area, cm^2	28·48	35·54	14·52
Moment of Inertia I_{xx}, cm^4	1 439·8	2 322·4	132·2
Modulus of Section Z_{xx}, cm^3	164·6	232·2	35·2
Radius of Gyration r_{xx}, cm	7·11	8·08	3·02

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
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	1 046·3	104·6	5·43	297·8	42·5	4·53
70·0	886·0	93·3	5·58	1 231·8	117·3	5·89	364·5	48·6	5·01
80·0	1 042·6	104·3	6·05	1 435·1	130·5	6·35	438·6	54·8	5·50
90·0	1 213·5	115·6	6·53	1 656·1	144·0	6·83	519·9	61·2	5·98
100·0	1 398·6	127·1	7·01	1 895·0	157 9	7·30	608·5	67·6	6·47
120·0	1 811·6	151·0	7·98	2 425·9	186·6	8·26	807·4	80·7	7·46
140·0	2 281·5	175·5	8·95	3 028·0	216·3	9·23	1 035·4	94·1	8·44
160·0	2 808·4	200·6	9·93	3 701·1	246·7	10·20	1 292·4	107·7	9·43
180·0	3 392·2	226·1	10·91	4 445·3	277·8	11·18	1 578·4	121·4	10·43
200·0	4 033·0	252·1	11·90	5 260·6	309·4	12·17	1 893·5	135·3	11·42
220·0	4 730·8	278·3	12·89	6 147·0	341·5	13·15	2 237·6	149·2	12·41
240·0	5 485·5	304·8	13·88	7 104·4	373·9	14·14	2 610·8	163·2	13·41
260·0	6 297·2	331·4	14·87	8 132·9	406·6	15·13	3 013·0	177·2	14·41
280·0	7 165·8	358·3	15·86	9 232·6	439·6	16·12	3 444·2	191·3	15·40
300·0	8 091·4	385·3	16·86	10 403·2	472·9	17·11	3 904·5	205·5	16·40
320·0	9 074·0	412·5	17·85	11 645·0	506·3	18·10	4 393·8	219·7	17·40
340·0	10 113·5	439·7	18·84	12 957·9	539·9	19·09	4 912·2	233·9	18·39
360·0	11 210·0	467·1	19·84	14 341·8	573·7	20·09	5 459·6	248·2	19·39
380·0	12·363·4	494·5	20·84	15 796·8	607·6	21·08	6 036·1	262·4	20·39
400·0	13 573·8	522·1	21·83	17 322·9	641·6	22·08	6 641·5	276·7	21·39

(Continued)

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISLC 175	ISLC 200	ISLC 225
Weight, kg	35·2	41·2	48·0
Area, cm^2	44·80	52·44	61·06
Moment of Inertia I_{xx}, cm^4	2 296·8	3 451·0	5 095·8
Modulus of Section Z_{xx}, cm^3	262·6	345·2	453·0
Radius of Gyration r_{xx}, cm	7·16	8·11	9·14

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
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	93·8	3·77
10·0	629·8	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	1 048·2	107·5	4·14
20·0	770·9	90·7	4·15	882·3	103·8	4·10	1 150·0	115·0	4·34
25·0	849·8	97·1	4·36	973·4	111·2	4·31	1 259·4	122·9	4·54
30·0	934·4	103·8	4·57	1 071·1	119·0	4·52	1 376·5	131·1	4·75
35·0	1 024·6	110·8	4·78	1 175·3	127·1	4·73	1 501·2	139·6	4·96
40·0	1 120·3	117·9	5·00	1 286·1	135·4	4·95	1 633·6	148·5	5·17
45·0	1 221·7	125·3	5·22	1 403·4	143·9	5·17	1 773·6	157·6	5·39
50·0	1 328·6	132·9	5·45	1 527·3	152·7	5·40	1 921·2	167·1	5·61
60·0	1 559·4	148·5	5·90	1 794·8	170·9	5·85	2 239·3	186·6	6·06
70·0	1 812·5	164·8	6·36	2 088·4	189·9	6·31	2 587·9	207·0	6·51
80·0	2 088·0	181·6	6·83	2 408·3	209·4	6·78	2 967·1	228·2	6·97
90·0	2 385·9	198·8	7·30	2 754·4	229·5	7·25	3 376·8	250·1	7·44
100·0	2 706·2	216·5	7·77	3 126·7	250·1	7·72	3 817·1	272·6	7·91
120·0	3 414·1	252·9	8·73	3 950·0	292·6	8·68	4 789·2	319·3	8·86
140·0	4 211·5	290·5	9·70	4 878·2	336·4	9·64	5 883·4	367·7	9·82
160·0	5 098·6	328·9	10·67	5 911·3	381·4	10·62	7 099·7	417·6	10·78
180·0	6 075·2	368·2	11·64	7 049·3	427·2	11·59	8 438·1	468·8	11·76
200·0	7 141·4	408·1	12·63	8 292·1	473·8	12·57	9 898·7	521·0	12·73
220·0	8 297·3	448·5	13·61	9 639·8	521·1	13·56	11 481·3	574·1	13·71
240·0	9 542·7	489·4	14·59	11 092·4	568·8	14·54	13 186·1	627·9	14·70
260·0	10 877·8	530·6	15·58	12 649·8	617·1	15·53	15 013·0	682·4	15·68
280·0	12 302·4	572·2	16·57	14 312·2	665·7	16·52	16 962·1	737·5	16·67
300·0	13 816·6	614·1	17·56	16 079·4	714·6	17·51	19 033·2	793·1	17·66
320·0	15 420·5	656·2	18·55	17 951·5	763·9	18·50	21 226·5	849·1	18·64
340·0	17 113·9	698·5	19·54	19 928·5	813·4	19·49	23 541·9	905·5	19·64
360·0	18 897·0	741·1	20·54	22 010·4	863·2	20·49	25 979·4	962·2	20·63
380·0	20 769·6	783·8	21·53	24 197·1	913·1	21·48	28 539·1	1 019·3	21·62
400·0	22 731·8	826·6	22·53	26 488·8	963·2	22·48	31 220·8	1 076·6	22·61
450·0	—	—	—	—	—	—	38 459·5	1 220·9	25·10
500·0	—	—	—	—	—	—	46 461·4	1 366·5	27·58

(Continued)

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISLC 250	ISLC 300	ISLC 350
Weight, kg	56·0	66·2	77·6
Area, cm^2	71·30	84·22	98·94
Moment of Inertia I_{xx}, cm^4	7 375·0	12 095·8	18 625·2
Modulus of Section Z_{xx}, cm^3	590·0	806·4	1 064·2
Radius of Gyration r_{xx}, cm	10·17	11·98	13·72

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
0	1 116·6	111·7	3·96	1 239·6	124·0	3·84	1 363·9	136·4	3·71
5·0	1 217·3	118·8	4·13	1 352·3	131·9	4·01	1 489·3	145·3	3·88
10·0	1 326·9	126·4	4·31	1 475·5	140·5	4·19	1 627·0	155·0	4·06
15·0	1 445·4	134·5	4·50	1 609·2	149·7	4·37	1 777·2	165·3	4·24
20·0	1 572·9	143·0	4·70	1 753·4	159·4	4·56	1 939·7	176·3	4·43
25·0	1 709·3	151·9	4·90	1 908·1	169·6	4·76	2 114·6	188·0	4·62
30·0	1 854·5	161·3	5·10	2 073·4	180·3	4·96	2 301·8	200·2	4·82
35·0	2 008·7	171·0	5·31	2 249·2	191·4	5·17	2 501·4	212·9	5·03
40·0	2 171·8	181·0	5·52	2 435·6	203·0	5·38	2 713·4	226·1	5·24
45·0	2 343·8	191·3	5·73	2 632·4	214·9	5·59	2 937·7	239·8	5·45
50·0	2 524·8	202·0	5·95	2 839·8	227·2	5·81	3 174·5	254·0	5·66
60·0	2 913·3	224·1	6·39	3 286·2	252·8	6·25	3 685·0	283·5	6·10
70·0	3 337·6	247·2	6·84	3 774·7	279·6	6·69	4 245·0	314·4	6·55
80·0	3 797·5	271·2	7·30	4 305·2	307·5	7·15	4 854·5	346·7	7·00
90·0	4 293·0	296·1	7·76	4 877·9	336·4	7·61	5 513·4	380·2	7·46
100·0	4 824·2	321·6	8·23	5 492·8	366·2	8·08	6 221·8	414·8	7·93
120·0	5 993·5	374·6	9·17	6 848·7	428·0	9·02	7 787·0	486·7	8·87
140·0	7 305·4	429·7	10·12	8 373·1	492·5	9·97	9 550·1	561·8	9·82
160·0	8 759·9	486·7	11·08	10 065·9	559·2	10·93	11 511·1	639·5	10·79
180·0	10 357·1	545·1	12·05	11 927·2	627·7	11·90	13 670·0	719·5	11·75
200·0	12 096·8	604·8	13·03	13 956·9	697·8	12·87	16 026·8	801·3	12·73
220·0	13 979·1	665·7	14·00	16 155·0	769·3	13·85	18 581·4	884·8	13·70
240·0	16 004·0	727·5	14·98	18 521·6	841·9	14·83	21 333·9	969·7	14·68
260·0	18 171·5	790·1	15·96	21 056·6	915·5	15·81	24 284·3	1 055·8	15·67
280·0	20 481·7	853·4	16·95	23 760·1	990·0	16·80	27 432·6	1 143·0	16·65
300·0	22 934·4	917·4	17·93	26 632·0	1 065·3	17·78	30 778·7	1 231·1	17·64
320·0	25 529·7	981·9	18·92	29 672·3	1 141·2	18·77	34 322·7	1 320·1	18·63
340·0	28 267·6	1 046·9	19·91	32 881·1	1 217·8	19·76	38 064·7	1 409·8	19·61
360·0	31 148·1	1 112·4	20·90	36 258·3	1 294·9	20·75	42 004·4	1 500·2	20·60
380·0	34 171·3	1 178·3	21·89	39 804·0	1 372·6	21·74	46 142·1	1 591·1	21·60
400·0	37 337·0	1 244·6	22·88	43 518·1	1 450·6	22·73	50 477·7	1 682·6	22·59
450·0	45 875·2	1 411·5	25·37	53 540·3	1 647·4	25·21	62 182·3	1 913·3	25·07
500·0	55 304·6	1 580·1	27·85	64 615·2	1 846·1	27·70	75 123·6	2 146·4	27·56
550·0	—	—	—	76 742·9	2 046·5	30·19	89 301·7	2 381·4	30·04
600·0	—	—	—	89 923·3	2 248·1	32·68	104 716·6	2 617·9	32·53

(Continued)

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISLC 400	ISMC 75	ISMC 100
Weight, kg	91·4	13·6	18·4
Area, cm^2	116·50	17·34	23·40
Moment of Inertia I_{xx}, cm^4	27 979·0	152·0	373·4
Moduius of Section Z_{xx}, cm^3	1399·0	40·6	74·6
Radius of Gyration r_{xx}, cm	15·50	2·96	4·00

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
0	1 569·7	157·0	3·67	55·0	13·7	1·78	106·6	21·3	2·13
5·0	1 714·4	167·3	3·84	67·4	15·9	1·97	125·9	24·0	2·32
10·0	1 873·7	178·4	4·01	82·0	18·2	2·17	148·2	27·0	2·52
15·0	2 047·6	190·5	4·19	98·8	20·8	2·39	173·4	30·2	2·72
20·0	2 236·0	203·3	4·38	117·7	23·5	2·61	201·6	33·6	2·94
25·0	2 439·0	216·8	4·58	138·8	26·4	2·83	232·6	37·2	3·15
30·0	2 656·6	231·0	4·78	162·1	29·5	3·06	266·6	41·0	3·38
35·0	2 888·7	245·8	4·98	187·6	32·6	3·29	303·5	45·0	3·60
40·0	3 135·4	261·3	5·19	215·2	35·9	3·52	343·4	49·1	3·83
45·0	3 396·7	277·3	5·40	245·0	39·2	3·76	386·1	53·3	4·06
50·0	3 672·5	293·8	5·61	276·9	42·6	4·00	431·8	57·6	4·30
60·0	4 267·8	328·3	6·05	347·3	49·6	4·48	532·0	66·5	4·77
70·0	4 921·4	364·5	6·50	426·4	56·9	4·96	643·8	75·7	5·25
80·0	5 633·2	402·4	6·95	514·1	64·3	5·45	767·4	85·3	5·73
90·0	6 403·2	441·6	7·41	610·5	71·8	5·93	902·6	95·0	6·21
100·0	7 231·6	482·1	7·88	715·6	79·5	6·42	1 049·6	105·0	6·70
120·0	9 062·9	566·4	8·82	951·8	95·2	7·41	1 378·6	125·3	7·68
140·0	11 127·3	654·5	9·77	1 222·6	111·1	8·40	1 754·4	146·2	8·66
160·0	13 424·7	745·8	10·74	1 528·2	127·3	9·39	2 177·0	167·5	9·65
180·0	15 955·1	839·7	11·70	1 868·4	143·7	10·38	2 646·4	189·0	10·63
200·0	18 718·5	935·9	12·68	2 243·3	160·2	11·37	3 162·6	210·8	11·63
220·0	21 714·8	1 034·0	13·65	2 652·8	176·9	12·37	3 725·6	232·9	12·62
240·0	24 944·2	1 133·8	14·63	3 097·1	193·6	13·36	4 335·4	255·0	13·61
260·0	28 406·6	1 235·1	15·62	3 576·0	210·4	14·36	4 992·0	277·3	14·61
280·0	32 102·0	1 337·6	16·60	5 089·6	227·2	15·36	5 695·4	299·8	15·60
300·0	36 030·4	1 441·2	17·59	4 637·9	244·1	16·35	6 445·6	322·3	16·60
320·0	40 191·7	1 545·8	18·57	4 220·9	261·0	17·35	7 242·6	344·9	17·59
340·0	44 586·1	1 651·3	19·56	5 838·5	278·0	18·35	8 086·4	367·6	18·59
360·0	49 213·5	1 757·6	20·55	6 490·9	295·0	19·35	8 977·0	390·3	19·59
380·0	54 073·9	1 864·6	21·54	7 177·9	312·1	20·35	9 914·5	413·1	20·58
400·0	59 167·3	1 972·2	22·54	7 899·6	329·1	21·34	10 898·7	435·9	21·58
450·0	72 920·1	2 243·7	25·02	—	—	—	—	—	—
500·0	88 129·2	2 518·0	27·50	—	—	—	—	—	—
550·0	104 794·5	2 794·5	29·99	—	—	—	—	—	—
600·0	122 916·1	3 072·9	32·48	—	—	—	—	—	—

(Continued)

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISMC 125	ISMC 150	ISMC 175
Weight, kg	25·4	32·8	38·2
Area, cm^2	32·38	41·76	48·76
Moment of Inertia I_{xx}, cm^4	832·8	1 558·8	2 446·6
Modulus of Section Z_{xx}, cm^3	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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
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	1 002·8	108·4	4·53
40·0	622·5	73·2	4·38	948·3	99·8	4·77	1 102·1	116·0	4·75
45·0	688·3	78·7	4·61	1 039·0	106·6	4·99	1 207·6	123·9	4·98
50·0	758·1	84·2	4·84	1 134·9	113·5	5·21	1 319·1	131·9	5·20
60·0	910·0	95·8	5·30	1 342·5	127·9	5·67	1 560·5	148·6	5·66
70·0	1 078·0	107·8	5·77	1 570·9	142·8	6·13	1 826·2	166·0	6·12
80·0	1 262·3	120·2	6·24	1 820·2	158·3	6·60	2 116·3	184·0	6·59
90·0	1 462·7	133·0	6·72	2 090·4	174·2	7·08	2 430·8	202·6	7·06
100·0	1 679·3	146·0	7·20	2 381·5	190·5	7·55	2 769·7	221·6	7·54
120·0	2 161·2	172·9	8·17	3 026·3	224·2	8·51	3 520·6	260·8	8·50
140·0	2 707·7	200·6	9·14	3 754·6	258·9	9·48	4 369·0	301·3	9·47
160·0	3 319·1	228·9	10·12	4 566·4	294·6	10·46	5 315·0	342·9	10·44
180·0	3 995·2	257·8	11·11	5 461·7	331·0	11·44	6 358·5	385·4	11·42
200·0	4 736·0	287·0	12·09	6 440·6	368·0	12·42	7 499·4	428·5	12·40
220·0	5 541·6	316·7	13·08	7 502·9	405·6	13·40	8 737·9	472·3	13·39
240·0	6 412·0	346·6	14·07	8 648·8	443·5	14·39	10 074·0	516·6	14·37
260·0	7 374·1	378·2	15·09	9 878·2	481·9	15·38	11 507·5	561·3	15·36
280·0	8 347·0	407·2	16·06	11 191·2	520·5	16·37	13 038·6	606·4	16·35
300·0	9 411·7	437·8	17·05	12 587·6	559·4	17·36	14 667·2	651·9	17·34
320·0	10 541·1	468·5	18·04	14 067·6	598·6	18·35	16 393·3	697·6	18·34
340·0	11 735·3	499·4	19·04	15 631·1	638·0	19·35	18 216·9	743·5	19·33
360·0	12 994·2	530·4	20·03	17 278·1	677·6	20·34	20 138·0	789·7	20·32
380·0	14 317·9	561·5	21·03	19 008·6	717·3	21·34	22 156·7	836·1	21·32
400·0	15 706·4	592·7	22·02	20 822·7	757·2	22·33	24 272·9	882·7	22·31

(Continued)

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISMC 200	ISMC 225	ISMC 250
Weight, kg	44·2	51·8	60·8
Area, cm^2	56·42	66·02	77·34
Moment of Inertia I_{xx}, cm^4	3 638·6	5 389·2	7 633·6
Modulus of Section Z_{xx}, cm^3	363·8	479·0	610·6
Radius of Gyration r_{xx}, cm	8·03	9·03	9·94

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
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	1 044·5	122·9	3·68
15·0	761·9	92·3	3·67	988·6	113·0	3·87	1 157·7	132·3	3·87
20·0	847·8	99·7	3·88	1 093·4	121·5	4·07	1 280·4	142·3	4·07
25·0	940·7	107 5	4·08	1 206·4	130·4	4·27	1 412·9	152·7	4·27
30·0	1 040·7	115·6	4·29	1 327·7	139·8	4·48	1 555·0	163·7	4·48
35·0	1 147·8	124·1	4·51	1 457·3	149·5	4·70	1 706·8	175·1	4·70
40·0	1 261·9	132·8	4·73	1 595·1	159·5	4·92	1 868·2	186·8	4·91
45·0	1 383·0	141·9	4·95	1 741·2	169·9	5·14	2 039·3	199·0	5·14
50·0	1 511·3	151·1	5·18	1 895·5	180·5	5·36	2 220·1	211·4	5·36
60·0	1 788·8	170·4	5·63	2 228·9	202·6	5·81	2 610·7	237·3	5·81
70·0	2 094·6	190·4	6·09	2 595·3	225·7	6·27	3 039·9	264·3	6·27
80·0	2 428·6	211·2	6·56	2 994·7	249·6	6·74	3 507·8	292·3	6·73
90·0	2 790·9	232·6	7·03	3 427·2	274·2	7·20	4 014·4	321·2	7·20
100·0	3 181·3	254·5	7·51	3 892·6	299·4	7·68	4 559·6	350·7	7·68
120·0	4 046·8	299·8	8·47	4 922·5	351·6	8·63	5 766·2	411·9	8·63
140·0	5 025·1	346·6	9·44	6 084·5	405·6	9·60	7 127·3	475·2	9·60
160·0	6 116·3	394·6	10·41	7 378·5	461·2	10·57	8 643·2	540·2	10·57
180·0	7 320·3	443·7	11·39	8 804·5	517·9	11·55	10 313·7	606·7	11·55
200·0	8 637·1	493·5	12·37	10 362·6	575·7	12·53	12 139·0	674·4	12·53
220·0	10 066·8	544·2	13·36	12 052·7	634·4	13·51	14 118·9	743·1	13·51
240·0	11 609·3	595·3	14·34	13 874·8	693·7	14·50	16 253·5	812·7	14·50
260·0	13 264·7	647·1	15·33	15 829·0	753·8	15·48	18 542·7	883·0	15·48
280·0	15 032·9	699 2	16·32	17 915·3	814·3	16·47	20 986·7	953·9	16·47
300·0	16 913·9	751·7	17·31	20 133·5	875·4	17 46	23 585·3	1 025·4	17·46
320·0	18 907·8	804·6	18·31	22 483·8	936·8	18·45	26 338·6	1 097·4	18·45
340·0	21 014·5	857·7	19·30	24 966·2	998·6	19·45	29 246·6	1 169·9	19·45
360·0	23 234·1	911·1	20·29	27 580·6	1 060·8	20·44	32 309·2	1 242·7	20·44
380·0	25 566·5	964·8	21·29	30 327·0	1 123·2	21·43	35 526·6	1 315 8	21·43
400·0	28 011·7	1 018·6	22·28	33 205·5	1 185·9	22·43	38 898·6	1 389·2	22·43
450·0	—	—	—	40 979·3	1 343·6	24·91	48 005·4	1 573·9	24·91
500·0	—	—	—	49 578·4	1 502·4	27·40	58 078·9	1 760·0	27·40

(Continued)

TABLE XXXVII DOUBLE CHANNELS LACED OR BATTENED TO BE USED AS COLUMNS

(Continued)

COMPOSED OF TWO CHANNELS OF SAME SIZE

Designation	ISMC 300	ISMC 350	ISMC 400
Weight, kg	71·6	84·2	98·8
Area, cm^2	91·28	107·32	125·86
Moment of Inertia I_{xx}, cm^4	12 725·2	20 016·0	30 165·6
Modulus of Section Z_{xx}, cm^3	848·4	1 143·8	1 508·2
Radius of Gyration r_{xx}, cm	11·81	13·66	15·48

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^4	cm^3	cm	cm^4	cm^3	cm	cm^4	cm^3	cm
0	1 130·0	125·6	3·52	1 500·1	150·0	3·74	1 746·7	174·7	3·73
5·0	1 243·4	134·4	3·69	1 637·8	159·8	3·91	1 906·8	186·0	3·89
10·0	1 368·2	144·0	3·87	1 788·8	170·4	4·08	2 082·7	198·4	4·07
15·0	1 504·5	154·3	4·06	1 953·3	181·7	4·27	2 274·4	211·6	4·25
20·0	1 652·1	165·2	4·25	2 131·2	193·7	4·46	2 481·7	225·6	4·44
25·0	1 811·2	176·7	4·45	2 322·5	206·4	4·65	2 704·8	240·4	4·64
30·0	1 981·6	188·7	4·66	2 527·2	219·8	4·85	2 943·6	256·0	4·84
35·0	2 163·5	201·3	4·87	2 745·3	233·6	5·06	3 198·2	272·2	5·04
40·0	2 356·8	214·3	5·08	2 976·9	248·1	5·27	3 468·5	289·0	5·25
45·0	2 561·5	227·7	5·30	3 221·8	263·0	5·48	3 754·5	306·5	5·46
50·0	2 777·6	241·5	5·52	3 480·2	278·4	5·69	4 056·2	324·5	5·68
60·0	3 244·0	270·3	5·96	4 037·2	310·6	6·13	4 706·9	362·1	12
70·0	3 756·1	300·5	6·41	4 647·8	344 3	6·58	5 420·5	401·5	6·56
80·0	4 313·8	331·8	6·87	5 312·1	379·4	7·04	6 197·1	442·6	7·02
90·0	4 917·2	364·2	7·34	6 030·1	415·9	7·50	7 036·6	485·3	7·48
100·0	5 566·2	397·6	7·81	6 801·7	453·4	7·96	7 939·0	529·3	7·94
120·0	7 001·1	466·7	8·76	8 506·0	531·6	8·90	9 932·6	620·8	8·88
140·0	8 618·6	538·7	9·72	10 424·9	613·2	9·86	12 178·0	716·4	9·84
160·0	10 418·6	612·9	10·66	12 558·4	697·7	10·82	14 675·0	815·3	10·80
180·0	12 401·2	689·0	11·66	14 906·6	784·6	11·79	17 423·8	917·0	11·77
200·0	14 566·4	766·7	12·63	17 469·4	873·5	12·76	20 424·3	1 021·2	12·74
220·0	16 914·1	845·7	13·61	20 246·8	964·1	13·74	23 676·5	1 127·5	13·72
240·0	19 444·4	925·9	14·60	23 238·9	1 056·3	14·72	27 180·5	1 235·5	14·70
260·0	22 157·3	1 007·1	15·58	26 445·6	1 149·8	15·70	30 936·1	1 345·0	15·68
280·0	25 052·7	1 089·2	16·57	29 867·0	1 244·5	16·68	34 943·5	1 456·0	16·66
300·0	28 130·6	1 172·1	17·56	33 503·0	1 340·1	17·67	39 202·6	1 568·1	17·65
320·0	31 391·1	1 255·6	18·54	37 353·6	1 436·7	18·66	43 713·4	1 681·3	18·64
340·0	34 834·2	1 339·8	19·54	41 418·9	1 534·0	19·65	47 476·5	1 795·4	19·63
360·0	38 459·9	1 424·4	20·53	45 698·8	1 632·1	20·64	53 490·2	1 910·4	20·62
380·0	42 268·1	1 509·6	21·52	50 193·4	1 730·8	21·63	58 756·2	2 026·1	21·61
400·0	46 258 8	1 595·1	22·51	54 902·6	1 830·1	22·62	64 273·9	2 142·5	22·60
450·0	57 034·4	1 810·6	25·00	67 614·6	2 080·4	25·10	79 169·5	2 436·0	25·08
500·0	68 951·0	2 028·0	27·48	81 668·2	2 333·4	27·59	95 638·2	2 732·5	27·57
550·0	82 008·6	2 246·8	29·97	97 063·2	2 588·4	30·07	113 680·3	3 031·5	30·05
600·0	96 207·2	2 466·9	32·47	113 799·8	2 845·0	32·56	133 295·6	3 332·4	32·54

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

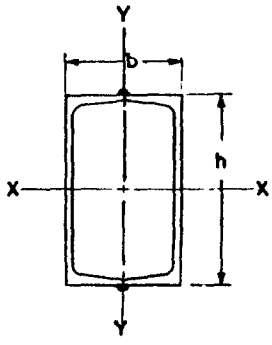

TABLE XXXVIII DOUBLE CHANNELS WITH FLANGES BUTTING AND WELDED TOE TO TOE TO BE USED AS COLUMNS

Nominal Size	Composed of Two Channels Each of Same Size		Weight per Metre	Sectional Area	Moments of Inertia		Moduli of Section		Radii of Gyration	
$h \times b$	Designation	w			I_{xx}	I_{yy}	Z_{xx}	Z_{yy}	r_{xx}	r_{yy}
mm mm		kg	kg	cm^2	cm^4	cm^4	cm^3	cm^3	cm	cm
100×90	ISJC 100	5·8	11·6	14·82	247·6	172·2	49·6	38·3	4·09	3·41
125×100	ISJC 125	7·9	15·8	20·14	540·0	278·8	86·4	55·8	5·18	3·72
150×110	ISJC 150	9·9	19·8	25·30	942·2	448·9	125·6	81·6	6·10	4·21
175×120	ISJC 175	11·2	22·4	28·48	1 439·8	615·4	164·6	102·6	7·11	4·65
200×140	ISJC 200	13·9	27·8	35·54	2 322·4	1 067·6	232·2	152·5	8·08	5·48
75×80	ISLC 75	5·7	11·4	14·52	132·2	125·0	35·2	31·2	3·02	2·93
100×100	ISLC 100	7·9	15·8	20·04	329·4	278·5	65·8	55·7	4·06	3·73
125×130	ISLC 125	10·7	21·4	27·34	713·6	658·2	114·2	101·3	5·11	4·91
150×150	ISLC 150	14·4	28·8	36·72	1 394·4	1 169·0	186·0	155·9	6·16	5·64
175×150	ISLC 175	17·6	35·2	44·80	2 296·8	1 418·3	262·6	189·1	7·16	5·63
200×150	ISLC 200	20·6	41·2	52·44	3 451·0	1 684·6	245·2	224·6	8·11	5·67
225×150	ISLC 225	24·0	48·0	61·06	5 095·8	3 030·6	453·0	336·7	9·14	7·05
250×200	ISLC 250	28·0	56·0	71·30	7 375·0	4 396·4	590·0	439·6	10·17	7·85
300×200	ISLC 300	33·1	66·2	84·22	12 095·8	5 366·4	806·4	536·6	11·98	7·98
350×200	ISLC 350	38·8	77·6	98·94	18 625·2	6 489·0	1 064·2	648·9	13·72	8·10
400×200	ISLC 400	45·7	91·4	116·50	27 979·0	7 720·9	1 399·0	772·1	15·50	8·14
75×80	ISMC 75	6·8	13·6	17·34	152·0	150·7	40·6	37·7	2·96	2·95
100×100	ISMC 100	9·2	18·4	23·40	373·4	333·6	74·6	66·7	4·00	3·78
125×130	ISMC 125	12·7	25·4	32·38	838·8	793·1	133·2	122·0	5·07	4·95
150×150	ISMC 150	16·4	32·8	41·76	1 558·8	1 368·8	207·8	182·5	6·11	5·73
175×150	ISMC 175	19·1	38·2	48·76	2 446·6	1 611·7	279·6	214·9	7·08	5·75
200×150	ISMC 200	22·1	44·2	56·42	3 638·6	1 883·6	363·8	251·2	8·03	5·78
225×160	ISMC 225	25·9	51·8	66·02	5 389·2	2 519·4	479·0	314·9	9·03	6·18
250×160	ISMC 250	30·4	60·8	77·34	7 633·6	2 951·0	610·6	368·9	9·94	6·18
300×180	ISMC 300	35·8	71·6	91·28	12 725·2	4 646·1	848·4	516·2	11·81	7·13
350×200	ISMC 350	42·1	84·2	107·32	20 016·0	6 994·9	1 143·8	699·5	13·66	8·07
400×200	ISMC 400	49·4	98·8	125·86	30 165·6	8 241·1	1 508·2	824·1	15·48	8·09

APPENDIX A

INDIAN STANDARDS FOR PRODUCTION, DESIGN AND USE OF STEEL IN STRUCTURE

The ISI has so far published the following Indian Standards in the field of production, design and utilization of steel:

IS : 800-1962 Code of Practice for Use of Structural Steel in General Building Construction (*Revised*)

IS : 801-1958 Code of Practice for Use of Cold Formed Light Gauge Steel Structural Members in General Building Construction

IS : 804-1958 Specification for Rectangular Pressed Steel Tanks

IS : 806-1957 Code of Practice for Use of Steel Tubes in General Building Construction

IS : 808-1957 Specification for Rolled Steel Beam, Channel and Angle Sections

IS : 811-1961 Specification for Cold Formed Light Gauge Structural Steel Sections

IS : 812-1957 Glossary of Terms Relating to Welding and Cutting of Metals

IS : 813-1956 Scheme of Symbols for Welding

IS : 814-1957 Specification for Covered Electrodes for Metal Arc Welding of Mild Steel

IS : 815-1956 Classification and Coding of Covered Electrodes for Metal Arc Welding of Mild Steel and Low Alloy High-Tensile Steels

IS : 816-1956 Code of Practice for Use of Metal Arc Welding for General Construction in Mild Steel

IS : 817-1957 Code of Practice for Training and Testing of Metal Arc Welders

IS : 818-1957 Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations

IS : 819-1957 Code of Practice for Resistance Spot Welding for Light Assemblies in Mild Steel

IS : 1161-1958 Specification for Steel Tubes for Structural Purposes

IS : 1173-1957 Specification for Rolled Steel Sections, Tee Bars

IS : 1179-1957 Specification for Equipment for Eye and Face Protection During Welding

IS : 1181-1957 Qualifying Tests for Metal Arc Welders (Engaged in Welding Structures Other than Pipes)

IS : 1182-1957 General Recommendations for Radiographic Examination of Fusion Welded Joints

IS : 1252-1958 Specification for Rolled Steel Sections, Bulb Angles

IS : 1261-1959 Code of Practice for Seam Welding in Mild Steel

IS : 1278-1958 Specification for Filler Rods and Wires for Gas Welding

IS : 1323-1959 Code of Practice for Oxy-Acetylene Welding for Structural Work in Mild Steel

IS : 1730-1961 Dimensions for Steel Plate, Sheet and Strip for Structural and General Engineering Purposes

IS : 1731-1961 Dimensions for Steel Flats for Structural and General Engineering Purposes

IS : 1732-1961 Dimensions for Round and Square Steel Bars for Structural and General Engineering Purposes

IS : 1863-1961 Dimensions for Rolled Steel Bulb Plates

IS : 1864-1963 Dimensions for Angle Sections with Legs of Unequal Width and Thickness

IS : 2314-1963 Specification for Steel Sheet Piling Sections

APPENDIX B

COMPOSITION OF STRUCTURALS SECTIONAL COMMITTEE, SMDC 6

The ISI Structurals Sectional Committee which was responsible for processing this revised Handbook consists of the following:

Chairman	*Representing*
SHRI O. S. MURTHY	Ministry of Railways
Members	
SHRI S. BANERJEE	Steel Re-Rolling Mills Association of India, Calcutta
COL N. S. BHAGAT	Engineer-in-Chief's Branch, Army Headquarters
SHRI R. S. MEHANDRU (*Alternate*)	
SHRI R. K. CHATTERJEE	Durgapur Steel Project, Durgapur
SHRI S. DAS GUPTA	In personal capacity (*M. N. Dastur & Co. Pvt. Ltd., Calcutta*)
SHRI D. S. DESAI	M. N. Dastur & Co. Pvt. Ltd., Calcutta
SHRI M. DHAR	Braithwaite, Burn & Jessop Construction Co. Ltd., Calcutta
SHRI N. K. SARKAR (*Alternate*)	
SHRI S. GOSWAMI	Indian Iron & Steel Co. Ltd., Burnpur
SHRI N. C. DUTT (*Alternate*)	
SHRI S. GURURAJ	Tube Investments of India Ltd., Jamshedpur
SHRI G. C. KHANNA	Institution of Engineers (India), Calcutta
SHRI E. K. N. NAMBIAR	Directorate General of Supplies and Disposals (Inspection Wing), New Delhi
SHRI B. R. NAGAR (*Alternate*)	
SHRI M. M. PANJE	Bhilai Steel Project, Bhilai
SHRI S. R. PRAMANIK	Hindustan Steel Ltd., Rourkela
SHRI RABINDER SINGH	National Buildings Organization, New Delhi
DR. A. V. R. RAO (*Alternate*)	
SHRI G. F. L. REBELLO	Tata Iron & Steel Co. Ltd., Jamshedpur
SHRI K. SRINIVAS	Indian Aluminium Co. Ltd., Calcutta
SHRI N. GOPAL KRISHNAN (*Alternate*)	
SHRI T. R. SUBRAMANIAN	The Iron & Steel Control, Calcutta
SUPERINTENDING SURVEYOR OF WORKS II	Central Public Works Department, New Delhi
SHRI R. B. VAID	The Indian Lightgauge Metal Products Private Ltd., Bombay
SHRI A. S. VALLISHAYEE	Mysore Iron & Steel Works, Bhadravati
SHRI B. S. KRISHNAMACHAR, Deputy Director (S & M)	Director, ISI (*Ex-officio Member*)

Secretary

SHRI H. N. KRISHNAMURTHY
Assistant Director (S & M), ISI