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भारतीय मानक

तप्त वेल्लित इस्पात के बल्ब एंगलों के आयाम

(पहला पुनरीक्षण)

Indian Standard

HOT ROLLED STEEL BULB ANGLES — DIMENSIONS

(First Revision)

UDC 669·14·122 : 669·14-423

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Price Group 2

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Structural Sections Sectional Committee had been approved by the Civil Engineering Division Council.

Bulb angles are generally used in ship building and car-building industries. In the preparation of this standard the Sectional Committee specially kept in view the requirements of these industries.

This standard was first published in 1958. In this revision apart from general updating, the designation of bulb angles has been modified.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the results of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

HOT ROLLED STEEL BULB ANGLES — DIMENSIONS

(*First Revision*)

1 SCOPE

1.1 This standard lays down the nominal dimensions, mass and sectional properties of hot rolled steel bulb angles.

2 REFERENCE

2.1 The Indian Standard IS 1852 : 1985 'Specification for rolling and cutting tolerances for hot-rolled steel products (*fourth revision*)' is a necessary adjunct to this standard.

3 TERMINOLOGY

3.0 For the purpose of this standard, the following definitions shall apply.

3.1 Y-Y Axis — A line passing through the centre of gravity of the profile of the sections and parallel to the axis of the web.

3.2 X-X Axis — A line passing through the centre of the gravity of the profile of the section and at right angles to the Y-Y axis.

3.3 U-U and V-V Axis — Lines passing through the centre of gravity of the profile of the section, representing the principal axes of the section.

4 SYMBOLS

4.1 Letter symbols used in this standard have been indicated in the Figure in Table 1. More explicit definitions for certain symbols used in the table and figure are given below:

a = Sectional area in sq cm

m = Nominal mass in kg per m = 0·785 a

D = Projection of the bulb from the inside face of the web

C_{xx} = Distance of centre of gravity of the section from the back line of the flange

C_{yy} = Distance of centre of gravity of the section from the back line of the web

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

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

I_{uu} = Moment of inertia (*Max*) about the *U-U* axis

I_{vv} = Moment of inertia (*Min*) about the *V-V* axis

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

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

$Z_{xx} = \frac{I_{xx}}{c_{xx}}$ = Modulus of section about the *X-X* axis

$Z_{yy} = \frac{I_{yy}}{c_{yy}}$ = Modulus of section about the *Y-Y* axis

$r_{xx} = \sqrt{\frac{I_{xx}}{a}}$ = Radius of gyration about the *X-X* axis

$r_{yy} = \sqrt{\frac{I_{yy}}{a}}$ = Radius of gyration about the *Y-Y* axis

$r_{uu} = \sqrt{\frac{I_{uu}}{a}}$ = Radius of gyration about the *U-U* axis

$r_{vv} = \sqrt{\frac{I_{vv}}{a}}$ = Radius of gyration about the *V-V* axis

α = Angle between the *U-U* and the *X-X* axis

5 DESIGNATION

5.1 Hot rolled steel bulb angles conforming to this standard shall be designated by letters BA followed by a figure denoting the depth of longer side of the angle in mm. * and ** to denote heavier sections.

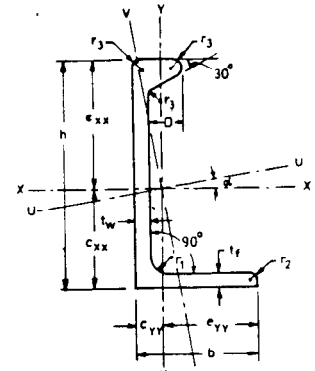
6 DIMENSIONS AND SECTIONAL PROPERTIES

6.1 The nominal dimension and mass of bulb angles sections shall be as given in Table 1. Sectional properties of the bulb angles have been given in Table 1 for information.

6.2 The rolling and cutting tolerances of the bulb angles shall be as stipulated, in IS 1852 : 1985.

Table 1 Nominal Dimensions, Mass and Sectional Properties of Bulb Angles

(*Clauses* 4.1 *and* 6.1)



Designation	Mass per Metre (m)	Sectional Area (a)	Size (h)×(b)	Thickness of Web (t_w)	Thickness of Flange (t_f)	(D)	Radius at Root (r_1)	Radius at Toe (r_2)	Radius at Bulb Corners (r_3)	Centre of Gravity		Distance of Extreme Fibres		Tan ∝	Moments of Inertia				Radii of Gyration				Moduli of Section		Designation
										C_{xx}	C_{yy}	t_{xx}	t_{yy}		I_{xx}	I_{yy}	I_{xx} (Max)	I_{yy} (Min)	r_{xx}	r_{yy}	r_{uu} (Max)	r_{vv} (Min)	Z_{xx}	Z_{yy}	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
	kg	cm^2	mm×mm	mm	mm	mm	mm	mm	mm	cm	cm	cm	cm		cm^4	cm^4	cm^4	cm^4	cm	cm	cm	cm	cm^3	cm^3	
BA 100	8·6	10·94	100×65	6·0	6·0	13	10·0	5·0	4·0	3·92	1·43	6·08	5·07	0·291	143	33·0	153	22·8	3·61	1·74	3·74	1·44	23·5	6·5	BA 100
BA 100*	9·6	12·17	100×65	7·0	6·5	13	10·0	5·0	4·0	3·95	1·43	6·05	5·07	0·288	155	35·7	165	24·9	3·56	1·71	3·69	1·43	25·6	7·0	BA 100*
BA 125	12·2	15·60	125×75	7·0	7·0	16	11·0	5·5	5·0	5·06	1·60	7·44	5·90	0·248	322	60·4	339	43·3	4·54	1·97	4·66	1·67	43·2	10·2	BA 125
BA 125*	13·4	17·11	125×75	8·0	7·5	16	11·0	5·5	5·0	5·08	1·61	7·42	5·89	0·246	344	64·6	362	46·6	4·49	1·94	4·60	1·65	46·4	11·0	BA 125*
BA 150	16·1	20·45	150×75	8·0	8·0	20	11·0	5·5	6·0	6·52	1·55	8·48	5·95	0·167	613	71·4	628	55·9	5·47	1·87	5·54	1·65	72·2	12·0	BA 150
BA 150*	18·8	23·94	150×75	10·0	9·0	20	11·0	5·5	6·0	6·53	1·57	8·47	5·93	0·162	686	79·8	703	63·4	5·36	1·83	5·42	1·63	81·1	13·5	BA 150*
BA 175	20·0	25·54	175×90	8·0	9·0	23	13·5	6·5	7·0	7·44	1·89	10·06	7·11	0·185	1 070	137	1 110	104	6·48	2·32	6·58	2·02	107	19·3	BA 175
BA 175*	23·3	29·66	175×90	10·0	10·0	23	13·5	6·5	7·0	7·46	1·90	10·04	7·10	0·181	1 190	152	1 230	117	6·34	2·27	6·43	1·99	119	21·4	BA 175*
BA 175**	26·5	33·74	175×90	12·0	11·0	23	13·5	6·5	7·0	7·49	1·92	10·01	7·08	0·177	1 310	166	1 350	130	6·23	2·22	6·32	1·96	131	23·5	BA 175**
BA 200	28·2	35·95	200×90	11·0	11·0	26	13·5	6·5	8·0	8·87	1·86	11·13	7·14	0·136	1 880	172	1 910	140	7·23	2·19	7·29	1·97	169	24·1	BA 200
BA 200*	33.6	42·76	200×90	14·0	12·5	26	13·5	6·5	8·0	8·89	1·91	11·11	7·09	0·131	2 130	194	2 160	160	7·06	2·13	7·12	1·93	192	27·3	BA 200*
BA 225	31·4	39·94	225×90	11·0	11·0	29	13·5	6·5	9·0	10·4	1·80	12·10	7·20	0·103	2 660	179	2 690	152	8·17	2·12	8·21	1·95	220	24·9	BA 225
BA 225*	37·3	47·50	225×90	14·0	12·5	29	13·5	6·5	9·0	10·4	1.85	12·13	7·15	0·098	3 020	202	3 040	175	7·97	2·06	8·01	1·92	249	28·2	BA 225*
BA 250	34·9	44·41	250×90	11·0	11·0	33	13·5	6·5	10·0	12·1	1·78	12·93	7·22	0·075	3 680	188	3 700	168	9·11	2·06	9·13	1·95	285	26·0	BA 250
BA 250*	39·2	49·96	250×90	13·0	12·0	33	13·5	6·5	10·0	12·0	1·81	13·01	7·19	0·072	4 010	205	4 030	185	8·96	2·02	8·98	1·92	308	28·5	BA 250*
BA 275	40·9	52·13	275×90	12·0	12·0	36	13·5	6·5	11·0	13·5	1·80	13·96	7·21	0·057	5 160	213	5 180	197	9·95	2·02	9·97	1·94	370	29·6	BA 275
BA 275*	45·6	58·15	275×90	14·0	13·0	36	13·5	6·5	11·0	13·4	1·83	14·05	7·17	0·054	5 580	231	5 600	215	9·80	1·99	9.81	1·92	397	32·2	BA 275*
BA 300	47·5	60·47	300×90	13·0	13·0	39	13·5	6·5	12·0	15·0	1·82	15·02	7·18	0·042	7 030	241	7 050	229	10·8	2·00	10·8	1·95	468	33·6	BA 300
BA 300*	52·6	66·96	300×90	15·0	14·0	39	13·5	6·5	12·0	14·9	1·86	15·08	7·14	0·040	7 570	260	7 580	248	10·6	1·97	10·6	1·92	502	36·4	BA 300*

NOTE — Sections carrying with * and ** in the designation are heavier sections in each size obtained from the same set of rolls as the lighter sections by spreading of the rolls. The width of flanges of these sections gets increased by an amount equal to the difference between the thickness of the webs. Therefore while ordering these heavier sections, mass should be mentioned.

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