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(चौथा पुनरोक्षण)

Indian Standard

**NON-FERROUS METAL BUTT HINGES —
SPECIFICATION**

(Fourth Revision)

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Price Group 4

Builders Hardware Sectional Committee, CED 15

FOREWORD

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

This Indian Standard was first published in 1950 and was subsequently revised in 1966 and 1978. Hinges have been designated with a view to provide an easy guide to users in selecting the size of a hinge for a particular use. The size designations with letters A, B, C, D, E and F are generally considered suitable for use with 45, 40, 35, 30, 25 and 20 mm thick shutters respectively. Further, each size of hinge marked with any of such letters may be either heavy or light which is indicated by suffixing numbers 11, 12, 21 or 22. Lower suffixing numbers indicate heavier hinges which are recommended for shutters of larger sizes while higher suffixing numbers indicate heavier hinges and are recommended for shutters of comparatively smaller sizes. For example, a hinge with size designation 125 CII indicates that the hinge is 125 mm in length and is suitable for 35 mm thick shutter when the size of the shutter is considerably large.

While preparing this revision, the Sectional Committee took note of the acute scarcity of non-ferrous materials like copper, zinc and their alloys in the country and the need for conserving the same in national interest. However, in view of the demand for hardware items made of these materials in overseas markets, the Sectional Committee has retained them specifically to meet the requirements of export trade. For all indigenous use, it has strongly recommended that hardware items made out of these materials should not be used.

This standard contains clauses 5.1, 6.1 and 8.1 which permit the purchaser to use his option for selection to suit his requirements.

In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. The present revision makes reference to the latest version of the Indian Standard referred in this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result 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.

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NON-FERROUS METAL BUTT HINGES— SPECIFICATION

(Fourth Revision)

1 SCOPE

1.1 This standard lays down requirements for butt hinges made from non-ferrous metals.

2 REFERENCES

2.1 This Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TYPES

3.1 Butt hinges shall be of the following four types according to the material used:

- a) Extruded aluminium alloy butt hinges,
- b) Extruded brass butt hinges,
- c) Cast brass butt hinges, and
- d) Sheet brass butt hinges.

4 MATERIAL

4.1 Materials used for flap and pin of hinges shall comply with the requirements given in Table 1.

5 DIMENSIONS AND TOLERANCES

5.1 Dimensions

The dimensions of different types of hinges shall be normally as given in Tables 2 to 5 read with Fig. 1 and Fig. 2. However, they may be manufactured in other dimensions where so agreed between the purchaser and the manufacturer.

5.2 Tolerances

The tolerances on dimensions of hinges specified for different types shall be as given in Table 6.

6 MANUFACTURE

6.1 General

The hinge pin shall be made of mild steel or brass or stainless steel, in the case of brass hinges. It may also be made of phosphor bronze, if so required by the purchaser. The hinge pin shall be of aluminium alloy or mild steel (galvanized) or stainless steel in case of aluminium alloy hinges. The aluminium alloy hinge pin shall be hard anodized

Table 1 Requirements for Materials for Flap and Pin

Item	Materials	Suitable Grade in Indian Standards
(1)	(2)	(3)
Flap	i) Extruded aluminium alloy ii) Extruded brass iii) Cast brass iv) Brass sheet	IS Designation 64430 WP or 65032 WP of IS 733 : 1983 IS 319 : 1974 LCB 2 of IS 292 : 1983 Designation CuZn 40 of IS 410 : 1977
Pin	i) Aluminium alloy ii) Phosphor bronze wire or rod iii) Mild steel wire or rod iv) Brass Wire v) Stainless steel	64430 WP of IS 733 : 1983 or 64430 WP of IS 739 : 1977 IS 7608 : 1987 IS 280 : 1978 Half hard conditions IS 4413 : 1981 Designation 04 Cr 18 Ni 10 or 04 Cr 17 Ni 12 M 02 of IS 6528 : 1972

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Table 2 Dimensions of Extruded Aluminium Alloy Butt Hinges

(Clause 5.1, 6.2, 6.3.1 and 6.3.2; and Fig.1)

Hinge Designation	Length	Breadth	Butt Dia	Pin Dia	Thickness of Flap		Holes for Screw Designation	No. of Screw Holes
(1)	A (2) mm	B (3) mm	D (4) mm	d (5) mm	C (6) mm	C/ (7) mm	(8)	(9)
150A22	150	75	14	5.60	4.0	4.8	12	12
125A22	125	75	14	5.60	4.0	4.8	12	10
125B21	125	63	13	5.60	4.0	4.8	10	10
125B22	125	63	11	5.00	4.0	4.8	10	10
125C22	125	63	10	3.55	3.2	4.0	10	10
100A22	100	75	14	5.60	4.0	4.8	12	8
100B21	100	63	13	5.60	4.0	4.8	10	8
100B22	100	63	11	5.00	4.0	4.8	10	8
100C22	100	63	10	3.55	3.2	4.0	10	8
90C22	90	63	10	3.55	3.2	4.0	10	8
75C21	75	63	13	5.60	4.0	4.8	10	6
75C22	75	63	11	5.00	4.0	4.8	10	6
75D22	75	63	10	3.55	3.2	—	9	6
75F22	75	45	7	2.50	3.2	—	8	6
75F22	75	40	7	2.50	2.5	—	6	6
65E22	65	45	7	2.50	3.2	—	6	6
65F22	65	45	7	2.50	2.5	—	6	6
50E22	50	45	7	2.50	3.2	—	6	4
50F22	50	40	7	2.50	2.5	—	6	4

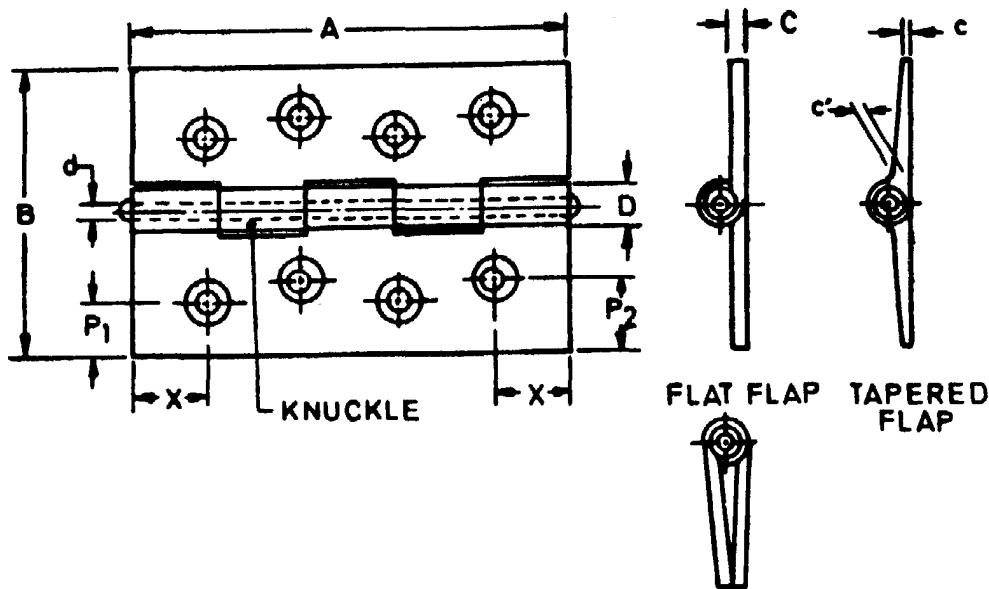


FIG. 1 BUTT HINGES (ALUMINIUM ALLOY, CAST BRASS OR EXTRUDED BRASS)

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Table 3 Dimensions of Extruded Brass Butt Hinges

(Clauses 5.1, 6.2, 6.3.1 and 6.3.2; and Fig. 1)

Hinge Designation	Length	Breadth	Butt Dia	Pin Dia	Thickness of Flap	Holes for Screw Designation No.	No of Screw Holes
	mm	mm	mm	mm	mm		
(1)	A	B	D	d	C	(7)	(8)
150A11	150	75	11.5	5.0	5.0	12	12
150A12	150	75	9.5	4.0	4.0	11	12
125A11	125	75	11.5	5.0	5.0	12	10
125A12	125	75	9.5	4.0	4.0	11	10
125B11	125	65	9.5	4.0	4.0	10	10
125B12	125	65	7.5	3.0	3.0	10	10
125C11	125	65	9.5	4.0	4.0	10	10
125C12	125	65	7.5	3.0	3.0	10	10
125C21	125	60	9.5	4.0	4.0	10	10
125C22	125	60	7.5	3.0	3.0	10	10
100A11	100	75	11.5	5.0	5.0	12	8
100A12	100	75	9.5	4.0	4.0	11	8
100B11	100	65	9.5	4.0	4.0	10	8
100B12	100	65	7.5	3.0	3.0	10	8
100C11	100	65	9.5	4.0	4.0	10	8
100C12	100	65	7.5	3.0	3.0	10	8
100C22	100	60	7.5	3.0	3.0	10	8
100C32	100	55	7.5	3.0	3.0	10	8
100D11	100	50	7.5	3.0	3.0	9	8
90C11	90	55	7.5	3.0	3.0	10	8
90D11	90	50	7.5	3.0	3.0	9	8
75C11	75	55	7.5	3.0	3.0	10	6
75D11	75	50	7.5	3.0	3.0	9	6
75E11	75	40	7.5	3.0	3.0	8	6
75E12	75	40	4.5	1.5	1.5	6	6
75F11	75	30	4.5	1.5	1.5	6	6
65E11	65	40	7.5	3.0	3.0	8	6
65E12	65	40	4.5	2.0	1.5	6	6
65F11	65	30	4.5	2.0	1.5	6	6
50E11	50	40	7.5	3.0	3.0	8	4
50E12	50	40	4.5	2.0	1.5	6	4
50F11	50	40	4.5	2.0	1.5	6	4
40F11	40	40	4.5	2.0	1.5	6	4

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Table 4 Dimensions of Cast Brass Butt Hinges

(*Clauses 5.1, 6.2, 6.3.1 and 6.3.2; and Fig. 1*)

Hinge Designation	Length	Breadth	Butt Dia	Pin Dia	Thickness of Flap	Holes for Screw Designation No.	No. of Screw Holes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	mm	mm	mm	mm	mm		
150A11	150	85	12.5	5.5	5.5	12	12
150A12	150	85	11.5	5.0	5.0	12	12
125A11	125	85	12.5	5.5	5.5	12	10
125A12	125	85	11.5	5.0	5.0	12	10
125B11	125	75	11.5	5.0	5.0	12	10
125B12	125	75	9.5	4.0	4.0	10	10
125C11	125	70	11.5	5.0	5.0	12	10
125C12	125	70	9.5	4.0	4.0	10	10
125C21	125	65	11.5	5.0	5.0	12	10
125C22	125	65	9.5	4.0	4.0	10	10
100A11	100	85	12.5	5.5	5.5	12	8
100A12	100	85	11.5	5.0	5.0	12	8
100B11	100	75	11.5	5.0	5.0	12	8
100B12	100	75	9.5	4.0	4.0	10	8
100C11	100	70	11.5	5.0	5.0	12	8
100C12	100	70	9.5	4.0	4.0	10	8
100C21	100	65	11.5	5.0	5.0	12	8
100C22	100	65	9.5	4.0	4.0	10	8
100C23	100	65	7.5	3.0	3.0	10	8
100D11	100	55	9.5	4.0	4.0	10	8
90C11	90	65	9.5	4.0	4.0	10	8
90D11	90	55	9.5	4.0	4.0	10	8
75C11	75	65	9.5	4.0	4.0	10	6
75D11	75	55	9.5	4.0	4.0	10	6
75E11	75	40	8.0	3.5	3.5	8	6
75E12	75	40	6.5	2.5	2.5	6	6
75F11	75	35	6.5	2.5	2.5	6	6
65E11	65	60	8.0	3.5	3.5	8	6
65E22	65	40	6.5	2.5	2.5	6	6
65F11	65	35	6.5	2.5	2.5	6	6
50E11	50	40	8.0	3.5	3.5	8	4
50E12	50	40	6.5	2.5	2.5	6	4
50F11	50	35	6.5	2.5	2.5	6	4
40F11	40	35	6.5	2.5	2.5	6	4
30F11	30	25	6.5	2.5	2.5	4	4
25F11	25	25	6.5	2.5	2.5	4	4

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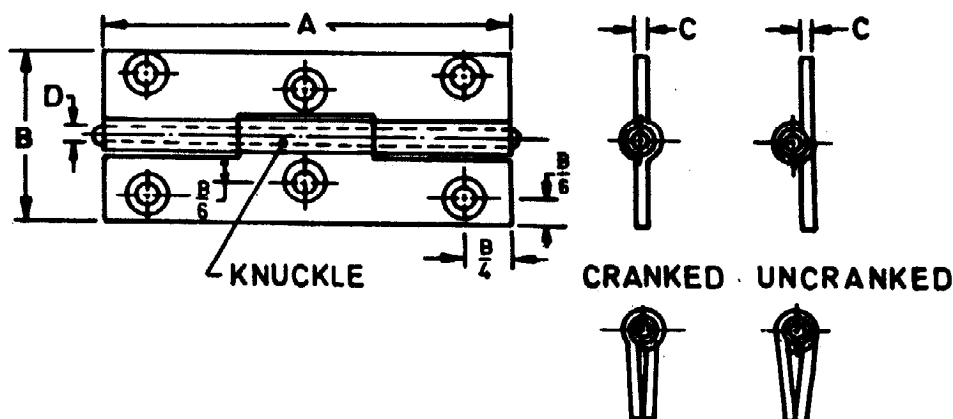


FIG. 2 SHEET BRASS BUTT HINGES (CABINET)

Table 5 Dimensions of Sheet Brass Butt Hinges (For Cabinet)
(Clauses 5.1, 6.2, 6.3.1 and 6.3.2; and Fig. 2)

Hinge Designation	Length	Breadth	Thickness of Flap	Dia of Hinge Pin	Holes for Screw Designation No.	No. of Screw Holes
(1)	A	B	C	d	(6)	(7)
	mm	mm	mm	mm		
25SB	25	15	1.00	1.80	2	4
30SB	30	15	1.00	1.80	4	4
40SB	40	20	1.25	2.00	4	6
50SB	50	25	1.25	2.00	4	6

Table 6 Tolerances of Dimensions of Hinges
(Clause 5.2)

All dimensions in millimetres.

Sl No.	Type	Length	Breadth	Butt Dia	Pin Dia	Thickness of Flap
(1)	(2)	A	B	D	d	C
		(3)	(4)	(5)	(6)	(7)
i)	Extruded aluminium alloy hinges	±1	In accordance with IS 2525 : 1982 or IS 3965 : 1981 or IS 280 : 1978			
ii)	Extruded brass butt hinges	±1	±1	± 0.3	± 0.10	± 0.3
iii)	Cast brass butt hinges					
iv)	Sheet brass butt hinges					

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to a minimum thickness of 0.015 mm and sealed with oil, wax or lanolin. The hinge pin shall be firmly riveted or suitably notched and shall be properly finished. The movement of the hinges shall be free, easy and square, and shall not have any play or shake. Washers shall be provided between the knuckles and these shall be of the same diameter as the butt and shall be made of nylon, plastic, stainless steel or other suitable material.

NOTE — In locations susceptible to atmospheric corrosion, use of brass or phosphor bronze hinge pins is recommended in case of brass hinges.

6.2 Knuckles

The number of knuckles in each hinge specified in Tables 2 to 5 shall not be less than five; the number of knuckles in case of cast brass hinges (see Table 4) of sizes less than 40 mm and in the case of sheet brass hinges specified in Table 5 shall not be less than three.

6.3 Screw Holes

All screw holes shall be countersunk.

6.3.1 The screw holes shall be suitable for countersunk head wood screws conforming to IS 6760 : 1972 and of the sizes specified in Tables 2 to 5 for different types and sizes of hinges. The size of the holes shall be such that when it is countersunk it shall be able to accommodate the full depth of countersunk head of the wood screw specified.

6.3.2 Number of Holes

The number of holes shall be as specified in Tables 2 to 5.

6.3.3 Position of Holes

When only two screw holes are provided in each flap, they shall be in one line but when more than two screw holes are provided they shall be distributed in zig-zag manner as shown in Fig. 1 but shall be equidistant from one another. The distance from the end of flap either parallel to the pin or across it shall be not less than the following:

X (see Fig. 1)

For all size of hinges 9.5 mm

P (see Fig. 1)

For hinges having breadth (*B*)

Up to 35 mm 8 mm

38 mm and above 9.5 mm

P₂ (see Fig. 1)

For hinges having breadth (*B*)

Up to 35 mm 9.5 mm

From 38 mm to 41 mm 11 mm

From 50 mm to 57 mm 14 mm

60 mm 15 mm

64 mm 16 mm

From 66 mm to 73 mm 17 mm

From 76 mm to 85 mm 19 mm

7 WORKMANSHIP AND FINISH

7.1 Hinges shall be free from all defects. All sharp edges shall be rounded.

7.2 Brass hinges shall have bright or satin finish and shall be suitably protected against discoloration. Aluminium alloy hinges shall be anodized and the quality of anodized finish shall not be less than Grade AC 10 of IS 1868 : 1982.

8 PACKING

8.1 Each hinge shall be packed in card board boxes or in any other approved packing. The number of hinges in a package shall be as under:

a) Size up to and including 75 mm 20 pieces

b) Size above 75 mm 10 pieces

NOTE — Hinges may be packed in multiples of six if required by the purchaser.

8.2 Each package shall bear the following particulars:

- Type of hinges;
- Hinge designation;
- Quantity of hinges;
- Name of manufacturer or trade mark, if any; and
- Material of hinge pin.

9 SCALE OF SAMPLING AND CRITERION FOR CONFORMITY

9.1 Lot

In any consignment all the butt hinges of the same type and size manufactured at the same time shall be grouped together to constitute a lot.

9.2 Lot Size and Sample Size

The number of butt hinges to be selected from a lot shall depend on the size of lot and shall be in accordance with col 1 and 2 of Table 7.

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Table 7 Scale of Sampling and Criterion for Conformity

Lot Size	Sample Size	Permissible No. of Defective Hinges
(1)	(2)	(3)
Up to 200	15	0
201 to 300	20	1
301 to 500	30	2
501 to 800	40	2
801 and above	55	3

9.2.1 Butt hinges for testing shall be selected at random from at least 10 percent of the packages subject to a minimum of three packages, equal number of hinges being selected from each such package.

9.3 Tests

All butt hinges as selected in 9.2 shall be

checked for dimensions subject to tolerances defects in manufacture and finish. Any hinge which fails to satisfy these requirements shall be considered as defective hinge.

9.4 Criterion for Conformity

A lot shall be considered as conforming to the requirements of this standard if the number of defective hinges among those tested does not exceed the corresponding number given in col 3 of Table 7, otherwise it shall be considered as not conforming to the requirements of this standard.

10 MARKING

10.1 Each hinge shall be legibly and indelibly marked with the name of manufacturer or trade mark, if any.

10.1.1 The hinge may also be marked with the Standard Mark.

ANNEX A

(Clause 2.1)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
280 : 1978	Mild steel wire for general engineering purposes (<i>third revision</i>)	739 : 1977	Wrought aluminium and aluminium alloy wire for general engineering purposes (<i>second revision</i>)
292 : 1983	Lead brass ingots and castings (<i>second revision</i>)	1868 : 1982	Anodic coatings on aluminium and its alloy (<i>second revision</i>)
319 : 1974	Free-cutting brass bars, rods and sections (<i>third revision</i>)	4413 : 1981	Brass wires for general engineering purposes (<i>first revision</i>)
410 : 1977	Cold rolled brass sheet, strip and foil (<i>third revision</i>)	6528 : 1972	Stainless steel wire
733 : 1983	Wrought aluminium and aluminium alloy bars, rods, and section (for general engineering purposes (<i>third revision</i>)	6760 : 1972	Slotted countersunk head wood screws
		7608 : 1987	Phosphor bronze wires for general engineering purposes (<i>first revision</i>)

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