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(Reaffirmed 1996)

भारतीय मानक

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(पाँचवाँ पुनरीक्षण)

Indian Standard

STEEL BUTT HINGES — SPECIFICATION

(Fifth Revision)

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Price Group 3

FOREWORD

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

This standard was first published in 1959 and subsequently revised in 1962, 1970, 1976 and 1981.

In this revision apart from general updation of the cross referred standards, reference to the use of grade O of IS 513 : 1986 has been incorporated for steel flaps in place of IS 4030 : 1973 which has since been superseded.

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.

Indian Standard

STEEL BUTT HINGES — SPECIFICATION

(Fifth Revision)

1 SCOPE

This standard lays down the requirements regarding materials, dimensions, manufacture and finish of mild steel butt hinges.

NOTE — The requirements of non-ferrous metal butt hinges has been covered in IS 205 : 1992.

2 REFERENCES

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

3 TYPES

Mild steel butt hinges shall be of the following types:

a) Light weight hinges (*see* Table 2)

b) Medium weight hinges (*see* Table 3)

c) Broad type hinges (*see* Table 4)

d) Square type hinges (*see* Table 5)

e) Heavy type I and II hinges (*see* Tables 6 and 7)

4 MATERIALS

Materials used for the manufacture of steel butt hinges shall comply with the requirements given in Table 1.

Table 1 Requirements for Materials for Steel Butt Hinges

(*Clause* 4)

Sl No.	Part	Material	Suitable Grade in Indian Standard
(1)	(2)	(3)	(4)
i)	Flap	Mild steel	Grade O of IS 1079 : 1988 or Grade O of IS 513 : 1986
ii)	Pin	Mild steel wire	Minimum 1/4 H of IS 280 : 1978

5 DIMENSIONS AND TOLERANCES

5.1 The leading dimensions of various types of hinges (*see* Fig. 1) and tolerances thereon shall be given in Tables 2 to 7.

5.2 The size of the hinge shall be denoted by the length (A) of the hinge,

6 MANUFACTURE

6.1 General

Hinges shall be well made and shall be free from flaws and defects of all kinds. All hinges shall be cut clean and square and shall be provided with mild steel hinge pins. The hole for the hinge pin shall be central and square to the knuckles. All sharp edges and corners shall be removed.

6.2 Knuckles

6.2.1 The sides of knuckles shall be straight and at right angle to the flap. The movement of the hinges shall be free and easy, and working shall not have any play or shake.

6.2.2 The number of knuckles in the hinge of different sizes shall be as specified in Tables 2 to 7.

6.3 Pins

The hinge pin shall be of diameters as specified in Tables 2 to 7 for different types and sizes of hinges. It shall fit inside the knuckle firmly and riveted head shall be well formed so as not to allow any play or shake. It shall allow easy movement of the hinge, but shall not cause looseness.

6.4 Screw Holes

All screw holes shall be clean and countersunk to suit countersunk head of wood screws conforming to IS 6760 : 1972. The screw holes shall be of the numbers specified in Tables 2 to 7 for different types and sizes of hinges.

6.4.1 *Number of Holes*

The number of holes to be punched in different types of hinges shall be as specified in Tables 2 to 7.

6.4.2 *Position of Holes*

The centre line of the holes shall be parallel to the pin. In the heavy and medium weight hinges, when only two screw holes in each flap are provided they shall be in one line, but when more than two holes are provided in each flap they shall be distributed in zig-zag manner as shown in Fig. 1. In the light weight hinges, up to three holes are provided in one line, but when more than three holes are provided they shall be distributed in zig-zag manner as shown in Fig. 1. In broad and square types the position of holes shall be as specified in Fig. 1. The distance of the screw holes from the end of the flap either parallel to the pin or across it shall be as follows.

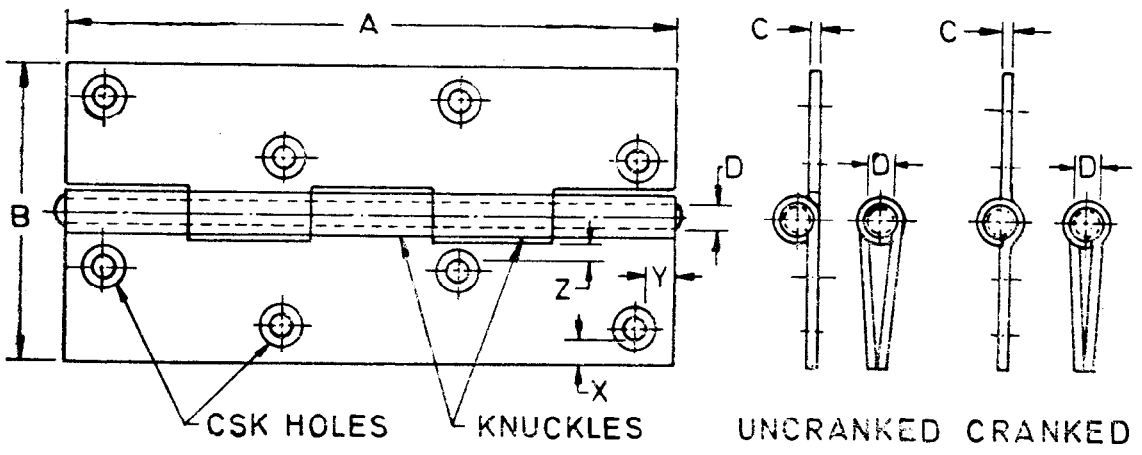

FIG. 1 A TYPICAL MILD STEEL BUTT HINGE

X or *Y* (*see* Fig. 1),	
For hinges of 15, 20 and 25 mm size	2 mm, *Min*
For hinges of 40, 50 and 65 mm size	3·5 mm, *Min*
For hinges of 75, 90 and 100 mm size	5 mm, *Min*
For hinges of 125 mm size and above	7 mm, *Min*
Z (*see* Fig. 1)	
For hinges of 15 mm size	3·5 mm, *Min*
For hinges of 20 mm size and above	4 mm, *Min*

where

X = distance of the end hole from the end of flap measured parallel to the pin;

Y = distance of end hole from the end of flap measured at right angle to the pin; and

Z = distance of the end hole nearest to knuckle edge, where holes are provided in zig-zag manner, from the edge of the knuckle slot.

6.4.2.1 When more than two screw holes are provided in each flap, they shall be equidistant from one another.

7 FINISH

Unless otherwise specified, hinges shall be finished bright with smooth surfaces.

8 MARKING

8.1 Each hinge shall be clearly and permanently marked with the indication of the source of manufacture.

8.2 The hinges may also be marked with the Standard Mark.

9 PACKING

9.1 Hinges shall be packed in cardboard boxes or in any other approved packing in the following quantities:

Sizes of 15, 20 and 25 mm	30 pieces in each package
Sizes over 25 mm up to and including 75 mm	20 pieces in each package
Sizes above 75 mm	10 pieces in each package

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

9.2 Each package shall be labelled showing the following particulars:

a) Type of hinges,

b) Size of hinges,

c) Quantity of hinges, and

d) Indication of the source of manufacture.

10 SAMPLING AND CRITERION FOR CONFORMITY

The method of selecting hinges and the criterion for conformity shall be as given in Annex B.

Table 2 Dimensions of Light Weight Mild Steel Butt Hinges

(*Clauses* 3, 5.1, 6.2.2, 6.3, 6.4 *and* 6.4.1)

Size of Hinge	Length	Breadth	Thickness of Flap	Diameter of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw No.
	A	*B*	*C*	*D*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
mm	mm	mm	mm	mm			
15	15 ± 0·5	18 ± 1	0·63 ± 0·04	2·00 ± 0·08	3	4	2
25	25 ± 0·5	22 ± 1	0·71 ± 0·04	2·00 ± 0·08	3	4	2
40	40 ± 0·5	25 ± 1	0·80 ± 0·04	2·50 ± 0·08	3	4	3
50	50 ± 0·5	30 ± 1	0·90 ± 0·04	2·80 ± 0·08	3	4	3
65	65 ± 0·5	35 ± 1	1·00 ± 0·04	3·15 ± 0·08	5	6	4
75	75 ± 0·5	40 ± 1	1·12 ± 0·04	3·15 ± 0·08	5	6	5
100	100 ± 0·5	50 ± 1	1·25 ± 0·06	3·55 ± 0·08	5	8	6

NOTE — Dimension *B* is for uncranked hinge. For cranked hinge, this dimension will increase accordingly.

Table 3 Dimensions of Medium Weight Mild Steel Butt Hinges

(*Clauses* 3, 5.1, 6.2.2, 6.3, 6.4 *and* 6.4.1)

Size of Hinge	Length	Breadth	Thickness of Flap	Diameter of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw No.
	A	*B*	*C*	*D*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
mm	mm	mm	mm	mm			
20	20 ± 0·5	20 ± 1	1·20 ± 0·06	2·00 ± 0·08	3	4	3
25	25 ± 0·5	25 ± 1	1·25 ± 0·06	2·24 ± 0·08	3	4	4
40	40 ± 0·5	30 ± 1	1·40 ± 0·06	2·50 ± 0·08	3	4	5
50	50 ± 0·5	37 ± 1	1·50 ± 0 06	3·15 ± 0·08	3	4	6
65	65 ± 0·5	42 ± 1	1·60 ± 0 06	3·55 ± 0·08	5	6	6
75	75 ± 0·5	47 ± 1	1·70 ± 0·06	4·00 ± 0·08	5	6	7
90	90 ± 0·5	52 ± 1	1·80 ± 0·06	5·00 ± 0·08	5	6	7
100	100 ± 0·5	58 ± 1	1·90 ± 0·06	5·60 ± 0·08	5	8	8
125	125 ± 0·5	65 ± 1	2·12 ± 0 08	5·60 ± 0·08	5	8	9
150	150 ± 0·5	75 ± 1	2·24 ± 0·08	6·30 ± 0·08	5	8	10

NOTE — Dimension *B* is for uncranked hinge. For cranked hinge, this dimension will increase accordingly.

Table 4 Dimensions of Broad Type Mild Steel Butt Hinges

(*Clauses* 3, 5.1, 6.2.2, 6.3, 6.4 *and* 6.4.1)

Size of Hinge	Length	Breadth	Thickness of Flap	Diameter of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw No.
	A	*B*	*C*	*D*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
mm	mm	mm	mm	mm			
50	50 ± 0·5	45 ± 1	1·50 ± 0·06	4·00 ± 0·08	3	4	6
75	75 ± 0·5	60 ± 1	1·70 ± 0·06	5·00 ± 0·08	5	6	7
100	100 ± 0·5	70 ± 1	1·90 ± 0·06	5·60 ± 0·08	5	8	8
125	125 ± 0·5	80 ± 1	2·12 ± 0·08	6·30 ± 0·08	5	8	10
150	150 ± 0·5	100 ± 1	2·24 ± 0·08	7·10 ± 0·08	5	8	10

NOTE — Dimension *B* is for uncranked hinge For cranked hinge, this dimension will increase accordingly.

Table 5 Dimensions of Square Type Mild Steel Butt Hinges

(*Clauses* 3, 5.1, 6.2.2, 6.3, 6.4 *and* 6.4.1)

Size of Hinge	Length	Breadth	Thickness of Flap	Diameter of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw No.
	A	*B*	*C*	*D*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
mm	mm	mm	mm	mm			
50	50 ± 0·5	50 ± 1	1·70 ± 0·06	5·00 ± 0·08	3	4	6
65	65 ± 0·5	65 ± 1	1·80 ± 0·06	5·60 ± 0·08	5	6	8
75	75 ± 0·5	75 ± 1	2·00 ± 0·06	5·90 ± 0·08	5	6	8
90	90 ± 0·5	90 ± 1	2·25 ± 0·06	5·90 ± 0·08	5	6	9
100	100 ± 0·5	100 ± 1	2·50 ± 0·06	6·30 ± 0·08	5	8	9

NOTE — Dimension *B* is for uncranked hinge. For cranked hinge, this dimension will increase accordingly.

Table 6 Dimensions of Heavy Weight (Type 1) Mild Steel Butt Hinges

(*Clauses* 3, 5.1, 6.2.2, 6.3, 6.4 *and* 6.4.1)

Size of Hinge	Length	Breadth	Thickness of Flap	Diameter of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw No.
	A	*B*	*C*	*D*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
mm	mm	mm	mm	mm			
50	50 ± 0·5	40 ± 1	2·50 ± 0·06	4·00 ± 0·08	3	6	8
65	65 ± 0·5	50 ± 1	2·80 ± 0·06	5·00 ± 0·08	3	6	8
75	75 ± 0·5	60 ± 1	3·15 ± 0·06	5·00 ± 0·08	5	6	9
90	90 ± 0·5	65 ± 1	3·15 ± 0·06	5·00 ± 0·08	5	6	9
100	100 ± 0·5	75 ± 1	3·55 ± 0·08	6·30 ± 0·08	5	8	12
125	125 ± 0·5	90 ± 1	4·00 ± 0·08	7·10 ± 0·08	5	8	12
150	150 ± 0·5	100 ± 1·5	4·50 ± 0·10	8·00 ± 0·08	5	10	12
175	175 ± 0·5	115 ± 1·5	5·00 ± 0·10	9·00 ± 0·08	5	10	14
200	200 ± 0·5	130 ± 1·5	6·00 ± 0·10	10·00 ± 0·08	5	10	11

NOTE — Dimension *B* is for uncranked hinge. For cranked hinge, this dimension will increase accordingly.

Table 7 Dimensions of Heavy Weight (Type 2) Mild Steel Butt Hinges

(*Clauses* 3, 5.1, 6.2.2, 6.3, 6.4 *and* 6.4.1)

Size	Length	Breadth	Thickness of Flap	Diameter of Hinge Pin	No. of Knuckles	No. of Screw Holes	Holes for Screw No.
	A	*B*	*C*	*D*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
mm	mm	mm	mm	mm			
50	50 ± 0.5	38 ± 1	2.00 ± 0.08	3.15 ± 0.08	3	6	6
65	65 ± 0.5	43 ± 1	2.10 ± 0.08	3.55 ± 0.08	5	6	6
75	75 ± 0.5	48 ± 1	2.45 ± 0.08	4.00 ± 0.08	5	6	7
90	90 ± 0.5	53 ± 1	2.50 ± 0.08	5.00 ± 0.08	5	6	7
100	100 ± 0.5	59 ± 1	2.60 ± 0.08	5.60 ± 0.08	5	8	8
125	125 ± 0.5	65 ± 1	2.80 ± 0.08	5.60 ± 0.08	5	8	9
150	150 ± 0.5	75 ± 2	2.80 ± 0.10	6.30 ± 0.08	5	8	10
175	175 ± 0.5	80 ± 2	3.20 ± 0.10	6.30 ± 0.08	5	10	11
200	200 ± 0.5	90 ± 2	3.50 ± 0.10	6.30 ± 0.08	5	10	11

NOTE — Dimension *B* is for uncranked hinge. For cranked hinge, this dimension will increase accordingly.

ANNEX A
(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*	*IS No.*	*Title*
205 : 1992	Non-ferrous metal butt hinges (*fourth revision*)	513 : 1986	Cold rolled low carbon steel sheets and strips (*third revision*)
280 : 1978	Mild steel wire for general engine ring purposes (*third revision*)	1079 : 1988	Hot-rolled carbon steel sheet and strip (*fourth revision*)
		6760 : 1972	Slotted countersunk head wood screws

ANNEX B
(*Clause* 10)

SAMPLING AND CRITERION FOR CONFORMITY

B-1 LOT

In any consignment, all the butt hinges of the same type and size and manufactured from similar materials under identical conditions of manufacture shall be grouped together to constitute a lot.

B-2 SAMPLE SIZE

B-2.1 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 8.

B-2.2 Butt hinges for testing shall be selected at random from at least 10 percent of the randomly selected packages subject to a minimum of three equal number of hinges being selected from each such package.

B-3 TESTS

All butt hinges selected as in **B-2** shall be checked for dimensions and tolerances (*see* **5**), manufacture (*see* **6**) and finish (*see* **7**). Any hinge which fails to satisfy the requirements of any one or more of the characteristics shall be considered as defective hinge.

B-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 8.

Table 8 Scale of Sampling and Criterion for Conformity

(*Clauses* B-2.1 *and* B-4)

Lot Size	Sample Size	Permissible Number of Defective Hinges
(1)	(2)	(3)
Up to 150	5	0
151 to 300	20	1
301 to 500	32	2
501 to 1 000	50	3
1 001 and above	80	5

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'.

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