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Indian Standard

IS 12817 : 2020

स्टेनलैस इस्पात के टक्करदार
कब्जे — विशिष्टि
(तीसरा पुनरीक्षण)

Stainless Steel Butt Hinges —
Specification
(*Third Revision*)

ICS 21.080; 91.190

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Price Group 4

Builder's Hardware Sectional Committee, CED 15

FOREWORD

This Indian Standard (Third 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.

Door hinges are made from different materials like mild steel, brass and aluminium. However, in the case of mild steel hinges in locations where atmospheric moisture levels are high, the hinges begin to rust. Stainless steel hinges are corrosion resistant and are therefore especially useful in areas having high atmospheric moisture content.

This standard was first published in 1989 and subsequently revised in 1997 and 2013. In the first revision in 1997 modifications with regard to the materials of flap and pin and requirements for light, heavy and unequal flap type stainless steel hinges were incorporated. In the second revision in 2013, requirements for an additional type, medium weight (narrow) hinge were incorporated. Further, unequal flap hinges were categorized into two types, light weight unequal and heavy weight unequal flap hinges. In addition, provision for additional sizes of light weight (narrow) type hinges were also incorporated.

This revision has been brought out to incorporate the experience gained in use of the standard since its last revision. In this third revision, following are the significant changes made:

- a) Provisions permitting use of any of the grades as per the revised standards for stainless steel plate, sheet and strip, and for stainless steel wire, have been included.
- b) Tables on dimensions and tolerances for medium weight, medium weight (narrow), unequal flap heavy weight, and heavy weight hinges have been updated.
- c) Cross-references to other Indian Standards have been updated.
- d) Considering varied finishes being now used, the provision for use of other finishes as per the agreement between manufacture and purchaser, has been included.
- e) Marking clause has been revised.

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

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

STAINLESS STEEL BUTT HINGES — SPECIFICATION

(Third Revision)

1 SCOPE

This standard covers types and requirements for materials, dimensions, manufacture and finish of stainless steel butt hinges.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	Title
4905 : 2015/ ISO 24153 : 2019	Random sampling and randomization procedures (first revision)
6528 : 1995	Stainless steel wire — Specification (first revision)
6760 : 1972	Slotted countersunk head wood screws — Specification
6911 : 2017	Stainless steel plate, sheet and strip — Specification (second revision)

3 TYPES

Stainless steel butt hinges shall be of the following types:

- Light weight (narrow) hinges (see Table 1);
- Light weight unequal flap hinges (see Table 2);
- Medium weight hinges (see Table 3);
- Medium weight (narrow) hinges (see Table 4);
- Heavy weight unequal flap hinges (see Table 5); and
- Heavy weight hinges (see Table 6).

4 MATERIALS

4.1 The stainless steel for manufacture of hinges shall be as given in **4.1.1** and **4.1.2**.

4.1.1 Flap

The stainless steel for flap shall conform to any grade mentioned in IS 6911.

4.1.2 Pin

The stainless steel for pin shall conform to any grade mentioned in IS 6528.

5 SIZE

The size of the hinge shall be denoted by the length, A of the hinge.

6 DIMENSIONS AND TOLERANCES

6.1 Typical shapes of stainless steel butt hinges are shown in Fig. 1 and Fig. 2.

6.2 The dimensions and tolerances of various types of stainless steel hinges shall be as given in Tables 1 to 6.

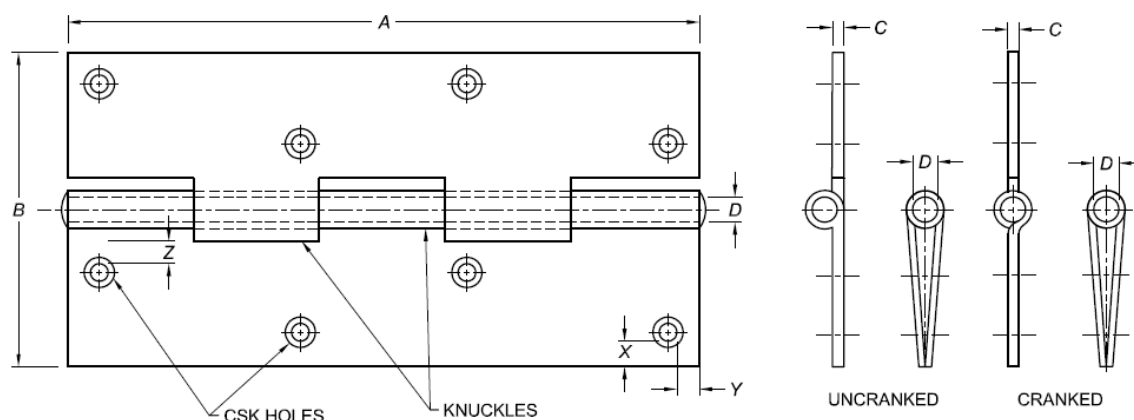


FIG. 1 TYPICAL SKETCH FOR LIGHT, MEDIUM AND HEAVY WEIGHT STAINLESS STEEL BUTT HINGES

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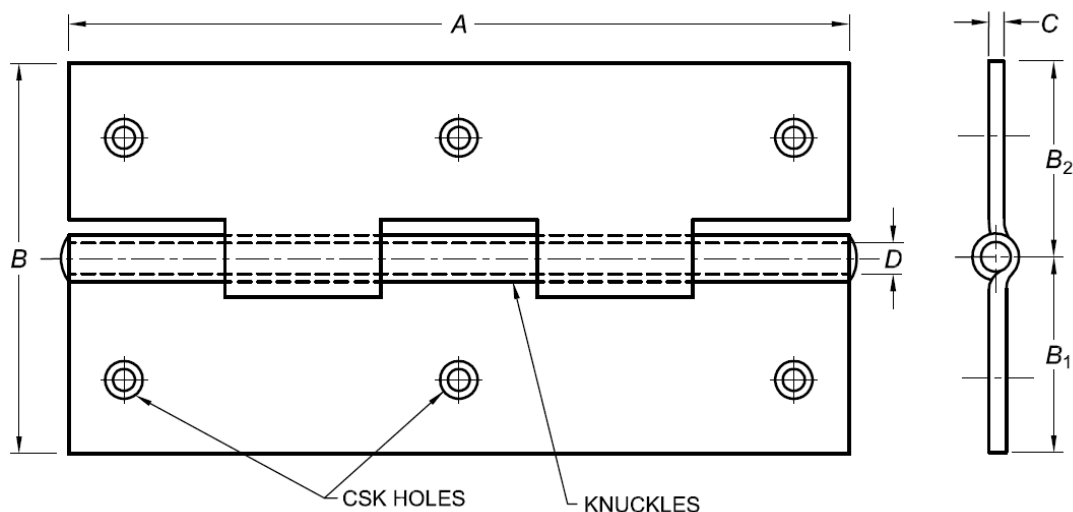


FIG. 2 TYPICAL SKETCH FOR UNEQUAL FLAP STAINLESS STEEL BUTT HINGES

Table 1 Dimensions and Tolerances of Light Weight (Narrow) Stainless Steel Butt Hinges

(Clauses 3, 6.2, 7.2, 7.3, 7.4 and 7.4.1)

Sl No.	Size of Hinge	Length	Breadth	Thickness of Flap	Dia of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw Number
	mm	A mm	B mm	C mm	D mm			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	50	50 ± 0.5	31 ± 1	1.20 ± 0.15	2.6 ± 0.10	3	4	4
ii)	50	50 ± 0.5	37 ± 1	1.20 ± 0.15	2.6 ± 0.10	5	6	4
iii)	65	65 ± 0.5	40 ± 1	1.20 ± 0.15	2.8 ± 0.10	5	6	4
iv)	75	75 ± 0.5	31 ± 1	1.20 ± 0.15	2.8 ± 0.10	5	6	4
v)	75	75 ± 0.5	37 ± 1	1.20 ± 0.15	2.8 ± 0.10	5	6	4
vi)	75	75 ± 0.5	40 ± 1	1.20 ± 0.15	2.8 ± 0.10	5	6	4

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

Table 2 Dimensions and Tolerances of Unequal Flap Light Weight Stainless Steel Butt Hinges

(Clauses 3, 6.2, 7.2, 7.3, 7.4 and 7.4.1)

Sl No.	Size of Hinge	Length		Breadth		Thickness of Flap	Dia of Hinge	Number of Knuckles	Number of Screw Holes	Hole for Screw Number
		A mm	B mm	B ₁ mm	B ₂ mm					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	50 × 10 × 16	50 ± 0.5	31 ± 1	13.0 ± 0.5	18.0 ± 0.5	1.20 ± 0.15	2.6 ± 0.10	5	6	4
ii)	50 × 12 × 19	50 ± 0.5	37 ± 1	16.0 ± 0.5	21.0 ± 0.5	1.20 ± 0.15	2.6 ± 0.10	5	6	4
iii)	65 × 10 × 16	65 ± 0.5	31 ± 1	13.0 ± 0.5	18.0 ± 0.5	1.20 ± 0.15	2.6 ± 0.10	5	6	4
iv)	65 × 12 × 19	65 ± 0.5	37 ± 1	16.0 ± 0.5	21.0 ± 0.5	1.20 ± 0.15	3.4 ± 0.10	5	6	4
v)	75 × 10 × 16	75 ± 0.5	31 ± 1	13.0 ± 0.5	18.0 ± 0.5	1.20 ± 0.15	3.4 ± 0.10	5	6	4
vi)	75 × 12 × 19	75 ± 0.5	37 ± 1	16.0 ± 0.5	21.0 ± 0.5	1.20 ± 0.15	3.4 ± 0.10	5	6	4

Table 3 Dimensions and Tolerances of Medium Weight Stainless Steel Butt Hinges

(Clauses 3, 6.2, 7.2, 7.3, 7.4 and 7.4.1)

Sl No.	Size of Hinge	Length	Breadth	Thickness of Flap	Dia of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw Number
	mm	<i>A</i> mm	<i>B</i> mm	<i>C</i> mm	<i>D</i> mm			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	50	50 ± 0.5	37 ± 1	1.50 ± 0.15	3.15 ± 0.10	3	4	5
ii)	65	65 ± 0.5	42 ± 1	1.60 ± 0.15	3.55 ± 0.10	5	6	5
iii)	75	75 ± 0.5	47 ± 1	1.70 ± 0.15	4.00 ± 0.10	5	6	7
iv)	100	100 ± 0.5	58 ± 1	1.90 ± 0.15	5.60 ± 0.10	5	8	8
v)	125	125 ± 0.5	64 ± 1	1.90 ± 0.15	5.60 ± 0.10	5	8	9
vi)	150	150 ± 0.5	70 ± 1	1.90 ± 0.15	5.60 ± 0.10	5	8	9

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

Table 4 Dimensions and Tolerances of Medium Weight (Narrow) Stainless Steel Butt Hinges

(Clauses 3, 6.2, 7.2, 7.3, 7.4 and 7.4.1)

Sl No.	Size of Hinge	Length	Breadth	Thickness of Flap	Dia of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw Number
	mm	<i>A</i> mm	<i>B</i> mm	<i>C</i> mm	<i>D</i> mm			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	50	50 ± 0.5	35 ± 1	1.30 ± 0.15	2.80 ± 0.10	3	4	4
ii)	65	65 ± 0.5	41 ± 1	1.30 ± 0.15	3.15 ± 0.10	3	6	4
iii)	75	75 ± 0.5	45 ± 1	1.50 ± 0.15	3.55 ± 0.10	5	6	5
iv)	100	100 ± 0.5	56 ± 1	1.60 ± 0.15	5.0 ± 0.10	5	8	7
v)	125	125 ± 0.5	62 ± 1	1.70 ± 0.15	5.0 ± 0.10	5	8	7
vi)	150	150 ± 0.5	68 ± 1	1.80 ± 0.15	5.4 ± 0.10	5	8	8

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

Table 5 Dimensions and Tolerances of Unequal Flap Heavy Weight Stainless Steel Butt Hinges

(Clauses 3, 6.2, 7.2, 7.3, 7.4 and 7.4.1)

Sl No.	Size of Hinge	Length		Breadth		Thickness of Flap	Dia of Hinge	Number of Knuckles	Number of Screw Holes	Hole for Screw Number
	mm	<i>A</i> mm	<i>B</i> mm	<i>B</i> ₁ mm	<i>B</i> ₂ mm	<i>C</i> mm	<i>D</i> mm			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	75 × 10 × 16	75 ± 0.5	33 ± 1	14 ± 0.5	19 ± 0.5	1.5 ± 0.15	3.4 ± 0.10	5	6	6
ii)	75 × 13 × 19	75 ± 0.5	37 ± 1	15.5 ± 0.5	21.5 ± 0.5	1.5 ± 0.15	3.4 ± 0.10	5	6	6
iii)	100 × 13 × 19	100 ± 0.5	40 ± 1	17 ± 0.5	23 ± 0.5	1.5 ± 0.15	3.4 ± 0.10	5	8	6

NOTE — In cases where the flap is too thin, screw holes in a straight line may also be adopted

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Table 6 Dimensions and Tolerances of Heavy Weight Stainless Steel Butt Hinges

(Clauses 3, 6.2, 7.2, 7.3, 7.4 and 7.4.1)

Sl No.	Size of Hinge	Length	Breadth	Thickness of Flap	Dia of Hinge Pin	Number of Knuckles	Number of Screw Holes	Holes for Screw Number
	mm	<i>A</i> mm	<i>B</i> mm	<i>C</i> mm	<i>D</i> mm			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	75	75 ± 0.5	47 ± 1	2.50 ± 0.15	5.0 ± 0.10	5	6	7
ii)	100	100 ± 0.5	59 ± 1	2.50 ± 0.15	5.6 ± 0.10	5	8	8
iii)	125	125 ± 0.5	65 ± 1	2.50 ± 0.15	5.6 ± 0.10	5	8	9
iv)	150	150 ± 0.5	75 ± 1	2.50 ± 0.15	5.6 ± 0.10	5	8	10

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

7 MANUFACTURE

7.1 General

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

7.2 Knuckles

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. The number of knuckles in the hinges of different sizes shall be as specified in Tables 1 to 6.

7.3 Pins

The hinge pin shall be of diameters as specified in Tables 1 to 6 for different types and sizes of hinges. Pin 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.

7.4 Screw Holes

All screw holes shall be clean and suitable for countersunk head of wood screws as per IS 6760 of number as specified in Tables 1 to 6 for different types and sizes of hinges.

7.4.1 Number of Holes

The number of holes to be punched in different sizes of hinges shall be as specified in Tables 1 to 6. Hinges may also be supplied without holes in one flap or without holes in both flaps if required by purchaser.

7.4.2 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 and Fig. 2. In light weight and unequal flap hinges (both light weight and heavy weight), 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. The distance of the screw holes from the end of the flap either parallel to the pin or across it, shall be as follows:

a) *X* or *Y* (Min):

1) Light weight (narrow) and medium weight (narrow) (see Fig. 1):

For hinges of 50 mm, 65 mm : 3.5 mm
75 mm or 100 mm

2) Medium and heavy weight (see Fig. 1):

- i) For hinges up to 65 mm size : 3.5 mm
- ii) For hinges of 75 mm and : 5 mm
100 mm size
- iii) For hinges of 125 mm size : 7 mm and
above

3) Unequal flap (see Fig. 2):

For hinges of 50 mm, 65 mm : 3 mm
75 mm or 100 mm

b) *Z* (Min):

1) Light weight (narrow) and medium weight (narrow) (see Fig. 1):

For hinges of 50 mm, 65 mm : 3 mm
75 mm or 100 mm

2) Medium and heavy weight (see Fig. 1):

- i) For hinges up to 65 mm : 4 mm
- ii) For hinges of 75 mm or : 4 mm
100 mm
- iii) For hinges of 125 mm and : 4 mm
above

3) Unequal flap (see Fig. 2):

For hinges of 50 mm, 65 mm : 2 mm
75 mm or 100 mm

where

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

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

Z = distance of end hole nearest to knuckle edge,

where holes are provided in zig-zag manner, from the edge of knuckle slot.

8 FINISH

Unless otherwise specified, hinges shall be naturally finished bright with smooth surface without chemical coating. Other finishes can be supplied as agreed to between the manufacturer and the purchaser.

9 SAMPLING AND CRITERION FOR CONFORMITY

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

10 MARKING

Each hinge shall be legibly and indelibly marked with the manufacturer's name or trade-mark and type on the body, either inside or outside as found convenient to the manufacturer.

10.1 BIS Certification Marking

The products(s) conforming to the requirement of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products(s) may be marked with the Standard Mark.

11 PACKING

11.1 Hinges shall be packed in cardboard boxes or any other approved packing in the following quantities or multiples of 5:

- a) 50, 65, 75 mm size — 20 pieces in each package; and
- b) 100, 125, 150 mm size — 10 pieces in each package.

11.2 Each packing shall be labeled showing the following particulars:

- a) Type of hinges,
- b) Size of hinges,
- c) Quantity of hinges, and
- d) Indication of the source of manufacture.

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ANNEX A

(Clause 9)

SAMPLING AND CRITERION FOR CONFORMITY

A-1 LOT

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

A-2 SAMPLE SIZE

A-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 2 and col 3 of Table 7.

A-2.2 Butt hinges for testing shall be selected at random from at least 10 percent of the packages subject to a minimum of three equal number of hinges being selected from each such package. In order to ensure the randomness of selection, procedure given in IS 4905 may be followed.

A-3 TESTS

All butt hinges selected as in **A-2** shall be checked for dimension and tolerance (*see 6*), manufacture (*see 7*), and finish (*see 8*). Any hinge which fails to satisfy the requirements of any one or more of the characteristics shall be considered as defective hinge.

A-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 acceptance number given in col 4 of Table 7, otherwise the lot shall be deemed as not meeting the requirements of this standard.

Table 7 Scale of Sampling and Criterion for Conformity

(Clauses A-2.1 and A-4)

SI No.	Lot Size	Sample Size	Acceptance Number
(1)	(2)	(3)	(4)
i)	Up to 50	13	1
ii)	51 to 90	20	1
iii)	91 to 150	32	2
iv)	151 to 280	50	3
v)	281 to 500	80	5
vi)	501 to 1 200	125	7
vii)	1 201 to and above	200	10

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Builder's Hardware Sectional Committee, CED 15

<i>Organization</i>	<i>Representative(s)</i>
In Personal Capacity (1421, Sector A, Pocket B & C, Vasant Kunj, New Delhi 110070)	SHRI B. MAJUMDAR (Chairman)
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Builders' Association of India, New Delhi	SHRI NEERAV PARMAR SHRI H. S. PSRICHA (<i>Alternate</i>)
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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 Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

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