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IS 2412 (1975): Link clips for electrical wiring [ETD 14: Electrical Wiring Accessories]



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Indian Standard
SPECIFICATION FOR
LINK CLIPS FOR ELECTRICAL WIRING
(First Revision)

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BUREAU OF INDIAN STANDARDS
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*Indian Standard*SPECIFICATION FOR
LINK CLIPS FOR ELECTRICAL WIRING*(First Revision)*

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Indian Standard
SPECIFICATION FOR
LINK CLIPS FOR ELECTRICAL WIRING
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 17 September 1975, after the draft finalized by the Electrical Wiring Accessories Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 This standard covers the requirements for link clips made of aluminium, used for general wiring purposes. Two types of link clips, namely, joint link clips and link clips with separate linking eyes, are covered in this standard.

0.3 This revision has been undertaken to take into consideration some of the latest developments and experiences in this field.

0.4 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements and the tests for link clips (both joint link clips and link clips with separate linking eyes) for general wiring purposes.

2. TERMINOLOGY

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

*Rules for rounding off numerical values (*revised*).

IS : 2412 - 1975

2.1 Type Tests — Tests carried out to prove conformity with the requirements of this standard. These are intended to prove the general qualities and design of a given type of link clip.

2.2 Acceptance Tests — Tests carried out on samples taken from a lot for purposes of acceptance of the lot.

3. MATERIAL

3.1 Link clips shall be manufactured from aluminium sheet or strip in the annealed condition.

NOTE — Aluminium sheets conforming to Grade 19000-0 and 40800-0 of IS : 737-1974* are suitable for this purpose.

4. CONSTRUCTION AND FINISH

4.1 Construction — The link clips and the linking eyes (if separate) shall be smooth, free from dents or burrs, or other irregularities and the corners shall be rounded off smoothly.

4.1.1 Fixing Hole — There shall be one fixing hole for sizes up to and including 40 mm, and two for sizes above 40 mm (*see* Fig. 1 and 2).

4.2 Finish — The aluminium link clips and the linking eyes (if separate) shall be free from any mark of corrosion.

5. DIMENSIONS

5.1 Link Clips with Separate Linking Eyes — The dimensions of link clips with separate linking eyes shall be in accordance with Table 1 read with Fig. 1.

TABLE 1 DIMENSIONS OF LINK CLIPS WITH SEPARATE LINKING EYES

SIZE	LENGTH <i>L</i>	THICKNESS	WIDTH	REF TO FIG.
(1)	(2) mm	(3) mm	(4) mm	(5)
25	25	0.32	8.0	1A
32	32	0.32	8.0	1A
40	40	0.32	8.0	1A
50	50	0.40	8.0	1B
63	63	0.40	8.0	1B
80	80	0.40	8.0	1B

*Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (*second revision*).

AMENDMENT NO. 1 JANUARY 1982

TO

IS :2412-1975 SPECIFICATION FOR LINK CLIPS FOR
ELECTRICAL WIRING

(First Revision)

Addenda

(Page 4, clause 5.1) - Add the following new
clause after 5.1:

'5.1.1 The values of thickness are minimum values to which the link clips shall comply. The tolerances on other dimensions shall be ± 5 percent, unless otherwise specified.'

(Page 5, clause 5.2) - Add the following new
clause after 5.2:

'5.2.1 The values of thickness are minimum values to which the link clips shall comply. The tolerances on other dimensions shall be ± 5 percent, unless otherwise specified.'

(ETDC 44)

AMENDMENT NO. 2 JANUARY 1984
TO
IS:2412-1975 SPECIFICATION FOR LINK CLIPS FOR
ELECTRICAL WIRING

(First Revision)

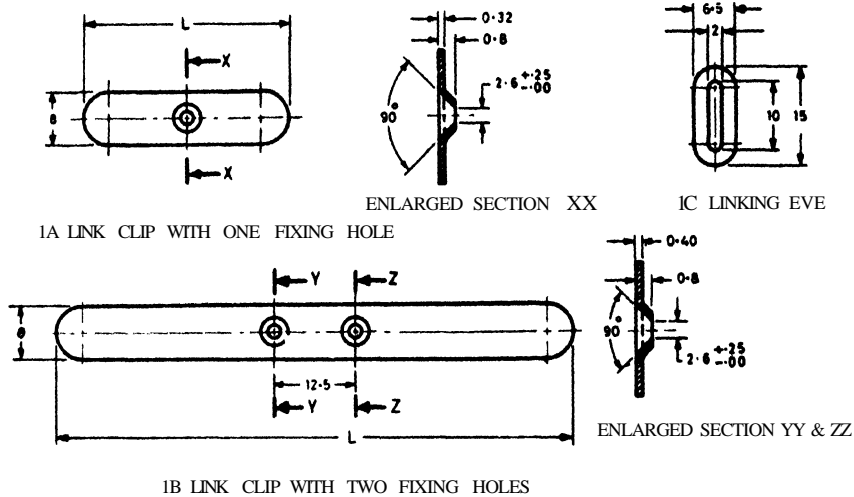
Alteration

Page 5, Table 2, col 5:

- a) *First entry* - Substitute '4' for '5'.
- b) *Second entry* - Substitute '7' for '10'.

(ETDC 44)

Reprography Unit, BIS, New Delhi, India



All dimensions in millimetres.

FIG. 1 LINK CLIP WITH SEPARATE LINKING EYES

5.2 Joint Link Clips — The dimensions of joint link clips shall be in accordance with Table 2 read with Fig. 2.

TABLE 2 DIMENSIONS OF JOINT LINK CLIPS

SIZE	LENGTH L	THICK- NESS	WIDTH	DISTANCE OF THE FIXING HOLE D	SPACING BETWEEN THE FIXING HOLES S	REF TO FIG.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	mm	mm	mm	mm	mm	
16	16	0.32	8.0	5	—	2A
25	25	0.32	8.0	10	—	2A
32	32	0.32	8.0	10	—	2A
40	40	0.32	8.0	12.5	—	2A
50	50	0.40	8.0	12.5	12.5	2B
63	63	0.40	8.0	20	12.5	2B
80	80	0.40	8.0	25	12.5	2B

A-2. SCALE OF SAMPLING

A-2.1 The number of link clips to be selected from the lot depends upon the size of the lot and shall be in accordance with Table 3.

TABLE 3 SCALE OF SAMPLING

LOT SIZE	FIRST SAMPLE (N_1)	SECOND SAMPLE (N_2)	(N_1+N_2)	C_1	C_2
(1)	(2)	(3)	(4)	(5)	(6)
1 001 to 3 000	20	20	40	1	4
3 001 „ 5 000	32	32	64	2	6
5 001 „ 10 000	50	50	100	3	8
10 001 „ 20 000	80	80	160	5	12
20 001 and above	125	125	250	7	18

A-2.1.1 The link clips for testing shall be selected from at least 10 percent of the boxes selected at random, subject to a minimum of three boxes, and an equal number of link clips, selected at random from each of such box. If the total number of boxes is less than three, the link clips shall be selected from every box.

A-3. ACCEPTANCE TESTS

A-3.1 The link clips, selected as in **A-2.1.1** shall be subjected to the tests mentioned in **7.2** to **7.4**.

A-4. CRITERIA FOR CONFORMITY

A-4.1 The lot shall be considered as conforming to the requirements of the acceptance tests if the conditions mentioned in **A-4.2** are satisfied.

A-4.2 A link clip is called a defective if it fails in one or more of the acceptance tests. The lot shall be considered as conforming to the requirements of the tests mentioned under **7.2** to **7.4** if the number of defectives in the first sample N_1 is less than or equal to C_1 given in col 5 of Table 3. If the number of defectives is greater than or equal to C_2 given in col 6 of Table 3, the lot shall be considered as not conforming to the requirements of the tests mentioned under **7.2** to **7.4**. If the number of defectives is between C_1 and C_2 a further sample of N_2 link clips shall be selected and subjected to the tests mentioned under **7.2** to **7.4**. If the number of defectives in the two samples combined is less than C_2 , the lot shall be considered as conforming to the requirement of the tests mentioned under **7.2** to **7.4** otherwise not.

7. TESTS

7.1 Classification of Tests

7.1.1 Type Tests — The following shall constitute the type tests :

- a) General examination (*see 7.2*),
- b) Dimensions (*see 7.3*), and
- c) Flexibility (*see 7.4*).

7.1.1.1 Number of samples — Fifty samples of link clips of a particular type and size shall be selected preferably at random, from a regular production lot, and tests described in 7.2 to 7.4 shall be carried out on them.

7.1.1.2 Criteria for conformity — Not more than two failures (out of the fifty samples selected) shall be allowed in tests 7.2 to 7.4.

7.1.2 When acceptance of lots is involved, the selection of samples, tests to be conducted and the criteria for conformity shall be in accordance with Appendix A.

7.2 General Examination — The link clips shall be examined for conformity with the requirements specified in 4.1.

7.3 Dimensions — The dimensions of the link clips and the linking eyes (if separate) shall be checked for conformity with those specified in 5.

7.4 Flexibility — The link clips shall be wound round a mandrel of 5 mm diameter and fixed with linking eye. It shall then be opened out, flattened by hand and again wound and fixed. At the end of five such operations, the clip shall retain its flexibility and shall be fit for use.

APPENDIX A

(Clause 7.1.2)

SAMPLING SCHEME FOR LINK CLIPS

A-1. LOT

A-1.1 In any consignment, all the link clips of the same type and size manufactured under similar conditions of production shall be grouped together to constitute a lot.

A-1.2 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of the specified acceptance tests.

A-2. SCALE OF SAMPLING

A-2.1 The number of link clips to be selected from the lot depends upon the size of the lot and shall be in accordance with Table 3.

TABLE 3 SCALE OF SAMPLING

LOT SIZE	FIRST SAMPLE (N_1)	SECOND SAMPLE (N_2)	(N_1+N_2)	C_1	C_2
(1)	(2)	(3)	(4)	(5)	(6)
1 001 to 3 000	20	20	40	1	4
3 001 „ 5 000	32	32	64	2	6
5 001 „ 10 000	50	50	100	3	8
10 001 „ 20 000	80	80	160	5	12
20 001 and above	125	125	250	7	18

A-2.1.1 The link clips for testing shall be selected from at least 10 percent of the boxes selected at random, subject to a minimum of three boxes, and an equal number of link clips, selected at random from each of such box. If the total number of boxes is less than three, the link clips shall be selected from every box.

A-3. ACCEPTANCE TESTS

A-3.1 The link clips, selected as in **A-2.1.1** shall be subjected to the tests mentioned in **7.2** to **7.4**.

A-4. CRITERIA FOR CONFORMITY

A-4.1 The lot shall be considered as conforming to the requirements of the acceptance tests if the conditions mentioned in **A-4.2** are satisfied.

A-4.2 A link clip is called a defective if it fails in one or more of the acceptance tests. The lot shall be considered as conforming to the requirements of the tests mentioned under **7.2** to **7.4** if the number of defectives in the first sample N_1 is less than or equal to C_1 given in col 5 of Table 3. If the number of defectives is greater than or equal to C_2 given in col 6 of Table 3, the lot shall be considered as not conforming to the requirements of the tests mentioned under **7.2** to **7.4**. If the number of defectives is between C_1 and C_2 a further sample of N_2 link clips shall be selected and subjected to the tests mentioned under **7.2** to **7.4**. If the number of defectives in the two samples combined is less than C_2 , the lot shall be considered as conforming to the requirement of the tests mentioned under **7.2** to **7.4** otherwise not.

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