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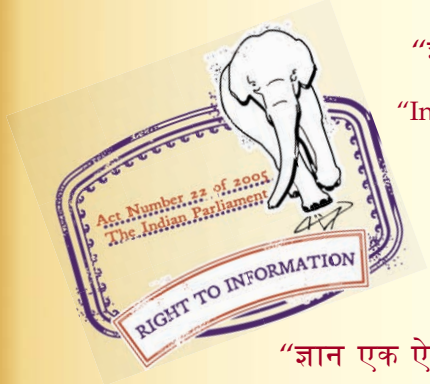

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IS : 1492 - 1970

Indian Standard

SPECIFICATION FOR METRIC SURVEYING CHAINS

(First Revision)

Second Reprint JUNE 1984
(Incorporating Amendment No. 1)

UDC 528 · 512

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

Gr 4

March 1971

AMENDMENT NO. 2 DECEMBER 1979

TO

IS:1492-1970 SPECIFICATION FOR METRIC SURVEYING CHAINS

(First Revision)

Alteration

(*Page 9, clause 5.1, line 2*) - Substitute '27 ± 2°C' *for* '20°C'.

(EDC 36)

Printed at Simco Printing Press, Delhi, India

Indian Standard

SPECIFICATION FOR METRIC SURVEYING CHAINS

(First Revision)

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Indian Standard

SPECIFICATION FOR METRIC SURVEYING CHAINS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 28 October 1970, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 This standard was first issued in 1959. The main modification made in this revision pertains to the inclusion of surveying chains of 5 m and 10 m lengths.

0.3 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, 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 for link type surveying chains of 5 m, 10 m, 20 m and 30 m lengths used in land measurement.

2. TERMINOLOGY

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

2.1 Surveying Chain — A length measuring device used for the purpose of obtaining surface distances between two points.

2.2 Length of Chain — The overall distance between the outside surface of the handles when fully stretched.

---

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

2.3 **Tallies** — Metallic tags or indicators of distinctive patterns fixed at various distinctive points of the chain to facilitate quick reading of fractions of a chain in surveying measurements.

3. MATERIAL

3.1 The different components of the chains shall be made from the materials mentioned against each:

Component	*Material*
Handle	Brass castings, preferably complying with IS : 292-1961*
Eye bolt, collar	Brass suitable for free cutting and high speed machining, preferably complying with IS : 319-1968†
Ring; link, small; link, large; link, connecting	Galvanized mild steel wire, 4·00 mm, preferably complying with IS : 280-1962‡
Tally	Brass sheet, preferably complying with Designation CuZn40 of IS : 410-1967§, or galvanized mild steel sheet, preferably complying with IS : 277-1969‖
Indicator ring	Brass wire

4. CONSTRUCTIONAL DETAILS

4.1 The nomenclature of the different parts of the chains and their dimensions shall be as indicated in Fig. 1.

4.2 To enable the reading of fractions of a chain without much difficulty, tallies shall be fixed at every metre length for chains of 5 m and 10 m lengths (*see* Fig. 2 and 3) and at every five-metre length for chains of 20 m and 30 m lengths (*see* Fig. 4 and 5). In the case of 20-m and 30-m chains, small brass rings shall be provided at every metre length except where tallies are attached. The tallies shall have distinctive shapes depending on their positions in chains as shown in Fig. 2 and 3.

4.2.1 The shapes of tallies for chains of 5 m and 10 m lengths for different positions shall be as shown in Fig. 6.

---

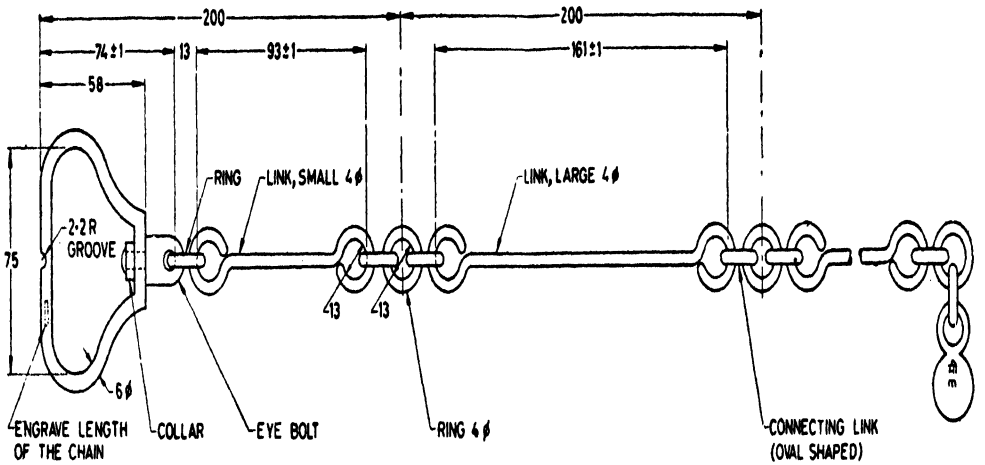
*Specification for brass ingots and castings (*revised*).

†Specification for free-cutting brass rods and sections (*second revision*).

‡Specification for mild steel wire for general engineering purpose (*revised*).

§Specification for rolled brass plate, sheet, strip and foil (*second revision*).

‖Specification for galvanized steel sheets (plain and corrugated) (*second revision*).



All dimensions in millimetres.

FIG. 1 NOMENCLATURE AND DIMENSIONS OF DIFFERENT PARTS OF CHAIN

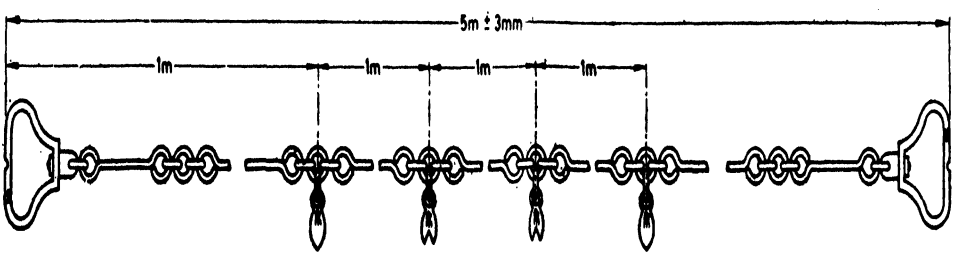


FIG. 2 5-METRE CHAIN

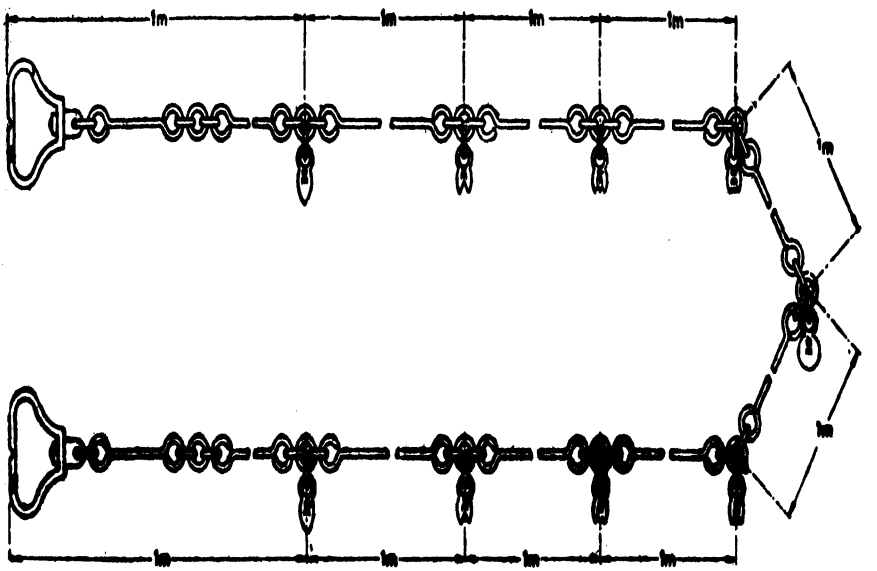


FIG. 3 10-METRE CHAIN

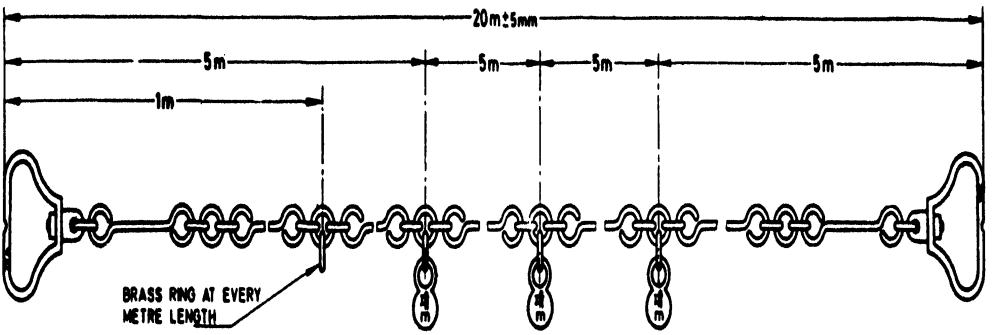


FIG. 4 20-METRE CHAIN

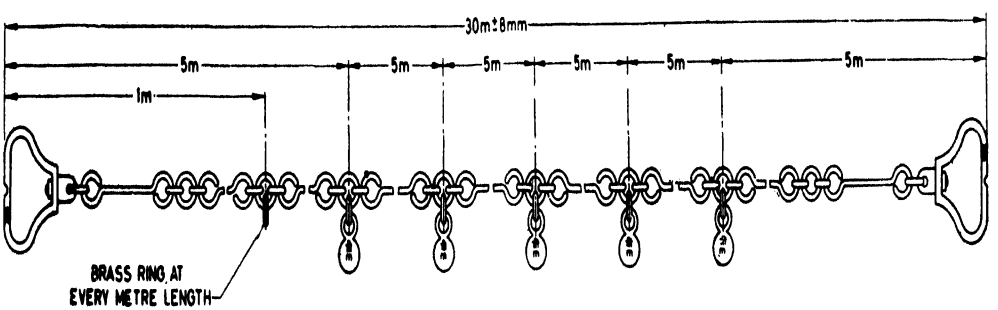
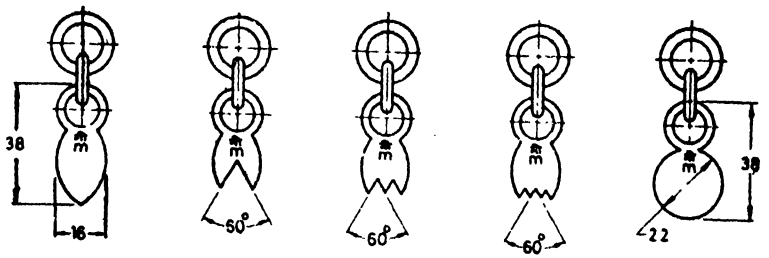


FIG. 5 30-METRE CHAIN



For 1 metre and 9 metres | For 2 metres and 8 metres | For 3 metres and 7 metres | For 4 metres and 6 metres | For 5 metres

FIG. 6 SHAPES OF TALLIES FOR CHAINS

4.3 The connecting links between two large links shall be oval in shape, the central one being a circular ring.

4.4 To facilitate holding the arrows (chain pins) in position with the handle of the chain, a groove shall be cut on the outside surface of the handle as shown in Fig. 1. The radius of the groove shall correspond to the radius of the arrows.

4.5 The handle joint shall have flexibility so that it would be possible to swivel the handle round the eye bolt. A swivel may also be provided at the middle of the chain.

5. TOLERANCES ON LENGTH

5.1 When measured with a tension of 8 kg and checked against a certified steel band or tape which has been standardized at 20°C, every metre length shall be accurate to within ±2 mm and the overall length of the chains shall be within the following tolerances:

5-metre chains	±3 mm
10-metre chains	±3 mm
20-metre chains	±5 mm
30-metre chains	±8 mm

6. MARKING

6.1 The tallies used for marking distances in the metric chains shall be marked with the letters 'मी' and 'm' (*see* Fig. 1 to 6) in order to distinguish them from non-metric chains.

6.2 The length of the chain, 5 m, 10 m, 20 m or 30 m as the case may be, shall be engraved on both the handles (*see* Fig. 2 to 5) to indicate the length and also to distinguish the chains from non-metric chains.

6.3 The chains shall be indelibly marked on the reverse side of the surface of the handle having the denomination, with the manufacturer's name or trade-mark and, if required, the year of manufacture.

6.4 The chains may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7. PACKING

7.1 The chains shall be individually wrapped in grease-resisting paper and suitably packed in a packing case lined with kraft paper. The number of chains to be packed in the packing case shall be as follows:

Length of Chain	*Number*
5 m	20
10 m	10
20 m and 30 m	5

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 $kg.m/s^2$
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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