इंटरनेट मानक

Disclosure to Promote the Right To Information

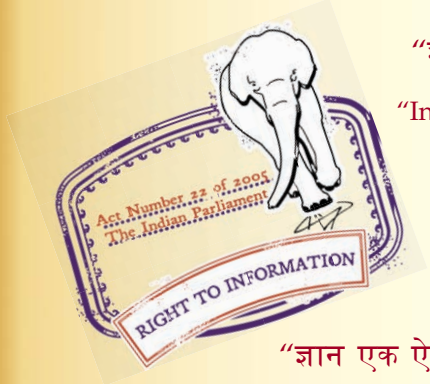
Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 1491 (1959): Metric Scales for Architectural Purposes
[PGD 22: Educational Instruments and Equipment]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"



"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

IS : 1491 - 1959
(Reaffirmed 2006)

Indian Standard

SPECIFICATION FOR METRIC SCALES FOR ARCHITECTURAL PURPOSES

First Reprint FEBRUARY 1964
Second Reprint OCTOBER 1967

UDC 389·151 : 531·716·1 : 72·022

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 1

February 1960

Indian Standard

SPECIFICATION FOR METRIC SCALES FOR ARCHITECTURAL PURPOSES

First Reprint FEBRUARY 1964
Second Reprint OCTOBER 1967

Optical and Mathemetical Instruments Sectional Committee, EDC 36

Chairman

DR C. S. RAO	Defence Research & Development Organization (Ministry of Defence)

Members

ASSISTANT DIRECTOR STANDARDIZATION (CIVIL)	Research, Design & Standardization Organization (Ministry of Railways)
SHRI K. L. BAJAJ	Directorate General of Ordnance Factories (Ministry of Defence), Calcutta
SHRI BALVIR SINGH	Grah Udyog Sahakari Samiti Ltd, Roorkee
SHRI I. S. GHULATI	Office of the Development Commissioner, Small Scale Industries (Ministry of Commerce & Industry)
COL R. S. KALHA	Survey of India, Dehra Dun
LT-COL S. K. S. MUDALIAR (*Alternate*)	
SHRI N. M. MALKANI	Central Public Works Department
SHRI PREM PRAKASH	National Physical Laboratory (CSIR), New Delhi
SHRI P. HARIHARAN (*Alternate*)	
SHRI S. RAGHAVACHARI	Central Water & Power Commission, New Delhi
SHRI D. P. JETHWANI (*Alternate*)	
SHRI E. B. RAJDERKAR	Raj-Der-Kar & Co, Bombay
SHRI E. N. NAIR (*Alternate*)	
CDR S. RAJENDRA	Indian Navy
DR I. RAMAKRISHNA RAO	Madras Institute of Technology, Madras
SHRI A. N. SEN	National Instruments Ltd, Calcutta
SHRI R. R. CHAKRAVARTY (*Alternate*)	
PROF S. R. SINGH	Roorkee University, Roorkee
SHRI P. V. SUBBA RAO	Andhra Scientific Co Ltd, Masulipatam
SHRI M. M. VADI	Development Wing, Ministry of Commerce & Industry
DR S. P. VERMA (*Alternate*)	
SHRI K. SRINIVASA RAO (*Alternate*)	

(*Continued on page* 2)

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 1

(*Continued from page* 1)

Members

SHRI H. C. VERMA	Associated Instruments Manufacturer (India) Ltd, New Delhi
DR LAL C. VERMAN (*Ex-officio*)	Director, ISI

Secretary

SHRI M. V. PATANKAR	Assistant Director (Eng), ISI

Drawing Instruments Subcommittee, EDC 36 : 1

Convener

SHRI S. K. RAJAGOPALAN	Roads Organization, Ministry of Transport & Communications

Members

SHRI R. M. APTE	Machine Tool Prototype Factory, Ambarnath
SHRI BALESHWAR NATH	Central Board of Irrigation & Power (Ministry of Irrigation & Power)
SHRI BALVIR SINGH	Grah Udyog Sahakari Samiti Ltd, Roorkee
SHRI A. N. BHATTACHARYYA	Defence Research & Development Organization (Ministry of Defence), Calcutta
SHRI S. S. DHARMAYYA (*Alternate*)	
SHRI R. R. CHAKRAVARTY	National Instruments Ltd, Calcutta
SHRI R. N. DAS	Directorate General of Ordnance Factories (Ministry of Defence), Calcutta
SHRI I. S. GHULATI	Office of the Development Commissioner, Small Scale Industries (Ministry of Commerce & Industry)
COL R. S. KALHA	Survey of India, Dehra Dun
SHRI B. R. MANKHAND	The Koh-i-Noor (India) Private Ltd, Banaras
SHRI PREM PRAKASH	National Physical Laboratory (CSIR), New Delhi
SHRI P. HARIHARAN (*Alternate*)	
SHRI D. M. SEN	Indian Engineering Association, Calcutta

Indian Standard

SPECIFICATION FOR METRIC SCALES FOR ARCHITECTURAL PURPOSES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 16 November 1959, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee had been approved by the Engineering Division Council.

0.2 This standard is one of a series of Indian Standards on metric scales being prepared by the Institution in connection with the changeover to the metric system; the other standards in the series are:

IS : 1480-1960 METRIC SCALES FOR GENERAL PURPOSES

IS : 1481-1961 METRIC STEEL SCALES FOR ENGINEERS

IS : 1482-1960 METRIC SCALES FOR USE WITH DRAFTING MACHINES

0.3 Throughout this standard, the term 'scale' has been used to denote the ratio of enlargement or reduction to which the drawings are to be made from these scales. The term 'Scale' (with *S* in capital) has been used to indicate a strip of material of suitable cross-section with figured divisions along the edge or edges so that dimensions may be read or transferred to a drawing or map.

0.4 The scales specified in this standard are based on the reduction scales recommended for general engineering purposes in *IS : 696-1955 Code of Practice for General Engineering Drawings. In addition, scales of 1 : 500 and 1 : 1 000, used mostly for preparation of drawings for construction of roads, bridges and railways, have been included. A set of paper Scales will, therefore, comprise of six different pieces of Scales with which architects, engineers and surveyors are mostly concerned.

0.5 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 the latest version of *IS : 2-1949 Rules for Rounding Off Numerical Values. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Since revised.

0.6 This standard is intended chiefly to cover the technical provisions relating to metric Scales used for architectural purposes, and it does not include all the necessary provisions of a contract.

---

1. SCOPE

1.1 This standard covers the requirements for metric Scales, made of varnished cardboard or of plastic material, used by architects, engineers and surveyors.

2. SCALE DESIGNATIONS

2.1 This standard recognizes six different scales, designated as A, B, C, D, E and F, and marked with 12 different scales of reduction as given below:

A	full size	(1 : 1)
	50 cm to a metre	(1 : 2)
B	40 cm ,,	(1 : 2·5)
	20 cm ,,	(1 : 5)
C	10 cm ,,	(1 : 10)
	5 cm ,,	(1 : 20)
D	2 cm ,,	(1 : 50)
	1 cm ,,	(1 : 100)
E	5 mm ,,	(1 : 200)
	2 mm ,,	(1 : 500)
F	1 mm ,,	(1 : 1 000)
	0·5 mm ,,	(1 : 2 000)

3. MATERIALS

3.1 Paper Scales — Cardboard paper or paper-backed cardboard shall be used for printing the Scales. A single composite white cardboard of the type commonly known as duplex, triplex and mill-board shall be preferred (namely, Bristol Board). The finish of the surface shall be preferably glossy. The cardboard from which the blanks are cut shall be smooth, and shall be free from any visible defects like decay, insect attacks, etc. The material shall be able to stand atmospheric moisture under normal conditions.

3.2 Plastic Scales — Rigid polyvinyl chloride or polyvinyl chloride copolymer sheets shall be used for the purpose. The sheets shall be smooth, even on all sides and free from blisters, porosity and other defects.

4. DIMENSIONS AND GRADUATIONS

4.1 The leading dimensions of the Scales shall be as shown in Fig. 1.

4.2 Graduations — The Scales shall be divided and subdivided as shown in Fig. 1. They shall be graduated on both the edges on one face only.

4.2.1 Graduations shall consist of fine, clear lines of uniform thickness. The thickness of the finest lines for the subdivisions of the Scale shall be 0·10 mm and that for the main division shall be 0·15 mm.

4.2.2 The length of the graduating lines shall be as follows:

	mm
cm marks	6
5-mm marks	4
mm marks other than 5-mm	2·5
0·5-mm marks	1·5

4.2.3 The figuring shall be done as shown in Fig. 1. The height of the figures shall be between 2·0 and 2·5 mm.

5. ACCURACY

5.1 The maximum cumulative error over the entire length shall not exceed $\pm$ 0·25 mm, when the Scales are compared against a certified metal Scale.

6. MARKING

6.1 The designations (*see* **2.1**) shall be marked at each end of the Scales and shall be 4 mm in height.

6.2 The ratio of reduction (*see* **2.1**) shall be shown below the appropriate edge (*see* Fig. 1).

6.3 The letters 'cm' and 'सेमी' shall be marked at the end of the Scales.

6.4 Each Scales shall be legibly and indelibly marked with the maker's name or his trade-mark. The year of manufacture shall be marked on plastic Scales.

6.5 The Scales 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. Presence of this 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 during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. 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. FINISH

7.1 The Scales, when made of paper, shall be given a protective coating of overprinting varnish.

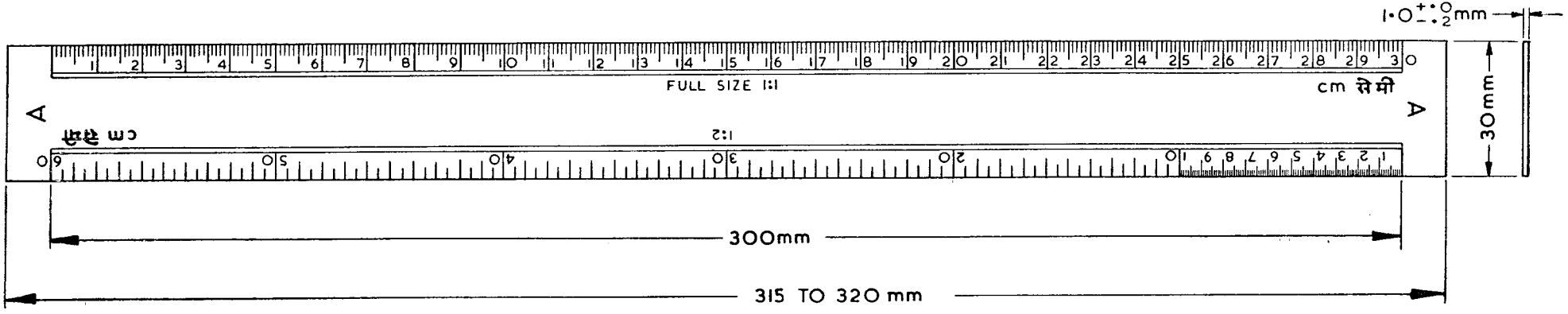
8. FLEXIBILITY TEST

8.1 The Scales shall be bent round in the form of a segment of a circle till the two ends are brought to a distance of about 20 cm apart. The Scales shall then be stretched and the operation repeated five times. The Scales shall not show any sign of permanent set after the test.

8.2 The Scales shall be held at the two ends and given a twist of 30° and then released. The Scales after this test shall not show any sign of warpage.

9. PACKING

9.1 Six pieces of Scales shall comprise a set and shall be packed in a suitably sized cardboard case bound in cloth. A table showing an index to 12 different scales from A to F shall be pasted over the casing so as to facilitate easy identification and selection.



NOTE – In the above figure, Scale A (1 : 1 and 1 : 2) has been illustrated and for Scale A 1 : 2 millimetre graduations have been shown only up to 10 cm.

FIG. 1 OVERALL DIMENSIONS OF METRIC SCALES FOR ARCHITECTURAL PURPOSES