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IS 302-2-26 (1994): Safety of household and similar electrical appliances, Part 2: Particular requirements:
Section 26 Clocks [ETD 32: Electrical Appliances]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
घरेलू और समान विद्युत साधित्रों की सुरक्षा

भाग 2 विवरणात्मक अपेक्षाएं

अनुभाग 26 घड़ियाँ

Indian Standard

SAFETY OF HOUSEHOLD AND SIMILAR
ELECTRICAL APPLIANCES

PART 2 PARTICULAR REQUIREMENTS

Section 26 Clocks

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

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Price Group 3

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Safety of Household and Similar Electrical Appliances Sectional Committee had been approved by the Electrotechnical Division Council.

This standard covers the general and safety requirements for clocks. This standard does not cover the performance requirements.

This standard is to be read in conjunction with IS 302-1 (1979) 'Safety of household and similar electrical appliances: Part 1 General requirements (*fifth revision*)'. For the sake of convenience, the clauses of this standard correspond to those of IS 302-1 (1979) which are applicable (which means that relevant provisions of the clause shall apply), or not applicable and the sub-clauses or portions thereof which are not applicable are indicated as under:

- a) In case of a clause where it is applicable or not applicable, the wording used in this clause of IS 302-1 (1979) is applicable/not applicable.
- b) In case of a sub-clause or part thereof 'Not applicable'.

Wherever a sub-clause of IS 302-1 (1979) is to be replaced by a new test, it has been indicated as under:

Replacement — Followed by the new text.

Any addition to the existing provisions of a sub-clause of IS 302-1 (1979) has been indicated as under.

Addition — followed by the text of the additional matter.

Clauses/tables which are additional to those of IS 302-1 (1979) are numbered starting from 101 and additional sub-clauses are numbered with the main clauses number followed by 101, 102, etc, for example, 7.101.

Should however any deviation exist between IS 302-1 (1979) and this standard, the provisions of the latter shall apply.

While preparing this standard, assistance has been derived from the following publications:

IEC Pub 335-1 (1976) 'Safety of household and similar electrical appliances : Part 1 General requirements'.

IEC Pub 335-2-26 (1987) 'Safety of household and similar electric appliances : Part 2 Particular requirements for clocks'.

The Indian Standards which are necessary adjuncts of this standard, are given in Annex AA.

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 '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.

**AMENDMENT NO. 1 APRIL 2002
TO
IS 302-2-26(1994) SAFETY OF HOUSEHOLD AND
SIMILAR ELECTRICAL APPLIANCES**

PART 2 PARTICULAR REQUIREMENTS

Section 26 Clocks

(Page 3, clause 101.1, line 3) — Substitute 'a sample' for 'two samples of the same type and rating'.

(Page 4, clause 101.1.1, line 1) — Substitute 'Sample' for 'Both samples'.

(ETD 32)

Reprography Unit, BIS, New Delhi, India

*Indian Standard***SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES****PART 2 PARTICULAR REQUIREMENTS****Section 26 Clocks****1 SCOPE**

The clause of IS 302-1 (1979) is applicable except as follows.

1.1 Replacement

This standard covers general and safety requirements of mains-operated clocks which are primarily intended for time-indicating purposes that rated voltage not exceeding 250 V ac single phase or dc.

Alarm clocks, clocks controlling radio receivers and the like, that are regarded as being primarily intended for time-indicating purposes and spring-driven clocks with an electrically-operated winding mechanism, are within the scope of this standard. Clocks incorporating driving means other than motors are also within the scope.

This standard does not apply to:

- Clocks having other functions, whether or not in combination with time indication, such as master control clocks and timers for cooking ranges, washing machines and the like;
- Clocks for 'clocking-in' purposes;
- Clocks incorporated in mains-operated electronic and related apparatus for household and similar general use; and
- Clocks incorporating electronic circuits only.

2 TERMINOLOGY

This clause of IS 302-1 (1979) is applicable except as follows.

2.30 Replacement

Normal load denotes the load obtained when the clock is connected to the mains supply and steady conditions have been established under the following conditions.

Spring-driven clocks with an electrically-operated winding mechanism are operated as in normal use; for other clock, the rotor is locked.

NOTE — If the clock incorporates an electro-mechanically operated alarm mechanism, this is either in circuit or out of circuit, whichever gives the most unfavourable condition.

3 GENERAL REQUIREMENT

This clause of IS 302-1 (1979) is applicable.

4 GENERAL NOTES ON TESTS

This clause of IS 302-1 (1979) is applicable.

5 RATING

This clause of IS 302-1 (1979) is applicable except as follows.

5.1 Replacement

The maximum rated voltage is 250 V.

Compliance is checked by inspection of the marking.

6 CLASSIFICATION

This clause of IS 302-1 (1979) is applicable.

7 MARKING

This clause of IS 302-1 (1979) is applicable except as follows.

7.14 Replacement

Instead of the marking requirement for fixed appliances, the following applies.

The marking of clocks intended to be permanently connected to fixed wiring shall not be behind a non-detachable cover, unless the cover has to be removed to connect the clock to the supply.

7.101 The clocks may also be marked with the Standard Mark.

8 PROTECTION AGAINST ELECTRIC SHOCK

This clause of IS 302-1 (1979) is applicable except as follows.

8.5 Replacement

Hands and their spindle and shafts of operating knobs, handles, levers and the like shall not be live.

Compliance is checked by inspection.

8.6 Addition

Hands are not considered as being actuated in normal use, unless they have to be touched to alter the time setting.

9 STARTING OF MOTOR-OPERATED APPLIANCES

This clause of IS 302-1 (1979) is applicable.

10 INPUT AND CURRENT

This clause of IS 302-1 (1979) is not applicable.

11 TEMPERATURE-RISE

This clause of IS 302-1 (1979) is applicable.

12 OPERATION UNDER OVERLOAD CONDITIONS OF APPLIANCES WITH HEATING ELEMENTS

This clause of IS 302-1 (1979) is not applicable.

13 ELECTRICAL INSULATION AND LEAKAGE CURRENT AT OPERATING TEMPERATURE

This clause of IS 302-1 (1979) is applicable.

14 RADIO AND TELEVISION INTERFERENCE SUPPRESSION

This clause of IS 302-1 (1979) is applicable.

15 MOISTURE RESISTANCE

This clause of IS 302-1 (1979) is applicable.

16 INSULATION RESISTANCE AND ELECTRIC STRENGTH (AFTER HUMIDITY TREATMENT)

This clause of IS 302-1 (1979) is applicable.

17 OVERLOAD PROTECTION

This clause of IS 302-1 (1979) is applicable.

18 ENDURANCE (under consideration).

19 ABNORMAL OPERATION

This clause of IS 302-1 (1979) is applicable except as follows.

19.1 Replacement

Instead of the sub-clauses applicable, the following applies:

For spring-driven clocks with an electrically-operated winding mechanism and for clocks incorporating motors having capacitors in the circuit of an auxiliary winding, compliance is checked by the test of 19.6.

19.6 Addition

Clocks incorporating capacitors or resistors to reduce the voltage for the motor are operated with the motor locked and with the capacity or resistors short-circuited one at a time.

The winding mechanism of spring-driven clocks is considered to have moving parts liable to be jammed.

19.11 This clause is applicable.

Other clocks are not tested for abnormal operation.

20 STABILITY AND MECHANICAL HAZARDS

This clause of IS 302-1 (1979) is applicable.

21 MECHANICAL STRENGTH

This clause of IS 302-1 (1979) is applicable except as follows.

21.1 MODIFICATION

Instead of the spring hammer adjustment specified the following applies:

The hammer spring is adjusted so that the product of the compression, in millimetres, and the force exerted, in newtons, equals 500, the compression being approximately 13 mm. With this adjustment, the impact energy is 0.25 ± 0.05 Nm.

Addition

The blows are not applied to spindles of hands or to dial glasses, unless the clock does not comply with the requirements of 8.1 when the dial glass is removed, in which case the blows are also applied to the dial glass.

22 CONSTRUCTION

This clause of IS 302-1 (1979) is applicable except as follows.

22.1 Addition

Clocks may be of Class I, Class II or Class III.

22.19 Addition

If coil formers of non-rotating windings are used as reinforced insulation, they shall be moulded in one piece. Coil formers of other windings shall not be used as reinforced insulation.

Additional Sub-clause

22.101 The switching mechanism of clocks controlling radio receivers and of clocks for similar purposes shall comply with the relevant Indian Standard as far as is reasonable.

Compliance is checked according to the relevant standard.

23 INTERNAL WIRING

This clause of IS 302-1 (1979) is applicable.

24 COMPONENTS

This clause of IS 302-1 (1979) is applicable except as follows.

24.1 Addition

Switches incorporated in clocks are not required to be switches for frequent operation.

24.9 Not applicable.

25 SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CABLES AND CORDS

This clause of IS 302-1 (1979) is applicable except as follows.

25.2 Replacement

The requirement that appliances intended to be permanently connected to fixed wiring shall allow the connection of the supply wires after the appliance has been fixed to its support, applies only to drip-proof, splash-proof and watertight clocks, intended to be permanently connected to fixed wiring.

25.4 Modification

—Type 2 attachment allowed.

25.6 Replacement

Instead of the types of cord specified the following applies.

Power supply cords shall be not lighter than:

—If polyvinyl chloride insulated, flat twin flexible cord as per IS 694 : 1990; and

—If rubber insulated, braided flexible cord as per IS 9968 (Part 1) : 1988.

25.11 Addition

Knots in the cord are allowed for polyvinyl chloride insulated cord, in which case it shall be a simple overhead knot around a smooth stud or pin.

26 TERMINALS FOR EXTERNAL CONDUCTORS

This clause of IS 302-1 (1979) is applicable.

27 PROVISION FOR EARTHING

This clause of IS 302-1 (1979) is applicable.

28 SCREWS AND CONNECTIONS

This clause of IS 302-1 (1979) is applicable.

29 CREEPAGE DISTANCES AND CLEARANCES

This clause of IS 302-1 (1979) is applicable.

30 RESISTANCE TO HEAT, FIRE AND TRACKING

This clause of IS 302-1 (1979) is applicable.

31 RESISTANCE TO RUSTING

This clause of IS 302-1 (1979) is applicable.

32 RADIATION HAZARDS

This clause of IS 302-1 (1979) is applicable.

101 TESTS**101.1 Type Tests**

The tests specified in Table 101 shall constitute the type tests and shall be carried out on two samples of the same type and rating selected preferably at random from a regular production lot. Before commencement of the tests, the samples shall be visually examined and inspected for obvious visual defects in respect of components, parts and their assembly, construction, mechanical hazards, markings, provision of suitable terminals for supply connections, earthing and the effectiveness of screws and connections. The external surface finish shall be even and free from finishing defects.

Table 101 Schedule of Type Tests
(Clause 101.1)

Sl No.	Clause Reference
i) Protection against electric shock	8
ii) Starting of motor operated appliances	9
iii) Input	10
iv) Temperature-rise	11
v) Operation under overload conditions	12
vi) Electrical insulation and leakage current at operating temperature	13
vii) Radio and television interference suppression	14
viii) Moisture resistance	15
ix) Insulation resistance and electric strength (after humidity treatment)	16
x) Overload protection	17
xi) Endurance (under consideration)	18
xii) Abnormal operation	19
xiii) Stability and mechanical hazards	20
xiv) Mechanical strength	21
xv) Construction	22
xvi) Internal wiring	23
xvii) Components	24
xviii) Supply connection and external flexible cables and cords	25
xix) Terminals for external conductors	26
xx) Provision for earthing	27
xxi) Screws and connections	28
xxii) Creepage distance and clearances	29
xxiii) Resistance to heat, fire and tracking	30
xxiv) Resistance to rusting	31
xxv) Radiation hazards	32

101.1.1 Criteria for Acceptance

Both samples shall successfully pass all the type tests for proving conformity with the requirements of the standard. If any of the samples fails in any of the type tests, the testing authority, at its discretion, may call for fresh samples not exceeding twice the original number and subject them again to all tests or to the test(s) in which failure(s) had occurred. No failure should be permitted in the repeat test(s).

101.2 Acceptance Tests

The following shall constitute the acceptance tests:

Test	Clause Reference
a) Protection against electric shock	8
b) Input	10
c) Temperature-rise	11
d) Electrical insulation and leakage current at operating temperature	13
e) Moisture resistance	15

f) Insulation resistance and electric strength (after humidity treatment)	16
g) Provision for earthing	27

NOTE — For the purpose of acceptance tests, the humidity treatment shall be done for 24 hours while conducting the test for moisture resistance (see 15).

101.2.1 A recommended sampling procedure for acceptance tests is given in Appendix B of IS 302-1 (1979).

101.3 Routine Test

The following shall constitute the routine tests:

Test	Clause Reference
a) Protection against electric shock	8
b) High voltage	13.3.2 of IS 302-1 (1979)
c) Provision for earthing	27

ANNEX A

Appendix A of IS 302-1 (1979) is not applicable.

ANNEX B

SAMPLING POCEDURE FOR ACCEPTANCE TESTS

Appendix B of IS 302-1 (1979) is applicable.

ANNEX C

ELECTRONIC CIRCUITS

Appendix C of IS 302-1 (1979) is applicable if electronic circuits are used.

ANNEX D

MEASUREMENT OF TEMPERATURE WITH THERMOMETER

Appendix D of IS 302-1 (1979) is applicable.

ANNEX E

ALTERNATIVE TESTS FOR PROTECTED MOTOR UNITS

Appendix E of IS 302-1 (1979) is not applicable.

ANNEX F**IMPACT TEST APPARATUS**

Appendix F of IS 302-1 (1979) is applicable.

ANNEX G**THERMAL CONTROLS AND OVERLOAD RELEASES**

Appendix G of IS 302-1 (1979) is applicable if thermal controls and overload releases are used.

ANNEX H**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**

Appendix H of IS 302-1 (1979) is applicable.

ANNEX J**TEST FOR FIRE RESISTING PROPERTIES**

Appendix J of IS 302-1 (1979) is applicable.

ANNEX K**BNF JET FOR DETERMINATION OF THICKNESS OF COPPER AND NICKEL PLATING**

Appendix K of IS 302-1 (1979) is not applicable.

ANNEX L**APPROXIMATE MEASUREMENT OF THICKNESS OF CHROMIUM ON NICKEL, STEEL AND COPPER**

Appendix L of IS 302-1 (1979) is not applicable.

ANNEX AA

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
302-1 (1979)	Safety of household and similar electrical appliances : Part 1 General requirements (<i>fifth revision</i>)
694 : 1990	PVC insulated cable for working voltages up to and including 1 100 V (<i>third revision</i>)
9968 (Part 1) : 1988	Elastomer insulated cables : Part 1 For working voltages up to and including 1 100 V (<i>first revision</i>)

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

Telephone

{ 331 01 31
331 13 75

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

{ 37 84 99, 37 85 61
37 86 26, 37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

{ 53 38 43, 53 16 40
53 23 84

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42
235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
BOMBAY 400093

{ 632 92 95, 632 78 58
632 78 91, 632 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE.
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