भारतीय मानक
Indian Standard

IS 302-2-80 : 2017

घरेलू और समान विद्युत साधित्रों की सुरक्षा

भाग 2–80 पंखों के लिए विवरणात्मक अपेक्षाएँ

(पहला पुनरीक्षण)

Household and Similar Electrical Appliances — Safety

Part 2-80 : Particular Requirements for Fans

(First Revision)

ICS 13.260; 23.120; 97.030

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Electrical Appliances Sectional Committee, ETD 32

FOREWORD

This Indian Standard (Part 2-80) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Electrical Appliances Sectional Committee had been approved by the Electrotechnical Division Council.

This is the first revision of IS 302-2-80 : 2003, which had superseded IS 12155 : 1987. The present revision has been undertaken to align with the latest IEC standard, IEC 60335-2-80 : 2008. It has been assumed in the formulation of this standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of SP 30 : 2011 'National Electrical Code' as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, in case of any difference, the provisions of national wiring rules and safety regulations would apply.

If the functions of an appliance are covered by different Part 2 of IS 302, the relevant Part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

NOTE — Throughout this publication, when Part 2 is mentioned, it refers to the relevant part of IS 302.

When a Part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 of IS 302 applies.

NOTE — This means that the Committee has determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE — Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IS 302 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or Part 2 standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

This standard is to be read in conjunction with IS 302-1 'Safety of household and similar electrical appliances: Part 1 General requirements'. For the sake of convenience, the clauses of this standard correspond to those of IS 302-1, instead of reproducing full text of each clause, clauses of IS 302-1 which are applicable (which means that relevant provisions of the clause 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 is 'This clause of Part 1 'is applicable/not applicable.
b) In case of sub-clause or part thereof 'Not applicable'.

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

(*Continued on third cover*)

Indian Standard

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES — SAFETY

PART 2-80: PARTICULAR REQUIREMENTS FOR FANS

(First Revision)

1 SCOPE

This clause of Part 1 is replaced by the following.

This standard (Part 2-80) deals with the safety of electric fans for household and similar purposes, their rated voltage being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 101 Examples of fans that are within the scope of this standard are:

a) Ceiling fans;

b) Duct fans;

c) Partition fans;

d) Pedestal fans;

e) Table fans.

This standard also applies to separate controls (regulators) supplied with fans.

Fans not intended for normal household use but which nevertheless may be a source of danger to the public, such as fans intended for use in shops, in light industry and on farms, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account,

a) persons (including children) whose,
   1) physical, sensory or mental capabilities; or
   2) lack of experience and knowledge prevents them from using the appliance safely without supervision or instruction; and

b) children playing with the appliance.

NOTE 102 Attention is drawn to the fact that,

a) for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;

b) in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

NOTE 103 This standard does not apply to,

a) appliances intended exclusively for industrial purposes;

b) appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);

c) fans incorporated in other appliances, unless otherwise specified in the relevant standard.

This standard does not cover performance requirement nor does it apply to household kitchen fans, air heaters required with fans, heating, ventilating units, mechanical refrigeration equipment or air conditioners.

2 REFERENCES

This clause of Part 1is applicable except as follows:

2.1 Addition

IS No.	*Title*
302-1 : 2008	Safety of household and similar electrical appliances : Part 1 General requirements
IS/IEC 60529 : 2001	Degrees of protection provided by enclosures (IP CODE)
1401	Protection of persons and equipments by enclosures—Probes for verification
1709	Capacitor for electric fan motor
694	PVC insulated unsheathed sheathed cables/cords with rigid flexible conductors for rated voltage upto and including 1100 V.
9968 (Part 1)	Elastoms insulated cables: Part 1 for working voltage up to including 1100 V.

3 DEFINITIONS

This clause of Part 1 is applicable except as follows.

3.1.9 *Replacement*

Normal Operation — Operation of the appliance under the following conditions:

Table and pedestal fans are operated with any oscillating mechanism in operation.

Ceiling fans are fixed to a ceiling.

Partition fans are installed in the centre of a suitable partition having dimensions at least four times the diameter of the air inlet.

Duct fans are installed in a duct in accordance with the installation instructions, the length of the duct being approximately four times the diameter of the fan.

Additional sub-clauses

3.101 Duct Fan — Fan for installation within an enclosed airway so that the airflow is ducted on both the inlet and outlet sides

3.102 Ceiling or Deck-Head Type Fan

A propeller-bladed fan having two or more blades and provided with a device for suspension from the ceiling of a room so that the blades rotate in a horizontal plane.

3.103 Table or Cabin Type Fan

A smaller-diameter propeller-bladed fan having two or more blades and intended for use with free inlet and outlet of air. It may be a table fan or bracket-mounted fan for wall or ceiling mounting.

3.104 Pedestal Type Fan

A propeller type fan having two or more blades mounted on a pedestal of fixed or variable height and intended for use with free inlet and outlet of air driven by electric motors.

3.105 Blade Sweep

The diameter of the circle traced out by the extreme tips of the fan blades.

3.106 Size of Fan

The sweep in millimetres.

3.107 Plane of Fan Blades

The middle plane of the solid of revolution traced out by the fan blades.

3.108 Plane of Anemometer Vanes

The middle plane of the solid of revolution traced out by the vanes of the anemometer.

3.109 Test Plane

The horizontal (in the case of ceiling type fans) and vertical (in the case of table and pedestal type fans) plane containing the plane of the anemometer vanes.

3.110 Types of Enclosures of Motors and Regulators

3.110.1 *Totally Enclosed Type Enclosure*

An enclosure which does not provide for circulation of air between the inside and outside of the case, but not necessarily air-tight.

3.110.2 *Ventilated Type Enclosure*

An enclosure in which the ventilations not materially obstructed while the live and internal rotating parts are protected mechanically against accidental or careless contact.

3.111 Methods of Mounting (for Table/Cabin and Pedestal Type Fans)

3.111.1 *Rigid Mounting*

The type of mounting in which direction of air flow can be changed only by changing the position of the fan.

3.111.2 *Semi-Rigid Mounting*

The mounting incorporating a trunion and/or swivel arrangement so that the direction of the air flow can be altered to suit requirements.

3.111.3 *Oscillating Mounting*

The mounting provided with a device by which the direction of the axis of the air flow is changed automatically and continuously in one plane.

3.111.4 *Double Oscillating (or Gyrostatic)Mounting*

The mounting provided with a device by which the direction of the axis of the air flow is changed automatically and continuously in more than one plane.

3.112 Rated Speed

The rotational speed specified by the manufacturer at which the fan develops the specified output at the rated frequency or frequency range and rated voltage of voltage range.

3.113 Ambient Temperature

The temperature of the surrounding atmosphere in which the fan or regulator operates.

3.114 Mounting

The mounting of a fan is the means of attaching the fan system (motor and blades) to its base.

3.115 Clamping Device

A means by which any positioning device, that is, swivel, trunnion, oscillating mechanism, etc, may be held in the desired position.

4 GENERAL REQUIREMENT

This clause of Part 1 is applicable. Compliance is checked by carrying out relevant tests as given in Table 103 on Schedule of type tests (***see*** **101.1**).

5 GENERAL CONDITIONS FOR THE TESTS

This clause of Part 1 is applicable except as follows.

5.7 Addition

For fans intended to be used in tropical climates, the tests of **10**, **11** and **13** are carried out at an ambient temperature of 40 ± 2 °C.

For fans marked with an ambient operating temperature,

the tests of **10**, **11** and **13** are carried out at the marked value ±2 °C.

6 CLASSIFICATION

This clause of Part 1 is applicable except as follows.

6.2 Addition

Duct fans shall be at least IPX2.

6.101 Fans shall be of one of the following classes with respect to climatic conditions:

a) fans for temperate climates; and
b) fans for tropical climates.

Compliance is checked by inspection.

7 MARKING AND INSTRUCTIONS

This clause of Part 1 is applicable except as follows.

7.1 Addition

Fans for tropical climates shall be marked with the letter T.

Fans intended for operation in locations where the local ambient temperature exceeds 40 °C shall be marked with the ambient operating temperature.

Fans shall also be marked for its size.

7.12 Addition

If the instructions state that the guard has to be removed for cleaning purposes, the instructions shall state the substance of the following:

Ensure that the fan is switched off from the supply mains before removing the guard.

7.12.1 *Addition*

The installation instructions shall include the substance of the following:

a) Model or type reference of a luminaire that may be installed in a fan constructed for this purpose;
b) Whether the fan is intended for mounting in outside windows or walls (for partition fans);
c) That the fan is to be installed so that the blades are more than 2.3 m above the floor (for fans intended to be mounted at high level); and
d) That precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances (for duct and partition fans).

7.101 BIS Certification Marking

The fans may also be marked with the Standard Mark.

7.101.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the license for the use of standard mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 PROTECTION AGAINST ACCESS TO LIVE PARTS

This clause of Part 1 is applicable except as follows.

8.1.1 *Modification*

Lamps are not removed. However, during insertion or removal of lamps, protection against contact with live parts of the lamp cap shall be ensured.

8.2 Addition

After the removal of detachable parts for the purposes of user maintenance, the basic insulation of internal wiring may be touched provided that it is electrically equivalent to the insulation of cords complying with IS 694 or IS 9968 (Part 1).

9 STARTING OF MOTOR-OPERATED APPLIANCES

This clause of Part 1 is not applicable.

10 POWER INPUT AND CURRENT

This clause of Part 1 is applicable except as follows.

10.1 Addition

Appliances are tested with shutters or similar devices in the open position. The appliance is supplied at rated frequency. Capacitors, if any, associated with the appliance shall be retained in the circuit. Regulator, if provided, shall be set at the highest speed position.

10.2 Addition

Appliances are tested with shutters or similar devices in the open position.

11 HEATING

This clause of Part 1 is applicable except as follows.

11.7 Replacement

Appliances are operated until steady conditions are established.

11.8 Addition

The temperature rise limits for appliances for tropical climates are reduced by 15 K.

The temperature rise limits for fans marked with an

ambient operating temperature are reduced by the difference between the marked value and 25 °C.

12 VOID

13 LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE

This clause of Part 1 is applicable.

14 TRANSIENT OVERVOLTAGES

This clause of Part 1 is applicable.

15 MOISTURE RESISTANCE

This clause of Part 1 is applicable except as follows.

15.1.1 *Addition*

The outer part of fans intended to be installed in the external structure of a building is subjected to the test of **14.2.4** a) of IS/IEC 60529, the part of the fan not mounted on the outside surface being protected against spray from the oscillating tube. The test is carried out with the appliance in the rest position and then in operation while supplied at rated voltage, shutters or similar devices being in the open position.

Fans marked with the second numeral of the IP system are subjected to the appropriate test of IS/IEC 60529 both at rest and in operation while supplied at rated voltage.

16 LEAKAGE CURRENT AND ELECTRIC STRENGTH

This clause of Part 1 is applicable.

17 OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS

This clause of Part 1 is applicable.

18 ENDURANCE

This clause of Part 1 is not applicable.

19 ABNORMAL OPERATION

This clause of Part 1 is applicable except as follows.

19.1 Addition

Fans incorporating shutters or similar devices operated by a control are also subjected to the test of **19.101**.

19.7 Addition

Separate controls are mounted on a dull black-painted plywood board. Approximately 50 percent of the area of each ventilating opening is blocked. The temperature of windings shall not exceed the values specified in Table 8 and the temperature rise of the board shall not exceed,

a) 50 K, for appliances with T marking; and
b) 65 K, for other appliances.

19.9 Not applicable.

19.101 Fans incorporating shutters or similar devices that are operated automatically are supplied at rated voltage and operated with the shutters or similar devices held in the closed or open position, whichever is more unfavourable.

20 STABILITY AND MECHANICAL HAZARDS

This clause of Part 1 is applicable except as follows.

20.1 Addition

Portable pedestal fans having a height exceeding 1.7 m and a mass exceeding 10 kg are placed on a horizontal surface. A force of 40 N is applied to the appliance at a height of 1.5 m in the most unfavourable horizontal direction.

The appliance shall not overturn.

NOTE 101 — Suitable means may be used to prevent the appliance from sliding.

In fans provided with oscillatory mechanism, means shall be provided to ensure that when properly installed, the fan is not stalled or overturned.

20.101 Fan blades, other than those of fans for mounting at high level, shall be guarded unless their leading edges and tips are rounded and,

a) they have a hardness less than D 60 Shore; or
b) they have a peripheral speed less than 15 m/s when the fan is supplied at rated voltage; or
c) the fan has a power output not exceeding 2 W when supplied at rated voltage.

NOTE — An edge with a radius of not less than 0.5 mm is considered to be rounded.

Compliance is checked by inspection and by measurement.

20.102 Static Load Test for Ceiling Suspended Fan Blade Brackets

20.102.1 A blade brackets used on a ceiling suspended fan shall be subjected to the static load test-described in **20.102.2**.

20.102.2 The mounting feet of the blade brackets shall be fixed by a support, vice or other securing means. The brackets shall be oriented as intended for actual use. After securing the bracket mounting feet, a crossbar is secured across the top of the outer-most blade

mounting hole(s). The load is suspended from the centre of the crossbar for 1 min. The combined weight of the crossbar, load and means of load suspension shall be in accordance with Table 101.

Table 101 Static Loads for Blade Brackets

(*Clause* 20.102.2)

Sl No. (1)	Size of Ceiling Fan [1] (2)	Total Static Load on Sample Blade Bracket [2] (3)
i)	Upto and including 1.14 m	9.07
ii)	Above 1.14 m	15.88

[1] Fan blade span (sweep).

[2] Include weight of crossbar and means of load suspension.

21 MECHANICAL STRENGTH

This clause of Part 1 is applicable except as follows.

21.1 Appliances are also subjected to the test of **21.101**.

21.101 Fan guards are subjected to a push force and a pull force of 20 N applied along the axis of the fan motor. After the test, it shall not be possible to touch dangerous moving parts with a test probe that is similar to test probe B of IS 1401, but having a circular stop face with a diameter of 50 mm instead of the non-circular face. The test probe is applied with a force not exceeding 5 N.

21.102 Ceiling fans shall have adequate strength.

Compliance is checked by the following test.

Ceiling fans are mounted in accordance with the installation instructions. A load of 10 000 N is suspended from the body of the fan for 1 min.

A torque of 50 Nm is then applied to the fixed body of the fan for 1 min. The test is repeated with the torque applied in the reverse direction.

Metal parts used in the suspension system shall have a minimum wall thickness of 1.5 mm. No parts of any hole or slot shall be closer than 5 mm from the edge. A safety cord shall be provided as a back up to the main suspension system and shall be strong enough to take 20 times the weight of the complete fan.

The suspension system shall not break and the fan shall not be damaged to such an extent that compliance with **8.1**, **16.3** and **29** is impaired.

NOTE — The suspension system shall be either bolted or screwed at the motor end and the suspension end. In case, it is screwed, the threads shall be such as to tend the joints to tighten when the fan is in motion. The joints shall be further secured by the use of lock nut or split pin.

22 CONSTRUCTION

This clause of Part 1 is applicable except as follows.

22.1 Addition

NOTE 101 — The enclosure defined in IS/IEC 60529 does not include guards for fan blades.

22.11 Modification

The 50 N force is not applied to clips used to fasten fan guards. Instead, a force of 15 N is applied in any direction to the clips in an attempt to release them.

22.101 Appliances having provision for attaching a luminaire shall incorporate appropriate terminals and internal wiring.

Compliance is checked by inspection.

22.102 Thermal cutouts, if any, incorporated in duct fans in order to comply with **19** shall be non-self resetting.

Compliance is checked by inspection.

22.103 Electrical insulation for which clearances and creepage distances are specified shall not be located in air ducts unless adequate precautions are taken to reduce the effects of contamination.

Compliance is checked by inspection.

NOTE — This requirement is met, if clearances are at least twice the values specified in **29.1** and for creepage distance the insulation is suitable for extra-severe duty conditions according to **30**.

23 INTERNAL WIRING

This clause of Part 1 is applicable except as follows.

23.3 Modification

Instead of moving the movable part backwards and forwards, fans with an oscillating mechanism are tested as follows.

Fans are supplied at rated voltage and operated under normal operation, the angle of oscillation being the maximum allowed by the construction. The test is carried out for 100 000 cycles of oscillation.

24 COMPONENTS

This clause of Part 1 is applicable except as follows.

24.2 Addition

Appliances having a rated power input not exceeding 25 W may be fitted with a switch in the supply cord.

24.101 Thermal cut-outs incorporated in duct fans in order to comply with **19** shall not be self-resetting.

Compliance is checked by inspection.

24.102 Stamping of fan motors shall be made from low loss electrical sheet steel conforming to IS 648 or any other suitable low loss electrical sheet steel.

24.103 Fans shall be fitted with two or more well balanced blades made from metal or other suitable material.

The blades and motor shall be securely fixed so that they do not become loose in operation.

24.104 Capacitors shall be easily replaceable and clearly marked with the maximum safe working temperature, and the corresponding voltage and capacitance. Capacitors shall comply with IS 1709.

24.105 Bearing shall be free from noise. Proper lubrication of bearings shall be carried out by the manufacturers.

NOTE — The criteria for noise level may however be subject to agreement between the manufacturer and the purchaser.

25 SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS

This clause of Part 1 is applicable except as follows.

25.5 Addition

Type Z attachment is allowed for portable fans.

26 TERMINALS FOR EXTERNAL CONDUCTORS

This clause of Part 1 is applicable.

27 PROVISION FOR EARTHING

This clause of Part 1 is applicable.

28 SCREWS AND CONNECTIONS

This clause of Part 1 is applicable.

29 CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION

This clause of Part 1 is applicable except as follows.

29.2 Addition

The micro-environment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

30 RESISTANCE TO HEAT AND FIRE

This clause of Part 1 is applicable except as follows.

30.2.2 Not applicable.

31 RESISTANCE TO RUSTING

This clause of Part 1 is applicable, except as follows:

Addition:

Compliance is checked by the following test:

All grease is removed from the parts to be tested by immersion in carbon tetrachloride or trichlorethane for 10 min.

The parts are then immersed for 10 minutes in a 10 percent solution of ammonium chloride in water at a temperature between 15°C and 35°C.

Without drying but after shaking off any drops, the parts are placed for 10 min in a box containing air having not less than 90 percent relative humidity and temperature between 15°C and 35°C.

After the parts have been dried for 10 min in a heating cabinet at a temperature of 100 ± 5°C, their surfaces shall show no signs of rust.

Traces of rust on sharp edges and any yellowish film removable by rubbing are ignored.

For small helical springs and the like, and for parts exposed to abrasion, a layer of grease may provide sufficient protection against rusting. Such parts are only subjected to the test, if there is doubt about the effectiveness of the grease film, and the test is then made without previous removal of the grease.

32 RADIATION, TOXICITY AND SIMILAR

Table 102 Schedule of Type Tests

(*Clause* 101.1)

Sl No. (1)	Tests (2)	Ref to Clause (3)
i)	Protection against access to live parts	**8**
ii)	Power input and current	**10**
iii)	Heating	**1**
iv)	Leakage current and electric strength at operating temperature	**13**
v)	Transient overvoltages	**14**
vi)	Moisture resistance	**15**
vii)	Leakage current and electric strength	**16**
viii)	Overload protection of transformers and associated circuits	**17**
ix)	Endurance	**18**
x)	Abnormal operation	**19**
xi)	Stability and mechanical hazards	**20**
xii)	Mechanical strength	**21**
xiii)	Construction	**22**
xiv)	Internal wiring	**23**
xv)	Components	**24**
xvi)	Supply connection and external flexible cords	**25**
xvii)	Terminals for external conductors	**26**
xviii)	Provision for earthing	**27**
xix)	Screw and connections	**28**
xx)	Clearances, creepage distances and solid insulation	**29**
xxi)	Resistance to heat and fire	**30**
xxii)	Resistance to rusting	**31**
xxiii)	Radiation, toxicity and similar hazards	**32**

HAZARDS

This clause of Part 1 is applicable.

101 TESTS

101.1 Type Tests

The tests specified in Table 102 shall constitute the type tests and shall be carried out on a sample selected preferably at random from regular production lot. Before commencement of the tests, the appliance shall be visually examined and inspected for obvious visual defects in respect of components, parts and their assembly, construction, mechanical hazards, marking, 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.

NOTE — Additional samples may be required for some tests, as mentioned in specific clauses.

101.1.1 *Criteria of Acceptance*

Sample shall successfully pass all the type tests for proving conformity with the requirements of the standard. If the sample 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 tests (s).

101.2 Acceptance Tests

The following shall constitute the acceptance tests:

Tests (1)	*Ref to Clause* (2)
Protection against access to live parts	**8**
Power input and current	**10**
Heating	**11**
Leakage current and electric strength at operating temperature	**13**
Moisture resistance	**15**
Leakage current and electric strength	**16**
Provision for earthing	**27**

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

101.2.1 A recommended sampling procedure for acceptance tests is given in Annex J of IS 302-1.

ANNEXES

The annexes of Part 1 are applicable.

(*Continued from second cover*)

'Replacement – followed by the new text'.

Any addition to the existing provisions of a sub-clause of IS 302- 1 : 2008 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 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 and this standard, the provisions of the latter shall apply. This standard does not cover the performance requirements.

This standard is based on corresponding IEC publication IEC 60335-2-80, Ed 3.0 (2008), issued by the International Electrotechnical Commission (IEC) with the following modifications:

a) Voltage for appliances other than single phase changed from 480 to 415
b) Additional definitions added,
c) Static and dynamic load test for ceiling suspended fan blade brackets incorporated,
d) Test specified for mechanical strength are more stringent,
e) Conformity of stamping material and capacitors to relevant Indian Standards specified, and
f) Schedule of type, acceptance and routine tests incorporated.

The significant differences from the previous edition of IS 302-2-80 are as follows:

1) The differences due to revision of IS 302-1 : 1979 to IS 302-1 : 2008.
2) Classification of fans for temperate for tropical climate included.
3) Modification in 'Protection against electric shock'.
4) Test for marked IP numeral to be carried out.
5) Abnormal operation test for controls included.
6) Number of operation of oscillating mechanism of fans increased.

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.

Bureau of Indian Standards

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Review of Indian Standards

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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