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IS 3347-3-1 (1988): Dimensions for porcelain transformer bushings for use in lightly polluted atmospheres: Part 3 17.5 kV bushings, Section 1: Porcelain parts [ETD 6: Electrical Insulators and Accessories]



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Bhartihari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

**DIMENSIONS FOR PORCELAIN
TRANSFORMER BUSHINGS FOR USE IN
LIGHTLY POLLUTED ATMOSPHERES**

PART 3 17.5 kV BUSHINGS

Section 1 Porcelain Parts

(Second Revision)

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

Indian Standard

DIMENSIONS FOR PORCELAIN TRANSFORMER BUSHINGS FOR USE IN LIGHTLY POLLUTED ATMOSPHERES

PART 3 17.5 kV BUSHINGS**Section 1 Porcelain Parts***(Second Revision)***0. FOREWORD**

0.1 This Indian Standard (Part 3/Sec 1) (Second Revision) was adopted by the Bureau of Indian Standards on 24 June 1988, after the draft finalized by the Electrical Insulators and Accessories Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 This part (Part 3) of the standard covers dimensions of porcelain transformer bushings for use in lightly polluted atmospheres (*see 0.3*) with the object of ensuring their interchangeability. To avoid multiplicity of sizes, the dimensions given are only for those ratings (voltage and current) which are being used appreciably. This part comprises two sections issued as two separate standards. This section (Sec 1) covers porcelain parts of the bushings whereas the dimensions of the metal parts to go with these porcelain parts are covered in Section 2 of this standard.

0.3 The dimensions given in this part satisfy the requirement of IS : 2099-1986* for 17.5 kV bushings. The dimensions apply to 12 kV bushings also. Instead of having two separate sets of close dimensions, the Sectional Committee responsible for the preparation of this standard decided that the same dimensions be used both for 12 kV and 17.5 kV bushings with the object of variety reduction of bushings.

0.4 This standard (Part 3/Sec 1) was first issued in 1965. The first revision was taken up in 1973 with a view to simplify the manufacture of porcelain parts on large scale by permitting an alternative shape of their top petticoat in respect of all the ratings covered in this standard. The second revision has been undertaken:

- a) to align the dimensions with current national and international practices, and
- b) to incorporate the new classification of polluted atmospheres given in IS : 2099-1986*.

0.5 The bushings are rated in terms of the highest system voltage (*see IS : 2099-1986**). The dimensions of the bushings for other voltages are given in following parts of this standard:

- | | |
|--------|---|
| Part 1 | Up to and including 1 kV bushings
Section 1 Porcelain parts
Section 2 Metal parts |
| Part 2 | 3.6 kV bushings
Section 1 Porcelain parts
Section 2 Metal parts |
| Part 4 | 24 kV bushings
Section 1 Porcelain parts
Section 2 Metal parts |
| Part 5 | 36 kV bushings
Section 1 Porcelain parts
Section 2 Metal parts |
| Part 6 | 72.5 kV bushings
Section 1 Porcelain parts
Section 2 Metal parts |
| Part 7 | 123 kV bushings
Section 1 Porcelain parts
Section 2 Metal parts |
| Part 8 | 52 kV bushings
Section 1 Porcelain parts
Section 2 Metal parts
<i>(Under preparation).</i> |

0.6 The dimensions for porcelain transformer bushings for use in heavily polluted atmospheres are covered by the series of IS : 8603-1977†.

0.7 The dimensions covered in this standard essentially apply to the bushings used outdoor with lower ends immersed in oil.

0.8 The performance requirements of the bushings are specified in IS : 2099-1986*.

*Specification for bushings for alternating voltages above 1 000 volts (*second revision*).

†Dimensions for porcelain transformer bushings for use in heavily polluted atmospheres.

*Specification for bushings for alternating voltages above 1 000 volts (*second revision*).

0.9 In the preparation of this standard, assistance has been derived from the following standards issued by the Deutsches Institut Für Normung:

DIN 42531 (1968) Indoor and outdoor transformer bushings:

Insulation class 10 N to 30 N, 250 A.

DIN 42532 (1969) Indoor and outdoor transformer bushings:

Insulation class 10 N to 30 N, 630 A.

DIN 42533 (1969) Indoor and outdoor transformer bushings:

Insulation class 10 N to 30 N, 1 000 to 3 150 A.

DIN 40680 (1968) Ceramic components for electrical engineering permissible dimensions variations.

0.10 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.

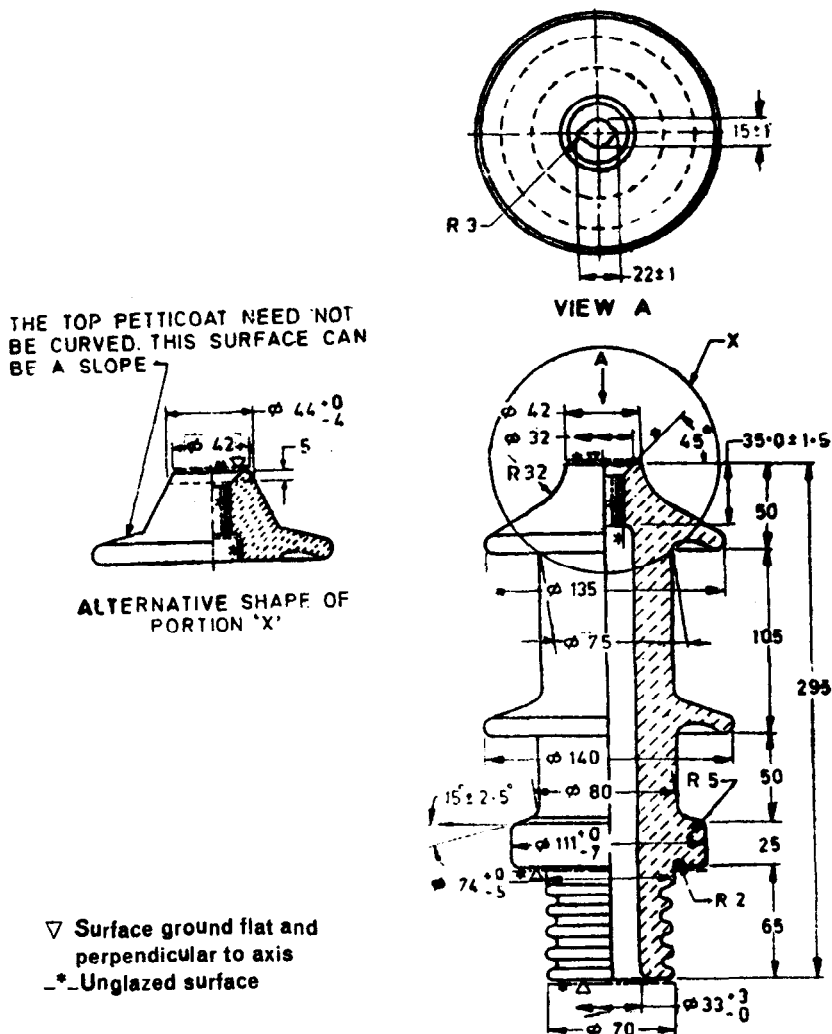
*Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard (Part 3/Sec 1) lays down the dimensions of porcelain parts of the bushings of 17.5 kV (see 0.3) used with power transformers for use in lightly polluted atmospheres.

2. DIMENSIONS

2.1 The dimensions of the porcelain parts for different ratings (kV/A) of the bushings are given in Fig. 1, 2 and 3.



All dimensions in millimetres.

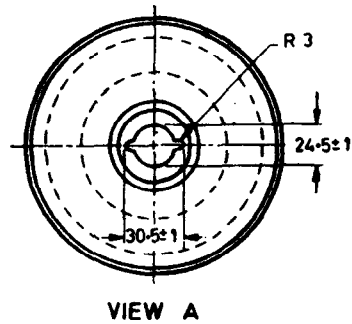
FIG. 1 DIMENSIONS OF PORCELAIN PARTS OF 17.5 kV/250 A BUSHING FOR USE IN LIGHTLY POLLUTED ATMOSPHERES

2.2 Unless specified otherwise, tolerance on a dimension shall be $\pm(0.03 d + 0.3)$ mm, d being the dimension in millimetres.

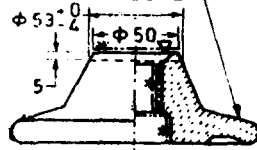
2.3 Whenever unilateral tolerance is given, that tolerance shall be twice the general tolerance, for

example, dimension X_{Max} , shall have twice the general tolerance given in 2.2 on lower side but there shall be no tolerance on upper side.

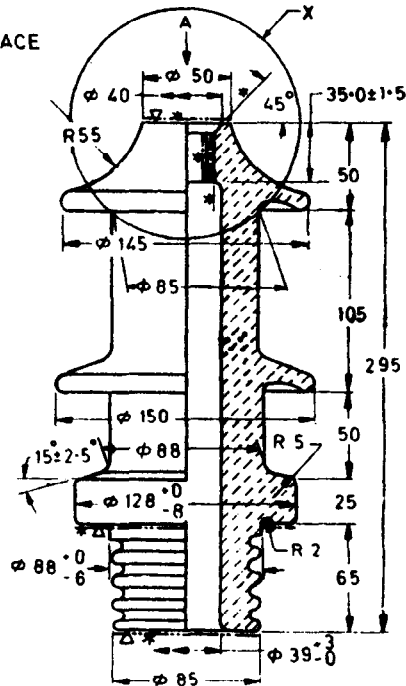
2.4 The minimum specific creepage distance shall be 280 mm (16 mm/kV).



THE TOP PETTICOAT NEED NOT BE CURVED. THIS SURFACE CAN BE A SLOPE



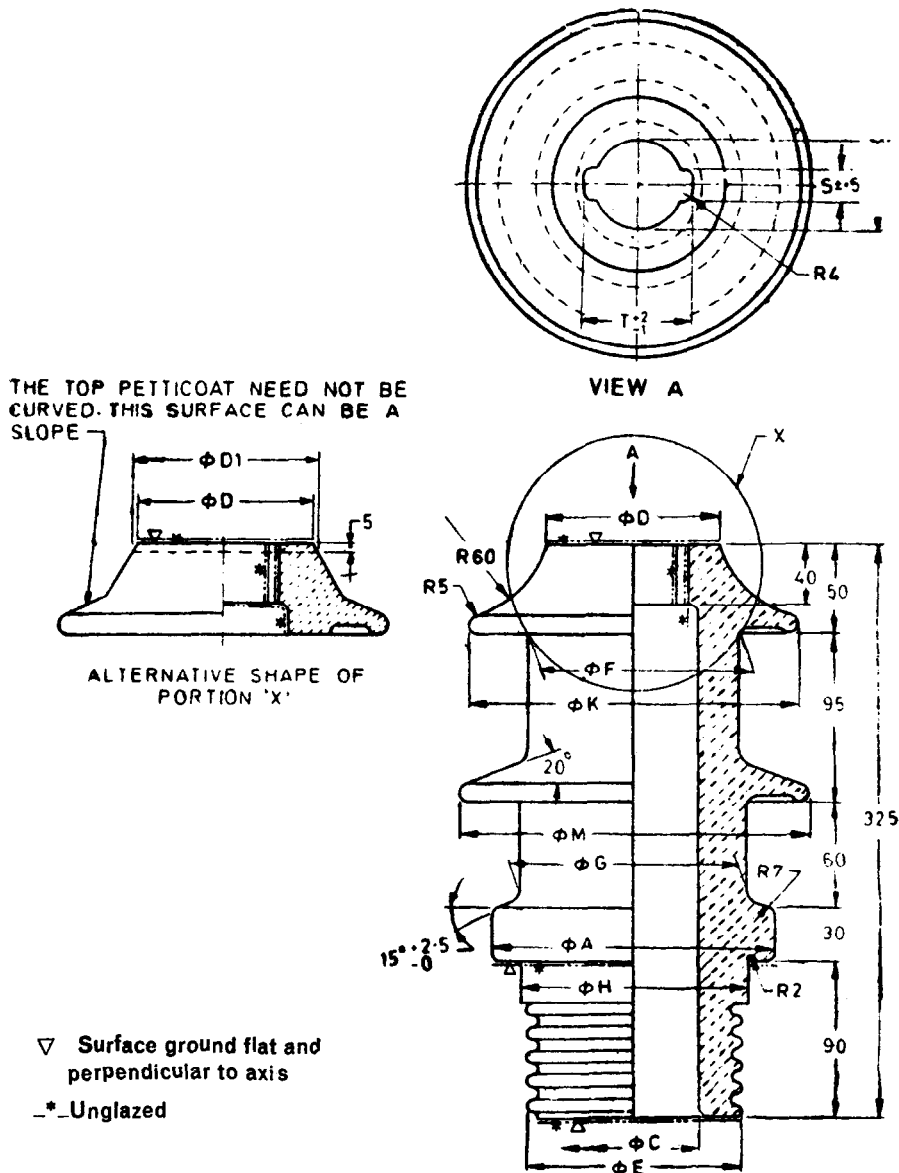
ALTERNATIVE SHAPE OF PORTION 'X'



∇ Surface ground flat and perpendicular to axis
 * Unglazed surface

All dimensions in millimetres.

FIG. 2 DIMENSIONS OF PORCELAIN PARTS OF 17.5 kV/630 A BUSHING FOR USE IN LIGHTLY POLLUTED ATMOSPHERES



RATING kV/A	A	B	C	D	D1	E	F	G	H	K	M	S	T
17.5/1 000	163 ⁺⁰ ₋₁₀	32	58±4	80	84 ⁺⁰ ₋₆	100	105	110	108 ⁺⁰ ₋₇	165	170	12	46
17.5/2 000, 3 150	183 ⁺⁰ ₋₁₂	50	74 ⁺⁵ ₋₀	100	104 ⁺⁰ ₋₇	125	120	130	131 ⁺⁰ ₋₈	190	190	17	62

All dimensions in millimetres.

FIG. 3 DIMENSIONS OF PORCELAIN PARTS OF 17.5 kV/1 000, 2 000 AND 3 150 A BUSHING FOR USE IN LIGHTLY POLLUTED ATMOSPHERES

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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