

NYLON INSULATOR  
 SPECIFICATION NO. CLW/ES/I-3/D/E  
 WITH DRAWING NO. CLW/ES/SK-1/I-3/D/E

1.0 SCOPE.

1.1 The specification covers the manufacture & supply of Nylon Insulators for the support of copper bars in H.T. panels for broad gauge 25 kV, Single Phase, 50 Hz, A.C. Electric Locomotives of the Indian Railways. Insulators are used to insulate the H.T. Copper bars from earth potential, as well as to provide support to copper bars to withstand locomotive vibration.

2.0 SERVICE CONDITION.

2.1 Nylon Insulators will be subjected to considerable vibrational & buffing shocks during the normal service of locomotives.

2.2 Insulators shall be suitable for working satisfactorily in an ambient temperature varying from 0°C to 60°C and a maximum relative humidity of 100%. The locomotive shall be working in an altitude upto a maximum of 1000 metres above mean sea level.

3.0 TECHNICAL SPECIFICATION.

3.1 Nylon Insulators shall be manufactured as per dimensions indicated in the Drawing No. CLW/ES/SK-1/I-3/D attached with this specification.

3.2 The material used shall be Hard Nylon of Natural/Cream colour or sintered Mica glass or Polycarbonate or Polyimide. Polyester or Epoxy Resin Bonded Glass Fibre may also be used as alternative material for the insulators.

3.3 There are two mild steel inserts meant for fixing the insulator on the panel. They shall have minimum 6mm clearance between them. They shall be concentric & co-axial with each other and the top and bottom machined faces shall be parallel to each other.

3.4 The insulator shall be free from blisters/blow holes/porosity to avoid failure in high voltage operation. It shall have good surface glazing and smoothness to avoid dust accumulation on the surface. There should not be any burrs (flashes) on the insulator surface.

3.5 The metal inserts shall be cadmium plated and/or passivated.

3.6 Marking: The manufacturer shall emboss/imprint/stencil/engrave permanent identification marks indicating their name/brand-name/monogram at a conspicuous place.

जांचा  
CHKD.

अनुमोदित  
DRN.

NYLON INSULATORS

(FOR ELECTRIC LOCOS)

*Uw...*

उप.मु.वि.अ. (अभि.)  
f DY. CEE. (D)

चितरंजन रेल इंजन कारखाना

पश्चिम बंगाल, भारत

CHITTARANJAN LOCOMOTIVE WORKS  
WEST BENGAL, INDIA

क्रमांक/ NO. : CLW/ES/I-3/D/E

दिनांक/ DATE :

4.0 TESTS

4.1 TYPE TESTS

- 4.1.1 Dimensional check as per drawing.
- 4.1.2 Check on workmanship & fitment etc.
- 4.1.3 The insulator when tested shall withstand a tensile load of 500 kg when applied between two ends.
- 4.1.4 The insulator when tested shall withstand a torque of 20 kg. m when applied on one of the ends, the other end being fixed rigidly. The insulator shall not show any sign of deformity.

FLAME PROPOGATION TEST:-

4.1.5 The test shall be carried out on a section of the sample insulator. The test shall be done in still air, using a Bunson Burner with an opening of 9 mm fed by local gas supply. The burner shall be regulated to provide a flame 100 mm. and an inner blue cone 50 mm long. The axis of the burner shall be inclined at an angle of 45° to the vertical. The sample shall be suspended inclined so that its axes is at right angles to the axis of the flame. The flame shall be applied at a distance of 100 mm. The flame shall be applied for one minute continuously.

Any *ignition* of the insulating material must be of subdued nature and shall not spread noticeably. Flame produced on the insulator, if any, should extinguish of its own wether 30 sec. after being withdrawn from the flame.

- 4.1.6 Temp. withstand test - The insulator under test shall be kept at a temp. of 120°C continuously for 8 hrs. After the test the insulator shall not show any sign of deformity or loose its property.
- 4.1.7 The insulator shall withstand a dielectric voltage of 20 kV 50 C/s, a.c. for 1 minute.
- 4.1.8 The insulator shall not puncture at a value lesser than 25 kV 50 C/s a.c.

4.2 Sampling test for acceptance of lots

4.2.1 Dielectric test at 20 kV for 1 minute to be carried out on one in every 100 insulators or part thereof in a lot. Insulator shall withstand this voltage. If one insulator fails, another 2 samples will be tested. If one of these also fails, the batch shall be rejected.

Ctd.....

अंश  
CHKD.  
आरेखित  
DRN.

NYLON INSULATORS  
(FOR ELECTRIC LOCOS)

उप. म. वि. ज. (अभि.)  
DY. CEE. (D)

चिन्नरंजन रेल इंजन कारखाना  
पश्चिम बंगाल, भारत  
CHITTARANJAN LOCOMOTIVE WORKS  
WEST BENGAL, INDIA  
क्रमांक/NO. : CLW/ES/I-340-  
पत्र/ALTA/DE

- 4.3 Routine Test ( to be carried out after acceptance of a lot)
- 4.3.1 Dimensional check on 10% of the lot offered.
- 4.3.2 Check on workmanship and fitment.
- 4.3.3. Dielectric test at 20 kV for 1 minute on each insulator.


5.0 SPECIAL CONDITION

Once a prototype is approved, no contractor shall change his source of supply or sub-contractor for purchased components and sub-assemblies without CLW's approval.

जांचा  
CHKD.

आरेखित  
DRN.

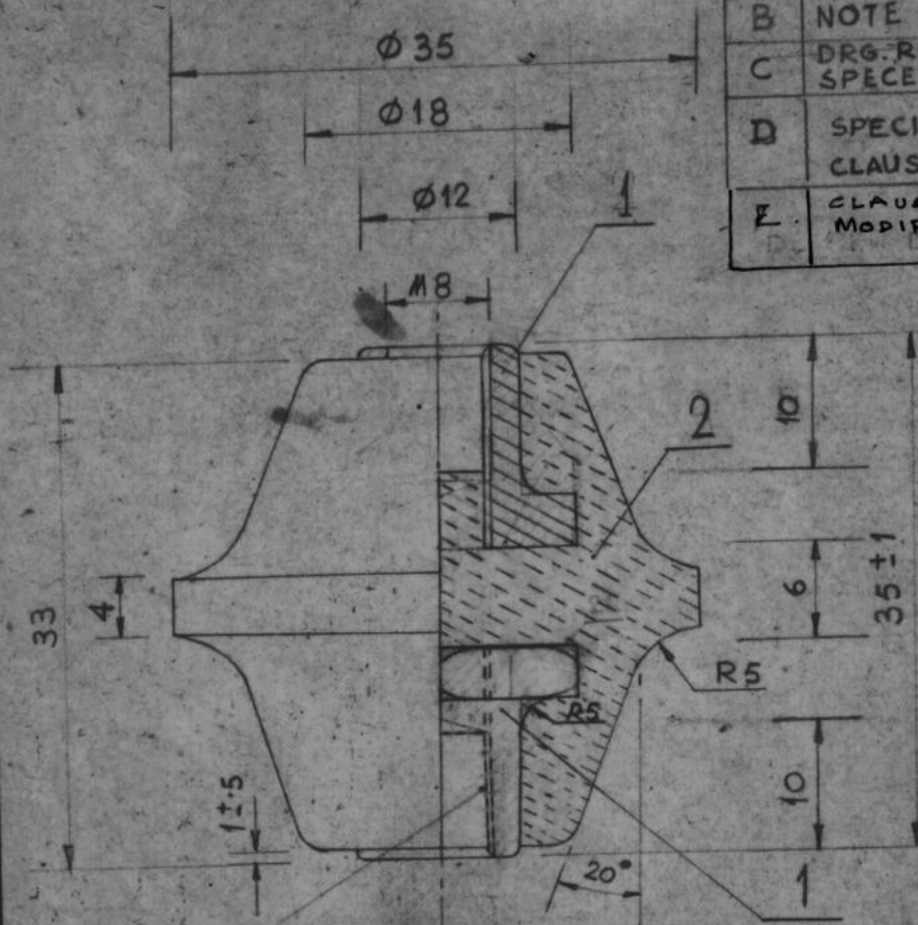
NYLON INSULATORS  
(FOR ELECTRIC LOCOS)

  
उप. म. वि. ज. (अमि.)  
DY. CEE. (D)

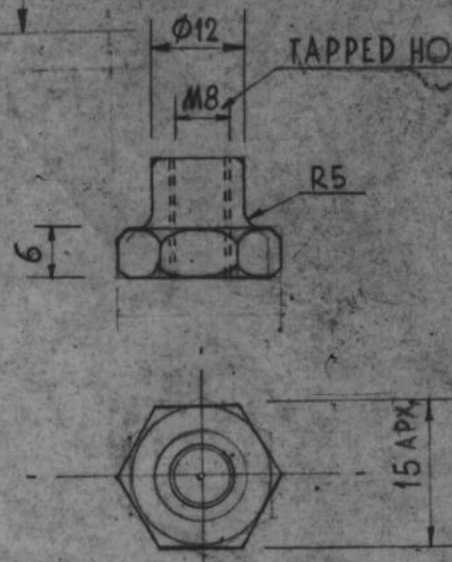
चितरंजन रेल इंजन कारखाना  
पश्चिम बंगाल, भारत  
CHITTARANJAN LOCOMOTIVE WORKS  
WEST BENGAL, INDIA  
क्रमांक/ NO. : CLW/ES/T-3  

पं	र	/	AL	T	A	B	E	D	E						
----	---	---	----	---	---	---	---	---	---	--	--	--	--	--	--

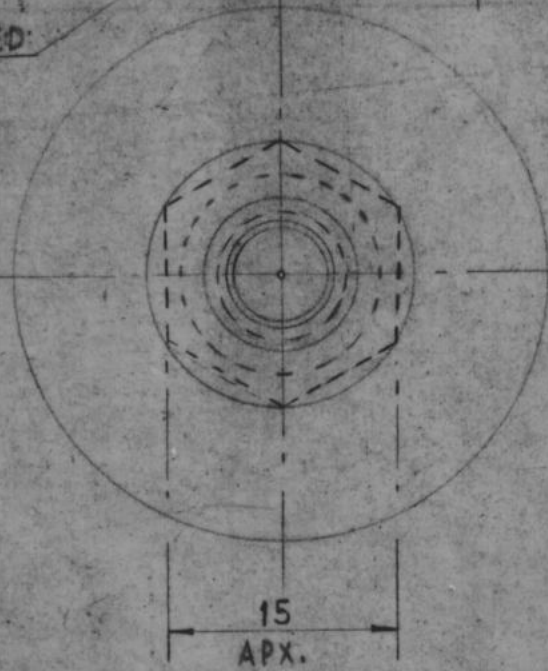
ALT. NO.	DESC.	INITIAL	DATE
A	NOTE 5 ADDED	sd/	22.10.76
B	NOTE 6 ADDED	sd/	25.12.76
C	DRG. REVISED AND SPECEN. ADDED.		3.4.77
D	SPECIAL CONDITION CLAUSE 5-0 ADDED	Unishy	20.11.76
E	CLAUSE 4.1.5 MODIFIED.		28/8



M8 TAPPED



DETAIL REF. 1.



REF	DESCRIPTION	MATL. SPEC.
2.	INSULATING MATERIAL	SEE CL. OF SPEC
1.	METAL INSERT.	STEEL 15

DRN. / CHKD.

NYLON INSULATOR.  
(FOR ELECTRIC LOCOS)

DY. C.E.E.D.

CHITTARANJAN LOCOMOTIVE WORKS  
WEST BENGAL, INDIA.  
NO. CLW/ES/SK-1/1-3/27  
DATE- 3.4.76.