Government of India

Ministry of Railways
Research, Designs & Standards Organisation
Manak Nagar, Lucknow - 226 011

No. EL/3.2.5 Dated 03.02.1995.

Special Maintenance instructions No. RDSO/ELRS/SMI/167

1. Title :

Precaution while taping of bus bars ands clamps of Traction Motors stators .

2. Application :

All Electric Locomotives fitted with TAO 659 Traction Motors.

3. Object:

To prevent insulation failure on bus bars and clamps of stators.

4. Procedure:

The following procedure should be adopted while insulating the bus bars and clamps of stators.

4.1 The insulation is less than 1mm in thickness and it has to be withstand about 1.5 KV (interpole Connection) continuously and insulation is also degraded due to vibration and erosion due to thermal expansion and contraction. In view of this, therefore, following precaution should be taken while taping the bus bars.

i) The corners radius on bus bars corner must be 1.2 mm at least.

ii) The tape should be pre-impregnated with a specified varnish before application.

iii) Application of varnish between each layer should be done during taping.

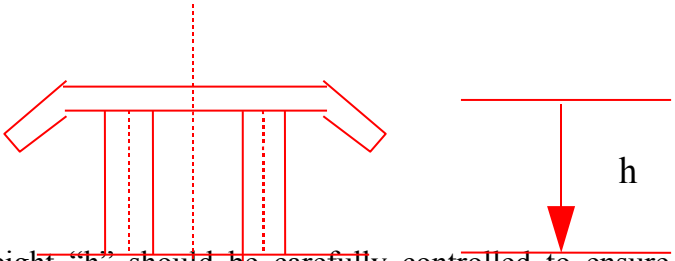
4.2 As the majority of the bus per insulation failures occurs under the clamps, therefore, following steps must be ensured to minimise the failures.

i) The corners of the bus bar clamps should be rounded on the side in contact with the insulated bar.

DESIRABLE SHAPE (ROUNDED CORNERS) BURR SHARP CORNERS

ii) There must not any asperities or rough spots on the stators at the portion under clamps. Any such defects should be ground off.

iii) The taped clamp pillars should not be so short as to cause excessive pressure on the insulation, nor so long as to permit vibration of bus bar in service.



There height "h" should be carefully controlled to ensure that it is equal to the height of the insulated bus bars clamps beside it. This will provide adequate but not excessive force on the insulated bars. The bars should be held firmly but not so hard as to crush or crack the insulation.

iv) There should be no accumulation of dust and dirt around the bus bar, therefore should be well cleaned during annual overhaul.

v) In view of the above, in every schedule, mesh covered opening at the pinion and should be cleared by wire brush.

5. **Drawing/Sketch No.** NIL

6. **Agency of Implementation**

All Electric Loco Sheds and of Indian Railway.

7. **Periodicity of Implementation:**

In every repair of stators for insulated of bus bar and clamps, and cleaning of mesh in the end shield in every inspection schedule like IA, IB, IC etc.

8. **Reference:**

Reliability Engineering study on Electric Locomotives Part 10 for TAO 659 Stator Connection Failure, prepared by RITES.

9. **Distribution:** As per enclosed list.

Encl: As Above

Rajiv Kumar

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for Director General (Elect.)