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लखनऊ & 226011  
Government of India - Ministry of  
Railways  
Research, Designs & Standards  
Organization, LUCKNOW - 226011

No. EL/3.2.5

Date: 10.10.2008

**Modification Sheet No. ELRS/MS/0368 ( Rev. '0')**

**Title:**

**Modification on End Punching and provision of U-shape insulation on slot end portion of armature of TAO-659 Traction Motors of Electric Locomotives.**

**1. Object:**

- 1.1. End punchings on both sides (PE & CE side) of Armature of TAO-659 TMs are having with same dimensions as those of main core.
- 1.2. Analysis of TMW, Nasikroad, and CR reveals that around 70 % of failure in armature is due to damage of insulation near core ends. During rewinding of armature, it is not possible to provide additional layer of insulation on coils at core ends due to no extra space available. Because of no extra layer of insulation at slot ends, coils are getting damaged during service. All these problems are attributed to sharp corners of slot portion of end punchings.
- 1.3. This problems can be overcome by increasing the depth of the slot portion of end punching, so that end punchings, so that end punchings should not come into contact with coils and by providing U shape insulation at the end portion of slots similar to armature of Hitachi traction motor.
- 1.4. End punchings of armature of Hitachi TM (HS-15250A) is having provision of U-Shape insulation of Nomex material to avoid the possibility of insulation damage due to sharp corners. This is also providing extra insulation at end portion of slot.
- 1.5. This modification has to be carried out in all armatures at the time of rewinding, and during new manufacturing.

**2. Work to be carried out:**

- 2.1. Modified end punchings should be stacked on both sides of main punching of Armature as per existing practice.
- 2.2. Armature Slot end punchings of both sides of Armature of TAO-659 TM are to be modified as per RDSO Drg. No. SKEL 4751, Alt 'O'.

2.3. U-Shape Insulation shall be manufactured as per RDSO Drg. No. SKEL-4752, Alt 'O'. Its material & properties of it is to conform Hitachi specification no 5552/070.

**3. Application:**

All armatures of TAO-659 traction motors of electric locomotives undergoing rewinding/new manufacturing.

**4. Material Required:**

- 4.1. End punchings as per RDSO's Drg. No. SKEL 4751, Alt 'O'.
- 4.2. U-Shape Insulation as per RDSO's Drg. No. SKEL 4752, Alt 'O'. Hitachi Specification no. 5552/070.

**5. Material rendered surplus: Nil**

**6. Modification Drawing No. :**

- 6.1. SKEL 4751,Alt 'O'
- 6.2. SKEL 4752,Alt 'O'

**7. Periodicity of Implementation:**

- 7.1. Whenever armatures of traction motors type TAO 659 are taken out for rewinding.
- 7.2. During new manufacturing of armatures of traction motor type TAO 659.

**8. Agency of Implementation:**

- 8.1. All workshops doing rewinding of armatures
- 8.2. Approved sources of manufacturers of traction motors type TAO 659.

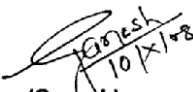
**9. Distribution:**

As per enclosed list.

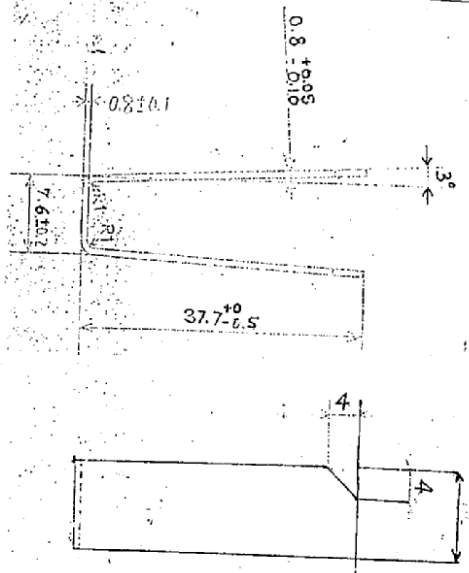
**10. Reference :**

CWM/NK's letter no. NK/TMW/DRG/530 , dt.08.10.2008.

**DA: as above**

  
(Ganesh)  
for Director General (Elec.)

SN 3807  
SN 4410



NOTE :-

1. ALL DIMENSIONS ARE
2. MATERIAL : NOMEX TYPE
- 410 - 30 mil THICK

DI	29.9.08
C	M
C	W
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STATUS	ALT	REF NO.	DESCRIPTION	APPD. BY	DATE

**U Shape Insulation for Armature**  
**Slot Ends of TAO-659 TM**

RDSO. ELECT. DTE.

SKEL-4752  
A11'0'

SUPERSEDED BY

REF.	PART NO.	DESCRIPTION	DETAIL DRG. NO.	NO./LOC.	HAIT.	SPEC.
		SCALE	APPD. BY			

FIRST ISSUED

SUPERSEDES

SUPERSEDED BY:	
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