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**No. EL/3.2.66**

**Date: 26.03.2018**

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**SPECIAL MAINTENANCE INSTRUCTION NO. RDSO/2018/EL/SMI/ 0320(Rev '0')**

**Dated 26.3.2018**

**1. Title:**

Improving reliability of Armature Shafts of Traction motors for EMUs/MEMUs Kolkata Metro by carrying out Ultra Sonic Testing (UST) and not rebuilding Armature Shaft by welding.

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## 2. **Brief History:**

- 2.1 EMU Car Shed, Ghaziabad had submitted the samples of broken Armature Shaft failed on 20.08.2017 of EMU traction motor type 4601 AZ for metallurgical investigation at M&C Directorate RDSO, Lucknow.
- 2.2 M&C Directorate RDSO, Lucknow had observed that Ultra Sonic Testing (UST) of broken shaft was carried out on 2009, and failure took place after 8 years. M&C Directorate RDSO vide their Metallurgical Investigation Report number 88/17 dated 17.01.2018, had recommended that to avoid online failures of armature shaft, it is advised to carry out UST during every POH.
- 2.3 In investigation of some other cases of breakage of armature shaft, M&C Directorate, RDSO had found weld deposits on the shaft, which had resulted in formation of micro cracks, and from such micro cracks, fatigue had initiated in multi nuclei manner and caused breakage of shaft.
- 2.4 M&C Directorate of RDSO vide Metallurgical Investigation Report number 116/17 & 119/17 dated 24.1.2018 had recommended that Re-building of shaft by welding is highly undesirable, objectionable and detrimental to metallurgical properties of material and results in premature failure of material. Any kind of welding should not be resorted.

## 3. **Object:**

Improving reliability of Armature Shafts of Traction motors for EMUs/MEMUs/Kolkata Metro by carrying out Ultra Sonic Testing (UST) and not rebuilding Armature Shaft by welding

## 4. **Modified Instructions :-**

- (i) UST of armature shaft of Traction motors of EMUs/MEMUs/Kolkata Metro shall be carried out during every POH.
- (ii) For new Traction motors, UST shall also be carried out by TM manufacturers
- (iii) During re-shafting, UST shall be carried out by workshops carrying out re-shafting.
- (iv) Re-building of shaft by welding is highly undesirable, objectionable and detrimental to metallurgical properties of material and results in premature failure of material. Any kind of welding on the shaft shall not be done.

## 5. **Application class :**

Applicable to all types of Traction motors used in EMUs/MEMUs/Kolkata Metro.

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**6. Agency of Implementation:-**

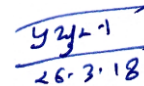
- i) All EMU/MEMU Car Sheds/ POH workshops carrying out POH of EMUs/MEMUs/Kolkata Metro rakes,
- ii) Workshops/Agencies carrying out re-shafting of Traction motors of EMUs/MEMUs/Kolkata Metro,
- iii) Manufacturers of new Traction Motors of EMUs/MEMUs/Kolkata Metro,
- iv) Traction motor armature shaft manufacturers.

**7. Periodicity of Implementation:**

UST of armature shafts of EMUs/MEMUs/Kolkata Metro shall be carried out:

- (i) During every POH for Existing Traction motors.
- (ii) During manufacturing of new Traction motors.
- (iii) During re-shafting.

Encl: nil



**(P. K. Saraswat)**  
**for Director General/Electrical**