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Lucknow - 226011



No. EL/3.2.70

Dated 20.9.2000

## **SPECIAL MAINTENANCE INSTRUCTION** **NO. ELRS/ SMI/ 0222 - 2000 (REV. - 0)**

### **TITLE :**

Special Instruction for essential requirements of facilities to rewind 3-Phase AC Auxiliary Motors used in Electric Locomotives in Loco Sheds and rewinding shops.

**1.0** This SMI supersedes Special Maintenance Instruction No. RDSO/ EL/ RS /SMI/155 dated 18.3.1993.

- 1.1 Auxiliary motors failures are being reported regularly by Railways due to inter turn short and earth fault. RDSO conducted detailed investigation to find out the causes of such failures.
- 1.2 Based on above, it is considered that significant improvement in reliability level of motors can be achieved by adoption of correct winding procedure.
- 1.3 This SMI indicates the minimum essential facilities which are required for rewinding of auxiliary motors.

### **2.0 Machines and Plant :**

#### **2.1 VPI Plant :**

- 2.1.1 VPI plant suitable for vacuum impregnation using solventless varnish FT2005/500EK of Schenectady Beck India Ltd. with chilling plant for storage of varnish, shall be required to work under following conditions :

Vacuum level: 1 Torr  
Pressure : 2 to 3 Kg/Cm<sup>2</sup>

Alternatively, VPI plant suitable for impregnating varnish Elmothem H71A of Schenectady Beck India Ltd. may also be used under following conditions :

Vacuum level : Not below 25 to 30 m bar (18.65 Torr to 16.2 Torr)  
Pressure : 2 to 3 Kg/Cm<sup>2</sup>

- 2.2 Electric oven (0-300°C) with automatic cut in and cut off with recording facility.
- 2.3 Storage facility : Air conditioned room with minimum two air conditioner for keeping insulating materials.
- 2.4 Coil making machine with counter.
- 2.5 Slot wedge cutting machine
- 2.6 Brazing facility.
- 2.7 Dynamic balancing machine for rotor balancing, suitable for G2.5 grade balancing.
- 2.8 Small crane/chain pulley.
- 2.9 Miscellaneous tools, e.g., rubber faced mallet, hylem or nylon round bar, wire cutter screw gauge/vernier calliper etc.

### **3.0 Testing Facilities :**

- 3.1 Enamelled winding wire testing facilities as per IS:13778 Part 1 to 6.
- 3.2 Resistance measurement facility (milli ohm meter)
- 3.3 Surge comparison tester.
- 3.4 Shock Pulse meter/Condition monitoring instrument as per RDSO Specification No. ELRS/SPEC/Aux./0011 Rev.'0' of Aug., 2000.
- 3.5 High voltage tester ( 0 – 5 KV)
- 3.6 Megger (500V)

- 3.7 Growler/EMC Motor checker.
- 3.8 Vibration meter
- 3.9 Techometer
- 3.10 Suitable motor test bed having 3 Phase regulated supply (0-500V) comprising wattmeters, voltmeters, Ammeters and Frequency meter of accuracy class 0.5.
- 3.11 All the testing instruments and meters are required to be calibrated on regular basis.

**4.0 Agency of Implementation :**

All Electric Loco Sheds/POH Shops doing rewinding of Auxiliary motors.

**5.0 Instruction Drawing :** Nil

**6.0 Distribution :** As per list attached.

  
(R K Kulshrestha)  
for Director General (Elec)