Government of India Ministry of Railways Research Designs & Standards Organisation Manak Nagar, Lucknow - 226011

No. EL/3.2.92/3 15th October, 1993

MODIFICATION SHEET NO. RDSO/WAM4/177

1.0 <u>Title of the modification</u>

Rewinding of MCP "Siemens Make" of 10.5 KW/14 HP, TEFC with dual coat wire or double glass covered copper enamelled conductor type ILA6 188-6YA90-Z.

2.0 Application to class of electric locomotives :

All electric locos which are fitted with Elgi compressor TRC 1000 M and driven by Siemens make of motor 10.5 KW/14 HP as indicated in para 1

3.0 Object of modification :

- **3.1** Siemens has supplied MCPs of following designs :
 - i) ILA6 186-6-9.4KW, TEFC, 320-500V, DGCC, Machine Sl. No. less than

170637.

- ii) 1LA6 186-6-9.4kw, TEFC, 290-500V, DGCC, Machine Sl. No.170637 onwards.
- iii) 1LA6 188-6, 10.5kw, TEFC, 290-500V, dual coat machine sl. No.185640
 - to 185739 and 185273 to 185322 and all TEFC MCPs supplied subsequently.
- iv) 1LA6-188-6, 10.5 kw TEFC, 290-500V, DGCC, Machine Sl. No.182380

to 182394

- v) 1RAD 187-6, 10.5kw, SPDP, 290-500V, dual coat.
- 3.2 For the rewinding of the 9.4 kw, TEFC, MCPs of design i) and ii) mentioned in para 3.1 above, in case of failure RDSO has already circulated the rewinding scheme with dual coat wire vide SMI 171 of Nov.'1992.

It is expected that railways would have adopted the same by now.

- **3.3** Further for rewinding of the 10.5 kw, TEFC, MCPs supplied by Siemens(Dual coat or DGCC), the rewinding scheme is enclosed for adoption. This should be incorporated on all 10.5 kw TEFC MCPs of designs (iii) and (iv) in para 3.1 above.
- **3.4** Modified stator winding will be suitable from 290V-500V to take care of problem of low voltage reported by Railways.

4.0 Material Required :

- 4.1 Dual coat enamelled winding wire conforming to IS:4800 Pt. XIII. The dual coat wire shall have first coat of Dr. Beck & Co. enamel MT 533.39 and top coat with allotherm 602 of Dr. Beck & Co. India procured from RDSO recommended sources contained in RDSO's letter No.EL/2.2.8.4 dated 21/23.6.93 updated from time to time.
- **4.2** VPI impregnation shall be done with solventless resin FT 1052 or FT 2005 of Dr. Beck & Co. only.
- **4.3** No. impregnation shall be done by Elmotherm F40 or F50 of Dr. Beck & Co. or H-71.

5.0 <u>Details of modification and works to be carried out.</u>

- 5.1 Remove the failed stator winding and follow the rewinding procedure as per SMI No.RDSO/ELRS/SMI/98 issued vide RDSO letter No.EL/3.2.70 dated 15/16.10.82. Test on the rewound motor will be done as per SMI/98.
- **5.2** Following rewinding data shall be followed:
- 1. Type of Motor 10.4 kw/14 HP TEFC (DGCC or dual coat) type 1LA6-188-6
 - 2. Type of winding single layer concentric
 - 3. Slot/pole/phase 2+1
 - 4. No. of coils 27
 - 5. Conductor per slot 11 each conductor shall have 5 wires in parallel of size 1.06 mm dia i.e. 5 x

1.06)

- 6. Wire size

 1.06 mm (bare)

 1.115 mm (insulated i.e. enamelled)

 0.882 mm² (cross sectional area of one bare wire)
- 7. Class of insulation F
- 8. Winding wire Conforming to IS: 4800 Pt. XIII
- 9. Copper Weight 10.0 kg. approximately
- 10. Coil per phase in 3 series
- 11. Connection of phase star 12. Coil pitch - 9/9
- 13. Coil Span 1-10/2-9; 11-18
 14. Total resistance 0.9057 ohm at 20 °C

- **6. Modification Drawing No. :** For all types of motor No.
 - 1) Drawing No. SK. EL. 4262 indicating developed winding diagram.
 - 2) 4H-2618-7114-0224937 indicating coil dimensions.

7. Agency for implementation:

All electric loco shades & shops and other rewinding agencies of Indian railways

- **8. Periodicity:** During rewinding on need basis
- **9. Distribution :** As per enclosed list.

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(G.R.Agarwal) for Director General/Elec.



