

No. EL/1.2.9.1

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Dated 13.12.2004

Chief Electrical Engineer,

- Central Railway, Mumbai CST- 400 001.
- Eastern Railway, Fairlie Place, Kolkata- 700 001
- East Cost Railway, Chandrashekharpur, Bhubaneswar- 751 016.
- Northern Railway, Baroda House, New Delhi-110 001
- North Central Railway, Hasting Road, Allahabad-211 001.
- Southern Railway, Park Town, Chennai-600 003
- South Central Railway, Rail Nilayam, Secunderabad -500 071
- South Eastern Railway, Garden Reach, Kolkata -700 043
- Western Railway, Churchgate, Mumbai-400 020
- West Central Railway, Jabalpur-482001
- South East Central Railway, Bilaspur-495004
- East Central Railway, Hazipur-844101 (Bihar)
- North Western Railway, Jaipur-302006.
- Chittaranjan Locomotive Works, Chittaranjan- 713 331

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MODIFICATION SHEET No. ELRS/MS/ 0334 , REV. '0'

1.0 Title :

Withdrawal of capacitors across U, V & W. terminal of main compressor of Static Converter fitted Locomotives.

2.0 Object :

2.1 The Static Converter is having power electronic module from which power is supplied to auxiliary motors of Locomotive. The Static Converter module is having Inverter, Rectifier and DC link module.

The output voltage is PWM wave, with total Harmonic distortion not exceeding 10 % in case of static inverters as distinguished from Arno fed supply which is sinusoidal with practically no harmonic distortion. Due to the presence of harmonics (even though of acceptable value), the surge protection capacitor placed across the MCP terminals resonate to give higher value of harmonic voltage, which is detrimental to the MCP.

2.2 Regarding the surge voltage at the time of switching ON and switching OFF of EM contactors of MCP, measurements have been done at CNB Shed and it has been found that practically no significant surge voltage is appearing across MCP, thus rendering the usage of such capacitor bans across MCP terminal redundant.

3.0 Work to be done:

- 3.1 In view of above, the capacitor bank which is fitted across main compressor to be removed from compressors circuit of Static Converter fitted locomotives.
- 3.2 In all new/MTR locomotives to be manufactured in future with static inverter, the capacitor bank need not be provided across MCP terminals.

4. Application to the class of Electric Locomotives:

All types of ac Electric Locomotives provided with static converter.

5.0 Material Required :

Nil

6.0 Material rendered surplus:

Capacitors of 0.5 microfarad \pm 10%, 1000 V AC of 'ICAR' / ITALY or 'GE' /U.S.A. three nos.

7.0 Reference :

- i) Reports for Zonal Railways, which are having Static Converter Locomotives.
- ii) Test and trial conducted at Kanpur Shed.
- iii) IEC-TS 60034-17 Third Edition 2002-2003

8.0 Modification Drawing :


NIL

9.0 Agency for implementation :

All Electric Loco Shed holding with Static Converter Unit,
POH Workshops and CLW


(S. K. Sinha)
for Director General/Elect.

Copy to : As per Standard Mailing List No.EL/M/0019, Ver. '2'.


(S. K. Sinha)
for Director General/Elect.

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