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लमानक' लखनऊ

'RAILMANAK', Lucknow

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450567 (DID)



सत्यमेव जयते

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भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन

लखनऊ - 226011

Government of India-Ministry of Railways

Research Design & Standards Organisation

Lucknow - 226011



No. MC/RLC/D

Dated : 18.10.2000

The General Manager (Engg.):

1. Northern Railway, Baroda House, New Delhi - 110 001.
2. Central Railway, CST, Mumbai - 400 001.
3. Eastern Railway, Fairlie Place, Calcutta - 700 001.
4. Western Railway, Churchgate, Mumbai - 400 020.
5. Southern Railway, Park Town, Chennai - 600 003.
6. South Central Railway, Rail Nilayam, Secunderabad - 500 071.
7. South Eastern Railway, Garden Reach, Calcutta - 700 043.
8. North Eastern Railway, Gorakhpur - 273 012.
9. Northeast Frontier Railway, Maligaon, Guwahati - 781 011.

Sub: Final maximum permissible speed certificate
for operation of High Power Diesel Multiple Unit (HP DMU).

1. The existing Diesel Multiple Units have certain limitations in respect of maximum attainable speed and acceleration. In order to improve these parameters, design of High Power Diesel Multiple Unit (HP DMU) has been developed. Each unit consists of one driving power car (DPC), two trailer cars (TC) and one driving trailer car (DTC), which have been manufactured as per ICF drawing nos. DMU/DPC5-9-0-501, DMU/TC4-9-0-401 and DMU/DTC4-9-0-401 respectively. The HP-DMU can be run in multiples of 1, 2 or more units as per traffic demand.

1.1 The DPC has been provided with EMU motor coach type of bogie while TC and DTC have been provided with 16 t capacity mainline type of bogie. Both these bogies have pneumatic suspension in the secondary stage, which is of similar design as used in EMUs (retrofitment). The pneumatic suspension is self levelling type such that the secondary spring height is maintained at a pre-determined level irrespective of the load. Hence, problems due to bogie clearances etc. are eliminated. In addition, it also improves ride quality. The maximum axle load of the DPC is 18.7t and TC/DTC is 13.31 t.

Under to assess the speed potential of the HP DMU, detailed oscillation trials conducted upto a maximum test speed of 110 km/h on Chennai - More section of Southern Railway, the results of which are contained in Report No. MT- 250. The results have indicated satisfactory riding of the DMU upto the maximum test speed of 110 km/h on straight track, station and curved track.

3. Based on these results, it is certified that the HP DMU may be permitted to run upto a maximum speed as indicated below, subject to the following conditions:

3.1 Track

3.1.1 (a) Maximum speed of 80 km/h:

The track shall be to a minimum standard of 90R rails on sleepers to M+4 density and depth of ballast cushion below sleepers of 200 mm, which may consist of at least 75 mm clean ballast and the rest in caked up condition on compacted and stable formation.

(b) Maximum speed of 100 km/h:

The track shall be to a minimum standard of 52 Kg. rails on sleepers to M+7 density and depth of ballast cushion below sleepers of 250 mm, which may consist of at least 100 mm clean ballast and the rest in caked up condition on compacted and stable formation.

- 3.1.2 For track of lower standard than that mentioned above, the Chief Engineer concerned shall decide the maximum permissible speed in terms of Railway Board's letter No.65/WDO/SR/26 dated 19/20-10-1966. When the Chief Engineer considers that the road bed is not compacted or there is improper drainage, he may suitably restrict the maximum permissible speed depending on the local conditions.

- 3.1.3 The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual, 1986.

3.2 Bridges

- 3.2.1 The clearance in regard to bridges refers to standard design of girders, slabs, pipe, culverts, pier and abutments, etc. issued by RDSO for BGML, RBG & MBG – 1987 standard loadings.

- 3.2.2 All other designs of superstructures and sub-structures are to be examined under the direction of the Chief Engineer concerned and certified safe by him in terms of current IRS Bridge Rules, Steel Bridge Code, Bridge Sub-Structure and Foundation Code etc. read with upto-date correction slips.

- 3.2.3 The clearance is subject to the following parameters of the rolling stock:

Maximum Axle Load	:	18.7t (DPC), 13.31t (TC/DTC)
Maximum Tractive Effort (DPC):	:	15.2 t
Maximum Braking Force	:	5.1t (DPC), 4.09t (TC/DTC)
CG height above rail level	:	Not to exceed 1830 mm.

3.3 Signaling

Provision of GR, SR, SEM and all extant instructions issued from time to time shall be complied with.

3.4 General

3.4.1 All the temporary and permanent speed restrictions in force and those that may be imposed from time to time due to track, bridges, curves, signaling and interlocking etc. shall be observed.

3.4.2 The profiles of the DPC, TC and DTC are the same as existing BG mainline coaches and are within the EDO-590 profile, approved by Railway Board for coaching stock vide their letter no. 63/WDO/SD/2 dated 20.3.65.

DA: Drg. Nos :

- i) DMU/DPC5-9-0-501
- ii) DMU/TC4-9-0-401
- iii) DMU/DTC4-9-0-401


(A.K. SANWALKA)
Executive Director Standards (Motive Power)

Copy to:

1. The General Manager (Mech./Optg.):

- 1. Northern Railway, Baroda House, New Delhi – 110 001.
- 2. Central Railway, CST, Mumbai – 400 001.
- 3. Eastern Railway, Fairlie Place, Calcutta – 700 001.
- 4. Western Railway, Churchgate, Mumbai – 400 020.
- 5. Southern Railway, Park Town, Chennai – 600 003.
- 6. South Central Railway, Rail Nilayam, Secunderabad – 500 071.
- 7. South Eastern Railway, Garden Reach, Calcutta – 700 043.
- 8. North Eastern Railway, Gorakhpur – 273 012.
- 9. Northeast Frontier Railway, Maligaon, Guwahati – 781 011.

2. Secretary (Mech.), Railway Board, Rail Bhavan, New Delhi – 110 001.

DA: Nil


(A.K. SANWALKA)
Executive Director Standards (Motive Power)

फैक्स/Fax : 91-0522-458500

तार : 'रेलमानक' लखनऊ

Telegram : 'RAILMANAK', Lucknow

टेलीफोन/Tele : 451200 (PBX)

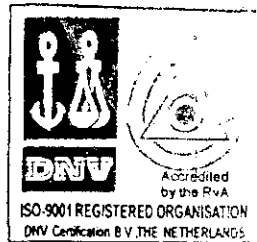
450567 (DID)



सत्यमेव जयते

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भारत सरकार - रेल मंत्रालय
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लखनऊ - 226011
Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226011



No. MC/RLC/D

Dated: 09-01-02

The General Manager (Engg.)/(Mech.)/(Optg.):

1. Northern Railway, Baroda House, New Delhi - 110 001.
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Sub: Amendment to the final maximum permissible speed certificate for operation of High Power Diesel Multiple Unit (HP DMU).

Ref: This office speed certificate of even no dated 18-10-2000.

Paras 3 and 3.1.1 of above referred speed certificate are amended as below.

"3. Based on these results, it is certified that the HP DMU may be permitted to run up to a maximum speed of 100 km/h, subject to the following conditions."

"3.1.1 The track shall be to a minimum standard of 90R rails on sleepers to M+4 density and depth of ballast cushion below sleepers of 200 mm which may consist of at least 75 mm clean and the rest in caked up condition."

Encl.: Nil.

(A. K. Sanwalka)

Executive Director Standards (Motive Power)

Copy to:

Secretary (Mech.), Railway Board, Rail Bhawan, New Delhi - 110 001.

Encl.: Nil.

(A. K. Sanwalka)

Executive Director Standards (Motive Power)