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भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
Government of India - Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011

No. MC/RLC/D

Dated: || -01-2010

The General Manager (Engg.),

1. Central Railway, Chhatrapati Shivaji Terminus, Mumbai-400 001.
2. Eastern Railway, Fairlie Place, Kolkata-700 001.
3. Northern Railway, Baroda House, New Delhi-110 001.
4. North Eastern Railway, Gorakhpur-273 001.
5. Northeast Frontier Railway, Maligaon, Guwahati-781 011.
6. Southern Railway, Annexe, Park Town, Chennai-600 003.
7. South Central Railway, Rail Nilayam, Secunderabad-500 071.
8. South Eastern Railway, Garden Reach, Kolkata-700 043.
9. Western Railway, Churchgate, Mumbai-400 020.
10. North Central Railway-Allahabad-211 001
11. North Western Railway- Jaipur-302 006
12. East Central Railway- Hajipur-844 101.
13. East Coast Railway, Railway Complex, Bhubaneswar-751 023.
14. South Western Railway, Hubli-580 023.
15. West Central Railway-Jabalpur-482 001.
16. South East Central Railway, Bilaspur-495 004.

Sub: Final maximum permissible speed certificate of 20 coaches of high power DMU upto a maximum speed of 100 km/h.

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- 1.0 1400 hp high power Diesel Multiple Unit (DMU) consisting of one driving power car (DPC), two trailer cars (TC) and one driving trailer coach (DTC) 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 may be run in multiples of five 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 16t 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 13.31t. The coaches are provided with Schaku couplers and Electro pneumatic brake system.

- 1.2 In order to assess the speed potential of the HP DMU, detailed oscillation trials had been conducted upto a maximum test speed of 110 km/h on Chennai – Bangalore section of Southern Railway, the results of which are contained in RDSO's report no. MT-250. On the basis of satisfactory results, high power DMU had been cleared for operation on track maintained to other than C&M-I, Vol.-I standard up to maximum speed of 100 km/h vide this office speed certificate no. MC/RLC/D 18-10-2000 followed by amendment of even no. dated 09-01-2002. On the basis of these speed certificates CRS Northern circle has accorded his sanctions for operation of 16 coaches (04 units) over various sections of Northern Railway vide their letter no. 95/Q-19/1810 dated 27-01-2004.
- 2.0 Based on the above, it is certified that the high power DMU having with 20 coaches (05 units) may be permitted to run upto a maximum speed of 100 km/h, subject to the following conditions:
- 2.1 Track
- 2.1.1 (a) Maximum speed of 80 km/h:
- The track be to a minimum standard of 90 R rails on sleeper to M+4 density and depth of ballast cushion below sleepers of 200 mm, which may consist of at least 75 mm clean and 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 52kg rails on sleeper to M+7 density and depth of ballast cushion below sleepers of 250 mm, which may consist of at least 100 mm clean and the rest in caked up condition, on compacted and stable formation.
- 2.1.2 For track maintained to lower standard than that mentioned above, the Chief Engineer shall decide the lower maximum permissible speed on the basis of maintenance condition. In this connection, Railway Board's letter no. 65/WDO/SR/26 dated 19/20.10.1966 may be seen. 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 upon the local conditions.
- 2.1.3 The maximum permissible speed on curves shall be decided on the basis of existing provision of the Indian Railway Permanent Way Manual, second reprint 2004.
- 2.2 Bridges
- 2.2.1 The clearance refers to bridges with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for BGML, RBG and MBG-1987 standard loadings. However, the bearings of span 78.8 m

(effective) designed for BGML standard loadings as per RDSO's drawing No. BA-11154 should be strengthened by providing two additional anchor bolts

- 2.2.2 Superstructures and bearings of non-standard spans including Arches and sub-structures of all bridges are to be examined under the directions of the Chief Bridge Engineer concern and certified safe by him in terms of current IRS Bridge Rules, Steel Bridge Code, Concrete Bridge Code, Arch Bridge Code, Bridge Sub-Structures and Foundations Code etc. read with upto-date correction slips.
- 2.2.3 Zonal Railways to certify adequacy of existing bridges for permitting rolling stock based on physical condition of bridges by keeping them under observations considered necessary by the Chief Bridge Engineer of Railway.
- 2.2.4 Location of bridges on which speed restrictions are imposed shall be notified by the Railways and incorporated in the working timetable.
- 2.2.5 The clearance is subject to the following parameters of HHP DMU Coach:-

S.No.	Description	DPC	TC/DTC
i.	Maximum axle load	18.70t	13.31t
ii.	Maximum tractive effort	15.2t	---
iii.	Maximum braking force	5.1t	4.09t
iv.	Maximum CG height above rail level	Not exceed 1830 mm	

2.3 Signalling

- a) Provisions of GR, SR, SEM & all extant instructions issued from time to time shall be complied with.
- b) On the sections where EBD of more than 1 Km is to be catered for, second distant signal or automatic signalling should be available failing which suitable speed restriction is to be imposed.

2.4 Traction Installation

2.4.1 In 25kV OHE

In 25kV a.c. traction area, the CEE of the Railway shall have to ensure that the minimum height of contact wire and electrical clearances as stipulated in provision of Chapter-V and V-A, Electric Traction "Schedule of Dimensions of 1676mm gauge (BG) revised-2004" is not violated and strictly followed to ensure its safe running.

2.4.2 In D.C. OHE

In D.C. traction area, Condition of operation will be decided by the CEE of the concerned Railway.

2.5 Rolling Stock

Before starting the operation, CME of the railway will certify the track worthiness and safety of the rolling stocks. He will also ensure proper maintenance of the stocks.

2.6 General

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

2.6.2 The profile of 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 20-03-1965.

2.6.3 This speed certificate does not supersede the earlier speed certificate issued vide this office letter of even no. dated 18-10-2000 followed by amendment of even no. dated 09-01-2002, which is still applicable for upto 16 coaches (04 units).

Encl: Drg. nos.

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



(S. Mani)

Exe. Director Standards (Motive Power)

Copy to:

1. Secretary, (Mech./ Engg. (G)) Railway Board, Rail Bhawan, New Delhi - 110001
2. The General Manager (Mech/Optg./S&T.),
 - (i) Central Railway, Chhatrapati Shivaji Terminus, Mumbai-400 001.
 - (ii) Eastern Railway, Fairlie Place, Kolkata-700 001.
 - (iii) Northern Railway, Baroda House, New Delhi-110 001.
 - (iv) North Eastern Railway, Gorakhpur-273 001.
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 - (vi) Southern Railway, Park Town, Chennai-600 003.
 - (vii) South Central Railway, Rail Nilayam, Secunderabad-500 071.
 - (viii) South Eastern Railway, Garden Reach, Kolkata-700 043.
 - (ix) Western Railway, Churchgate, Mumbai-400 020.
 - (x) North Central Railway-Allahabad-211 001
 - (xi) North Western Railway- Jaipur-302 006
 - (xii) East Central Railway- Hajipur-844 101.
 - (xiii) East Coast Railway, Railway Complex, Bhubaneshwar-751 023.
 - (xiv) South Western Railway, Hubli-580 023.
 - (xv) West Central Railway, Jabalpur-482 001.
 - (xvi) South East Central Railway, Bilaspur-495 004.

3. Chief Commissioner of Railway Safety, Ministry of Civil Aviation (Commission of Railway Safety), Asok Marg, Lucknow- 226001
4. Managing Director, Konkan Railway Corporation Limited, Belepur, Navi Mumbai- 400614

Encl: Nil.



(S. Mani)

Exe. Director Standards (Motive Power)