

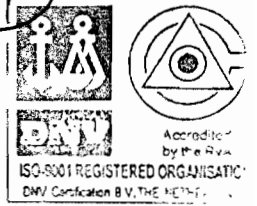
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सत्यमेव जयते

भारत सरकार - रेल मंत्रालय  
अनुसंधान अभिकल्प और मानक संगठन  
लखनऊ - 226011  
Government of India - Ministry of Railways  
Research Designs & Standards Organisation  
Lucknow - 226011

32/2



No. MC/LHB/COACH

Dated : 20.5.2003

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 - 273 012
5. Northeast Frontier Railway, Maligaon, Guwahati - 781 011
6. Southern Railway, 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. East Central Railway, Hajipur - 844 101
11. East Coast Railway, Chandrasekharpur, Bhubaneswar - 751 016
12. North Central Railway, Allahabad - 211 001
13. North Western Railway, Jaipur - 302 006
14. South East Central Railway, Bilaspur - 495 004
15. South Western Railway, Hubli - 580 023
16. West Central Railway, Jabalpur - 482 008

**Sub: Final Speed certificate for operation of BG EOG type AC 3 - Tier (LHB variant) coach fitted with FIAT bogies at 160 km/h on track maintained to C&M-I Vol. I standards**

RDSO has designed bogie suspension and coach layout of AC 3-Tier ACCN (LHB variant) coach on FIAT bogies, generally to the LHB design received under Transfer of Technology contract, from M/s ALSTOM-LHB, with axle load within 16.25 t capacity. The bogie has a wheelbase of 2560 mm and the design incorporates flexible guidance of the axle, flexi-coil secondary suspension, and no headstock and incorporates anti-roll bar. The bogie is fitted with axle mounted disc brake system. RCF has manufactured this coach based on RDSO's design to RCF's drawing No. LE 90009.

- 1.1 The detailed oscillation trials and long confirmatory runs on the prototype coach have been completed up to a test speed of 180 km/h on Ghaziabad - Tundla section of North Central Railway. The results of trial are contained in RDSO's Report No. MT-412 (May 2003). The results indicate that on track maintained to standards as specified in RDSO Report No. C&M-I, Vol. I, the coach exhibits satisfactory riding and stability behaviour, up to a maximum test speed of 180 km/h.
2. Based on the results of detailed oscillation trials and long confirmatory run, it is certified that AC 3-Tier ACCN coach to RCF drawing No. LE 90009, fitted with FIAT bogies may be permitted to run up to maximum speed of 160 km/h on track

maintained to standards as specified in RDSO report No. C&M-I Vol. I, subject to the following conditions:

2.1 Track

2.1.1 Upto 140 km/h speed

The track shall be to a minimum standard of 52 kg rails on sleepers to M+7 density and minimum depth of ballast cushion below sleepers to 250 mm which may consist of at least 100 mm clean and the rest in caked up condition on compacted and stable formation. The track shall be maintained to standards as laid down in RDSO's Report No. C&M-I Vol. I. In this connection, the instructions for the maintenance of track on high speed routes circulated to the railways under RDSO's DO letter No. CRA/509 dated 07.7.1971 and approved by Railway Board vide their letter No. 71/W6/HS/8 dated 27.8.1971 and No. 71/W6/HS/1 dated 21.10.1971 should also be followed.

2.1.2 Beyond 140 km/h and upto 160 km/h speed

2.1.2.1 The track shall be to a minimum standard of 60 kg (90 UTS) rails on PSC sleepers to 1660 nos. per kilometer sleeper density and minimum depth of ballast cushion below sleepers to 300 mm which may consist of at least 150 mm clean and the rest in caked up condition on compacted and stable formation. The track shall be maintained to standards as laid down in RDSO's Report No. C&M-I Vol. I. In this connection, the instructions for the maintenance of track on high speed routes circulated to the railways under RDSO's DO letter No. CRA/509 dated 07.7.1971 and approved by Railway Board vide their letter No. 71/W6/HS/8 dated 27.8.1971 and No. 71/W6/HS/1 dated 21.10.1971 should also be followed.

2.1.2.2 Replacement of existing switches with loose heel by fixed heel with curved switches to be laid on PSC sleeper layout with CMS crossings with adequate arrangements to ensure designed geometry of turnouts.

2.1.2.3 Improvement on track geometry parameters on the route of operation of the train is to be carried out.

2.1.2.4 The curves will have to be suitably realigned and proper transition lengths is to be provided.

2.1.2.5 Action should be taken for relocation/modification of engineering signals in consultation with respective S&T and OHE departments of Zonal Railways.

2.1.2.6 Concerned railway will arrange for providing fencing particularly near habited urban areas to prevent unauthorized pedestrian/cattle crossings.

2.1.3 For track of lower standard than that mentioned above, the Chief Engineer concerned shall decide the maximum permissible speed. 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 on the local conditions.

- 2.1.4 The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual, 1986. Higher speeds may, however, be permitted subject to the maximum cant deficiency of 100 mm and the rate of change of cant and cant deficiency not exceeding 55 mm per second.
- 2.1.5 Route proving run/confirmatory oscillograph car run shall be conducted before starting operation above 105 km/h speed as per provisions of Policy Circular No. 6.
- 2.2 **Bridges**
- 2.2.1 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 loading.
- 2.2.2 All other designs of superstructures and sub-structures are to be examined under the directions of the Chief Engineer concerned and certified safe by him in terms of current IRS Bridge Rules, Steel Bridge Code, Concrete Bridge Code, Arch Bridge Code, Bridge Substructures and Foundations Code, etc. read with up to date correction slips.
- 2.2.3 This clearance is subject to the following parameters of AC 3-Tier ACCN coach:
- |                           |   |   |
|---------------------------|---|---|
| Maximum axle load         | : | 16.25 t   |
| Maximum braking force     | : | 5.8 t (12.7 % of tare weight and<br>8.92 % of gross weight) |
| CG height from rail level | : | Not exceeding 1830 mm.                                      |
- 2.3 **Signalling**
- 2.3.1 Provision of GR, SR, SEM and all extant instructions issued from time to time shall be complied with.
- 2.3.2 It is necessary to provide the means / arrangements to put back the home signal and last stop signal to its 'ON' position immediately after the passage of the train.
- 2.3.3 For speed 120 km/h and above
- 2.3.3.1 MACLS shall be provided with two distant signals. First distant signal shall be located at a distance of 1 km in rear of the home signal and the second distant signal at a distant of 2 km in rear of the home signal.
- 2.3.3.2 The above shall also be applicable to IBS and the interlocked gates located in the block sections.
- 2.3.3.3 All manned level crossing gates shall be provided with telephone communication with the nearest station.
- 2.3.4 For speed 130 km/h and above (in addition to clause 2.3.3)

- 2.3.4.1 Track circuiting of complete station yard from first stop signal to last stop signal and all other running lines.
- 2.3.4.2 Means for direct holding the closed switch rail to its corresponding stock rail and preventing the point from being unlocked during passage of the train.
- 2.3.4.3 Means for verifying complete arrival of trains by means of track circuits and interlocking the same with advance starter.
- 2.3.4.4 Provision of AWS.
- 2.3.4.5 Provision of telephone communication between Driver-Nearest station and / or control office.

## 2.4 Rolling Stock


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

2. The Wheel Slide Protection (WSP) device of all the coaches in the rake shall be functional at the starting station. If the WSP of any coach becomes defective enroute, the brake system of that particular coach shall be isolated.

## 2.5 General

2.5.1 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 shall be observed.

2.5.2 AC 3-Tier ACCN coach with 23540 mm length over body and 12340 mm maximum distance apart between any two adjacent axles infringes clause 13(b), 16, 17, 19(b), 20(b), 21(b), 22, 31 and 32(b) of Chapter IV (A) of BG Schedule of Dimensions, 1973 Reprint. These infringements of LHB coach have been condoned by Railway Board vide their letter No. 2002/CEDO/SR/13 dated 10.12.2002.

  
(S.K. Sinha)

Executive Director Standards (Motive Power)

DA: 1. Rly. Bd.'s letter No.2002/CEDO/SR/13  
dated 10.12.2002

2. RCF's drawing No. LE 90009

Copy to:

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

The General Manager (Mech.),

1. Central Railway, Chhatrapati Shivaji Terminus, Mumbai - 400 001
2. Eastern Railway, Fairlie Place, Kolkata - 700 001
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