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



No. SD.WAP5.11

Dated 28-05-01

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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. Southern Railway, NGO Annexe, Park Town, Chennai-600 003.
5. South Central Railway, Rail Nilayam, Secunderabad-500 071.
6. South Eastern Railway, Garden Reach, Kolkata-700 043.
7. Western Railway, Churchgate, Mumbai-400 020.

Sub: Final maximum permissible speed certificate for WAP5 class of locomotives on track maintained to main line standard.

WAP5 class of locomotives, with Bo-Bo bogies are imported locomotives from M/S ABB, Switzerland. Outline of the locomotive is as per drawing No.SK.EL.4353. The axle load of the locomotive is $19.5 \pm 2\%$ t.

1.1 Detailed oscillation trials to establish the speed potential of the WAP5 class of locomotive on main line standard track were conducted on Ujjain-Bhopal section of Western Railway upto maximum test speed of 115 km/h. The results contained in RDSO's Report No. MT-242 (October, 2000) indicate that the locomotive exhibits satisfactory riding and stability behavior upto maximum speed of 115 km/h.

2. Based on the above, it is certified that operation of single WAP5 class of locomotive may be permitted upto a maximum speed of 105 km/h, subject to the following conditions:

2.1 Track

2.1.1 For maximum speed of 105 km/h

a) 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 and the rest in caked up condition, on compacted and stable formation.

For maximum speed of 100 km/h

b) The track shall be to a minimum standard of 90 R 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, on compacted and stable formation.

b.1) The operation of WAP5 loco on 90R rails, however, is subject to the decision of the railway to impose speed restrictions or to restrict speeds, keeping into consideration the condition stresses on bridges, condition of formations or bad formations, age of track, over due renewal of track, extent of rail and weld failures etc.

2.1.2 For track of lower standard than that mentioned above, the Chief Engineer shall decide the lower 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 upon the local conditions.

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

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 loadings.

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, Bridge Sub-Structure and Foundation Code etc. read with upto date correction slips.

2.2.3 The clearance is subject to the following parameters of WAP5 locomotive:

Axle load	19.5±2%t
Maximum Tractive effort	26.3t
Maximum Braking effort	16.3t

2.3 Signalling

2.3.1 Signalling shall be provided as per the standards of interlocking.

2.3.2 It is necessary to provide 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 Where down gradients exist on approaches to signals, suitable speed restriction may be imposed to insure that drivers do not overshoot signals at danger.

- 2.3.4 Where signalling system has been upgraded, the catenary current shall be limited to 800/1000 Amp for single line and double/multi line sections respectively. Where the signalling system has not so far been upgraded, the catenary current shall be limited to 300/600 Amp for single line and double/multi line sections respectively. CSTE and CEE should ensure the above provisions in signalling and catenary current respectively.

2.4 Traction Installation

- 2.4.1 The OHE shall have swiveling type of cantilever having the tension in the conductors regulated automatically, with a presag of 50/100 mm. The presag is on contact wire for a span of 72 meter, proportionately less for smaller spans.
- 2.4.2 In case of locations where porcelain section insulators are installed on main line and lie within first 1/10th and 1/3rd of the span immediately after the OHE structure and the runners in the trailing direction the maximum speed shall be limited to 105 km/h. At all other locations where porcelain section insulators are installed, the speed shall be limited to 80 km/h.
- 2.4.3 The current collection beyond 100 km/h shall be made through 1 No. pantograph fit for high speed operation.
- 2.4.4 In addition to the above, the Chief Electrical Engineer may impose any temporary speed restrictions on the basis of his personal knowledge and experience of the OHE and the conditions prevailing on any particular section.

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, etc. shall be observed.
- 2.5.2 The pantograph of WAP5 locomotive in locked down condition and the surge arrestors infringe the Maximum Moving Dimensions of 1929 over non-electrified sections. After removing pantograph pan assembly and two surge arrestors, the profile will infringe the Maximum Moving Dimensions of 1929 but will be within 'X' class loco profile. For movement of the loco in non-electrified territory, pantograph pan assembly and two surge arrestors shall be removed and the movement of the loco shall be cleared by the Railway concerned as per the extant rules applicable. In non-electrified sections where Maximum Moving Dimensions of existing 'X' class locos are not permissible, the movement shall

be in accordance with the instructions issued by the Railway Board and other additional instructions issued by the Zonal Railways for the movement of ODCs.

Railway Board have condoned the infringements vide their letter no. 95/CEDO/SR/18 dated 14-7-95.


(A. K. SANWALKA)

EXE.DIRECTOR STANDARDS (MOTIVE POWER)

Encl: Copy of
RDSO's Report
No. MT-242.

Copy to:-

The Secretary (Elect./Engg.(G)),
Railway Board, Rail Bhawan, New Delhi-110 001.

The General Manager (Elect./Optg.)

1. Central Railway, Chhatrapati Shivaji Terminus, Mumbai-400 001.
2. Eastern Railway, Fairlie Place, Kolkata-700 001.
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5. South Central Railway, Rail Nilayam, Secunderabad-500 071.
6. South Eastern Railway, Garden Reach, Kolkata-700 043.
7. Western Railway, Churchgate, Mumbai-400 020.

Encl: Nil.


(A. K. SANWALKA)
EXE.DIRECTOR STANDARDS (MOTIVE POWER)