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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

AN ISO 9001
CERTIFIED
ORGANISATION

No. SV.AS.ML/07/Vol-IV

Dated : 05/07/2007

The General Manager (Engineering),

- i. Northern Railway, Baroda House, New Delhi-110 001
- ii. Western Railway, Churchgate, Mumbai-400020
- iii. Central Railway, CSTM, Mumbai - 400 001
- iv. Eastern Railway, Fairly Place, Kolkata- 700 001
- v. Southern Railway, Park Town, Chennai - 600 003
- vi. North Frontier Railway, Maligaon, Guwahati- 781 001
- vii. North Eastern Railway, Gorakhpur-273 001
- viii. South Eastern Railway, Garden Reach, Kolkata-700 043
- ix. South Central Railway, Secunderabad-500 071
- x. West Central Railway, Jabalpur-482 001
- xi. South East Central Railway, Bilaspur-495 004
- xii. South Western Railway, Hubli-580023
- xiii. East Coast Railway, Railway Complex, Bhubaneshwar-751 023
- xiv. East Central Railway, Hajipur-844 101
- xv. North Western Railway, Jaipur-302 006
- xvi. North Central Railway, Allahabad-211 001

Sub:- Final maximum permissible speed certificate for operation of AC EOG coaches - Ist AC Chair Car (WFCZAC) fitted with Pneumatic Suspension at the Secondary Stage on ICF bogie at 130 kmph over track maintained to standards specified in RDSO's report C&M-I Vol-I.

- 1 RDSO has redesigned the suspension of AC EOG coaches - Ist AC Chair Car provided with Pneumatic Suspension at the Secondary Stage on ICF bogie as per ICF's drg. no.WTAC₅-9-0-501.
- 1.1 In order to assess the riding quality and stability of all the AC EOG coaches fitted with air springs in secondary stage, detailed oscillation trials and long confirmatory runs have been conducted on track maintained to standards laid down in C&M-I Vol-I upto a maximum test speed of 145 kmph on Surat-Virar section of Western Railway using Ist AC chair car.

The results contained in RDSO's Report no.RDSO/2007/TG/MT-775/F/Rev.0 dt.16.05.2007 indicate that Ist AC chair car with pneumatic suspension exhibits satisfactory riding upto a test speed of 145 kmph.

- 2 Based on the above, it is certified that the WFCZAC coaches fitted with 16.25t design axle load ICF bogie are fit to run upto a maximum speed of 130 kmph over track maintained to standards specified in RDSO's report C&M-I Vol-I subject to conditions given in the ensuing paragraphs.

2.1 Track

- 2.1.1 The track shall be to a minimum standard of 52 kg rails on PSC/ST sleeper to M+7 density and minimum depth of ballast cushion below sleepers of 250 mm which may consist of at least 100 mm clean and the rest in caked condition, on compacted and stable formation and maintained to standards recommended in RDSO Report no.C&M-I Vol-I. In this connection, the instructions for maintenance of track on high speed routes, circulated to the Railways under RDSO's D.O. letter no.CRA/509 dt. 07.07.71 and approved by the Railway Board under their letter no. 71/W6/HS/8 dt. 27.08.71 and 71/W6/HS/1 dt. 21.10.71 should also be followed.
- 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 on 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, Second Reprint, 2004 and should not be more than 80 kmph.

2.2 Bridges

- 2.2.1 The clearance refers to bridges with standard design of girders, slabs, pipe culverts, piers and abutment, etc. issued by RDSO for BGML, RBG and MBG-1987 standard loadings. However the bearings of span 78.8m (effective) designed for BGML standard loading as per RDSO's Drawing no.BA-11154 should be strengthened by providing two additional anchor bolts.
- 2.2.2 All other designs of super structures and sub-structures 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 Foundation Code etc. read with upto date correction slips.

2.2.3 The clearance is subject to the following parameters of AC EOG Coaches:

(i) Maximum axle load (Design)	=16.25t
(ii) Axle Load upto which clearance is given	=13.355t
(iii) Gross Track Loading Density	= 2.915 t/m
(iv) Max. C.G. Height from Rail Level	= not exceeding 1830mm.

2.2.4 Specific restrictions are applicable which are indicated in relevant Speed Certificates of hauling locomotives issued by RDSO.

2.3 Signaling

2.3.1 Provisions of GR, SR, SEM & all extant instructions issued from time to time shall be complied with.

2.3.2 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 restrictions is to be imposed.

2.4 Rolling Stock

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

2.5 Traction Installation

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

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 modified design of EOG 1st AC Chair Car is identical to that of existing ICF coaches. This infringes with the 1973 edition of the BG schedule of Dimensions but is within the limits laid down in EDO-590, which has been condoned vide Board's letter No. 63/WDO/SD/Z dated 20.3.65.

Encl : 1.Drg. No.WTAC₅-9-0-501



(P.K. Agrawal)

Executive Director Standards (Motive Power)

Copy:-

1. **EDME (Coaching)**, Railway Board, Rail Bhawan, New Delhi-110 001
2. **General Manager (Mech./Optg.)**
 - i. Northern Railway, Baroda House, New Delhi-110 001
 - ii. Western Railway, Churchgate, Mumbai-400020
 - iii. Central Railway, CSTM, Mumbai - 400 001
 - iv. Eastern Railway, Fairly Place, Kolkata- 700 001
 - v. Southern Railway, Park Town, Chennai - 600 003
 - vi. North Frontier Railway, Maligaon, Guwahati- 781 001
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 - x. West Central Railway, Jabalpur-482 001
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 - xiv. East Central Railway, Hajipur-844 101
 - xv. North Western Railway, Jaipur-302 006
 - xvi. North Central Railway, Allahabad-211 001
3. **General Manager (Mech)**, ICF, Chennai
4. **General Manager (Mech.)**, RCF, Kapurthala
5. **Managing Director**, Konkan Railway Corp. Ltd., Belapur Bhavan, Navi Mumbai-14

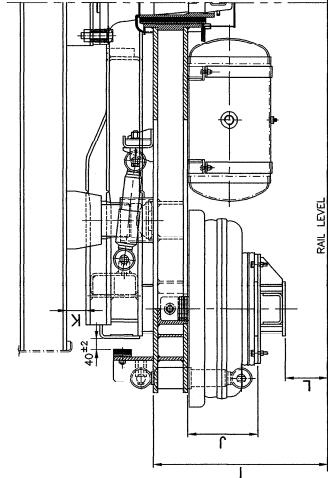
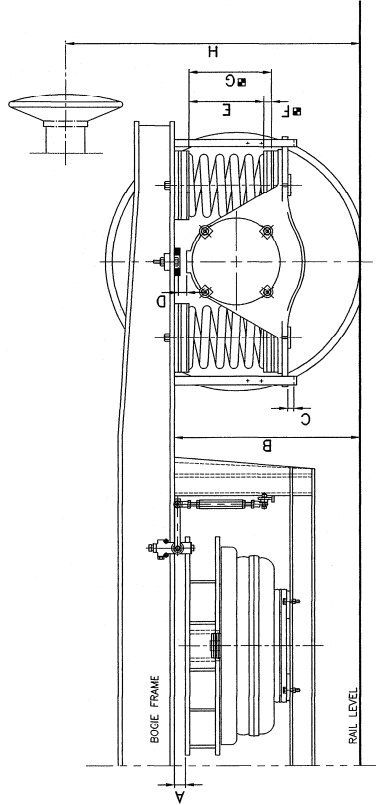


(P.K. Agrawal)

Executive Director Standards (Motive Power)

WTAC5-9-0-501

ALTERATIONS



SUSPENSION DATA

LOAD	A	B	C	D	E	F	G	H	I	J	K	L
TARE	40 ²⁵	686 ¹⁵	40 ²⁵	40 ²³	291 ³⁵	-	231 ³⁵	1104 ¹⁰	646 ²⁵	255 ³⁵	70 ²³	166 ²⁵
GROSS	40 ²⁵	678 ¹⁵	48 ²⁵	32 ²⁵	283 ⁴⁵	-	283 ³⁵	1086 ²⁵	638 ²⁵	255 ³⁵	70 ²³	158 ²⁵

WEIGHT PARTICULARS

TARE WEIGHT OF THE COACH : 42.6 Tonnes
 WEIGHT OF THE BOGIE : 6.2 Tonnes
 WEIGHT OF THE BOLSTER : 0.5 Tonne
 UNSPRUNG MASS PER BOGIE : 3.2 Tonnes
 NORMAL PAY LOAD : 3.68 Tonnes
 OVER LOAD : - Tonnes
 TOTAL PAY LOAD (SDGL) : 3.68 Tonnes
 GROSS WEIGHT OF THE COACH : 46.28 Tonnes

TEST LOAD/BOGIE

UNDER TARE : 15.10 Tonnes
 UNDER GROSS : 16.94 Tonnes

NOTE:

1. DIMENSION 'G' SHOULD BE MAINTAINED WITH REQUIRED No. OF COMPENSATING RINGS OF STANDARD THICKNESS OF 4mm.
2. AXLE BOX SPRING TO DIRS. No. WTAC2-0-1-202.
3. DIMENSIONS A,H,J,K SHALL BE ENSURED AT FURNISHING DIVISION AFTER GIVING AIR CONNECTION TO THE AIR SPRINGS AND CONTROL SYSTEMS.

SUPERSEDED BY:		SCALE: 1:25		DRAWN BY: R. Aravindhan		CHECKED BY: K. Murugadasan		APPROVED BY: [Signature]	
GROUP: SUSPENSION		WTAC5-0-0-501		DATA CODE No. 013		DATE: 23.12.2014		SHEET 1 OF 1	
ASSEMBLY DRAWINGS		INDIAN RAILWAY STANDARDS		WTAC5-9-0-501		FORM IR 32 600 x 420		INTEGRAL COACH FACTORY CHENNAI - 600 038	
SUSPENSION DIAGRAMATIC ARRGT. FOR AC EGG COACHES WITH AIR SPRINGS		INDIAN RAILWAY STANDARDS		WTAC5-9-0-501		FORM IR 32 600 x 420		INTEGRAL COACH FACTORY CHENNAI - 600 038	