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No. SV. FIAT Spring

Date: 11.02.2020

**PCME,
Western Railway, Churchgate,
Mumbai - 400 020.**

Sub: Spring Failure in LHB coaches.

Ref: Item No. D (i) of Minutes of Meeting of DG/RDSO with CR & WR Officers on 30.01.2020 circulated vide File No. Sec DG/minutes/2020/3 dated 04.02.2020.

In reference to above, a comprehensive study of primary suspension arrangement of LHB coaches was done based on data received from Zonal Railways. Accordingly, primary suspension of LHB coaches has been reviewed for adequacy in consultation with RCF/KXH by specifying thickness of compensating ring (disc) and RCF CAI No. CAI/RCF/MECH/LHB/016 dated 21.06.2019 issued to Railways & PUs vide letter No. SV.FIAT Spring dated 28.06.2019.

For minimizing breakage of primary springs in LWACCN coaches, Zonal Railways & PUs have been advised vide letter No. SV.FIAT Spring dated 16.12.2019 to provide 12 mm thick compensating ring below primary rubber bump stop with outer spring as per drawing no. 1277142 & inner spring as per drawing no. 1277143 during manufacturing, shop schedules & sick line attentions.

As per directives from Railway Board, RDSO Specification No. RDSO/2017/CG-01 for Hot Coiled Cylindrical Springs for use in suspension of I.R. coaches having FIAT Design Bogies has been revised to make suitable changes and issued for material improvement, tightening up quality control during manufacturing & inspection, such as:

- (i) Dilutions permitted by PUs in reference to FIAT specification have been removed.
- (ii) Minimum contact line length has been defined.
- (iii) Vanadium (V) and Molybdenum (Mo) % has been clearly defined to ensure that these alloying element are not kept to minimum permissible levels.
- (iv) Permissible limit of hydrogen (H) and Nitrogen (N) content in liquid steel has been clearly defined these alloying element are not kept to maximum permissible levels.
- (v) For Spring Steel Rounds manufacturing, Ingot-forging-rolling route also included.

As already communicated, procurement is to be ensured with RDSO specification only and material should be inspected by QA (Mech.) Directorate of RDSO.

Remedial measures have been suggested from time to time to ensure the implementation of best maintenance practices in the field. In this regard, Carriage Maintenance Instructions (CMI) No. RDSO/2017/CG/CMI-01 for coil springs in FIAT Bogie was issued to Zonal Railways vide letter No. SV.FIAT Spring dated 30.01.2017, followed by specific instructions regarding proper handling vide letter No. SV.FIAT Spring dated 12.02.2019, reiteration of maintenance instructions vide letter No. SV.FIAT Spring dated 15.03.2019 & instruction for holistic attention to suspension system vide letter No. SV.FIAT Spring dated 05.11.2019.

Quality Audits of Parel Workshop and LTT Coaching Depot of Central Railway and Lower Parel Workshop and BCT Coaching Depot of Western Railway were conducted from 16.04.2019 to 19.04.2019. The audits were aimed at identification of weak areas which can be improved upon to bring the maintenance practices of coil springs in line with Carriage Maintenance Instructions (CMI) No. RDSO/2017/CG/CMI-01. Accordingly, Audit Report

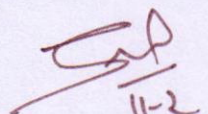
indicating weakness/shortcomings has been communicated to CR & WR for necessary compliance of non-conformities raised in the subject audits. Other Railways have also been advised to carry out Quality Audit of their Workshops & Coaching Depots for maintenance practices being followed for coil springs in FIAT bogies of LHB coaches as per RDSO Check Sheets.

For meaningful analysis and identifying root cause of coil spring failures, compiled data and analysis of coil springs failure cases were requested from Zonal Railways in an updated format vide letter No. SV.FIAT Spring dated 15.03.2019, followed by reminder letters No. SV.FIAT Spring dated 09.10.2019 & 22.01.2020. The updated format was circulated to Railways so that complete details are available for analysis (Coach type-wise, Railway-wise, Make-wise, in comparison to coach type-wise population etc.) and root cause identification. Data till December, 2019 has been received. Analysis and data in the format should regularly be provided on monthly basis.

During trials, number of load cycles to which springs are subjected shall be ascertained for accelerated fatigue testing. Presently, springs of vendors are subjected to fatigue testing as per clause no. 8.4 of RDSO Specification No. RDSO/2017/CG-01 (Rev.01) with Corrigendum No.01.

It is requested to ensure compliance to above mentioned instructions to reduce failures of coil springs in LHB coaches.

DA: Nil.


(Shobhit Pratap Singh)
Joint Director/VDG/Carriage
for Executive Director/Carriage

Copy to:

(i) PCMEs,

1. Northern Railway, Baroda House, New Delhi-110 001.
2. Central Railway, CSTM, Mumbai - 400 001.
3. Eastern Railway, Fairlie Place, Kolkata-700 001.
4. Southern Railway, Park Town, Chennai - 600 003
5. North East Frontier Railway, Maligaon, Guwahati- 781 011.
6. North Eastern Railway, Gorakhpur-273 001.
7. South Eastern Railway, Garden Reach, Kolkata-700 043.
8. South Central Railway, Secunderabad-500 071.
9. West Central Railway, Jabalpur- 482 001.
10. South East Central Railway, Bilaspur- 495 004.
11. South Western Railway, Hubli- 580023.
12. East Coast Railway, Railway Complex, Bhubaneswar- 751 023.
13. East Central Railway, Hazipur-844 101.
14. North Western Railway, Jaipur-302 006.
15. North Central Railway, Allahabad-211 001.
16. Konkan Railway Corp. Ltd., Corporate office, Belapur Bhawan, Navi Mumbai – 400 614.
17. Integral Coach Factory, Chennai- 600 .38.
18. Rail Coach Factory, Kapurthala, Punjab – 144 602
19. Modern Coach Factory, Rae Bareli – 229120.

(ii) EDME (Chg.), Railway Board, Rail Bhawan, New Delhi-110 001. - for kind information please.