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No. SV. FIAT Spring

Date: 08.11.2018

Principal Chief Mechanical Engineers,

1. Northern Railway, Baroda House, New Delhi - 110 001
2. Western Railway, Churchgate, Mumbai - 400020
3. Central Railway, CSTM, Mumbai - 400 001
4. Eastern Railway, Fairly Place, Kolkata - 700 001
5. Southern Railway, Park Town, Chennai - 600 003
6. North East Frontier Railway, Maligaon, Guwahati - 781 011
7. North Eastern Railway, Gorakhpur - 273 001
8. South Eastern Railway, Garden Reach, Kolkata - 700 043
9. South Central Railway, Secunderabad - 500 071
10. West Central Railway, Jabalpur - 482 001
11. South East Central Railway, Bilaspur - 495 004
12. South Western Railway, Hubli - 580023
13. East Coast Railway, Railway Complex, Bhubaneswar - 751 023
14. East Central Railway, Hajipur - 844 101
15. North Western Railway, Jaipur - 302 006
16. North Central Railway, Allahabad-211 001
17. Konkan Railway Corporation Ltd., Belapur Bhawan, Navi Mumbai – 400 614
18. Integral Coach Factory, Chennai - 600 038
19. Rail Coach Factory, Hussainpur, Kapurthala, Punjab – 144 602
20. Modern Coach Factory, Rae Bareli – 229 120

Sub: Speed Restriction in LHB coaches due to enroute breakage of primary outer spring

Ref: PCME/SECR letter no Mech/HQ/2018/06 dt 09-07-2018

Vide letter under ref. above, SECR had requested for issue of guidelines in case of enroute breakage of primary springs in LHB coaches. The dynamic behavior of LHB coach with one broken primary outer spring has been studied at RDSO. Simulation studies for coach dynamic behavior including vehicle stability and ride quality have been carried out on NUCARS software with one broken primary outer spring where the breakage is within one and a half (1.5) coil lengths from top / bottom end. This study has brought out that there is no deterioration in the coach running behavior at speeds upto 80 kmph, with an adequate margin of safety. FIAT OEMs have also recommended that spring breakage shortens the spring, but at the same time increases the stiffness of the spring, so that affected vehicle can be permitted up-to destination station. It is further planned to conduct oscillation trial of a LHB coach fitted with broken primary outer spring to study behaviour at higher speeds.

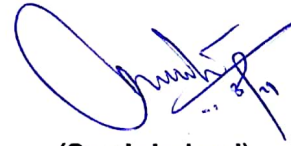
In view of above, in case of enroute breakage of outer spring of primary stage suspension, the LHB coach can be permitted to run upto the destination with escorting TXR staff at a restricted speed of 80 kmph, provided each of the following conditions are met:

- (i) Only one primary outer spring is broken and all other coil springs / air springs in primary as well as secondary suspension are in good condition. All springs must be checked critically before permitting the coach with restricted speed.

- (ii) The primary outer spring is broken at only one location, which falls within one and a half (1.5) coil lengths from top / bottom end. The corresponding rubber pad primary bump stop must be intact and there should be no oil-leakage or any physical damage to the Primary Vertical Damper. Further, the control arm lug should not have any marks of hitting with the Head Brackett.
- (iii) The broken spring is not displaced from its position.
- (iv) The coach is to be escorted upto destination accompanied with TXR staff.

At the destination, the broken spring should necessarily be replaced and detailed investigation of failure should be carried out. Spring failure reports should continue to be sent to RDSO, as per extant instructions.

DA: Nil.



(Samir Lohani)
Executive Director/Carriage

Copy to:

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