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No. SV.FIAT DAMPER

Date: 05.02.2021

Principal Chief Mechanical Engineer

1. Central Railway, HQ office, Mech. Branch, CSTM, Mumbai - 400 001
2. Eastern Railway, HQ office, Mech. Branch, Fairly Place, Kolkata- 700 001
3. Northern Railway, HQ office, Mech. Branch, Baroda House, New Delhi-110 001
4. Southern Railway, HQ office, Mech. Branch, Park Town, Chennai - 600 003
5. South Central Railway, HQ office, Mech. Branch, Secunderabad-500 071
6. South Eastern Railway, HQ office, Mech. Branch, Garden Reach, Kolkata-700 043
7. North Eastern Railway, HQ office, Mech. Branch, Gorakhpur-273 001
8. North East Frontier Railway, HQ office, Mech. Branch, Maligaon, Guwahati- 781 011
9. Western Railway, HQ office, Mech. Branch, Churchgate, Mumbai-400020
10. East Central Railway, HQ office, Mech. Branch, Hazipur-844 101
11. East Coast Railway, HQ office, Mech. Branch, Railway Complex, Bhubaneswar- 23
12. North Central Railway, HQ office, Mech. Branch, Allahabad-211 001
13. North Western Railway, HQ office, Mech. Branch, Jaipur-302 006
14. South Western Railway, HQ office, Mech. Branch, Hubli- 580023
15. West Central Railway, HQ office, Mech. Branch, Jabalpur- 482 001
16. South East Central Railway, HQ office, Mech. Branch, Bilaspur- 495 004
17. Konkan Railway Corp. Ltd. Corporate office Belapur Bhawan Nawi Mumbai-400 614
18. Integral Coach Factory, Chennai - 600038
19. Rail Coach Factory, Kapurthala – 144 602
20. Modern Coach Factory, Rae Bareli – 229212

Sub: Maintenance of dampers provided in FIAT Bogie.

1. High number of failures of dampers in FIAT bogies of LHB coaches are being observed in field. During field visits, it has been observed that there is scope of improvement in handling/storage/maintenance of these dampers in workshops, depots & PUs. On the basis of visits of Zonal Railways / workshops, Do and Don't for maintenance, storage, handling, removal and fitment of FIAT Dampers have been prepared and enclosed as Annexure – I for necessary compliance alongwith compliance of maintenance instructions for dampers of LHB coaches contained in CAMTECH maintenance manual for LHB coaches at PUs, workshops & depots. It is also requested for quality audits of practices and availability of M&P & infrastructure for maintenance, storage, fitment, removal, & handling of dampers of LHB coaches at PUs, workshops & depots.
2. Analysis reports of failed dampers are not being sent by Zonal Railways to RDSO. Only total number of failures is communicated. Failure reports are not having any details required for effective failure analysis. Due to this, proper root cause analysis of failure becomes difficult. Hence, format for reporting of compiled failure cases of FIAT Dampers has been prepared and shared through Google Sheet for submitting failure data (Google sheets have been transferred with email ids of respective CRSEs, which may be shared with other concerned officials including workshops). Detailed instructions for correct data

entry have also been shared. Along with compiled details of failures in shared format, detailed investigation report of individual case with photographs should also be submitted. It is requested to submit details of failures of FIAT Dampers for 2019-20 and 2020-21 in google sheets shared for the purpose, along with detailed investigation report of individual failure case with photograph to enable this office for effective failure analysis and root cause identification.

DA: As above

(Shobhit Pratap Singh)
Joint Director/Carriage
for Director General/Carriage



Copy

PED/CAMTECH For kind information.

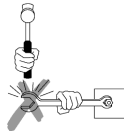






GM/CMM/CRIS, New Delhi For kind information regarding failure reporting format for LHB dampers .

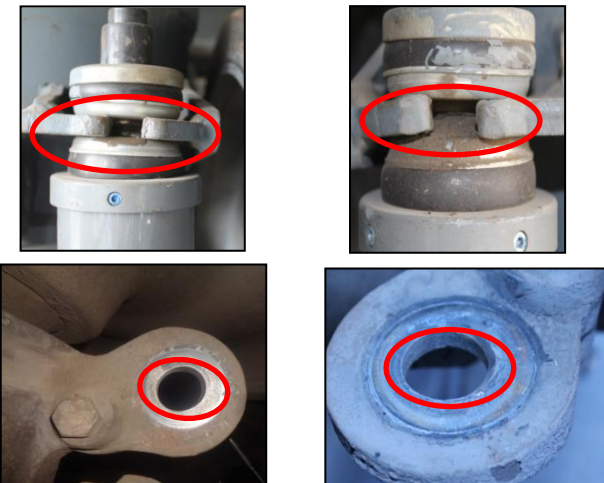




DME/Coachin,Railway Board,New Delhi For kind information.

DOs & DON'Ts ON LHB DAMPERS

S.N.	 Don't-	 Do-																					
1.	Do not fit wrong dampers specifically - secondary vertical/lateral dampers.	During fitment please ensure that correct damper is fitted on the bogie. Always check RCF/RDSO's drawing number of damper mentioned on the name plate/dust cover/Barrel of damper. Drawing no. of dampers are given as under: <table border="1"> <thead> <tr> <th>S. No.</th> <th>Damper</th> <th>RCF Drg. No.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Primary Vertical Dampers for all type of LHB Coaches.</td> <td>LW05102</td> </tr> <tr> <td>2</td> <td>Secondary Vertical Damper for LHB AC Coaches</td> <td>LW05101</td> </tr> <tr> <td>3</td> <td>Secondary Lateral Damper for all coil FIAT Bogie</td> <td>LW05101</td> </tr> <tr> <td>4</td> <td>Yaw Damper for all type of LHB Coaches.</td> <td>LW05103</td> </tr> <tr> <td>5</td> <td>Secondary Lateral Damper for Air Spring Bogie`</td> <td>LW05122</td> </tr> <tr> <td>6</td> <td>Secondary Vertical Damper for Non AC Coaches</td> <td>LG05122</td> </tr> </tbody> </table> <p>Also check for colour coding given by RDSO's drawings/specification (in latest supplies).</p>	S. No.	Damper	RCF Drg. No.	1	Primary Vertical Dampers for all type of LHB Coaches.	LW05102	2	Secondary Vertical Damper for LHB AC Coaches	LW05101	3	Secondary Lateral Damper for all coil FIAT Bogie	LW05101	4	Yaw Damper for all type of LHB Coaches.	LW05103	5	Secondary Lateral Damper for Air Spring Bogie`	LW05122	6	Secondary Vertical Damper for Non AC Coaches	LG05122
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PRIMARY VERTICAL DAMPER

2.	Do not use improper/incorrect tools (i.e. use of hammer, chisel, punch & tommy bars etc.) during fitment/removal of dampers <div style="display: flex; justify-content: space-around; align-items: flex-start;">     </div> 	Do use proper/correct tools during fitment/removal of dampers <div style="display: flex; justify-content: space-around; align-items: center;">  </div> 
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<p>3.</p>	<p>Do not Fit the damper if any distortion observed on mounting bracket. It may damage the mounting parts of damper</p> 	<p>Before fitting the damper on bogie, please make sure that the Mounting Brackets (Upper & Lower side) are in good condition. If there is any distortion/ovality or foreign material, then take the corrective action.</p> 
<p>4.</p>	<p>Do not tighten the Nyloc Nut of Upper End prior to Lower End. It may cause false torqueing on the lower side End (assembly)</p> 	<p>During the fitment please make sure:</p> <ul style="list-style-type: none"> • First fit the lower mounting (assembly) followed by upper mounting of damper without torqueing • Torque the Lower side Nut first at 100 Nm by using torqueing tool then Upper side Nut • During refitment of Dampers, it has been observed that sometimes workshops are using Standard Nut (M16x2). The standard size of M16 Nut is M16x2 (2mm pitch size). This damages the damper end spindle threads. Correct size of nyloc nut for this damper is M16 X 1.5 (1.5 mm pitch size). <p>In order to make these dampers more reliable, it is recommended that these Nyloc Nuts should be replaced by new ones every time during reassembly on Bogie.</p>
<p>5.</p>	<p>Do not fit dampers in inclined position as it will lead to eccentric loading</p> 	<p>Do ensure that fitment of damper at Right angle to Bracket face</p> 

6. Do not fit the damper without cap as it may lead to jamming of threads due to rust and will require gas cutting of bolts for removal of dampers



Ensure fitment of cap as it will help in avoiding to jamming of threads due to rust.



7. Do not interchange the washers and other assembly parts with different manufacturers. It will cause improper fitment of the damper.



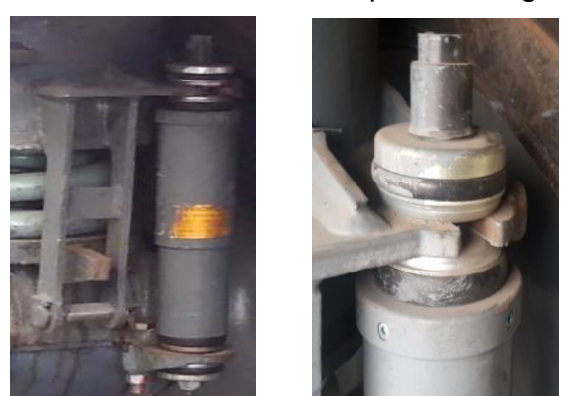
Do use appropriate parts during assembly of dampers. Manufacturer wise integrity of different parts including washers and rubber discs is to be ensured.



8. Do not fit the damper incorrectly. It is observed some times that the dampers are fitted with extra rubber discs and sometimes without washers.



Do ensure that appropriate and specified numbers of rubber mounts separated with washers have been provided during fitment/maintenance of dampers on bogie.



9. Do not leave the fasteners loose, as it may drop down resulting in misalignment of the damper and will affect its functioning.

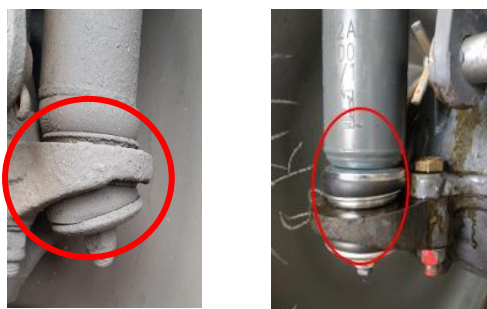


Do ensure that all the fasteners have been torqued properly with specified tightening torque mentioned in maintenance manual followed by marking of tightened location by paint.

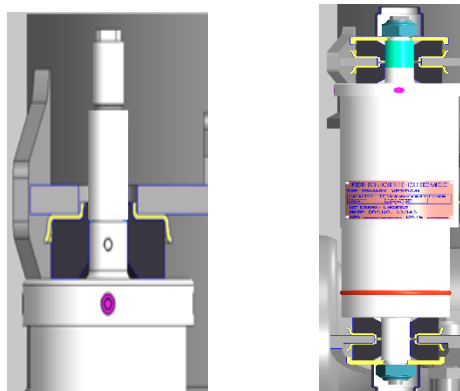
S. No.	Damper	Size	Torque (Nm)
1	Primary Vertical Damper	M16	100
2	Secondary Vertical Damper	M12	70
3	Secondary Vertical Damper	M12	70
4	Yaw Damper	M16	170



10. Do not fit the washers tapered or eccentric to the hole of the Control Arm of the bogie. It may cause the damage of washer and thus leading to bending of stud/spindle of the damper.





Fit the washers concentric to the hole of control arm so that damper gets fitted properly




<p>11.</p>	<p>Do not leave damper in uncleaned condition which may lead to leakage due to non-transfer of heat.</p>	<p>Cleaning must be done periodically as prescribed in maintenance manual to prevent the damper from coating of foreign material which inhibits heat transfer.</p>
<p>12.</p>	<p>• Do not replace the dampers until any sign of leakage observed within serviceable life.</p>	<p>Do replace dampers immediately if any sign of significant leakage observed during service.</p>
<p>13.</p>	<p>Do not allow the dampers with corroded dust cover in service which may deteriorate its performance due to dirt/dust contamination.</p>	<p>Do ensure that dampers are in good condition. If any damage found on damper then corrective action needs to be taken.</p>

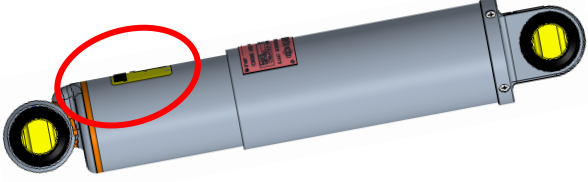




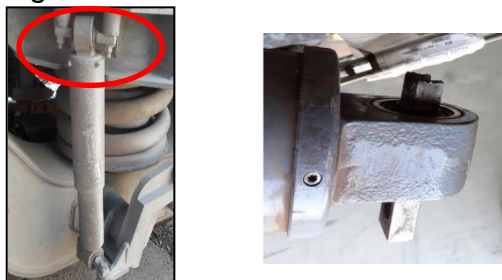



<p>14.</p>	<p>Do not mishandle the dampers during transportation/storage in shops/depot</p> 	<p>Handle the Damper carefully for preventing external damage, sometimes the Spindle of damper or thread get damaged due to hitting on the ground. Store the primary vertical dampers with rubber cap on M16 nut, provided by vendor.</p> 
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<p>15.</p>	<p>Do not remove the damper through weld/Gas cut. It damages the damper. It is seen in field that the damper is removed through gas cut and an additional threaded Spindle/stud is welded on the damper to reassemble it;</p> 	<p>During removal/fitment, please use proper tooling to remove the damper from the bogie. Air Guns can be also used</p> 
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SECONDARY DAMPERS

<p>16.</p>	<p>Do not interchange the dampers (Lateral Damper in place of Vertical Damper or vice versa) while fitting on the Bogie. It is seen in some bogies that Lateral damper is assembled in vertical Condition. Therefore, special attention is to be needed during fitment.</p> 	<ul style="list-style-type: none"> • Please ensure that the right damper is fitted on the right bogie as per their Coach type, particularly secondary vertical and secondary lateral damper. i) For AC Coaches-Secondary Vertical Damper drawing no. LW05102 / ii) For Non-AC Coaches-Secondary Vertical Damper drawing no. LG05101/ iii) For Coil-Spring Bogie-Secondary Lateral Damper drawing no. LW05100 / iv) For Air-Spring Bogie-Secondary Lateral Damper drawing no. LW05122/ • Damper needs to be identified by Name plate / Engraving details on the Protection Cover / Barrel tube (casing tube) / Forces defined on the dampers.
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<p>17.</p>	<p>Do not fit the damper in wrong direction. It will cause damage of seals (dry working) inside the damper and hence leakage will start very soon.</p> 	<p>In Lateral damper, fit the damper in such a way that “THIS SIDE DOWN” Sticker must be facing towards the ground. The side with protection cover needs to be kept at upper (elevated) side i. e. to be mounted on bolster.</p>  
<p>18.</p>	<p>Do not let any bolt loosen or untighten while fitting on the bogie. It may cause the breakage of Silent Bloc or removal of Silent Bloc from damper.</p> 	<p>Torqueing must be done at 70 Nm to tighten the Nut & Bolts meant for the fitment of End mounting. To ensure the tightening of nut & bolts, marking must be done after proper torqueing.</p> 
<p>19.</p>	<p>Do not allow damper in service with damaged Silent Block Bar Pin</p> 	<p>Do ensure that Proper silent block bar pin assembly during fitment of dampers for proper working</p> 

20. Do not store the Lateral and vertical damper together as they all look similar to each other



As these dampers look similar to each other and the only difference is in damping force, therefore it is recommended to store Secondary Vertical Damper for LHB AC Coaches, Secondary Vertical Damper for Non AC Coaches, Secondary Lateral Damper for all coil FIAT Bogie and Secondary Lateral Damper for Air Spring Bogie separately as per their type & damping force. One can identify the damper Name, Part no. and damping force from the Name plate or engraving marked on Protection Cover / Casing tube (barrel tube).



YAW DAMPER

21. Do not fit dampers in reverse/wrong direction/orientation



Do ensure proper fitment and direction of dampers with prescribed torque (170 Nm):

- The side with protection/dust Cover needs to be kept at upper (elevated) side i.e. to be mounted on the Coach;
- The side with **“THIS SIDE DOWN”** sticker needs to be kept at bottom side i.e. to be mounted on the Bogie facing towards ground.






22. Do not use damper with damaged/broken dust cover as flying stone may damage piston rod surface finish and dampers start leaking



Do ensure that Dust cover of damper is in good condition so that it would protect the Piston rod from foreign material and stone hitting



<p>23.</p>	<p>Do not hit/throw the damper on ground. It will damage the Protection Cover. Handle the damper carefully as YAW dampers are heavier in weight and it may cause accident.</p> 	<p>Always use trolley or any other carrier to take the damper from one place to another.</p> 
<p>24.</p>	<p>During SSI/SSII/SSIII/sickline attention of the Coaches, Bogies are separated from the Coaches. Do not remove bogie from the Coach without removing the Yaw damper. It may lead to bending load on the End mounting and may damages the Silent Block.</p>	<p>During SSI/SSII/SSIII/Sickline attention of the Coaches, before lifting coach, always remove the YAW damper from both ends before Separating the Bogie From the Coach.</p>
<p>25.</p>	<p>Do not let any bolt loosen or untighten while fitting on the bogie. It may cause the breakage of Silent Block.</p> 	<p>Ensure proper torque to fasteners (170 Nm). After ensure the tightening of fasteners, marking must be done after torqueing.</p>