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GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
(RAILWAY BOARD)

No.2009/M(W)/814/Safety/Pt.

New Delhi, dated 07.05.12

The Chief Mechanical Engineers,  
All Indian Railways

ED/Carr/RDSO  
ED/Wagon/RDSO

**Sub: Plan of action for improvement in bearing  
maintenance in workshops**

A seminar on maintenance/assembly of bearings covering all the three types of bearings viz. Wagon CTRBs, Spherical roller bearings (ICF coaches) and CTRB for LHB coaches was held at New Delhi on 23.04.12.

Based on the discussions and the practices shared by the workshops, a plan of action for improving the bearing maintenance practices is being advised for necessary action. Railways/RDSO may apprise the progress in this regard on a regular basis.



(S.K.Sharma)  
Add. Member (PU)  
Railway Board

CC: CWM/All workshops : For information and necessary action.

## Plan of action for improvement in bearing maintenance in workshops.

### Brief:

A seminar on maintenance/assembly of bearings covering all the three types of bearings viz. Wagon CTRBs, Spherical roller bearings (ICF coaches) and CTRB for LHB coaches was held at New Delhi on 23.04.12. The seminar was attended by 82 representatives from 23 different workshops across Indian Railways and RDSO. The seminar was unique in the sense that grass root level staff who are actually involved in day to day maintenance participated and shared their views freely. Officers from Railway Board also attended the seminar.

Apart from an overview by Railway Board on the trend of bearing failures and the concerns thereupon, teams from different workshops shared their experiences of maintenance with each other. Innovative practices introduced by various Workshops for better maintenance were also discussed. Railways also sought clarification on certain prevalent maintenance practices. RDSO took a note of those points for further advice on the same.

At the end of the Seminar, the representatives of Workshops spoke about the practices they intended to imbibe from discussions/presentations during the day. They also submitted their concerns and queries on maintenance-related issues.

### Points of Action:

S.No.	Action Plan	Action by	Time Frame
1.	<p><b>Sharing of good practices amongst the workshops:</b></p> <p>A few good practices were shared by the workshops during presentation/discussion and can be emulated by other workshops are as follows:</p> <ul style="list-style-type: none"> <li>• Cleaning of axle end cap screw holes by compressed air jet-Lower Parel shop.</li> <li>• Use of GO and NO-GO gauges for checking end screw holes-Lower Parel shop.</li> <li>• Use of dial snap gauge for measurement of journal diameter- PER Carriage Workshop</li> <li>• Use of protection cover on journal end while shunting/transportation of</li> </ul>	<p>CMEs CWMs</p>	03 months

	<p>loose wheelsets to prevent damage- RYPS Workshop</p> <ul style="list-style-type: none"> <li>• Use of Probe gauge for detecting any damages in CTRBs – RYPS Workshop</li> <li>• System of stacking and storage of bearings age-wise and make-wise for freight CTRBs- JUDW &amp; KGP.</li> <li>• Use of rubber mats on the overhauling tables-KGP Workshop</li> <li>• Rear cover wall thickness measuring device - GKP Workshop</li> <li>• Use of nylon slings for lifting of wheel sets – RYPS Shop</li> </ul>		
2.	<p><b>Clarifications on various issues:</b> RDSO may issue clarification on the following technical issues raised by the workshops:</p> <p><b>2.1 CTRBs of Freight Stock</b></p> <ul style="list-style-type: none"> <li>• <b>Cleaning of Bearings:</b> Different Workshops are following different practices as far as cleaning of bearings is concerned. The soaking time for bearings in kerosene oil varies from 10 minutes to 12 hours in different Workshops. This needs clarification from RDSO. Also, KTTW mentioned that grease in bridge area of cage is not cleaned properly even on purging and grease loosening machine. Methodology for cleaning the bearing assembly completely may be specified by RDSO.</li> <li>• <b>Interchangeability of Cup and Cone of Bearings:</b> As per G-81, different makes of cups and cones are not interchangeable. G-81 also mentions that combination of</li> </ul>	ED/W/RDSO	01 month

cup and cone as a unit should be maintained unless one of them gets rejected. Railways indicated that the cups and cones get mixed up at the time of cleaning and that assembly of cups and cones of the same CTRB once again was not practical; however, Railways are ensuring that they are of the same make. RDSO may issue clear-cut instructions regarding the interchangeability of cup and cone of two units of the same make.

- **Marking/etching-** Return date is required to be punched on backing ring as per RDSO instructions. However, as brought out by KTTW, practically proper stamping is not achieved due to curvature and hardness of backing ring. The marking/etching methodology on bearings needs to be looked into by RDSO. The system of marking by OEMs also needs to be standardised.
- **Mounting and Dismounting of Bearings in ROH Depots/Open Line:** Some Railways have been dismounting defective CTRBs in Open Line and sending them to Workshops for overhauling. G-81 specifies that in no case, the bearings should be opened out in Yards, Sicklines, ROH Depots. RDSO may clarify whether defective bearings may be dismounted in ROH Depots for sending to workshops and mounted again after receiving the overhauled bearings from Workshops.

	<ul style="list-style-type: none"> <li>• <b>Seal Wear Ring:</b> KTTW mentioned that the width of groove formed on Seal Wear Ring is very thin. It is not feasible to measure the depth of this groove accurately. RDSO may clarify the issue. RDSO may also clarify whether Seal Wear Rings having vent holes should be permitted in service or not.</li> </ul> <p><b>2.2 Bearings of ICF Coaching Stock</b></p> <ul style="list-style-type: none"> <li>• <b>Attention to the bearings in case of IOH of ICF bogies-</b> Workshops wanted clarity on specific attention that needs to be given to bearings in bogies received for IOH. RDSO may clarify whether bearings are to be attended in every IOH and the scope for such attention.</li> <li>• <b>Fitment of Axle Box housing in ICF bogies-</b> Clear procedure needs to be defined for fitment of axle box housing, as different methods like hammering/ heating are being followed by different workshops.</li> <li>• <b>Periodicity of Zyglo testing-</b> The periodicity and percentage of bearings to be zyglo-tested/DPT tested needs to be standardised. RDSO may issue instructions accordingly for Zyglo/DPT.</li> <li>• <b>Marking/etching-</b> The marking /etching methodology on bearings and stamping on axles needs to be looked into as the old</li> </ul>	ED/Carr/RDSO	01 Month
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	<p>etchings are not visible after prolonged usage. RDSO may reiterate the marking instructions to the bearing manufacturers and Railways.</p> <ul style="list-style-type: none"> <li>• <b>Checking rear cover wall thickness</b>-How to check rear cover wall thickness in in-situ position in ICF coaches is not clear and needs to be instructed by RDSO.</li> </ul> <p><b>2.3 CTRBs of LHB Coaching Stock</b></p> <p>Refurbished bearings are being received from OEMs in workshops. In the Bill of rejected bearings, OEMs are indicating all components as rejected and as such no root-cause failure analysis is possible. OEMs need to be advised by Railways to indicate actual components being rejected for failure analysis. The data generated should be sent to RDSO for consolidation and further analysis.</p>	<p>CMEs CWMs ED/Carr/RDSO</p>	<p>01 month</p>
<p>3.</p>	<p><b>Quality audits:</b></p> <p>Half-yearly internal audit of bearing section must be undertaken by workshops to ascertain any deviations which might have crept in over a period of time. A record of the same along with action taken should be maintained for perusal during inspection of workshops. Audit of bearing section by RDSO in the workshops should also continue as per the extant practice.</p>	<p>CMEs CWMs</p>	<p>01 month and subsequently every 06 months</p>

4.	<p><b>Analysis of failures:</b></p> <p>Analysis of failure to reach the root cause (wherever possible) would help in taking appropriate action to minimise bearing failures. RDSO should circulate standardised proforma for all the three types of bearings to be filled in any incidence of failure. The filled up proforma should be sent by Railways to RDSO for further investigation/ analysis.</p>	<p><b>ED/W/RDSO</b> <b>ED/Carr/RDSO</b></p>	01 month
5.	<p><b>Exchange of good practices:</b></p> <p>It was suggested that all SSEs of sections maintaining bearings should maintain continuous contact with their counterparts over CUG phone. They should also visit other workshops once in 06 months to exchange ideas and innovations</p>	<p><b>CWM</b> <b>SSE</b></p>	01 month

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