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EL/3.1.35/12

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Government of India - Ministry of Railways
Research, Designs & Standards Organization
LUCKNOW – 226 011

Date: 16.12.2009

(Kind attn. Shri Mohit Chandra/Director/RS)

Sub: Maintenance practices and use/replacement of spares/materials
for traction link and housing for 3 phase Electric Locomotive.

Enclose please find SMI NO. RDSO/2009/EL/SMI/0259 (Rev '0') dt.
09.12.2009 for the subject item for perusal and instruction from Railway
Board. Suitable guidelines to Zonal Railway/CLW will be issued by RDSO.

(M K GUPTA)
for Director General/Electrical

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No. EL/3.1.35/12

Dated 09.12.2009

**SPECIAL MAINTENANCE INSTRUCTION No. RDSO/2009/EL/SMI/0259, Rev. '0',
Dated 09.12.2009**

1.0 Title: Maintenance practices and use/replacement of spares/materials for traction link and housing for 3 phase Electric Locomotive.

2.0 Brief History:

2.1 RDSO has issued SMI 0241 dt. 24.10.2006 to increase the size of traction link bolts from 16 mm to 20 mm and change the property class from 10.9 to 8.8. Based on the feed back from Railways, RDSO vide letter no. EL/3.1.52/12 dt. 13.12.2007 have re-examined the issue and instructions were modified to use larger size bolt in new locomotives during manufacturing and in the existing Locomotives 16x65 mm bolts of class 8.8 shall be used as enlarging of the existing hole in the flange for 20 mm dia bolt was not possible. In the mean time, CLW has introduced the level 1 radiography testing to detect the casting flaws in the housing from Loco no. 31148 onwards for WAG9 and 30234 for WAP7. This has been mainly done to improve upon the quality of casting. As per CLW's latest drawing no. 1209-01.113-002 Alt. 6, the provision of 20 mm dia bolt by increasing the hole size in flange from 17.5 to 21 mm has been made. However, the profile and other dimensions of housing remains the same. But the higher size bolt is infringing with the body of housing, hence the bolts cannot be tightened properly. Central Railway informed that for fitment of M 20x65mm bolts in 21mm dia. hole, there should be a gap of 7 to 8 mm between bolt and housing body to avoid infringement and proper tightening. Central Railway also suggested that after reviewing the design of the housing profile near the infringing location on the outer diameter the gap of 7 to 8 mm can be achieved. Accordingly, ELS/AQ/CR has modified the housing by reducing its thickness by 4-5 mm with grinding near the flange hole to get the requisite clearance for proper tightening and fitment of 20 mm dia bolt. This modified arrangement has been implemented in 09 nos. of WAG9 locomotives which are working without any failure of traction link bolt/housing for more than one year.

2.2 OEM of elastic ring i.e. M/s ACLAWERKE/Germany have changed the material specification by changing the grade of Elastic ring from 2800H to 2300H for better performance. The

first purchase order of elastic ring for the grade 2300 H was placed in February 2003 by CLW/CRJ. The fitment was started in 2004. The life of the elastic ring is reported to be 3 - 3½ years for 2800 grade as well as 2300 grade.

3.0 Object:

There have been several instructions and issues pertaining to maintenance and replacement/use of different spares for traction link and housing in 3-phase locomotives. The issue have been discussed during 33rd MSG (Elect Loco) Meeting in which it was felt necessary that the existing maintenance practices of different sheds, their results and experience must be studied in details and a consolidated line of action/instruction needs to be developed.

Accordingly, a meeting of sheds officers and supervisors was organised at ELS/TKD/WCR for the same. Based on the feedback received and experience, a consolidated line of action has been framed as given below –

4.0 Modified instruction:

- 4.1 The use of 20mm bolt with modified housing and flanged should be used as per the latest drawing of CLW. The modification sheet no. MP.MOD.VL-06.38.09 (Rev 00) dated 30.11.2009 of MP directorate of RDSO has been prepared which specifies the grinding details to avoid fouling of bolt head with housing. Also the use of interlock washers are to be done to prevent loosening of nuts. CLW/CRJ and Zonal Railways should implement the same and CLW/CRJ should modify their drawings incorporating the grinding details as shown in sketch no. 2009-18 of modification sheet. However, the level 1 radiographic testing shall have to be carried out during inspection and records shall be taken from the suppliers during the supplies of new housing.
- 4.2 Railways should ensure the replacement of the elastic ring after 3 year i.e. during alternate MOH, IOH and POH of locomotives.
- 4.3 The re-torquing of all the fasteners of housing and traction link shall be done during every inspection i.e. after 3 months.
- 4.4 Only one time use of F.S. locknuts should be done. Railway should ensure the availability and procurement from approved sources only. Moreover, the authenticity of the nuts shall be properly monitored and cross checked.
- 4.5 The other maintenance practices for checking of alignment, testing, maintaining specified clearances etc. shall continue to be carried out as per the original instructions given in maintenance manual of locomotives.

5.0 Application to: WAG9,WAP5 and WAP7

6.0 Agency of Implementation: Electric Loco Sheds, CLW and POH Shops

7.0 Periodicity of implementation: During every minor and major inspection as specified above. Also, Railways should plan the replacement of housings in locomotives which are failing repeatedly on priority with the modified arrangement.



(M. K Gupta)
for Director General/Elect.