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Government of India
Ministry of Railways
Research, Designs &
Standards Organization,
LUCKNOW - 226011



No. EL/ 3.1.35/12

Dated 09.10.2017

Chief Electrical Engineer,

1. Central Railway, Mumbai CST-400 001.
2. Northern Railway, Baroda House, New Delhi-110 001.
3. North Central Railway, Block A2, Allahabad- 211 033
4. North Eastern Railway, Gorakhpur-273 001
5. Northeast Frontier Railway, Maligaon, Guwahati-781 011
6. North Western Railway, Jaipur.
7. Eastern Railway, Fairlie Place, Kolkata -700 001.
8. East Central Railway, Hazipur-844101.
9. East Coast Railway, Chandrashekharpur, Bhubaneshwar-751016.
10. Southern Railway, Park Town, Chennai-600 003.
11. South Central Railway, Secunderabad-500 371.
12. South Eastern Railway, Garden Reach, Kolkata -700 043.
13. South Western Railway, 4th Floor, Railway Station Road, Hubli- 580 020 (Karnataka).
14. South East Central Railway, Bilaspur-495004
15. Western Railway, Churchgate, Mumbai-400 020.
16. West Central Railway, Jabalpur-482001.
17. Chittaranjan Locomotive Works, Chittaranjan-713 331 (WB)
18. Diesel Locomotive Works, Varanasi-221004 (U. P.)

SPECIAL MAINTENANCE INSTRUCTION No. RDSO/2017/EL/SMI/0316,
Rev.0

1.0 Title: Fitment procedure/replacement schedule of Elastic Ring for Three Phase Electric Locomotive.

2.0 Brief History:

- 2.1** Elastic ring is used in the traction links of three phase electric locomotives. The traction links are providing a permanent connection between the bogie and the loco body. The link rod is situated between two pivot points, one on the locomotive under frame, the other on the end transom of the bogie, permitting lateral movement but restraining longitudinal movement.
- 2.2** RDSO has already issued SMI-259 to maintain requisite clearance for proper tightening & fitment. OEM of elastic ring i.e.

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ACLAWERKE/Germany have changed the material specification with grade 2300H for better performance.

2.3 Zonal Railways have also reported failure of elastic ring in the past and recently one case of shifting of elastic ring from its position in CLW-new loco-31829, BNDM commissioned 3-phase loco was noticed. In view of the above, a fresh SMI shall be required.

2.4 This SMI has been prepared to cover procedure for proper fitment of elastic ring inside pivot head with proper alignment and standard replacement schedule according to life of elastic material.

3.0 **Procedure for fitment of Elastic ring in the pivot housing:**

Note: Before starting the assembly procedure, surface of pivot post cone and inner dia. of elastic ring should be checked for correct dimension and smoothness to ensure proper interference and smooth fitment of elastic ring.

3.1 Remove all burrs from the edge of the pivot housing bore using a emery paper.

3.2 Remove any scratches from the bore of the pivot housing with fine emery paper.

3.3 Place the pivot head on a clean bench with the lower side facing upwards.

3.4 Ensure that pivot head bore is completely clean, free from of all debris and foreign material.

3.5 Coat the entire surface of the pivot head bore with glycerine

3.6 Ensure the elastic ring surfaces are completely clean, free of all debris and foreign material.

3.7 Coat the entire outside surface of the ring with glycerine.

3.8 Position the ring squarely on the pivot head.

3.9 Tap around the circumference of Elastic ring using a non-marking mallet hammer until elastic ring is seated in the pivot head.

4.0 **Assembly of the pivot head to the locomotive under frame or bogie frame:**

4.1 Elastic ring in pivot post should be fitted with the help of prescribed special tool/fixture. For fitment of elastic ring, proper height/clearance of pivot post should be maintained from the bottom so that fixture can be placed properly for fitment of elastic ring. During the fitment of the elastic ring in locomotive with bogie, if proper clearance from bottom is not available then in that case loco should be placed on inspection pit to ensure proper clearance for fitment of fixture for elastic ring.

4.2 Ensure that the pivot post is clean and free of grease. If necessary, steam clean the posts and surrounding area, remove all traces of dirt, debris and built up of grease.

4.3 Install the fixture on the pivot head. It is important to ensure that the fixture is concentric with the pivot posts.

4.4 Screw the cone onto the base of the fixture.

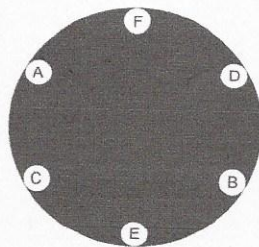
4.5 Install the elastic ring into the pivot head.

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- 4.6 Mount the fixture onto the pivot head.
- 4.7 Lubricate the pivot post and the inside surface of the ring with glycerine.
- 4.8 Position the pivot housing with elastic ring on the fixture below the pivot head as shown below.



- 4.9 Press the pivot housing into position with help of hydraulic jack which is part of fixture. Pressure during mounting should not exceed 60 kN.
- Note:** In case the pressure increases more than 60 kN, assembly should be stopped. Elastic ring should be removed. Surface of pivot post cone and inner dia. of elastic ring should be checked for cracks, damage, misalignment or any obstruction.
- 4.10 Dismantle and remove the jack.
- 4.11 Position the inner retaining plate on the pivot post. Ensure the recess in the plate is correctly seated on the post spigot.
- 4.12 Install the retaining plate bolt and progressively torque bolts (property clause 10.9 of M 12X35) in sequence A-B-C-D-E-F to 115 NM as mentioned below.



- 4.13 Loctite 271 should be applied for fitment of bolts.
- 4.14 Repeat process given in 4.11 to 4.13 for fitment of outer retaining plate.
- 4.15 Ensure a little gap between retaining plate and ring i.e. ring should not touch/rest on retaining plate.
- 4.16 Clean the area between the retaining plate and ring and then seal the gap using ALTMPQNB50 paste or Loctite 767 or PERG bead sealant B77.

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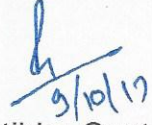
5.0 Schedule for replacement of elastic ring: RDSO has issued revision of maintenance schedule of three phase electric locomotives vide letter no. EL/3.1.35/16 dated 07.02.2012 as must change item. Railway should ensure the replacement of the elastic ring during alternate major overhaul (before 4 years) of locomotives.

6.0 Application to: WAP-5, WAP-7 & WAG-9 Electric locomotives.

7.0 Agency of Implementation: Electric Loco sheds, CLW and DLW.

8.0 Periodicity of Implementation: During assembly/fitment of Elastic Ring on the pivot.

9.0 References: (i) Indian railways WAG-9 Maintenance and repair manual


(Pratibha Gupta)
for Director General Electrical

Encl: Nil

Copy to: The Secretary (Elec.), Railway Board, New Delhi-110 001.
(Kind Attn: Sri A. K. Goswami, Dir/TRS) - for kind information please.

