

Government of India
Ministry of Railways
Research, Designs & Standards Organisation
Manak Nagar, Lucknow - 226 011

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SPECIAL MAINTENANCE INSTRUCTIONS NO.RDSO/ELRS/SMI/174

**IMPROVED MAINTENANCE PRACTICES FOR CLW MAKE EP LINE
CONTACTORS**

1. OBJECT

Survey of maintenance practices being followed by various electric loco sheds and continuous unusual occurrences/arising of CLW make EP line contactors, calls for adopting improved engineering practices to overcome/minimise certain maintenance deficiencies.

- 1.1** The SMI emphasises the following course of action to ensure reliability of CLW make EP line contactors already in service.

2. INSTRUCTIONS

- 2.1** During assembly and rehabilitation of flexible shunt, mobile contact lever, sockets etc. following precautions should be taken.
- 2.1.1** The sleeves or sockets at the end of each flexible terminal should have a bell mouth to prevent their edges rubbing on the stranded or braided conductors.
- 2.1.2** There should be no brazing or soldering at the bell mouth end. Brazing shall be done at the other end as shown in fig.2 of Annexure-1.
- 2.1.3** The sleeve or socket should be pressed or crimped to a cross-section about 90% of the total section of conductor plus sleeve (or socket)
- 2.1.4.** The sleeves at the ends of the leads are brazed into the mobile contact lever at one end and the connector block at the other end.
- 2.1.5** A brazing alloy of melting point of about 600 deg. c should be used e.g. Rupatam-14.
- 2.1.6** The mobile contact lever should be partly immersed in water up to the level of the control pivot. so that only the palm is exposed during brazing. This will ensure. that the central portion. which is subject to highest mechanical stresses is not exposed to a temperature exceeding 350 deg. c.
- 2.1.7** Main contact force may be kept between 13 to 14 kg.

- 2.1.8** Contact force of main contact should be measured during every IC using a specially designed stirr-up spring balance of range 0-20 kg. as shown in the fig-1 of Annexure 1. following the procedure given below.
- (i) Place a strip of paper or metal foil between the contacts and close the contactor by energising its solenoid.
 - (ii) Place the stirrup on the tip of the mobile contact and secure it with the screws on the side.
 - (iii) Attach a spring balance of range 0-20 kg before the stirrup and a lever resting on any fixed point below the contactor.
 - (iv) Press the lever slowly until the strip of paper or foil can be pulled out. Read the spring balance.
 - (v) If the contact force is less than 13 kg, replace the contact spring with one of the adequate free length and stiffness.
- 2.1.9** The fasteners should be tightened fully initially and retightened in the next IA to take care of any permanent set. The retention of tightness should be checked on a few selected contactors in every IA. If it is observed that there is no slackening, there is no need for retightening periodically except in AOH.
- 2.1.10** Some sheds are replacing the fixed contact holding screws by high tensile steel screws. For getting a better tightening feature, it is recommended to drill out the tapped hole in the support block on the blow out coil and use nut and bolts by brazing the both head on to the drilled out tapped hole. By this procedure the bolts will retain tightness for longer period and it will also will retain tightness for longer period and it will also minimise the over heating of contacts.
- 2.1.11** A common problem experienced by all sheds is piston bucket perishing due to sub-standard material. In case of replacement by sheds particularly the rubber items, it should be ensured that the rubber specified by RDSO should be procured from approved suppliers only as per the acceptance tests suggested by RDSO.
- 2.1.11.1** A cyclic check should be made on the rubber components and a systematical replacement taken up before it fails in service. However, as a reliability measure, the piston bucket should be replaced in every AOH.

3. INSTRUCTION DRAWING

NIL.

4. APPLICATION

All EP line contactors of CLW make.

5. AGENCY FOR IMPLEMENTATION

All electric loco sheds and POH shopss.


6. DISTRIBUTION

As per mailing list.

Encl: Mailing list.

Annexure-1.

(Elect.)


(R.N.LAL)
for Director General