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SPECIAL MAINTENANCE INSTRUCTION NO. RDSO/2011/ EL/SMI /0273(Rev '0')

1. **Title: Detection of rotation of outer race of bearing and assembly components in 3 Phase traction motors type 6FRA6068 & 6FXA 7059**

2. **Brief History:**

Bearing seizure on account of rotation of outer races of bearings in end frames has been reported by sheds. In addition to this, during overhauling of 3 phase traction motors following defects have been observed, which could have led to bearing seizure during service, if not detected:

1. Looseness of Inner bearing stopper (NDE) inside NDE End frame
2. Looseness of outer race of NDE bearing inside NDE End frame
3. Looseness of Inner bearing stopper (DE) inside DE End frame
4. Looseness of outer race of DE bearing inside DE End frame

When outer race of the bearing rotates in its end frames or there is rubbing of metal parts due to improper fits of labyrinths/stoppers, metal content in grease increases beyond stipulated limits.

Sheds have evolved a procedure of detection of such cases by analyzing the metal content in the grease sample and thus preventing line failure.

3. **Object:**

To detect rotation of outer race of bearing and assembly components in 3 Phase traction motors type 6FRA6068 & 6FXA 7059, etc by checking the metal content in grease sample and by monitoring the temperature of end frames.

4. Procedure:

4.1. Grease Sampling

4.1.1. NDE side:

In case of NDE Bearing, some of the grease comes out from bearing and accumulate near PG ring of speed sensor. The sample of grease can be taken from PG ring area and can be tested for metal content. On arrival of locomotives during IC/AOH inspection, the speed probe housing is to be opened to collect the grease sample. Alternately, grease sample can be collected from old grease coming out from grease escape hole (if provided), while re-greasing of bearings.

To start with one cyclic check has to be carried out at the first available opportunity and subsequently during IC/AOH inspection, this check has to be carried out.

4.1.2. DE side:

Rotation of bearing outer race can be detected by testing samples of grease during overhauling of traction motor or whenever traction motor is removed from the bogie.

4.1.3. Metal content Evaluation criteria

SN	Grease sample from	Permissible metal content
1	NDE side bearing	Not more than 0.25%
2	DE side bearing	Not more than 0.25%

If metal content found exceeding the limit given in table above, the traction motor is required to be dismantled and to be investigated and rectified for any such defect.

5. Temperature Monitoring :

The rotation of outer race in side end frames and any rubbing of metal parts due to improper fits of labyrinths/stoppers also increase temperature of the bearing, end frames and its assembly components. Hence by measurement of temperature of bearing housing with the help of non-contact thermometer, whenever a locomotive arrives just after service at outputs or in the loco shed. The limit of the temperature rise of bearing housing shall be as per table given below:

SN	Temperature measurement at	Permissible temp. rise over ambient
1	NDE side bearing housing	Less than 25 °C

In case the temperature exceeds the limits, the locomotive has to be withdrawn from the service and grease sampling can be done for identification of rotation of bearing race and rubbing of labyrinths/stoppers as mentioned in para 4.0

6. Application to class of Locomotives:

WAP5/WAG9/WAP7 locomotive for traction motors type 6FRA6068 and 6FXA7059.

7. Agency of Implementation:-

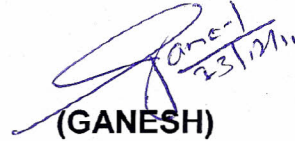
All Electric Loco Sheds and Outputs.

8. Periodicity of Implementation:

8.1. Grease Sampling and testing : After one cyclic check , during IC/AOH inspection

8.2. **Temperature Monitoring:** Whenever locomotive arrives just after service for trip inspection or unscheduled visits.

Distribution: As per standard mailing list


(GANESH)

for Director General/Electrical