

WOSS 501/8

British Railways Board

Director of Mechanical and Electrical Engineering

Seasoning of Commutators

WORKSHOP OVERHAUL STANDARD SPECIFICATION

REVISION RECORD

This Specification will be updated when necessary by the issue of amended pages accompanied by revision letters. The amended or additional part of re-issued pages will be marked with a vertical black line.

If you consider that an amendment is necessary, complete BR Form 14298 and pass it to the local BRB Resident Engineer or Area Quality Engineer. Submission of a form does not authorise the proposed amendments.

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WORKSHOP OVERHAUL STANDARD SPECIFICATION 501/8

SEASONING OF COMMUTATORS

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INTRODUCTION

This specification details the process to be followed for rotary seasoning of traction motor, main, auxiliary and train heating generator and motor alternator/generator set commutators.

Data for particular machines may be found by reference to the relevant machine WOSS or WOSS 501/2.

REFERENCE DOCUMENTS

WOSS 501/2 Re-insulation of Electrical Machines.

TOOLS AND MATERIALS

Seasoning plant with variable speed drive. 100-4000 rpm.

| | |
|----------------------------------|----------------------------|
| Coupling and/or adaptor plates) | To be manufactured to suit |
| Torque Spanner attachment) | type of machine. |
| Torque Spanner) | |

Gas heating ring with hood.

Temperature measuring device to read up to 200°C (such as a contact thermometer or a non contact temperature sensing device).

Tachometer calibrated to within +2%.

Locking plates and/or Locking Washers to suit the type of commutator to be processed.

| | |
|------------------------|--------------------|
| Silicone grease (MS4). | BR Cat No. 27/4612 |
|------------------------|--------------------|

| | |
|-----------------------------------|-----------------------|
| Woven glass tape 0.23 mm x 25 mm. | BR Cat No. 55/121130. |
|-----------------------------------|-----------------------|

PROCEDURE

1. Preparation

- 1.1 Remove and replace the commutator bolts/nuts one at a time and retighten using a torque spanner, set at the specified torque. Ensure that the threads are free running over the full length of travel and lightly lubricate with silicone grease. Should any bolt require renewing contact the D of M&EE BRB at Derby for details of the bolts to be used.
- 1.2 Fit suitable bearings and adaptor/s to the armature shaft, lubricate the bearings, mount the armature on the pedestals of the seasoning plant and connect the drive.
- 1.3 Apply a few turns of glass tape onto the vee-ring insulation for protection during the heating cycle.

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- 1.4 Fit the gas heating ring and hood in position around the commutator.

Note: At no time must the gas jet be alight with the commutator stationary.
2. Heat and Bake
 - 2.1 With the armature rotating at a minimum speed of 100 light the gas jets. Adjust the air/gas mixture to give a clean flame playing on the commutator face and clear of direct contact with the riser joints.
 - 2.2 Raise the copper temperature to 145°C - 150°C whilst running at 50% of the overspeed value. This must take at least 1.1/2 hours.
3. Overspeed, Hot and Cold
 - 3.1 Run the armature under the following conditions:
 - 3.1.1 At the specified overspeed, for a period of 5 minutes with the heat applied.
 - 3.1.2 At the specified overspeed, for a further 5 minutes with the heat removed.
 - 3.1.3 At 50% of overspeed, until the commutator has cooled to 50°C.
4. Tighten, Cold
 - 4.1 With the commutator at a temperature of 50°C or below tighten the nuts or bolts a little at a time in a diametrically opposed sequence using a torque spanner until all the bolts are tightened to the specified torque.
5. Heat and Bake
 - 5.1 Reheat the commutator to 145°C-150°C as detailed in operation 2. The heating time will be reduced depending on the commutator temperature at the start of the heating process.
6. Overspeed, Hot
 - 6.1 Keeping the heat applied run the armature for 5 minutes at the specified overspeed.
7. Tighten, Hot
 - 7.1 Shut down and whilst hot tighten the nuts or bolts a little at a time in a diametrically opposed sequence using a torque spanner until all the bolts are tightened to the specified torque.

8. Overspeed, Cold
 - 8.1 Run for 5 minutes at specified overspeed with heat off, then run at 50% of overspeed until cooled to approximately 50°C.
9. Tighten, Cold
 - 9.1 Repeat operation 4.1.
 - 9.2 If more than 15° movement (2.1/2 mins on clock face) of the torque spanner occurs at the final tightening of either ring nut or bolts the particular commutator should be referred to the Resident Engineer BRB or Area Quality Engineer who may authorise a repeat cycle of seasoning. If following this it is still possible to get more than 15° movement the commutator is to be banded and the outer 'V' ring removed for examination.
10. Lock
 - 10.1 Secure all bolts/nuts where applicable.
11. Remove Protective tape
 - 11.1 Remove protective tape from the 'V' ring insulation.