

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD

LINE BREAKERS G.E. AND E.E. TYPE

ELECTRICAL MECHANIC'S PROCEDURE.

ROSTERED DAY-IN SERVICE.

1. Before commencing any work on the line breaker, both trolley poles must be off the overhead and placed under the trolley hocks and danger discs must be attached to both trolley pole ropes.
2. Remove the line breaker cover; do not leave it on the rail but place it on the ramp or floor of the pit.
3. Examine all wiring connections for signs of burning, looseness, collapsed spring lock washers or broken cable strands at wiring lugs; if defective, repair. If the screw or cap screw is loose, before tightening replace the spring locking washer. Any wiring cable that has damaged insulation must be re-insulated using varnish tape and insulation tape.
4. Examine the operating holding coil for burns, deterioration of insulation, loose terminals or looseness on mounting fixtures and if defective repair or replace.
5. Examine overload relay fingers and contacts for contact, material failure, loose screws or high resistance spots on the contact faces. The relay fingers most prone to high resistance spots are the E.E. type. Inspect the two resistance tubes for burns, loose pigtail connections, or looseness in clips.
6. Examine the interlock fingers, finger stop plates and contacts for material failure and loose mounting screws; if defective replace and before tightening any screw replace spring locking washers.
7. Replace the fingers and contact plates in pairs, when either contact has worn to half original thickness of contact. All spring washers must be replaced.
8. Check and if necessary adjust both interlock fingers to make simultaneously just before the main contacts close. Adjust if necessary, by bending the stop plate, not the finger.
9. Detach the arc chute by removing the retaining cap screws. Remove all copper deposits from the sides and top of the arc chute with the end of a flat file and replace any plates or spacing pieces that are broken, or plates that have a crater burnt in them deeper than  $\frac{1}{8}$ ". Examine the arcing horn and burning tip, and if badly burnt, replace.
10. Check copper shunt for fraying; if frayed or broken replace. Check the pressure spring for material failure, and ensure that the retaining screw for the fibre spring seat is tight; if defective replace.
11. The armature and contact carrier pins and brushes must be checked for excessive wear, and if worn, change the operating unit complete. If the armature is stiff to move on the spindle remove the cotter pins and remove the pin with the extracting tool supplied then clean the pin and brushes with kerosene; it may be necessary to rub the spindle lightly with emery paper. Re-assemble the armature and replace the cotter pins.

Note: The linebreaker brushes or spindles must not be lubricated with oil.

12. Check the copper rivets retaining the anti-residual plate and if loose or fractured, renew them.
13. Check that the width of the contact gap is  $\frac{3}{8}$ ". Contact tips, screws and nuts must be checked for tightness; if loose, do not tighten without renewing the spring locking washers. All burns and blisters must be removed from the contact tips by the use of an 8" bastard file; if badly ridged, or worn to half the original thickness, replace. At all times, when renewing the contact tips the top cap screws and all spring locking washers must be renewed. Clean the face of the arcing throat with a wire brush; if badly burnt, change the complete operating unit.
14. Replace the arc chute and check that the moving contact does not foul the arc chute.
15. The overload setting is adjusted and sealed at Preston Workshops and the lead seal must not be broken nor the adjustment altered.
16. The inside of the linebreaker must be thoroughly cleaned using a sash tool, and the inside of the cover and the porcelain mounting insulators wiped clean with a cloth; if insulators are damaged, replace. Replace the cover and when all Electrical work has been completed on the tram, remove the danger discs.

Every 4th Rostered Day-in Service:

The line breaker must be blown out with compressed air.

EAST PRESTON