

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD

PITMANS DUTIES.

Daily:

Tram Brakes: Must be adjusted and shoes inspected and changed where necessary on all trams at least once every 24 hours.

Note: At all times before adjusting the brakes check to see that both hand brakes are fully released. Trams berthed in the Depot between the A.M. and P.M. peaks must have the brakes inspected and if necessary adjusted.

P.M. PITMEN MUST ADJUST ALL THE BRAKES ON TRAMS berthed on the roads set out by the Depot Foreman, or any trams requested by the Depot Starter to satisfy traffic requirements.

Trolley poles on all trams must be changed to the trailing position. First remove the trolley pole from the overhead wire and place it under the hook and then place the other pole on the overhead wire: this method must be observed to prevent double pole short circuits. At all times before trolley ropes are handled the hands must be clean.

Roads used for Day-in Servicing must have the tops of the rails cleaned and lightly sanded before the trams are berthed after the P.M. peak.

All Trams berthed on outside tracks must have the weather blinds down, all doors closed, and lights turned off, and if berthed on a grade the hand brake must be fully applied.

NOTE: Trams berthed on the outside tracks at Essendon, South Melbourne and Malvern Depots (Coldblo Road) must be left with the compressor switch in the "on" position. The air brake handle and the reverse key must be removed and placed up on the ledge alongside the destination box.

Before the completion of every shift Pitmen must personally sign and enter on the back of the card the number of all the trams on which they have personally worked and give details of the work done, including the number of brake shoes replaced and tram bearings repacked.

Brake Rigging must be cleaned and oiled, including the threads on the brake shoe adjusting turnbuckles or trunnion nuts.

Brake Rigging that is worn is to be unit changed, or if units are not available, repaired and the Depot Foreman notified.

Brake Hanger springs must be correctly tensioned; if sufficient tension cannot be obtained, pack with washers between the spring and the nut or cotter pin. Always use a new cotter pin.

Radius bars, support brackets and brake pull rod guides must be inspected and if worn or damaged, must be renewed.

Brake pull rod rollers and pins must be inspected and if worn or flatted, replaced. The Depot Foreman must be notified to check the adjustments of the brake cylinder beams turnbuckle after the replacement of a brake pull rod or roller. Pitmen are not permitted to alter this adjustment unless supervised by the Depot Foreman.

Suspension bearings must be checked for wear and end thrust. If the bearings are worn they must be replaced (max. wear $1/16$ " on the axle). The maximum permitted amount of end slog is $3/16$ " and the minimum is $1/8$ ", and bearings must be kept within this

limit. Care must be taken when tightening the thrust collar clamp nuts not to strain the bolts by using too much leverage. When small particles of brass appear around the thrust collar, it indicates that the oil grooves are blocked or worn off and the bearing must be removed and the oil grooves re-cut.

Axle box: Inspect for leaking gasket or loose bolts. Replace any loose bolt with a new bolt and Nylock nut. Check axle box horn stay liners; if worn or broken, replace.

Equalizer beam and hornstay distance pieces must be checked for looseness and before tightening the bolts, renew the spring locking washers.

The Trucks must be checked for material failure, broken or relaxed springs, loose or broken bolts or defective cotter pins.

Motor drain holes must be kept clean at all times.

Adjust the brakes and replace any worn shoes; also, make certain that the brake shoe keys hold the shoes firm, and do not rattle in the shoe holder.

Brake pull rods and brake cylinder beams must be inspected for flaws or damage and all pivot points cleaned and oiled. Pitmen are not permitted to adjust the brake cylinder beam turnbuckle; all adjustments must be supervised by the Depot Foreman. The hand brake spindle must be cleaned and oiled (lubricant $\frac{1}{2}$ kero. and $\frac{1}{2}$ oil) and applied to test its operation.

Hand brake wire cables and levers must be inspected, cleaned and oiled, and length adjusted if required. All frayed or damaged ropes must be replaced. The rubber protection hose must be taped firmly in position to prevent the wire rope from fraying or short circuiting the outer motor terminal blocks.

Bolster side bearers must be checked for broken or loose bolts or loose packing pieces and the bearing surface must be cleaned and oiled.

Pitmen must also carry out any other duties which may be designated by the Depot Foreman.

THE DUTIES OF PITMEN FOR LUBRICATING THE
BEARINGS AND GEARS AND REPACKING OF TRAM BEARINGS.

All containers used for oil or grease must be kept clean and when not in use, stowed in a locker.

Dry Wool Packing must be kept in a clean locked locker.

Dry wool packing must be soaked in armature oil for at least 24 hours before it is used and the container that is used must have a dust proof cover.

Rostered Day-in Service:

Clean dirt from around the hatchway ledges and the tops of the bearing lids, using a millet whisk.

Lift the lids on the armature and suspension bearing lids, and check the height of the oil in the wells using the steel standard measuring gauge, then add sufficient oil to bring the oil to the correct height on the gauge, (armature bearing $1\frac{1}{2}$ ", suspension bearing $1\frac{3}{4}$ ") then pour approximately one table-spoon of oil on the top of each wool packing; close the lids, making sure that they are seated firmly on the housing.

Note: If bubbles of water appear on the gauge after dipping the oil wells, the bearings must be repacked with new wool. Oil the motor thrust collars (quantity: one teaspoon per collar).

Every Second Rostered Day-in Service:

Clean and oil the truck bolster centre bearing, the truck bolster transom plates, and on Class W3 and 4 trams clean and oil the inside compensating brake lever pivot points.

Check the oil level in the compressor by using the steel gauge. The correct level is $\frac{1}{2}$ " below the top of the filler plug; add compressor oil as required.

All compressor breathers and drain holes must be kept clean.

Every 4th Rostered Day-in Service:

Lubricate all transmission gears as required. The usual quantity is one 3 oz. pat to each set of gears.

SCHEDULE OF BEARING INSPECTION AND REPACKING:

Every 12 weeks the armature gear side bearing on M.V. motors must have the wool packing drawn and repacked with new wool packing. This is important as the gear shield tends to glaze the wool packing.

Inspection of axle box saddle bearings and repacking of the boxes:

Four weeks after a change of trucks, the axle box cover is to be removed, and the wool packing pushed back by using a wood packing stick; if necessary, add wool packing.

Armature oil is used for lubrication. Ensure that the wool is thoroughly soaked; a slight excess of oil should be present. Replace the rubber gasket if defective, inspect the bolts and Nylock nuts and if defective, replace. Replace the cover and tighten securely.

52 Weeks after a change of trucks:

Remove the axle box cover and draw the wool packing, using the steel hook provided.

Place a hydraulic jack under the axle box and lift the box sufficiently to allow the saddle bearing (and, if used, the keeper) to be removed. It may be necessary to slacken off the brakes to gain sufficient height to remove the saddle brass; before the job is completed the brakes must be re-adjusted. Examine the saddle bearing and, if worn at the end, or if the white metal is defective replace with a reconditioned bearing. When the bearing is being used again, all surplus metal must be removed from the side edges and a draw scraper used to level both sides of the bearing to assist with the oil feed. Clean all the old oil out of the box and with a clean kerosene rag on a piece of wood, wipe the axle journal and the inside of the box making sure that all foreign material is removed. On no account must the hand be placed between the top of the journal and the axle box, use a piece of rag wrapped around a wooden stick. Oil the running surface of the bearing and place it in position (also the keeper, if used) then lower the jack and check that the bearing is seated correctly.

Repack the box with new soaked wool packing using a wooden pushing stick to pack the wool into position.

Use armature oil to lubricate the box, ensuring that the wool is thoroughly soaked (slightly in excess) with the oil.

Examine the axle box rubber gasket and if defective, replace; examine the bolts and the Nylock nuts and if defective, renew. Replace axle box cover, tighten firmly.

All other axle boxes on the tram must be serviced by the same method.

Hot Axle Box - Safety Precautions:-

To prevent the heated wool from igniting on exposure to air the axle box cover must not be removed until the box has cooled.

When it has cooled, remove the axle box cover and draw the wool packing using the steel hook provided.

Place a 3 ton hydraulic jack under the bottom of the axle box and lift the box sufficiently high to allow the saddle bearing and, if used, the keeper to be removed.

After the saddle bearing has been removed, clean out all debris and wash the inside of the box and the journal with kerosene.

Hands must not be placed between the top of the journal and the axle box - use a piece of rag wrapped around a wooden stick.
If the journal is damaged report it to the Depot Foreman.

Oil the bearing face of a reconditioned saddle bearing and place in position, (and if used, the saddle brass keeper) lower the jack and check that the bearing is seated correctly.

Repack the box with new soaked wool packing using a wooden pushing stick to pack the wool into position.

Use armature oil to lubricate the box ensuring that the wool is thoroughly soaked (slightly in excess). Examine the axle box rubber gasket and if defective, replace. Examine

the bolts and Nylock nuts and if defective, renew. Replace the cover and tighten securely,

All the other axle boxes on the tram must have the saddle bearing inspected and repacked using new wool packing, using the method described for the 52 week servicing.