

T R A M W A Y    B O A R D.  
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EDISON CAR LIGHTING SYSTEM.

RULES FOR THE GUIDANCE OF EMPLOYEES.

1. Only employees authorised for the maintenance of the car lighting are allowed to start, operate or control any of the charging machinery, switchgear, rheostat, batteries or connections.

2. CONNECTING FOR CHARGING:

There are 2 types of batteries used, namely, the type B-4 for the dummies and B-6 for the trail cars. For charging purposes they are to be made up in groups. Each group must consist of only one type, that is, the B-4 must not be connected with the B-6. Each of the battery units is arranged with its positive terminal on the right hand side of the terminal block when the attendant is facing same. This terminal is marked on each cell of the battery, thus + . They are to be connected in series, using the jumper cables provided, connecting the positive side of one battery to the negative side of the next battery which is immediately next to it. The positive connection of the charging supply is at the right hand side of each bench when the attendant is facing the batteries. In arranging groups, the attendant must endeavour to have an equal number of batteries in each circuit.

3. CHARGING.

The attendant must see when closing the charging circuit that the generator voltage does not exceed the number of batteries in the circuit multiplied by 8, that is, for 10 batteries the machine voltage should be 80. The attendant must endeavour to group the batteries in such a manner that each charging circuit shall contain approximately the same number of complete batteries. This prevents waste of energy.

#### 4. HEIGHT OF SOLUTION.

The solution in each cell must be sufficient to cover the elements to a height of 1/2" above the plates. For checking purposes this can be ascertained by using a piece of glass tube with straight cut ends, one end being fitted with a piece of rubber tubing. This glass should be inserted through the ventilation vent, allowing it to touch the top of the plates. The first finger should then be placed on the top of the rubber and the tube withdrawn. The height of solution in the tube will indicate the amount of solution above the plates. The solution thus removed must be put back into the same cell.

#### 5. WATERING.

The only material required to be added to the cells to maintain the condition 4 above is distilled water. This is to be added with the battery filling outfit provided, which, when the filler portion is inserted, will immediately indicate whether make-up water is required, as follows:-

On inserting the filler, if the alarm bell does not ring, the filler should be pressed forward, thus opening the supply valve and allowing water to enter the cell. Immediately the correct height of solution is reached the alarm bell rings, indicating that the attendant should release the valve and withdraw the filler. Attendants are specially instructed to see that neither water nor drippings from the filler are allowed to slop over or around the cells, the tops of which must be kept clean.

#### 6. CHARGING CURRENT.

The charging current must not be switched on until all the batteries on any particular circuit have been connected up and the charging rheostats set in the "set" "all-in" position. The rheostat can then be adjusted to give the following normal charging currents which should be maintained, and which can be re-adjusted from time to time by manipulating the rheostat.

Normal charging rate for the B-4 battery ... 15 amps.  
" " " " " B-6 " ... 22½ amps.

These charging rates are to be adhered to and maintained until the battery gives a voltage equivalent to 9 volts per battery, the reading to be taken whilst the normal charging current is flowing.

7. SPECIAL OVERCHARGING:

Once a month the batteries must be given a special 12-hour charge at normal rate. Before starting this overcharge the batteries must be as fully discharged as can be conveniently got under service conditions. The height of the electrolyte must be checked and if necessary adjusted before this charging is started.

8. CLEANING:

The battery cells and trays, and the tray seat in each car or dunny, must be kept clean. Dirt should not be allowed to collect around the cell tops or bottoms which must be periodically cleaned down with a suitable cloth or brush. Dirt and dampness are detrimental to the life of the battery. Incrustations may be easily removed by first moistening same with warm water. Charging benches must be kept clean and dry, and free from all material other than the batteries.

9. JUMPER CABLES.

All plugs and jumpers for batteries must be periodically inspected by the attendant, and plugs which show signs of making bad contact should be immediately adjusted.

10. CONDITION OF SOLUTION.

The attendant must take readings with the hydrometer provided of the specific gravity of the solution in at least one out of every five cells once a fortnight. These readings must be taken when the batteries are in a fully charged condition and the solution at the correct height, such readings being entered in the log book for future reference.

11. I M P O R T A N T.

- (a) When connecting cells, either for charging on the benches or when in the car, the attendant should make sure that all contacts are clean and tight.
- (b) To make up for evaporation, use only distilled water and the filler outfit provided.
- (c) Keep vent valves of cells closed during charging.
- (d) Do not endeavour to inspect cells with a match or any other open flame as such practice is extremely dangerous.
- (e) Do not use a spanner, tool or any piece of metal on the battery or charging benches.
- (f) All end plug connections on the charging benches are to be placed in the receptacles provided when same are not in use.
- (g) Any batteries found defective or are not operating satisfactorily should be immediately reported to the Depot Manager and entered in the log book.
- (h) Smoking within 6 feet of the battery charging benches is strictly prohibited.

R E P O R T S.

The attendant must keep a complete record of the number of hours each battery is in service, and properly enter same in the log book.

ELECTRICAL FOREMAN.

The electrical foreman Mr. T. Dawe has charge of and will give directions upon all technical matters connected with the electric lighting of the cars.

H. A. WILCOX

General Manager.