

Tramcar of New Type for Melbourne

Large Car for Two-man or One-man Operation

A feature of the administration of the Melbourne tramways board is its progressive policy in investigating and making full trial of any equipment or method of operation that promises to effect an improvement in service or a reduction in cost. The board's officers keep in close touch with the methods of other undertakings, both in Australia and abroad, and by reason of their receptiveness to new ideas, are always abreast and sometimes ahead of current practice elsewhere. This general policy can the more readily be given expression because the board has its own extensive workshops where new rolling stock may be constructed, tested, altered and

as a one-man car over the light-load sections in the slack times. One car of the new type has been completed, and three more are under construction in the shops. In addition to the special features of body design to suit the method of operation, these cars have a control system that is new to Melbourne, and one of them is mounted on trucks of a new type designed and built by the board.

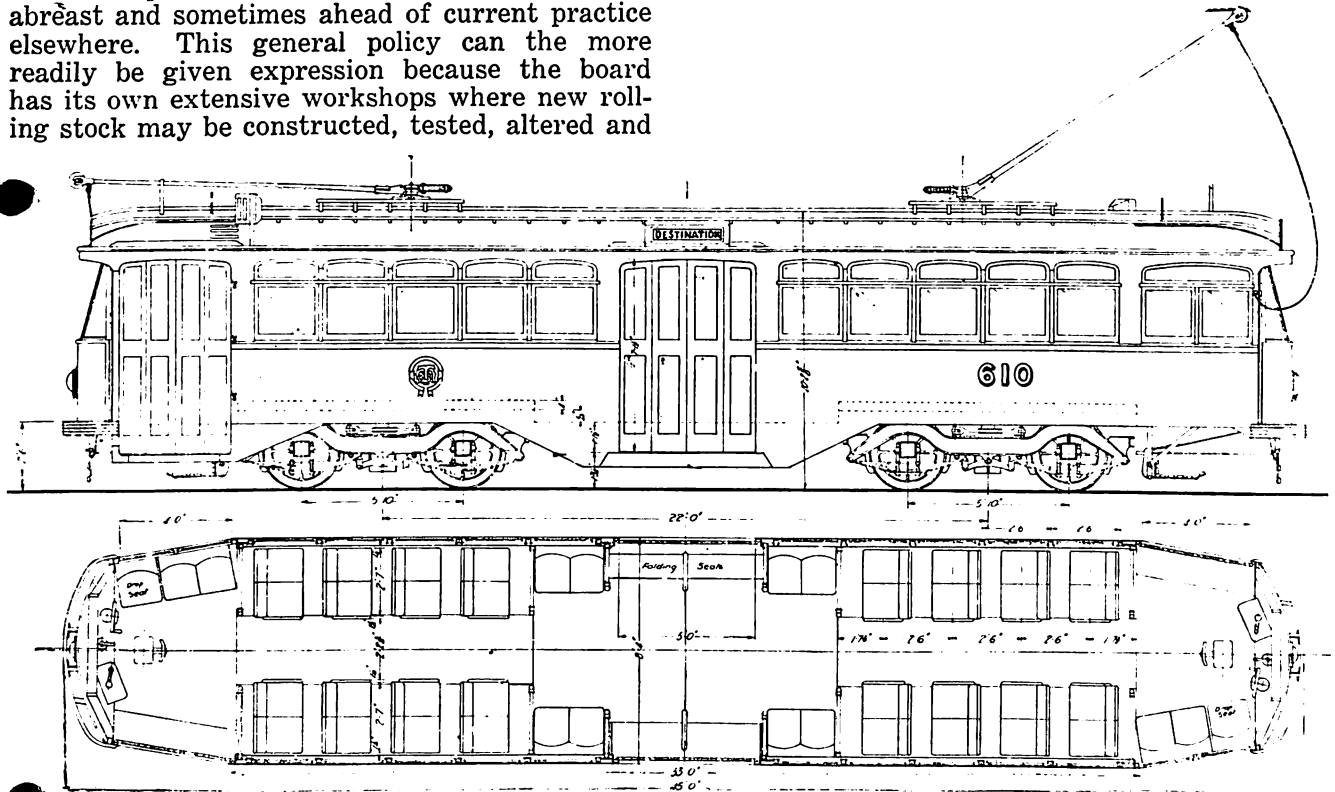


Fig. 1. Class Y1 Steel Bogie Car for Melbourne Tramways

brought to perfection, under the direct superintendence of the engineers responsible for operation. At these shops new cars are continually being turned out at the average rate of one a week.

An example of the adoption of new equipment and methods to suit the conditions of service is seen in the action now being taken by the board to thoroughly try out a type of car that is new to Melbourne. On routes where the normal loading is fairly heavy over certain sections and light over others, economical operation is difficult to obtain. Therefore, it has been decided to try out on such routes a type of car with large carrying capacity, that can be operated by a motorman and conductor over the busy sections and at peak periods, and by a motorman only

It will be realised that if a large car is to be suitable for one-man operation it must differ considerably from the standard type of large car used by the board, viz., the class W, which has motorman's cabins, end saloons, a central open compartment and three open entrances near the centre. The new car, therefore, has certain features of similarity to the small one-man safety cars used by the board on certain routes. The general body work, windows, end frames, and end doors are of the same design as those used in the safety cars, the difference being that the body is longer than that of the safety car, and is equipped with centre doors. All the doors, like those of the safety cars, are controlled by the motorman.

The general elevation and plan are shown in Fig. 1, which is a drawing of the car that is mounted on the new trucks. The car is 45 ft. long, 8 ft. 4 in. wide, 10 ft. 2 $\frac{5}{8}$ in. high from rail to roof, and weighs 17 tons. The seating capacity is 50 or 54, and the crush load capacity 120. The centre doors each open to a width of 5 ft., and the end ones to a width of 4 ft. The framework is entirely of steel, made up of plates and standard commercial sections, and the side coverings are of sheet steel. Anti-climbing bumpers

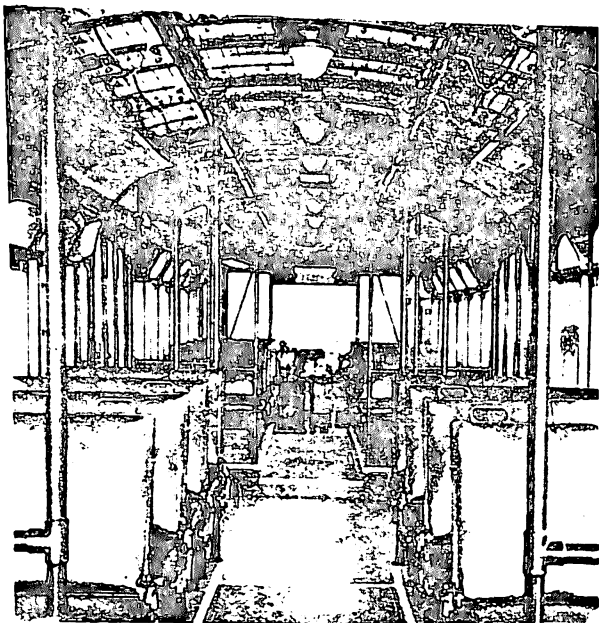


Fig. 2. Interior of New Bogie Car

are fitted to the ends to reduce the possibility of telescoping in collision. A feature of the construction is the extensive use made of electric welding in joining the members. The floor is of wood, covered with linoleum, and all the interior facings are of Australian blackwood. Ample ventilation is provided by the centre section of the roof being raised throughout its length so as to leave longitudinal slots, and by the top section of each window consisting of a hinged fanlight which can be dropped back at an angle inside the car to admit air but not rain. The lower portions of the windows drop to the full depth, and louvered sun blinds are provided. The motorman's windscreens are sloped at such an angle that the reflections of lights inside the car at night will be thrown downwards out of the motorman's line of vision, and there will be no chance of dazzle obscuring his view of the road. A seat is provided for the use of the motorman while driving or collecting fares.

In the seating accommodation, shown in Fig. 2, special attention has been paid to passengers' comfort. Cross seats with reversible backs are used in the body of the car, and there are short side seats near the centre doors and near the

ends, opposite the end doors. In addition there are folding seats which may be dropped in front of the centre doors when these doors are not in use, at times when the car is under one-man operation. The seats have aluminium frames, are sprung and are upholstered in brown Australian leather. They were made at the board's workshops in Preston.

Three of the cars are mounted on trucks of the ordinary equaliser bar, equal traction type. The fourth is on special trucks of a modern type designed by the board's officers. These have cast steel side frames made by Messrs. Bradford Kendall Ltd., Sydney, and long semi-elliptic springs rigidly attached to the axle boxes and joined to the side frames at the ends by means of shackles. On test these trucks have been found to possess very easy riding qualities. In all the trucks built for these cars the wheels are of 33 in. diameter. Each truck is equipped with two 40-h.p. Metropolitan-Vickers motors made in Sydney. The free running speed of the motors is 28 m.p.h., and the gear ratio is 13/77.

The control is of the electro-pneumatic type throughout, and complete control of this type is being used in these cars for the first time in Australia. The electric controller is of the G.E. series-parallel type fitted with dead man's handle, and was made in Australia. The electro-pneumatic control equipment was supplied by the Westinghouse Brake Co. as was also the braking equipment. The brakes are applied by an electro-pneumatic valve operating close to the brake cylinder, worked through a quick application and release valve. The brake cylinders and much of the equipment were made in Australia. The actual brake itself is of the clasp type, and the system is arranged to automatically adjust the pressure to correspond with the load on the car. The doors are controlled by pneumatic door engines, operated through electro-pneumatic valves by air pressure. The operating equipment is so interlocked with the brakes that the car cannot be started until the doors are closed. This equipment was made in England, and supplied by Messrs. Horrocks, Roxburgh Pty. Ltd.

Special attention has been paid to the lighting of these cars, and a soft and pleasing effect is obtained by the use of suitable shades. The tramways board realises that the conditions of modern service require that increased attention be paid to the comfort of passengers, and the special seating features, attractive lighting and easy riding qualities should appeal to patrons. In addition the cars are handsome in both internal and external appearance, and are generally such that they should prove a great asset to the undertaking. If they fulfil in service the expectations of their designers, the board proposes to proceed immediately with the construction of more.