

To ACTING BRANCH MANAGER  
From BRANCH TRAMWAY SUPT.

### AUTOMATIC BRAKING

Reference enquiry from Engineer & Manager dated 15th October, 1948. I refer to our letter to Engineer & Manager upon this subject dated 12th October, 1948, and submitted in respect to objections raised recently by the local division of the A.T. & M.O.E.A., also letter sent in reply to the above complaint.

### History -

The test tram (No. 26) was inspected and approved for service by the Engineer & Manager, and commenced in service on 24th June, 1948. It has been in operation for 8,250 service miles to date. Changes in the equipment as originally installed were -

- (1) Diaphragm valve operated by the service air brake was transferred from the pilot line to the automatic brake air line.
- (2) Double check valve in pilot line transferred to middle of tram to equalise end operational time factors.
- (3) Reduction in exhaust port of the release valve.
- (4) Foot valve moved to more central location, placed horizontal on floor and pedal length restored to original.

On 16th August, 1948, a new type foot valve was supplied and installed, with original pedal complete. This valve operates in parallel with the controller valve, as compared with the previous simple shut-off valve.

### Experience -

There has been no expressed or apparent objection to the allotment of No. 26 tram to service crews during test periods. The special report card shows entries as follows :-

- (1) 3/7/48. Air leakage at controller valve. (Caused by dirt on valve seat, probably dislodged inside pipes during installations).
- (2) 8/7/48. Slow discharge of automatic brake. (Characteristic to the modification from original job, and not a defect).
- (3) 28/8/48. Circuit breaker opened when full air brake applied. (Tested O.K. Considered due to inefficiency of operator).
- (4) 30/8/48. Circuit breaker opened when full air brake applied. (Tested O.K. Further trial given).
- (5) 31/8/48. Circuit breaker opened when full air brake applied. (Tested O.K. Leather gasket in double check valve on brake cylinder inspected. Piston deep seated in leather. Gasket replaced with kip leather).



- (6) 19/10/48. Air leakage at controller valve.  
(Fragment of copper found on valve seat).

None of the reported defects created a hazardous condition with respect to the tram operation, but would create a nuisance value for objectors to the installations. There has been no recurrence of defects peculiar to the original installation, and in this respect the modifications have proved of value. Elimination or reduction of the defects experienced would be obtained by (1) discarding the original leather gaskets in double check valves in favour of better quality kip leather. (2) Blowing out all pipes and fittings in the pilot line after installation, to remove any particles, dirt, etc., likely to foul the controller or foot valves.

#### Alternative Recommendations -

In so far as this branch is concerned, it is obvious that we must either recommend that the installation be extended to all trams, or that it be removed from all trams. Branches with considerable one-man operation might recommend that the installation be confined to trams used as one-man trams only.

#### Arguments in favour of retention and extension of automatic Braking -

- (1) It is highly desirable that safety devices be incorporated to ensure that the tram will be stopped in the event of collapse, etc., of a motorman.
- (2) The Commission has committed itself to a policy, and any retraction under pressure from the Tramway Union would be a retrograde step. It might be considered detrimental to the maintenance of discipline.
- (3) The expenditure made on the project is already too considerable to permit of its being discarded.
- (4) That the present installation is reasonably reliable, and that even with the modifications conceded to the Tramways Union, there is still a reasonable chance that the apparatus would function in the event of collapse of a motorman, to both his and passengers' advantage.

#### Arguments against the retention of automatic braking on trams -

- (1) That the experience over many years of operations proves that it is unnecessary, and that extra gadgets on the trams only tend to reduce their previous high reliability.
- (2) That large undertakings operating under more congested conditions are opposed to automatic brakes, citing Melbourne, Sydney, etc.
- (3) That automatic braking, where used, is on rolling stock designed for the purpose, in that the operator's position and comfort are studied.
- (4) That in the adaptation of the apparatus to our present type of rolling stock, with restricted drivers' compartments, it is not possible to provide the necessary comfortable operating position.
- (5) That efforts to increase comfort of the operator reduce the potential efficacy of the devices, and therefore much of the protection sought is lost.



(6) That the present type of foot valve has an advantage which is offset when applied to double end operated trams of combination type, in that the foot valve at the rear end can be used to stop automatic brake application, unless special precautions are taken.

(7) In view of the uncertainty as to the future of the provincial tramways, the potential expenditure to complete the installation is not at present justified. In the knowledge that the only organisation conceivable as the successor to the State Electricity Commission control of the trams is opposed to the automatic brake principle, and would probably discard same, weight is lent to the foregoing.

(8) The retention and extension of automatic braking would perpetuate a feeling and atmosphere of antagonism between the Union and the Commission, which is not to be desired. The discard of the system would have considerable future goodwill value.

(9) If feeling against the automatic brake became sufficiently bitter, and led to a threat of direct action, any appeasement would be disastrous. The Commission has already by direction (A) Suspended further installations, (B) Disconnected the apparatus on all but one tram in each city. Far better to now call the job off than make a decision to go ahead and equip all trams, and later, under pressure, to cancel the project.

#### COSTS, ETC.

##### Budget Provision (A.P. 3/10/1944) -

22 trams	£2,750
Supplementary (bogies)	850
TOTAL:	<u>£3,600</u>

##### Expenditure to date -

Material (22 trams)	£2,027
Labour, etc. (10 trams)	534
TOTAL:	<u>£2,561</u>

##### Costs to date per tram -

Material (22 trams)	av.	£92 each
Labour, etc. (10 trams)	av.	<u>£53 "</u>
TOTAL COST: av.		<u>£145 "</u>
10 trams		

##### Estimated Cost to Complete -

Original A.P. (22 trams)	
Conversion of 9 trams at £10 each	£90
Installation 11 trams at £75 (labour etc)	£825
Installation, Incidental Materials etc.	<u>£50</u>
TOTAL:	<u>£965</u>

##### Budget Provision - Original A.P. - £2,750

Cost to date	£2,561
Added cost	<u>965</u>
	<u>£3,526</u>



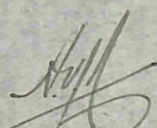
## Supplementary Provision -

4 bogie trams - £850  
Cost to date  
Estimated cost

-  
£850

SUMMARY:

In view of the criticism by the Manager, State Electricity Commission, of the discomfort of the operator of automatic controls on our type of trams (heavy expenditure would be occasioned by any structural alteration to conform to the arrangement of conventional automatic brake equipped trams), the reduction of potential effectiveness of the equipment, particularly in respect to the foot valve, and the danger of ultimate appeasement under pressure, it is my personal opinion that the installation should not be pursued.

  
Branch Tramways Supt.

BALLARAT:  
25th October, 1948.