

## How to drive a tram car

Step up in front with Robin Brewster at the controls  
(Glasgow Evening Times article September 1957)

Hurray along please- ting- ting we're off to the Glasgow Corporation Motor School to learn how to drive a tram. No wonder you have often wondered how the tram driver can control the whole vehicle by that single handle on the control column. The sketch shows that the ingenious piece of mechanism: so keep your eye on it as we drive off.

To start the driver puts the pointer to the first notch in the four marked series. Series means that the two motors are dividing the amount of power between them



53's rheostat opened.

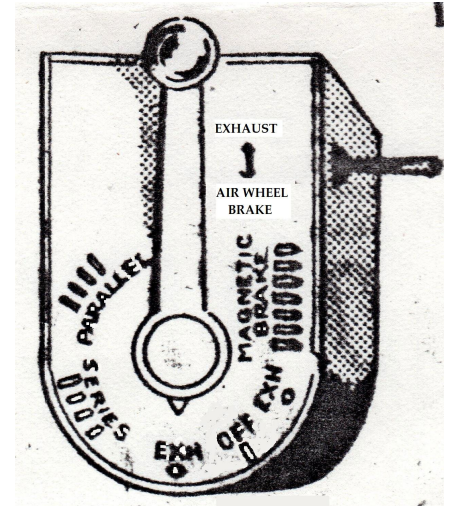
When the pointer is here, the power runs first through the rheostat, which absorbs three quarters of it, so the motors only get a small boost to start them. Now we move up to notch 2 and travel a little faster because the rheostat is now only holding back half the power then up to notch 3, and then notch four. The rheostat is now cut out and the motors are dividing the power (575v) between them. The rheostat by the way is that black box under the stairs, generally incorrectly thought to be a heater used by the conductor on cold days!

### Power Boxes

Now we are running along at about 12 miles an hour. To speed up we move the pointer up to notch one in the parallel group. The motors are now getting independent supplies of power, but again the rheostat is keeping back 3/4s of it to allow slow build up. Moving up the notched again slowly cuts out the rheostat until

we are travelling on full power at 25 miles an hour. If the driver is in too much of a hurry and does not move up slowly from notch to notch you will hear a big bang as the switch on the platform blows and he cannot get power back until it has been reset.

Perhaps you have noticed that going full speed down a stretch the driver will switch off the power for no apparent reason, pause then switch power back on. This is because he has reached a section junction. To ensure that every part of the overhead cable gets exactly the same voltage, the line is divided into sections, powered separately. Section junctions are indicated by a white painted pole with a power box beside it. In the cable at that point is the break between sections and the tram must pass this section with power off the bow collector ( that's the apparatus on the roof which contacts the line) will join the sections and may burn out the insulator and cause hold ups!



Controller diagram



Summerlee's section box

On the lower right hand side of the control column you'll see seven notches marked with the words magnetic brake. To apply this, the driver swings the pointer right down through the off position and onto the first notch in the magnetic brake section.

### Shuddering to halt

In this case no power is going through the motors. Instead the electricity generated by the turning wheels is put to magnetising the brake shoe just behind the the wheels and bringing it down on the rail. Again the power passes through the rheostat box that notch one only exerts dragging pressure. But going to notch 7 brings the trams to a shuddering halt which pitches the poor passengers about!

To illustrate how the wheels power the magnetic brake, imagine a tram standing in Renfield Street with brake on. As the wheels are not turning the magnetising current decreases until the shoe lifts off and the tram begins to run down hill. But it has hardly gone far before the turning wheels have generated enough power to magnetise the shoe and bring it down again to stop the tram. So it would go on until the tram has reached the level.

If you have a bike, you'll see that the principle is the same as that of the dynamo which keeps your light going.

The handle jutting out the side of the control box is the air brake control. When the tram is at a stand still on the air brake you'll hear the motor running to generate the air pressure. A twist of this lever also applies sand to the greasy rails..

The larger handle on the right is the wheel brake and this lock is generally only applied when the tram driver leaves the tram.



**392's track brake. Photo taken from in the inspection pit**



**Summerlee's maximum speed restriction notice on overhead line.**

Tram drivers must keep their eyes open for their own road signs. For instance the black speed restriction notices. The black oval discs with white figures hand on the overhead wire, and indicate the maximum speed allowed on the section.

His road book gives him special details for certain parts of the line but generally the limits are 15mph in the city and 25 mph in the suburbs. City centre sections are generally negotiated at 5mph  
Electric points

Finally there are electric points to be negotiated. The driver is warned of these by an overhead white disc bearing the red letters E.P. Shortly after that he sees before him between the rails a round steel stud, a triangular stud and then an arrow.

The round stud is a be prepared stud, but over the triangular stud the bow collector touches a special contact in the overhead wire which as you might say 'alerts' the points mechanism.

Whichever direction the arrow points indicates that to go that way the driver must pass over the arrow with one notch of power applied. If he wishes to go the other way he must switch off the power after passing the triangular stud and coast over the arrow.

So there you are. To drive a tram is not such an easy job as many folk imagine is it? The low accident record of the Glasgow trams is a tribute to the men and women who drive them.

