

TRAMCAR BRAKING

All motormen before taking up duty must be familiar with the following questions and answers:-

BRAKE EQUIPMENT DESCRIPTIONS, ETC.

Question 1: What is the purpose of the compressor?

ANSWER: To pump air from the atmosphere into the reservoirs.

Question 2: What is the governor and its purpose?

ANSWER: The governor is an electric switch for automatically opening and closing the circuit to the compressor motor.

Question 3: At what pressure does the compressor commence to work?

ANSWER: 60 lbs.

Question 4: At what pressure does the compressor motor cease working?

ANSWER: 70 lbs.

Question 5: When you know that electricity is in the overhead wires and the compressor does not work, what would you do?

ANSWER: Make sure that the compressor switch is closed and if so examine the fuse.

Question 6: Before replacing a burnt out fuse what precaution would you take?

ANSWER: Open the compressor switch.

Question 7: What is the purpose of the motorman's brake valve?

ANSWER: It has a dual purpose; firstly to allow the air to pass from the reservoir to the brake cylinder, secondly to exhaust the air into the atmosphere from the brake cylinder.

Question 8: What is the purpose of the two air gauges situated one in each motorman's cabin?

ANSWER: To indicate the pressure in the air reservoirs.

Question 9: What is the handbrake?

ANSWER: It is a mechanical brake by which the motorman can, by turning the wheel, force the shoes on to the wheels.

Question 10: When is the handbrake to be used?

ANSWER: In the event of the failure of the air brake, and when leaving a tram at the terminus or elsewhere on the road.

Question 11: Under what condition could the brake be automatically freed from the wheels when standing?

ANSWER: When a lightly loaded tram picks up a number of passengers.

Question 12: What is the reason for this automatic freeing of the brake shoes?

ANSWER: When the weight is applied to the tram, the shoes are forced down vertically and at a tangent from the wheels.

- Question 13: Under what condition could the brake of a standing tram automatically tighten when the brakes are on?
- ANSWER: When a heavily loaded tram discharges a great number or all its passengers at the one time. In this case the shoes rise vertically toward the centre line of the wheels, resulting in greater pressure between the shoes and the wheels.
- Question 14: Which is the most effective brake?
- ANSWER: The air brake.
- Question 15: Under what conditions should a heavy application of the air brake be made?
- ANSWER: When the tram is travelling at speed and the rail is in good condition.
- Question 16: What is meant by the rail being in good condition?
- ANSWER: When the adhesion between the wheel and rail is good.
- Question 17: Under what conditions would the adhesion be best?
- ANSWER: When the rail is thoroughly clean and wet.
- Question 18: When is the rail slippery?
- ANSWER: Generally after a light rain or when there is any substance on the surface such as oil, tar, leaves &c.
- Question 19: What would you do to counteract this slippery condition?
- ANSWER: Apply brake more gradually and apply sand to the rails by pressing on the sander button and release brake momentarily to allow wheels to revolve if they skid.
- Question 20: Is it your duty to see that the sand hoppers have plenty of sand and that the apparatus is working satisfactorily?
- ANSWER: Yes; these should be frequently examined, especially under conditions that are likely to make the rails slippery.
- Question 21: What is the minimum (lowest) air pressure at which you are permitted to use this brake?
- ANSWER: 50 lbs.
- Question 22: What precaution would be necessary when running a tram under this condition?
- ANSWER: A greater distance must be allowed in which to bring the tram to a standstill as the force on the shoes would be somewhat reduced.
- Question 23: Would you be permitted to travel as fast with the air brake out of order?
- ANSWER: No; it would be necessary to travel more slowly and to allow plenty of time in which to bring the tram to a standstill.
- Question 24: If wheels skid when brake is applied what must you do?
- ANSWER: Release brake momentarily in order to allow wheels to revolve, apply brake more gently and use sand.

Question 25: Under what conditions must you allow a greater distance in which to stop tram?

ANSWER: (a) When tram is heavily loaded.
 (b) When on down grade.
 (c) When rail is slippery.
 (d) When using hand brake.
 (e) When approaching any obstruction.

PROCEDURES IN THE EVENT OF BRAKE FAILURE:

Question 26: How would a tram be stopped, moving in a forward direction, if air and hand brakes failed.

ANSWER: By pulling the reversing lever back and applying one notch of power, or if necessary two, at the same time using sand.

Question 27: What would be necessary if the wheels spun round and did not grip the rails sufficiently?

ANSWER: Throw the handle to the off position for an instant and apply the power, also sand, again, repeating the process if necessary until the tram has been brought to a standstill.

Question 28: If the circuit breaker opens when the motors are reversed, what should be done?

ANSWER: The power handle should be immediately thrown round to the parallel running position and left there until the vehicle comes to rest.

Question 29: Should sand be used when either of these two electrical means are used to stop the tram?

ANSWER: Yes; and should be used continuously until the vehicle comes to rest.

Question 30: If the tram is running backwards downhill, how would it be stopped?

ANSWER: In the same manner as described above except that the reversing key would be pointing in the opposite direction, that is it must always be pointing in the opposite direction to that in which the tram is travelling.

Question 31: How would a tram be kept from moving on a grade after having been stopped when there was no air or hand brake to hold it?

ANSWER: Some hard substance would have to be placed in front of the wheels, such as a big stone, piece of wood, draw-bar etc.

Question 32: How would a tram descend a grade if both air and hand brake failed?

ANSWER: The circuit breaker should be opened, the reversing key pulled back, that is pointing up the grade, and the power handle turned round to the last parallel position and left there until the tram came to rest on the level track.

Question 33: With this means of stopping a tram, would it hold it in a stationary position?

ANSWER: No; because the electricity used in stopping it is dependent on the motion of the tram to generate the current.

Question 34: What happens when this means of stopping the tram is used?

ANSWER: The two motors are cross-connected so that the one is driven by the momentum of the tram and generates electricity supplied to the other motor which retards or stops rotation.

Question 35: Would it be possible to use this means of stopping the tram when one of the motors had been cut off?

ANSWER: No; as previously explained, it is necessary to have the two motors in working order and cross-connected.

Question 36: Would this means of stopping tram be effective if the pole were off trolley wire or if the electricity was off for any reason?

ANSWER: Yes, it is not dependent on power from the trolley wire.

LEAVING TRAM UNATTENDED ON A GRADE:

Question 37: If necessary to leave a tram unattended on a grade, what action would be necessary?

ANSWER: Release air-brake and apply the handbrake firmly, open the automatic switch, push the reversing key so that it is pointing up the grade and turn the power handle round to the last parallel running position after removing the trolley pole if daylight.

Manager.

5.

On the trip into the City, the usual signal will be obtained at the outer loop, but at Bridge Street the signal there will indicate the condition of this street. If box is clear, a proceed signal is obtained from setting contactors suitably placed and later restoring contactors clear the outer loop signal. Near Grenville Street, the Bridge Street signal is cleared by a restoring contactor.