Private - For the use of Railway Staff only.

BRITISH TRANSPORT COMMISSION

BRITISH RAILWAYS - SCOTTISH REGION

Instructions for the Operation of the Battery Railcar Train

GLASGOW.
21st. APRIL, 1958.

OW2/85/X/58.

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INSTRUCTIONS FOR THE OPERATION OF BATTERY RAILCAR TRAIN

This train is fitted with two-tone warning horns at each end. The Two-tones must always be sounded when it is necessary to give a warning.

All concerned must warn men employed under their supervision who may be required to work on the permanent way or to walk upon or cross running lines of the importance of observing the warning, and that they must be prepared for the train to approach quietly and at high speed. Upon hearing the warning the Driver should be given an acknowledgement whenever possible.

It is important that men engaged on permanent way work, etc., shall move promptly to a point of safety upon sighting or receiving audible warning of the approach of a train.

If it is necessary for a Battery Railcar train to work over a section of line where it is not normally scheduled to run, the Driver must sound the warning horn in accordance with Rule 127 and also when approaching curves, level crossings, barrow crossings, overbridges, Ganger's huts and other buildings adjacent to the line upon which the train is running.

The speed of the train must not exceed **10 m.p.h.** when proceeding along carriage or repair sidings, or sidings in Motive Power Depots. Before entering sheds the Driver must bring his train to a stand and give a warning signal on the horn to staff who may be at work inside. The speed of the train inside a shed must not exceed **5 m.p.h.**

WORKING INSTRUCTIONS

RULES AND REGULATIONS.

1. The Rules and Regulations are applicable to the Battery Railcar train except as modified below :-

(i) Rules.

55 - The duty of going to the signal box to remind the Signalman of the position of the train must be performed by the Guard, but where Fireman's call plungers or telephones are provided, the Driver must make use of these appliances.

In connection with clause (h) of this Rule the Guard must carry out the duties allocated to the Fireman as in the case of electric trains.

56 - In the circumstances described in clause (b) of this Rule, the Guard must first protect his train in rear before complying with Rule 55, clause (a).

126 - A Driver is forbidden to leave charge of his train without :-
(a) removing the controller reversing key
(b) putting the hand brake on hard

127 - Each driving compartment must be equipped with not less than 12 detonators and a red flag.

The Driver must have with him in the driving compartment a hand lamp with red shade.

141 - The Guard's signal to start the train will be given in accordance with the bell code shown in Instruction No. 6.

178-187 The Driver must carry out the duties of the Fireman as laid down for Motormen in charge of electric trains. If the opposite line is obstructed the Driver must go forward on foot to protect such obstructed line.

188 - In the case of the train conveying passengers, the Driver must carry out the duties allocated to the Fireman after satisfying himself that the fire is being dealt with.

WORKING INSTRUCTIONS (continued)

(ii) Regulations.

(a) - **Passenger communication -**
The passenger communication is by means of a short handle painted red, fixed in each car. When the handle is pushed upwards it causes the brake to be applied and the train to be stopped. No discs are provided on the outside of the vehicles to show when the alarm handle has been operated. The alarm handle must be reset by the Guard pushing the handle firmly downwards.

(b) - **Brake Regulations -**
The vehicles are equipped with an "Oerlikon" air brake system and the regulations relative to this type of brake are contained herein. The brake tests as required by Regulation 3 clauses (a), (b), (c) and (d) must be made daily before the train is taken into use.

MANNING OF TRAINS.

2. The train will be manned by a Driver and a Guard only.

COMPOSITION OF TRAIN.

3. This train is composed of two vehicles and can only be used as a twin-set as either car is immobile without the other.

Except in an emergency, these two vehicles must only be separated by staff from both the Carriage and Wagon Engineer's Department and the Chief Mechanical and Electrical Engineer's Department.

Should it be necessary in an emergency for these vehicles to be separated this may be done by a Motive Power Department representative who has been specially trained for this purpose.

TAIL TRAFFIC.

4. Additional vehicles must not be attached to this train.

HEAD AND TAIL LIGHTS AND DESTINATION INDICATORS.

5. The destination indicators must be illuminated both at the front and rear of the train and the train classification headlamps illuminated on the front of the train only. The Driver is responsible for ensuring, at any turning round point, that the classification headlamps are extinguished before he proceeds to the other end of the train.

An oil tail lamp must be carried on the rearmost vehicle and a spare oil tail lamp, properly trimmed must be carried in the Guard's brake compartment to enable the provisions of Rule 204 to be complied with.

BELL CODE.

6. The following code of bell signals between Guard and Driver must always be used by means of the bell communication provided :-

1	Stop
2	Start
3	Set-back
3-3	Guard required by Driver
4	Slow down when propelling
5	Guard leaving train in accordance with rules
6	Draw forward
7	Correct air pressure indicated in rear driving compartment during tests.

PROPELLING.

7. Except during shunting operations, propelling must only be resorted to where specially authorised.

When propelling, a speed of 5 m.p.h. must not be exceeded and the Guard must ride in the leading driving cab, keep a good look-out, operate the warning horns when necessary and in an emergency be prepared to stop the train by application of the brake. The Guard must carefully observe all signals and signal to the Driver as may be necessary in accordance with the bell codes shown in Instruction No. 6. In event of failure of the bell communication, the train must be driven from the leading end.

PROPELLING (continued).

The train must be driven from the leading end when proceeding towards stationary vehicles, entering carriage or repair sheds or proceeding up to buffer stops.

HEATING OF TRAIN.

8. The Guard will be responsible for seeing the heating units are in use when necessary and that they are switched off when the train is stabled. He should also have the heating adjusted during the journey as far as practicable to meet the wishes of the passengers.

The Guard, depot staff or other person specially appointed for the duty, will, however, be responsible for switching on the heat before leaving the depots at the commencement of the working and where pre-heating is necessary, suitable arrangements must be made between the Operating and Motive Power Departments for this to be carried out.

Any defect in the heating system must be advised by the Guard to the Driver, who must report it.

EXCHANGE OF TOKENS ON SINGLE LINES.

9. In order to enable the Driver to receive or deliver a single line token by hand, the train must be brought to a stand at the signal box, station platform, or other token exchange point and the Signalman must receive and/or deliver the token at that point.

FIRE PRECAUTIONS.

10. A small chemical fire extinguisher is provided in each Driver's cab and in the Guard's brake compartment and must be used on all fires in which the electrical equipment is involved. The fumes given off when this type of extinguisher is used are dangerous and care must, therefore, be taken when dealing with a fire in a confined space.

A two-gallon water type extinguisher (gas pressure) is also provided in the Guard's brake compartment and may be used on any fire not involving the electrical equipment.

FIRE PRECAUTIONS (continued).

The two bags of sand provided in the Guard's brake compartment may be used on any type of fire but care must be taken to prevent unnecessary damage to equipment by the sand.

DEADMAN'S HANDLE.

11. A Deadman's device is incorporated in the master controller handle in both driving cabs, and should the Driver release his grip, the brake will be applied and the power cut off.

Should any defect arise to make the Deadman's device inoperative, the Guard must ride with the Driver until another competent man can be provided or the defect remedied.

DRIVING APPARATUS DISABLED.

12. In the event of the driving apparatus in the leading cab becoming disabled, and the Driver can regain control of the train from the rear driving cab, the train must be driven at reduced speed and proceed with caution to the nearest point where the train can be taken out of service.

In such cases the Guard must ride in the leading driving cab, keep a good look-out, operate the warning horns when necessary and in an emergency be prepared to stop the train by application of the brake. The Guard must carefully observe all signals and signal to the Driver as may be necessary in accordance with the bell codes shown in Instruction No. 6.

ASSISTING DISABLED TRAIN.

13. In an emergency, the disabled Battery Railcar train can be assisted by any other type of train or engine, but the disabled train must be treated as a non-fitted train and, in the circumstances, the train must be worked cautiously and at reduced speed.

The Battery Railcar train must not be utilised to assist any type of train.

GENERAL REGULATIONS FOR WORKING THE OERLIKON AIR BRAKE.

1. Description.

(a) The operation of the Oerlikon Brake depends on compressed air. The air is provided by a compressor and is maintained in the reservoir pipe between the pressures of 80 and 100 lbs. per square inch. The train pipe is charged to 70 lbs. per square inch pressure by the reservoir pipe via the Driver's brake valve. Variations in train pipe pressure caused by movement of the Driver's brake valve handle actuate the triple valve which proportions the air flow from an auxiliary reservoir into the brake cylinders according to the pressure difference between the triple valve control reservoir and the train pipe.

(b) The Battery Railcar can only be used as a twin-set as either car is immobile without the other. No additional vehicles must be attached to this train.

2. Operation of brake.

(a) The brake is operated by the Driver's brake valve which, by allowing air to escape from or enter into the train pipe, causes the triple valve to alter the brake cylinder pressure.

A fall of 25 lbs. per square inch in the train pipe pressure causes a "Full Service Brake Application" and a reduction to zero pressure on "Emergency Application".

(b) The brake is ordinarily applied by the Driver, but it can also be applied by the Guard or by the passengers. A Guard or passenger application causes an "Emergency Application", and after the application the valve used must be re-set.

3. Before Starting.

(a) The Driver must satisfy himself that the brake system is in working order by carrying out tests in accordance with the following instructions :-

3. Before Starting (cont'd.).

(i) Check that handbrakes are on in both cabs and that both Driver's valves are in the neutral position.

(ii) Switch on control circuits and compressor circuit and ensure that the compressor is working.

(iii) In the leading cab, depress controller handle to operate deadman's valve. Place the Driver's brake valve handle in the "Running" position and wait for train pipe pressure to stabilise at 70 lbs. per square inch. Should the pressure in the train pipe stabilise at below 70 lbs. per square inch adjust regulating cap on top of the valve handle by turning it slowly in a clockwise direction until the required pressure has been obtained. Wait for the main reservoir pressure reaching 100 lbs. per square inch at which point the compressor should cut out.

(iv) Still holding down controller handle, move from the "Running" position into the "Set" position when the brake cylinder pressure gauge should register approximately 7 to 10 lbs. per square inch.

(v) Move from the "Set" position to "Full Service Braking" position and observe that whilst doing so the train pipe pressure falls and the brake cylinder pressure increases.

When in "Full Service Braking" position the train pipe pressure should fall to about 50 lbs. per square inch, with the brake cylinder pressure at about 57 lbs. per square inch.

(vi) Move into the "Emergency" position and observe that the train pipe pressure falls to zero. The brake cylinder pressure should be about 57 lbs. per square inch.

(vii) Re-charge the train pipe by moving the Driver's brake valve handle into the "Running" position, then test the operation of the deadman's device by releasing the controller handle, when the train pipe pressure should drop to zero and a pressure of about 57 lbs. per square inch should be registered on the brake cylinder pressure gauge.

In order to conserve air while testing the deadman's device, the brake handle should be put in the "Neutral" position before releasing the controller handle so that only the train pipe will be exhausted.

3. Before Starting (cont'd.).

(viii) Depress the controller handle and move Driver's brake valve handle into the "Running" position and re-charge the train pipe. Check with the Guard that the correct train pipe pressure is obtainted in the non-driving cab and move into "Neutral" position, also ensure that the brake blocks are hard on the wheels on which the hand brakes do not operate. Then go to other cab.

(ix) Depress controller handle, move Driver's brake valve handle into "Running" position and allow train pipe pressure to stabilise, adjusting as necessary.

(x) Repeat 4, 5, 6, 7 and 8.

(b) The Driver must satisfy himself that all drain cocks are closed and that the cocks for Inter-Car connections are open.

(c) The Guard must operate the emergency brake handle in the non-driving cab and thereafter see that the required train pipe pressure of 70 lbs. per inch is registered on the pressure gauges in his compartment and in the non-driving cab before giving the signal to start. He must also assure himself that the handbrake is off and the Driver's brake valve handle is in the "Neutral" position in the non-driving cab.

(d) The Driver must ensure before starting that the gauges in his cab indicate the required pressures. The Driver must accept the signal to start, given by the Guard, not only as an indication that the train is ready to proceed but also as an assurance that the other train pipe pressure gauges indicate the required pressure and that the other handbrake is off.

4. During Journey.

(a) The required pressure should be maintained throughout the journey except when it is necessary to apply the brake. Should the Guard find during the journey that the gauge in his compartment shows a pressure less than 70 lbs. per square inch (unless he is satisfied that it is caused by the Driver applying the brake) he must be prepared to apply the handbrake in the non-driving cab as may be required.

4. During Journey (cont'd.).

(b) The Driver and Guard must report any irregularities in connection with the working of the brake, or defect in its action, or other special circumstances. At stations where there are Examiners, the Guard must, on arrival, direct the attention of the Stationmaster or Examiner to the irregularity in working of the brake. The Guard must note the particulars in his journal, giving the individual number of the defective vehicle.

(c) Should the Driver find that his train is being retarded owing to brake blocks on all the wheels not being off, he must stop, under the protection of fixed signals if practicable, and have the brakes properly released.

(d) Should the Driver find that the brake has been applied by the Guard, or otherwise, he must at once assist in stopping the train by putting the handle of the brake valve into "Neutral" position to prevent escape of air from the main reservoirs.

(e) When the Guard becomes aware that the Driver is not going to make a booked stop, or for any other cause other than an emergency, he should warn the Driver by means of the bell code. Should the Driver fail to respond to such warning the Guard must make a brake application as if it were an emergency.

It should be noted that it is not possible for the Guard to make a partial application.

5. Stopping.

(a) The Oerlikon Brake must be used for ordinary stopping of the train by the Driver. The brake should be so operated in making a stop that it is not necessary to make a powerful application when the train is travelling at low speed, but in the case of emergency the valve must be opened to allow all the air from the train pipe to escape.

(b) Before finally coming to a stand, the brake should be eased off towards the "Set" position according to the gradient.

5. Stopping (cont'd.).

(c) To release the brake, the Driver's valve handle should be moved into the "Running" position.

(d) The working of the Oerlikon Brake will not relieve the Guard from responsibility of observing Rule 148.

6. Testing Brake when Running.

In addition to tests laid down in Regulation 3, Drivers must also test the brake in good time before reaching their full braking distance when approaching

(i) Steep falling gradient
(ii) A Terminus
(iii) A principal station at which the train has to stop
(iv) A crossing place on a single line at which the train has to stop.

The speed of the train must be reduced by the test and the Driver must enter such Stations, or dead end bay at any Station, at a speed which will enable him to stop the train at the proper place.

Unless the brake is working properly when thus tested, the Driver must stop the train by the handbrake, with the assistance of the Guard using the handbrake in the non-driving cab.

The train may be worked forward at low speed, being controlled by use of the handbrake.

7. Release of Brake by Hand.

To release the brake on either vehicle the cord or wire attached to the triple valve of each car must be pulled until the brake on the car concerned is fully released.

7. Release of Brake by Hand (cont'd.).

There is one triple valve on each car and it controls the brakes on only the car to which it is fitted.

The cord or wire must never be fastened to hold the triple valve release lever open. The position of the cord or wire is indicated by a yellow star on the solebar.

The cord or wire should be pulled for the least time necessary to release the brakes, otherwise air will be wasted.

8. Failure of Brakes.

In the event of a failure of the brake which does not result in an automatic application of the brake the train must be stopped by use of the handbrake.

If sufficient train pipe pressure can be maintained to operate the control governor the train may be worked forward at low speed and the handbrake used for stopping.

9. General.

Stationmasters, Inspectors and others concerned, should satisfy themselves by personal observation, whenever possible, that the foregoing Regulations are being properly observed.

BY ORDER OF THE

CHIEF OPERATING SUPERINTENDENT.

GLASGOW : 21st. APRIL, 1958.