BRITISH RAILWAYS-WESTERN REGION

MULTIPLE UNIT DIESEL TRAINS

H E A T I N G

This booklet is intended as a general guide to Operating Department Staff who may be concerned with the working of Multiple-Unit Diesel Trains. It includes for ready reference a reproduction of the instructions relating to Heating as shown in the General Appendix (Supplement G.A. 34 Op.), but it must be clearly understood that this booklet is not intended to replace or supersede this publication and amendments thereto to which reference must continue to be made as necessary. However, it does supersede the description of Heating equipment included in the Diesel Trains Booklet (B.R. 29879/2) on pages 20 - 23.

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Introduction

Heating is provided by hot air directed into the passenger compartments through grilles placed under the seats. The operation of the heaters is automatic once they have been switched on.

In cold weather the Cars will be adequately heated within 30 minutes of switching on.

Extract from General Appendix(page 134)

(Supplement G.A. 34 Op., page 5, Instruction 10).

"The Guard will be responsible for seeing the heating units are in use when necessary and that they are switched off when not required. He should also adjust the heating during the journey as far as practicable to meet the wishes of the passengers.

The Guard, depot staff, or person specially appointed for the duty, will 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 for this to be carried out.

The Guard or Shunter must ensure that all heaters are switched off when the train is to be stabled.

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

Where the heater control switches are situated in the driving compartment the Driver should not operate the switches without reference to the Guard.

It should be noted that whilst all types of heaters have separate switches, the control in the various units varies as indicated below :-

1. Suburban Cars

The following vehicles are fitted with semi-automatic heaters:-

Vehicle Nos. W.50050 - 50133
W.50818 - 50923
W.51128 - 51153
W.55000 - 55019
(Single Power Cars)
W.56291 - 56299
(Drive end Trailers)
W.59000 - 59041
W.59326 - 59376
W.59438 - 59448

(a) Turn heater control switch in clockwise direction to the "Full Heat" position, this supplies current to the glow plug and the "Glow plug" light is illuminated.

After a period of 45 seconds the "Airfan" light will automatically be illuminated, denoting that the heater fan and fuel pump are working. After a further $3\frac{1}{2}$ minutes the "Glow plug" light will be extinguished and the heater will continue to run automatically. The "Airfan" light is illuminated the whole time that the heater is running.

If the "Glow plug" light does not come on as soon as the switch is turned to "Full Heat" return the switch to the "Off" position and do not attempt to re-start. The failure must then be reported.

If the "Airfan" light goes out after $3\frac{1}{2}$ minutes, or during normal running, return the switch to the "Off" position and then re-start. No more than 3 attempts should

be made to start the heater, and any heater which fails to start after these 3 attempts must be reported.

(b) When the "Glow Plug" light goes out at the end of the $3\frac{1}{2}$ minutes starting cycle, the switch should remain in the "Full Heat" position. All heaters have now been modified so that the "Reduced Heat" position is now the same as the "Full Heat" position, and gives maximum output.

(c) To admit cold air into the Car the switch should be turned in the anti-clockwise direction to the "Cold" position.

(d) To switch off heater the switch on the control panel should be turned to the "Off" position. If the heater has been supplying heat, it will automatically continue to run for 3 or 4 minutes after being switched to the "Off" position, to remove unburnt fuel from the combustion chamber.

All indicator lights on the control panels are extinguished when the heaters are shut down.

2. Cross Country Cars

The following vehicles are fitted with semi-automatic heaters :-

Vehicle Nos. W.50647 - 50744
W.59255 - 59301

The control panel layout on these Cars is similar to the Suburban Cars fitted with semi-automatic heaters except that the Guard must ensure that the main power switches are closed before operating the heater control switches.

(a) Turn heater control switch in clockwise direction to the "Starting" position. This supplies current to the glow plug and the "Glow Plug" light is illuminated.

After a period of 45 seconds the "Airfan" light will automatically be illuminated denoting that the heater fan and fuel pump are working. After a further $3\frac{1}{2}$ minutes the "Glow Plug" light will be extinguished

and the heater will continue to run automatically. The "Airfan" light is illuminated the whole time the heater is running.

If the "Glow Plug" light does not come on as soon as the switch is turned to the "Starting" position turn switch to "Off" position and do not attempt to re-start. The failure must then be reported. If the "Airfan" light goes out after $3\frac{1}{2}$ minutes or during normal running, return the switch to the "Off" position and then restart. No more than three attempts should be made to start the heater, and any heater which fails to start after these 3 attempts must be reported.

(b) When the "Glow Plug" light goes out at the end of the $3\frac{1}{2}$ minutes starting cycle, the switch should be returned anti-clockwise to the "Running" position. Care should be taken not to go beyond this position or the heater will automatically shut down. With the switch placed in the

"Running" position the thermostat in the passenger saloon changes the heater to reduced heat and back to full heat according to the temperature in the Car.

Passengers may, however, exercise some control by operating the temperature control handle situated in the passenger saloon. This operates a valve controlling the intake of air to the heater. When the control handle is on "Warm" air is taken from the saloon, heated and then recirculated into the vehicle, giving maximum saloon temperature. When the control handle is on "Cool" the air is taken from outside the vehicle, is heated, and then passed into the vehicle, giving a lower saloon temperature than in the above case. Operation of this control does not affect the main heater controls.

(c) To admit cold air into the Car the switch should be turned in the anti-clockwise direction to the "Cold" position.

(d) To switch off heater the switch on the control panel should be returned to the "Off" position. If the heater has been supplying heat it will automatically continue to run for 3 or 4 minutes after being switched to the "Off" position, to remove unburnt fuel from the combustion chamber.

All indicator lights on the control panels are extinguished when the heaters are shut down.

The main power switches must NOT be used for switching off heaters.

3. Cross Country Cars

The following Cars are fitted with fully automatic through train control heaters :-

Vehicle Nos. W.51052 - 51107
W.59413 - 59437

Each heater is wired to its own control panel, and a Through Control panel is fitted in the Guards compartment. Provided all vehicles in the train are fitted with fully automatic heaters, all heaters in the train can be started or

stopped from one Guard's panel.

The method of controlling the heaters is as follows :-

A. Heating Control from the Guards Panel

(i) Each local panel switch must be checked to ensure that the Heating switch is in the "Heating" position and the "Isolator" switch in the "Off" position.

(ii) Select heating position on Guard's panel.

(iii) Place the "Isolator" switch on the Guard's panel in the "On" position.

Both "Failure" and "Isolator" indicator lights on all panels will be illuminated showing that there is a battery supply to each heater control but that each heater is in a non operating or failed position.

(iv) Press the "Start" button on the Guard's Panel. The failure light on all panels will go out and the heaters are then under the control

of the passenger saloon temperature thermostats. If the temperature in the saloon is below 70°F the heaters will commence the starting cycle, which takes approximately 5 mins. If the failure light on the Guard's panel comes on at the end of the starting cycle, a period of one minute should be allowed to elapse and an attempt to start the failed heater should then be made by pressing the "Start" button on the Guard's panel. (This will not affect the heaters already running). If a failure is indicated after 3 attempts to start no further attempts must be made. The Guard must then inspect all local panels to locate the failed heater or heaters, which will be indicated by the failure light or lights on the local panels. The failures must then be reported.

(v) To switch off all heaters turn the Guards "Isolator" Switch to the "Off" position which will extinguish all indicator lights. All heaters will then go through a shut down cycle and finally cease running.

NOTE Do not shut heaters down by switching the selector Switch on the local panels to "Ventilating" position.

B. Cold Ventilating Control from the Guards panel

(i) The Selector switch on all local panels must be placed in the "Ventilating" position, and the "Isolator" switches placed in the "Off" position.

(ii) Select "Ventilating" on the Guards panel.

(iii) Place the "Isolator" switch on the Guard's panel in the "On" position. This causes the airfan motors to run until the Guards Isolator switch is returned to the "Off" position. During ventilation the "Isolator" indicator lamp will be illuminated on all panels.

NOTE Where there is more than one Guards compartment in the train the heaters must be shut down from the controls which were used when they were started.

The isolating switch in all other Guards compartments must be in the "Off" position. The selector switches in these compartments must be in the "Heating" position, when heating is required, and in "Ventilating" when ventilating is required.

C. Control from Local Panels

Local panels are only to be used when the train is made up of vehicles of different types, some being fitted with semi-automatic heaters and some with fully automatic heaters.

The same sequence of operating the controls applies for the local panels as for the Guards panel, both for heating and ventilating.

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