

F. Smith
BRITISH RAILWAYS

(WESTERN REGION)



**MULTIPLE UNIT DIESEL
PULLMAN TRAINS**

**FOR THE INFORMATION OF RAILWAY AND
PULLMAN CAR COMPANY STAFF**

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NOTE:—

This booklet is intended as a guide to Railway staff and those of the Pullman Car Company who may be concerned with the working of Multiple-Unit Diesel Pullman trains and it must be clearly understood that it does not replace or supersede the instructions relating to the observance of the rules and regulations applicable to the working of Diesel Multiple Unit Pullman Trains as contained in Circular No. 544, "Working of Diesel Pullman Trains".

C. W. POWELL,
OPERATING OFFICER,
PADDINGTON.

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NOTE: A diagram of the Pullman Train Set and a more detailed index of the items included in this booklet will be found at the end.

INTRODUCTION

The Multiple Unit Diesel Pullman trains have been introduced by British Railways (Western Region) as part of the "Plan for the Modernisation and Re-equipment of British Railways." They provide services to the highest standards of speed and passenger comfort, and incorporate many new features in design and equipment.

DESCRIPTION OF TRAINS

The trains consist of eight-car sets and have been built to entirely new standards of Pullman comfort with specially designed decor. All the vehicles are painted blue externally with white edging to the windows. Diesel-electric is the method of traction employed.

See diagram at back of booklet.

Each set will be a self-contained train and will consist of the following formation:—

Motor Car (Second Class) with main engine and generator, above floor; also Guard's accommodation.

Parlour Car (Second Class) with auxiliary engine generator set, below floor.

Kitchen Car (Kitchen and First Class seating).

Parlour Car (First Class).

Parlour Car (First Class).

Kitchen Car (Kitchen and First Class seating).

Parlour Car (Second Class) with auxiliary engine generator set, below floor.

Motor Car (Second Class) with engine and generator, above floor; also Guard's accommodation.

The length of each train over buffers is 545 ft. 1 in. Each motor car is 68 ft. 6½ in. and other cars each 68 ft. 0 in. in length.

Each Motor Car is provided with a 1,000 h.p. North British/M.A.N. Diesel engine placed above floor level in an engine-compartment immediately to the rear of the Driver's cab, adjacent to which is the generator compartment. There is access through these compartments connecting the Driver's cab with the Guard's compartment. Traction motors are fitted to the bogie at the opposite end of the vehicle to the Driver's cab.

Each second class Parlour Car is provided with one Rolls Royce 180 b.h.p. diesel engine generator set, mounted on the underframe, which supplies electrical power for the operation of the air conditioning, heating, lighting, kitchen equipment and 24 volt battery charging. Either auxiliary engine generator set can supply sufficient power for the whole train except in extreme cold weather conditions when the use of both engine generator sets will be necessary. Traction motors are fitted to one bogie of each of these vehicles, i.e., the bogie adjacent to the Motor Car and are supplied with power from the main generator.

The electric control circuits and power supplies are carried between adjacent cars by means of flexible jumper couplings, and there are hosepipe connections for the air brakes.

The trains are arranged in such a formation that they can be divided into two identical half-sets and this is an important feature of the system of maintenance.

TRAIN NAME AND DESTINATION INDICATORS

Indicators are provided on both sides of each Motor Car showing the train name and destination station together with intermediate calling points. These are displayed on roller blinds through a glazed panel which can be illuminated when required. The light switch is on the partition wall to the right of the Guard's table. The correct method of display is for the roller blinds to be adjusted so that, except where "Special" is exhibited, the train name appears at the top of the panel with the destinations beneath it.

The indications on the roller blind can only be altered from inside the train. To do this the indicator box should be opened by releasing the clips; the blind can then be moved by operating the handle. One indicator is accessible from the Guard's compartment, the other from the generator compartment immediately opposite the communicating door leading from the Guard's compartment.

HALF-SET IDENTIFICATION ARRANGEMENTS

For maintenance purposes each train will be divided into two half-sets. These half-sets have been allocated the six numbers from 4 to 9 inclusive. This number will be carried on the solebar of the motor car second in each half-set in the form of a small metal plate with white lettering on a blue background. The number allocated will normally correspond with the last digit of the individual number of each vehicle forming the half-set.

DRIVING CAB LAYOUT

The equipment fitted in each cab includes the following:—

Master controller incorporating reversing handle and power handle.

Driver's brake controller.

Handbrake with through train indicator light.

Two warning horn controllers.

Gauges and Instruments to indicate:—

Brake cylinder pressure.

Main reservoir and brake pipe pressure (Duplex gauge).

Speed in miles per hour.

Generator current.

Control panel on desk incorporating:—

Control switch.

Push buttons for engine start, engine stop and overload reset.

Indicator lights for alarm, electro-pneumatic brake and engine stop.

Auxiliary heat switch.

Switch panel with adjustable indicator lights for:—

Instrument lights.

Dimmer.

Marker lights.

Indicator lights for:—

High speed brake.

Auxiliary engine shut-down.

High speed brake test button.

High speed brake relay box.

Deadman's treadle under control desk.

Deadman's hold-over button.

Western Region Automatic Warning System equipment modified to work with the Westinghouse Brake, comprising:—

Modified cab apparatus.

Sealed isolating cock.

Solenoid valve.

Siren.

Anti-forestalling suppression relay.

Reset button.

In/out of use switch.

In/out of use indicator.

Loudaphone for communication with the Guard.

Two Windscreen wipers with controls.

Marker discs.

Three fire extinguishers.

Fire alarm bell.

Guard's hand lamp, detonator and flag case.

Cab heating controls including a fresh air/recirculating selector.

Electric cooker.

24V. socket and switch for handlamp.

Lighting main switch.

Light switch over each door.

Adjustable seats for Driver and Second Man.

Coat hooks.

The driving controls will normally be operated only by the Driver except that during propelling movements, to which further reference is made on page 37, the Guard or Shunter will be required to operate the warning horn, air or hand brake, and bell signals on the loudaphone, as necessary.

Access to the driving cab is restricted to the Driver, Guard, Pilotman, staff in possession of driving compartment passes, maintenance staff, also Shunters during propelling movements.

ACCESS TO CARS

The Parlour Cars have inward opening doors on both sides at each end leading into a vestibule from which there is access to the main saloon.

The Kitchen Cars have a similar arrangement at the passenger end of the vehicles and at the kitchen ends there are double doors on each side leading into the kitchens for the use of Pullman Staff only.

The Motor Cars each have a vestibule at the passenger end and, in the centre, double doors giving access to the Guard's compartment. At the leading end there is an inward opening door each side into the Driver's compartment.

Each train set is gangway connected throughout except at the leading end of the Motor Cars which are fitted with two windows extending across the width of the coach. In the latter vehicle, movement of passengers is restricted to the passenger saloon by a door leading to the Guard's compartment which is marked private.

At starting and stopping points it will be the responsibility of the Pullman Car Attendants to see that before departure all outside passenger doors are properly closed and secured by means of the safety catch fitted to the inside of each door.

SEATING ARRANGEMENTS

All cars consist of open stock with tables in the traditional Pullman style but with a specially designed modern decor. Details of interior layout and seating are shown on the diagram inserted at the back of this booklet and the seating capacity of

each vehicle and train formation is also summarised below:—

	SEATING CAPACITY			
	FIRST CLASS		SECOND CLASS	
	Smoking	Non-Smoking	Smoking	Non-Smoking
Motor Car (Second Class)	—	—	—	18
Parlour Car (Second Class) with Auxiliary engine generator set	—	—	42	—
Kitchen Car (First Class)	—	18	—	—
Parlour Car (First Class)	36	—	—	—
Parlour Car (First Class)	36	—	—	—
Kitchen Car (First Class)	—	18	—	—
Parlour Car (Second Class) with Auxiliary engine generator set	—	—	42	—
Motor Car (Second Class)	—	—	—	18
TOTALS	72	36	84	36
	108		120	

Individual tip-up seats are provided in both classes. All first-class seats are capable of being moved forward up to the table for dining and a release lever is provided on the framework of the seat, which is worked by the passenger reaching down with his hand pulling up the lever and sliding the seat forward or back. A control, which is operated by pressing upward with the fingers, is fitted in the end of one of the arms enabling the passenger to adjust the angle of the seat back. Both of these controls are placed on the gangway-side of each first class seat. Each seat is numbered individually as shown on the diagrams and the numbers are displayed on the gangway side of the head rest of each seat.

SEAT RESERVATION

All seats in the trains will be reservable in advance and this facility will be given at starting

and all intermediate calling points. Detailed instructions will be issued from time to time.

The coach registration letters are displayed on metal plates which are inserted in the slots provided on the outside of the coaches near the passenger access doors, and on the inside in the end vestibules of each coach.

The lettered plates are reversible, so that when the train is reversed, or one half-set in the train is replaced by another half-set under the maintenance programme or for any other purpose, the correct registration can be displayed. The standard arrangement for sets in traffic will be for the leading vehicle in the direction of travel to be "A" and the rear vehicle "H." The reversible registration plates are therefore lettered as under:—

<i>Vehicle</i>	<i>Obverse</i>	<i>Reverse</i>
Motor Car (Second Class)	A	H
Parlour Car (Second Class) with Auxiliary engine generator set	B	G
Kitchen Car (First Class)	C	F
Parlour Car (First Class)	D	E
Parlour Car (First Class)	E	D
Kitchen Car (First Class)	F	C
Parlour Car (Second Class) with Auxiliary engine generator set	G	B
Motor Car (Second Class)	H	A

The Pullman Car Company's staff will be responsible for the reversing of the car registration plates at the terminal stations.

BLINDS AT PASSENGER WINDOWS

The windows at each table are double glazed to prevent condensation and heat losses, and to provide sound insulation. Clips are provided on the lower framework between the inner and outer windows to hold a capsule containing silica-gel crystals. The capsules will be fitted at certain periods of the year to avoid misting of the windows. Should a window become badly misted it is possible to clear this by:

- (a) Removing the table lamp
- (b) Unscrewing the special screws securing the inner glass
- (c) Opening the inner glass, the frame of which is hinged at the bottom
- (d) Cleaning the inner surface of the glass
- (e) Close and lock the inner window. Replace the table lamp.

Small venetian blinds are fitted between the two sheets of glass and these blinds can be raised or lowered and the angle of the slats adjusted by means of small control handles fitted at the sides of the windows in the first class or above the windows in the second class saloons. In the first class separate blinds are provided for each half of the passenger windows so that passengers on both sides can adjust individually their own blinds; in the second class one blind only is provided for the whole width of the window.

ATTENDANT CALL SYSTEM

A press button is provided at each table below the window by means of which the Attendant may be called. When this button is operated a

small green lamp above the table is illuminated to indicate to the Attendant where he is required.

A buzzer is sounded in the corridor outside the pantry in the kitchen cars and a green lamp above an arrow indicates the direction in which the Attendant should proceed.

The call is cancelled by the Attendant pressing a button placed under the outer edge of the table on the supporting leg and by pressing a further button placed adjacent to the directional lamps in the corridor of the kitchen cars.

The system is so arranged that each kitchen car serves the half of the train of which it forms a part.

PARCEL AND LUGGAGE RACKS

Solid racks run the whole length of each saloon on both sides with slatted grilles so that any articles placed on the racks may be seen from below.

Tiered luggage racks are provided in the end vestibules opposite the toilets and a draught screen of specially toughened glass has been fitted adjacent to the vehicle entry door.

GUARD'S COMPARTMENT

The Guard's accommodation on each train consists of a compartment 11 ft. $0\frac{3}{4}$ in. in length in each Motor Car placed between the generator compartment and the passenger saloon.

The Guard's seat which is adjustable for height is placed at a fixed table over which a letter rack is provided.

Loudaphone apparatus is provided for communication between the Guard and Driver; detailed instructions are set out on pages 42 and 43. A signal

push together with a list of standard codes is placed over each double door to enable the Guard to send the standard bell codes to the Driver; the signal pushes operate on the same circuit as the calling plungers of the loudaphone.

Public Address equipment is provided so that announcements may be made to the passengers, details of which are set out on page 44 under paragraph headed "PUBLIC ADDRESS SYSTEM."

The train lighting Through Control switches are placed on the partition of the compartment and there are individual switches over each double door for controlling the van main lights. A switch for the emergency lighting in the van is placed above on the partition to the right of the Guard's table. Adjacent to it is the switch for illuminating the train name and destination indicators and the switch for the public address system.

Two electric heaters and a food warmer are fitted on the compartment partition. These are controlled by a main switch and individual switches. A foot-warmer is incorporated with a foot rest under the Guard's table and the switch for this is provided on the small partition to the left of the Guard's table.

Panels giving access to the train name and destination indicators on both sides of the train are placed on the side wall of the van, and just inside the door leading to the generator compartment respectively.

A coat hook is provided.

Each van contains the following emergency equipment:—

One Fire Extinguisher.

Two Fire Buckets.
One Extending Ladder.
A First Aid and Emergency Tool cupboard
which contains:—

Emergency Equipment

One 7-lb. hammer.
Two steel wedges.
Two crowbars and one extension.
One axe, fireman's, large.
One axe, fireman's, small.
Two saws (one large, one small).
One panel-cutting tool.
Two hand lamps, oil.
One electric lamp.
Two coils of rope (one No. 6 size and one
3½ in. circular).

First-Aid Equipment (One Medical Case No. 3)

One instruction card (B.R.7151-2).
One record book.
One set splints (two splints, one extension).
Nine triangular bandages.
Six 2-in. roller bandages (Infirmary No. 2).
Three packets of cotton wool (½ oz. sterilised).
Three packets of lint (white) (½ oz.).
Six Mines dressings, large.
Three Mines dressings, medium.
Two sterilised dressings, small.
Two sterilised dressings, medium.
Two sterilised dressings, large.
One bottle of antiseptic (2 oz.).
One bottle of sal volatile (2 oz.).
One bottle of eye drops (1A, ½ oz.).
Six safety pins, rustless.

TRAVELLING TECHNICIANS

A Travelling Technician from the Chief Mechanical & Electrical Engineer's Department will form part of the train crew of each train. He will travel in the leading Guard's compartment, in which a small cupboard for his tools and equipment has been provided. He will be responsible for:—

- (i) Deciding which of the auxiliary engines should be used.
- (ii) Changing over auxiliary engines en route.
- (iii) Switching on the second auxiliary engine when requested by the Pullman Car Conductor during excessively cold weather.
- (iv) Taking action when "fault" lights appear.
- (v) Dealing with technical faults in traction equipment upon request from the driver.
- (vi) Supervision of connection and disconnection of "shore" electrical supplies, where provided, at terminating points.

WESTINGHOUSE ELECTRO-PNEUMATIC BRAKE WITH HIGH SPEED CONTROL

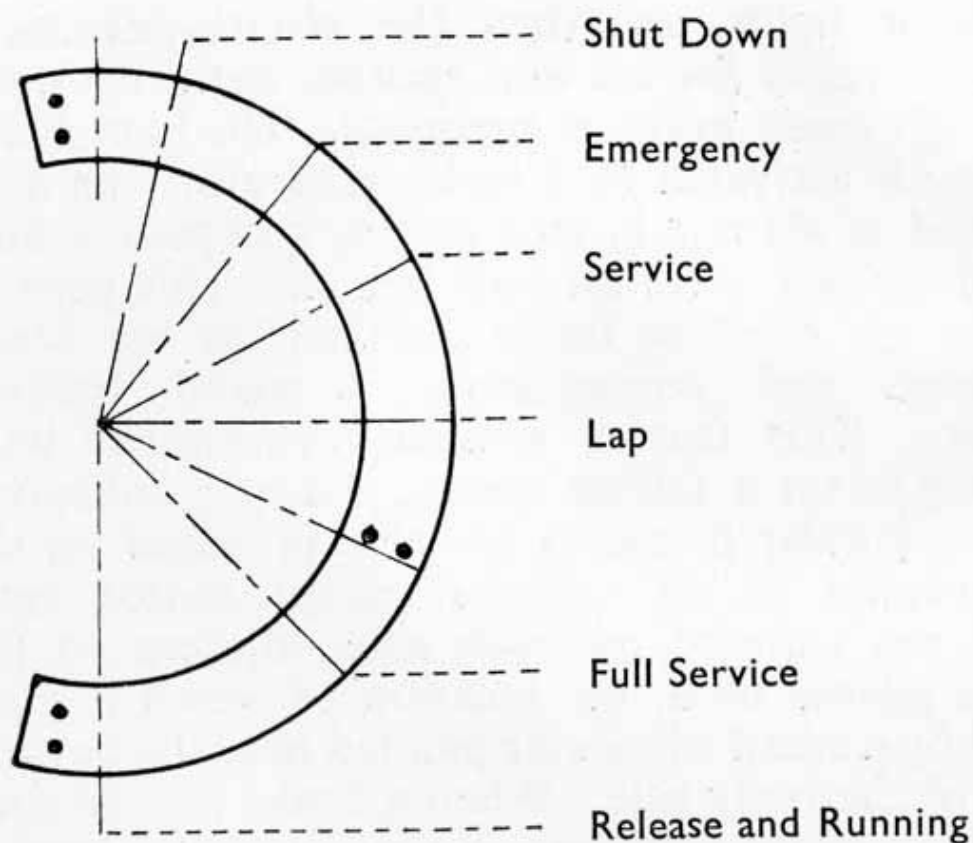
The trains are fitted with Westinghouse Electro-Pneumatic Brake featuring a High Speed Control and are operated by compressed air and not vacuum as is the accepted practice on ordinary trains.

The essential features are as follows:—

An electrically driven air compressor is fitted on the underframe of each motor car, and each

compressor charges its own main air reservoir to a maximum pressure of 125 lbs. p.s.i. These reservoirs are connected to each other by a common pipe, called the main reservoir pipe, which extends the whole length of the train. Connected to this pipe also, on each vehicle, is a supplementary reservoir charged with air at the same pressure. Another pipe extending the full length of the train is called the brake pipe and can be distinguished from the main reservoir pipe quite easily as it is slightly larger in diameter. This brake pipe is connected to an auxiliary air reservoir on each vehicle. Mounted on the underframe of each vehicle is an electro-pneumatic brake unit which is connected to both the main reservoir pipe and the brake pipe, and this unit is perhaps the most important item of the brake system. Brake cylinders with combined slack adjuster are mounted on the outside of the bogie frame on the heavy type bogies and on the inside of the bogie frame on the trailer bogies; these cylinders in turn being connected by suitable rigging to the brake blocks.

Control of the brake is established by means of a brake controller situated in each driving cab, the control handle having six operational positions as indicated by the following diagram:—



- Position 1—Release and Running
- Position 2—Full Service
- Position 3—Lap
- Position 4—Service
- Position 5—Emergency
- Position 6—Shut Down

In the Guard's van is a Guard's emergency valve and adjacent to this is a gauge which indicates brake pipe pressure.

The normal type of passenger communication is fitted, the operation of which opens a valve in the brake pipe. Indication is given by a standard red flag at one end of each vehicle and can be easily re-set from the doorway below.

There are two gauges in each driving cab, one single gauge indicating brake cylinder pressure and another duplex gauge which indicates brake pipe pressure and main reservoir pressure. A small

indicator lights up when the electro-pneumatic brake is ready for use and another indicates when the high speed brake is energised. The high speed feature is activated by a tacho-generator which, at a speed of 40 m.p.h. and above, energises a high speed magnet valve on each vehicle. This permits higher air pressure to be obtained in the brake cylinders and consequently increased braking power. This feature remains operational until 30 m.p.h. on a falling speed. Gauges indicating brake cylinder pressures are also provided on the underframe of all vehicles except motor cars. They are situated on each side adjacent to the brake release cord, the location of which is indicated by a small white star painted near the bottom edge of the body side. When a brake release cord is pulled, all the cylinders on that particular vehicle are released and *not one bogie only*. A handbrake wheel is fitted in each driving compartment and this activates the brake on the bogie at the end of the train only. A small indicator below the wheel lights up bright if either handbrake is "ON" and glows dim when both are "OFF."

Operation

When the air compressors are started the pressure in the main air reservoir builds up to a maximum of 125 lbs. p.s.i. indicated on the duplex gauge in the driving cab. Position 1, Release and Running, on the brake controller is then selected and pressure in the brake pipe will build up to 70 lbs. p.s.i., which is also indicated on the duplex gauge and, in addition, it will be indicated on the gauge in the Guard's van. From this position the brakes can be applied and this will normally be carried out by

moving the brake controller handle between Positions 1 and 2 which will operate the electro-pneumatic brake. This action energises magnet valves in the brake units on each vehicle by means of through train wires and admits air into the brake cylinders from the supplementary reservoirs thus producing a brake application. In this case no indication will be given on the Guard's gauge, as the brake pipe pressure will remain steady.

The advantage of an electro-pneumatic application is that an even and simultaneous application of the brakes is obtained throughout the train.

In the event of the electro-pneumatic brake being inoperative due to failure of electrical equipment or for any other reason, the automatic brake would be used. This is effected by moving the brake controller handle between Positions 3 and 4. In this case the brake pipe is vented to atmosphere thus producing a "pressure drop" in the brake pipe and auxiliary reservoirs. This produces a movement of a slide valve in the electro-pneumatic brake unit of each vehicle and permits air to flow from the supplementary reservoirs into the brake cylinders and thus produces a brake application.

During an automatic brake application the "pressure drop" will be indicated on the gauge in the Guard's van and also on the duplex gauge in the driving cab. It should be noted that the automatic brake will also come into operation in the event of the Guard's emergency valve being opened, if a passenger communication cord is pulled, or if an inter-coach hose pipe is broken.

Position 5 on the brake controller is the emergency position and should the brake handle be moved into this position it will produce a simul-

taneous application of both the electro-pneumatic and the automatic brakes throughout the train. Position 6 is "Shutdown" and the brake handle will always be in this position in non-operative driving cabs. However, in the event of a Guard riding in a non-operative cab during a propelling movement he could, if necessary, in an emergency, move the controller handle from Position 6 "Shutdown" to Position 5 "Emergency" and produce a brake application.

No brake air hose pipes are provided at the extreme ends of the train so that it is impossible to operate two trains together, neither can extra vehicles or "tail traffic" be attached. In the event of a total failure of the traction equipment on one of these trains necessitating haulage by a locomotive, the train would be "unbraked" and under the control of hand brakes only.

If it is necessary to haul the train with a locomotive, the brushes in the traction motors should first be lifted from contact with the commutators, this being the responsibility of the Travelling Technician. If circumstances do not permit this and the train is hauled with the brushes in contact with the commutators then they must be inspected before the train is returned to service.

AUTOMATIC WARNING SYSTEM

General

The apparatus in the train, which is air braked, varies from that for vacuum braked trains, although the audible signals are again produced by a bell for the "all clear" aspect and a siren for the "caution" aspect. The operation of the

contact shoe is also similar on air and vacuum braked vehicles.

Description of Train Apparatus

The cab apparatus is placed behind the Driver on the bulkhead with the handle of a Sealed Isolating Cock projecting slightly from the face of the enclosing cabinet. The associated Timing Reservoir and Application Valve are situated in close proximity below the cab floor. The A.W.S. Power Governor is fixed beside the A.W.S. Battery Box on the other side of the bulkhead. A Reset button is situated on the Driver's desk and above it is an A.W.S. IN/OUT of USE Switch and an A.W.S. IN/OUT of USE Indicator.

Operation of Train Apparatus

The shoe switch is connected with an electrically controlled valve in such a way that whenever this valve is opened air will be released through the siren from the brake pipe, thus sounding the siren.

This occurs when a train passes over a "dead" ramp, associated with a distant signal showing a "caution" aspect, resulting in the brakes being fully applied, power to the traction motors being cut off and the diesel engines reverting to idling. This will happen within three seconds of the siren first sounding if suitable action is not taken in the manner described hereafter.

The Driver, by depressing and releasing the Reset button within the 3 second warning period, can acknowledge the warning given by the siren, stopping the siren sounding, avoiding the brake application and the shut-down of traction power.

If the caution signal is not acknowledged as described above within the 3 second warning period, the ensuing brake application can only be cancelled by first returning the power control handle to the Notch 0 position and then depressing and releasing the Reset button. The traction power, which was cut simultaneously with the brake application, can only be reapplied when the brakes have become fully released.

When the train passes over an electrified ramp, which is associated with a signal displaying the "all clear" aspect, the bell will ring.

Anti-forestalling of the " Caution " Signal

The Reset button cannot be used to forestall the sounding of the siren. If the Reset button is depressed at any other time than after receiving the caution warning from a "dead" ramp the siren will sound and, if held depressed for more than 3 seconds, the effect will be the same as for an uncancelled warning.

Trains Stationary on or moving slowly over a " Dead " Ramp

If the train is standing on or passing over a "dead" ramp, the siren will sound, but the full brake application and cutting of the traction power can be avoided by the Driver holding down the Reset button, which will stop the siren sounding. When the shoe clears the ramp the siren will sound again and the Reset button must then be quickly released if the Driver wishes to regain full control of the train.

AUXILIARY DIESEL ENGINE GENERATOR SETS AND 120 KW SHORE SUPPLY

Auxiliary diesel engine generator sets are mounted on the underframes of the two Parlour Cars (Second Class). Each engine is a Rolls Royce 8-cylinder type of 180 b.h.p., the controls being situated on a panel placed in the vestibule of the car concerned.



AUXILIARY ENGINE CONTROL PANEL

HIGH SPEED DIESEL PULLMAN TRAINS

Operation of the auxiliary engine controls will be the responsibility of the Travelling Technician.

There is also an external control panel on the underframe adjacent to the engine. This is for the use of maintenance staff only. These engine generator sets supply electrical power for the operation of the air conditioning, heating, lighting, kitchen equipment and 24 volt battery charging.

The auxiliary engines will not normally be used when the train is standing at terminating stations or sidings equipped with "shore" electrical supplies other than for short periods immediately after arrival at and before departure from such points. When the trains are standing at places so equipped connection must be made with the "shore" supply by means of the special plugs provided. "Shore" installations have been provided at the following points for the sole purpose of maintaining an electrical supply to the air conditioning, lighting, refrigeration plant, etc., without running the auxiliary engine generator sets whilst trains are standing:—

Paddington Station
Old Oak Common (Paint Shop)
Bristol (Temple Meads)
Bristol (Dr. Days Sidings)
Wolverhampton (Cannock Rd. Sidings)

The procedure for coupling and uncoupling the "shore" electrical supply, where provided, is detailed hereunder:—

At the end of a run and arrival at the terminus, it is necessary to have only the leading auxiliary power unit running. This will ensure the minimum interruption of supplies to the lighting and air-conditioning equipments when changing over to

the "shore" electrical supply at the terminus.

When the "shore" supply is connected, the auxiliary power unit can be shut down.

Upon departure from the terminus the power unit nearest the "shore" supply must be started 5 minutes before the latter is disconnected in order to ensure the minimum interruption of supplies.

During the journey the leading auxiliary power unit should be started and the trailing unit shut down in all cases except during extreme cold conditions to ensure that the arrival requirements mentioned above at destination are met.

The "shore" electrical supply is connected through a power supply coupling situated at each end of the train, each socket being provided with a dummy plug which must be removed before connecting the "shore" supply, and replaced when the power plug is disconnected.

NOTE:

The coupling is of the "captive" type and care must be exercised to ensure that, on no account, is the train moved when the coupling is made.

Connecting Supply

1. Switch on the Purple Light Isolator at the supply cubicle to ensure that the plug is in its dummy socket.
2. Turn Isolator "A" to the "ON" position.
3. Turn Isolator "B" to the "ON" position.
4. Withdraw the power supply plug from the

dummy socket on the supply cubicle or trackside junction box. The Purple Indicator lamp will be extinguished.

5. Unlock and operate the lever twice of the Stone-Kheops coupling at the end of the train. Withdraw the dummy plug from the socket.
6. Insert the power supply plug into the Stone-Kheops coupling and lever home twice. The Red Indicator lamp will light when the supply is connected to the train.

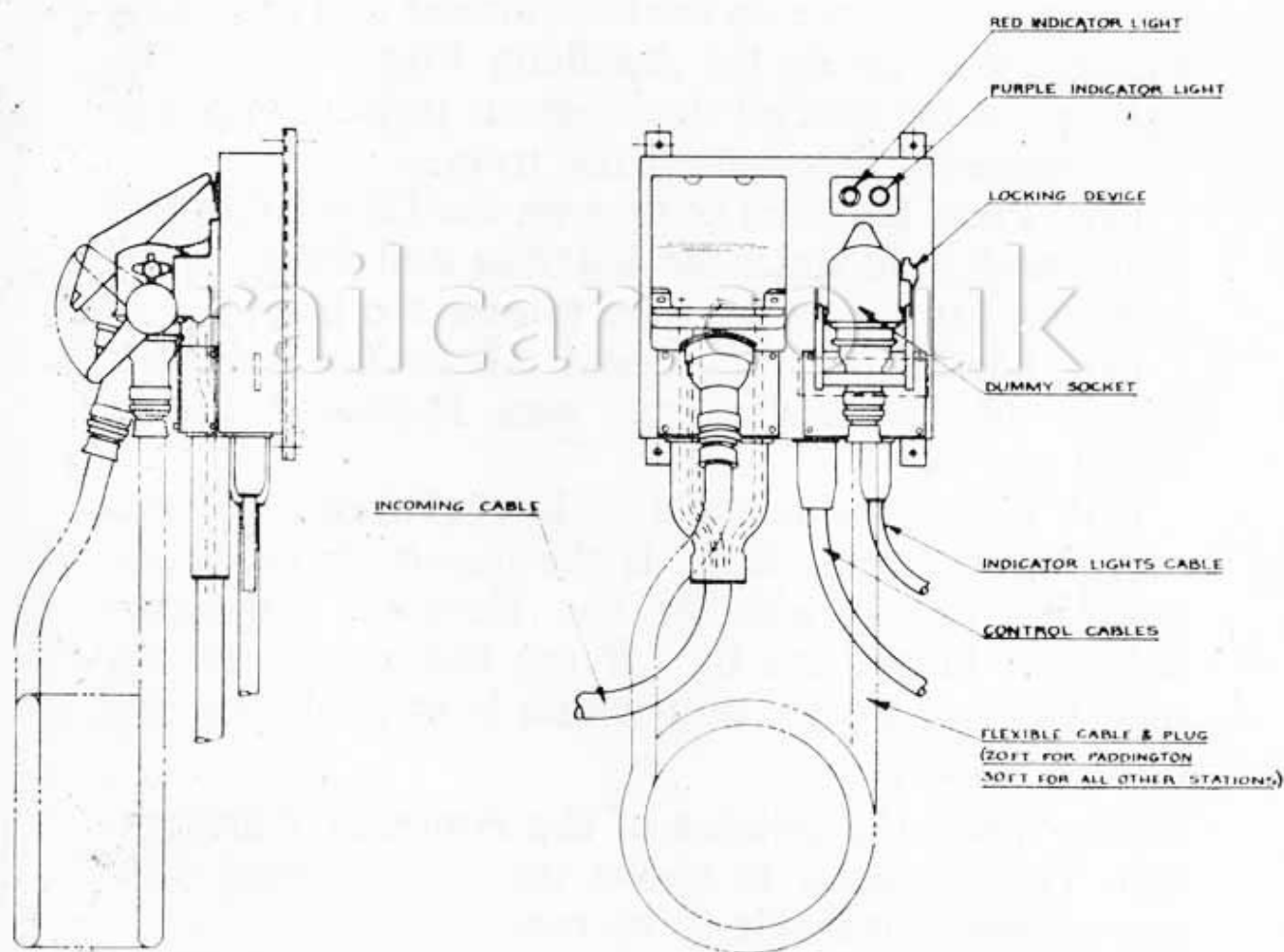
Disconnecting Supply

1. Withdraw the power supply plug from the Stone-Kheops socket on the train. The Red Indicator lamp should be extinguished.
2. Insert the dummy plug into the Stone-Kheops socket on the train, lever home twice and lock in position.
3. Insert the power supply plug into the dummy socket on the supply cubicle or trackside junction box. The Purple Indicator lamp should light, so ensuring the "all-clear" to the train personnel that the train can proceed.
4. Turn Isolator " B " to the " OFF " position.
5. Turn Isolator " A " to the " OFF " position.
6. Switch off the Purple Light Isolator. The Purple Indicator lamp will be extinguished.

NOTE:

The plug contacts are only alive after they have been inserted into the train's Stone-Kheops socket.

The operation of coupling and uncoupling the train to the "shore" supply will be carried out by a member of the Running and Maintenance Carriage and Wagon ground staff, deputed for the purpose, under the supervision of the Travelling Technician. The Guard will be responsible for making a visual check that the "shore" supply line is disconnected before giving the "right-away" signal for the train to leave.



JUNCTION BOX FOR 120 KW SHORE SUPPLY

DRG. No. 141442

Control of Auxiliary Power Units

The starting and stopping of the Auxiliary Power Unit is normally the duty of the Travelling Technician. Should it be necessary for Pullman or Operating Staff to operate the controls in the event of an emergency the following procedure must be followed.

Starting

(1) Check that the Feeder Control Isolating Switch is in the " on " position and the Feeder Control "on" indication lamp is lit. The switch and indicator lamps are on the Instrument and Indicator Lights Panel inside the Auxiliary Power Car. The light indicates that all the inter-car power couplings are connected throughout the train.

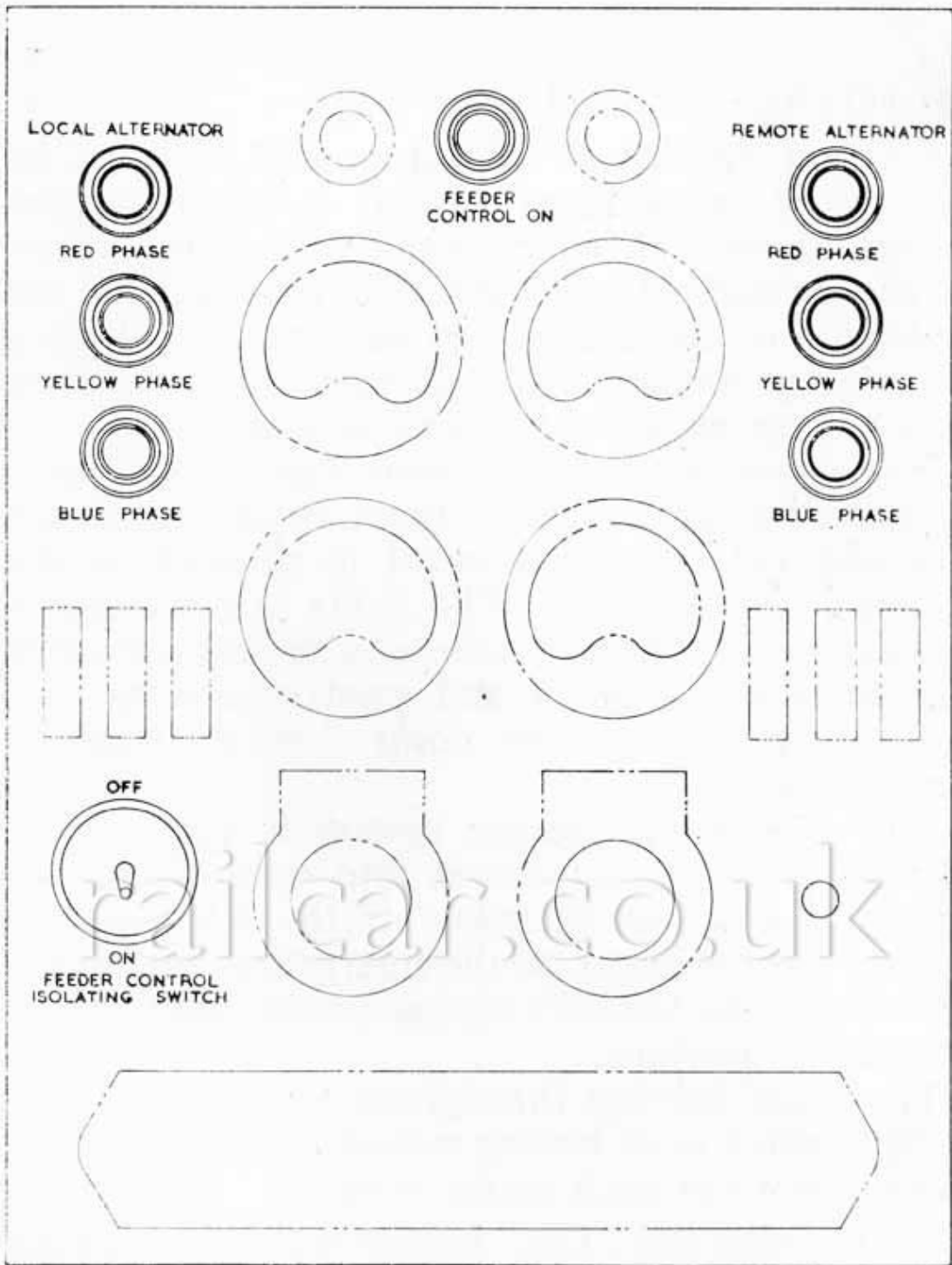
(2) Press the start button on the Diesel Control Panel and hold until the Starting and Fuel " on " indicator lamps are lit, then release the button.

(3) Check that the Local Alternator indicator lamps on the Instrument and Indicator Lights Panel are lit.

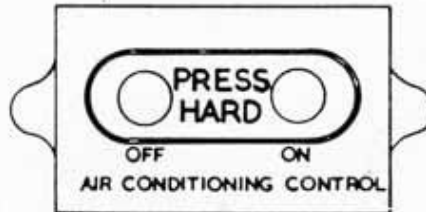
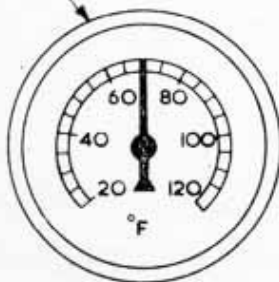
(4) Check the reading of the Ambient Temperature Thermometer dial. If the pointer is *below the red line*, check whether the Remote Alternator indicator lamps are lit. If the lamps are not lit, start the 2nd power unit which is at the other end of the train.

Note: When the pointer of the Ambient Temperature Thermometer is above the *double lines*, only one power unit needs to be run.

Stopping. Press the stop button on the Diesel Control Panel for 1 second and the power unit will shut down.



AMBIENT TEMPERATURE THERMOMETER



INSTRUMENT AND INDICATOR LIGHTS PANEL
HIGH SPEED DIESEL PULLMAN TRAINS

LIGHTING

General lighting in all saloons is provided by fluorescent tubes fitted behind a fluted perspex screen, about 2 ft. wide, running along the centre of the ceiling. Lights are also provided on the underside of the racks over each table. Modern table lamps are fitted at each table and individual switches are provided for their operation.

The power for the main train lighting system is supplied by the auxiliary diesel engine generator sets and the through control is situated in the Guard's compartment. The lights in the Guard's compartments, Driver's cabs, engine and generator compartments, kitchen and pantry sections and staff compartments are controlled by separate local switches.

The emergency lighting system is run off the 24 volt batteries and comes into operation automatically if an interruption of the main supply occurs; local switches for the emergency lighting are provided in the Guard's compartments and kitchen and pantry sections.

The main lighting throughout the train is controlled from a push button mounted in the Guard's compartment of each motor coach.

- (1) Pressing the " On " button will switch on the main lighting.
- (2) An auxiliary power unit must be running or the external supply connected to feed the train.
- (3) If neither of the supplies as in 2 above is available, the emergency lighting will come on.
- (4) Pressing the " Off " button will switch off all the main lights.

AIR CONDITIONING EQUIPMENT

General Description of Equipment

The power for the Air Conditioning equipment and for lighting the train is obtained from 2 auxiliary power units mounted on the underframes of the 2nd Class Parlour Cars.

Each auxiliary power unit consists of an engine driven alternator with its associated voltage regulator and switchgear, arranged to supply its own feeder mains running the length of the train. The two feeder systems are separate and distinct and distributors are tapped off at each car.

One power unit will be sufficient for summer cooling and normal heating conditions, but both units will be required for extreme winter conditions. Under normal conditions one power unit will act as a standby.

Automatic control gear is provided to ensure that priority loads will be connected to the first power unit to be started up. Additional loads will be supplied by the second power unit. The shutting down of the first power unit automatically sheds the priority load on to the second power unit.

The starting and stopping of the engines is controlled by push buttons in the same car as the auxiliary power unit. The current for the control circuits and starting motor is provided from a 24 volt battery.

The electrical inter-car couplings must be inserted throughout the train before the feeder contactors can be closed. Any break in the coupling circuits immediately disconnects the feeder mains from the power units. This ensures that exposed coupling pins are safe.

A comprehensive system of protective devices, embodying visual warning is provided to safeguard the electrical and mechanical apparatus.

Operation of Equipment Through Control

All the air conditioning equipments throughout the train are switched on and off together provided that individual equipments have been switched on at the Fan and Temperature Control Isolating Switch on their air conditioning control panels. The air conditioning equipment throughout the train can only be switched on by means of these Master Controller buttons.

These buttons are on the push button panel which is mounted below the Instrument and Indicator Lights Panel inside the auxiliary power car. In cases of faulty operation of the equipment, the air conditioning of individual cars can be switched off by means of the Fan and Temperature Control Isolating Switch, but during normal operation the Master Controller should always be used.

Individual Car Control

The temperature conditions within the car are controlled thermostatically, and the transition of cooling to heating or vice versa is automatically effected.

Three different temperature settings of heating and cooling are provided; they can be selected by a control switch mounted on the Air Conditioning panel within the car. The control is identified as Temperature Control Switch.

J STONE & CO (DEPTFORD) LTD ENGINEERS DEPTFORD LONDON

Stone-Carrier

Air Conditioning System

PATENTED IN ENGLAND U.S.A & OTHER COUNTRIES



SUPPLY N° 1



SUPPLY N° 2



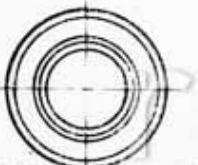
COMPRESSOR



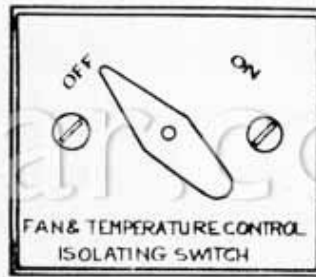
TEMPERATURE
CONTROL SWITCH



FAN



AIR & FLOOR HEAT
N° 1



FAN & TEMPERATURE CONTROL
ISOLATING SWITCH



AIR & FLOOR HEAT
N° 2



AIR CONDITIONING CONTROL PANEL

HIGH SPEED DIESEL PULLMAN TRAINS

Car Temperature Control

The controlled temperature required in the car is selected by moving the Temperature Control switch to one of the three positions:—

1. **LOW.** In this position the temperature will be controlled between 67° F. and 68.5° F.
2. **MEDIUM.** In this position the temperature will be controlled between 70° F. and 71.5° F.
3. **HIGH.** In this position the temperature will be controlled between 74° F. and 74.5° F.

COUPLING AND UNCOUPLING

The gangways are of a special type constructed to a design of the Schweizerische Industrie-Gesellschaft and are known as the S.I.G. type of gangway. They are of a semi-permanent character and, therefore, coupling and uncoupling will not be performed in normal service owing to the time and special equipment required to carry out this operation. These functions must only be undertaken by technical staff, and will normally only take place at maintenance depots.

A draw hook is provided at each end of the train behind a grille with hinged doors. This is only for use in emergency should it be necessary for a locomotive to tow the train clear of the running lines.

It will not be possible for additional vehicles of any kind to be conveyed by these trains.

REVERSING AND PROPELLING

It will be necessary to allow a minimum time of 6 minutes for the Driver to change ends and regain control.

The trains will not normally be driven from the trailing end, except when movements are being made from one siding to another adjoining in the course of servicing and stabling.

In the event of a long propelling movement it will be necessary for the Guard or Shunter to ride in the leading driving compartment where he will have the use of the loudaphone, warning horn and emergency brakes.

KITCHEN CARS

Each Kitchen Car serves the half-train set of four vehicles of which it forms part.

Gas Supply

Kitchen Cars are provided with Propane gas appliances which are supplied from standard B.R. cylinders carried on the underframes of the cars. When the service supply is exhausted, the supply to the cooking equipment, etc., is automatically drawn from the reserve cylinders while an indicator, situated on the outside of the car, gives a clear indication that one set of gas cylinders requires replacing.

Gas cylinders can be replaced at the following places:—

Bristol (Dr. Days)
Old Oak Common
Wolverhampton (Cannock Road)

Equipment

The following equipment is fitted:—

Pantry

Refrigerator.

Stainless steel sink unit comprising main sink, electrically heated sterilizer, strainer.

Ascot heater.

Various cupboards, shelves, bottle racks, plate racks, etc.

Extractor fan.

Kitchen

Refrigerator with deep freeze capacity.

Sink unit, as pantry.

Ascot heater.

Double gas stove.

Double eye-level grill.

Hot cupboard.

Racks, cupboards, etc.

Extractor fan.

Large serving hatch into corridor.

MAINTENANCE AND DAILY SERVICING

Daily servicing and fuelling will be carried out at the stabling points specially equipped to deal with these trains at Bristol (Dr. Days Sidings), Wolverhampton (Cannock Road) and at any other points which may be subsequently so equipped.

Periodical maintenance will be undertaken at Old Oak Common.

Heavy maintenance will be carried out at Swindon Works.

BATTERY CHARGING

The 24 volt batteries will be charged during running by the auxiliary diesel engine generator sets and at terminal and stabling points from the "shore" electrical supply.

The 96 volt batteries on the power cars will be charged during the running of the main engines.

FUELLING

The fuel-oil supply for the main engines is supplied from four main tanks each with a capacity of 250 gallons and two service tanks each with a capacity of 20 gallons, making a total of 1,040 gallons capacity for the complete train. This will permit the train to run for a distance of approximately 900 miles in normal service before refuelling is required.

Two separate tanks each with a capacity of 100 gallons supply fuel-oil to the auxiliary engines.

Each train in normal service will be refuelled once every 24 hours while undergoing daily servicing.

WATER SUPPLY

Roof water tanks of 70 gallons capacity are provided for each of the lavatories, and 200 gallons capacity for the kitchen, pantry, and staff lavatory in each Kitchen Car. These tanks are drained during frosty weather by opening the drain cocks by means of the special tool supplied for the purpose.

Drain cocks for the passenger lavatory tanks are situated behind the mirrors in the toilets which

are hinged and locked by a carriage key. The drain cock for the tanks in the Kitchen Cars are behind a panel in the ceiling above the sink.

CARRIAGE CLEANING

The following carriage cleaning arrangements are applicable to the Diesel Multiple Unit Pullman trains:—

EXTERIOR

Standard arrangements for British Railways Stock.

INTERIOR

Daily:

Vestibule, lavatory and corridor floors, using diluted suitable disinfectant. Chrome fittings wipe with damp rag. Empty Ash Trays at end of each day, and at the end of each individual journey during the day.

Weekly

Carpets and upholstery, vacuum clean and remove stains as necessary.

Toilet walls (plastic), sponge down and dry off.
Aluminium fittings, dust off and clean with lanoline.

Fortnightly

Plastic panels, i.e., saloon ceilings, second class partitions, sponge down lightly with clean water and dry off.

First class partitions (wood veneer), clean and polish with a good furniture polish.

Lanide panels (body sides and table tops), sponge down using a diluted solution of soap flakes or similar detergent, dry off with clean cloth.

Note: Acids must not be used for the cleaning of Pullman Cars.

The Pullman Car staff is responsible for equipping the lavatories with toilet rolls, soap, hand towels and the provision and changing of antimacassars in the Cars.

ROUTE RESTRICTIONS

These trains are built to the C.1 loading gauge with the exception of the traction motor gear cases which are to the L.1 gauge, and may work over running lines and sidings normally used for coaching stock, subject to the restrictions shown in the appropriate instructions.

STATION STOPS

In all cases, owing to the use of a standard formation, the trains should come to rest at the same position every day and this will enable the station staff to assist passengers in taking up a position as near as possible to the entrance of the coach in which their seats have been reserved. Station stops and turn-round times have been kept to a minimum consistent with the duties to be carried out and it is essential, therefore, that station staff and train crews should do all they can to avoid delays.

The following stopping points have been laid down:—

Paddington	Within 15 ft. of the buffer stops of the platform concerned.
Bath Spa	At the 9-car station stop signs on both Up and Down platforms.
Bristol (T.M.)	Platform 9, at the point opposite the white ring indicated on platform support pillar opposite the Chief Inspector's Office. Other platforms at the normal stopping point for main line trains.
Leamington Spa	At the 8-car station stop signs on both Up and Down platforms.
Solihull	At the 8-car station stop signs on both Up and Down platforms.
Birmingham (S.H.)	At the 8-car station stop signs on both Up and Down platforms.
Wolverhampton (L.L.)	At the 8-car station stop signs on both Up and Down platforms.

LOUDAPHONE EQUIPMENT

The loudaphone apparatus is a means by which the Driver and Guard may speak to each other, or exchange bell signals but it does not in any way relieve staff from their obligation to carry out the relevant rules and regulations.

A buzzer, which is actuated by the depression of the " call " button on the loudaphone, is provided in both the Guard's and Driver's compartments and this communication must always be used for the exchange of signals in accordance with the standard code shown in Circular No. 544 " Working of Diesel Pullman Trains." An additional signal push which will operate the buzzer in the Driver's cab is provided over the door of each Guard's compartment.

Standard codes will be used for all normal movements but the Driver, if requiring to speak to the Guard, or the Guard, if requiring to speak to the Driver, must send on the " call " button the code 3 pause 3 " Guard required by Driver. Guard or Driver attend telephone (where provided) ", and the man at the other end must acknowledge by repetition as detailed in the instructions referred to above. Conversation may then proceed provided both men keep the " Speak " button depressed.

The apparatus must only be used for essential conversations on matters affecting the working of the train and, except in the case of emergency, should not be used when the train is in motion. The apparatus may also be used by Shunters, in the absence of Guards, in order to communicate with Drivers in connection with shunting operations.

In order to avoid any possibility of unauthorised use of the apparatus in Drivers' cabs the door between the generator compartment and the Guard's compartment and the exterior doors of the Driver's compartment must be kept locked when the Driver's cab is not in use.

PUBLIC ADDRESS SYSTEM

Loudspeakers connected to the public address system are placed behind grilles which are spaced out along one side of the ceiling above the racks in each saloon. This system is wired to a central control point in each Guard's compartment from which announcements may be made to the passengers. These announcements will be made by the Pullman Car Conductor or an Attendant deputed by him and will normally be concerned with information about the starting and stopping of the trains but, in emergency, announcements will be made on information supplied by the Guard.

The apparatus in the Guard's compartment consists of a microphone and controls which are housed in a cabinet locked by a special key and placed above the First-Aid and Emergency Tool Cupboard. The main on/off switch for the equipment is provided above the Guard's table, to the right.

TRAIN IDENTIFICATION INDICATORS

These trains are not provided with four-character panels for displaying the train identification number which therefore will not be exhibited on these trains. However, the four-character indication applicable to each journey as shown in the Working Time Tables or in other train Working Notices will be used for reporting purposes and for transmitting the description of the train between signal boxes in which four-character walking type Train Describers are in use.

Instead of an identification number, each train

will display the appropriate headcode only by means of white discs by day, or electric headlamps during darkness or fog or falling snow. Three positions are provided, one over each buffer and one in the centre. Coloured discs are provided for the purposes stated below:—

Three Blue — for blanking out any lamp
(steel) position

One Red — for working in wrong direction
(translucent) in emergency

Two White — for use in daylight.
(opaque)

For passenger service the headcode to be displayed will be Class 1, i.e., one white disc or light over each buffer; for empty carriage workings, Class 3, i.e., one over the right-hand buffer (in the direction of movement) and one in the centre, (as shown in the Regional Appendix under the heading “ Classification and Destination Indicators and Head Lamps ”).

REPORTING OF DEFECTS

The normal practice of reporting carriage and wagon defects is for the Pullman Car Staff to enter details on a defects card which is placed in a special glass fronted container in the kitchen corridor, adjacent to the staff toilet. The cards will be inspected each turn by the Travelling Technician who will be responsible for arranging repairs.

Guard's journals will be rendered for each journey and any defects in the sets should also be noted thereon.

ACCESS ROUTES AT DEPOTS FOR PULLMAN CAR COMPANY STAFF

Old Oak Common

Nearest station—Willesden Junction (L.M.R. and Bakerloo line) thence 10 minutes walk via Old Oak Lane to Old Oak Common Yard. Access at Staff Hostel entrance down steps to Pullman Car Depot (former Paint Shop).

Bristol (Dr. Days Sidings)

From Bristol (T.M.) station via Approach Rd., Temple Gate, Cattle Market Rd., Feeder Rd., Avon St., Silverthorne Lane, Kingsland Rd., Day's Rd. and Stuart St. to entrance to sidings.

Wolverhampton (Cannock Road)

Entrance via the gate in Cannock Road (adjacent to the bridge carrying the road over the Western Region main line) thence down steps and via pathway alongside the embankment leading to Cannock Road Sidings.

REGIONAL APPENDIX INSTRUCTIONS RELATING TO THE WORKING OF DIESEL PULLMAN TRAINS

For the instructions applicable to the working of Diesel Multiple Unit Pullman Trains reference should be made to Circular No. 544 "Working of Diesel Pullman Trains."

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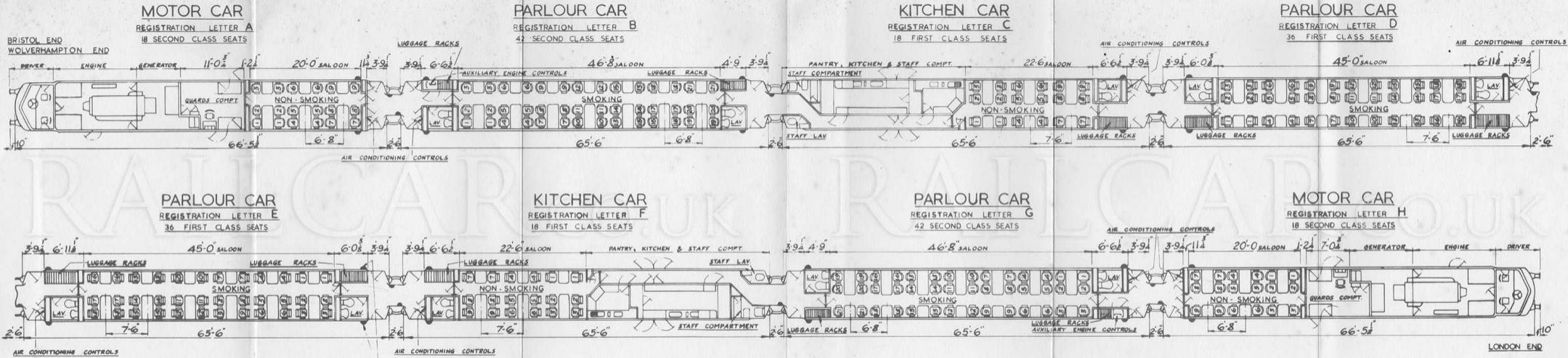
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THIS SYMBOL REPRESENTS THE POSITION OF VEHICLE REGISTRATION LETTERS ON ALL CARS

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