

BR.33003/75

**ELLIOTT
TRACK RECORDING CAR.
NO. D.B. 999507.**

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DRIVERS' INSTRUCTIONS FOR OPERATING ELLIOTT TRACK RECORDING CAR NO. D.B. 999507

General description

Single unit coach with driving position at each end. Single driving engine only.

TECHNICAL DATA

Type	1A.
Weighing in running order ...	24 tons.
Coning of wheels	1 in 100.
Wheel base	24ft. 0ins.
Wheel diameter	3ft. 0ins.
Width overall	9ft. 3ins.
Length overall	38ft. 0ins. over body (42ft. 4ins. over buffers).
Height overall	12ft. 7½ins.
Minimum curve negotiable ...	4 chains.
Maximum speed at maximum governed engine revs.:	
1st Speed 2nd Speed 3rd Speed 4th Speed	
13 m.p.h. 23 m.p.h. 35 m.p.h. 54 m.p.h.	
Gearbox ratios:	
1st Gear 2nd Gear 3rd Gear 4th Gear	
4.07 : 1 2.42 : 1 1.608 : 1 1 : 1	
Fuel capacity	120 gallons for engine heater and generator plant.
Lubricating oil sump capacity	4 gallons.
Wickham Freeborn clutch capacity ...	1/5th pint.
Gearbox oil capacity ...	1½ gallons.
Final drive oil capacity ...	6 pints.
Cooling water capacity ...	10½ gallons.
Control system	Manual throttle. Electro-pneumatic gears.
Brake system	Compressed air and hand brake.
Warning horns	Compressed air operated.
Mileage range without refuelling ...	600 miles nominal.

ENGINE

One 6-cylinder 8.143 litre	H. Meadows 6 HDT. 500 97 BHP
Horizontal oil engine ...	@ 1,900 r.p.m.
Compression ratio	16 : 1
Bore	120 m.m.=4.724 in.
Stroke	120 m.m.=4.724 in.
Firing order	1, 5, 3, 6, 2, 4.
Rotation	Clockwise.
Fuel injector type	C.A.V. BKBL97S. 5039
Fuel injector lifting pressure	2,500 lbs./sq. in. (170 atmos.)
Fuel pump type	C.A.V. monobloc.

TRANSMISSION

Clutch	Wickham "freeborn" clutch.
Gearbox	S.C.G. type R11C gearbox 4-speed epicyclic.
Final drive reversing arrangement ...	Wickham type D final drive gearbox. Axially sliding dog clutch between bevel gears.
Final drive gear ratio ...	3.68 : 1.

AUXILIARIES

Batteries	...	...	Exide lead acid 12 cells 24 volt 220 amp./hr.
Alternator	...	...	C.A.V. type AC.8, driven off front end of the engine.
Rectifier for alternator	...	...	C.A.V. Germanium type RUG.4.
Lighting	...	...	24 volt.
Starter motor	...	...	C.A.V.
Compressor	...	...	Clayton-Dewandre type, belt driven.
Coach heating equipment	...	...	Smith's combustion air heater.
Windscreen wipers	...	...	Compressed air operated.
Demister	...	...	Hot air obtained from coach heating air duct.
Speedometer	...	...	Elliotts (electrical)

DRIVER'S CONTROLS

1. Electrical control switch (Yale type with removable key).
2. Throttle handle (detachable) incorporating the Deadman's device.
3. Gear change selector lever (gate change) and indicator light.
4. Reversing lever (detachable).
5. Engine "Start" button.
6. Engine "Stop" button.
7. Battery ammeter, charge/discharge.
8. Switches: Demister, Panel light, Interior lights (2), Probe lights, Fan, Code lights and head light (4).
9. Windscreen wiper valve.
10. Engine oil pressure Indicator light (Red).
11. Water temperature indicator light (Amber).
12. Reservoir air pressure gauge.
13. Speedometer—marked for gear change speeds.
14. Brake cylinder pressure gauge.
15. Dual horn control.
16. Hand brake wheel ("B" end only).
17. Driver's air brake handle (detachable).
18. Coach heater switch and indicator panel ("A" end only).
19. Portable fire extinguisher CO2 type.

CONTROLS ON SIDE OF COACH

1. Fuel tank contents gauge, both sides of fuel tank.
2. Battery charging socket—each side of coach.

FUSES FITTED

Two fuse boxes under each control desk, identification of each fuse marked on inside of each fuse box cover.

GENERAL INFORMATION

The throttle handle is coupled to the engine fuel pump throttle control by MECHANICAL linkage.

The reversing lever and gear change selectors operate electro-pneumatic (E.P.) valves, therefore DO NOT USE FORCE WHEN MOVING THESE CONTROL LEVERS.

The throttle and electrical control system operates from either end of the coach but on this type **cannot** be linked to another vehicle.

Any failure of the control air pressure resulting in a severe drop in pressure will return the gears to neutral. The engine continues to run—it is NOT controlled by air pressure.

The throttle handle is also the Deadman's device and, if it is allowed to spring up, after about six seconds' delay the air brake will be applied. To reset the Deadman's device the throttle handle must be moved back to OFF position before the handle can be depressed to regain control.

The gear selector handle and reversing lever are mechanically interlocked. The gear selector handle is locked in the neutral position and cannot be moved until the reversing lever is moved to the FORWARD or REVERSE position.

NOTE.—There are five positions including reverse in the gear selector gate but reverse position in the gear selector gate is not usable.

The reversing lever cannot be moved unless the gear selector lever is in NEUTRAL.

SPECIAL NOTE

DO NOT MOVE THE GEAR CHANGE SELECTOR HANDLE FROM THE NEUTRAL POSITION UNTIL READY TO START THE COACH, except when "toggling up" the gearbox brake bands.

Indicator Lights

1. Engine oil pressure indicator lights — RED — normally dim — bright on fault.
2. Engine water temperature indicator lights — AMBER — normally dim — bright on fault.
3. Gear change indicator light — RED — illuminated if gear not engaged.

DRIVER'S DAILY DUTIES WHEN IN SERVICE

1. Obtain the control switch key and door key from safe keeping—see instructions under "Stabling the Coach."
2. Check that: (a) the detonator cases are intact;
(b) the handbrake is on at "B" end.

At Convenient Time during Turn

1. Make a short inspection of the coach and check that the apparatus is generally in good working condition. Check fuel tank level, and radiator header tank water level.
2. Toggle up the gear box brake bands as follows:—
 - (a) Check that full air pressure is available;
 - (b) Stop the engine;
 - (c) With the reversing lever in FORWARD position move the gear selector handle to engage 1st, 2nd and 3rd gears (not 4th) about six times, pausing in each gear position to allow the brake bands to engage fully;
 - (d) Return the gear selector handle to NEUTRAL;
 - (e) Restart engine as required.

Report all known defects at end of turn.

STARTING THE ENGINE

1. Check that the battery isolating switch is in the ON position.
2. Check that the handbrake is ON, then turn the control switch key to the ON position.
3. Check that the gear selector is in NEUTRAL position in the gate, i.e. reversing lever removed from the control panel.
4. Depress the throttle handle to engage the Deadman's device, then move it to partly open the throttle ;
5. Press the " START " button and release it immediately the engine fires. When the engine has started return throttle handle to IDLING position.

NOTE.—If the engine does not start within approximately three seconds, release " START " button for not less than ten seconds to allow engine to come to rest and check that the oil pressure indicator light glows brightly before pressing button again. If the engine refuses to start, check fuel tank contents gauge for fuel content and ensure that fuel cock is open.

WITH THE ENGINE RUNNING

- (a) The throttle handle may be operated to run the engine up to build up air pressure. When the air pressure has built up to 75 lbs./sq. in. **place the reversing lever into position in the control panel.**
- (b) Place the air brake handle into position and move it to Release position. Check that there is 100/110 lbs./sq. in. air pressure on the main reservoir gauge ;
- (c) Release the throttle handle. Check that the Deadman's device operates and that after six seconds' delay the brakes are applied ;
- (d) Check that the air pressure has again built up to approximately 85 lbs./sq. in.
- (e) Apply the air brake—check air brake pressure—50 lbs./sq. in. and then release the hand brake at " B " end.

STARTING THE COACH

- (a) Obtain control of the Deadman's device and hold the throttle in the Idling position ;
- (b) Partially release the air brake ;
- (c) **WITH THE ENGINE IDLING** place the reversing lever into FORWARD, then move the gear selector handle into the 1st gear gate (if 1st gear does not engage the indicator light on the gear control column will remain illuminated) ;
- (d) Release the air brake fully by placing brake handle to OFF position. The vehicle should not be moved with the brakes dragging ;
- (e) After a pause of **NOT LESS THAN TWO SECONDS** from the moment of selecting first gear, open the throttle notch by notch ; as the coach's speed increases, change gear as indicated on the speedometer.

The correct speeds are as follows:

1st Gear	0 - 13 m.p.h.
2nd Gear	13 - 23 m.p.h.
3rd Gear	23 - 35 m.p.h.
4th Gear	over 35 m.p.h.

GEAR CHANGING

(a) Changing up

When the speedometer indicates the correct changing speed—

1. Return throttle handle to IDLING position and at the same time place the gear lever into NEUTRAL.
2. PAUSE FOR TWO SECONDS, then select the next higher gear position.
3. AGAIN PAUSE FOR FOUR SECONDS before re-opening the throttle handle.
4. Change gear progressively in the same manner until top gear is engaged.

NOTE.—DO NOT MOVE THE GEAR SELECTOR HANDLE UNTIL THE ACTUAL GEAR CHANGE IS TO BE MADE.

(b) Changing down

When the speedometer needle has dropped to a speed that indicates that a change down is necessary—

1. Return the throttle handle to IDLING position and immediately select the next lower gear.
2. PAUSE FOR TWO SECONDS, then re-open the throttle.

NOTE.—DO NOT MOVE THE GEAR SELECTOR HANDLE UNTIL THE ACTUAL GEAR CHANGE IS TO BE MADE.

COASTING

When the maximum running speed required is obtained, this can be maintained by easing back the throttle handle towards the IDLING position. NO FREE WHEEL FITTED, DO NOT COAST IN NEUTRAL.

STOPPING THE COACH

1. Return the throttle handle to IDLING and hold in that position.
2. Apply the air brake as required.
3. When almost at a stand return the gear selector handle to a NEUTRAL position in the gear change gate.

NOTE.—If the coach speed has been reduced, e.g. due to a signal check, and if the signal is placed into the clear position before the coach is brought to a stand, release the air brake and change down **progressively** to the gear responding to the actual road speed.

CHANGING ENDS

1. When the car has been brought to a stand release the throttle hand **and allow the Deadman's device to operate**, check by reading the air brake gauge that the brakes are applied.
2. Place the air brake handle to OFF position and remove handle.
3. Remove the throttle handle and reversing lever.
4. Place control switch in the OFF position and remove key.
5. Proceed to the other end of the coach and place throttle and air brake handles into position. Place control switch into the ON position, then place reversing lever in FORWARD OR REVERSE as required.

REVERSING THE COACH

If it is necessary to reverse the coach without changing ends—

1. STOP THE COACH.
2. With the engine idling move the reversing lever to REVERSE.
3. Proceed as for "Starting the coach," items d - e.

STOPPING THE ENGINE

1. Return the throttle handle to idling position, then release to deadman's position.
2. Check that the air brake is ON.
3. Place the reversing lever into NEUTRAL position.
4. Press engine "Stop" button and hold in that position until engine has stopped.
5. Apply the handbrake.

STABLING THE COACH

The coach will be stabled in a safe and secure siding either in a Motive Power Yard or Civil Eng. Dept. Depot siding as decided by the District Engineer.

After stopping the engine by the method shown above—

1. Check that the handbrake is applied.
2. Place air brake valve to OFF position and remove handle.
3. Remove reversing lever and throttle handle. Place control switch in OFF position and remove key.
4. Shut off compartment heater if in use.
5. Place the air brake handle, reversing lever, and throttle handle into the position provided in the coach for their storage.
6. The control switch key and door key must be placed in safe keeping. A label is to be attached to the handle of the coach door to indicate the place where the keys have been deposited.

COACH HEATING

Heating is by means of hot air suitably directed into the body of the coach. The operation of the heater is automatic apart from switching on and operating the heat control.

To operate the heater turn heater switch in a clockwise direction to FULL HEAT position. This supplies current to the glow plug (an Element) and the glow plug light on the Indicator panel should be illuminated. If this fails, return switch to the OFF position and do not attempt to restart.

After a period of about 45 seconds the air fan light will be illuminated on the Indicator panel denoting that the heater fan and fuel pumps are running. In approximately 3½ minutes the glow plug indicator light will be automatically extinguished.

If the oil fails to ignite in the above period the fan and fuel pump is automatically switched off, and it is then necessary to return the control switch to OFF and re-start.

Not more than three attempts should be made to start the apparatus.

If the switch is in the Full Heat position and the heater cuts OUT, the indicator light will be extinguished. Return the switch to OFF, then attempt to restart the heater as described above.

To admit cold air, turn the control switch in the anti-clockwise direction past the OFF position to COLD.

FAULTS IN TRAFFIC

If the engine stops whilst coach is running, stop the coach, place the gears into NEUTRAL, then attempt to restart by depressing the local "Start" button, not more than three times. If this fails to restart the engine, lock the final drive in NEUTRAL.

Coach will then require towing to a terminal point.

To Lock Final Drive in Neutral

Place gear selector handle and reversing lever into NEUTRAL, then at the rear of the final drive casing unscrew the studs from the driving dog positioning control cylinders, reverse them and screw them back into the cylinders until they are right home. Check that the main propeller shaft to the final drive can be rotated by hand.

ASSISTING DISABLED COACH

In an emergency the disabled coach may be assisted by a diesel train or by a locomotive coupled by means of the special towing three-link coupling provided with the coach.

Great care must be taken in carrying out any emergency movement, and a speed of 15 m.p.h. must not be exceeded.

FAILURE OF CONTROL EQUIPMENT

If driving controls in leading driving position have failed:

Remove control switch key, throttle handle, reversing lever and air brake handle, then proceed to the opposite driving compartment and endeavour to gain control. Then act in accordance with the Appendix Instructions for the Working of Diesel Mechanical Cars—Driving Apparatus Disabled.

FIRE PRECAUTIONS

Portable fire extinguishers are provided for use in the event of an outbreak of fire. These are suitable for use on electrical equipment.

WARNING HORNS

When sounding the horn to comply with Rule 127 and the Appendix Instructions, operate the lever in such a manner to give the 2-tone sound that these horns are designed to emit. This is of the utmost importance, and if the horn is defective it must be reported immediately.

TOWING

Special three link loose couplings are provided to tow this coach and it can only be towed at a MAXIMUM speed of 15 m.p.h. and when slowing down or stopping extra care is necessary to avoid damage to the equipment.

If coupled to a train it must be marshalled next to the brake van. The final drive MUST be locked in Neutral.

The power brake cannot be coupled up and the vehicle must be under control of the hand brake.

The air brake MUST be released and ALL the air blown out of the air reservoirs.

All controls must be placed to OFF position and the control handles and keys removed.