

CHAPTER I

Starting the Engine and Driving the Car

Starting the Engine—Throttle Control—Mixture Control—Ignition Control—Fuel Feed—Fuel Gauge—Maximum Engine Speed—Gear Changing—Controllable Shock Dampers—Battery Charging—Lighting Control and Switch—Accessories—Radiator Thermostat and Thermometer—Overheating—Coolant Level in Radiator—Frost—Fitting of Snow Chains.

Starting the Engine.

Switch on the ignition by turning master and ignition switches on the instrument board to **On**.

The master switch controls all the electrical system, excepting the inspection lamp and the roof lamp, the latter being left always available for convenience when entering the car in the dark.

The action of switching on the ignition also switches on the electric fuel pumps, and a few pulsations of the latter may then be heard.

A small red warning light on the instrument board will be illuminated when the ignition is switched on, but will be extinguished when the engine speed is sufficient to cause the cutout contacts to close.

Set the mixture control to **"START"**; it must not be maintained in this position. As soon as the engine starts running, gradually reset the control to **"RUN"**.

With a cold engine the hand throttle control should be opened about one third of its range, but should be re-set to the closed position when the engine has warmed up.

Re-starting with a warm engine, the above is not necessary as the carburetter slow running adjustment has been set to give an adequate idling speed.

Depress the starter button firmly, *an appreciable pause must be made between the operations of switching on the ignition and depressing the starter button, especially when making a start from cold.* This is necessary in order to give the pumps time to fill the float chambers of the carburetters.

When starting the engine for the first time in the day it is a good plan to form the habit of depressing the chassis oil pump pedal once at this stage. Subsequently it should be depressed once every 100 miles. If the car is to be driven only a few miles, however, half a pump-full will be sufficient at the first starting.

When the engine is cold a high oil pressure will be shown on the gauge, due to the greater viscosity of the oil at low temperatures. The pressure will fall, however, as soon as the oil becomes warmer.

A starting handle is carried in the tool kit; in the event of it being used, it should be removed afterwards from the bracket and returned to the tool kit.

Throttle Control.

Under normal running conditions, the hand throttle control should be carried right back at the closed position. An adjustable stop is provided on the carburetter for the throttle lever, which is so adjusted that the engine will idle reliably in these circumstances when the accelerator pedal is released.

Mixture Control.

Under normal running conditions the lever should stand at "**RUN**". This control is only intended for use when starting from cold, and should not be used for varying the mixture strength under running conditions. Actually, its effect decreases rapidly as the throttle is opened.

Ignition Control.

Control of the ignition timing is entirely automatic, no hand control being provided.

Fuel Feed.

Fuel is supplied from the main tank to the carburetter by means of a dual electric pump mounted in the frame (See Fig. 11). The total capacity of the main tank is 18 gallons.

Fuel Gauge.

The electric fuel gauge on the instrument board is graduated to register the total quantity of fuel in the main tank. The gauge is inoperative when the ignition is switched off.

Special contacts carried by the tank unit cause the green warning lamp to light when only about three gallons of fuel remain in the tank.

Maximum Engine Speed.

The engine speed must never be allowed to exceed 4,500 r.p.m. It is, therefore, recommended that as a safe guide, the following speeds should not be exceeded:—

1st Gear	...	...	...	...	27 miles per hour.
2nd Gear	...	...	...	...	43 miles per hour.
3rd Gear	...	...	...	...	65 miles per hour.

The quietness of the Bentley engine and chassis, and the smoothness of the ride provided by the Bentley suspension, make it difficult to judge speed. *Keep an eye on your speedometer.*

Gear Changing.

The position of the gear lever for each of the four speeds and reverse is shown in Fig. 2.

When reverse is required, the top of the lever must be depressed, this operates a catch, and allows the lever to be moved into the reverse gate.

A special synchronising device is fitted to second, third and fourth gears.



Fig. 2.—GEAR CHANGE LEVER AND GATE.

Any change into these gears—up or down—is facilitated by this easy change mechanism. All that it is possible to ensure by such a synchronising mechanism is that the gear members to be engaged cannot be brought together until they are both rotating at the same speed. It does not synchronise the engine and clutch shaft speeds. This must be done by the driver before re-engaging the clutch, otherwise there will be an unpleasant jerk, causing unnecessary wear and tear of the clutch and strain on the transmission.

It is necessary to depress the clutch pedal fully when changing gear. The gear lever should then be moved gently into the required gear position and, before re-engaging the clutch, the engine should be speeded up when changing down, or allowed to slow down when changing up, so that its speed shall suit the car speed on the required gear.

The change from second to first must be made in the usual manner by double de-clutching.

If an owner prefers to start from rest in second speed, this is in no way detrimental to the transmission or clutch, and, in fact, with the Bentley Mk. VI is the recommended procedure under normal conditions.

Controllable Shock Dampers.

In order to provide comfortable riding at all speeds, controllable shock dampers are fitted to the rear axle.

The control is effected by the lever, mounted above the steering wheel, and marked **Ride Control**.

For ordinary town work, or touring with moderate loads, it will be found that the damper loadings as set by the pump are adequate when the hand lever is at **Normal**.

With heavy loads, improved riding comfort will be obtained by moving the lever towards **Hard**, the control being progressive.

Battery Charging.

This is entirely automatic, as the provision of an automatic output regulator in conjunction with a shunt wound dynamo, adjusts the charge rate to suit the state of the battery.

When the battery is low in charge, the ammeter on the instrument board will show a higher reading towards **Charge** than it will when the battery is well charged. In making such a comparison, however, other factors which affect the ammeter reading must be taken into account, chiefly engine speed and current-consuming apparatus in use at the time.

Whenever the master switch and the ignition switch are **On**, and the engine running above idling speed, the battery is being charged. This should be checked by reference to the ammeter.

Further information regarding the electrical system is given in Chapter X.

Lighting Control and Switch.

As already mentioned, the movement of the master switch and the ignition switch to **On** not only switches on the ignition and charge, but brings into operation the electric fuel pumps and fuel gauge.

The ignition switch also switches on a red warning light on the instrument board, which is automatically extinguished when the engine is running at a speed sufficient to cause the dynamo to excite up to battery voltage.

This red lamp consequently serves two purposes, viz.:—

- (a) When alight it shows the driver that the ignition switch is on, and, therefore, warns him to switch off if he is leaving the car, and

- (b) When it becomes extinguished this indicates that the dynamo is exciting. (It does not follow that the dynamo is charging the battery. This should be ascertained by reference to the ammeter.)

The master switch controls the head, side and tail lamps, alternative **On** positions being provided, viz.:—

S and **T**.—Side and Tail lamps on.

H, **S** and **T**.—Head, Side and Tail lamps on.

PL.—"Parking" lights on, e.g. Side and Tail lamps on, accessories off.

In addition, a foot operated switch is provided, by means of which, the beam of the driving lights is altered to allow anti-dazzle precautions to operate, thus extending courtesy and safety to passing traffic.

Accessories.

The control of the Windscreen Wiper and De-mister is provided by means of switches on the instrument board.

A press button switch is also available for ascertaining the engine oil level which reads on the fuel gauge. (See Fig. 1.)

These are all controlled by the master switch, and it is recommended that the master switch be regularly used to avoid leaving the car with one of the accessories in operation.

Radiator Thermostat and Thermometer.

A thermostat is provided in the upper radiator coolant pipe which automatically restricts the flow through the radiator, until the coolant in the system attains a temperature of about 78° C.

A thermometer is provided on the instrument board to indicate that the thermostat is operating properly and that there is no shortage of coolant.

Overheating.

If on long ascents which call for full throttle, "boiling" should occur due to abnormal conditions of atmospheric temperature, and/or, following winds, etc., it is preferable to change into a lower gear and reduce the throttle opening.

Adjustment of the fan belt may be necessary, and this should receive attention.

Coolant Level in Radiator.

The radiator filler cap, which is located beneath the bonnet on the left-hand side, should be removed occasionally for inspection of the coolant level, but it *must not be removed when the engine is running*.

The level of the coolant should be maintained at approximately one inch below the bottom of the filling orifice. Top up if necessary with the correct anti-freeze mixture. (See page 80.)

Frost.

The car is delivered with a suitable anti-freeze mixture in the cooling system. (See page 77.)

If the original coolant has been replaced with water, and the car has to stand exposed to frost with the engine not running, it is of vital importance that the system should be drained by opening the drain taps on the water pump inlet pipe, and on the cylinder block (1, Fig. 33), and releasing the filler cap. The car heater must also be drained by opening the tap on the return pipe.

Before attempting to start, or even move the engine again, hot water should first be poured over the water pump, as otherwise damage may be caused to the pump rotor by the presence of particles of ice within the casing. Warm water can be used with advantage for refilling the radiator.

Fitting of Snow Chains.

In the event of snow chains being necessary, they should be fitted to the rear wheels only.

A Parsons chain, known as the "Special Bentley Type", is available. It is recommended that these be obtained through Messrs. Bentley Motors (1931) Ltd., or one of their "Special Retailers", in order to ensure the supply of the correct type.

When fitting these special chains, it is *essential* to commence by fastening the one hook on the inside of the wheel and always to take up the adjustment on the outside, where two fastening clips are provided. The tensioning springs which are supplied to go on the outside of the wheel must always be fitted.