

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.

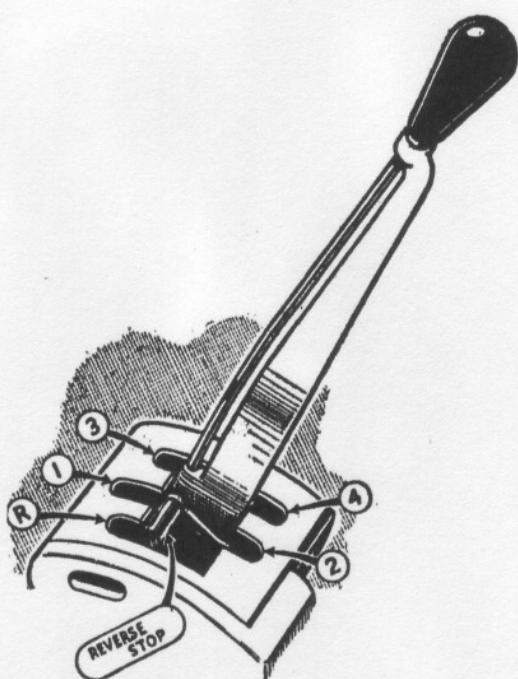


Fig. 2.—GEAR CHANGE LEVER AND GATE.

Generally the car should be moved from rest in second gear, this is in no way detrimental to the transmission or clutch; but if starting on a gradient, first gear should be used.

The second, third and fourth gears are of the synchromesh type, and it is necessary to depress the clutch pedal fully when changing gear. The gear lever should 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.

It should be noted that the travel between first gear and neutral is greater than on the other gears. Therefore, when manoeuvring in traffic, it is important to remember that care should be taken to make sure that the lever has reached neutral position from first gear before re-engaging the clutch.

When changing from first to second, the fullest use should be made of the synchro mechanism, and the gear lever should be moved gently from first speed to second speed whilst the clutch is fully disengaged.

The car must be stopped before engaging the reverse gear, and the same advice applies when changing from reverse to a forward gear.

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.

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.

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. 34), 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.

(To be inserted in Bentley Mk. VI Handbook, No. X, to face page 26.)

FAULTY IGNITION CONDENSER.

In cases where the engine misfires or fails to start, and that this condition is obviously not due to petrol starvation, it is possible that the ignition condenser is at fault.

In such circumstances as the above, it is recommended that the condenser mounted below the ignition distributor, see Fig. 39, page 91, should be removed and replaced by a new one.

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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.

CHAPTER II

Periodic Lubrication and Attention

LUBRICANTS RECOMMENDED

Engine and Gearbox.

For normal operation of the car under Temperate climatic conditions, Bentley Motors (1931) Ltd. recommend a first quality oil of viscosity S.A.E. 20 for the engine, for all the year round use. But, if conditions permit of long journeys of maintained high speeds, a heavier duty oil of S.A.E. 30 grade would provide better oil mileages. Also, it would be advantageous to use an S.A.E. 30 grade oil where the car is normally operated under Tropical climatic conditions.

On the other hand, under extreme Winter conditions of sub-zero temperatures, the use of a lighter grade oil of S.A.E. 10 viscosity would provide easier starting and satisfactory lubrication.

The oil for the gearbox should be a first quality oil of viscosity S.A.E. 30, which is suitable for all driving conditions.

The following oils are recommended:—

			"A"	"B"
			Engine.	Gearbox.
Price's	...	...	Energol 20.	Energol 30.
Wakefield's	...	...	Castrolite	X.L.
Shell	...	...	Single, or X.100-20.	Double, or X.100-30.

Equivalent oils to the above are also marketed by: Sternal Ltd., Alexander Duckham & Co. Ltd., Anglo-American Oil Co. Ltd., Gulf Oil (Great Britain) Ltd., and Dalton & Co. Ltd.

In the instructions which follow, reference is made to Oil "A" or "B" as above, i.e. viscosity 20 or 30.

Rear Axle.

Wakefield's Special Castrol Hi-press S.C. (If this is unobtainable, use a first quality Hypoid oil. Do **not** mix these oils; drain and refill.)

Carburetter Air Valve Damper.

Viscosity 10 oil, any of the following may be used:—

Price's	...	...	...	...	U.C.L.
Wakefield's	...	...	...	...	Oilit.
Shell	...	...	...	...	Donax A.I.

Steering Box—Chassis Oil Pump—Starter Motor Gears.

Viscosity 30 oil, as under "B".

Hydraulic Shock Dampers.

Viscosity 20 oil, as under "A".

Propeller Shaft—Contact Breaker Cam.

Vacuum Mobilgrease No. 2.

Distributor Grease Cup.

High Melting Point Grease.

Hydraulic Brake Fluid.

Lockheed Brake Fluid—Orange.

CAPACITIES

Engine ...	...	...	...	...	...	16 pints approx.
Gearbox	...	...	...	...	...	6 pints ,,
Rear Axle	...	...	...	...	...	1 $\frac{3}{4}$ pints ,,
Chassis Oil Pump	...	...	...	...	...	2 pints ,,
Cooling System	...	...	...	...	...	3 $\frac{3}{4}$ gallons ,,
Fuel Tank	...	...	...	...	...	18 gallons ,,

GENERAL

In addition to the points supplied with oil by the centralised system, there are others which, for various reasons, cannot be fed in this way and must, therefore, be lubricated by hand.

In the notes which follow, these points are classified as far as possible under mileages, or according to the usage of the car.

It is important that careful attention should be given to their lubrication so as to reduce wear and eliminate mysterious squeaks and rattles.

Further notes are included covering the periodic operations and adjustments which are necessary.

Points for Regular Attention according to Use of Car

FREQUENTLY, OR DAILY IF LONG JOURNEYS ARE CARRIED OUT

1.—Engine Oil.

Inspect oil level on dipstick or electric gauge **when engine is not running**, and top up as necessary with correct oil. Do not run engine with oil level down to "Min." mark. (See page 41.)

2.—Chassis Lubrication.

Use foot-operated pump according to mileage travelled. Depress pedal once when car is being started for the first time each day, and then once every 100 miles. Use the pump more frequently during bad weather.

Replenish reservoir as necessary, but do not overfill. Leave one inch between oil level and bottom of filler orifice.

WEEKLY

3.—Radiator Coolant.

Inspect coolant level and, if necessary, top up with the correct anti-freeze mixture to maintain the level at about one inch below the bottom of the filling orifice.

4.—Tyres.

Check the tyre pressures.

These should be:—Front, 25 lbs./sq. in. } Cold.
Rear, 30 lbs./sq. in. }

5.—Distributor Grease Cup.

Give grease cup one turn; when empty, fill with the correct grease. (See page 28.)

6.—Windscreen Washer.

Inspect and refill reservoir if required, leave one inch between liquid level and top of filling orifice.

MONTHLY

7.—Battery.

Check level of acid in each cell and top up with distilled water if necessary. Check more frequently when big mileages are covered or when the car is being run during hot weather.

8.—Brakes.

See Chapter VI for description.

To check the adjustment, rotate the adjusters in a clockwise direction until obvious resistance is felt. This resistance should be equal for all four brakes, and should the last "click" on any one adjuster require noticeably greater force to obtain, this adjuster should be turned back to the previous "click". (See page 55.)

9.—Carburettors.

Inspect oil level in oil reservoir of automatic air valve guide, and top up with the recommended oil. (See page 27.)

Lubrication and Maintenance

EVERY 5,000 MILES

1.—Engine Oil Filter.

Remove felt element and washers, and discard. Replace with new element and washers. See that cover joint is oil tight. (See page 38.)

2.—Gearbox.

Inspect oil level in the gearbox by means of dipstick. If necessary, replenish with the correct oil to level of mark on dipstick. (See page 60.)

3.—Rear Axle.

Inspect oil level in rear axle when warm, by removing level plug (Fig. 22), and, if necessary, top up with correct oil to level of hole. (See page 63.)

If the correct oil is not obtainable, do not add a different oil, but if replenishment is necessary, drain off and refill with an alternative oil as directed on page 27.

4.—Steering Box.

Remove plug and fill casing with correct oil to mouth plug of orifice. (See page 65.)

5.—Ignition Governor.

Remove the distributor cover and lift off rotor. Apply two or three drops of oil "A" to governor spindle. (See page 91.)

6.—Contact Breakers.

Apply one drop of oil "A" with oil-can to the pivot pin of each rocker arm. (See page 91.)

7.—Distributor Cam.

Apply one or two drops of oil "B" to the cam lubricator pad. (See page 91.)