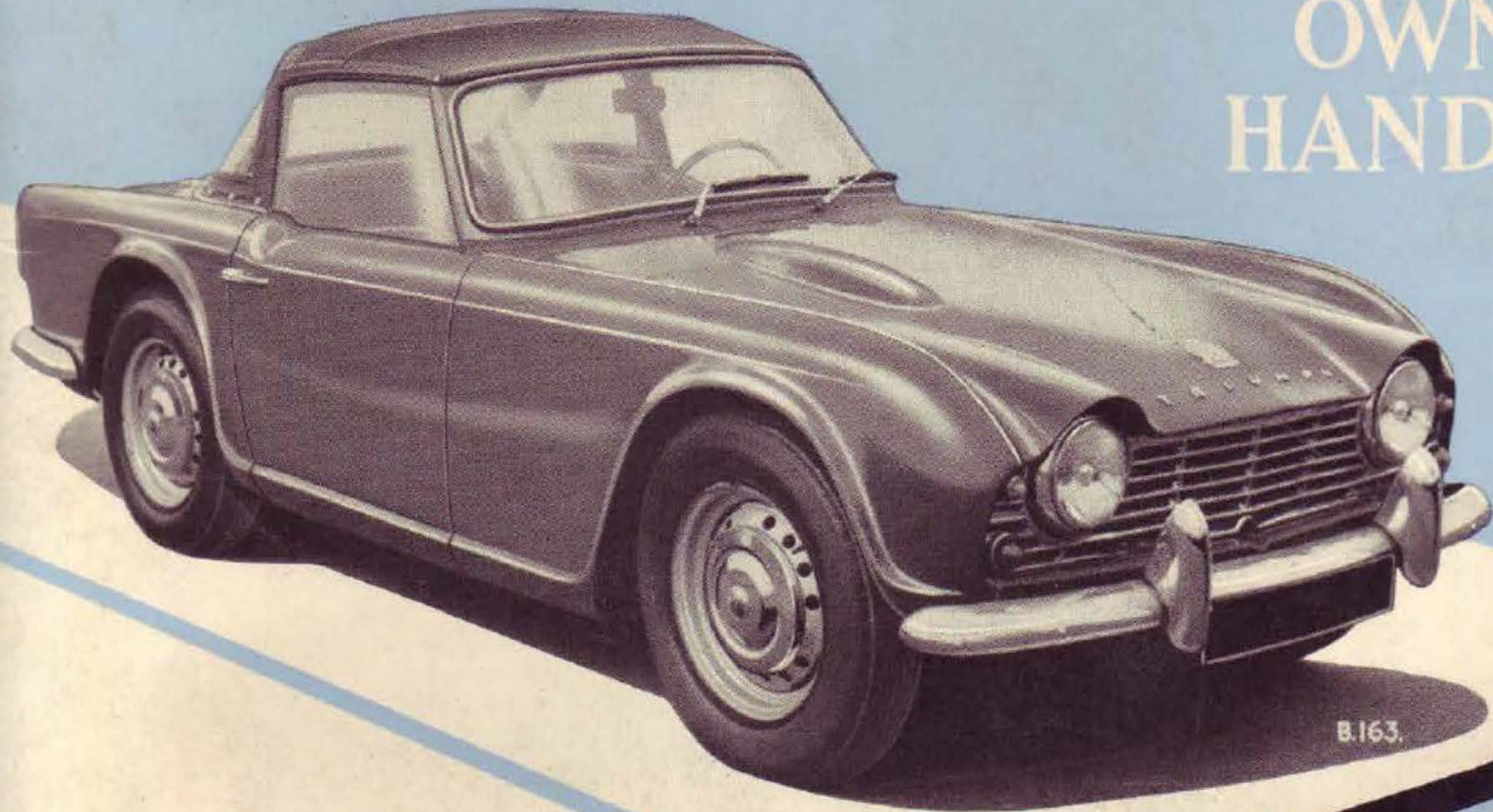


TRIUMPH *TR4.*

OWNERS
HANDBOOK



TRIUMPH TR4

OWNERS HANDBOOK

Issued by

STANDARD-TRIUMPH SALES LTD.

COVENTRY, ENGLAND

A member of the Leyland Motors Corporation

FOREWORD

Success, the aspiration of all human pursuits, has, in the world of motor sport, become synonymous with the name of Triumph. The many laurels obtained by T.R.'s in international and local competitions have gained them an enviable reputation of which every owner is justifiably proud.

The newest of the Triumph thoroughbreds, the T.R.4, combines new developments with the well proven rally tested features of its predecessors. We welcome owners to an ever widening circle of enthusiasts and wish them many pleasant hours of motoring in adding new honours to a name already renowned.

To ensure a continuance of the superb performance which a T.R.4 is capable of giving, coupled with reliability and economy, regular care and attention are necessary. All essential information and the periods after which attention is recommended, are contained in the following pages. Owners are advised to read them carefully and note particularly the advice on lubrication.

New parts or accessories, when needed, are obtainable only through authorised Triumph dealers, who in addition to being trained to give expert advice and attention, are also equipped to undertake repairs and overhauls which are beyond the scope of most owners.

STANPART

Spare Parts Service

Replacement parts are not supplied from the factory direct to the general public, but are directed through Distributors who, in turn, supply their Dealers.

Genuine spare parts are marketed under the trade mark "Stanpart" and carry the same guarantee as the original part. The same high quality material is used and the strictest accuracy maintained during manufacture. You are advised, therefore, to insist on the use of these parts should replacements be necessary. Remember, parts which do not carry the trade mark "Stanpart" will invalidate the guarantee if fitted to your vehicle.

The descriptions and illustrations appearing in this book are not binding. The MANUFACTURER, therefore, reserves the right — whilst retaining the basic features of the Models herein described and illustrated — to make at any time, without necessarily bringing this book up-to-date, any alteration to units, parts or accessories deemed convenient for improvement or for any manufacturing or commercial reason.

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IMPORTANT

In all communications relating to
Service or Spares please quote the Commission
Number (Chassis Number)

LOCATION OF COMMISSION AND UNIT NUMBERS

Commission Number—On Scuttle Panel. (May be seen by lifting the bonnet.)

Engine Number—On L.H. side of Cylinder Block.

Gearbox Number—On L.H. side of housing.

Rear Axle Number—On face of Hypoid Housing Flange.

INSTRUMENTS AND INDICATORS

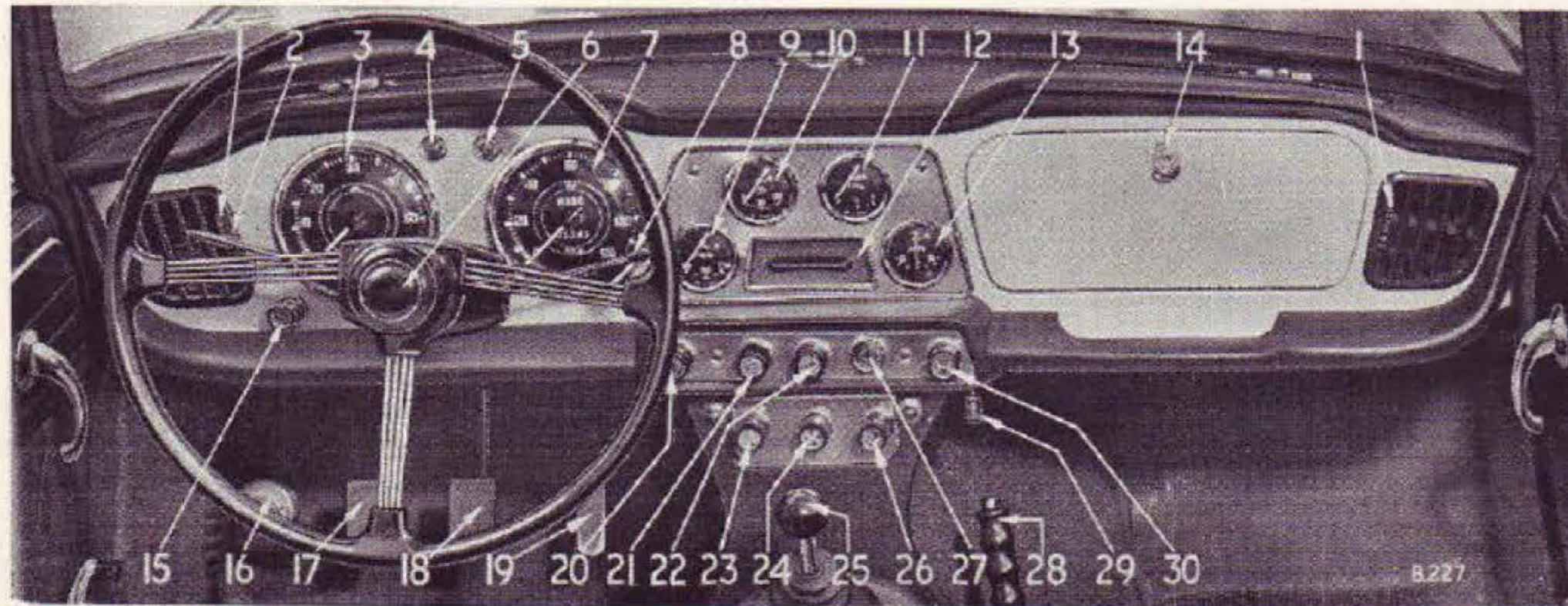
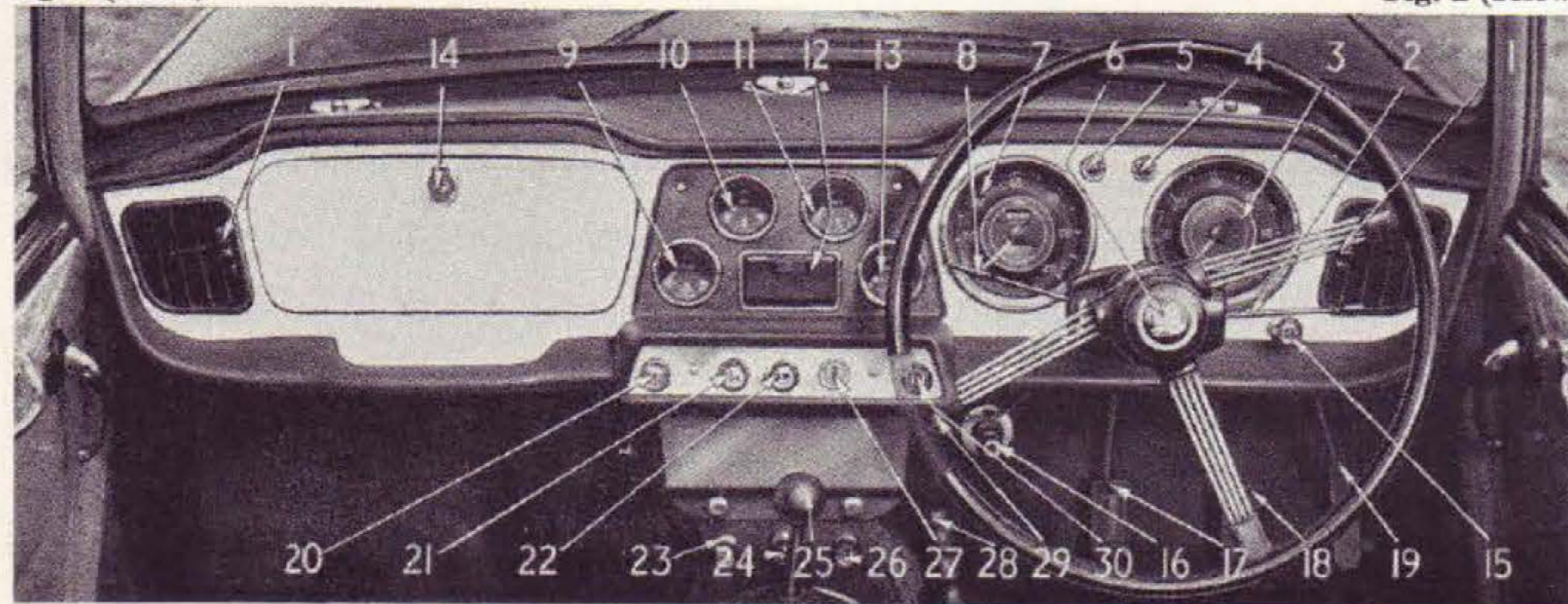


Fig. 1 (above)

Fig. 2 (below)



1. Fresh Air Vent Controls.
2. Overdrive Switch (Special Access.)
3. Tachometer.
4. Turn Signal Indicator.
5. Ignition Warning Light.
6. Horn Button.
7. Speedometer.
8. Turn Signal Control.
9. Water Temperature Gauge.
10. Oil Pressure Gauge.
11. Fuel Gauge.
12. Ash Tray.
13. Ammeter.
14. Facia Locker.
15. Panel Illumination Rheostat.
16. Headlamp Dipper Switch.
17. Clutch Pedal.
18. Brake Pedal.
19. Accelerator Pedal.
20. Lighting Switch.
21. Windscreen Washer Control.
22. Windscreen Wiper Switch.
23. Heat Control.
24. Heater Blower Switch.
25. Gear Shift Lever.
26. Heat Distribution Control.
27. Ignition/Starter Switch.
28. Handbrake Lever.
29. Scuttle Ventilator Control.
30. Choke Control.

INSTRUMENTS AND INDICATORS

The instruments, indicators and controls shown on Figs. 1 and 2, and indicated in brackets within the text, perform the following functions:—

Tachometer (3)

The tachometer, indicates the engine speed in revolutions per minute and is calibrated in divisions of 100, extending to 6,000. The speed range within the red segment is subject to special precautions. These are given on page 14.

Turn Signal Indicator (4)

The green flashing indicator monitor light, glows intermittently when the direction control is operated and the ignition is switched on. See "Turn Signal Control" on page 9.

Ignition Warning Light (5)

The small red warning light glows when the ignition is switched on and is extinguished when the engine is accelerated.

If the indicator glows when driving, this indicates an electrical fault which should be traced and rectified without delay.

Speedometer (7)

The speedometer indicates the road speed of the vehicle in miles per hour and is calibrated in divisions of 2, extending to 120.

The figures within the aperture above the centre of the dial may be used to record individual journeys, provided that the figures are re-set to zero at the beginning. This is achieved by pushing up and turning anti-clockwise the knob which extends downwards from behind the instrument.

The figures within the aperture below the centre of the dial show the total mileage of the vehicle and may be used as a guide for periodic lubrication and maintenance.

The High Beam indicator near the bottom of the dial glows only when the headlamp main beams are in use. When the dipper switch is operated the indicator is extinguished.

INSTRUMENTS AND INDICATORS

Water Temperature Gauge (9)

The gauge is calibrated in degrees Fahrenheit and indicates the temperature of water leaving the cylinder head. The normal operating temperature is reached when the needle registers in the central sector of the dial.

Oil Pressure Gauge (10)

Calibrated in lbs. per sq. in., the oil gauge registers the pressure of oil fed to the bearings. At speeds exceeding 30 m.p.h., when the oil is hot, the gauge needle should register between 65 and 75. A low pressure is normal when idling or running at a lower speed.

Fuel Gauge (11)

The fuel gauge is calibrated relative to the fuel tank and registers the approximate contents only. When the ignition is switched on the needle moves slowly across its scale, taking up to one minute to reach a true reading. The needle then maintains a steady reading regardless of vehicle movement.

Ammeter (13)

The ammeter is calibrated in amperes and indicates the rate of battery charge and discharge. The charging rate is indicated when the pointer moves to the right-hand side of "zero", and discharge, by movement to the left.

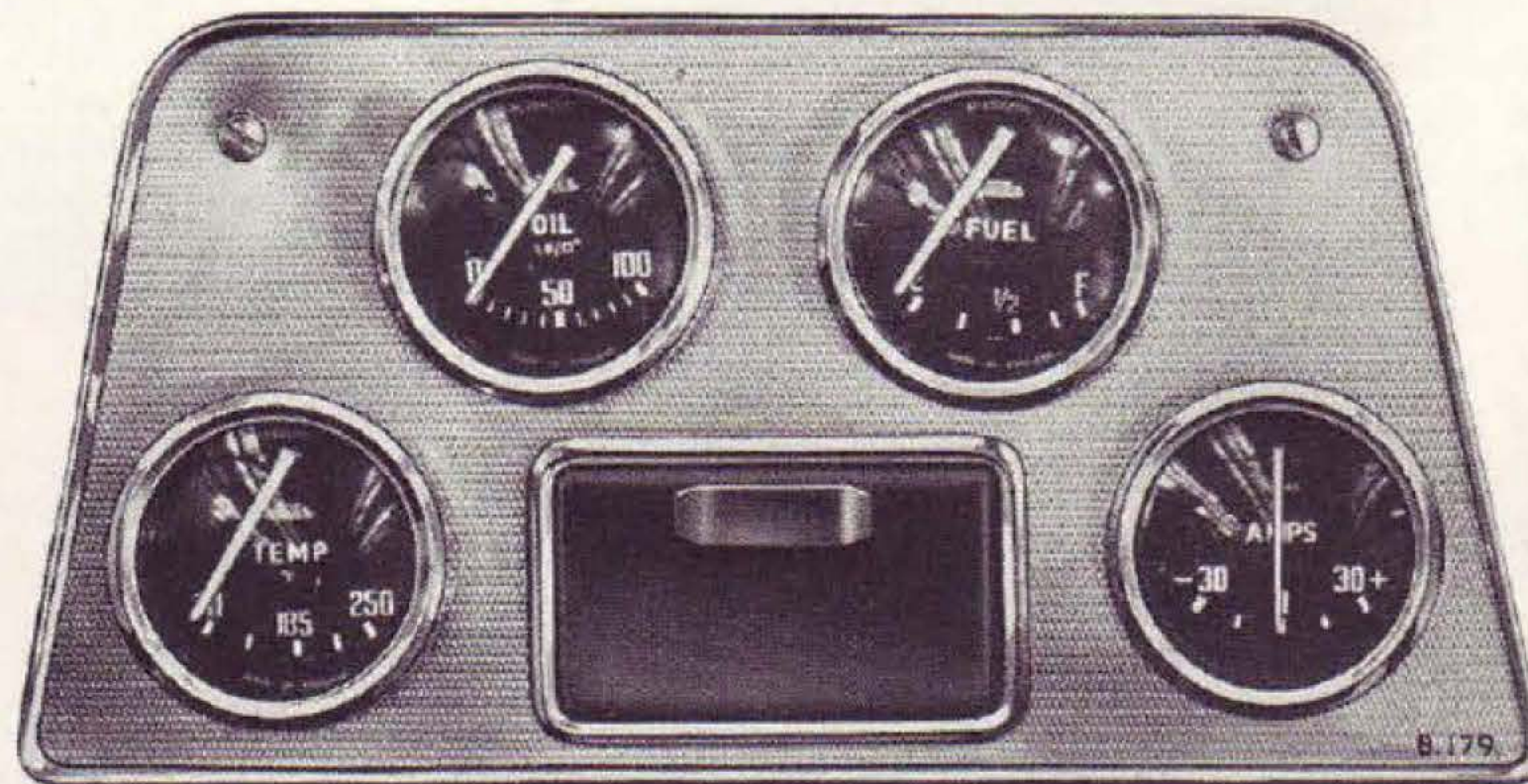


Fig. 3

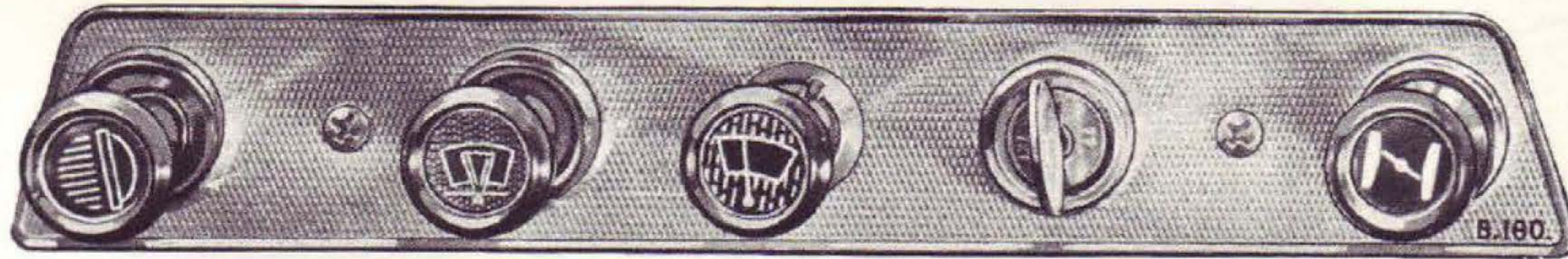


Fig. 4

Lighting Switch (20)

Pull the switch out to the first position to illuminate the side, rear, number plate and centre instrument panel lights. Twist the switch slightly clockwise and pull out to the second position to illuminate the headlamps. See "Dipper Switch", page 8.

Windscreen Washer (21)

Use the windscreen washer control in conjunction with the windscreen wiper. Operate by pushing the control to spray clean fluid on to the screen as the wiper blades disperse the mud. If the washer has remained unused for some time, depress the control a few times to charge the system.

Windscreen Wiper (22)

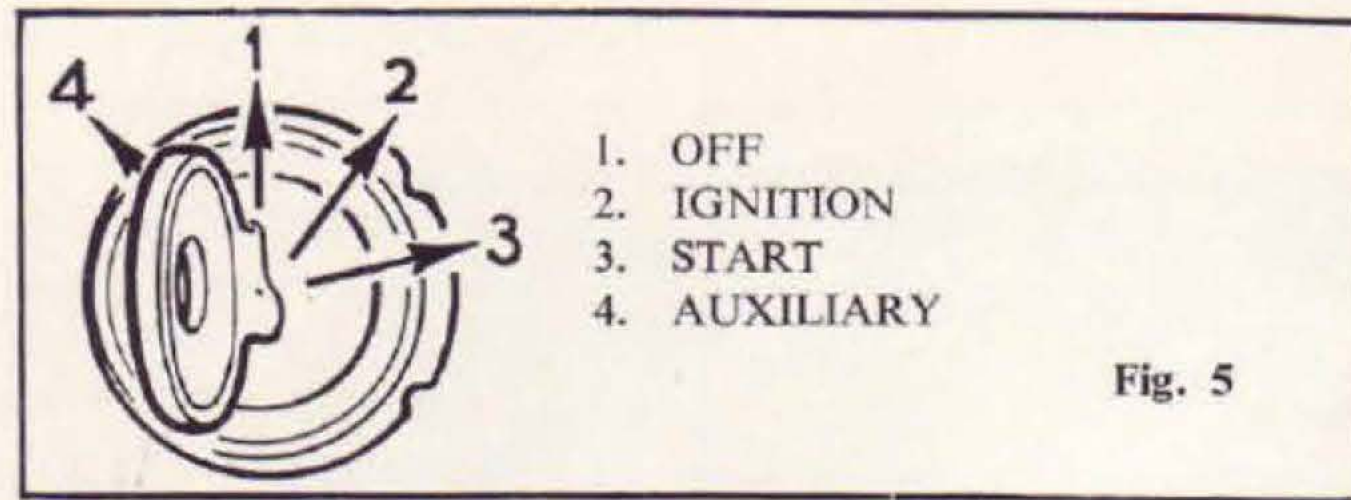
Pull the switch knob to operate, and push to switch off, when the wipers will automatically return to the parked position at the base of the windscreen. The wipers can only be operated when the ignition switch is turned to the "ignition" or auxiliary positions.

Ignition and Starter Switch (27)

Operated by a separate key, the combined ignition and starter switch has four positions. These are: 1, "Off", in which position the key may be withdrawn; 2, "Ignition"; 3, Start; 4, Auxiliary. (See Fig. 5.)

With the key in the "Off" position (vertical), turn the key clockwise to switch on the ignition and auxiliary circuits.

SWITCHES AND CONTROLS



To operate the starter motor, turn the key further clockwise against spring pressure and when the engine fires, release the key, which will return to the "Ignition" position. If the engine has failed to start, wait until the starter motor has come to rest before returning the key to the "Start" position.

To select "Auxiliary" turn the key anti-clockwise from the vertical position. This will enable, for example, the radio to be used with the ignition switched off and, since the key must be withdrawn from the switch to lock the vehicle, accessories cannot continue to function.

Choke Control (30)

The choke control is used to enrich the fuel mixture for easier starting from cold. The control should not be used if the engine is warm, and may not be necessary in warm climates. Full instructions for its use are given under "Starting" on page 13.

Tachometer and Speedometer Illumination (15)

Turn the switch knob clockwise to switch on, and further clockwise to dim the illumination. Turn fully anti-clockwise to switch off.

Headlamp Dipper Switch (16)

A foot operated dipper switch, located on the toe-board to the left of the clutch pedal, enables the driver to quickly lower his headlamp beams whilst maintaining full control of the steering and other hand controls.

When the headlamps are illuminated, see lighting switch on page 7, the main beams may be lowered by pressing the dipper switch and releasing it. To return to the main beam position, again press the dipper switch and release it. The main beam position is indicated by a red warning light near the bottom of the speedometer dial.

Horns (6)

Operate the horns by pressing the button in the centre of the steering wheel.

Overdrive Control (2)

When an overdrive is fitted, the control is mounted on the outboard side of the steering column cowl. Move the lever up to engage overdrive, and down to release it. Before using the control, see page 14.

Turn Signal Control (8)

The turn signal lamps are controlled by a lever mounted on the inboard side of the steering column cowl. Before making a right-hand turn, move the lever clockwise. Move it anti-clockwise before turning left. When either left- or right-hand turn signal lamps are operating, a green indicator light on the facia, flashes intermittently.

Clutch, Brake and Accelerator Pedals (17, 18 and 19)

These are conventional items which do not need further explanation.

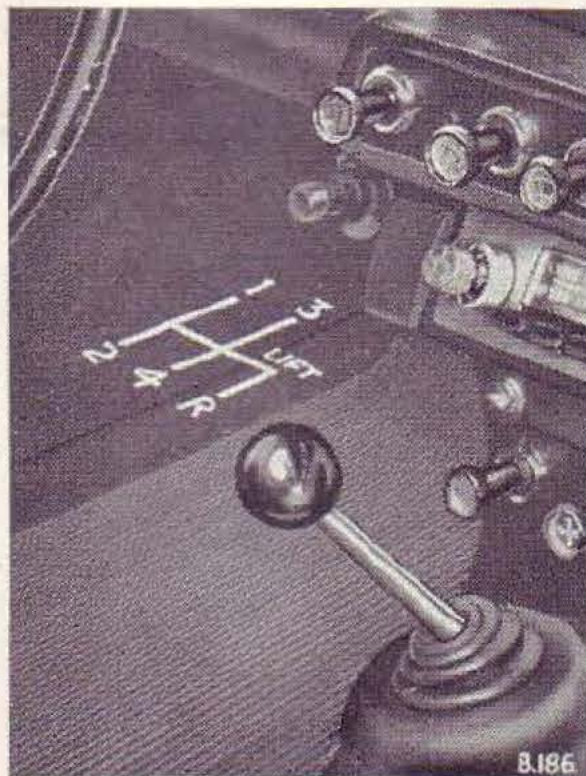


Fig. 6



Fig. 7

Gear Shift Lever (25)

All forward gears have synchromesh engagement. See Fig. 6 for the gear shift positions. Reverse is engaged by moving the gear shift lever to the right, lifting it and then moving it rearwards.

Handbrake (28)

To apply the rear wheel brakes, pull the handbrake lever and retain it in position by pressing the button on top of the lever. Release the handbrake by pulling it slightly rearwards to free the pawl, then allow the lever to move forward to the "OFF" position.

Seat Adjustment (Fig. 7)

The driver's and passenger's seats are adjustable for leg reach by lifting the lever at the outer side of each seat and sliding the seat to the desired position, allowing the lever to re-engage in the nearest adjustment notch. The passenger's seat backrest hinges forward to provide access to the rear compartment. Do not forget to move the driver's seat forward before lowering or raising the "Soft Top". See page 46.

Radio Controls

For operating instructions see the radio leaflet provided with the set. This is protected against electrical damage by a 5 amp. fuse housed in the main lead union.

HEATING AND VENTILATION

HEATING AND VENTILATION

The heater is designed to heat and distribute incoming fresh air, or if dust and exhaust fumes are being admitted, the intake duct may be closed and the heater used to recirculate air already in the vehicle.

Fresh air is admitted to the heater duct through the open scuttle ventilator. This is opened by pulling the ventilator lever rearwards and closed by pushing it forwards.

When the scuttle ventilator is closed, air is drawn in through the open fascia vents and recirculated by the heater unit. The fascia vents are opened by turning the handwheel, at the side of each vent, forward.

When the scuttle ventilator is open, cool fresh air is blown out of the open fascia vents and may be directed up or down, or may be cut-off by adjusting the handwheel. There is no provision for heating the air blown from the fascia vents.

The degree of heat given out by the heater unit is controlled by the left-hand control on the heater control panel. Pull the control fully out for maximum heat, or push it fully in for cold. Intermediate positions give varying degrees of heat.

The blower switch on the centre of the panel controls a motor-driven fan which stimulates the flow of fresh air from outside when the vehicle is stationary, and boosts the air circulation when the vehicle is moving. The blower is operated by pulling the control to switch on, and pushing it to switch off.

The distribution of warmed air is effected by the right-hand control. Pulling the control fully out directs air to the interior of the vehicle. Pushing the control fully in directs air to the windscreen only. Intermediate positions direct air to the screen and interior in varying proportions.



Fig. 8

LOCKS AND KEYS

Locks and Keys

Two sets of keys are provided. One key is used for operating the ignition switch and door locks, and the other for locking the facia locker and luggage compartment. **The spare set of keys is housed inside the rear lamp at the passenger side.** You are advised to record the key number for future reference, so that in the event of loss, replacement keys may be obtained without difficulty.

Facia Locker (Fig. 9)

The facia cubby box may be unlocked by turning the key a quarter turn clockwise and opened by depressing the locking barrel and pulling on the lipped plate.

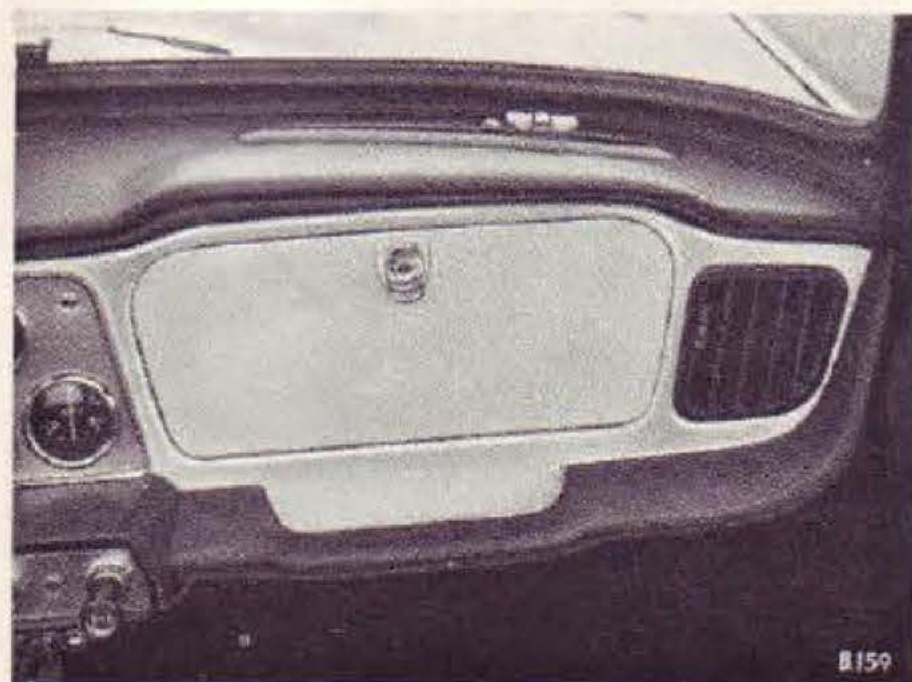


Fig. 9

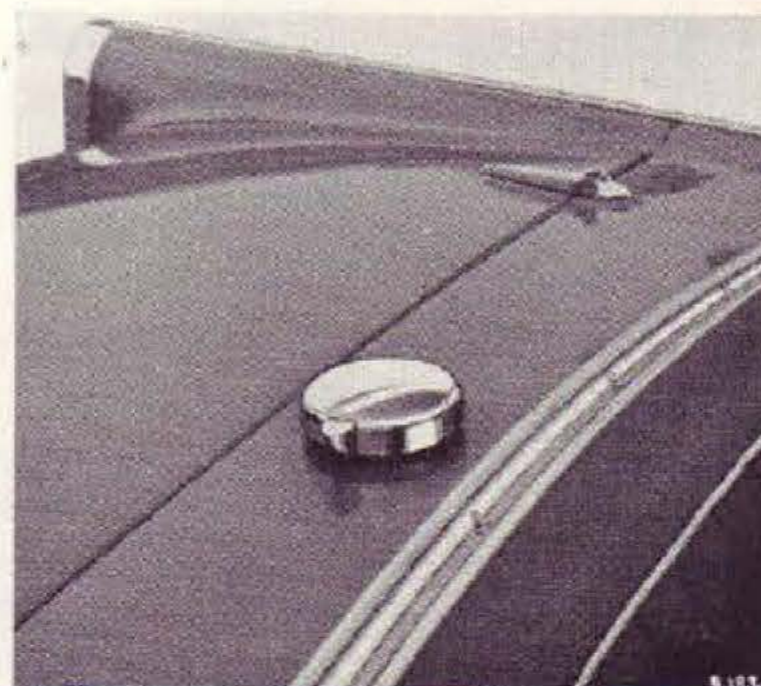


Fig. 10

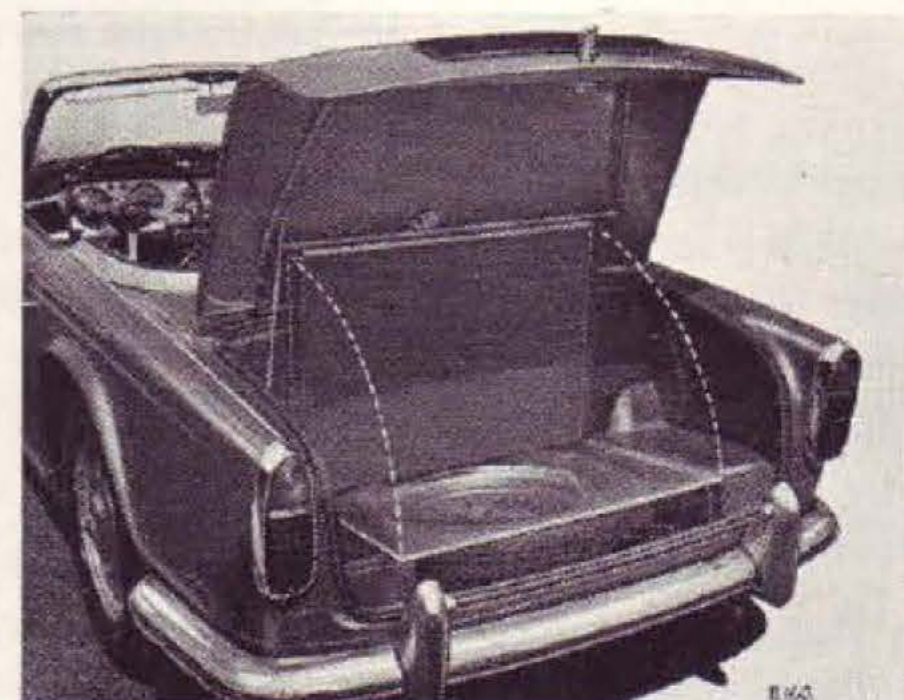


Fig. 11

Luggage Compartment (Fig. 11)

To open the luggage compartment lid, turn the unlocked handle counter-clockwise to a vertical position and raise the lid to its limit before engaging the stay in the slot provided.

To close the lid, raise it slightly to release the stay which can then be engaged in its rubber retainer on the boot lid support assembly. Lower the lid and turn the handle, which may be locked by turning the key a half turn counter-clockwise.

Fuel Filler Cap (Fig. 10)

The fuel filler cap, located forward of the luggage locker lid, is opened by depressing a small lever at the side of the cap. Press the cap to close.

LOCKS

Door Locks

Either door may be locked from inside or outside irrespective of which door was last used as an exit. The mechanism automatically prevents the inside handle being set in the locked position whilst the door is open. This eliminates the possibility of being locked out of the car in the event of the key being inadvertently left inside.

Interior Locking

To lock the door it must be closed first. Only then will the mechanism permit the inside handle to be moved forwards. The handle will automatically return to the normal position as soon as it is released.

IMPORTANT. Do not attempt to force the handle into the locked position whilst the door is open.

Exterior Locking

When leaving the car, move the door handle forward and leave the vehicle by the other door, which may then be locked by using the key as follows :—

Insert the key in the lock and turn it approximately a quarter turn towards the shut-face. The key will automatically return to the upright position from where it may be withdrawn.

When the doors are locked, pressure on the outside push buttons, which may be fully depressed, cannot force or damage the lock.

To Unlock

Re-enter from either door by inserting the key in the lock and turning it approximately a quarter turn away from the shut-face. The key will again automatically return to the upright position to enable it to be removed.

Lubrication

It will be beneficial, particularly during freezing weather, to introduce a few drops of thin machine oil into the latch slot and the lock key slots at intervals of not more than once a month.

IMPORTANT. Under no circumstances should grease be applied to the lock cylinders or keys.

Bonnet Release

To open the bonnet pull the control situated below the right-hand side of the facia. The bonnet will rise sufficiently to enable the fingers to be inserted under the rear edge to raise it to a near vertical position, where it will be supported by a stay. Disengage the stay from its recess before closing the bonnet.



Fig. 12

DRIVING FROM NEW

Starting the Engine from Cold

Check, and if necessary top up, the radiator water level and the engine oil level. If the car has not been used for several days and fuel has evaporated from the carburettors, refill them by operating the priming lever on the fuel pump. The slight resistance ceases when the float chambers are full.

Apply the handbrake and ensure that the gear lever is in "Neutral". Pull the choke control out to its stop and turn the key to the "ignition" position. The ignition warning light should then glow and the fuel gauge should register the contents of the fuel tank.

From the "ignition" position, turn the key clockwise against spring pressure to operate the starter motor. Immediately the engine fires, release the key, which will return to the "ignition" position. Should the engine fail to start at the first attempt, do not re-operate the starter switch until the starter motor has come to rest.

As soon as it starts, push the choke to the "half-in" position and warm the engine at a fairly fast idling speed of approximately 1,500 r.p.m. This will cause the ignition warning light to be extinguished, thus indicating that the generator is charging. The oil gauge should indicate the pressure of oil circulating. If the gauge remains at zero, stop the engine immediately and establish the cause. Failure to do so may result in serious damage to the engine.

Cylinder wear is minimized if the engine is warmed up quickly by driving away as soon as oil is circulating after starting the engine. Do not race the engine to speed up the process but, if possible, maintain a speed of approximately 25 m.p.h. until the choke can be pushed fully in. In warm climates, use of the choke may be unnecessary. Avoid the use of full throttle during the warming-up period. A thermostat incorporated in the cooling system enables the engine to be warmed up quickly from cold.

Starting with the Engine Warm or Hot

When re-starting a hot engine, depress the accelerator pedal to about one-third of its travel before operating the starter switch. The choke control should not be used.

Running-in

The importance of correct running-in cannot be too strongly emphasized, for during the first 500 miles of motoring, the working surfaces of a new engine are bedding down.

During this period the valve seats stabilise, causing in some instances, slight distortion and preventing proper seating of a valve. Avoid possible damage resulting from such a condition, by having the compression pressures checked early in the life of the engine after "running-in" is completed. If the pressures are unequal, valve grinding is recommended.

Further attention to the valves should not then be required for a considerable mileage, or until the pressures have again become unequal.

DRIVING FROM NEW

Whilst no specific speeds are recommended during the running-in period, avoid placing heavy loads upon the engine, such as using full throttle at low speeds or when the engine is cold. Running-in should be progressive and no harm will result from the engine being allowed to "rev." fairly fast provided that it is thoroughly warm and not pulling hard. Always select a lower gear if necessary to relieve the engine of load.

Full power should not be used until at least 500 miles have been covered and even then, it should be used only for short periods at a time. These periods can be extended as the engine becomes more responsive. After 1,000 miles running, the engine can be considered as fully run-in.

Recommended Speed Limits

Avoid over-revving, particularly in the lower gears. The driver is advised not to drive the car continuously at engine speeds above 4,500 r.p.m. in any gear. However, whilst accelerating through the gears it is permissible to attain 5,000 r.p.m. for short periods, this speed being indicated by a red segment on the tachometer.

When an overdrive is fitted, do not change from overdrive to normal 3rd or 2nd gears at engine speed exceeding 4,000 r.p.m., otherwise damage may result from "over-revving".

Overdrive Unit (when fitted)

An overdrive unit serves as a convenient method of providing, at will, a lower overall gear ratio to reduce engine speed and wear, and to effect fuel economy.

The Laycock de Normanville overdrive unit incorporates an epicyclic gear train which is engaged, to give overdrive condition, by a cone clutch moving under the influence of the hydraulic pressure generated by a small piston pump. When pressure is released, via a control valve, the clutch is returned and held in direct drive by compression springs. A uni-directional roller clutch enables the change into, or out of, overdrive to be made when transmitting full power, without loss of road speed.

The hydraulic control valve is linked to an electro-magnetic solenoid which is operated, via a relay, by a two-position switch mounted on the steering column.

Greatest benefit will accrue from judicious use of the overdrive, the governing factor being that the vehicle continues to run easily without sign of engine labouring, combined with the minimum amount of throttle opening necessary to maintain this condition.

Suggested minimum engagement speeds are:—

Top gear	..	..	..	40 m.p.h.
Third gear	..	..	..	30 m.p.h.

Maximum disengagement speeds are:—

Top gear	..	..	..	85 m.p.h.
Third gear	..	..	..	61 m.p.h.
Second gear	..	..	..	45 m.p.h.

The above disengagement speeds correspond approximately to peak revs. in normal gear. Disengagement of the O/D at speeds higher than those stated may cause damage from "over-revving".

ROUTINE SERVICING

This section describes the lubrication and servicing requirements which are necessary to maintain the vehicle in good order and ensure trouble-free motoring. All points described should receive attention at the prescribed intervals.

Lubrication

When carrying out the following maintenance work, the importance of using only high grade lubricants is vitally important and cannot be over emphasised

Engine

Experience has revealed that bedding-in of engine components, particularly the piston rings, is incomplete at the end of 500 miles motoring. To facilitate running-in, engines of new cars contain a special running-in oil which should be retained until 1,000 miles have been completed. Draining the oil at an earlier period, delays the attainment of maximum compression and oil control. **The period for the free service has therefore been extended from 500 miles to 1,000 miles.**

Gearbox, Overdrive and Rear Axle

Rear axles, gearboxes and overdrive units fitted to new cars are filled with a special oil, formulated to give all necessary

protection to new gears. **This oil should not be drained** but may be topped up with any of the approved oils listed on page 54 and 55 against the appropriate unit.

These lubricants have maintained a high standard of quality over many years and are recommended only after extensive tests in collaboration with the oil companies concerned. In countries where these oils are unobtainable, use similar high grade oils having the same characteristics.

Avoid the use of cheaper lubricants which may result in excessive wear or premature breakdown and consequently may, in time, prove to be false economy.

Maintenance Voucher Scheme

If for any reason the owner cannot undertake the work, he is recommended to make full use of the maintenance voucher scheme developed especially for the car. Under this scheme, any Triumph Distributor or Dealer can be entrusted to carry out, for a low fixed charge, the work listed on the vouchers supplied with the car. When all the vouchers have been used, the owner can obtain a continuation book from his dealer.

ROUTINE SERVICING

DAILY ATTENTION

Engine

Prior to starting out on a long run, or every 250 miles, check the engine oil level after the engine has remained idle for at least 15 minutes and, if necessary, add oil until the level reaches the high mark on the dipstick.

Before checking the level, make sure that the car is standing on level ground. The dipstick (1) may then be withdrawn, wiped clean and pushed fully home before withdrawing it for reading. Should the level be at the lower mark on the dipstick, 4 pints (4.8 U.S.A.) will be required for topping up via the cap (3).

Radiator Water Level

Remove the radiator filler cap (2) and check the level of the coolant in the head tank. To avoid danger of scalding, if the engine is hot, exercise extreme care when removing the filler cap. Turn it a half-turn and allow pressure to be fully released before completely removing the cap.

Top up the radiator with clean rain water until the level is one inch below the filler neck. This will allow for expansion of the coolant as the engine warms up and is particularly important if an anti-freeze mixture is being used, since the expansion allowance will prevent unnecessary loss of fluid and consequent dilution as further topping up takes place.

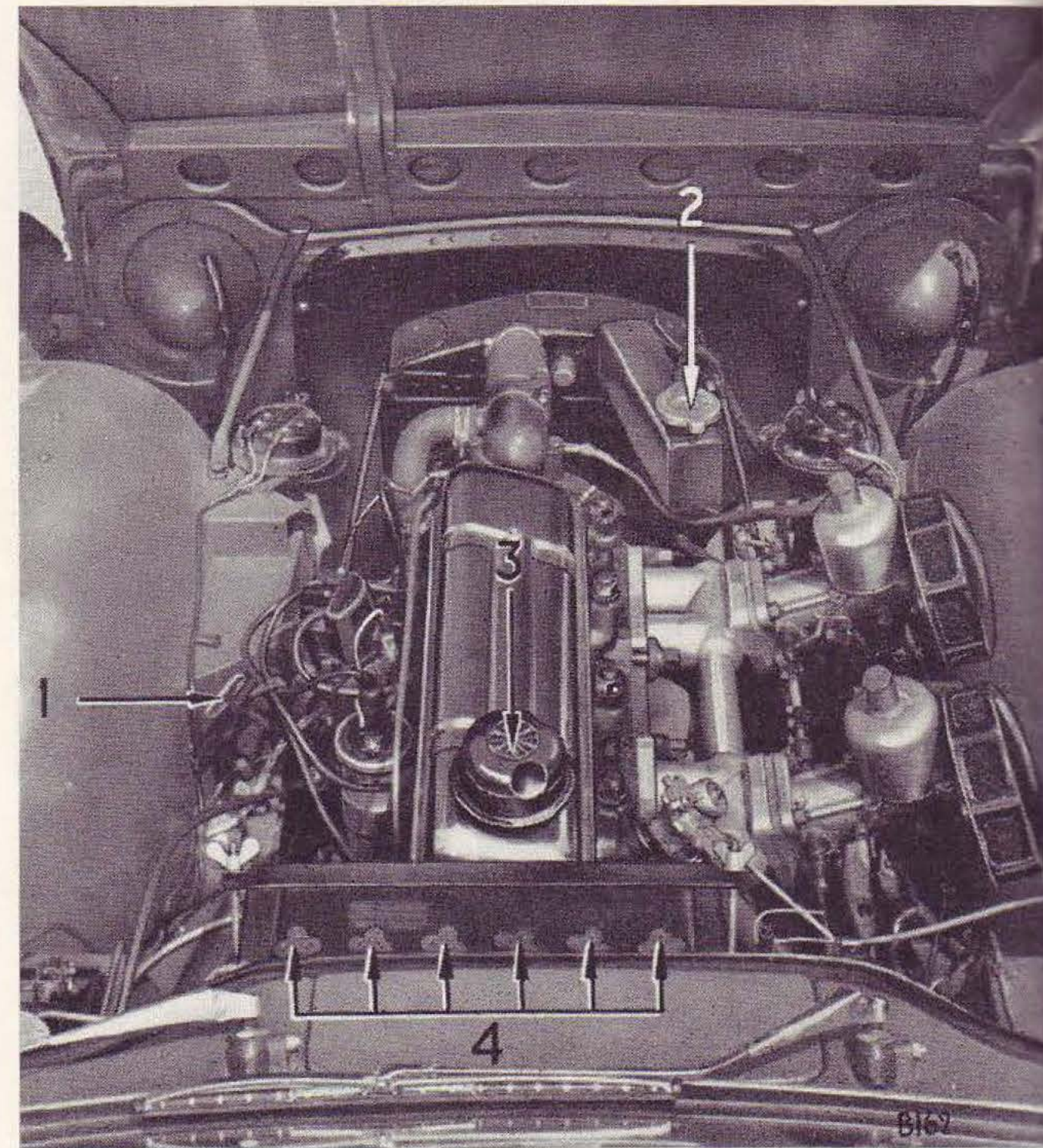


Fig. 13

WEEKLY ATTENTION

In addition to daily attention, carry out the following :—

Tyres

The maintenance of correct tyre pressure is an important factor governing tyre life, steering behaviour and suspension. Air losses due to diffusion may vary between 1 and 3 lbs. per sq. in. per week. It is, therefore, important that a check on tyre pressure is made weekly and the losses made good. Correct tyre pressures are given on page 62.

Adjust the pressures whilst the tyres are cold, *i.e.*, before a run. As the tyres warm up their pressures may increase as much as 5 to 6 lbs. per sq. in. depending upon the type of tyre and the severity of driving.

CAUTION. Never bleed a warm tyre to the recommended pressure.

Battery

Examine the level of the electrolyte in the cells and, if necessary, add distilled water via the plugs (4) Fig. 13, to bring the level up to the top of the separators.

The use of a Lucas Battery Filler will be found helpful when topping-up. Ensure that the Battery Filler is filled with distilled

water and insert it into a filler plug orifice until it rests gently on the separators. Sufficient water will pour into the cell to bring the electrolyte to its correct level. Check each cell in turn.

IMPORTANT.

Never use a naked light when examining the battery, as the mixture of oxygen and hydrogen given off by the battery can be dangerously explosive.

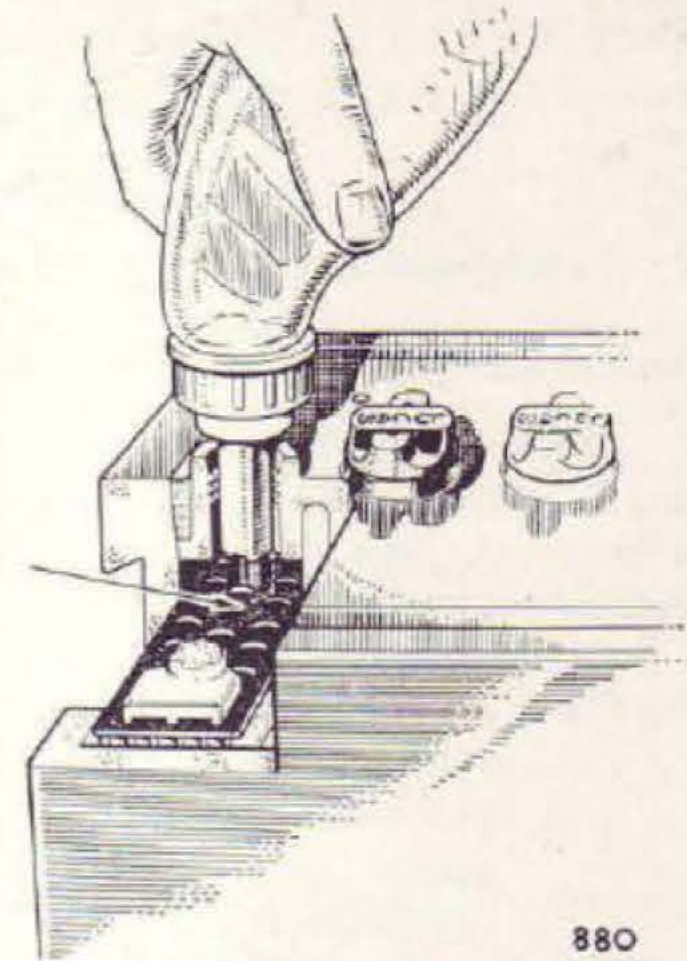


Fig. 14

Examine the battery terminals and, if necessary, clean and coat them with petroleum jelly. Wipe away any foreign matter or moisture from the top of the battery and ensure that the connections and fixings are clean and tight.

500 AND 3,000 MILE SERVICING

500 MILES

Many of the components, including gaskets, bolts and studs, inevitably settle down during the first few hundred miles of use. At the completion of 500 miles, the owner should, therefore, return the vehicle to his dealer, who will carry out the work listed on the back of the 500-mile voucher, free of charge, except for oil and grease.

3,000 MILES

In addition to the daily and weekly checks :—

Brake and Clutch Master Cylinders (Fig. 16)

Wipe the master cylinder caps clean, remove them and check the fluid level in the clutch and brake master cylinder reservoirs. If necessary, top up the fluid until it is level with the arrow on the side of the reservoirs.

NOTE. As the brake pads wear, the level of fluid in the master cylinder falls. The addition of fluid to compensate for pad wear is unnecessary. Should the level have fallen appreciably, check the condition of the pads. If their condition is satisfactory establish the cause of loss and rectify the defect immediately. Refer to Page 37, "Bleeding the Brake and Clutch Hydraulic System".

Propeller Shaft (Fig. 17)

Lubricate the splines and the bearing assembly at each end of the propeller shaft by forcing grease through the lubricators "A" and "B".

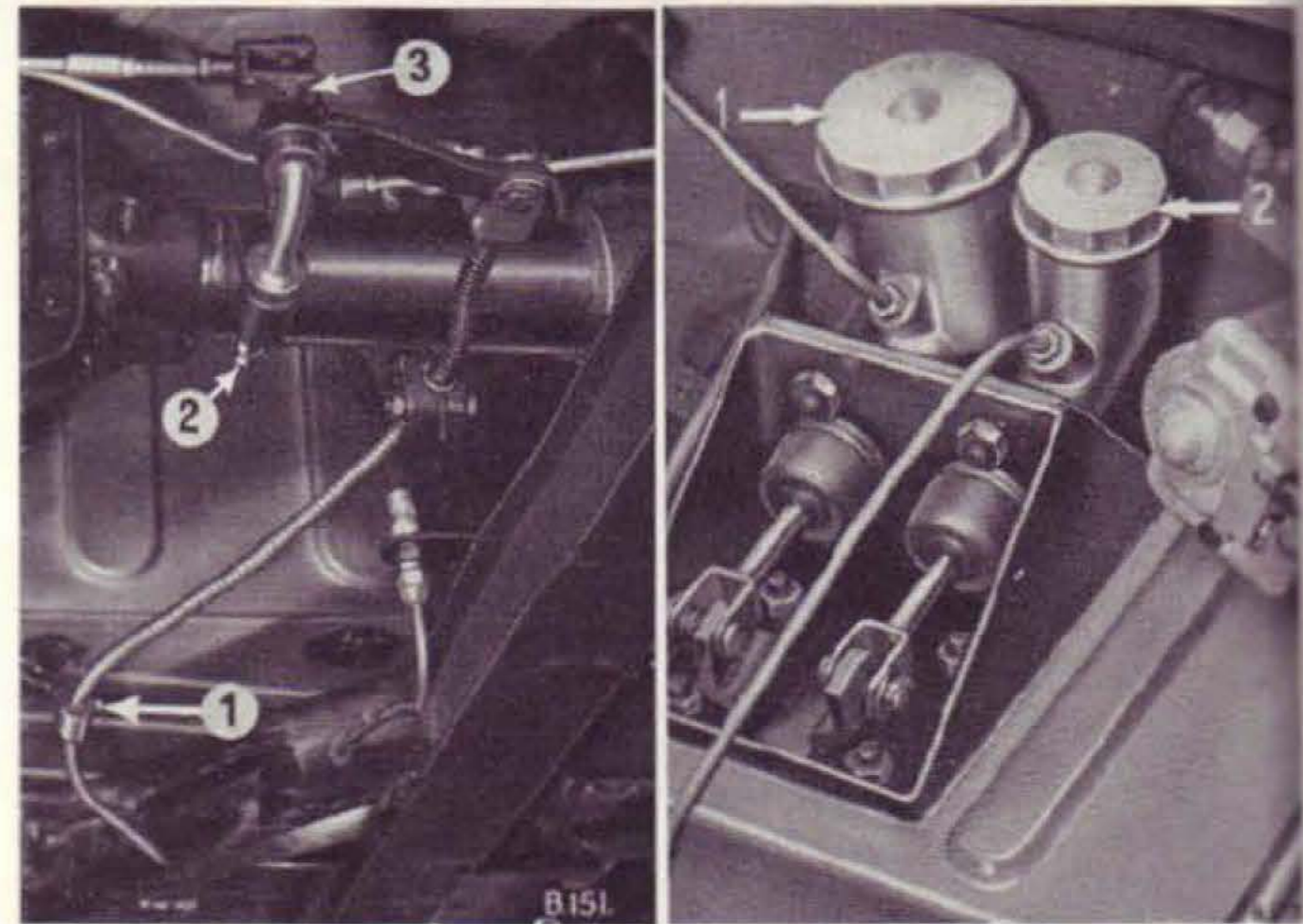


Fig. 15

Fig. 16

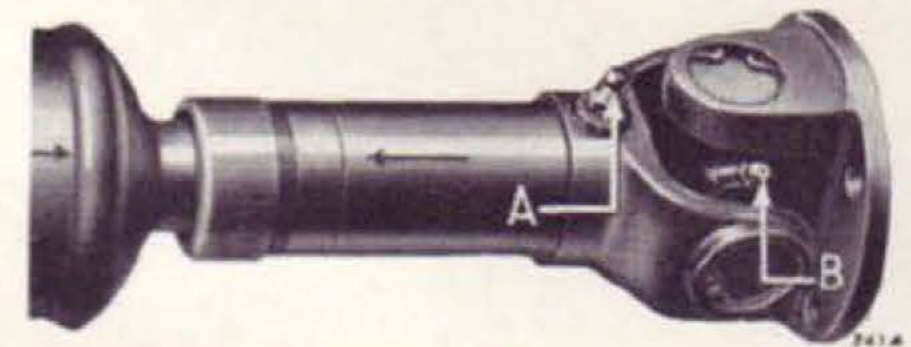


Fig. 17

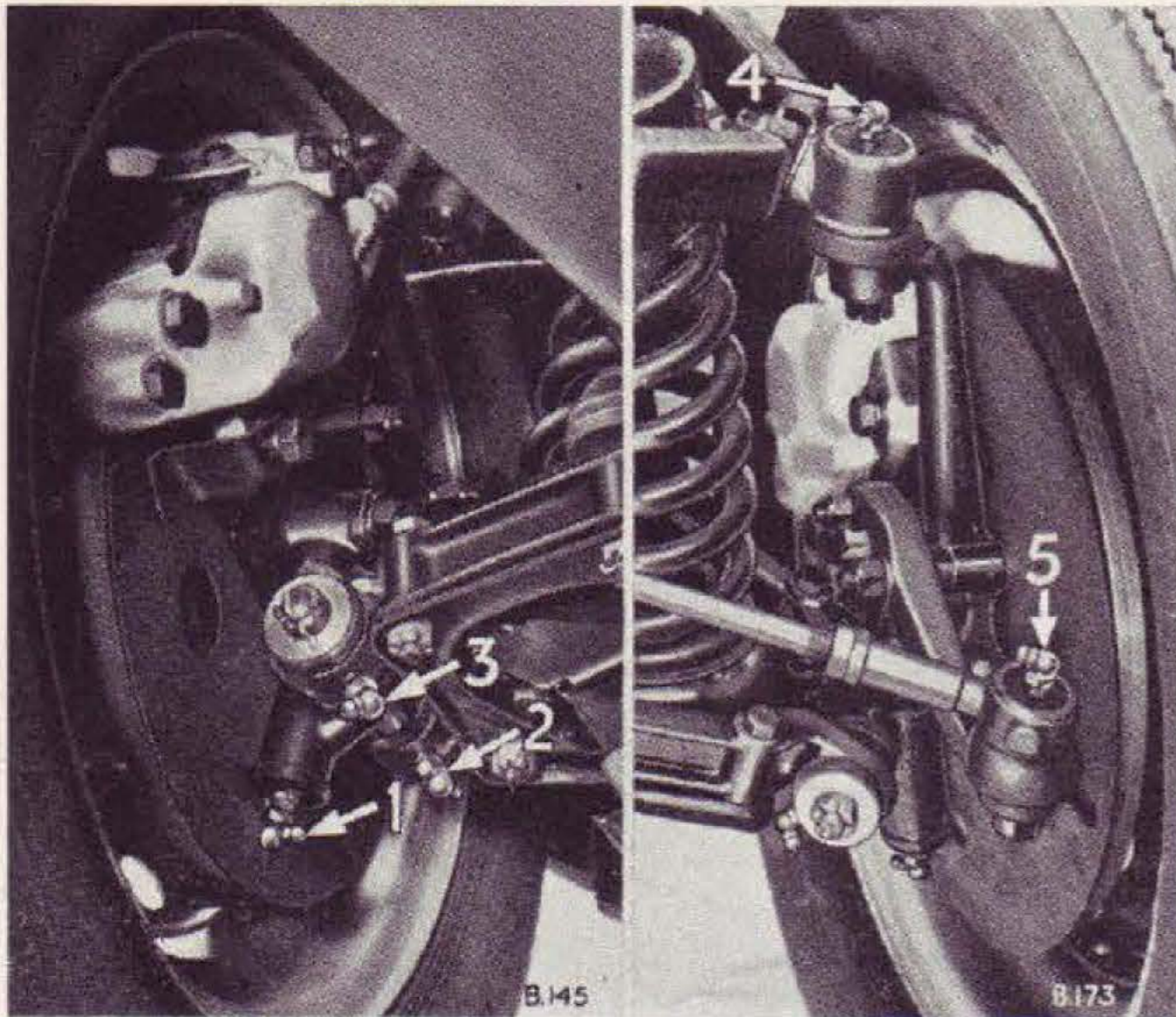


Fig. 18

Front Suspension and Steering Tie-Rods

Grease nipples 1 to 5, shown on Fig. 18, are provided at each side for lubricating the front suspension and steering tie-rods. Jack up the front of the chassis until the road wheels are clear of the ground and, using a high pressure grease gun, force good quality grease through the nipples.

The inner ends of the upper and lower wishbones are mounted on nylon bushes which sometimes develop a pronounced squeak when dry. This can be rectified by occasionally forcing each rubber dust seal to one side and injecting a few drops of thin oil.

After greasing, wipe away all surplus grease to prevent it from contaminating the disc brakes and tyres.

Clutch Cross Shaft Bearings

Inject a small amount of grease through a nipple located at each end of the clutch cross shaft and accessible from beneath the vehicle.

Clutch and Brake Pedal Bearings

Use an oil can to lubricate the clutch and brake pedal bearings and their linkages. These are accessible from within the driving compartment.

Handbrake Cable Conduit (Fig. 15)

Inject grease through a nipple (1) on the handbrake conduit until grease exudes from both ends of the conduit. During winter months, frequent greasing at this point will prevent water entry, and a frozen cable.

Handbrake Compensator (Fig. 15)

Inject grease through two nipples (2 and 3) on the handbrake compensator. Apply oil to all pivot pins.

3,000 MILE SERVICING

Clutch Adjustment (Fig. 19)

Check, and if necessary, adjust the clearance between the clutch operating piston and the push rod (2). The correct clearance is 0.1". To adjust:—

1. Slacken the nut (3) and unscrew the push rod (2) until all clearance between the push rod and the cupped end of the operating piston (inside slave cylinder) is taken up.
2. Adjust the position of the locknut (3) until a feeler gauge of 0.1" thickness may be inserted between the locknut face and the clevis fork (4).
3. Without disturbing the locknut on the push rod, screw the push rod into the clevis until the nut contacts the clevis face, then lock up the nut (3).

Front Brake Adjustment

The disc brakes, fitted to the front wheels are self-adjusting and need replacement shoe pads when the linings are reduced to approximately $\frac{1}{8}$ " thickness.

Rear Brake Adjustment (Fig. 20)

Each rear brake is provided with a small adjuster, (1), which is accessible when the road wheel is removed. To adjust the shoes, turn the adjuster clockwise until the shoes are hard against the drum; then slacken the adjuster by one notch increments until the drum is free to rotate.

Handbrake Adjustment

Adjustment of the rear brake shoes automatically re-adjusts the handbrake mechanism.

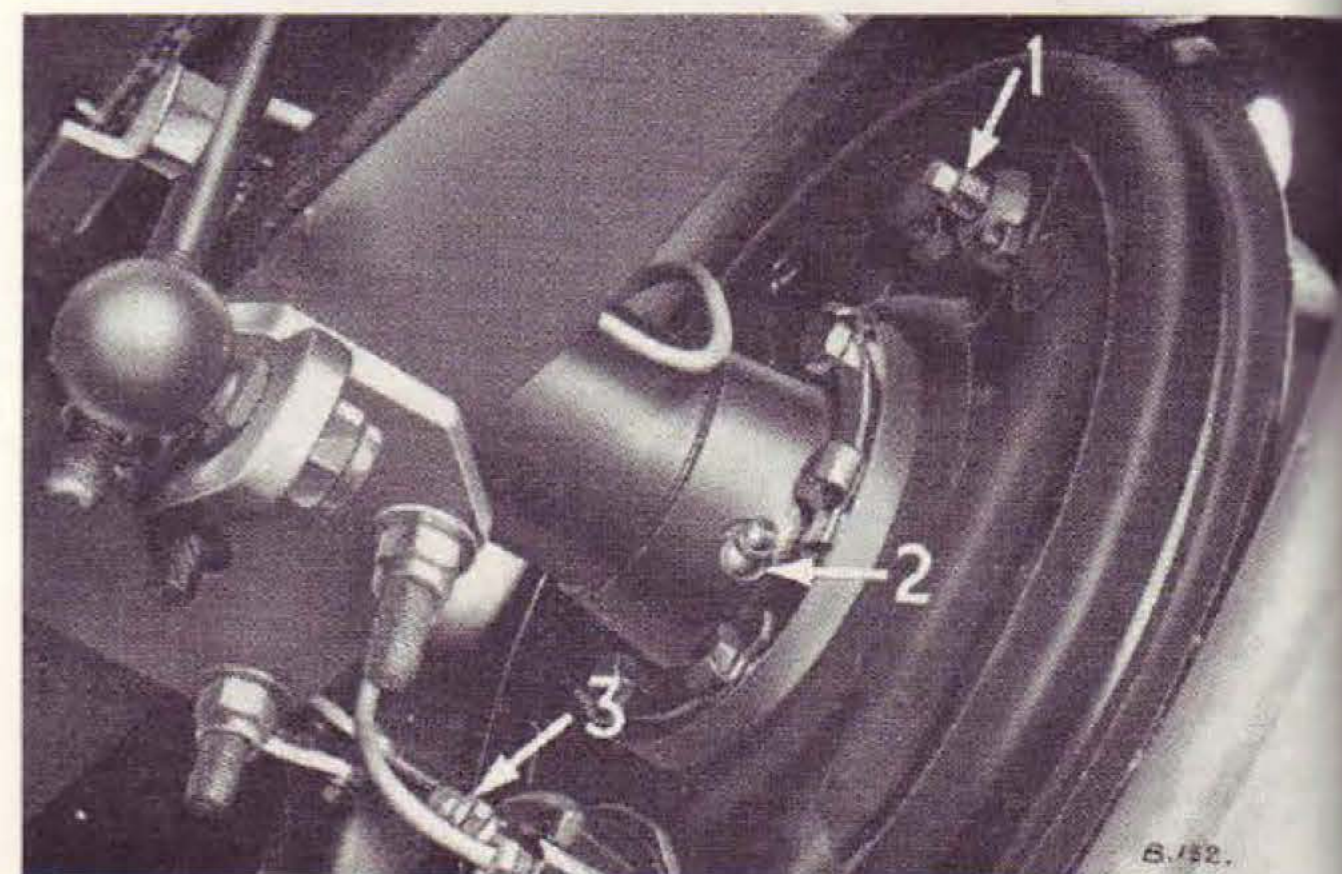
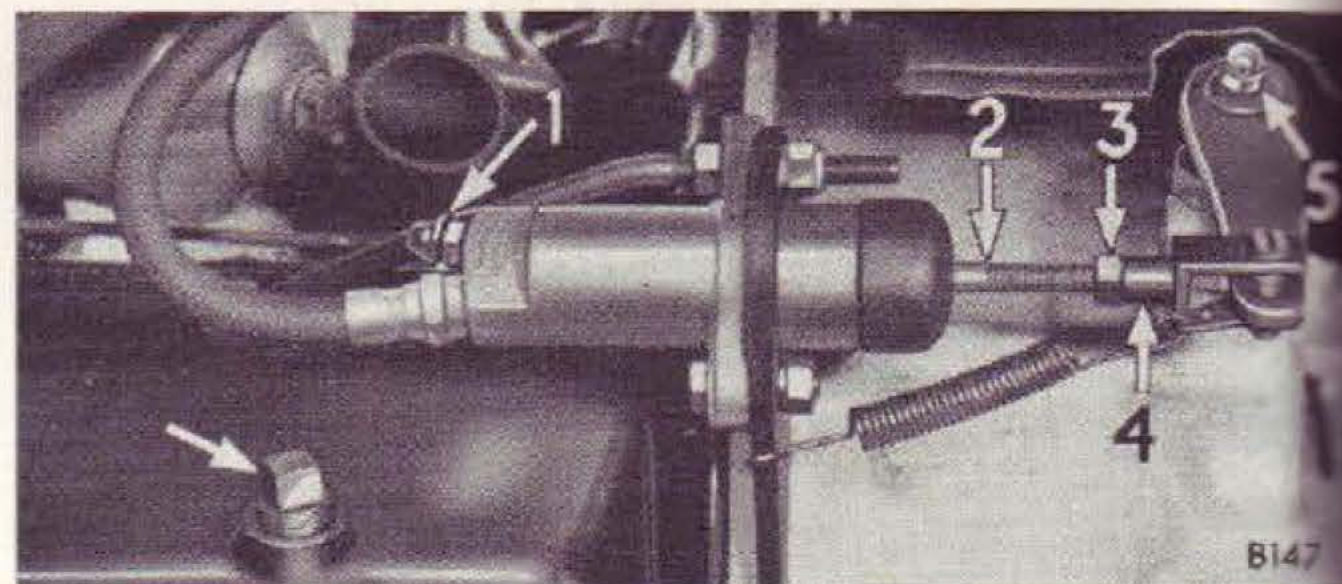


Fig. 19 (top)

Fig. 20 (bottom)

6,000 MILES

At 6,000 mile intervals, carry out the work listed under 3,000 miles, and the following additional work.

Change Engine Oil

For average driving conditions drain and refill the oil sump with the appropriate grade of oil at the end of each 6,000 mile period. Reduce this period for the following unfavourable conditions:

- (a) Frequent stop/start driving.
- (b) Short journeys during cold weather, especially when appreciable engine idling is involved.
- (c) Regular use of roads producing extreme dust.

If the vehicle is used for competition or sustained high speed work, use of higher viscosity oils is advised because of the increased oil temperature. Additives which dilute the oil or impair its efficiency must not be used.

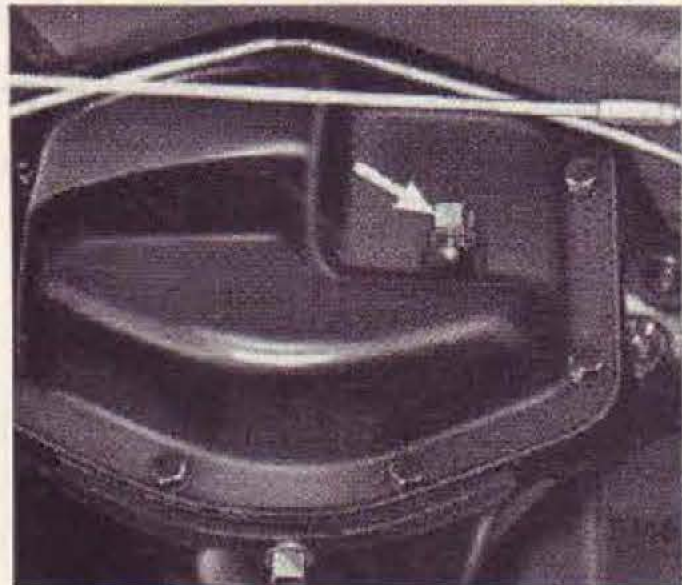


Fig. 21

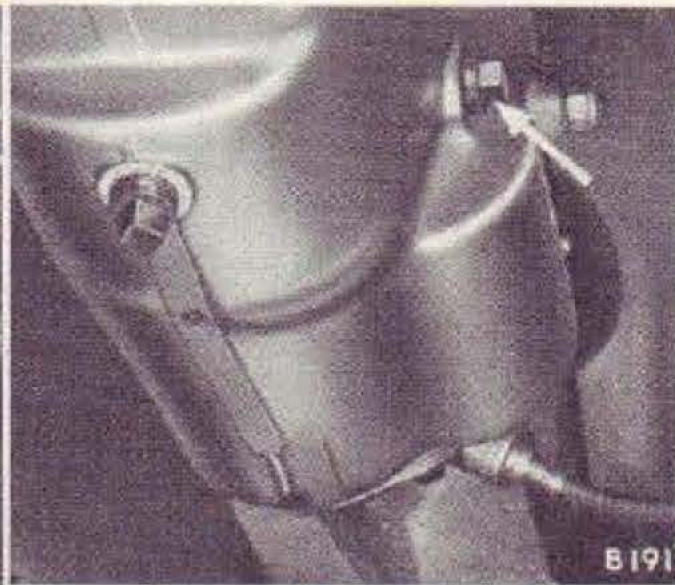


Fig. 22

Top-up Gearbox (Fig. 22)

With the vehicle standing on level ground, remove the oil level plug (shown arrowed) and, using a suitable dispenser such as a pump type oil can with flexible nozzle filled with an extreme pressure (Hypoid) lubricant, top up the gearbox until the oil is level with the bottom of the filler plug threads.

Allow surplus oil to drain away before refitting the level plug and wiping clean.

Top-up Rear Axle (Fig. 21)

Remove the oil level plug (shown arrowed) and, using the dispenser used for topping-up the gearbox, and the same oil, *i.e.*, extreme pressure (Hypoid) lubricant, top up the rear axle until the oil is level with the bottom of the filler plug threads.

Allow surplus oil to drain away before refitting the level plug and wiping clean.

Air Cleaners

Remove and wash the air cleaners in fuel. Soak the gauzes in engine oil and allow to drain before wiping them clean. When refitting the cleaners, ensure that the holes above the carburettor flange setscrew holes are correctly aligned with corresponding holes in the air cleaner and gaskets. (See Fig. 30.)

If the engine is operating under dusty conditions, clean the filters more frequently.

Oil Filler Cap (Fig. 13)

Remove and swill the cap (3) in fuel, allow to drain before refitting.

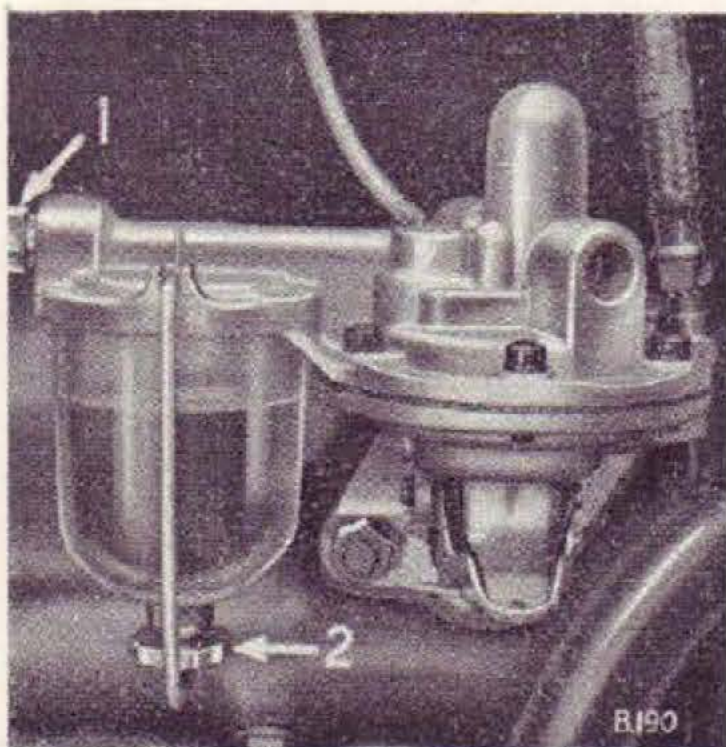
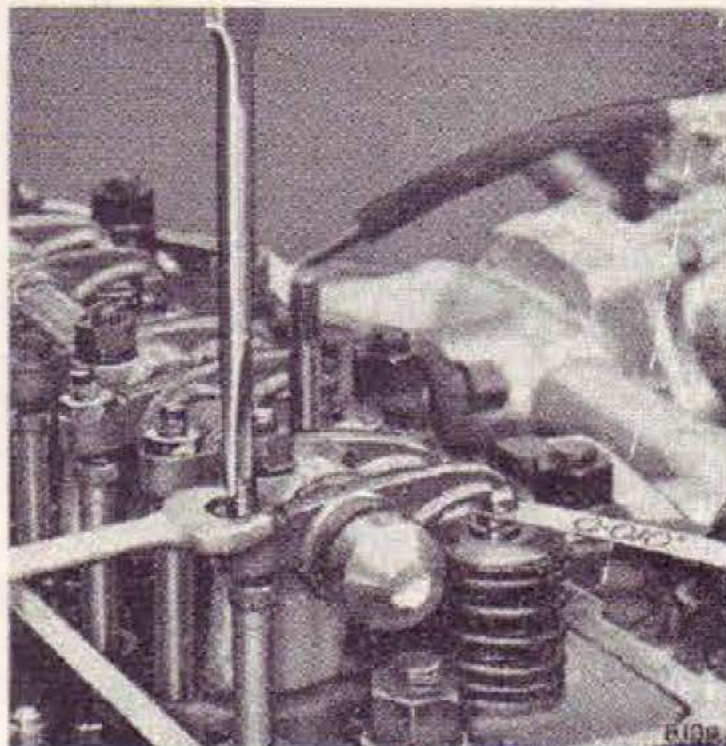


Fig. 23 (top)

Fig. 24 (bottom)

Oil Filter Element (Fig. 25)

To renew the element, unscrew the securing bolt "C", remove the container and withdraw the element. Wash the container to remove foreign matter trapped by the filter and discard the old washer "A", replacing it by a new one each time the element is renewed.

When re-assembling the container and a new element, ensure that the washer "A" is correctly positioned in its groove in the filter body. Do not tighten the bolt "C" more than is necessary to effect an oil-tight joint.

Before re-starting the engine make sure that the sump is filled to the correct level with clean fresh oil.

Fuel Pump Bowl (Fig. 24)

Clean the sediment bowl as follows :—

Disconnect the fuel pipe (1) from the suction side of the pump and to prevent loss of fuel, fit a tapered rubber or wood plug into the pipe bore ($\frac{1}{4}$ " I.D.). Alternatively, attach one end of a length of rubber tube over the end of the fuel pipe and tie the opposite end of the tube above fuel tank level.

Unscrew the stirrup nut (2) under the bowl, swing the stirrup to one side and remove the bowl. Swill out the sediment bowl and wipe it clean.

To avoid damaging the glass sediment bowl when refitting it, tighten the stirrup nut only sufficiently to ensure a fuel-tight joint. Re-connect the fuel pipe and prime the carburettors.

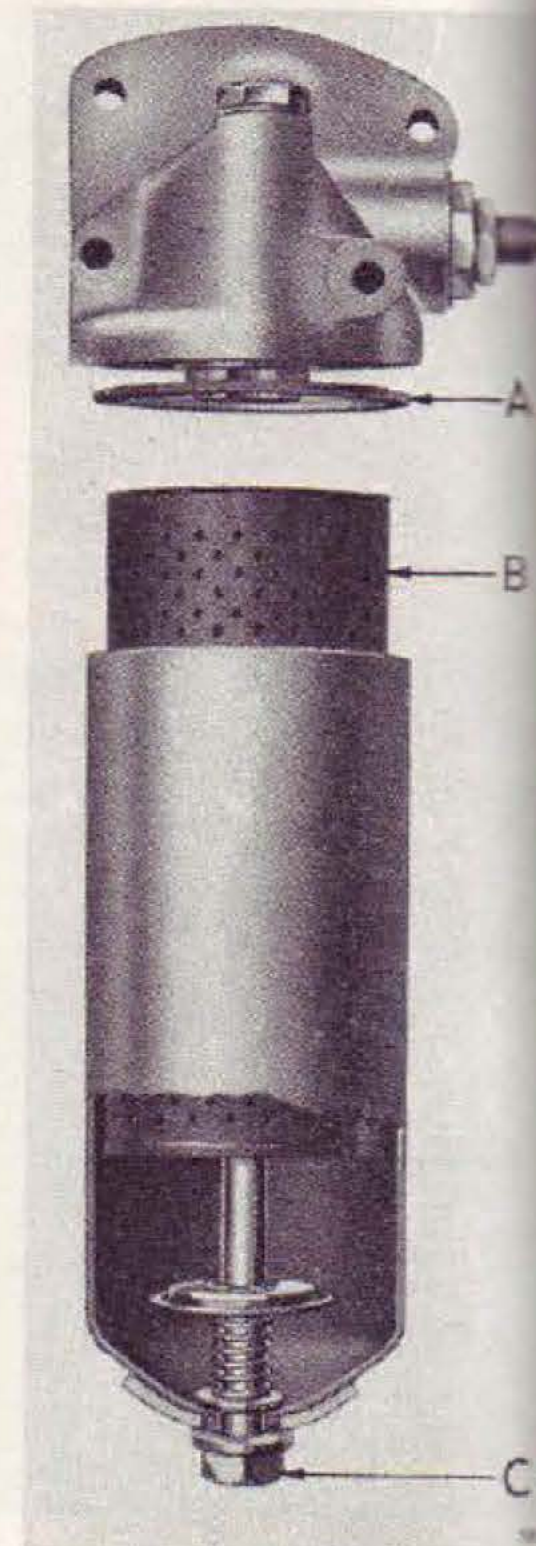


Fig. 25

Valve Rocker Clearances (Fig. 23)

Check and, if necessary, adjust the inlet and exhaust valve clearances to 0.010" when cold. These settings, which are correct for all operating conditions, are obtained as follows :—

1. Turn the crankshaft until No. 1 push rod has reached its highest point ; then rotate the crankshaft a further complete revolution.
2. To adjust No. 1 rocker, slacken the locknut and insert a 0.010" feeler gauge between the rocker and valve stem. Turn the adjuster with a screwdriver until slight resistance is felt as the gauge is moved across the valve stem ; then re-tighten the locknut.
3. After tightening the locknut, re-check the clearance and if satisfactory, deal with the remaining rockers in a similar manner, ensuring that each rocker is correctly positioned before attempting to adjust it.

Fan Belt Tension (Fig. 26)

The fan belt should be sufficiently tight to drive the generator without unduly loading the bearings.

Adjust the belt by slackening the adjusting bolt (5) and the generator pivots (3 and 4). Pivot the generator until the belt can be moved $\frac{3}{4}$ " to 1" at its longest run (6). Maintaining the generator in this position, securely tighten the adjusting bolt and the two pivots.

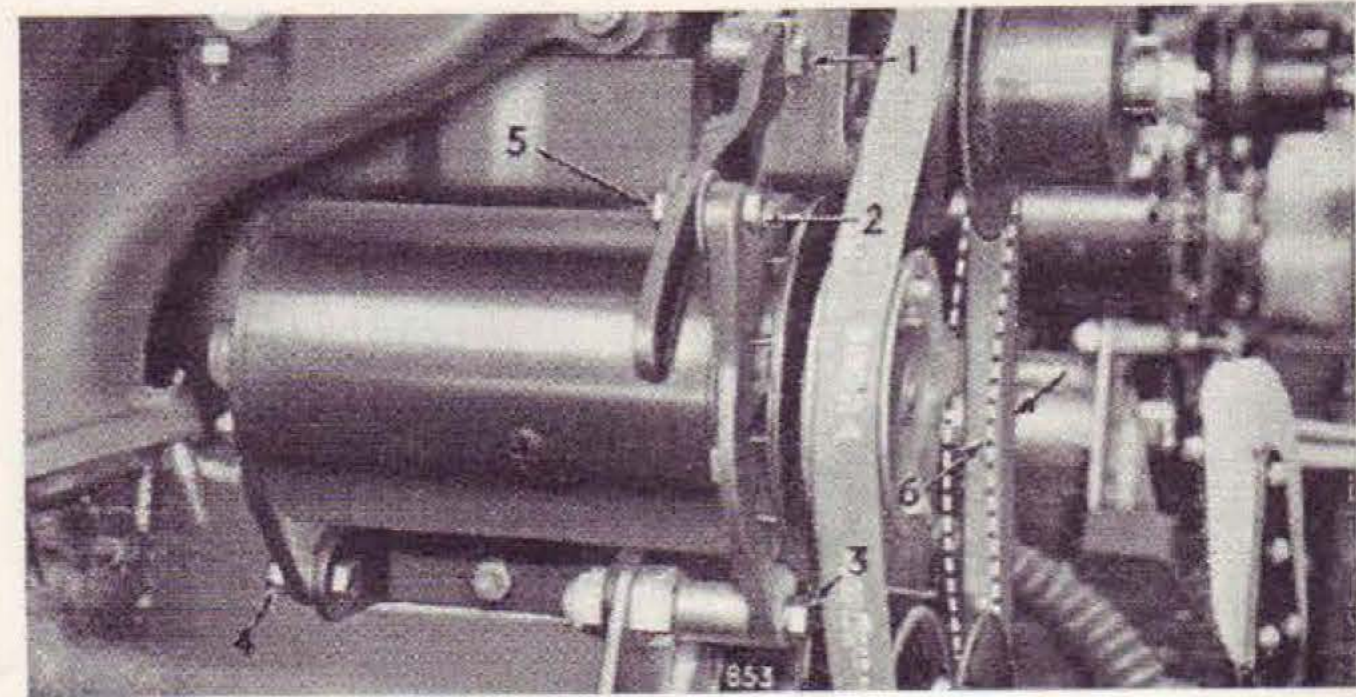


Fig. 26

Carburettor Dash Pots (Fig. 28)

Unscrew the hexagon plug from the top of each carburettor and withdraw the plug and damper assembly. Top up the damper chambers with the current grade of engine oil. The oil level is correct when, utilizing the damper as a dipstick, its threaded plug is $\frac{1}{4}$ " above the dash-pots when resistance is felt. Refit the damper and hexagonal plug. Using an oil can, apply oil to the throttle and choke control linkages.

Sparking Plugs

Remove the sparking plugs for cleaning and re-set the gaps to 0.025". Clean the ceramic insulators and examine them for cracks or other damage likely to cause "H.T." tracking. Test the plugs before re-fitting and renew those which are suspect.

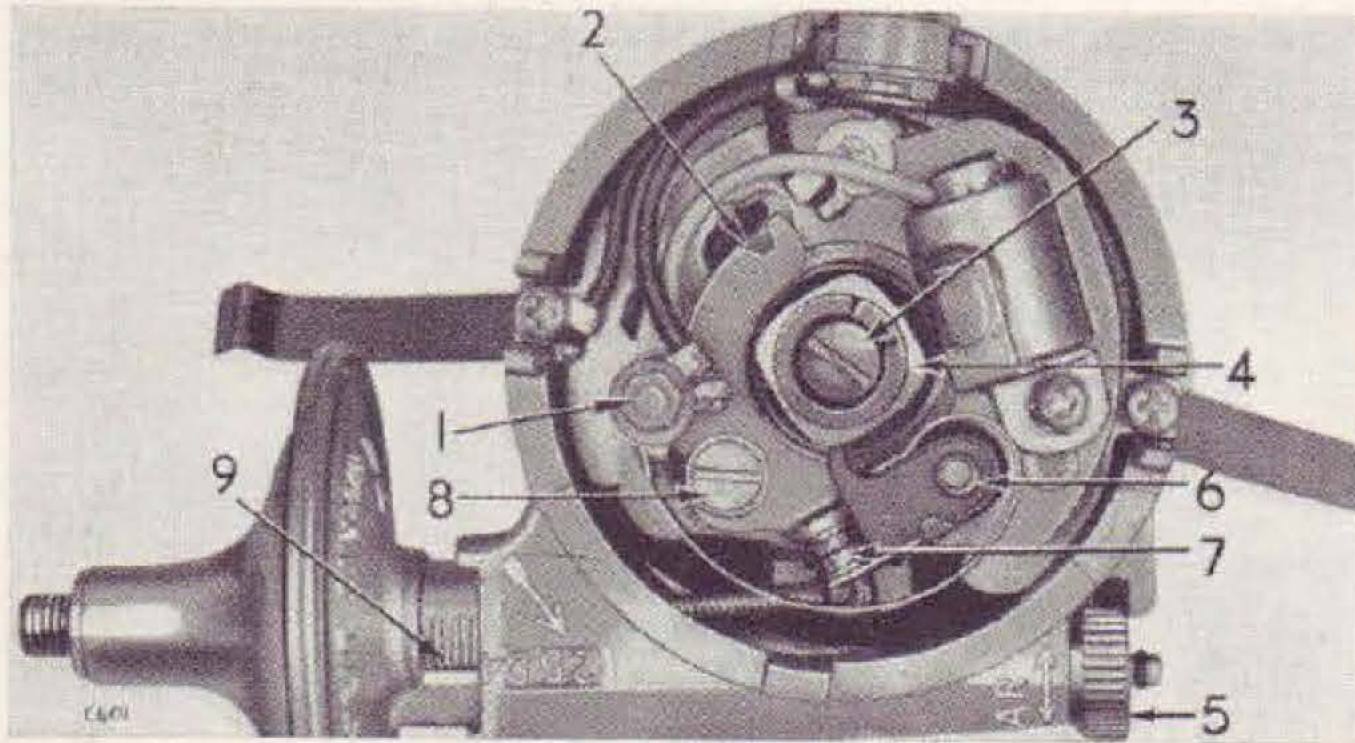


Fig. 27

Ignition Distributor (Fig. 27)

Release the clips and remove the distributor cap and rotor arm. Detach the contact breaker points and clean their contact faces with a fine carborundum stone. If all trace of pitting cannot be removed, fit new contacts. Using a small screwdriver in the slot (2), adjust the moving contact so that when the contact heel is on the peak of the cam a 0.015" feeler gauge may be inserted between the contact faces (7); then tighten the screw (8).

Apply a few drops of thin oil around the edge of the screw (3) to lubricate the cam bearings and distributor spindle. Place a single drop of clean engine oil on the pivot (6). Smear the cam (4) with engine oil. A squeak may occur when the cam is dry.

Refit the rotor arm and ensure that the distributor cap is clean and the central carbon brush is free in its housing. Refit the cap and secure it to the distributor.

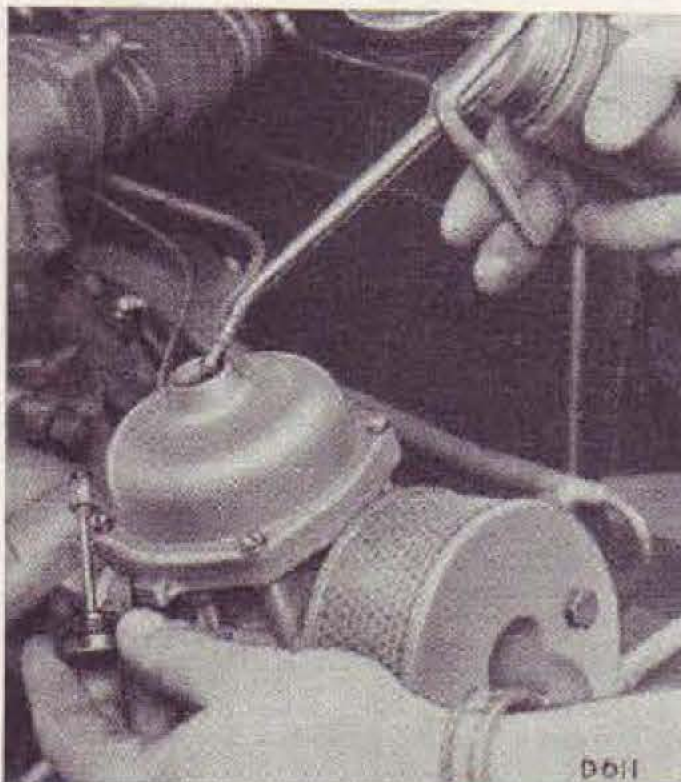


Fig. 28

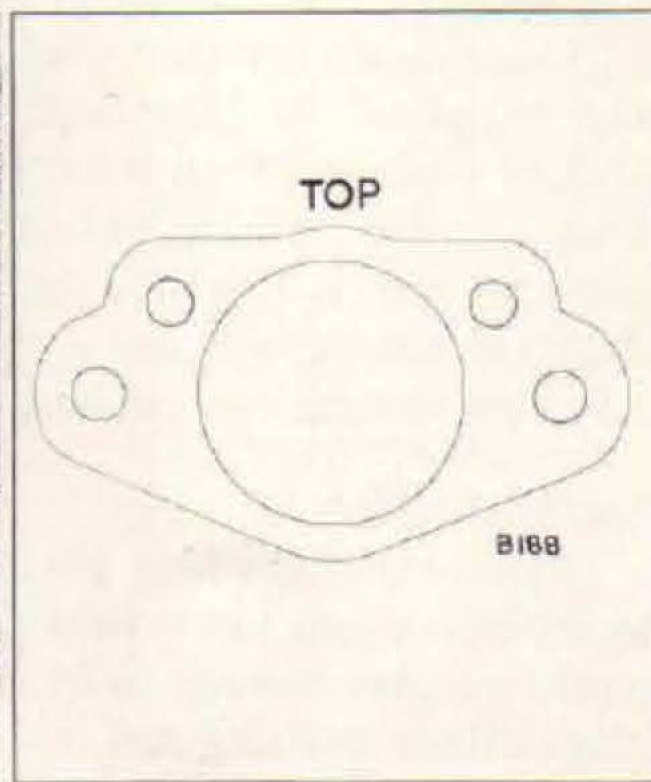


Fig. 29

Hinges, Catches and Controls

To enable the various hinges, catches and controls to work freely and prevent unnecessary wear, lubricate them occasionally with an oil can.

Chassis Attachments

Check the tightness of all bolts and nuts, particularly the front and rear suspension, the steering and the wheel nuts.

12,000 MILES

At 12,000 mile intervals, carry out the work listed under 6,000 miles, and the following additional work.

Front Hub Lubrication (Fig. 30)

If the car is being used for competition work, re-pack the front hubs with grease every 12,000 miles. This period may be extended to 24,000 miles for normal use.

To pack the hubs with grease :—

Jack up the front of the car and remove one front road wheel. Without disturbing the hydraulic pipe unions, unscrew the caliper securing bolts (1) and lift the caliper from the disc, tying it to a convenient point to prevent it hanging by the attached hydraulic pipe. Note the number of shims fitted between the caliper and vertical link.

When wire-spoked wheels are fitted, remove the splined hub extensions by detaching the nuts shown on Fig. 31.

Remove the hub grease cap, withdraw the split pin and remove the slotted nut and "D" washer. Detach the hub assembly and outer race from the stub axle. Wash all trace of grease from the hub and bearings. Pack the hub and bearings with new grease, working it well into the rollers.

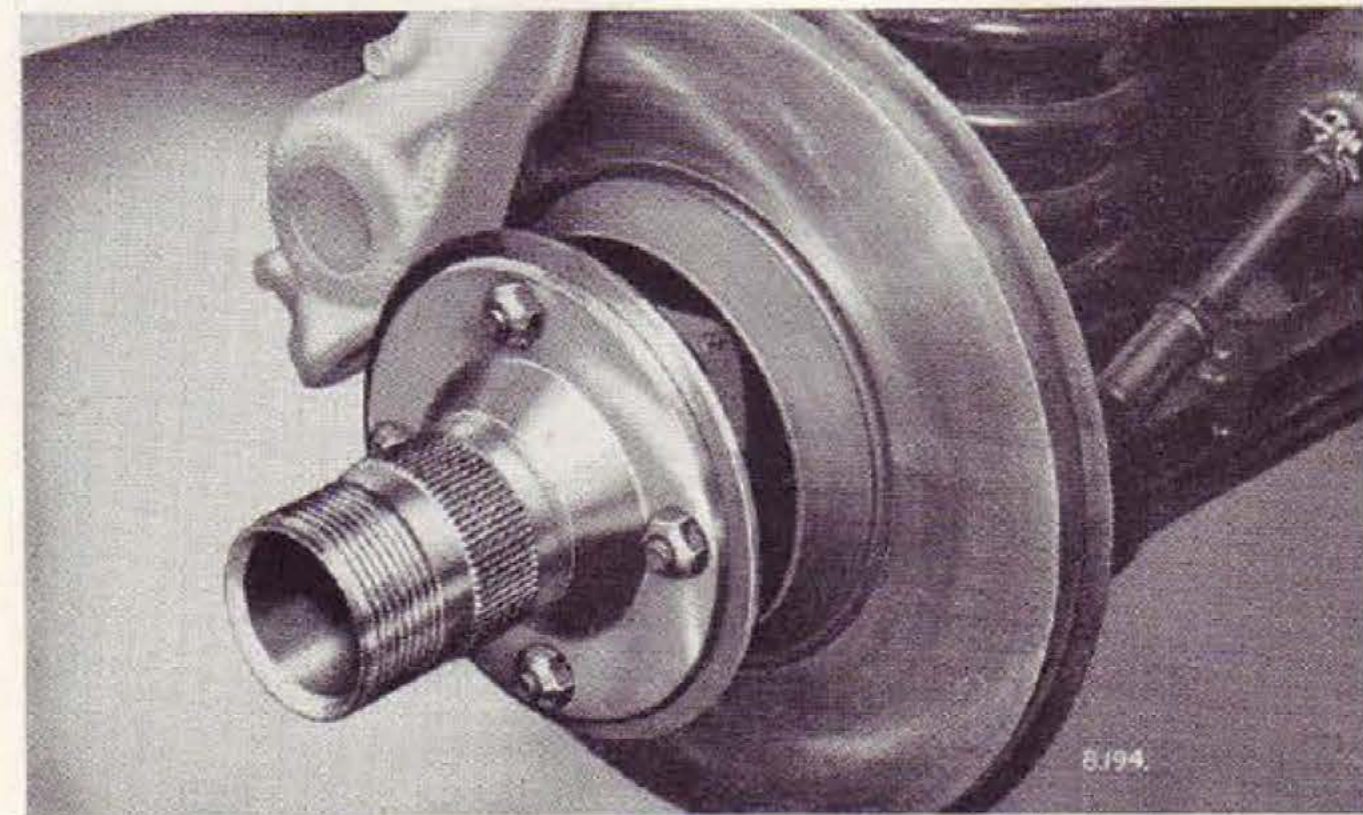
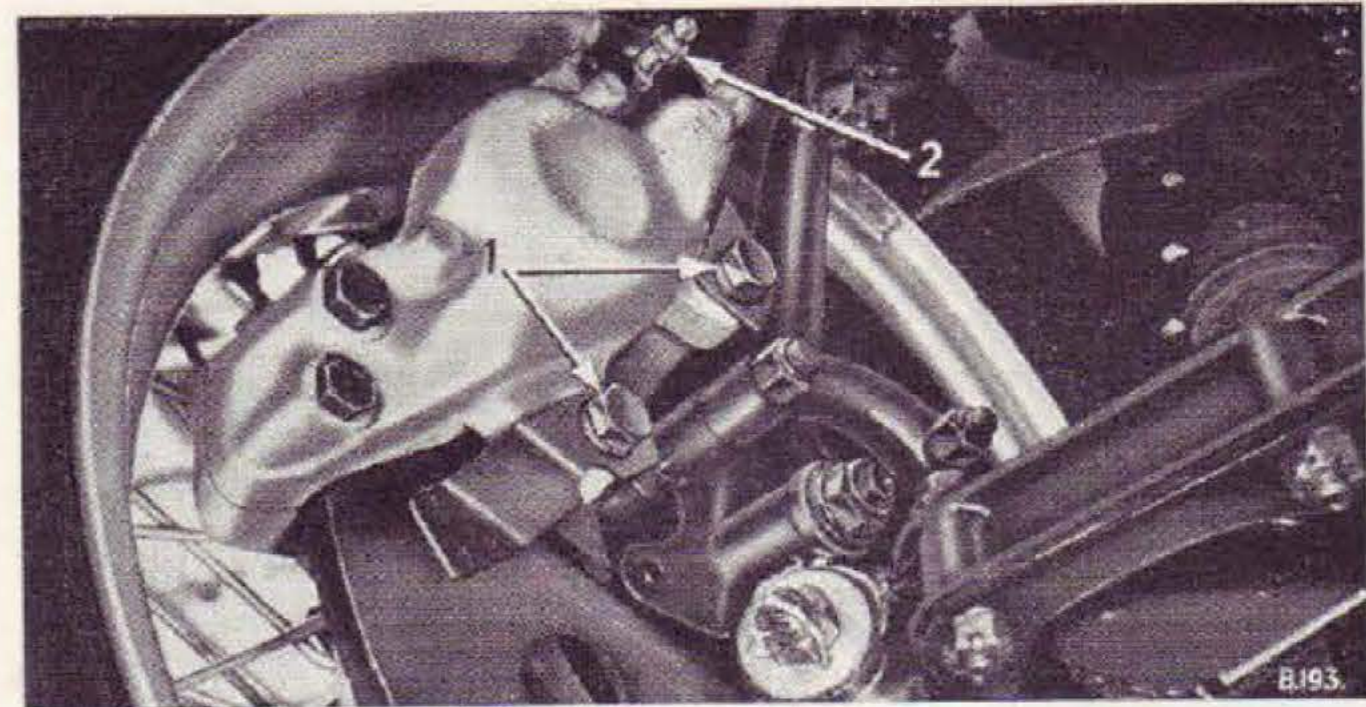


Fig. 30 (top)

Fig. 31 (bottom)

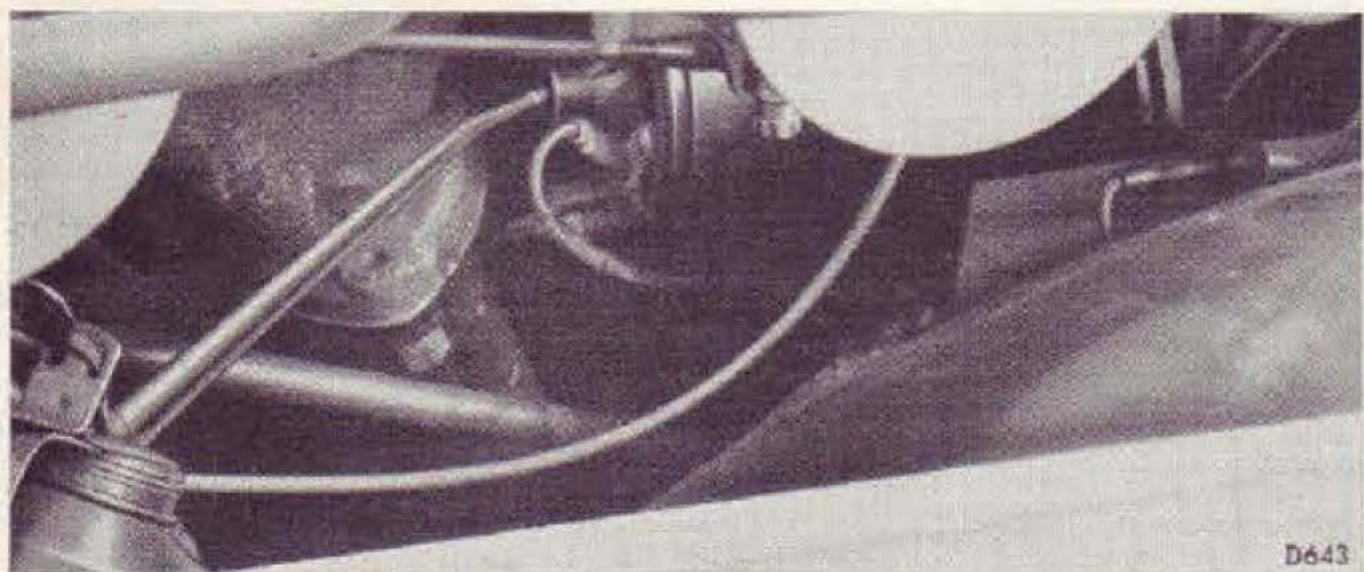
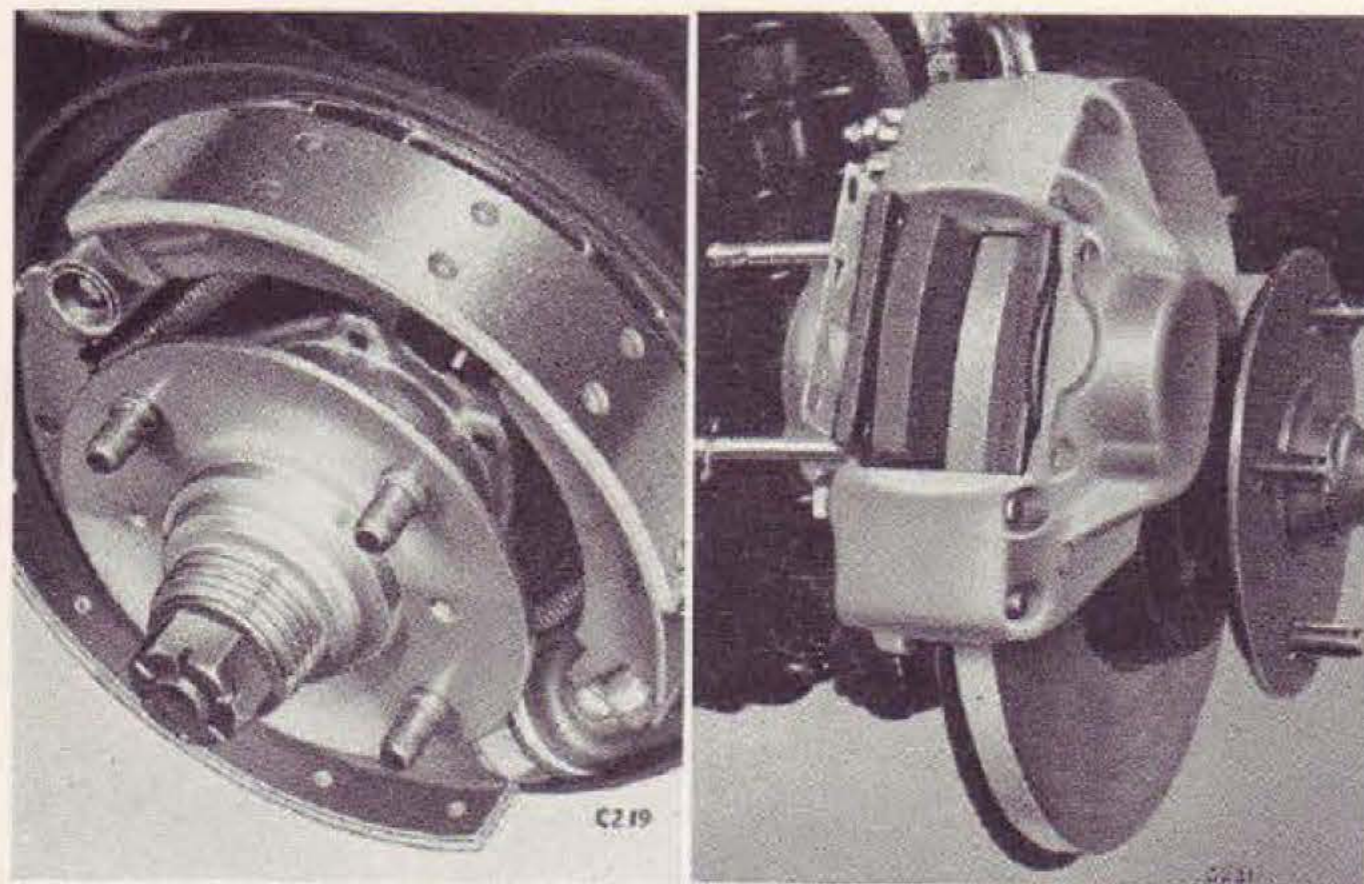


Fig. 32 (top left) Fig. 33 (top right) Fig. 34 (bottom)

Re-assemble the hub and races to the stub axle, securing them with the "D" washer and slotted nut. Spin the hub and tighten the nut until resistance is felt to hub rotation, then slacken off the nut one half flat and fit a new split pin. Re-assemble the brake caliper unit to the vertical link, refitting any shims removed during dismantling. Re-assemble the splined hub extension (if fitted). Refit the road wheel and lower the jack. See "Warning" on page 31.

Repeat the above operations with the opposite wheel hub.

De-dust Rear Brake Linings (Fig. 32)

Jack up the rear of the car and remove both road wheels and brake drums. Examine the brake linings for wear and freedom from oil or grease. Renew worn or contaminated linings.

Using a high pressure air line, or a foot pump, blow all loose dust from the mechanism and, using a clean dry cloth, wipe the dust from the inside of the drums. Avoid touching the braking surfaces with greasy hands.

Refit the brake drums and road wheels, re-adjust the brakes (see page 20) and remove the jack.

Rear Hub Bearings (Fig. 38)

Lubricate the rear hub bearings by applying the grease gun and giving 5 strokes to a nipple (2), situated behind the rear brake backing plate.

Steering Unit (Fig. 36)

Remove a sealing plug from the top of the steering unit and replace it by a grease nipple. Apply the grease gun and give 5 strokes only. Remove the nipple and refit the plug. Over greasing can cause damage to the rubber bellows.

Water Pump (Fig. 37)

Apply a grease gun to the grease nipple and inject grease until it exudes from a hole in the side of the pump.

Generator (Fig. 34)

Use an oil can to pour a few drops of engine oil through the hole in the centre of the rear end cap.

Sparking Plugs (Fig. 35)

Renew the sparking plugs at 12,000 miles. When replacing the plugs, make sure that they are the correct type and the gaps are set to 0.025". The types recommended are given on page 58.

Re-connect the plug leads as shown below.

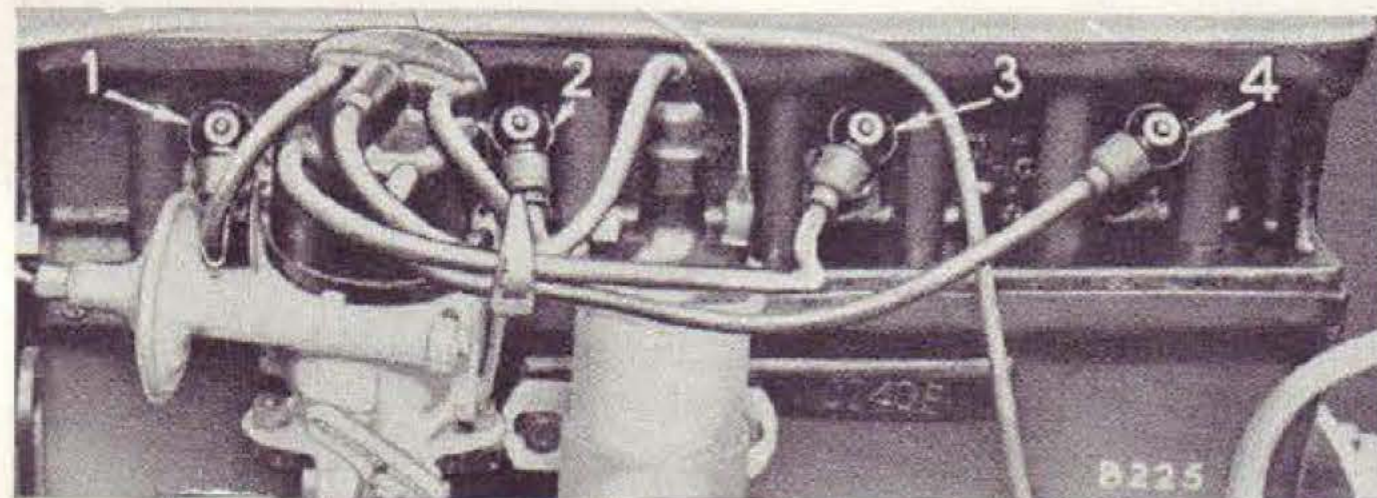


Fig. 35

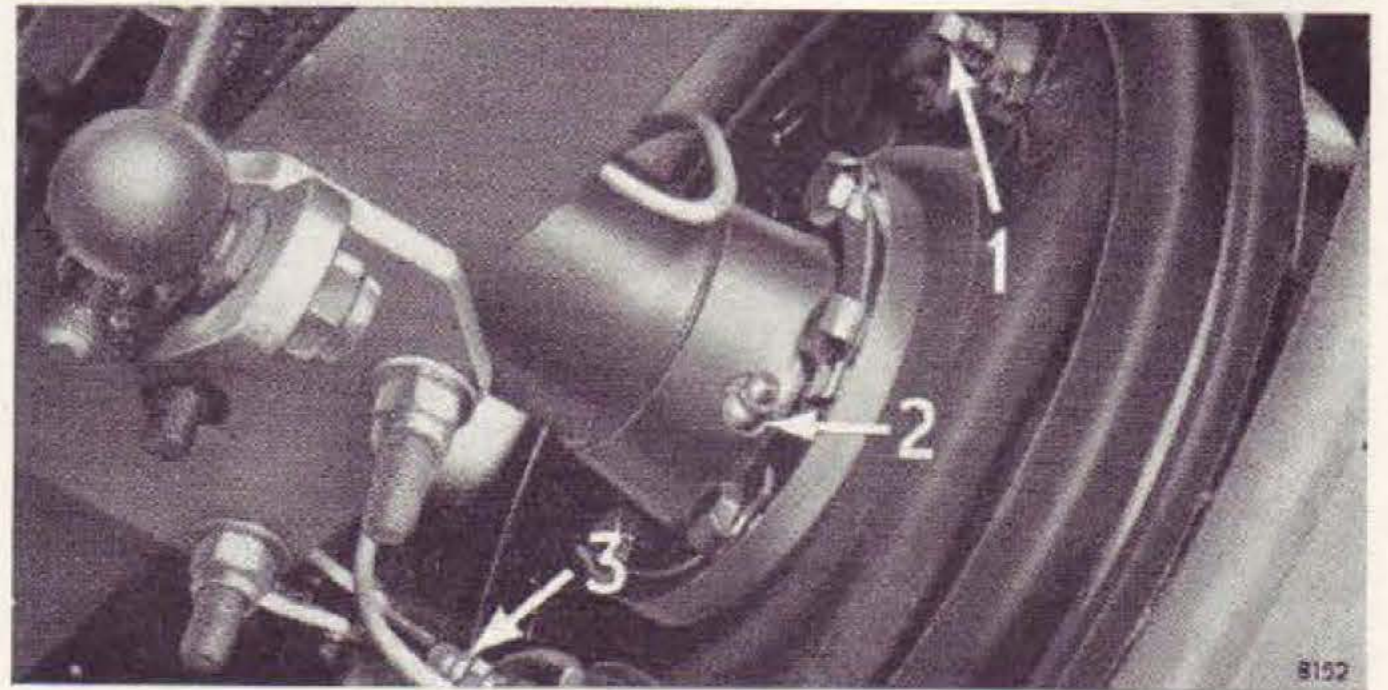
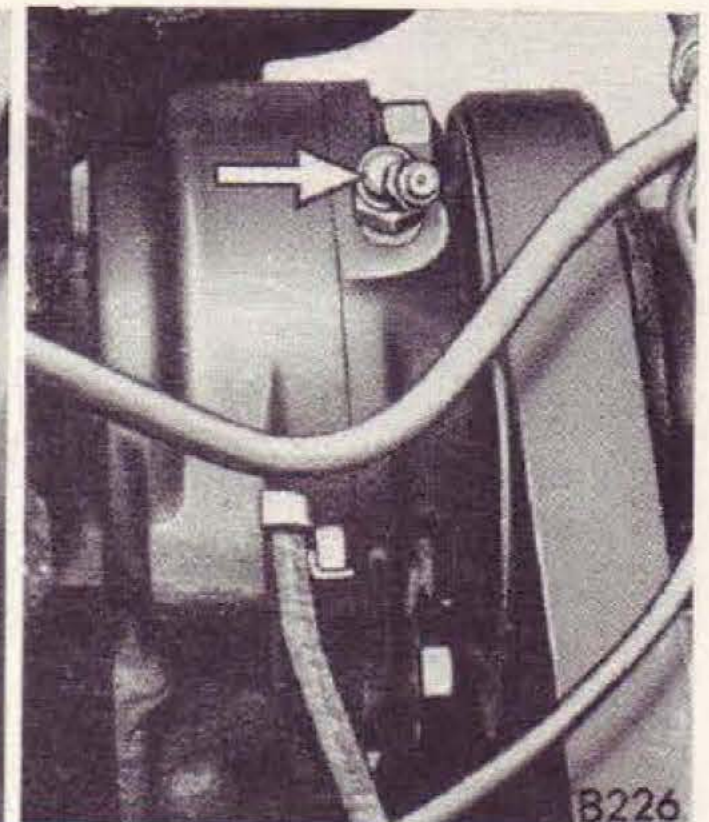
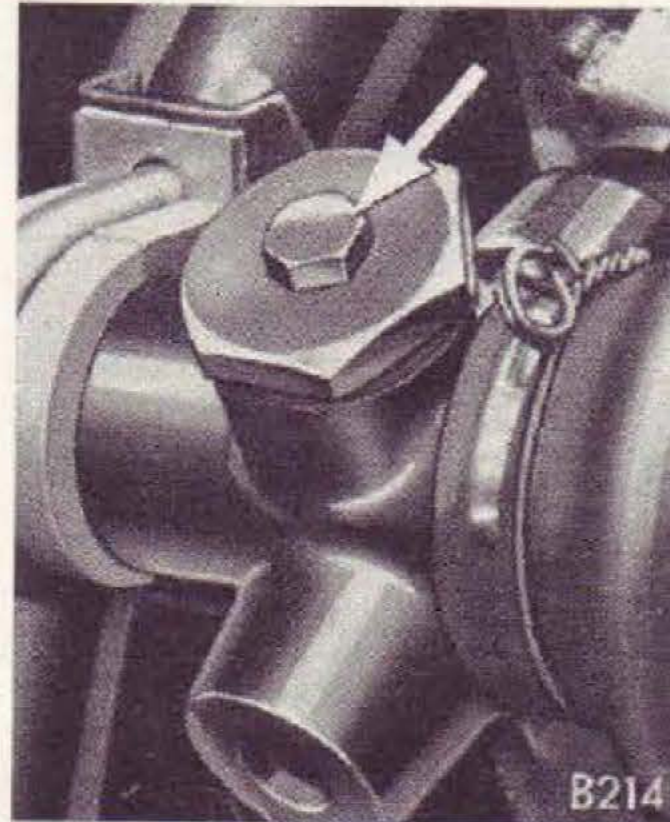


Fig. 36 (top left)

Fig. 37 (top right)

Fig. 38 (bottom)

COOLING SYSTEM

COOLING SYSTEM

Draining

Pull the heater control knob to the fully open position. Remove the radiator filler cap; open the tap in the bottom of the radiator (Fig. 39) and the tap at the rear right-hand side of the cylinder block (Fig. 40).

Flushing

Efficient cooling is maintained by thoroughly flushing the system once each year before adding anti-freeze. When carrying this out, it is advantageous to remove the drain tap completely and to use plenty of clean running water.

Allowing anti-freeze solution to remain in the system throughout the summer period affords anti-corrosion protection. The

solution, however, should be changed at the beginning of each winter period as the inhibitor becomes exhausted.

Screen Washer (Fig. 41)

Examine the water level in the plastic windscreen washer container shown arrowed. If required, unscrew the cap and replenish the container with clean water. Under freezing conditions, fill the screenwasher container with a mixture of methylated spirits (alcohol) and water. This may then be used to disperse ice and snow from the windscreen. Do not use anti-freeze solution in the windscreen washer, as this may discolour the paintwork and damage the wiper blades and sealing rubber.

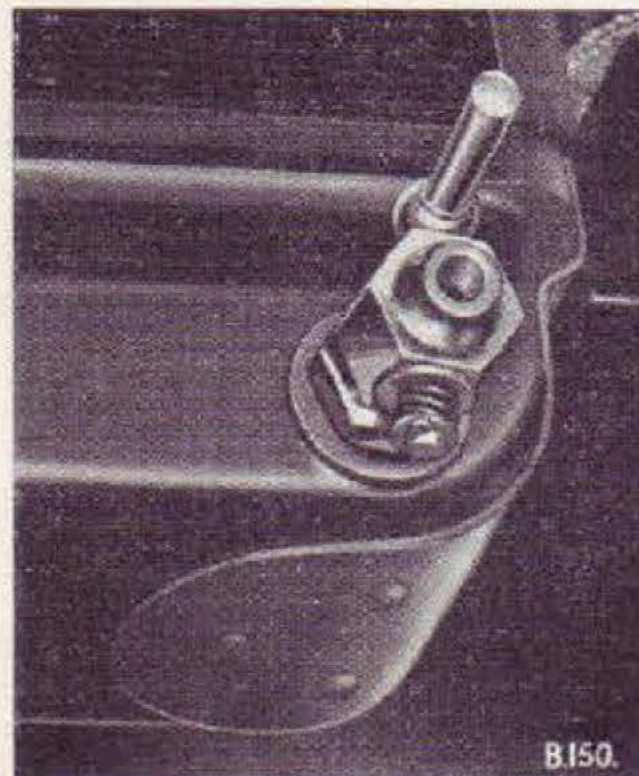


Fig. 39

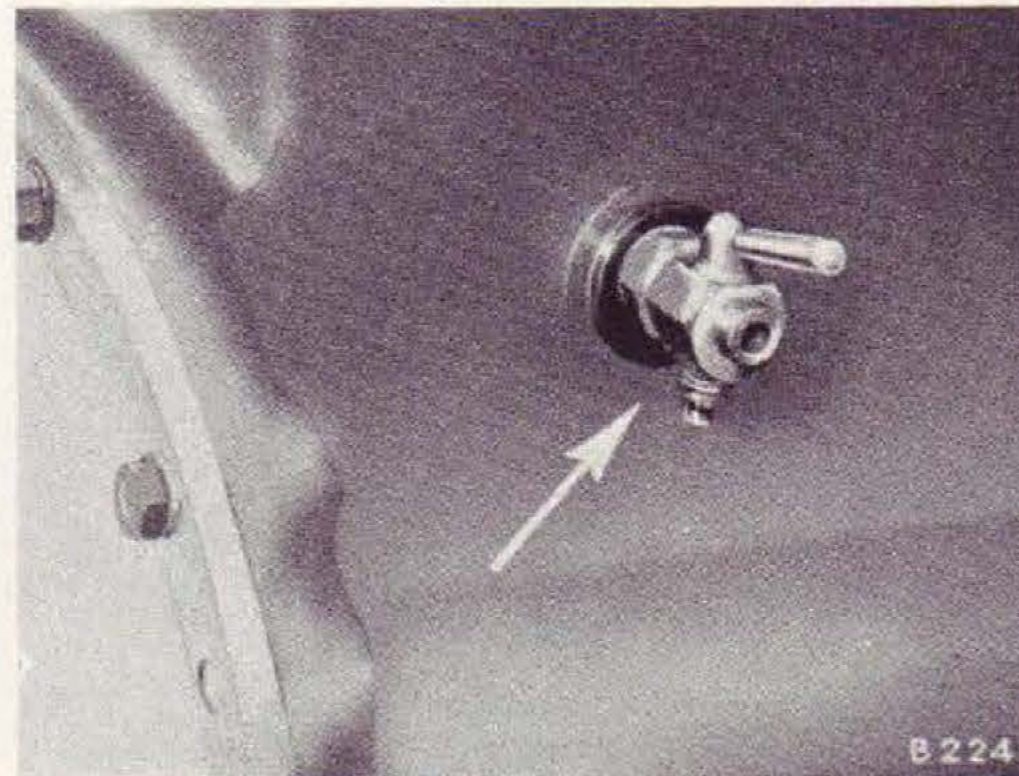


Fig. 40

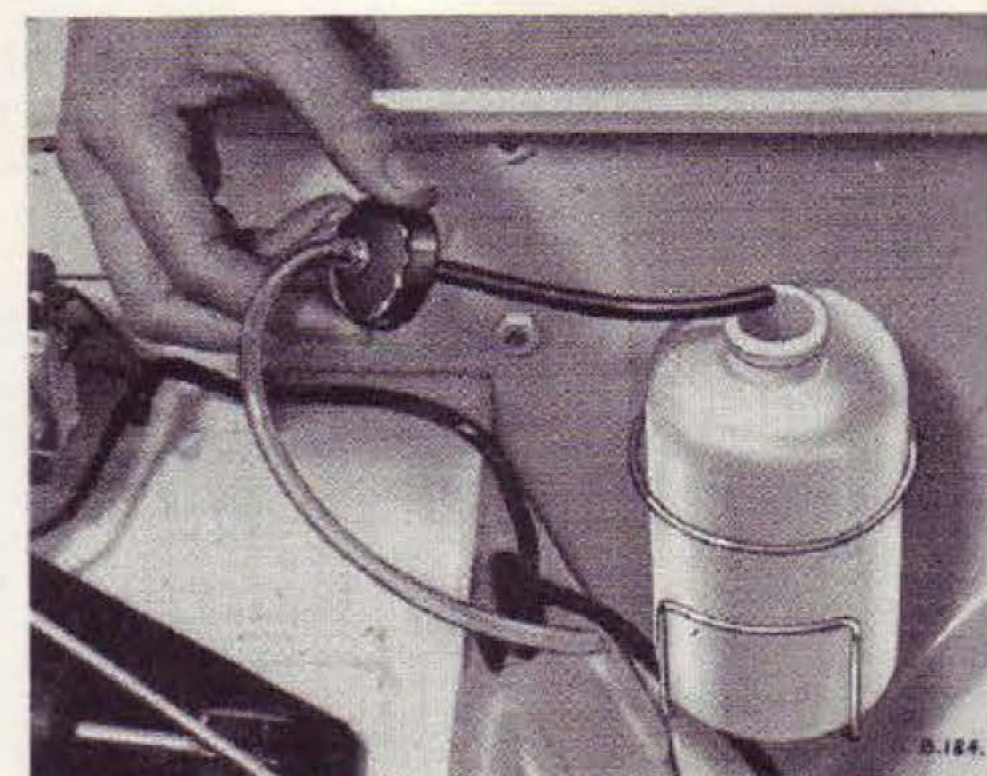


Fig. 41

COOLING SYSTEM

Frost Precautions

The car heater cannot be completely drained by normal methods. Therefore frost damage will not be prevented by merely draining the radiator.

For your safeguard during freezing weather, an approved anti-freeze solution should be added to the coolant in the radiator, pages 54 and 55. Because of the searching effect of these solutions, advise your Dealer to check the system for leaks before adding the anti-freeze.

At certain temperatures glycol water solutions adopt a "mushy" state with a viscosity which impairs circulation and can immobilise or damage the water pump. Therefore, consult the following chart before adding anti-freeze, for the degree of frost protection required.

It is not advisable to use the same anti-freeze mixture for more than one season because the inhibitor becomes exhausted. Its continued use may cause the corrosion of components in contact with the old solution.

ANTI-FREEZE CONCENTRATION	25%	30%	35%
Complete Protection:— Vehicle may be driven away immediately from cold	10°F (−12°C) (22 degrees of frost)	3°F (−16°C) (29 degrees of frost)	−4°F (−20°C) (36 degrees of frost)
Safe Limit:— Coolant in mushy state. Engine may be started and vehicle driven away after short warm-up period.	1°F (−17°C) (31 degrees of frost)	−8°F. (−22°C) (40 degrees of frost)	−18°F. (−28°C) (50 degrees of frost)
Lower Protection Limit:— Prevents frost damage to cylinder head, block and radiator. Engine should NOT be started until thawed out.	−14°F. (−26°C) (46 degrees of frost)	−22°F. (−30°C) (54 degrees of frost)	−28°F. (−33°C) (60 degrees of frost)

WHEELS AND TYRES

ROAD WHEELS AND TYRES

Pressed Steel Wheels (Fig. 42)

Using the combination tool supplied in the kit, remove the nave plate (hub cap) by levering at a point adjacent to one of the attachment studs.

Progressively slacken and detach the wheel nuts (R.H. thread) with the wheel brace, then remove the road wheel.

To refit the wheel, smear the attachment studs with oil or grease to prevent corrosion, fit the wheel and secure it by fitting

and progressively tightening the nuts. Refit the nave plate by engaging its rim over two of the attachment studs and springing it over the third stud, by giving it a sharp blow with the palm of the hand.

Wire Spoked Wheels (Fig. 43)

A copper-faced hammer is provided with cars fitted with wire spoked (knock-on) wheels to facilitate hub cap removal. Turn the hub caps, on the right-hand side of the car, clockwise



Fig. 42



Fig. 43



Fig. 44

and the hub caps on the left-hand side of the car, anti-clockwise, to remove them. Detach the wheel by pulling it straight off the splined hub. When refitting the road wheels, smear the hub splines with oil or grease to prevent corrosion and possible difficulty with wheel removal. Ensure that the hub caps are fully tightened by striking the "ears" in the appropriate direction with the copper-faced hammer.

WARNING. If the vehicle is fitted with wire-spoked wheels, the splined hubs, when removed, must be re-fitted to the correct side of the vehicle, *i.e.*, the knock-on hub caps must tighten in the opposite direction to road wheel rotation. Failure to ensure this may result in a road wheel coming off its splined hub.

Every 6,000 miles, check the tightness of all bolts and nuts, particularly the front and rear suspension, the steering and the wheel nuts.

Using the Jack (Fig. 44)

To raise either side of the vehicle for road wheel removal, proceed as follows :—

1. Ensure that the handbrake is applied and one of the wheels remaining on the ground is chocked.
2. Lift the floor covering adjacent to the door sill and remove the rubber grommet from the aperture in the floor panel.

3. Lower the jack through the aperture and engage the jack lug with the slotted bracket on the chassis frame.
4. Using the ratchet jack handle included in the tool kit, rotate the hexagonal shank of the jack clockwise to raise the vehicle.
5. To lower the jack, reverse the position of the ratchet handle and turn it counter-clockwise.

TYRES

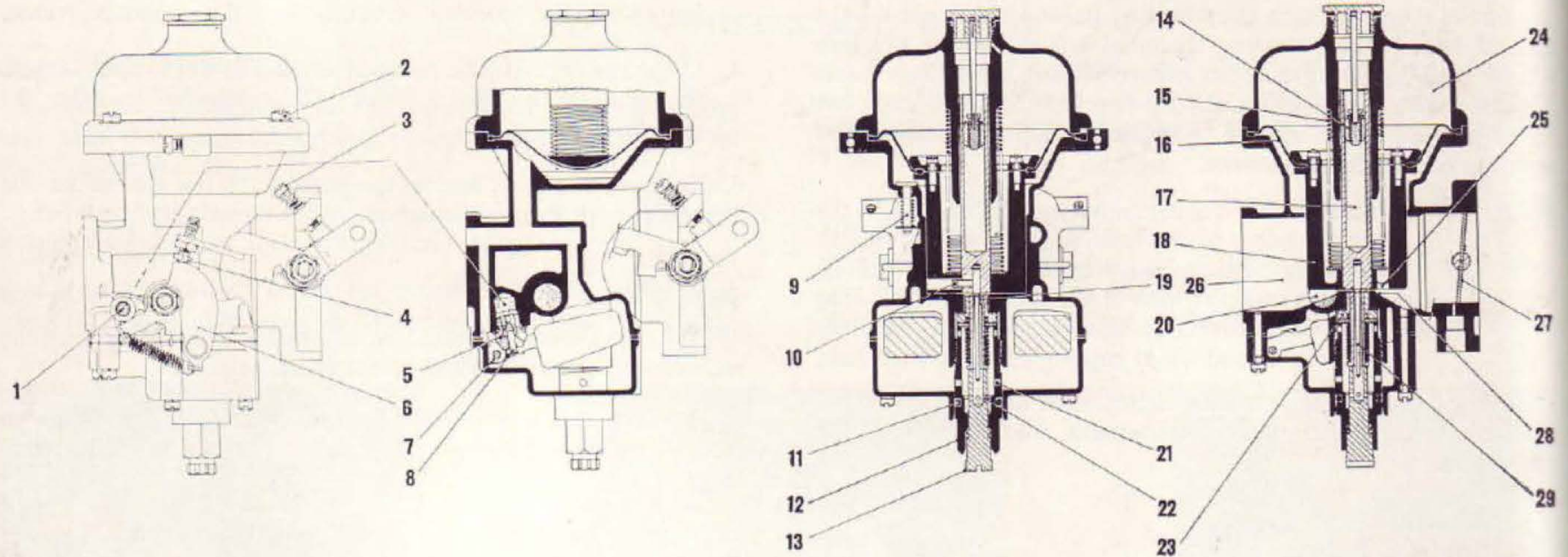
The tyre pressures should be adjusted in accordance with the recommendations contained on the chart, page 62.

Where cars are to be used for racing, consult the respective tyre company regarding the need for tyres of full racing construction.

Weathermaster tyres are homologated for competition use but these must not be used where high speeds are contemplated, 70 m.p.h. being the maximum with these tyres at normal Gold Seal pressures, and 85 m.p.h. maximum at the increased pressure (Page 62).

When new tyres are required it is essential to fit those of the same type. The characteristics of tyres vary considerably and therefore the four tyres must be of the same type.

RUNNING ADJUSTMENTS



- 1. Petrol inlet
- 2. Screws
- 3. Throttle stop screw
- 4. Screw
- 5. Needle seating
- 6. Lever

- 7. Float arm
- 8. Needle
- 9. Spring loaded pin
- 10. Locking screw
- 11. "O" ring
- 12. Jet assembly

- 13. Jet adjusting screw
- 14. Damper
- 15. Coil spring
- 16. Diaphragm
- 17. Guide rod
- 18. Air valve

- 19. Jet orifice
- 20. Starter bar
- 21. Inlet hole
- 22. Inlet hole
- 23. Orifice bush
- 24. Chamber

- 25. Air valve drilling
- 26. Bore
- 27. Throttle
- 28. Bridge
- 29. Metering needle

Fig. 48

ZENITH-STROMBERG CARBURETTORS (SERIES 175.CD)

Starting from Cold

The mixture is enriched for cold starting when the choke control is pulled. This operates a lever (6) which rotates the starter bar (20) to lift the air valve (18) and needle (29), thus increasing the area of the annulus between needle and jet orifice. Simultaneously, a cam on the lever (6) opens the throttle beyond its normal idle position to provide increased idling speed, according to the setting of the screw (4).

When the motor fires the increased depression will lift the air valve (18) to weaken the initial starting mixture and prevent the engine stalling through over richness.

While the choke remains in action the car may be driven away but the control knob should be released or pushed in gradually as the engine attains normal working temperature. This will progressively decrease the extent of enrichment and the degree of throttle opening for fast-idle to the point where the screw (4) is out of contact with the cam on the choke lever and the throttle is permitted to return to the normal idle position as determined by the setting of the throttle stop screw (3).

NOTE : The accelerator pedal should not be depressed when starting from cold.

Normal Running

With the opening of the butterfly throttle, manifold depression is transferred, via a drilling (25) in the air valve, to the chamber (24) which is sealed from the main body by the diaphragm (16).

The pressure difference between chamber (24) and that existing in the bore (26) causes the air valve to lift, thus any increase in engine speed or load will enlarge the effective choke area since the air valve lift is proportional to the weight of air passing the throttle (27). By this means air velocity and pressure drop across the jet orifice remain approximately constant at all speeds.

As the air valve (18) rises it withdraws a tapered metering needle (29), held in the base of the air valve by the screw (10), from the jet orifice (19) so that fuel flow is increased relative to the greater air flow.

Acceleration

At any point in the throttle range a temporarily richer mixture is needed at the moment of further throttle opening. To provide this, a dashpot or hydraulic damper is arranged inside the hollow guide rod (17) of the air valve.

The rod is filled with S.A.E.20 oil to within a $\frac{1}{4}$ " of the end of the rod in which the damper (14) operates. When the throttle is opened, the immediate upward motion of the air valve is resisted by this plunger during which time the suction or depression at the jet orifice is increased to enrich the mixture.

The downward movement of the air valve (18) is assisted by the coil spring (15).

RUNNING ADJUSTMENTS

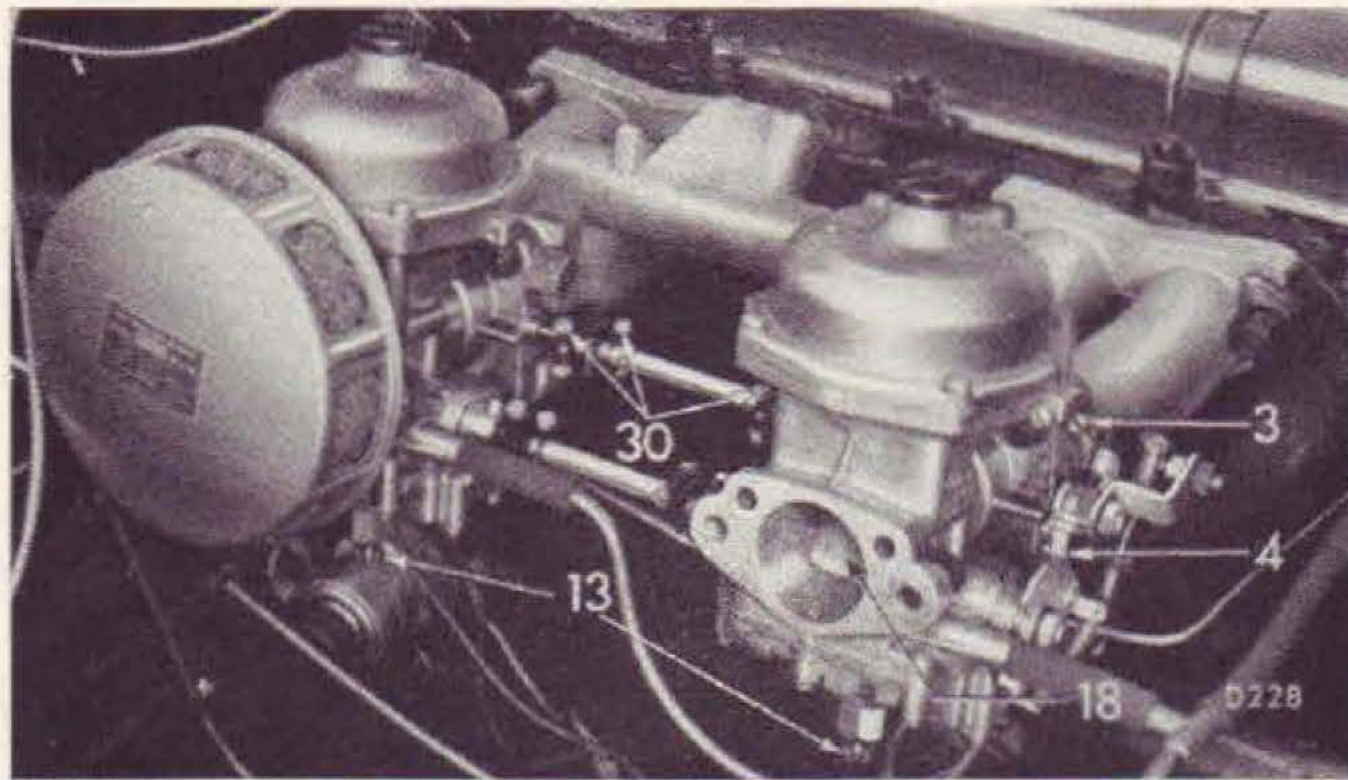


Fig. 46 (top)

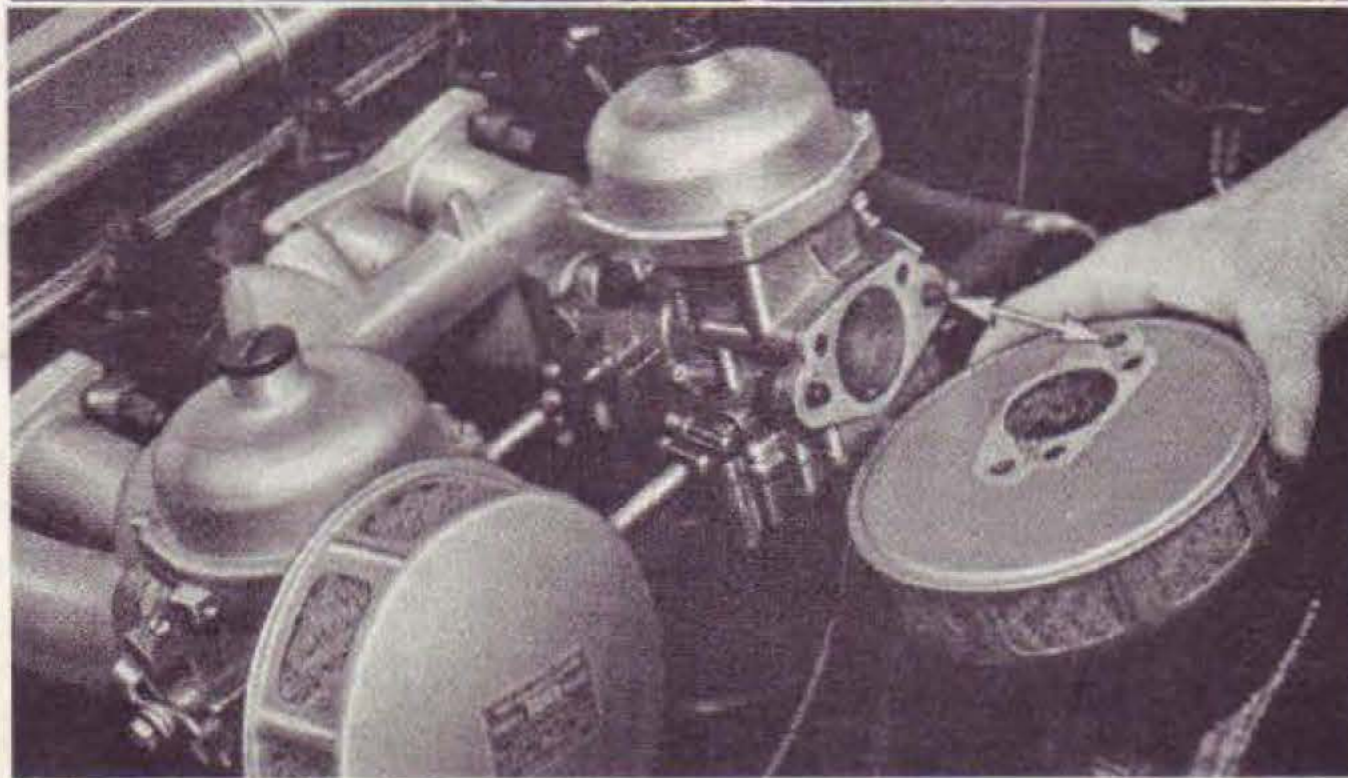


Fig. 47 (bottom)

ADJUSTMENT

Setting the Idle

Two adjustment screws are used to regulate the idle speed and mixture. The throttle stop screw (3) controls the speed, and the jet adjusting screw (13) determines the quality of air-fuel mixture entering the cylinders. Turning the jet adjusting screw **clockwise** decreases the mixture strength; **anti-clockwise** will enrich.

With the engine at normal working temperature, remove the air cleaner and hold the air valve (18) down on to the bridge (28) in the throttle bore. Screw up the jet adjustment screw (13)—a coin is ideal for this purpose—until the jet contacts the underside of the air valve. From this position turn down the jet adjusting screw three turns. This establishes an approximate jet position from which to work.

Run the engine until it is thoroughly warm and adjust the stop screw (3) to give an idle speed of 600/650 r.p.m.

The idle mixture is correct when the engine beat is smooth and regular and the air intake "hiss" is equal on both carburetors.

As a check, lift the air valve a very small amount ($\frac{1}{32}$ ") with a long thin screwdriver and listen to the effect on the engine. If the engine speed rises appreciably, the mixture is too rich and, conversely, if the engine stops, the mixture is too weak. Properly adjusted, the engine speed will either remain constant or fall slightly on lifting the air valve.

Adjusting and Synchronising Twin Carburettor Installation

Loosen the clamping bolts on the throttle spindle couplings between the two instruments. Next, unscrew the throttle stop screw to permit the throttle in each carburettor to close completely, and tighten the clamping bolts on the couplings between the spindles of the two carburettors.

Screw in the throttle stop screws (3) to the point where the end of the screw is just contacting the stop lever attached to each throttle spindle. From this point rotate the stop screw in each carburettor one complete turn to open the throttles an equal amount to provide a basis from which final speed of idle can be set.

Having reconnected the throttles and set each open an equal amount, regulate the jet adjusting screws (13) in the instruments as detailed under the heading "Setting the Idle", *i.e.*, three turns down from the point where the jet orifice comes into contact with the base of the air valve (18).

NOTE : Remember that the idle quality depends to a large extent upon the general engine condition and such points as tappet adjustment, spark plugs, and ignition timing should be inspected if idling is not stable. It is also important to eliminate any leaks in the induction system.

Float Chamber Fuel Level (Fig. 48)

To check the float level, remove the carburettor from the engine and remove the float chamber. Invert the carburettor. Check that the highest point of the float, when the needle is

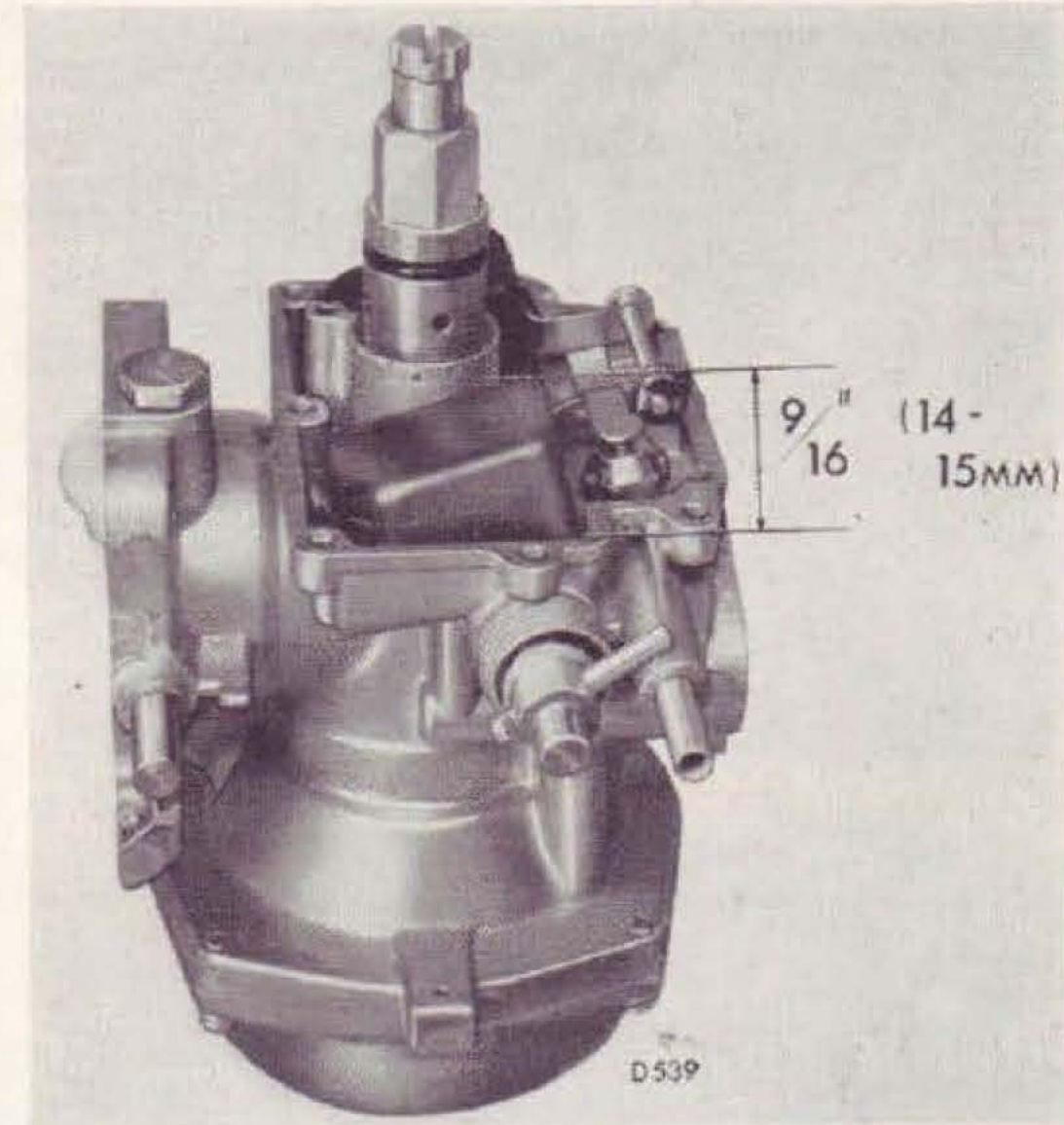


Fig. 48

against its seating, is $\frac{9}{16}$ " (14.28 mm.) above the face of the main body. Re-set the level by carefully bending the tag which contacts the end of the needle. The addition of a thin fibre washer under the needle valve seat will effectively lower the fuel level.

RUNNING ADJUSTMENTS

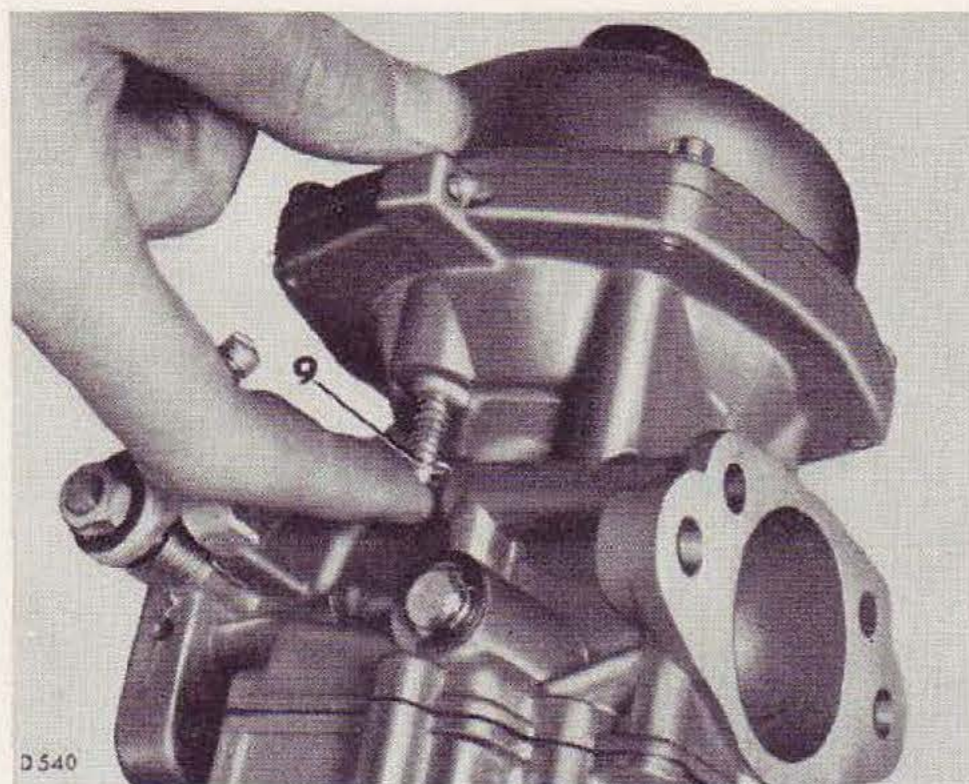


Fig. 49

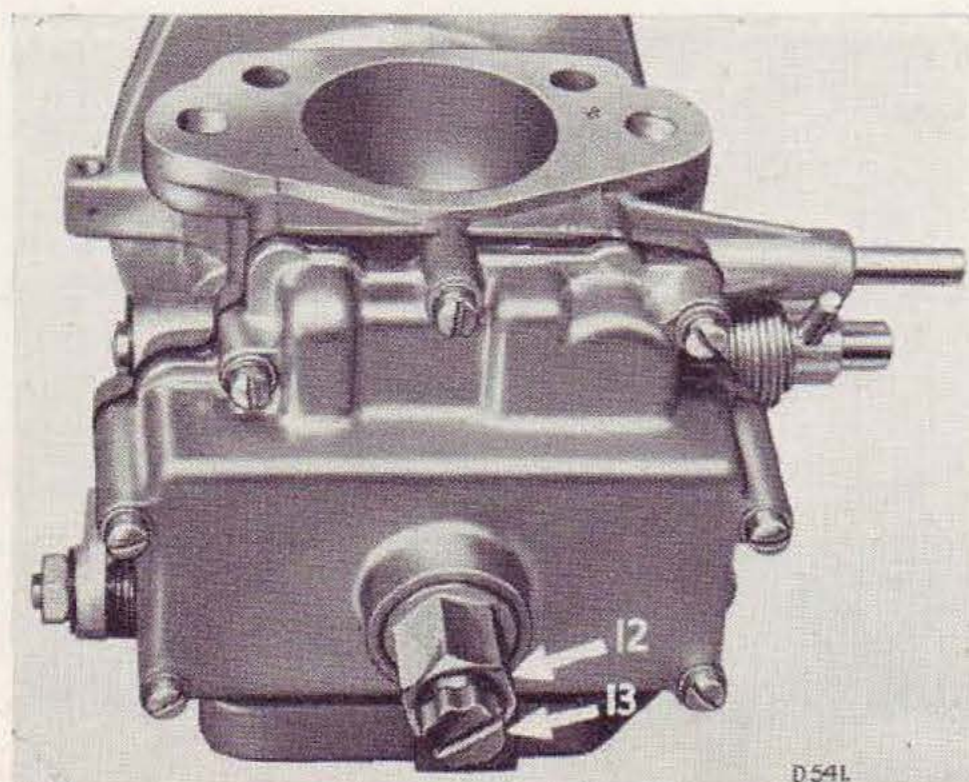


Fig. 50

Jet Centralisation

Efficient operation of the carburettor depends upon a freely moving air valve and a correctly centred needle in the jet orifice. The air valve may be checked for freedom by lifting the valve with the spring loaded pin (9). A valve failing to fall freely indicates a sticking valve, or an off-centred jet, and/or the needle (29) fouling the jet orifice. Rectify by removing and cleaning the valve and bore in paraffin, or by re-centralising the needle in the jet.

NOTE : When required, the jet needle must be renewed by one bearing the same code number. The shoulder of the needle must be fitted flush with the lower face of the air valve.

Procedure

1. Lift the air valve (18) and fully tighten the jet assembly (12).
2. Screw up the orifice adjuster until the top of the orifice (19) is just above the bridge (28).
3. Slacken off the jet assembly (12) approximately one half turn to release the orifice bush (23).
4. Allow the air valve (18) to fall; the needle will then enter the orifice and thus centralise it.
5. Slowly tighten the assembly (12), checking frequently that the needle remains free in the orifice. Check by raising the air valve approximately $\frac{1}{4}$ " and allowing it to fall freely. The piston should then stop firmly on the bridge.
6. Re-set the engine idling.

BLEEDING THE BRAKE AND CLUTCH HYDRAULIC SYSTEMS

If a pipe joint has been uncoupled, or part of the hydraulic system dismantled, the system must be bled to expel air.

The procedure is as follows:—

1. Clean the bleeder nipple and fit a piece of rubber tube over it, allowing the tube to hang in a clean container partially filled with fluid, so that the end of the pipe is below the level of the fluid.
2. Unscrew the bleeder nipple one complete turn. There is only one bleeder nipple to each wheel and one nipple on the clutch operating cylinder. The position of the brake bleeder nipples is shown on Figs. 30 item 2, and on Fig. 38 item 3. The clutch bleeder nipple is shown on Fig. 19, item 1.
3. Fill the fluid reservoir before commencing the bleeding operation, and keep it at least half-filled during the whole operation, otherwise air will be drawn into the system via the master cylinder. Do not use fluid that has been expelled from the system for maintaining the level. Always clean the area around the filler cap before removing it.
4. Depress the pedal quickly and allow it to return without assistance. Repeat this pumping operation with a slight pause between each depression of the pedal. Observe the

flow of fluid being discharged into the glass jar and when all air bubbles cease to appear, hold the pedal firmly down and securely tighten the bleeder nipple.

NOTE. For bleeding or replenishment of the system, use only fluid that has been stored in a container sealed from atmosphere. Immediately bleeding is completed, re-seal residual fluid in the container, before it is again stored.

Engine

Before filling the cooling system with an anti-freeze mixture, or after the engine has been decarbonised, check the tightness of the cylinder head nuts and if necessary, tighten them in the order shown on Fig. 51.

Re-adjust the valve rocker clearances as described on Page 23.

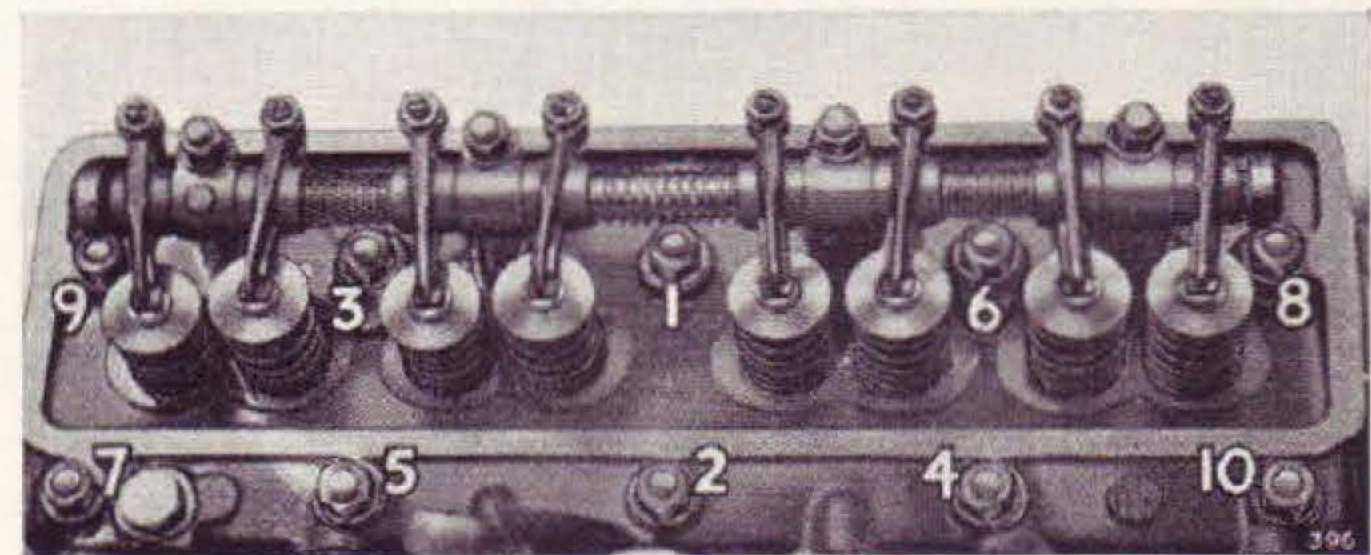


Fig. 51

RUNNING ADJUSTMENTS

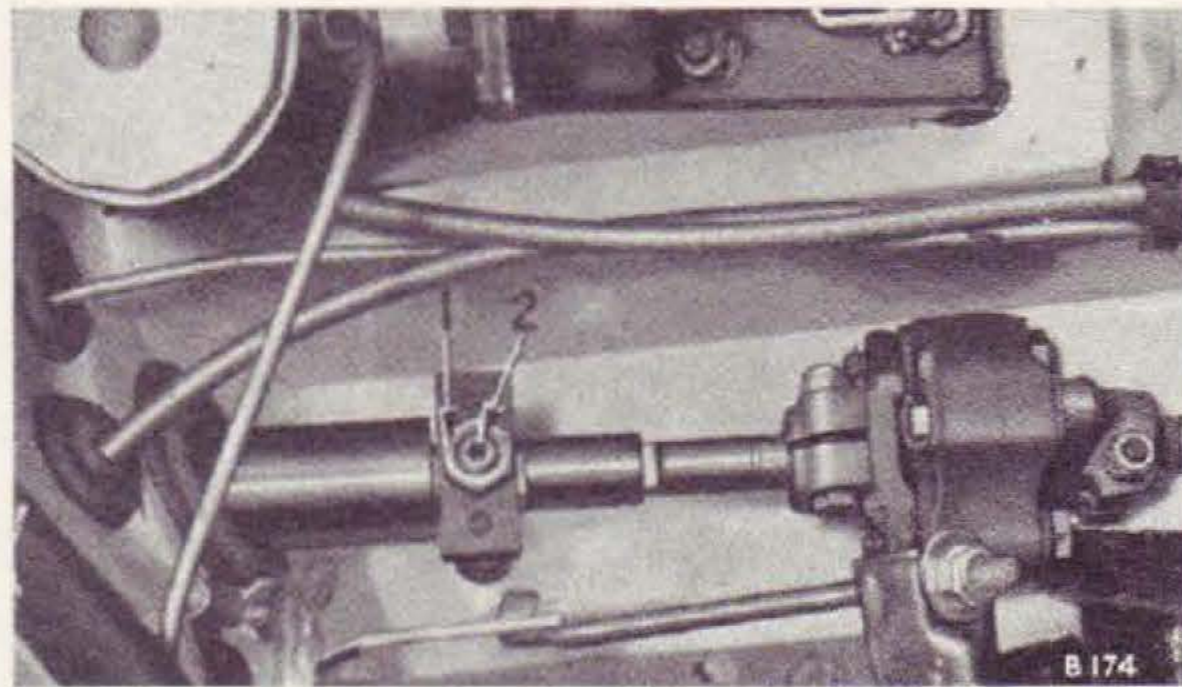


Fig. 52

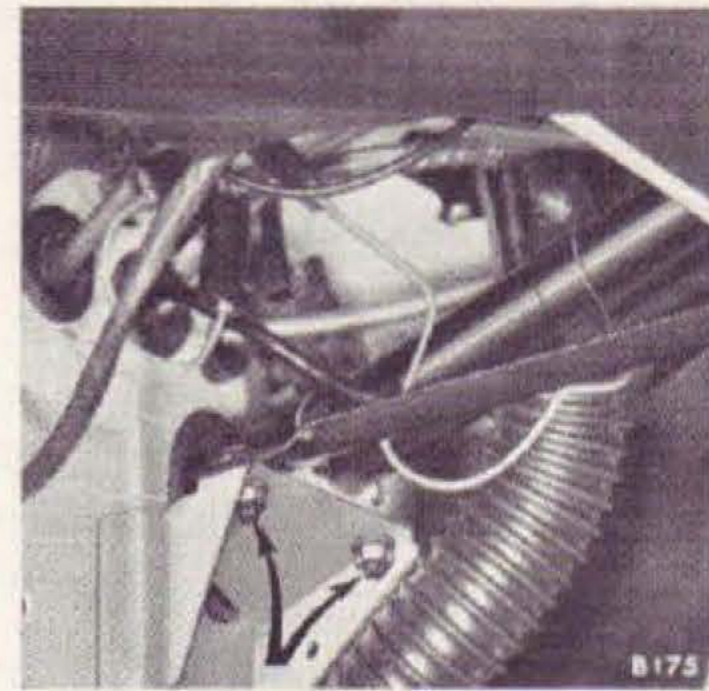


Fig. 53

STEERING COLUMN IMPACT CLAMP

The T.R.4. incorporates a telescopic steering column which provides adjustment for column length and protection for the driver in the event of a collision.

To adjust the column length :—

1. Slacken the impact clamp lock nut, (1) Fig. 52, and unscrew the socket head screw (2) with a $\frac{1}{8}$ " A.F. socket key.
2. Working inside the vehicle, slacken the clamp nuts shown arrowed on Fig. 53.
3. Slacken a third clamp behind the fascia panel.
4. Move the column to the desired position and re-tighten the two upper clamps.

5. Using only finger pressure on the socket key, tighten the screw (2) and secure the locknut (1).

NOTE. The steering column will be unable to telescope if adjusted to its lowest position.

Front Wheel Alignment

The front wheel alignment should be parallel to $\frac{1}{8}$ " toe-in when the following tyres are fitted :—

Dunlop Gold Seal, Dunlop Gold Seal Nylon, Dunlop Road Speed, Goodyear Allweather Rib, Goodyear Allweather Nylon, Motorway Special.

When Goodyear D.F.S. and Michelin X tyres are fitted the front wheel alignment should be parallel to $\frac{1}{16}$ " toe-in.

ELECTRICAL SYSTEM

A 12 volt positive earth system is employed in all circuits.

To safeguard against fire from short circuits, always disconnect one cable from the battery before removing or disconnecting an electrical unit.

Fuses (Fig. 54)

The fuse unit, which is located on the right-hand side valance, houses four 35-amp. fuses. Fuse A2 protects the instrument

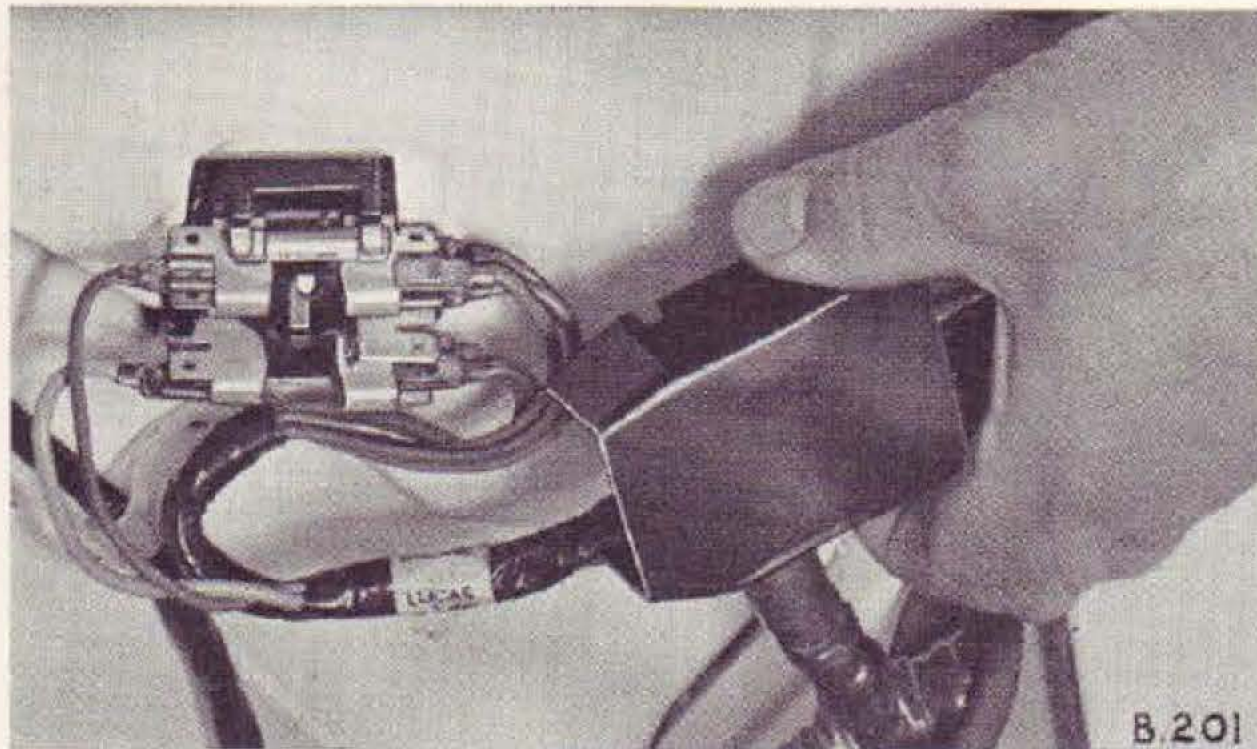


Fig. 54

illumination, the parking and tail lamps and the number plate illumination lamps. Fuse A4 protects the units controlled by the ignition switch, *i.e.*, flashing direction signals, temperature and fuel gauges, brake stop lamps and the wiper motor.

The horns are protected by a 35-amp. in-line fuse located below the fuse unit adjacent to the main harness.

Failure of a fuse is indicated by all the units protected by that fuse becoming inoperative. If the new fuse fails immediately, the equipment and associated wiring must be examined and the fault rectified.

BULB CHART

	Watts	Lucas No.
Parking	4	222
Flashing	21	382
Brake/Tail	21/6	380
Plate Illumination	6	207
Panel Illumination	2.2	987
Headlamp (Home Market)	60/45	54521060

ELECTRICAL SYSTEM

KEY TO FIG. 55

1. Generator.
2. Ignition Warning Lamp.
3. Ignition Coil.
4. Distributor.
5. Control Box.
6. Ignition Switch.
7. Ammeter.
8. Horns Fuse.
9. Horn Push.
10. Horns.
11. Starter Motor.
12. Starter Solenoid.
13. Battery.
14. Lighting Switch.
15. Dipper Switch.
16. High Beam Indicator Lamp.
17. Headlamp High Beam, R.H.
18. Headlamp High Beam, L.H.
19. Headlamp Dip Beam, R.H.
20. Headlamp Dip Beam, L.H.
21. Instrument Illumination Rheostat.
22. Fuse Unit.
23. Stop Lamp Switch.
24. Stop Lamp, R.H.

25. Stop Lamp, L.H.
26. Ammeter and Gauges Illumination.
27. Voltage Stabilizer.
28. Heater Blower Motor
29. Heater Blower Motor
30. Temperature Indicator Gauge.
31. Temperature Transmitter.
32. Fuel Gauge.
33. Tank Unit.
34. Speedometer Illumination.
35. Tachometer Illumination.
36. Reversing Lamp Switch
37. Reversing Lamp
38. Reversing Lamp
39. Parking Lamp, R.H.
40. Parking Lamp, L.H.
41. Direction Indicator, R.H. Front.
42. Direction Indicator, L.H. Front.
43. Tail Lamp, R.H.
44. Plate Illumination Lamp, R.H.
45. Flasher Unit.
46. Direction Indicator Switch.
47. Direction Indicator, R.H. Rear.

48. Direction Indicator, L.H. Rear.
49. Direction Indicator Monitor Lamp.
50. Tail Lamp, L.H.
51. Plate Illumination Lamp, L.H.
52. Windshield Wiper Motor.
53. Windshield Wiper Motor Switch.
54. Relay
55. Solenoid.
56. Column Control.
57. Transmission Switches

} Optional
Extra

} Optional
Extra.

} Overdrive
Optional
Extras.

CABLE COLOUR CODE

B	Black.	S	Slate.
U	Blue.	W	White.
N	Brown.	Y	Yellow.
G	Green.	D	Dark.
K	Pink.	L	Light.
P	Purple.	M	Medium.
R	Red.		

ELECTRICAL SYSTEM

Ignition

Failure of the ignition warning light will not prevent the ignition system functioning but the fault should be rectified at the first opportunity.

All high tension cables fitted to the ignition system are made from carbon impregnated nylon or cotton cords encased in rubber or neoprene to form a high resistive conductor. Replacement cables must always be of the same type.

Keep the moulded cover of the distributor clean by wiping it inside and outside with a soft cloth. Check that the carbon brush on the inside moves freely. The contacts must be kept free from oil or dust, and a gap maintained at 0.014" to 0.016".

Ignition Timing (Fig. 27)

The nominal ignition setting given on page 58 applies to an engine at rest. When the engine is running the ignition is advanced automatically to suit varying conditions. Maximum performance of an individual engine may require slight modification of the nominal setting to suit particular grades of fuel.

To set the ignition timing, rotate the crankshaft until the hole in the crankshaft pulley flange is aligned with the pointer on the timing cover. With the distributor point gap (7) set at 0.015" (0.4 mm.), and the vernier adjustment set in the centre of its scale (9), slacken the distributor clamp bolt and adjust the

distributor so that the contact breaker points are just commencing to open. Tighten the distributor clamp bolt and rotate the knurled vernier adjustment screw (5) anti-clockwise until one extra division appears on the scale. One division is equal to 4° ignition advance (crankshaft angle).

Generator and Control Box

The generator operates in conjunction with the voltage regulator unit which is adjacent to the cut-out in the control box. A fully-charged battery receives a low charging current and a discharged battery a high charging current. Additionally the cut-out prevents the battery from being discharged through the generator, when the generator is not charging. In this event, the ignition warning light glows.

Maintenance of the coil is restricted to keeping the terminals clean and free from oil.

The Starter Motor

The starter brush gear and commutator do not normally require attention for a considerable period. After 48,000 miles, however, it is advisable to have the unit serviced at a Triumph or Lucas Service Depot.

If the starter pinion jams in mesh with the flywheel, it may be released by switching off the ignition, selecting top gear, and rocking the car to and fro, or by removing the end cover from the starter and turning the squared end of the exposed shaft in a clockwise direction.

Headlamp Alignment

The sealed beam is aligned in the vertical plane by turning the screw at the top of the lamp and in the horizontal plane by turning the screw on the side. Alignment of the high beam on one lamp is best carried out with the other lamp covered.

Maximum illumination is obtained, and discomfort to other road users is prevented, by ensuring that the lamp beams do not project above the horizontal when the vehicle is fully laden. Adjustments, when necessary, should be entrusted to a Dealer having beam setting equipment.

Light Unit Replacement

The headlamps are fitted with sealed beam units. Filament failure necessitates light unit renewal. Remove the snap-on rim by inserting the tool, provided in the kit, behind the rim and levering sideways (Fig. 56). Remove the screws (1), Fig 57, and withdraw the rim to release the light unit. Do not disturb the beam aiming adjustment screws (2). Disconnect the plug, Fig. 58.

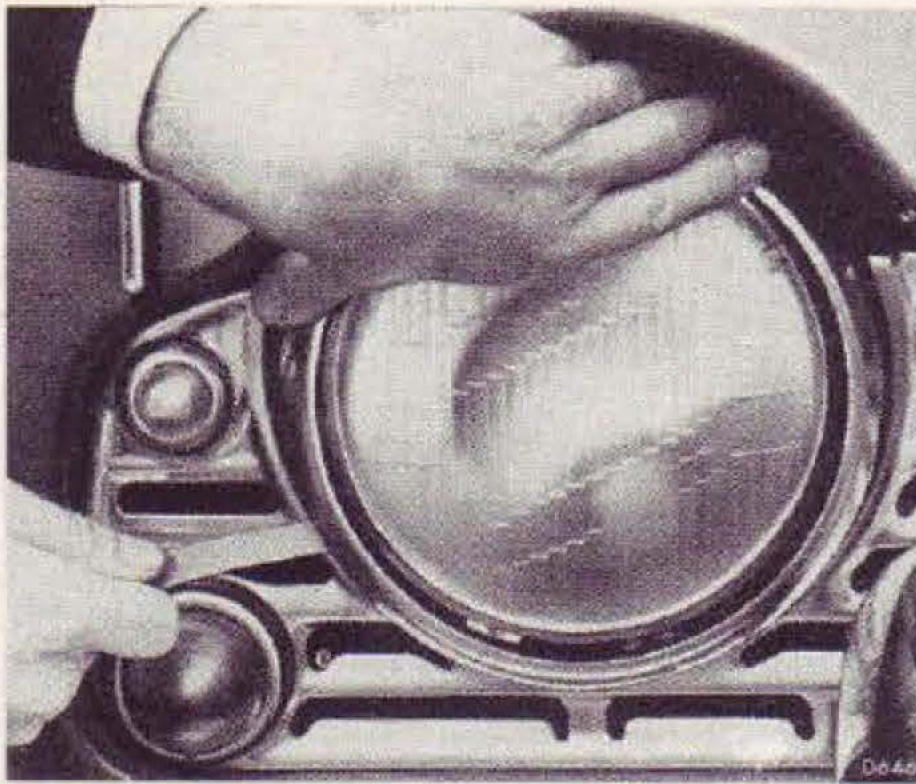


Fig. 56

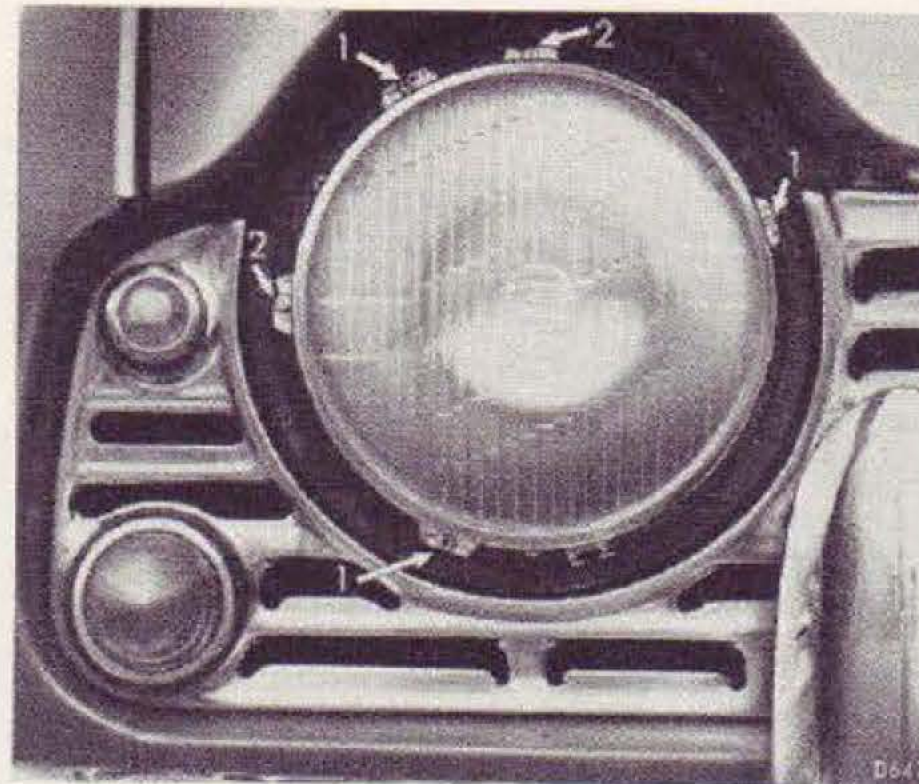


Fig. 57

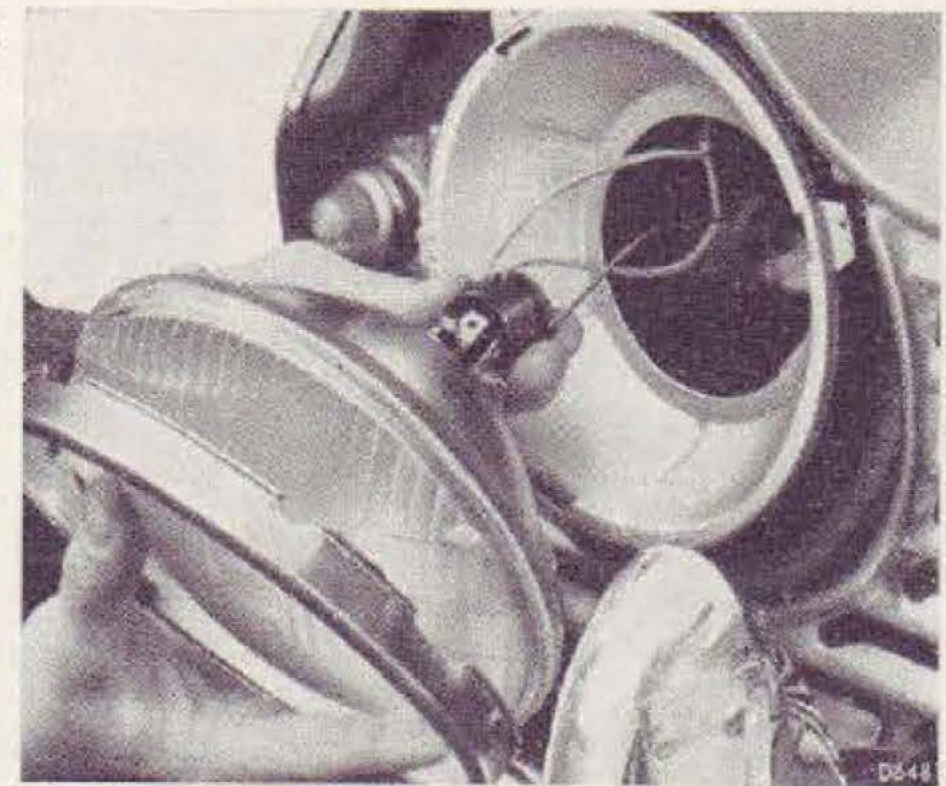


Fig. 58

ELECTRICAL SYSTEM

Direction Indicator Flashing Lamps (Fig. 59)

With the aid of a thin screwdriver turn back the rubber and remove the rim. This then permits the glass lens to be similarly removed. When re-assembling the components fit the glass lens first.

Tail/Brake Stop and Direction Indicator Flashing Lamps (Fig. 61)

Remove three screws and lift off the lens, which is in two sections, to gain access to the bulbs. The pins on the tail/brake stop lamp bulb are offset and cannot be fitted incorrectly.

Parking Lamps (Fig. 60)

Twist the lens counter-clockwise and withdraw the lamp front to gain access to the bulb.

Plate Illumination Lamps (Fig. 62)

Remove the two screws securing the rim and cowl to the over-rider, withdraw the lamp approximately 2" and renew the bulb.

Battery

Keep the terminals clean and well covered with petroleum jelly to prevent corrosion. If the terminals become corroded scrape them clean and coat with petroleum jelly.



Fig. 59

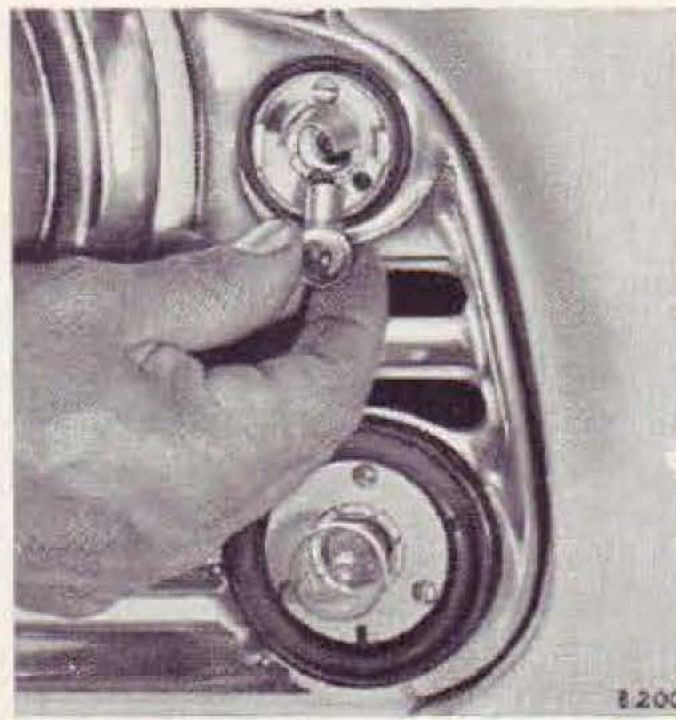


Fig. 60



Fig. 61



Fig. 62

CARE OF THE BODYWORK

To preserve the "new look" of the body, the following suggestions are offered.

Washing

Wash the vehicle frequently with plenty of running water and a clean sponge. Soften, and if possible remove, mud with water before using the sponge. To prevent scratches, do not use a dry cloth to remove dust from the body. When all dirt is removed, dry the vehicle with a clean damp chamois leather.

Chromium Plating

Maintain the attractive appearance of chromium plated parts by frequent washing and thorough drying, particularly in winter when contamination with road salts is likely. Occasionally apply a wax polish.

Removing Grease and Tar

Use denatured alcohol to remove grease and tar. White spirit is also effective, but it must not be applied to rubber.

Glass

To avoid scratching, clean the windows with a damp chamois leather kept especially for the purpose. Protect glass from contamination by any silicone preparations used in the vicinity. Silicone polishes are extremely difficult to remove and cause the windscreen wipers to smear.

Polishing

After a period of use, the formation of traffic film will cause the paintwork to lose some of its lustre, even though the vehicle may have been carefully and regularly washed. The original brilliance may be restored after washing by using a reputable non-abrasive cleaner and polish.

Wax preparations are recommended for their durability, but if used regularly the old wax must first be removed with a cleaner before further application of new wax. The frequency at which polishing is necessary depends upon local conditions of air pollution.

Interior Care

Brush and clean the inside of your car each time you wash and polish the outside of it. Use a vacuum cleaner where possible and ensure complete removal of all dust from the interior and trim.

Wash the upholstery with luke-warm, non-caustic, soapy water. Do not use detergents or household cleaners as these may cause damage. Remove all traces of suds with a clean damp cloth and thoroughly dry the upholstery with a dry duster or towel.

Wipe the facia and instrument panel with a damp cloth only. Wax or other polishes should not be used inside the car.

SOFT TOP

The soft top, which is made from P.V.C. material, is supported by a hinged frame. The top may be readily removed from the frame and stored away. The frame folds down into the back of the car and is concealed by the rear and quarter trimming.

A tonneau cover is available as an optional extra. The cover provides weather protection for the vehicle interior when the soft top is removed. It incorporates press studs for securing to the car and has a zip fastener down the centre which permits access to either or both of the front seats.

Maintenance

Maintenance of the soft top is restricted to washing the fabric with warm water and a non-caustic soap. Always wipe the top dry.

Do not use detergents, polish or fuel-based cleaners as they may damage the fabric or affect the adhesive used in manufacture.

Obstinate grease marks may be removed by using a cloth moistened with trichlorethylene.

Apply engine oil sparingly to the joints of the frame with a small brush. Work the oil well into the joints and then wipe away all surplus oil.

To Remove

Move the driver's seat forward and fold down the back of the passenger seat.

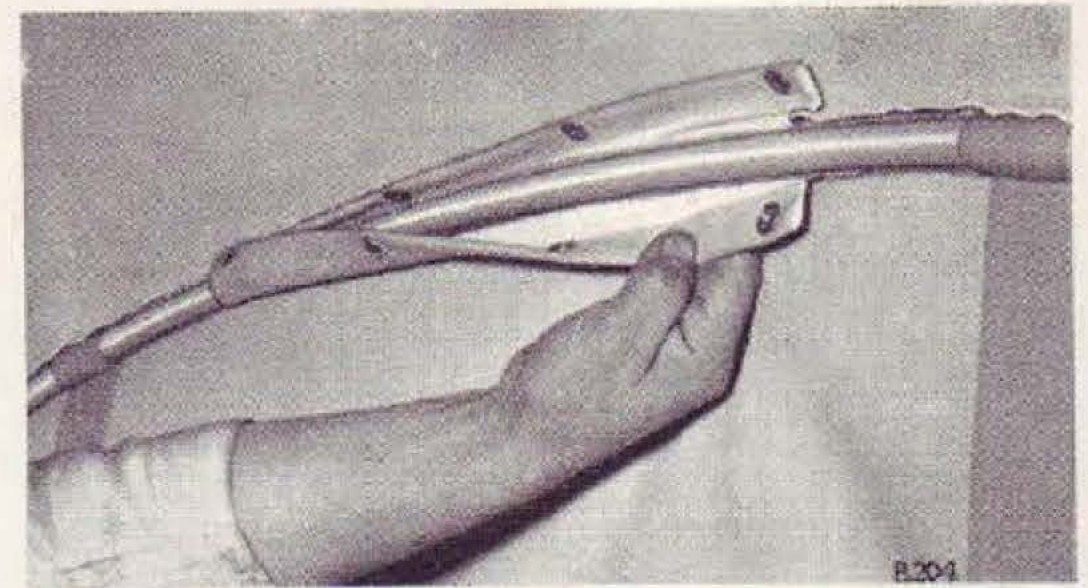


Fig. 63

Release the clips securing the soft top to the forward rail of the hood stick assembly.

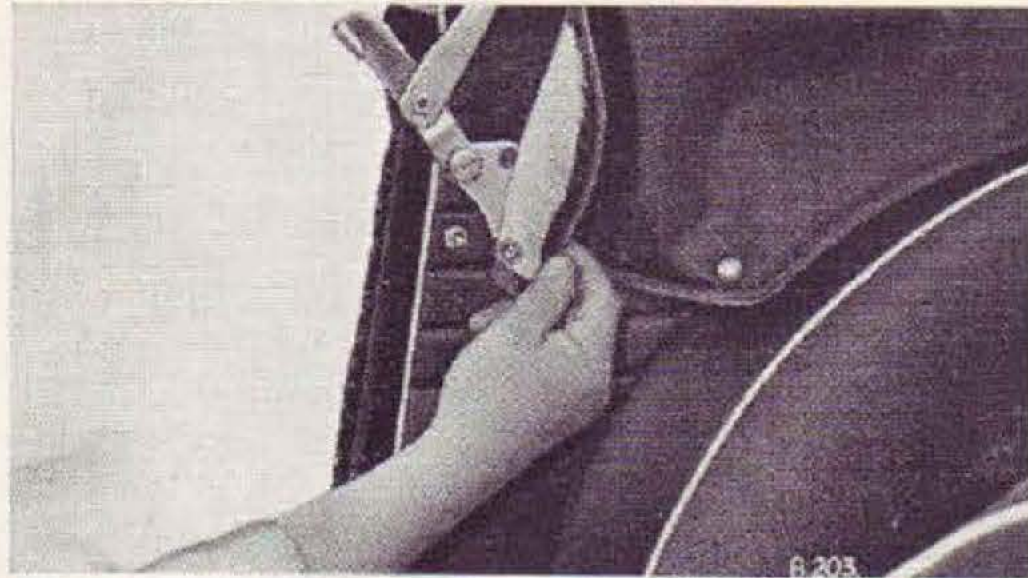


Fig. 64

Release the quarter trim panel from the hood stick assembly and pull the locking lever forward which releases the tension on the material.

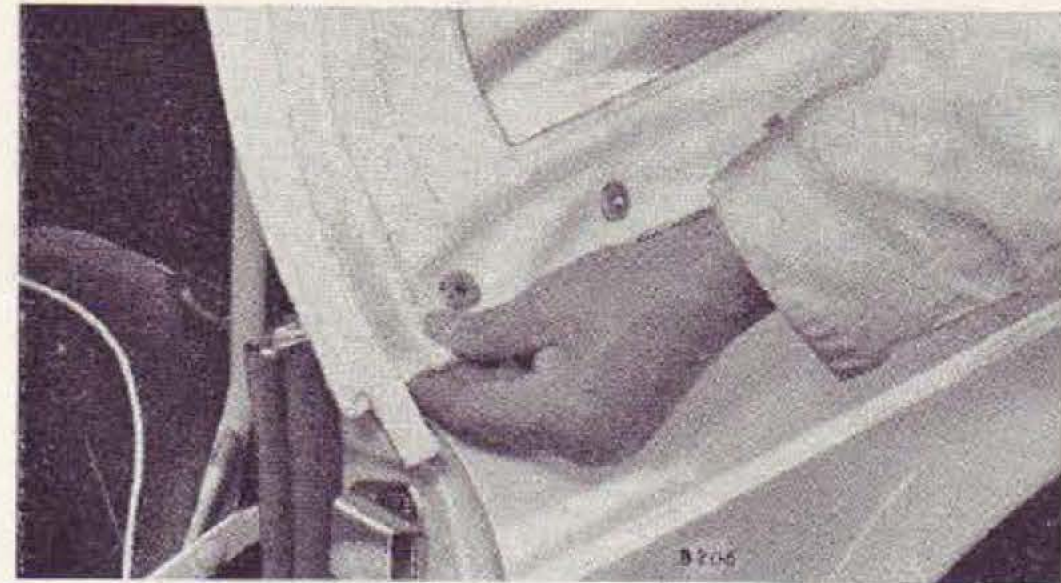


Fig. 66

Lift the fasteners securing the rear edge of the top to the body.

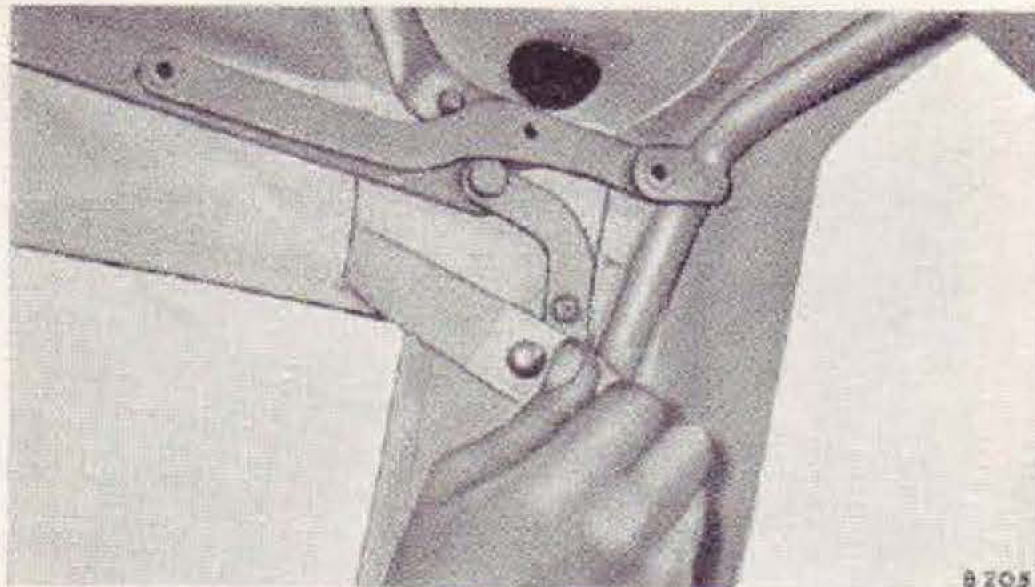


Fig. 65

Release the valance tensioners from the rear hood stick.

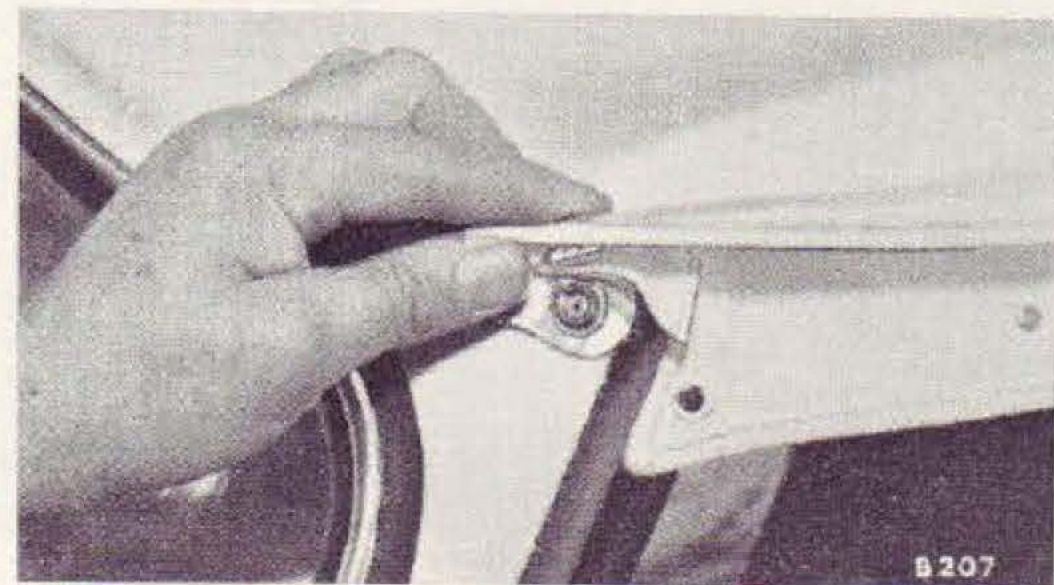


Fig. 67

Release the fastener on the top outer edge of the top.

BODYWORK

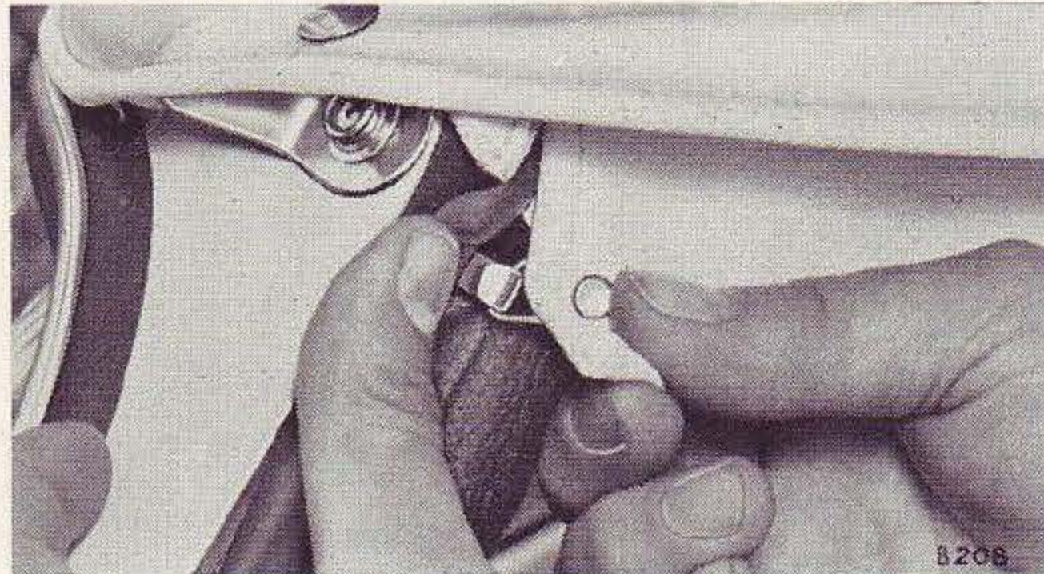


Fig. 68

Turn back the top corner of the draught rubber on the screen pillar and unhook the soft top from the pillar.



Fig. 69

Pull the soft top forward and disengage the front retainer from the top of the wind-shield header rail.

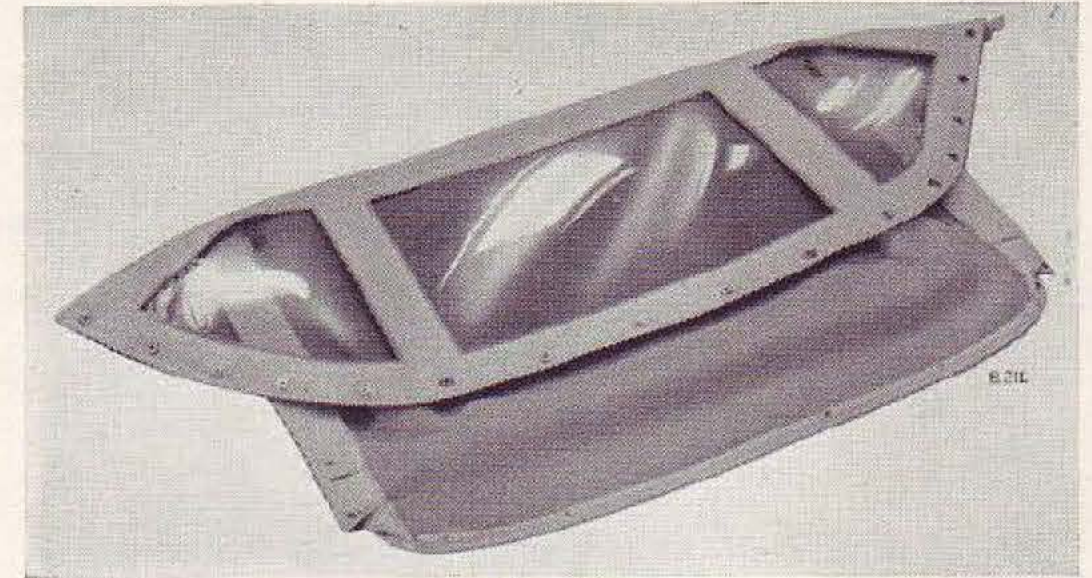


Fig. 70

Lift the top away from the car and fold it at the seam above the back window. Fold the side windows inward to rest on the back window. The surplus material is then folded over to form a neat pack.

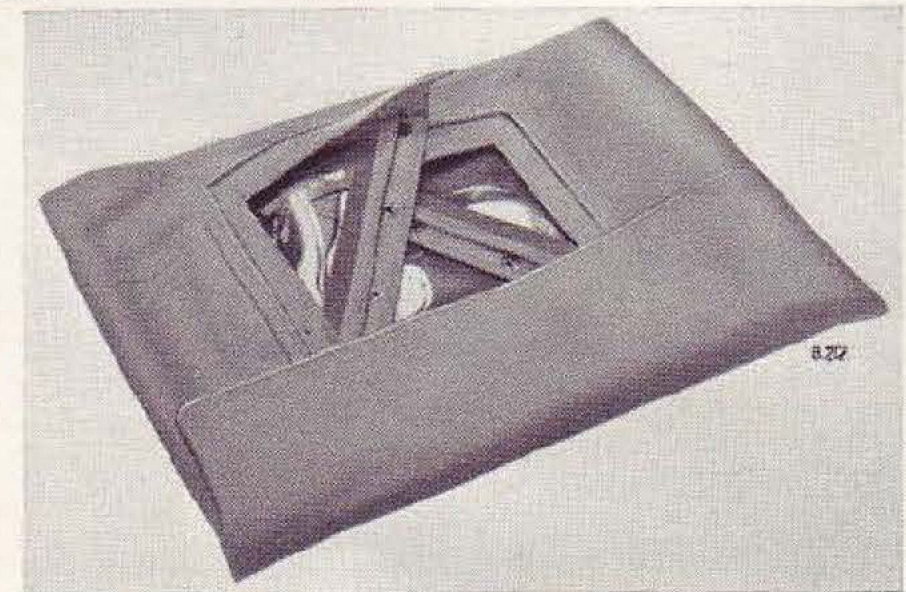


Fig. 71

Stow the folded top into the luggage locker.

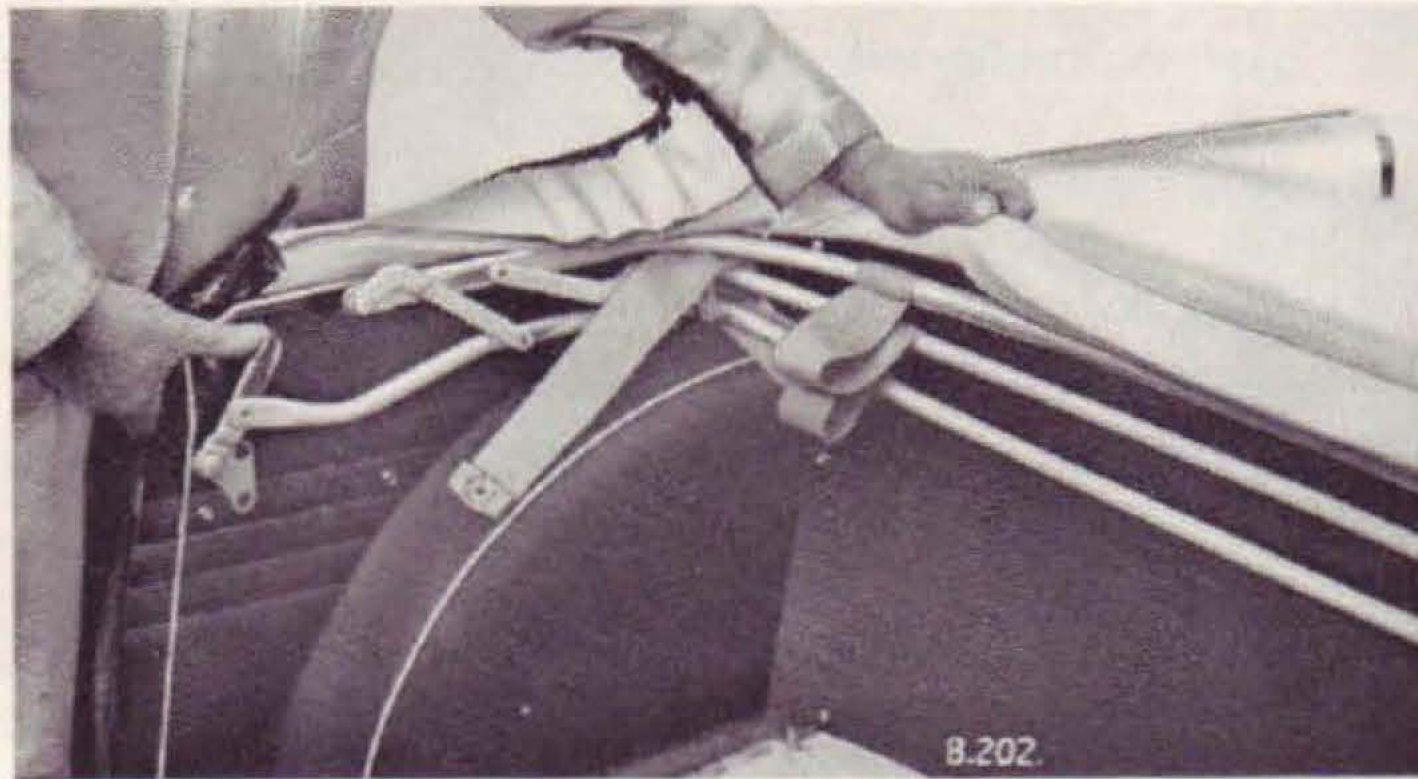


Fig. 72

Release both webbing straps from the rear of the car.

Release the fasteners securing the carpet and rear squab trim to the floor and lift the quarter and rear trim pads over the upper edge of the car.

Push the front rail rearward and at the same time pull the

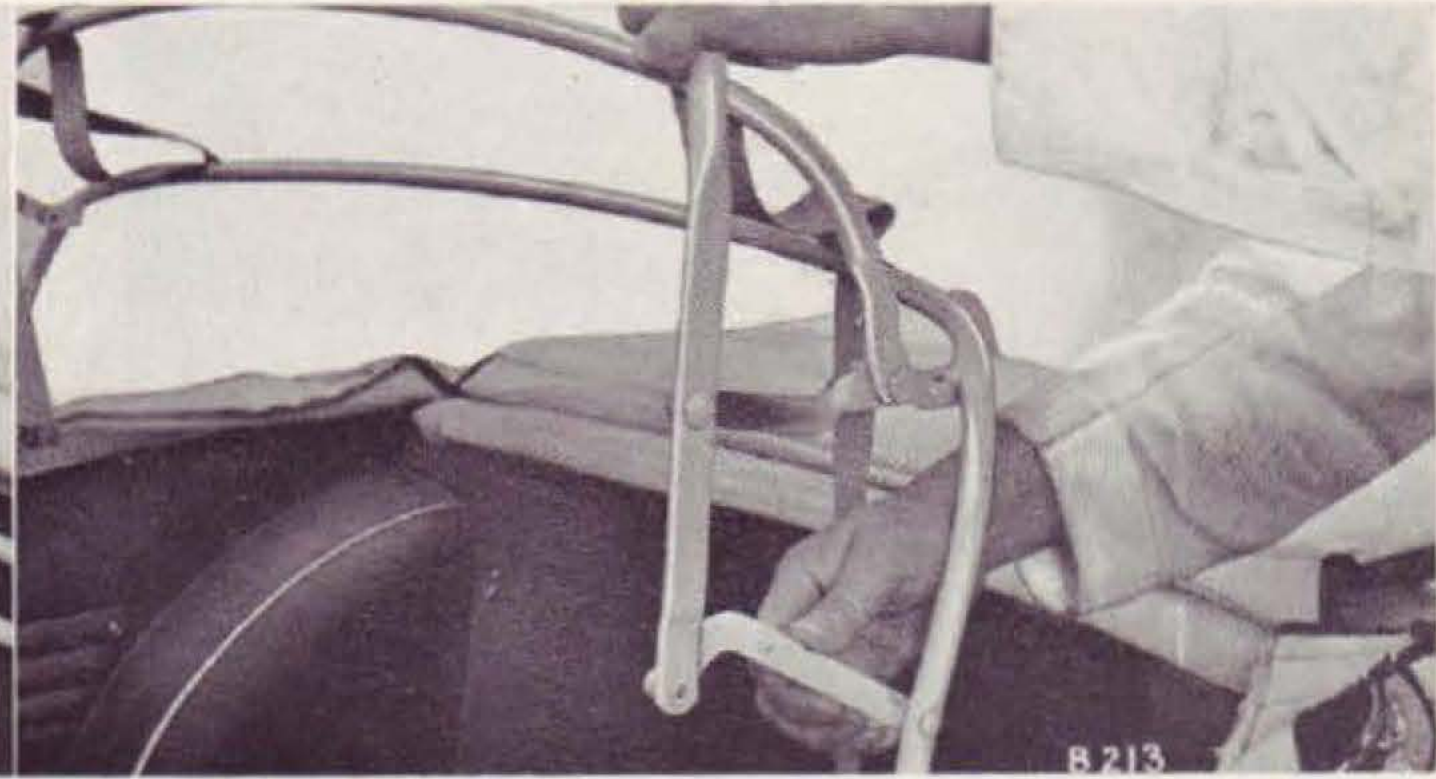


Fig. 73

connecting link forward and fold the hood stick assembly into the rear of the car.

Push the locking lever back to lock the assembly in its folded condition.

Pull the quarter trim into position and press the fasteners.

Refit the rear trim and carpet.

BODYWORK

To Raise

Move the driver's seat forward and fold down the back of the passenger's seat.

Unclip the carpet, rear and quarter trim pads and pull the trim onto the rear edge of the body.

Pull the locking lever upward.

Raise the hood stick assembly.

Push the quarter and trim panel loosely into position and attach the two webbing straps to the upper and rear edge of the body.

Unfold the soft top and lay it loosely on the frame.

Engage the retaining strip on the forward edge of the soft top with the windshield header rail.

Commencing at the two centre fasteners, attach the top to the rear of the car.

Lift the weatherstrip at the top edge of the screen pillars and hook the soft top to the pillar.

Attach the top to the upper end of screen pillar.

Push the locking lever into position.

Attach the valance tensioner to the hood stick.

Place the quarter trim into position and re-connect the fasteners.

Refit the rear trim and carpet.

Refit the soft top to the front rail.

Adjust the position of the driving seat.

SAFETY HARNESS

Full provision is made for fitting a two- or three-point attachment type of safety harness to the car. Both types are available as special accessories from your Dealer.

SURREY TOP

To Fit (Fig. 78)

Remove the two bolts from the underside of the windscreen header rail, and the two bolts from the underside of the back light surround, and lift away the roof panel.

Open out the surrey top frame and enter the rear ends of the frame into the holes in the top back light surround.

Press the rubber covered studs, attached to the front end of the frame, into the holes in the screen header rail.

Adjust the nuts on the rear end of the frame to provide rigidity without stressing the front rubbers, or making frame removal difficult.

Once the nuts have been correctly adjusted, no further adjustments should be required when the frame is subsequently removed or refitted.

Fit the front end of the surrey top by folding its stiffened edge under the retainer strip attached to the top of the screen as shown in Fig. 74.

Enter the two nylon studs, attached to the rear edge of the surrey top, in to the top of the backlight frame as shown in Fig. 75 and secure them with the small wing nuts provided in the conversion kit.

Fit one press stud, shown in Fig. 77. on each upper side of the backlight frame as follows:—

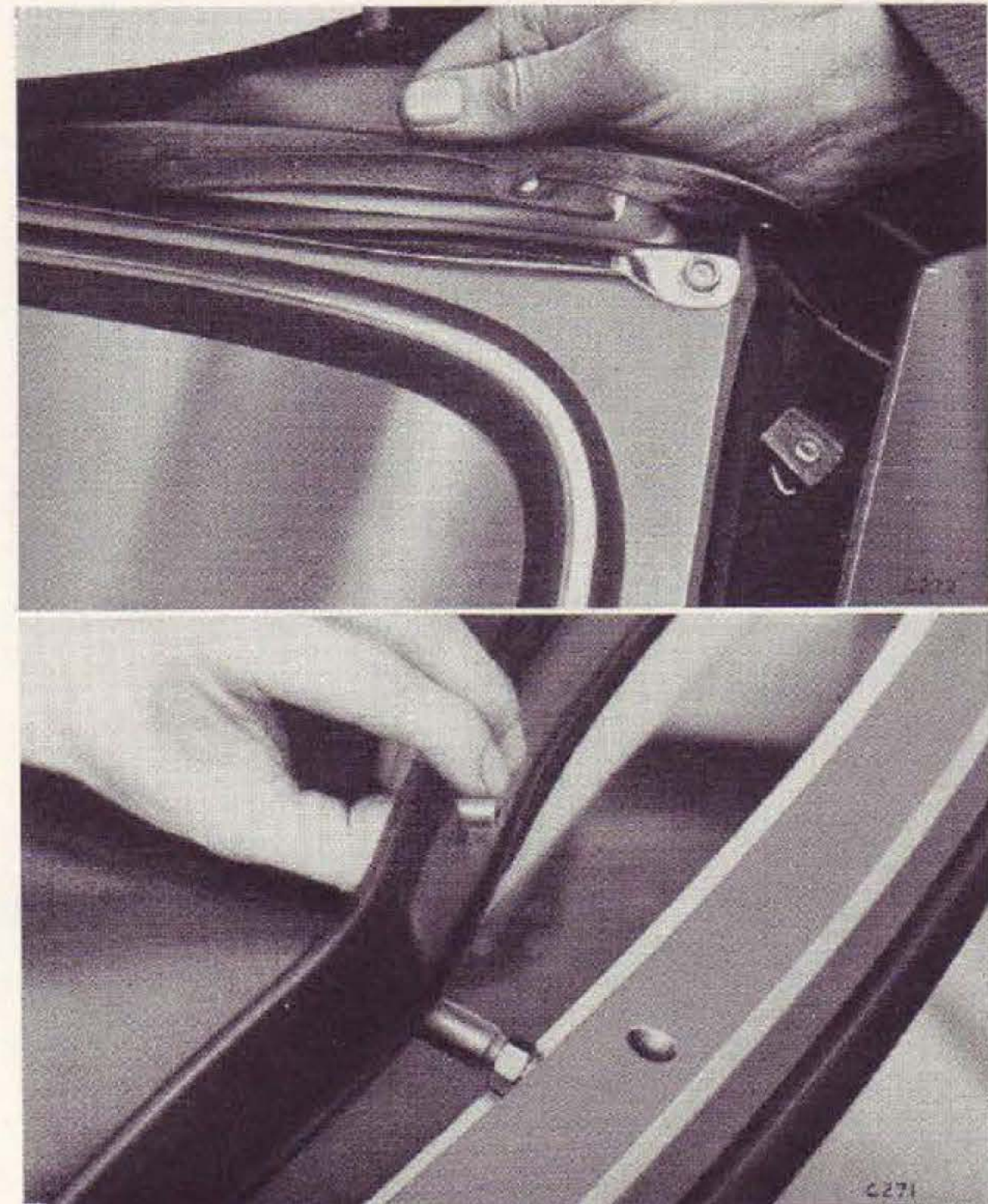


Fig. 74 (top) Fig. 75 (bottom)

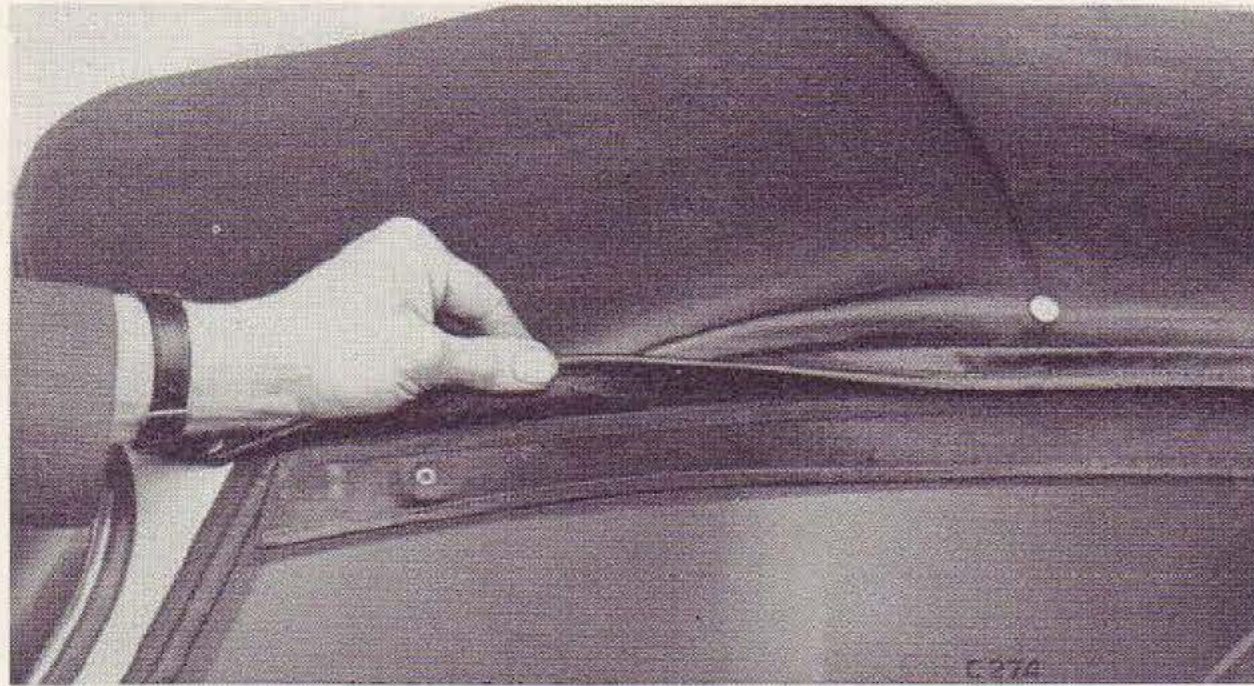


Fig. 76 (top)

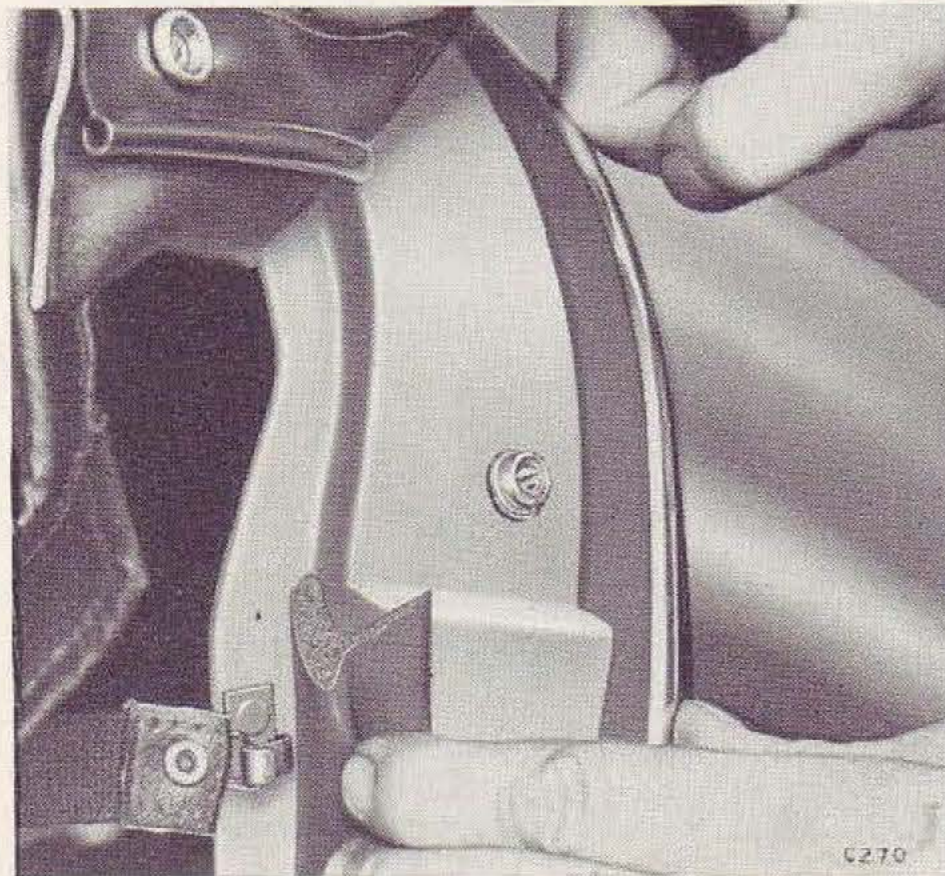


Fig. 77 (left)

Surrey Top (cont'd.)

1. Apply marking blue to the press button, attached to the rear corner of the surrey top, pull the fabric taut and transfer the marking to the backlight frame.
2. Drill the frame and fit the press stud.
3. Engage each valance tensioner with a hook revealed by turning back the weatherstrip at each side of the door.
4. Secure the press studs.

When closing the door, ensure that the top edge of the cover shown held in Fig. 76 is to the outside, and the backing strip to the inside of the window in the raised position.

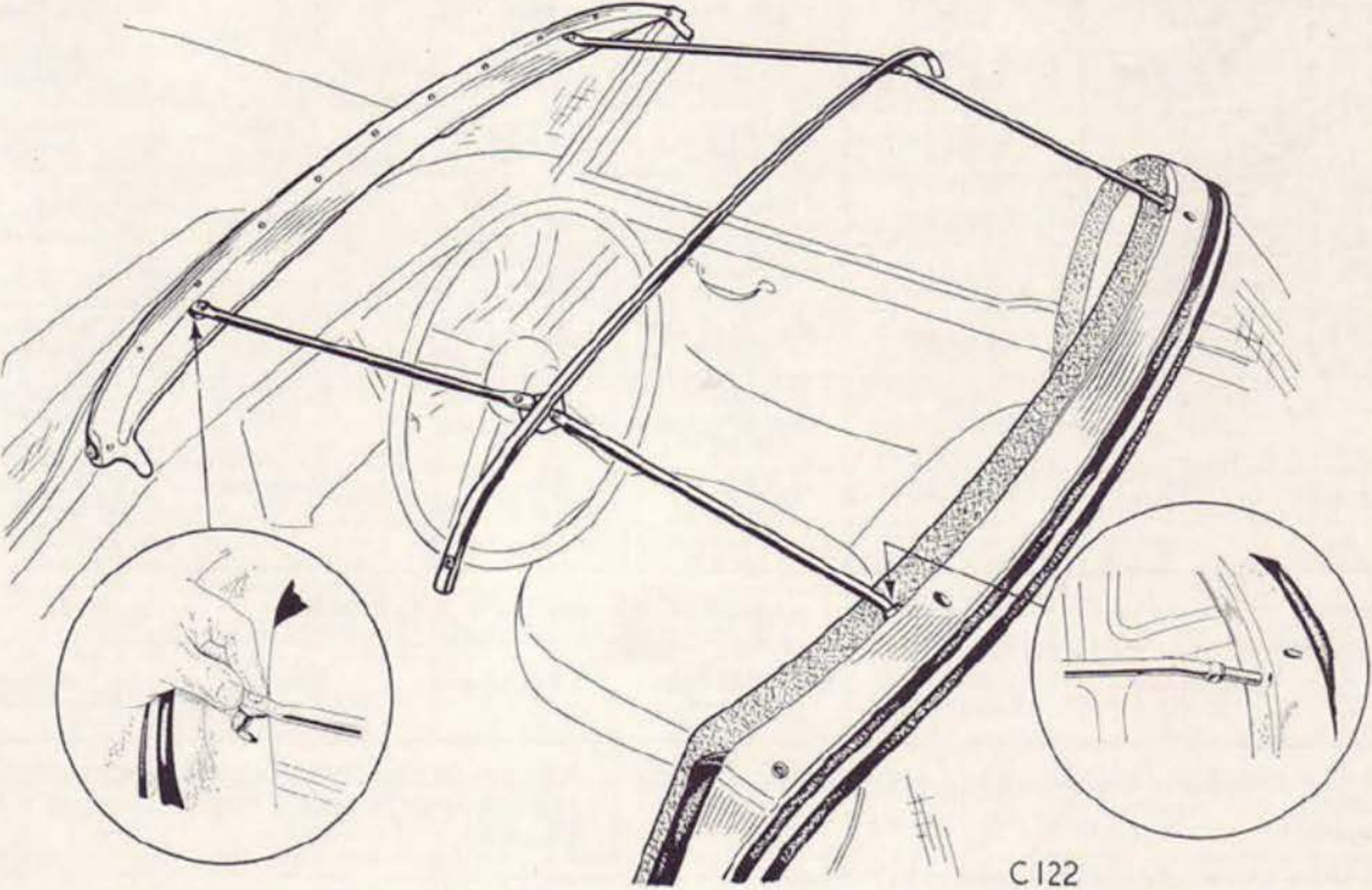


Fig. 78

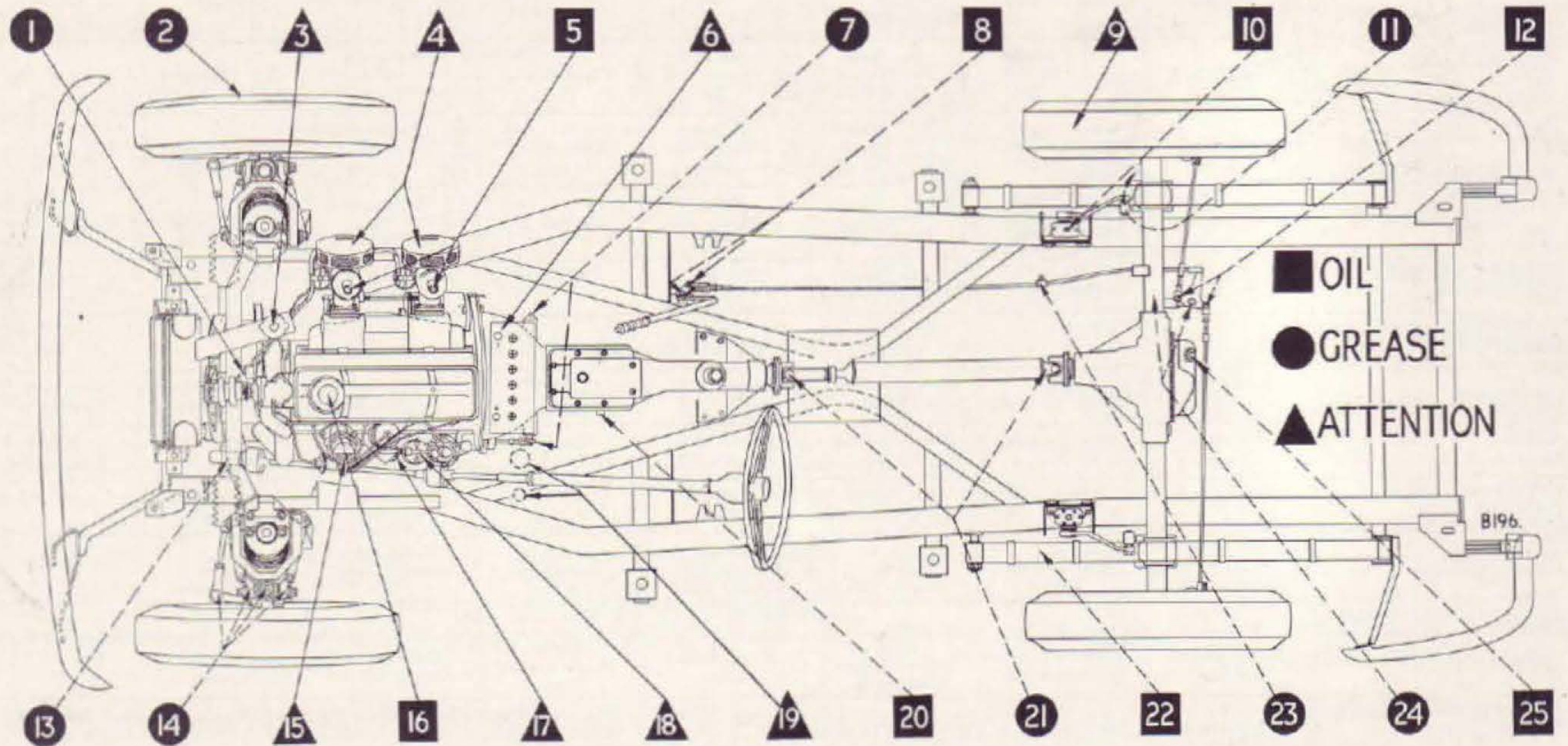
RECOMMENDED LUBRICANTS — HOME MARKETS

COMPONENT	MOBIL	SHELL	Esso	B.P.	CASTROL	DUCKHAM'S	REGENT	
ENGINE SUMP*	Mobiloil Arctic or Mobiloil Special	Shell X-100 20W or X-100 Multigrade 10W/30	Esso Extra Motor Oil 20W/30	Energol Motor Oil 20W or Visco Static	Castrolite	Duckham's Nol Twenty or Duckham's Q5500	Havoline 20/20W or Havoline Special 10W/30	
UPPER CYLINDER LUBRICANT	Mobil Upperlube	Shell U.C.L.	Esso U.C.L.	Energol U.C.L.	Castrollo	Duckham's Adcoids	Regent U.C.L.	
CARBURETOR DASHPOTS	SUMMER	Mobiloil A	X-100 30	Essolube 30	Energol Motor Oil 30	Castrol XL	Nol "Thirty"	Havoline 30
	WINTER	Mobiloil Arctic	X-100 20W	Essolube 30	Energol Motor Oil 20W	Castrolite	Nol "Twenty"	Havoline 20/20W
GEARBOX AND O/DRIVE REAR AXLE	Mobilube GX.90	Shell Spirax 90 E.P.	Esso Gear Oil GP.90	Energol E.P. S.A.E. 90	Castrol Hypoy	Duckham's Hypoid 90	Universal Thuban 90	
STEERING UNIT GREASE GUN	Mobilgrease M.P.	Shell Retinax A	Esso Multi-Purpose Grease H	Energol L.2	Castrol L.M.	Duckham's LB.10	Marfak Multipurpose 2	
OIL CAN	Mobil Handy Oil	Shell X-100 20W	Esso Handy Oil	Energol S.A.E. 20W	Everyman Oil	Duckham's General Purpose Oil	Havoline 20/20W	
REAR ROAD SPRINGS	OLD REAR AXLE OR ENGINE OIL							
BRAKE CABLES	Mobilgrease M.P.	Shell Retinax A	Esso Multi-Purpose Grease H	Energol L.2	Castrol Brake Cable Grease	Duckham's Keenol K.G.16	Marfak Multipurpose 2	
CLUTCH AND BRAKE RESERVOIRS	CASTROL GIRLING BRAKE AND CLUTCH FLUID			WHERE THE PROPRIETARY BRAND IS NOT AVAILABLE, OTHER FLUIDS WHICH MEET THE S.A.E. 70 R.3 SPECIFICATION MAY BE USED.				
	*Where circuit or other severe competitions are contemplated it is advisable to use oils of high viscosity in view of the increased temperature encountered.							
ANTI-FREEZE SOLUTIONS	Mobil Permazone	Shell Anti-freeze	Esso Anti-freeze	B.P. Anti-frost	Castrol Anti-freeze	Duckham's Anti-freeze	Smith's Bluecol	

RECOMMENDED LUBRICANTS — OVERSEAS COUNTRIES

COMPONENT	MOBIL	SHELL	ESSO	B.P.	CASTROL	DUCKHAM'S	CALTEX TEXACO	S.A.E. & A.P.I. DESIGNATION	
ENGINE* SUMP Air Temp. °F. Over 70° 40° to 70° 10° to 40° Below 10°	MOBIL OIL SPECIAL	Mobiloil A.F.	X-100 Multigrade 20W/40 or X-100 40	Esso Extra Motor Oil 20W/40 or Esso Motor Oil 40	VISCO STATIC	Energol Motor Oil 40	Castrol XXL	Q20-50 Duckham's Nol "Forty" Havoline 40 or Havoline Special 20W/40 S.A.E. 40 M.M.	
		Mobiloil A	X-100 MULTIGRADE 10W/30	Shell X-100 30		Esso Motor Oil 30	Energol Motor Oil 30	Castrol XL	Q5500 Duckham's Nol "Thirty" Havoline 30 S.A.E. 30 M.M.
		Mobiloil Arctic		Shell X-100 20W		Esso Motor Oil 20	Energol Motor Oil 20W	Castrolite	Duckham's Nol "Twenty" Havoline 20/20W S.A.E. 20W M.M.
		Mobiloil 10W		Shell X-100 10W		Esso Motor Oil 10W	Energol Motor Oil 10W	Castrol Z	Duckham's Nol "Ten" Havoline 10W S.A.E. 10W M.M.
UPPER CYLINDER LUBRICANT	Mobil Upperlube	Shell Donax U	Esso Upper Motor Lubricant	Energol U.C.L.	Castrollo	Duckham's Adcoids	Upper Cylinder Lubricant		
CARBURETTOR DASHPOTS	USE APPROPRIATE CURRENT SINGLE GRADE ENGINE OIL								
GEARBOX REAR AXLE	Over 30°	Mobilube GX.90	Shell Spirax 90 E.P.	Esso Gear Oil G.P.90	Energol E.P. S.A.E. 90	Castrol Hypoy	Duckham's Hypoid 90	Universal Thuban 90 G.L.4 Hypoid 90	
	Below 30°	Mobilube GX.80	Shell Spirax 80 E.P.	Esso Gear Oil GP.80	Energol E.P. S.A.E. 80	Castrol Hypoy Light	Duckham's Hypoid 80	Universal Thuban 80 G.L.4 Hypoid 80	
STEERING UNIT GREASE GUN	Mobilgrease M.P.	Retinax A or Darina AX	Esso Multi-Purpose Grease H	Energol L2	Castrol L.M.	Duckham's L.B.10	Marfak Multipurpose 2		
OIL CAN	Mobil Handy Oil	Shell X-100 20W	Esso Handy Oil	Energol Motor Oil S.A.E. 20W	Everyman Oil	Duckham's General Purpose Oil	Home Lubricant		
REAR ROAD SPRINGS	OLD REAR AXLE OR ENGINE OIL								
BRAKE CABLES	Mobilgrease M.P.	Retinax A or Darina AX	Esso Multi-Purpose Grease H	Energol L.2.	Castrol Brake Cable Grease	Duckham's Keenol KG 16	Marfak Multipurpose 2		
CLUTCH AND BRAKE RESERVOIRS	CASTROL GIRLING BRAKE AND CLUTCH FLUID				WHERE THE PROPRIETARY BRAND IS NOT AVAILABLE OTHER FLUIDS WHICH MEET THE S.A.E.70 R3 SPECIFICATION MAY BE USED.				
*Where circuit or other severe competitions are contemplated it is advisable to use oils of high viscosity in view of the increased oil temperature encountered.									
ANTI-FREEZE SOLUTIONS	B.P. Anti-frost	— Mobil Permazone	— Shell Anti-freeze	— Esso Anti-freeze	— Castrol Anti-freeze	— Duckham's Anti-freeze	— Smith's Bluecol		

LUBRICATION AND MAINTENANCE



LUBRICATION AND MAINTENANCE

Ref.	Items	Details	Page Ref.	Mileage Intervals	Ref.	Items	Details	Page Ref.	Mileage Intervals	
9	Tyre Pressures ..	Check, adjust if necessary	17 31	Weekly	7	Clutch Cross Shaft Bearings (2 nipples)	Grease Gun	19	3,000	
3	Radiator Water Level ..	Top up	16	Weekly	1	Engine Water Pump (1 nipple)		27	12,000	
6	Battery	Top up	17	Weekly	11	Hubs—Rear (2 nipples) ..		26	12,000	
14	Steering Swivels (4 nipples) ..	Grease Gun	19	3,000	15	Ignition Distributor	Oil Can	24	6,000	
14	Steering Outer Tie Rod Ball Joints (2 nipples)		19	3,000	8	Handbrake Lever		3,000		
14	Lower Wishbone Outer Bushes (4 nipples)		19	3,000		Door Locks, Hinges, Bonnet Safety-Catch, Boot and Spare Wheel Locks		24	6,000	
21	Propeller Shaft Splines (1 nipple)		Three or Four Strokes	Grease Gun	18	3,000			Generator	27	12,000
	Universal Joints (2 nipples)	18			3,000			Oil Filler Cap	21	6,000
19	Hydraulic Brake and Clutch Reservoirs	Top up Fluid Level	18	3,000	25	Rear Axle	Top up Oil Level	21	6,000	
5	Carburettor Dashpots and Control Linkages	Oil as Recommended	Oil Can	23	6,000	13	Steering Unit	Grease Five Strokes	27	12,000
16	Engine	Top up Oil Level		16	250	4	Air Cleaners	Clean	21	6,000
		Drain and Refill with New Oil	21	6,000	17	Oil Filter	Renew Cartridge	22	6,000	
20	Gearbox	Top up Oil Level	21	6,000	18	Fuel Pump	Clean out Filter Bowl	22	6,000	
23	Hand-brake Cable (1 nipple)	Grease Gun	19	3,000	2	Hubs—Front	Remove and Re-pack	25	12,000 or 24,000	
24	Compensator (2 nipples)		19	3,000	10	Rear Dampers	Top up		12,000	
					22	Road Springs	Clean and Oil		12,060	

GENERAL SPECIFICATION

GENERAL SPECIFICATION

Engine

Number of cylinders	4	
Bore of cylinders	3.386"	86 mm.
(Special Order)	3.268"	83 mm.
Stroke of crankshaft	3.622"	92 mm.
Piston area	36 sq. in.	232 sq. cm.
(Special Order)	33.5 sq. in.	216 sq. cm.
Cubic capacity	130.5 cu. ins.	2138 c.c.
(Special Order)	121.5 cu. ins.	1991 c.c.
Compression ratio	9 or 7 : 1	

Valve rocker clearances

—inlet and exhaust	0.010" (cold)	0.254 mm.
Valve timing (with valve rocker clearances set at 0.0165") (0.42 mm.)	Inlet and exhaust valves to be equally open at T.D.C. on the exhaust stroke.	

Lubrication (Engine)

Type of pump	Hobourn-Eaton.
Oil filter	Purolator. A.C. Delco or Tecalemit full flow filter (replaceable element).

Fuel System

Fuel tank	Mounted over axle in front of luggage compartment.
Carburettors	Stromberg 175 CD Needle size 2 O

Ignition System

Contact breaker gap	0.015"	0.4 mm.
Spark plugs—Type	Normal road use—Lodge CNY. High Speed Touring—Lodge HN. Competition Use—Lodge 2 HN. Low Octane Fuel—Lodge CN.	
Gap	0.025"	0.64 mm.
Firing order	1 : 3 : 4 : 2	
Ignition timing	4° B.T.D.C. (basic setting).	

Electrical System

Type—Battery	12 volt, 51 amps. hr.
Type	Model BT. 9A.
Control box	Model RB. 106-2.
Generator	Model C40-1.

Chassis Data

Frame	Channel steel pressings braced with a cruciform member.	
Wheelbase	7' 4"	2.236 metres
Track :		
Front (Disc Wheels)	4' 1"	1.245 metres
Rear (Disc Wheels)	4' 0"	1.220 metres
Front (Wire Wheels)	4' 2"	1.270 metres
Rear (Wire Wheels)	4' 1"	1.245 metres

GENERAL SPECIFICATION

Ground clearance (Static laden)	6"	15.2 cm.
Turning circle	33' 0"	10 metres
Steering Unit	Rack and pinion.	

Suspension

Front Independent suspension with wish-bones top and bottom. Patented bottom bush and top ball joint swivels. Coil springs controlled by telescopic dampers. Taper roller hub bearings.

Rear Wide semi-elliptic springs, controlled by piston type dampers.

Rear Axle

Type Semi-floating axle shafts, three-piece casing.

Drive Hypoid bevel gears.

Ratio 3.7 or 4.1 : 1

Gearbox

Type 4 forward speeds and reverse. Synchronesh on all forward gears.

Control Centre floor mounted remote control.

Wheels and Tyres

Tyre Size and Pressure (See pages 38 and 62).

Front Wheel Alignment (See page 38).

Brake System

Make Girling.

Type

Front—Caliper disc.

Rear—Leading and trailing shoe drums.

Dimensions

Rear : 9" × 1½" (22.86 × 4.45 cms.).

Operation

Pedal operates hydraulically on all four wheels.

Handbrake operates mechanically on rear wheels only.

Capacities

	Imperial	U.S. Pints	Metric
Engine—from dry	11 pints	13.2 pints	6.25 litres
Drain and refill	10 pints	12 pints	5.7 litres

Gearbox	1½ pints	1.8 pints	0.8 litres
With overdrive from dry	3½ pints	4.2 pints	2.0 litres

Drain and refill	2¾ pints	3.3 pints	1.6 litres
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Rear Axle	1½ pints	1.8 pints	0.8 litres
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<i>Water Capacity</i> of cooling system	13 pints	15.7 pints	7.39 litres
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With heater fitted	14 pints	16.8 pints	8.0 litres
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Fuel Capacity	11¾ gals.	14 gals.	53.5 litres
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Exterior Dimensions

Overall length	13' 0"	396 cms.
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Overall width	4' 9½"	146 cms.
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Overall height	4' 2"	127 cms.
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GENERAL SPECIFICATION

Weight

Dry (excluding extra equipment)	2128 lb.	970 kg.
Complete (including fuel, oil, water and tools)	2240 lb.	1015 kg.

Performance Data

Nett

Engine

100 B.H.P. at 4,600 r.p.m.
 Torque 1,520 lb/in. at 3,350 r.p.m.
 (Equivalent to 147 lb/sq. in B.M.E.P.)
 Piston speed at 100 m.p.h. in top gear,
 2,850 ft/min. at 4,800 r.p.m. (3·7 : 1
 axle).

Gear Ratios

	O/drive Top	Top	O/drive 3rd	3rd	O/drive 2nd	2nd	1st	Rev.
Gearbox Ratios	0·82	1·0	1·09	1·325	1·65	2·01	3·139	3·223

3·7 : 1 Axle

Overall Ratios	3·034	3·7	4·02	4·9	6·1	7·43	11·61	11·93

4·1 : 1 Axle

Overall Ratios	3·36	4·1	4·46	5·44	6·76	8·24	12·87	13·21

ROAD SPEED DATA

	O.D. Top	Top	O.D. 3rd	3rd	O.D. 2nd	2nd	1st	Reverse
Engine Speeds (3·7 axle)								
Using Dunlop Textile Tyres :								
at 10 m.p.h.	412	501	545	664	825	1007	1573	1615
at 10 km./hr.	250	310	340	410	510	620	970	1005
Using Michelin X Tyres :								
at 10 m.p.h.	409	498	541	660	820	1001	1563	1605
at 10 km./hr.	254	309	336	410	509	622	971	997
Engine Speeds (4·1 axle)								
Using Dunlop Textile Tyres :								
at 10 m.p.h.	455	556	604	736	916	1170	1744	1790
at 10 km./hr.	283	345	375	467	579	694	1083	1112
Using Michelin X Tyres :								
at 10 m.p.h.	452	552	601	731	910	1110	1733	1779
at 10 km./hr.	281	343	373	454	565	691	1077	1105

TYRE PRESSURE DATA

OPERATING CONDITIONS	Goodyear Grand Prix		Goodyear G200 Wire Belted 165—15		Goodyear G800 165—15	
	lbs. per sq. in.		lbs. per sq. in.		lbs. per sq. in.	
All motoring including fast motoring on Motorways and similar roads with sustained speeds up to 105 m.p.h. ..	Front	Rear	Front	Rear	Front	Rear
		20	24	22 *24	38 *32	24	28
High speed tuning with sustained speeds regularly in excess of 105 m.p.h.						
	24	28	22 *24	38 *32	24	28
OPERATING CONDITIONS	Goodyear Allweather Rib and Dunlop Gold Seal 5·50/5·90-15		Goodyear Allweather Rib Nylon and Dunlop Gold Seal Nylon 5·50/5·90-15		Goodyear Motorway Special and Dunlop Road Speed R.S.5 5·50/5·90-15	
	lbs. per sq. in.		lbs. per sq. in.		lbs. per sq. in.	
Normal motoring with sustained speeds limited to 85 m.p.h.	Front	Rear	Front	Rear	Front	Rear
	20	24	20	24	20	24
Fast motoring on Motorways and similar roads with sustained speeds up to 100 m.p.h. ..						
	26	30	20	24	20	24
High speed tuning with speeds regularly in excess of 100 m.p.h.						
	Not recommended		26	30	20	24
*From Commission Number CT23383						

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